

Primavera Project Planner®

Reference Manual

Version 3.0

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Please send your comments about Primavera Project Planner to:

Primavera Systems, Inc.
Three Bala Plaza West
Bala Cynwyd, PA 19004
Telephone: 610-667-8600
FAX: 610-667-7894
Internet: usatech@primavera.com
World Wide Web site: <http://www.primavera.com>

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Preface

In this preface:

What's New in P3?

**Using P3 Documentation, Help,
and Tutorials**

Where to Get Support

Primavera Project Planner (P3) offers an easy-to-use approach to project planning with an intuitive interface that makes project planning and control easy, without sacrificing the powerful sophistication of high-end project-management software that you expect from Primavera.

P3 is a multiuser product that operates on popular local area networks such as Novell or Banyan Vines; it is compatible with SureTrak project files, allowing you to share data with other network users, and with anyone who manages projects using Primavera software.

What's New in P3?

This version of P3 has a new look and feel, making it easier to use than ever. For example, dialog boxes have been redesigned to take advantage of standard Windows features. P3 3.0 also contains enhancements to important product features, including scheduling and leveling, layouts, and period performance data. In addition, P3 uses a new custom report writer called InfoMaker that enables you to create reports that include all the information you need from your projects. Take advantage of the following product enhancements in P3 3.0:

Period Performance Data Store periodic actuals and earned value per resource assignment to facilitate accurate reporting and display a resource assignment's true actual cost and quantity spread from the start of the resource assignment to the data date or actual finish.

Automatic Scheduling and Leveling Have P3 automatically schedule or level projects whenever you change data that affect calculated schedule or level dates.

Progress Spotlight and Progress Update Visually identify which activities were scheduled in the current update period and automatically status their progress if they are on schedule.

Customizable Header and Footer Select the information to include in the header and footer, including project dates, the bar chart legend, project titles, and multiple revision boxes and logos. You can also specify the size, position, and font of each header and footer section.

Project Codes Define project codes in the project group and assign them to member projects so you can organize and filter projects at the project-group level.

Resource Assignments Assign the same resource to multiple activities in one step.

Bar Chart Format individual bars to emphasize specific activities, and display the zig zag progress line that appears relative to the data date line to see how current schedule dates compare to target dates in the Bar chart.

Activity Columns Display multiple predecessors, successors, cost accounts, or resources in one column cell. Group data items into one band for each combination of values.

PERT Use the new timescaled PERT to arrange activities by early start or actual start. You can also expand PERT by inserting rows and columns.

InfoMaker Use P3's new custom report writer to modify and format existing P3 reports, or create an executable to run a series of reports.

Primavera Post Office Display an Expected Finish constraint column on the Status Sheet so team members updating their status can see when work is expected to finish. Use the Print command to print the Status Sheet.

Using P3 Documentation, Help, and Tutorials

If you aren't already familiar with P3, use the *Planning and Control Guide* first to learn the basic features in P3, then move on to this *Reference* manual to learn the details. This manual is organized as follows:

Part 1 – Project Development P3 enables you to implement project management in your organization. This part demonstrates how to build and manage projects effectively using projects and layouts, working with activities and relationships, calculating and adjusting the schedule, defining activity and resource calendars, setting up code structures (Work Breakdown Structure, activity codes, project codes, and custom data items), establishing target projects to evaluate progress compared to the current plan, planning and tracking resources and costs, and leveling resources.

Part 2 – Managing Multiple Projects P3 allows enterprise-wide management of multiple projects, whether accessible via a LAN, WAN, or e-mail. This part discusses management of project groups and projects in a group, using e-mail to share project data, linking independent projects or project groups, and copying projects and project groups.

Part 3 – Project Tools Once project data are in place, P3 project tools enable you to manage and control that data. This part discusses utilities, such as copying, deleting, and backing up projects; global change; and integrating information with OLE.

Part 4 – Presentation and Analysis P3's many presentation options and their uses are described. This part discusses customizing Bar chart and PERT layouts and resource/cost profiles and tables, grouping and sorting activities, selecting activities by filter, summarizing data, and printing layouts.

Part 5 – Reports and Graphics P3 provides reports and graphics that communicate detailed or summarized information about projects. This part discusses the schedule, resource/cost, matrix, and custom reports available and their content, as well as bar chart, timescaled logic, pure logic, and resource/cost graphics that can help you analyze and communicate project data. This part also explains how to produce these reports and graphics in P3, create P3 reports using Infomaker, and publish reports on the World Wide Web.

Online documentation This manual is available online in .PDF format. To view the online information using the Adobe Acrobat Reader, you must install both the Reader and the online documentation from the P3 Setup CD. Insert the P3 CD-ROM in your computer's disk drive, and click the Documentation button from the initial Setup screen. Select either the Adobe Acrobat Reader or the P3 Documentation. Complete the setup instructions as prompted.

In addition to this book, other documentation is provided online for your reference:

- *Planning and Control Guide*
- *Batch and File Structures*
- *A Guide to the Project Management Body of Knowledge*

To view the InfoMaker online documentation, first install the InfoMaker Dynatext reader by performing the following steps:

- 1 Run Setup from the P3 3.0 CD.
- 2 Click Install InfoMaker.
- 3 Select InfoMaker Dynatext.
- 4 You can install the reader to any drive and folder; the default is C:\PROGRAM FILES\SYBASE\OLBOOKS.
- 5 Accept the Typical Install option.
- 6 Browse to the 30SETUP\IM\OLBOOKS folder on the CD-ROM when prompted for the location of online books.
- 7 When Setup completes, you can view the online books by selecting Start, Programs, Sybase, Online Books (or the folder you installed to if you chose a location other than the default).

InfoMaker online documentation is available both on the P3 CD by inserting it and selecting Start, Programs, Sybase, Online Books; and via the internet at <http://calas.sybase.com>.

The InfoMaker online documentation provides a general introduction to the InfoMaker application. For a more thorough reference, you may consider purchasing the InfoMaker User's Guide. For details, contact Sybase via their web site at www.sybase.com or call 1-800-879-2273. If you have a news reader installed with your Internet browser, you can set up a news account to forums.sybase.com and join the InfoMaker news group.

InfoMaker technical documents can be accessed from <http://techinfo.sybase>

P3 Help system P3 provides an extensive help system to supplement the documentation. Use P3 Help to access information about commands and dialog boxes. P3 Help also includes step-by-step procedures for performing each P3 function.

Tutorials P3 provides several online lessons that teach the basic skills required to use the program. Access the tutorials by choosing Help, Tutorial, from within P3.

Where to Get Support

If you have a question about using P3 that you or your network administrator cannot resolve with information in the P3 documentation or online Help, call Primavera Technical Support at the times and locations listed below.

Please have your software serial number ready when you call. We log each call to help us resolve your questions quickly.

Office	Time Zone	Hours	Telephone	FAX	Internet Address*
Bala Cynwyd, Pennsylvania, U.S.A.	EST	8:00-7:00 (Mon-Fri) 9:00-2:00 (Sat)	610-668-3030	610-667-0652	usatech@primavera.com
London, England, U.K.	GMT	8:30-6:30 (Mon-Thur) 8:30-5:30 (Fri)	44-208-563-5555	44-208-748-9180	uktech@primavera.com
Kowloon, Hong Kong, SAR	GMT+ 8:00	9:00-5:30 (Mon-Fri)	852-2111-8299	852-2111-9477	hktech@primavera.com

*You can also visit Primavera's World Wide Web site at <http://www.primavera.com>.



In the United States, we periodically and randomly monitor technical support calls to ensure that we are providing the highest quality support to you.

All Primavera products are backed by comprehensive support and training. To request product literature, contact your local dealer, call Primavera at 610-667-8600, or send your request via e-mail to **info@primavera.com** in the United States. In the United Kingdom, call 44-208-563-5500 or e-mail your request to **intlinfo@primavera.com**. In Hong Kong, call 852-2111-8288, or e-mail your request to **hkinfo@primavera.com**.

Setting Up P3

In this chapter:

Before You Begin Setup

Installing P3 on a Stand-Alone Computer

Installing P3 for Multiple Users

Setting Up User Workstations

Starting P3

This chapter explains how to install P3 on a stand-alone PC and as part of a network installation. Once P3 has been installed, each workstation must be configured so P3 can work optimally with your printer, plotter, and network.

Before You Begin Setup

Before you begin installing P3, you should review Primavera's hardware and software recommendations and valid operating environments.

Hardware and software recommendations Primavera recommends using the following hardware and software for best results with P3:

- 486 or faster computer
- 16 MB total memory
- At least 68 MB of free disk space
- Windows 3.1, Windows 95/98, or Windows NT
- CD-ROM drive

P3 also works in the following operating environments:

Operating Systems:

Windows 3.1 or higher

Windows NT 3.51 service pack 5 or higher

Server-Based Networks:

Novell Netware 3.11 or higher

Banyan Vines 7.x or higher

Client/Server:

(Novell) Btrieve NLM 6.15 or higher

Btrieve for Windows NT 6.15 or higher

Peer-to-Peer Networks:

Windows for Workgroups 3.11 or higher

Before you can install P3, Microsoft Windows, Windows 95/98, or Windows NT must be running on your computer. Because the files on the P3 program CD-ROM are compressed to save space, you must use the P3 Setup program.

You can install P3 on a stand-alone computer for use by one person or on a multiuser network fileserver as described later in this chapter.

P3.INI file P3 Setup creates a P3.INI file in your Windows folder that contains default Toolbar preferences and screen colors and identifies the location of program files, user files, and project files. Setup adds the following statements to the Directories section of the P3.INI file to indicate the folder files are stored in. You can edit this file if the P3 file locations change.

Folder setting	Defines location of
PROGLOC	Read Only program files
WORKLOC	Read Write program files
USERLOC	User-specific and temporary files
PROJ	Project files (default)

P3 sets two additional parameters, PRMZLOC (serial number information) and USERFILLLOC (user list file), equal to the P3 WORKLOC folder.

Installing P3 on a Stand-Alone Computer

The P3 Setup program makes installation quick and easy and provides help if you experience a problem. P3 Setup provides defaults for most prompts. You can accept these defaults or type in different responses.

To install P3

- 1 Start Windows and close any open applications (including the Microsoft Office floating Shortcut bar). Insert the P3 CD-ROM in the CD-ROM drive.
- 2 Setup starts automatically, displaying a menu of the items that you can install from the P3 CD-ROM. Select Install P3 v3.0.



If the AutoRun feature does not automatically load the Setup program, choose Start, Run, and type D:\SETUP.EXE (where D is the letter of the CD-ROM drive you are using). Then click OK.

- 3 The Primavera License agreement is displayed. This information describes the terms for using P3. Read the agreement carefully and click Accept to continue the installation.
- 4 P3 Setup prompts you for the Product ID. This number is located on the back of the CD-ROM case. If you are upgrading from a previous version of P3, enter the Update ID number.

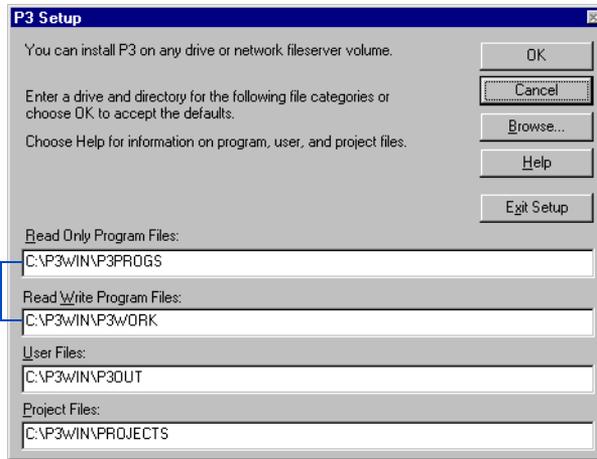
P3 Setup displays the disk space requirements for using P3. It also recommends that you close all other open programs before you continue. To verify that P3 Setup is the only open program, press Alt+Tab. If necessary, close any open programs, then click Continue.

- 5 Specify folder locations for P3 files. To accept the default drives and folders, click OK. If the folders do not exist, the program prompts you to have Setup create them.

When installing P3 on a stand-alone computer, you can ignore the Read Only/Read Write designation for program files and accept the defaults. You can also choose to store the files in a different location.

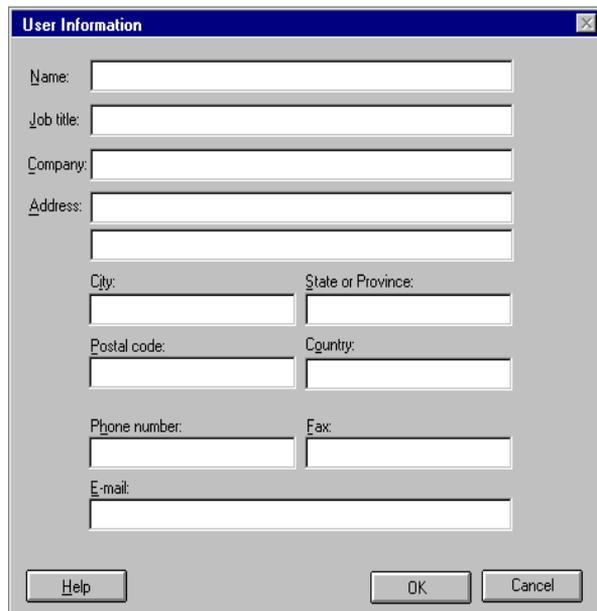
If you are installing P3 as an update to a previous version, P3 Setup will prompt you for some additional information. Follow the instructions onscreen. If necessary, click Help for details.

In network environments, Read Only program files are commonly separated from Read Write files so network administrators can protect program files from accidental deletion.



Change the locations to the same folder if you do not want to separate program files. If you choose the same directory for program files you must have full access rights to the folder. Use the Browse button to display the drives and folders available to your computer.

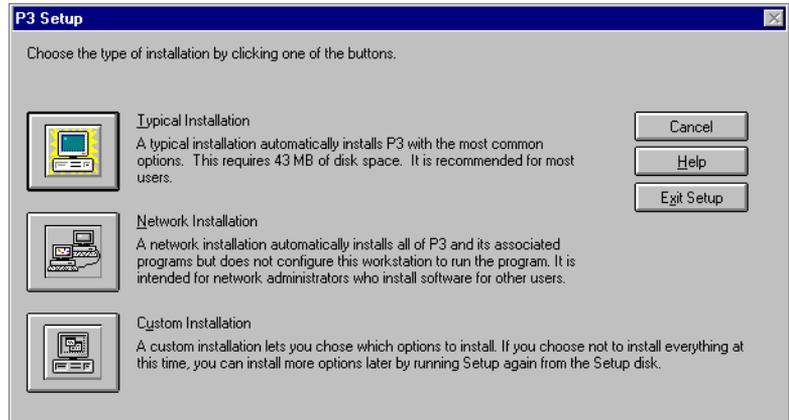
- 6 Setup displays a series of registration dialog boxes. Type the registration information and click Next.



P3 Setup displays the name of your registration file and the folder to which Setup copied it. You can send this information to Primavera through e-mail, by fax, or by mailing it.



- 7 P3 offers several types of installation. Choose an installation type depending on the disk space available on your computer and the options you want to install.



A *typical installation* includes all P3 program files and associated applications and the sample projects (together with their associated target projects). This option does not install the InfoMaker custom report writer, but you can install it after P3 Setup completes.

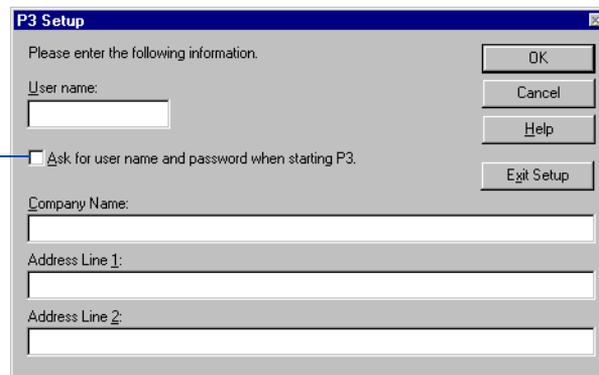
A *custom installation* enables you to choose the applications and sample projects to install. In the Program File Options or Sample Project Options dialog box, clear the checkbox beside any program option or project you do not want to install.

For details about installing P3 on a workstation, see *Setting Up User Workstations* later in this chapter.

A *network installation* includes all P3 programs included with a typical installation but does not set up P3 on the computer from which you are running Setup. This option enables a network administrator to install P3 with all the necessary files for setting up workstations without installing P3 on his or her own computer or drive. Choose a typical installation if you are installing P3 on a network drive and if the PC will also be used as a workstation.

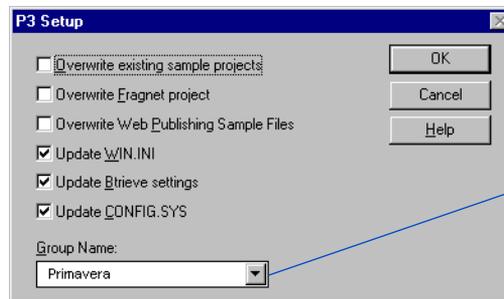
- 8 After you choose the installation type, enter your P3 login name, company name, and company address. To view this information later, choose Help, About P3.

If you want password protection when you start P3, mark this checkbox.



If you mark the Ask For User Name And Password When Starting P3 checkbox, P3 prompts you to enter your user name and password each time you start P3. Your password is the same as your user name until you change it in P3 using the Change Password command.

- 9 Identify files P3 Setup can overwrite or modify by marking the checkboxes for those files. Clear checkboxes for files you do not want P3 Setup to change. Setup may disable certain options based on the type of installation selected.



P3 Setup creates a Primavera program group unless you specify a different name.

P3 Setup adds the following programs to the Primavera group.

Program Name	Description
--------------	-------------

Primavera Project Planner (P3)	The P3 application
Primavera Look	A text and graphics editor you can use to customize reports and graphics
Netset	The network administration program for registering users and assigning access rights
Endpoint Manager	Enables you to add to the list of available endpoint symbols for activity bars in P3
Interproject Relationships	Enables you to connect projects by assigning relationships between independent projects or project groups
Uninstall	Enables you to remove P3 and its associated applications from your computer
Web Publishing Wizard	Enables you to create a series of HTML documents based on the projects and reports you specify. You can transfer these documents to either the World Wide Web (using FTP) or your office intranet, and view them using an Internet browser
Metafile Viewer	Enables you to link or embed Windows metafiles in P3 layouts
MPX Conversion Utility	Enables you to convert Microsoft Project .MPX files to P3 format and vice versa.
P3 Setup Help	Provides help for the P3 Setup program
P3 Readme	Contains late-breaking information about P3, changes to the documentation, and details about new features in P3

For more information about installing InfoMaker online documentation, see the *Preface*.

10 Click OK to complete the installation.

Install the Adobe Acrobat Reader, online documentation, InfoMaker, and the Dynatext Reader Insert the P3 CD-ROM in the CD-ROM drive. Setup starts automatically, displaying a menu of the items that you can install from the P3 CD-ROM. Click either Documentation to install the Adobe Acrobat Reader and online documentation, or Install InfoMaker to install the InfoMaker custom report writer and the Dynatext Reader that enables you to read the InfoMaker online documentation.

Installing P3 for Multiple Users

If you purchase a LAN Pack or a multiuser version of P3, you can install it once on a network fileserver and have several users access the software from their workstations at the same time. More than one user can then open and share projects stored on the fileserver.



You cannot remove serial numbers from LAN Packs.

The number of users who can use P3 at the same time depends on the number of serial numbers included with your installation. Each copy of P3 has one serial number assigned to it. When a user starts P3, the serial number is locked and cannot be used by another person until the user who started P3 exits the software.

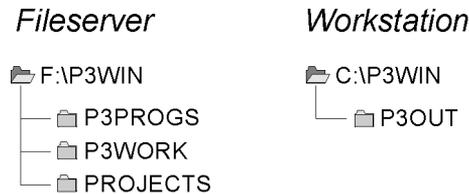
Before installing P3 on your network, decide on a folder structure for the program, data, and project files. The following table shows the default folders created when you install P3 and set up each user's workstation:.

Folder	Content	Comments
P3WIN	Program, project-file, and user-file folders	Created during setup
P3WIN\P3PROGS	Read Only program files	Store program files needed to run P3
P3WIN\P3PROGS\CLIPART P3WIN\P3PROGS\HTMFILES	Read Write files	Contains sample clip-art files, and sample HTML reports
P3WIN\P3WORK	Read Write program files	Separates Read Write program files from Read Only program files stored in P3PROGS
P3WIN\PROJECTS	Project files	Must be located on fileserver for multiple users to share projects
P3WIN\P3OUT	Temporary files created by P3	Stores files such as project reports for each user

Setting user access rights By default P3 Setup separates Read Write program files (stored in P3WORK) from Read Only program files (stored in P3PROGS) so you can protect specific program files from accidental deletion. For example, Read Write files such as USERFIL.P3, which stores user names, are separated from program files such as P3.EXE, the main program file required to run P3. The network administrator should set Read Only rights to the P3WIN\P3PROGS folder and Read Write access to the P3WIN\P3WORK folder.

Folder configurations Primavera recommends you use one of two different folder configurations to store project files.

Alternative 1 allows all users to access project data. Place the program folders (\P3WIN\P3PROGS and \P3WIN\P3WORK) and project folder (\P3WIN\PROJECTS) on the network so users can share them. Use this arrangement if many users work on the same project simultaneously.



Project File Storage Alternative 1: Users share projects

Alternative 2 allows users to work independently and store projects on their local drives. Locate the program folders (\P3WIN\P3PROGS and \P3WIN\P3WORK) on the fileserver so all users can share program files. Store users' project and output files on their own workstations in folders within the C:\P3WIN folder. If you use this configuration, you may want to create an additional folder on the network drive (\P3WIN\PROJECTS) for projects users share.

Fileserver*Workstation*

Project File Storage Alternative 2: Separate directories for shared and independent projects

For steps on using P3 Setup, see *Installing P3 on a Stand-alone Computer* earlier in this chapter.

For more information about Netset, choose Help, Network Setup, in P3.

After you create a folder structure for your network and operating environment, use the P3 Setup program to install P3 as described earlier in this chapter.

Adding copies of P3 to a multiuser system If you purchase additional copies of P3 after the original installation, you can add other copies (or serial numbers) to a multiuser system by choosing the option to add a new serial number in Netset. You can also use Netset to add a new serial number or remove a copy of P3 from a multiuser system if you decide to use it as stand-alone copy for one person.

Setting Up User Workstations

P3 Setup configures a workstation by creating a P3.INI file in the user's Windows folder. P3.INI identifies the location of the P3 program files on the fileserver, temporary files created by P3 operations, and project files, as well as the default toolbar preferences and screen colors.



If you are upgrading from a previous version of P3, you must also update the P3 workstations.

To set up user workstations

- 1 Click Start then click Run.
- 2 Click Browse and choose **SETUP.EXE** from the network drive and folder where P3 is installed.
- 3 Answer the questions about the location of P3 and other files. P3 Setup adds the following statements to the Directories section of the P3.INI file to indicate where files are stored:

Directory setting	Defines location of
PROGLOC	Read Only program files
WORKLOC	Read Write program files
USERLOC	User-specific and temporary files
PROJ	Project files (default)

During Setup, specify the location of P3 on your network for the Read Only program files, Read Write program files, and project files. Specify User Files on a local drive. Setup makes the following changes to the workstation:

- Adds a Primavera Group with program names to the Start menu.
- Copies or updates Windows and Windows\System files required to run this version of P3.



During setup, you can set the USERLOC file to a network drive and folder, but two concurrent P3 users cannot share that folder. If you are running P3 with Btrieve NLM (NetWare Btrieve), the USERLOC file must reside on a network drive. Create a unique folder on the network drive for each user with a P3 login.

For steps on using P3 Setup, see [Installing P3 on a Stand-Alone Computer](#) earlier in this chapter.

For information about access rights and other multiuser considerations, choose Help, Network Setup, in P3.

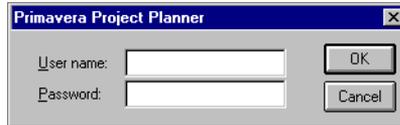
Use Netset to modify user information and access rights.

Starting P3

After running P3 Setup, follow this procedure to start P3:

- 1 Click Start, Programs, Primavera, and then select Primavera Project Planner.
- 2 If you selected password protection during Setup, type your user name and password.

You need not enter the password if it is the same as your user name; click OK to continue.



If you don't want to enter a username and password each time you start P3, modify the command-line properties or shortcut for the P3 icon. See *Password-protection: removing* in P3 Help.

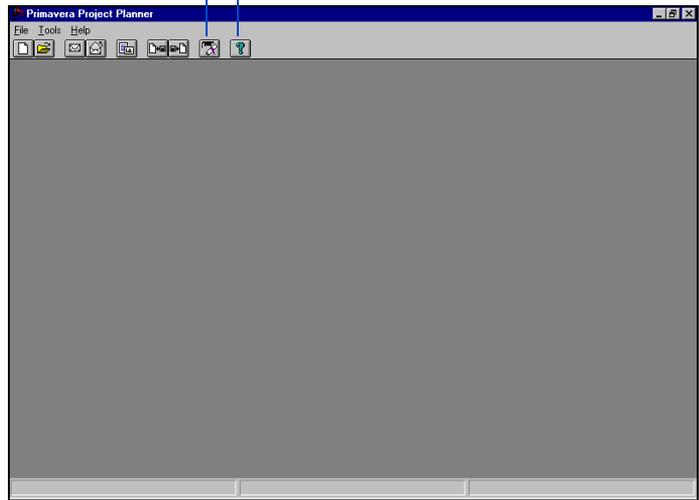
If you installed a new system, you may be prompted to register your system with Primavera. You can register via the web, fax, or e-mail at any time before the expiration period has ended. (You are notified of this expiration period each time you start P3.) When you register, Primavera returns your Workstation Key, which you then use to unlock your workstation before the expiration period has ended.

For details on new features, see the *What's New?* topic in the P3 Help file.

P3 displays the opening window. Choose File, New, to create a new project. Choose File, Open, to open an existing project.

*Click to view a tutorial
for using P3.*

*Click to open the P3
Help system.*



Project Development

In this part:

Projects and Layouts

Working with Activities

Working with Relationships

Calculating and Adjusting the Schedule

Activity Calendars

Resource Calendars

Work Breakdown Structure Codes

Activity and Project Codes

Custom Data Items

Targets and Progress

Planning Resources and Costs

Tracking Resources and Costs

Resource Leveling

This part describes how to build projects using the fundamentals of P3 such as activities, relationships, and layouts to accomplish project goals. Creating projects and customizing layouts to present project data, and adding activities and relationships are explained in relation to both the Bar chart and PERT. After creating the project, the next step is calculating a schedule, then adjusting it and fine tuning with a coding structure (WBS, Activity, and Custom Data Items) and calendars—both activity and resource. When you are satisfied with your project, you can create a target to compare it with the current project as it progresses to make sure you stay on track. The final chapters in this part concentrate on planning and tracking resources and costs, and the use of resource leveling to ensure that resource demand does not exceed resource availability.

Projects and Layouts

In this chapter:

Starting P3 and Opening Projects

Adding a Project

Setting Access Rights for the Project

Defining Restricted Access Rights

Creating a New Layout

Saving Layouts

Opening an Existing Layout

Running a Filter when Opening Layouts

Creating a Snapshot Activity List

Using Layouts Across Projects

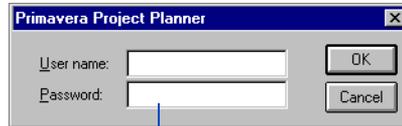
Creating projects in P3 is easy. Simply establish your objective and specify a start date.

The appearance of a project depends on its layout. A layout is a picture of your project that stores visual elements such as the format of activity bars and columns, the organization of activities, and screen colors.

Each layout displays a set of activities defined by a filter. Use different filters in a layout to focus on different aspects of your project. The layout saves the most recently run filter and displays those activities the next time you open the layout.

Starting P3 and Opening Projects

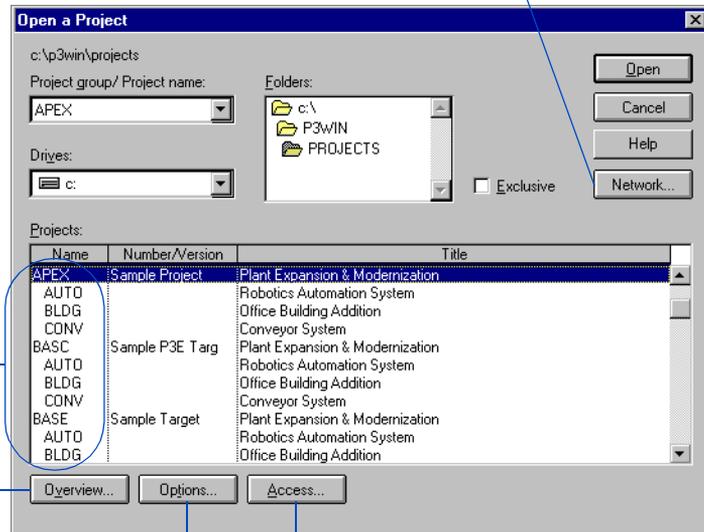
To start P3, click Start, Programs, Primavera, and then select Primavera Project Planner. If you selected password protection during Setup, type your user name and password.



You don't need to enter the password if it is the same as your user name; click OK to continue.

You can also select a project from the list of recently opened projects at the bottom of the File menu.

Open a project After you start P3, you can begin working with a project. Choose File, Open, to access an existing project from the default projects folder. Select a different drive and folder to access projects located elsewhere. You can open up to four projects at the same time.



Map to a network drive.

P3 lists projects and project groups. Double-click the project you want to open.

Review summary information about the project.

Change the layout and filter associated with the selected project.

List the users who can access the project.

When you open a project, P3 displays the project in the Bar chart or PERT, depending on which view was open when you last saved the layout.

5 Part 1: Project Development

You can access overview information for an open project by choosing File, Project Overview.

View general project information Choose File, Open, select a project, then click Overview. You can edit some of the information, including the project title, company name, and the project start and finish dates.

Project directory: d:\p325\projects

Project group/ Project name: APEC

Project ID: Number/Version: Sample Project

Project title: Plant Expansion & Modernization

Company name: Acme Motors

Access: Read Write Decimal places: 2

Planning unit: Day Activity count: 134

Project start: 19JUL99 Project must finish by:

Data date: 27SEP99 Early finish: 13FEB01

Exclusive

Project Codes...

Targets:

	Target	Number/Version	Data Date
1	BASE	Sample Target	19JUL99
2			

Click to view or assign project-level codes.

The project end date, as calculated by P3.

You can enter a date to constrain the project end date.

Obtain Exclusive access Certain features in P3 such as leveling, performing global changes, and editing activity IDs, require that only one user have the project open. Mark the Exclusive checkbox in the Open a Project or Project Overview dialog box to prevent other users from accessing the project when you have it open. If you have Read Only access rights, you can still obtain Exclusive access; other users will be denied access to the project while you review data and run reports and graphics. If you have restricted access rights, marking Exclusive means P3 will deny other users access to the project; however, you are still restricted to using specific functions.

If you did not enter a project in Exclusive mode but want to perform an operation that requires Exclusive access, such as leveling, P3 determines whether other users have the project open. If you have Read Write access to the project and no other users have it open, P3 temporarily changes your access rights to Exclusive Write. When you complete the operation, P3 automatically resets your access rights to Read Write.

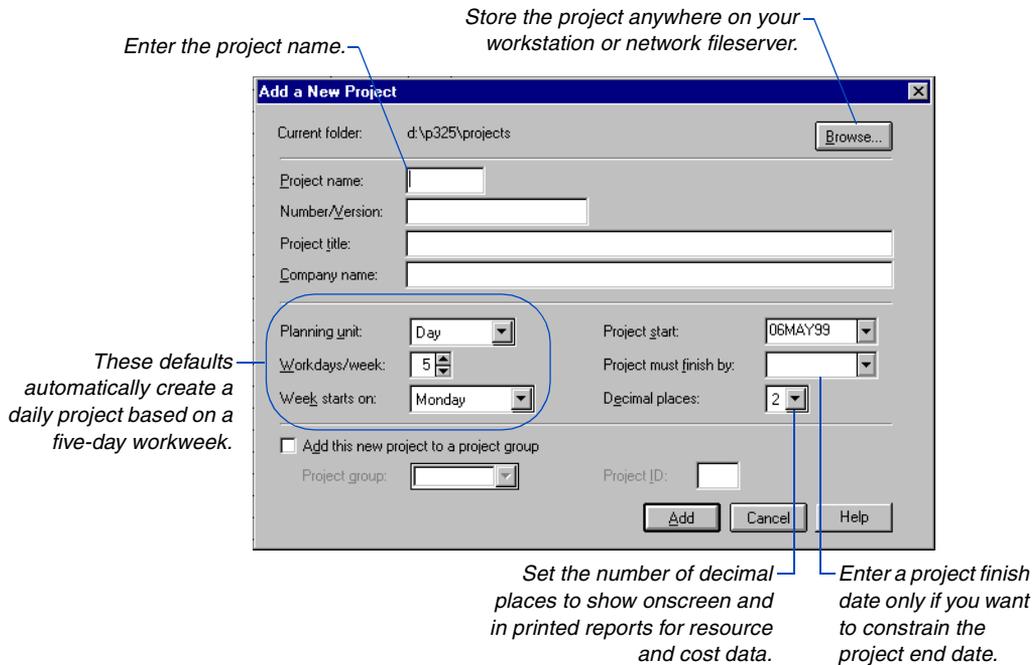


You cannot obtain Exclusive access to a project if another user is working in it, nor can you open a project if another user is working in the project with Exclusive access. To see a list of users currently in an open project, choose View, Current Users, or press F5.

Adding a Project

You can create independent projects, or projects that are part of a project group. A project group is a comprehensive project that consists of the detailed activities from designated member projects, as well as its own activities. Use project groups when managing multiple projects or to divide a large project into smaller projects. Each project has its own project managers, and the project controls coordinator is responsible for the overall project group.

Add a new project Choose File, New, then type a unique four-character project name. Type some general information such as the project title and company name; these fields are optional.



For information about working with multiple projects, see the *Creating and Managing Project Groups* and *Setting Up and Managing Projects in Project Groups* chapters.

Add a project to a project group If the project you are adding is part of a group, mark the Add This New Project To A Project Group checkbox. Click in the Project Group field and select the project group. You can also add a new project group by typing a unique project name in the Project Group field.

When you assign a project to a project group, P3 automatically assigns a two-character project ID to identify the member project within the project group; this ID becomes the first two activity ID characters for each activity in the member project. You can accept P3's default ID or specify your own.

Specify the planning unit The planning unit determines the time unit P3 uses to schedule the project; select hours, days, weeks, or months. When you add a project, P3 initially specifies a daily project with a standard Monday through Friday workweek.

Modify the number of days per week and the starting workday using the Workdays/Week and Week Starts On fields. You can also modify the standard workweek for any calendar using the Standard Daily Information dialog box (choose Data, Calendars, and click Standard in the Project Calendars dialog box).

Set the decimal places for resource and cost data P3 normally displays resource and cost data using two decimal places. If you prefer, you can suppress the decimal places and display whole numbers. Use the Decimal Places field in the Add a New Project dialog box. For example, if you work with large projects where quantities and costs are high, decimal places may be insignificant. Suppressing decimal places increases the amounts that fields for resource and cost data can display by a factor of 100.



If you change the decimal place setting during the course of a project from two decimal places to zero, P3 rounds cents up or down accordingly. If you change the setting from two decimal places to zero, then back to two, the decimal values show zeros.

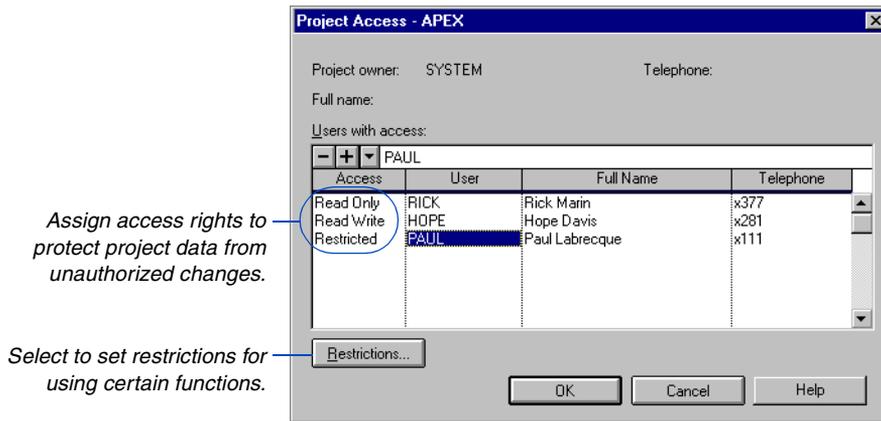
For details on adding activities, see the *Working with Activities* chapter.

Define the first activity for a new project After you add the project, P3 opens the Bar chart in the default layout. P3 places the cursor in the Edit bar for the Activity ID field. Type an ID and click .

Setting Access Rights for the Project

When you add a new project, you become its owner. As a project owner, you can assign access rights to any user in the database. Users without access rights to a project cannot open it.

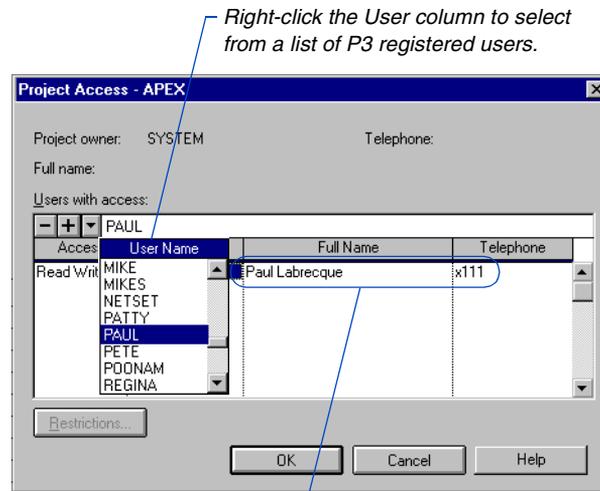
Assign access rights Choose File, Open, and select the appropriate project, then click Access. You must be the project owner or a privileged user to edit the Project Access dialog box, and you also must have Exclusive access to the project.



For information about access rights required for P3 menu options and tasks, see *Menu Options and Access Rights* in P3 Help.

P3 provides three levels of access rights:

Assign this level	To
Read Only	Allow the user to view project data and print and view reports and graphics
Read Write	Allow the user to view, add, and change project data, and print and view reports and graphics
Restricted	Restrict the user from performing certain functions such as scheduling, leveling, running global changes, or modifying dictionaries. You can also restrict the user to working with a specific set of activities and running a specific set of reports and graphics



P3 enters the user's full name and telephone number, if they are recorded in the database.

Select EVERYONE in the User column if you want all users in the P3 database to have the same access to the project.

Access Rights and Multiple Projects

When working in a multiple project environment, refer to the following rules for access rights:

Any number of authorized users can have Read Write access to the same project at the same time, even if other users are working in the project group or in a different project. You cannot obtain Read Write access to a project when someone else has already secured Exclusive access to that project or to its project group.

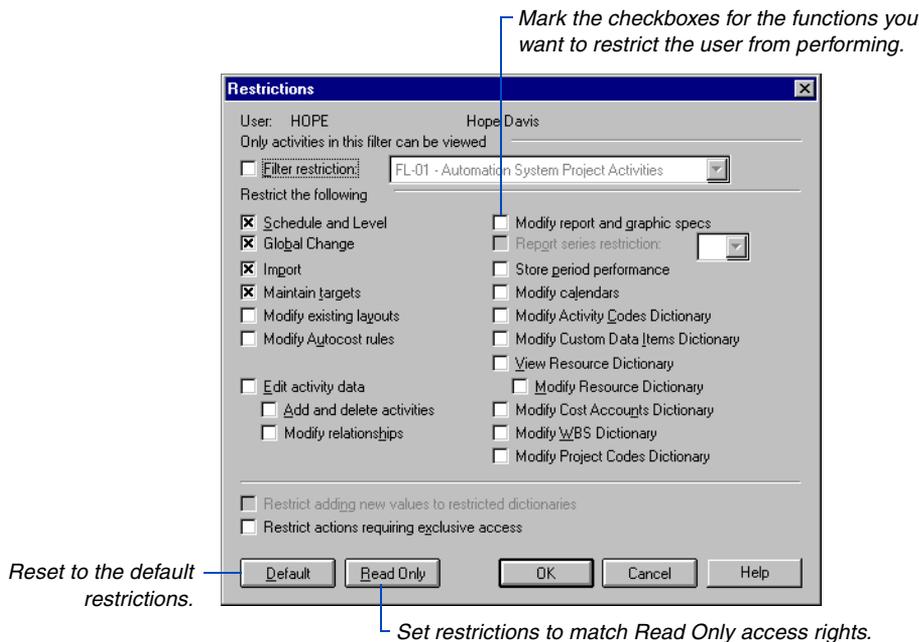
To obtain Exclusive access to a project, no other users can have that project or its project group open. However, other users can have different member projects from the same project group open (in Read Write or Exclusive mode); this means that P3 can level more than one project at a time.

To secure Exclusive access to the project group, no other users can have the project group, or any of its projects, open.

Defining Restricted Access Rights

Once you assign restricted access rights for a user, define the restricted areas of the project.

Set restrictions In the Project Access dialog box, select the user name, then click the corresponding cell in the Access column. Click  in the edit box and select Restrictions.



Restrictions set for users with Restricted access to project(s) apply even if that user has been assigned privileged status in Netset.

Limit access to certain activities You can restrict a user to working with a particular set of activities; for example, limit the user to working with activities in his or her department. Mark the Filter Restriction checkbox, then click  to select the filter. The user will only be able to work with the activities that meet the filter criteria.



When a user is restricted to working with activities from a specific filter, if the user opens a layout, P3 runs the restricted filter, regardless of the layout's associated filter.

For details on how each restriction affects working in P3, look up *Restrictions dialog box* in P3 Help.

Limit access to certain reports To prevent a user from seeing certain information such as financial data, limit the user to running a specific set of reports. Assign a series code to only the reports or graphics you want the user to access (choose Tools, Tabular Reports or Graphic Reports, Production). In the Restrictions dialog box, mark the Report Series Restriction checkbox, then select the appropriate series code.

Customize Read Only access When users have Read Only access, they can only view project data and view or print reports and graphics. If you want users to have Read Only access and prevent them from viewing certain information also, assign Restricted access rights, then, in the Restrictions dialog box, click Read Only to set Read Only limits. Modify these limits by clearing or marking the appropriate checkboxes.

In a Concentric environment, user restrictions for P3 projects set in P3 also apply when users manage those projects in SureTrak.

Assign restrictions to a target project When you set restrictions on users for a target project, P3 also disables the corresponding checkboxes for the current project in the Update Target dialog box (choose Tools, Project Utilities, Targets then click Update). For example, if you restrict modifying the WBS Dictionary for the target project, P3 disables the Replace WBS Structure, Values and Titles Dictionary checkbox in the Update Target dialog box for that user in the current project.



Users with Restricted access to a project cannot view the access list for that project.

Creating a New Layout

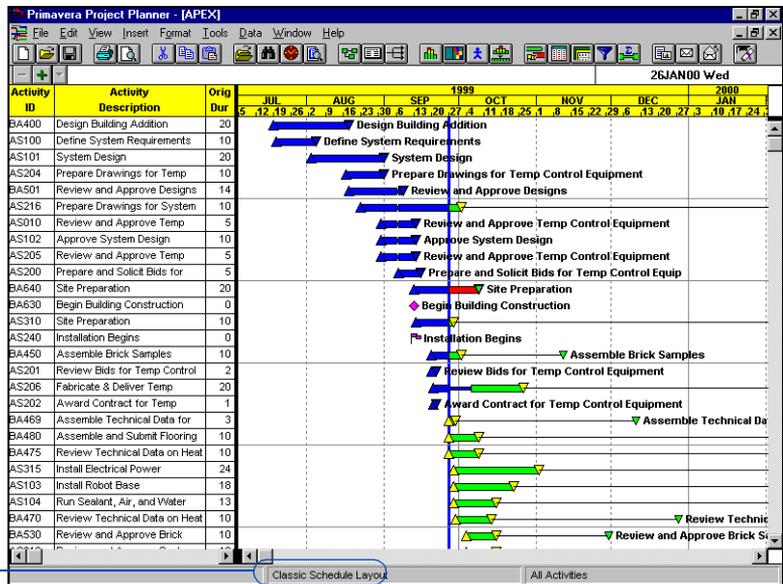
You can customize nearly any part of the Bar chart and PERT to present your project from different perspectives. For example, in the Bar chart, set the list of activities in columns that show specific data, change the size and endpoints for activity bars, and group activities by meaningful codes. In PERT, customize the appearance of activities and relationship lines, and change the end shapes and colors for specific activities.

When you customize a view, you create a layout. You can construct an unlimited number of layouts for a project. Each project contains one set of layouts; in a multiuser environment, all users share the layouts.

Create layouts based on the needs of your project. Select a filter to associate with each layout, then apply your own colors and fonts. For example, you might want a layout just for updating and another for analyzing resources and costs. Your manager may want to view only summary information, using his or her color preferences. You can save and copy layouts to other projects.

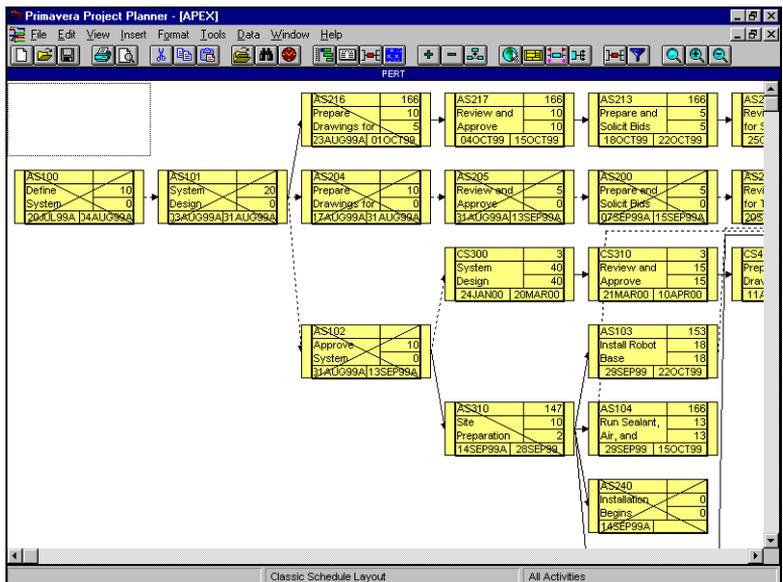
Create a new layout Choose View, Layout, New. P3 displays the default layout, called the Classic Schedule Layout, in the Bar chart or PERT depending on where you're working in P3 when you create the layout.

The Classic Schedule Layout for the Bar chart includes the list of activities in column format and the corresponding activity bars. The columns show activity IDs, descriptions, original and remaining durations, percent complete, early dates, resources, and budgeted costs. The bars contains activity bars for early dates and float. P3 sorts activities by early start dates and total float.



For information on customizing the Bar chart and PERT, see the *Customizing Bar Chart Layouts* and *Customizing PERT Layouts* chapters.

The Classic Schedule Layout for PERT shows all activities in the project, starting with the first activity that has no predecessors and ending with the last activity that has no successors. The following data appear for each activity: activity ID, description, early start and finish dates, original and remaining durations, and total float.



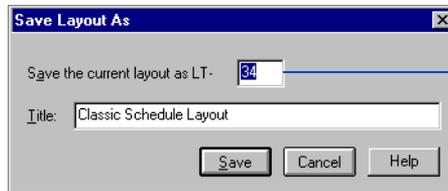
Customize the layout, then choose File, Close, or View, Layout, Save, to save the layout with a unique ID and title.

Saving Layouts

P3 automatically saves changes to project data such as adding, deleting, editing, copying, and updating activities in a project. However, you must save the current layout to save changes to the appearance of the Bar chart and PERT, such as displaying the Activity form, changing column data, changing data for activities in PERT, positioning the split bars, and modifying bar sizes and colors.

Save a layout Choose View, Layout, Save. If you want to rename an existing layout and leave the original intact, choose View, Layout, Save As.

If you make changes to a layout and attempt to close the project, P3 prompts you to save the layout.



P3 assigns the next available layout number. Accept it or enter a new number.

Replacing P3's default layout

When you create a new project or layout, or open an existing project for the first time, P3 displays the default layout. You can replace this default layout with one of your own custom layouts. Display the layout you want to use as the default, then choose View, Layout, Make Default. P3 displays that layout whenever you create a new project or layout.

When you create your own default layout, P3 saves a special layout file, P3LAYOUT, in your USERLOC folder. P3 stores the original default layout (Classic Schedule) file, called P3GLOBAL, in the PROGLOC folder. The P3GLOBAL file is not accessible when the USERLOC folder contains P3LAYOUT. If you want to restore the Classic Schedule Layout as the default, delete or rename P3LAYOUT from your USERLOC folder.

For more information about placing HTML layouts on your office network or the Internet, see the *Publishing Reports on the World Wide Web* chapter.

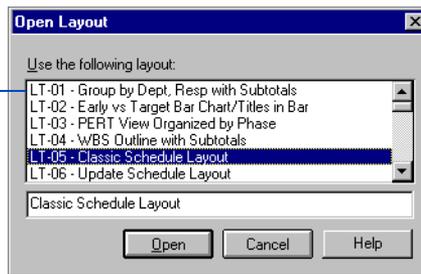
Save a layout in HTML format Choose File, Save As Web Page. Type a maximum of five characters for the file name (the project name is the default) with no extension; P3 automatically supplies JPG or PNG format for the layout image, based on your File Format for Image selection. Select the drive and folder location for the layout file, then click Save. P3 saves the HTML file in the location you specify where you can retrieve it for publishing on the Internet or company intranet.

Opening an Existing Layout

P3 displays the last layout saved when you open a project. You can open only one layout for a project at a time. However, if you share projects with other users, P3 can make a copy of a layout if two or more users need to access it at one time. You must save the copied layout with a unique ID and title to save your changes.

Open a layout Choose View, Layout, Open. P3 prompts you to save the current layout if you've made changes.

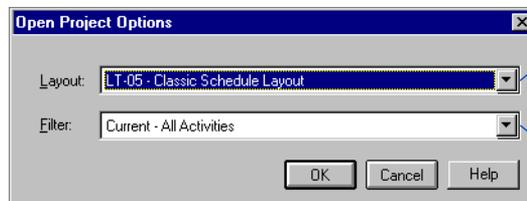
P3 displays a list of layouts for the current project. Double-click the layout you want to open.



For information on a layout's associated filter, see [Running a Filter when Opening Layouts](#) later in the chapter.

P3 displays the layout in the Bar chart or PERT, depending on the view you had open last when you saved the layout. P3 also runs the layout's associated filter and, if displaying the Bar chart, organizes activities based on the Bar chart grouping and sorting criteria. If P3 displays PERT, activities are arranged based on their relationships or the timescale, depending on which PERT view you had open when you last saved the layout.

Choose a layout when opening a project If you know what layout you want to use before opening a project, you can choose the layout in the Open a Project dialog box. Choose File, Open. Select the project you want to open, then click Options.



Choose a layout before opening a project.

You can also choose a filter before opening a project.

Opening a Layout when the Associated Filter has been Changed or Deleted

When you save a layout, P3 also saves information about the associated filter such as the ID and selection criteria. P3 stores filter specifications by project; therefore, filters are shared among layouts. When you open a layout, P3 verifies that the filter specification saved with the layout matches the filter specification stored in the project.

Since all users can modify or delete a filter specification, you may sometimes open a layout when the associated filter no longer matches the selection criteria of the same filter in the project. P3 displays the following message:

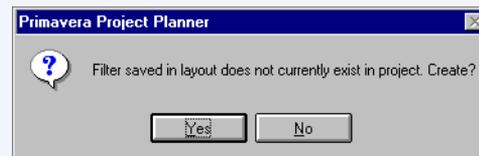


Click to run the originally associated filter.

Click to run the modified filter specification stored in the project.

If you click No (run the filter stored in the layout), the filter selection criteria will still differ between the project and layout. Edit the filter specification in the project if you want it to match the layout's associated filter.

When opening a layout and the layout's associated filter specification no longer exists in the project, P3 displays the following message:



Click Yes to run the layout's associated filter and add the filter to the project. P3 assigns the original filter ID and description.

Click No to run the layout's associated filter without adding it to the project. The filter still doesn't exist in the project; therefore, if you run another filter and save the layout, the original filter is gone.

Multiuser Considerations when Opening Layouts

In a multiuser environment, all users share the same layouts and filters. The following two examples outline special considerations and solutions when users work with the same layouts and filters.

Scenario: Layout 2 is a company standard layout. The associated filter specification (Filter 2) for Layout 2 displays all activities in the Construction department. Joe, the construction manager, opens Layout 2, makes changes, then exits, and saves the layout. Later that day, Tom, the hardware engineer, opens Layout 2 and sees the Construction department activities. However, Tom wants to see his own activities, so he modifies Filter 2 to select only the activities in the Engineering department. Tom prints the schedule, exits, and saves the Layout as Layout 10. When Joe comes to work the next day and opens Layout 2, P3 displays the message “Filter has changed. Update filter saved in layout with corresponding filter in project?”

Solution: The filter specification saved with Layout 2 selects activities in the Construction department. However, since Tom modified Filter 2 for the project, the filters stored in the layout file and project no longer match. Joe should click No if he wants to see the activities based on the filter saved with Layout 2.

Scenario: Mary works the first shift and from her workstation opens Layout 4, which runs Filter 4 and displays only activities in Shift 1. She reviews the schedule, prints it, exits, and saves the layout. Later that day, Mike, who works the second shift, opens Layout 4 from his workstation. He doesn’t want to see activities in Shift 1, so he runs another filter (Filter 5) to select only activities in Shift 2. Mike makes changes, exits, and saves Layout 4. The next day when Mary opens Layout 4, she sees activities in Shift 2.

Solution: When each user wants to see activities for his/her shift without running a filter every time, set the layout options to “Do not run the filter.” Each user should also have a separate location for his/her user files (USERLOC). In this case, each time a user saves a layout, P3 saves the current list of activities displayed in the layout. P3 saves this list as a FLT file (for example, PROJFLT.04 for Layout 4) and stores it in each user’s USERLOC folder. When a user opens Layout 4, P3 does not run the associated filter, but displays the list of activities saved in that user’s FLT file.

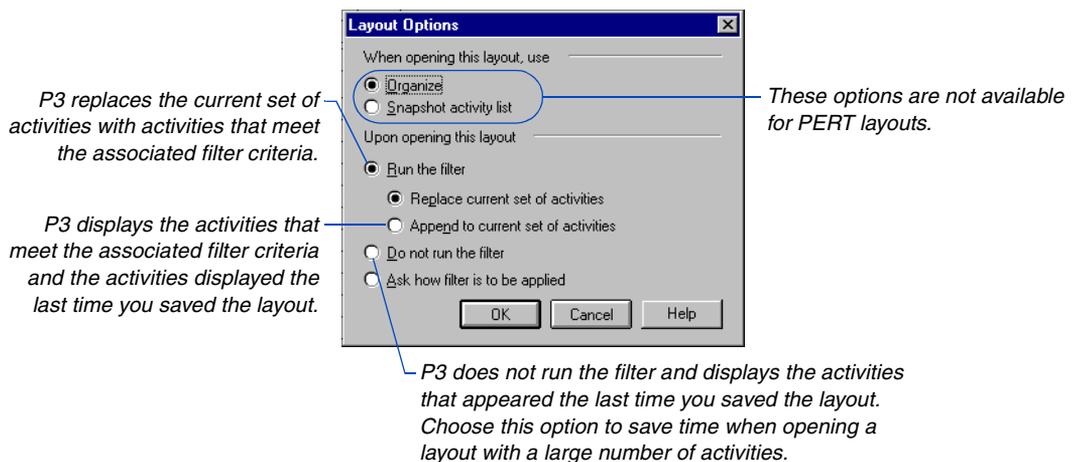
Running a Filter when Opening Layouts

P3 saves the current filter assignment with a layout. When you open a layout, P3 automatically runs the associated filter and reorganizes the layout with the activities that meet the filter criteria.

At times you may not want to run a filter when you open a layout. For example, suppose you add activities to your project and at the end of the work session, you save the layout. The next time you open the layout, if the newly added activities do not meet the associated filter criteria, they won't be included in the layout. P3 provides options that enable you to specify whether and how a filter should be applied when opening a layout.

Layout options apply only to the current layout.

Set filter options Choose View, Layout, Options. If the current layout is a Bar chart, choose the Organize option, then choose an option for running the layout's associated filter.



You can also have P3 ask how to apply the filter when you open a layout; choose the Ask How Filter Is To Be Applied option. The next time you open the layout, P3 prompts you to choose a method for running the associated filter.

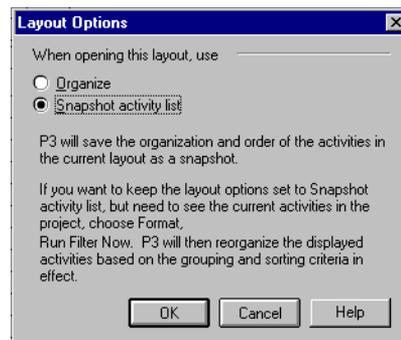
Creating a Snapshot Activity List

When you want to open a layout faster or preserve a layout's set of activities and their organization, save your layout as a "snapshot." P3 saves the activities in the layout and their exact order and grouping. The next time you open the layout, P3 displays the activities in the snapshot activity list without running a filter or reorganizing the project.



The snapshot activity list is only available from the Bar chart.

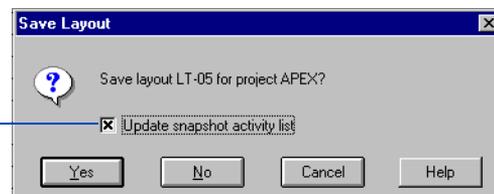
Create a snapshot activity list From the Bar chart, choose View, Layout, Options, then choose Snapshot Activity List.



Making changes, such as modifying the color and font for group title bands, or changing an activity description, does not affect the snapshot activity list.

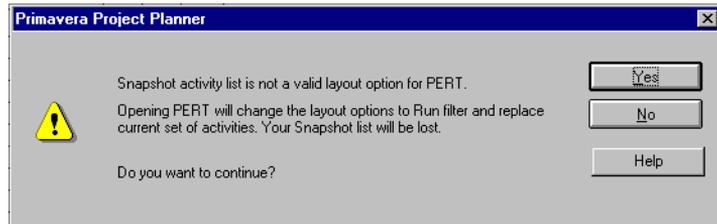
P3 distinguishes layouts saved with a snapshot activity list by displaying the letters "SS" before the layout name in the status bar. If you make changes to the activity selection, grouping, ordering, or add or delete activities while working with a snapshot list, P3 prompts you to update the snapshot activity list when you save the layout or close the project.

Mark this checkbox to save changes to the activity list; or clear it to preserve the original list.



Switch to PERT when working with a snapshot activity list

The snapshot activity list applies only to the Bar chart. If you switch to PERT, P3 warns that you will lose your snapshot list.



For information about layout options, see *Running a Filter when Opening Layouts* earlier in this chapter.

If you click Yes, P3 changes the layout options to run the filter and replace the current set of activities. P3 displays PERT and runs the layout's associated filter. Since running the filter also reorganizes activities in both views, you lose the snapshot activity list in the Bar chart. If you switch back to the Bar chart, you will see activities based on the layout's associated filter and the current grouping and sorting options.

Click No if you want to continue working in the Bar chart with the snapshot activity list.

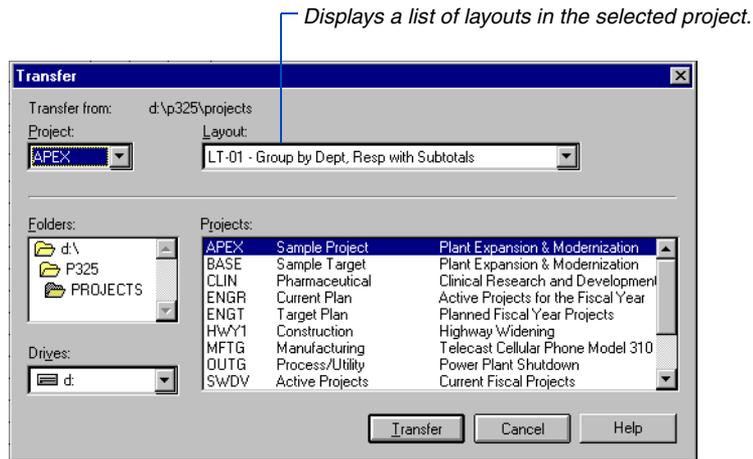
Multiuser Considerations

A snapshot activity list is available only to the user who creates the list; however, you can still open a layout with the layout options set to Snapshot Activity List. If P3 cannot locate or access the snapshot activity list when you open a layout, P3 reorganizes the layout using the associated filter. After you open the layout, keep the layout options set to Snapshot Activity List and P3 will create a new list when you save the layout; or change the layout options to Organize and P3 will open the project accordingly.

Using Layouts Across Projects

You can transfer a layout from a different project to the current one, or between specifications within the same project. To expedite the creation of a new layout, transfer a similar one and modify it.

Transfer a layout Choose View, Layout, Transfer. Select the project that contains the layout you want to transfer. Select the layout to transfer and click Transfer.



After you transfer the layout and make the necessary changes, use the File, Save As command to save the layout with a unique ID.



If you transfer layouts between projects, the transferred layout may have an associated filter that does not exist in the receiving project; or the filter criteria may not match the criteria of the same filter ID in the receiving project. In these cases, P3 displays a message.

Working with Activities

In this chapter:

- Assigning Activity IDs
- Adding Activities in the Bar Chart
- Adding Activities in PERT
- Adding Activities with Relationships
- Estimating Durations
- Defining Activity Types
- Editing Data in Columns
- Using the Activity Form
- Using the Detail Forms
- Selecting Activities
- Cutting, Copying, and Pasting Activities
- Deleting and Dissolving Activities
- Extracting Activities
- Moving Activities
- Switching Between the Bar Chart and PERT
- Using Fragnets to Create a Project

Activities represent work that must take place in a determined amount of time. The process by which you add activities depends on the type and size of your project. P3 provides several ways to add activities: use a spreadsheet method in the Bar chart, use PERT to examine the flow of logic, or use the Activity form to enter detailed information.

This chapter also describes how to edit activities, use cut, copy and paste techniques, remove activities, and use predefined sets of activities called fragnets.

Assigning Activity IDs

Activities in P3 are identified by a unique ID. Activity IDs can consist of up to 10 characters: letters, numbers, or a combination of both. P3 automatically assigns an ID to each activity you add.

As you add activities, P3 increments each ID by 10.

Activity ID	Activity Description	Orig Dur	F	MAR	APR	MAY	JUN	JUL	AUG	SEP
A0100	Plan Direct Mail Campaign	5	5-22	1-8						
A0110	Rent Mailing Lists	10								
A0120	Determine Creative Concept	1								
A0130	Produce Art and Copy	10								
A0140		1								

When P3 assigns a new ID, it checks whether the ID already exists in the project. If it exists, P3 searches in increments of 10 until it finds an unused ID. If you delete an activity, that ID becomes available for a new activity.

If you add activities to a project that is part of a project group, P3 automatically assigns the project ID as the first two characters of the activity ID, followed by the incremented number.

P3 increments activity IDs based on the currently selected activity. As you build a project, make sure you select the last activity added when you add a new activity. If you add an activity when no activity is selected, P3 does not assign an ID. Instead, in the Bar chart, P3 moves the cursor to the edit bar for you to specify an ID. When working in PERT, P3 opens a blank Activity form and places the cursor in the ID field.

When you add a new project, P3 does not automatically assign an ID for the first activity. Instead, P3 places the cursor in the edit bar for the Activity ID field for you to specify an ID.

Type the first ID for the project.

Activity ID	Activity Description	Orig Dur	F	MAR
A0100		1	5/22/18	15/22/18

Activity ID	Activity Description	Orig Dur	F	MAR
A0100		1	5/22/18	15/22/18
A0110		1		

When you add the next activity, P3 automatically assigns an ID incremented by 10 based on the first activity ID.



To change an activity ID, you must have Exclusive access to the project. In the Open a Project dialog box, select the project you want to open, mark the Exclusive checkbox, then click OK to open the project with Exclusive access.

For information on defining Activity ID codes, see the *Activity and Project Codes* chapter.

Use Activity ID codes You can build intelligence into your activity IDs by assigning specific letters or numbers that reflect cost codes, departments, certain types of activities, or other coding structures. To set up these codes in a new project before adding the first activity ID, choose Data, Activity Codes.

Change the increment value If you want P3 to increment IDs by a value other than 10, choose Tools, Options, Activity Inserting, then type a value in the Increment field.

Turn off the automatic numbering feature If you want to add activities without P3 assigning IDs, choose Tools, Options, Activity Inserting and clear the Automatically Number Activities checkbox. When the automatic numbering feature is off, you must specify a unique ID for each activity you add.

Adding Activities in the Bar Chart



The Bar chart provides a spreadsheet-like method to add activities. For each activity, you type the corresponding information in each column cell. Once you add activities, stretch and move bars along the timescale to set specific dates and durations.

You can also press the **Insert** key to add an activity.

Add an activity in the Bar chart Choose **Insert, Activity**. P3 adds a row for the new activity below the currently selected activity.

The screenshot shows the Primavera Project Planner interface. A Gantt chart is displayed with a grid for the year 1998. The grid columns represent months and specific dates. A new activity, A0150, is being added below the existing activities. A callout points to the activity ID column, stating "P3 automatically assigns the activity ID." Another callout points to the start date of the new activity bar, stating "P3 positions the new activity at the data date." The activity list on the left includes:

Activity ID	Activity Description	Orig Dur
A0100	Plan Direct Mail Campaign	5
A0110	Rent Mailing Lists	10
A0120	Determine Creative Concept	1
A0130	Produce Art and Copy	10
A0140	Mail Drop	8
A0150		1

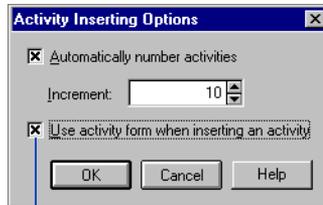
Use the arrow keys to move between Column cells.

To enter Direct activity information, click the appropriate cell in each Activity column, then type the information in the edit bar. You can also click to choose from a list of values. Click to confirm or to cancel.

For more information on how P3 assigns activity IDs, see *Assigning Activity IDs* earlier in this chapter.

If you add an activity when no activity is selected, or if P3 is not set up to assign activity IDs automatically, P3 places the cursor in the edit bar for you to type an ID. Click to confirm.

Add activities using the Activity form You can set up P3 to display the Activity form when you add activities in the Bar chart. Choose **Tools, Options, Activity Inserting**.



The dialog box titled "Activity Inserting Options" has a close button (X) in the top right corner. It contains two checked checkboxes: "Automatically number activities" and "Use activity form when inserting an activity". Below the first checkbox is an "Increment:" label followed by a text box containing "10" and a spinner control. At the bottom are three buttons: "OK", "Cancel", and "Help".

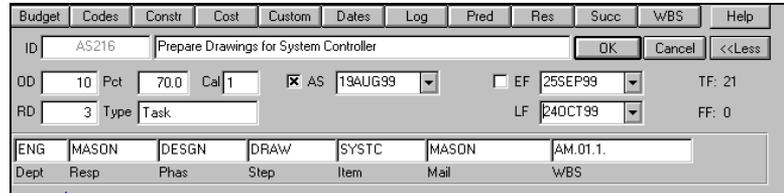
Mark this checkbox to have P3 display the Activity form when you add activities.

Choose Insert, Activity. P3 displays the Activity form at the bottom of the project window and enters an activity ID in the ID field. Specify a description; press Tab to move from field to field. Click OK.



This option is not available in PERT because P3 always displays the Activity form when you add activities in a PERT layout.

For details on using the Activity form, see *Using the Activity Form* later in this chapter.



The screenshot shows the Activity form with the following fields and values:

Budget	Codes	Constr	Cost	Custom	Dates	Log	Pred	Res	Succ	WBS	Help
ID	AS216	Prepare Drawings for System Controller		OK	Cancel	<<Less					
OD	10	Pct	70.0	Cal	1	<input checked="" type="checkbox"/> AS	19AUG99	<input type="checkbox"/> EF	25SEP99	TF:	21
RD	3	Type	Task					LF	24OCT99	FF:	0
ENG	MASON	DESGN	DRAW	SYSTC	MASON	AM.01.1.					
Dept	Resp	Phas	Step	Item	Mail	WBS					

Use the Activity form to specify detailed information such as a calendar ID, activity type, and activity code values.

Add activities to groups Group activities based on common attributes such as activity codes. You can then add activities to specific groups and P3 automatically assigns the group value(s) to the new activities.

For information on how to group activities, see the *Grouping and Sorting Layouts* chapter.

When your Bar chart layout is grouped by resource, cost account, or cost account category, P3 automatically places the new activity under a group title band called Unassigned.

The screenshot shows the Primavera Project Planner interface. On the left is a table of activities, and on the right is a Gantt chart. A dialog box titled 'Activity Codes' is open, showing a tree structure where 'ENG' is selected under 'Codes' and 'ACME' is selected under 'RESP'. The table below shows the activity data:

Activity ID	Activity Description	Orig Dur	Rem Dur	%
Engineering Department				
Andy Mason - Director of Development				
BA400	Design Building Addition	20	0	100
AS100	Define System Requirements	10	0	100
AS101	System Design	20	0	100
AS204	Prepare Drawings for Temp	10	0	100
AS216	Prepare Drawings for System	10	5	50
AS102	Approve System Design	10	0	100
BA469	Assemble Technical Data for	3	3	0
BA475	Review Technical Data on Heat	10	10	0
BA470	Review Technical Data on Heat	10	10	0
CS300	System Design	40	40	0
CS375	System Design	40	40	0
CS310	Review and Approve Design	15	15	0
CS385	Review and Approve Design	15	15	0
CS430	Prepare Drawings for	20	20	0
CS440	Review and Approve	5	5	0
Tim Evans - Program Manager				
AS205	Review and Approve Temp	5	0	100
AS217	Review and Approve System	10	10	0
Acme Motors - Owner				
BA501	Review and Approve Designs	14	0	100
BA530	Review and Approve Brick	10	10	0
BA540	Review and Approve Flooring	1	1	0
BA560	Review and Approve Flooring	10	10	0
Subtotal		210	161	33

This activity has been added to a layout grouped by Department and Responsibility. P3 automatically assigns values for the Department and Responsibility codes.

Adding Activities in PERT



Adding activities in PERT enables you to see the flow of logic as you build your project. You can also add activities in PERT along a weekly or monthly timescale to build your project based on the order of time, rather than by relationship. From the Bar chart, choose View, PERT. To display a timescaled PERT layout rather than relationship logic, from PERT choose Format, Organize, click the Arrangement tab, and choose the PERT Layout with Timescale option.

Add an activity in PERT Double-click the area where you want to place the new activity. You can also choose Insert, Activity, or press the Insert key.

When you add activities in timescaled PERT, they are placed in the selected area of the layout (empty or occupied). Choose Format, Reorganize Now to place activities in their correct location, based on early/actual start dates.

P3 adds the activity and assigns an ID.

Use the Activity form to enter additional information for the new activity. Click OK to close the form.

The screenshot shows the Primavera Project Planner interface. The top window displays a PERT layout with activities A0100, A0110, A0120, A0130, and A0140. Activity A0140 is highlighted with a dotted box. Below the PERT layout is the Activity form for A0140. The form fields are as follows:

Budget	Codes	Constr	Cost	Custom	Dates	Log	Pred	Res	Succ	WBS	Help
ID: A0140											
OD	1	Pct	0.0	Cal	1	<input type="checkbox"/> ES	04MAR99	<input type="checkbox"/> EF	04MAR99	TF: 0	
RD	1	Type	Task			<input type="checkbox"/> LS	04MAR99	<input type="checkbox"/> LF	04MAR99	FF: 0	
Resp	Area	File	Item	Locn	Step	WBS					

Buttons: OK, Cancel, Help

Buttons: Classic Schedule Layout, All Activities

Enter an activity description.

If you use the Insert Activity command, P3 places the new activity to the right of the selected activity. If you add an activity when no activity is selected, P3 places the new activity in the position of the current focus, indicated by a dotted box around the activity.

For more information on how P3 assigns activity IDs, see *Assigning Activity IDs* earlier in this chapter.

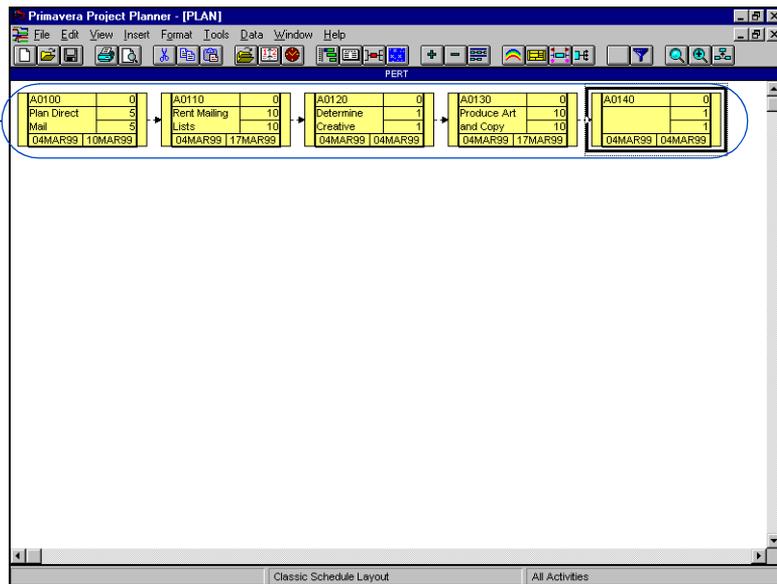
If you add an activity when no activity is selected, or if P3 is not set up to assign activity IDs automatically, P3 places the cursor in the ID field in the Activity form so you can specify an activity ID.

Adding Activities with Relationships

You can add activities and assign relationships in one step using a feature called Autolink. P3 automatically assigns finish to start relationships between activities as they are added.

Add and link activities Choose Insert, Autolink, to turn on the Autolinking feature. Before you add an activity, select the new activity's predecessor; P3 assigns the finish to start relationships from the selected activity to the new activity.

P3 automatically links activities with finish to start relationships.



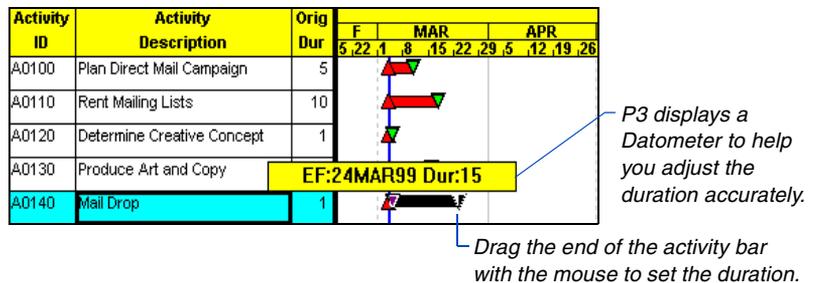
For details on adding and modifying relationships, see the *Working with Relationships* chapter.

When autolinking activities in the Bar chart, make sure relationships show in the Bar area so you can see the relationships as they are added. Choose View, Relationships.

Estimating Durations

P3 assigns new activities a duration of one planning unit (hour, day, week, or month). Estimate the original duration as the time required to complete the activity, based on the planning unit of the project. P3 automatically sets the remaining duration (the time left to complete the activity) equal to the original duration.

To change the duration in the Bar chart, click the corresponding cell in the Orig Dur column, then specify the duration in the edit bar. P3 adjusts the length of the activity bar to represent the specified duration. You can also set the duration by stretching the activity bar with the mouse.



For more information about activity types, see *Defining Activity Types* in the next section.

P3 calculates or records duration according to activity type. For some activity types, you specify the duration; for others, P3 calculates it. The following table describes how to assign durations for each type of activity.

Activity Type	Description
Task, independent, and meeting activities	Enter the duration as the number of hours, days, weeks, or months required to accomplish the activity; or assign driving resources to determine duration.
Start milestone or start flag	Leave duration as zero; occurs at start of the hour, day, week, or month and has no finish dates.
Finish milestone or finish flag	Leave duration as zero; occurs at end of the hour, day, week, or month and has no start dates.
Hammock	Leave duration as one; P3 calculates duration from earliest predecessor to latest successor.
WBS	Leave duration as one; P3 calculates duration from the earliest activity with a matching WBS code to the latest activity with a matching WBS code.

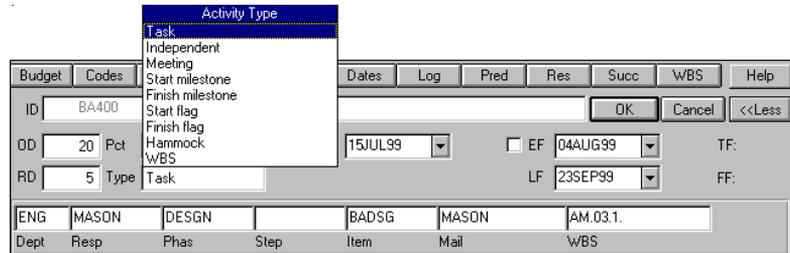
Defining Activity Types

P3 provides nine types of activities, each modeling a different set of project circumstances. P3 calculates or records activity duration based on the activity type. For some types of activities, you specify a duration; for others, P3 calculates a duration. Other types of activities have no duration.

An activity that requires time to complete (has a duration greater than zero) and that is not merely a summary of other activities, can be one of three types: task, independent, or meeting. For any of these three types, you can specify a duration when you add the activity or you can assign driving resources and let P3 calculate the activity's duration, based on the amount of time its driving resources must be assigned to it.

Specify an activity type In the Type field in the Activity form, click  to select an activity type.

You can also specify activity type in the list of activities if you include the Activity Type data item as an Activity column and use the drop-down arrow in the edit bar for the selected cell.



The screenshot shows the P3 Activity form with the 'Activity Type' dropdown menu open. The menu lists the following options: Task, Independent, Meeting, Start milestone, Finish milestone, Start flag, Finish flag, Hammock, WBS, and Task. The form fields include: ID (BA400), DD (20 Pct), RD (5 Type), Dates (15JUL99), EF (04AUG99), LF (23SEP99), and a table at the bottom with columns: Dept (ENG), Resp (MASON), Phas (DESIGN), Step, Item (BADSG), Mail (MASON), and WBS (AM.03.1).



If you use a SureTrak project that contains topic activities, you cannot edit the Type field for topic activities.

Define task activities P3 schedules a task activity according to the base calendar assigned to the activity. Designate an activity as a task activity if you aren't assigning resources to the activity, or if the assigned resources should be scheduled according to the activity's base calendar, rather than each resource calendar.

For example, several design activities must be done in the week before a new software release begins coding. It doesn't matter whether the resources are available earlier than that week, or whether they would otherwise be scheduled for time off during that week—these activities must be scheduled during a specific timeperiod, and their scheduling controls the scheduling of their resources.

Define independent activities If you plan to use resource calendars and driving resources, designate an activity as independent. In an independent activity, resources work according to their own resource calendars, and for their own durations. P3 schedules an independent activity according to predecessor logic and the times its driving resources are scheduled to work.

For example, in a documentation project, several resources (writers and editors) work on a rough draft. Each works according to his or her own workday and vacation calendar; they are not necessarily scheduled to work simultaneously. Each has a specified amount of work to accomplish (individual resource durations); they do not necessarily have equal amounts of work. The rough draft starts when the earliest resource starts to work and ends when the last one finishes

Define meeting activities Meeting activities require that all resources work together simultaneously as a team to complete the work. They are useful for scheduling meetings and any activities where resources cannot work independently.

For example, in a factory relocation project, heavy equipment resources and a crew resource must be onsite at the same time for one week. Both the equipment and the crew resources are driving—the activity's duration depends on their work. If you define this activity as a meeting activity, P3 schedules it only when both the equipment and the crew are available for the same one-week timeperiod. P3 schedules any nondriving resources, such as an inspector in this example, according to the combined calendars of the crew and equipment—the conglomerate of the driving resources' calendars.

Meeting Activity Characteristics

Without driving resources	Activity and resources use the base calendar and the duration assigned in the Activity form.
With driving resources	Activity uses a calendar that is a conglomerate of its driving resources' calendars; the duration of the longest driving resource determines the activity's duration.

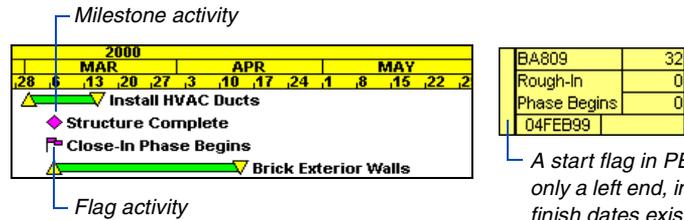
Define milestones and flags Use milestones to indicate the beginning or end of a major event or phase, or any other important point in your project. You must assign actual dates to milestones when updating. Use flags to signal the start or finish of an activity or group of activities. Flags are automatically updated based on the status of its connected activities. Milestones and flags have no original or remaining duration.

Activity Type Characteristics

SM (start milestone)	Zero duration; represents the start of a set of activities; finish dates are blank; scheduled according to the base calendar. Update a start milestone by assigning an actual start date.
FM (finish milestone)	Zero duration; represents the end of a set of activities or an accomplishment in the course of the project; start dates are blank; scheduled according to the base calendar. Update a finish milestone by assigning an actual finish date.
SF (start flag)	Zero duration; represents the start of an activity or set of activities; scheduled according to the base calendar. P3 assigns start dates (early/late or actual) based on the earliest start of its predecessor(s); finish dates are blank.
FF (finish flag)	Zero duration; represents the end of an activity or set of activities; scheduled according to the base calendar. P3 assigns finish dates (early/late or actual) based on the latest finish of its predecessor(s); start dates are blank.

Modifying the Appearance of Milestones and Flags

By default, in the Bar chart, start and finish milestones and flags appear as diamonds in the Bar area. In PERT, start and finish milestones and flags are represented by an activity with only one end, depending if the activity is a start or finish milestone or flag.



For more information about formatting bars, see the *Customizing Bar Chart Layouts* chapter.

You can change the shape and color of milestones and flags in the Bar chart using the Endpoints dialog box (choose Format, Bars, then click Endpoints). You can also select the bars you want to change first, and choose Format, Selected Bars, Modify Bar Format. To change the appearance of milestones and flags in PERT, select the activities, then choose Format, Activity Box Ends and Colors.

Define hammock activities Use hammocks to monitor the elapsed beginning-to-end duration of a group of activities. A hammock duration is the number of days between the beginning of the first activity and the end of the last one in the group—not the sum of the activities' durations. If several hammocked activities overlap, the hammock's duration will be smaller than the combined durations; if large gaps exist between the activities in the hammock, its duration may be longer.

Define WBS activities Like a hammock activity, the duration of a WBS activity extends from the start of the earliest activity in a group to the end of the latest one. WBS codes control which activities are part of a WBS activity: P3 incorporates any activities that share a component of the WBS activity's WBS code into the WBS activity.

For example, all activities whose WBS codes start with A (A.1, A.1.1, A.1.1.2, A.2, A.3 and so forth) can be part of one WBS activity whose WBS code is A. At a lower level, all activities whose WBS codes start with A.1 (A.1, A.1.1, A.1.1.2 and so forth) can be part of a WBS activity whose WBS code is A.1.

To show only one level of detail, you don't need to create WBS activities; you can group and subtotal activities based on their WBS codes, using the Organize dialog box (choose Format, Organize).

Choose a level for the WBS code you want to summarize and choose WBS as the activity type.

For more information about creating a WBS structure and WBS codes, see the Work Breakdown Structure Codes chapter.

A WBS activity must have a WBS code. If it doesn't have a WBS code, or if no activities share an element of the WBS activity's WBS code, the WBS activity spans all activities from the data date to the finish date.

Editing Data in Columns

Columns make it easy to view or update activity information in a tabular format, similar to a spreadsheet. After you format the columns so they contain the information you want, you can browse through the data using the arrow keys or the mouse. Use the edit bar above the Activity columns on the Bar chart to add or modify activity information.

If you select a cell that contains noneditable data, such as total float, the data appears dimmed in the edit bar.

Enter or change data in the edit bar Select the cell containing the data you want to change and the corresponding data displays in the edit bar. Click the edit bar or press F2, then type the appropriate data. You can also click to choose from a list of choices, or use the up and down arrows to change a numeric value. To delete data from a cell, select the cell, then select the data in the edit bar and press Delete.

Click to cancel changes.

Click to accept changes.

Trim Robot Paths Line A			Edit bar	
Activity ID	Activity Description	Orig Dur	FEB	
			14	21
AS108	Install System Controller	16		
AS250	Install Bar Rails	20		
AS260	Trim Robot Paths Line A	15		
AS111	Pilot Start Line A	1		

P3 highlights the activity row and displays a black box around the selected cell.

When you are not entering or changing data in the edit bar, P3 replaces the and icons with icons for adding and deleting activities.

Copy information between cells You can copy information from one cell to several other cells in the same column. Select the cell containing the value you want to copy, drag the mouse up or down to select the activities to which to copy the data, and then choose Edit, Fill Cell. For example, you might want to assign the same activity code value to several activities.

For example, select ISD, then drag the mouse down to select activities AS103 to AS 213.

Activity ID	Activity Description	Orig Dur	Rem Dur	Dept	JUL		AUG	
					12,19,26	2,9,16		
AS315	Install Electrical Power	24	24	ISD				
AS103	Install Robot Base	18	18					
AS104	Run Sealant, Air, and Water	13	13					
AS217	Review and Approve System	10	10					
AS213	Prepare and Solicit Bids for	5	5					
AS214	Review Bids for System	4	4	PCH				

Activity ID	Activity Description	Dur	Dur	Dept	JUL		AUG	
					5	12,19,26	2	9,16
AS315	Install Electrical Power	24	24	ISD				
AS103	Install Robot Base	18	18	ISD				
AS104	Run Sealant, Air, and Water	13	13	ISD				
AS217	Review and Approve System	10	10	ISD				
AS213	Prepare and Solicit Bids for	5	5	ISD				
AS214	Review Bids for System	4	4	PCH				

Choose Edit, Fill Cell, and P3 copies the ISD Department code value to the selected activities.

If the activities to which you want to copy data are not contiguous, press the Ctrl key while clicking each activity to which you want to copy, ending with the cell containing the data you want to copy. If you want to use Fill Cell for noncontiguous activities, the last activity you Ctrl+click has the focus and its value is used for the copy.



You can copy only editable data between activities. You cannot copy data such as schedule dates and float. To copy resource and cost data, activities must be grouped by resource or cost account.

Using the Activity Form



Use the Activity form to review or record information about an activity. The Activity form contains basic activity information such as early and late dates, original and remaining durations, float, calendar ID, percent complete, activity type, and activity and WBS code values. P3 displays the Activity form at the bottom of the project window.

You can also select an activity and press Enter to open the Activity form.

Open the Activity form Double-click an activity or choose Edit, Edit Activity. To keep the Activity form open while you work, choose View, Activity Form, or press F7. The form remains open even when you switch between the Bar chart and PERT. To close the form again, choose View, Activity Form, or press F7.

If more than one activity is selected, the Activity form displays information for the activity with the current focus, indicated by a black box around the selected cell in the Activity columns on a Bar chart or a dashed box surrounding an activity in PERT. Click the More button to display activity and WBS codes and values in the form or the Less button to hide this information in the form.

Information for the selected activity appears in the form.

Drag the split bar up or down to resize the Activity form to display more or less information.

Click to access detail forms.

Activity and WBS code values

The screenshot displays the Primavera Project Planner interface. The top part shows a Gantt chart with activities plotted against a timeline from 1999 to 2000. Activity AS315, 'Install Electrical Power', is highlighted in blue. Below the chart, the Activity Form is open, showing details for AS315. The form includes fields for ID, Description, Duration, and various dates (ES, EF, LS, LF). It also has tabs for Budget, Codes, Constr, Cost, Custom, Dates, Log, Pred, Res, Succ, WBS, and Help. The bottom section shows WBS code values: ISD, MILLS, SYS1, HRDWR, AM 01.2.

Activity ID	Activity Description	Orig Dur
AS201	Review Bids for Temp Control	2
AS206	Fabricate & Deliver Temp	20
AS202	Award Contract for Temp	1
BA469	Assemble Technical Data for	3
BA480	Assemble and Submit Flooring	10
BA475	Review Technical Data on Heat	10
AS315	Install Electrical Power	24
AS103	Install Robot Base	18
AS104	Run Sealant, Air, and Water	13
BA470	Review Technical Data on Heat	10
BA530	Review and Approve Brick	10
AS217	Review and Approve System	10
BA650	Excavation	10
BA560	Review and Approve Flooring	10

Activity Form for AS315: Install Electrical Power

ES: 29SEP99, EF: 01NOV99, TF: 147
 LS: 28APR00, LF: 02JUN00, FF: 0

WBS Code Values: ISD, MILLS, SYS1, HRDWR, AM 01.2

Date and Float Calculations

P3 bases calculations of early and late dates and float for each activity on the network logic, data date, remaining durations, and any imposed constraints. Early dates indicate the earliest start and finish dates an activity can be performed, considering network logic. Late dates represent the latest dates an activity can start and finish without delaying the project.

Float helps identify schedule problems and analyze schedule status. P3 calculates total float as the difference between the late and early finish dates. A positive total float value represents the number of workperiods an activity can slip before it possibly affects the project finish date. P3 calculates a negative total float only when you impose a constraint or a project finish date; the late dates are earlier than the early dates, which indicates that the activity is behind schedule. Free float equals the amount of time the early start of an activity can be delayed without delaying the early start of a successor.

To edit the activity ID, you must have Exclusive access to the project. Choose File, Open, then mark the Exclusive checkbox in the Open a Project dialog box.

Edit the Activity form To change activity data, type over the existing information. Press the Tab key to move from field to field or click a field. To save your changes, click OK or click anywhere outside the Activity form. Click Cancel to reject the changes.

If you open the Activity form from the Bar chart by choosing View, Activity Form, or pressing F7, clicking OK or Cancel changes the buttons to Previous and Next. Click these buttons to scroll through each activity in the layout.

These buttons replace OK and Cancel when you finish editing.

Budget	Codes	Constr	Cost	Custom	Dates	Log	Pred	Res	Succ	WBS	Help	
ID	AS310	Site Preparation								Previous	Next	<<Less
DD	10	Pct	80.0	Cal	1	<input checked="" type="checkbox"/> AS	14SEP99		<input type="checkbox"/> EF	28SEP99		TF: 147
RD	2	Type	Task						LF	27APR00		FF: 0
ISD	MILLS	SYS1			HRDWR		AM.01.2					
Dept	Resp	Phas	Step		Item		WBS					

Using the Detail Forms

Use the buttons at the top of the Activity form to display detail forms that enable you to view predecessors and successors, assign activity codes, allocate resources and costs, constrain schedule dates, record log information, and assign custom data items.

You can also access the detail forms by right-clicking an activity in the Activity columns, and choosing Activity Detail.

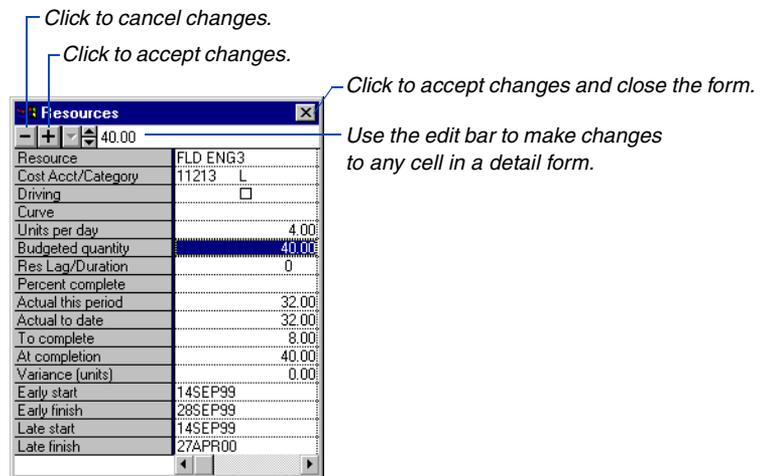
The screenshot displays the Primavera Project Planner interface. The main window shows a grid of activities. Activity AS106, 'Set & Connect Robots', is selected. Two detail forms are open: 'Cost' and 'Resources'. The 'Cost' form shows data for activity AS106, including budgeted cost (2880.00), actual to date (0.00), and cost to complete (2880.00). The 'Resources' form shows resource allocation for FLD ENG2, including units per day (8.00), budgeted quantity (144.00), and variance (0.00). The bottom of the screen shows the activity form with buttons for Cost, Resources, and other details. Blue arrows point from the text below to the 'Cost' and 'Resources' buttons in the activity form.

Click these buttons to display cost and resource information.

Use the mouse or press F6 to move between detail forms.

You can display as many forms as necessary. Use the mouse to move and resize forms. If you switch between the Bar chart and PERT, the detail forms remain open for the selected activity. When you save the layout, P3 also saves the size and position of the detail forms.

Edit a detail form Click the appropriate cell, then click the edit bar and make the changes. Click to accept the change or to cancel. If the Activity form is displayed, you still need to click OK in the Activity form to save the changes to the activity.



To close multiple detail forms, choose View, Activity Detail, Close All.

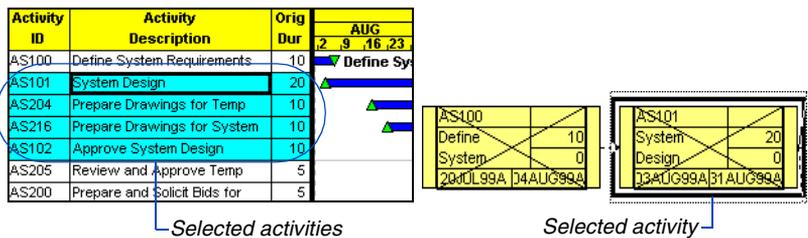
Save changes in detail forms P3 always saves your changes when you click outside a detail form in the project window, regardless of whether you still have other detail forms open. If you display the Activity form while working with detail forms, clicking OK from the Activity form always saves changes to the current detail form. However, clicking Cancel in the Activity form cancels all changes in the detail forms, even if the detail forms have already been closed.

Selecting Activities

When you select activities, you pick one or more activities for the action you want to perform, such as copying, deleting, or moving. You can select one activity, several activities, or all activities in the layout.

To change the highlight color, choose Format, Screen Colors.

P3 identifies selected activities in the Bar chart by highlighting each activity row in the list of activities in a particular color. In PERT, P3 surrounds selected activities with a black box.



Activities remain selected when you switch between the Bar chart and PERT.

Select a single activity From the Bar chart, click a row in the list of activities or click an activity bar. From PERT, click the activity box.

Select all activities Choose Edit, Select All.

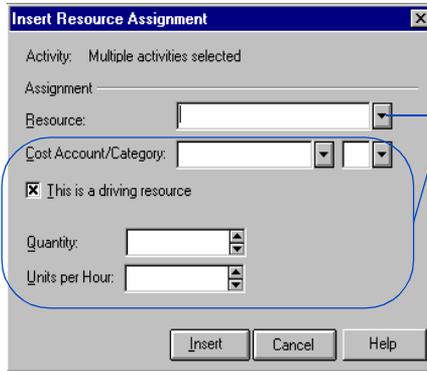
Select contiguous activities Click the first activity, press and hold the Shift key, and click the last activity. In the Activity list, you can also click the first activity, then drag the mouse up or down the rows to select a range of activities. In PERT, drag the mouse around the activities you want to select. P3 displays a black outline to indicate the selection area as you drag the mouse.

Select noncontiguous activities Click the first activity, press and hold the Ctrl key, then click each activity you want to select.

Unselect an activity Choose Edit, Unselect. From PERT you can also click in any unoccupied area of the window.

Select activities for resource assignment If the same resource assignment applies to multiple activities, you can select the applicable activities and choose Insert, Resource Assignment.

For more information about resource assignments, see the *Planning Resources and Costs* chapter.

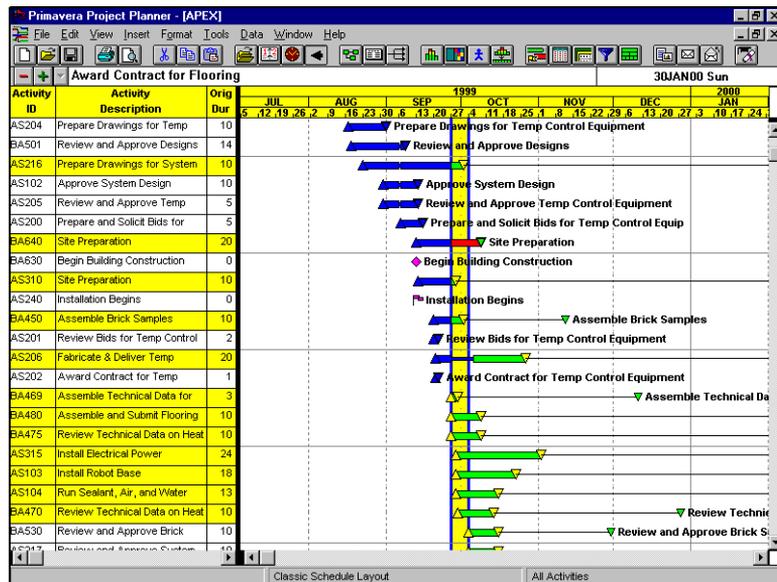


Select the resource and define its attributes for the assignment to multiple activities.

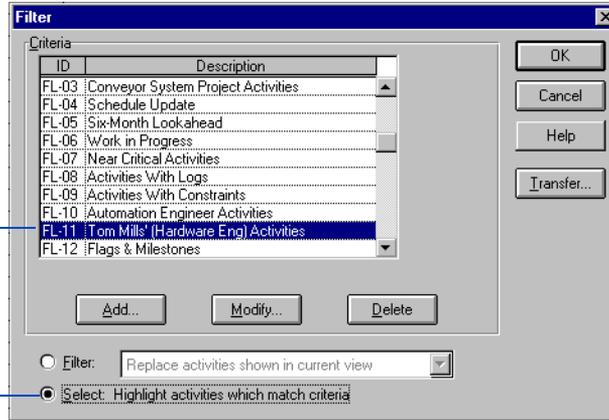


Select activities for updating Whether you estimate progress, or manually update activities, you can quickly select the activities that should have progress based on the data date you specify using the Progress Spotlight feature. Click the Progress Spotlight icon or drag the data date line in the Bar chart. P3 highlights the activities that are scheduled to take place in the selected update period in the Activity columns, and draws a spotlight curtain for the period in the bar area.

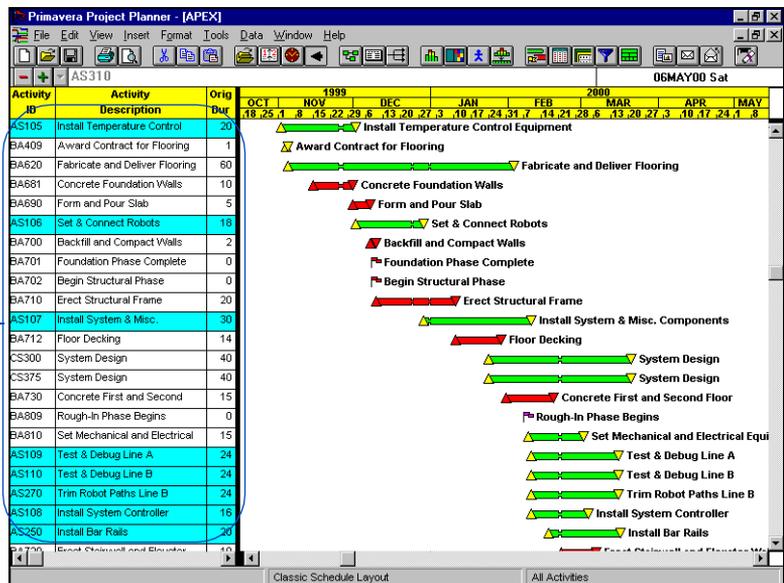
For more information about Progress Spotlight, see the *Targets and Progress* chapter.



Select common activities You can select activities based on a common attribute. For example, you might want to copy all activities associated with the Engineering department. A quick way to select these activities is to use a filter. Choose Format, Filter, and select a filter specification.



Choose Select to highlight activities based on the selected filter criteria.



For more information about highlighting activities by filter, see the *Using Filters to Select Activities and Projects* chapter.

Navigate through only selected and/or spotlighted activities

Once you select activities using one or more of the methods described in this section, P3 enables you to move easily to each of these activities in sequence, for example to update spotlighted activities that need updating, to review details for selected activities, or to move, delete, or copy only certain activities in the selected set. Use the Ctrl+up/down arrow keys to navigate in columns, or click the Previous and Next buttons on the Activity form.

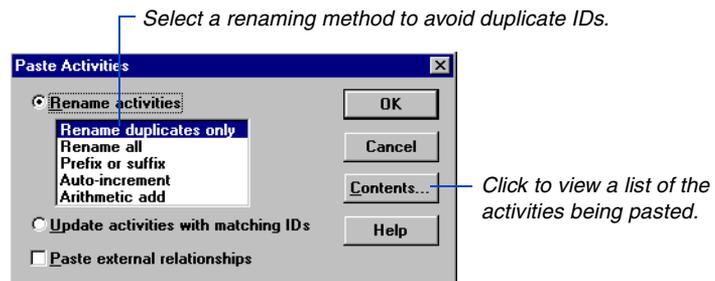
Cutting, Copying, and Pasting Activities



During the planning stages of a project, you may need to refine scheduling details by copying or moving activities. Use the Copy and Paste commands to duplicate similar tasks as you build a project. Use Cut and Paste to remove an activity from the current project and then insert it in another part of the same project or in a different project. You can also copy or cut several activities at one time; P3 retains the relationships between them.

Cut, copy, and paste activities Select the activities you want to copy or cut, then choose Edit, Copy, or Edit, Cut. Choose Edit, Paste.

Select a method for renaming activity IDs when pasting copied activities or cut activities to another project.



The following table describes the options for renaming activities:

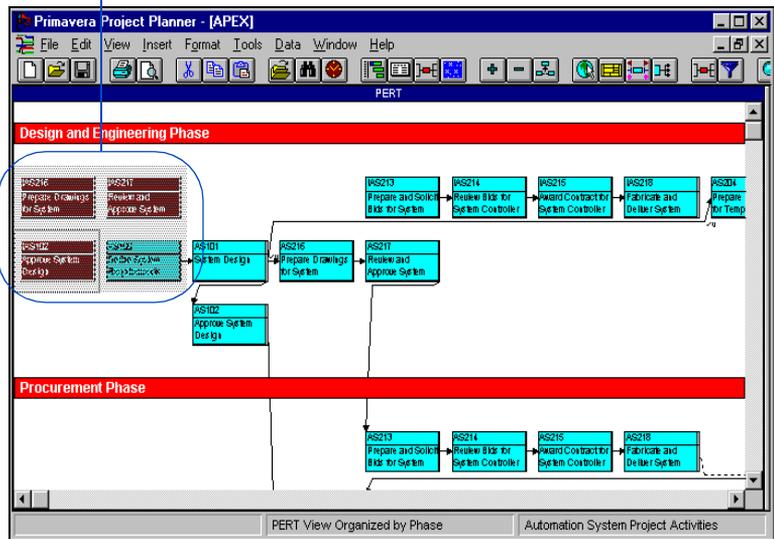
Choose	To
Rename duplicates only	Have P3 prompt you to specify a new ID for any activity with the same ID as an activity in the project in which you are pasting
Rename all	Have P3 prompt you to specify a new ID for each activity being pasted
Prefix or suffix	Specify a prefix or a suffix to add to the IDs

Choose	To
Auto-increment	Create new IDs that P3 automatically increments. Specify a base ID and the amount to increase each ID. For example, specify 100 as the base and 10 as the increment to obtain the new IDs 100, 110, 120, and so on. The base ID need not be numeric: P3 increments alphabetic characters like digits. For example, a base ID of A00 incremented by 10 produces new activity IDs ranging from A00 to A90, then B00, B10, and so on.
Arithmetic add	Increment IDs numerically, starting with a number you specify. For this option to appear, the copied IDs must be numeric. For example, if you specify 10 as the increment for 100, 200, and 300, the new activity IDs are 110, 210, and 310 for the copied group.

If you set up the Bar chart to reorganize automatically, P3 positions the activities based on the current sort and group criteria.

Paste activities When pasting activities in the Bar chart, P3 places the pasted activities below the selected activity(ies); if no activities are selected, P3 places the activities at the bottom of the list of activities. When pasting activities in PERT, drag the activities to the area of the project where you want them to appear. If you place them in an occupied area, P3 moves any conflicting activities to the right. Choose Format, Reorganize Now, to position activities in their correct location, based on early/actual start dates or relationships in a timescaled PERT layout, or on relationships in a PERT layout.

This shaded area represents the pasted activities. Drag the activities to the location where you want them to appear.



When you copy or cut a group of activities, P3 always retains the relationships between them.

Paste external relationships You may sometimes want to duplicate an activity but retain a link between the copied activity and the original predecessor(s) and successor(s). When you paste one or more activities, P3 can also paste the relationships to and from the activity(ies); these are referred to as external relationships. Mark the Paste External Relationships checkbox in the Paste Activities dialog box. If you paste the activity in another project, the external activities must also exist in the project to which you are pasting.

Update activities between projects The Paste command also enables you to update activities between projects. Click the Update Activities With Matching IDs option in the Paste Activities dialog box. P3 checks the ID of each activity in the Clipboard; if an activity with that ID exists in the project, P3 replaces its information with the information from the Clipboard activity. Activities without matches are added to the project. This feature is useful if you work with projects that are part of a group and you are not connected to a network. You can update the activities remotely and then send them via e-mail to a different project location where they can be pasted into the project group. P3 automatically updates the appropriate activities with the new data.

You can cut, copy, and paste activities between groups based on activity code, activity ID code, WBS code (Bar chart only), and calendar ID.

For details about grouping activities, see the *Grouping and Sorting Layouts* chapter.

If you don't have access to the project group, open both projects, then copy or cut and paste the activities from one project to another.

Paste activities between groups When activities are grouped, use the Copy, Cut, and Paste commands to quickly modify certain data. When you paste an activity within a group, P3 automatically assigns the group value to the pasted activity. For example, suppose activities are grouped by the phase activity code. To modify this value for several activities, cut the activities, then paste them into the appropriate phase group; P3 automatically reassigns the phase-code value. To paste activities within a group, select an activity in the group, or select the group title band.

If you work with projects that are part of a group, the Cut, Copy, and Paste commands enable you to move or duplicate activities between projects. Open the project group, organize activities into groups by project ID or by project code, then copy/paste the activities in the appropriate group.

Activity ID	Activity Description	Orig Dur	MAR	7
Robotics Automation System				
AS265	Path Refinement and	10	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS275	Path Refinement and	10	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS113	Install	2	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS150	Production Start	0	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS114	Calibrate Robot Controller &	10	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS115	Load System Software	20	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS116	Program	15	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
AS600	Manual Operation Ready	0	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
Conveyor System				
CS310	Review and Approve Design	15	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶
CS430	Prepare Drawings for	20	▶▶▶▶▶▶▶▶▶▶	▶▶▶▶▶▶▶▶▶▶

Cut and paste activities between projects; P3 automatically reassigns the project ID.

Pasting Data in Other Applications

When you copy or cut activities from the Bar chart and paste them into another application, P3 pastes only the information that appears in the columns of activity data when you cut or copied the activities. For example, if the Activity columns contain the activity ID, description, early dates, and budget cost, P3 pastes only that data, including the default column titles, for the cut or copied activities. If you copy or cut activities from PERT, P3 pastes only the data that appear for the activity when you cut or copy it.

Once you cut or copy activities from P3 and paste them into another application, you cannot paste the activities back to P3. Instead, use the Export and Import commands (choose Tools, Project Utilities) to return activities to P3.

Pasting Activities Between Projects

When you paste an activity into another project, P3 retains the activity data for the pasted activity, including the activity ID, title, durations, percent complete, float, logs, resources and costs (and associated dictionary information), constraints, and custom data items. If you paste a group of activities, P3 also retains the relationships in the group.

Pasting activities between projects is much easier if basic data, such as calendars and dictionaries, correspond; however, P3 does accept differences. The following information explains how P3 pastes activities between projects.

Calendar data The pasted activities and the host project can use different planning units. However, you must revise durations to reflect the planning unit for the host project. In multiple-calendar projects, P3 automatically assigns all pasted activities to calendar 1 for the host project.

Resource and cost data If the resources and costs for the pasted activities differ from those in the host project, P3 appends the new dictionary data to the host project. When activities use the same resources, P3 retains the information in the host-project dictionary.

Custom data items P3 compares custom data item specifications in the pasted activities to those in the host project. If the pasted activities contain field names, types, and lengths that match those of the host project, P3 copies the values for those custom data items. For example, if both the pasted activities and the host project specify RVDB (revised budget) as a custom data item, the pasted activities retain their data values for the RVDB custom data item.

Activity codes P3 retains the activity code values for each pasted activity. P3 does not paste Activity Codes Dictionary data, such as descriptions, into the host project. You must add these descriptions to the Activity Codes Dictionary of the host project.

WBS codes P3 retains the WBS value for each activity; however, P3 does not paste the WBS structure, including levels and widths, into the host project. As a result, WBS code values for the pasted activities may be meaningless if the structure differs from that in the host project.

Past period data When source and host projects have different planning units, P3 ignores the file that contains past period information (if you use Store Period Performance to store historical quantity and cost data) during the paste.

Deleting and Dissolving Activities

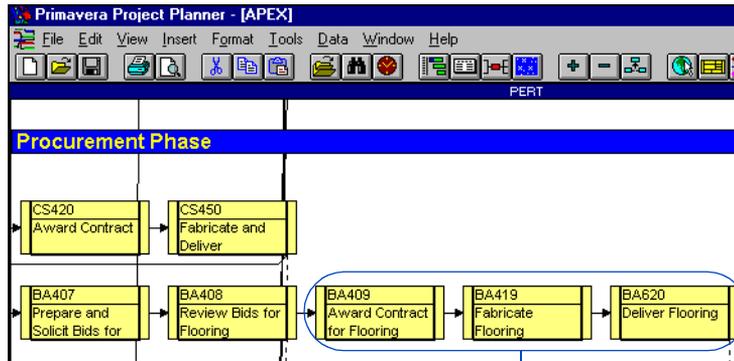


Use the Edit, Delete command to delete activities and their relationships from a project without copying them to the Clipboard. You can also dissolve an activity. Unlike deletion, dissolving an activity maintains the project's logic by deleting an activity and joining its predecessor and successor activities with a finish to start relationship.

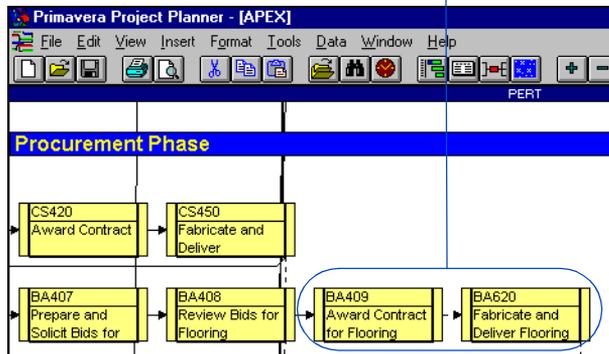
Delete activities Select the activity or activities you want to delete, then choose Edit, Delete.

You can dissolve only one activity at a time.

Dissolve an activity Select the activity and choose Edit, Dissolve Activity. The selected activity must have a predecessor and successor.



This sequence of activities can be completed with just two activities. Dissolve activity BA419. P3 automatically joins activity BA419's predecessor and successor with a finish to start relationship.



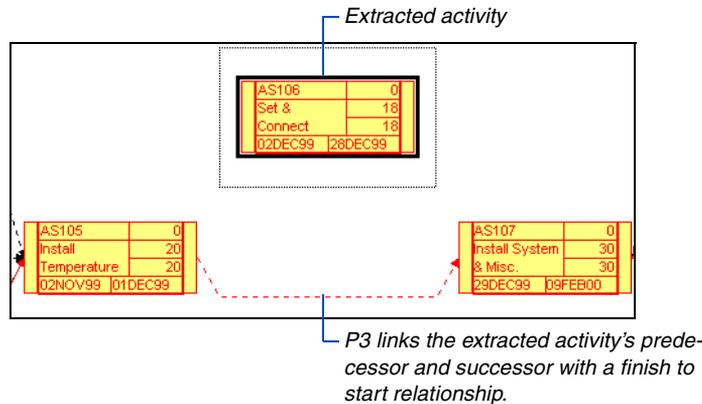
Extracting Activities



You can remove an activity from a relationship chain. P3 removes all relationships to and from the extracted activity, then connects the predecessor activities to the successor activities with a finish to start relationship. Use this feature as a method when moving an activity to another area of the project. Extracting saves you the step of recreating relationships in the broken chain of activities. P3 does not delete the extracted activity from the project.

Extract an activity Select the activity you want to extract, then choose Edit, Extract Activity.

You can extract only one activity at a time.



Moving Activities

You can drag and drop an activity to another location in the same project. When you move an activity, relationships remain intact and P3 does not place the activity data on the Clipboard.

Move an activity in the Bar chart Point to the middle of the first column in an activity row. The mouse pointer changes to Φ . Drag the mouse up or down through the list of activities until you reach the row where you want to move the activity.

Move an activity in PERT Drag the activity to the new location. If you move the activity to an occupied area, P3 moves conflicting activities to the right. You can also move several activities at once; select the activities you want to move, then drag them to the new location.

Move activities between groups Moving activities between groups provides an easy way to modify activity data because P3 automatically reassigns the group values. You can move activities between groups based on activity codes, WBS codes, and calendar ID to modify these assignments.

You can also use the keyboard to move activities in PERT. Select the activities you want to move, then choose Edit Move. Use the arrow keys to position the activities in the new location. Press Enter to place them.

Drag an activity between responsibility group bands to change responsibility code assignments.

Activity ID	Activity Description	Orig Dur	JUL
Andy Mason - Director of Developme			12, 19, 26, 2
AS100	Define System Requirements	10	
AS101	System Design	20	
AS204	Prepare Drawings for Temp	10	
AS216	Prepare Drawings for System	10	
AS102	Approve System Design	10	
Tom Mills - Director of Hardware Eng			
AS310	Site Preparation	10	
AS240	Installation Begins	0	
AS103	Install Robot Base	18	
AS105	Install Temperature Control	20	

Group title bands for the Responsibility code.



Switching Between the Bar Chart and PERT

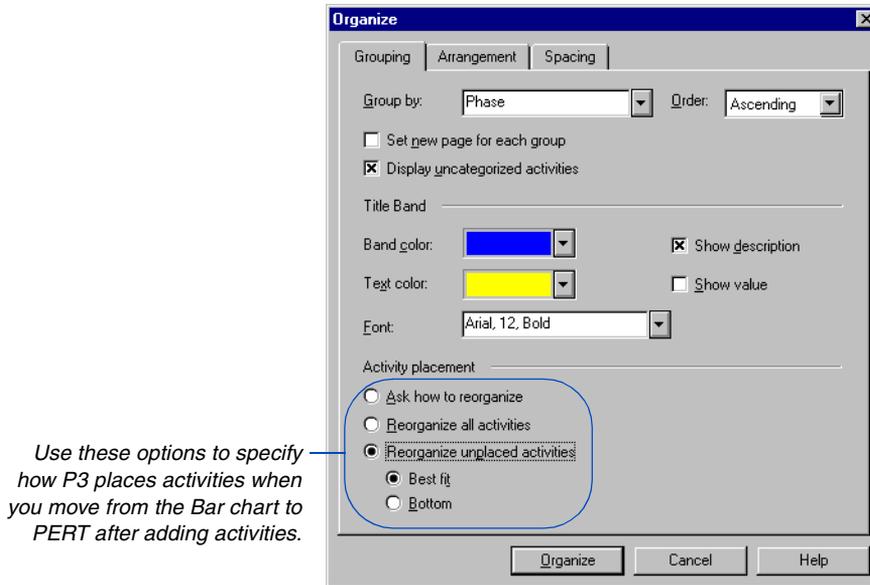
This section describes how P3 places new activities when you switch between the Bar chart and PERT.

Switch to the Bar chart When you add activities in PERT and switch to the Bar chart, P3 places the new activities at the bottom of the list of activities. However, if an activity other than a new activity is currently selected, P3 places the new activities below the selected activity. Choose Format, Reorganize Now, to place new activities in the appropriate rows, based on the current sort and group criteria (defined in the Organize dialog box).

If the Bar chart is set to reorganize automatically, P3 reorganizes the Bar chart when you switch from PERT after adding activities. P3 positions new activities in the appropriate rows, based on the current sort and group criteria.

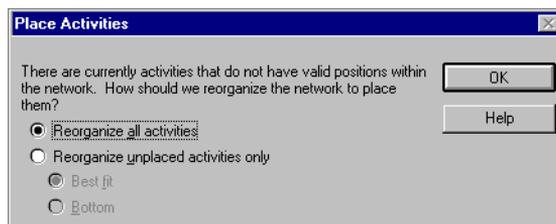
Switch to PERT When you add activities in the Bar chart and then switch to PERT, P3 rearranges all activities in PERT and places the new activities based on relationships, then start dates (depending on the arrangement option chosen) for timescaled PERT, or by relationships for PERT. P3 positions activities without relationships at the bottom of the network when you open PERT; if a timescaled PERT layout was opened the last time you displayed PERT, activities without relationships are placed under the timescale based on early/actual start dates. If activities are organized in groups in PERT, P3 places the new activities in the appropriate group.

If you do not want P3 to rearrange all activities when moving to PERT, choose to have P3 place only the new activities or prompt to rearrange activities. Choose Format, Organize, then click the Grouping tab to set the arrangement options for PERT.



Choose Reorganize Unplaced Activities to have P3 position only new activities. Choose Best Fit to have P3 place new activities to the right (or in the first empty spot) of the last predecessor on the right; if a new activity has no predecessor, P3 places it to the left of the last successor on the left. Choose Bottom to have P3 place new activities at the bottom of the network.

Choose Ask How To Reorganize to have P3 prompt you to choose a method for arranging activities when moving to PERT.



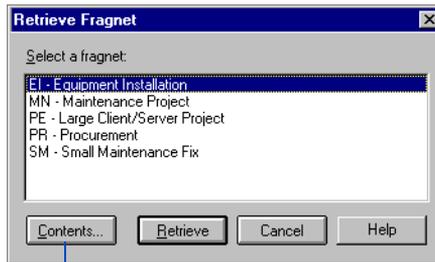
Switch views after changing activities If you change activities in one view, and then switch to another view, the changed activities may need to be moved from their original position. For example, suppose activities in the Bar chart are grouped by Department. While working in PERT, you change the Department code values for several activities, then switch to the Bar chart. The activities whose department code values have changed still reside in the original department group on the Bar chart. Choose Format, Reorganize Now, to place the changed activities in the appropriate rows.

Using Fragnets to Create a Project

When you work with similar projects, you can save time by reusing existing sets of activities to build projects instead of recreating them each time. In P3, using fragnets simplifies this process. Fragnets are fragments of a project, a collection of activities from one project that can be used repeatedly in other projects. You can build a library of fragnets for use in future projects.

Retrieve fragnets P3 provides a set of sample fragnets for tasks such as procurement and equipment installation. To retrieve a fragnet from the library, choose Tools, Fragnet, Retrieve Fragnet, from the host project. P3 lists the existing fragnets by ID and description. Double-click the fragnet you want. P3 prompts you to select a renaming method; this step eliminates duplicate IDs in the fragnet and the host project.

For information about renaming methods, see *Cutting, Copying, and Pasting Activities* earlier in this chapter.



View a list of activities included in the fragnet.

If you set up the Bar chart to reorganize automatically, P3 positions the fragnet activities based on the current sort and group criteria.

When retrieving fragnets in the Bar chart, P3 positions the fragnet activities below a selected activity. If an activity is not selected, P3 places the fragnet activities at the bottom of the list of activities. If activities are organized in groups, P3 assigns the group values to the activities. If the fragnet activities already contain activity code values, P3 overwrites the appropriate value.

For information on placement options in PERT, see the previous section, *Switching Between the Bar Chart and PERT*.

When retrieving fragnets in PERT, P3 positions the fragnet activities based on the placement options specified in the Organize dialog box. To move the fragnet activities once they are placed in PERT, drag them to the appropriate location.

After you retrieve a fragnet, make any necessary changes to it or connect it to existing activities with relationships.

Fragnet contents Data for each activity stored in a fragnet include the activity ID, title, durations, percent complete, float, activity type, relationships for activities within the fragnet, logs, resources and costs (and associated dictionary information), and custom data items. P3 does not store calendar data and constraints in fragnets. P3 automatically assigns retrieved fragnet activities to calendar 1.

P3 stores activity code values for fragnet activities but does not store classifications and other Activity Codes Dictionary specifications. P3 also stores WBS values for the fragnet activities; it does not store the WBS structure.

It is easier to retrieve part of one project and incorporate it into a different project if basic data, such as calendars and dictionaries, correspond. P3 does, however, accept differences.



You cannot retrieve fragnets if the layout is grouped by resource, cost account, or cost account category.

Create fragnets Select the activities that you want to store as a fragnet, then choose Tools, Fragnet, Store Fragnet. Type a unique ID and title to identify the fragnet. P3 stores the fragnets in a library.

Delete a fragnet Choose Tools, Fragnet, Delete Fragnet, to remove a fragnet from the library. Projects that already incorporate the deleted fragnet are not affected.

Replace text in fragnets Once you retrieve a fragnet into another project, you can tailor the data to the new project. Since activity titles and code values are likely to be similar, P3 provides a “text replacement” feature that enables you to change these items easily without retyping them entirely.

For example, suppose you use P3 to add a group of activities pertaining to the procurement of a pump. You know that you will be working on several similar pump projects in the future, so you want to store the activity set as a fragnet. The activities might be described as follows: Write Specifications for Pump 009-12, Prepare Bid List for Pump 009-12, Send Specifications for Pump 009-12, and so on.

For details about how P3 handles data when it is brought into another project, see *Pasting Activities Between Projects* earlier in this chapter.

Note that the activity descriptions include the specific pump number. This number changes for each pump project. Instead of entering the specific pump number in every description, you can use brackets (< >) as placeholders. For example, the activity titles might be Write Specifications for Pump <no>, Prepare Bid List for Pump <no>, and so on. When you retrieve this fragnet, P3 prompts you to replace the contents of the bracket with another value; the bracket containing <no> is replaced with the text you specify.

You can specify multiple sets of brackets within the description and you can use these placeholders in activity code values. The following example illustrates multiple brackets in an activity description:

```
Install <part> in <sys>
```

Fragnet Project

P3 stores fragnets in a project called FRGW; it must exist to retrieve fragnets. If you restore a project to a different computer and you want to retrieve fragnets, you must also copy project FRGW (FRGW*.P3). P3 stores FRGW in the folder defined by WORKLOC.

Each time you store a fragnet, P3 adds the activities and associated data for the fragnet to the project FRGW. With each successive fragnet you store, P3 appends data to the FRGW project, even if the fragnets originated in different projects.

Working with Relationships

In this chapter:

Defining Relationships in PERT

Defining Relationships in the Bar Chart

Editing and Deleting Relationships

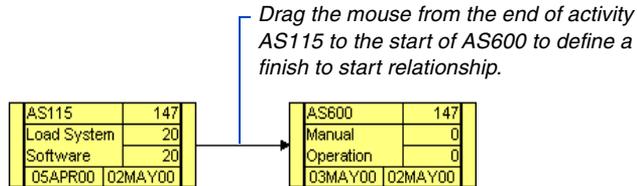
Tracing Logic

Create relationships between activities to indicate whether an activity can begin at any time or only after other activities start or finish. Once you assign relationships, schedule the project for P3 to calculate early and late dates for each activity.

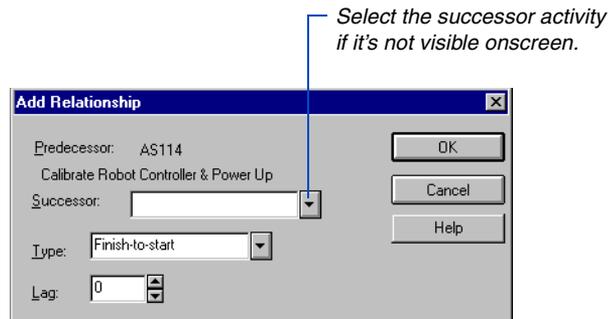
P3 provides several methods for assigning relationships: use PERT to visualize the flow of logic as you link activities or use the Bar chart to link several activities at once.

Defining Relationships in PERT

Define relationships in PERT by dragging the mouse between any two activities that you want to connect. Point to the left or right of the predecessor activity and drag the mouse to the left or right of the successor activity. The mouse pointer changes to a  as you define relationships.



You can link an activity to a successor even if it is not displayed onscreen. Drag the mouse to the edge of the screen to scroll to the successor activity. You can also drag the mouse to an unoccupied area. When you release the mouse, P3 displays a dialog box where you specify the successor activity and type of relationship. Click  to select a successor activity; P3 lists the activities included in the current layout. If you want to select an activity that's not included in the layout, type the activity ID in the Successor field.



Driving and Nondriving Relationships

P3 identifies the predecessor(s) that control, or drive, the early start and finish dates for an activity. The link between this predecessor and the activity it controls is called a driving relationship; if two or more predecessors share this control, they are both driving. A driving relationship between two critical activities—activities which, if delayed, delay a deadline or the entire project—is considered a critical relationship.

Relationships from predecessors to successors that do not control the early dates for the successor activity are nondriving relationships.

Driving relationships appear as solid lines.

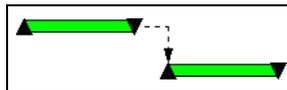
For information on formatting relationships lines in PERT, see the *Customizing PERT*

Nondriving relationships appear as dashed lines.

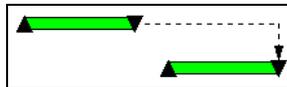
An asterisk in the Predecessors and Successors forms indicates a driving relationship.

Activity ID	Rel	Lag	TF	Description
AS102	FS	0		Approve System Design
AS204	FS	-10		Prepare Drawings for Temp Control Equ
AS216	FS	-10	166	Prepare Drawings for System Controller
	FS	0		

Relationship types and lag You can define four types of relationships, described and illustrated below. Typically, you define relationships from the predecessor to the successor activity.



Finish to start (FS). The successor activity can begin only when the current activity completes.



Finish to finish (FF). The finish of the successor activity depends on the finish of the current activity.



Start to start (SS). The start of the successor activity depends on the start of the current activity.



Start to finish (SF). The successor activity cannot finish until the current activity starts.

When a successor activity cannot start or finish as soon as its predecessor starts or finishes, you can define a lag time for the relationship. Lag is the number of time units from the start or finish of an activity to the start or finish of its successor. Lag can be a positive or negative value. For example, a start to start relationship with a 3-day lag indicates that the successor activity can start 3 days after the start of its predecessor.

P3 interprets lag times according to the predecessor activity's base calendar. Consider two activities that have a start to start relationship with a 2-day lag. If the predecessor activity uses a 7-day workweek and finishes on a Friday, P3 schedules the 2-day lag on Saturday and Sunday (workdays for the predecessor), even if those days are nonworkdays for the successor; P3 then schedules the successor activity to start on Monday.

Defining Relationships in the Bar Chart



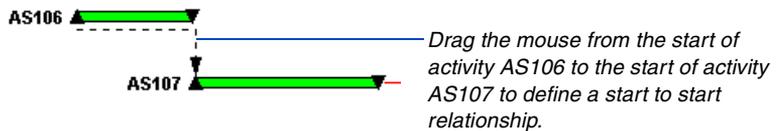
To assign relationships in the Bar chart, make sure relationships are displayed onscreen (choose View, Relationships, or press F3).



You cannot display relationships when grouped by resource.

Define relationships in the Bar chart Point to the start or finish of the predecessor activity bar and drag the mouse to the start or finish of the successor activity bar. The mouse pointer changes to  as you define relationships.

If you show several bars for each activity, you must use the bar designated as the key bar to assign relationships. Choose Format, Bars, to check bar settings.



Assign relationships using the activity detail forms You can also assign relationships using the Predecessors and Successors forms. In the Activity columns, right-click the appropriate activity and choose Activity Detail, Successors.

Activity ID	Rel	Lag	TF	Description
BA911	FS	0	0	Finish Carpentry and Millwork
BA912	FS	0	3	Install Plumbing Fixtures

The Successors form displays the relationship, lag, description, and other information for defined successors. Use the horizontal scroll bar to view more information.

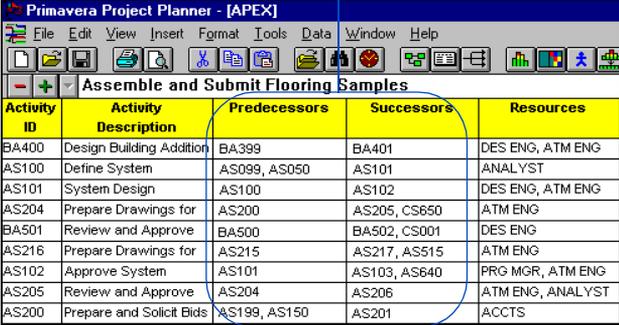
To add a successor relationship, click  from the edit bar in the Successors form, then click  to select a successor activity. Modify the relationship type and lag, if necessary. You can define a successor even if it doesn't exist in the project; type the ID for the new activity and click . When you select another activity, click outside the Successors form, or close the form, P3 prompts you to add the activity.

Link multiple activities with finish to start relationships Select the activities you want to link (they don't have to be contiguous in the list of activities), then choose Edit, Link Activities. P3 automatically adds finish to start relationships between each activity, starting with the first selected activity and continuing to the last. Choose Edit, Unlink Activities, to remove finish to start relationships and lag from selected activities. The predecessor relationship of the first activity and the successor relationship of the last activity remain intact. To unlink activities, the relationships must be contiguous between the selected activities.

Assign finish to start relationships between activities as you add them Choose Insert, Autolink. When you add a new activity, P3 links the currently selected activity to the new activity with a finish to start relationship. To add activities without assigning relationships, turn off the Autolink feature by again choosing Insert, Autolink.

Display relationships in the activity list Choose Format, Columns, and select Predecessors and/or Successors as data items. The cells in these relationship columns contain all corresponding activity IDs per activity row; they cannot be edited.

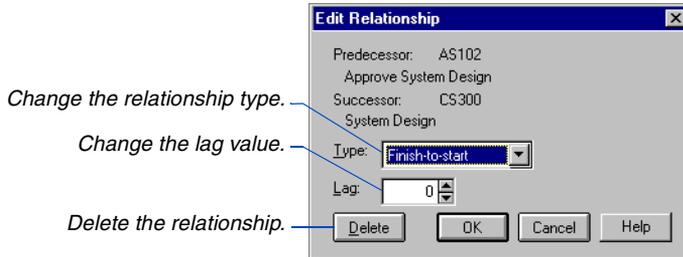
Include predecessors and successors as columns in the list of activities as another method of viewing relationships.



Activity ID	Activity Description	Predecessors	Successors	Resources
BA400	Design Building Addition	BA399	BA401	DES ENG, ATM ENG
AS100	Define System	AS099, AS050	AS101	ANALYST
AS101	System Design	AS100	AS102	DES ENG, ATM ENG
AS204	Prepare Drawings for	AS200	AS205, CS650	ATM ENG
BA501	Review and Approve	BA500	BA502, CS001	DES ENG
AS216	Prepare Drawings for	AS215	AS217, AS515	ATM ENG
AS102	Approve System	AS101	AS103, AS640	PRG MGR, ATM ENG
AS205	Review and Approve	AS204	AS206	ATM ENG, ANALYST
AS200	Prepare and Solicit Bids	AS199, AS150	AS201	ACCTS

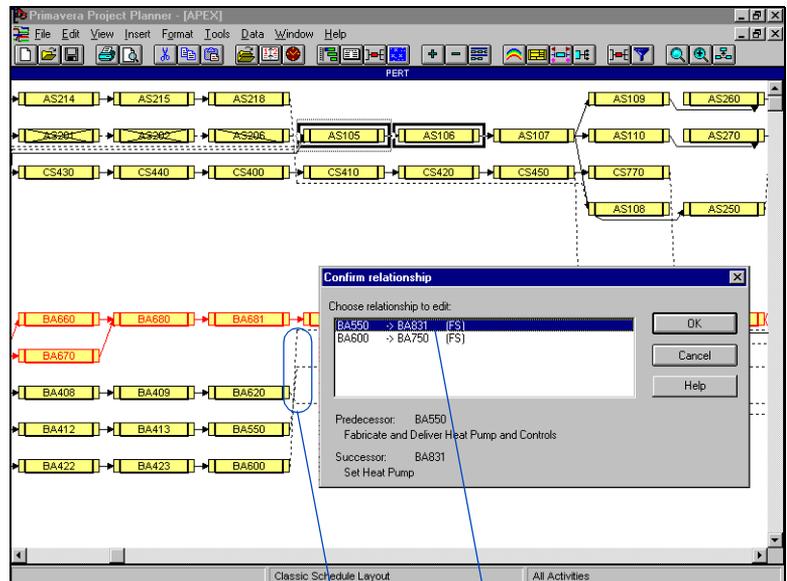
Editing and Deleting Relationships

As you add activities and make adjustments to your project, you may need to modify or delete relationships. Click the relationship line you want to change or delete. If you are working in the Bar chart, make sure relationship lines are displayed (choose View, Relationships).



If you click a relationship line that branches to different activities, P3 displays a dialog box to confirm the relationship to edit.

You can format relationship lines in PERT to be drawn as separate, shared, or direct lines. For details, see the *Customizing PERT Layouts* chapter.

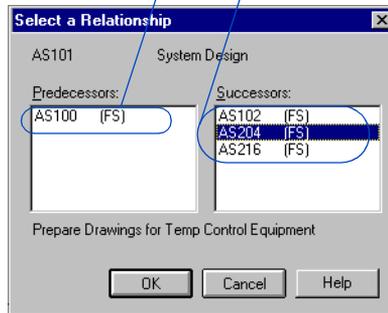


Double-click the relationship you want to edit.

This relationship line represents two different relationships.

You can also edit a relationship in the Bar chart by selecting an activity and choosing Edit, Relationships (make sure relationship lines are visible in the Bar area).

This activity has two predecessor and two successor relationships. Double-click the relationship you want to edit.



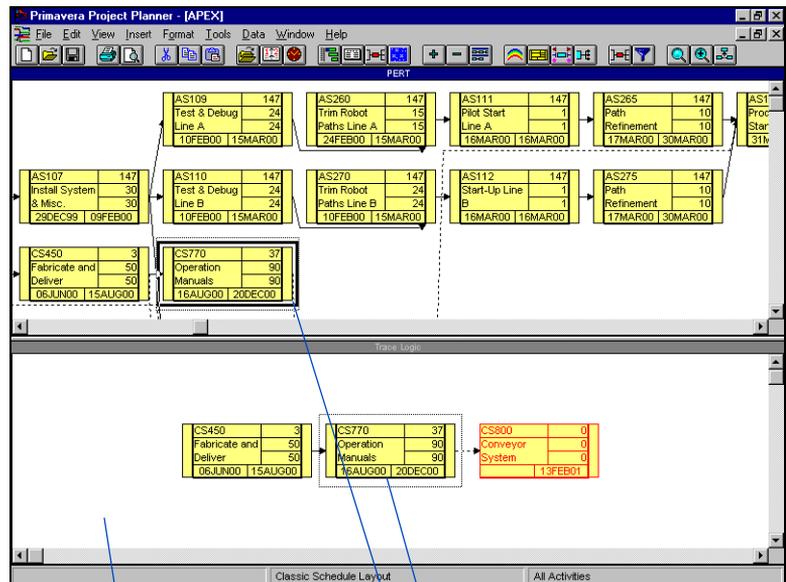
Tracing Logic

You can examine a sequence of activities by moving forward or backward through the schedule. Move from an activity to its successor, then to that activity's successor; or move from an activity to its predecessor, then to that activity's predecessor. Tracing logic enables you to determine the reason a specific activity has negative float.

PERT provides a separate Trace Logic view so you can examine a path while still viewing the entire project. You can also use the Predecessors and Successors forms to trace logic in either PERT or the Bar chart.

Trace logic in PERT Select the activity from which you want to begin tracing logic, then choose View, Trace Logic. You can also display Trace Logic by right-clicking in a blank area of PERT and choosing Trace Logic.

P3 displays Trace Logic under PERT. If the Activity form is displayed, P3 places Trace Logic above the form.



Trace Logic

P3 displays the selected activity and its immediate predecessors and successor in Trace Logic.

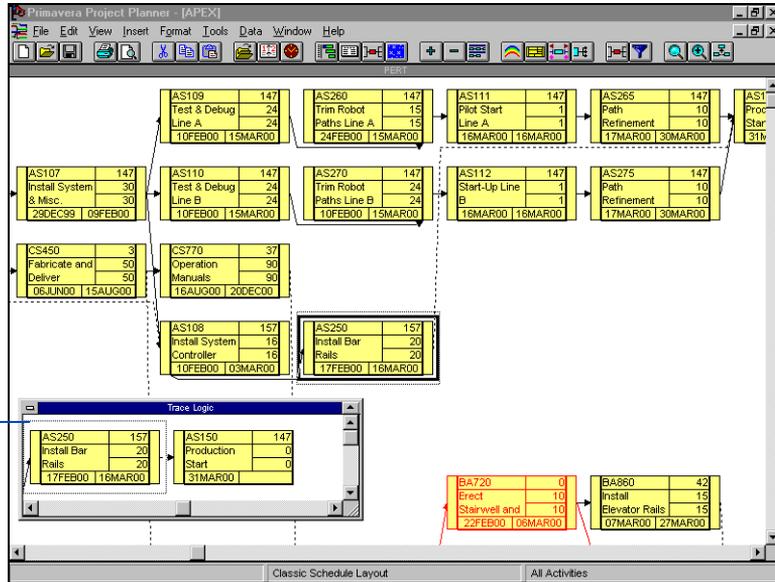
You can zoom in Trace Logic without affecting PERT. Right-click in Trace Logic, then choose Zoom.

To move through the chain of activities, click a predecessor or successor of the selected activity. You can also use the arrow keys to move through the predecessors or successors; P3 moves along the driving relationship path.

Drag the horizontal split bar up or down to resize Trace Logic. To close Trace Logic, right-click in a blank area in Trace Logic, then choose Hide Trace Logic.

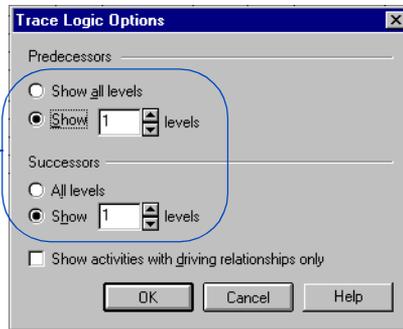
Change Trace Logic to a movable window You can change Trace Logic to a window that can be placed anywhere in the project window. Right-click in Trace Logic, then choose Undock Trace Logic.

To change the Trace Logic window back to a full view, right-click in the Trace Logic window and choose Dock, Trace Logic, or click the maximize button.



Resize the Trace Logic window and place it anywhere on the screen.

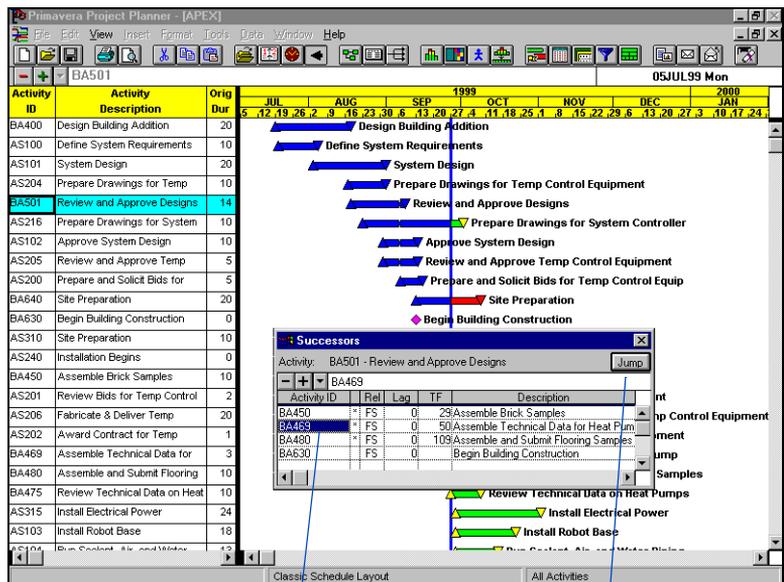
Set trace logic options Control the number of predecessors and successors displayed in Trace Logic by choosing Format, Trace Logic.



Modify the amount of detail P3 shows by increasing or decreasing the level of predecessors and successors.

You can choose to show only activities with driving relationships. Use this feature when you want to focus on the critical paths in your project. P3 does not display activities that have nondriving relationships to and from the selected activity.

Trace logic using the Predecessors and Successors forms
 Right-click the activity from which you want to begin tracing logic. Choose Activity Detail, Predecessors or Successors in the Bar chart. You can also right-click an activity in PERT and choose Activity Detail, then Predecessors or Successors.



If you jump to an activity not included in the current layout, P3 adds the activity to the layout.

Select the activity you want to trace, then click Jump. P3 selects the activity in the Activity columns and lists its predecessors or successors in the detail form.

Calculating and Adjusting the Schedule

In this chapter:

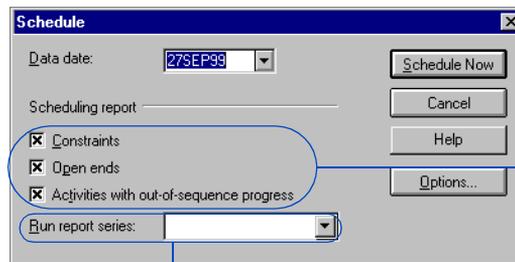
- Calculating a Schedule
- Creating a Schedule Statistics Listing
- Setting Schedule Calculation Options
- Using Date Constraints
- Using Float Constraints
- Assigning Constraints

When you calculate a schedule, P3 examines all activities to calculate the earliest start and finish dates as well as the latest start and finish dates for each activity and for the entire project. You control whether P3 schedules a project automatically whenever you enter or update activity information or only when you initiate it. After P3 calculates the schedule, you can use constraints to accurately reflect project requirements.

Calculating a Schedule

P3 calculates the earliest start and finish dates for each activity from the beginning to the end of the project, then calculates the latest start and finish dates for each activity, working from the end of the project back to the first activity. During the backward pass, P3 also calculates float values. P3 uses the project planning unit and calendar definitions to calculate these dates.

Calculate a schedule Choose Tools, Schedule or press F9, specify a data date, and click Schedule Now.



Mark the activity conditions you want to include in the list.

Select series codes (choose Tools, Tabular Reports, Production) for any reports you want to produce during scheduling.

Press F8 to enter the current system date as the data date.

In the Schedule dialog box, specify whether to list activities with constraints, open ends, and out-of-sequence progress on schedule reports. P3 schedules activities from the project data date. The data date is the starting date of all remaining work—the “time now.” P3 reorganizes the layout based on the current sort and group criteria.

Non-exclusive scheduling You no longer need exclusive access to schedule a project, whether it is stand-alone, a project group, or a member project. When you start scheduling, if another user is working in the same project, or a member project of the same project group, P3 displays an advisory message. You can continue scheduling. When scheduling is complete, P3 stores new schedule dates for activities that are not locked by other users.

See [Setting Schedule Calculation Options](#) later in this chapter for details.

You can also schedule automatically so that P3 schedules the project whenever you change data that affects the schedule, such as when you add, change, or delete a duration, relationship, lag, or constraint.

Creating a Schedule Statistics Listing

When scheduling from a project group, P3 also produces individual listings for each member project.

After calculating a schedule manually, P3 automatically creates a schedule statistics listing that summarizes information about the project. This listing includes the total number of activities in the project, the number of activities that have started, the number of activities that have finished, the number of relationships in the project, and the percent of the project that is complete.

```

Scheduling Statistics for Project Group APEX:
Project floats are based on Project end date(s).
Schedule calculation mode - Retained logic
Schedule calculation mode - Contiguous activities
Schedule calculation mode - Make open ends critical
Float calculation mode - Use finish dates
SS relationships - Use early start of predecessor

Schedule run on Wed Jun 19 08:44:19 1999
Run Number 49.
Project Group Information
Number of activities..... 128
Number of activities in longest path.. 43
Started activities..... 16
Completed activities..... 11
Number of relationships..... 139
Percent complete..... 8.2
Number of early constraints..... 2
Number of flags..... 6
Data date..... 23DEC99
Start date..... 15JUL99
Imposed finish date.....
Latest calculated early finish..... 06MAY01
    
```

Calendars used during scheduling The activity type determines whether P3 assigns resources to activities according to their own calendars or according to the activity's base calendar, as described in the following table.

Activity Type Calendar

Task	Activity's base calendar for all resources, both driving and nondriving
Independent	Individual resource calendars; both driving and nondriving resources use their own calendars.
Meeting	A conglomerate calendar of common worktime among driving resources; both driving and nondriving resources use this conglomerate calendar.

Loop Report

A loop is a path of activities that returns to itself. If P3 detects a loop in the activity logic during manual scheduling, it stops calculating the schedule and produces a loop report.

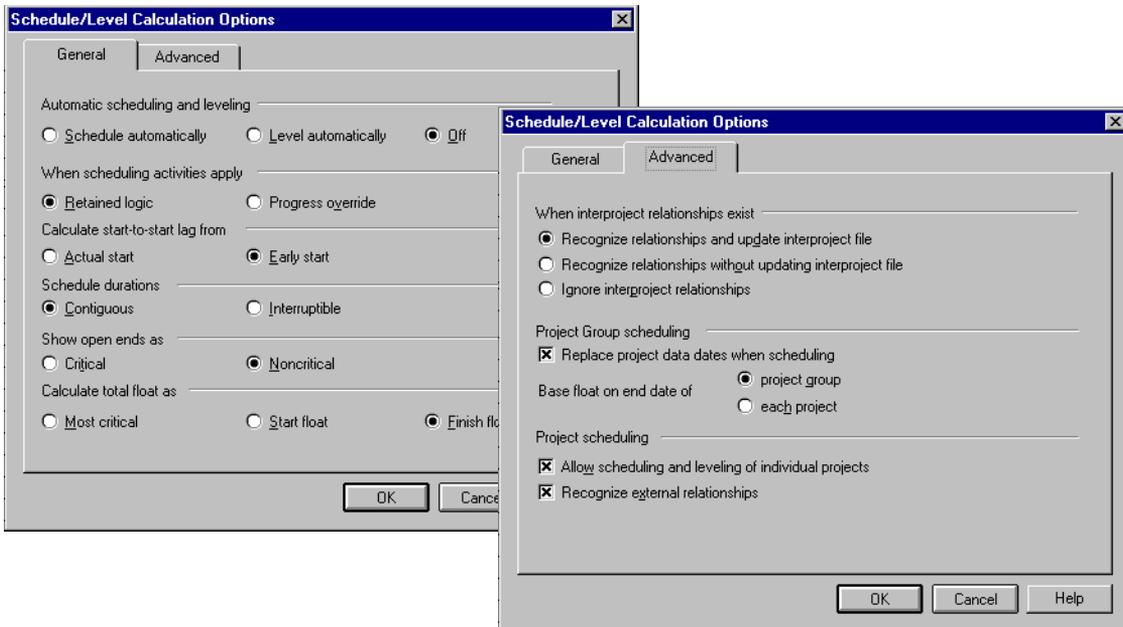
The loop report lists the activities that form the loop, a loop number, the activity ID, and an activity description. The loop number is a sequential number assigned by P3. The first and last activities in a closed loop are the same.

P3 cannot calculate the schedule until you eliminate all loops. To eliminate a closed loop, trace through the logic and delete the precedence relationships that cause it, then recalculate the schedule.

Setting Schedule Calculation Options

P3 enables you to specify additional options for scheduling. For example, select the type of logic (retained or progress override) used to calculate the schedule, specify whether P3 bases total float on start or finish dates or on the most critical of the two values, and indicate whether or not you want P3 to schedule automatically. You can also specify settings for project group/project scheduling and leveling. Settings apply to each project.

Set schedule options Choose Tools, Schedule, then click Options. You can change the type of schedule logic P3 uses any time before P3 calculates the schedule. Remember that your changes only affect future calculations.



Automatic scheduling and leveling When you choose automatic scheduling, P3 schedules the project whenever you change data that impacts the schedule, such as when you add, change, or delete a duration, relationship, lag, or constraint. The status bar indicates that P3 is scheduling the project and displays any scheduling messages. P3 only displays a schedule report if it detects loops in network logic. If no loops are found, you can continue working in the project as soon as P3 finishes scheduling.

When you change the data date by dragging the data-date line or by using the Progress Spotlight feature, P3 turns off automatic scheduling, then turns it on again when you finish estimating progress.

If you choose automatic resource leveling, P3 levels each time you schedule your project or each time you change data that impacts leveling, such as when you add, change, or delete a resource, calendar, or relationship.

Retained logic or progress override Retained logic or progress override logic affects a schedule only if one or more activities show out-of-sequence progress. For example, in a conventional finish to start relationship, an activity has out-of-sequence progress when it starts before its predecessor finishes, invalidating its predecessor relationship.

Retained logic requires that an out-of-sequence activity cannot resume until all predecessors finish. To ignore logic relationships and allow an activity with progress to continue even if its predecessors have not finished, choose Progress Override. Before you choose Progress Override, make sure the out-of-sequence activities can continue without adhering to their predecessor relationships as originally planned.

Start to start lag calculation When the predecessor activity in a start to start relationship starts out of sequence, P3 delays the successor activity until the lag expires and all predecessor relationships are satisfied. You can choose to reduce the lag from the actual start or internal early start date of the predecessor.

P3 automatically reduces lag from the early start of the predecessor. Use this option when the start of the successor depends on the amount of work accomplished on the predecessor activity. Choose Actual Start when you want the start of the successor to depend on the time elapsed from the actual start of the predecessor, regardless of how much work has been accomplished on the predecessor activity.

Contiguous or interruptible activity durations Contiguous and interruptible activity durations affect activities whose finish dates are constrained by certain relationship types or date constraints.

P3 automatically schedules a project using contiguous activity duration, which requires that work be continuous but adhere to the network logic. Interruptible activity duration schedules activities so the number of workperiods between the start and finish may be greater than the duration. The remaining duration remains the same, but work is not performed continuously.

For example, some activities have finish dates that are constrained by a finish to finish or start to finish relationship or by an early finish constraint. When using contiguous activity duration, the finish relationship or constraint affects the start and finish dates of the activity. When using interruptible activity duration, the finish relationship or constraint, but not the start date, affects the finish date. The activity can start earlier, based on its predecessors or constraints.



When scheduling or leveling in interruptible mode, P3 does not interrupt an activity with a mandatory start or mandatory finish constraint.

Critical or noncritical open ends Open-ended activities have no predecessor or successor relationships to other activities. P3 checks for open ends when scheduling and can identify them as critical by shading the open-ended activity bars in the critical color identified in the Bars dialog box.

Total float calculation P3 calculates float based on the start or finish dates of an activity or on the most critical dates. This option applies only to interruptible scheduling and calculating float for hammock activities in contiguous scheduling.

P3 automatically calculates total float as finish float, which is the workperiod difference between the early and late finish dates. Choose Start Float if you want float to represent the workperiod difference between the early and late start dates of the activity. Choose Most Critical when you want float to be the lower of the start or finish float.

Interproject relationships Choose whether P3 recognizes relationships between activities from different project groups when scheduling and updates activities in the current project as well as in the project group.

Choose the second option to schedule a project and recognize interproject relationships using dates from the project group file without updating this file. Choosing this option enables you to perform “what-if” analysis without affecting the dates for other projects. Choose the third option to schedule the current project without considering activities linked to other activities from different project groups.

Project group and member project scheduling Use the project group options if your project uses a project group and member projects. You must set these options from the project group.

For more information about assigning access rights, refer to the *Creating and Managing Project Groups* and *Setting Up and Managing Projects in Project Groups* chapters.



Users with Exclusive Read Write access can always schedule and level the project group level. To limit users who can schedule/level the project group, set Restricted access.

Choose whether to allow scheduling and leveling of individual projects within a project group. Also choose whether to replace the project data dates with the data date from the project group when you schedule the project group.

When scheduling from the project group, P3 automatically calculates late dates based on the end date of the project group; however, you can choose to use the end date of each project.

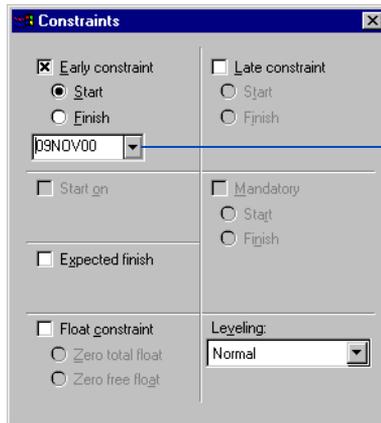
For more information on scheduling and leveling project groups and projects, refer to the *Setting Up and Managing Projects in Project Groups* chapter.

When scheduling an individual project, choose whether to recognize external relationships. This option considers the effects of relationships to other projects or to the project group. Clear the Recognize External Relationships checkbox if you want P3 to ignore relationships between your project and other projects during scheduling. P3 then schedules the project as an independent project using its start date, data date, and imposed finish date (if any) for calculations. P3 treats interproject relationships as open ends.

Using Date Constraints

Use constraints when activities must start or finish at a specific time and/or date. Constraints can restrict or distribute float to critical activities, control stand-alone activities, smooth resource use, or eliminate resource conflicts. P3 provides two types of constraints: date constraints and float constraints. Use date constraints when a specific date controls an activity or project.

For information on how to set constraints in P3, refer to the *Assigning Constraints* section later in this chapter.



This early start constraint restricts the activity from starting any earlier than November 9.

For information about float constraints, refer to the *Using Float Constraints* section later in this chapter.

P3 uses date constraints only when they create a tighter schedule. For example, an imposed early start date of December 1 will not affect a schedule-determined early start date of December 15. Conversely, if an imposed start date is set to start no earlier than December 30, P3 schedules an activity whose scheduled early start is December 15 to the imposed start date.

Early start constraint Use an early start constraint to ensure that the start of an activity is not scheduled before a specified date. An early start constraint affects the schedule only if the constraint date is later than the calculated early start date for the activity.

Early finish constraint The early finish constraint functions like an early start constraint except that P3 applies it to the calculated early finish dates for an activity. It changes the schedule only if the constraint date is later than the calculated early finish date for the activity.

Late start constraint A late start constraint can affect the late dates of an activity if the constraint date is earlier than the calculated late start for the activity. This constraint reduces the amount of total float in successive activities.

Late finish constraint A late finish constraint affects only the late dates and can be used to set intermediate completion dates or milestones. The assigned constraint date must be earlier than the scheduled late finish date for the activity.

Start on constraint A start on constraint affects an activity as if both early start and late start constraints are imposed on it. The early start constraint revises the early dates only if the imposed date is later than the calculated early start date. The late start constraint revises the late start dates only if the imposed date is earlier than the calculated late start date.

Expected finish constraint Use an expected finish constraint to update the schedule based on an estimate of the expected finish of an activity. P3 calculates the remaining duration of activities with expected finish constraints as the workperiod difference between their calculated early start dates and the assigned expected finish dates. For activities underway, P3 calculates the remaining duration as the number of workdays from the data date to the expected finish date.

Mandatory start constraint A mandatory start constraint sets both the early and late start dates equal to a specified date; P3 does not override the constraint during schedule calculations. Use caution when imposing this constraint, since it can violate network logic and cause the dates for an activity to be earlier than those of its predecessor(s).

Mandatory finish constraint A mandatory finish constraint sets the early and late finish dates equal to the imposed date and sets the late dates of paths leading to the activity and the early dates of paths leading from it. P3 does not override the mandatory finish constraint during schedule calculations. Use caution when imposing this constraint since it can violate network logic by allowing P3 to schedule a successor activity before its predecessor(s).

For more information on constraint calculations, see *Calculating and Adjusting the Schedule* in P3 Help, or search on *Constraints*.

Using Float Constraints

Use float constraints when you do not know the actual duration of an activity but you do know that relationships or dates will govern its calculation. Float constraints control float for an activity by changing its schedule dates.

Zero total float constraint Use a zero total float constraint to make an activity critical. When you impose a zero total float constraint, P3 sets the late dates for the activity equal to its early dates, giving it zero total float.

Zero free float constraint A zero free float constraint, also known as an as late as possible constraint, allows an activity to start as late as possible without delaying its successors. An activity with free float can start as late as possible without delaying its immediate successors.

Assigning Constraints

You can assign constraints using the Constraints form or assign them directly to an activity bar in the Bar chart using the mouse.

Assign a constraint using the Constraints form Choose View, Activity Detail, Constraints. Mark the checkbox for the constraint you want to apply, then specify the constraint date.

Choose Start or Finish to constrain early or late dates.

For Independent activities, select Split, Stretch, Crunch, or an alternative leveling method from the drop-down list.

For information on changing the leveling technique used for activities, refer to the *Resource Leveling* chapter.

P3 automatically identifies a date constraint by displaying an asterisk next to the date in the activity columns. For expected finish constraints, P3 displays an asterisk next to the original and remaining durations.

Assign a constraint in the Bar chart Point to an activity bar, then press and hold the Ctrl key. The mouse pointer changes to a . Drag the mouse right or left until you reach the constraint date you want, using the Datometer as a guide; then release the mouse button.

The schedule dates do not reflect the constraint date until you schedule the project.

P3 displays the Constraints form set to the date you selected. If you point to an early bar, P3 automatically sets the date as an early start constraint. If you point to a late bar, P3 sets the date as a late finish constraint. If you point to a bar with an actual start date, P3 sets a late finish constraint. To adjust the constraint date, click and select another date. Click OK, then schedule the project to include the constraint.



The activity bar must represent early or late dates: the early bar must span the early start and finish dates and the late bar must span the late start and finish dates. For example, you cannot assign a constraint to a bar that spans the early start and late finish dates, or to target bars or custom data item bars.

Constraint Limitations

An activity can have a maximum of one early date constraint, one late date constraint, and one duration or float constraint. You can assign constraints to milestones; however, you can assign only certain types of constraints to each type of milestone.

For example, apply a start constraint only to a start milestone and a finish constraint only to a finish milestone. You can also assign zero free float and zero total float constraints to milestones. You cannot assign constraints to flags.

Activity Calendars

In this chapter:

Adding a New Activity Calendar

Defining Global Calendar Information

Defining Shift Data for Hourly Projects

Specifying Holidays, Nonworkperiods, and Exceptions

Printing Calendars

Assigning Calendars to Activities

Activity calendars define periods when work can and cannot occur during a project and the length of the workweek, holidays, and exceptions. Use more than one calendar when your project contains activities that can occur on different schedules. P3 also provides a global calendar for specifying holidays and other nonworkperiods that apply to all activities in a project.

Once you define calendars in P3, assign activities to them to control schedule dates and model specific situations. When you want to base a project schedule on resource availability, you can define resource calendars. Each resource can have its own calendar that specifies its available worktime.

Adding a New Activity Calendar

P3 enables you to establish up to 31 calendars per project to accommodate different work patterns. For example, if some activities require a five-day workweek, while others are performed part-time (such as Monday, Wednesday, and Friday) or during a specific timeperiod (such as 08:00 to 11:59), you can create different calendars and assign the activities to them.

P3 automatically includes calendar 1 when you add a new project. You cannot delete this calendar, but you can change it. Each calendar is designated by a calendar ID—a unique one-character code used to assign each activity in the project to a calendar. In a daily project, calendar 1 defines a five-day workweek that begins on Monday (unless you designate a different start day of the week when you add the project). For hourly, weekly, and monthly projects, calendar 1 uses continuous worktime; that is, all time is available for work. All calendars use the same planning unit selected for the project (hours, days, weeks, or months).

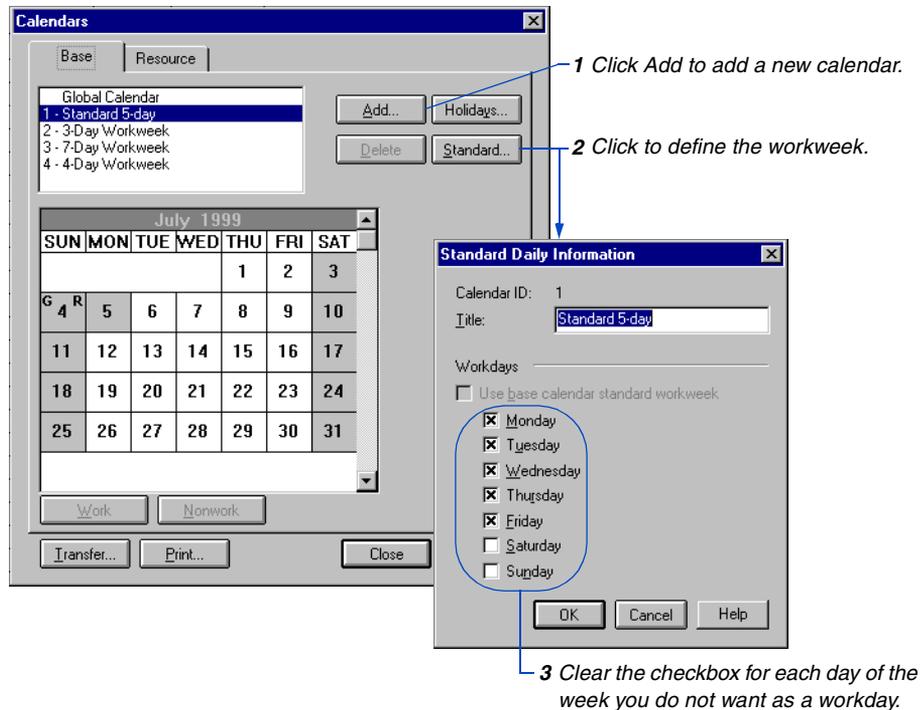
You can change the planning unit for a project using the Tools, Project Utilities, Copy command. For information about copying projects, refer to the Project Utilities chapter.

Add a new calendar to the project Choose Data, Calendars. The Calendars dialog box displays calendar 1 beginning with the month of the project start date. Click Add and accept the next sequential ID or click and choose another ID. Specify a calendar title and click OK. New calendars specify a seven-day workweek.



You must have Exclusive access to a project before you can add or delete calendars.

You can also define specific calendars for resources by clicking the Resource tab in the Calendars dialog box. For more information about defining resource calendars, refer to the *Resource Calendars* chapter.



Transferring Calendars

For more information about creating holidays, nonworkperiods, and exceptions, refer to the *Specifying Holidays, Nonworkperiods, and Exceptions* section later in this chapter.

You can transfer calendars between projects or within the same project to avoid entering data more than once. To transfer calendars within a project, click Transfer in the Calendars dialog box, then choose Individual Calendar. Click in the From field and choose the calendar ID from which you want to transfer definitions. Click in the To field and choose the calendar ID to which you want to transfer information. A calendar must exist for the selection.

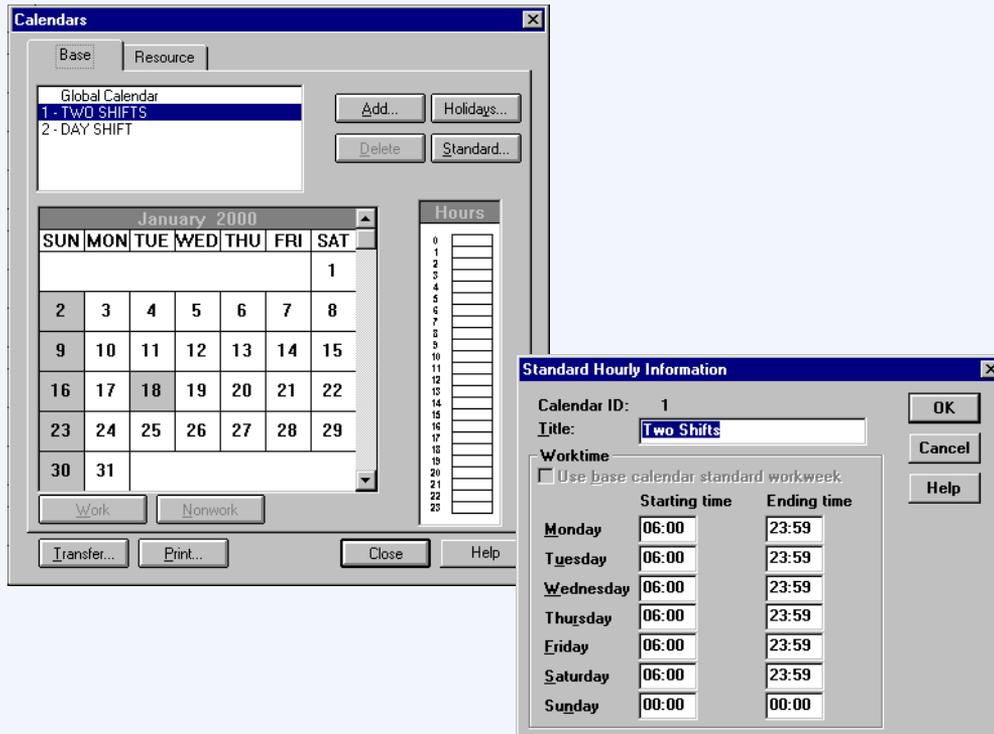
To transfer calendars between projects, both projects must have the same planning unit. Click Transfer in the Calendars dialog box, then choose All Calendars. Select the project whose calendars you want to transfer to another project. P3 transfers all calendars, including data specified for the global calendar.

Defining Hourly Calendars

If your project is hourly, the Calendars dialog box shows the work hours defined for each day. Shading in the Hours table indicates nonworktime. Calendar 1 for an hourly project specifies continuous worktime, meaning, every hour of the day is available for work.

Define the times for an hourly calendar Click Standard in the Calendars dialog box for the selected calendar. Click the Starting time field and enter a time.

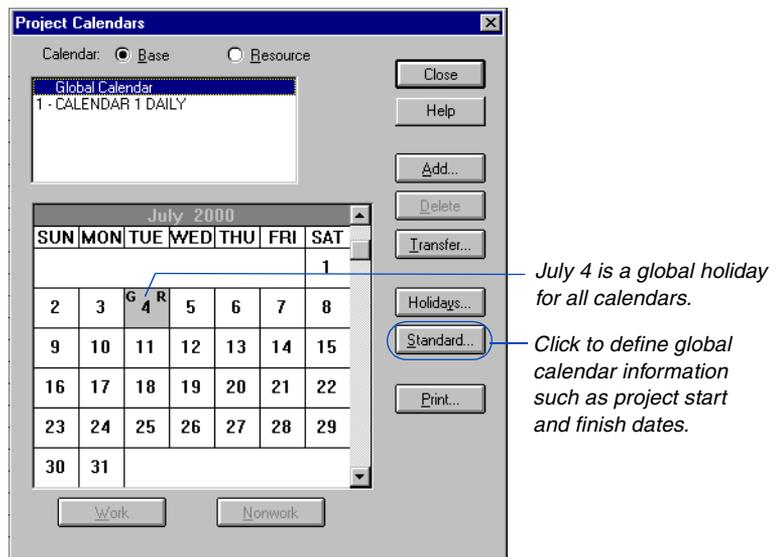
To designate no work for an entire day, enter 00:00 as both the starting and ending times. Enter an ending time that is earlier than the start time to identify work that continues into the next day. For example, identify a workday that starts at 11 p.m. and ends at 7 a.m. the next day as 23:00 to 06:59. Continue defining worktimes for each day of the week.



Defining Global Calendar Information

The global calendar defines nonworkperiods that apply to all calendars. Use the global calendar to designate all holidays and nonworkperiods your company observes, especially if you plan to use more than one calendar. P3 automatically reflects these nonworkperiods in all project calendars so you need not define them on each calendar you use.

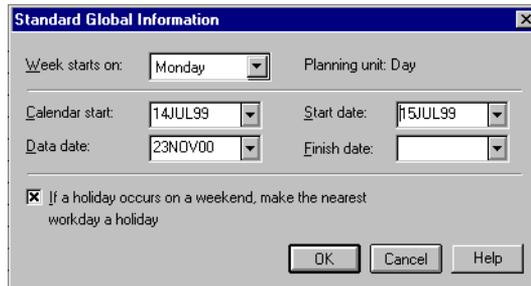
Display the global calendar Choose Data, Calendars, and select Global Calendar in the Calendars dialog box.



Designate a nonworkperiod as a holiday Double-click the day in the calendar. To designate a range of nonworktime, drag the mouse from the starting day to the last day of the range, then release it. Click the Nonwork button. To select a column of days (for example, every Saturday), double-click the name of the day. The day or days you selected appear shaded.

Moving Holidays that Occur on Weekends

For daily projects, the Standard Global Information dialog box enables you to establish a convention for holidays that occur on weekends. P3 automatically moves holidays or specially designated nonworkdays that fall on a regularly scheduled nonworkday (weekend) to the nearest workday. For example, if Christmas falls on a Sunday, P3 considers the following Monday a nonworkday.



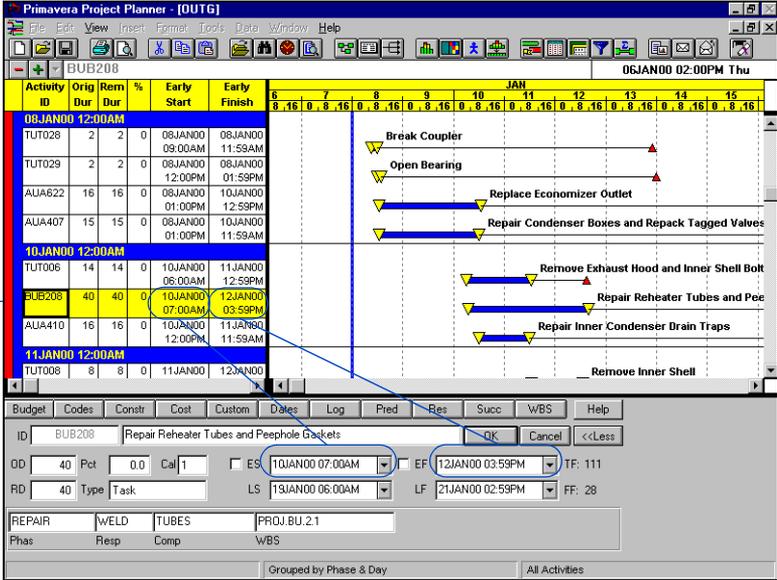
In the Calendars dialog box, select the Global Calendar and then click Standard. The Standard Global Information dialog box shows the start day of the workweek, the planning unit for the project, the calendar start date, the data date, and the project start and finish dates. Clear the holiday convention checkbox at the bottom of the dialog box to turn off this option.

Defining Shift Data for Hourly Projects

Use the Standard Global Information dialog box to define shifts for an hourly project. Use shifts in an hourly project to define resource limits and to produce printed reports and graphics.

Shifts represent a grouping of hours. P3 does not use shifts in scheduling calculations. For example, suppose a project uses an 18-hour calendar that begins at 06:00 and ends at 23:59. You may want to group the hours into two shifts per day, 06:00 to 14:59 and 15:00 to 23:59.

The early start begins on 10JAN00 in the first shift (06:00 to 14:59) and continues through four shifts to the early finish of 12JAN00 in the second shift.



Specify shift data Enter the number of shifts per day, up to six. Specify the starting time of the first shift, then enter the standard shift duration. The shift duration times the number of shifts per day cannot exceed 24 hours.

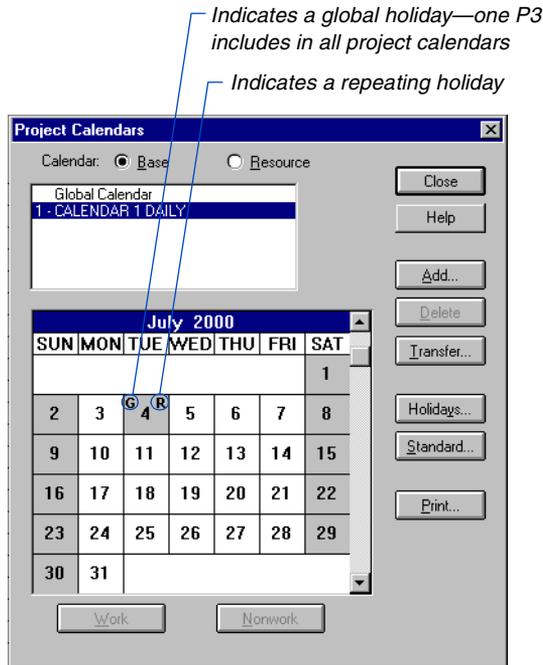
Week starts on:	Monday	Planning unit:	Hour
Calendar start:	29NOV99 12:00AM	Start date:	05JAN00 12:00AM
Data date:	08JAN00 12:00AM	Finish date:	
Shifts for reporting and for defining resource limits			
Shifts per day:	2	First shift:	6:00
		Duration:	9 hrs

Specifying Holidays, Nonworkperiods, and Exceptions

After you create calendars and establish standard workweeks, you can define nonworkperiods. Nonworkperiods are times when work is not scheduled, such as holidays, vacations, or other times when work cannot occur. P3 does not schedule activities or apply resources on dates defined as nonworkperiods. You can define nonworkperiods independently for both the base calendars and global calendar. The global calendar defines nonworkperiods and exceptions that apply to the entire project.

Define nonworkperiods for an individual calendar In the Calendars dialog box, select the calendar for which you want to define nonworkperiods. Double-click the day or hour you want to designate as a holiday.

To designate a range of nonworktime, drag the mouse from the starting day to the last day of the range, then release it. Click Nonwork. To select a column of days (for example, every Saturday), double-click the name of the day. The day or days you selected appear shaded.



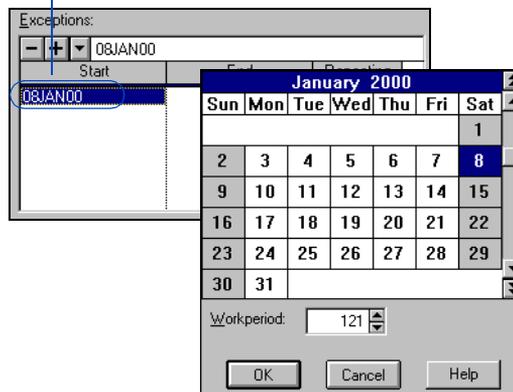
You can also define exceptions: times when work can be scheduled during periods otherwise specified as nonwork. For example, suppose you designate Saturday as a standard nonworkday, with the exception of next Saturday, when work must occur to make up for behind-schedule work progress.

Specify an exception for a nonworkperiod In the Calendars dialog box, select the calendar for which you want to specify an exception. Double-click a standard nonworkday such as a Sunday to convert it to a workday.

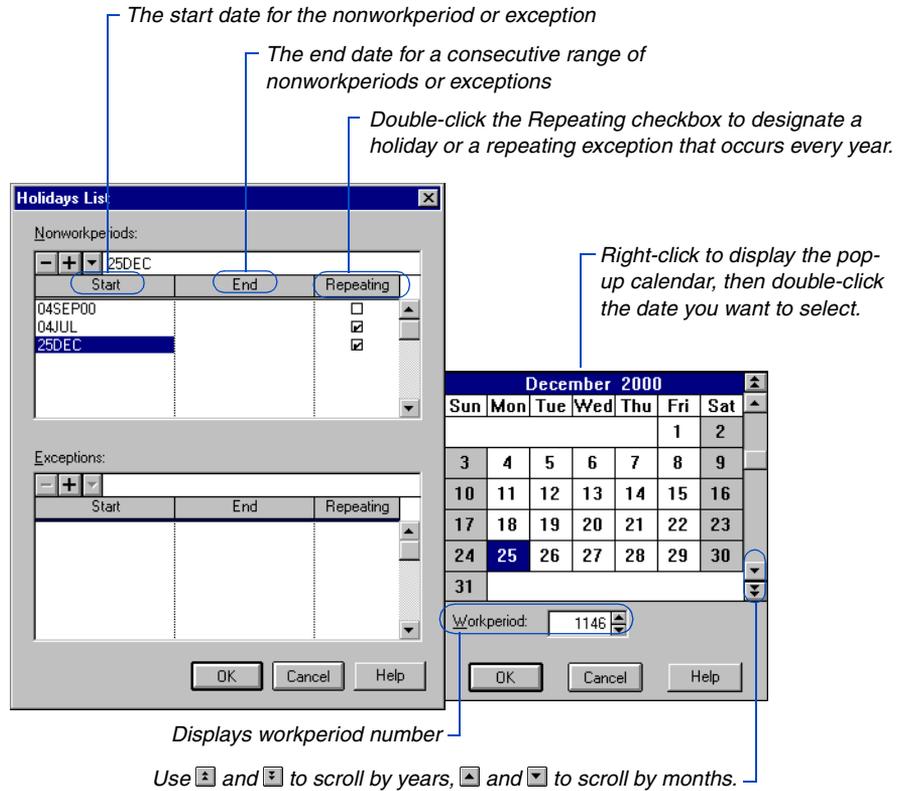
Specify annual holidays that change dates each year (such as Thanksgiving) as nonworkday(s) on the appropriate day(s) (month and day) for each year of the project in the project calendar(s).

To convert a range of nonworkdays to workdays, select a range of standard nonworktime, then click Work. For example, if Saturday is normally a nonworkday, to designate all Saturdays during the month of August as exceptions, double-click the weekday title, SAT, then click Work.

Even though Saturday, January 8 is a nonworkday for this calendar, you can specify it as an exception when work can be scheduled.



Enter specific dates or specify a repeating holiday Click Holidays in the Calendars dialog box to review a list of all nonworkperiods and exceptions for the current calendar. P3 displays the nonworkperiods and exceptions set in the Calendars dialog box so you can review the list on one screen. To modify the list, use the  and  buttons to insert or delete dates.



For more information, refer to *Defining Hourly Calendars* earlier in this chapter.

Hourly projects When you enter times as nonworkperiods and exceptions, use military format as valid hour entries: 00 to 24. In the Start column, the minutes are always :00. In the End column, P3 changes the minutes to :59 to indicate the end of the hour. For example, if you enter 11:00 as the end period, P3 changes it to 10:59.

Weekly or monthly projects Specify nonworkperiods and exceptions for weekly and monthly projects using the chosen date format (choose Format, Dates) or right-click to select a date from the pop-up calendar. In these types of projects, a week or a month is the smallest unit of time; therefore, specifying a day actually indicates that the whole week or month in which the specified day falls is a nonworkperiod or exception. P3 automatically changes any entry in the Start column to the start date of the specified week or month. P3 shows the end date of the specified week or month in the End column.

Printing Calendars

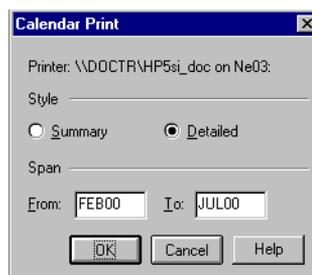
You can produce a summary report based on all calendars in the project, or a detailed report based on the calendar displayed in the Calendars dialog box. P3 uses the printer you select in the Print Setup dialog box (choose File, Print Setup) to print the selected Calendar report.

A summary daily calendar report lists nonworkdays (identified by an H) for all calendars in the project, including the global calendar. Calendar dates are listed vertically on the left side of the report and calendar IDs are listed horizontally across the top of the report. The report prints nonwork hours, rather than nonworkdays, for hourly projects.

If you select a summary report when the global calendar is displayed in the Calendars dialog box, the report contains project statistics such as calendar type, calendar ID, holiday convention (for daily projects), and information about the calendars defined for the project. This information includes the project start and finish dates, each calendar definition, and nonworkperiods and exceptions.

A detailed daily calendar report prints a calendar for each month in the timespan you select in the Print dialog box. P3 displays global (G) and repeating (R) holidays in the upper-right corner on dates you specified as global or repeating holidays.

Print calendars. Click Print in the Calendars dialog box. In the Print dialog box choose Summary or Detailed, depending on the type of report you want. Enter the months and years you want the report to span, then click OK.



In a daily project, P3 prints a detailed wall calendar for each month selected. In an hourly project, P3 prints a detailed calendar report for each day of the month, with the corresponding date and workperiod number. Worktime is indicated by the number 1, and nonworktime by a dot.

Assigning Calendars to Activities

Group activities by calendar ID (choose Format, Organize), then drag an activity from one calendar-ID band to another to change calendar assignments.

P3 automatically assigns calendar 1 to all activities. If you have defined additional calendars, assign them to activities using the Activity form or Activity columns. You should assign activities to the appropriate calendar before you schedule the project.

You should assign the base calendar to task, start/finish milestone, WBS, or hammock activities. P3 uses the assigned calendar to schedule the activity and its resources for these activity types. If driving resources are assigned to an activity and its type is Independent or Meeting, P3 schedules the resources according to their individual calendars.

Assign activities to a calendar using the Activity form Display the Activity form by double-clicking an activity or choosing View, Activity Form.

Budget	Codes	Constr	Cost	Custom	Dates	Log	Pred	Res	Succ	WBS	Help
ID	AS216	Prepare Drawings for System Controller			OK	Cancel	<<Less				
OD	10	Pct	50.0	Cal	1	<input checked="" type="checkbox"/> AS	23AUG99	<input type="checkbox"/> EF	01OCT99	TF:	166
RD	5	Type	Task					<input type="checkbox"/> LF	31MAY00	FF:	0
ENG	MASON	DESIGN	DRAW	SYSTC	AM.01.1.						
Dept	Resp	Phas	Step	Item	WBS						
Classic Schedule Layout											All Activities

Click the Calendar field to select a calendar for the activity.

For more information about activity types, refer to the *Working with Activities* chapter.

Assign activities to a calendar using Activity columns Choose Format, Columns, to add Calendar ID as a column. Click the Calendar cell for the activity and press F2. Type an ID, then click .

Type a calendar ID for the selected activity.

The calendar assignments are shown in the Calendar ID column cells.

Activity ID	Planned Start	Planned Finish	Early Start	Early Finish	Cal ID
AUA401	06JAN00 08:00	06JAN00 23:59	07JAN00 07:00A	08JAN00 12:59	1
TUT026	07JAN00 06:00	07JAN00 07:59	08JAN00 09:00	08JAN00 11:59	1
TUT029	07JAN00 08:00	07JAN00 09:59	08JAN00 12:00	10JAN00 07:59	2
TUT009	11JAN00 13:00	11JAN00 21:59	12JAN00 13:00	12JAN00 21:59	1
TUT010	11JAN00 22:00	12JAN00 16:59	12JAN00 22:00	13JAN00 16:59	1
TUT012	12JAN00 08:00	12JAN00 14:59	13JAN00 06:00	13JAN00 14:59	2
TUT015	14JAN00 06:00	14JAN00 12:59	17JAN00 06:00	17JAN00 12:59	2
TUT017	14JAN00 13:00	19JAN00 07:59	17JAN00 13:00	20JAN00 07:59	2
TUT019	19JAN00 08:00	19JAN00 12:59	20JAN00 08:00	20JAN00 12:59	2
TUT022	20JAN00 06:00	20JAN00 14:59	21JAN00 06:00	21JAN00 14:59	2
TUT031	20JAN00 15:00	20JAN00 18:59	21JAN00 15:00	21JAN00 18:59	1
OPEN1					
BUB210	12JAN00 20:00	13JAN00 09:59	14JAN00 12:00	14JAN00 20:59	1
PREP					
TUT026	06JAN00 20:00	06JAN00 23:59	07JAN00 15:00A	08JAN00 06:59	1

Deleting Calendars

You can delete calendars other than the global calendar or calendar 1, but you should first assign all the activities and resources that use it as a base to another calendar. Display the calendar you want to delete, then click Delete from the Calendars dialog box. Click Yes when prompted to confirm the deletion.

If you delete a calendar and schedule a project without reassigning activities and resources to another calendar, P3 automatically assigns the activities and resources to calendar 1. P3 notes these activities in the P3.OUT file.

Resource Calendars

In this chapter:

Defining Resource Calendars

Scheduling Using Resource Calendars

Spreading Resource Use When Using Resource Calendars

Resource Calendars and Layout Organization

A resource calendar is a copy of a base (activity) calendar that you modify to reflect the resource's specific availability.

Each resource in your project can have its own calendar to accommodate the resource's work schedule. For personnel resources, you can record vacations and other scheduled nonworkperiods; for materials and equipment, record delivery, availability, lease dates, and other time-related information.

P3 uses the calendars of resources to schedule meeting and independent activities.

Defining Resource Calendars

A resource can be a person, material, funds, equipment, or anything else used during a project. Not every resource is available every day, and realistic project scheduling requires that schedulers be aware of resource availability.

Use resource calendars to accurately reflect the work schedules of your resources: personnel vacations and holidays, equipment delivery or lease dates, expected arrival dates, and so forth. P3 only uses resource calendars to schedule independent and meeting activities. When you define calendars for resources and assign those resources to activities, be sure the resources are driving and the activity type is independent or meeting.

Build resource calendars from base calendars A resource calendar is a copy of a base calendar that you can change to suit the resource's schedule. You can build a resource calendar from any base calendar defined for a project.

To meet a deadline, some resources may have to work on days that are normally nonworkdays. For example, the Testing department may have to work Saturdays—normally nonworkdays—for the last month of a project. In this case, associate the testing resources with an appropriate base calendar and add Saturdays in the last month of the project as workday exceptions to that base calendar.

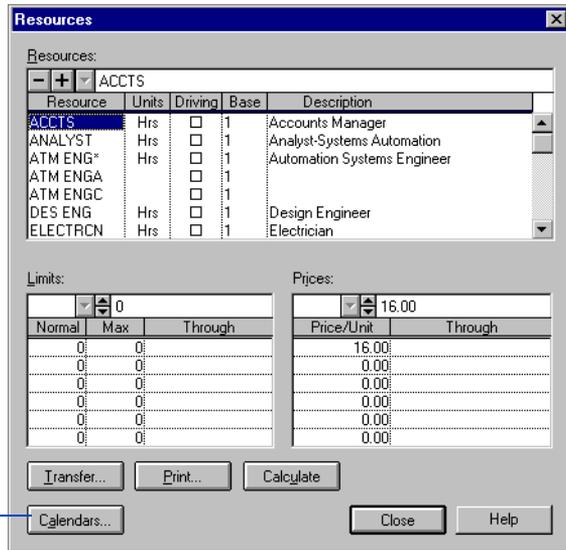
For information on defining base calendars, refer to the *Activity Calendars* chapter.

You can create any number of resource calendars from the same base calendar. For example, in a single-calendar project all resource calendars can begin as copies of calendar 1, yet each resource calendar can be unique. A project group can have up to 2,340 resource calendars.

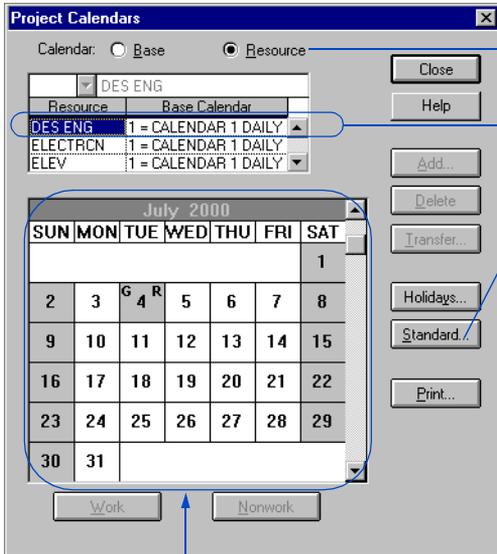
For more information about assigning access rights, refer to the *Creating and Managing Project Groups* chapter.

To add or modify resource calendars and their base-calendar assignments, the owner of the project group must grant the user unrestricted access to modify calendars.

Choose Data, Resources, to open the Resources dialog box.



1 Click Calendars to open the Project Calendars dialog box.



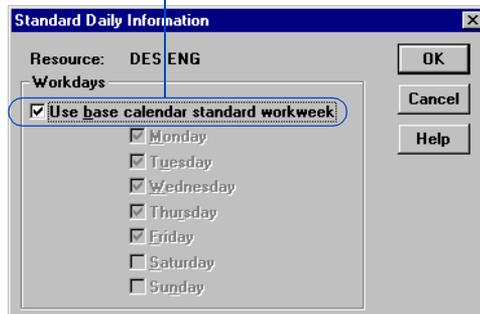
2 Choose Resource to edit resource calendars.

3 Select the resource for which you want to define a calendar. Right-click the Base Calendar column to choose a different base calendar for the resource.

4 Click Standard to open the Standard Daily Information dialog box for daily projects, the Standard Hourly Information dialog box for hourly projects, and so forth.

5 Specify whether to base the resource calendar's workweek on its base calendar's standard workweek or modify the workweek for the resource.

6 Record or modify resource holidays, vacations, or other expected nonworkperiods not already part of the base calendar.



For details about obtaining exclusive access to a project, refer to *Setting Access Rights for the Project* in the *Projects and Layouts* chapter.

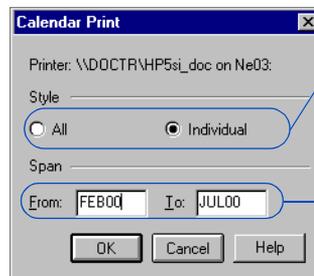
If you are not the owner of a project, you may not have rights to change the setting of the Use Base Calendar Standard Workweek checkbox. In this case, if the standard workweek for the base calendar is unsuitable for the resource calendar, you can base the resource calendar on a different base calendar.



Changes to holidays and exceptions in a base calendar affect all resource calendars derived from it. If your resource calendar uses its base calendar's standard workweek, changes to that standard workweek also affect the resource calendar.

Printing Resource Calendars

Print a resource calendar from its Project Calendars dialog box. Choose Data, Calendars, to open the Project Calendars dialog box; choose Resource, then click Print to open the Calendar Print dialog box. Specify a style and date span, then click OK.



Choose whether to print an individual resource calendar for the currently selected resource, or to print all resource calendars.

Specify the date span for the printout.

To change the output destination or printer, choose File, Print Setup, or change the Windows default printer setting using the Printers option in Windows Control Panel.

Scheduling Using Resource Calendars

Once you define unique calendars for resources, assign those resources to activities. Designate the resources as driving and the activity type as independent or meeting. P3 schedules the activity according to when those resources work. P3 uses the activity's resource calendars—not the activity's base calendar—when scheduling the resources.



When scheduling task activities, P3 ignores resource calendars and always uses the activity's base calendar.

P3 schedules an independent activity according to predecessor logic and the times its resources are scheduled to work. If you use one or more driving resources on an activity, set the activity type as independent. P3 schedules work to occur based on the resource calendars of the driving resources. The activity's overall duration is the number of workperiods, as counted on the base calendar for the activity, between the earliest early start of all driving resources and the latest early finish of all driving resources.

P3 calculates the duration of a meeting activity based on the driving resource with the longest duration. P3 schedules the activity using a calendar that is a combination of the worktime for all driving resources. The activity's overall duration is the number of workperiods, as counted on the base calendar for the activity, between the start and finish of the driving resource with the longest duration.

Leveling Leveling considers not only the resource calendars but the quantity of each resource available according to the limits and through dates specified in the Resource Dictionary.

Spreading Resource Use When Using Resource Calendars

P3 considers resource calendars as it spreads the actual and estimated resource use for your project. Actual to date use of resources is spread from the resource's start through the data date, and any nonworkperiods defined in the resource calendars are skipped. P3 spreads resources assigned to the activity according to the base calendar for the activity. If you are storing period performance, use is spread based on the actual data you recorded. P3 honors any nonlinear resource curves assigned to non-driving resources.



Do not apply nonlinear resource curves to driving resources.

Modifying calendars If you change a calendar, P3 spreads resource use according to the new calendar. For example, if Roy is a driving resource assigned to Task A and Roy's resource calendar has five working days and two nonworkdays, P3 spreads actuals for Task A over five days as specified in the resource calendar. If you change Roy's resource calendar to include four working days and three nonworkdays, P3 spreads actuals for Task A over the four days specified in the calendar.

Calculating planned value P3 accounts for each driving resource calendar when calculating the planned value, or budgeted cost for work scheduled (BCWS). All planned value data displayed in P3 layouts reflect the driving resource calendars, planned value data shown in custom reports, Global changes, resource/cost graphics, and resource matrix reports. P3 uses the resource calendars of independent activities when calculating earned value and planned value for use in earned value reports and data export. P3 bases the earned value and planned value of task activities on the activity's base calendar.

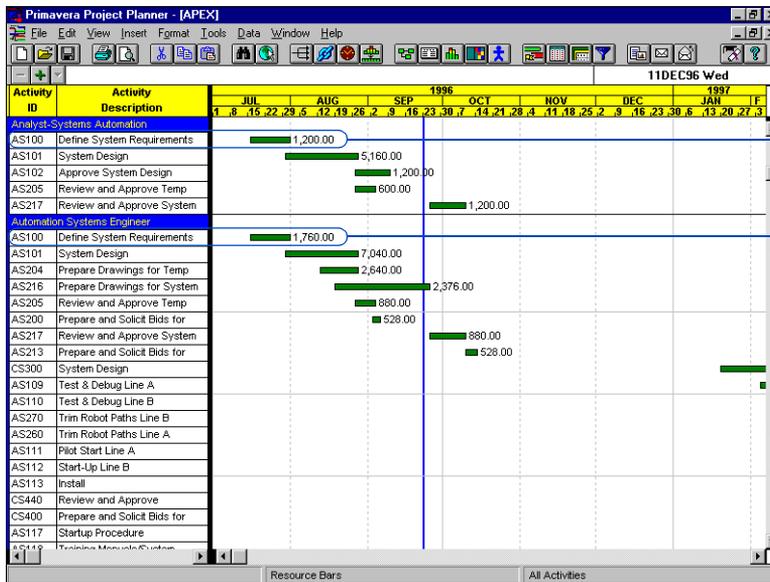
Importing and globally changing data During data import and Global change, you can apply, delete, or modify driving resources. During these operations, P3 does not immediately redistribute resources and their costs. If you use driving resources, reschedule the project after importing data or after making any resource- or duration-related Global changes.

Resource Calendars and Layout Organization

Whether or not they are organized by resource, P3 layouts can reflect information about resource calendars.

Displaying resource information when not organized by resource If a layout is not organized by resource, you can display resource data by formatting activity bars based on their resource dates. Set the start and end points for the bars to indicate resource dates rather than activity dates. P3 summarizes the dates of all resources for each activity, drawing each activity bar based on its summary resource dates. You can also set up a Resource column; P3 displays each resource assigned to an activity in the column cell.

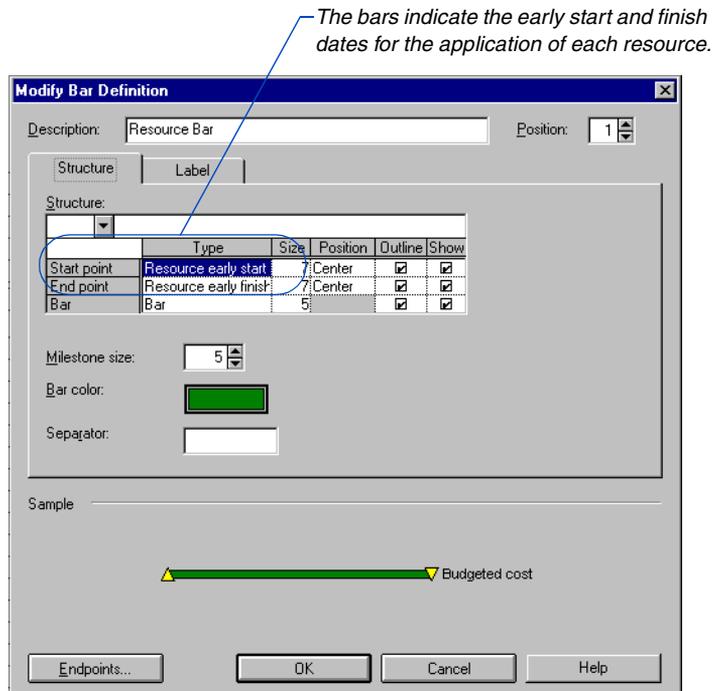
Formatting bars when organized by resource When the Bar chart is organized by resource, you can format activity bars to begin or end on any resource-related date, including early or late resource start or finish dates for the current and target projects. In addition, you can display any of these resource dates as text around the bars.



Because this layout is grouped by resource, activities using more than one resource are repeated for each resource.



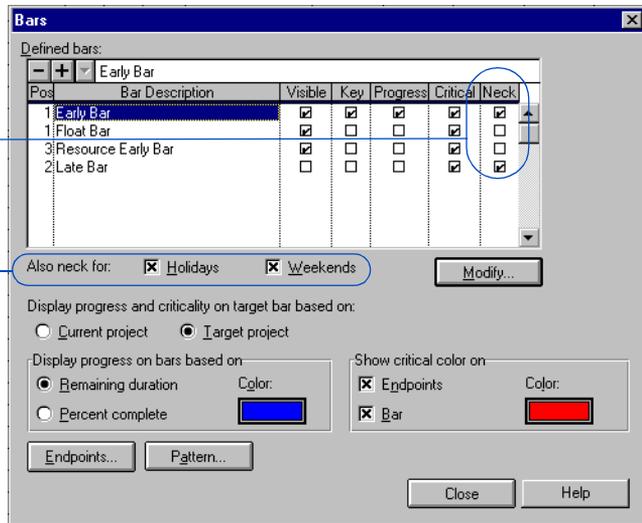
You cannot drag resource bars or stretch their start or end dates.



Summarizing by resource When you summarize a layout by resource, you cannot drag summary bars or move their endpoints. The summarized resource early start is the early start of the earliest resource; the summarized resource early finish is the latest resource.

For more information on necking bars, refer to the *Necking Bars (Indenting)* section in the *Summarizing Data* chapter.

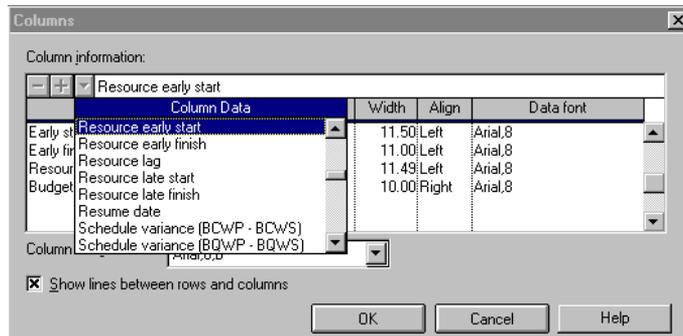
Necking bars You can clearly visualize available worktime and nonworktime for resources by “necking” resource bars. First, display a resource bar and mark the Neck option; then organize the Bar chart by resource (Format, Organize.) When you organize a Bar chart by resource, necking a resource bar reflects the resource’s calendar rather than the activity’s base calendar. Necking does not reflect resource splitting, stretching, or crunching.



Mark the checkbox to neck the bar indicating time when no work is scheduled.

Mark these options to neck the bars based on standard nonworktime.

Formatting columns When formatting Activity column for the Bar chart, you can include any early or late resource dates from the current or target projects. You cannot edit these dates.



Work Breakdown Structure Codes

In this chapter:

Breaking Down Project Components

Organizing Activities by WBS Codes

Setting Up a WBS Level Structure

Outlining the WBS

Assigning WBS Codes to Activities in a Work Breakdown Outline

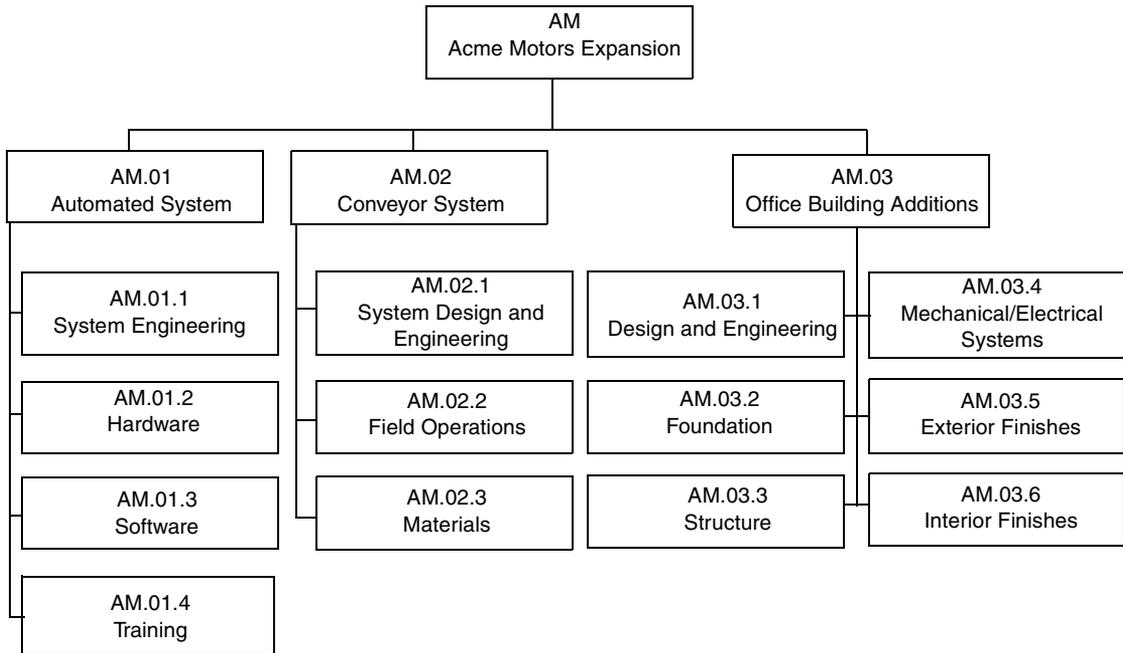
Assigning WBS Codes Using Forms and Global Change

Summarizing by WBS Code

A Work Breakdown Structure (WBS) is a hierarchy of work to be accomplished to complete a project. The highest WBS level is the final product; below it are increasingly detailed levels of work elements. Read this chapter to gain an overview of using WBS codes to plan a project and analyze costs and schedules.

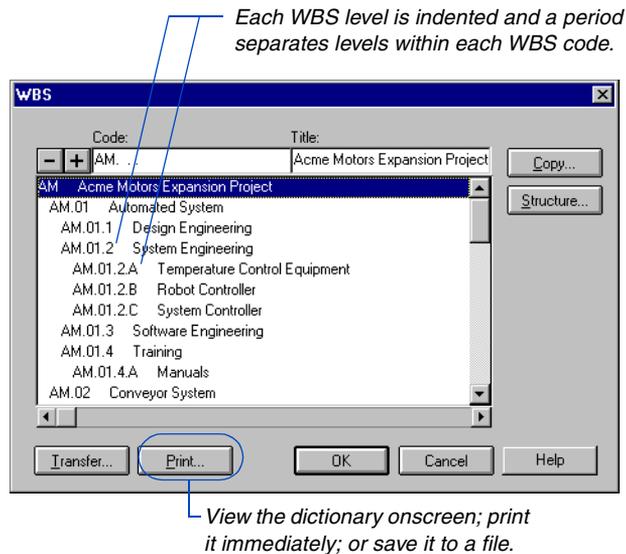
Breaking Down Project Components

The following example shows a partial WBS for the sample project APEX. In this project, three major components must be completed to achieve the goal of an expanded and modernized automobile production plant: an automated system, a new conveyor system, and an office building addition. Each major component is separated into smaller components.



First, outline the project components using codes and titles in the WBS Dictionary. To ensure that you include all important steps and events, list the major components first. Subdivide each major component into smaller components.

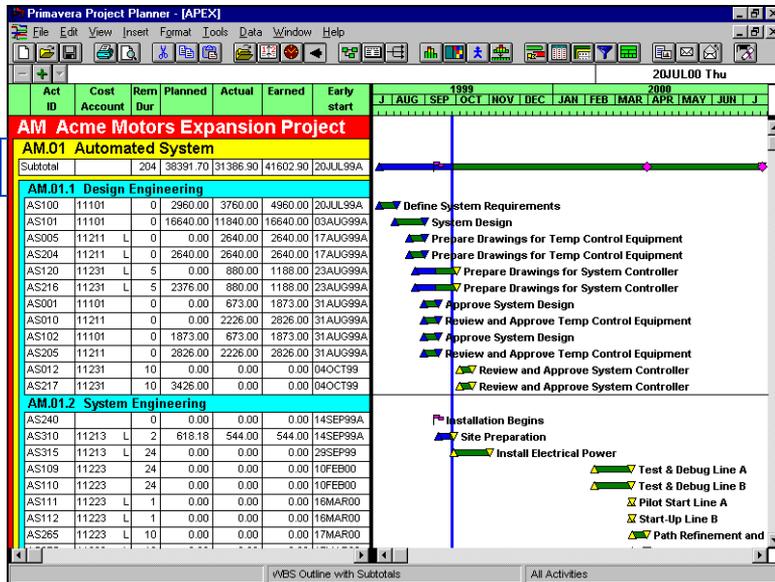
Use a coding scheme that clearly conveys the relationships between levels. For example, if AM.01 represents the automated system, begin the code for each of its subcomponents with AM.01. Separate the levels with a character such as a period. A branch consists of a code and its subordinates. You can quickly create a WBS by copying branches or transferring the entire WBS from an existing project that contains steps similar to those required for the new project.



Organizing Activities by WBS Codes

You can create an outline of your project based on its WBS. Activities with the same WBS code are banded, or grouped together. Choose Format, Organize, then choose Work Breakdown to display activities in outline mode.

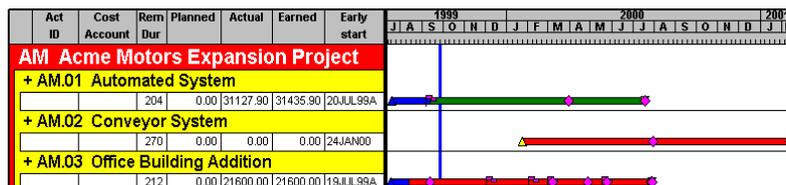
WBS-level bands identify each project component.



You can print the WBS outline by choosing File, Print, and printing the Bar chart layout. For more information, refer to the Printing Layouts chapter.

P3 can automatically assign WBS codes to new activities. For example, select the WBS-level band for AM.01.2 and choose Insert, Activity, to add an activity; P3 assigns AM.01.2 as the WBS code for the new activity.

To analyze the budget and schedule, summarize data by WBS code. The following example shows a portion of a layout that summarizes the budget and schedule for each major component. The summary bars show the start and finish times for all activities in each component.

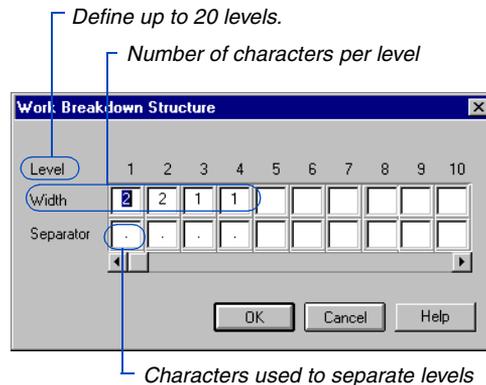


Setting Up a WBS Level Structure

When you create a project, the WBS Dictionary is predefined with one level containing 10 characters. If your WBS does not match this structure, you can modify the standard structure. You can define up to 20 levels using a total of 48 characters. Each level cannot exceed 10 characters. Specify a separator character to distinguish each level. The default separator is a period; you can change it to any character.

Define WBS codes Choose Data, WBS. In the WBS dialog box, click Structure. Enter a number from 1 to 10 in the Width cell beneath the appropriate level.

In the Separator cell, specify the character you want to use. You can use the same or unique characters for each level. Continue to specify widths for each level. Use the scroll bar at the bottom of the WBS Structure dialog box to move to levels above 10.

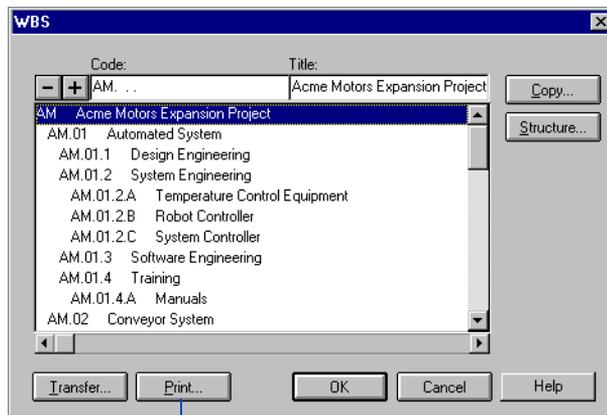


To delete a level, press Backspace in the Width cell or select the cell and press Delete. When you delete a level, P3 deletes all codes and titles at that level and also deletes succeeding levels. For example, if six levels are defined and you delete level 5, P3 deletes the codes and titles for levels 5 and 6.

Outlining the WBS

Use the WBS dialog box to create WBS codes and titles. When you add WBS codes, P3 automatically places each new code in the correct location in the outline.

Add WBS codes and titles Choose Data, WBS, then click . Enter a code and click . Codes can consist of any alphanumeric character except an asterisk. Spaces can also be used, except for the first character in the first level. The code already includes separators.



Print the WBS and review before assigning codes to activities.

You can copy the WBS Dictionary from another project to the current project. The transferred structure overwrites the existing WBS structure; however, codes from the previous WBS remain assigned to activities.

You can also enter a code at the lowest level to create an entire branch at once. For example, instead of selecting three times to create codes AM.04, AM.04.1, and AM.04.1.A, enter AM.04.1.A as the first code; P3 creates all three codes at once. To enter a title for each code, click the Title field portion of the edit bar, type a title, and click .

Delete WBS codes Select the code you want to delete and click . P3 also deletes all descendent (indented) codes for the code you delete. Click OK to confirm the deletion.

Copy WBS branches Select the code you want to copy. Click Copy in the WBS dialog box and specify the new code. Click OK to create the new branch. P3 automatically copies the descendent codes. P3 also copies code titles, but you can change them.

Assigning WBS Codes to Activities in a Work Breakdown Outline

P3 can assign WBS codes automatically as you build your project. First, create the WBS structure and codes, then display an outline of the project based on its WBS.

Organize by work breakdown Choose Format, Organize, then choose Work Breakdown in the Organize dialog box.

P3 automatically displays all defined WBS levels in the Group By column. Use the Font, Bkgrnd (background), and Text columns to modify the font, background, and text colors for each WBS-level band. P3 shows a text sample for the WBS-level band in the Sample section at the bottom of the Organize dialog box.

Hide a WBS level by choosing blank in the Visible column.

Select Yes in the New Page column to start a new page for each WBS level when printing.

Group By	Visible	Font	Bkgrnd	Text	New page	Total
Level 1	Yes	Arial,14,B	Red	Black	Yes	Bottom
Level 2	Yes	Arial,12,B	Yellow	Black	Yes	Top
Level 3	Yes	Arial,10,B	Cyan	Black	No	None
Level 4	Yes	Arial,8,B	Green	Black	No	None

Sort by:

Sort on	Order
Early start	Ascend

Choose how to sort the activities within each WBS level.

After you click Organize Now in the Organize dialog box, P3 groups and sorts activities according to their WBS code assignments.

If activities have already been assigned WBS codes but you want to view the WBS outline without activities, run the No Activities filter (choose Format, Filter). P3 displays only the WBS-level bands.

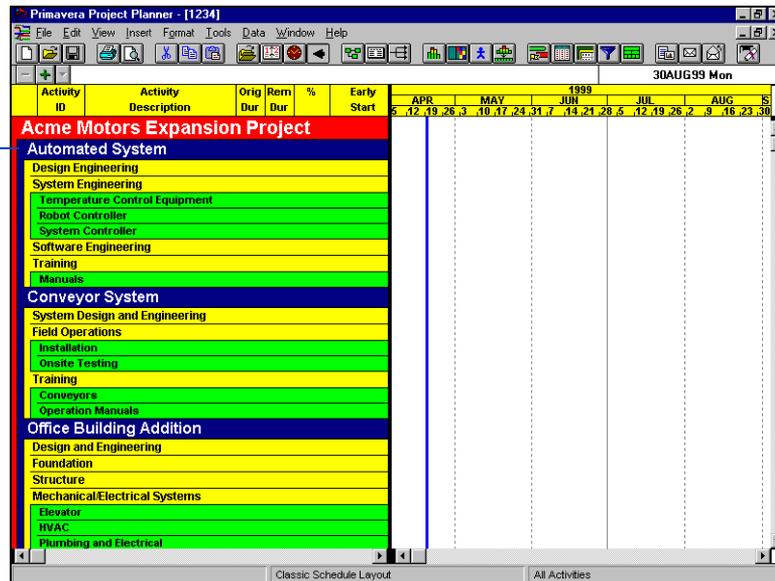
For more information about grouping activities by WBS, refer to the *Grouping and Sorting Layouts* chapter.

Assign WBS codes to activities If you organize by work breakdown, P3 lists activities without WBS code assignments at the top of the outline in an Uncategorized group. Use this as an indicator as to which activities are not yet assigned to a WBS code.

You can move an activity from one WBS-level band to another in the WBS outline. Click the middle of the left-most column for the activity whose WBS you want to change, then drag the mouse up or down to a row in the appropriate WBS-level band.

If you are building a new project and have not yet added any activities, P3 displays only the WBS-level bands for each WBS code, as shown in the following example. You can then build the project by adding the activities within the appropriate WBS-level bands. P3 automatically assigns the WBS codes. (Be sure the Display Empty Work Breakdown Levels checkbox in the Organize dialog box is marked.)

Select a WBS-level band, then choose Insert, Activity, to add a new activity and assign the WBS code.

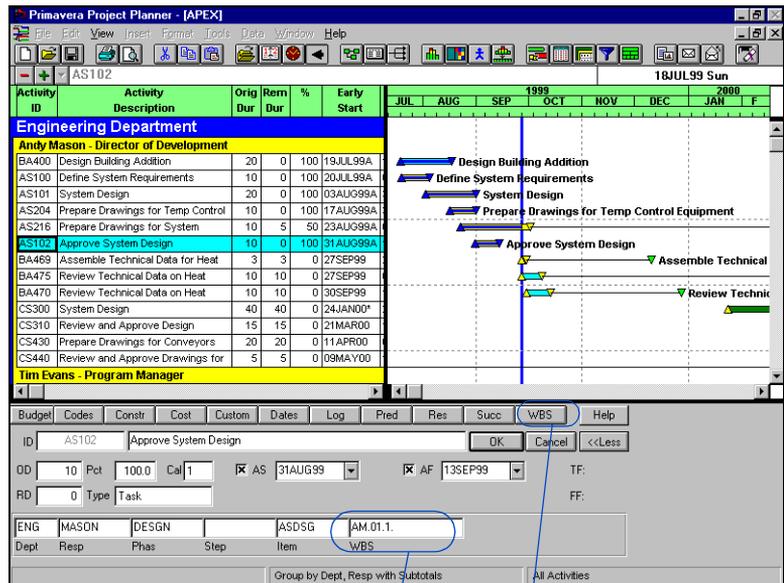


Assigning WBS Codes Using Forms and Global Change

When you use the Activity form to assign a WBS code to an activity, WBS codes need not be defined in the WBS Dictionary before you assign them to activities. However, if you want to show WBS titles in layouts and reports, you must define titles for the values in the WBS Dictionary dialog box.

To keep the Activity form displayed so you can assign WBS codes to several activities, choose View, Activity Form, then select an activity.

Assign WBS codes using the Activity form Double-click an activity in the Activity columns to display the Activity form. Click the WBS field, then click to select an existing code or type a new code. Click OK. P3 prompts you to add a new code to the WBS Dictionary. You can also specify a title. Click OK and P3 adds the entire branch to the WBS Dictionary. For example, if you specify AM.03.7.A, P3 also adds the branch AM.03.7 to the dictionary. P3 automatically saves your edits.



Select an existing code or type a new code in the WBS field, or click WBS to open the WBS form.

If you open the Activity form using View, Activity Form, P3 replaces OK and Cancel with Previous and Next, which you can use to display another activity.

Assign WBS codes using the WBS form Click WBS in the Activity form; or right-click an activity, choose Activity Detail, then WBS. Click the WBS field, then click to select an existing code, or type a new code. When you click anywhere outside the dialog box, P3 prompts you to add a new code to the WBS Dictionary. You can also specify a title. Click OK and P3 adds the entire branch to the WBS Dictionary. P3 automatically saves your edits.

Assign WBS codes using Global Change Choose Tools, Global Change, then click Add to create a new specification that assigns codes to activities. The following example shows a Global Change specification that assigns a WBS code to all activities that are part of the Structural phase.

GL-09 APEX - Global Change

Title: Assign WBS Code AM.03.3 to Structural Acts.

Trial run

Run

Change Selection

Selection Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	PHAS	EQ	STRUC		
or					
or					
Then:	WBS	EQ	AM.03.3		
Else:					

Transfer... OK Cancel Help

The If statement uses the PHAS activity code to select all structural activities.

The Then statement uses the WBS data item to assign AM.03.3 as the WBS code for these activities.

Activity and Project Codes

In this chapter:

Creating Activity Codes and Values

Assigning Activity Codes Using Columns

Modifying Activity Codes and Values

Coding Activity IDs

Combining Codes into Aliases

Coding Projects

Grouping and Summarizing by Codes

Use the Activity Codes Dictionary to define a set of codes you can use to categorize activities in your projects. You can then organize, group, select, and summarize activities; and produce reports and graphics based on the defined codes.

You can also organize the member projects in a project group according to specific categories, such as location and manager, using project codes. Establish project codes to fulfill the filtering, sorting, and reporting requirements for your member projects. Project codes are especially helpful when many member projects comprise a project group.

Read this chapter to learn how to set up codes dictionaries, assign codes to activities and projects, and use codes to organize your layouts.

Creating Activity Codes and Values

You can define activity codes to classify activities into specific groups for organizing and sorting data in projects. Once you set up the coding for your project in the Activity Codes Dictionary, you can assign these values to activities.

Activity codes are categories such as area, phase, department, responsibility, location, or subcontractor. For each code, define specific values, each with a description that can appear in layouts, printed reports, and graphics. For example, use the Responsibility code to list individual managers or team leaders.

Define activity codes Choose Data, Activity Codes, then click the Activity Codes tab. For each code you want to define, type a name containing up to four alphanumeric characters, specify a length of up to 10 characters, and type a description.

Create up to 20 code classifications.

Defines the maximum length of each code value, up to a total of 64 characters.

The number of values per classification is unlimited.

Click to print the Activity Codes Dictionary to serve as a reference.

Activity Codes Dictionary

Activity codes | Activity ID | Alias

Codes:

#	Name	Length	Description
1	DEPT	3	Department
2	RESP	5	Responsibility
3	PHAS	5	Phase
4	STEP	5	Step

41 characters remaining

Values: DEPT

Value	Description	Order
ENG	Engineering Department	1
PCH	Purchasing Department	2
ISD	Information Systems Department	3
CON	Construction Department	4

Transfer... Print... Refresh

When new code values occur in project, validate against dictionary

Close Help

Use order numbers to determine the order of values when you group and summarize by activity codes.

Define values and descriptions In the Codes section of the Activity Codes tab, select the activity code to which you want to assign values and descriptions. In the Values section, type a value and description. Specify an order number from 1 to 255 if you want the value to appear in an order other than the default alphanumeric sequence.

Transfer activity codes You can copy the Activity Codes Dictionary from another project. P3 overwrites the codes, values, and descriptions for the current project but does not erase values already assigned to activities in the current project.

Click Transfer in the Activity Codes Dictionary dialog box and select the project containing the codes you want to transfer. Use the Drives and Folders fields to select a project that is not located in the current folder.

Creating Standard Activity Codes

P3 automatically provides six activity codes for a new project: RESP (responsibility), AREA (area/department), MILE (milestone), ITEM (item name), LOCN (location), and STEP (step). If you have a project group, P3 also provides the SUBP (member project) code.

For new projects, you can use the codes P3 provides, modify them, or create your own. Choose Tools, Options, Default Activity Codes, to predefine up to 20 codes for new projects. If most of your projects contain similar coding structures, use the default codes for new projects instead of establishing them for each project.

If you open a project and then change the default codes P3 provides, any new projects you create will contain the changed default codes, but not the currently open project.

The Default Activity Codes dialog box contains the same columns as the Codes section in the Activity Codes Dictionary dialog box. To create standard activity codes, follow the same steps for defining activity code values and descriptions.

For information about grouping and sorting activities based on activity codes, refer to the *Grouping and Sorting Layouts* chapter.

Assigning Activity Codes Using Columns

You can categorize individual activities by assigning activity code values to them. Values need not be defined in the Activity Codes Dictionary before you assign them to activities. However, to show descriptions in layouts, reports, and graphics, you must define descriptions for the values in the Activity Codes Dictionary dialog box.

You can also use Global Change to assign or revise activity codes globally.

Use Activity columns to assign or revise codes for an entire list of activities or to drag activities to a different activity code band for reassignment. You can also use the Activity form or the Activity Codes form to assign or revise code values for a specific activity.

Assign/change code values using Activity columns Add the activity code as a column. Select the Activity Code cell for the activity and press F2. Then type a code value in the edit bar or select one from the drop-down list and press Enter.

To edit the value...

Activity ID	Activity Description	RESP	PHAS
Engineering Department			
Andy Mason - Director of Development			
BA400	Design Building Addition	MASON	DESGN
AS100	Define System Requirements	MASON	DESGN
AS101	System Design	MASON	DESGN
AS204	Prepare Drawings for Temp	MASON	DESGN
AS216	Prepare Drawings for	MASON	DESGN
AS102	Approve System Design	MASON	DESGN
BA469	Assemble Technical Data for	MASON	DESGN

...select the activity code cell.

Copy an activity code value to other activities Select the activity code cell containing the assignment you want to copy; press Ctrl and drag the mouse to highlight one or more contiguous activities to which you want to copy the indicated code value. If activities are not contiguous, select each activity while pressing Ctrl.

Choose Edit, Fill Cell. P3 copies the activity code value from the selected cell (indicated by the black box) to the highlighted activities.

Activity ID	Activity Description	RESP	PHAS
Engineering Department			
Andy Mason - Director of Development			
BA400	Design Building Addition	MASON	DESGN
AS100	Define System Requirements	MASON	DESGN
AS101	System Design	MASON	DESGN
AS204	Prepare Drawings for Temp	MASON	DESGN
AS216	Prepare Drawings for	MASON	DESGN
AS102	Approve System Design	MASON	DESGN
BA469	Assemble Technical Data for	MASON	DESGN
BA470	Review Technical Data on	MASON	DESGN
CS300	System Design	MASON	DESGN

Use Edit, Fill Cell, to assign the same activity code value to several activities.

Reassign codes You can also change activity code assignments by dragging an activity from one activity code band to another. Point to the middle of the left-most column, then drag the mouse up or down to a row in the appropriate activity code band.

Activity ID	Activity Description	RESP	PHAS
System Integration Phase II			
Linda Haris - Director of Software Engineering			
AS113	Install	HARIS	SYS2
AS115	Load System Software	HARIS	SYS2
AS116	Program	HARIS	SYS2
AS280	Test Software	HARIS	SYS2
AS285	Debug Software	HARIS	SYS2
AS500	Automatic Operation Ready	HARIS	SYS2
Tim Evans - Program Manager			
AS600	Manual Operation Ready	EVANS	SYS2
AS150	Production Start	EVANS	SYS2

Activity ID	Activity Description	RESP	PHAS
System Integration Phase II			
Linda Haris - Director of Software Engineering			
AS115	Load System Software	HARIS	SYS2
AS116	Program	HARIS	SYS2
AS280	Test Software	HARIS	SYS2
AS285	Debug Software	HARIS	SYS2
AS500	Automatic Operation Ready	HARIS	SYS2
Tim Evans - Program Manager			
AS113	Install	EVANS	SYS2
AS150	Production Start	EVANS	SYS2
AS600	Manual Operation Ready	EVANS	SYS2

Drag activities between bands to reassign values.

For more information about copying activity codes, refer to the *Working with Activities* chapter.



You cannot move activities between groups when the activities are grouped by activity ID code.

Modifying Activity Codes and Values

You may need to change the activity coding structure for a project after it is established, for example, to insert a new code value between existing ones.

You can also modify the length of values for an existing code. For example, suppose you specify one character as the length for the AREA code and you want to increase the length to two characters. In the Activity Codes Dictionary, change the entry in the Length column to 2; P3 automatically appends a blank space to all code value fields for that name.



You must have Exclusive access to a project before you can modify the coding structure.

Insert new code names In the Codes section of the Activity Codes tab, select the code name that you want the new one to precede. Click  and type a name, length, and description; P3 automatically adjusts the order of the succeeding codes. Click Close when you finish inserting names.

Insert new code values In the Values section of the Activity Codes tab, select the code value that you want the new one to precede. Click  and type a code description and sequence number; P3 automatically adjusts the order of the succeeding codes. Click Close when you finish inserting code values.

Coding Activity IDs

You can classify the characters of an activity ID into different parts to give each part special meaning. By building “intelligence” into activity IDs, you can increase your ability to organize, select, and summarize activities. For example, if a project involves producing several products, each of which requires similar development phases, you can code activity IDs so each activity is easily identified by product and phase.

Click the Activity ID tab in the Activity Codes Dictionary dialog box.

The maximum number of ID codes is four.

P3 assigns SUBP as the first name when a project is added to the project group.

Activity ID	Activity Description	RESP	PHAS
Conveyor System			
Engineering Department			
CS300	System Design	MASON	DESGN
CS310	Review and Approve Design	MASON	DESGN
CS430	Prepare Drawings for Conveyors	MASON	DESGN
CS440	Review and Approve Drawings for Conveyors	MASON	DESGN

Conveyor System activities share the same first two ID characters.

You don't need to classify the entire activity ID into different categories. However, you can select, group, and organize only for the classified portions.

Set up the activity ID codes the same way you classify activity codes (described earlier in this chapter). An activity ID can contain up to 10 characters. You can define up to four ID codes. The total length of all ID codes cannot exceed 10 characters. For each code, define the length of the values within that category.

Code 1 for activity IDs always starts in the first position of the activity ID field. Use the same justification as the IDs in your project. For example, if your activity IDs are entirely numeric, P3 automatically justifies the IDs to the right. If the activity IDs are four characters long, they start in the seventh position of the activity ID field. To sort and select by activity ID codes that start in the seventh position, set up Code 1 as a dummy activity ID code occupying the first six positions. Code 2 begins at position 7, where the activity ID begins.



The SUBP code should always be the first code if projects exist for the project group.

Use the following example as a guide when coding numeric activity IDs:

#	Name	Length	Description
1	DUMM	6	Dummy Code
2	AREA	4	Area/Department

ID 9999

Positions 1-6

Positions 7-10

Combining Codes into Aliases

You can create combined codes, called aliases, that enable you to produce reports and graphics that contain a higher level of detail. For example, you may want to print summary reports by a combination of phase and responsibility. You can also group activities and skip pages or lines in reports/graphics by aliases; P3 automatically prints the alias description before each group of activities. Aliases are available for printed reports and graphics only—not layouts.

You can also use aliases to summarize data from one or more projects into a single project.

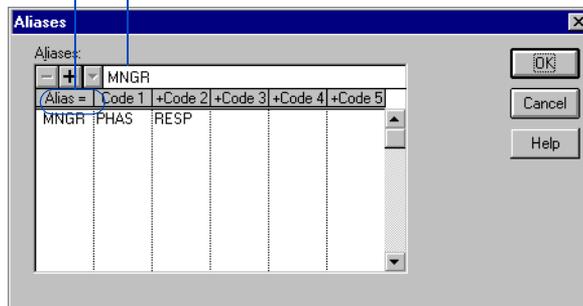


Project codes cannot be part of an alias.

Define aliases Create an alias by joining two to five activity codes or two to four activity ID codes. To combine both activity codes and activity ID codes in one alias, join two to four codes. Click the Alias tab in the Activity Codes Dictionary dialog box, then click Define Aliases.

Type an alias containing up to four alphanumeric characters.

Join the Phase and Responsibility codes to create a Manager alias.



Define alias values and descriptions In the Activity Codes Dictionary dialog box, click the Alias tab, then select the alias code for which you want to define values and descriptions. The Length column for each alias contains the combined total number of characters for each code used in the alias. This value cannot exceed 10 characters per alias code. Keep this in mind as you define values for the alias. You should print out your Activity Codes Dictionary to use as a reference when entering values.

Type code values, and, optionally, descriptions in the Values section. Make sure the code values match existing values for the classifications. You should include a description for each value to make the reports and graphics more meaningful when you use the alias in printed output.

Activity Codes Dictionary

Activity codes Activity ID Alias

Define Aliases...

Codes:

#	Name	Length	Description
1	MNGR	10	PHAS + RESP

Values: MNGR (PHAS + RESP)

Value	Description	Order
CLOSENOLAN	Close-In Phase-Nolan's Responsibility	
DESGNACME	Design Phase-Acme Motor's Responsibility	
DESGNMASON	Design Phase-Mason's Responsibility	
DESGNNOLAN	Design Phase-Nolan's Responsibility	
FINSHNOLAN	Finishes Phase-Nolan's Responsibility	

Transfer... Print... Refresh

When new code values occur in project, validate against dictionary

Close Help

Make sure the values match existing values in the Activity Codes Dictionary for the combined codes.

For more information about combining bands, see the *Grouping and Sorting Layouts* chapter.

Grouping with Combined Bands

When printing layouts, you can organize activities by one or more data items and then combine the bands of activities into one band to further consolidate information. Combining bands provides another way to group information in layouts, similar to using aliases for printed reports and graphics. You can then review the displayed layout onscreen, or print it for further evaluation or distribution to appropriate personnel. For example, combine the phase, responsibility, and member project codes into one band for distribution to the managers of those projects. Choose Format, Organize, select the data items you want to group, then mark the Display All Values in One Band checkbox. You can show the value, description, or both for the items in each band; click Options in the Organize dialog box to set your display preferences.

The screenshot shows the Primavera Project Planner interface with a Gantt chart. The chart displays various activities grouped into colored bands. The bands are labeled with phase and responsibility information, such as 'Design and Engineering Phase - Andy Mason - Director of Development - Office Building Addition'. The Gantt chart shows activity durations and dependencies across a timeline from 1999 to 2000.

Act ID	Activity Description	Cost Account	Orig Dur	Rem Dur	% Comp	Early start	Early finish	Late Start	Late Finish	Resource ID	
AS204	Prepare Drawings for Temp Control Equipment	11211	L	10	0	100	17AUG99A	31AUG99A	17AUG99A	31AUG99A	ATM ENG
AS216	Prepare Drawings for System Controller	11231	L	10	5	50	23AUG99A	01OCT99	23AUG99A	31MAY00	ATM ENG
AS102	Approve System Design	11101		10	0	100	31AUG99A	13SEP99A	31AUG99A	13SEP99A	PRG MGR,
Design and Engineering Phase - Andy Mason - Director of Development - Office Building Addition											
BA400	Design Building Addition	13106	L	20	0	100	19JUL99A	17AUG99A	19JUL99A	17AUG99A	DES ENG
BA469	Assemble Technical Data for Heat Pump	13106	L	3	3	0	27SEP99	29SEP99	08DEC99	10DEC99	DES ENG
BA475	Review Technical Data on Heat Pumps	13106	L	10	10	0	27SEP99	08OCT99	31JAN01	13FEB01	DES ENG
BA470	Review Technical Data on Heat Pumps	13106	L	10	10	0	30SEP99	13OCT99	13DEC99	27DEC99	DES ENG
Design and Engineering Phase - Andy Mason - Director of Development - Conveyor System											
CS300	System Design	12101	L	40	40	0	24JAN00*	20MAR00	27JAN00	23MAR00	ATM ENG
CS310	Review and Approve Design	12101	L	15	15	0	21MAR00	10APR00	24MAR00	13APR00	PRG MGR
CS430	Prepare Drawings for Conveyors	12311	L	20	20	0	11APR00	08MAY00	14APR00	11MAY00	DES ENG
CS440	Review and Approve Drawings for Conveyors	12311		5	5	0	09MAY00	15MAY00	12MAY00	18MAY00	PRG MGR,
Design and Engineering Phase - Tim Evans - Program Manager - Robotics Automation System											
AS205	Review and Approve Temp Control Equipment	11211		5	0	100	31AUG99A	13SEP99A	31AUG99A	13SEP99A	ATM ENG,
AS217	Review and Approve System Controller	11231		10	10	0	04OCT99	15OCT99	01JUN00	14JUN00	ATM ENG,
Design and Engineering Phase - Acme Motors - Owner - Office Building Addition											
BA501	Review and Approve Designs	13106	L	14	0	100	18AUG99A	08SEP99A	18AUG99A	08SEP99A	DES ENG
Procurement Phase - Tim Evans - Program Manager - Robotics Automation System											
AS010	Review and Approve Temp Control Equipment	11211		5	0	100	31AUG99A	13SEP99A	31AUG99A	13SEP99A	ATM ENG,
AS012	Review and Approve System Controller	11231		10	10	0	04OCT99	15OCT99	01JUN00	14JUN00	ATM ENG,
Procurement Phase - Meg Foley - Purchasing Manager - Robotics Automation System											
AS200	Prepare and Solicit Bids for Temp Control Equip	11213		5	0	100	07SEP99A	15SEP99A	07SEP99A	15SEP99A	ACCTS,
AS201	Review Bids for Temp Control Equipment	11213		2	0	100	20SEP99A	21SEP99A	20SEP99A	21SEP99A	PRG MGR,
AS202	Award Contract for Temp Control Equipment	11213	L	1	0	100	21SEP99A	21SEP99A	21SEP99A	21SEP99A	ACCTS

Coding Projects

If you use project groups, you can set up codes for tracking items at the project level. For example, define project codes to categorize member projects into groups that can be combined in a single band on a layout. You can also use these codes to sort, filter, and report using project-level data. Set up project codes by project group, then define the values that will be assigned to member projects and assign the values to the projects.

P3 supplies 10 default project codes. This is the maximum number of codes that can be assigned to a project group in the Project Codes Dictionary. You can use these codes as described and define your own values for each one, or you can change the descriptions to better suit your organization. For example, you may want to replace the default Project Manager code description with Team Leader.

Define project codes and values With a project group open, choose Data, Project Codes. You can also choose File, Project Overview, and then click Project Codes. Define up to 10 project code descriptions; click a project code description and type a new description in the edit bar.

To add values to a project code, type the values and descriptions in the Values section of the Project Code Definition tab.

Supply up to 10 characters per value.

Click to update a target, or other project, with the Project Codes Dictionary.

Value	Description	Order
BALA	Bala Cynwyd, PA	
CENT HARB	Center Harbor, NH	
CHICAGO	Chicago, IL	
LONDON	London, England	
SAN FRAN	San Francisco, CA	

Use the Order column to specify the order of values by entering the appropriate number for each value in the list. The order numbers of the values determine the order of bands when you organize a project by a project code. Click Close when you have finished adding codes and values.

Assign project code values Open the member project for which you want to assign project code values. Choose Data, Project Codes, and click the Values for Project tab. You can also choose File, Project Overview, then click Project Codes. The project codes predefined in the project group are displayed in the Code column. Click the Value cell for the applicable code, then select the value from the drop-down list in the edit bar.

All activities in the project are automatically assigned the project code value.

Code	Value
Project Manager	DANL
Status	A
Project Location	BALA
Reason	
Industry	
Division	
Plan Prepared By	
Key Contact	
Priority	
Currency	

Click Close when you have finished assigning project code values to the member project. The project code values you assign in a project need not be defined in the project group; you can add new values from the member project using the Project Code Definition tab. If necessary, you can add, edit, and delete project code values and titles. P3 automatically changes the Project Codes Dictionary in the project group—the codes and values are then available for other projects in the same group.



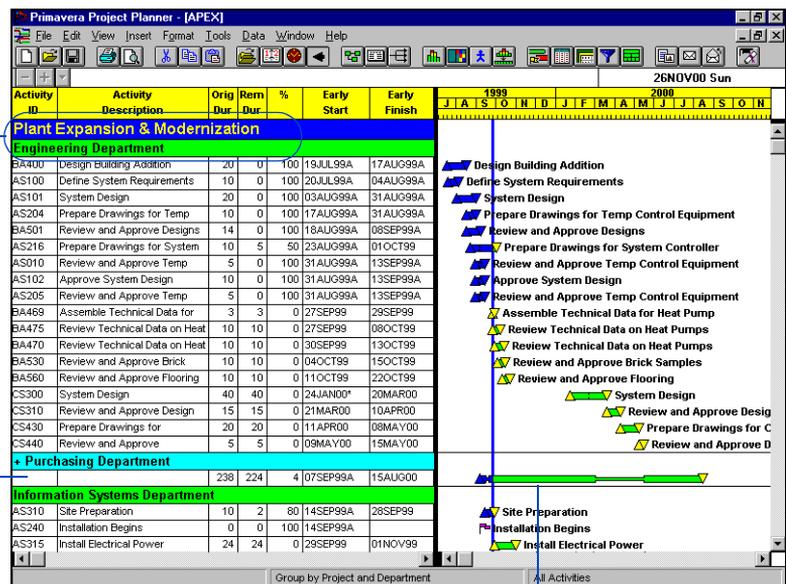
If you are restricted from modifying the Project Codes Dictionary, any values you add are assigned to the project code, but they are not added to the Project Codes Dictionary.

Grouping and Summarizing by Codes

Use activity and project codes to group activities and member projects in Bar chart and PERT layouts. Grouping enables you to focus on specific activities, such as those within a particular phase or department; or on a particular aspect of member projects, such as product line or location. The following example shows activities grouped by projects and departments. Activities in the same project and department are grouped and identified by an activity code description band.

Group by project and department in the Organize dialog box so the layout is easy to read.

When you summarize an activity group, the early date bar begins at the earliest start date of all activities in the code value and extends to the latest early finish date of all activities in the code value.



Summary bar

Group by activity or project code Choose Format, Organize, then choose Activity Data Item. In the first row of the Group By column, specify the activity or project code by which you want to group. You can group by more than one code by adding additional rows. You can also combine the groups into one band when one or more values change by marking the Display All Values in One Band checkbox.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Resource	Budgeted Cost
Plant Expansion & Modernization - Engineering Department								
BA400	Design Building Addition	20	0	100	19JUL99A	17AUG99A	DES ENG	9,600.00
AS100	Define System Requirements	10	0	100	20JUL99A	04AUG99A	ANALYST	4,960.00
AS101	System Design	20	0	100	03AUG99A	31AUG99A	DES ENG	16,640.00
AS204	Prepare Drawings for Temp Co	10	0	100	17AUG99A	31AUG99A	ATM ENG	2,640.00
BA501	Review and Approve Designs	14	0	100	18AUG99A	08SEP99A	DES ENG	1,680.00
AS216	Prepare Drawings for System	10	5	50	23AUG99A	01OCT99	ATM ENG	2,376.00
AS010	Review and Approve Temp	5	0	100	31AUG99A	13SEP99A	ATM ENG	2,826.00
AS102	Approve System Design	10	0	100	31AUG99A	13SEP99A	PRG MGR	1,673.00
AS205	Review and Approve Temp	5	0	100	31AUG99A	13SEP99A	ATM ENG	2,826.00
BA469	Assemble Technical Data for	3	3	0	27SEP99	29SEP99	DES ENG	540.00
BA475	Review Technical Data on Heat	10	10	0	27SEP99	08OCT99	DES ENG	600.00
BA470	Review Technical Data on Heat	10	10	0	30SEP99	13OCT99	DES ENG	600.00
BA530	Review and Approve Brick	10	10	0	04OCT99	15OCT99	DES ENG	240.00
BA560	Review and Approve Flooring	10	10	0	11OCT99	22OCT99	DES ENG	240.00
CS300	System Design	40	40	0	24JAN00*	20MAR00	ATM ENG	5,280.00
CS310	Review and Approve Design	15	15	0	21MAR00	10APR00	PRG MGR	2,019.00
CS430	Prepare Drawings for	20	20	0	11APR00	08MAY00	DES ENG	4,800.00
CS440	Review and Approve	5	5	0	09MAY00	15MAY00	PRG MGR	1,113.00
Plant Expansion & Modernization - Purchasing Department								
AS200	Prepare and Solicit Bids for	5	0	100	07SEP99A	15SEP99A	ACCTS, ATM	1,168.00
BA450	Assemble Brick Samples	10	5	50	20SEP99A	01OCT99		0.00
AS201	Review Bids for Temp Control	2	0	100	20SEP99A	21SEP99A	PRG MGR	329.90
AS206	Fabricate & Deliver Temp	20	15	25	21SEP99A	26OCT99	VENDOR	3,500.00
AS202	Award Contract for Temp	1	0	100	21SEP99A	21SEP99A	ACCTS	32.00
BA480	Assemble and Submit Flooring	10	10	0	27SEP99	08OCT99		0.00

Once you group activities in one or several projects by activity or project code, you can summarize all or specific groups of activities in the Bar chart.

Summarize a specific group by activity code Double-click the activity code band; or select the band and choose Format, Summarize; or select the band and press Enter. When a group is summarized, P3 adds a plus sign (+) before the activity code band name.

Custom Data Items

In this chapter:

Defining Custom Data Items

**Assigning Custom Data Items
Using Columns**

**Assigning Custom Data Items
Using the Activity Form**

Creating Custom Data Item Bars

**Using Global Change to Calculate
Custom Data Items**

Custom data items enable you to add your own fields and values for activities and resource/cost accounts to your project database. Read this chapter to learn how to create a Custom Data Items Dictionary and assign custom data items to activities and resources.

Defining Custom Data Items

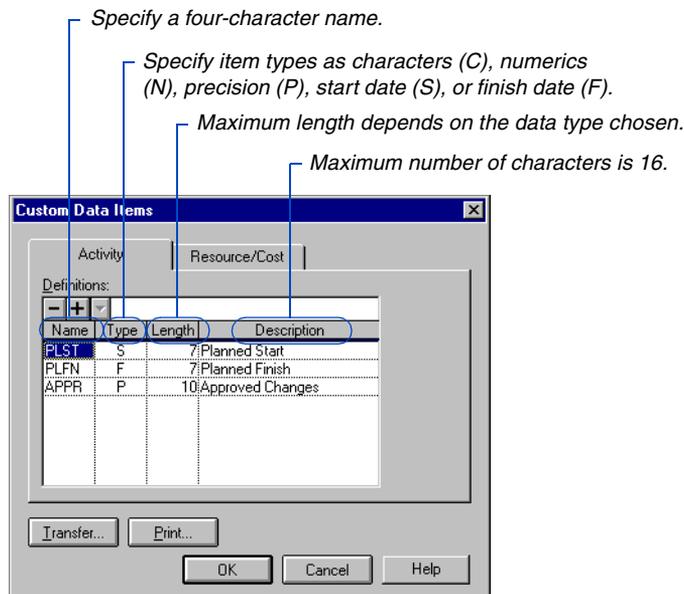
You can print custom data item values in reports and graphics, or include custom data item columns and print the Bar chart layout.

You can add custom data items to each activity to track additional data such as planned start and finish dates, leveled dates, fabrication/delivery dates, purchase-order numbers, or building permits.

You can also create custom data items to track details for resources/costs, such as baseline and revised budgets, contract commitments, expanded resource names, change orders, profit, loss, overhead, variances, income, and expenditures.

Define custom data items Choose Data, Custom Data Items. P3 displays the Custom Data Items dialog box for activity items. Click the Resource/Cost tab to define custom data items for any resource assigned to an activity.

For each custom data item you want to define, type a name containing up to four characters, specify a type and length, and type a description. You can add up to eight custom data items each for activities and resources/costs.





When defining custom data items, you cannot use reserved abbreviations such as the activity data items ACT, DES, ID, OD, and RD, or the activity codes defined in your project.

Transfer custom data items You can transfer custom data items, together with the structure defined for them, from one project to another. Click Transfer in the Custom Data Items dialog box and select the project that contains the custom data items you want to transfer. Use the Drives and Folders fields to select a project that is not located in the current folder.



The transferred items overwrite existing custom data items in the current project. P3 also erases values assigned to activities and resources/costs for the overwritten data items in the current project.

Changing Custom Data Item Definitions

You can change the definition for a custom data item at any time; however, we recommend that you not make casual changes. For example, if you change the data type from a number to a date, P3 erases any values for that data item (after confirmation) and makes these changes to the database when you return to the project window from the Custom Data Items dialog box. When you change definitions for items with defined values, P3 prompts you to change the field back to the original value or confirm the change.

If you decrease the length of a character value, P3 truncates the data. The length of date values directly corresponds to the default date format you are using. If you want to increase or decrease a custom data item date length, choose Format, Dates, and adjust the value accordingly.

Assigning Custom Data Items Using Columns

When you finish creating custom data items, use the Activity form or the Activity columns to assign custom data items to activities or resources.

You can also use the Tools, Global Change command to assign custom data items to activities.

Use the Activity columns to view or assign custom data item values for a group of activities by creating a Bar chart layout that contains the appropriate custom data items.

Assign custom data items using Activity columns Choose Format, Columns. Add the custom data items as columns. Click the Custom Data Item field cell for the activity and press F2. Then type a data-item value in the edit bar or select one from the drop-down list and press Enter.

Include custom data items such as Approved Changes to the columns.

Activity ID	Activity Description	Early Start	Early Finish	Approved Changes
Accounts Manager				
Temperature Control Equipment-Install				
AS200	Prepare and Solicit Bids for	07SEP99A	15SEP99A	640.00
AS201	Review Bids for Temp Control	20SEP99A	21SEP99A	128.00
AS202	Award Contract for Temp	21SEP99A	21SEP99A	32.00
System Controller-Install				
AS213	Prepare and Solicit Bids for	18OCT99	22OCT99	0.00
AS214	Review Bids for System	25OCT99	28OCT99	0.00
AS215	Award Contract for System	29OCT99	29OCT99	0.00
Conveyors				
CS420	Award Contract	05JUN00	05JUN00	0.00
HVAC				
BA411	Prepare and Solicit Bids for	14OCT99	18OCT99	0.00
BA412	Review Bids for Heat Pump	19OCT99	20OCT99	0.00
BA413	Award Contract for Heat Pump	21OCT99	21OCT99	0.00

Assigning Custom Data Items Using the Activity Form

You can also access the Custom Data Items form by clicking the right mouse button in an activity row for a selected activity and choosing Activity Detail, Custom Data.

You can use the Custom Data Items form to enter values for an activity and/or resource assigned to it.

Assign custom data items to an activity Double-click an activity to open the Activity form, or select an activity and choose View, Activity Form. Click Custom in the Activity form and click the Activity Data tab in the Custom Data Items form. Click the Value column and type the value for the selected item.

The screenshot shows the 'Custom Data Items' window with the 'Activity data' tab selected. A dropdown menu shows '24JAN00'. Below it is a table with the following data:

	Value	
Planned Start	24JAN00	
Planned Finish	20MAR00	
Approved Changes		360.00

Assign custom data items to a resource Double-click an activity to open the Activity form. Click Custom in the Activity form and click the Resource Data tab in the Custom Data Items form. Click the resource, then click the Value column and type the value for the selected item.

The screenshot shows a dialog box titled "Custom Data Items" with two tabs: "Activity data" and "Resource data". The "Resource data" tab is active. It contains a table with two columns: "Resource" and "Cost Account". The table lists three resources: "DES ENG", "ANALYST", and "ATM ENG", all with a cost account of "11101 L". A blue oval highlights this table. Below the table is a table with two columns: "Value" and "Value". The first row shows "Commitment Amt" with a value of "0.00". The second row shows "Original Budget" with a value of "4800.00". A blue oval highlights this table. A blue arrow points from the text "Displays the resources and cost accounts assigned to the activity." to the first table. Another blue arrow points from the text "Lists the resource custom data items and the values assigned to the selected resource/cost account." to the second table.

Resource	Cost Account
DES ENG	11101 L
ANALYST	11101 L
ATM ENG	11101 L

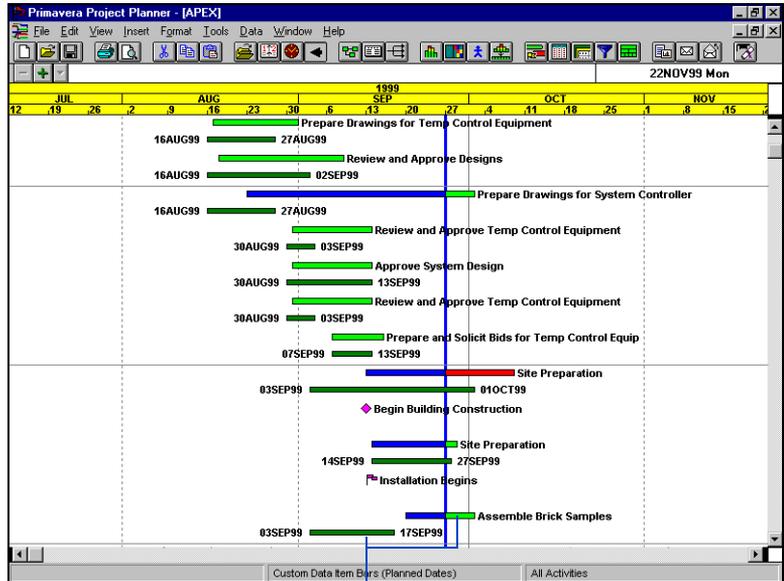
	Value
Commitment Amt	0.00
Original Budget	4800.00

Displays the resources and cost accounts assigned to the activity.

Lists the resource custom data items and the values assigned to the selected resource/cost account.

Creating Custom Data Item Bars

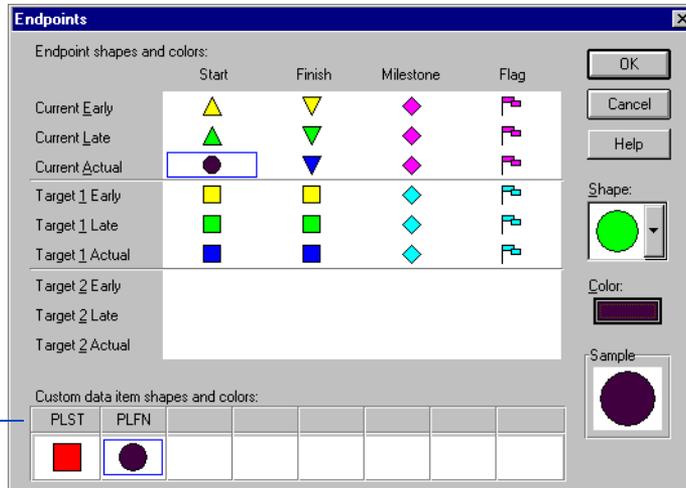
Once you assign custom data items to activities, you can create activity bars and endpoints based on the custom data items. For example, to track planned dates without creating a target project, you can create custom data items for planned start and finish dates, then create an activity bar that spans these planned dates.



Customize bars to include custom data item planned dates for comparison with the scheduled dates bar.

You can set up endpoint shapes for custom data item dates in the Endpoints dialog box (choose Format, Bars, and then click Endpoints). Click in the custom data item box at the bottom of the dialog box, then select the shape and color of the endpoint to associate with it.

Associate the endpoint with its corresponding custom data item identifier.



For information about creating activity bars, refer to the *Customizing Bar Chart Layouts* chapter.

You can also use custom data items to create interim milestones, which represent events in a single activity. For example, create activity-level custom data items such as “complete first draft” and “complete revisions,” and designate them as finish dates in the Custom Data Items Dictionary. Create activity bars for each interim milestone and show only the endpoint.

Organizing by Custom Data Items

Use custom data items to organize, or sort, activities in the Bar chart. Organizing enables you to base the order of activities in the columns on the values you have established for custom data items. Choose Format, Organize. You can sort, but not group, by custom data items.

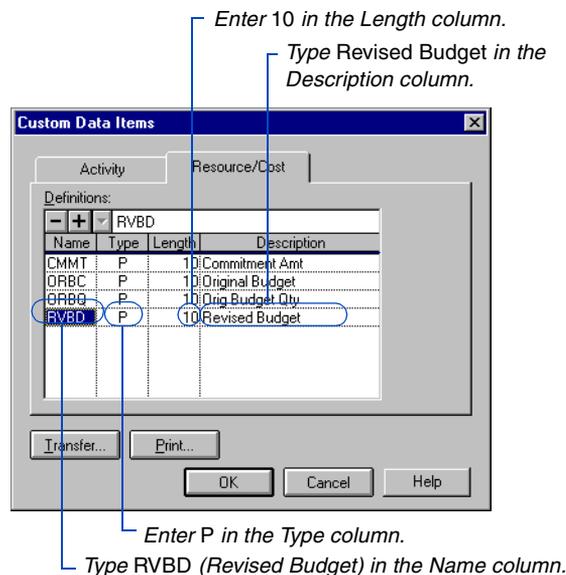
Using Global Change to Calculate Custom Data Items

Use Global Change to calculate and enter values for custom data items automatically. For example, create a custom data item at the beginning of the project called Planned Start and use Global Change to set the planned start date equal to the early start date. Review this data for each activity to monitor work progress.

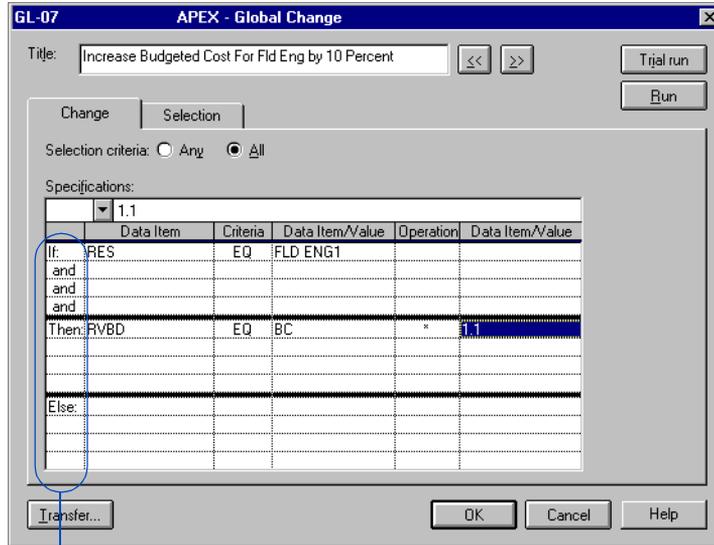
Using custom data items in conjunction with Global Change gives you complete access to, and control of, project data.

Define global changes with If:Then:Else: statements. Use any standard data item in formulas to calculate values for custom data items. If an activity satisfies an If: statement, P3 makes the change specified by the Then: statement; otherwise, P3 performs the change specified by the Else: statement. To perform a global change for all activities, specify only a Then: statement.

Suppose you create a custom data item called “revised budget” and you want to show a 10-percent increase over the original budget for specific resources, such as Field Engineers. Use Global Change to have P3 automatically calculate the revised budget for the resources.



Choose Tools, Global Change. Click Add in the Global Change specification list dialog box, then click Add to accept the next sequential specification ID. In the Global Change Specifications list box, use If: and Then: statements to indicate that the revised budget is set equal to the original budgeted cost plus ten percent for all Senior Field Engineers. Click OK, then click Run to calculate values for custom data items.



Use arithmetic functions to calculate values for custom data items.

View Global Change results in the columns.

Activity ID	Activity Description	Resource	Budgeted Cost	Revised Budget
Information Systems Department				
Tom Mills - Director of Hardware Engineering				
AS265	Path Refinement and Shakedown-Line A	FLD ENG1	2,000.00	2,200.00
AS275	Path Refinement and Shakedown-Line B	FLD ENG1	2,000.00	2,200.00
CS700	Install Conveyor 211	FLD ENG1	2,800.00	3,080.00
CS710	Install Conveyor 212	FLD ENG1	10,000.00	11,000.00
CS720	Install Conveyor 213	FLD ENG1	2,000.00	2,200.00
CS730	Install Conveyor 214	FLD ENG1	6,000.00	6,600.00

Creating Custom Reports

You can create custom reports for custom data items. P3 summarizes custom data item values by type in the reports. For example, start-date values show the earliest start date, and finish-date values show the latest date.

Choose Tools, Tabular Reports, Report Writer, to create custom reports. For more information about creating custom reports, refer to the *Custom Report Writer* chapter.

ACTIVITY ID	ORIG DUR	REM DUR	CAL ID	%	ACTIVITY CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	PLANNED START
BA400	20	0	1	100	MASON	Design Building Addition	19JUL99A	17AUG99A	19JUL99
AS100	10	0	1	100	MASON	Define System Requirements	20JUL99A	04AUG99A	19JUL99
AS101	20	0	1	100	MASON	System Design	03AUG99A	31AUG99A	02AUG99
AS204	10	0	1	100	MASON	Prepare Drawings for Temp Control Equipment	17AUG99A	31AUG99A	16AUG99
BA501	14	0	1	100	ACME	Review and Approve Designs	18AUG99A	08SEP99A	16AUG99
AS216	10	5	1	50	MASON	Prepare Drawings for System Controller	23AUG99A	01OCT99	16AUG99
AS010	5	0	1	100	EVANS	Review and Approve Temp Control Equipment	31AUG99A	13SEP99A	30AUG99
AS102	10	0	1	100	MASON	Approve System Design	31AUG99A	13SEP99A	30AUG99
AS205	5	0	1	100	EVANS	Review and Approve Temp Control Equipment	31AUG99A	13SEP99A	30AUG99
AS200	5	0	1	100	FOLEY	Prepare and Solicit Bids for Temp Control Equip	07SEP99A	15SEP99A	07SEP99
BA630	0	0	1	100	NOLAN	Begin Building Construction	13SEP99A		03SEP99
BA640	20	10	1	50	NOLAN	Site Preparation	13SEP99A	08OCT99	03SEP99
AS240	0	0	1	100	MILLS	Installation Begins	14SEP99A		14SEP99
AS310	10	2	1	80	MILLS	Site Preparation	14SEP99A	28SEP99	14SEP99
AS201	2	0	1	100	FOLEY	Review Bids for Temp Control Equipment	20SEP99A	21SEP99A	14SEP99

You can include a custom data item such as planned start when you create a custom report.

Targets and Progress

In this chapter:

- Creating a Target Project
- Modifying a Target Project Globally
- Replacing Calendars and Dictionaries in a Target Project
- Updating Activity and Resource Data in a Target Project
- Preparing to Update the Project
- Highlighting Activities for Updating
- Estimating Activity Progress Automatically
- Updating Activities Manually
- Interrupting Activity Progress
- Storing Period Performance
- Comparing Current and Target Schedules
- Tracing Progress Using the Progress Line
- Analyzing Schedule and Cost Performance

A target is a project plan you can compare to the current schedule to measure progress.

This chapter describes how to use targets to pinpoint variances between actual work accomplished and the originally planned schedule. You can also use the target plan to create “what-if” scenarios for planning the remaining work.

Once a project is underway, update the schedule and costs at regular intervals. Learn different ways to record progress for the activities in your project. After you update the current plan, you can compare it to the target to analyze schedule and cost performance.

Creating a Target Project



Before you update a schedule the first time, we suggest that you create a target plan. The simplest target plan is a complete copy of the original schedule. As the project progresses, use the target as a benchmark or baseline for comparing the target dates, resources, and costs to those for the current schedule. You can also use the target to measure project status and performance.

To create a copy of the current project and designate it as a target, choose Tools, Project Utilities, Targets.



Type a name for the target project, or select an existing project to use as a target from the drop-down list, then click OK.

You can create another plan (Target 2) and update it at the end of each period; then compare Target 2 to the current project to identify slippage or recovery since the last period. Create as many targets as you want, but you can compare only two targets to the current schedule at a time.

As the project progresses and changes occur, you can globally incorporate these changes into the target project for an accurate comparison of data as described in the next section.

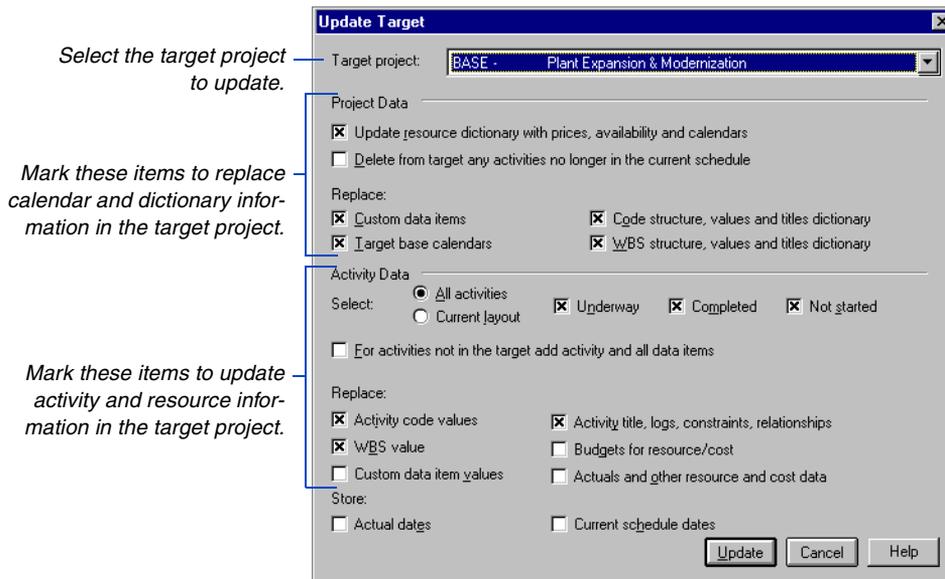


Project groups and their associated projects can have separate target plans. P3 saves targets as separate projects which you can select from the Open a Project dialog box.

To remove a target assignment, select the target project name from the Targets dialog box, then click .

Modifying a Target Project Globally

As the project progresses, you may need to modify a target project by adding or deleting activities, revising budgets, or updating custom data items or activity codes. Use P3's Update Target feature to modify a target project based on changes made to the current project. Update all activities or only those in the current layout. In the current project, choose Tools, Project Utilities, Targets, then click Update.



To update a second target which is used to track changes between updates, select it from the Target Project field and mark the checkboxes at the bottom of the dialog box for updating actuals and schedule data.

Using Targets to Track Weekly Progress

To preserve the original plan (Target 1), remember to clear the Actual Dates and Current Schedule Dates checkboxes when you update Target 1.

Creating a target plan is useful for comparing dates, resources, and costs against the current schedule. You can also create a second target to evaluate any slippage or recovery from the previous update. In this case, you should mark the checkboxes for storing actual dates and current schedule dates at the bottom of the Update Target dialog box.

To retain historical data for each update period, rename Target 2 after each update period. An easy way to keep track of these projects is to name the project using the update period it represents. For example, Target 2 projects saved during the month of April might be named 0407, 0414, 0421, and 0428.



The Update Target feature updates dictionaries and activity and resource data in the target project only. It does not change the original schedule or record actuals.

The next two sections describe each field in the Update Target dialog box.

Replacing Calendars and Dictionaries in a Target Project

When you modify the current schedule's calendar or dictionaries, you can automatically reflect these changes in the target project by marking the appropriate checkboxes in the Project Data section of the Update Target dialog box.

If you plan to analyze the impact of different normal and maximum resource availability limits, clear this checkbox.

Project Data

Update resource dictionary with prices, availability and calendars

Delete from target any activities no longer in the current schedule

Replace:

Custom data items

Code structure, values and titles dictionary

Target base calendars

WBS structure, values and titles dictionary

Update Resource Dictionary with prices, availability, and calendars Updates prices, minimum and maximum limits, and through dates to match those in the current project. Adds new resources and their associated resource calendars from the current project. Resources deleted from the Resource Dictionary for the current project remain in the Resource Dictionary for the target project.

Delete from target any activities no longer in the current schedule Deletes activities in the target that no longer exist in the current schedule.

Replace custom data items Replaces the target project's Custom Data Items Dictionary with the coding structure used in the current project. When you mark this checkbox, P3 also removes the custom data item values for all activities. To update custom data item values assigned to activities or resources/costs, mark the Replace: Custom Data Item Values checkbox in the Activity Data section of the dialog box.

Replace target base calendars Copies the calendar from the current project to the target project. Do not replace the target calendar if you want to maintain separate calendars and perform “what-if” comparisons.

You must use the Transfer button in the Project Codes dialog box from the current project to update the target project with the project codes structure.

Replace code structure, values and titles dictionary Updates the activity code structure to match the current project.

Replace WBS structure, values and titles dictionary Updates the WBS structure to match the current project.

Updating Activity and Resource Data in a Target Project

When you add or remove activities or resources, you can use the Activity Data section of the Update Target dialog box to globally update the target project to reflect these changes.

Select activities to update in the target Choose All Activities to update all activities in the target project that exist in the current project. Choose Current Layout to update only those activities in the target project that are displayed in the current layout (based on the current filter).

You can further limit which activities are updated by including only those that are underway, completed, and/or not started. Mark Underway to select activities that have an actual start date or a percent complete less than 100 but greater than zero. Mark Completed to select activities that have an actual finish date or are 100 percent complete. Mark Not Started to select activities that have no actual start or finish date and are zero percent complete.

For activities not in the target add activity and all data items Adds activities that exist in the current project but not in the target project, including the activity description, relationships, durations, codes, resources, logs, and other data assigned to the new activities.

Replace activity code values Updates activity code values in the target project. Mark this checkbox if you change activity code assignments in the current project and want to make the same changes in the target.

If you modify the existing activity code structure, change code titles, or add, delete, or replace activity codes or code values in the Activity Codes Dictionary, also mark the checkbox for replacing the code structure, values, and titles dictionary (under Project Data).

Replace WBS value Updates WBS code values in the target project. Mark this checkbox if you change WBS code assignments in the current project and want to make the same changes in the target. If you modify the existing WBS code structure, change WBS code titles, or add, delete, or replace WBS codes or titles in the WBS Dictionary, also mark the checkbox for replacing the WBS structure, values, and titles dictionary (under Project Data).

Replace custom data item values Updates the custom data item values assigned to activities or resource/costs in the target project. Mark this checkbox if you change the custom data item values assigned to certain activities or resources in the current project.

If you add or delete custom data items or modify the type or length of existing data items, mark the checkbox for replacing custom data items (under Project Data).

Replace activity title, logs, constraints, relationships Updates activity titles or log entries; also adds, deletes, or changes constraints or relationships to match those in the current project.

P3 replaces a relationship in the target only if the predecessor or successor activity exists in the target. It changes relationship types and lags and durations to match those in the current project. P3 deletes relationships that exist in the target plan but not in the current project.

Replace budgets for resource/cost Updates budgeted quantities and costs for existing resources. Makes new resource assignments based on new assignments made to activities in the current project. Also records budgeted costs and quantities for the new resources. Deletes resource assignments that have been deleted in the current project. To update prices and limits in the Resource Dictionary, mark the checkbox for updating the Resource Dictionary (under Project Data).

Replace actuals and other resource and cost data Updates actuals this period and actuals to date. Also updates other resource and cost data such as cost accounts, resource lags and durations, percentages complete, and estimates at completion.

Store actual dates Copies actual dates from the current project. Also copies percent complete and remaining durations from the current project for activities with actual dates.

Store current schedule dates Copies early start, early finish, late start, and late finish dates from the current project. Also copies original and remaining durations, percent complete, and total float. Does not update actual dates unless you mark the Actual Dates checkbox. Early and late dates remain unchanged for activities that have an actual date.

To preserve the original plan, you should not record actual dates or change the schedule in the baseline target. However, if you create a second target to store past-period performance, update the dates in the target project at the end of each schedule update period.

Preparing to Update the Project

Once a project is underway, you will need to update the schedule and resource use at regular intervals. Each project is different: you may need to update daily, weekly, or monthly, depending on the amount of time your project spans and how frequently you want to adjust your forecasts.

For more information about using e-mail, see the *Using E-Mail to Share Project Data* chapter.



You also can update the project remotely using e-mail.

Although no set rules exist for update frequency, consider these general guidelines: If your project never seems to be accurate, you are not updating often enough, or the scope of your activities is too broad—you should divide activities into smaller ones. If you spend too much time updating, you're updating too often, or the scope of your activities is too narrow.

Which activities should I update? You should update any activity on which work has been performed—started, progressed, or finished—since the last update or since the start date of the project. Update activities that

- Start and finish during the current update period
- Start during a previous update period but finish during the current update period
- Start during a previous update period and continue during the current update period, but are not finished and
- Start during the current update period but are not finished

If an activity hasn't started, even if it should have started, do not update it. P3 schedules activities that should have started, but have not, according to their predecessors; if their predecessors have completed, P3 schedules them as of the data date. Activities that should have started may also have negative float if their delay interferes with date constraints and must-finish deadlines.

If an activity finished during a previous update period, you've already updated it as complete; you needn't update it again. If an activity starts and/or finishes within the update period, enter actual start and/or finish dates for the activity. If an activity starts but has not yet finished, record actual start dates and remaining durations.



An activity is fully updated when you record actual start and finish dates, set remaining duration to zero, and/or set percent complete to 100.

Milestone activities and updating A milestone resembles an activity, even though it represents only a point in time and therefore has no duration in the schedule. If you update activities individually, record an actual start date for a start milestone or an actual finish date for a finish milestone. If you have P3 estimate progress, it will update milestones appropriately.

Choosing a Method of Updating

P3 offers several ways of updating your schedule. You can update progress for all activities and resources as a whole; update activities and resources individually; or use a combination of the two methods.

If your project is progressing exactly as planned or if you only need to estimate progress, simply tell P3 the data date or “as-of” date, and have P3 determine which activities have progressed and how much, and calculate the remaining durations of activities that have started. P3 also notes which activities have completed and sets their remaining durations to zero.

If your project is not progressing as planned—many activities are starting out-of-sequence, activities are taking more or less time to complete than originally planned, actual resource use is exceeding planned use—update activities and resources individually. This will help you forecast the effects of this unforeseen progress or lack of progress, so that you can take appropriate corrective action wherever necessary.

Most projects progress somewhere between these two situations: some activities are progressing as planned and some are not. If this is the case, you’ll want to combine the two updating methods. Let P3 calculate your project as if it is progressing exactly as planned, and then individually update those activities and resources that have deviated from the plan.

For more information about closing out, see *Storing Period Performance* later in this chapter.

Storing period performance Primavera recommends storing period performance each update period so actuals resulting from the update reflect the period-to-date values.

Understanding the data date P3 uses the data date, or “as-of” date, when calculating the schedule. Before the first update, the project start date is the data date. As the project proceeds, move the data date forward. To update a project, change the data date by using the Progress Spotlight feature, dragging the data date line across the activity bars, or enter the data date in the Update Progress dialog box.

Select the data date line type and color by choosing Format, Sight Lines and clicking the Data Date tab.

If you’re working with a daily schedule, the data date is always in the morning. To update a project as of Tuesday night, make Wednesday morning the data date. If you’re working with an hourly schedule, make sure the hour of the data date is appropriate; if you specify a data date of Friday at 3:00 p.m., P3 accepts progress up to that time—but not including it.

Highlighting Activities for Updating

The Progress Spotlight feature highlights the activities that should have been worked on during a specified timeperiod. You can also drag the data date line to a specific date to highlight the activities that fall between the last data date and the new data date. Once you spotlight activities, you can automatically status them, manually update them, or cut and copy them.



Use the Progress Spotlight feature Choose View, Progress Spotlight, or click the Progress Spotlight icon to highlight a timeperiod equal to the smallest increment of the displayed timescale from the previous data date. To increase/decrease the highlighted area between the previous data date and the new date by one or more timescale increments, drag the data date line to the right or the left.

Unlike selected activities, when Progress Spotlight is active, activities remain spotlighted even when you click in another area of the workspace.

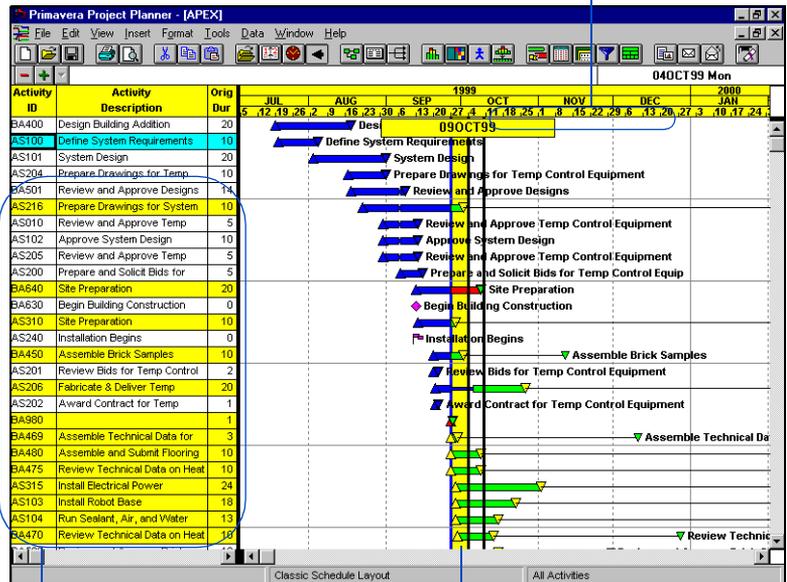
To make it easier to use Progress Spotlight, set up your timescale so that the smallest increment is equal to your update periods. Then, when you click to turn this feature on, the highlighted curtain will indicate the update period immediately and eliminate the need to adjust the data date. For example, if you update weekly, set the timescale to weekly increments; choose Format, Timescale, and select Weeks as the Minimum Time Unit.

Update activities as described later in this chapter, or reschedule the project immediately according to the new data date by pressing Ctrl+F9.



Distinguish spotlighted activities from selected activities by assigning them different colors. Choose Format, Screen Colors.

When you drag the data date line, the new data date is displayed.



P3 spotlights activities that should have started, progressed, or finished between the previous data date and the new data date in the Bar chart.

Drag the data date line Click the data-date line; when it changes to \pm , drag the line to the right until you reach the new data date. P3 spotlights the activities between the last data date and the new data date. Update activities as described later in this chapter, or reschedule the project immediately according to the new data date by pressing Ctrl+F9.

For more information about the Update Progress dialog box, see *Estimating Activity Progress Automatically* later in this chapter.

Depending on the density of the timescale above the activity bars, you may not be able to position the data date line on the exact date and time you want to use. In this case, enter the data date in the Update Progress dialog box and have P3 estimate progress as of that date before you update individual activities.



When you spotlight activities by dragging the data date line or by using the Progress Spotlight feature, P3 turns off automatic scheduling. Choose Tools, Schedule, or press F9 to reschedule after you finish updating; P3 recalculates the schedule and turns automatic scheduling back on.

Estimating Activity Progress Automatically

If activities are progressing on schedule, you may want P3 to estimate progress for all activities as of the new data date you specify. P3 can quickly estimate activity dates, percent complete amounts, and remaining durations when you use the Update Progress dialog box to update a project.

Estimating activity progress is a quick and convenient way to update your project. P3 estimates progress only for those activities that were supposed to take place. Since progress can occur out of sequence, you may need to update additional activities—especially if you selected activities by dragging the data date line or by using the Progress Spotlight feature. You should also review all incomplete activities to make sure their remaining durations, actual dates, and percent complete amounts are realistic. Once you spotlight activities, you can quickly update the project as “on time.”

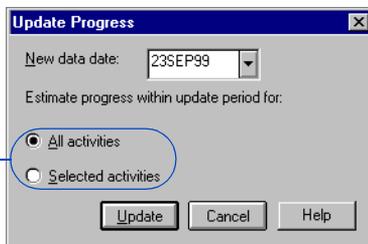
In P3, you can update projects automatically, update each activity manually, or use both methods.

Estimate progress for all spotlighted activities Spotlight the activities for which you want to estimate progress by dragging the data date line or by using the Progress Spotlight feature. Choose Tools, Update Progress. Select a new data date if the one shown is not accurate.



The data date may differ from the date on which you enter the update information. For example, you can enter update information on a Monday for a data date as of the previous Friday; the resulting project shows progress as of that Friday.

Choose to update all activities scheduled to work during the current update period or only spotlighted activities.



For details on recommended options settings before updating, see the *Calculating and Adjusting the Schedule* chapter.

Click Update. For each activity in the update, P3 estimates percent complete amounts as of the data date, sets dates to actual dates if they fall before the new data date, and estimates remaining durations for activities that are not finished as of the data date. P3 also updates resource assignments based on each activity's revised percent complete and remaining duration while adhering to Autocost Rules. In addition, P3 takes into account only the first price per unit in the Resource Dictionary, if more than one price per unit for varying through dates exists, when updating resource assignments.



If you estimate progress for selected activities that do not fall within the update period, those activities will show no progress. When spotlighting activities, you can only estimate progress—percent complete, remaining duration, and so on—for activities that are within the update period. If you manually update a spotlighted activity, then run Update Progress, P3 bypasses the activity and your changes are retained.

Automatic Stating

When you update activities, P3 automatically links remaining duration to percent complete. This means that if you revise the remaining duration to reflect the amount of time required to finish the activity, P3 recalculates the schedule percent complete. You can, however, change the way P3 calculates this value if the percent complete does not accurately reflect the remaining duration.

P3 provides an automatic resource/cost stating tool, called Autocost, that enables you to change the method or “rule” the program uses to calculate data when you update. Other rules involve the method P3 uses to calculate resource and cost data.

To access the Autocost rules for the current project, choose Tools, Options, Autocost Rules. Before revising these rules, refer to the *Tracking Resources and Costs* chapter for more information about each rule.

Updating Activities Manually

You can record progress at any time. P3 records progress up to the current data date. For example, suppose the current data date is Friday, November 5. A week passes and it is now November 12. Update progress through November 11, then advance the data date to November 12; P3 revises the schedule based on the actual dates, updated remaining durations, delays, and other changes you just recorded.

To keep the Activity form displayed while you update several activities, choose View, Activity Form.

To update activities using the Activity form, double-click the activity you want to update. Edit the appropriate fields in the Activity form. When you finish updating the activity, click OK.

Activity ID	Current Dur	Revised Dur	% Comp	Early Start	Early Finish	Actual Start	Actual Finish
BA640	10		50	13SEP99	08OCT99	13SEP99	
BA650	10		0	11OCT99	22OCT99		
BA660	5		0	25OCT99	29OCT99		
BA670	5		0	25OCT99	29OCT99		
BA680	10		0	01NOV99	12NOV99		
BA681	10		0	15NOV99	30NOV99		
BA690	5		0	01DEC99	07DEC99		
BA700	2		0	08DEC99	09DEC99		
BA701	0		0		09DEC99		
BA702	0		0	10DEC99			
BA710	20		0	10DEC99	10JAN00		
AS206	15	25		21SEP99	26OCT99	21SEP99	
AS218	60		0	01NOV99	27JAN00		

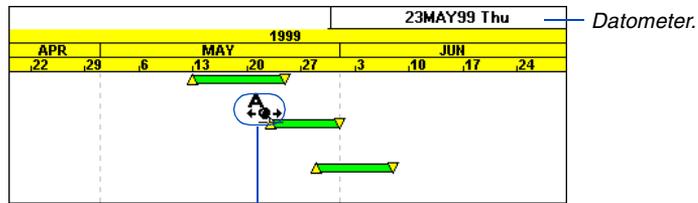
You can update the remaining duration and/or percent complete.

Mark to assign an actual finish date.

Mark to change the early date to an actual date.

To change the date, click to display a calendar. Then double-click the appropriate date.

You can also record progress directly on an activity bar. To assign an actual date, point to the beginning or end of an activity bar and press the Shift key. When the mouse pointer changes to , drag the end of the bar to change the actual start or finish date.

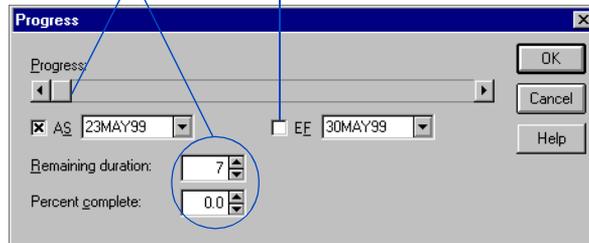


1 Drag the mouse to the left or right to modify the actual date, using the Datometer as a guide. Release the mouse when you reach the date you want.

When prompted, click Yes to replace the start or finish date of the activity with the actual date. P3 displays the Progress dialog box with the actual start or finish date you selected. To adjust the date, click and select another date.

3 You can also drag the scroll box to update the remaining duration and/or percent complete for the activity.

2 To set an actual finish, mark this checkbox, then click and select the date you want.

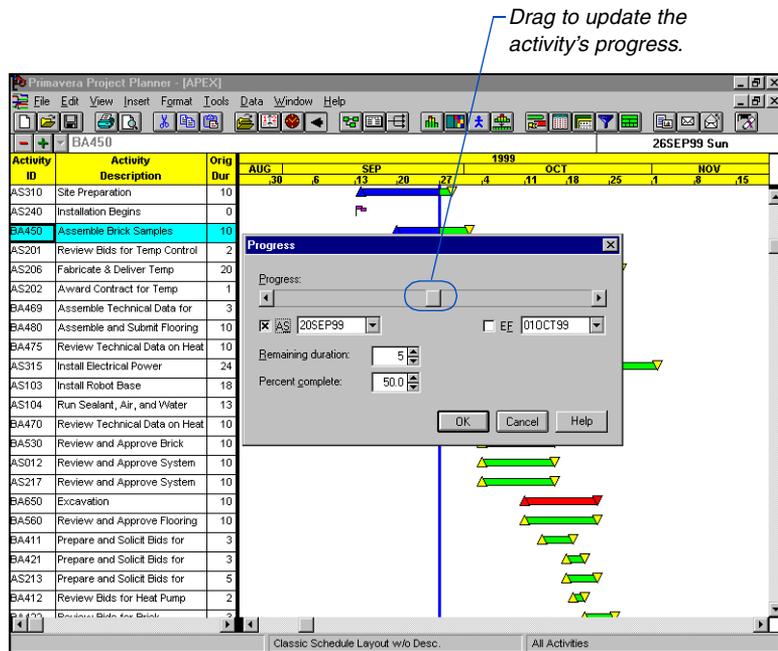


If you enter an actual finish date, P3 automatically sets the percent complete to 100 and the remaining duration to 0.



The activity bar must be designated as the key bar (use the Bars dialog box) and must span the early or late dates. You cannot assign progress on resource, target, or custom data item bars.

Review or update progress for an activity Point to the middle of an activity bar and press the Shift key. When you release the mouse, P3 displays the Progress dialog box for the selected activity. When you use this method, P3 does not automatically set actual dates for the activity.



As you drag the Progress scroll box, P3 draws progress on the activity bar and shows the corresponding numeric value in the Percent Complete field. P3 indicates this progress by coloring the appropriate portion of the bar. Choose Format, Bars, to specify the color used to identify progress. The data listed in the Activity columns are automatically updated to reflect the progress entered in the Progress dialog box. P3 calculates the remaining duration based on the percent complete.



Once you record progress for the current period, you should always recalculate the schedule. Press F9 or choose Tools, Schedule. Be sure to update the data date—the date from which P3 begins schedule calculations.

Manually Updating Spotlighthed Activities

You can use Progress Spotlight to highlight the activities that should have progressed between the old and new data dates and then manually update some or all of the spotlighted activities. Select these activities using the Ctrl+up/down arrow keys in the Activity columns, or use the Previous and Next buttons on the Activity form. You can also turn Progress Spotlight on in a layout you have set up for updating activities, and then print and distribute it to alert the recipient(s) of the activities to be updated.

Interrupting Activity Progress

At some point in the project, you may need to stop work on an activity for a period of time. Indicate this interruption by specifying suspend and resume dates in the Dates form for the activity.

Suspend an activity's progress Right-click an activity and choose Activity Detail, Dates. The activity must have an actual start date before you can record a suspend date.

	Start	Day	Finish	Day
Current Early	21SEP99A	46	15OCT99	64
Current Late	21SEP99A	46	02JUN00	222
Target 1 Early	17SEP99	44	14OCT99	63
Target 1 Late	01MAY00	200	26MAY00	219
Target 2 Early				
Target 2 Late				

Suspend: 28SEP99 Resume: 06OCT99

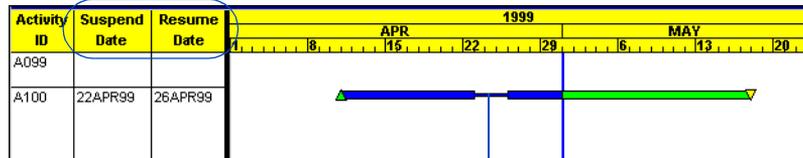
Actual duration: 4 Free Float: 11

Record the suspend date as the end of the last day on which work occurred for the activity.

When work begins again, record the resume date here.

P3 calculates an actual duration for all activities with progress based on the amount of time actually worked. P3 considers nonworktime and specific calendar definitions.

You can show suspend and resume dates as Columns.



P3 indicates a work stoppage on activity bars when you mark the Neck checkbox in the Bars dialog box.

Storing Period Performance

To track total actuals and quantities to date (quantities and costs) each time the schedule is updated, you need to store period performance. For example, if you increase the actual this period by 50, P3 increases the actual to date by the same amount. At the end of each period, reset the actual this period values of all activities to zero by choosing Tools, Store Period Performance. Resetting the actual this period values does not affect actual to date values; it prepares you to begin tracking new use for the current period.

For more information about historical period data, see the *Tracking Resources and Costs* chapter.

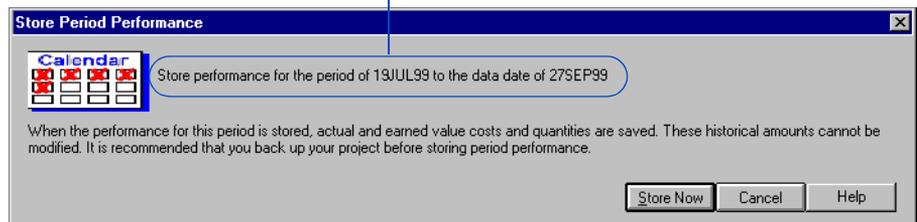
Storing period performance records actuals for that schedule update period along with earned value, so you can track previous periods and compare current and future trends.



Primavera recommends you back up your project before storing period performance.

Post actual amounts for the period Choose Tools, Store Period Performance, before the start of the next scheduling period. For example, your schedule updates may be every two weeks, monthly, or even quarterly. To track actual costs and progress recorded, update your schedule at the times established by the project controls coordinator, then store period performance at the end of the update period and before the start of the next schedule update.

P3 displays the previous closeout date and the current data date used to close out the project this period.

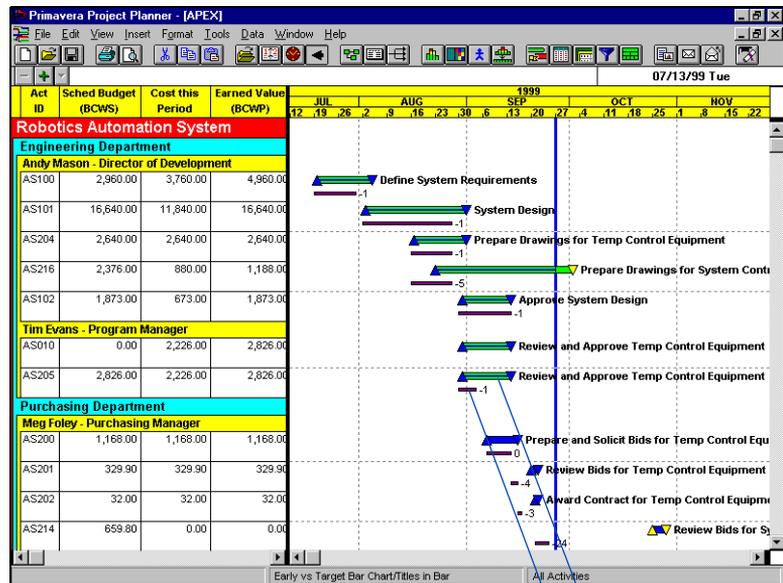


Click Store Now; P3 defines a historical “bucket,” stores the actual this period values in the bucket, then sets actual this period values to zero in anticipation of the next schedule update period. If the project data date is on or before a previous storage date, P3 prompts you to review the assignments that could not be processed in the CLOSEOUT.OUT file when the period posting has completed. P3 also creates an audit file in the PROJECTS folder named <project name>HST.OUT that contains a history of closeout dates for the project.

Comparing Current and Target Schedules

After updating a project, you can quickly evaluate progress and performance onscreen. Use a layout that shows current and target bars to identify tasks that start or finish later than planned. In the list of activities, include columns for the planned value, actual costs to date, and earned value to identify tasks that are behind schedule or over budget. For detailed reporting, create schedule and activity matrix reports and resource and cost graphics. Run the Earned Value report to analyze cost and schedule variance.

Displaying target and current bars indicates how the schedule is progressing according to the original plan.



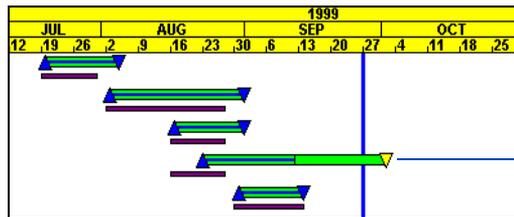
For details on showing data on bars, see the *Customizing Bar Chart Layouts* chapter.

A target comparison makes it easy to see variances between the current and target dates. Add Activity columns for almost any data item from the target project. Display activity bars that represent target dates. You can also display target and variance data on the activity bars.



When the current project is open, you can view, but not change, target data. To modify the target, either open the target project or use the update feature discussed earlier in this chapter.

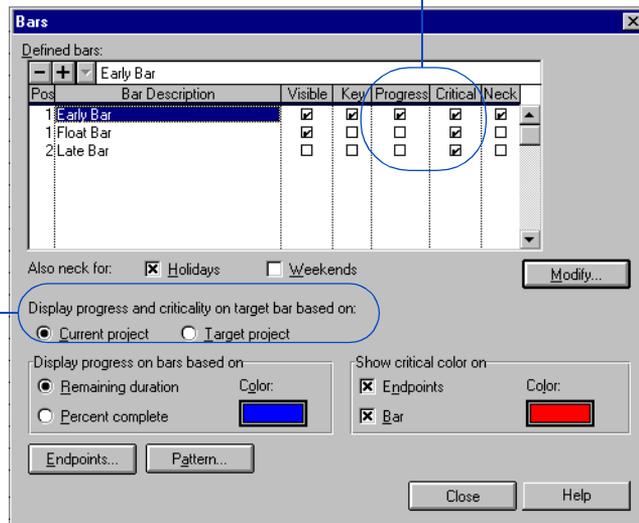
Compare progress on current and target bars You can also focus on the Bar chart to see progress at a glance. P3 indicates progress by highlighting a portion of the activity bar using a color you specify.



This activity is 50 percent complete.

Choose Format, Bars, to specify whether P3 bases target progress on the current project or the target plan.

Mark these checkboxes to show progress and criticality on bars.



Specify which project P3 uses to show progress on target bars.

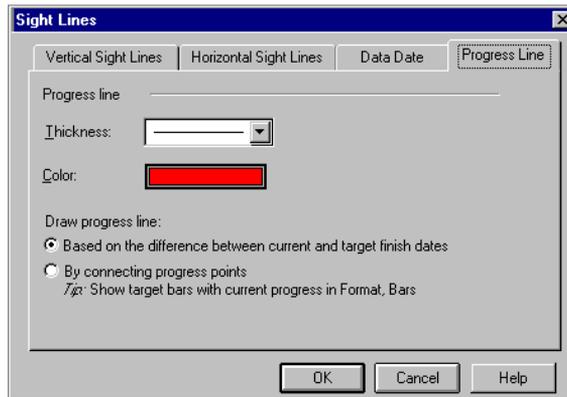
For more information about identifying progress, see the *Customizing Bar Chart Layouts* chapter.

You can base progress on the percent complete or on the remaining duration of an activity. Using percent complete, P3 highlights the portion of the bar based on the percent complete and the overall length of the bar. For example, if an activity is 40 percent complete, P3 highlights 40 percent of the overall length of the bar. When using remaining duration, P3 highlights progress from the actual start date of the activity to the point at which the remaining work is scheduled to begin.

Tracing Progress Using the Progress Line

For information about showing progress on bars, see the *Customizing Bar Chart Layouts* chapter.

Show a progress line in the Bar chart to graphically trace progress on activities to see an overall picture of how a project is performing. You can choose to base the progress line on finish date variance or on actual progress. Click the Progress Line tab in the Sight Lines dialog box (Format, Sight Lines) to select line type and color, and whether you want to base progress on target variance or on actual progress.



Choose View, Progress Line, to display the progress line.

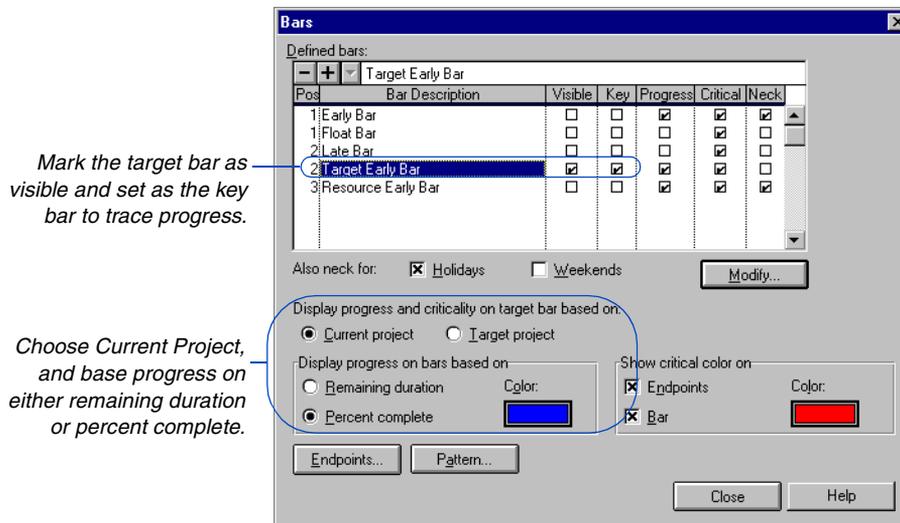
Draw progress line based on target variance Choose the Difference Between Current and Target Finish Dates option to see the progress line drawn to the left or right of the data date line using the variance value for all activities. For example, if the target finish date is two days before the current finish date (negative variance), the progress line is drawn two days to the left of the data date line. Conversely, if the target finish date is two days after the current finish (positive variance), the progress line is drawn two days to the right of the data date line. If an activity is on schedule (zero variance) the progress line is drawn to the data date.



P3 draws the variance progress line based on a continuous, seven-day calendar.

Using the variance option, you can immediately gauge whether your project is staying on track based on your original estimates. An activity is behind schedule if the progress line is drawn to the left of the data date line on the activity bar, and ahead of schedule if the line is drawn to the right of the data date line on the activity bar.

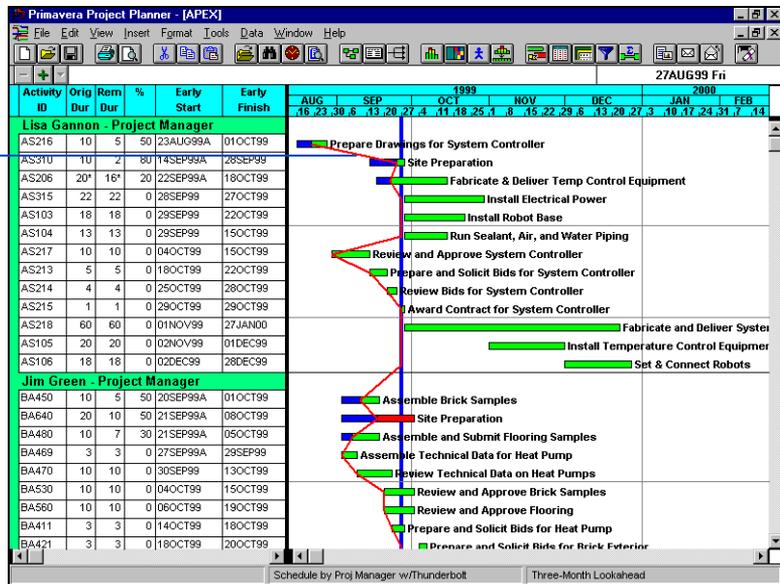
Draw progress line based on actual progress Choose the Progress Points option to see the progress line zig zag among activities that have started or that should have started, relative to the target start and finish dates. When using this option, you should choose to display target bars with progress based on the current project. (Choose Format, Bars).



For example, if you choose to show progress based on the current project and percent complete, an activity that should have been 50 percent complete according to its target dates, but is only 25 percent complete, would have its progress drawn to the left of the data date line to the 25 percent complete point as it would appear on the target bar. Conversely, if the activity is 75 percent complete, the line would be drawn to the right of the data date line to the 75 percent complete point relative to the target bar.

In the following example, the current progress (based on percent complete) is drawn on each target bar. The Percent Complete (%) column indicates that Activity AS216 is 50 percent complete. This current progress is drawn to the 50 percent complete point of the target bar. The progress line then connects each progress point.

If the progress line is drawn to the left of the data date line, the activity is behind schedule; if it appears to the right, the activity is ahead of schedule.



If an activity was scheduled to start before the data date, but has no progress, P3 draws the progress line to the target start point (indicating a delay.)

P3 draws the progress line to the data date line when:

- the activity is completed,
- the activity has no progress and is scheduled to start after the data date,
- the activity is a milestone or a flag,
- the activity does not exist in the target project, and/or
- the resource dates do not exist in the target project.



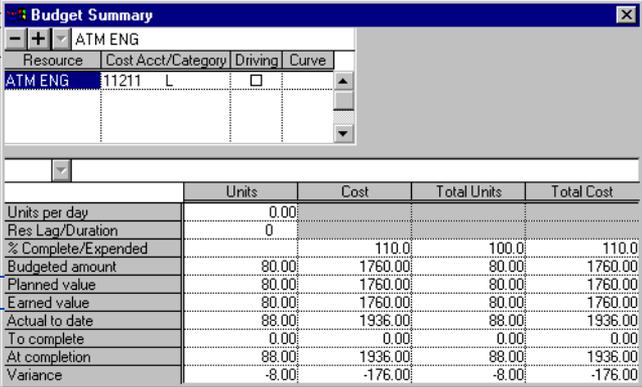
The key bar determines the bar to which the progress line is drawn. For example, if you are displaying the current and the target bar with the target bar designated as the key bar, the progress line connects points on the target bar.

Analyzing Schedule and Cost Performance

Activity bars do not always indicate whether work is progressing as scheduled. For example, an activity bar may show that an activity started on time and is 30 percent complete, but it does not indicate whether progress is proceeding as planned. If the original plan called for 50 percent of the work to be completed by the current data date, you may need to assign additional resources to finish on time, or you may need to revise the current finish date. Also, comparing actual costs to the budget in the list of activities provides no information about the spending rate or the likelihood that the task will finish within budget.

Planned value and earned value are two indicators of schedule and cost performance. They are displayed in the Budget Summary form; you can also display them as columns in the list of activities.

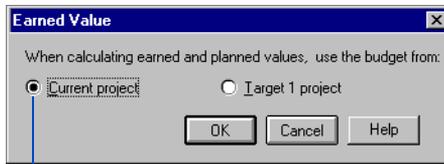
Compare these values to determine whether the activity is behind schedule.



	Units	Cost	Total Units	Total Cost
Units per day	0.00			
Res Lag/Duration	0			
% Complete/Expended		110.0	100.0	110.0
Budgeted amount	80.00	1760.00	80.00	1760.00
Planned value	80.00	1760.00	80.00	1760.00
Earned value	80.00	1760.00	80.00	1760.00
Actual to date	88.00	1936.00	88.00	1936.00
To complete	0.00	0.00	0.00	0.00
At completion	88.00	1936.00	88.00	1936.00
Variance	-8.00	-176.00	-8.00	-176.00

The planned value, commonly called the budgeted cost for work scheduled (BCWS), indicates the amount of work that should have been completed by the current data date. For example, if an activity is scheduled to start on 1DEC and finish on 12DEC and the data date is 7DEC, half the work should have been completed, assuming that the activity is assigned a calendar with a seven-day workweek.

P3 calculates the percent of work that should have been completed between the early start date in the Target 1 project and the data date, then multiplies this percentage by the budget. Use the Earned Value Calculations dialog box to specify which schedule to use for calculating planned value and earned value (choose Tools, Options, Earned Value).



Specify whether P3 uses the budget in Target 1 or in the current project to calculate the planned value and earned value.

Earned value is the value of work performed. P3 calculates this value by multiplying the percent complete by the budget in Target 1 or in the current project. For example, if the Target 1 budget equals 100 and the task is 40 percent complete, the earned value is 40.

Compare the earned value to the planned value to determine whether the activity is behind schedule. If the earned value is less than the planned value, less work was accomplished than originally planned. Compare the earned value to the actual to date value to analyze cost performance. If actual spending is proceeding as planned, the actual to date equals the earned value.

Budget Summary				
ETSLDR				
Resource	Cost Acct/Category	Driving	Curve	
ETSLDR		<input type="checkbox"/>		
EPG2TEW	C++CS3	<input type="checkbox"/>		
Summary				
	Units	Cost	Total Units	Total Cost
Units per day	8.00			
Res Lag/Duration	0			
% Complete/Expended		14.3	25.0	14.3
Budgeted amount	56.00	2800.00	112.00	6720.00
Planned value	56.00	2800.00	56.00	2800.00
Earned value	14.00	700.00	28.00	1680.00
Actual to date	8.00	400.00	16.00	960.00
To complete	48.00	2400.00	96.00	6320.00
At completion	56.00	2800.00	112.00	7280.00
Variance	0.00	0.00	0.00	-560.00

This activity is behind schedule and over budget.

Planning Resources and Costs

In this chapter:

Adding Resources to the Dictionary

Setting Resource Limits and Prices

Defining Resource Limits by Shifts

Hierarchical Resources

Setting Up Cost Accounts

Estimating Costs

Allocating Resources to Activities

Using Driving Resources

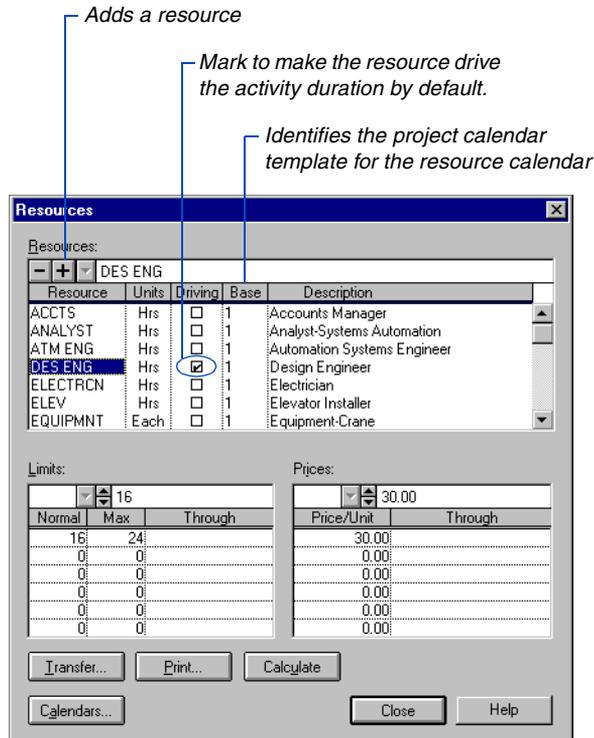
Resource Distribution

P3 enables you to develop a resource plan that integrates resources, costs, and schedule to implement effective project control. Begin by building a dictionary of the resources necessary to complete the project; for each resource, set availability limits, unit prices, and a calendar to define its standard worktime and nonworktime; then allocate resources to the activities that require them.

Using this information, P3 enables you to produce resource reports and profiles. Analyze the resource allocation, and adjust your project plan to avoid over-allocation and peaks and valleys of resource usage.

Adding Resources to the Dictionary

Use the Resource Dictionary to list the resources required to complete a project. Resources can be workers, materials, equipment, and so on.



For information on specifying base calendars, refer to the *Activity Calendars* chapter.

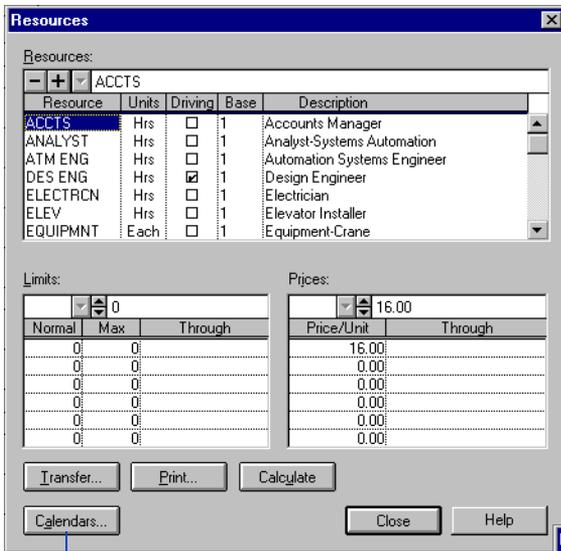
Add a resource Choose Data, Resources, to open the Resource Dictionary. Click **+** in the Resources section and type a resource name. Type a unit of measure in the Units column. Mark the Driving checkbox to make the resource drive the activity duration by default whenever it is applied. You can also make any resource a driving resource using the Driving checkbox in the Resources form. In the Base column, type the ID number of the project calendar to use as the template for the resource's calendar.

Delete a resource Select the resource to delete; then click **[-]**.



When you delete a resource from the dictionary, P3 automatically removes the resource assignment from all activities.

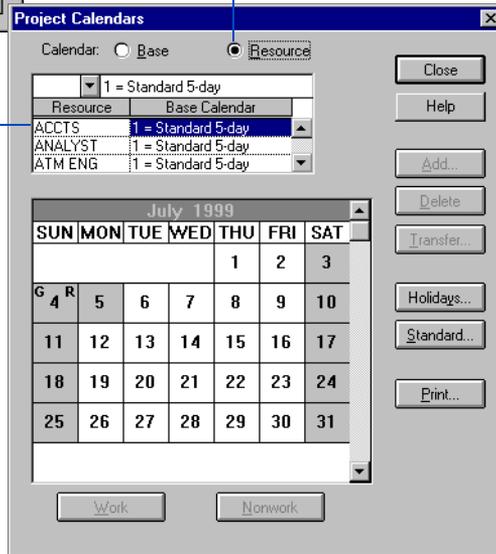
Define resource calendars Use resource calendars to record and schedule time when resources are unavailable, such as vacations. P3 assigns each resource a calendar that defines when the resource is available, without regard to the quantity available. Each resource calendar uses a base calendar as a template. To tailor the calendar to the resource, make exceptions to the base calendar, or add nonworkperiods to it. The changes become part of the resource's calendar but not part of the base calendar.



Click to open the Project Calendars dialog box.

Select a resource to view and edit its calendar.

Choose Resource to view and edit resource calendars.



For additional information, refer to the *Resource Calendars* chapter.

Transferring Resources

When assigning similar resources to more than one project, you can copy the Resource Dictionary from one project to another to save time and ensure consistency. You can copy dictionaries from projects located anywhere on your workstation or network fileserver.

P3 appends new resources and associated data to the existing list of resources for the current project; it does not overwrite the Resource Dictionary for the current project. For resources with the same name in both projects, the transferred data overwrites the old data. Resource calendar information transfers with the dictionary.

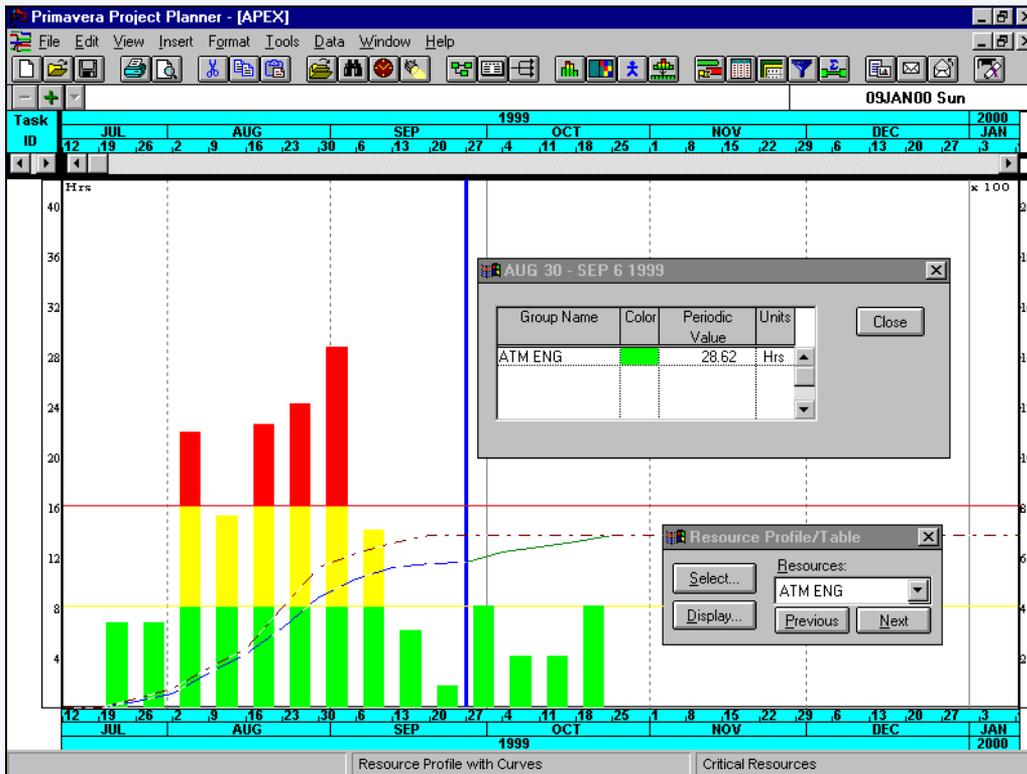
To transfer the Resource Dictionary from another project into the current one, click Transfer in the Resources dialog box. Click OK when prompted, then select the project name you want to transfer the dictionary from; click OK.

To list projects located in another drive and folder, click in the Drives field and select the drive; then double-click the folder in the Folders list box.

Analyzing Resource Availability

You can easily see the relationship between resource availability and resource demand over time. Choose View, Resource Profile, to produce onscreen profiles of resources or costs. You can specify which resource or

resources to profile; whether to display bars or an area profile; and whether to display cumulative curves showing the current schedule, the earned value, or the baseline budget.



For more information about setting up resource profiles to analyze resource availability, see the *Customizing Resource/Cost Profiles and Tables* chapter.

Setting Resource Limits and Prices

You can define the availability and price of all your resources; the available quantities and prices may vary over time. Although setting limits is optional, they help you quickly identify areas of resource overload in resource profiles.

Leave the Through column blank to apply the availability and/or price through the end of the project.

Define quantities available Select a resource and specify its limits of availability in the Limits section. Specify the normal and maximum number of units available during each workperiod (hour, day, week, or month) of the specified timeframe. Normal and maximum availabilities of zero, in combination with a blank through date, indicate unlimited availability through the end of the project.



To level resources, you must set availability limits.

Select the resource you want to define.

Specify up to six sets of limits and/or unit prices and their through dates.

Resource	Units	Driving	Base	Description
ACCTS	Hrs	<input type="checkbox"/>	1	Accounts Manager
ANALYST	Hrs	<input type="checkbox"/>	1	Analyst-Systems Automation
ATM ENG	Hrs	<input type="checkbox"/>	1	Automation Systems Engineer
DES ENG	Hrs	<input checked="" type="checkbox"/>	1	Design Engineer
ELECTRCN	Hrs	<input type="checkbox"/>	1	Electrician
ELEV	Hrs	<input type="checkbox"/>	1	Elevator Installer
EQUIPMNT	Each	<input type="checkbox"/>	1	Equipment-Crane

Limits:			Prices:	
Normal	Max	Through	Price/Unit	Through
4	8	09/27/99	30.00	12/31/99
4	12	12/31/99	45.00	
0	0		0.00	
0	0		0.00	
0	0		0.00	
0	0		0.00	

Apply price changes During initial project bidding or when estimating budgets, you may want to determine the effect of varying prices over time. You can plan for escalating costs, inflation, labor contracts, and so on. First, revise the unit price or a price through date for the resource. Then, click Calculate to apply the new price to all activities that have the resource assignment. (If you are storing period performance at the end of each schedule update period, this calculation does not affect historical prices/costs.)

Defining Resource Limits by Shifts

The workday of hourly projects can be divided into one, two, or three shifts. Each resource can have its own limit table for each shift. P3 uses these limits during resource leveling.

The Shift field appears only if you mark this checkbox.

Each shift has a limit table

Limits: Shift: 1

Normal	Max	Through
15	20	0
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

Select the shift for which you are defining limits.

For details about defining shifts in hourly projects, refer to the *Activity Calendars* chapter.

Level with shift limits If you level your project, be sure the minimum resource availability during every shift satisfies the minimum demand for the resource. For example, an activity with a 24-hour duration spanning three shifts must have access to the required number of units per time-period for all its resources during all three shifts; otherwise the activity cannot be leveled, due to insufficient resource availability. P3 produces a Resource Leveling Analysis Report automatically when you level the schedule and indicates insufficient resource availability if it occurs.

Prices and shift limits The resource price per unit holds constant during any defined date range. Shift availability limits have no effect on price.

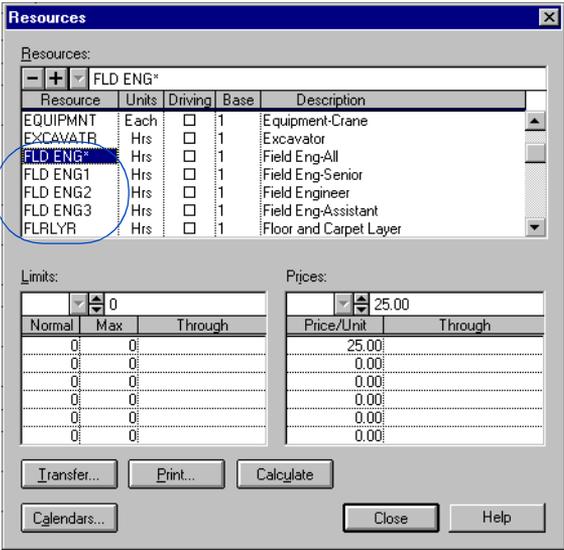
Hierarchical Resources

You can treat a group of similar resources as a single resource pool, called a hierarchical resource, for leveling and reporting purposes. When you level a hierarchical resource, P3 considers all the resources in the hierarchy as one resource.

If you do not set limits for hierarchical resources, P3 adds the normal and maximum limits of all the resources in the hierarchical group. P3 uses limits in reports and during leveling.

Level with hierarchical resources Typically, projects draw from a pool of resources in which many interchangeable resources perform the same function. For example, the Engineering department may consist of 10 field engineers who, in theory, can perform the same work. For the purpose of resource leveling the project, you can treat engineers as a hierarchical resource and level on FLD ENG*. P3 assumes that if one engineer is overloaded, another who has less work can take up the slack.

Use an asterisk to distinguish the top-level hierarchical resource from individual resources.



Filter activities by hierarchical resource You can select activities by hierarchical resource name. P3 selects all activities that use any resource with the specified common root.

Report on hierarchical resources In any report where you might specify a resource, you can specify a hierarchical resource instead. P3 rolls up the summary information for all detailed resources within the hierarchy.

Planning with Hierarchical Resources

Hierarchical resources are especially useful during project planning. If you do not know your exact resource assignments, but do know which generic resources will be needed, assign hierarchical resources to your activities and create a plan with enough detail to determine when you will need resources, and how many. Later, you can replace the hierarchical resources with specific resource assignments.

Setting Up Cost Accounts

Generally projects contain many activities, a smaller number of resources, and an even smaller number of cost accounts. For example, one cost account may represent the efforts of an entire department containing 40 people working on 100 tasks. Develop a cost account structure in which each cost account represents a unique project component. You can also establish separate cost categories to classify resources into categories such as labor, material, or equipment.

Define cost accounts Choose Data, Cost Accounts.

Define cost categories and their codes.

Define cost accounts and their titles.

Transfer the Cost Accounts Dictionary from another project.

Use wildcards to roll up cost accounts in reports and graphics. Define account titles that P3 uses in reports and graphics organized by cost accounts.

P3 automatically adds new cost accounts to the Cost Accounts Dictionary as you assign them to resources. Open the dictionary and specify account titles for the new cost accounts at your convenience.

P3 uses cost categories, one-character codes, to describe expenditure types, such as labor, material, or equipment. The 12th character of the cost account field identifies the cost category. Define as many as 36 cost account categories for a project. Use them for sorting, selecting, and summarizing cost data in reports.

Cost accounts use up to 12 characters to represent information about a resource assignment or a monetary budget. Define a consistent scheme to encode information efficiently. Intelligence is built into the APEX sample project's cost account numbering scheme. Characters 1-2 identify the project within the project group; characters 3-4 identify the item within the project; character 5 identifies the type of work: 1 for design, 3 for installation, and so forth. You can use wildcards to find the cost of all installation items by reporting on cost account `????3???????`.

The incoming dictionary replaces your current dictionary; they do not merge.

Transfer cost accounts If another project uses the same cost account structure, you can save time and insure consistency by copying its contents to the current project. Click Transfer in the Cost Accounts dialog box. You can transfer dictionaries from projects located anywhere on your PC or network fileserver.

Delete cost accounts or cost categories Choose Data, Cost Accounts to open the Cost Accounts dialog box; select the cost account or cost category to delete, and click .



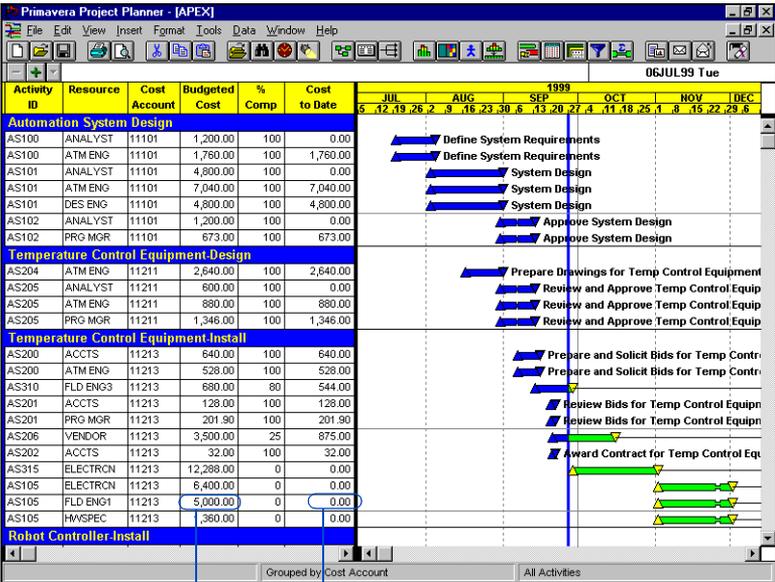
If you assign a monetary budget to an activity using a cost account but no resource name, and then delete the cost account from the dictionary, P3 removes the budget from the activity.

Assign cost accounts Once you set up the Cost Accounts Dictionary, you can use the Cost form to assign cost accounts to the activities in your project. You can also assign cost accounts in the list of activities if you include a column for cost accounts.

Estimating Costs

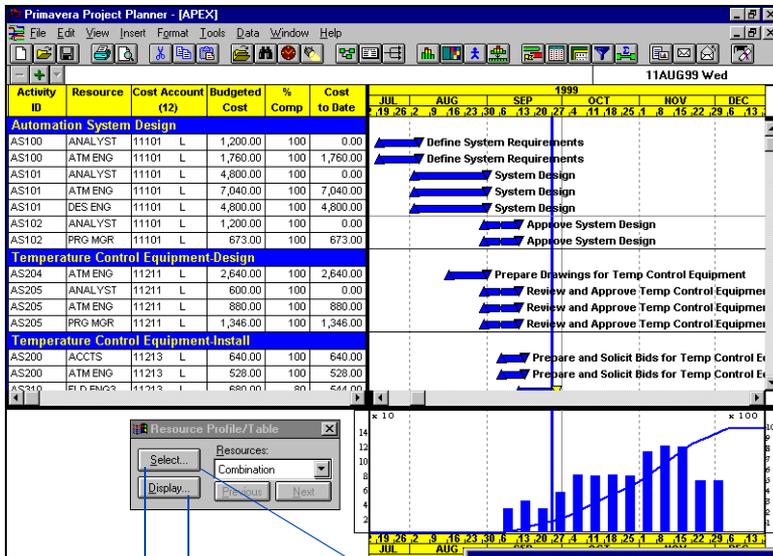
If you define prices for the resources the project uses, you can estimate project costs. Control costs at the activity level. P3 bases the calculation of activity and project budgets on your detailed estimates of labor quantities, materials, and other required resources.

Cost accounts Cost accounts help you track budgets and accumulated resource use, actual costs, and estimates of costs to complete. Use cost accounts to review costs at a summarized or a detailed level for any group of activities in the project. For example, organize your layout by cost account and include cost data columns in the list of activities to review cost accounts at a detailed level, as shown in the following layout.



Show the detailed budget and actual to date costs for each activity and resource.

You can also track costs by displaying the Resource/Cost Profile or Table. The following example illustrates a resource profile showing the average weekly expenditure for cost account 11213, including both labor and material.



Use to define a Resource Profile.

Resource Profile Selection

Select: 1

Group #	Group Name	Criteria	Low Value Resource	Low Value Cost Account	High Value Resource	High Value Cost Account
1	11213	EQ		11213 ?		

Stack so that the lowest numbered group is at the Top Bottom

OK Cancel Help

If you use a wildcard character in the Cost Category field (position 12 of the cost account), P3 includes all items in cost account 11213, regardless of their cost category.

Resource Profile Display Options

Display Type: Units Cgsts

Dates: Early Late

Activities: All Selected

Time interval: Weeks Histogram Curves

Exclude actual to date from current estimate

Histogram Calculate: Total Peak Average

Format: Area Bar

Values: Current estimate Earned value Planned value

Calendar: <Blank> Draw limits Emphasize overload with color

Curves: Current estimate Earned value Planned value

Show curves using different line types

Close Help

Mark more than one checkbox to compare curves.

If you organize the layout by resource or cost account, you can type budgets directly in the Activity columns.

Monetary budgets You can assign monetary budgets to activities without using named resources. Use either the Budget Summary or Cost form and assign the budgets to cost accounts. Divide the total activity budget among any number of cost accounts; you can assign an unlimited number of cost accounts to an activity. Treat the cost acct/category as two fields, as P3 presents it in the edit bar. The left section holds the 11-character cost account; the right section holds the 1-character cost category.

The right side of the cell holds the cost category.

The left side of the cell holds the cost account.

Type the cost category in the designated position.

Resource	ANALYST	ATM ENG		
Cost Acct/Category	11101 L	11101 L	11999	C
Driving	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
Curve				
Budgeted cost	1200.00	1760.00	2000.00	
Actual this period	0.00	1760.00	2000.00	
Actual to date	0.00	1760.00	2000.00	
Percent expended	0.0	100.0	100.0	
Percent complete				
Earned value	1200.00	1760.00	2000.00	
Cost to complete	0.00	0.00	0.00	
At completion	0.00	1760.00	2000.00	
Variance	1200.00	0.00	0.00	

This part of the activity's budget has a cost account but no resource name.

Setting the Number of Decimal Places

Before you assign costs, decide on the level of detail to use when entering and reporting cost data: zero or two decimal places. In projects that involve large sums, use zero to allow larger magnitude numbers in each of the fields. When displaying two decimal places, the maximum resource quantity or cost is 21,474,836.47. When displaying zero decimals, the largest valid number is 2,147,483,647. To specify the number of decimal places to use in a project, choose File, Project Overview, and edit the Decimal Places field.

Allocating Resources to Activities

Allocate resources and costs to activities, and assign those resources or costs to cost accounts. You can assign an unlimited number of resources and cost accounts to an activity. You can also assign the same resource and cost account to the same activity or to multiple selected activities, as many times as needed. Cost accounts are optional, but using them enhances reporting and tracking capabilities. If you are assigning different resources to individual activities, it's easiest to allocate resources using the Resources form in conjunction with the list of activities on the Bar chart.

1 Select an activity in the Activity ID column.

2 Open the Resources form.

3 Click **+**, then **▼**, to add a new resource. Choose the resource from the drop-down list; P3 assigns it to the activity.

4 Type the budget or units per timeperiod for the new resource.

Activity ID	Activity Description	Orig Dur	Item Dur	%
AS200	Prepare and Solicit Bids for	5	0	100
BA450	Assemble Brick Samples	10	5	50
AS201	Review Bids for Temp Control	2	0	100
AS202	Award Contract for Temp	1	0	100
BA480	Assemble and Submit Flooring	10	10	0
BA411	Prepare and Solicit E			
BA421	Prepare and Solicit E			
AS213	Prepare and Solicit E			
BA412	Review Bids for Hel			
BA422	Review Bids for Bri			
BA413	Award Contract for			
BA550	Fabricate and Deliv			
BA407	Prepare and Solicit			
AS214	Review Bids for Sy			
BA423	Award Contract for			
BA600	Deliver Brick			
AS215	Award Contract for			
BA408	Review Bids for Flo			
BA409	Award Contract for			
BA620	Fabricate and Deliv			
CS400	Prepare and Solicit E			
CS410	Review Bids for Co			
CS420	Award Contract			
CS450	Fabricate and Deliv	50	50	0

Resource	Units per day	Budgeted quantity	Res. Log/Duration
ATM ENG	8.00	8.00	
DBS ENG - Design Engineer			
ELECTRCN - Electrician			
ELEV - Elevator Installer			
EQUIPMNT - Equipment-Crane			
EXCAVATR - Excavator			
FLD ENG1 - Field Eng-Senior			
FLD ENG2 - Field Engineer			



Express resource budgets in the same units defined for the resource in the Resource Dictionary. For example, if the dictionary defines engineers in terms of hours per day, specify the budget for engineers in hours per day.

If you do not specify the resource duration, P3 uses the activity's remaining duration in these calculations.

Specify the budget The budgeted quantity indicates the total amount of the resource required to perform the activity. Specify either a total budgeted quantity or the required units per timeperiod. If you enter the units per timeperiod, P3 multiplies this amount by the resource's remaining duration to calculate the quantity to complete. If you enter a quantity to complete or a budgeted quantity, P3 divides this amount by the resource's remaining duration to calculate the units per timeperiod.



P3 uses the following equations for budget calculations:

$$\begin{aligned} \text{Quantity to Complete} &= \text{Units Per Timeperiod} \times \text{Remaining Duration} \\ \text{Estimate at Completion} &= \text{Estimate to Complete} + \text{Actual to Date} \end{aligned}$$



Assign the same resource to one or more activities Select one or more activities in the list of activities. Choose Insert, Resource Assignment. Assign resources to activities based on budgeted quantity and/or units per timeperiod. P3 follows the Autocost rules in either case.

Specify the quantity of time required for the resource to complete the activity(ies) and/or specify the units per timeperiod—the length of the workday (in hours) the resource will devote to the activity(ies). For example, if you specify four hours per day, and the workday is eight hours, P3 calculates a rate of four hours per day, or 50 percent.

You can also enter a resource or cost account not currently in the Resource or Cost Accounts Dictionaries; P3 adds it to the applicable dictionary automatically.

Click to select from a list of all resources.

Assign a cost account to track costs associated with the resource assignment.

Specify a total budget quantity in person-hours for nondriving resources; P3 calculates the number of units per day based on the activity's remaining duration.

For more information on this topic, refer to the *Tracking Resources and Costs* chapter.

If you enter both quantity and units per timeperiod, and are assigning a driving resource (mark the This is a Driving Resource checkbox), P3 calculates a resource duration automatically. (If the selected resource is marked as driving in the Resource Dictionary, P3 marks the This is a Driving Resource checkbox automatically.) This is the only case in which P3 calculates the resource duration.

Adjust resource and cost requirements During the development stages of a project you will probably adjust resource rates and/or forecasts. By default, P3 links the budget and the estimate at completion for activities with no progress via the Autocost rule “Link Budget and EAC for Non-Progressed Activities.” When you modify the units per timeperiod or the estimate at completion of a resource, P3 automatically updates the budget to reflect these changes. Once the plan is final and you record progress, P3 stops adjusting the budget to match the estimate at completion.

Specifying Resource Lag and Duration

By default, resource use starts when an activity starts and continues until it completes. You can describe resource use more precisely using resource lags and durations on the Resources form. Resource duration indicates the number of workperiods the resource will work, independent of the activity duration. Resource lag indicates the number of workperiods between the start of the activity and the start of the resource. P3 uses the resource’s remaining duration to calculate the quantity to complete. If you do not specify a resource duration, P3 uses the activity’s remaining duration by default.

For example, if a resource has a 5-day lag and a 10-day duration, use of the resource begins on day 6 of the activity and continues for 10 days. You can assign a resource to continue beyond an activity’s end date to model unusual situations or to reflect delayed payments.

If you do not explicitly specify a resource duration, P3 uses the activity’s duration for the resource. Whenever you specify a resource duration, with or without a lag, you must edit and reduce the resource duration as work progresses to indicate resource consumption.

Using Driving Resources

The schedule duration of an activity often depends on the number of resources you assign to it. Generally, the more resources you have, the less time required to complete an activity. You can designate a resource as driving, which means that the resource availability determines the activity's remaining duration. Enter the total effort required (quantity to complete) and the resource rate (units per timeperiod), and P3 calculates the activity's duration for you. If either the budget or rate change, the duration changes automatically.

Resource	EQUIPMNT	MASON
Cost Acct/Category	13516 E	13516 L
Driving	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Curve		
Units per day	1.00	80.00
Budgeted quantity	28.00	2240.00
Res Lag/Duration	0	0.28
Percent complete		
Actual this period	0.00	0.00
Actual to date	0.00	0.00
To complete	28.00	2240.00
At completion	28.00	2240.00
Variance (units)	0.00	0.00
Early start	07MAR00	07MAR00
Early finish	13APR00	13APR00
Late start	07MAR00	07MAR00
Late finish	13APR00	13APR00

Double-click to mark the checkbox making this a driving resource.

The units to complete divided by the units per day determine the remaining duration of the driving resource and the activity.

Global driving resources A resource can be specified as a global driving resource in the Resource Dictionary. P3 automatically marks the driving checkbox for these resources whenever they are applied to an activity; you can also double-click the checkbox for any resource to remove or apply the driving flag as appropriate. You cannot assign a resource curve to a driving resource.

For details about scheduling with driving resources, refer to the *Resource Calendars* chapter.

Determine activity duration If you assign more than one driving resource to an activity, the longest calculated resource duration determines the activity's remaining duration. P3 calculates the duration for each driving resource as follows:

$$\text{Driving Resource Duration} = \text{Quantity to Complete} \div \text{Units per Timeperiod}$$

When you first assign a driving resource, define the rate of use (units per timeperiod) and the quantity to complete. P3 calculates the quantity at completion, which equals the quantity to complete since the activity has no actual to date use recorded, and sets the budgeted quantity equal to the quantity at completion.

P3 uses the longest calculated resource duration (plus its lag) as the initial original and remaining durations for the activity. P3 uses this duration to calculate the units per timeperiod for any nondriving resource as:

$$\text{Units Per Timeperiod} = \text{Quantity To Complete} \div \text{Remaining Duration (of the Resource or Activity)}$$

When you assign more than one driving resource to a task activity, you can easily identify which resource drives the activity by comparing the duration of each resource to the activity duration.



P3 calculates the activity duration of an independent activity as the workperiod difference between the latest early finish of all its resources and the earliest early start of all its resources.

Scheduling Resources

Every resource has its own calendar; P3 schedules each activity according to either the activity's base calendar or the calendars of its assigned resources. P3 considers two factors: the activity type, and the resource type(s).

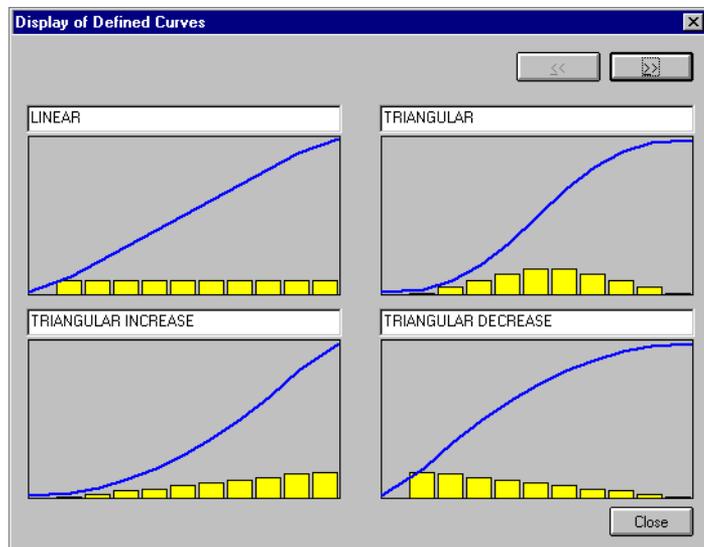
For task activities, P3 uses the activity's base calendar to schedule all resources, whether driving or nondriving. For independent activities, P3 uses the resource calendars of each resource, whether driving or nondriving. For meeting activities, P3 creates a conglomerate calendar of worktime common among all driving resources, and schedules all resources, both driving and nondriving, using this worktime.

Resource Distribution

P3 can distribute resource use, and the costs associated with it, in two ways: linearly and nonlinearly. P3 distributes resources linearly by default. Nonlinear distribution, which accurately models the way you plan to consume resources, requires you to specify how you want P3 to distribute resources.

Linear distribution P3 automatically distributes resource use (and associated costs) evenly across each activity. The actual to date consumption is spread evenly from the resource start through the data date, holding units per timeperiod constant. P3 spreads anticipated use, called the estimate to complete, evenly from the data date through the end of resource use, with a constant units per timeperiod equal to the quantity to complete divided by the resource's remaining duration.

Nonlinear distribution When resource or cost use will not be uniform, use nonlinear distribution curves to indicate how you want P3 to distribute them. For example, you might anticipate use of a resource to be slow at the beginning of an activity, increase as the activity progresses, and taper off toward completion. If you draw a graph of this planned resource use, it resembles a bell-shaped or triangular curve. P3 distributes the resource according to the curve you specify. Choose Data, Resource Curves, and click Display to preview the defined curves.



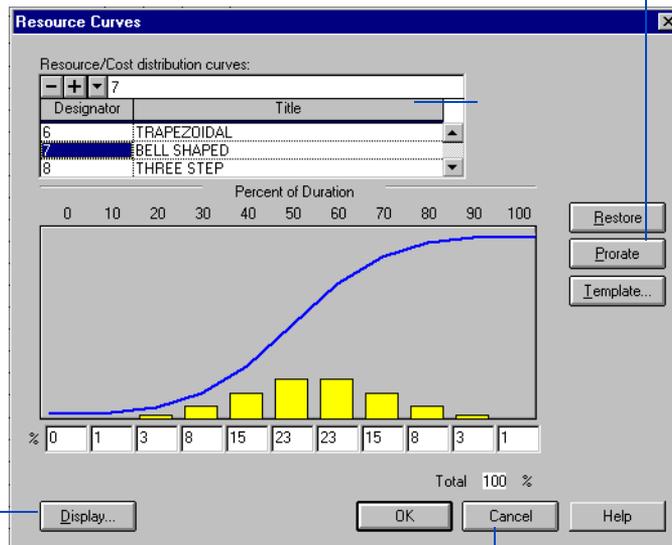
For more information about tracking period performance, see the *Tracking Resources and Costs* chapter.



If you store period performance at the end of each update period, any nonlinear curves you assign to the activities in your project will not be reflected for the actual to date spread of the resource assignments. (Period performance data are always spread according to the actual amounts recorded.) However, P3 still reflects nonlinear estimate to complete curves regardless of whether you store period performance.

View and edit resource curves P3 provides nine distribution curves. You can use them as defined, modify them, or design and add your own distribution curves. Choose Data, Resource Curves, to open the Resource Curves dialog box. When defining a new curve you can base it on an existing one: click Template, select a standard curve, and adjust the curve to your needs.

Automatically adjusts the values of a curve to equal 100 percent



Displays four curves at once

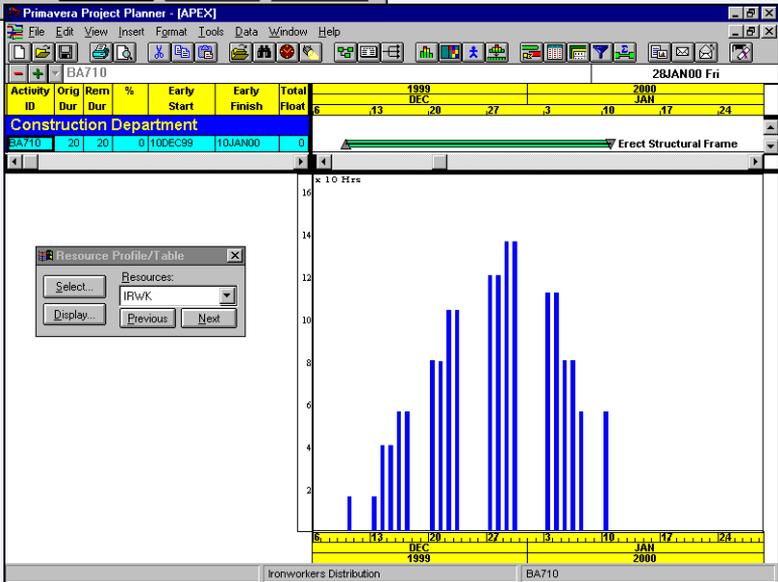
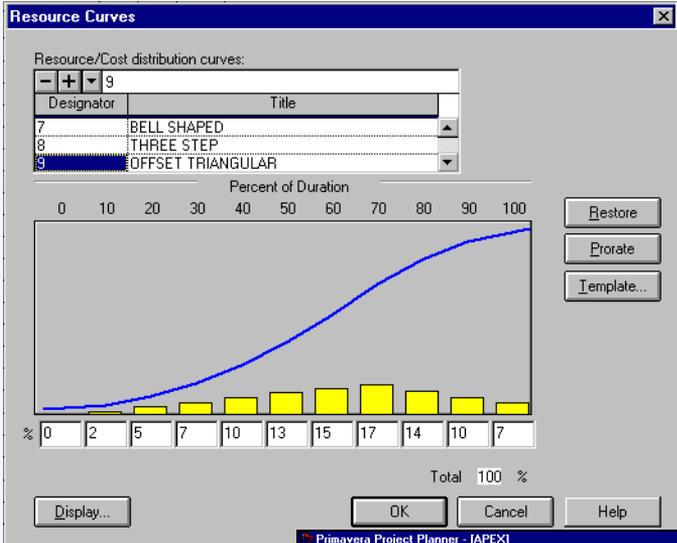
Reverts to the saved curve definition

The Resource/Cost Distribution Curves section lists the distribution curves available in P3. Select a curve to display its distribution profile.

Visualizing Nonlinear Distribution

The following examples illustrate nonlinear resource distribution for one activity. The activity uses one resource assigned to the standard Offset Triangular curve.

The resource profile illustrates how resource use increases and decreases according to the pattern of the bars in the Resource Curves dialog box.



The Percent of Duration area indicates the resource's duration in 10 percent increments. The bars represent the percentage of the total resource budget the activity has consumed (actual to date) or will consume (estimate to complete).

According to the preceding bell-shaped curve, 4 percent of the resource budget will be consumed after 20 percent of the resource duration elapses. The cumulative total of the 10 percent increments up to and including the 20 percent bar equals 4 percent.

Assign a curve to a resource Assign curves to any nondriving resource using the Resources, Budget, or Cost form. Type a valid curve designator (0–9, A–F) in the Curve cell or right-click the cell and select a curve from the drop-down list. You can also assign curves to resources by editing the Resource Curve column in the list of activities if the layout is grouped by either resource or cost account.

Display actual resource usage P3 uses distribution curves when displaying and reporting actual to date resource data, if you are not tracking actual data in the past (by closing out the period). When statusing activities that use resource curves, you must record an actual start date for the activity. P3 calculates the actual duration of the resource as the workperiod difference between the actual start date and the data date, minus any resource lag.

P3 calculates a new total duration for the resource as

$$\text{Total Duration} = \text{Actual Duration} + \text{Remaining Duration}$$

In the preceding calculation, P3 uses the remaining duration for the resource if one is specified; otherwise, P3 uses the remaining duration for the activity.

P3 calculates the percent of total duration already completed as

$$\text{Percent of Duration Completed} = (\text{Actual Duration} \div \text{Total Duration}) \times 100$$

P3 uses this percentage to calculate the actual to date and the estimate to complete based on the assigned curve. P3 divides the distribution curve at the percent of duration completed. For example, using the Offset Triangular curve, when the activity is 40 percent complete it has consumed 24 percent of the resource.

P3 calculates the actual to date as the product of the budget and the percent of cumulative use, or

Actual to Date = Percent of Cumulative Use x Budget

P3 then distributes the actual quantity proportionately over the actual duration from the actual start date to the data date, based on the curve values.

For details, refer to the *Tracking Resources and Costs* chapter.

P3 calculates a new estimate to complete as the estimate at completion minus the actual to date (using the default Autocost rule responses). P3 spreads this estimate to complete from the data date to the early finish date, also using the distribution scale.

Curves for Monetary Budgets

P3 always associates resource curves with named resources. To create a purely monetary budget and employ a resource curve to distribute it, you must associate a resource name with the budget. To do this, create a resource named Cash with a price per unit of 1; treat Cash as a resource, apply it to the activity, and assign it a curve.

Tracking Resources and Costs

In this chapter:

Overview of Autocost Rules

Applying Autocost Rules to Projects

Setting Autocost Rules

Updating a Project with Autocost

Updating Driving Resources

Cost Calculations

Measuring Earned Value

Updating Resources Using the Resources Form

Updating Resources Using the Bar Chart

Storing Period Performance

Analyzing Cost and Schedule Variances

Once you establish a baseline budget, you can begin tracking resources and costs for the project. This chapter discusses some of the ways P3 helps you update, report, and visualize the use of resources and funds throughout the project.

P3's Autocost feature makes most manual updating unnecessary, but you can manually record exact resource use as the project progresses for the most accurate results.

Overview of Autocost Rules

During the life of a project, as you record progress for activities you should also track the use and cost of resources. By tracking resources and costs as they are used, you can most accurately anticipate the resources and funds needed to finish the job.

P3's Autocost feature automatically updates resource and cost information based on the schedule progress you report. For example, when you update an activity's schedule percent complete or remaining duration, Autocost can estimate the resources' actual use and cost to date, estimates to complete, and estimates at completion. You can overwrite P3's resource and cost calculations, or allow P3's estimates to stand. P3 displays these estimates as you update each activity, so you can see their effect on resource and cost values immediately.

For details on setting Autocost options, refer to the *Setting Autocost Rules* section later in this chapter.

The default Autocost rules configuration is appropriate for most projects, but you can modify the rules to suit your specific needs and methods.

Autocost enables you to model lump-sum (fixed-price) and cost-plus (cost-reimbursable) projects. Autocost calculates resource costs based on the unit prices you define in the Resource Dictionary. If the calculated costs are inaccurate, you can type exact cost values and configure Autocost to retain them.



You should be thoroughly familiar with the basic resource and cost components of P3 before changing any Autocost rules.

Applying Autocost Rules to Projects

P3 has a set of global Autocost rules that you can define, view, or modify at any time. P3 applies these rules to all new projects. You can change the rules for any project or project group at any time.



Autocost rules apply to the entire project; you cannot set rules for individual activities.

A project group and a project can have different Autocost settings. When you edit data, P3 applies the Autocost rules of the currently open project.

P3 offers two types of Autocost rules:

- **System global default settings.** To set the global Autocost rules that apply to all new projects added from your workstation, close all projects and choose Tools, Options, Default Autocost Rules.
- **Project-specific Autocost rules.** To set the Autocost rules for a specific project or project group, open the project or project group and choose Tools, Options, Autocost Rules.

Use these optional fields to note who set the rules, and when.

Automatic Cost/Resource Calculation Rules for APEX

Identifier: Date:

Link remaining duration and schedule percent complete
 Freeze resource units per time period
 Add actual to ETC Subtract actual from EAC
 Allow negative ETC

When quantities change, use current unit prices to recompute costs:
 Budget Actual to date Estimate to complete

Use the update percent complete against budget to estimate
 Actual quantity to date Actual cost to date

Link budget and EAC for non-progressed activities
 Calculate variance as: Budget - EAC EAC - budget

Perform these calculations during each schedule computation

Apply these rules when moving from one Cell to another Resource

Transfer... Default... OK Cancel Help

P3 provides a set of recommended Autocost rule settings. While viewing your own Autocost rules, click here to view P3's recommendations.

Global Autocost Default

Link remaining duration and schedule percent complete
 Freeze resource units per time period
 Add actual to ETC Subtract actual from EAC
 Allow negative ETC

When quantities change, use current unit prices to recompute costs:
 Budget Actual to date Estimate to complete

Use the update percent complete against budget to estimate
 Actual quantity to date Actual cost to date

Link budget and EAC for non-progressed activities
 Calculate variance as: Budget - EAC EAC - budget

Perform these calculations during each schedule computation

Apply these rules when moving from one Cell to another Resource

Apply Cancel Help

To make P3's recommendations your workstation's Global defaults for all new projects, start P3, but do not open any projects. Choose Tools, Options, Autocost Rules. Click the Default button. Click Apply.

When a project or project group is open, click Apply to accept your system's global defaults for the current project.

Setting Autocost Rules

The Automatic Cost/Resource Calculation Rules dialog box contains several rules and options. The settings of these rules and options constitute your project's Autocost specification. Modify these settings by marking or clearing their checkboxes.

P3 always balances a fundamental equation:

$$\text{Quantity To Complete} = \text{Units Per Timeperiod} \times \text{Remaining Duration}$$

When you update an activity and one or more of these variables change, P3 balances the equation automatically. For example, if the remaining duration changes and the units per timeperiod cannot change, P3 changes the quantity to complete to balance the equation. However, if the Autocost rules allow the units per timeperiod to change, the quantity to complete remains the same. By setting the Autocost rules, you determine which variables change.

In the following discussion, marked checkboxes and options indicate Primavera's recommended default settings.

Link remaining duration and schedule percent complete

Action: This rule automatically links each activity's schedule percent complete (PCT) with its remaining duration (RD). When you update either one, P3 calculates the other. Clear this checkbox if the schedule percent complete for your activities does not typically indicate their remaining duration.

When using resource curves, clear the checkbox to have P3 calculate earned value based on a resource or schedule percent complete that you specify, rather than calculating a nonlinear percent complete derived from the resource curve.

Remarks: If you clear the checkbox for this rule, you can indicate that an activity's remaining duration does not accurately reflect its percent complete. For example, an activity with an original duration of 10 days may already be 90 percent complete, yet you expect it to take 5 days to complete the remaining 10 percent of work.

P3 calculates the finish date using remaining duration, ignoring percent complete. P3 calculates earned value and actuals to date using percent complete, ignoring remaining duration.

Freeze resource units per time period

Action: When this checkbox is not marked, P3 can adjust the units per timeperiod when the estimate to complete or the remaining duration changes:

$$\text{Units Per Timeperiod} = \text{Estimate To Complete} \div \text{Remaining Duration}$$

Mark this checkbox to freeze the units per timeperiod and calculate a new estimate to complete when the remaining duration changes:

$$\text{Estimate To Complete} = \text{Units Per Timeperiod} \times \text{Remaining Duration}$$

$$\text{Estimate At Completion} = \text{New Estimate To Complete} + \text{Actual To Date}$$

Remarks: If your resource units per timeperiod are fixed (for example, a constant crew size), mark this checkbox to freeze the units per timeperiod. When you want to spread the resource estimate to complete over the remaining duration of an activity (for example, manpower as a variable crew size), clear the checkbox.

Add actual to ETC Subtract actual from EAC
 Allow negative ETC

Action: Choose Add Actual To ETC to have P3 calculate a new estimate at completion (EAC) when the estimate to complete (ETC) or the actual quantity to date (QTD) value changes:

$$\text{Estimate At Completion} = \text{Estimate To Complete} + \text{Actual To Date}$$

Use this option when working with a cost-plus contract, or when the estimate at completion is not fixed.

Choose Subtract Actual From EAC (estimate at completion) to have P3 calculate a new estimate to complete when the estimate at completion or the actual to date value changes:

$$\text{Estimate To Complete} = \text{Estimate At Completion} - \text{Actual To Date}$$

Using the new estimate to complete, P3 automatically recalculates the units per timeperiod as

$$\text{Units Per Timeperiod} = \text{Estimate To Complete} \div \text{Remaining Duration}$$

Use this option when working with a fixed-price contract, and you must accomplish work using a finite quantity or within a fixed budget. This approach helps you track the amount of resource remaining before you exceed the budget.

Mark the Allow Negative ETC (Estimate To Complete) checkbox to indicate that you will accept a negative estimate to complete. If you mark this checkbox, P3 indicates a negative value with a minus sign if the actual to date value exceeds the estimate at completion. If you don't mark this checkbox and P3 calculates a negative estimate to complete, P3 sets the estimate to complete to zero, and the estimate at completion to the actual to date.

Remarks: This rule freezes either the estimate to complete or the estimate at completion when the actual to date changes. If you add the actual to date to the estimate to complete, P3 calculates a new estimate at completion showing you the cost to complete the activity, as well as the variance (if any) between the new estimate at completion and the budget. If you subtract the actual to date from the estimate at completion, P3 calculates a new estimate to complete, showing you the amount of resource remaining before you exceed the budget.

Since a negative estimate to complete is usually illogical, you will rarely mark the Allow Negative ETC checkbox. Some analysts, however, use negative estimates to complete to indicate adjustments, overpayments, or credits.



Accept negative estimates to complete with caution, since the more the project is over budget, the less it appears to cost to finish it.

When quantities change, use current unit prices to recompute costs:

Budget Actual to date Estimate to complete

Action: Marking any checkbox for this rule causes P3 to calculate the cost of the resource's budget, actual to date, or estimate to complete as the product of its unit price (from the Resource Dictionary) and the quantity. P3 uses the following formulas:

$$\begin{aligned}\text{Budgeted Cost} &= \text{Budgeted Quantity} && \times && \text{Price Per Unit} \\ \text{Actual Cost} &= \text{Actual Quantity To Date} && \times && \text{Price Per Unit} \\ \text{Cost To Complete} &= \text{Quantity To Complete} && \times && \text{Price Per Unit}\end{aligned}$$

Because the cost at completion depends on the newly calculated costs, P3 recalculates the cost at completion as

$$\text{Cost At Completion} = \text{Cost To Complete} + \text{Actual Cost}$$

Remarks: Usually, you do not recalculate the resource budget once you set it. If the authorized work on a particular activity increases, however, P3 must recalculate the budget to reflect the greater quantity.

In cost-reimbursable and time-and-materials projects, you typically recalculate the cost to complete each time you revise the quantity to complete. In fixed-price jobs, however, the cost to complete may not be related to the quantity remaining or the unit price of the resource. The cost to complete is simply the unexpended portion of the budget, although the quantity to complete is the difference between the original budget quantity and the actual quantity to date.

You may want P3 to estimate the actual cost expended in performing an activity, rather than entering exact values yourself. P3 estimates actuals by multiplying the actual quantity to date by the unit price of the resource. This technique is especially useful in projects where actual cost data are unavailable, but costs are still important. In theory, however, if timely data are available, you should always record actuals rather than estimates.



If you use period closeout to store historical data, only current costs are recalculated; data stored for past periods remains unchanged.

Use the update percent complete against budget to estimate

Actual quantity to date Actual cost to date

Action: Marking either or both checkboxes causes P3 to estimate the actual to date as

$$\text{Actual Quantity} = \text{Budgeted Quantity} \times \text{Percent Complete}$$

$$\text{Actual Cost} = \text{Budgeted Cost} \times \text{Percent Complete}$$

P3 performs these calculations whenever the budget, schedule percent complete, or resource percent complete changes. However, if you use period closeout to record historical data, P3 uses the actual values as part of the calculation.



If you enter a resource percent complete, it supersedes the schedule percent complete in the calculation. If the resource percent complete field remains empty, P3 uses the activity's schedule percent complete.

Actual to date values that you enter override calculated values. If you do not mark this rule's checkboxes, only the actuals you enter appear in the project.

Remarks: When you mark either checkbox in this rule, P3 displays the estimated actual values onscreen and responds as if you had typed the estimates yourself, recalculating other values accordingly.

Link budget and EAC for non-progressed activities

Action: Mark the checkbox to automatically set the budget equal to the estimate at completion (EAC) as long as the activity has no progress. To change the estimate at completion and the budget before work begins, change either of the two variables; P3 changes the other to match the edited value.

A nonprogressed activity is any activity that does not have an activity percent complete, resource percent complete, actual to date, or actual start date.

Remarks: This rule is helpful during the planning stages of a project, when you need to adjust resource requirements until the plan is acceptable. When you are satisfied with the budgets, clear the checkbox. Then the budgets do not change unless you revise them directly.

Calculate variance as: Budget - EAC EAC - budget

Action: By default, P3 calculates variance as Budget minus EAC (Estimate At Completion), and overruns appear as negative variances. Choose the second option, EAC minus Budget, to show overruns as positive variances.

Remarks: If you prefer to represent an under-budget completion estimate as a positive number, choose EAC minus Budget.

Perform these calculations during each schedule computation

Action: Autocost calculations occur when data changes because you make an edit, or because a schedule computation changes the remaining duration (RD) of activities with expected finish constraints or nonlinear resources. Otherwise, when this checkbox is not marked, P3 does not perform Autocost calculations when you schedule a project.

When you mark this checkbox, P3 recalculates the quantities and costs of all activities, based on the current Autocost rule settings when it schedules the project.

Remarks: If your project uses nonlinear resource curves or expected finish constraints, resource use, price, or schedule percent complete can vary as the data date advances. Mark this checkbox to obtain the most accurate information.



P3 recalculates all values, including those you enter directly, such as actual quantities. If you want to enter data manually, wait until scheduling finishes, when the Autocost calculations have finished.

If you change Autocost rules and want to evaluate all calculations according to the new rules, mark this checkbox. Schedule the project (without necessarily changing the data date), and P3 calculates all resource/cost data using the new settings. When P3 finishes scheduling, clear this checkbox.

Apply these rules when moving from one Cell to another.
 Resource

Action: When you update resource and cost data in the Resources, Budget Summary, or Cost forms, P3 can recalculate all fields each time you change any field, or P3 can wait until you finish editing the resource before performing calculations. Choose Cell and P3 recalculates resource and cost values immediately, each time you change the value of a cell in a resource. Choose Resource and P3 waits to recalculate all fields until you end the edit or move to another resource. When updating resource and cost values in Columns, P3 always recalculates as you move from cell to cell. The following example shows the effect of choosing each option.

Original values

Resource	FLD ENG1	HWSPEC
Cost Acct/Category	11223 L	11223 L
Driving	<input type="checkbox"/>	<input type="checkbox"/>
Curve		
Units per day	8.00	4.00
Budgeted quantity	144.00	72.00
Res Lag/Duration	0	0
Percent complete		
Actual this period	0.00	0.00
Actual to date	0.00	0.00
To complete	144.00	72.00
At completion	144.00	72.00
Variance (units)	0.00	0.00

Cell option chosen

Resource	FLD ENG1	HWSPEC
Cost Acct/Category	11223 L	11223 L
Driving	<input type="checkbox"/>	<input type="checkbox"/>
Curve		
Units per day	10.00	4.00
Budgeted quantity	180.00	72.00
Res Lag/Duration	0	0
Percent complete		
Actual this period	0.00	0.00
Actual to date	0.00	0.00
To complete	180.00	72.00
At completion	180.00	72.00
Variance (units)	0.00	0.00
Early start	29SEP99	29SEP99
Early finish	22OCT99	22OCT99
Late start	13MAR00	13MAR00
Late finish	05APR00	05APR00

Value increased to 10.00.

Values change immediately.

Resource option chosen

Resource	FLD ENG1	HWSPEC
Cost Acct/Category	11223 L	11223 L
Driving	<input type="checkbox"/>	<input type="checkbox"/>
Curve		
Units per day	10.00	4.00
Budgeted quantity	144.00	72.00
Res Lag/Duration	0	0
Percent complete		
Actual this period	0.00	0.00
Actual to date	0.00	0.00
To complete	144.00	72.00
At completion	144.00	72.00
Variance (units)	0.00	0.00
Early start	29SEP99	29SEP99
Early finish	22OCT99	22OCT99
Late start	13MAR00	13MAR00
Late finish	05APR00	05APR00

Value increased to 10.00.

Values do not change until you finish editing for this resource.

Remarks: When you choose the Resource option and update more than one variable, P3 resolves logical contradictions using logical rules. The following section explains how P3 prioritizes values and recalculates data when you update more than one variable.

Updating a Project with Autocost

When you update the schedule, you can have P3 update the resources and costs for you. Mark the checkbox for the first Autocost rule to link the remaining duration and percent complete; mark the checkbox for the rule to recalculate costs based on quantity changes; mark the checkbox for the rule to estimate actual quantities and costs based on the newly updated activity percent complete. With these rule settings, to update the project all you need to do is record the new schedule percent complete or remaining duration for each activity.

You can input additional data if you like. You can change six variables while updating an activity:

- Percent complete
- Remaining duration
- Units per timeperiod
- Actual to date
- Estimate to complete
- Estimate at completion

P3 always balances the following two equations regardless of the data you update:

$$\text{Estimate To Complete} = \text{Units Per Timeperiod} \times \text{Remaining Duration}$$

$$\text{Estimate At Completion} = \text{Estimate To Complete} - \text{Actual To Date}$$

Change several variables Sometimes, if you change several variables, these equations contradict one another. For example, suppose you revise the estimate to complete (QTC) and the units per timeperiod (UPT).

Since you are changing the estimate to complete and the units per timeperiod, P3 can only calculate the Remaining Duration as it tries to balance the first equation. However, P3 can only calculate the Remaining Duration of a driving resource.

To resolve this unbalanced equation, P3 accepts or rejects your edited values according to the following priorities:

Priority	Variable
1	Remaining Duration
2	Units Per Timeperiod
3	Actual Quantity To Date
4	Estimate To Complete and Estimate At Completion

In the preceding example, units per timeperiod has a higher priority than quantity to complete; therefore, P3 accepts the value you specify for units per timeperiod, and recalculates the estimate to complete to balance the equation.

Change only the remaining duration If you change only the remaining duration of an activity, P3 refers to your setting for the Autocost rule to freeze units per timeperiod to determine whether to hold the units per timeperiod constant and calculate the estimate to complete, or hold estimate to complete constant and calculate the units per timeperiod.

P3 can interpret the basic equation in two ways:

$$\text{Estimate To Complete} = \text{Units Per Timeperiod} \times \text{Remaining Duration}$$

or

$$\text{Units Per Timeperiod} = \text{Estimate To Complete} \div \text{Remaining Duration}$$

If the rule is set to freeze the resource units per timeperiod, P3 uses the first form of the equation and recalculates the estimate to complete. If you cleared the checkbox for the rule to freeze units per timeperiod, P3 uses the new remaining duration to calculate a new units per timeperiod value.

Changing Autocost Settings

In general, once you set the Autocost rules at the start of a project, you should not change them. Autocost calculations are sensitive to the variables you update. If you must change rules in the middle of a project, remember that activities you already updated will not immediately reflect the new rules. To recalculate them using the new rules, mark the Perform These Calculations During Each Schedule Computation checkbox and calculate the schedule. When P3 finishes recalculating the schedule, clear the checkbox.

Updating Driving Resources

If you assign a driving resource to a task activity, the remaining duration of that resource determines the activity's remaining duration. If you assign more than one driving resource to a task activity, P3 uses the longest driving resource duration as the remaining duration of the activity.



P3 calculates the activity duration of an independent activity as the workperiod difference between the latest early finish of all its resources and the earliest early start of all its resources.

P3 calculates each driving resource's remaining duration based on its units per timeperiod (UPT) and quantity to complete (QTC). The key equation is

$$\text{Remaining Duration} = \text{Quantity To Complete} \div \text{Units Per Timeperiod}$$

To update a resource-driven activity, update its resources. Clear the checkbox for the first Autocost rule, which links percent complete and remaining duration; P3 always calculates the activity's remaining duration when you assign driving resources.

The simplest way to update resource-driven activities is to update each resource's actual to date and estimate to complete. With this data, P3 calculates the rest of the resource data as well as the activity's remaining duration. If you like, you can also update resource percent complete, estimate at completion, or units per timeperiod, if they change. If the checkbox for the rule to use the percent complete against budget to estimate is marked, P3 multiplies the resource percent complete by the budget to estimate the actual to date. Then, P3 uses the estimated actual to date to calculate a new estimate to complete and estimate at completion.



If a resource percent complete is blank, P3 uses the activity percent complete to calculate the actual to date for that resource.

Cost Calculations

The relationships between cost variables are similar to those between resource variables: the actual cost to date plus the cost to complete must always equal the cost at completion. Cost calculations are simpler than resource calculations because costs have no units per timeperiod variable.

P3 can calculate financial data for you and display it in the Cost and Budget Summary forms or in Activity columns. By calculating costs based on resource quantities, P3 eliminates the need to enter data for both resources and their associated costs. Control the automatic cost calculations using the Autocost rules “When quantities change, use current unit prices to recompute costs,” and “Use the update percent complete against budget to estimate.”

The “When quantities change, use current unit prices to recompute costs” rule enables you to update costs immediately by updating only resource quantities. When you mark one or more checkboxes in this rule, P3 calculates costs for the budget, actual to date, and estimate to complete as the product of the resource’s unit price (from the Resource Dictionary) and the resource quantity, using the following equations:

$$\text{Budgeted Cost} = \text{Budgeted Quantity} \times \text{Price Per Unit}$$

$$\text{Actual Cost} = \text{Actual Quantity} \times \text{Price Per Unit}$$

$$\text{Cost to Complete} = \text{Quantity to Complete} \times \text{Price Per Unit}$$

If you use period closeout to record historical data, P3 uses the actual values as part of the calculation.

If any calculation changes the cost to complete, P3 automatically recalculates the estimated cost at completion as

$$\text{Cost at Completion} = \text{Actual Cost} + \text{Cost to Complete}$$

To suppress automatic cost calculations when you update resource quantities, clear the checkboxes for this rule.

The “Use the update percent complete against budget to estimate” rule pertains to the calculation of actual quantities and costs to date automatically. This rule enables you to use the updated percent complete value (either schedule percent or resource percent) to calculate a new actual cost to date as

$$\text{Actual Cost} = \text{Budgeted Cost} \times \text{Percent Complete}$$

P3 uses the new actual cost to recalculate the cost at completion as

$$\text{Cost at Completion} = \text{Actual Cost} + \text{Cost to Complete}$$



The Autocost rules “When quantities change, use current unit prices to recompute costs,” and “Use the update percent complete against budget to estimate,” relate to estimating actual costs in different circumstances. If you mark checkboxes for both rules, the first rule overrides the second in case of a conflict. For example, if you change a quantity and also change the resource percent complete, P3 recalculates the actual cost as the product of the price per unit and the new quantity.

Even when cost-related rules are marked, you can type values directly. For example, if the “When quantities change, use current unit prices to recompute costs” rule is marked and you revise an actual cost to date, the add/subtract rule (the third rule) determines whether P3 calculates the cost to complete or the cost at completion.

Automatic cost calculations flow in one direction from resource units to their associated costs. Editing costs does not effect resource quantities.

Recalculate costs If you revise a price per unit or through date for a resource in the Resource Dictionary, P3 can recalculate the cost for every application of that resource based on the new unit price. Click Calculate in the Resource Dictionary when prices change. P3 recalculates the costs for each activity affected by the new unit price or date. If you change a price per unit or through date and do not click Calculate, P3 asks if you want to recalculate costs when you close the Resources dialog box or edit another resource in the dictionary.

Measuring Earned Value

Once an activity begins, you can measure actual performance and compare it to planned performance, as indicated in the baseline schedule. Earned value is a measure of the value of work actually performed up to the data date.

The Budget Summary form includes cost and quantity data for each resource/cost account assigned to an activity. The following example shows the Budget Summary form for an activity in progress.

Budget Summary				
EXCAVATR				
Resource	Cost Acct/Category	Driving	Curve	
EXCAVATR	13206 L	<input type="checkbox"/>		
Summary				
	Units	Cost	Total Units	Total Cost
Units per day	48.00			
Res Lag/Duration	0			
% Complete/Expended		50.0	50.0	50.0
Budgeted amount	960.00	20640.00	960.00	20640.00
Planned value	720.00	15480.00	720.00	15480.00
Earned value	480.00	10320.00	480.00	10320.00
Actual to date	480.00	10320.00	480.00	10320.00
To complete	480.00	10320.00	480.00	10320.00
At completion	960.00	20640.00	960.00	20640.00
Variance	0.00	0.00	0.00	0.00

As of the data date, according to the target plan this activity should have already used 720.00 units of the resource EXCAVATR at a cost of 15480.00.

As of the data date, this activity has earned payment for only 480.00 units of the resource at a cost of 10320.00.

Schedule variance The difference between the earned value (BQWP) and the planned value, or budgeted quantity for work scheduled (BQWS) is called schedule variance. In a favorable schedule variance, the earned value exceeds the planned value; that is, the rate of completion, as indicated by the consumption of the resource, is ahead of schedule.

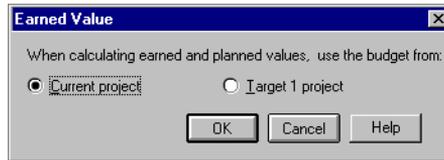
Cost variance The difference between the actual cost to date of the resource (ACWP) and the earned value (BCWP) of the resource is called cost variance. In a favorable cost variance, the earned value exceeds the actual cost; that is, the cost of earning a certain percentage of the total budget is less than expected.

Configuring earned value and planned value calculations P3 calculates earned value (budgeted cost for work performed, or BCWP) as the product of the resource's budget and its percent complete as of the data date. If the resource percent complete is blank, P3 uses the activity's schedule percent complete (PCT) in the calculation.



Where nonlinear resource curves are used, P3 calculates the resource's percent complete using the curve.

The planned cost and quantity values are measures of the work that should have completed as of the data date according to the target schedule. The planned cost value increases as the data date moves forward, while the BCWP increases when more work is completed. Calculations of BCWP and planned cost can use the resource budget from the current schedule or from the Target 1 schedule. To set this option, choose Tools, Options, Earned Value.



For details on configuring the display for decimal places, refer to the *Estimating Costs* section in the *Planning Resources and Costs* chapter.

Decimal display P3 normally displays resource and cost values onscreen and in reports using two decimal places. If you change the setting from two decimal places to zero, P3 rounds existing numbers. If you change the setting back to two decimals again, the decimal values are initially all zeros.

Updating Resources Using the Resources Form

In the Bar chart, you can open the Resources form for any selected activity to review all quantities associated with each resource. Right-click on the activity and choose Activity Detail, Resources, or open the Activity form and click Res.

Select any of these fields and type its value in the edit bar, or click ▾ and choose a value from the drop-down list.

These are calculated fields; you cannot edit them.

Resources	
+ ▾ 8.00	
Resource	FLD ENG3
Cost Acct/Category	11233 L
Driving	<input type="checkbox"/>
Curve	
Units per day	8.00
Budgeted quantity	160.00
Res Lag/Duration	0
Percent complete	
Actual this period	0.00
Actual to date	0.00
To complete	160.00
At completion	160.00
Variance (units)	0.00
Early start	17FEB00
Early finish	16MAR00
Late start	12OCT00
Late finish	08NOV00

Choose whether to enter actual use since the last period closeout, actual use to date, the resource percent complete, the estimate to complete, or the estimate at completion. When you update any one of these quantities, P3 can update the others automatically. For example, to update the activity using the resource shown above (using the default Autocost rules), you can record the activity's actual start date and new remaining duration, and the resource's actual to date use or percent complete; P3 calculates the other quantities.

Resources	
+ ▾ 40.00	
Resource	FLD ENG3
Cost Acct/Category	11233 L
Driving	<input type="checkbox"/>
Curve	
Units per day	8.00
Budgeted quantity	160.00
Res Lag/Duration	0
Percent complete	
Actual this period	40.00
Actual to date	40.00
To complete	120.00
At completion	160.00
Variance (units)	0.00
Early start	27AUG99
Early finish	09MAR00
Late start	27AUG99
Late finish	01NOV00

The project manager recorded the actual start date, reduced the activity's remaining duration, and recorded the actual to date resource use. P3 calculated the actual this period, to complete, and variance.

Resources	
+ ▾ 25.0	
Resource	FLD ENG3
Cost Acct/Category	11233 L
Driving	<input type="checkbox"/>
Curve	
Units per day	8.00
Budgeted quantity	160.00
Res Lag/Duration	0
Percent complete	25.0
Actual this period	40.00
Actual to date	40.00
To complete	120.00
At completion	160.00
Variance (units)	0.00
Early start	27AUG99
Early finish	09MAR00
Late start	27AUG99
Late finish	01NOV00

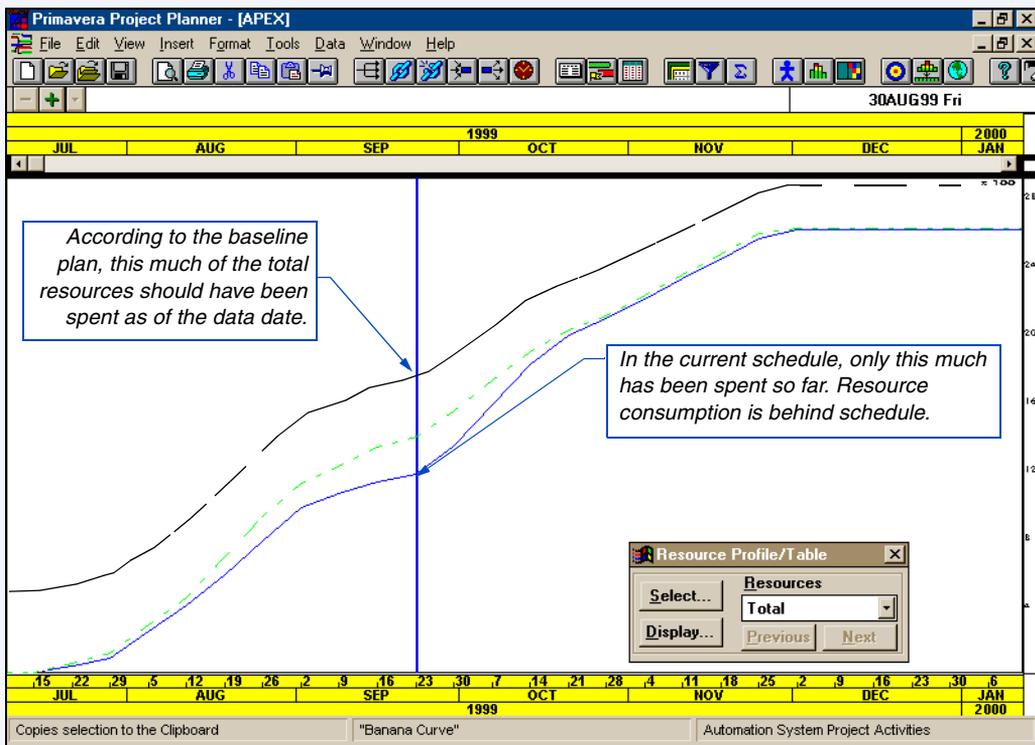
The project manager recorded the actual start date, reduced the activity's remaining duration, and recorded the resource percent complete. P3 calculated the actual to date, actual this period, to complete, and variance.

Checking Progress by Profiling Resources

The resource profile is a visual, intuitive, easy-to-use method for assessing progress relative to your baseline plan. Compare actual to date resource consumption with planned consumption. Compare the latest

estimate at completion to the planned estimate at completion.

For details on creating and interpreting profiles, refer to the *Customizing Resource/Cost Profiles and Tables* chapter.



Updating Resources Using the Bar Chart

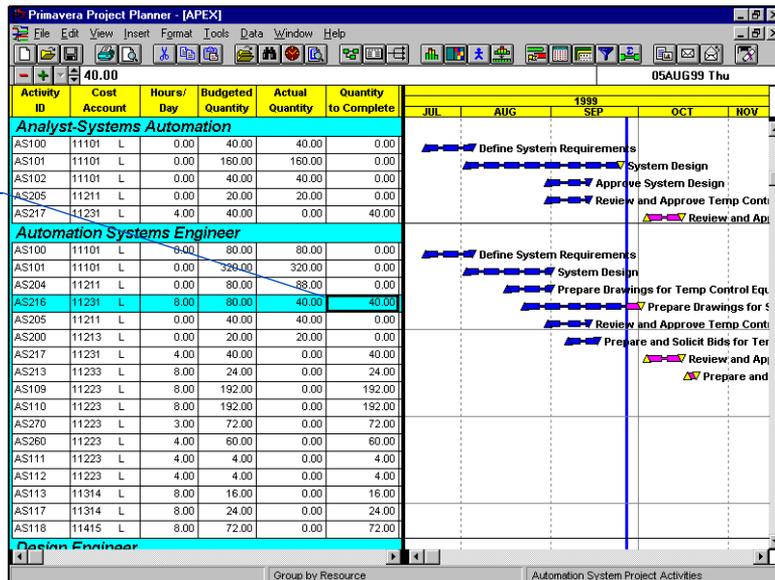
For details on organizing a Bar chart, refer to the *Grouping and Sorting Layouts* chapter.

To view and edit detailed resource and cost data in the list of activities in the Bar chart, include the relevant columns in the layout and group the activities by resource or cost account.



To edit resource or cost data in the Bar chart, you must group activities by resource or cost account.

Select an activity; then click the cell you want to update, such as Quantity to Complete.



When you group activities by resource or cost account, activities using more than one resource or cost account assignment appear more than once in the layout. In the previous example, all the activities that require the Systems Automation Analyst also require the Automation Systems Engineer. These activities appear twice in the layout, in the Analyst-Systems Automation group, and again in the Automation Systems Engineer group. The resource and cost data on any row apply only to that group's resource.

When you group by cost account, an activity appears more than once in the cost account group if it has multiple resources with the same cost account or if the same resource is applied to more than one cost account or category.

You cannot edit data that are summarized by resource or cost account.

Storing Period Performance

P3 spreads actual data evenly from the recorded actual start date to the data date unless you choose to store period performance at the end of each schedule update period. Each resource assignment's actual and earned value costs and quantities are then spread from the start of the resource assignment to the data date as they actually occurred.

The project controls coordinator should establish a regular timeperiod for updating the schedule. Period performance data should always be stored at the end of this period, after the update is complete and before the next schedule update period begins. This ensures that later comparisons of historical period data are based on the same timespan.



Resources must be assigned to the activities in your project before you can store period performance data.

Activity ID	Activity Description	Orig Dur	Rem Dur	Early Start	Early Finish
AS310	Site Preparation	10	5	15SEP99	05APR00
AS206	Fabricate & Deliver	146*	0*	20SEP99	17APR00
AS217	Review and Approve	10	10	01OCT99	03APR00
AS122	System Design	90	90	16DEC99	24JUL00
CS310	Review and Approve	15	15	21MAR00	19APR00
AS102	Approve System	10	10	16MAR00	29MAR00
AS204	Prepare Drawings for	10	10	16MAR00	29MAR00
AS216	Prepare Drawings for	10	3	16MAR00	20MAR00
ATM130	Identify Current	1	1	16MAR00	16MAR00

Row	Group Name	1999 DEC	2000 JAN	2000 FEB	2000 MAR
1	ENGINEER	56.52	43.48	200.00	30.00

Use the Resource table to view actual costs and quantities in prior periods for each resource.

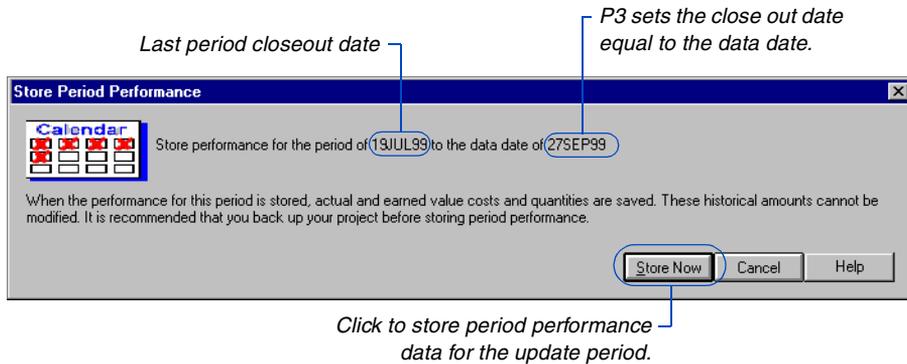
Since you cannot change period performance data once you store them, you may want to create a backup copy of the project before closing out the update period.

Store period performance Record progress by entering actual start dates for each activity and updating each activity's resource quantity this period or quantity to date. Then change the data date to a date that is later than all of the recorded actual dates and schedule the project. At this point you can close out the update period and store performance data.



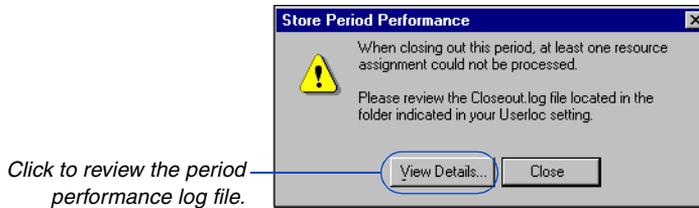
Be sure to define prices for resources in the Resource Dictionary before storing period performance. Changing prices after closing out an update period may result in cost variances.

Choose Tools, Store Period Performance.



P3 saves the actual this period values and earned value as period performance data and then resets the actual this period value to zero in anticipation of the next schedule update period. Resetting the actual this period values does not affect actual to date values, but it enables you to begin tracking progress for the current schedule period and it saves values from the previous period. For example, if you increase the actual this period by 50, P3 increases the actual to date by the same amount. When you store period performance, P3 resets the actual this period to 0, but the actual to date remains increased.

P3 skips any assignments that have an actual start or an actual finish after the data date. If P3 cannot close out all resource assignments, it creates a file called CLOSEOUT.OUT that lists the assignments it could not calculate. P3 also creates an audit file in the PROJECTS folder named <project name>HST.OUT that contains a history of closeout dates for the project.



Storing period performance requires Exclusive access to the project. If you are the only user who has the project open and you have Read Write access, P3 changes you access rights to Exclusive when you begin storing period performance and then returns them to Read Write when you finish.

Analyzing Cost and Schedule Variances

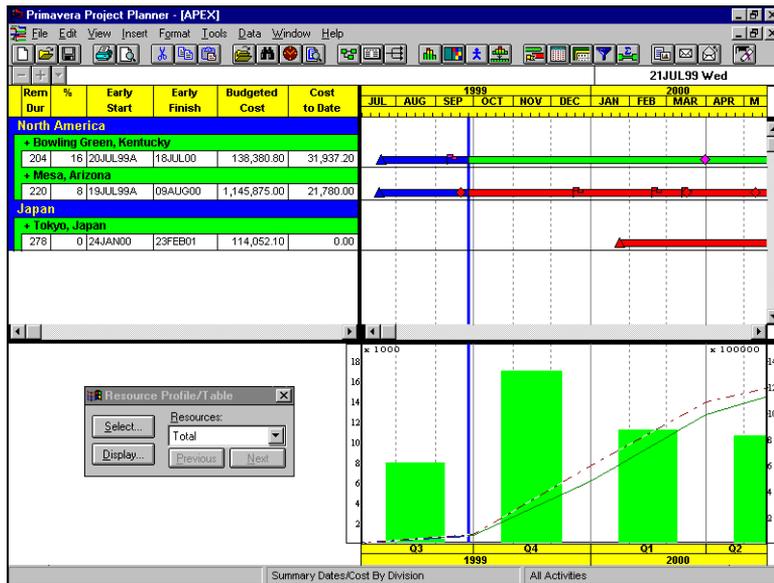
Use the Bar chart to identify cost and schedule variances in your schedule.

For details on formatting columns in the activity list and summarizing projects, refer to the *Customizing Bar Chart Layouts* chapter.

Identify problem areas Create a summary Bar chart to analyze the cost and schedule variance at a higher level. Include activity columns for the budget, earned value, schedule and cost variances, and so on. Group activities by the activity code by which you will summarize, such as phase, responsibility, or department. Then choose Format, Summarize All, to create a high-level view of the project. P3 summarizes all resource and cost information.



Modifying prices after storing period performance data can result in cost variances.



Summaries combine values for all resources in the summary group. If resource units such as person-days and linear meters are mixed in a group, resource unit numbers are meaningless, but summary costs are valid.

You can also use the Earned Value report to locate cost and schedule variances and then view the variances in detail. Produce an Earned Value report for quantities or costs. Choose Tools, Tabular Reports, Resource or Cost, Earned Value.

The following example contains cost data for selected activities in the APEX sample project:

Acme Motors		PRIMAVERA PROJECT PLANNER						Plant Expansion & Modernization			
REPORT DATE	27MAY99	RUN NO.	27	EARNED VALUE REPORT - COST				START DATE	19JUL99	FIN DATE	20FEB01
Earned Value Report - Cost			8:24					DATA DATE	16AUG99	PAGE NO.	2
COST ACCOUNT	RESOURCE	ACTIVITY ID	PCT CMP	CUMULATIVE TO DATE			VARIANCE		AT COMPLETION		
				ACWP	BCWP	BCWS	COST	SCHEDULE	BUDGET	ESTIMATE	
11314	L ATM ENG	AS113	.0	.00	.00	.00	.00	.00	352.00	352.00	
11314	L ATM ENG	AS117	.0	.00	.00	.00	.00	.00	528.00	528.00	
11415	L ATM ENG	AS118	.0	.00	.00	.00	.00	.00	1584.00	1584.00	
12101	L ATM ENG	CS300	.0	.00	.00	.00	.00	.00	5280.00	5280.00	
12223	L ATM ENG	CS305	.0	.00	.00	.00	.00	.00	528.00	528.00	
12311	L ATM ENG	CS440	.0	.00	.00	.00	.00	.00	440.00	440.00	
12312	L ATM ENG	CS400	.0	.00	.00	.00	.00	.00	440.00	440.00	
ATM ENG TOTAL			13.8	4928.00	4928.00	13053.33	.00	-8125.33	35728.00	35728.00	
=====											
DES ENG - Design Engineer											
11101	L DES ENG	AS101	45.0	1920.00	2160.00	4800.00	240.00	-2640.00	4800.00	4800.00	
12311	L DES ENG	CS430	.0	.00	.00	.00	.00	.00	4800.00	4800.00	
13106	L DES ENG	BA400	50.0	9000.00	4800.00	9600.00	-4200.00	-4800.00	9600.00	9600.00	
13106	L DES ENG	BA469	.0	.00	.00	.00	.00	.00	540.00	540.00	
13106	L DES ENG	BA470	.0	.00	.00	.00	.00	.00	600.00	600.00	
13106	L DES ENG	BA501	.0	.00	.00	1680.00	.00	-1680.00	1680.00	1680.00	
13106	L DES ENG	BA530	.0	.00	.00	.00	.00	.00	240.00	240.00	
13106	L DES ENG	BA560	.0	.00	.00	.00	.00	.00	240.00	240.00	
DES ENG TOTAL			30.9	10920.00	6960.00	16080.00	-3960.00	-9120.00	22500.00	22500.00	
=====											
ELECTRCN - Electrician											
11213	L ELECTRCN	AS105	.0	.00	.00	.00	.00	.00	6400.00	6400.00	
11213	L ELECTRCN	AS315	.0	.00	.00	.00	.00	.00	12288.00	12288.00	
13206	L ELECTRCN	BA670	.0	.00	.00	.00	.00	.00	6400.00	6400.00	
13436	L ELECTRCN	BA850	.0	.00	.00	.00	.00	.00	19200.00	19200.00	
13626	L ELECTRCN	BA901	.0	.00	.00	.00	.00	.00	3072.00	3072.00	
ELECTRCN TOTAL			.0	.00	.00	.00	.00	.00	47360.00	47360.00	
=====											
ELEV - Elevator Installer											
13416	C ELEV	BA860	.0	.00	.00	.00	.00	.00	28800.00	28800.00	
13416	L ELEV	BA913	.0	.00	.00	.00	.00	.00	3840.00	3840.00	
ELEV TOTAL			.0	.00	.00	.00	.00	.00	32640.00	32640.00	
=====											
EQUIPMNT - Equipment-Crane											
13206	E EQUIPMNT	BA680	.0	.00	.00	.00	.00	.00	29800.00	29800.00	
13206	E EQUIPMNT	BA681	.0	.00	.00	.00	.00	.00	29800.00	29800.00	
13206	E EQUIPMNT	BA690	.0	.00	.00	.00	.00	.00	14900.00	14900.00	
13306	E EQUIPMNT	BA710	.0	.00	.00	.00	.00	.00	59600.00	59600.00	

Resource Leveling

In this chapter:

Understanding Resource Leveling

Specifying Leveling Techniques

Forward Resource Leveling

Backward Resource Leveling

Smoothing Resource Use

Leveling a Project in a Project Group

Specifying the Leveling Cutoff Date

Specifying Activities to Level

Selecting Resources to Level

Adjusting Resource Availability

Prioritizing Activities for Leveling

Splitting, Stretching, and Crunching Activities

Setting Project Options for Splitting, Stretching, and Crunching

Reviewing the Leveling Analysis Report

Level resources in your project schedule to ensure that resource demand does not exceed resource availability. When you level resources, P3 delays or advances each activity until sufficient resources are available.

You can level a project repeatedly, using different assumptions about resource availability. Compare and analyze the results to develop the best resource plan to meet the target date.

P3 can also stretch an activity's duration to reduce its per period resource requirements; split activities into segments that work around periods of low resource availability; and shorten activity durations by taking advantage of abundant resources.

Understanding Resource Leveling

Resource leveling is an automated process that delays the start of certain activities. During leveling, P3 compares the requirements of all scheduled activities to the maximum quantity available at the time of leveling. P3 delays an activity if too few resources are available at any time during the activity's duration. In P3, you can select resources for leveling as well as specify the leveling priority for each activity. In addition to delaying activities until resources are available, P3 can decrease the overall duration of an independent (or meeting) activity during resource leveling. By using surplus available resources during any workperiods when they exist, P3 increases the units per timeperiod of a resource, reducing the duration of that resource proportionately. This can reduce the duration of the overall activity. During leveling, P3 can also make the workperiods of a task or independent activity noncontiguous. If you allow P3 to split an activity, P3 can suspend work until sufficient resources become available on that activity.

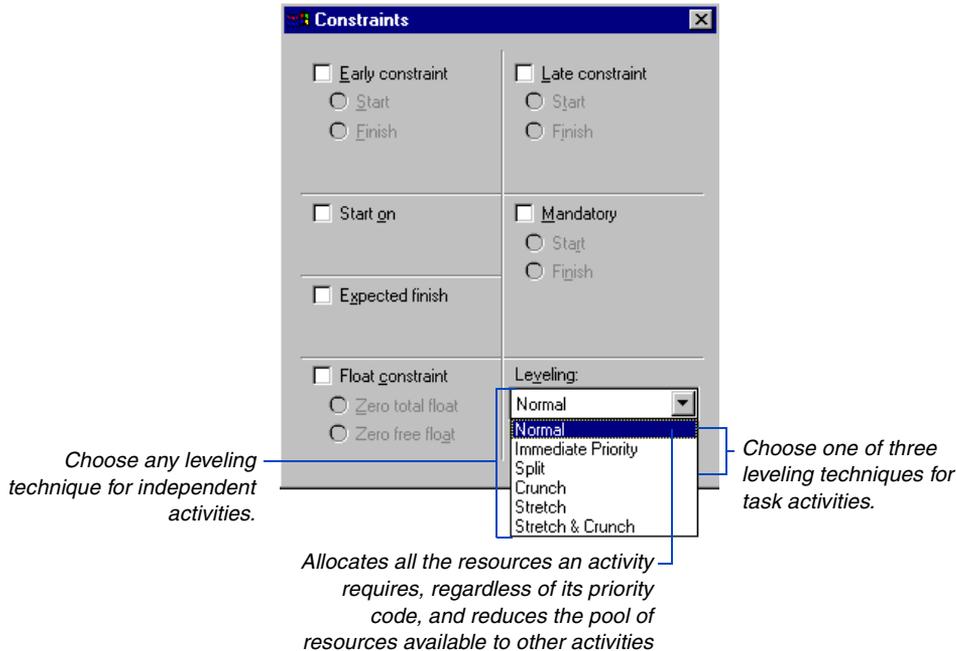
Use the Bar chart to review the results of leveling. You can set up the Bar chart to show the following bars for activities: early bars (where they are scheduled after leveling), unleveled bars (where they were scheduled before leveling), and level delay bars and points (the amount of time they were delayed). P3 draws the level delay bar from the unleveled start date to the leveled start date to illustrate the amount of delay; the level delay point is placed at the unleveled start of the activity.

Level automatically If you turn on automatic resource leveling in the Schedule/Level Calculation Options dialog box (choose Tools, Level, and then click Options), P3 levels each time you schedule your project or each time you modify data that affect leveling, such as when you add, change, or delete a resource, calendar, or relationship.

Specifying Leveling Techniques

Use the Activity form, Activity columns, or Global Change to specify an activity leveling technique other than Normal.

Use the Activity form Choose View, Activity Detail, Constraints; then choose an option from the Leveling field drop-down list.

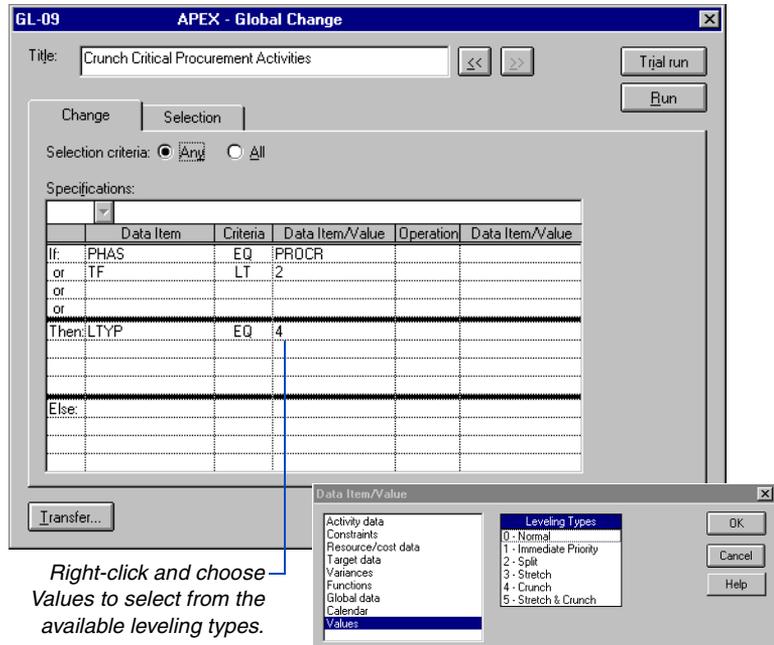


For details on adding columns and using the Fill Cell function, refer to the *Customizing Bar Chart Layouts* chapter.

Use Activity columns Choose Format, Columns, and include the Leveling Type column in the Bar chart. Right-click the Leveling Type cell for any activity and select its type from a drop-down list. Use the Fill Cell function to copy a leveling type to many activities.

For details on changing leveling type using Global change, refer to the *Global Change* chapter.

Use Global change To change the leveling type of a group of activities that you can identify based on common properties, use Global Change (choose Tools, Global Change, and click the Change tab). Specify selection statements to identify the activities, and specify the leveling type in the Change statement. For example, the following Global change sets the Crunching leveling type for procurement activities with less than two days of positive float.



A task activity is an activity with resources assigned to it. During leveling, P3 treats a task as a single unit. An independent activity, however, is a collection of resources that P3 schedules to accomplish some item of work. During leveling, P3 schedules each resource independently; the independent activity summarizes the dates of its resources.

Forward Resource Leveling

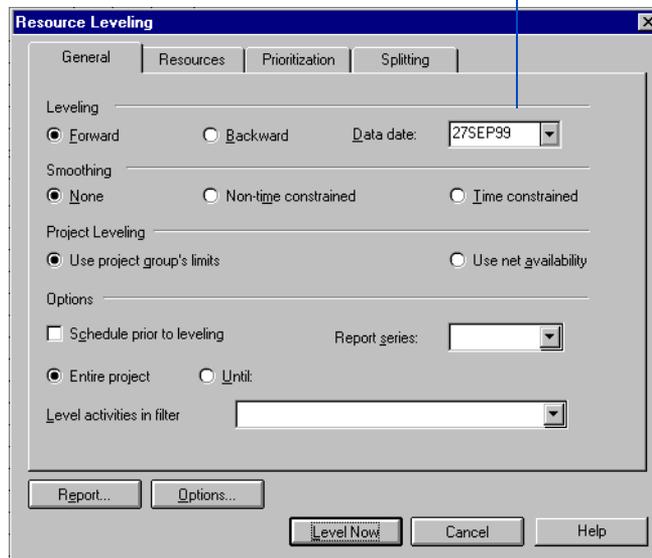
Forward leveling schedules the early dates of activities from the start to the finish of the project, obeying network logic while ensuring that sufficient resources are available to perform each activity.

For information on other options, refer to the *Splitting, Stretching, and Crunching Activities* section later in this chapter.

Choose Tools, Level, to open the Resource Leveling dialog box. Use forward leveling when resource limitations are the primary consideration, and it is acceptable for limited resources to delay project completion. Using the default leveling options, P3 assumes normal resource availability; tries to schedule each activity to begin on its early date; and delays the activity within its positive float if sufficient resources are unavailable at that time.

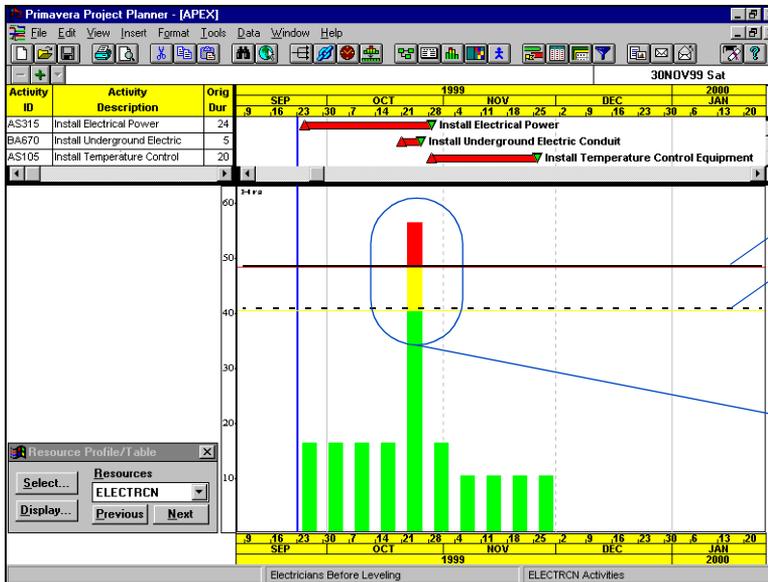
If P3 does not find enough resources within the float span, it repeats the process beginning at the early scheduled date, this time assuming higher resource limits. The exact limits P3 uses depend on the option you choose in the Smoothing section of the dialog box. If P3 still cannot schedule the activity, it delays the activity beyond its late dates, until sufficient resources are available. P3 also delays an activity if any predecessor is incomplete, which can occur if an ancestor is delayed by leveling. Any delay beyond an activity's late finish date delays the project's completion date.

Forward leveling begins on the project data date by default.



The next two examples illustrate the use of a single resource before and after forward leveling. Note that by delaying activities BA670 and AS105, leveling brings the resource requirement within the maximum availability.

Before forward leveling

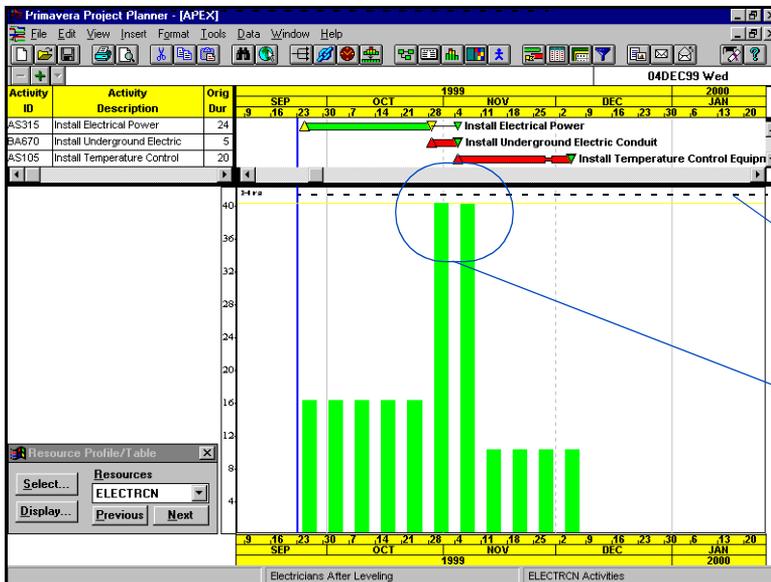


Maximum availability line

Normal availability line

Before leveling, concurrent activities require more of the resource than the maximum amount available.

After forward leveling



Normal availability line

Leveling delays two activities and brings demand within the maximum limit; in this case, below the normal limit.

Backward Resource Leveling

Use backward leveling to schedule activities to occur as late as possible without delaying the project finish. P3 reverses the leveling process, beginning at the project's late finish and working towards the beginning of the project. If there is insufficient resource availability to schedule an activity on its late dates, P3 advances the activity to an earlier date until the necessary resources become available.

Resource splitting, stretching, and crunching apply only to forward leveling.

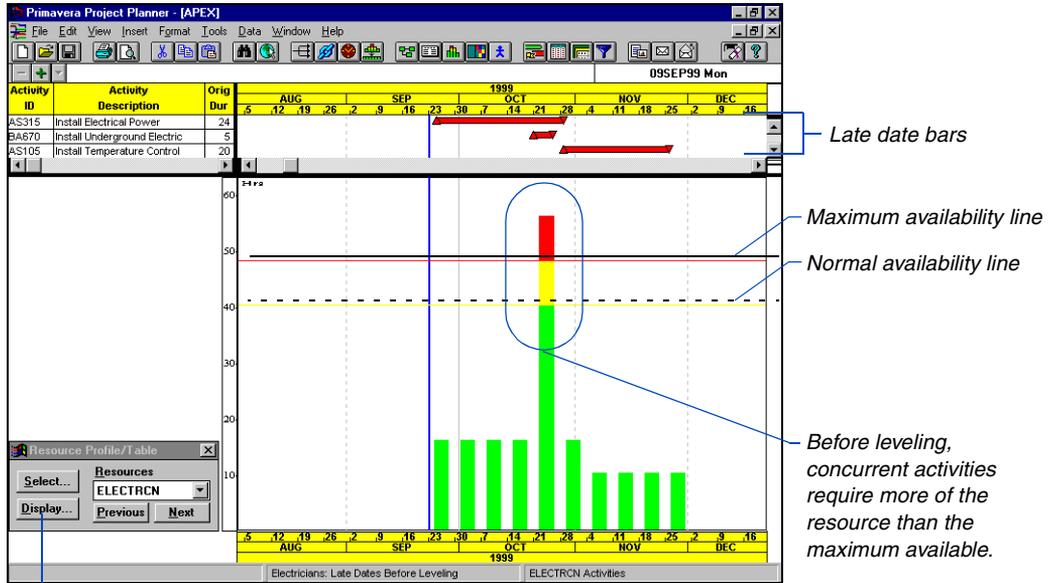
In backward leveling, P3 can schedule activities to occur earlier than their scheduled early dates, meaning the project must begin earlier than planned in order to complete on schedule with the available resources.



P3 does not perform backward leveling if any activity being considered is an independent or meeting activity. If P3 detects an independent or meeting activity, leveling stops. P3 provides an explanation onscreen and in the output file, P3.OUT.

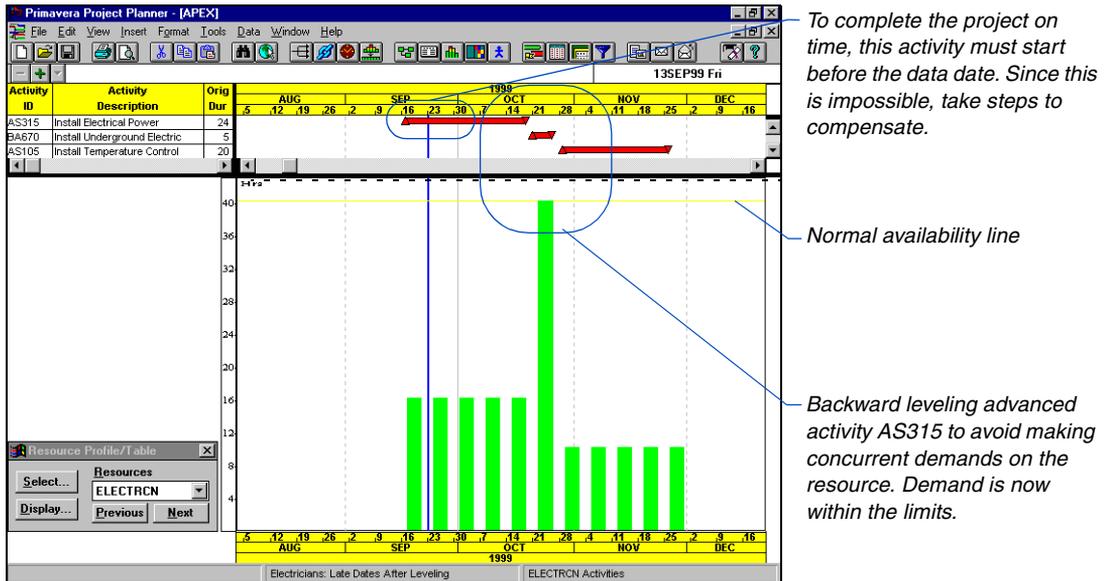
The next two examples illustrate the use of a single resource before and after backward leveling. By advancing some activities, leveling brings resource requirements within the maximum availability.

Before backward leveling



Choose the late dates in the Resource Profile Display Options dialog box.

After backward leveling



To complete the project on time, this activity must start before the data date. Since this is impossible, take steps to compensate.

Backward leveling advanced activity AS315 to avoid making concurrent demands on the resource. Demand is now within the limits.

Smoothing Resource Use

During leveling, P3 refers to the normal and maximum availability limits in the Resource Dictionary. Sometimes the normal limit is insufficient to provide enough resource to schedule an activity. Without smoothing, P3 assumes the maximum availability of resources.

Smoothing uses different assumptions about resource availability. By modeling incremental increases in availability, smoothing minimizes peaks and valleys in the resource usage profile. This is often desirable: maintaining relatively constant resource levels can reduce costs.

Smoothing: None Choose the None option when the normal and maximum limits of all resources are equal or nearly equal. Using this option, P3 tries to schedule an activity within its float span using the normal resource limit. If there is an insufficient resource, P3 tries again, beginning at the early schedule date, using the maximum limit. This method may result in overestimation of the amount of resource being used. For example, if an activity requires 6 units per timeperiod (UPT) of a resource that has normal and maximum limits of 5 and 15, respectively, P3 makes all 15 units available to the activity.

Smoothing: Nontime constrained Choose the Nontime Constrained option when the normal and maximum limits significantly differ. This method of leveling attempts to keep resource usage as close to the normal limits as possible using positive float to delay and stagger activities, rather than using the maximum quantity available and scheduling several activities to occur simultaneously. This technique can produce a smoother profile of resource use than leveling without smoothing.

P3 divides the range between normal and maximum into ten increments. If the activity cannot be scheduled assuming normal limits, P3 delays the activity one workperiod (within its available positive float) and tries again. After exhausting the float, P3 begins the entire leveling process again on the original date, this time increasing the availability assumption one increment (ten percent of the difference between the normal and maximum limits). P3 repeats this process, if necessary, until it reaches the maximum limit. If the activity still cannot be scheduled, P3 continues assuming the maximum limit and delays the activity one workperiod at a time, repeating the process and causing negative total float if necessary.

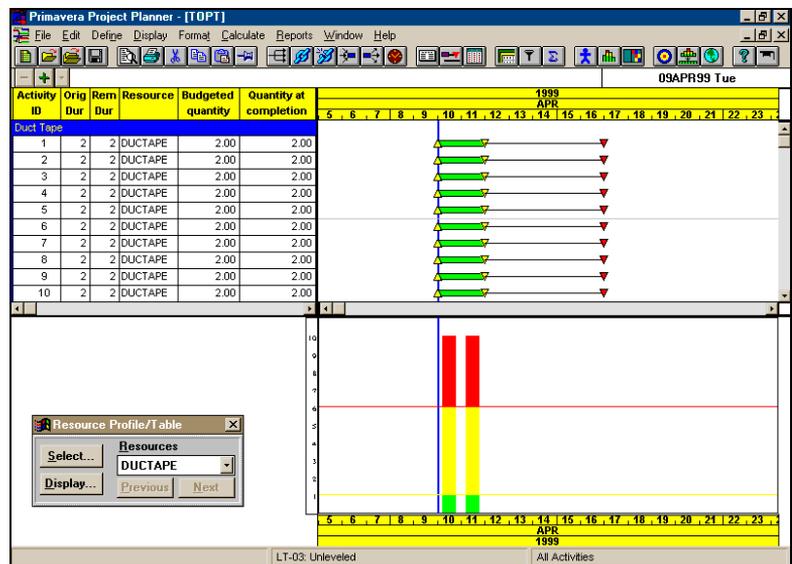
Smoothing: Time constrained Choose the Time Constrained option when the project must finish on time, regardless of the resources required. P3 levels activities assuming double the normal and maximum resource limits, and proceeds as when using the None option; however, no activity is delayed beyond its late schedule dates. If P3 cannot schedule an activity within its available float, the activity occurs on its original schedule date and a warning message appears in the Resource Leveling Analysis Report. No change is made to the Resource Dictionary, but P3 reflects the doubled maximum limits in the Resource Leveling Analysis Report.

For information on these options, refer to the *Splitting, Stretching, and Crunching Activities* section later in this chapter.



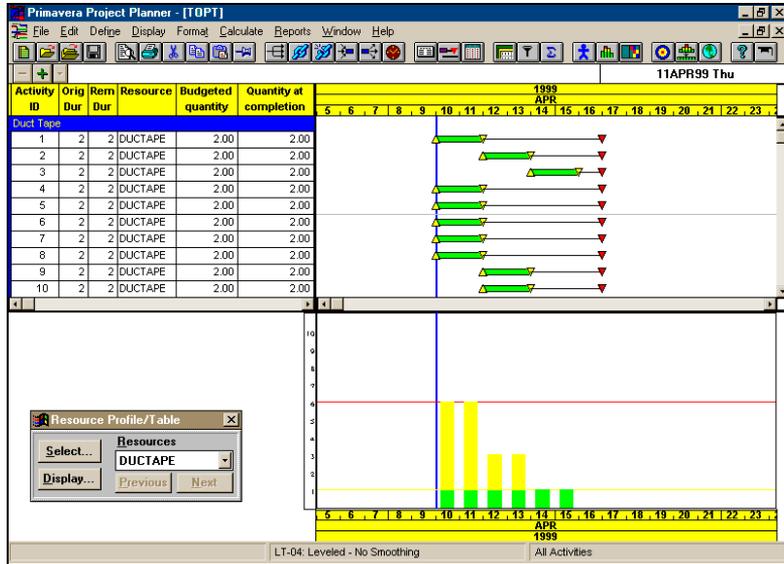
For splittable or stretchable activities, P3 only uses resource smoothing after it attempts splitting or stretching the activity to find sufficient resources.

The following three examples illustrate smoothing using a project consisting of ten activities with no relationships between them, and scheduling is driven purely by resource availability. Each activity initially has five days of total float available.

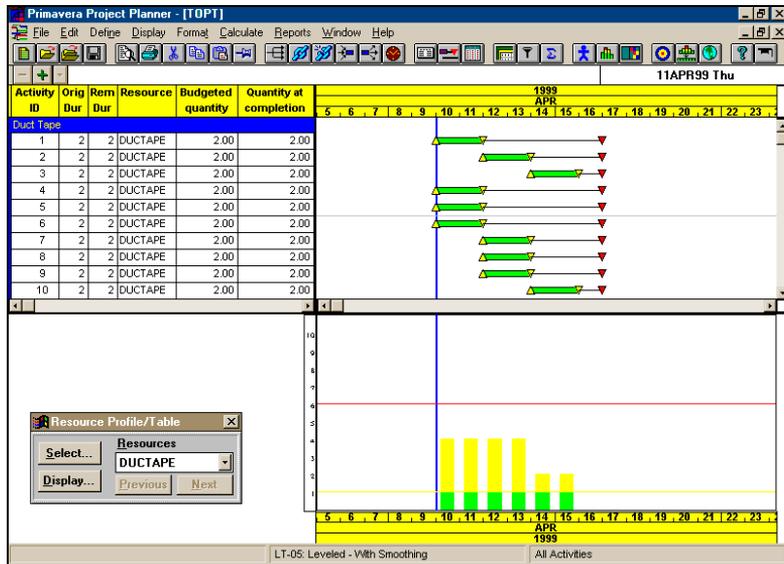


This unlevelled schedule uses no available float and stacks all activities that exceed the maximum resource availability.

Leveling without smoothing schedules activities as early as possible, using total float to delay others while keeping usage below the maximum limit. This resource usage profile is heavily front-loaded.



Leveling with smoothing delays more activities, and keeps the usage profile flatter. Since P3 delays the activities within their available float, the project finish date is not affected.



Leveling a Project in a Project Group

Projects in a project group share resources from a common pool defined in the project group's Resource Dictionary. Since resources are finite and all projects in the group can demand resources, you need to know whether P3 assigns resources to a project first or last. You can choose whether P3 levels according to the limits for the project group or uses net availability.

Use the project group's limits When you use the project group's limits, P3 assumes the overall group's total resource pool is available, ignoring possible demands by activities in other projects.

Use net availability Using net availability, P3 deducts the resources required by all other projects in the group from the original resource pool. Only the remainder is available to the project you are leveling.

These options are available when you level a project that is a member of a project group.

For information about defining report series, refer to the [Preparing and Viewing Reports and Graphics](#) chapter.

The screenshot shows the 'Resource Leveling' dialog box with the 'General' tab selected. The 'Project Leveling' section is circled in blue, highlighting the radio buttons for 'Use project group's limits' and 'Use net availability'. The 'Data date' is set to '27SEP99'. The 'Leveling' section has 'Forward' selected. The 'Smoothing' section has 'None' selected. The 'Options' section has 'Entire project' selected. The 'Level activities in filter' dropdown is empty.

Report leveled data After leveling the project, leveled dates replace early/late scheduled dates until you schedule the project again. Any reports or graphics you generate after leveling reflect leveled dates. A convenient way to run one or more reports for analyzing the results of leveling is to use the Report Series feature. P3 automatically runs the series you select when the leveling process completes.

Specifying the Leveling Cutoff Date

If you want a short-term picture of a forward-leveled schedule, P3 enables you to level to a specified date. This saves leveling time and produces a precise report of the impact leveling will have in the near future. You can also level the entire project to see the impact of every change through project completion. Choose Tools, Level, to open the Resource Leveling dialog box.

Resource Leveling

General Resources Prioritization Splitting

Leveling
 Forward Backward Data date: 27SEP99

Smoothing
 None Non-time constrained Time constrained

Project Leveling
 Use project group's limits Use net availability

Options
 Schedule prior to leveling Report series: [dropdown]
 Entire project Until: 27OCT00
 Level activities in filter: [dropdown]

Report... Options... Level Now Cancel Help

Choose to specify the date or workperiod to level through.

October 2000

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

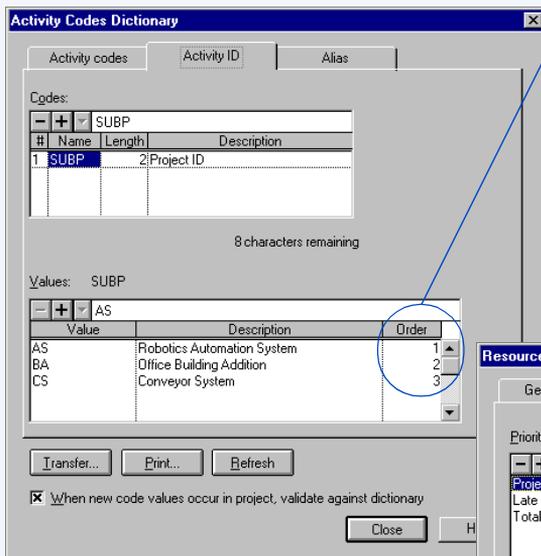
Workperiod: 1105

OK Cancel Help

Resource Leveling a Project Group: Prioritizing by Project

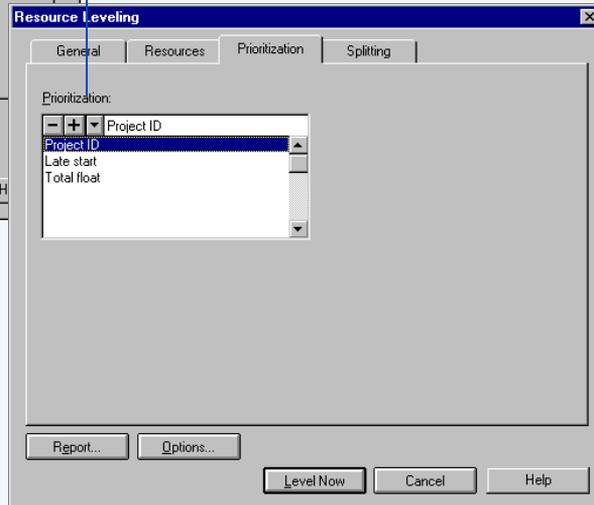
When projects in a group share a common resource pool, the project group manager may want to control which project receives top priority when competing for scarce resources.

To accomplish this, prioritize by the activity ID code SUBP (Project ID). Control the sorting sequence of the SUBP values using the Order column in the Activity Codes Dictionary.



1 In the Order column, assign 1 to the project with the highest priority, 2 to the next highest, and so forth.

2 In the Resource Leveling dialog box, click Prioritization and then choose Project ID as the primary code to prioritize activities by for leveling.

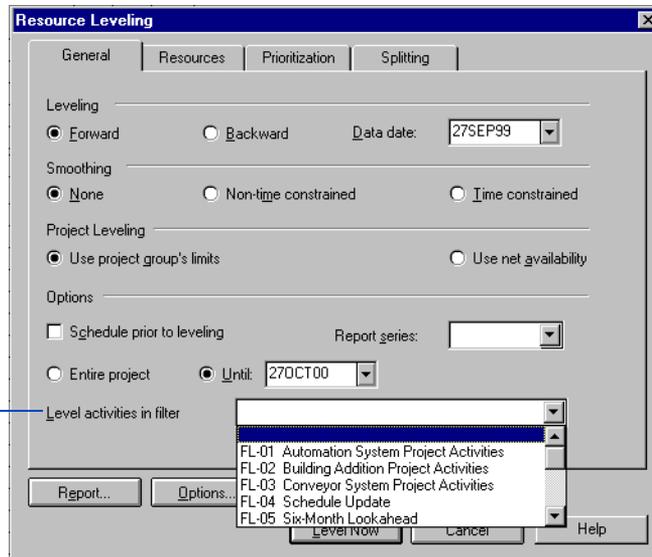


To prioritize activities for leveling without regard to their source project, create an activity custom data item such as PRIO and specify a prioritization value for each activity. Use PRIO as the first prioritization parameter.

Specifying Activities to Level

You can specify the activities P3 considers during leveling using a filter. When your focus is a specific facet of the project, or activities that use certain resources, use a filter to speed leveling. Choose Tools, Level, to open the Resource Leveling dialog box.

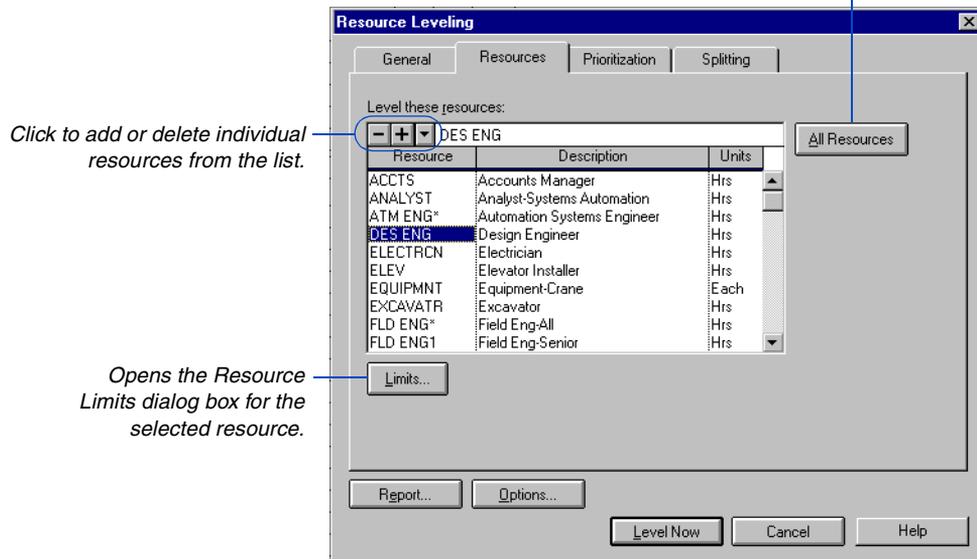
Specify any project filter or choose the blank field at the top of the list to consider all activities.



Selecting Resources to Level

During leveling, P3 can consider any or all of your resources. You usually know the resource or resources that are critical to ontime project completion. Leveling these resources may be all you require; however, you can level up to 500 resources at once. Choose Tools, Level to open the Resource Leveling dialog box. Click the Resources tab.

*Displays a list of up to 500 resources.
P3 will level all of them; delete those
you do not want to level.*



If you add new resources in the middle of a project, remember to add them to the resources list before leveling.

Adjusting Resource Availability

In most projects, more than one activity uses the same resource simultaneously. Resource leveling depends on resource availability: the normal and maximum amounts of the resource available to the overall project. Choose Data, Resources, to set initial resource limits in the Resources dialog box. For each resource, record the amount per day (or hour, week, or month) normally available to the project, and the maximum available if needed. These limits can vary over time. You can also record the price per unit of each resource, although this information is not required.

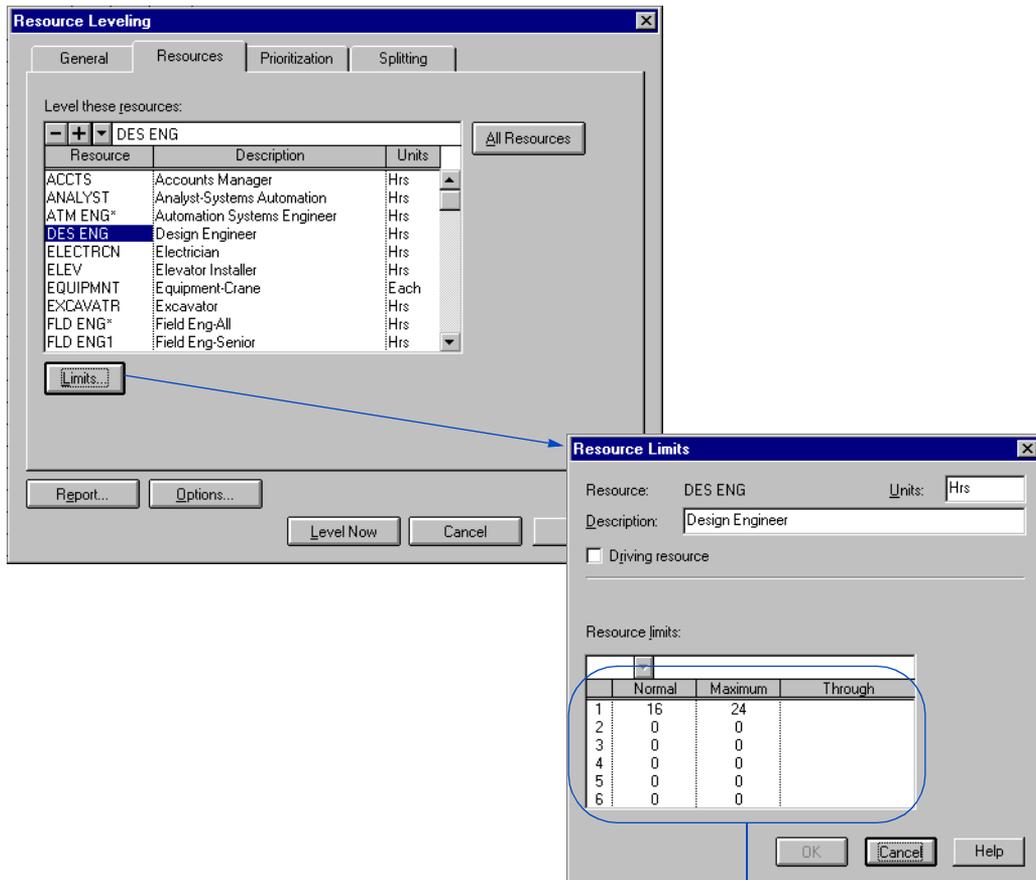
This resource is budgeted in writer-hours per day.

Resource	Units	Driving	Base	Description
SW ENG	Hrs	<input type="checkbox"/>	1	Software Engineer
SYST ENG	Hrs	<input type="checkbox"/>	1	System Engineer
TECH WRI	Hrs	<input type="checkbox"/>	1	Technical Writers
UNASSIGN	Hrs	<input type="checkbox"/>	1	Unassigned Activities
VENDOR	Hrs	<input type="checkbox"/>	1	Vendor

Indicates three writers available per 8-hour day (24 ÷ 8 = 3) through 31JAN00

Four writers (32 ÷ 8 = 4) are normally available from 01FEB00 through the end of the project. The maximum number of writers P3 schedules is five.

When you level resources in a project, you can adjust the project's resource limits. Click Limits in the Resources tab to open the Resource Limits dialog box. You can level repeatedly, using different sets of limits, to examine "what-if" scenarios.



Values in this dialog box are the same as those set in the Resource Dictionary. Modify values to try "what-if" scenarios using different resource limits.

Prioritizing Activities for Leveling

During forward leveling, P3 looks for the earliest activities with complete predecessors. These activities are ready for leveling. If several activities are ready for leveling, their resource requirements may conflict. Use Prioritization to specify which activity P3 levels first, when a conflict exists.

By default, P3 prioritizes by late start date and, in the event of a tie, by total float. You can, however, specify any prioritization parameters appropriate to your situation. Remember that P3 only uses prioritization to break ties; the logical sequence of activities in the project always is the primary key.



P3 sorts by activity ID when all prioritization parameters are tied.

If any Prioritization values change when you schedule the project, mark this checkbox; P3 automatically schedules the project before leveling it.

Resource Leveling

General Resources **Prioritization** Splitting

Leveling
 Forward Backward Data date: 27SEP99

Smoothing
 None Non-time constrained Time constrained

Project Leveling
 Use project group's limits Use net availability

Options
 Schedule prior to leveling Report series: []
 Entire project Until: []
Level activities in filter: []

Report... Options... Level Now Cancel Help

Splitting, Stretching, and Crunching Activities

P3 normally levels resources by scheduling each activity when all resource requirements can be met for the entire, continuous duration of the activity. If this condition cannot be met, P3 delays the entire activity until the condition can be met.

You can specify splitting, stretching, or crunching as the leveling technique for an independent activity. P3 can then split it into two or more parts and schedule them separately, when sufficient resources are available; stretch the duration of the activity, reducing its per-period resource demands within available limits; or crunch the activity into a shorter duration by using additional resources.

For details on resource smoothing, refer to the *Smoothing Resource Use* section earlier in this chapter.

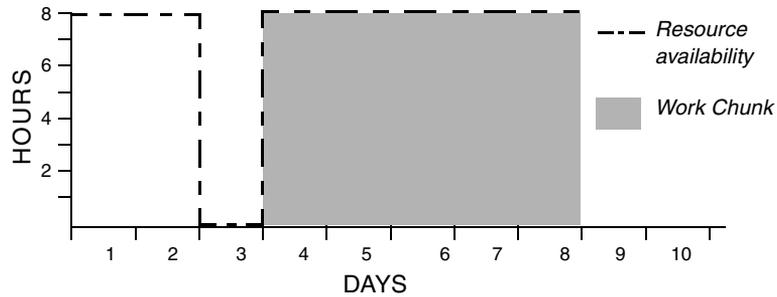
During resource leveling, if resources are insufficient to schedule a split or stretched activity assuming the normal limits in the Resource Dictionary, P3 tries using additional resources up to the maximum limit. P3 will use resource smoothing, if you specify it, and attempt to split or stretch the activity assuming intermediate resource limits.

Splitting The nature of some activities dictates that the work, once it begins, must continue every working day until it completes. Work on other activities, however, can occur during any workperiods when sufficient resources are available, even if the workperiods are not contiguous on the activity or resource calendar. P3 can schedule a task or independent activity to begin when the required resources are available, suspend work if the resource supply becomes too low, and resume work when sufficient resources are available again. For example, suppose that Fred, a technical writer, is scheduled to spend 5 days writing a document, but he must attend a high-priority meeting on day 3. Although Fred is working on day 3, he is not available to work on his writing assignment.

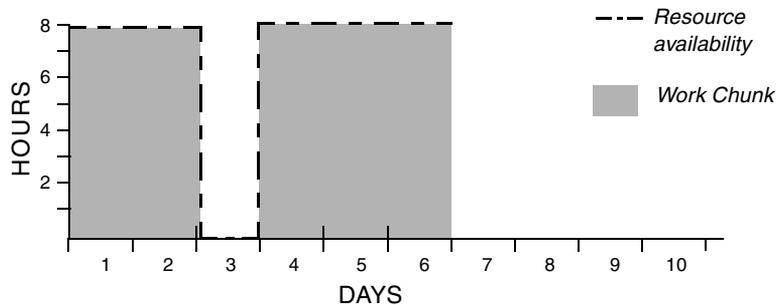
If you do not allow P3 to split the activity, P3 delays the start of the activity until day 4, when Fred becomes available to work on the writing assignment for 5 contiguous workdays. Fred works on the assignment on days 4 through 8.

If you allow P3 to split the activity, P3 schedules Fred to begin writing immediately (day 1), and complete the job after his high-priority meeting finishes. He works on the writing assignment on days 1, 2, 4, 5, and 6. In this scenario, Fred completes the activity 2 days sooner.

Unsplit activity: one work chunk of five days.



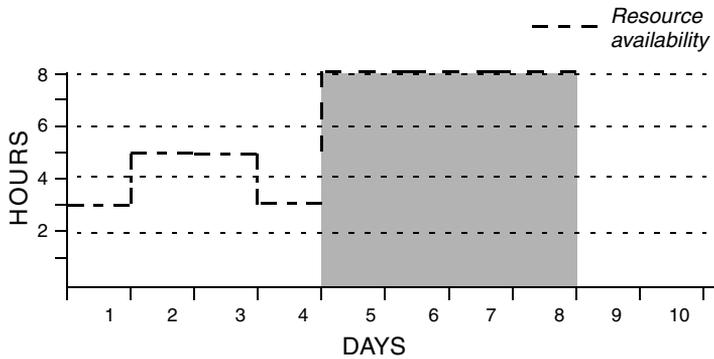
Split activity: two work chunks totalling five days, with a 1-day suspension between them.



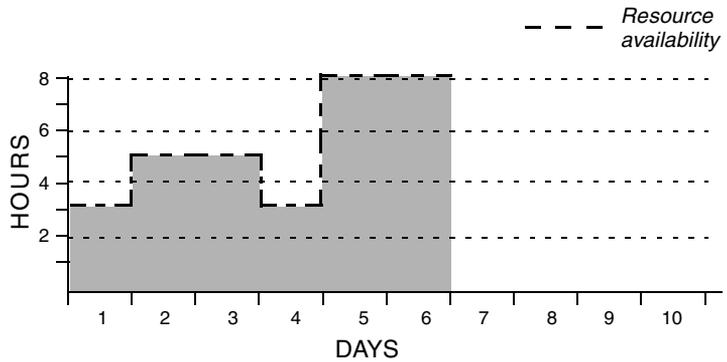
Stretching Some activities require a constant supply of resources for their entire duration. Others tolerate a reduced supply, allowing them to continue working through periods of low resource availability. You can specify that P3 can stretch an independent activity, and P3 relaxes the per-period requirement for its resources, which increases the duration of the activity by increasing the duration of the resources.

For example, suppose Carl, a programmer, is scheduled to work full time (8 hours per day) on an activity requiring 32 hours of his time. Other, higher-priority assignments leave him from 3 to 5 hours per day to work on this activity until day 5, when he becomes available for 8 hours per day. If the activity is not stretchable, P3 delays the entire activity until day 5, when Carl becomes available for 8 hours per day over 4 consecutive workdays, completing the activity at the end of day 8. If the activity is stretchable, P3 accommodates Carl's workload by scheduling him to work on the activity whenever he is available, beginning immediately. By recognizing that Carl's time is flexible, P3 can schedule him to finish 2 days earlier.

P3 delays the non-stretchable activity until the resource is available eight hours per day.

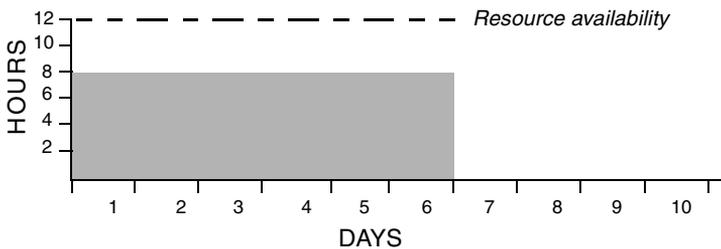


P3 schedules the stretchable activity to begin using available hours immediately.

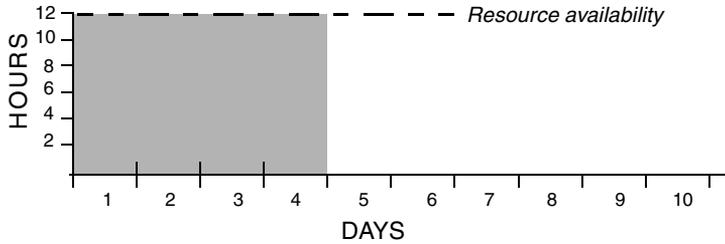


Crunching You cannot speed the completion of some activities by increasing their resource supply; these activities are not crunchable. Crunchable activities are independent activities that you can complete in less time if you increase their resource supply. P3 reduces the duration of a crunchable activity by taking advantage of additional available resources. For example, Carl, the programmer, is assigned a crunchable activity. The uncrunched duration of this activity is six, 8-hour days. If Carl works 12-hour days to crunch the schedule, he completes the work in four, 12-hour days and advances the scheduled finish by 2 days.

Since this activity is not crunchable, one programmer, working eight hours per day, completes it in six days.



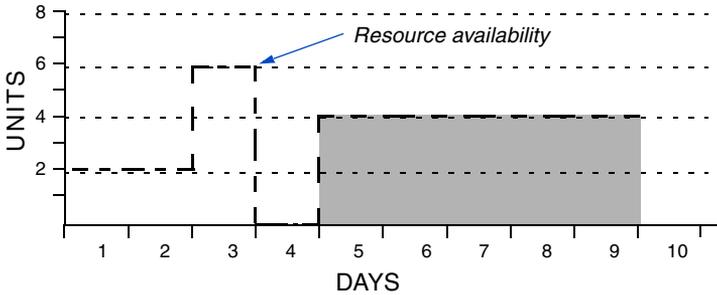
Since this activity is crunchable, one programmer, working 12 hours per day, completes it by the end of day 4.



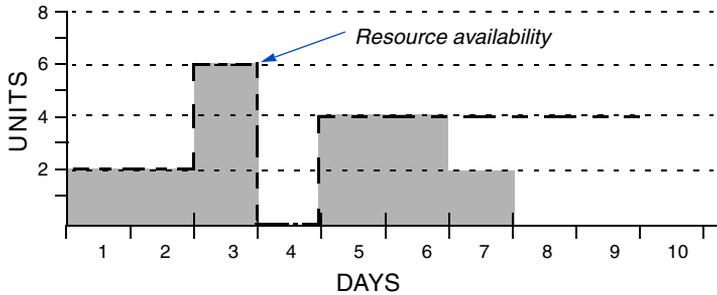
When crunching activities, P3 never exceeds the maximum resource availability limit defined in the Resource Dictionary.

Stretching and crunching P3 can stretch and crunch an independent activity. As resource availability varies over the scheduled dates for the activity, P3 can reduce resource requirements during some workperiods (stretching parts of the activity), and increase resource usage during others (crunching other parts of the activity). The activity in the following example uses a total of 20 resource units.

Without stretching or crunching: 20 units spread uniformly over five days.



Resource profile after stretching and crunching



P3 can split any activity that is stretchable or crunchable.

Setting Project Options for Splitting, Stretching, and Crunching

To set project-wide options for splitting, stretching, and crunching, choose Tools, Level, and click the Splitting tab. Set these options at the project level for each individual project. Set these options at the project group level for activities that are not part of a specific project.



For some activities, efficiency suffers if work suspends and resumes too often, or for too long. Overallocation of resources can be counterproductive. Underallocation of resources can result in slow progress.

Specify the minimum usable percentage of a resource's required units per timeperiod that P3 can allocate to any activity.

Specify the maximum usable percentage of a resource's units per timeperiod requirement that P3 can allocate to any activity.

The screenshot shows the 'Resource Leveling' dialog box with the 'Splitting' tab selected. The dialog has four tabs: General, Resources, Prioritization, and Splitting. The Splitting tab contains the following settings:

- Maximum number of splits per activity: 1
- Maximum duration of each split: 2 hours
- Minimum duration of each work chunk: 2 hours
- A diagram showing two 'Work chunk' boxes connected by a dashed line with a 'Split' label and arrows.
- Stretching: Units per timeperiod may be as little as 75 % of requirement.
- Crunching: Units per timeperiod may not exceed 125 % of requirement.
- Show results from splitting, stretching, and crunching in onscreen profiles and loading reports.

Buttons at the bottom include 'Report...', 'Options...', 'Level Now', 'Cancel', and 'Help'.

Splitting example In the example of activity splitting in the previous section, the duration of the final work chunk is one day. P3 does not schedule this solution using the default setting of two days. Adjust all these settings to suit the nature of your work.

Stretching example In the example, the resource's normal daily requirement (UPT) is eight hours per day. The default minimum usable percentage is 75 percent, in this case six hours per day. The solution uses the programmer as little as three hours per day on several days. To allow P3 to schedule as few as three hours per day in this example, set the minimum usable percentage no higher than 37 percent.

Crunching example The example shows the programmer working 12-hour days rather than the normal requirement of 8-hour days. To allow P3 to schedule this solution, set the maximum usable percentage to at least 150 percent of the normal requirement.



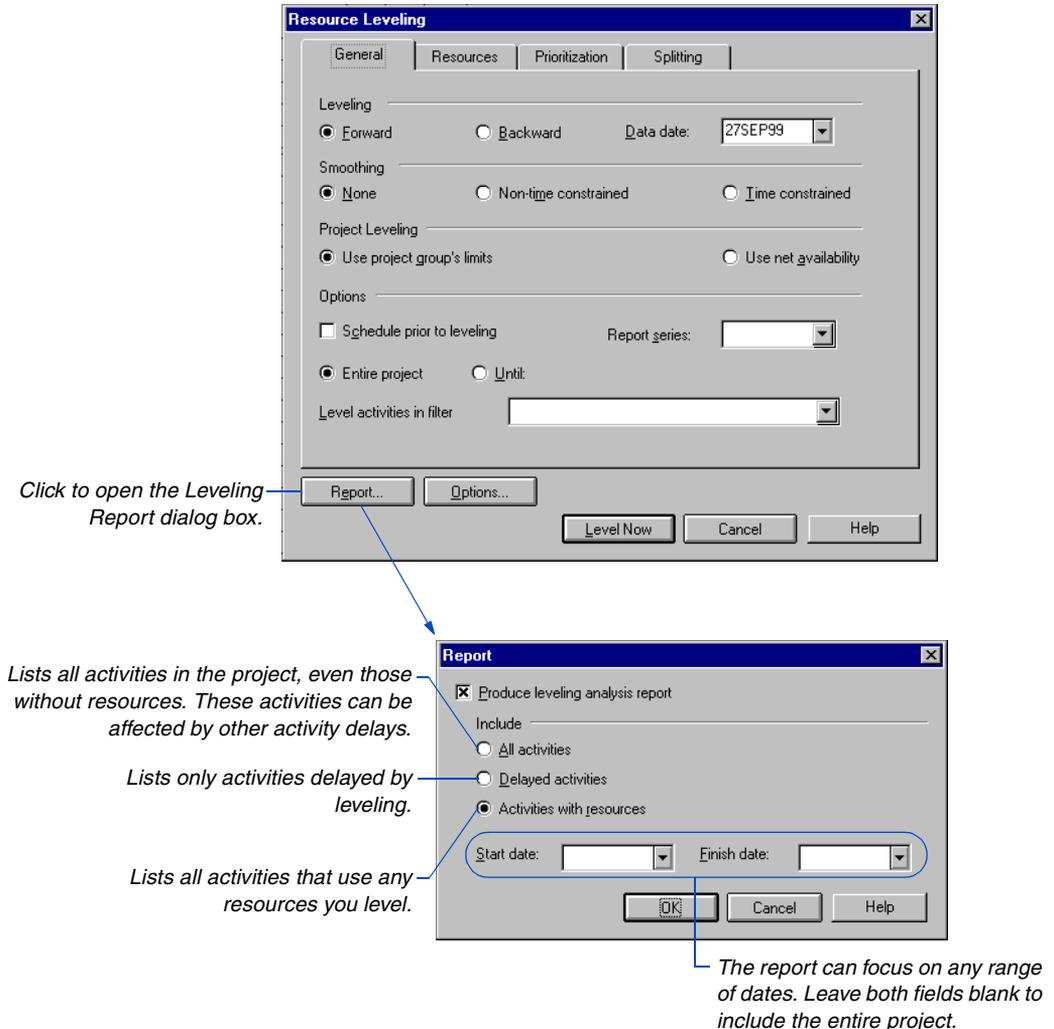
During normal scheduling of a crunchable activity, P3 assumes the most optimistic duration for the activity: the original duration divided by the maximum usable percentage of the UPT for the resources.

Analyze data Because you will probably analyze data using resource and cost profiles or tables, or using resource and cost loading reports, P3 normally stores and displays data on the effects of resource splitting, stretching, and crunching for use in these reports. No other reports reflect the impact of resource splitting, stretching, and crunching on resource spreads in the project.

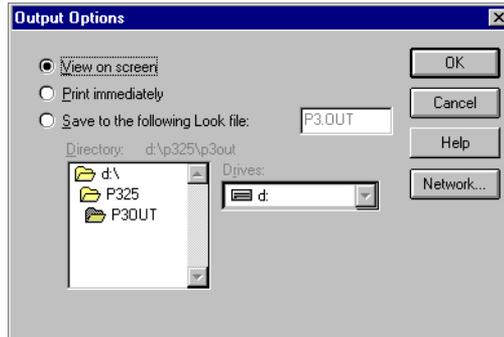
If you do not plan to use resource profiles, tables, or loading reports, you can increase the speed of resource leveling by turning off storage of this data. Choose Tools, Level, click the Splitting tab, and clear the checkbox at the bottom of the dialog box.

Reviewing the Leveling Analysis Report

P3 produces a Leveling Analysis Report each time you level a project. View this report to see a detailed account of activities delayed or advanced by leveling, and their impact on other activities in the project. Click Report to specify the content of the Leveling Analysis Report.



Click Level Now in the Resource Leveling dialog box to level the project. P3 prompts you to choose whether to view the report onscreen, print the report, or save it to a file.



By default, P3 displays the file in Primavera Look. If you choose to save the file, P3 saves the report to the P3.OUT file. P3 overwrites this file when it generates any new standard output; to save the report for future use, specify a unique filename.

The following report segment illustrates the data the Resource Leveling Analysis Report contains.



P3 displays all independent and meeting activities delayed during leveling in the Delayed by Resource column.

Predecessors can delay an activity even if it has sufficient resources.

Acme Motors		Primavera Project Planner										Plant Expansion Project				
Report Date 20MAR99 14:27		Forward Resource Leveling Analysis Report										Start Date 19JUL99 Fin Date 01DEC00				
												Data Date 27SEP99 Page no. 6				
		Daily Res Rem	-----Early Start-----				-----Delayed by Pred-----				-----Delayed by Res-----				Early Levelled	
Activity Id	Resource Usage Lag Dur	Date	Tf	Norm	Max	Date	Tf	Norm	Max	Date	Tf	Norm	Max	Start	Finish	
CS730	Install Conveyor 214 30	23SEP00	0											23SEP00	03NOV00	
	FLD ENG* 8 30	23SEP00		8	12									23SEP00	03NOV00	
CS760	Field Painting 20	23SEP00	10							04NOV00	-20			04NOV00	01DEC00	
	FLD ENG* 8 20	23SEP00		0	4					04NOV00		8	12	04NOV00	01DEC00	
CS305	Start-Up & Debug Sys 20	04NOV00	0			15JAN01	-50							15JAN01	11FEB01	
	ATM ENG 8 3	04NOV00		8	16	15JAN01		8	16					15JAN01	19JAN01	
	FLD ENG* 8 20	04NOV00		0	4	15JAN01		24	28					15JAN01	11FEB01	
AS270	Trim Robot Paths Lin 24	03DEC99	147			08JAN00	123			11FEB00	99			11FEB00	14MAR00	
	ATM ENG 3 24	03DEC99		0	8	08JAN00		0	8	11FEB00		8	16	11FEB00	14MAR00	
	FLD ENG* 8 24	03DEC99		16	20	08JAN00		16	20	11FEB00		24	28	11FEB00	14MAR00	
AS260	Trim Robot Paths Lin 15	16DEC99	147							11FEB00	108			11FEB00	03MAR00	
	ATM ENG 4 15	16DEC99		0	8					11FEB00		5	13	11FEB00	03MAR00	

Activity AS260 requires more resource units per time-period than are available for its early scheduled dates. P3 delays the activity until availability increases. The delay reduces the activity's total float from 147 to 108.

The Leveling Statistics page of the report lists the settings used to level the project.

Leveling Statistics for Project APEX:

- Interproject relationships requested but not used,
 - no relationships for this project in interproject relationship file.
- Project float is based on Project Group end date.
- Leveling direction: - Forward
- Schedule calculation mode - Retained logic
- Schedule calculation mode - Contiguous activities
- Float calculation mode - Use finish dates
- SS relationships - Use early start of predecessor

Comparing Leveled and Unleveled Schedules

P3 provides several ways to store and compare data. One way to compare leveled and unleveled schedules is to make one the target of the other; then use P3's ability to report on current and target data in any type of report or graphic. In this example, the name of the current, unleveled project is SCHED:

- 1 Establish the current and target projects. Choose Tools, Project Utilities, Copy. Then copy project SCHED to another name, such as LEVL.
- 2 Close project SCHED and choose File, Open; select project SCHED and click Overview.
- 3 Assign project LEVL as a target of project SCHED.
- 4 Schedule project SCHED normally but level the copy named LEVL.
- 5 Open project SCHED and generate reports comparing the current project (SCHED) with its target project, LEVL. The resulting reports compare the nonleveled and leveled schedules.

An alternative method uses only one version of the project:

- 1 Create activity custom data items to store leveled early and late dates.
- 2 Level the project.
- 3 Use Global Change to store the leveled dates in the matching custom data items.
- 4 Reschedule the project, thereby restoring the unleveled dates; P3 stores the leveled dates in the custom data items.
- 5 Use Report Writer or InfoMaker to create reports comparing the project's scheduled and leveled dates.

Managing Multiple Projects

In this part:

Creating and Managing Project Groups

Setting Up and Managing Projects in Project Groups

Copying and Converting Projects and Project Groups

Linking Independent Projects or Project Groups

This part describes how to manage multiple projects and achieve enterprise-wide control by organizing individual projects into project groups. Enhance the consistency of reports and make them simple to interpret by sharing a common set of codes, titles, and graphics specifications among the projects in a group.

Creating and Managing Project Groups

In this chapter:

- Process Summary
- Adding a Project Group
- Assigning Access Rights
- Defining Calendars
- Setting Up Dictionary Structures
- Setting Scheduling and Leveling Options
- Linking Projects within the Project Group
- Leveling Resources Across Projects
- Storing Period Performance Across Projects
- Reporting Across Projects
- Keeping Track of Projects within a Project Group
- Backing Up and Restoring Project Groups

This chapter describes how the project controls coordinator should set up project groups. Project groups enable you to manage projects that share the same resources or help you oversee large projects by dividing them into smaller projects that are easier to control. Project groups contain all the activities in the member projects and provide a comprehensive look at the project as a whole.

Process Summary

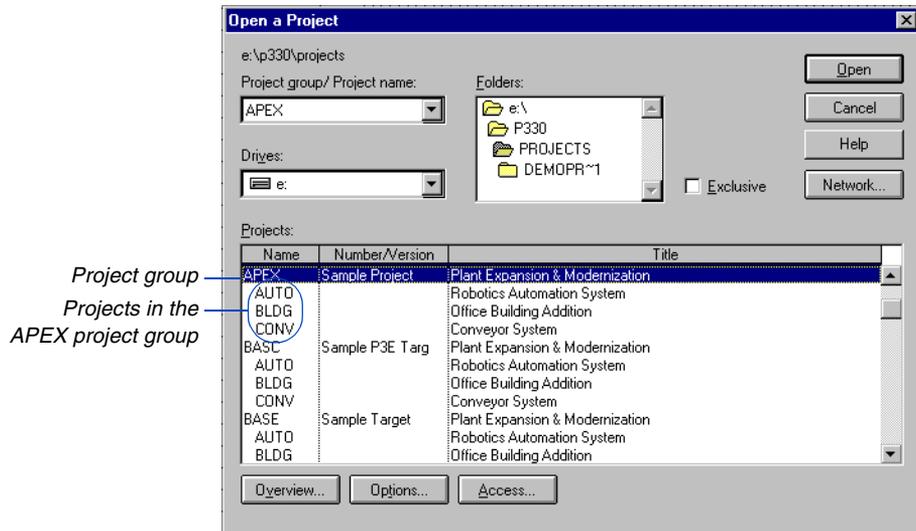
To manage multiple related projects in P3, you can create and then add each individual or member project to the group. Member projects are treated as portions of a larger project; a separate manager controls each project, while a project controls coordinator oversees the project group. As each project manager adds activities to a project or updates the schedule, P3 automatically updates the project group—eliminating the need to enter data twice or merge data. The project group provides a comprehensive look at all member projects. You can add relationships between projects to reflect dependencies.

Project group guidelines To work effectively and efficiently in a multiproject environment, certain guidelines are essential:

- Individual project managers and the project controls coordinator should discuss standard work schedules and coding structures, as well as required resources and their unit prices. For consistency across projects, the project group contains this information so that member projects can share it. All managers involved need to agree to these standards before the project starts since some of these data elements can only be changed in the project group.
- Project participants may want to use a version-control utility called Project Check-in/Check-out that is provided with P3. This utility enables a project participant to check out a project to work with at another location; it also notifies any other participant who tries to access the project that it has been checked out. The project can still be accessed from its usual location, and users can make changes and save the project; however, P3 overwrites those changes when the checked-out project is checked back into the project group. Project managers should recommend that all project participants use Project Check-In/Check-Out to ensure that data are not overwritten by other users.

Choose Tools, Project Check-in/Check-out to access this version-control utility. For more information about using Project Check-in/Check-out, see Keeping Track of Projects within a Project Group later in this chapter.

- Project participants should also determine naming conventions, so that everyone involved in the project recognizes activity IDs and resources. Each project activity ID automatically starts with a two-character code that identifies the member project to which it belongs. This code makes it easy to distinguish project activities from one another in the project group, and project participants can use it to select, sort, and summarize project data. You can also define additional project codes for organizing, filtering, and reporting across multiple projects.
- Establish a regular time for updating progress. To avoid confusion, all member projects should use the same data date; if projects are unable to use a common data date, schedule periodically from the project group to synchronize dates in member projects.



Project controls coordinator checklist

- 1 Add a new project group (choose File, New). Specify a project start date that is the earliest start of all projects that will be part of the project group.
- 2 Click Access in the Open a Project dialog box to establish who can access the project group. Make sure the project group is accessible to the project teams so they can add their own projects. Later, after all the projects have been added, you can limit access to the project group.

For guidelines for working with projects in a project group, see the next chapter, *Setting Up and Managing Projects in Project Groups*.

- 3 Set up the dictionaries and calendars in the project group that will be used by each member project; this ensures consistent coding structures, resource definitions, cost accounts, and calendar information among projects. Also, define resources that all projects will share.
- 4 Determine the scheduling and leveling options for the project in the Schedule/Level Calculation Options dialog box (choose Tools, Schedule, Options).
- 5 Link member projects at the project group level and create a target project from the project group.

Adding a Project Group

A project group contains data for several projects that may or may not be related to one another—some projects may be linked only because they compete for the same resources. A project group may also contain data for activities that are exclusive to that project group. Choose File, New to create a project group shell.

1 Enter a four-character name for the project group.

2 Enter descriptive information about the project group.

3 Specify the project group defaults and set the start date.

After the project controls coordinator creates the project group, each project manager adds his or her own part of the project, specifying project names and unique IDs, access lists, and project activities and associated data.

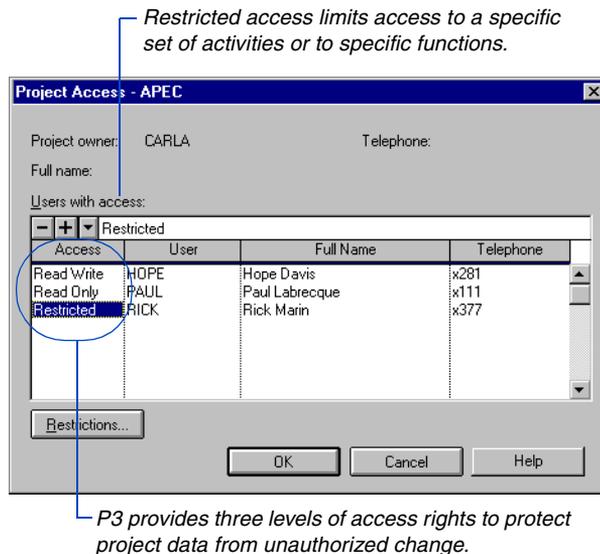


Each project manager can specify a start date, data date, and finish date within his/her own project. However, all projects in the project group should have the same data date to avoid confusion.

Assigning Access Rights

Managing multiple projects also involves sharing data. When P3 operates on a network, authorized users can access projects at almost any time. When you add the project group, you become its owner. As the project owner, determine access lists that designate who can work in both for the project group and for each member project.

Establish who can access the project group Choose File, Open and select the project group, then click Access and select the Access column. Click ▾ to choose one of the access rights from the drop-down list. In the User column, click ▾ to choose a user. Repeat to assign access rights to each person who needs access to the project group.



For more information about access rights, refer to the *Setting Up P3* chapter.

The access list for the project group pertains only to the project group—each member project can also have a unique access list. Each project manager needs Read/Write access rights to the project group to add a project. The project controls coordinator can change access rights at any time.

Multiple users Generally, multiple users can work simultaneously in the same project or in separate projects. The project controls coordinator can also access the project group without impeding the project managers' work.

Defining Calendars

In the project group, use the Project Calendars dialog box to define the Global calendar for the project group. Specify holidays and any other nonworkperiods that apply to all projects.

The project controls coordinator should also define a project calendar in the project group that specifies the standard workweek. Since different projects may work on different schedules, the coordinator can define multiple calendars to accommodate each case. Each project manager can then assign the appropriate calendar(s) to activities in his or her project.

The screenshot shows the 'Project Calendars' dialog box. At the top, there are radio buttons for 'Calendar: Base' (selected) and 'Resource'. Below this is a list of calendars: 'Global Calendar', '1 - Standard 5-day', '2 - 3-Day Workweek', '3 - 7-Day Workweek', and '4 - 4-Day Workweek'. A blue circle highlights this list with the annotation: 'Displays all calendars in the project group. Select the calendar you want to change.' To the right of the list are buttons: 'Close', 'Help', 'Add...' (annotated 'Add a new calendar.'), 'Delete', 'Transfer...' (annotated 'Transfer calendar(s) from existing projects or project groups.'), 'Holidays...', 'Standard...' (annotated 'Define the standard workweek.'), and 'Print...'. Below the list is a calendar grid for 'July 1999' with columns for SUN, MON, TUE, WED, THU, FRI, SAT. The first row shows 'G 4 R' under SUN, '5' under MON, '6' under TUE, '7' under WED, '8' under THU, '9' under FRI, and '10' under SAT. A blue circle highlights the 'G 4 R' with the annotation: 'Changes made in the Global calendar affect all other calendars in the project group.' At the bottom of the dialog are two buttons: 'Work' and 'Nonwork' (annotated 'Define a selected day as a workday or a nonworkday.').

For more information on activity and resource calendars, see the *Activity Calendars* and *Resource Calendars* chapters earlier in this manual.

Individual project managers cannot add or modify base calendars; however, they can define resource calendars.

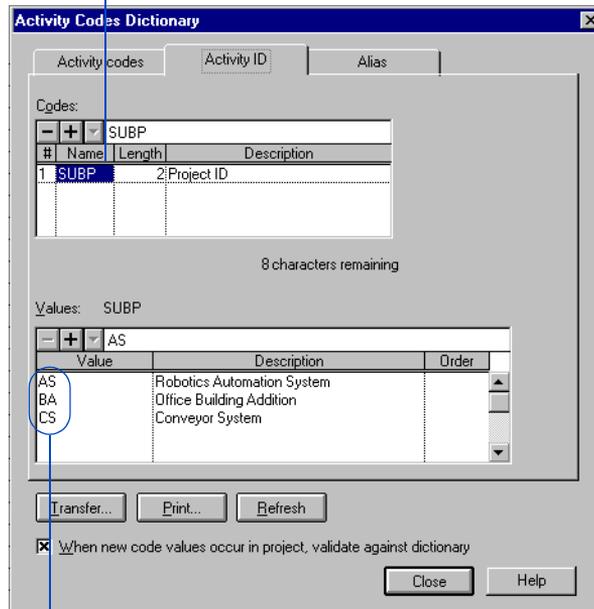
Setting Up Dictionary Structures

To maintain consistency across projects, all projects share dictionaries for project codes, activity codes, the work breakdown structure (WBS), resources, cost accounts, and custom data items. The project controls coordinator creates a project group template that contains this standard dictionary data. Before establishing naming conventions, you may want to discuss them with other participants so that everyone involved in the project recognizes activity IDs, codes, and resources.

Within their projects, managers can add values and descriptions to establish activity codes; These new values and descriptions appear at the project group level and can be used in other projects.

Activity coding structure The project controls coordinator should establish an activity coding structure in the project group that can be used across all projects. This structure should include code values and descriptions. The project controls coordinator can also define activity ID codes in the project group; however, the first activity ID code field is reserved by P3 to identify member projects (SUBP). Use this code to sort, select, summarize, and report on activities by member project from the project group.

When you add a project to a project group, P3 automatically adds an activity ID code and names it SUBP.



P3 assigns each member project a two-character value under the SUBP activity ID code.

Project coding structure In addition to structuring data using activity codes, you can set up codes for tracking items at the project level. Within the project group, the project controls coordinator should establish project codes, code values, and descriptions that can be used across all projects. Use project codes to categorize member projects into groups, such as division, funding source, manager, team, and type of work. You can then organize member projects; combine multiple member projects in a single band; and sort, filter, or report using the codes from the project group. For example, since all activities in the member projects are automatically assigned the project code value, you could organize the project group by manager and filter by an activity code, such as phase, to see the individual managers involved in each phase of the project. Define project codes and values from the project group, then assign the project codes values to your member projects.

Work breakdown structure A work breakdown structure (WBS) provides a structured view of project components that project participants can use to track data and identify cost and schedule variances. The project controls coordinator should define a standard WBS that all projects can use.

Resource Dictionary In the project group, use the Resource Dictionary to define resources for all projects, along with normal and maximum limits for the entire project. The normal and maximum limits correspond to resource levels throughout the duration of the project. Modifying these limits at the project level affects resource availability in the project group.

Cost Accounts Dictionary In the Cost Accounts Dictionary, define an accounting structure, then assign these accounts to individual resources or activities. A cost account is a code used to identify and accumulate costs for a resource or an activity. Use cost accounts to select and roll up cost and resource data for reporting.

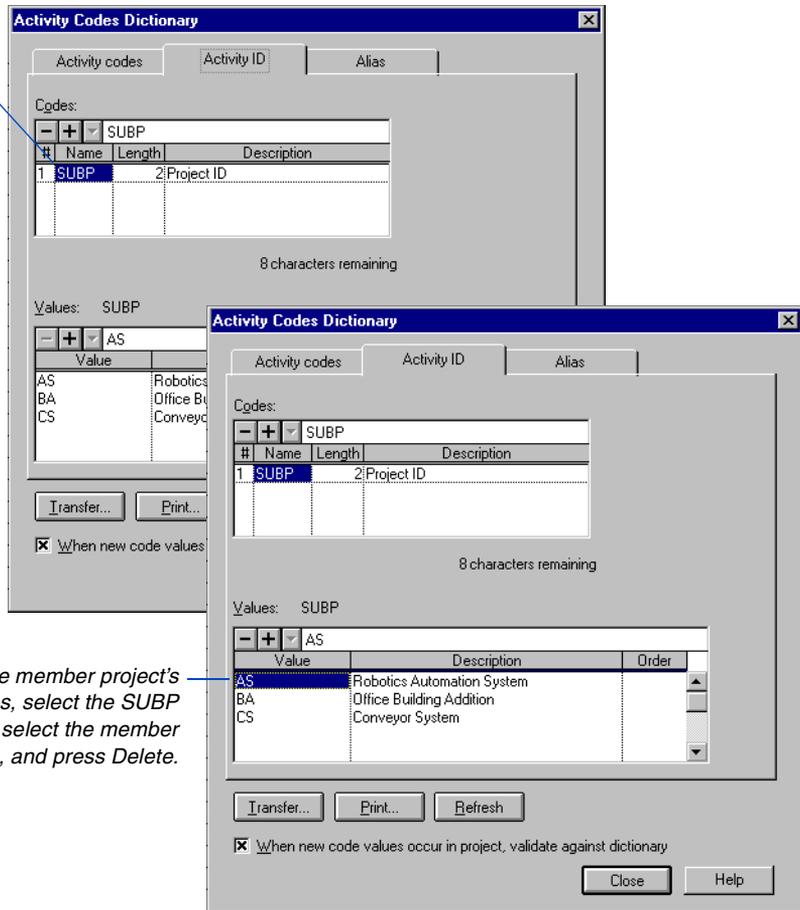
Custom data items Define custom data items in the project group. Custom data items track additional data or resource/cost detail needed for a particular project. You can edit, modify, or add new custom data items, if necessary.

For more information about defining activity ID codes, refer to the *Activity and Project Codes* chapter.

Delete member project ID codes You can remove one or all member project names and titles without deleting their activities from the project group. To remove only one member project ID, choose Data, Activity Codes, then click the Activity ID tab. Select the member project ID code and press Delete. Click Yes to remove the project's name and title from the Open a Project dialog box but retain the project's activities in the project group. To remove all member projects, select the SUBP ID code, then press Delete. Click Yes to remove all member project names and titles from the Open a Project dialog box but retain the project activities in the project group. To delete a member project and all its activities from the project group, choose Tools, Project Utilities, Delete. Select the project and click Delete. Click Yes.

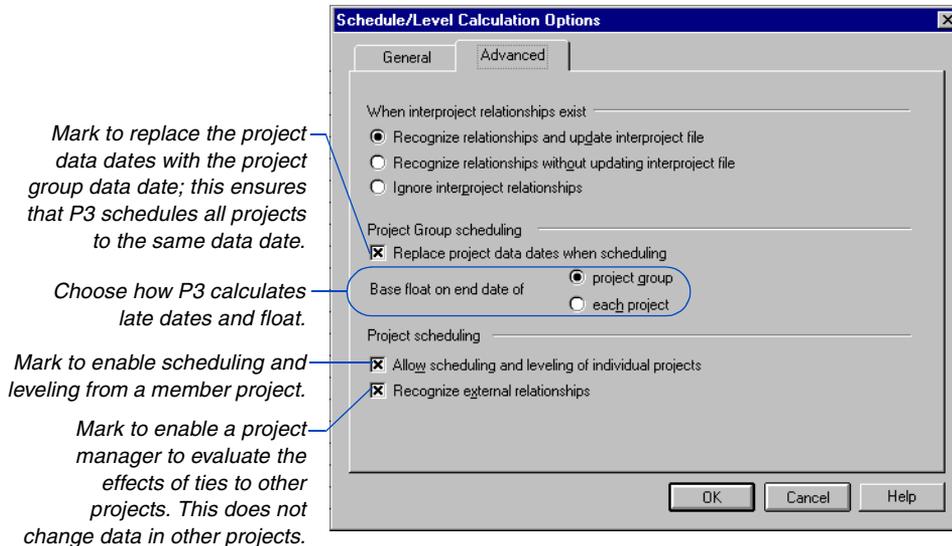
To delete all member project names and titles, select the SUBP activity ID, then press Delete.

To delete one member project's name and titles, select the SUBP activity ID, then select the member project value, and press Delete.



Setting Scheduling and Leveling Options

The project controls coordinator should determine standard scheduling and leveling options for the project group and all member projects. To access the Schedule/Level Calculation Options dialog box, choose Tools, Schedule, then click Options in the Schedule dialog box; or click Options in the Resource Leveling dialog box. For example, select the type of logic (retained or progress override) P3 uses to calculate the schedule. Specify these choices in the project group in the Schedule/Level Calculation Options dialog box. Click the Advanced tab to project group and project scheduling and leveling settings.



Automatically schedule P3 can automatically schedule the project group whenever you change information that affects the schedule. If automatic scheduling is turned on, P3 uses the scheduling options set in the Schedule/Level Calculation Options dialog box.

Control the data date when scheduling Each project can be scheduled using its own data date. When you analyze data or report from the project group, schedule dates and durations may be inaccurate if projects use different status dates. At the beginning of the project, the project controls coordinator should establish consistent procedures that specify when updating occurs.

The project controls coordinator should also periodically calculate the entire schedule from the project group. When scheduled from the project group, P3 includes all projects.

Calculate late dates and float When scheduling and leveling from the project group, choose how to calculate late dates and total float for each project based on the project group end date or the individual project end dates.

P3 uses the imposed finish date for the project group, if any, to calculate late dates; otherwise, P3 uses the latest calculated early finish date for the project group. If scheduling and leveling of individual projects is permitted, P3 calculates the project late dates from its latest calculated early finish date.

Since total float is the difference between early and late dates, this option also determines how P3 calculates float values. For example, if you choose to base float on the end date of the project group, total float would be positive for an individual project whose end date is earlier.



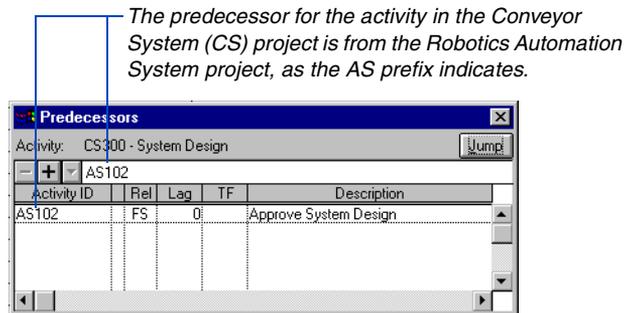
If a project has an imposed finish date, P3 always uses that date to calculate late dates for the project, regardless of your response to this option.

Schedule and level using external relationships If the project controls coordinator specifies not to recognize external relationships, P3 levels member projects as independent projects, using their respective start dates, data dates, and finish dates for calculations. P3 treats relationships across member projects as open ends. This is useful during initial project planning before external relationships have been determined. Mark this option to enable a project manager to evaluate the effects of ties to other member projects on his or her project, without changing data in the other projects.

Linking Projects within the Project Group

When a large project is divided into smaller projects, make the resulting projects as independent as possible. However, since the projects belong to the same project group, link them where appropriate. For example, if one member project in the project group deals with the manufacturing of a product, that project cannot begin until the testing project, a separate project in the project group, finishes.

After activity data have been entered for individual projects, the project controls coordinator can link the projects by adding relationships in the project group. To create relationships, specify predecessors and successors for activities.



The Predecessors and Successors forms show the relationships from activities in one member project to activities another or in the project group itself. When you show relationship lines on the Bar chart, P3 shows relationship lines for external activities (an activity in another member project or in the project group) if it is included in the active project layout.

Interfaces between member projects can be as simple as one link between the start and finish of projects, or they can be connected by several relationships within projects.

For information about defining relationships, refer to the *Working with Relationships* chapter.



Individual project managers can view relationships to other projects from their own projects, but cannot edit them.

Leveling Resources Across Projects

Leveling from the project group enables you to evaluate the impact of resource availability across all projects—related or unrelated—at one time. P3 analyzes all member projects and considers all relationships within and across the projects. Display resource/cost profiles to compare required resource amounts to the available quantities for each project and across all projects. If you discover that combined use of a resource across all projects exceeds the available amount, level resources to resolve conflicts.

The project controls coordinator determines if member projects can level resources. Set this option in the Schedule/Level Calculation Options dialog box (choose Tools, Schedule, Options).

Automatically level P3 can automatically level the project group whenever you change information that affects the schedule. If automatic leveling is turned on, P3 uses the leveling options set in the Schedule/Level Calculation Options dialog box.

Set leveling priorities If two activities from different projects require the same resource at the same time, or if one project takes precedence over another in the project group, specify the order in which projects receive the resource by setting priorities for leveling in the Activity Codes Dictionary dialog box (choose Data, Activity Codes). During leveling, P3 assigns the resource to the activity with the highest priority first.

Using Hierarchical Resources For Leveling

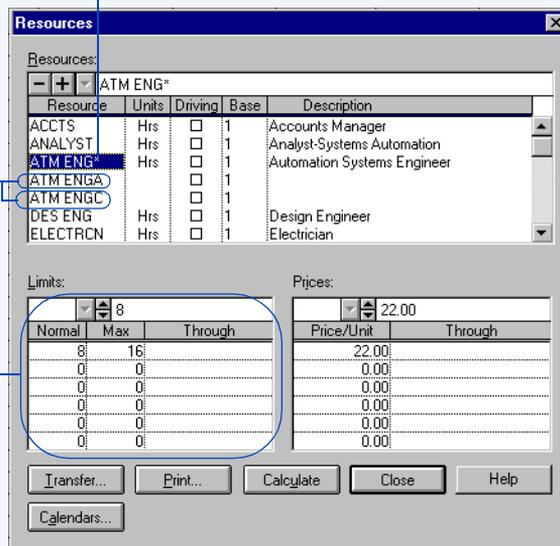
Sometimes levels of availability can vary for the same resource across projects. One way to deal with these varying limits is to use hierarchical resources. A hierarchical resource bundles similar resources, or resources that can be interchanged, for

leveling and reporting purposes. Because limits can be set for the individual resources as well as for the hierarchical resource, project managers need not revise limits when they level only their part of the project.

Define a hierarchical resource; the asterisk is a wildcard.

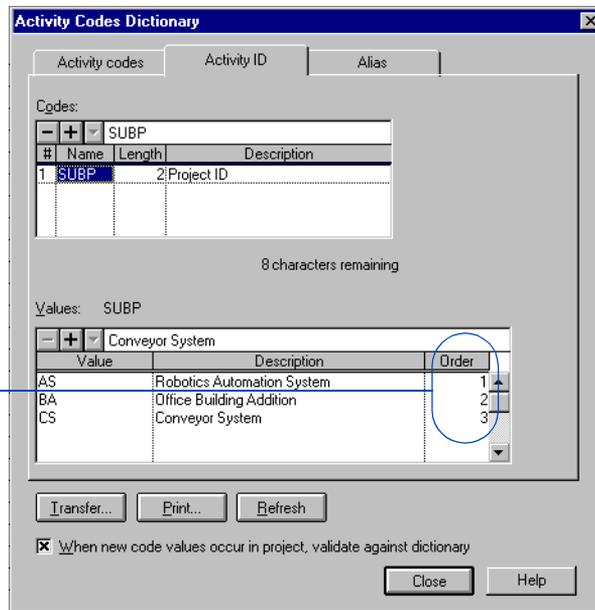
Define separate resources for Robotics and Conveyor Automation System Activities.

Specify limits for each resource.

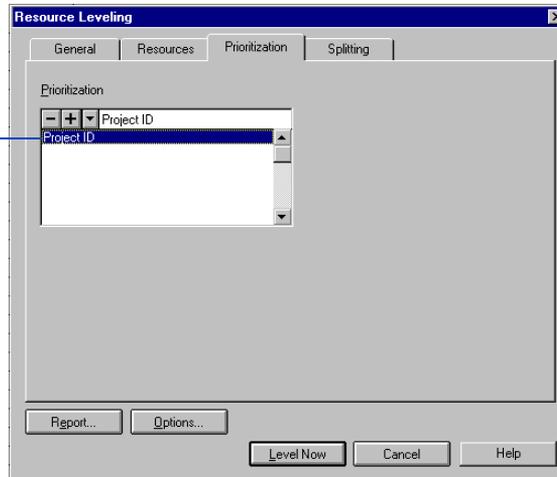


In this example, each project manager can level his or her own Automation Systems Engineer resource using the limit for his or her project. When the Automation Systems Engineer use needs to be evaluated across all projects, level the hierarchical resource ATM ENG* in the project group. P3 considers all Automation Systems Engineers included under this “umbrella” as one resource for leveling.

Hierarchical resources must be defined in the Resource Dictionary before they are specified for leveling. If you leave the limits blank for a hierarchical resource, P3 totals all individual resources in the hierarchy. If a resource within the hierarchy also has blank limits, indicating unlimited availability, the hierarchical resource also has unlimited availability.



1 Specify the order in which you want P3 to consider projects by assigning an order number to each SUBP activity ID code value.



2 Choose Tools, Level to display the Resource Leveling dialog box. Click the Prioritization tab and choose project ID as the code to prioritize activities for leveling.

For more information about summarizing activities, refer to the *Summarizing Data* chapter.

For information about leveling resources, refer to the *Resource Leveling* chapter.

Review the effects of leveling P3 provides a number of different methods for analyzing the effect of leveling on a project or project group. Examine the resource leveling analysis report produced after resource leveling to see which activities were delayed. You can also produce resource histograms after leveling to see how P3 resolved resource conflicts. From the project group, summarize activities in the Bar chart to compare the current schedule to the target schedule and review the impact of leveling on the entire schedule.

Storing Period Performance Across Projects

You cannot change period performance data it once you close out the period. Therefore, you may want to schedule your project and create a backup copy before storing these data.

The project controls coordinator should establish a schedule—for example, every 2 weeks, month, or quarter—for updating the schedule and then storing period performance. After the schedule has been updated, choose Tools, Store Period Performance. Closing out the period stores the actual quantities, costs, and earned value quantity and cost values as historical data and then resets the actual this period to zero in anticipation of the next schedule update.

When you store period performance at the project group level, P3 closes out member projects as well, but uses the member project's respective data dates. You can, however, store period performance in member projects individually. For the most accurate reflection of closeout dates, we recommend that the data date at the project group level is the same as or later than the data date in each of its member projects. Otherwise, a member project could have an activity with an actual start that is later than the data date in the project at the project group level, in which case you would see different (earlier) period performance data for these activities at the project group level.

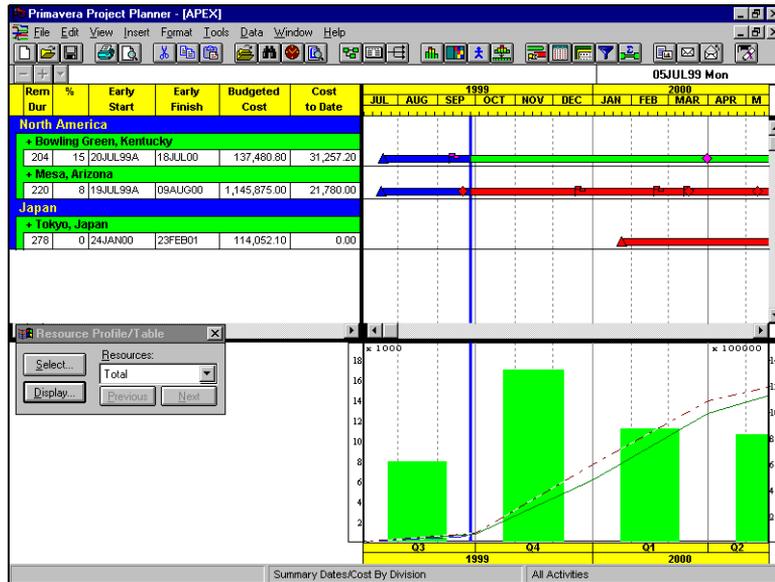
For more information on storing period performance, refer to the *Tracking Resources and Costs* chapter.

If you store period performance using a date that is earlier than the previous closeout date for either the project group or a member project, any data that was included in that update will not be stored again. Newly added resources can be stored. If P3 cannot store period performance for resources in the project group or in member projects, it creates a file named CLOSEOUT.OUT listing the records it could not close out.

Reporting Across Projects

Create and print layouts from the project group to review the overall schedule status. You can also produce reports to review project group and member project status. The following example shows a layout grouped and summarized by the division and location project codes. This layout provides a summary of dates and costs for each project and shows the overall status at a glance.

To analyze one project in detail, create a filter that selects activities by the project ID code.



P3 uses the project group data date for special calculations and graphics produced from the project group. For example, P3 spreads resource data according to the project group data date: actual data are shown up to the data date, and the estimate to complete quantity is spread from the data date. Other calculations that use the project group data date include summaries of durations.

Keeping Track of Projects within a Project Group

P3's Project Check-In/Check-Out feature enables you to keep track of member projects that are used outside the project group. This feature is useful when a member project manager travels to a project site and updates or modifies the member project while at that site, or when member project managers work on projects at home.

P3 notes when a member project manager checks out a project from a project group. When anyone tries to open that member project or the project group, P3 informs the user that the project is checked out. Users can make changes and save the project, but P3 overwrites those changes when the checked-out project is checked back into the project group.

When you check out a project to diskette(s), P3 creates a compressed backup that spans all necessary diskettes.



Before you can check the project back into the project group, you must restore it to a temporary directory on your hard drive (choose Tools, Project Utilities, Restore).

For more information on backing up projects, see *Backing Up and Restoring Project Groups* later in this chapter.

If you don't need to inform other users that the project is checked out, and you want to store the project on diskettes, consider using the Backup utility rather than Project Check-In/Check-Out.

If you check out a project to a directory on a hard drive, P3 does not compress the project. To use the project, open it using P3.



Close the project group from which you are checking out the member project before you run Project Check-In/Check-Out.

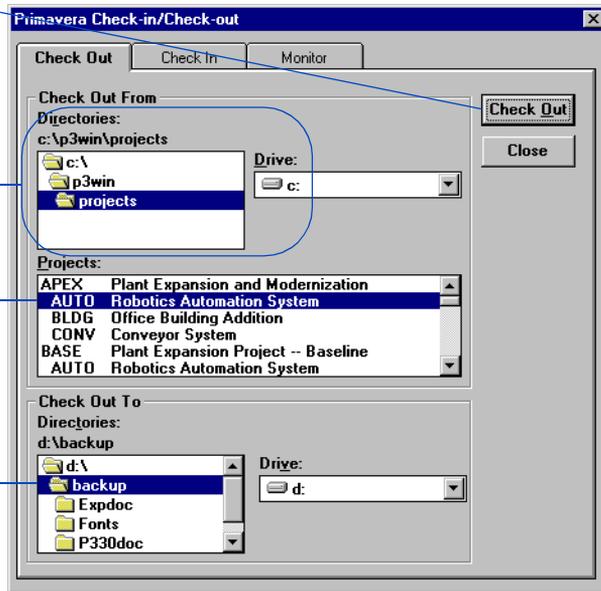
Check out a project from a project group Choose Tools, Project Check-In/Check-Out, then click the Check Out tab.

4 Click to check out the selected project and copy it to the location you specified.

1 Select the project group drive and folder.

2 Select the project you want to check out.

3 Select the drive and folder in which you want to store the checked-out project.

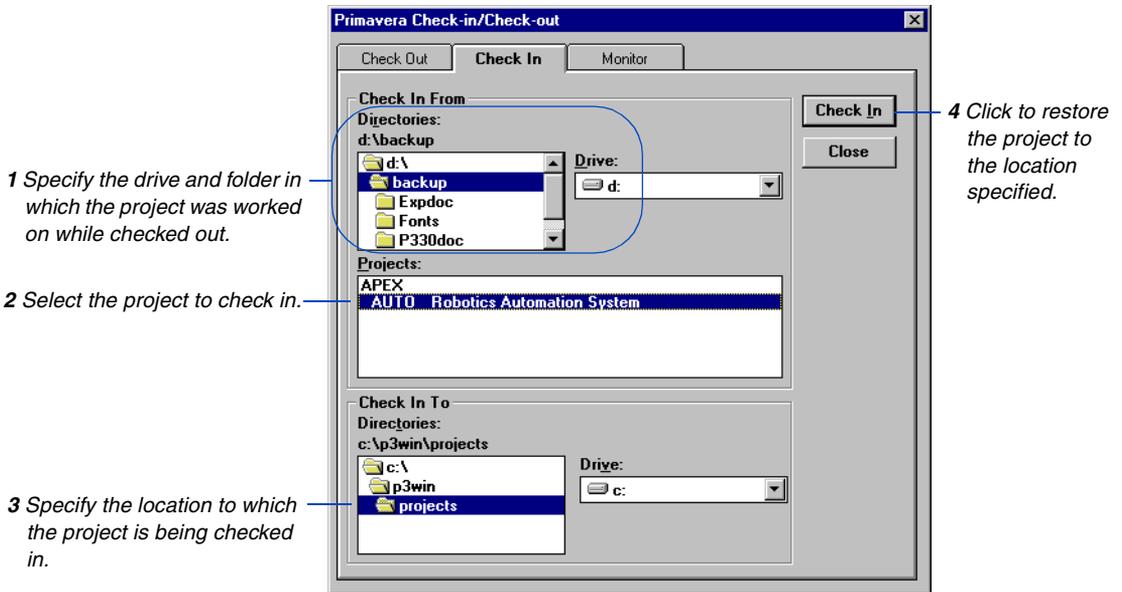


Check a project back into a project group When the member project manager finishes working with a project, check the project back in to the project group. P3 overwrites any changes that may have been made locally to the member project while it was checked out.

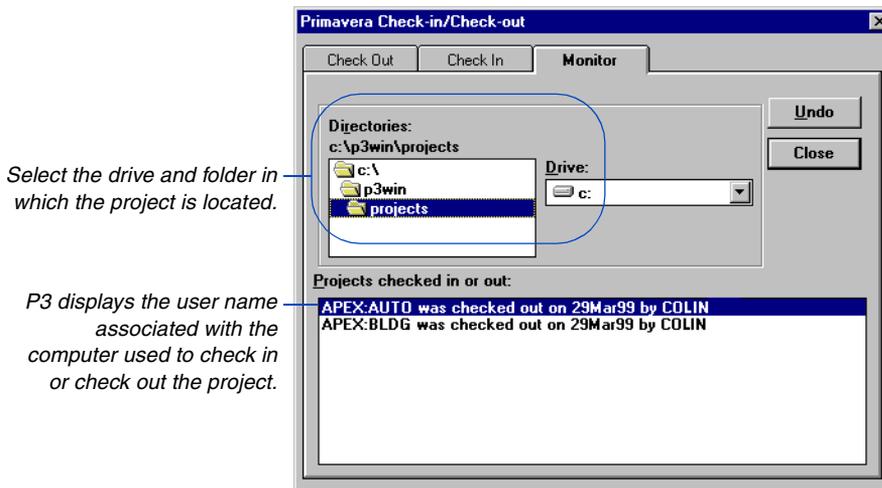


If the project was checked out to a diskette, you must restore it to a temporary directory on your computer's hard drive before running Project Check-In/Check-Out.

Choose Tools, Project Check-In/Check-Out, then click the Check In tab.



Determine whether a project is currently checked out Choose Tools, Project Check-In/Check-Out, then click the Monitor tab.



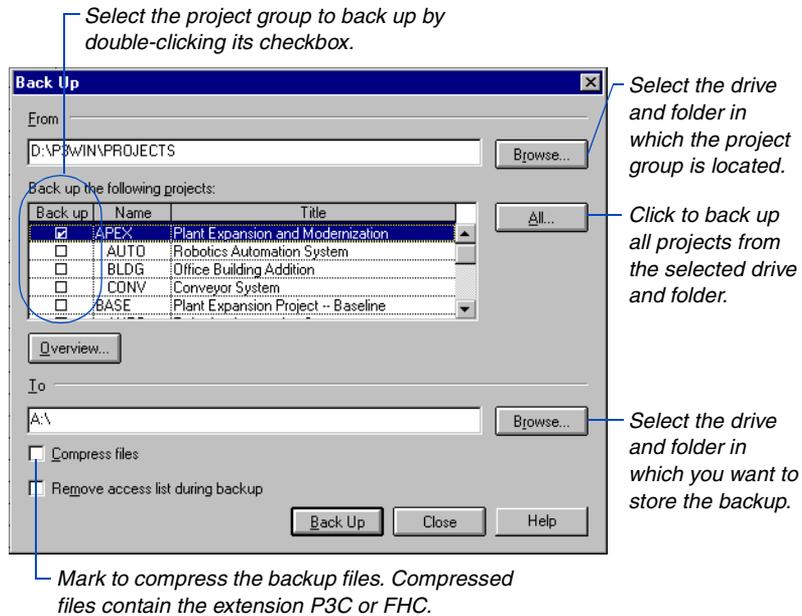
Click Undo to reverse the check-out status of a selected project in the Projects Checked In or Out section. When a project has been checked out for an extended period, you may want to undo the status to disable the warning message that displays each time you open the project.

Backing Up and Restoring Project Groups

P3 enables you to back up project groups to diskettes or to another folder and then restore these project groups from the backup. Backing up project groups protects the data and enables you to share projects with users at remote sites. The Back Up command does not delete project files from the folder.

For more details on backing up projects, see the *Project Utilities* chapter.

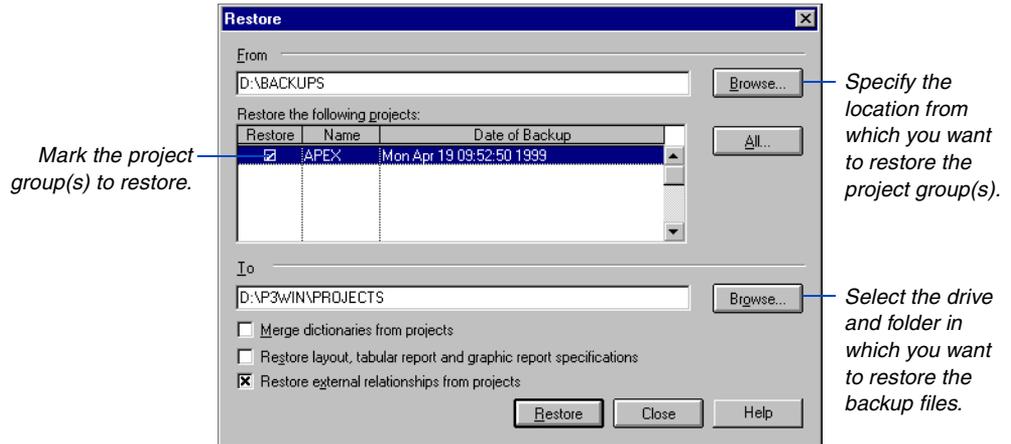
Back up project groups Choose Tools, Project Utilities, Back Up. When you back up a project group, P3 automatically backs up layouts and report and graphic specifications, as well as all other activity information, such as project dictionaries and filter specifications. To back up a project group,



Backup log P3 creates a file called PBACKUPLOG that contains the project group or project name, the project ID, the backup date, and an indicator for whether the files are compressed. P3 also creates the PBACKUP.050 file which lists the individual files that were backed up. P3 creates both files in the folder of the backed-up projects.

Whether you back up a project group or a project, the files that P3 backs up use the name of the project group, for example, APEXREL.P3, where APEX is the project group name.

Restore project groups Restore a project from the backup diskette(s) or folder to the selected folder using the Restore command (choose Tools, Project Utilities, Restore).



If you specify a new folder, P3 prompts you to create it. If a project using the same name (for example, an older version of the backed-up project) already exists in the folder you select, confirm that you want to replace it with the restored project.

Use the last three checkboxes on the dialog box to decide how restored projects fit within the project group.

Merge dictionaries from projects To copy any new values added to a project's dictionary to the project group's dictionaries, mark the Merge Dictionaries From Projects checkbox.

Restore backed-up layouts, reports, and graphics To restore backed-up layouts and report and graphic specifications, mark the checkbox.



Marking this checkbox will overwrite the existing layouts and report and graphic specifications if the project already exists in the folder to which you are restoring it.

Restore external relationships from projects When you back up a project, P3 saves the relationships to external activities in other projects or the project group. Clear this checkbox to have P3 disregard these relationships when you restore a backup of a project.

Setting Up and Managing Projects in Project Groups

In this chapter:

- Adding a Project to a Group
- Assigning Access Rights
- Assigning Activity and WBS Codes
- Assigning Project Code Values
- Assigning Resources
- Scheduling a Project
- Leveling Resources in a Project
- Backing Up and Restoring Projects

A project group enables you to manage more than one project concurrently by bringing them together under one umbrella.

Projects are members of the larger project group. A separate manager usually controls each project in the group. In P3, projects in a group can also be complete, independent projects; these standalone projects are treated as member projects to simplify analyzing the effects of shared resources or reporting across multiple projects.

This chapter describes how to develop a project that will be part of a project group.

Adding a Project to a Group

If you are responsible for creating and managing a project that is part of a project group, follow the same steps you would to add a standalone project. You also use the same project name for different projects in different project groups.

The screenshot shows the 'Add a New Project' dialog box with the following fields and annotations:

- Current folder:** c:\p3win\projects (with a 'Browse...' button)
- Project name:** AUTO (with a callout: *Type a unique four-character name for the new project.*)
- Number/Version:** (empty text box)
- Project title:** Robotics Automation System
- Company name:** Acme Motor Corporation
- Planning unit:** Day (dropdown menu)
- Work days/week:** 5 (spin box)
- Week starts on:** Monday (dropdown menu)
- Project start:** 19JUL99 (calendar dropdown)
- Project must finish by:** (empty date dropdown)
- Decimal places:** 2 (spin box)
- Add this new project to a project group**
- Project group:** APEX (dropdown menu, with callout: *Choose the project group to which you want to add the project.*)
- Project ID:** AS (text box, with callout: *Use P3's default project ID (A0, A1, A2, and so on), or type a prefix unique to your project.*)
- Buttons:** Add, Cancel, Help

Additional callouts:

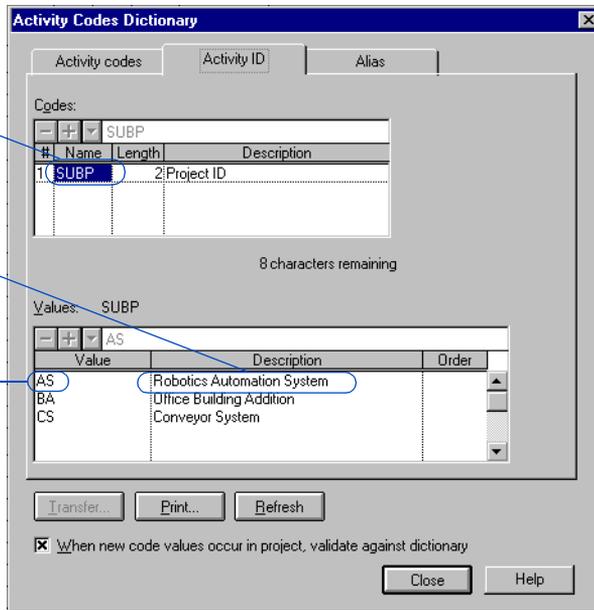
- A blue circle around the Planning unit, Work days/week, and Week starts on fields is annotated with: *Values for these fields derive from the project group.*
- A callout pointing to the Project start field states: *The project start cannot be earlier than the project group start date.*

Project IDs A project ID is a two-character code used to differentiate member projects within a project group. It occupies the first two positions of the activity ID for each project activity. At least one of the two project ID characters must be alphabetic; for example, use U1 to identify the Unit 1 project.

P3 adds the activity ID code SUBP to the Activity Codes Dictionary as the first ID code.

P3 uses the project title as the code description.

P3 adds the project ID as the code value.



For details about adding a project, refer to the *Projects and Layouts* chapter.

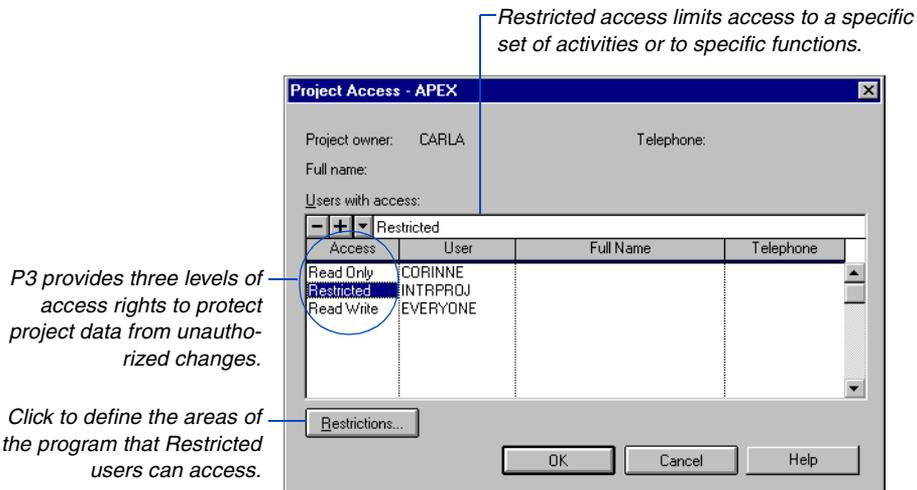


If an activity ID code other than SUBP is defined in the first position of the project group Activity Codes Dictionary, P3 does not add the project.

Assigning Access Rights

Access rights protect project files from unauthorized changes by users. Each project in a project group has its own access list; the project group access list pertains only to the project group. The project controls coordinator administers access rights at the project group level, while individual project managers control their own access list.

When you add a project, you become its owner. P3 places the user name EVERYONE in the project's access list. Click Access in the Open a Project dialog box (choose File, Open) to assign access rights to anyone who will use the project.



For more information about access rights, refer to the [Setting Up P3 and Projects and Layouts](#) chapters.

Exclusive access Certain options, such as scheduling, leveling, and editing activity IDs, require that only one user have the project open. Mark the Exclusive checkbox in the Open a Project dialog box when you open the project (choose File, Open) to prevent other users from accessing the project. To obtain Exclusive access to a project, no other users can have that project open; however, other users can have different projects of the same project group open.

Assigning Activity and WBS Codes

All member projects share the coding structure established in the project group; this structure can only be modified from the project group. Use the Activity form and detail forms to assign activity and WBS codes to the activities in your project.

PCH	VENDR	PROCR	FABDE	SYSTC	AM.01.2.C
Dept	Resp	Phas	Step	Item	WBS

Assign activity codes for each activity.

Assign WBS codes.

For detailed information about assigning codes to activities, refer to the *Activity and Project Codes* chapter.

For more information about assigning WBS codes, refer to the *Work Breakdown Structure Codes* chapter.

The activity code values you assign in a project need not be defined in the project group Activity Codes Dictionary; P3 prompts you to add any new value. If necessary, you can add, edit, and delete activity or WBS code values and titles in your project. P3 automatically changes the appropriate dictionary in the project group, where they are also available for other projects in the same group.

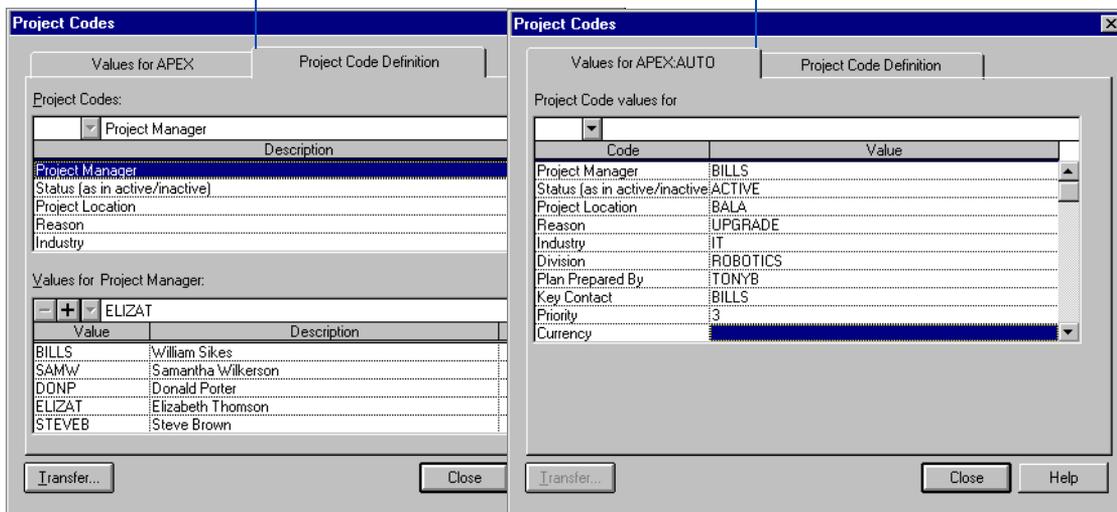


You cannot transfer an Activity Codes Dictionary while working in a member project; transfer the dictionary from the project group.

Assigning Project Code Values

If the project controls coordinator set up codes for tracking items at the project group level, assign the appropriate code value to each project in the group. For example, if a code was set up at the group level for manager, you and the other project managers who manage the projects in the group would then assign the applicable value (manager's name) to your specific projects.

Define the codes and values at the project group level, then assign the specific value(s) for the individual codes from the member project.



For detailed information about assigning code values to projects, refer to the *Activity and Project Codes* chapter.

When you choose Data, Project Codes in the member project for which you want to assign project code values, the project codes predefined in the project group are displayed in the Code column of the Project Codes dialog box. Click the Value cell for the applicable code, then select the value from the drop-down list in the edit bar.

For more information about transferring dictionaries, refer to the *Activity and Project Codes* chapter.

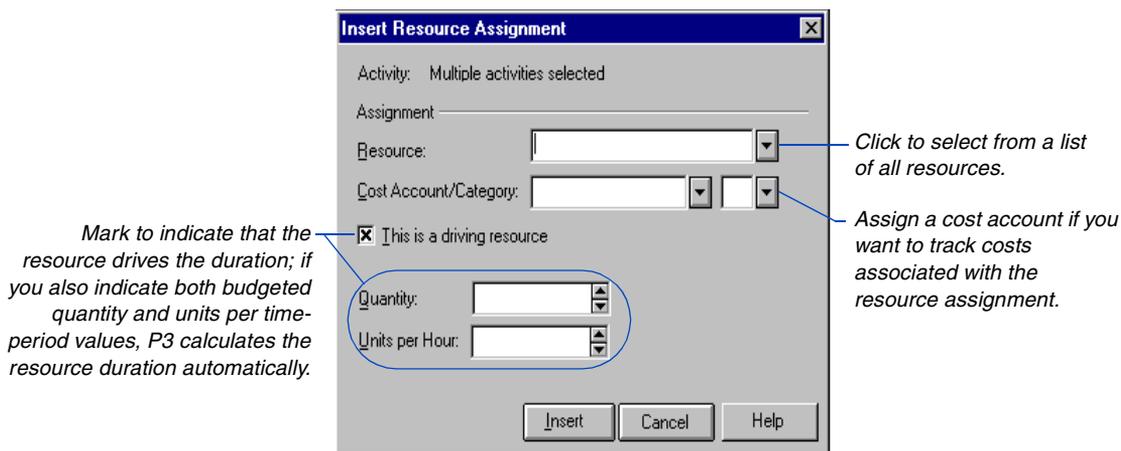


You cannot transfer a Project Codes Dictionary while working in a member project; transfer the dictionary from the project group to another project group.

The project code values you assign in a project need not be defined in the project group; you can add new values from the member project using the Project Code Definition tab on the Project Codes dialog box. If necessary, you can also edit and delete project code values and titles in your project. P3 automatically changes the Project Codes Dictionary in the project group, so the new values are available for other projects in the same group.

Assigning Resources

You can quickly assign one resource to multiple activities in your project using the Activity columns on the Bar chart. Make sure the activities to which you want to make resource assignments are included in the layout. Select the activities (contiguous or noncontiguous) in the Activity columns, then choose Insert, Resource Assignment.



You can delete existing resources, edit names and unit prices, or transfer resources only while working in a project group.

Resource Dictionary You can add new resources to an activity or adjust the availability limits for any existing resource in the Resource Dictionary. The changes also appear in the project group and other member projects.

You can also use the Resource Dictionary to review other data about resources, such as unit prices. Choose Data, Resource Curves, to review the resource/cost distribution curves.

For more information on resources and costs, refer to the [Planning Resources and Costs](#) chapter.

Costs Track costs in a member project the same as you would in any other project. All member projects should use the same set of Autocost rules at the project group level; however, P3 accepts a different set of rules for each project.

Storing Period Performance

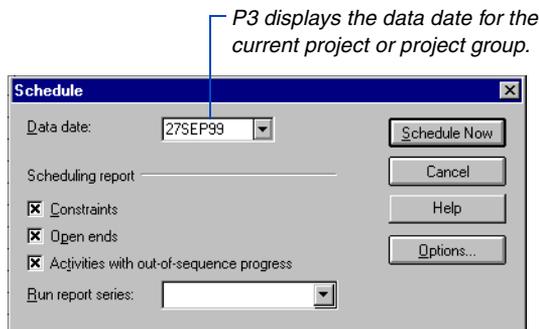
If you want to track historical data for resource assignments by period, make sure you store period performance at the end of each schedule update period. Choose Tools, Store Period Performance. Each resource assignment's earned value and actual this period quantity and cost amounts are saved as historical data from the previous storage date to the data date. P3 then resets the actual this period for assignments to zero. Storing period performance enables you to report and display a resource assignment's true actual cost and quantity spread from the start of the resource assignment to the data date of the actual finish.

For more information on storing period performance, refer to the *Tracking Resources and Costs* chapter.

When you store period data from the project group, P3 saves historical data for the group, as well as separately for each member project. Each member project's respective data date is used to store the data. You can also choose to store historical actuals and earned value from each member project.

Scheduling a Project

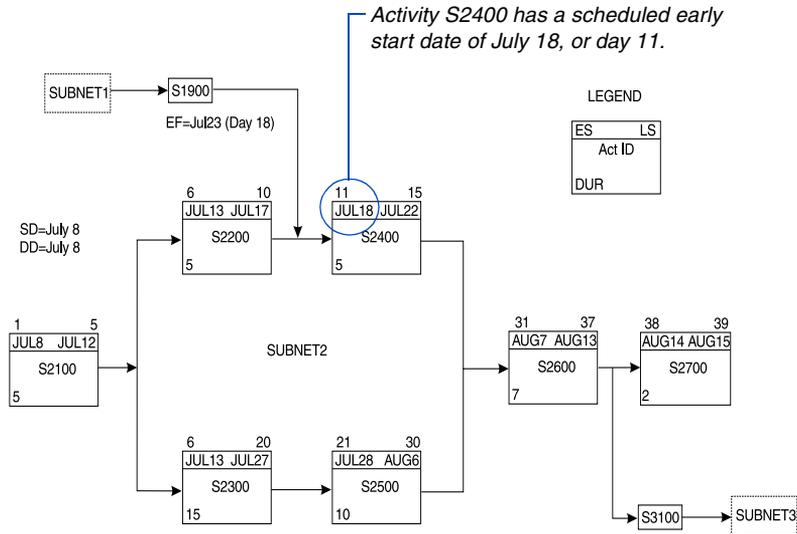
You can schedule a project if the project controls coordinator has authorized it. Project scheduling is set as an option in the Schedule/Level Calculation Options dialog box from the project group. To schedule a project, choose Tools, Schedule.



Schedule automatically P3 can automatically schedule the project whenever you change information that affects the schedule. You can turn on automatic scheduling by project or project group, or by user per project, by modifying the P3.INI file. For example, turn on automatic scheduling for a member project, but not for the project group if your project has few activities and you want to see how changing the remaining duration of an individual activity affects your individual project schedule. If automatic scheduling is on, P3 uses the project scheduling options set in the Schedule/Level Calculation Options dialog box.

Ignore external relationships When scheduling a project, you can have P3 ignore relationships between your project and other projects. P3 schedules your project as an independent project using its start date, data date, and imposed finish date (if any) for calculations. P3 treats relationships to other member projects as open ends.

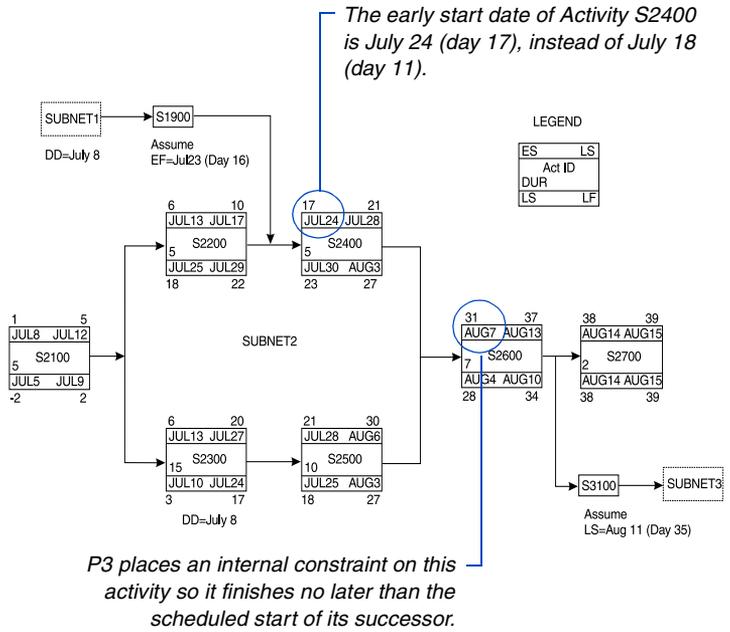
In the following example, you are managing project 2. If you schedule only your project and disregard relationships to projects 1 and 3, P3 calculates the following early schedule dates (assuming a seven-day workweek).



P3 calculates late dates using the project's imposed finish date. When ignoring external relationships, if the project does not have an imposed finish date P3 calculates late dates using the project's latest calculated early finish.

Recognize external project relationships If the start dates of some activities in your project depend on the finish dates of activities in another project, you should consider these relationships. Once a project is underway, you can review schedule dates for your project while considering the effects of external relationships. P3 treats these external relationships as constraints and does not disrupt data in other projects.

In the following example, an internal constraint on Activity S2400 requires that it start no earlier than the scheduled early finish of its predecessor from project 1, Activity S1900.



When recognizing external relationships, P3 calculates the late dates for a project using the imposed finish date of the project. If the project has no imposed finish date, P3 uses the imposed finish date for the project group. If neither the project nor the project group have an imposed finish date, P3 calculates late dates using the latest calculated early finish date for the project.



When you review workperiod numbers from a project, remember that they are based on the start date for that project.

Creating Targets

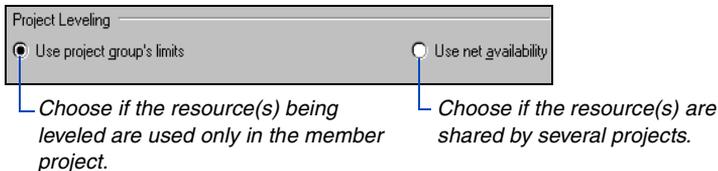
For more information, refer to the *Targets and Progress* chapter.

You can create a target for a project to compare to the current schedule. Choose Tools, Project Utilities, Targets, to create a target. Targets created from a project that is a member of a project group do not contain links to other projects or project groups; P3 treats these target projects, including those created from a member project, as standalone projects.

Leveling Resources in a Project

When several projects compete for the same resources, availability can be a problem. A major cause of project delays is committing to too many jobs that use the same resources. Leveling compares resource demands to the quantities available, then reschedules activities when sufficient resources are available. Project managers can level resources in their projects if authorized by the project controls coordinator.

When leveling resources in a project, you need to determine which availability limits to use: those of the project group or net availability.



When you choose net availability, P3 deducts use by all other projects from the project group limits and uses the amount remaining as the availability limit when leveling the project. Your project is the last one P3 considers for availability.

Adjust availability limits An alternative approach is to change the limits to reflect the true availability of the resources to be leveled. Then, after leveling, reset the limits to their original amounts. Changes made to limits in the Resource Dictionary apply to all projects, so it is important to keep a record of the original values and remember to reset them.

For information about how hierarchical resources can be used for leveling, refer to the *Creating and Managing Project Groups* chapter.



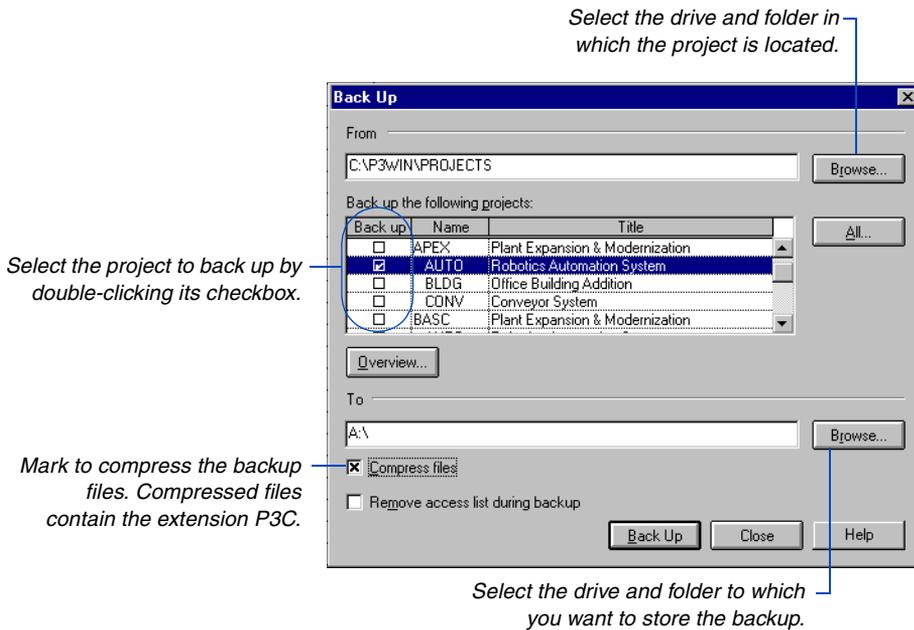
When leveling a project, timing can influence the results. Remember that other users in other projects may be changing schedule and resource data while you level resources in your project. The project controls coordinator should periodically level resources from the project group to ensure that the overall project is considered at one time.

Level automatically P3 can automatically level the project whenever you change information that affects leveling. You can turn on automatic leveling by project or project group, or by user per project, by modifying the P3.INI file. For example, turn on automatic leveling for a member project but not for the project group if your project has few activities and you want to see how changing the limits of a driving resource affects your individual project schedule. If automatic leveling is on, P3 uses the project leveling options set in the Schedule/Level Calculation Options dialog box.

Backing Up and Restoring Projects

P3 enables you to back up projects to diskettes or to another folder and then restore these projects from the backup. P3 backs up all project data, including the project group calendar and dictionaries. You can restore the project to any location, even if that location does not contain the project group. The Back Up command does not delete project files from the folder.

Back up projects Choose Tools, Project Utilities, Back Up.



Backup log P3 creates a file called PBACKUP.LOG that contains the project name, the project ID, the backup date, and an indicator for whether the files are compressed. The files P3 backs up use the name of the project group with an extension of _S1, where S1 is the project ID. For example, APEXREL.AS, where APEX is the project group name and AS is the project ID.

For more information about backing up and restoring projects and project groups, see the *Project Utilities* chapter.

Restore projects Restore a project from the backup diskette(s) or folder to the selected folder using the Restore command (Tools, Project Utilities, Restore). If a project using the same name (for example, an older version of the backed-up project) already exists in the folder you select, confirm that you want to replace it with the restored project.

Specify the location from which you want to restore the project.

Mark the project to restore.

From

D:\BACKUPS

Browse...

Restore the following projects:

Restore	Name	Date of Backup
<input checked="" type="checkbox"/>	APEX	Mon Apr 19 09:52:50 1999

All...

To

D:\P3WIN\PROJECTS

Browse...

Merge dictionaries from projects

Restore layout, tabular report and graphic report specifications

Restore external relationships from projects

Restore Close Help

Select the drive and folder in which you want to restore the backup files.

Copying and Converting Projects and Project Groups

In this chapter:

Copying a Project Group

Copying a Project within a Project Group

Copying a Project to Another Project Group

Dividing a Project into Multiple Projects

Making a Project into a Project Group

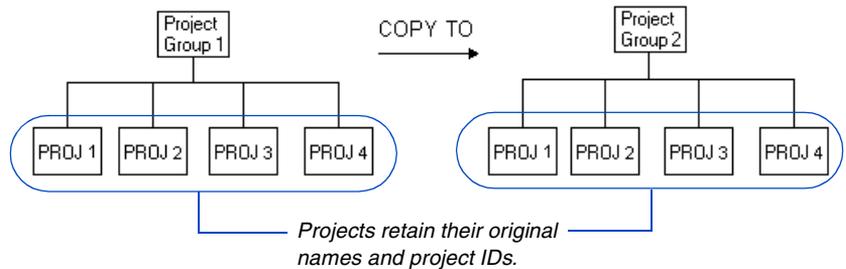
Making a Project Group into a Project

After you develop and review a project schedule in P3, you may want to explore alternative approaches. For these types of “what-if” analyses, you can copy an entire project, change the copy, and then compare the altered copy to the original plan.

This chapter specifically describes copying and manipulating project groups and projects. Refer to the *Project Utilities* chapter for basic information on copying projects.

Copying a Project Group

You can copy a project group together with all its projects. P3 duplicates all data, including layouts, reports and graphic specifications.



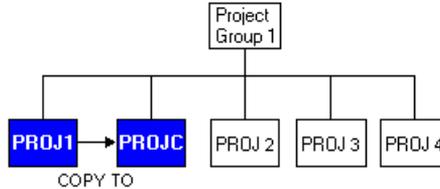
Copy a project group Choose Tools, Project Utilities, Copy to display the Copy dialog box.

- 1 Select the project group you want to copy.
- 2 Select the filter for the activities you want to copy.
- 3 Type a unique name for the new project group.

Rename activity IDs If you rename activity IDs by assigning extra characters to the left of the existing IDs, the project ID code value no longer has meaning. For example, if you add the characters A0 to the left of activity S1500, where S1 is the project ID, the resulting activity ID is A0S1500.

Copying a Project within a Project Group

To perform “what-if” analyses on a project—for example, to see how the schedule will be affected if you change activity relationships or reduce durations—copy it into the same project group and make the changes to the duplicate project.



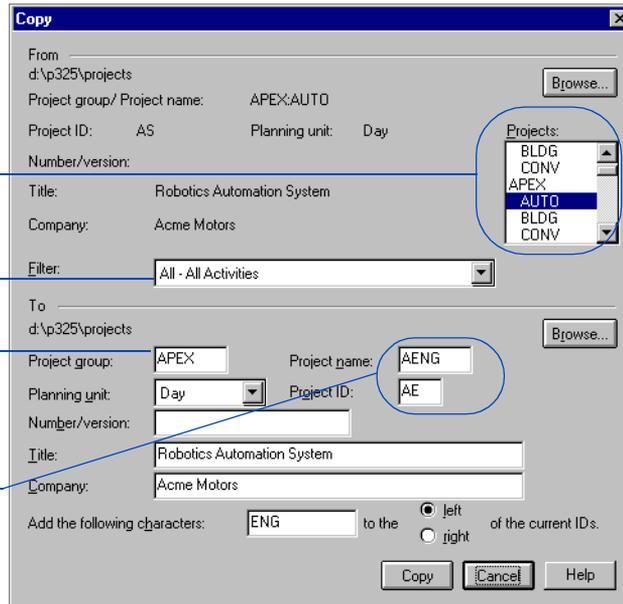
Copy a project Choose Tools, Project Utilities, Copy to display the Copy dialog box.

1 Select the project you want to copy.

2 Select the filter for the activities you want to copy.

3 Type the same project group name.

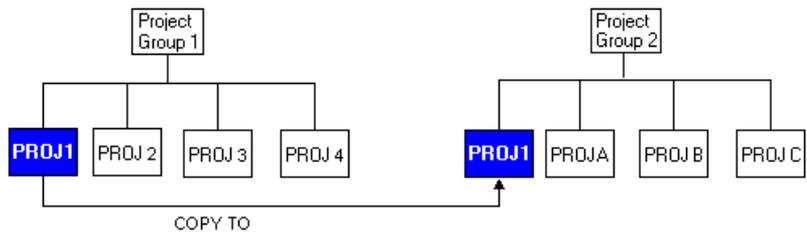
4 Type a unique name and a new two-character project ID (at least one of which must be alphabetic) for the duplicated project.



If you add characters to the left of existing activity IDs, P3 inserts the specified characters between the project ID and the activity ID; this preserves the project ID code. For example, if you add the characters A0 to the left of activity S1500, where S1 is the project ID, the resulting activity ID is S1A0500.

Copying a Project to Another Project Group

You may sometimes want to use the same project in different project groups. For example, suppose you are the department manager for a development company and are responsible for creating a project for two separate products. Although the products differ, the process to complete them is similar. You can create a project for the first project group and then copy this project to a second, new project group, making any minor adjustments after the new project is in place.

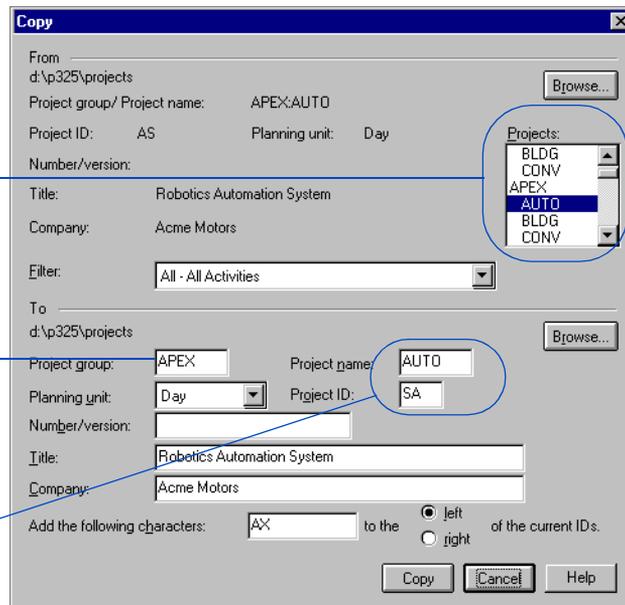


Copy a project to a project group Choose Tools, Project Utilities, Copy to display the Copy dialog box.

1 Select the project you want to copy.

2 Type the name of the existing project group to which you want to copy the project.

3 Type a name and a two-character project ID (at least one of which must be alphabetic) for the new project.



P3 copies all data from the original project to the new project, including resource allocations. P3 does not copy relationships to activities that are not part of the new project group.



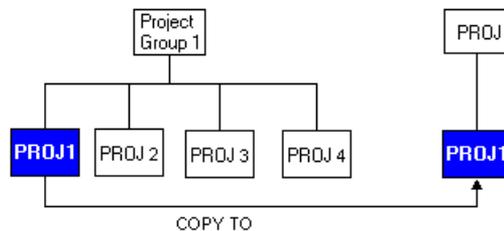
Remember, you are copying data to a different project group whose dictionaries and calendars may not be the same as the dictionaries and calendars of the project that you are copying; for this reason, the copied project uses the dictionaries and calendars of the new project group. P3 copies (and updates) resource calendars from the original project to the new project, if the resource calendar already exists in the new project. If resources and calendars (base and resource) exist in the original project, but not in the new project, add them to the new project.

If you add any characters to the left of existing activity IDs, P3 inserts the specified characters between the project ID and the activity ID; this preserves the project ID code. For example, if you add the characters A0 to activity S1500, where S1 is the project ID, the resulting activity ID is S1A0500.



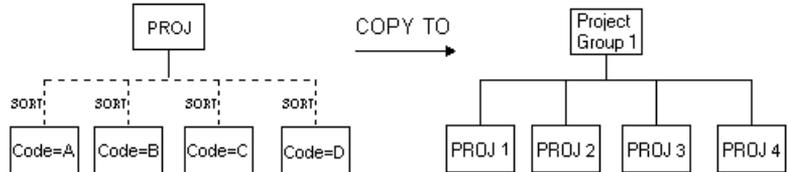
The project name and project ID can be the same as or different than the originals. However, the project name and project ID must be unique within the new project group.

Create a new project group The new project group need not have existing projects, but the project group itself must already exist. You can convert a single project into a project group by copying a project into it. In this case, be sure the first activity ID code in the project group is SUBP (project ID) with a length equal to 2.



Dividing a Project into Multiple Projects

If you have already created a schedule for a large project, you can divide that project into several smaller projects that can be better managed separately.



An activity coding structure that corresponds to the breakdown of the new project group simplifies the process of dividing the project.

To divide a large project into several projects, first decide which level you will use to separate the project—for example, WBS code, department, or contract. In the existing project, use a filter to select only the activities for one project. For example, to divide a software development project into several projects, you might use a filter that selects activities in the Programming department.

Add a new project group and transfer calendars and dictionaries from the existing project to the new project. To set up the project group for projects, be sure that the first activity ID code is blank in the Activity Codes Dictionary; P3 uses this field to define the SUBP ID code with a length of two characters.

Choose Tools, Project Utilities, Copy to open the Copy dialog box.

1 Select the project you want to copy.

2 Select the filter for the activities you want to copy to the new project.

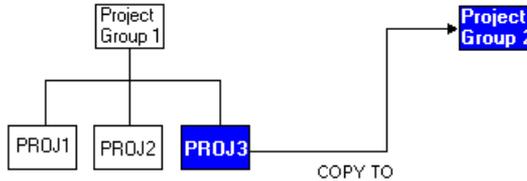
3 Specify the new project group name.

4 Type a name and a two-character project ID (at least one of which must be alphabetic) for the new project.

Repeat this process for each project you want to create. When you finish creating the new projects, you can establish relationships between them in the new project group.

Making a Project into a Project Group

You can convert an existing project into its own project group, then either add new projects and assign them to this new project group, or treat the new project as a single project.



Convert a project to a project group Choose Tools, Project Utilities, Copy to display the Copy dialog box.

1 Select the project you want to convert.

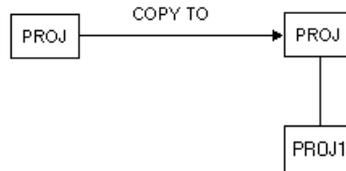
2 Type the name of the new project group; the project group you specify cannot already exist.

Since you are copying data to a new project group, P3 copies calendar and dictionary data.

If you rename activity IDs by assigning extra characters to the left of them, P3 places the specified characters in front of the existing IDs; in this case, the project ID code value no longer has meaning. For example, if you add the characters A0 to the left of activity S1500, where S1 is the project ID, the resulting activity ID is A0S1500.

Making a Project Group into a Project

Use the Copy command to build projects that consist of the same sets of activities. A project group (or single project) can be converted into several projects, while the original project is kept as the project group.



For example, suppose you want to develop a schedule for the shutdown of three utility units, each of which will be managed as a project. Each unit consists of the same basic sets of activities. You can add a project that contains the activities for one of these units, then copy that project to create individual projects for each unit to shut down.

Convert a project group into a project Choose Tools, Project Utilities, Copy to open the Copy dialog box.

1 Select the original standalone project.

2 Type the name of the standalone project.

3 Type a project name and a two-character ID (one of which must be alphabetic) for the first project.

P3 copies the project group activities to the new project. Since you are using the same project group, calendars and dictionaries are also the same. After you use this method, the original project no longer exists as a single project.



When source and host projects have different planning units, P3 ignores the file that contains historical actuals (if you use Store Period Performance to store historical quantity and cost data) during the copy.

Repeat these steps for each project you want to create. When you finish creating projects, delete the original activities at the project group level.

Linking Independent Projects or Project Groups

In this chapter:

What is the Interproject Relationship Manager?

Adding Projects to the Interproject Relationship Manager

Assigning Relationships Between Projects

Exporting Interproject Data

Importing Interproject Data

Scheduling Linked Projects

Maintaining Interproject Data

Primavera's Interproject Relationship Manager enables you to connect independent projects or project groups by assigning relationships between activities from different projects. Assigning interproject relationships enables you to obtain data from other projects that may affect your project. For example, use interproject relationships to track outside due dates that have a direct bearing on your project.

The linked projects can reside locally on the same network file server, or they can be maintained remotely.

What is the Interproject Relationship Manager?



Primavera’s Interproject Relationship Manager is a separate application installed during P3 Setup. Use it to connect independent projects or project groups.

You link projects by specifying the name of each project, its location, and the predecessor and successor activities in each project.

Add local or remote projects to the group.

Assign relationships between projects.

The screenshot shows the 'Interproject Relationship Manager - [INTERPRO.IPG]' window. It has a menu bar (File, Project, View, Window, Help) and a toolbar with icons for file operations and help. The window is divided into two main sections: 'Project groups' and 'Relationships'.

Project groups:

Project	Location	Last Scheduled	Data Date	Planning Unit
BLD1	d:\p325\projects	Tue Jun 08 11:34:12 1999	08JUN99	Day
BLD2	d:\p325\projects	Tue Jun 08 11:31:29 1999	08JUN99	Day
BLD3	d:\p325\projects	Tue Jun 08 11:32:36 1999	08JUN99 00:00	Hour

Relationships:

Pred Proj	Activity ID	EF/AF	Imposed EF	Succ Proj	Activity ID	LS/AS	Imposed LS
BLD1	BLD1FINISH	17JUN99		BLD2	BLD2START	18JUN99	
BLD2	BLD2FINISH	07JUN99		BLD3	BLD3START	08JUN99 00:00	

At the bottom of the window, there is a status bar with the text 'For Help, press F1' and a 'NUM' button.

The Interproject Relationship Manager maintains the project names, locations, activity IDs, relationships, and dates of all defined projects in one file per location.

Once you set up the project listing and assign relationships, you can schedule each project. If a set of linked projects includes remote projects, the project manager at the local site must first import interproject relationships data from the remote sight before scheduling to update the interproject file with the most current dates. When you schedule the local projects, P3 considers the dates stored in the interproject file and updates the project and interproject file accordingly.

Guidelines for Linking Projects

The Interproject Relationship Manager links independent projects or project groups together with one relationship between two activities in different projects. For example, a milestone in Project A can have a finish to start relationship with an activity in Project B.

Although you can store many projects in the Interproject file (up to 256), it is best to keep relationships simple, such as from Project A to Project B, but not back from Project B to Project A. This situation may result in a loop—and, although P3 checks for loops in the current project, it does not detect loops created when using interproject relationships. Also, your results may vary depending on which project you schedule first.

When connecting your projects requires more than one or two links between projects, consider using P3's Project Group feature instead. Using project groups lets you schedule, update, and manage interrelated projects separately and together.

For details, see the *Creating and Managing Project Groups* chapter.

Managing connected projects requires a high level of coordination. We recommend that you develop internal procedures for how to best manage a collection of linked projects. Here are a few suggestions to consider before linking independent projects or project groups.

- Determine the activities in each project that will be linked to another project.
- To minimize the impact of connector activities on schedule logic, we recommend that you define these activities as zero duration activities or milestones.
- You may want to use a special naming convention for connector activities so you can easily locate them in each project. For example, use the project name as part of the activity ID: APEXSTART, APEXFINISH, and so on.
- If projects use multiple calendars, you may want to assign the connector activities to a continuous calendar.

Adding Projects to the Interproject Relationship Manager



Before you link projects with the Interproject Relationship Manager, first determine the projects you want to connect, the order to link them, and the predecessor and successor activities in each project that will define the interproject relationships.

Create the interproject file Start the Interproject Relationship Manager from the Primavera programs group.

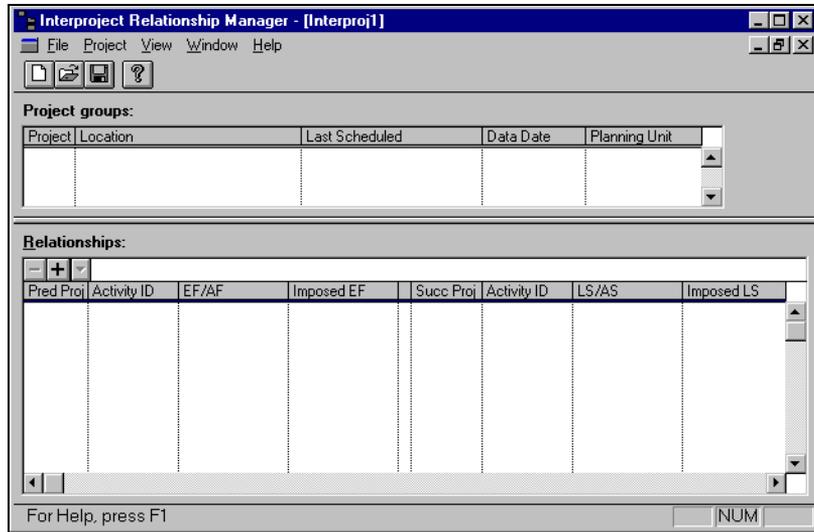


Type the password, *Intrproj*, then click *OK*.



*If the default password, *Intrproj*, has been changed, contact your network administrator for the new one.*

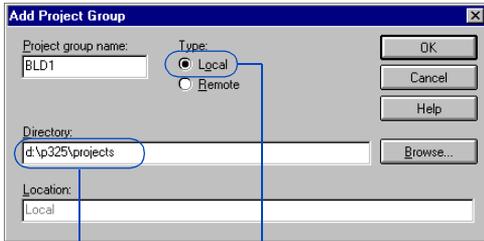
Choose File, New. This creates the file that maintains the project names, locations, activity IDs, relationships, and dates for all projects that you want to link. All project links are maintained in one file per location.



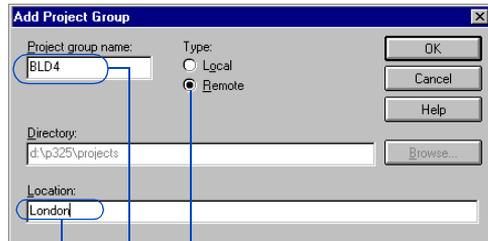
Add local and remote projects To add a project to the inter-project file, choose Project, Add Project Group. Specify the names of the projects you want to connect.



You cannot add a project while it is opened exclusively in P3 by another user.



For local projects, type the project name and path or click Browse and select it.



For remote projects, choose Remote and specify the project name and location.

For details on importing data, see *Importing Inter-project Data* later in this chapter.

The Interproject Relationship Manager shows the last scheduled data date and planning unit for each local project. Dates for remote projects are updated each time you import this information from a remote site.

Project groups:

Project	Location	Last Scheduled	Date Date	Planning Unit
BLD1	d:\p325\projects	Tue Jun 08 11:34:12 1999	08JUN99	Day
BLD2	d:\p325\projects	Tue Jun 08 11:31:29 1999	08JUN99	Day
BLD3	d:\p325\projects	Tue Jun 08 11:32:36 1999	08JUN99 00:00	Hour

You can link projects that use different planning units.

Once you add the projects that you want to link to the interproject file, you can assign relationships to connect them.

Assigning Relationships Between Projects

Once you add projects to the Interproject Relationship Manager, assign relationships between an activity in each project to link them. Specify relationships between projects with care—P3 does not check for loops (circular logic) created when using interproject relationships.

In the Relationships section, click  to add a new relationship. Click  and select a predecessor project. In the Activity ID column, specify a predecessor activity. For remote projects, type the activity ID and click . In the Succ Proj column, select the successor project and then specify an activity ID. Continue to add relationships until each project in the group is linked. All interproject relationships are defined as finish to start relationships.

1 Specify a predecessor project and activity.

2 Specify a successor project and activity.

Relationships:							
Pred Proj	Activity ID	EF/AF	Imposed EF	Succ Proj	Activity ID	LS/AS	Imposed LS
BLD1	BLD1FINISH	17JUN99		* BLD2	BLD2START	18JUN99	
BLD2	BLD2FINISH	07JUN99		* BLD3	BLD3START	08JUN99 00:00	

The asterisk indicates a driving relationship.

The Interproject Relationship Manager displays current schedule dates for activities from the local projects. Dates for remote projects are updated each time you import this information from the remote site.

Constrain interproject activities You can constrain the activities that link projects by entering dates in the imposed EF (early finish) or imposed LS (late start) fields.

Relationships:							
Pred Proj	Activity ID	EF/AF	Imposed EF	Succ Proj	Activity ID	LS/AS	Imposed LS
BLD1	BLD1FINISH	17JUN99		* BLD2	BLD2START	18JUN99	17JUN99
BLD2	BLD2FINISH	07JUN99		* BLD3	BLD3START	08JUN99 00:00	

An imposed late start constraint limits the latest date its predecessor activity can finish.

When calculating a schedule, P3 uses the late start constraint during the backward pass only if the calculated late start is later than the imposed date.

The imposed EF constraint limits the earliest time its successor activity can start. When calculating a schedule, P3 uses the early finish constraint in the forward pass only if the calculated early finish date is earlier than the imposed date.

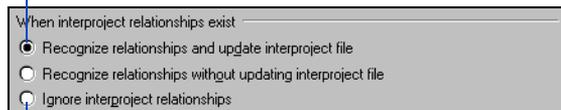
Delete interproject relationships In the Relationships section, select the activity ID and click .

Defining Relationships Between Activities in the Same Project

Although the Interproject Relationship Manager is designed to link independent projects and project groups, you can also use it to define relationships between activities in the same project. This provides a way to turn off relationships for enhanced “what-if” analysis.

For example, a software developer who wants to see how adding a new feature to a product impacts the schedule can add the new activity and its predecessor to the Interproject Relationship Manager. When calculating the schedule, P3 considers the information in the interproject file based on the setting for Interproject Relationships in the Schedule/Level Calculations dialog box.

Choose this option to have P3 include the time required to implement the new features.



When interproject relationships exist

- Recognize relationships and update interproject file
- Recognize relationships without updating interproject file
- Ignore interproject relationships

Choose this option to have P3 calculate the schedule without considering the new activity.

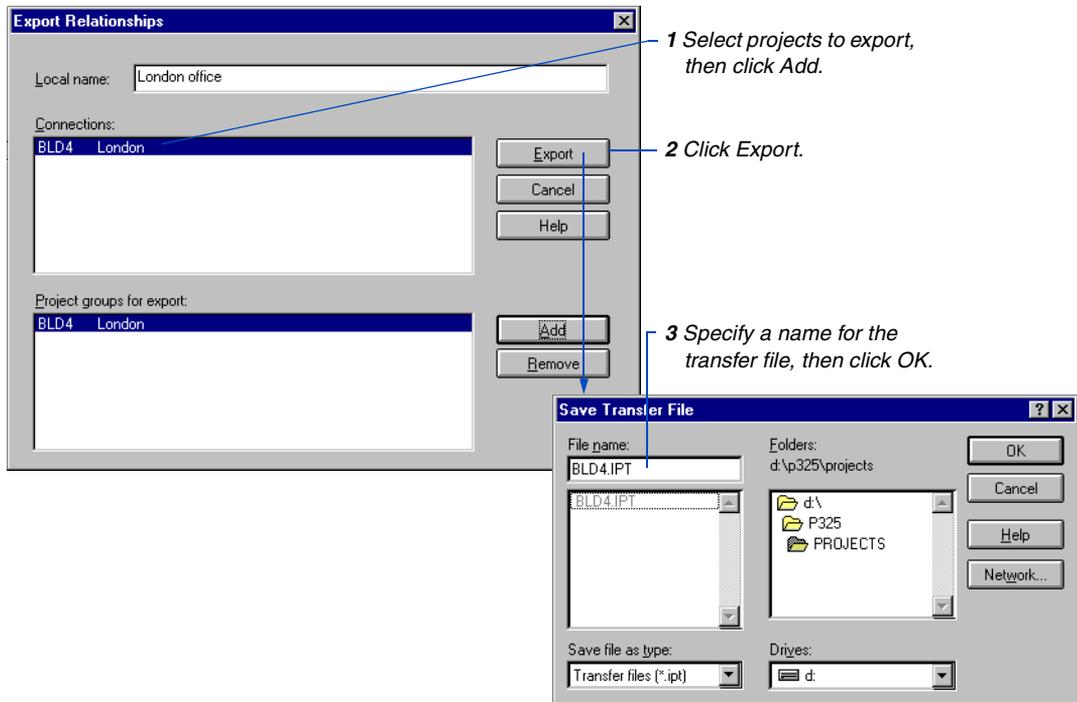
To review or change this option in P3, choose Tools, Schedule, then click Options.

Exporting Interproject Data

Each location contains one interproject relationship file that includes data about the linked projects. When a collection of linked projects includes remote projects, the manager at the remote site needs to export interproject relationship data from his or her project and send it to the local site where it can be imported into the local interproject file.

Exporting interproject relationships creates a “transfer file” that contains the schedule dates for the remote project. This step ensures accurate schedule data when scheduling each project in the group.

Export interproject relationships From the remote site, open the interproject file and choose File, Export Relationships. In the following example, scheduling information from the London office (project BLD4) is exported to a transfer file.



For details on importing a transfer file, see *Importing Interproject Data* in the next section.

Send the transfer file to the local site using e-mail or any other method; import the file into the local interproject file to update remote project dates.

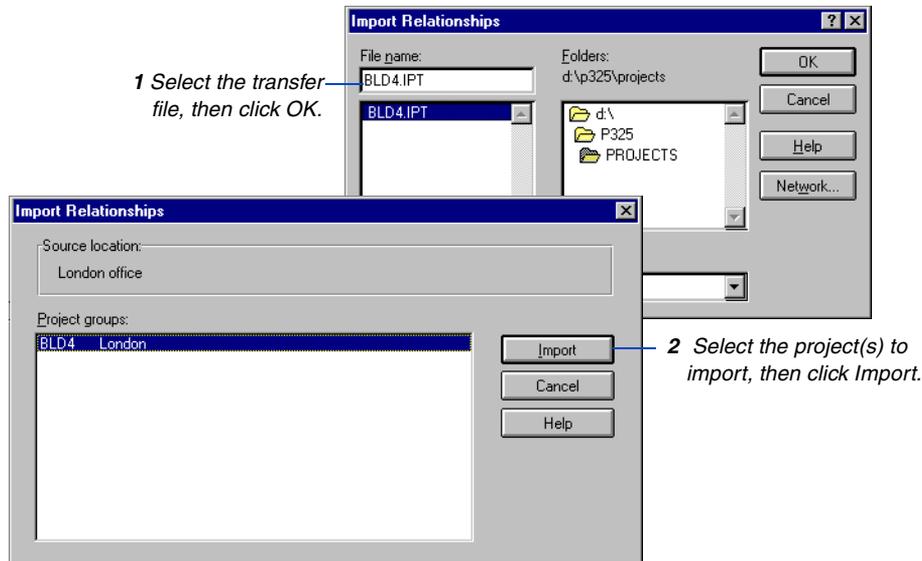
Importing Interproject Data

When a collection of linked projects includes remote projects, the local project manager must first obtain interproject relationship data from the remote projects.

For details on exporting interproject data, see *Exporting Interproject Data* in the previous section.

The project manager at the remote site exports the interproject relationship data for his or her project to a transfer file and sends this information to the local site. At the local site, the project manager imports this data to update the remote project dates listed in the interproject file. When the local projects are scheduled, P3 considers dates from the interproject file, including the most recent dates from the remote projects.

Import interproject relationships From the local site, open the interproject file and choose File, Import Relationships. In the following example, information from the London office (project BLD4) is imported into the local interproject file.



If any new projects and relationships exist in the transfer file, they are added to the interproject file.

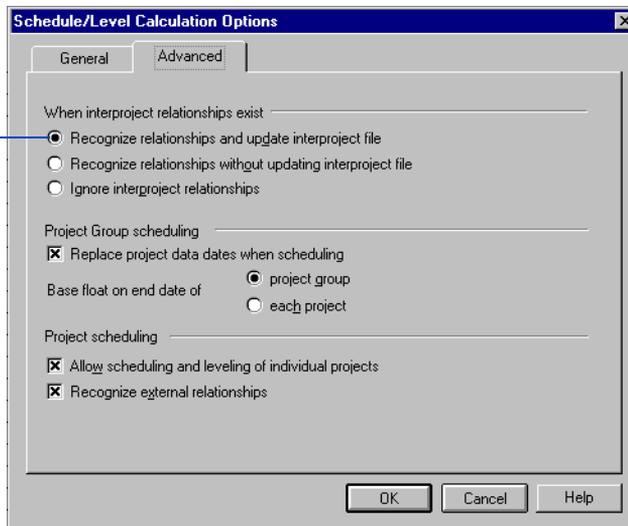
To update all projects in the group, schedule the local projects as described in the next section.

Scheduling Linked Projects

Before scheduling linked, independent projects or project groups, be sure that all projects in the group recognize interproject relationships. This option is located in P3's Schedule/Level Calculations dialog box.

Set scheduling options When you schedule a project listed in the interproject file, P3 recognizes interproject relationships, according to the settings in the Schedule/Level Calculations dialog box. To view these options in P3, choose Tools, Schedule, click Options, then click the Advanced tab.

P3's default setting recognizes interproject relationships.



You can change this setting to have P3 use dates from the interproject file without updating the interproject file after scheduling the current project; this enables you to perform “what-if” analysis without affecting the dates for other projects. Alternatively, have P3 ignore interproject relationships entirely.

Obtain schedule dates for remote projects When you include remote projects in a group of linked projects, each site maintains a copy of the interproject file.

The project manager at the remote site exports the interproject information from the remote projects to a transfer file. Then, the project manager sends it to the local site where it can be imported into the local copy of the interproject file. P3 schedules each local project, starting with the first predecessor project. P3 considers the dates and relationship information from the interproject file when calculating the schedule for each local project. Finally, the project manager at the local site exports interproject information from his or her projects to a transfer file and sends it to the remote site. This transfer provides the remote site with an updated copy of the interproject file.

Schedule linked projects Close the interproject file before scheduling linked projects. For the most accurate dates, determine a logical sequence for scheduling the projects. For example, schedule from the first predecessor project to the last; then reschedule using the reverse order.

P3 scans the interproject file for connections to activities in the current project, and updates the project and interproject files accordingly. Schedule subsequent projects in the specified order.

For more details on scheduling, see the *Calculating and Adjusting the Schedule* chapter.

During the first scheduling run for linked projects, P3 performs a forward pass and calculates the early dates. When you schedule each project again, using the reverse order, P3 performs a backward pass to calculate the late dates for these activities. After scheduling, review the schedule statistics report for messages about the linked projects.

```

Primavera Scheduling and Leveling Calculations -- Scheduling Report
Activity Date Constraint
BLD1FINISH Finish Milestone
Interproject relationship listing for project BLD1 -- Scheduling Report
-----
Relationship from this project, activity BLD1FINISH to project BLD2, activity BLD2START:
treated as late finish constraint of 25APR99 on predecessor based on late start of successor.
Successor project last scheduled using data date 26APR99, on Tue Mar 26 16:38:51 1999 by
Primavera product: P3W.
Scheduling Statistics for Project BLD1: Interproject relationships used in this analysis.
    
```

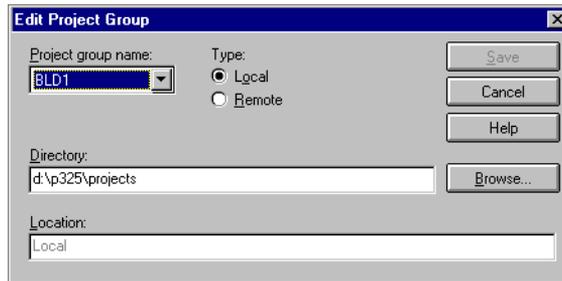


If a loop exists in a project, P3 produces a loop report. However, since P3 schedules each project individually, it does not detect interproject loops.

Maintaining Interproject Data

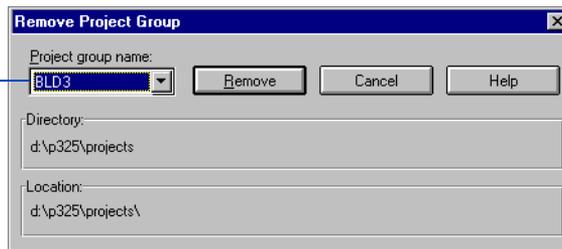
As you work with linked projects, you may need to update a project's location or remove it from the group.

Edit project data If the name or location of a project listed in the interproject file changes, modify this information by opening the interproject file and choosing, Project, Edit Project Group.



Remove projects from a group To delete a project from a group, choose Project, Remove Project Group.

Select the project to delete,
then click Remove.



When you remove a project from the interproject file, the Interproject Relationship Manager removes all interproject relationships to and from that project.



Removing a project from the Interproject Relationship Manager only removes the reference to the project listed in the interproject file; it does not delete the project. To delete a project, use P3's Delete command (choose Tools, Project Utilities, Delete).

Print the interproject report As you manage linked projects, you can print interproject data to analyze relationships. Open the interproject file and choose File, Report. Mark the checkbox beside the report options you want, then click Run.

Choose whether to view, print, or save the report to a file.

Lists the report name and location, which you can change.

Clear the checkbox beside any listing that you don't want in the report file.

The following report shows a sample printed interproject file.

When you schedule a linked project, review P3's Schedule Statistic Report. It lists scheduling information about interproject relationships for the current project.

Project Summary:						
Project	Location	Last Scheduled	Data Date	Planning Unit		
BLD1	c:\p3win\projects	Fri May 03 09:54:30 1999	02MAY99	Day		
BLD2	c:\p3win\projects	Fri Mar 29 12:13:19 1999	01APR99	Day		
BLD3	c:\p3win\projects	Fri Mar 29 12:13:32 1999	01APR99	Hour		
BLD4	London office					
Relationships Sorted by Predecessor Project:						
Pred Proj Activity ID	EF/AF	Imposed EF	Succ Proj Activity ID	LS/AS	Imposed LS	
BLD1	BLD1FINISH	08APR99	BLD2	BLD2START	10APR99	
BLD2	BLD2FINISH	23APR99	BLD3	BLD3START	24APR99 00:59	
Relationships Sorted by Successor Project:						
Pred Proj Activity ID	EF/AF	Imposed EF	Succ Proj Activity ID	LS/AS	Imposed LS	
BLD1	BLD1FINISH	08APR99	BLD2	BLD2START	10APR99	
BLD2	BLD2FINISH	23APR99	BLD3	BLD3START	24APR99 00:59	

Project Tools

In this part:

Project Utilities

Global Change

Integrating Information with OLE

Using E-Mail to Share Project Data

Primavera's project tools enable you to manipulate, store, and use information efficiently. Without ever leaving P3 you can back up, compress, and restore projects or entire project groups. You can import and manipulate OLE objects, and create or import metafiles. Another powerful tool, Global change, enables you to select and modify large numbers of activities at one time to add, change, or delete data quickly and save data entry time. Exchange and update project information quickly using a local area network (LAN), wide area network (WAN), or electronic mail (E-mail) to link all project participants. You can even exchange project information with parties who do not use Primavera.

Project Utilities

In this chapter:

Copying Projects

Deleting Projects

Merging Projects

Summarizing Projects

Backing Up Projects and Project Groups

Restoring Projects and Project Groups

Converting Data to and from Microsoft Project

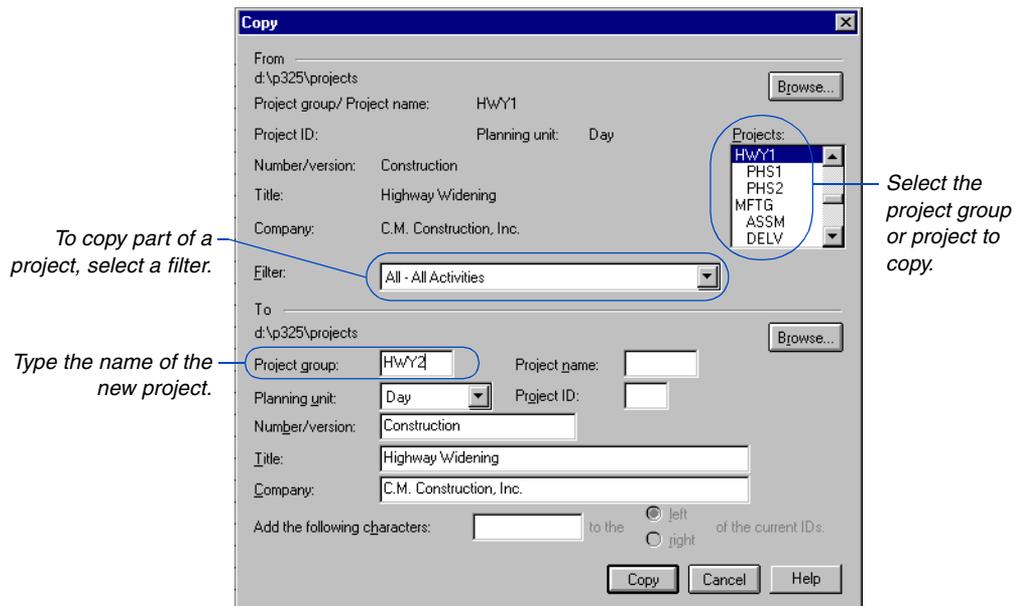
This chapter provides information about the project utility commands that enable you to copy and delete projects, back up and restore projects to a different location, merge them to create one large project from several projects, and summarize a group of projects.

P3 enables you to open Microsoft Project .MPX files and save them in P3 format.

The last section in this chapter describes how to convert P3 projects to Microsoft Project (.MPX) format or vice versa.

Copying Projects

Use the Copy command to create a duplicate of any project. Copy a project to explore “what-if” scenarios using the duplicate project, so the original project files do not change. You can also quickly create a new project from an existing one if the new project uses data similar to the old one. Simply copy the existing project and rename the duplicate. Choose Tools, Project Utilities, Copy.



When you copy a project, P3 keeps the original target assignments for the duplicated project, but does not make a duplicate of the actual target project.

Several options exist for copying and renaming projects and project groups. For more information, see the *Copying and Converting Projects and Project Groups* chapter.

Copying projects to change data When copying a project, you can select a different planning unit for the copied project. You can also globally change activity IDs to different values in the new project. Use the Add The Following Characters field at the bottom of the Copy dialog box to add a prefix or suffix to the copied activities.

Changing Activity IDs

When copying a project, you can globally change activity IDs to different values in the new project. To change activity IDs, specify a character string to add to the left or right of existing IDs. The prefix or suffix can contain up to eight characters, but the new activity ID cannot exceed the maximum 10-character length.

If the character string causes the activity ID to exceed the maximum number of

characters, P3 stops duplicating the project.

P3 automatically right-justifies all numeric activity IDs and left-justifies alphanumeric activity IDs. Consider the following cases before adding a character string to activity IDs.

For more examples, look up *Activity IDs: changing* in P3 Help.

If you add	To a numeric ID	The result is	To an alphanumeric ID	The result is
10000 to the left of IDs	5	10005	BA1	10000BA1
	210	10210	KJ10	10000KJ10
	3210	13210	ASC201	10000ASC201
33 to the right of IDs	1	133	AC3	AC3 33
	10	1033	NA18	KJ10 33
	201	20133	PD535	PD53533
A2 to the left of IDs	125	A2 125	A100	A2A100
	1535	A2 1535	B2050	A2B2050
	76450	A276450	C30000	A2C30000
D5 to the right of IDs	5	5D5	AD00	AD00 D5
	210	210D5	CK050	CK050 D5
	3210	3210D5	T30000	T30000D5

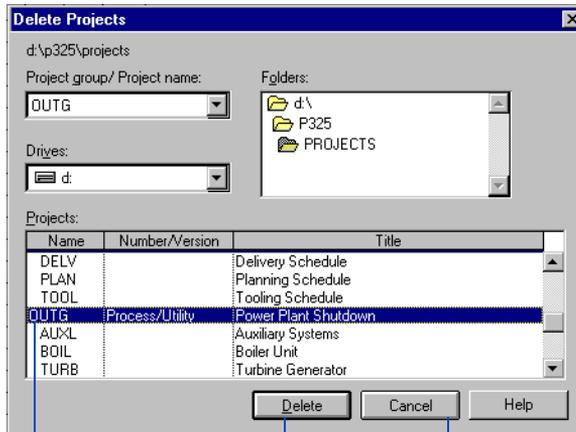
Deleting Projects

The Delete command permanently deletes a project from the specified folder, including layouts and report/graphic specifications. When you delete a project group, P3 also deletes all corresponding projects.



Before you select this option, you may want to back up your project files.

To delete a project, choose Tools, Project Utilities, Delete. Use the Drives and Folders fields to select projects in other locations. You cannot delete an open project.



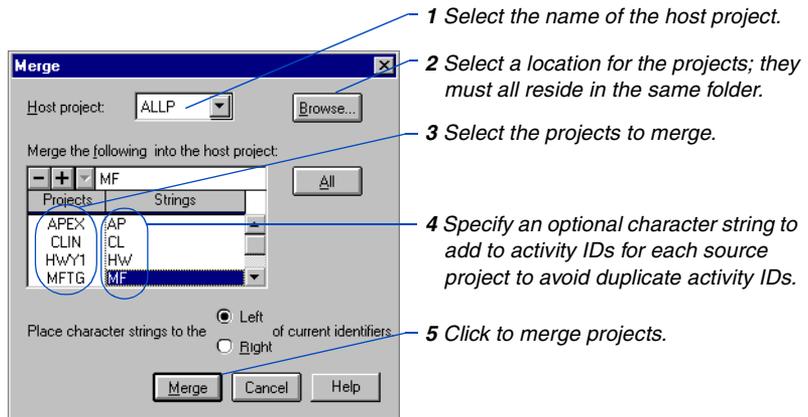
1 Select the project to delete.

2 Click Delete.

3 Click Cancel when you finish deleting projects.

Merging Projects

Use the Merge command to combine any number of projects into one comprehensive project. Merging projects creates one project that incorporates the details from several projects. You can also merge several independent projects that draw on the same resources, analyze total resource use and, if necessary, level resources. Choose Tools, Project Utilities, Merge.



The planning unit for all merged projects must be the same as the host project. You can merge projects at the project group level only.

P3 creates a log file called P3.OUT that contains information about merged projects. To access this report, choose Tools, Look, and select the P3.OUT file in the USERLOC folder. The USERLOC folder refers to the folder location of user files; the Directories section of your P3.INI file lists this folder.

The host project becomes the consolidated project. It contains activities previously assigned to it, as well as the activities from the source projects. Merged projects can exist as separate projects within the host project, or you can add relationships to link them and create one large project. If you add relationships, be sure to reschedule the host project.

Merging calendars P3 retains the base calendars from the host project for the merged project and adds unique calendar IDs and associated data from entering projects. P3 adds new resource calendars from the entering projects and assigns them to any new resources added to the dictionary.

We recommend merging projects with matching dictionaries.

Merging dictionaries P3 builds one comprehensive Resource Dictionary from the source projects Resource Dictionaries. All other dictionaries (Project Codes, Activity Codes, WBS, Cost Accounts, and Custom Data Items) use those from the host project.

Consolidate and Report Across Multiple Projects Using Oracle

DataStore for Primavera is a program that provides Oracle access to projects created in P3 or SureTrak. Oracle users can add to, update or join P3/SureTrak records in Oracle tables, consolidating multiple projects into a comprehensive set.

You can store multiple P3 projects in Oracle, including project groups and projects, projects from multiple directories, and projects stored on several servers. This enables you to assemble data from any number of projects and manipulate the data in Oracle. You can then create reports based on the multiproject data from Oracle.

Generate reports from Oracle using any SQL-based tool, or use Primavera's custom report writer, InfoMaker.

DataStore includes a large number of SQL scripts to facilitate the manipulation and extraction of P3-created data in your Oracle database.

Summarizing Projects

Summarize projects to combine data from up to ten projects into one project. The resulting project summarizes schedule, resource, and cost data while leaving the source projects intact. You can create summary schedule reports, bar charts, resource reports, or any other report or graphic in P3; or create a layout that includes schedule information in Activity columns.



You can only summarize independent projects or project groups.

Choose Tools, Project Utilities, Summarize.

Select each source project. Planning units need not match.

Select an activity code to summarize by. The code must exist in each project.

Specify a new name for the summary project or select an existing summary project to update.

Specify the folder of the projects to summarize.

To summarize more than ten projects, repeat the process using the same summary project name or create a series of projects at various levels of detail.

How P3 summarizes projects The summary is based on activity or that already exist within the projects. P3 creates a summary activity by combining data from all activities with the same code value(s) for the specified code in each source project. Each summary activity contains data from only one source. Early and late dates, durations, and percents complete are included. P3 records the early dates for the summary activity as the earliest early start or actual start and the latest early finish or actual finish for the activities in the summary group. P3 calculates late dates similarly. P3 records an actual finish date only if all detailed activities in a summary group are finished.

The summarized code value becomes the ID for the new activity, and the activity code title becomes the new description. For example, if you summarize by DEPT (Department code) in the sample project APEX, the summary project contains four summary activities: CON (Construction department), ENG (Engineering department), PCH (Purchasing department), and ISD (Information Systems department).



P3 does not create relationships between summary activities; therefore, you cannot schedule the summary project. You can, however, define these relationships for presentation purposes. The source projects are unaffected by these relationships.

P3 automatically builds the Resource and Cost Accounts Dictionaries for the summary project from values contained in the source projects.

Summarizing dictionaries P3 uses the planning unit, calendars, project codes, activity codes, resource and cost accounts, custom data items, WBS codes, and Autocost rules from the first source project listed in the Source projects field. You can also create a summary-project shell before you summarize projects by creating a new project and then defining a calendar and dictionaries for it. To simplify the process, transfer calendars and dictionaries from other projects.

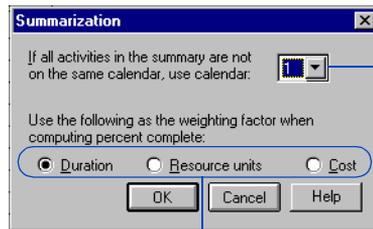
Storing source project name in the summary activity's ID You can include the project name as part of the summary activity ID; this prevents duplicate IDs and makes it easy to identify the source project of a summary activity. P3 does not duplicate activity IDs during summarization.

If you choose this option, P3 adds the activity ID code PRJT to the Activity Codes Dictionary for the summary project. This code field enables you to select and sort the summary activities by a specific project.

For more details on how P3 calculates summary data, see the *Summarizing Data* chapter.

Assigning calendars for summary data All summary activities are assigned to one calendar in the summary project so P3 can determine the summarized original and remaining durations and total float. P3 uses calendar 1 from the summary project by default; or you can select a different calendar. Once you create the summary project, you can reassign the summary activities to different calendars.

To specify the method P3 uses to calculate the summary percent complete, choose Tools, Options, Summarization.



P3 does not use the calendar specified here to summarize project groups. Use the Assign To Calendar field in the Summarize Projects dialog box to set the default calendar for summary activities.

Choose how P3 calculates summary percent complete.

Setting the data date Since all source projects should have the same data date, you need not specify a data date for the summary project. However, if some source projects have different data dates, or you want to set the data date for the summary project to a specific date, type a data date in the Set Data Date To field. P3 does not use this date to change summary schedule dates. If you do not specify a data date, P3 uses the data date of the first source project.

Determining float Choose most critical float, start float, or finish float. The most critical float is the lowest total float P3 encounters in the group of detailed activities from each summary group. P3 calculates start float as the workperiod difference between the early and late start dates of the summary activity. Similarly, finish float is the workperiod difference between the early and late finish dates. P3 uses the specified summary project calendar to calculate these values.

Loading resources and costs Mark the Load Resources and/or Load Costs checkboxes to load resource/cost data from the source projects into the summary project. Loading resource data enables you to examine total resource use/costs for each summary activity.

Consolidating resource and cost data Consolidating data shows the accumulated resource use or cost in the summary project without considering resource lags and durations. You can consolidate by cost category, resource, or cost account. If resource and cost data are not consolidated, P3 provides a detailed analysis, using resource lags and durations, that distributes the use of each resource across the summary activity at the appropriate times and in the appropriate proportions.



If you store historical actual data using Store Period Performance, note that when summarizing projects P3 uses the total quantity and cost values, not the actual values.

Consolidating by cost category A summary consolidated by cost category accumulates costs for each category encountered in the group of detailed activities for a summary activity. In place of the resource name in the summary activity, P3 shows the cost category title. P3 also includes cost estimates from the source-project activities.

Consolidating by resource P3 consolidates resources for a summary activity by analyzing the summary groups's detailed activities and totaling the quantities for all matching resources. Matching resources are any resources that have the same name, even if their resource designators, cost accounts, or cost account categories differ. P3 adds the values for the budget, the quantity at completion, the actual quantity to date, and the actual quantity this period. The new units per timeperiod and quantity to complete are calculated as:

$$\begin{aligned} \text{Quantity to Complete} &= \text{Summary Quantity at Completion} - \text{Summary Actual to Date} \\ \text{Units per Timeperiod} &= \frac{\text{Summary Quantity to Complete}}{\text{Summary Remaining Duration}} \end{aligned}$$

P3 does not consider resource lags and durations from the source project. P3 does not assign resource designators, cost accounts, or cost account categories to the summary activity when you consolidate by resource.

Consolidating by cost account A cost consolidation by cost account shows only cost accounts and their associated costs. Resources or cost account categories are not shown. A consolidation by cost account for resource data shows only cost accounts; it does not show resource names or cost account categories.

To individualize resource assignments or incurred costs instead of accumulating these data, select None in the Consolidate By field. P3 automatically assigns a resource designator to duplicate resources making them unique; this prevents the resource or cost data from being consolidated into one assignment.

To record detailed use exactly, use unique combinations of resources, cost accounts and cost categories, and resource designators for each activity in a summary group. If two or more resource assignments in a summary group have the same resource, cost account/cost category, and resource designator, P3 consolidates them into one assignment. You can identify unique resources by assigning them different resource designators. In a detailed resource analysis, P3 applies resource lags and durations to resource assignments so the summary activity accurately reflects how often each resource is scheduled for use in the source project.

Updating a summary project P3 automatically adds the activity code PROJ to the Activity Codes Dictionary of every summary project. P3 also adds code values that indicate the names of the projects being summarized. P3 assigns each summary activity a code value that identifies its source project.

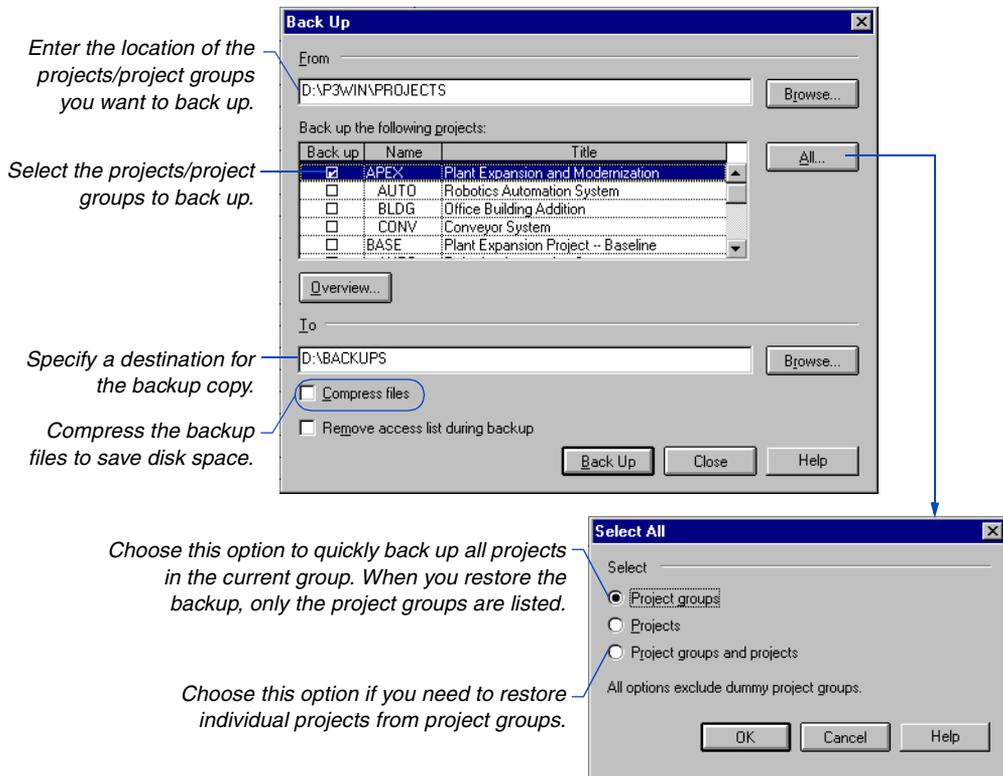
P3 uses the PROJ code value to identify an activity when you update a summary project. To update a summarized project, enter the latest data for the detailed activities in each source project and then summarize again. P3 updates the summary activity from the correct detailed project.

Summarizing projects with different planning units P3 enables you to summarize projects with mixed planning units. P3 uses the planning unit for the summary project to determine the overall planning unit. For example, if you summarize a daily and a weekly project into a daily project, the activity durations from the daily project remain in units of days. P3 calculates the activity durations from the weekly project in days as the number of workperiods between the summary early start date and the summary early finish date.

If you summarize a daily and a weekly project into a weekly summary project, P3 uses units of weeks for all durations. All start dates move back to the nearest start day of the week, and all finish dates move to the nearest end day of the week.

Backing Up Projects and Project Groups

P3 enables you to back up projects to diskettes or to another folder and then to restore projects and project groups from the backup as needed. Choose Tools, Project Utilities, Back Up. Backing up projects and project groups protects project data and enables you to share projects with users at remote sites. P3 automatically backs up layouts and report and graphic specifications for each project and project group, as well as all other activity information, such as project dictionaries and filter specifications. The Back Up command does not delete the project files from the folder.



For details on backing up project groups, see *Backing Up and Restoring Project Groups* in the *Creating and Managing Project Groups* chapter.

Removing the access list You may want to remove the access list if you are sending the backed up project or project group to a P3 user who is not on the access list. When the P3 user restores the project or project group, that user automatically becomes the project owner.

Backup log P3 creates two files in the folder to which you back up a project or project group. The PBACKUP.LOG file contains information about the backup procedure. The PBACKUP.050 file lists the individual files that were backed up.

Whether you back up a project or a project group, P3 assigns the name of the project group to the backed-up files, for example, APEXREL.P3, where APEX is the project group name and REL identifies this file as the one containing the relationships in the project/project group. Project files have the extension, `._S1`, where S1 is the project ID.

Backing up projects and project groups P3 backs up all project data, including the project group calendars and dictionaries if you back up a project group. You can restore the project or project group to any location, even if that location does not contain the project group. For example, suppose the project group and all projects are shared on a network folder and you need to work at an office that is not connected to a network. You can back up a project and restore it on the remote computer, provided the computer has a licensed copy of P3. Then, work with the project as you would normally. The project group appears in the Open a Project dialog box. When you finish working at the remote location, back up the project. Be sure to restore the latest version of the project to your primary workstation; otherwise your data will not be current.

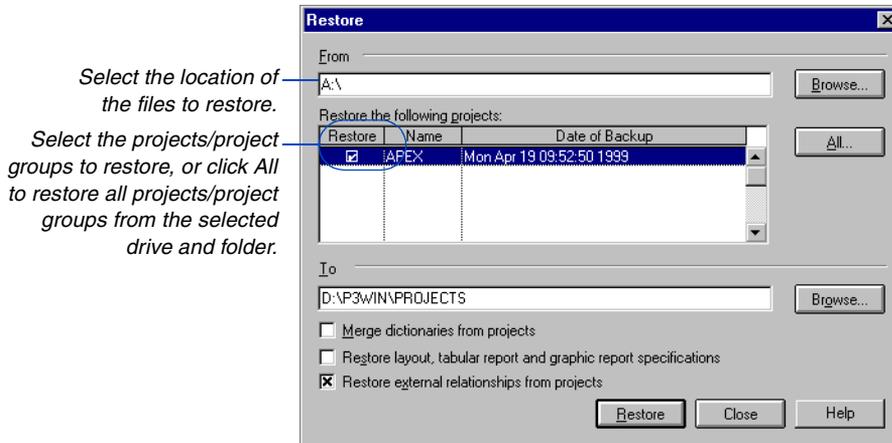
For more information about using Project Check-in/Check-out, see *Keeping Track of Projects within a Project Group* in the *Creating and Managing Project Groups* chapter.

Using Project Check-In/Check-Out

P3's Project Check-In/Check-Out feature enables you to keep track of member projects that are used outside the project group. This feature is useful when a member project manager travels to a project site and updates or modifies the member project while at that site, or when member project managers work on projects at home. P3 notes when a member project manager checks out a project from a project group. Unlike Backup, when anyone tries to open that member project or the project group, P3 informs the user that the project is checked out. Users can make changes and save the project, but P3 overwrites those changes when the checked-out project is checked back into the project group.

Restoring Projects and Project Groups

Restore projects and project groups from the backup diskette(s) or folder to the selected folder using the Restore command. Choose Tools, Project Utilities, Restore.



Merge dictionaries from projects When restoring a project back to its project group, mark this checkbox to copy new values added to the project's dictionaries to the project group's dictionaries.



You cannot restore a project from one project group to a different project group.

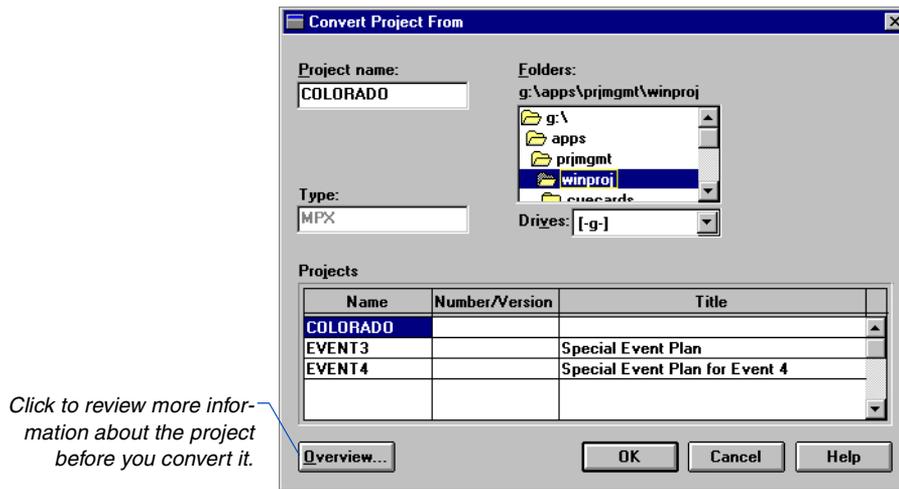
Restore layout, tabular report, and graphic report specifications Layouts and report/graphic specifications are project-specific and are backed up with the project. If a project is shared among users via backup/restore, each user may not want to overwrite his or her own layouts and specifications for reports and graphics. Clear this checkbox to retain the layouts and report/graphic specifications; mark the checkbox to overwrite them. This option does not apply if you are restoring a project to a project group since the specifications are stored at the project group level.

Restore external relationships from projects When you back up a project that is part of a project group, P3 saves the relationships to external activities in other projects or the project group. Clear this checkbox to have P3 disregard these relationships when you restore a backup of a project.

Converting Data to and from Microsoft Project

P3 enables you to convert Microsoft 3.0 or 4.0 projects to P3 format. You can also save P3 projects as a Microsoft .MPX file.

Convert a Microsoft Project to P3 Choose Tools, MPX Conversion Utility, then choose File, Convert an MPX Project to a P3 Project. In the Projects section, select the Microsoft project to convert. Click OK. In the Convert Project To dialog box, specify a new name for the converted project.



Convert a P3 project to Microsoft Project Choose Tools, MPX Conversion Utility, then choose File, Convert a P3 Project to an MPX Project. Select a project in the Projects section and click OK. In the Convert Project To dialog box, enter a new name for the converted project.

See the *MPX Conversion Utility* Help file for data conversion tables.

Global Change

In this chapter:

Adding Global Change Specifications

Defining Global Changes

Running Global Changes

Assigning Codes or Custom Data Items

Assigning Constraints

Changing Titles and IDs

Changing Calendar Assignments

Deleting Data

Removing Progress on a Project

Using Date Arithmetic

Working With WBS Values

Adding and Deleting Resources

Changing Budgets and Resources

Estimating a New Cost at Completion

Using Resource and Code Titles

Extracting Mid-String Characters

Finding and Changing Blank Values

Trimming Blank Spaces

Using Data String Functions

Changing Activity and Leveling Types

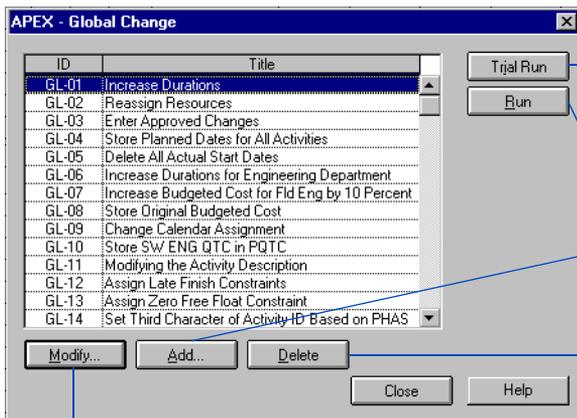
Global change is a powerful P3 feature that can change data for some or all project activities in a single process. This chapter describes many techniques for using Global change, such as, search and replace data, assign resources, use date arithmetic, and modify text strings.

Adding Global Change Specifications

Global change is a powerful tool a nonprogrammer can use to make systematic changes to project data. Use this tool to select and modify any number of activities in the project in one operation.

Basic principles of Global change First, select the activities to change using the same selection method used in reports, graphics, and filters. Next, process the selected activities according to change criteria you define. Create Global change specifications using statements of the form “If X is true, then do action A; otherwise (else), do action B.” For example, “If the person responsible for the activity is either Tom or Dick, increase the remaining duration by 15 percent; otherwise, increase the remaining duration by 5 percent.”

Add a specification Choose Tools, Global Change and click Add.



Preview the effects of a proposed change without actually changing the database.

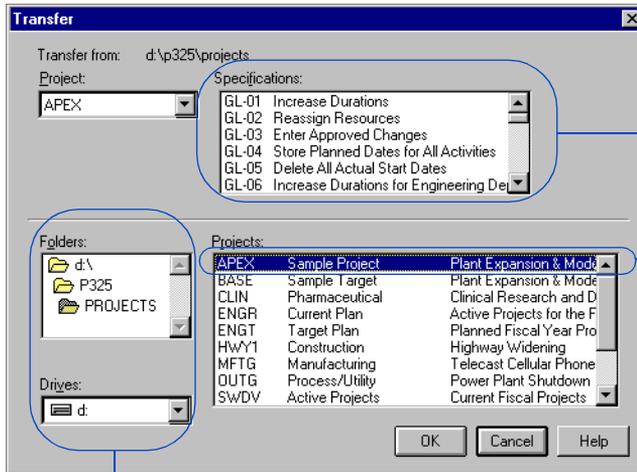
When you run a Global change you can view, save, or print an audit report that lists all “before” and “after” values.

When adding a new specification, accept the next available number suggested by Global change, or specify your own unique two-character ID.

When you delete a specification its number becomes available for reuse.

Click to view or edit existing specifications.

Transfer a specification Click Transfer in the Global Change dialog box to copy a Global change specification from another project to the current project. You can also add a new specification and use Transfer to copy an existing one into it.



3 Select the specification to transfer to the current project.

2 Select the project containing the Global change specification you want to transfer.

1 Select the drive and folder where the project containing the Global change specification you want to transfer is located.

Defining Global Changes

Global change specifications consist of selection and change statements.

For more information on selecting, see the *Using Filters to Select Activities and Projects* chapter.

Select activities to change Click the Selection tab in the Global Change dialog box to specify the activities P3 considers. To select all activities in the project, leave the Selection Criteria field empty. Optimize processing speed by selecting only the activities you want to change. Within each selection level, you can impose multiple conditions that P3 evaluates for each activity. Specify whether all conditions must be met in order to select the activity, or whether satisfying any condition is sufficient to select the activity.

The screenshot shows the 'APEX - Global Change' dialog box with the following components and annotations:

- Title:** Change Calendar Assignment
- Navigation:** Left and right arrow buttons (labeled "Scroll through other specifications.") and "Trial run" and "Run" buttons (labeled "Run the specification without affecting the stored data; review the audit report to examine the proposed changes.")
- Selection Criteria:**
 - Level: 1 (dropdown)
 - must meet: All of the following criteria: / Any
 - Selection criteria table:

Select if	Is	Low Value	High Value
Resource	EQ	ATM ENG	
Resource	EQ	DES ENG	
 - Annotations: "Define up to four levels of selection criteria. Each level filters out some activities and passes the remaining activities to the next level. Combine Any and All selection types by using multiple levels." and "Specify selection criteria." (pointing to the table)
- Transfer List:** A list of "Schedule Parameters" (Resource, Resource curve, Resume date, Suspend date, Total float, etc.) is shown below the table, accessed via a right-click on a column (labeled "Right-click any column to select from a list of choices.")
- Buttons:** "Transfer...", "OK", "Cancel", and "Help" buttons.
- Annotation:** "Save the specification without running it." (pointing to the "OK" button)

Define change statements P3 tests each selected activity using an If: condition, makes the change specified by the Then: statement when the If: condition is true, and makes the change specified by the Else: statement when the If: condition is false. Every Global change must include a Then: statement, but If: and Else: statements are optional. The Any/All option determines whether "And" or "Or" logic is used when you specify multiple If: conditions.

You can specify multiple Then: and Else: statements to perform more than one action during a Global change. The statements are performed in the order they are listed.

Use temporary variables Change statements can use temporary variables to store intermediate values. Create a data item whose name begins with an ampersand (&), and P3 treats it as a temporary variable.

The following example changes the calendar assignment to calendar 2 for all activities in the Engineering department. In addition, the engineering activities are assigned to the responsibility of Evans. The calendars of all nonengineering activities are changed to calendar 3.

*To perform a change for all selected activities, just use a Then: statement.
To change some activities but leave the rest unchanged, specify If: and Then: statements and leave the Else: section blank.*

GL-09 APEX - Global Change

Title: Change Calendar Assignment

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	DEPT	EQ	ENG		
or					
or					
or					
Then:	CAL	EQ	2		
	RESP	EQ	EVANS		
Else:	CAL	EQ	3		

Transfer... OK Cancel Help

Running Global Changes

In a multiuser environment, you must have at least Read Write access to the project to run a Global change. Running a Global change that deletes or modifies activity IDs requires Exclusive access. Primavera recommends running all Global changes in Exclusive access mode if you work in a multiuser environment.

Run Global change If you do not need to review the specification before running it, select the one you want to run from the Global Change specification list dialog box and click Run. Otherwise, click Run in the Global Change dialog box after you create or modify a specification. You can also use the Production feature (Tools, Tabular Reports, Production) to run a series of Global changes.

For information about backing up projects, refer to the *Project Utilities* chapter.



Because Global changes permanently alter project data, you should back up your project before running any Global change. You can “undo” a change only by restoring a backup of the project.

Password protection P3 prompts you to type the password established for Global change; GCHANGE is the default. To change or remove the password, close P3, run the Primavera Network Administration program (Netset), and choose Options, Change User Password. If you turn off password protection, P3 prompts you to confirm that you want to run the change.

Before running a Global change, use the Trial Run feature to view or print an audit file showing the old and new values of the data items P3 will change. P3 does not actually change project data until you click Run.

When you click Run, P3 performs the Global change and stores the modified project data. Running the change produces the same audit file as the trial run. You can display the audit file immediately, print it, or save it as a text file. P3 names the audit file P3.OUT unless you specify a different filename by saving the file and entering a new name. If you do not specify a different name for each audit file, P3 overwrites the previous P3.OUT file each time you run another Global change.

Assigning Codes or Custom Data Items

You can use Global change to enter activity code and custom data item values, both for activities and resources. The following example selects all activities in the design phase and sets the value of a resource custom data item called PQTC (previous quantity to complete) equal to the current period's QTC (quantity to complete). The If: statement limits the scope of the change to the SW ENG resource.

Selecting the activities to change in the Selection Criteria field optimizes Global change run time.

GL-10 APEX - Global Change

Title: Store SW ENG QTC in PQTC

Change Selection

Level 1 must meet All of the following criteria: Any

Selection criteria:

Phase	Select if	Is	Low Value	High Value
Phase		EQ	DESGN	

Transfer... OK Cancel Help

This statement specifies only the resource custom data item for the SW ENG resource; custom data items for other resources are unaffected.

GL-10 APEX - Global Change

Title: Store SW ENG QTC in PQTC

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	RES	EQ	DES ENG		
or					
or					
or					
Then:	PQTC	EQ	QTC		
Else:					

Transfer... OK Cancel Help

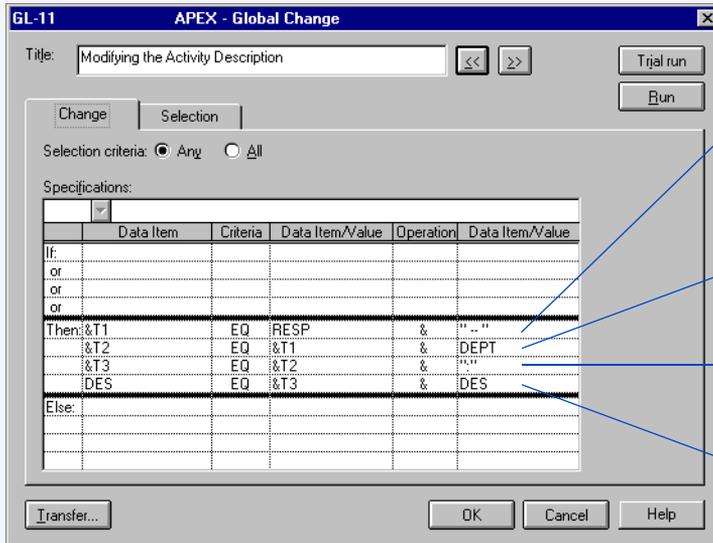
Example: Adding a Name and Department to Activity Descriptions

This example inserts the responsible person's name and department, with separators between and after them, in front of the original activity description. This illustrates the strategy of building up the new activity description string step by step, using temporary variables to store intermediate parts of the final description as they are composed.

A sample activity description that reflects the Global change is

JONES -- DESIGN: PREPARE DRAWINGS

Note that the last step uses the original description, DES, in both the first and the last columns; you can use an old value to define a new one.



Stores the RESP value plus a separator string that includes spaces within the quotation marks that enclose it.

Appends the DEPT value to the string being stored in &T1.

Adds the second separator string and stores it in &T3.

Redefines the activity description as the string stored in &T3, followed by the original description.

For details on using temporary variables, refer to *Use temporary variables* earlier in this chapter.

Assigning Constraints

You can use Global change to apply or remove date and float constraints. The following example assigns a constraint to all Purchasing department activities to finish no later than 14 days from the data date.

Choose All since both If statements must be true to select an activity.

Right-click in the Data Item column to view a list of standard data items, including the date and float constraints.

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	PCT	EQ	0		
and	DEPT	EQ	PCH		
Then:	FNL	EQ	DD	+	14

- Standard Data Items
- RSM - Resume Date
- SNE - ES Constraint
- SNL - LS Constraint
- FNE - EF Constraint
- FNL - LF Constraint**
- DN - Start On
- MS - Mandatory Start
- MF - Mandatory Finish
- ZTF - Zero total float
- ZFF - Zero free float

Apply float and hammock constraints by setting their value to 1; remove them by setting their value to 0. The following example applies a zero free float (ZFF) constraint to all fabricate and deliver activities.

Selection criteria: Any

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	STEP	EQ	FABDE		
Then:	ZFF	EQ	1		

Changing Titles and IDs

You can remove, insert, or replace characters from the beginning, end, or middle of any text field. In P3 projects, text fields include activity descriptions, activity IDs, resource IDs and titles, cost account codes and titles, project and activity codes and descriptions, log entries, and character-type custom data items. Global change provides the following functions:

Function	Purpose
LTRIM(item)	Removes leading blanks.
RTRIM(item)	Removes trailing blanks.
LEFT(item, x)	Extracts x number of characters, starting with the first character in the item.
RIGHT(item, x)	Extracts x number of characters, starting with the last character in the item.
SUBSTR(item, x, y)	Extracts y number of characters, starting at position x.
SS(item, x, y)	Another syntax for SUBSTR, allowing more space for the data-item name in the statement.

For details on converting dates to their string equivalents, refer to *Using Date String Functions* later in this chapter.

The following example illustrates changes to an activity ID, but you can use the same technique to manipulate any text field, as well as dates that have been converted to strings.

Change activity IDs Since activity IDs are text strings, use the text manipulation functions LEFT(ACT, X), RIGHT(ACT, X), and SS(ACT, X) in combination with string concatenation to modify them.

In the following example, the project uses alphanumeric (left-justified) activity IDs. This specification changes the third ID character to the letter D for all activities in the Design phase, and to the letter X for all other activities. In both the Then: and Else: statements a temporary variable is used to store the first two characters of the activity ID with the new character appended to them. Adding the remaining seven characters of the ten-character activity ID field completes the change.

GL-14 APEX - Global Change

Title: Set Third Character of Activity ID Based on PHAS << >> Trial run Run

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	PHAS	EQ	DESIGN		
or					
or					
or					
Then:	&T1	EQ	LEFT(ACT,2)	&	D
	ACT	EQ	&T1	&	RIGHT(ACT,7)
Else:	&T1	EQ	LEFT(ACT,2)	&	X
	ACT	EQ	&T1	&	RIGHT(ACT,7)

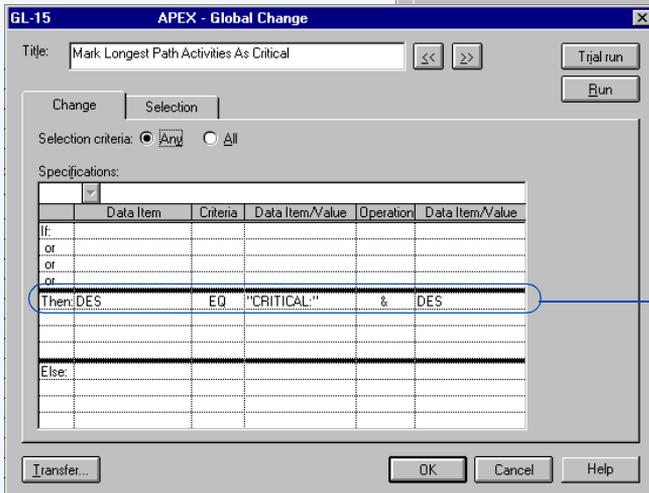
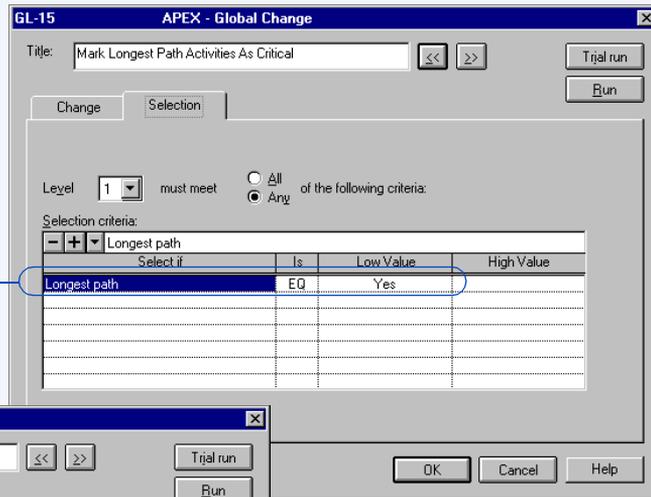
Transfer... OK Cancel Help

Identifying Activities on the Longest Path

Use Global change to identify and modify all activities on the longest path (critical path) through your project. Modify the titles of these activities, making it easier to identify them in

reports and graphics. This example shows how to insert the word CRITICAL at the beginning of each activity's title.

Selects all activities on the longest path, regardless of their total float.



Inserts the word CRITICAL: at the beginning of each activity on the longest path.

Changing Calendar Assignments

Select the activities with calendar assignments you want to change; then set CAL equal to the new calendar ID. The following example changes Engineering activities that are currently on calendar 1 to calendar 2. Engineering activities assigned to other calendars remain unchanged.



If you change an activity's calendar assignment, P3 will spread stored period performance data according to the new calendar.

GL-16 APEX - Global Change

Title: Reassign Engineering's Calendar 1 Activities

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	DEPT	EQ	ENG		
and	CAL	EQ	1		
and					
and					
Then:	CAL	EQ	2		
Else:					

Transfer... OK Cancel Help

To change the calendar assignment for every activity, regardless of its original calendar ID, use a Then: statement. The following example assigns all selected activities to calendar 3.

GL-17 APEX - Global Change

Title: Assign All Selected Activities to Calendar 3

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:					
or					
or					
Then:	CAL	EQ	3		
Else:					

Transfer... OK Cancel Help

Deleting Data

When you want to delete large amounts of data at once, Global change is the ideal tool. Delete specific items of data or entire activities.

Delete activities If you can select an activity, you can delete it. Use either the Selection Criteria field, or the If: statement when you click the Change tab, to specify the selection criteria. To delete an activity, change its ID to the word DELETE. The following example deletes all activities in the Design phase.

If you run P3 in a network environment, you must have Exclusive access rights to the project to change or delete activity IDs.

The screenshot shows the 'APEX - Global Change' dialog box. The 'Title' field is 'Delete All Design Phase Activities'. The 'Change' tab is selected. The 'Selection criteria' are set to 'Any'. The 'Specifications' table is as follows:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	PHAS	EQ	DESGN		
or					
or					
or					
Then:	ACT	EQ	DELETE		
Else:					



Remember to back up your project before you delete activities using Global change. Verify your selection criteria carefully by performing a trial run.

Delete values for most data items To delete most data items, set the value of the item equal to a blank space by specifying a space surrounded by quotation marks “ ”. Items deleted this way include actual dates, code values, custom data items, resource assignments, resource identifiers and curve assignments, and activity descriptions. The next example deletes all activity descriptions that contain the word “planning.”

Global change is not case sensitive when selecting activities based on text fields.

The screenshot shows the 'APEX - Global Change' dialog box. The title bar reads 'GL-19 APEX - Global Change'. The 'Title' field contains 'Delete Descriptions Containing "Planning"'. Below the title bar are 'Change' and 'Selection' tabs, and 'Run' and 'Trial run' buttons. The 'Selection criteria' section has radio buttons for 'Any' (selected) and 'All'. The 'Specifications' section contains a table with the following data:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	DES	CN	PLANNING		
or					
or					
or					
Then:	DES	EQ	' '		
Else:					

At the bottom of the dialog are 'Transfer...', 'OK', 'Cancel', and 'Help' buttons.

Use a space enclosed in double quotes to blank out a value.

Two data items, RDUR (resource duration) and RPCT (resource percent complete), are numeric fields with blank default values, rather than zero. To delete these items, set them equal to -1 in the Global change specification.

Remove a zero total float, zero free float, or hammock constraint Set the value of the constraint field (ZTF, ZFF, or HA) to 0. To apply these constraints, set their values to 1.

Remove a driving resource flag Set RDRV equal to “ ”. To apply a driving resource flag, set RDRV equal to “*”.

Removing Progress on a Project

To remove all progress from a project, use Global change to delete all recorded actual dates and progress and set the remaining duration back to its original duration. The following example removes progress from a project.

GL-20 APEX - Global Change

Title: Remove All Progress From Project

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	AS	EQ	''		
or:	AF	EQ	''		
or:	PCT	EQ	0		
or:	RD	EQ	OD		
Then:	AS	EQ	''		
	AF	EQ	''		
	PCT	EQ	0		
	RD	EQ	OD		
Else:					

Transfer... OK Cancel Help



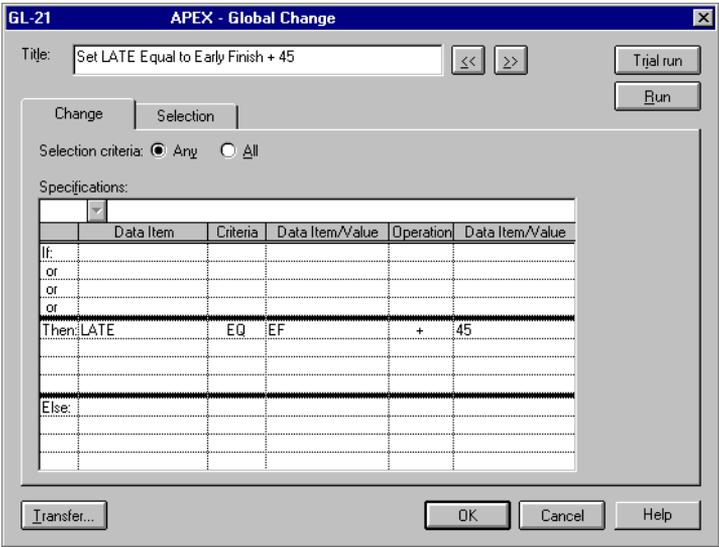
Because Global changes permanently alter project data, you should only deprogress a copy of your project. You can “undo” a change only by restoring a backup of the project made prior to running the Global change.

Using Date Arithmetic

Change statements can perform addition and subtraction operations on dates. Subtracting one date from another results in the number of work-periods between the two dates. Adding a number to a date results in a new date, as does subtracting a number from a date.

The following example adds 45 workperiods to the early finish date of every activity, based on each activity's calendar. P3 stores the result in a date-type activity custom data item called LATE.

When storing data in a custom data item, such as LATE in this example, be sure the data types match. The possible custom data types are character, start date, finish date, numeric, and precision.

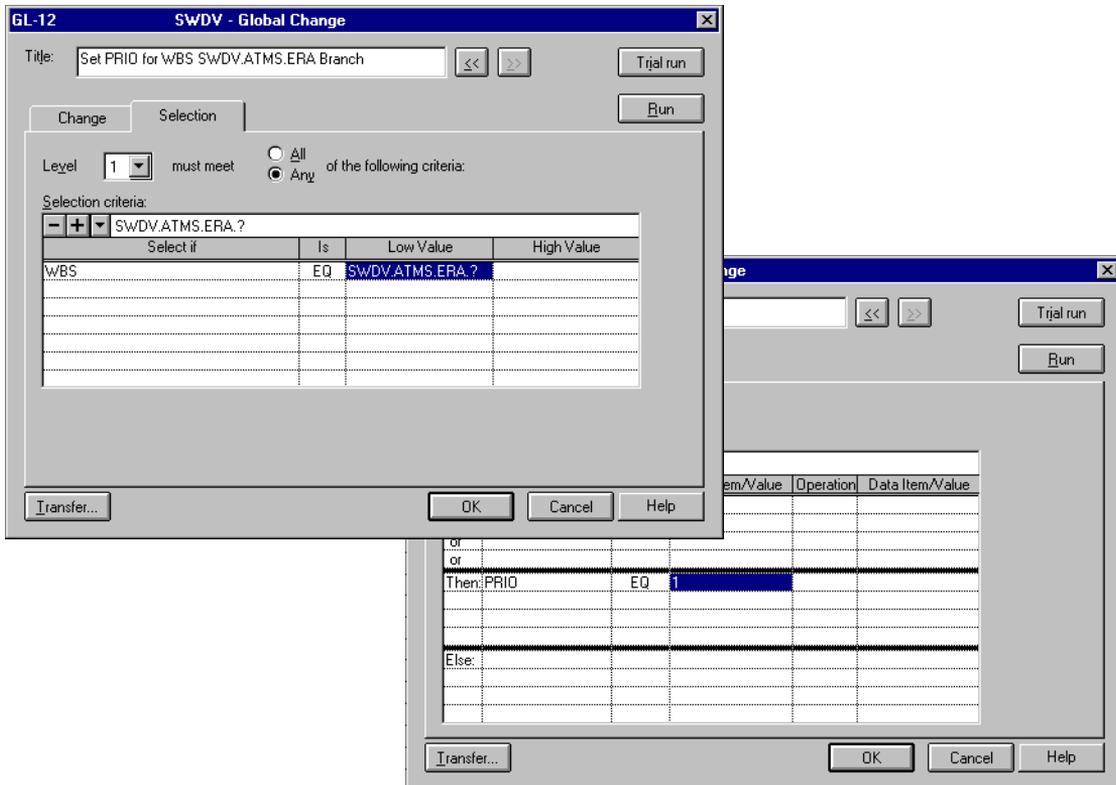


Working With WBS Values

Global change enables you to select activities and change data based on work breakdown structure (WBS) values. Global change can also change the WBS values themselves.

Select activities based on WBS values You can select an entire branch of your WBS to effect a change on all activities comprising that branch. Use the wildcard ? character following the branch identifier in the Selection tab of the Global Change dialog box. For example, the statement WBS EQ SWDV.ATMS.ERA.? selects activities with the WBS values SWDV.ATMS.ERA.01, SWDV.ATMS.ERA.02, SWDV.ATMS.ERA.03, SWDV.ATMS.ERA.04, and includes the entire branch of the WBS structure that begins with the value SWDV.ATMS.ERA.

The following example sets the activity code value for the PRIO (Priority) code field to 1 for all activities whose WBS value begins with SWDV.ATMS.ERA.



You can also use Global change to set WBS values; the only valid criteria code value is EQ. The following example sets the WBS value equal to AM.01.2 for all FOLEY's procurement activities.

GL-23 APEX - Global Change

Title: Set WBS for Foley's Procurement Activities

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	RESP	EQ	FOLEY		
and	PHAS	EQ	PROCR		
and					
and					
Then:	WBS	EQ	AM.01.2		
Else:					

Transfer... OK Cancel Help

Adding and Deleting Resources

Global change can apply new resources to activities or delete resources from activities. Choose AD from the drop-down list of criteria codes to add a resource.

This specification adds the new resource, then assigns it a cost account and units per timeperiod.

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	PHAS	EQ	CLOSE		
or					
or					
or					
Then:	RES	AD	PAINTER		
	ACC	EQ	13646		
	UPT	EQ	1		
Else:					

To delete a resource, change its name to DELETE.

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	RES	EQ	EXTRA		
or					
or					
or					
Then:	RES	EQ	DELETE		
Else:					

Changing Budgets and Resources

Change resource-related data If your change statement refers to a resource or cost item, such as the RES, ACC, BQ, or BC, Global change evaluates each selected activity once for each resource assigned to it. When dealing with a resource that is not assigned to many activities, click the Selection tab and specify the activities to select in the Selection Criteria field to reduce the number of activities Global change must modify.

After selecting the pool of activities that use the resource(s) in question, click the Change tab and use If: statements to specify which resource(s) the Global change affects. When you select a resource in the Change tab, the change only affects the specified resource. P3 ignores other resources assigned to the selected activities.

The following example uses both the Selection and the Change tabs. The Selection tab limits the Global change to design-phase activities that utilize both Smith and Jones as resources. The Change tab increases the number of hours budgeted for Smith by 25 percent; Global change ignores all other resources (including Jones) assigned to the selected activities.

All three selection criteria must be met for P3 to process an activity in this Global change.

GL-26 APEX - Global Change

Title: Increase Smith's Design BQ by 25%

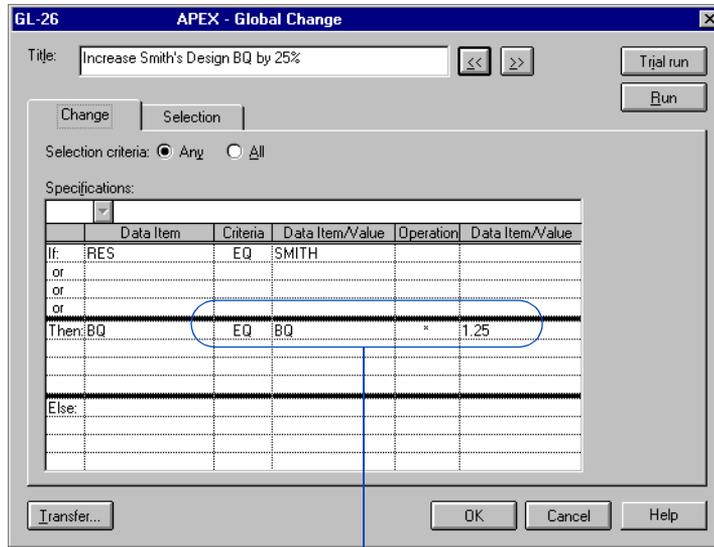
Change Selection

Level: 1 must meet All of the following criteria: Any

Selection criteria:

Phase	Select if	Is	Low Value	High Value
Phase	EQ	DESGN		
Resource	EQ	SMITH		
Resource	EQ	JONES		

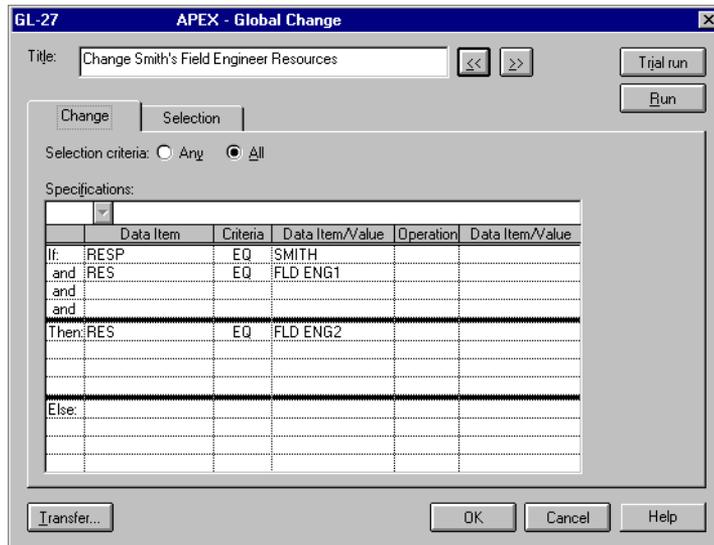
Transfer... OK Cancel Help



To increase the budgeted quantity by 25 percent, multiply the original budget by 1.25.

Change a resource assignment The next example changes the assigned field engineer from FLD ENG1 to FLD ENG2 for all activities under Smith's responsibility. Other resources assigned to Smith's activities are not affected.

Both If: conditions must be met for P3 to make the specified change. Choose All to make this type of specification.



You can also add new resources using Global change. The next example adds FLD ENG2 as an additional resource to Smith's activities that already use FLD ENG1.

The function AD is used to add a new resource, rather than to replace an existing one.

GL-28 APEX - Global Change

Title: Add FLD ENG2 to Smith's FLD ENG1 Activities

Trial run

Run

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	RESP	EQ	SMITH		
and	RES	EQ	FLD ENG1		
and					
Then:	RES	AD	FLD ENG2		
Else:					

Transfer... OK Cancel Help

Estimating a New Cost at Completion

You can use Global change to estimate a new cost at completion (CAC) based on the rate of progress to date. The following example uses a standard formula to calculate a temporary variable, named &CPI (Cost Performance Index), based on the standard data items earned value (BCWP) and actual cost to date (CTD). The calculated Cost Performance Index adjusts the cost at completion (CAC).

GL-29 APEX - Global Change

Title: Cost Performance Index

Trial run

Run

Change Selection

Selection criteria: Any All

Specifications:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:					
or:					
or:					
or:					
Then:	&CPI	EQ	BCWP	/	CTD
	CAC	EQ	CAC	/	&CPI
Else:					

Transfer... OK Cancel Help

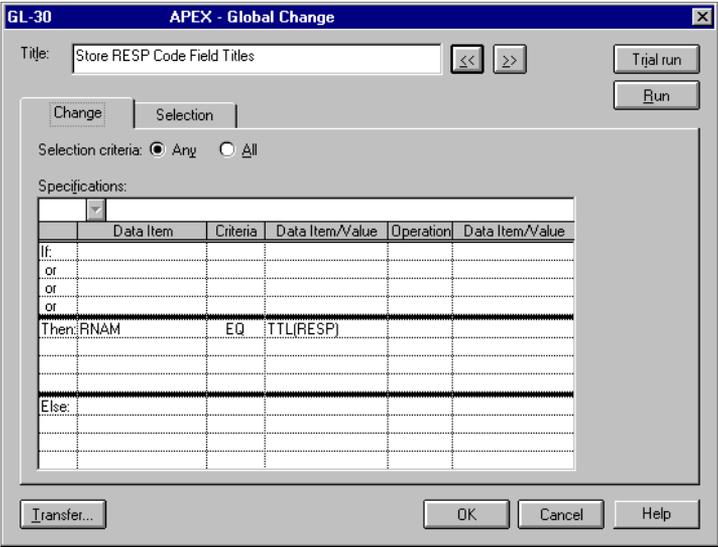
Since the data items involved in this change are resource-related, P3 processes the change once for each resource assigned to any selected activity. P3 calculates the value CAC for every resource.

Using Resource and Code Titles

The Global change function TTL(item) finds the full description of a project code, activity code, resource, or cost account. Use Global change to store these values in activity and resource custom data items; use them in reports in place of their abbreviated code value equivalents.

The following example stores the full titles matching the responsibility code field values for each activity in a character-type activity custom data item named RNAM.

When storing data in a custom data item, be sure the data types match. Possible types include: character, start date, finish date, numeric, and precision.



Extracting Mid-String Characters

The SUBSTR, or SS, string function extracts characters from anywhere in a string. The following example extracts the month portion of each activity's early finish date and inserts it at the beginning of the activity description. The temporary variable &T1 stores the early finish date as a character string in the format DDMMYY. Another temporary variable, &T2, stores the third, fourth, and fifth characters of that string (MMM), which are extracted using the SUBSTR function. The final step appends a colon and a space to &T2 and then appends the original description.

The screenshot shows the 'APEX - Global Change' dialog box. The title bar reads 'GL-31 APEX - Global Change'. The 'Title' field contains 'Extracting and Using Mid-String Characters'. There are 'Trial run' and 'Run' buttons. The 'Change' tab is selected, and 'Selection criteria' are set to 'Any'. The 'Specifications' section contains a table with the following data:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:					
or					
or					
or					
Then:	&T1	EQ	STDATE(EF)		
	&T2	EQ	SS(&T1,3,3)		
	DES	EQ	&T2	&	DES
Else:					

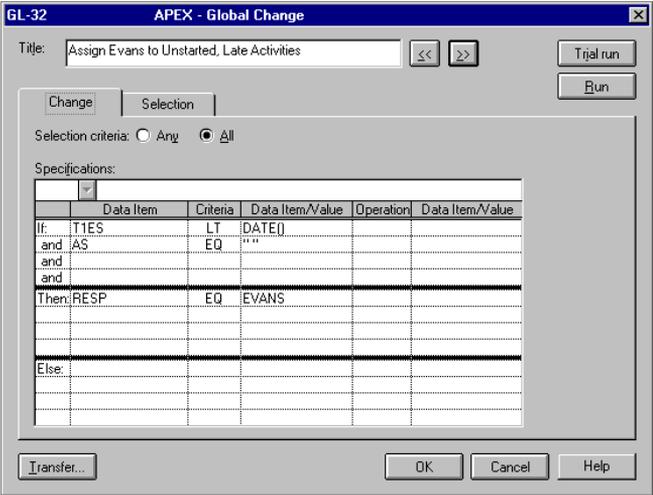
Buttons at the bottom include 'Transfer...', 'OK', 'Cancel', and 'Help'.

For more information on the STDATE function, refer to *Using Date String Functions* later in this chapter.

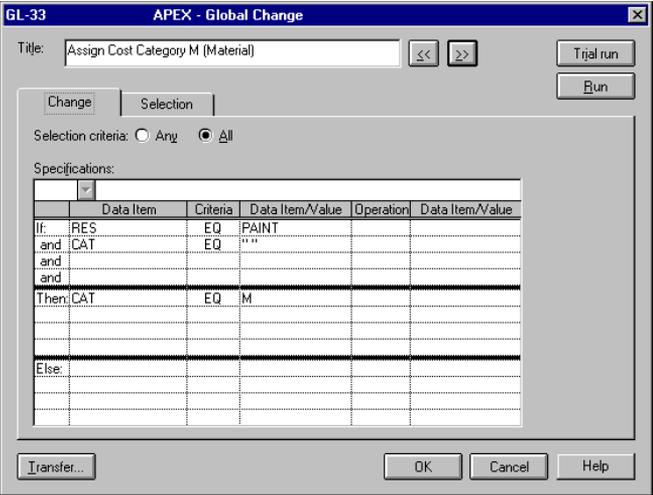
This sample specification changes an activity containing the description Create Samples, and having an early finish date of 15MAR99, to have the new description MAR: Create Samples. It changes an activity having the description Final Technical Review, and having an early finish date of 06JUN99, to have the new description JUN: Final Technical Review.

Finding and Changing Blank Values

Global change is an easy way to find activities with blank values in fields that remain empty until you make a specific entry, such as the actual start. The following example locates all activities for which the target early start date has passed without an actual start being recorded. The following change assigns a new responsible party, EVANS, to this set of activities.



The next example assigns the cost category M (material) to the PAINT resource if no category is already assigned to it.



Trimming Blank Spaces

The LTRIM (left trim) string function removes leading spaces that appear at the beginning of a value; RTRIM (right trim) removes trailing spaces.

P3 right-justifies activity IDs consisting only of numbers. When the ID is less than 10 characters long, P3 counts blank spaces preceding the activity ID as characters. Use LTRIM to remove the leading spaces when you want to combine the ID with other text.

The following example adds each activity's department code (DEPT), plus a colon and a space, as a prefix to each activity ID.

The screenshot shows the 'APEX - Global Change' dialog box. The title bar reads 'GL-34 APEX - Global Change'. The 'Title' field contains 'Prefix DEPT Code to Activity ID'. There are 'Trial run' and 'Run' buttons. The 'Change' tab is selected, and 'Selection criteria' is set to 'Any'. The 'Specifications' table is as follows:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:					
or:					
or:					
or:					
Then:	&T1	EQ	DEPT	&	ACT
	ACT	EQ	&T1	&	LTRIM(ACT)
Else:					

At the bottom of the dialog are 'Transfer...', 'OK', 'Cancel', and 'Help' buttons.

P3 automatically left-justifies the resulting activity IDs because they are not purely numeric.

Another string function, RTRIM, removes the trailing spaces that pad a data item to fill its defined field length. Suppose your responsibility and department code fields are each 10 characters wide, but some code values contain fewer than 10 characters, and you want activity descriptions that combine text with the code values. For example, you want to combine the text “REFER TO” and “IN” with values for two activity codes, RESP and DEPT, to obtain descriptions such as “REFER TO MILLS IN SHIPPING.” Use RTRIM to strip off the trailing spaces following the code values before combining them with the desired text, as shown in the following example.

The screenshot shows the 'APEX - Global Change' dialog box. The title is 'Include Responsible Party in Activity Title'. The 'Selection' tab is active, with 'Any' selected under 'Selection criteria'. The 'Specifications' table is as follows:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:					
or					
or					
or					
Then:	&T1	EQ	"REFER TO "	&	RTRIM(RESP)
	&T2	EQ	" "	&	RTRIM(DEPT)
	DES	EQ	&T1	&	&T2
Else:					

The value "REFER TO " in the third row of the table is circled in blue. A blue line points from this circle to the explanatory text below.

This statement includes spaces in the quotation marks to maintain correct word separation.

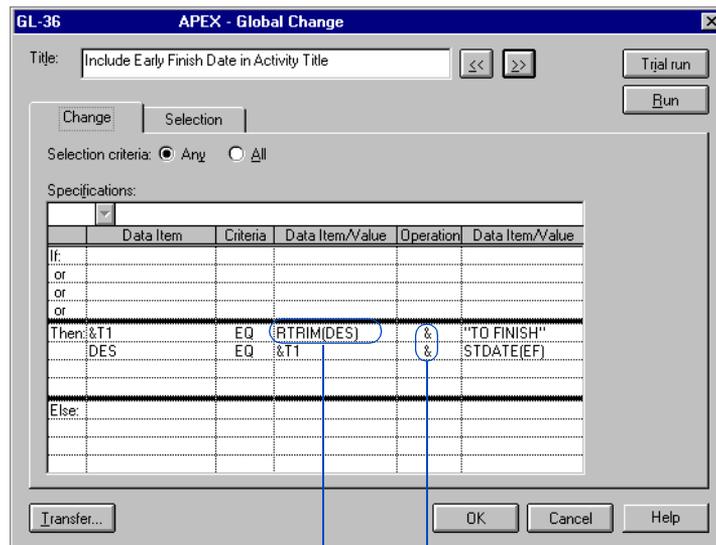
Using Date String Functions

You can access three date functions in Global change through the Date Item/Value option list:

Function	Purpose
DAY(date)	Produces the day of the week for the date (such as EF).
DATE()	Produces the current (system) date.
STDATE(date)	Converts date to a string in the format DDMMYY.

Uses of these functions include storing the weekday for a date in a custom data item or temporary variable for use in reports. For example, if the early finish of an activity is 15JUN99, then DAY(EF) = TUE.

You can also include a date, converted to a text string, as part of the activity description, as shown in the next example. When appending or inserting text strings, be sure to include spaces within the quotation marks, as needed.



The RTRIM function removes trailing spaces from the original description, allowing space for added text to fill the 48-character description field.

The ampersand operator concatenates, or joins, two text strings.

Changing Activity and Leveling Types

You can set activity type (STYP) and leveling type (LTYP) using Global change. Certain activity and leveling types are incompatible. If you attempt to make incompatible assignments, Global change prints a message in the P3.OUT file explaining which activities cannot be changed and the reason for the problem.

The following example sets the leveling type to crunch for all engineering activities whose scheduled early finish dates are more than two work-periods behind their target dates.

The screenshot shows the 'APEX - Global Change' dialog box. The title bar reads 'GL-37 APEX - Global Change'. The 'Title' field contains 'Crunch Eng. Activities with < -2 Target Variance'. The 'Change' tab is selected, and the 'Selection' sub-tab is active. The 'Selection criteria' are set to 'All'. The 'Specifications' table is as follows:

	Data Item	Criteria	Data Item/Value	Operation	Data Item/Value
If:	DEPT	EQ	ENG		
and	V1EF	LT	-2		
and					
and					
Then:	LTYP	EQ	4		
Else:					

The 'Data Item/Value' dialog box is open, showing a list of 'Leveling Types' on the right. The list includes: 0 - Normal, 1 - Immediate Priority, 2 - Split, 3 - Stretch, 4 - Crunch, and 5 - Stretch & Crunch. The '4 - Crunch' option is selected. The dialog box also has 'OK', 'Cancel', and 'Help' buttons.

Right-click the cell to open the Data Item/Value dialog box. Select a leveling type from the list of descriptions.

For details about activity and leveling types, refer to the *Resource Leveling*

Integrating Information with OLE

In this chapter:

Using OLE to Highlight Project Events

Linking an Object in a Layout

Embedding an Object in a Layout

Pasting an Object in a Layout

Updating Links in Documents

Using Tools to Attach Objects to the Layout

Modifying Objects Using the Pushpin Tool

Handling Objects Using the Arrow Tool

Creating Formatted Text

Linking Files in a Layout

Creating a Line on a Date

Shading Timeframes in a Layout

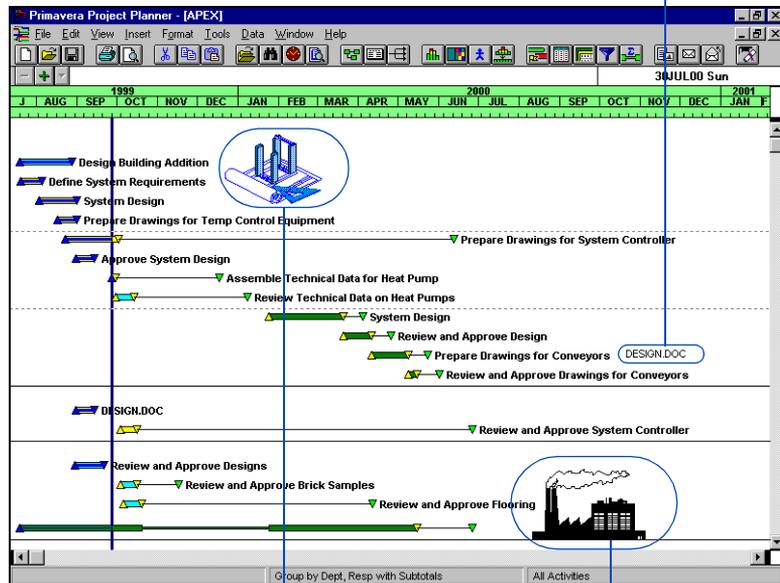
Object linking and embedding (OLE) enables you to create documents that integrate information from different applications. As an OLE client—an application that accepts embedded or linked objects—P3 enables you to bring different objects together into one integrated layout.

Using OLE to Highlight Project Events

You can create drawings, text, graphs, or other objects with an OLE server application, and integrate those objects into your layout. An OLE server is an application whose objects can be embedded or linked into other documents. Once you embed or link objects into a layout, you can edit the objects from within the layout without exiting P3.

The following example uses OLE objects to highlight important events during the project.

Include design documents for specific phases.



Insert pictures to highlight project activities.

The following table lists definitions of key OLE terms.

Term	Definition
Destination document	The file into which objects are linked or embedded; in P3, the current layout.
Embed	To insert a new object or a copy of an existing object into a layout. You can edit the object using the application in which the object was created from within P3.
Link	To make a connection between an object in an existing source file and a layout. A visual representation of the object appears in the layout. You can access the object in its source file and edit it from within P3. Any changes to the object in the source file appear in the visual representation in the layout.
Object	A file or a section of a file (such as a drawing, graph, or paragraph) that is embedded, pasted, or linked into the destination document.
OLE Client	An application that accepts embedded or linked objects.
OLE Server	An application whose objects can be embedded or linked into other documents.
Paste	To insert an object into a layout using the Edit, Paste Special command. The object can be moved and resized, but not edited.
Source application	The application used to create an object.
Source file	The file where an object is created and saved.

Linking an Object in a Layout

You can integrate information from different applications into a layout by inserting an object and creating a link between a P3 layout (the destination document) and the file in which the object was created (the source file).

Linking is based on the standard use of the Clipboard. When you copy information to the Clipboard, you can paste it directly into the layout. If you link an object, the information is stored in the source file and only a visual representation of that object is displayed in the layout; when you edit a linked object, you change the object in the source file and the changes are reflected in the visual representation in the layout.



Primavera recommends that you do not store layouts with OLE objects on a network drive. OLE objects retain information about the location (drive and folder/subfolder) of the source application and, for linked objects, the name and location of the source file. Since workstations connected to a network may use different drive designators for the same network drive, the source file and/or source application for an object may not be found and/or updated if a user's designator differs from the one used when the object was originally inserted.

Linking an object to the source file when you paste it enables you to automatically update the object in the destination document whenever the object is changed in the source file. When you link a document from a different application to a layout, P3 stores information about the location of the source file and updates the object whenever you open the layout. Linking is useful when an object appears in more than one layout. You need update the object only once and the new information is displayed in all the layouts to which the object is linked.



Objects can be linked only from saved files. For example, if you create a drawing in Microsoft Paint, you must save it as a file before linking it to your layout.

Create a link in P3 Open the application in which you want to create the linked object. Create the object and save the file, or open an existing file. Select the object and copy it to the Clipboard. Open the layout of the P3 project to which you want to link the object. Select the activity or group title band to which you want to attach the object. Choose Edit, Paste Link.

P3 displays the object in the layout next to the selected activity. Choose View, Layout, Save to retain the linked object in your layout.

You can customize the placement of the object using the Attachment Configuration dialog box. Refer to Using Tools to Attach Objects to the Layout later in this chapter.



If you do not select an activity or group title band before inserting an object into a layout, P3 places the object to the right of the vertical split bar next to the first activity that appears onscreen.

Copying the P3 Project Workspace

Choose Edit, Copy Picture to copy all or part of a visible layout from the P3 project workspace to the Clipboard. To include the copied portion of the visible layout in another file, open the file and paste from the Clipboard. You can resize the picture of the layout.

To copy a portion of the visible layout, scroll to the portion of the layout you want to copy. Choose Edit, Copy Picture. Starting in the upper left corner of the portion of the layout you want to copy, drag down diagonally until the rubberband box encompasses the picture you want, then release the mouse.

The original linked object is still linked to the source file, but the pasted object is a picture that you can resize or move. Open the file in which you want to insert the picture. Paste the picture from the Clipboard into the file. To preview the copied picture before placing it in the file, use the Clipboard Viewer.

Embedding an Object in a Layout

You can integrate information from different applications into a layout by inserting an object and embedding the object in the layout.

Embedding is based on the standard use of the Clipboard. When you copy information to the Clipboard, you can paste it directly into the layout. If you embed an object, P3 stores the object in the layout; when you edit an embedded object, you change only the object in the layout.



Primavera recommends that you do not store layouts with OLE objects on a network drive. OLE objects retain information about the location (drive and folder/folder) of the source application. Since workstations connected to a network may use different drive designators for the same network drive, the source file and/or source application for an object may not be found and/or updated if a user's designator differs from the one used when the object was originally inserted.

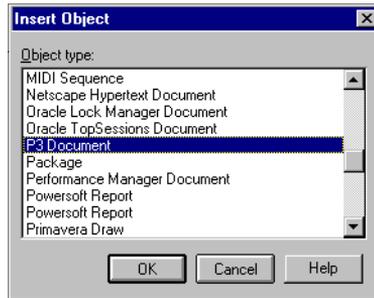
Embedding an object inserts it in your layout. If you need to modify the embedded object, double-click it to launch its source application. The changes you make to the object in the layout do not affect the source file. For example, if you embed a copy of an existing drawing in your layout and edit it in P3, the changes you make to the drawing will not be reflected in its source file.

Use either of the following methods to embed an object:

- Use the Insert, Object command to start a server application in which you can create a new object. This command enables you to create an object in another application—from within P3—and embed it in a layout. Double-clicking an embedded object launches its source application.
- Use the Edit, Paste command to embed a copy of an existing object into your layout. This command enables you to edit the copy of the object without affecting its source file.

When you embed an object using the Insert, Object or Edit, Paste commands, P3 retains information about the source application. For example, if you embed a drawing created in Microsoft Paint in a layout, the source application is launched when you double-click the object. In this case, Microsoft Paint launches with the object displayed.

Create and embed a new object Select the activity or group title band to which you want to attach the object. Choose Insert, Object.



Select the application that creates the type of object you want to embed. The Insert Object dialog box lists all the server applications installed on your system. Click OK to open the selected server application. Create a new object. Choose File, Update from the menu bar of the server application.

P3 updates your layout to contain the object. Minimize or exit the server application and return to P3. If you exit without updating the document, the application displays a message enabling you to update the destination document before exiting. Click Yes to update.

P3 displays the object in the layout next to the selected activity. Choose View, Layout, Save to retain the object in your layout.

Embed a copy of an existing object Open the application that contains the object you want to embed and copy the object to the Clipboard. In P3, open the layout in which you want to paste the object. Select the activity or group title band to which you want to attach the object. Choose Edit, Paste.

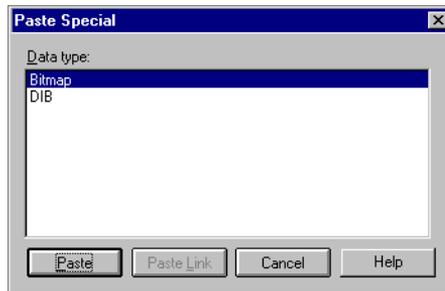
P3 displays the object in the layout next to the selected activity. Choose View, Layout, Save to retain the object in your layout.

Pasting an Object in a Layout

You can also insert a picture in your layout without linking it to the source application. Use the Edit, Paste Special command to paste different formats of an object copied to the Clipboard. Server applications often provide different formats for their objects. For example, a picture in the Clipboard may be pasted as a device independent bitmap (DIB), metafile (Picture), or OLE object.

To paste the object, select a format without the word “object” in the title (the OLE object format retains information about the source application). When the picture is pasted into the layout, you cannot edit it from P3 except to resize the picture. Using this type of paste reduces the size of your project file because P3 omits information about the object’s source application.

Paste an object Open the application that contains the object you want to paste, or create an object and copy it to the Clipboard. In P3, open the layout in which you want to paste the object. Select the activity or group title band to which you want to attach the object. Choose Edit, Paste Special.



Select Bitmap, DIB (device independent bitmap), or Picture (metafile) to paste the object into the layout without retaining the source application information, then click Paste.

The contents of this dialog box depend on the server application used to create the object. The OLE object data type retains information about the source application of the object. Select this data type to embed the object in the layout.

The object appears in the layout next to the selected activity. Choose View, Layout, Save to retain the pasted object in your layout.



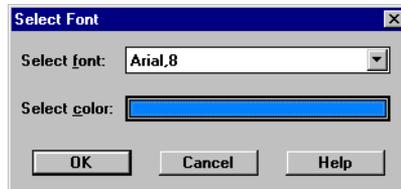
If you select Bitmap or Picture in the Data Type field, the pasted object is contained in the layout but you cannot edit it. However, you can use the Attachment Tools described later in this chapter to resize the object.

Changing Attributes of Pasted Text

When you paste text into a layout, P3 enables you to change the font and color of the pasted text.

To paste and modify text in a layout, open the file that contains the text or create a new file. Select the text you want to paste into your layout and copy it to the Clipboard. Select the activity or group title band to which you want to attach the object. Choose Edit, Paste to insert the text using the Windows character set.

If the pasted text contains international characters, choose Edit, Paste Special and select OEM Text to paste. Double-click the text object in the layout.

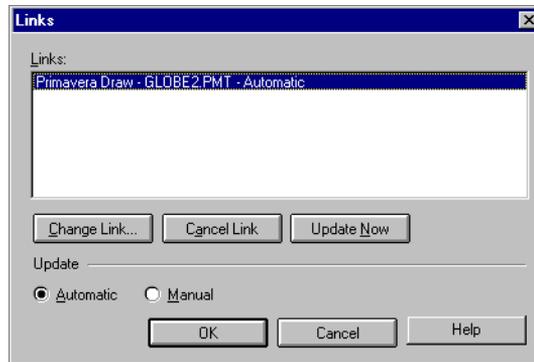


The Select Font dialog box enables you to modify the font and color of the pasted text. Click  in the Select Font field to select a different font. Click the Select Color button to select a different color for the text.

Updating Links in Documents

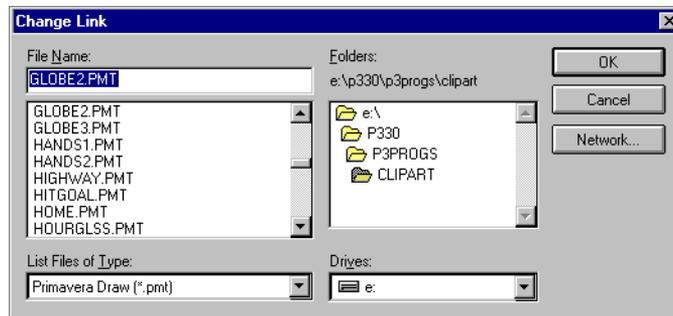
When you link documents to a P3 layout, you must maintain the destination document and each source file. For example, a link can be broken if a source filename is changed or if the source file is moved to a different folder. You can reconnect a broken link with the Links dialog box.

Update a link Choose Edit, Links. The Links dialog box enables you to manage the links in the current layout. The Links field lists the linked objects in the layout and the status of each object (Manual, Automatic, Static). You can reconnect a broken link, cancel a link, change the way it is updated, and manually update it.



The Edit, Links command is available only if a linked object exists in the layout.

Reconnect a broken link In the Links field, select the link you want to reconnect. Click Change Link, or double-click the name of the link. Select the correct folder and filename for the linked object, and click OK. In the Links dialog box, click OK. To reconnect more than one link, click Update Now and repeat.



Change the link update options Select the linked object for which you want to change the update options. Choose Automatic to have P3 automatically update the link each time you open the layout; choose Manual to prevent P3 from updating the object.

To update a link set to manual update, open the Links dialog box, select the link to update, and click Update Now. Update Now updates all links selected in the Links field.

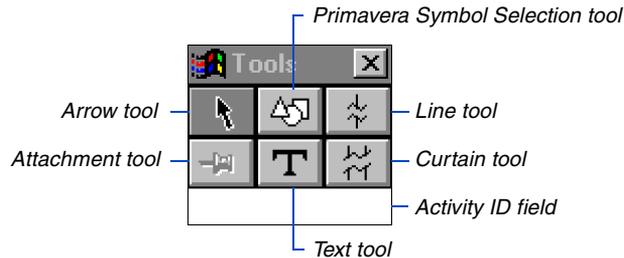
Cancel a link Select the link you want to cancel in the Links field. Click Cancel Link. The status of the object changes to Static and the object can no longer be edited. Some object details may be lost when you cancel a link. Click OK.

The object with a cancelled link will no longer appear in the Links dialog box. Once you cancel a link, you must relink to the source file using the Paste Link command (choose Edit, Paste Link).

Using Tools to Attach Objects to the Layout

The Attachment Tools enable you to select objects, change the attachment of objects, quickly link bitmaps and Primavera Draw objects to your layout, add text, shading, and date lines to the Bar chart.

Display Attachment tools In the Bar chart, choose View, Attachment Tools.



If the Primavera Symbol Selection tool or Text tool is selected, the activity ID field at the bottom of the Tool palette displays the activity ID or group title band to which the object will attach when you release the mouse button. If you select an attached object in the layout, the Activity ID field will display the Activity ID or group title band to which the object is currently attached.



You must display the Tool palette to select OLE objects in the Bar chart.

Modifying Objects Using the Pushpin Tool

The Pushpin tool changes the activity bar or group title band and date to which an object is attached.

Modify the attachment of objects Select the object with the attachment, then click the Pushpin tool.

The image shows the 'Attachment Configuration' dialog box. It has two main sections: 'Associate with' and 'Attach to'. In 'Associate with', 'Group title' is selected with a dropdown menu showing 'ENG'. In 'Attach to', 'Date' is selected with a dropdown menu showing '12JUL99'. Below these are two sections: 'Horizontal Offset' and 'Vertical Offset'. 'Horizontal Offset' has 'Time' selected, with a 'Number' field set to '163' and 'Units' set to 'Days'. 'Vertical Offset' has a 'Number' field set to '3' and 'Units' set to 'Millimeters'. There are 'OK', 'Cancel', and 'Help' buttons at the bottom.

Choose Time (hours, days, weeks, or months) or Distance (inches or millimeters). P3 measures the offset from the start or end point of the bar or date, depending on the option selected in the Attach To field. P3 converts the entry in the Number field to reflect the unit of measure.

Specify inches or millimeters. P3 measures the offset from the midpoint of the height of the bar. P3 converts the value in the Number field to reflect the unit of measure.

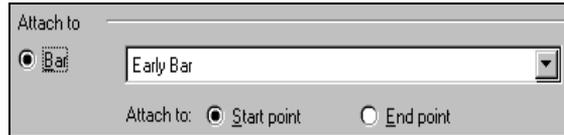
When vertical offset distance is measured in inches, you can move the object with the mouse in increments as small as 1/8 inch. When distance is measured in millimeters, you can move the object in increments as small as 1 millimeter.

In the Attachment Configuration dialog box, choose Activity ID or Group Title to specify the method of attachment. In the Activity ID (or Group Title) field, select the activity ID or group title band to which you want to attach the object. (If you select an activity ID that is part of a summary, the object will not be visible until you unsummarize.)



You can attach objects to any group title band except those that contain numbers, such as dates, float, calendar ID, and WBS outline. You also cannot attach objects to Uncategorized/Unassigned bands or to any blank group title bands (ones without code titles).

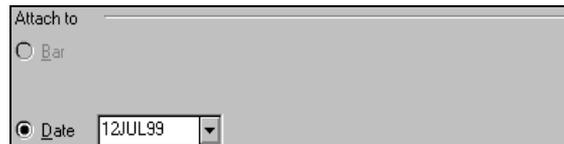
Select whether to attach to a bar or a date. The Bar option is available only if you select to attach to an Activity ID. To attach to a bar, choose the Bar option and choose Start or End Point.



The screenshot shows a dialog box titled "Attach to". It has two radio buttons: "Bar" (selected) and "Date". To the right of the "Bar" radio button is a dropdown menu containing the text "Early Bar". Below the radio buttons, there is a section labeled "Attach to:" with two radio buttons: "Start point" (selected) and "End point".

If your layout displays more than one bar, in the Bar field select the bar to which you want to attach the object.

If you attach to a date, choose Date. In the Date field, select the date to which you want the object to attach.



The screenshot shows a dialog box titled "Attach to". It has two radio buttons: "Bar" (unselected) and "Date" (selected). To the right of the "Date" radio button is a dropdown menu containing the text "12/JUL99".

Editing Objects

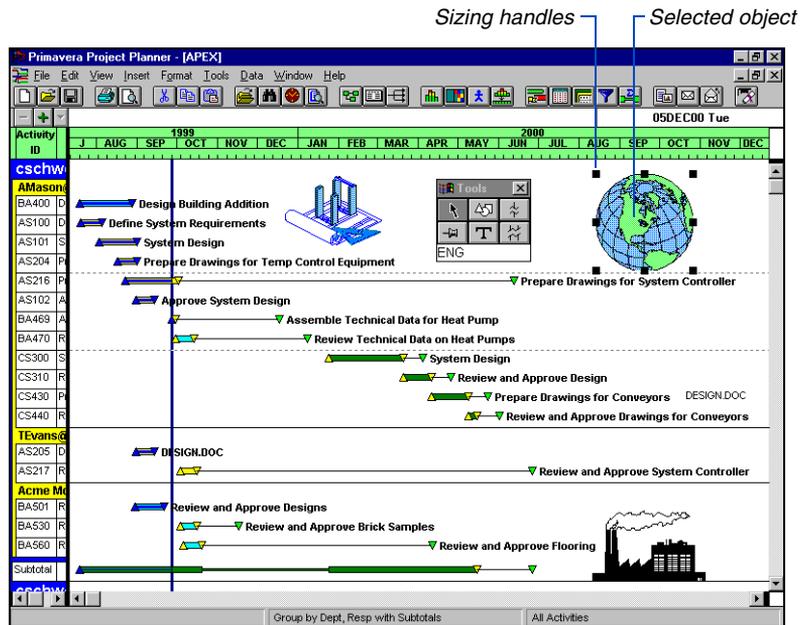
Once you insert an object, you can launch the source application of the object by selecting it and choosing Edit, Object or by double-clicking the object.

The Edit, Object command changes according to the object selected. For example, if you select a Primavera Draw Object, the Edit menu displays Primavera Draw Object. If you select an object created in Microsoft Paint, the Edit menu displays Microsoft Paint Picture Object.

Handling Objects Using the Arrow Tool

P3 enables you to copy an object, move it to another activity, date, or group title band, resize an object, and delete an object by using the Arrow tool.

Select an object using the Arrow tool Click the Arrow tool, then select the object.



Copy an object Click the Arrow tool. Select the object to copy. Choose Edit, Copy. Select the activity to which you want to attach the copied object then choose Edit, Paste.

Move an object Using the Arrow tool, drag the object you want to move to the new location. When you move an object, P3 changes its horizontal and vertical offsets each place it appears in the layout. For example, if you attach an object to an activity that appears five times in the layout, the object will also appear five times. If you change the offsets of one of the five objects, moving it 2 inches above the activity to which it is attached, the other four occurrences of the object will also move 2 inches above their original location.



Moving an object changes only its horizontal and vertical offsets; it does not change the activity to which the object is attached. To change the activity to which the object is attached, refer to Using Tools to Attach Objects to the Layout earlier in this chapter.

Resize an object Click the Arrow tool and select the object you want to resize. Drag a sizing handle to resize the object.

Delete an object Click the Arrow tool and select the object to delete. Press Delete. When you delete an object, P3 deletes it from every place the object appears in the layout. For example, if the object appears in the layout five times, when you select any one of them, P3 deletes all five occurrences. P3 does not delete a duplicate object if it is attached to a different activity ID or group title band.

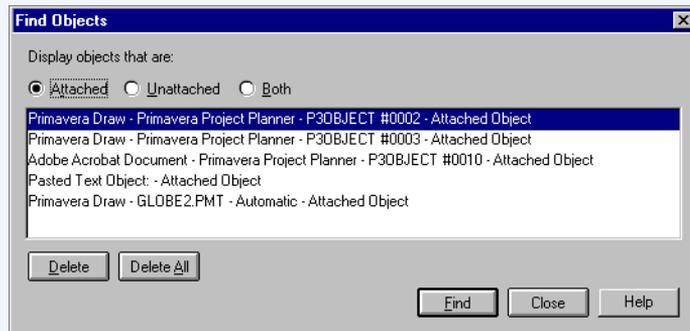
Displaying and Listing Objects

P3 enables you to display or hide the objects inserted in a layout. A checkmark appears in front of the View, Objects command when the option is active.

To display objects, choose View, Objects. Hiding objects is useful if you want to print the display without the objects. P3 continues to store the objects in the layout, even when they are hidden.

When you insert objects in a layout, P3 maintains a list of the objects currently linked or embedded in the active layout.

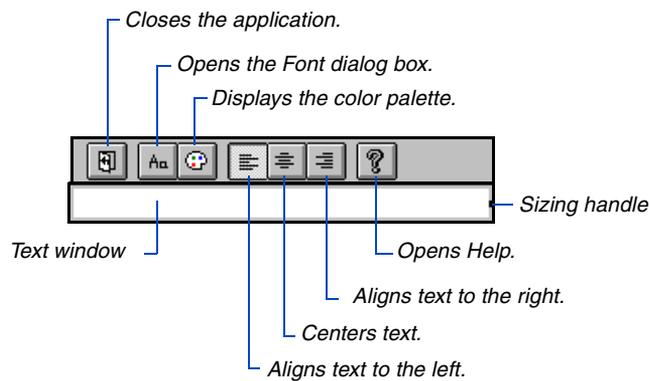
To list objects in the layout, choose Edit, Find Objects. The Find Attached Objects dialog box lists the objects contained in the active layout. To move to a particular object, select the object in the Attached Objects field and click OK. P3 selects the attached object and scrolls to it.



Creating Formatted Text

The Text tool in the tool palette creates formatted text and inserts it in a layout.

Insert formatted text in a layout Click the Text tool. Position the mouse over the Bar chart until the Activity ID window in the tool palette displays the Activity ID or group title band to which you want to attach the text. Drag diagonally downward to create a space for text. The Primavera Text toolbar and Text window appear where you defined a space for the text.



Change text font and color Type the text and, if necessary, select a new font and color for the text. Click the Color icon to select a different color from the palette. Click the Font icon to display the Font dialog box. Select a font, font style, and size. Click OK. Click the Close icon to close the application and insert the text in the Bar chart.

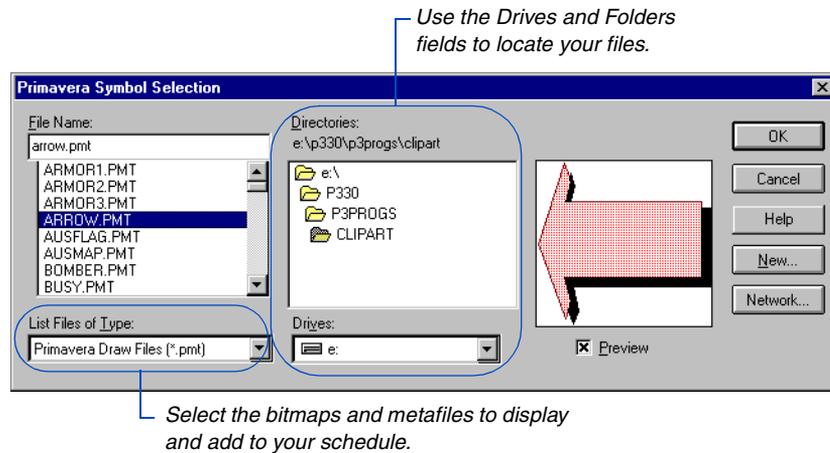
The Text window width is specified by the size of the box you draw to create space for the text. You can change the width using the handle on the right side of the Text window. The length of the Text window increases as necessary when you enter text. The attributes of all text in one text box are the same. For example, all text will be aligned either left, right, or centered, and the text color and font are the same for all text in each text box.

Linking Files in a Layout

The Primavera Symbol Selection tool links bitmaps, drawings from Primavera Draw, and metafiles to a layout.

Link using the Primavera Symbol Selection tool Click the Primavera Symbol Selection tool. Position the mouse pointer over the Bar chart until the Activity ID window in the tool palette displays the activity ID or group title band to which you want to attach the linked object.

To display the Primavera Symbol Selection dialog box, drag in the Bar chart.



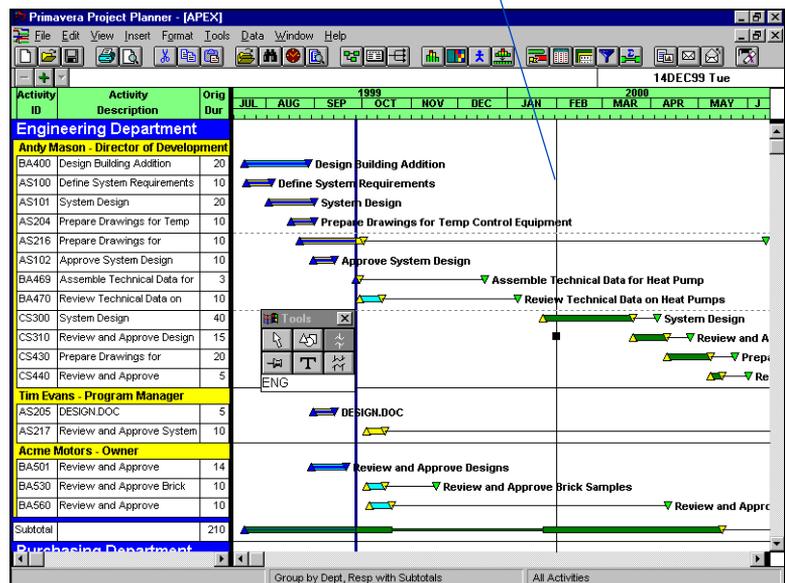
In the File Name field, select the name of the file to link to the layout. Mark the Preview checkbox to display a picture of the file, then click OK.

Creating a Line on a Date

The Line tool places a vertical line on a specific date. For example, to highlight a specific date on a layout, use the Line tool to draw a line marking that date. The line appears on that date throughout the layout.

Create a line using the Line tool Click the Line tool, then select the date on the Bar chart where you want the line to appear.

A vertical line specifies the date you selected.



Change the start date attachment for a line object Select the line, then select the object again when the pointer turns to a +. Click the Pushpin tool in the tool palette to display the Attach To Date dialog box. Change the date using the pop-up calendar. Click OK. P3 automatically moves the vertical line in the layout to the date you selected.

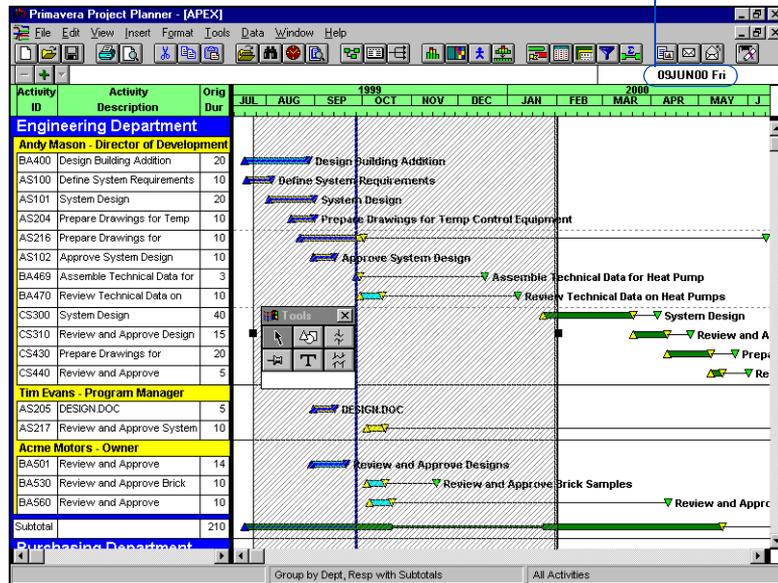
The screenshot shows the 'Attach to Date' dialog box. It has a title bar with 'Attach to Date' and a close button. The dialog contains two fields: 'Attach to:' and 'Start Date:'. The 'Start Date:' field is set to '01FEB00'. There are three buttons: 'OK', 'Cancel', and 'Help'.

Shading Timeframes in a Layout

The Curtain tool shades a specific portion of the layout when you view or print the display.

Shade a part of the layout Click the Curtain tool, then drag in the Bar chart from where you want the shading to begin to the location you want the curtain to end. A thin line marks the end of the curtain until you release the mouse.

Use the Datometer to accurately place the curtain on specific dates.



You can reposition both the curtain and the line by placing the pointer over the shape. When the mouse pointer changes to a +, drag the curtain or line to the new location. An outline of the line or curtain shows the changing location.

Delete a curtain or line Select either object and press Delete.

Using E-Mail to Share Project Data

In this chapter:

Overview

Sending an Entire Project

Sending a Picture of a Project

Sending Activities for Updating

Addressing Mail Messages

Customizing the Status Sheet

Sending a Text Mail Message

Receiving an Entire Project

Receiving an Activity Status Sheet for Updating

Access Rights

P3 and your e-mail system work together so you can share project information with others. Use P3 to create a mail message with one or more attachments, such as a backup of your project, a picture of the project window, or selected activities from a project.

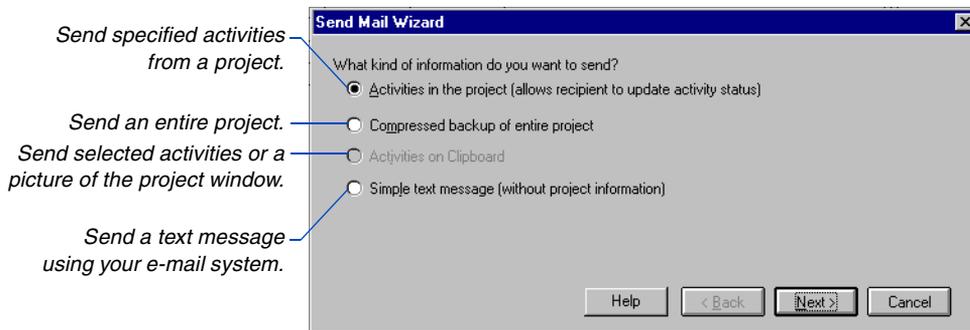
You can also use P3's E-mail feature as a tool for updating project progress. The project manager can send a status sheet to multiple recipients, who can then update the activities and return the status sheet, again via e-mail, to the manager.

This chapter describes how to send and receive project information via P3's Send Mail and Receive Mail features.

Overview

To facilitate the communication of vital project data within the corporate office or between offices worldwide, use P3's E-mail capabilities to send and receive project information. You can collect update information and merge it into your project, keeping your project as current as possible.

Sending e-mail from P3 You can send an entire project or selected activities from a project as attachments to an e-mail message. You can also send a picture of the project window or a simple text message.



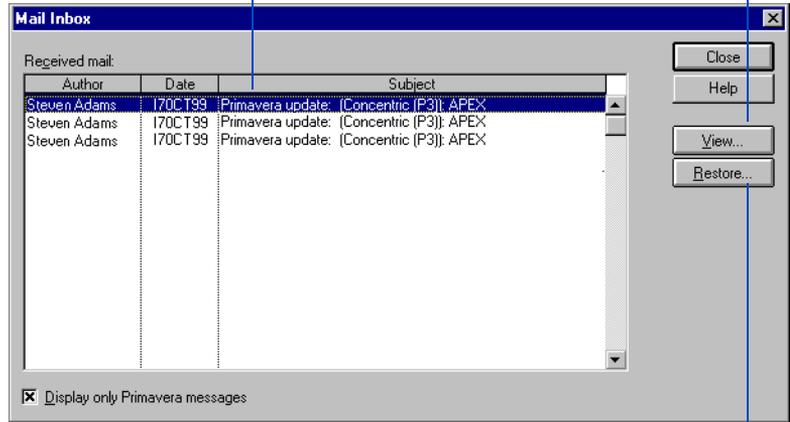
P3 supports both MAPI (Messaging Application Programming Interface) and VIM (Vendor Independent Mail) standards; therefore, this feature is compatible with most major mail systems.

Decide how to collect update information, either in a standardized status sheet or one that you customize yourself. You can also address the same message to a group of recipients; or, have P3 distribute individualized messages containing specific activities to each recipient in the workgroup.

Receiving e-mail in P3 The Mail Inbox displays the messages you receive that contain P3 or SureTrak data items.

Select a mail message to view or restore.

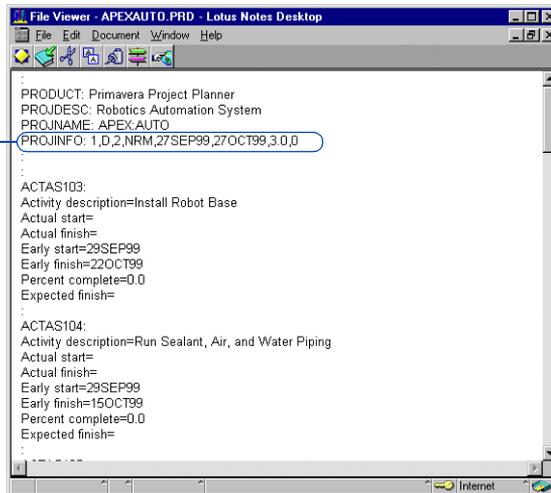
View the text message and status sheet containing the activities to update.



Restore a project backup.

View the status sheet and update activities using Primavera Post Office. Once these activities have been modified to reflect progress in the project, return the status sheet to the project manager so progress can be recorded.

A through date of 27OCT99 for statusing activities was indicated before the status sheet was sent.

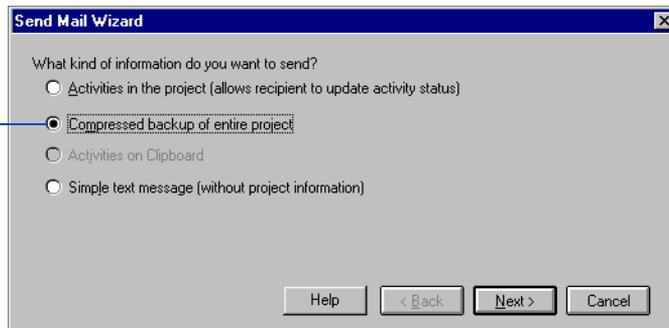


Sending an Entire Project

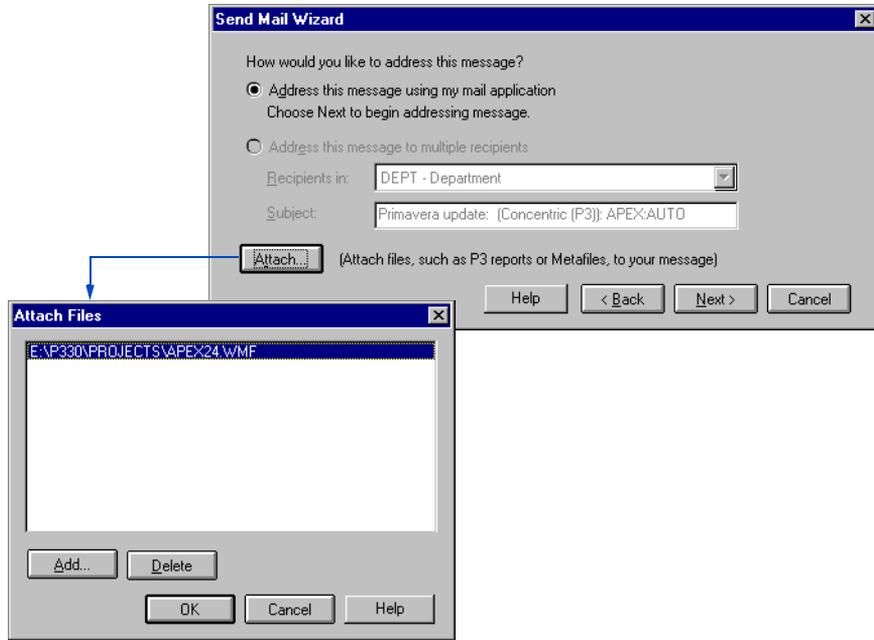
Use P3 to send a backup of an entire project or project group to another member of your workgroup using your e-mail system. P3 backs up the open project into one file with the project name and the extension .PRX, then attaches the project to a mail message.

Send a project Open the project group or project you want to send. Choose File, Send Mail to launch the Send Mail Wizard. Move forward through the steps using the Next button, or go back to change an entry using the Back button.

*Choose to send an entire
P3 project via e-mail.*



You can send other attachments with your mail message in addition to the backup file. For example, send copies of meeting minutes or memoranda regarding the project.

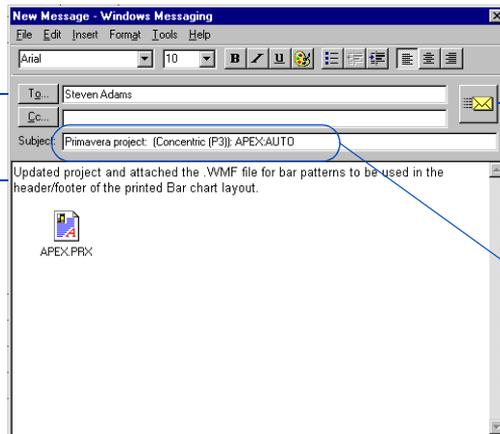


For more information about how P3 backs up projects, see the *Project Utilities* chapter.

After you add an attachment to the message, P3 compresses the open project into a backup file and accesses your mail system.

Enter the E-mail address(es) of those you want to receive the project.

Type any mail message you want to send with the attached P3 file(s).



Send the message and attachment(s).

P3 automatically enters the text for the subject line.

Sending a Picture of a Project

To present project information to someone, as perhaps a quick summary or printout, use Send Mail to send a picture of the project window using your e-mail system. The recipient does not need P3 to view this message.

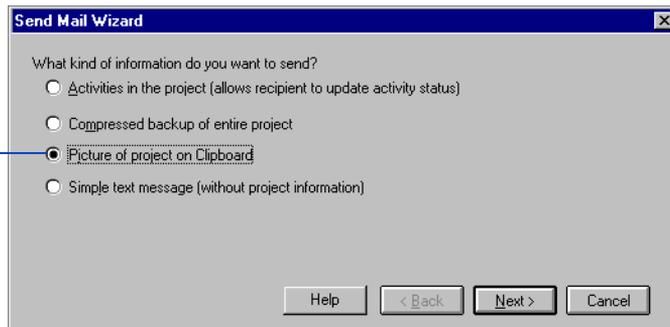
Copy a picture of the P3 workspace. Open the project group or project you want to take a picture of, and compose the window to contain the information you want to deliver. Choose Edit, Copy Picture and drag your pointer corner-to-corner across the area of the window you want to copy. This places a bitmap of the area you defined on the Clipboard.



You can copy selected activities to the Clipboard and attach that file to a mail message from P3. Select the activities you want to send and choose Edit, Copy. This places the activities on the Clipboard. Launch the Send Mail Wizard and choose Activities On Clipboard to attach the contents of the Clipboard to an e-mail message.

Send a picture through e-mail. After you copy the picture to the Clipboard, choose File, Send Mail to launch the Send Mail Wizard.

Choose to automatically send the picture on the Clipboard as an attachment.



Move forward using the Next button, or go back to change an entry using the Back button. Attach any other files you want to send with the Clipboard file, such as a Windows Metafile or a flat text file, and address the message. Click Send to mail the project picture. The bitmap is sent as a .CLP file that can be viewed using the Clipboard Viewer.

For more information about saving a picture of a layout as a Windows Metafile, refer to the *Printing Layouts* chapter.



You can also send a Windows Metafile picture of the project layout as an attachment to a P3 mail message. Click Attach and specify the Metafile picture.

Sending Activities for Updating

Instead of sending an entire project or project group through e-mail, you can send specified activities from a project. P3 allows you to choose whether to send the activities in the current view, currently selected activities, or filtered activities, as well as choose a Standard or Custom status sheet. The Standard status sheet is a quick way to update activity progress, while the Custom status sheet allows more flexibility in collecting information about the data items you select.

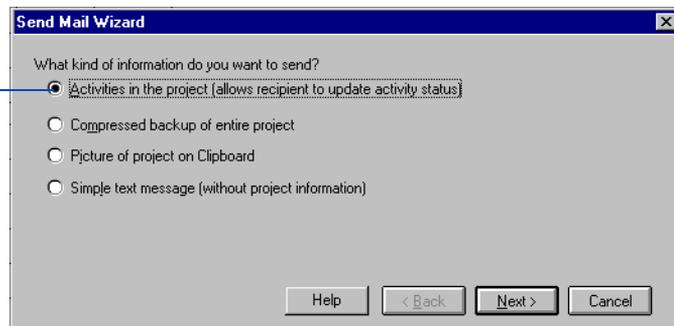
You can send mail messages to one or more persons either as a group or individually, using unique codes to address each activity.



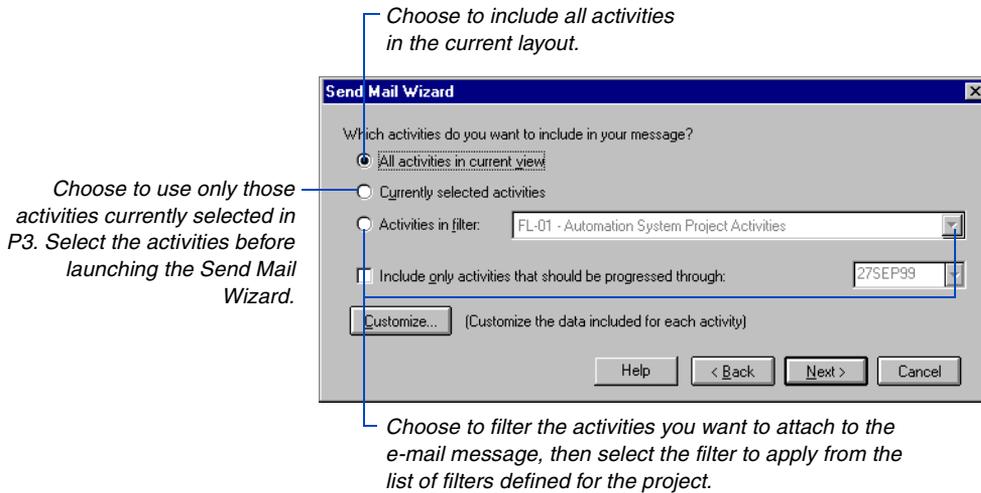
You can send activity information to participants who do not have P3 if they have the Primavera Post Office application (available from Primavera Systems).

Launch the Send Mail wizard Before sending mail, open the project group or project containing the information you want to send. When you run the wizard, move forward through the steps using the Next button, or go back to change an entry using the Back button. Choose File, Send Mail to launch the Send Mail Wizard, then choose Activities In The Project.

Choose this option to send only the activities that you specify.



Choose to send all activities in the current layout, selected activities, or activities in a filter.



Filter through a cut-off date In addition to the activities selected from the previous options, you can further restrict the number of activities included in the mail message by specifying a cut-off date for progressed activities. For example, if today is July 10 and you are sending activities to be updated for the following week, specify a date of July 17.



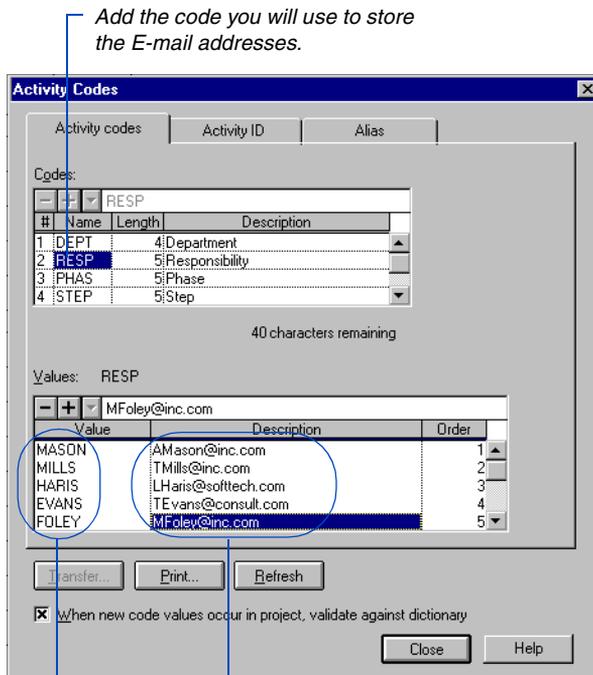
For more information about the Standard and Custom status sheet, see *Customizing the Status Sheet* later in this chapter.

Send the Standard or Custom status sheet By default, P3 sends a Standard status sheet with a Percent Complete column; however, once you send a different status sheet, P3 automatically sends the last type of status sheet specified, if you don't define another type. To customize a status sheet, click *Customize*.

Addressing Mail Messages

P3 uses your mail system to address the P3 message you create. If you choose Address This Message Using My Mail Application you can send multiple copies of a single message, so each recipient receives the same mail message. You can also assign each activity a code that contains an E-mail address, so when you send e-mail, P3 automatically sends all coded activities to the mail addresses assigned to them.

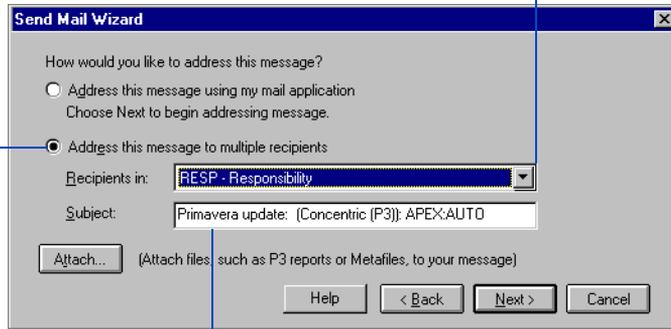
You can assign E-mail addresses to an activity code, resource or cost account. Select a dictionary—Activity Codes, Resource, or Cost Accounts—to set up the E-mail addresses. This feature is especially useful during updating. For example, suppose you want to send each department manager status sheets for updating on a weekly basis. Set up an activity code called Mail, then define values and descriptions for each department manager for whom the E-mail address is entered as the description.



Assign each activity code to an activity. If you use the Cost Accounts Dictionary, you can assign mail addresses only to the 11th or 12th character in all cost accounts.

Select the code containing the E-mail addresses. Select an Activity Code value, resource, or cost account.

Choose to use the activity codes you assigned to address the e-mail message.

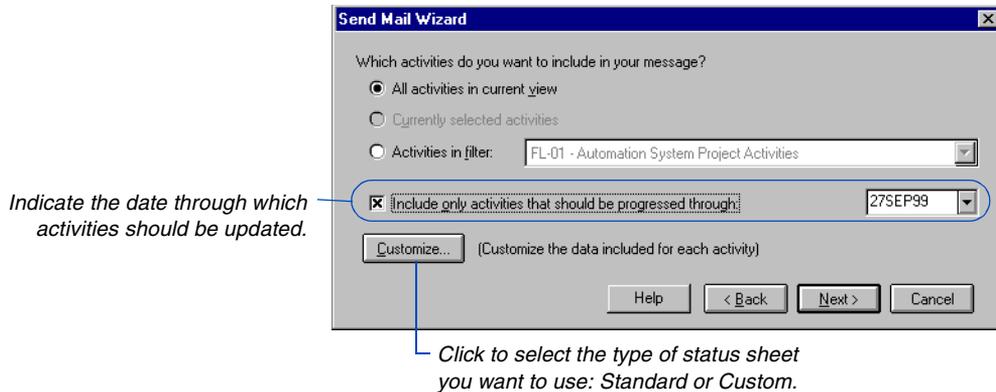


Type the subject line for the message, or use the one supplied by P3.

When you choose to address your message to multiple recipients, P3 sends a mail message to each recipient containing only the activities coded as pertaining to him or her.

Customizing the Status Sheet

P3 status sheets control how activity information is presented in an e-mail message. Two types of status sheets are available: Standard and Custom.



- Use the Standard status sheet to create a standardized process for updating your projects. The Standard status sheet always sends the same set of activity information: whether an activity has started and what date it began, and whether an activity has completed and what date it finished. You cannot add or remove data items from the Standard status sheet. When you select this option, choose to collect progress by including a column for either Remaining Duration or Percent Complete.
- Mark the Include Expected Finish Constraints checkbox to display a column with expected finish dates on the status sheet. Expected Finish constraints are used when you want P3 to calculate an activity's duration based on the Expected Finish date.
- Use the Custom status sheet to specify the activity and/or resource data items to send in an e-mail message and whether the recipient can modify these items. P3 always includes activity IDs in the Custom status sheet; if you send resource data, P3 automatically includes resource and 12-character cost account data items.

Enter the data item titles to include in the mail message.

Customize Activity Data

Standard status sheet
 Collect progress using:
 Remaining duration
 Percent complete
 Include expected finish constraints

Custom status sheet
 Customize the activity and resource data items included for each activity in the mail message

Activity data items:

Planned Start		
Data Item	Title	Editable
Activity description	Activity description	<input checked="" type="checkbox"/>
Actual start	Actual start	<input checked="" type="checkbox"/>
Actual finish	Actual finish	<input checked="" type="checkbox"/>
Remaining duration	Remaining duration	<input checked="" type="checkbox"/>
Planned Start	Planned Start	<input type="checkbox"/>

Resource data items:

Driving flag		
Data Item	Title	Editable
Actual cost	Actual cost	<input checked="" type="checkbox"/>
Budgeted quantity	Budgeted quantity	<input checked="" type="checkbox"/>
Budgeted cost	Budgeted cost	<input checked="" type="checkbox"/>
Driving flag	Driving flag	<input checked="" type="checkbox"/>

Include relationships

Determine the activity and resource data items to include in the Custom status sheet.

Mark to include relationship information for the activities you send.

For more information about status sheets, refer to *Receiving an Activity Status Sheet for Updating* later in this chapter.

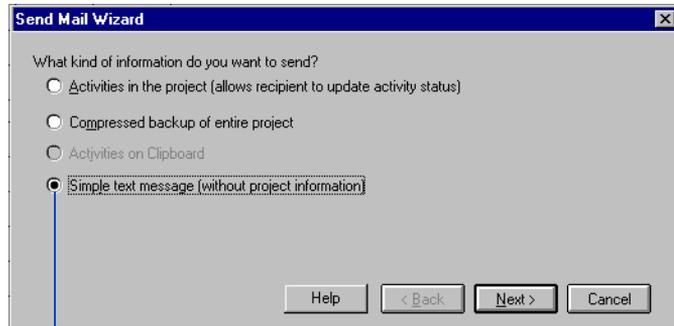


If you do not specify which type of status sheet to send in an attachment, P3 automatically sends the last type of status sheet specified.

Sending a Text Mail Message

Use P3's Send Mail feature to send text e-mail messages by accessing your e-mail system without leaving P3.

Choose File, Send Mail to launch the Send Mail Wizard.



Choose to access your e-mail system from P3.

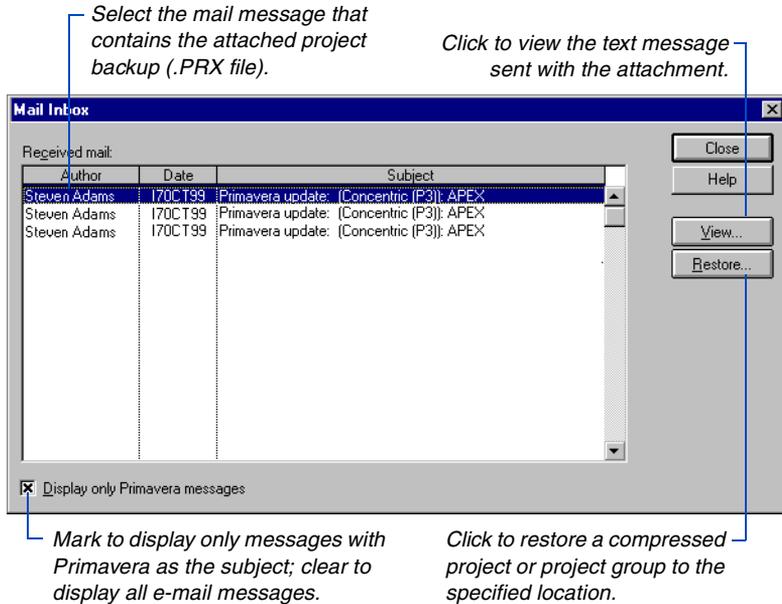
Add any attachments you want to send with the text message, then type the subject line and memo and address the message. Click Send to mail the message.



If you choose File, Send Mail when no project is open, P3 automatically accesses your mail system so you can send a text message directly. To send project information, you must have that project open when you launch the Send Mail Wizard.

Receiving an Entire Project

In P3, you can receive an e-mail message without switching to your e-mail system and review and modify any P3 data included with those messages. If this message contains a backup of an entire P3 project, you can restore that backup by choosing File, Receive Mail.



If you restore the project to a folder that contains another version of the project, or a different project with the same name, you must choose whether to overwrite the existing project.

For more information about how P3 backs up projects, see the *Project Utilities* chapter.



P3 cannot restore a project if that project is currently open. Close the project before restoring it.

Starting Primavera Post Office

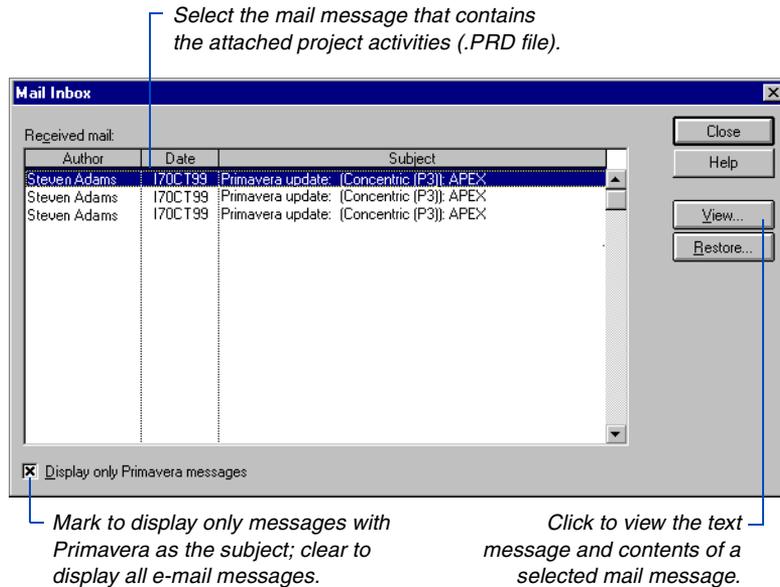
Use Primavera Post Office to update or edit project information attached to a mail message. You can access Primavera Post Office using one of three different methods: P3's Receive Mail feature, an external e-mail system, or independently.

- To launch Primavera Post Office in Receive Mail, click View in the Mail Inbox.
 - To launch Primavera Post Office from your mail system, open the P3 attachment.
 - To launch Primavera Post Office independently, access PRMMAIL.EXE. Once you start the program, you can open any mail text or attachment that has been copied to your local or network drive. From Primavera Post Office, choose File, Open, then select any file with a .PRD extension.
-

Receiving an Activity Status Sheet for Updating

P3 allows you to receive e-mail messages directly, without switching to your e-mail system. You can then update any activity data the message contains, and send these data to the author or any other person.

Choose File, Receive Mail, and start your e-mail system.



Primavera Post Office is fully compatible with Excel's copy and paste features; you can copy all fields in Primavera Post Office as text fields.

P3 provides two status sheets for receiving activity information through e-mail: Standard and Custom. The author of an e-mail message determines the status sheet you receive.

Updating activity data in the Standard status sheet Use the Standard status sheet to update activity information and either merge it into your project or return it to the person who sent the mail message. You cannot edit status sheet columns that appear gray. Once an activity starts, you can update the Start Date and Finished? columns for that activity; when an activity is marked finished, you can edit the Finish Date column. If an activity is marked finished, P3 automatically enters a value of 0 for the activity's remaining duration or 100 for percent complete.

For more information about merging updated activities into your project, see *Merge Activities to Update Project Information* in P3 Help.

Mark to indicate that an activity has started.

Enter the date the activity started.

Indicates the date through which activities should be updated

Description	Started?	Start Date	Finished?	Finish Date	Remaining Duration	Expected Finish
Define System Requirements	<input checked="" type="checkbox"/>	07/20/99	<input checked="" type="checkbox"/>	08/04/99	0	
System Design	<input checked="" type="checkbox"/>	08/03/99	<input checked="" type="checkbox"/>	08/31/99	0	
Approve System Design	<input checked="" type="checkbox"/>	08/31/99	<input checked="" type="checkbox"/>	09/13/99	0	
Install Robot Base	<input checked="" type="checkbox"/>	09/29/99	<input type="checkbox"/>		18	10/07/99
Run Sealant, Air, and Water Pipin	<input type="checkbox"/>		<input type="checkbox"/>		13	
Install Temperature Control Equip	<input type="checkbox"/>		<input type="checkbox"/>		20	
Set & Connect Robots	<input type="checkbox"/>		<input type="checkbox"/>		18	
Install System & Misc. Componen	<input type="checkbox"/>		<input type="checkbox"/>		30	

Mark to indicate an activity has finished.

Enter the date an activity finishes.

You can also status by indicating an Expected Finish date for an activity; this adds the Expected Finish (XF) constraint to the activity in P3.

Printing a status sheet You can print the information sent to you in the status sheet, including column headings, grid lines and borders, activity data, and resource data by clicking Print.

Select the page orientation for the printed status sheet.

Mark the status sheet elements from the status sheet that you want to print.

Click to include a header or footer containing data items you select, such as the project title and date, or type free-form text to appear on the printed status sheet.

Updating a Custom status sheet The Custom status sheet enables you to view and edit activity or resource data. The person who composes the e-mail message determines the items the Custom status sheet contains and whether recipient(s) can edit them.

The originator of this message made this column read only.

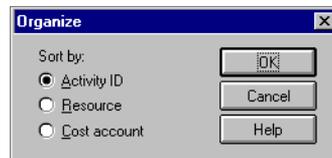
Activity ID	Activity description	Actual start	Actual finish	Original duration	Remain
AS100	Define System Requirements	07/20/99	08/04/99	10	
AS101	System Design	08/03/99	08/31/99	20	
AS102	Approve System Design	08/31/99	09/13/99	10	
AS103	Install Robot Base			18	
AS104	Run Sealant, Air, and Water Piping			13	
AS105	Install Temperature Control Equipment			20	
AS106	Set & Connect Robots			18	
AS107	Install System & Misc. Components			30	
AS108	Install System Controller			16	
AS109	Test & Debug Line A			24	
AS110	Test & Debug Line B			24	
AS111	Pilot Start Line A			1	
AS112	Start-Up Line B			1	
AS113	Install Processor/Software/Data Tapes			2	
AS114	Calibrate Robot Controller & Power Up			1	
AS115	Load System Software			20	
AS116	Program			15	
AS117	Startup Procedure Development			3	

Recipients can update information in these columns.

For more information about customizing the activities you send through e-mail, refer to the *Customizing the Status Sheet* section earlier in this chapter.

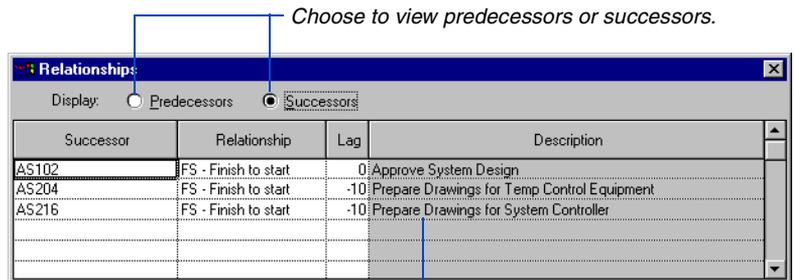
Add activities to the Custom status sheet If you want to add an activity from your project to the Custom status sheet, choose Insert, Activity, and type the activity ID. Type the activity information, and close the Custom status sheet. You can forward the new information in a mail message to be merged into the project.

View resource information in the Custom status sheet Choose View, Resource Data, to view resource data contained in the Custom status sheet. When viewing resource data, organize the activities in the Custom status sheet by activity ID, resource, or cost account. To sort the activities, choose View, Organize, and select the option you want to use.



View relationships and logs in the Custom status sheet If the person who sent the mail message chose to include relationship or log information for the activities, you can view that information in separate dialog boxes.

- Choose View, Relationships, to view the currently selected activity's predecessors or successors in a separate window. To view the relationships for a different activity, select it in Primavera Post Office; P3 automatically updates the activity information in the Relationships window.



A description is available for each predecessor or successor activity only if the data file contains both relationship and activity description information.

- Choose View, Log Data, to review log information for an activity. This option is not available if log information was not sent with the activities.

View the text sent with the mail message In Primavera Post Office, choose View, Message, to display any text message included in the main body of the mail item; you cannot edit this message.

View data copied into the body of the mail message Some Internet gateways copy attachments to the body of the mail message. To update activities sent in attachments that were moved into the body of the message, copy the mail message to your local or network drive and append .PRD to the file extension, then run Primavera Post Office and update the activities.

Access Rights

To use certain options in P3, you must be the project owner, a privileged user, or have access rights to the project. The project owner grants these access rights. Restrictions can limit you to a specific set of activities or prevent you from performing various functions in P3, such as editing activity data and scheduling. To protect project data from unauthorized changes, P3's Send Mail and Receive Mail features use the access rights established for the project.

Send Mail restrictions

- **Filter restriction.** You cannot send a compressed backup of an entire project or use filters to select the activities you want to send using e-mail.
- **View Resource Dictionary restriction.** You cannot send a compressed backup of an entire project. Any attempt to send resource information will be ignored; P3 sends only activity data in the mail message.

Receive Mail restrictions

- **Import, Edit activity data restrictions, or Read Only.** You cannot merge data from a mail attachment into your project.
- **Add and delete activities, filter restrictions.** You cannot add activities to the project; output files are marked to indicate each activity in the mail message that is not in the current project.
- **Modify relationships restriction.** You cannot add or modify relationships.

Presentation and Analysis

In this part:

Customizing Bar Chart Layouts

Grouping and Sorting Layouts

Using Filters to Select Activities and Projects

Summarizing Data

Customizing PERT Layouts

Customizing Resource/Cost Profiles and Tables

Printing Layouts

Once the schedule is established you will want to present it in concise, attractive, informative ways.

This part discusses how to format and organize data to create striking, information-packed onscreen displays and how to print it. Create Bar chart layouts with optional resource/cost graphics curves and histograms. Create PERT layouts to clearly illustrate the logic of your network while still presenting detailed data about each activity. Tailor each type of presentation to your exact needs by customizing the colors and shapes used to identify various parts of the project. You can group, sort, and select the activities to include in any representation of the project. You can also summarize the project at any level of organization to create executive-level presentations. This part also explains how to set up and print layouts.

Customizing Bar Chart Layouts

In this chapter:

Adding, Deleting, and Inserting Columns

Changing Column Titles and Data

Sizing Columns and Rows

Adjusting the Timescale

Adding Bars

Formatting All Bars in the Layout

Formatting Individual Bars

Modifying Endpoint Shapes and Colors

Showing Data on Bars

Showing Progress on Bars

Highlighting Critical Activities

Highlighting Bars by Code

Formatting Sight Lines

Customizing Fonts

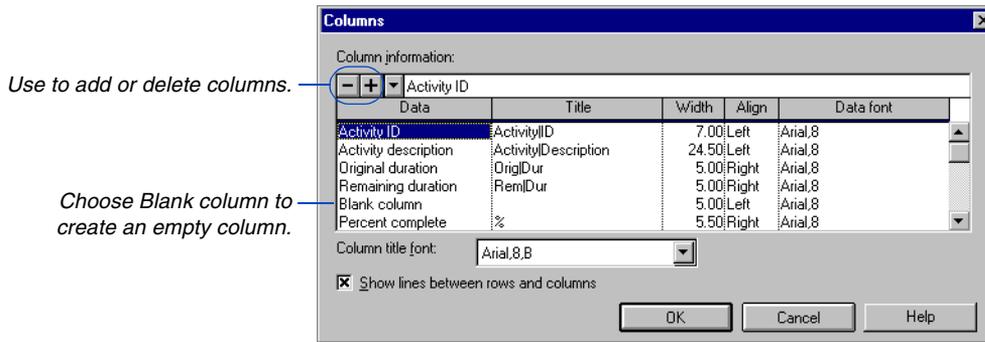
Changing Screen Colors

A Bar chart layout combines a columnar table with a timescaled bar chart. Read this chapter to learn how to control columns, configure activity bars, and adjust other elements of the Bar chart. You can customize both the content and the appearance of the Bar chart and save your preferences as part of a layout.

Adding, Deleting, and Inserting Columns



The columns on the left side of the Bar chart list activity data using rows and columns. Each row contains a different activity and each column displays a specific data item. Create as many columns as you need using the Data column in the Columns dialog box. Display schedule data, activity codes, WBS codes, custom data items, and resource/cost data. To modify columns, choose Format, Columns.



Add a column to the end of the list Scroll to the bottom of the data items listed and click the next empty row. Right-click and select the data item that you want to appear in the column. P3 enters a default title, width, alignment, and font value, which you can change. The sequence of columns is the same as their order in the list.

Insert or delete a column Select an existing item in the Data column. Click  to add a new column above the one you selected.

To delete a column, select it in the Data column and click . P3 deletes the data column and moves up all succeeding columns.

For more information on target projects, see the *Targets and Progress* chapter.

Display target data You can also display target data in columns, provided a target plan has been assigned to the project. To designate a target plan, choose Tools, Project Utilities, Targets, and enter a project name as Target 1 or 2.

Display resources and cost accounts If activities are not grouped by resource and you include resources in columns, P3 displays all the resources assigned to each activity in the Resource column. P3 summarizes corresponding cost values if you also include a cost column in the layout.

You can also view the individual cost accounts assigned to each activity using Cost Account (11) or Cost Account (12) as a column. To focus on specific resource assignments for an activity, group activities by resource. Choose Format, Organize, to group activities by a specific data item.

Display relationships You can show individual predecessor and successor activity IDs for each activity in columns. An asterisk precedes each driving predecessor/successor.



You cannot edit resource, cost, or relationship data shown in columns.

Changing Column Titles and Data

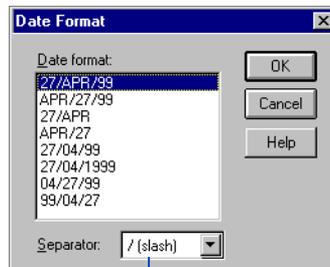


Choose Format, Columns to customize the columns to show only the information you want. You can modify the font, title, width, and alignment for each column.

To change the colors of data columns and titles, choose Format, Screen Colors.

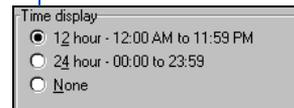
Insert line breaks in column titles The “pipe” character (|) between words in the Title column indicates a line break for stacked titles (use Shift+| to enter this character). For example, type Activity|Description in the Title column to use two lines for this title. Place the separator in front of the text to leave a blank line before the column title; enter it after the last line of text to leave space between the title and the first row of data.

Format dates P3 normally displays dates using a DayMonthYear format, such as 31JAN99. You can rearrange this format or use a format that includes a separator, such as 1/31/99. Choose Format, Dates.



Place a separator, such as a slash, between date information.

In hourly projects, you can also specify a format for time.



P3 uses the specified format in all areas of the project, except in printed reports and graphics, where it always uses a DayMonthYear format.

Format numbers Choose View, Thousands Separators to display a comma as a separator for numbers above 999 (for example 1,000) in the Bar chart. To remove the separator, choose this command again. Numbers that appear in tabular reports and graphics do not show a thousands separator.

Format columns To quickly change the format of one or two columns, right-click the column title (or double-click it) and make adjustments. You can change the data, title, width, alignment, or font.

Double-click a column title to make quick changes.

The screenshot shows the Primavera Project Planner interface. A Gantt chart is visible on the right, showing project activities from July to September 1999. A dialog box titled "Column Information" is open, showing settings for the "Activity description" column. The dialog has fields for Data, Title, Width, Alignment, and Data font.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start	Early Finish	Resource	Budgeted Cost
BA400	Design Building Addition	20	0	100	19JUL99A	17AUG99A	DES ENG	9,600.00
AS100	Define System Requirements	10	0	100	20JUL99A	04AUG99A	ANALYST	4,960.00
AS101	System Design	20	0	100	03AUG99A	31AUG99A	DES ENG	16,640.00
AS204	Prepare Drawings for Temp	10	0	100	17AUG99A	31AUG99A	ATM ENG	2,640.00
BA501	Review and Approve Designs	14	0	100	18AUG99A	08SEP99A	DES ENG	1,680.00
		10	5	50	23AUG99A	01OCT99	ATM ENG	2,376.00
		10	0	100	31AUG99A	13SEP99A	PRG MGR	1,873.00
		5	0	100	31AUG99A	13SEP99A	ATM ENG	2,826.00
		5	0	100	07SEP99A	15SEP99A	ACCTS, ATM	1,168.00
		20	10	50	13SEP99A	08OCT99	EXCAVATR	20,640.00
		0	0	100	13SEP99A			0.00
		10	2	80	14SEP99A	28SEP99	FLD ENG3	680.00
		0	0	100	14SEP99A			0.00
		10	5	50	20SEP99A	01OCT99		0.00
AS201	Review bids for Temp Control	2	0	100	20SEP99A	21SEP99A	PRG MGR	329.90
AS206	Fabricate & Deliver Temp	20	15	25	21SEP99A	26OCT99	VENDOR	3,500.00
AS202	Award Contract for Temp	1	0	100	21SEP99A	21SEP99A	ACCTS	32.00
BA469	Assemble Technical Data for	3	3	0	27SEP99	29SEP99	DES ENG	540.00
BA480	Assemble and Submit Flooring	10	10	0	27SEP99	08OCT99		0.00
BA475	Review Technical Data on Heat	10	10	0	27SEP99	08OCT99	DES ENG	600.00
AS430	System Requirements Specs	0	0	0	27SEP99			0.00
AS315	Install Electrical Power	24	24	0	29SEP99	01NOV99	ELECTRCN	12,288.00

To modify several columns, choose Format, Columns.

Change the width, alignment, or font for data in each column.

The screenshot shows the "Columns" dialog box. It has a list of data items on the left and a table of column settings on the right. The "Data" column is selected. The table has columns for Title, Width, Align, and Data font. The "Data" column title is circled, and a note points to it.

Data	Title	Width	Align	Data font
Activity ID	ActivityID	8.33	Left	Arial,8
Activity description	ActivityIDescription	26.00	Left	Arial,8
Original duration	OrigIDur	5.00	Right	Arial,8
Remaining duration	RemIDur	5.00	Right	Arial,8
Percent complete	%	6.33	Right	Arial,8
Early start	EarlyStart	11.50	Left	Arial,8

Select data items for the columns.

All column titles use the font selected here.

Text in this column identifies the data; P3 displays it at the top of the columns.

Sizing Columns and Rows

P3 automatically sizes columns and rows based on the data items you select and how you format them. However, you can override automatic sizing by adjusting columns or rows directly in the columns or by using the Columns or Row Height command in the Format menu.

Size columns directly Point to the vertical line on the right side of the column title. When the cursor changes to \leftrightarrow , drag the line to the left or right to adjust the width. P3 automatically wraps data if you decrease column width and sometimes data may be truncated.

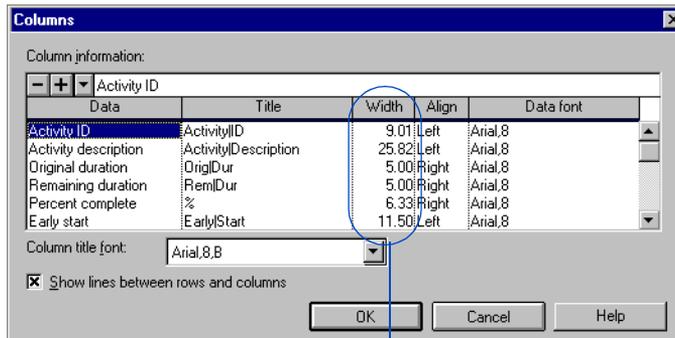
Column Width:19.63			
Activity Description	Orig Dur	Rem Dur	
Design Building	20	0	
Define System	10	0	
System Design	20	0	
Prepare Drawings for	10	0	
Review and Approve	14	0	

P3 displays the exact character width as you drag the column.

Hide a column by dragging the vertical line all the way to the left which sets the width to zero. To redisplay the column, choose Format, Columns and change the width in the Columns dialog box.



Size columns from the Columns dialog box Choose Format, Columns and specify an exact width for columns. To change one or two columns quickly, double-click the column title in the Bar chart.



Enter an exact width for each column.

Size individual rows Click the horizontal grid line in the bottom left corner of the first column, then drag the mouse until the row reaches the size you want.

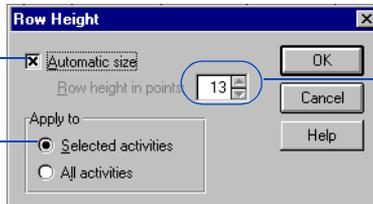
BA501	Review and Approve Designs	14
BA530	Review and Approve Brick Samples	10
BA530A	Review and Approve Brick Samples	10
BA470	Review Technical Data on Heat Pumps	19

Row Height:35

Click the bottom-row grid line and drag it up or down to adjust row height.



Size several or all rows P3 automatically sizes each activity row. You can control the exact row height by turning off the automatic sizing feature and specifying a number of points in the Row Height dialog box. To resize several rows or all rows, choose Format, Row Height.



Mark to have P3 determine row height.

To apply a fixed row height to specific activities, select them in the columns first, then choose this option.

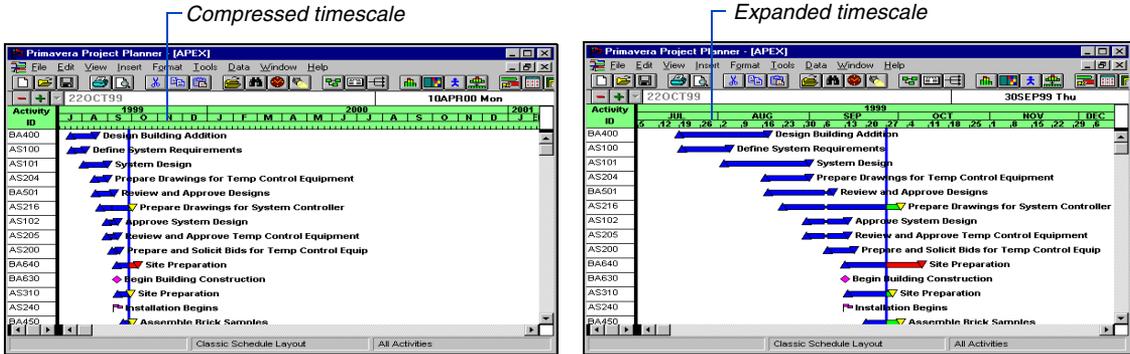
To set row height, clear the Automatic Size checkbox, then type a row height.



When you adjust row height for columns, remember that P3 also modifies the row height in the Bar area. If you decrease the row height, check that the activity bar and any text on the bar are entirely visible.

Adjusting the Timescale

The timescale appears along the top of the bars side of the Bar chart. You can narrow the timescale to a specific timeframe and control the size of activity bars by compressing or expanding the timescale.



To change the timescale, double-click anywhere on the timescale or choose Format, Timescale.

The screenshot shows the 'Timescale Definition' dialog box. It contains several settings for configuring the timescale:

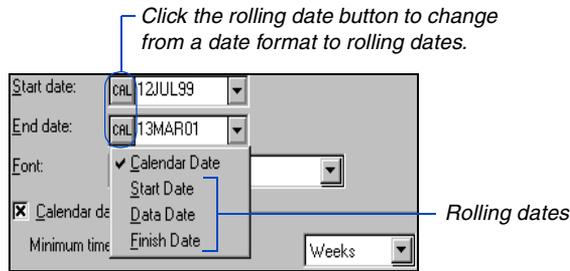
- Density:** A scroll box for adjusting the width of the timescale bars.
- Start date:** Set to 'SD -2W'.
- End date:** Set to 'FD +1M'.
- Font:** Set to 'Arial,8,B'.
- Calendar dates:** A checked checkbox.
- Minimum time unit:** Set to 'Days'.
- Show fiscal years:** A checked checkbox with 'Start month' set to 'October'.
- Show manufacturing weeks:** An unchecked checkbox.
- Show day of week:** An unchecked checkbox.
- Ordinal dates:** A checked checkbox.
- Unit:** Set to 'Days'.
- Ordinal start:** Set to 'CRL 03/JAN00'.

 At the bottom are 'OK', 'Cancel', and 'Help' buttons.

When you choose calendar dates, you can display fiscal years, manufacturing weeks, days of the week or a combination of these choices, depending on the minimum time unit you specify.

Drag the scroll box left to compress the timescale or right to expand it.

Define timescale dates The timescale start and end dates determine the first and the last timeperiods that appear in the bars side of the Bar chart. Modify the start and end dates to narrow or widen the timescale.



Rolling dates enable you to set the timescale once. As you record progress and the data date moves forward in time, the timeframe displayed also changes automatically.

Use rolling dates Click the appropriate rolling date button in the Start and End Date field.

If you choose Enter

Start date +	A positive or negative number followed by the duration unit (h for hours, d for days, w for weeks, m for months, y for years).
Data date +	
Finish date +	For example, FD+1M ends the timescale 1 month after the project completion date.

Use this format throughout P3 whenever you see the rolling date button.

To change the timescale colors, choose Format, Screen Colors.

Label the timescale P3 labels the timescale using a combination of three increments of time, such as weeks, months, or years. You can specify a minimum time unit for calendar dates or ordinal dates. If space is insufficient to label the minimum time increment, P3 displays hash marks instead.

Display ordinal dates Ordinal dates are useful when you are planning or bidding a project and don't know specific dates. Mark the Ordinal Dates checkbox to use sequential numbers (Day 1, Week 1, Month 1) instead of calendar dates on the timescale. Choose a time unit and start date.

FY99											
JUL			AUG				SEP				
1	1	2	3	4	5	6	7	8	9	10	11

Ordinal dates include nonworktime or holidays. Ordinal dates that precede the project start date display a negative number.

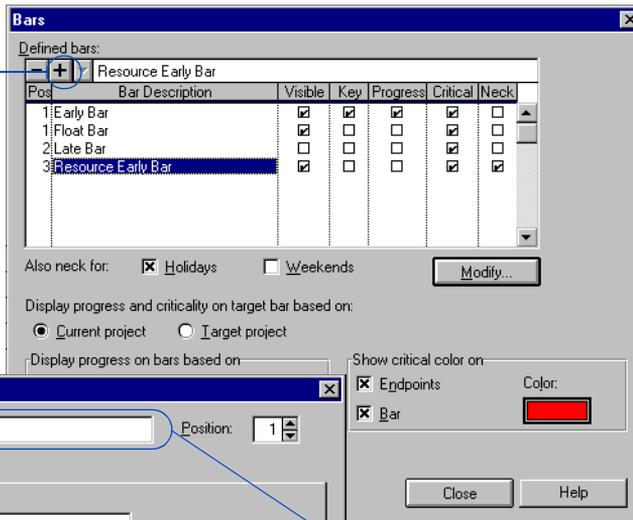
Adding Bars

A bar represents schedule dates for an activity. P3 provides some default schedule bars, including an Early, Late, Float, and Resource bar. You can also define new bars that show other information, such as target dates or custom data item dates as bars in the Bar chart layout.

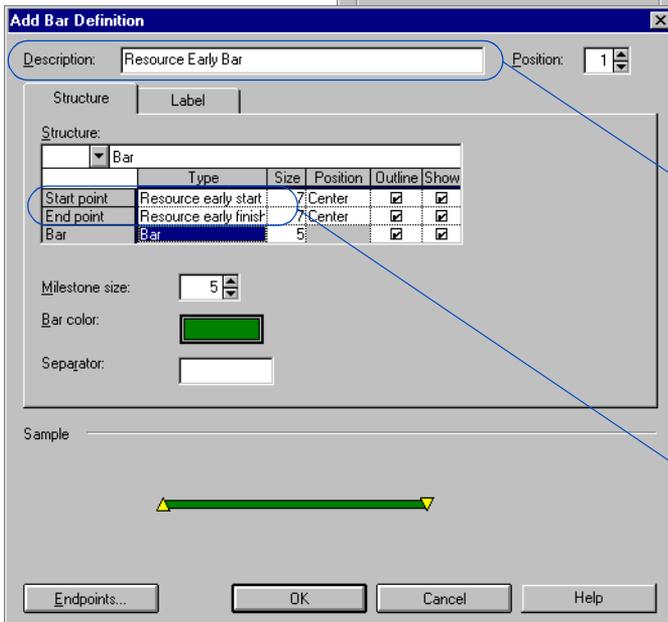


Add an activity bar Choose Format, Bars.

1 To add a bar, click here.



2 Enter a description for the bar.



3 Define a bar by specifying when it should start (Start point) and when it should end (End point).

Choose from a list of start and finish schedule dates for either the current or target schedule. The bar can be represented as a solid line, dashed line, dotted line, or bar.

Formatting All Bars in the Layout



You can configure the size, format, color, and other elements of individual bars, a group of bars, or all activity bars included in the layout. You can also show one or more bars for each activity. Choose Format, Bars to set attributes for all bars in a layout; the Bars dialog box lists the defined bars and their positions for the current layout. Define a standard set of bars for your project and then choose the bars you want to show by marking the Visible checkbox.

Mark or clear a checkbox to show or hide a bar.

Specifies the bar used for summaries when more than one bar is shown.

Indicates the bar position within the activity row.

Pos	Bar Description	Visible	Key	Progress	Critical	Neck
1	Early Bar	<input checked="" type="checkbox"/>				
1	Float Bar	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	Late Bar	<input type="checkbox"/>				
3	Resource Early Bar	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Specify the bar position When you define more than one bar for each activity, use the Pos (Position) column to assign position numbers that determine their placement. Show bars on the same line by assigning the same position number, align them close together by using consecutive position numbers, or spread out bars for each activity by skipping numbers.

Display progress, criticality, or nonworktime on bars Mark the Progress, Critical, or Neck checkboxes to specify whether a bar shows these elements.

For details, see [Showing Progress on Bars](#) later in this chapter.

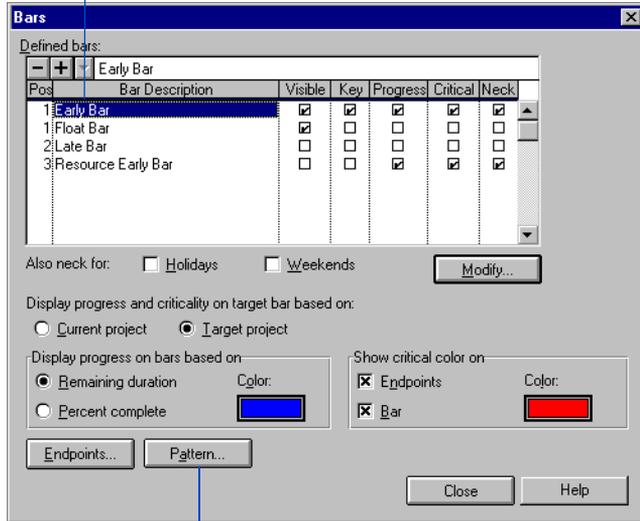
When specifying progress, choose whether to have P3 display progress based on percent complete or remaining duration, and a color to indicate progress on bars.

For details, see [Highlighting Critical Activities](#) later in this chapter.

When specifying critical activities, you can choose a critical color (the default is red) and specify whether the critical color appears on bars, endpoints, or both.

Mark the Neck checkbox to show nonworktime as a neck in the bar. Nonworktime includes suspend/resume dates, out-of-sequence progress, and optionally, holidays and weekends. To view all nonworktime, including holidays and weekends, mark the Holidays and Weekends checkboxes.

To further customize a bar, double-click it or select it and click Modify.



Click to highlight specific activity groups with colors and/or patterns.

Modify size and position of bars and endpoints To further customize bars, click Modify. You can change the size and position of the endpoints and bar. Clear the Show checkbox for the Start Point and End Point to display only an activity bar, or clear the Show checkbox for the Bar and show only endpoints to emphasize a particular date.

Modify Bar Definition

Description: Early Bar Position: 1

Structure: Early start

Type	Size	Position	Outline	Show
Start point	7	Center	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
End point	7	Center	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bar	6		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Milestone size: 7

Bar color:

Separator:

Sample:
▲
▼
 Activity description
Log record 1

Buttons: Endpoints... OK Cancel Help

Use these columns to customize bars and endpoints.

Right-click in this cell to choose a format for the activity bar.

Select the bar color.

Shows a sample of the bar as you make changes.

Formatting Individual Bars

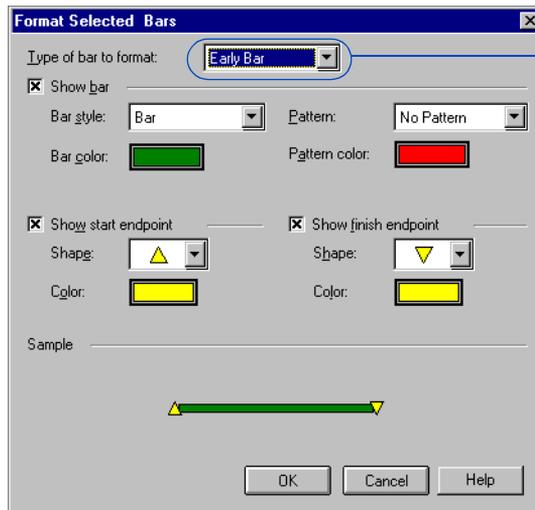
The basic attributes for the bars in a layout are used as the default settings for any activities you add to the project. You can modify the attributes of individual bars, for example, to distinguish a particular group of bars using different endpoints or colors, or to call out individual bars using a different pattern.



If you modify the attributes for a bar that shows progress or identifies a critical activity, the attributes set up to show progress/criticality will overlay the attributes established for the individual bar.

When you format individual bars, you can change the bar type, color, pattern, start and finish endpoint shape, and milestone/flag shape.

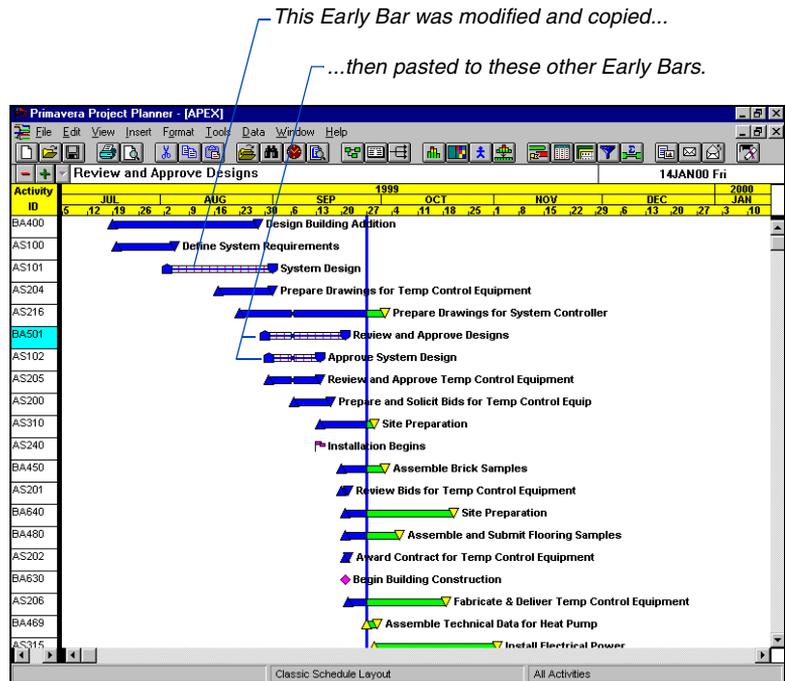
Set attributes for individual bars Select activities in columns for the bar(s) you want to modify, and choose Format, Selected Bars, Modify Bar Format. Change any of the format settings by selecting from the drop-down lists for Bar Style, Pattern, or Shape; click any of the Color blocks to select a different color from the color palette. Click OK to apply your changes to the selected bar(s).



The bar types previously defined in the Bars dialog box for the entire layout are available for selection.

The selected bar you are copying must have the same bar type as the bars to which you are pasting the bar format. For example, if you select the Early Bar as the Bar Type for the bar you are copying, you can only paste that bar format to other Early Bars in the layout.

Apply a bar format to other bars You may want to set up attributes for one bar to be used as a template for other bars in a layout. The following example uses a specific bar format for design-related activities. Right-click the bar and choose Format Selected Bars, Copy Bar Format. In the Activity columns, select the activities to which you want to apply the copied attributes, then right-click and choose Format Selected Bars, Paste Bar Format. Select a bar type to paste for the selected bars (if you copied more than one bar type), then click Paste.



Revert to the original formatting If you want to use the original settings for the bar types in a layout, select the bars you want to change, then choose Format, Selected Bars, Use Default Bar Format. If you have selected more than one bar, from the drop-down list in the Default Bar Format dialog box, select the bar type or All Bars to apply the default bar format to, then click OK.

Modifying Endpoint Shapes and Colors

You can specify different symbols for bar endpoints, milestones, flags, and custom data items stored as dates. Customize endpoints for the current and target schedules. These settings apply to all bars in the current layout. P3 saves the endpoint configuration as part of the layout.

Specify the start and end point size, position, and style.

Type	Size	Position	Outline	Show
Start point	Early start	7	Center	<input checked="" type="checkbox"/>
End point	Early finish	7	Center	<input checked="" type="checkbox"/>
Bar	Bar	6		<input checked="" type="checkbox"/>

If you show more than one data item in the same position, enter separators, such as a slash, a hyphen, or spaces.

Click to select a shape and color for endpoints, milestones, flags, and custom data items.

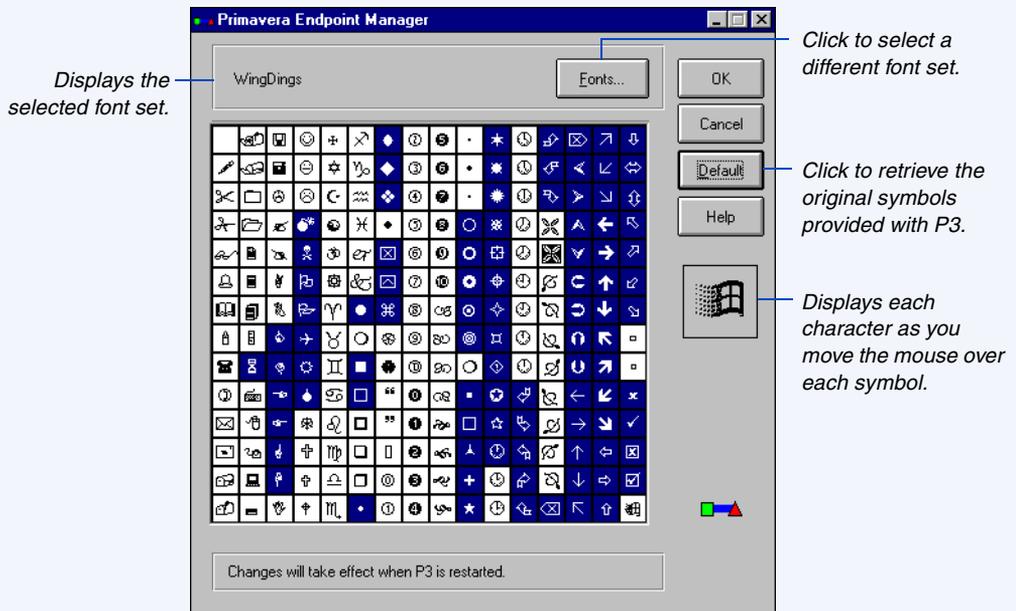
Select an endpoint by clicking it; select several at once by dragging the mouse over them.

Choose a shape for selected endpoints.

Using the Endpoint Manager

P3 provides a standard set of endpoints that contains 24 basic shapes and 94 symbols from the WingDings TrueType font set. However, you can use the Primavera Endpoint Manager application (installed during P3 Setup) to add to the standard set of shapes and symbols provided in the Shape field of P3's Endpoints dialog box.

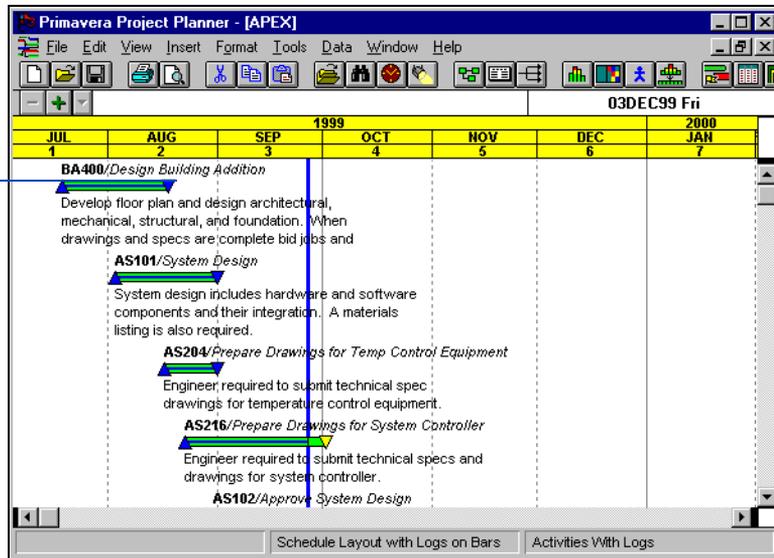
Start the Endpoint Manager from the Primavera programs group. Click Fonts to display any TrueType font set that is available on your computer. Drag the mouse across the symbols you want to use as endpoints in P3. Click OK. The next time you start P3, the selected symbols are available in the drop-down list in the Shape field.



Showing Data on Bars

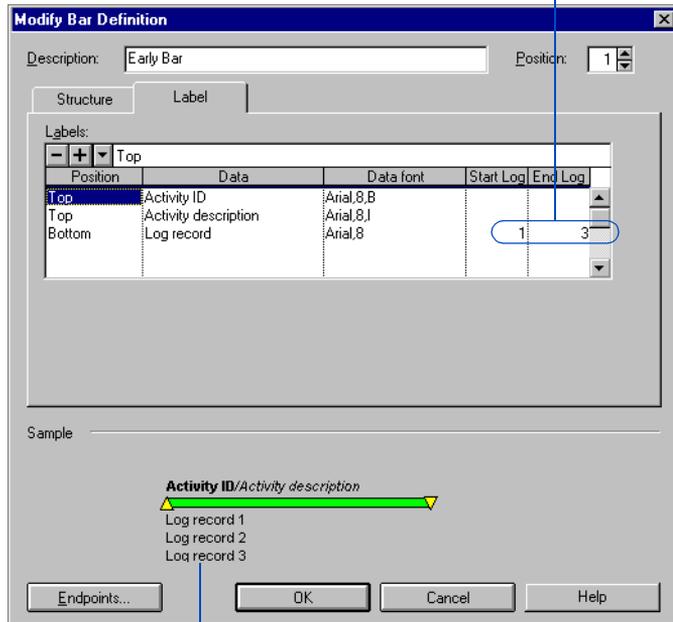
Some data items can be shown directly on activity bars for reference, including the activity ID, description, cost data, schedule dates, resource dates, duration, float value, and log information.

Each activity bar shows the activity ID, description, and log information.



Use the Label tab from the Modify Bar Definition dialog box (choose Format, Bars, then click the Label tab) to specify the data items you want to show. Click  in the Text section to add a data item to the bar. Use the Position column to specify where P3 places the data item relative to the bar.

If you show log records, specify a range to display. Masked logs do not display on bars.

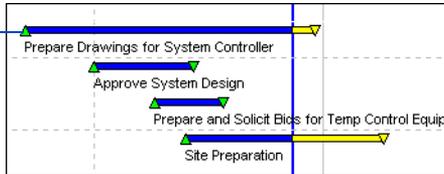


Preview the bar label positions as you make changes.

Showing Progress on Bars

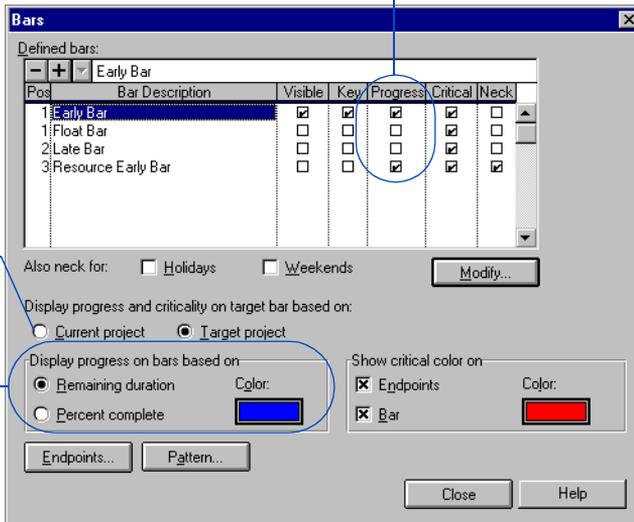
When reviewing activity progress, you may want to differentiate activities that have started or finished from future activities, separating progress from scheduled work. P3 indicates progress on an activity bar by coloring the appropriate portion of the bar.

P3 uses the color that you specify to indicate progress.



To show progress on activity bars, choose Format, Bars.

Double-click a checkbox to show progress for a bar.



When showing target bars, choose whether progress is based on the current or target project.

Choose whether to base progress on remaining duration or percent complete, then select a color to indicate progress.

P3 displays progress on bars only if the endpoints are from the same schedule.

When you base progress on remaining duration, the progress indicator extends from the actual start date of the activity to the point at which work on the remaining duration is scheduled to begin.

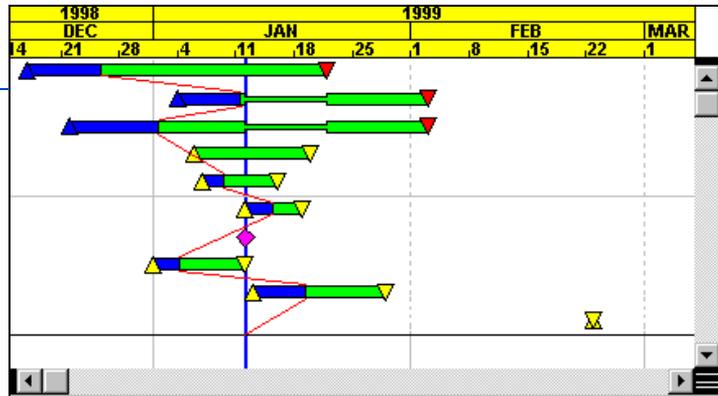
If you base progress on percent complete, the length of the progress indicator equals the product of percent complete times the overall length of the bar. The length of the bar includes nonworkperiods as well as workperiods; therefore, the percentage point is not necessarily the beginning of the remaining duration. This method enables you to show the percentage of the overall duration and the amount of work completed on an activity, rather than the time remaining.

If you have not established a target project, the Progress Line menu item is disabled.

Show progress in relation to the data date line The Progress Line traces progress on activities to see an overall picture of how a project is performing. You can choose to base the progress line on finish date variance or actual progress. Choose View, Progress Line, to display the progress line.

Click the Progress Line tab in the Sight Lines dialog box (choose Format, Sight Lines) to select line thickness, color, and progress option.

This example shows both progress on the bar and a progress line.

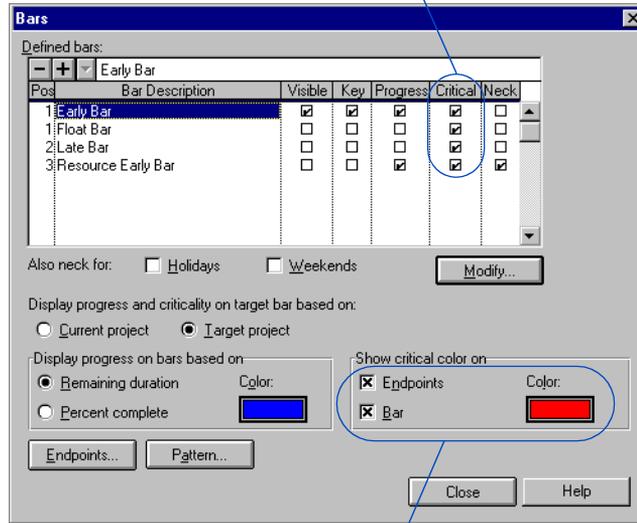


For more information about using the progress line, see the *Targets and Progress* chapter.

Highlighting Critical Activities

You can use color to distinguish critical activities from noncritical activities. Choose Format, Bars.

1 Double-click the checkbox for each bar where you want to show critical activities in the Bar chart layout.



2 Specify whether to show critical color on the bar, its endpoints, or both. Click the Color rectangle to select the color for critical activities.

Define critical activities P3 automatically defines a critical activity as any activity whose total float is zero or a negative value. To define critical activities based on a different float value, choose Tools, Options, Critical Activities.



Customize the critical path by choosing a cut-off value for total float other than zero.

If your project uses multiple calendars, you might want to define critical activities based on the longest path in the project. Defining float in a multicalendar project is more complicated since P3 bases float calculations on calendar definitions, including workperiods, holidays, and exceptions. Using float to identify critical activities may prove misleading since some activities may have large float values due to their calendar assignments, but still be critical to the completion of the project.

In a multicalendar project, P3 calculates the longest path by identifying the activities that have an early finish equal to the latest calculated early finish for the project. P3 identifies all driving relationships for these activities and traces them back to the project start date.

Highlighting Bars by Code

If the activities in your project have activity codes assigned to them, you can use different colors and patterns to distinguish activities by specific group, such as responsibility or phase. To specify highlighting by code on bars, choose Format, Bars, and then click Pattern.



If you define multiple bars, P3 can show highlighting for only one bar type at a time, such as early date bars or late date bars. Use the Key column in the Bars dialog box to indicate on which bar to show highlighting.

Click in each column to select a different color and/or pattern.

Click to fill in all values for the selected code with the default settings.

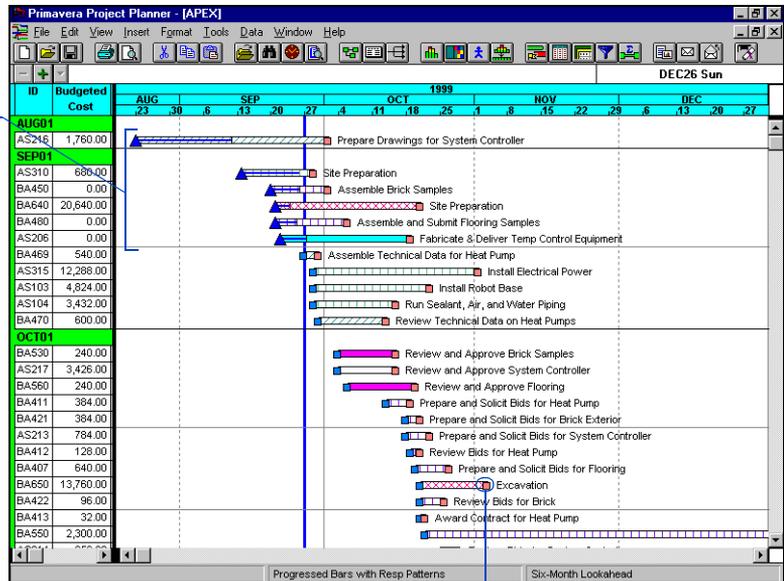
Click to remove all values from the list.

Select an activity code or ID code.

Code Value	Pattern	Pattern Color
ACME	Solid fill	[Color Swatch]
EVANS	Horizontal	[Color Swatch]
FOLEY	Vertical	[Color Swatch]
HARIS	Down diagonal	[Color Swatch]
MASON	Up diagonal	[Color Swatch]
MILLS	Crosshatch	[Color Swatch]
NOLAN	Diagonal crosshatch	[Color Swatch]
VENDR	Solid fill	[Color Swatch]

If you show a pattern in the bar, specify a bar size of five or more on the Modify Bar Definition dialog box, and choose white or another light color for the bar so the pattern is visible.

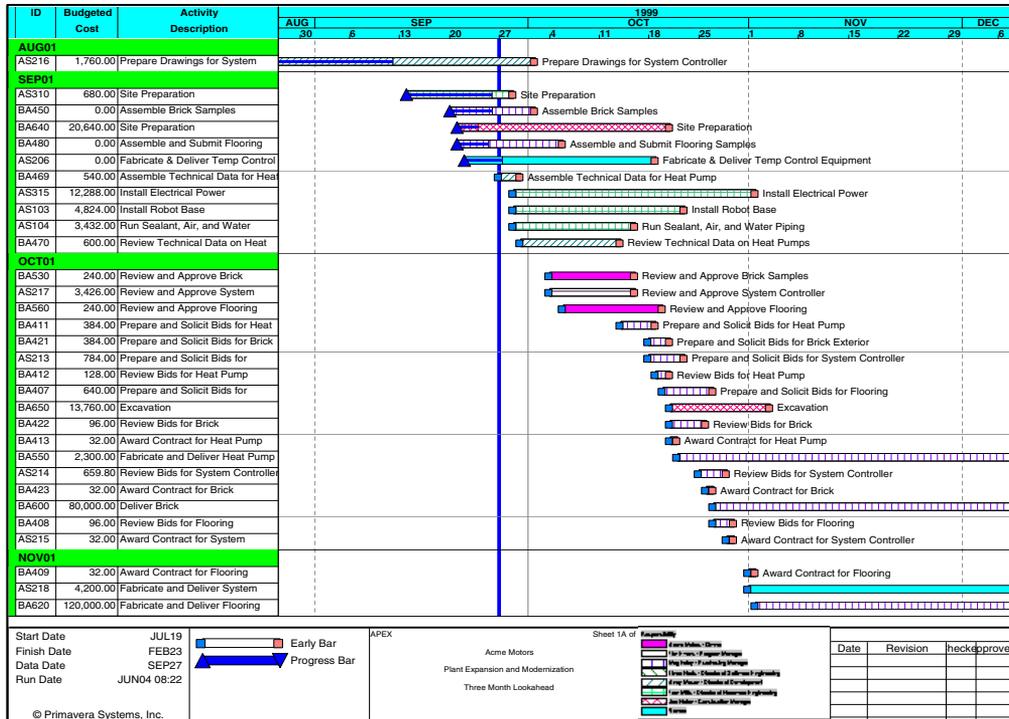
When you use color to identify critical or progressed activities, P3 colors the center of the bar; the remainder of the bar shows the highlighting by code color and pattern.



Endpoints, flags, and milestones are always filled with a solid color.

Show a legend for patterns and colors in the printed layout

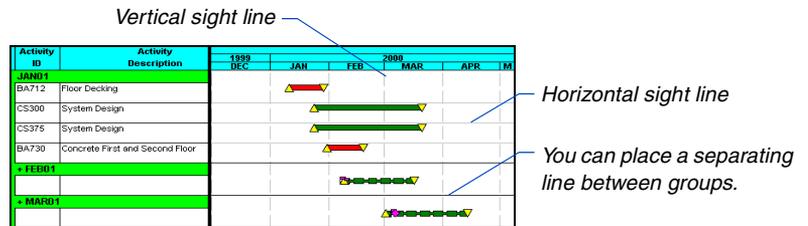
When you specify colors and patterns for codes, click Legend in the Pattern dialog box to save your specifications to a Windows metafile (.WMF extension). P3 names the legend using the project name followed by the layout number, such as APEX01.WMF, and saves it in your PROJECTS folder. Choose File, Page Setup, then click the Headers (or Footers) tab. Choose Logo from the data item list in the dialog box, then select the .WMF file you created. You can place the legend in any area of the header or footer.



Formatting Sight Lines

Sight lines in the Bar area help you trace bars to their position along the timescale (vertically) or to activity row data (horizontally). You can specify the location and style of major and minor horizontal and vertical sight lines.

To remove lines between columns and rows, choose **Format, Columns and clear the Show Lines Between Rows And Columns** checkbox.



To specify sight lines, choose **Format, Sight Lines**.



For more information about the data date and progress lines, see the *Targets and Progress* chapter.

For more information about printed layouts, see the *Printing Layouts* chapter.

Space horizontal sight lines according to the number of activities you want between lines. Type a 0 to turn off sight lines.

The 'Sight Lines' dialog box is shown with the 'Vertical Sight Lines' tab selected. It contains settings for Major and Minor sight lines. The Major sight lines section has a Type dropdown set to a solid line, a Color dropdown set to 'Light gray', and a Display section with a value of '1' and a unit of 'Months'. The Minor sight lines section has a Type dropdown set to a dashed line, a Color dropdown set to 'Dark gray', and a Display section with a value of '0' and a unit of 'Months'. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom.

Change the line type and color of sight lines.

Space vertical sight lines based on a specific number of time intervals in the timescale.

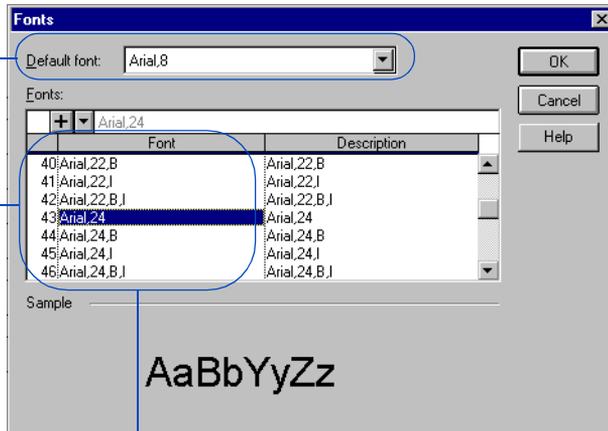
Customizing Fonts

P3 enables you to specify the appearance of text in your projects by defining the fonts available in a layout. The fonts you define become the selection from which you customize the different elements in the layout, such as the column titles and text, timescale, activity bar text, header and footer text for printed displays, and group titles for organized projects and activities.

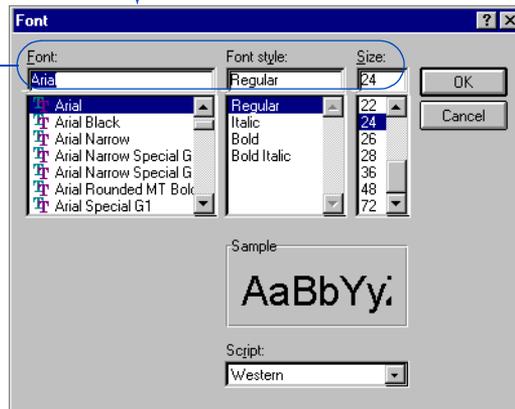
Add font definitions Choose Format, Fonts to list the font definitions delivered with the Classic Schedule Layout. These definitions use True Type fonts which print exactly as they appear onscreen. You can change these definitions or add to the list. Choose Format, Fonts.

P3 uses this font for column and bar data.

Right-click in this column to display the Font dialog box.



Select the font, style, and size. Click OK to add the font to the list of font definitions.





You can use any True Type font available on your computer to create font definitions.

P3 appends the new font definition to the list of existing font definitions.

Modify font definitions You can also modify the existing font definitions in the Font Definitions dialog box. However, if you change a font definition, all the text changes in the new assignment. For example, if you change a font from Arial 10 Bold to Times Roman 10 Italic in the Font Definitions dialog box, P3 changes all the text that was previously Arial 10 Bold to Times Roman 10 Italic. This feature is useful when you want to globally modify the font assignments in a layout.

Changing Screen Colors



P3 provides a set of color schemes for various screen elements in P3 layouts. To change colors in a layout, choose Format, Screen Colors.

Click to save the new color scheme and enter a name for it.

Click to select a different color scheme.

To change the background color for each screen element, click the area surrounding the word "Text" and select a color.

To select a different color for the text, click directly on the word "Text."

To change text and background colors of grouping bands, choose Format, Organize.

You can develop an unlimited number of color combinations and save them as color schemes. The color schemes are saved for each user, so they are available to you regardless of the layout or project you have open.



The P3 Defaults color scheme is the color scheme provided with the Classic Schedule Layout. You cannot overwrite the P3 Defaults color scheme.

Grouping and Sorting Layouts

In this chapter:

Sorting Activities

Grouping Activities into Bands

Formatting Group Title Bands

Page-Breaking by Groups

Outlining Activities by WBS Levels

Reorganizing Activities

Grouping Activities in PERT

P3 provides extensive grouping and sorting capabilities so you can view a project from many different perspectives. Sorting arranges activities in any order you select, such as by early start to view activities chronologically.

Grouping organizes activities or projects into categories that share a common attribute. For example, focus on activities by resource, responsibility, or date; focus on a particular aspect of a group of projects, such as phase or product. Or, for a hierarchical view of the project, outline the project by its work breakdown structure.

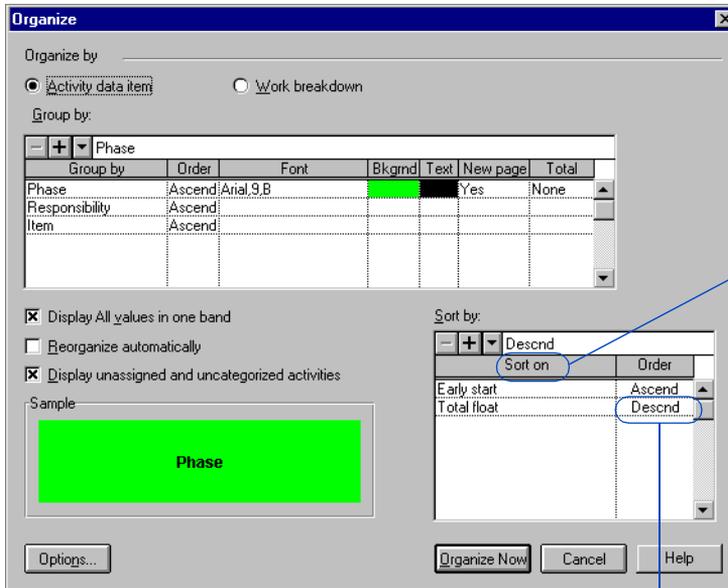
This chapter describes how to control the order of activities and how to organize them into meaningful groups.

Sorting Activities



Sorting determines the sequence P3 lists activities in the Bar chart. You can sort activities alphabetically, numerically, or chronologically, depending on the data item you choose. For example, sort by total float to see critical activities first. Or sort by percent complete in descending order to see completed or in progress activities at the top of the layout. If you do not define data items for sorting, P3 automatically sorts activities by activity ID.

Sort activities Choose Format, Organize. In the Sort By section of the dialog box, click **+** and select a data item for sorting activities.

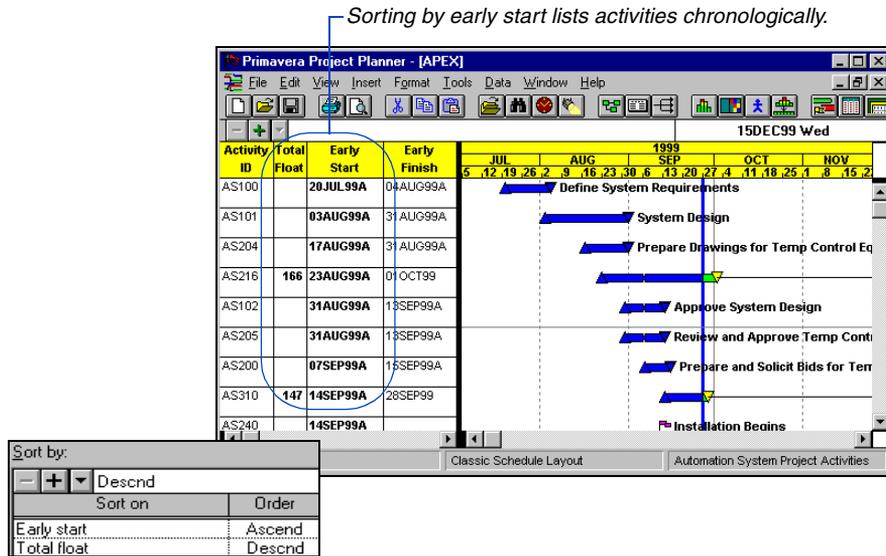


Select up to 20 data items (levels) by which you want to sort activities.

To sort from highest to lowest order, choose Descnd (descending) order.

P3 sorts in ascending (lowest to highest) order. To reverse the order, select the Order cell, click **▾** and choose Descnd (descending) order.

The following layout is sorted by early start and total float. If two activities are scheduled to start on the same day, P3 shows them in order of total float.



Use the following table as a guide for sorting activities.

Data Type	Ascending Order	Descending Order
Dates	Sorts chronologically, from earliest to latest dates.	Sorts chronologically, from latest to earliest dates.
Numbers	Sorts from largest negative number to largest positive number.	Sorts from largest positive number to largest negative number.
Codes* and Text	Sorts alphanumerically, from 0 to 9, and then A to Z.	Sorts alphanumerically, from Z to A, and then 9 to 0.

* For code values, P3 uses the order specified in the Activity Codes (or Project Codes) Dictionary first, then applies the alphanumeric sort.

Grouping Activities into Bands



Grouping activities (also called organizing or banding) enables you to focus on activities that have something in common. You can group activities by many different items, including activity and project codes, activity ID codes, activity type, calendar ID, cost account, cost account category, dates, resources, total float, WBS, and project. P3 displays a colored title band to distinguish each group.

For details on using the Work Breakdown option, see *Outlining Activities by WBS Levels* later in this chapter.

Group activities Choose Format, Organize. You can group activities by activity data item or work breakdown structure. This section shows grouping by activity data item.

Specify whether groups appear in ascending or descending order.

Organize

Organize by

Activity data item Work breakdown

Group by:

Group by	Order	Font	Bkgrnd	Text	New page	Total
Project		Arial,14,B			None	
Department	Ascend	Arial,12			None	
Responsibility	Ascend	Arial,9,B			None	

Select the data items for grouping.

Display All values in one band

Reorganize automatically

Display unassigned and uncategorized activities

Sample

Project

Mark to combine the selected data items together in one group band.

Mark this checkbox to show unclassified activities in the layout.

Sort by:

Sort on	Order
Early start	Ascend
Total float	Ascend

Options... Organize Now Cancel Help

Right-click in the Font, Bkgrnd, and Text columns to change the font and color of bands. These options are discussed in more detail later in this chapter. Use the Sample section to preview the settings for each band. To have P3 print each code value within a group on a separate page, choose Yes in the New Page column. To show subtotals above or below each group, choose Top or Bottom in the Total field.

For more details about subtotals, see the *Summarizing Data* chapter.

This layout is grouped by project, department, and responsibility.

Organize by

Activity data item Work breakdown

Group by:

- +

Group by	Order	Font
Project ID	Ascend	Arial,14,B
Department	Ascend	Arial,12,B
Responsibility	Ascend	Arial,9,B

Group by Dept, Resp with Subtotals All Activities

Combine group bands You can organize by multiple data items and then combine those items into one band to consolidate a layout. For example, combine the phase, responsibility, and area codes into one band. Choose Format, Organize, select the data items you want to group, then mark the Display All Values in One Band checkbox.

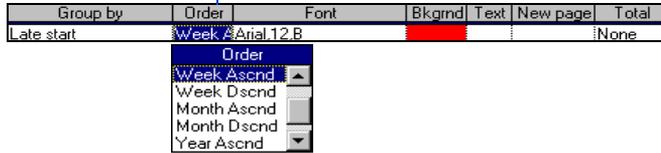
To navigate between combined bands, press the Ctrl+up/down arrow keys.

Activity ID	Orig Dur	Rem Dur	%	Early Start	Early Finish	Total Float	Resource	Budgeted Cost	Budgeted Quantity
Procurement Phase - Acme Motors - Owner									
BA530	10	10	0	04OCT99	15OCT99	29	DES ENG	240.00	8.00
BA560	10	10	0	11OCT99	22OCT99	109	DES ENG	240.00	8.00
Procurement Phase - Vendor									
AS206	20	15	25	21SEP99A	26OCT99	151	VENDOR	3,500.00	0.00
AS218	60	60	0	01NOV99	27JAN00	166	VENDOR	4,200.00	0.00
System Integration Phase I - Tom Mills - Director of Hardware									
AS310	10	2	80	14SEP99A	28SEP99	147	FLD ENG3	680.00	40.00
AS240	0	0	100	14SEP99A				0.00	0.00
AS315	24	24	0	29SEP99	01NOV99	147	ELECTRCN	12,288.00	384.00
AS103	18	18	0	29SEP99	22OCT99	153	FLD ENG1,	4,824.00	216.00
AS104	13	13	0	29SEP99	15OCT99	166	PLUMBER	3,432.00	104.00
AS105	20	20	0	02NOV99	01DEC99	147	FLD ENG1,	12,760.00	480.00
AS106	18	18	0	02DEC99	28DEC99	147	FLD ENG2,	4,104.00	216.00
AS107	30	30	0	29DEC99	09FEB00	147	HWSPEC,	8,160.00	480.00
AS109	24	24	0	10FEB00	15MAR00	147	FLD ENG1,	9,024.00	384.00

Combining data items enables you to focus simultaneously on activities with several classifications.

Group by date When you group by date, right-click in the Order column and select a time interval and order. You can group activities by early or late schedule dates to track activities that start or finish at the same time.

Specify the increment of time and order (ascending or descending).



You can group activities by hour (in hourly projects), day, week, month, or year. The following layout is sorted by week, in ascending order.

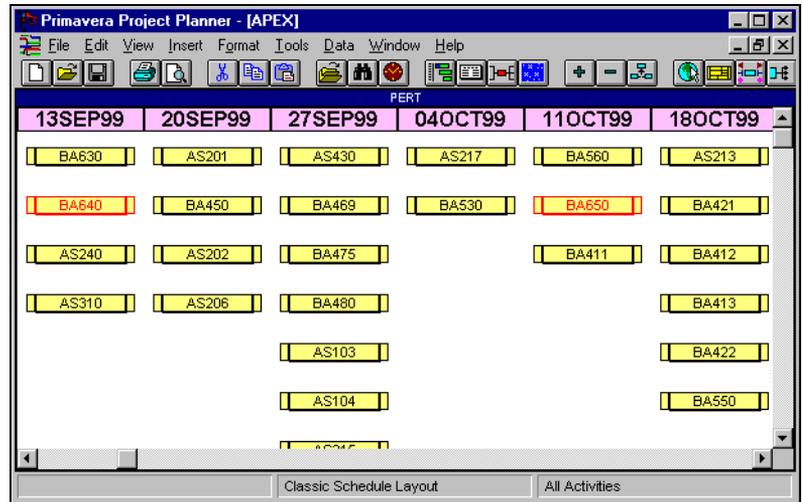
Activity ID	Activity Description	Total Float	Late Start	Late Finish
15NOV99				
BA681	Concrete Foundation	0	15NOV99	30NOV99
29NOV99				
BA690	Form and Pour Slab	0	01DEC99	07DEC99
AS106	Set & Connect Robots	147	03JUL00	27JUL00
06DEC99				
BA700	Backfill and Compact	0	08DEC99	09DEC99
BA701	Foundation Phase	0		09DEC99
BA702	Begin Structural Phase	0	10DEC99	
BA710	Erect Structural Frame	0	10DEC99	10JAN00
27DEC99				
AS107	Install System & Misc.	147	28JUL00	08SEP00

When grouping by week, P3 uses the date for the start day of the week (defined in the Global calendar) as the group title.

Grouping PERT by Start Date

Timescaled PERT is another way to organize activities by date. You may prefer this graphical representation in which P3 vertically positions all activities scheduled to start below the applicable daily, weekly, or monthly time intervals. From the Bar chart, choose View, PERT; then from PERT, choose Format, Organize, click the Arrangement tab, and choose the PERT Layout with Timescale option. P3 displays activities with the horizontal axis arranged by early/actual start date, ascending only. You can choose the colors for the timescale band and text and the text font, and you can indicate whether to reorganize the layout automatically after scheduling or leveling.

For more information about Timescaled PERT, see the *Customizing PERT Layouts* chapter.



Group by resource Group activities by resource, cost account, or cost category to review or modify resource and cost assignments. The resource and cost data apply only to the resource assignment in each group. The following example shows activities grouped by resource.

You can also show each resource assigned to an activity by setting up a resource column; if the layout is also grouped by resource, only one resource appears in the cell.

Activity ID	Resource early start	Resource early finish	Budgeted Cost
Analyst-Systems Automation			
AS217	04OCT99	15OCT99	1,200.00
Automation Systems Engineer			
AS216	23AUG99	01OCT99	2,376.00
AS217	04OCT99	15OCT99	880.00
AS213	18OCT99	20OCT99	528.00
Design Engineer			
BA469	27SEP99	29SEP99	540.00
BA475	27SEP99	08OCT99	600.00
BA470	30SEP99	13OCT99	600.00
BA530	14OCT99	15OCT99	240.00
BA560	21OCT99	22OCT99	240.00
AS213	18OCT99	22OCT99	150.00

If more than one resource is assigned to an activity, the activity is listed for each assigned resource group.



You must group activities by resource, cost account, or cost category to edit and assign resource and cost data in the Activity columns. If you do not group activities by these items, P3 displays summarized cost values for all resources assigned to an activity; however, up to 20 individual resources are shown (separated by commas) for each activity in the Resource column.

For complete details on pasting activities into groups, see the *Working with Activities* chapter.

Group to apply code values automatically When you add a new activity to a specific band of activities, P3 automatically applies the value of that group to the new activity. You can also cut, copy, paste, and drag activities from one group to another; P3 automatically modifies the values for the moved or pasted activities.



You cannot drag and drop activities between project code bands.

Formatting Group Title Bands

When you group activities, you can customize the font and color of grouping bands and text. You can also specify whether each band shows the code value or description and how P3 displays group dividers in the Bar chart.

Organize

Organize by

Activity data item Work breakdown

Group by: Phase

Group by	Order	Font	Bkgnd	Text	New page	Total
Phase	Ascend	Arial,11,B				None
Responsibility	Ascend					
Item	Ascend					

Sort by:

Sort on	Order
Early start	Ascend

Sample

Phase

Display All values in one band
 Reorganize automatically
 Display unassigned and uncategorized activities

Options... Organize Now Cancel Help

Select a font for text in bands.

Select the background color of bands.

Select the text color.

Click to set banding options.

If you are combining values in one band, P3 only uses the font, colors, and other options set for the first item in the Group By list.

For details on adding to the fonts list, see the [Customizing Bar Chart Layouts](#) chapter.

Right-click in each column to select a different value. To add to the list of fonts, choose Format, Fonts. If you are combining data items in one band, P3 uses the attributes for the first data item for each combined band.

Set banding options Click Options to specify whether the code value, description, or both displays in the Bar chart. You must show either the code value or description in the columns side.

Choose whether to display the value, description, or both in columns.

When combining data items into one band, values/descriptions are separated by hyphens.

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Earned Value (BCWP)	Earned Value (BOWP)
Information Systems Department - EVANS						
AS150	Production Start	0	0	0	0.00	0.00
AS600	Manual Operation Ready	0	0	0	0.00	0.00
AS117	Startup Procedure	3	3	0	0.00	0.00
AS118	Training Manuals/System	9	9	0	0.00	0.00
AS900	System Buyoff	0	0	0	0.00	0.00
CS770	Operation Manuals	90	90	0	0.00	0.00
Construction Department - Joe Nolan - Construction Manager						
BA640	Site Preparation	20	10	50	10,320.00	480.00
BA630	Begin Building	0	0	100	0.00	0.00
BA650	Excavation	10	10	0	0.00	0.00

You can separate groups in the bar area with lines or bands. Choose whether to display the grouping value, description, both, or neither in the layout. The following example shows bands in the bars side with descriptions.

In the bars area, choose whether to show group dividers as lines or bands.

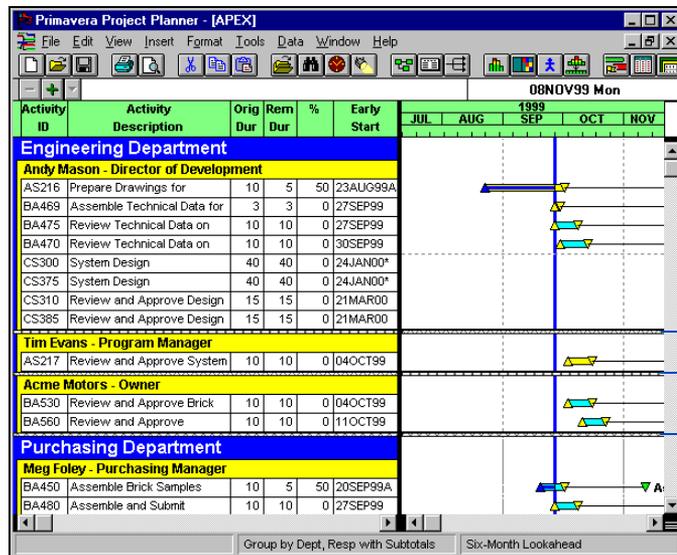
Page-Breaking by Groups

When grouping activities, you can have P3 insert a page break each time the data item value changes. When you print the layout, each group of activities prints on a separate page. For example, to distribute the schedule by responsible manager, group by responsibility and choose Yes in the New Page field of the Organize dialog box. P3 inserts a page break before each new responsibility code. If you are combining values into single bands, P3 uses the New Page indicator specified for the first band—anytime the value changes for the first Group By item, the activities print on a new page.

Group by	Order	Font	Bkgrnd	Text	New page	Total
Department	Ascend	Arial.11.B			<input type="checkbox"/>	None
Responsibility	Ascend	Arial.8			<input checked="" type="checkbox"/>	None

Choose Yes to insert a page break each time the code value changes.

Control page breaks Page breaks appear as thick horizontal lines in the layout. Toggle this option on or off by choosing View, Page Breaks.



For more information about using page breaks, see the *Printing Layouts* chapter.

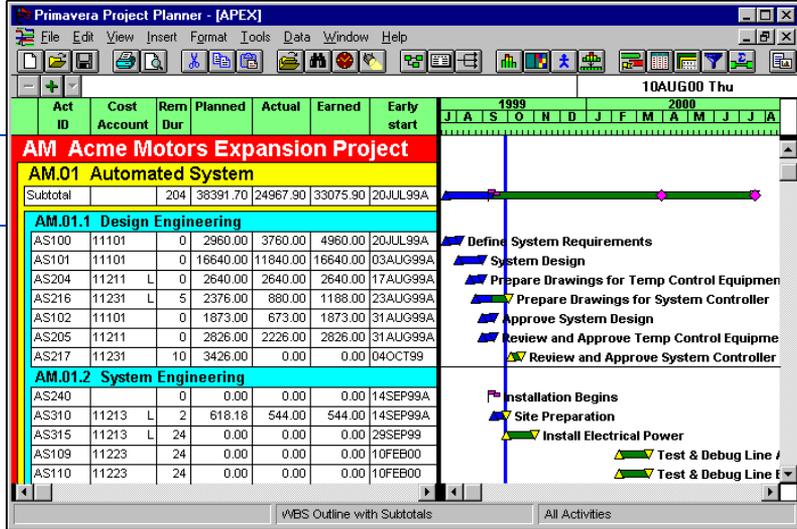
To insert a page break, choose Insert, Page Break. Choose Insert, Remove Page Break to erase a selected page break. To remove all page breaks and have P3 determine where page breaks occur, choose Insert, Clear All Page Breaks.

Outlining Activities by WBS Levels

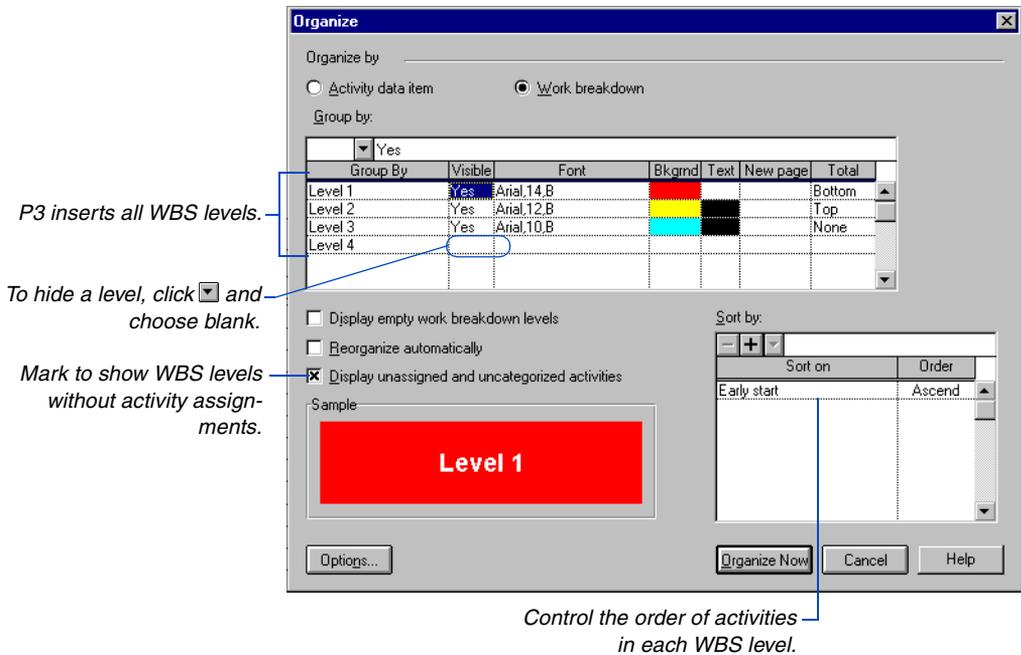


If activities in your project are assigned to a work breakdown structure, you can view activities hierarchically based on the WBS.

Each level is indented under the preceding level.



Outline by work breakdown structure Choose Format, Organize and then choose Work Breakdown.



For more details, see [Formatting Group Title Bands](#) earlier in this chapter.

You can choose different colors and fonts for each WBS level band. Click Options to specify whether to show the code value, description, or both in the columns. In the bars area, choose whether to show group dividers as lines or bands, and whether to display code values, descriptions, both, or neither.

To begin a new page each time the WBS code changes, choose Yes in the New Page column. Show subtotals for each group by specifying Top or Bottom in the Total column. You can also specify items to sort by to control the order of activities within WBS levels.

Show uncategorized activities When you mark the Display Unclassified and Uncategorized Activities checkbox, P3 shows any activities without a WBS code assignment in a separate group band titled Unclassified. You can use this as an indicator as to which activities are not yet assigned to a WBS code. Or, mask these activities from view by clearing this checkbox in the Organize dialog box.

Show empty work breakdown levels Mark this checkbox to show WBS levels with no activities assigned to them. This is useful for viewing undefined components of a project. While showing empty levels, you can automatically assign the WBS codes to activities as you add them (or drag them from other levels to reassign them). Clear this checkbox at any time to suppress empty WBS levels in the layout.



If you apply a filter to view a specific WBS branch, you may want to clear this checkbox to prevent empty levels and levels that do not meet the filter's criteria from displaying in the layout.

For details on creating a WBS dictionary, see the *Work Breakdown Structure Codes* chapter.

Combine WBS grouping with other data items When you choose the Work Breakdown option, the WBS levels are the only available grouping item. To combine grouping by WBS with other codes, choose the Activity Data Item option and select WBS (and any other grouping items you want) from the Group By list. Note that WBS levels only appear indented when you use the Work Breakdown option.

Group by	Order	Font	Bkgrnd	Text	New page	Total
WBS	Ascend	Arial,12,B	Blue	Yellow		None
Responsibility	Ascend	Times New Roman,10,B	Green	Black		None

Activity ID	Activity Description	Orig Dur	Rem Dur	%
AM.01.1 System Engineering				
MASON Andy Mason - Director of Development				
AS100	Define System Requirements	10	0	100
AS101	System Design	20	0	100
AS204	Prepare Drawings for Temp	10	0	100
AS216	Prepare Drawings for	10	3	70
AS102	Approve System Design	10	0	100
EVANS Tim Evans - Program Manager				
AS205	Review and Approve Temp	5	0	100
AS217	Review and Approve System	10	10	0

This layout is organized by WBS and responsibility.

Reorganizing Activities

During an average workday, you may change your project by adding new activities, changing schedule dates, or modifying code assignments. At some point, certain activities may no longer meet the current sort and group criteria. Although P3 rearranges activities automatically when you open a layout, run a filter, or schedule the project, you may want P3 to reorganize automatically as you change project data during your work session.

Reorganize automatically Choose Format, Organize. When you mark the Reorganize Automatically checkbox, P3 automatically moves an activity to the appropriate group based on the grouping and sorting order currently defined in the Organize dialog box.

Mark this checkbox to have P3 reorganize as you make changes.

<input type="checkbox"/>	Reorganize automatically
<input type="checkbox"/>	Display unassigned and uncategorized activities



Reorganize on demand If you do not want P3 to update the layout after each change, clear the Reorganize Automatically checkbox. When you want to reorganize activities, choose Format, Reorganize Now.



When you run P3 on a network, P3 prevents your layout from constant change when many users work in the same project. For example, if other users change data, P3 does not automatically reorganize your layout. However, when you reorganize, you will see the effects of changes made by other users.

Grouping Activities in PERT

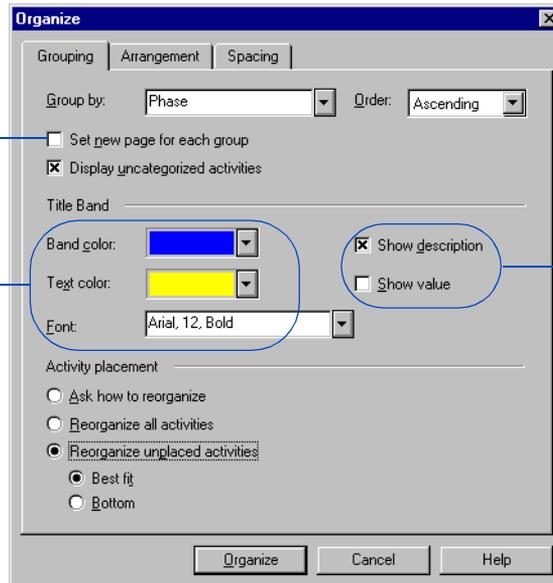


You can arrange PERT so activities are grouped according to a common value. For example, group activities by activity code to focus on activities that are part of the same project, department, or phase.

Group activities in PERT Choose Format, Organize. Use the Group By field to specify how to group activities.

Mark this checkbox to print each group of activities on a separate page.

Customize bands by changing the colors and font size and style.

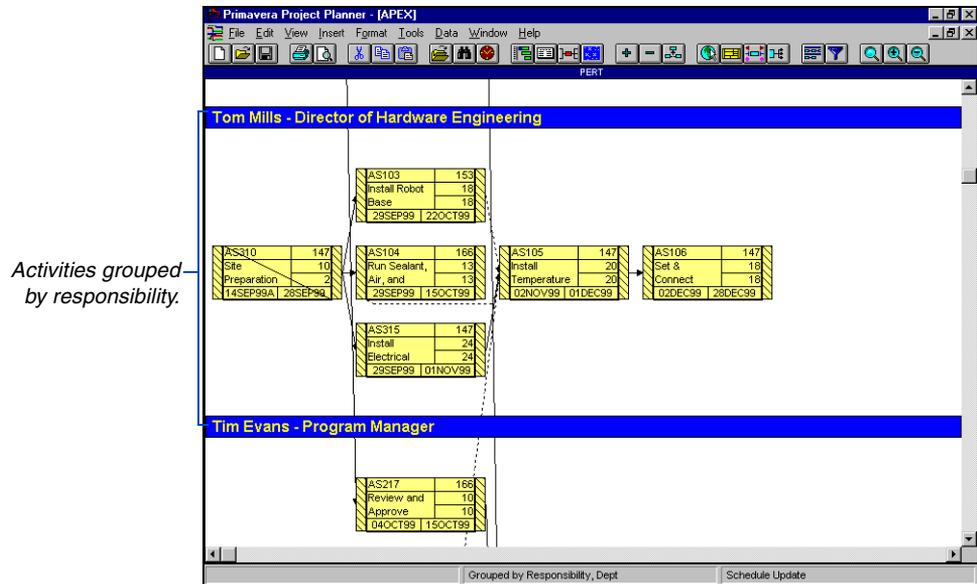


Display code values and/or descriptions in the band.

Organize activities by activity or project code, activity ID code, calendar ID, or total float. P3 automatically positions groups in ascending order; to use a descending order, choose Descending in the Order field.

For more details, see the [Working with Activities](#) chapter.

Use the Activity Placement options at the bottom of the Grouping tab to control how P3 positions activities when moving from the Bar chart after adding activities.



Turn off grouping Choose Format, Organize. Choose <None> in the Group By field, then click OK. P3 arranges activities based on schedule logic (or relationships/early start date, if you are showing timescaled PERT).

To reorganize activities at any time, choose Format, Reorganize Now.



If you reorganize timescaled PERT after scheduling/leveling, activities are placed in the correct location, based on relationships or early/actual start date (depending on which arrangement option you choose).

Using Filters to Select Activities and Projects

In this chapter:

- What is a Filter?
- Applying Filters
- Adding or Changing Filters
- Transferring Filters
- Highlighting Activities by Filter
- Selecting Activities in a Date Range
- Selecting Activities Using Wildcards
- Selecting Activities with Common Text
- Selecting Critical Activities
- Selecting Activities by Type
- Filtering Projects

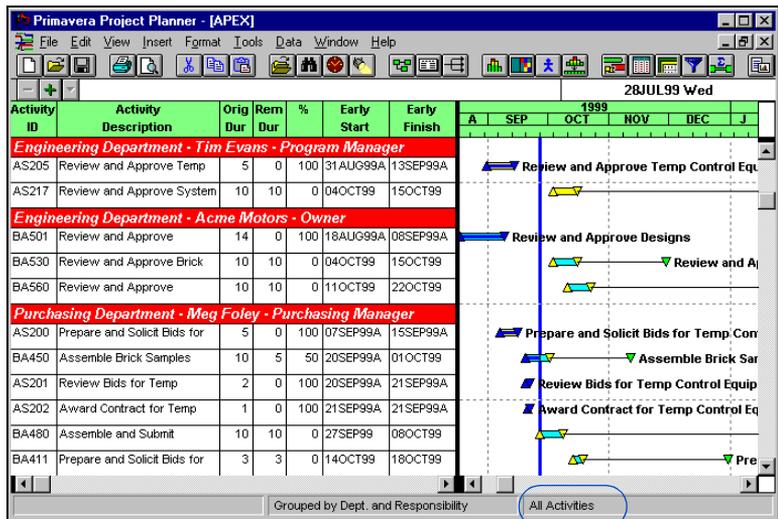
Filters control the activities P3 displays in the layout. When you want to work with a part of your project, a filter temporarily limits the activities displayed, based on criteria you specify.

P3 provides several filters which you can use or modify; you can also add new filters or copy filters from other projects.

Read this chapter to learn how to create and apply filters to meet your information needs.

What is a Filter?

A filter is a set of instructions that determines which activities P3 displays in the layout. By default, P3 displays all activities in the project. You can apply a filter at any time to focus on specific areas of a project. For example, you might want to see only critical activities, activities that are underway, or activities scheduled to start during the next three weeks. When you apply a filter, you can choose to replace the current set of activities, append to it, or temporarily remove activities from view.



P3 always shows the current filter name in the status bar.

For details on ordering activities, see the *Grouping and Sorting Layouts* chapter.

Although filters determine which activities P3 displays in the layout, you can group and sort activities for maximum control of the ordering of activities. If you want to focus on a subset of activities, use filters. To group activities with a common attribute, choose Format, Organize.

Applying Filters

When you want to change the set of activities that displays in Bar chart and PERT layouts, you can use or modify the filters supplied with P3, create your own, or transfer filter specifications from other projects.



Apply a filter Choose Format, Filter. Select a filter specification from the list. Specify whether to replace the set of activities with only those that meet the criteria of the filter, to append to the current set of activities, or to remove activities from view if they meet the filter's criteria. Click OK to apply the filter.

Select a filter and click OK to apply it.

Click to view or change the criteria for a selected filter.

Choose how to apply the filter.

Choose to highlight activities that match the filter's criteria.



Applying filters changes the set of activities you see in both PERT and Bar chart layouts. P3 also automatically reorganizes the project any time you apply a filter.

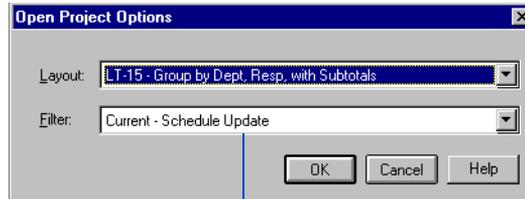
To cancel a filter, choose the All Activities filter at any time.

Although applying a filter temporarily removes certain activities from view, they remain part of the project and are included when you schedule or level the project.



Rerun the current filter You can rerun the current filter and “refresh” the activities displayed any time during your work session. Choose Format, Run Filter Now. P3 reruns the current filter and also reorganizes the layout based on the current sort and group criteria.

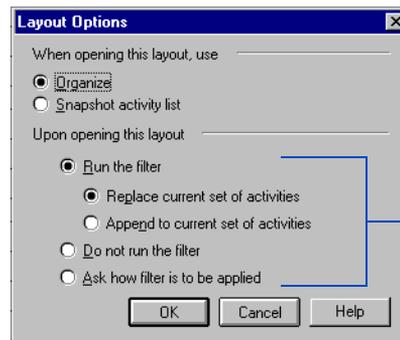
Apply a filter when opening a project When you open a project, the last layout/filter you saved is automatically displayed. To have P3 automatically apply a different filter when opening a project, choose File, Open. Select the project and click Options.



Specify the filter to run when opening the project.

For more details on layout options, see the *Projects and Layouts* chapter.

Apply a filter when opening a layout When opening a layout, P3 applies the filter based on options set in the Layout Options dialog box. Choose View, Layout, Options.



Choose whether or not to run the filter, or choose the Ask option to have P3 display these options each time you open the layout.

For steps on setting up restricted access with filters, look up *Restricted Access: using filters* in P3 Help.

Filters and restricted access rights A project owner can use filters to prevent others from viewing certain data in a project. First, create the filter that selects only the activities that you want others to view. Then, assign Restricted access to any user whose access you want to limit. In the Restrictions dialog box, select the filter you want P3 to apply when the restricted user opens the project.

Users with filter-restricted access can still apply other filters to work with a subset of activities. The restricted filter acts as a top level filter to any other filter being applied. Those with filter-restricted access cannot, however, modify or delete the restricted filter.

For details on setting layout and filter options in multiuser situations, see the *Projects and Layouts* chapter.

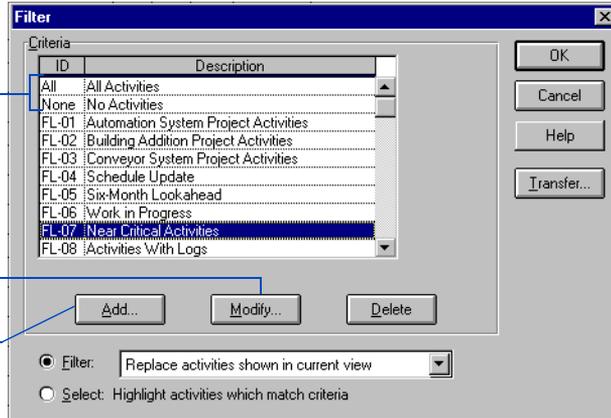
Multiuser considerations Since P3 stores layouts and filters with the project, all users in a network environment share the same layouts and filters.

Adding or Changing Filters



You can create as many filters as you need for each project. To add or change a filter, choose Format, Filter.

P3 lists these filters for every project; you cannot modify or delete them.



Click to view or change the selected filter specification.

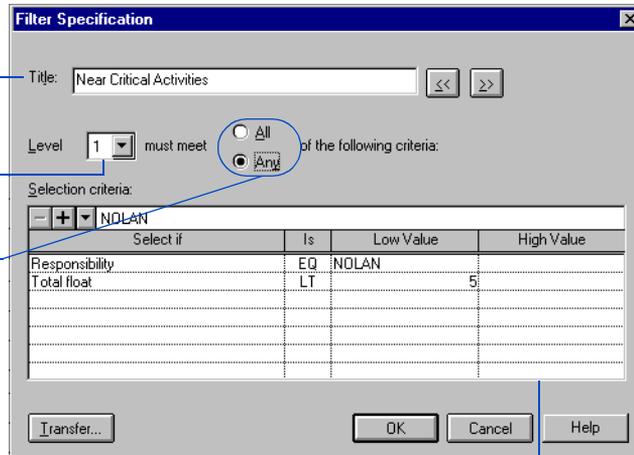
*Adds a new filter ID.
Enter a filter description.*

Click Add or Modify and use the Selection criteria section of the Filter Specification dialog box to create a statement that describes how you want to select activities. For example, to focus on near critical activities that are the responsibility of Nolan, the following specification selects only activities assigned to Nolan with a total float value less than 5.

Type a title that describes the activities you want the filter to select.

Specify up to four levels of filtering criteria.

Choose whether activities must meet all selection statements or at least one.



Specify a value in this column when selecting a range of data.

When you specify multiple levels of selection criteria, each successive level selects from only the activities that met the criteria of previous levels.

The following table provides details on the Selection criteria section of the Filter Specification dialog box.

Column	Description
Select if	Identifies the data used for the selection. Enter up to seven lines of selection statements per level.
Is	Enables you to restrict the number of activities selected by choosing one of the following criteria codes: EQ - Equal To NE - Not Equal To GT - Greater Than LT - Less Than WR - Within Range NR - Not Within Range CN - Contains (the text string) SN - Does Not Contain (the text string)
Low Value/ High Value	Identifies specific activity data to use for the selection. Enter data in the High Value column only when using WR or NR as criteria codes.



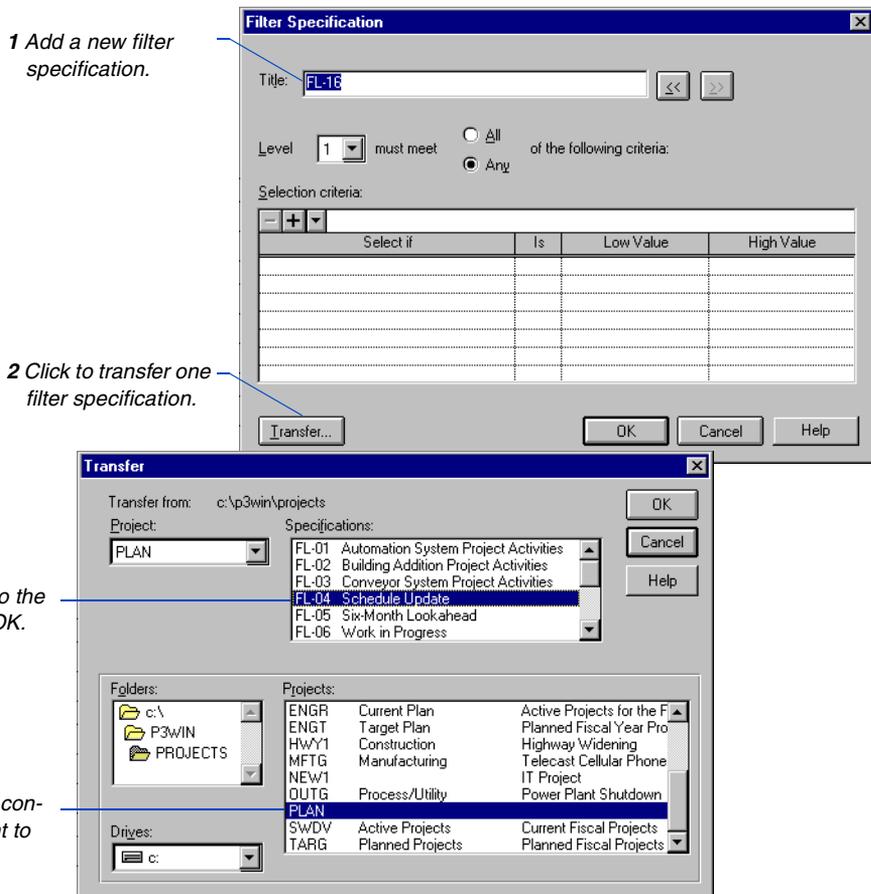
If you modify an existing filter specification, remember that the filter may be associated with a layout that you or other users may open later. When you open a layout whose associated filter doesn't match the current project filter, P3 alerts you that the filter criteria have changed.

Transferring Filters



You can transfer one filter or the entire set of filter specifications from another project to the current project. To transfer one specification from another project to the current one, you must first add a new filter (or open an existing one that you want to overwrite). To copy all filters from another project to the current one, click Transfer in the Filter dialog box.

Transfer one filter specification Choose Format, Filter. Click Add, then click Transfer.

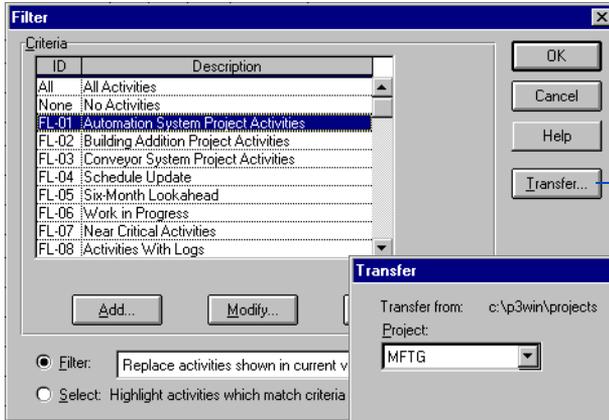


P3 overwrites the current specification with the filter information you selected to transfer to the current project.

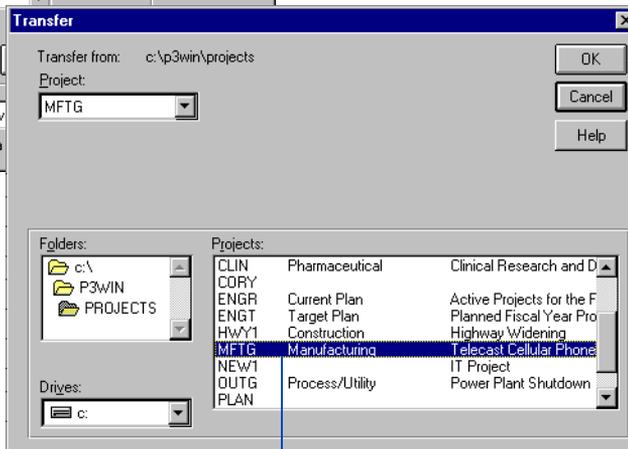
Transfer all filters from another project Choose Format, Filter and click Transfer.



When you transfer all specifications from another project to the current one, P3 overwrites the existing set of filters.



1 Click to transfer all filter specifications from another project to the current one.



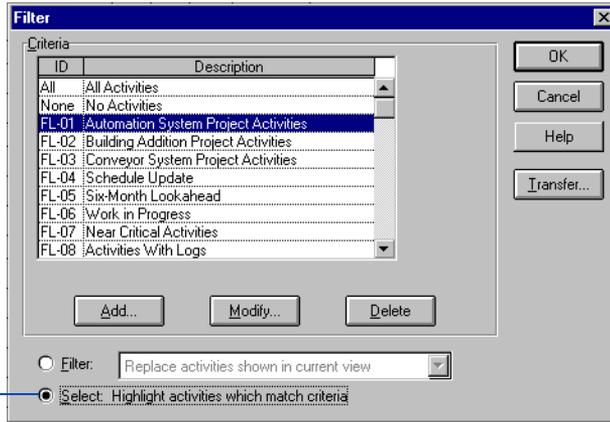
3 Click OK.

2 Select a project from which to copy all filters.

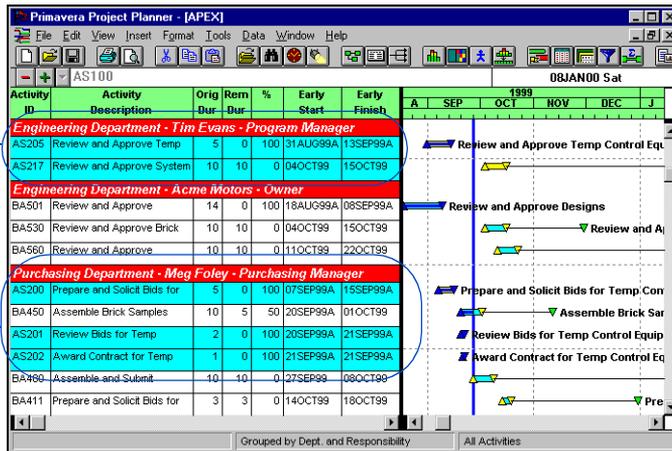
Highlighting Activities by Filter



When you want to select or highlight certain activities in a layout without changing the set of activities, you can select them using any of the filters available in your project. For example, you might select unstatused activities so you can e-mail them to others; or perhaps you want to copy only activities that meet certain conditions from one project to another. To highlight activities by filter, choose Format, Filter.



Select a filter, choose this option, and then click OK.



P3 highlights activities that match the filter criteria.

Other activities appear but are not selected. Choose Edit, Unselect to remove the highlighting.



P3 does not change the set of activities with this option; it only highlights the current set of activities that match the filter's criteria.

Selecting Activities in a Date Range

P3 provides several ways to select activities scheduled for a specific timeframe.

Filter based on a window of time In the Filter Specification dialog box, choose Early Dates, Late Dates, or Actual Dates in the Select If column to select activities that are scheduled to start, finish, or occur in a specific timeframe. You must use WR (within range) as the criteria code and specify low and high date values. The filter shown in the following example selects activities with an early start or early finish date in September. This includes any activity that spans the month of September (the activity can start before September 1 and finish after September 30).

Select if	Is	Low Value	High Value
Early dates	WR	01SEP99	30SEP99

To base the filter on calendar dates, right-click in these columns, then select a date.

Filter with rolling dates The rolling date specification selects activities based on their relation to the data date or the project start or the finish date, rather than by specific calendar dates. Rolling dates always use current project dates, so you won't need to edit the filter each time the data date or other project date changes.

When you select a "date" data item you can click the rolling date button in the Low/High Value columns.

Selects any activity whose early start occurs within range of the current data date plus six months.

Selecting Activities Using Wildcards

Wildcards enable you to select items with the same or similar values. Use a wildcard, represented as a question mark (?), with any alphanumeric data item, such as resource or activity ID. A wildcard can occupy one or more positions of the data item to indicate that any value can occupy that position(s). Use only EQ or NE as criteria codes in the Is column.

Using the question mark (?) wildcard Use the question mark wildcard (?) with any alphanumeric data item to select activities with some, but not all characters in common. The following filter selects activities with the common prefix AS1.

Select if	Is	Low Value	High Value
Activity ID	EQ	AS1???????	

Selecting by WBS You can also use the question mark wildcard to select activities assigned to a WBS branch. The following statement selects activities assigned to the WBS branch, AM.01.

Select if	Is	Low Value	High Value
WBS	EQ	AM.01.??	



When selecting activities based on WBS codes, always use the EQ criteria code in the Is column and use a question mark for each level of the WBS.

To obtain all activities with resource assignments, specify Resource NE blank (Low Value) rather than use an asterisk.

Using the asterisk (*) wildcard An asterisk (*) is another type of wildcard you can use for selection. Use the asterisk only when you select resources to indicate that any character can occupy that position or any of the remaining positions. (You cannot specify any characters after the asterisk.)

For example, suppose you set up engineering resources so that varying skill levels and experience use different costing schedules. They might consist of the following:

- ENGR101 - Engineer Costing Rate Level 1, Number 1
- ENGR102 - Engineer Costing Rate Level 1, Number 2
- ENGR201 - Engineer Costing Rate Level 2, Number 1
- ENGR202 - Engineer Costing Rate Level 2, Number 2
- ENGR301 - Engineer Costing Rate Level 3, Number 1
- ENGR302 - Engineer Costing Rate Level 3, Number 2
- ENGR303 - Engineer Costing Rate Level 3, Number 3

To select only activities that use the first engineer in each level, you would create the filter shown in the following example.

Select if	Is	Low Value	High Value
Resource	EQ	ENGR?01	

For information about hierarchical resources, see the *Planning Resources and Costs* chapter.

If the resources defined in your project use a common prefix, you can define a hierarchical resource, using the common prefix followed by an asterisk in the Resource Dictionary. Using the previously listed engineers as an example, the hierarchical resource would be ENGR*. Then, to select all activities that use any of the engineers, create the following filter.

Select if	Is	Low Value	High Value
Resource	EQ	ENGR*	

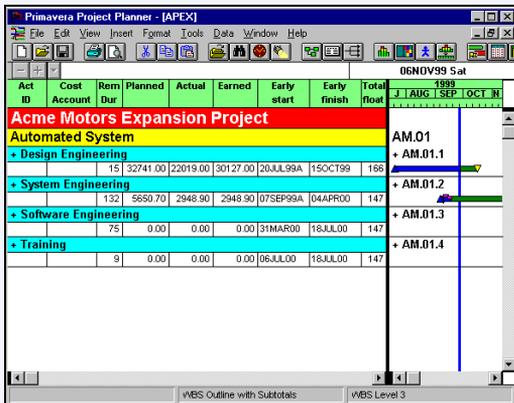
Organizing and Filtering by WBS

When you organize a project by work breakdown structure, you can show or hide empty WBS levels. Empty WBS levels are those with no activities assigned to them or levels that display as empty because activities in the level do not meet the criteria of the current filter. When assigning activities to the WBS, you may want to mark the Display Empty Work Breakdown Levels checkbox (choose Format, Organize) to show empty levels.

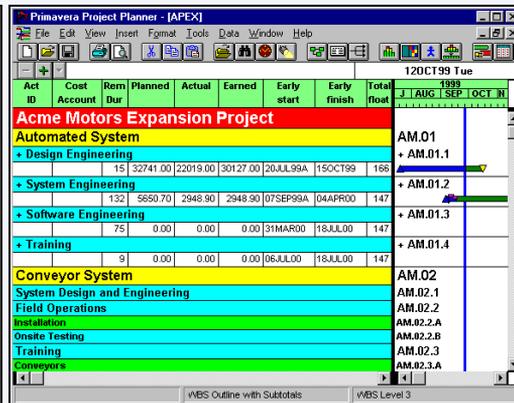
Suppress empty levels at any time by clearing this checkbox, such as when you want to print a WBS layout for presentation purposes.

To focus on a specific WBS branch, you can define a filter that selects the branch. For example, the following filter selects activities in the AM.01 branch of the WBS.

Select if	Is	Low Value	High Value
WBS	EQ	AM.01.??	



Display empty work breakdown levels



Display empty work breakdown levels

To hide empty levels and all levels that do not meet the filter's criteria, clear the Display Empty Work Breakdown Levels checkbox in the Organize dialog box.

The layouts above show the different results that display when filtering by WBS, depending on how the Display Empty Work Breakdown Levels checkbox is set.

Selecting Activities with Common Text

Sometimes you may want to select activities based on certain words or character strings in their description. For example, to examine only activities that pertain to installing various components, create a selection statement like the one shown in the following example.

Select if	Is	Low Value	High Value
Activity description	CN	Install	

↳ *Selects any activity that contains the word Install in its description.*

The case of the letters (upper or lower) does not matter and the character string can contain numbers as well as letters.

You can also select activities based on specific words or character strings in activity codes, project codes, cost accounts, logs, resources, activity IDs, and activity or resource custom data items (as long as they are alphanumeric fields).

The criteria code SN (string not equal to) selects activities based on words or character strings that are not part of an activity description, log, or other text string.

Select if	Is	Low Value	High Value
Activity description	SN	Install	

↳ *Selects all activities with descriptions except those that pertain to installing components.*

To select activities with or without logs, use the EQ or NE criteria codes. The following example selects “Log records not equal to blank” or only those activities with log records.

Select if	Is	Low Value	High Value
Log record	NE		

↳ *Selects only activities that contain logs.*

Selecting Critical Activities

Selecting activities by total float Use the following filter to view the critical activities in a project. You can include near-critical activities in the selection by increasing the number in the Low Value column.

Select if	Is	Low Value	High Value
Total float	LT	1	

Selecting activities by longest path In multicalendar projects, viewing activities on the longest path is important because some activities may have large float values due to their calendar assignments, but still be critical to the completion of the project. To select activities on the longest path, type the following:

Select if	Is	Low Value	High Value
Longest path	EQ	Yes	

P3 calculates the longest path by identifying the activities that have an early finish equal to the latest calculated early finish for the project. P3 identifies all driving relationships for these activities and traces them back to the project start date.

Selecting activities with negative variance Managing a project involves comparing the schedule's progression relative to the original plan. Variances, either positive or negative, indicate differences between the current and target schedules.

P3 provides data items for selecting activities based on schedule variances between the current and target schedules. These codes include Variance target 1 early start, Variance target 1 early finish, Variance target 1 late start, and Variance target 1 late finish.

Select if	Is	Low Value	High Value
Variance target 1 early finish	LT	1	

Selects activities whose current early finish dates have slipped from the early finish dates for Target 1.

P3 selects only activities with a negative variance between the current and target 1 schedules, based on early finish dates. You can also base your selection on target 2 early and late start or finish dates.

Selecting Activities by Type

P3 classifies all activities in a project by type. The activity type determines whether the activity has a duration you enter or one that is calculated by P3, and which calendar P3 uses (base or resource) to schedule it. The following examples show how to use filters to select activities by activity type.

Milestone activities

Select if	Is	Low Value	High Value
Activity type	EQ	Start Milestone	
Activity type	EQ	Finish Milestone	

Flag activities

Select if	Is	Low Value	High Value
Activity type	EQ	Start flag	
Activity type	EQ	Finish flag	

WBS or Hammock activities

Select if	Is	Low Value	High Value
Activity type	EQ	Hammock	
Activity type	EQ	WBS	

Activity [Task], Topic, Independent, or Meeting activities

Select if	Is	Low Value	High Value
Activity type	EQ	Task	
Activity type	EQ	Topic	
Activity type	EQ	Independent	
Activity type	EQ	Meeting	

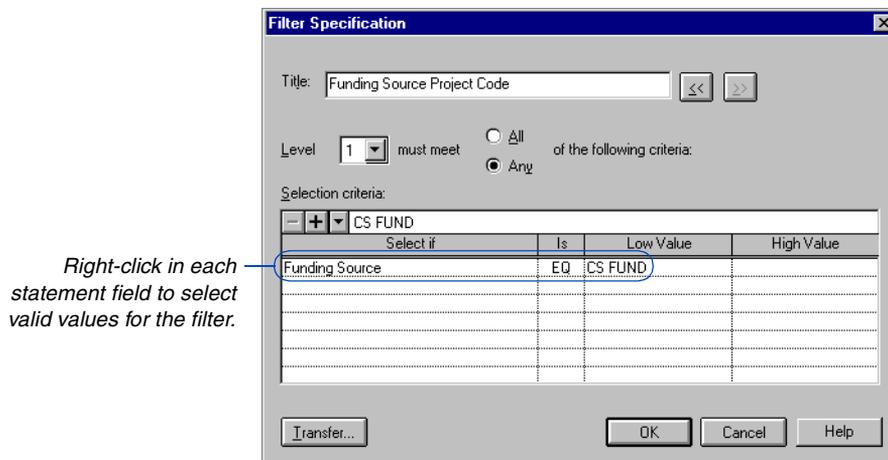
For details on activity types, see the *Working With Activities* chapter.

Filtering Projects

If you manage a large number of projects, you may want to use project codes to classify them using specific categories of information—such as product, phase, or manager—that correspond to your type of business. You can then use these to filter project information and focus only on the information you need for analysis, distribution, and presentations.

For more information about setting up and assigning project codes, see the *Activity and Project Codes* chapter.

Filter using project codes Suppose you manage a project group that consists of 50 projects, but you want to see only those that projects are funded by a particular organization. Establish a Funding Source project code and values at the project group level, then assign those values to each project in the group. Open the project group and choose Format, Filter. Click Add and give the filter a meaningful name such as “Funding Source Project Code.” Set up the filter so that the applicable project code is equal to the value for which you want to display projects in the group, similar to the statement shown in the following example.



For more information about grouping, see the *Grouping and Sorting Layouts* chapter.

Only the projects assigned the Low Value project code value will be displayed in the project group.

You can also group projects by project description or some other data item, or you can add another filter statement to the existing one to focus on specific activities in each project.

The organization bands identify the funding source project code and the departments within the applicable project(s) that are supported by the fund.

Primavera Project Planner - [APEX]										27SEP99 Mon											
										1999											
										JUL			AUG			SEP					
										5	12	19	2	9	16	23	30	6	13	20	27
Activity ID	Orig Dur	Rem Dur	%	Early Start	Early Finish	Resource	Budgeted Cost	Cost to Complete	Cost at Completion												
Connor Smith Fund																					
Engineering Department																					
AS100	10	0	100	20JUL99A	04AUG99A	ANALYST,	4,960.00	0.00	3,760.00	Define System Require											
AS101	20	0	100	03AUG99A	31AUG99A	DES ENG,	16,640.00	0.00	11,840.00	System Desi											
AS204	10	0	100	17AUG99A	31AUG99A	ATM ENG,	2,640.00	0.00	2,640.00	Prepare Dat											
AS216	10	5	50	23AUG99A	01OCT99	ATM ENG,	2,376.00	880.00	1,760.00												
AS102	10	0	100	31AUG99A	13SEP99A	PRG MGR,	1,873.00	0.00	673.00	Appo											
AS205	5	0	100	31AUG99A	13SEP99A	ATM ENG,	2,826.00	0.00	2,226.00	Review											
AS217	10	10	0	04OCT99	15OCT99	ATM ENG,	3,426.00	3,426.00	3,426.00												
Subtotal	63	15	80	20JUL99A	15OCT99		34,741.00	4,306.00	26,325.00												
Purchasing Department																					
AS200	5	0	100	07SEP99A	15SEP99A	ACCTS., ATM	1,168.00	0.00	1,168.00	Prep											
AS201	2	0	100	20SEP99A	21SEP99A	PRG MGR,	329.90	0.00	329.90	Re											
AS206	20	15	25	21SEP99A	26OCT99	VENDOR	3,500.00	2,625.00	3,500.00	Av											
AS202	1	0	100	21SEP99A	21SEP99A	ACCTS	32.00	0.00	32.00												
AS213	5	5	0	18OCT99	22OCT99	ATM ENG,	934.00	934.00	934.00												
AS214	4	4	0	25OCT99	28OCT99	ACCTS, PRG	659.80	659.80	659.80												
AS215	1	1	0	29OCT99	29OCT99	ACCTS	32.00	32.00	32.00												
AS218	60	60	0	01NOV99	27JAN00	VENDOR	4,200.00	4,200.00	4,200.00												
Subtotal	99	78	13	07SEP99A	27JAN00		10,855.70	8,450.80	10,855.70												
Information Systems Department																					
AS310	10	2	80	14SEP99A	28SEP99	FLD ENG3	680.00	136.00	680.00	Instal											
AS240	0	0	100	14SEP99A			0.00	0.00	0.00												
AS315	24	24	0	29SEP99	01NOV99	ELECTRON	12,288.00	12,288.00	12,288.00												
AS103	18	18	0	29SEP99	22OCT99	FLD ENG1,	4,824.00	4,824.00	4,824.00												

This layout focuses on those projects that are funded by a specific source.

Summarizing Data

In this chapter:

Summarizing Data Grouped by Codes or WBS

Necking Bars (Indenting)

Showing Discrete Bars in a Summary Group

Showing Subtotals by Group

How P3 Summarizes Data

Once you organize activities into groups, you can summarize or “roll up” project data to simplify its presentation. Summary presentations are convenient for management and client overviews because they eliminate activity-level details.

P3 displays summary information in the columns for each group in the Bar chart. Display activity bars as one continuous bar or as discrete segments that represent each component of the summary bar. To distinguish scheduled worktime from nonworktime, you can have P3 neck (indent) summary bars during periods when no work occurs.

When you want to show activity details and summary information, you can show subtotals for each group or a grand total for the project.

Summarizing Data Grouped by Codes or WBS



In a layout that is organized into groups, you can summarize activities to show a simple overall picture of the schedule without all the details. Summarize by any item available for grouping, such as activity codes, dates, resources, or WBS.

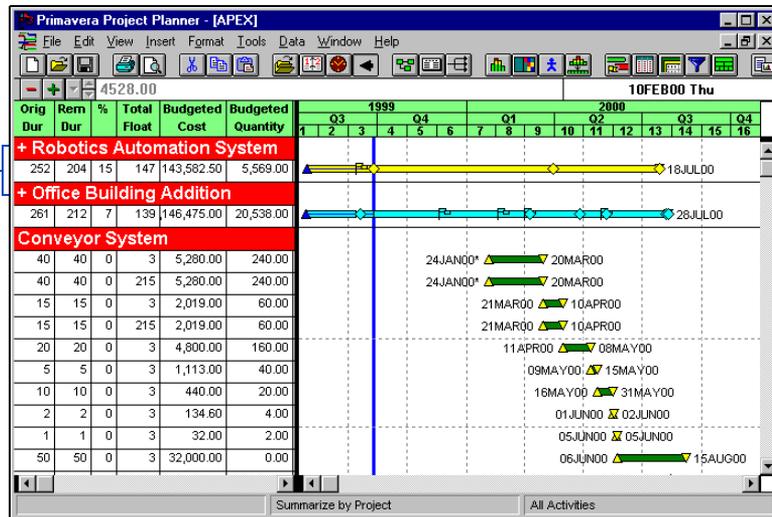


If you define multiple bars, P3 can summarize only one bar type at a time, such as early-date bars or late-date bars. Use the Key column in the Bars dialog box (choose Format, Bars) to indicate which schedule dates to summarize by.

For details on grouping, see the *Grouping and Sorting Layouts* chapter.

Summarize individual groups First group activities by a data item (Format, Organize). To summarize one group of activities, double-click the group title band. P3 “rolls up” or summarizes data in the columns and any data displayed in bars for that group. For example, in the following layout, the first two groups, Robotics Automation System and Office Building Addition, are summarized; the third, Conveyor System, is not.

A plus sign (+) indicates a summarized group.



Summarize all groups To summarize all groups at one time, choose Format, Summarize All. P3 lists each data item the layout is currently grouped by in the Summarize To field.

If you are combining bands in the layout, you have the choice of summarizing by all groups or none.



Select the level to summarize to.

Choose this option to summarize only selected bands.

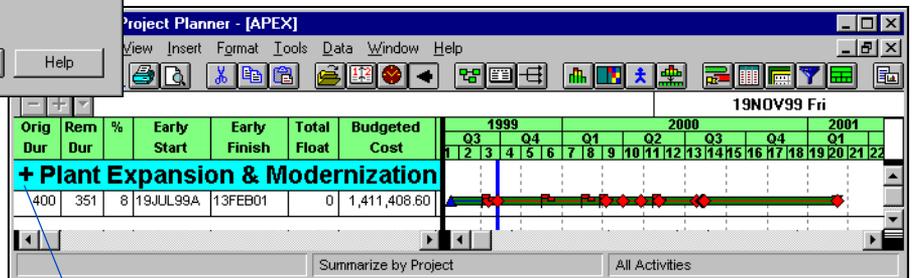
If you group activities at several levels (for example, by phase and responsibility), specify whether P3 should summarize to a specific level, leaving other levels unsummarized, or whether to summarize all groups.



Unsummarize groups To unsummarize a group, double-click a summarized band or select the band and choose Format, Expand. To unsummarize all groups at once, choose Format, Summarize All and choose None in the Summarize To field.

Summarize by WBS Level The same summarizing options are available when you organize the layout using the Work Breakdown option. Double-click any group title band to summarize one WBS level, or choose Format, Summarize All and select a WBS level to summarize to.

Summarize by project or project ID To summarize the entire project into one summary activity, select Project in the Summarize To field.



P3 displays a grand total row in the columns and a summary bar that rolls up information for the entire project.

If the project contains several projects (called a project group), you can organize by project ID and then summarize by this code for a compressed view of each project in the group, as shown in the following example.

This layout is grouped and summarized by project ID.

Dur	Dur	Early Start	Early Finish	Total Float	Budgeted Cost
+ Robotics Automation System					
252	204	15 20JUL99A	18JUL00	147	143,582.50
+ Office Building Addition					
261	212	7 19JUL99A	28JUL00	139	1,146,475.00
+ Conveyor System					
270	270	0 24JAN00	13FEB01	0	121,351.10

Customize Summary Bands and Bars

For details on grouping by codes or WBS, see the *Grouping and Sorting Layouts* chapter.

To change the appearance of summary bands, choose Format, Organize and modify the fonts and colors for data items.

Group by	Order	Font	Bkgrnd	Text	New page	Total
Department		AscendiArial,10,B,I				None
Responsibility		AscendiArial,12,B				Bottom

Summary bars show milestones and flags. To hide them, choose Format, Bars and click Modify. Enter a zero in the Milestone Size field.

Milestone size:

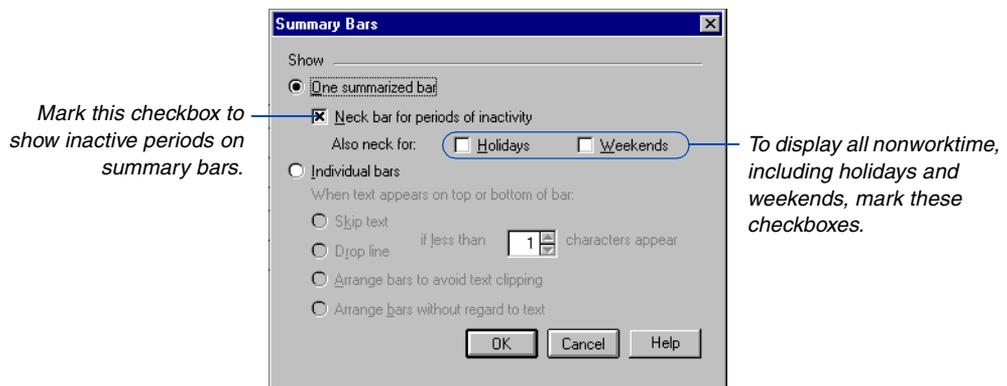
To control whether you see a single summary bar or individual bars for each summary row, choose Format, Summary Bars. For more details, see the *Showing Discrete Bars in a Summary Group* section later in this chapter.

Necking Bars (Indenting)

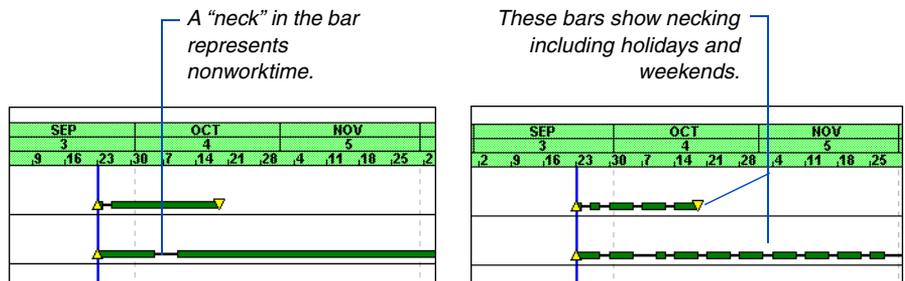
When you summarize, P3 shows one continuous bar for each summary group. Since the summarized activity may contain periods when no work takes place, the continuous bar may not always represent total duration accurately. You can show scheduled worktime more accurately by choosing to neck (indent) summary bars during inactive periods.



Neck summary bars Choose Format, Summary Bars and choose One Summarized Bar.



P3 indicates inactive time by necking the activity bar for periods when no activities are scheduled.

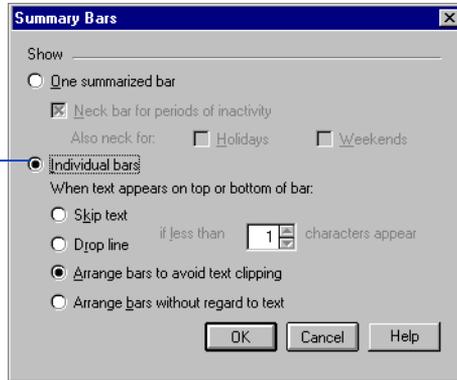


P3 uses the activity calendar to determine nonworktime if all activities in a summary are assigned to the same calendar; otherwise it uses the summary calendar specified in the Summary Calculations dialog box (Tools, Options, Summarization). If you group and summarize by resource and show resource bars, P3 uses the resource calendar to determine nonworktime.

Showing Discrete Bars in a Summary Group



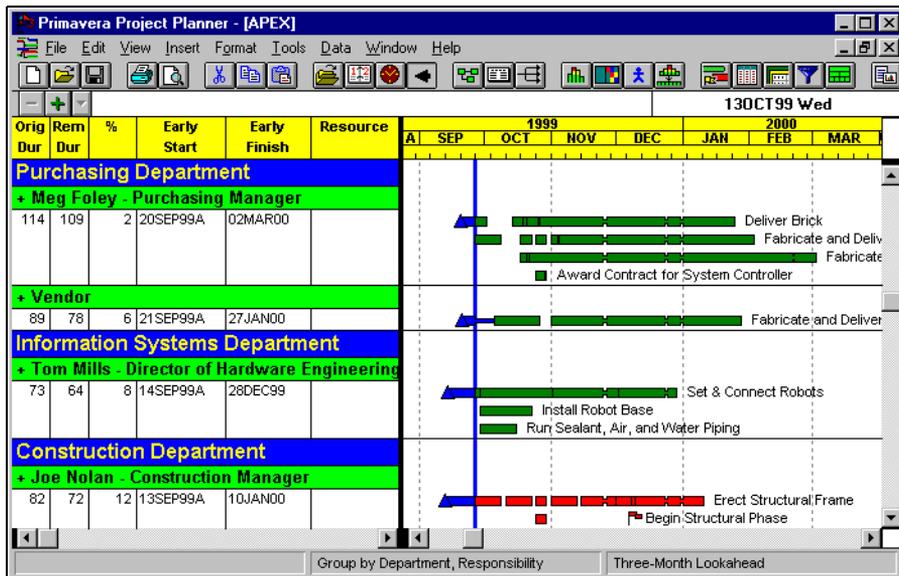
You can divide the summary bar into discrete segments that represent each component of the activity bar. Choose Format, Summary Bars.



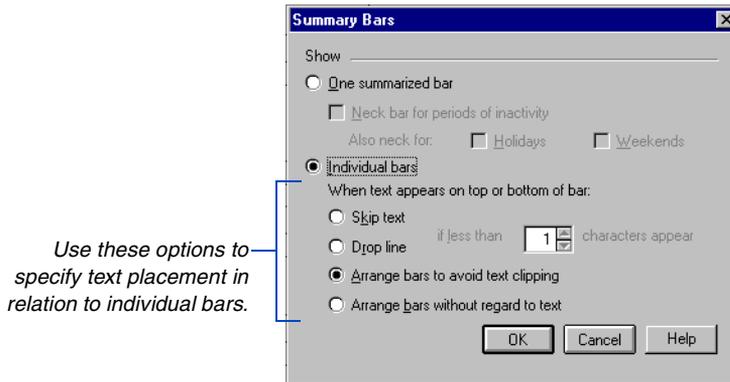
Choose to show discrete bars in a summarized layout.

You can show one summary bar with its individual activity bars by showing subtotals. See the next section for details.

P3 places as many individual bars as will fit in each row. Bars may drop down to another row when space is insufficient, especially when data are displayed on activity bars. The following example shows individual bars for each activity in the summary.



Showing text on discrete bars When you choose to show text on bars in either the Top or Bottom positions, you can specify how P3 places text in relation to the bars.



The following table describes each option.

Option	Description
Skip Text	P3 does not display text if fewer than a specific number of characters appear. Skipping text keeps activities close together.
Drop Line	P3 drops the activity bar down to the next row unless space is sufficient for the specified number of characters.
Arrange Bars To Avoid Text Clipping	Bars are arranged so all text appears for each bar.
Arrange Bars Without Regard To Text	Bars are arranged without regard to text. In this case, P3 may overwrite text on the activity bars.



When you choose a position for text other than Top or Bottom, text around bars displays only if all of it fits in the allotted space.

Necking discrete bars When you show individual bars, P3 uses the necking options specified in the Bars dialog box (choose Format, Bars). The *Customizing Bar Chart Layouts* chapter provides information on these options.

Showing Subtotals by Group

When you want to combine activity-level details with summary information, you can show subtotals for grouped activities in the layout.

To display subtotals only, summarize activities after grouping them.

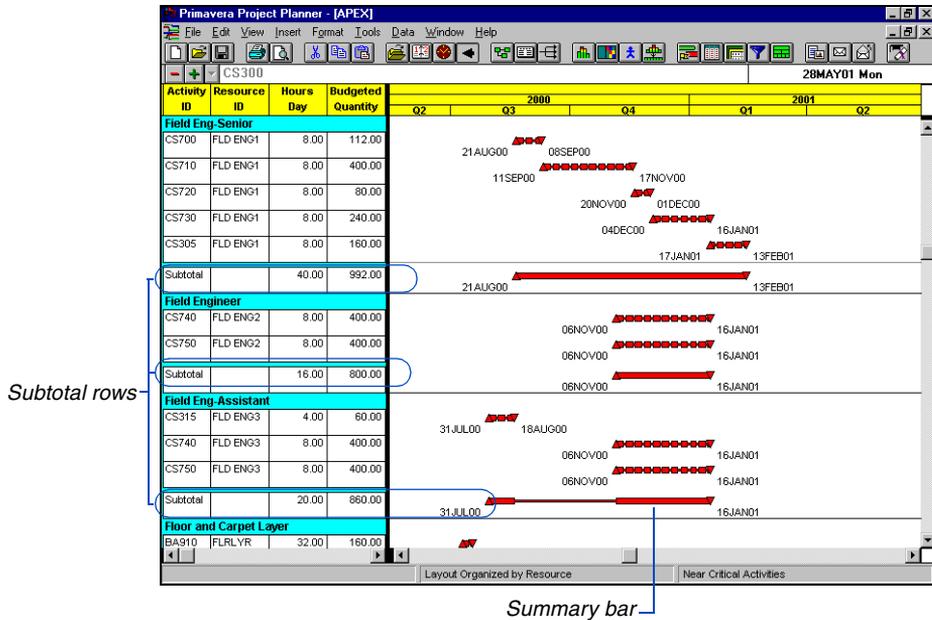
Show subtotals Choose Format, Organize. In the Total column, right-click and select the location of the subtotal row—either at the top or bottom of each group. Choose None when you do not want P3 to display a subtotal row for the group.

Specify whether to show subtotals above or below each group.

Group by	Order	Font	Bkgrnd	Text	New page	Total
Resource	Ascend	Arial,9,B				Bottom

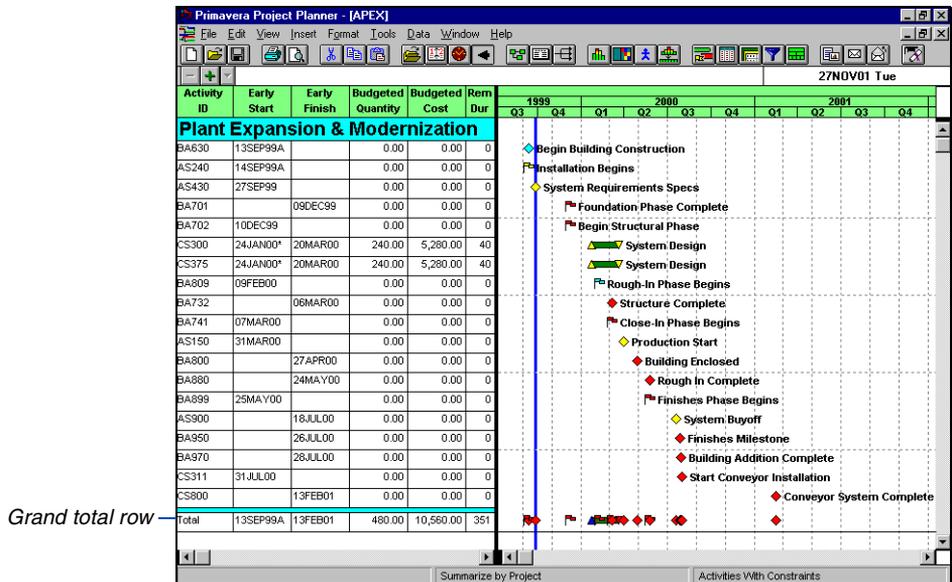
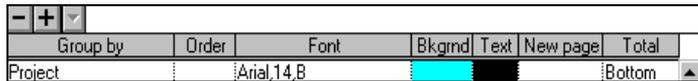
For details on the methods P3 uses to summarize data, see *How P3 Summarizes Data* in the next section.

The following layout, grouped by resource, shows subtotals below each resource. P3 calculates subtotals for data shown in columns. One summary bar is also shown for each subtotal row.



You can turn necking on or off for a subtotal bar using the Format, Summary Bars command. Choose One Summarized Bar and specify the necking options you want to use for subtotal bars.

Show a grand total To show a grand total row at the top or bottom of the layout, choose Format, Organize. Select Project from the Group By list and then either Top or Bottom in the Total field. P3 places the grand total row in the first or last row of the layout.



When showing subtotals or totals, P3 displays the word Subtotal or Total in the first column when Activity ID or Activity Description is listed in the first column.

Show subtotals and totals by WBS The same subtotalling options are available when you group activities by work breakdown structure. Project level totals are not available when you organize by WBS, unless Level 1 is defined at the project level with no activities below it, as demonstrated in the sample project, APEX.

How P3 Summarizes Data

P3 calculates summary data differently for different kinds of information, as follows:

Calendar ID When you summarize and show the calendar ID, if all the activities in the summary group are not assigned to the same calendar, P3 uses the summary calendar specified in the Summary Calculations dialog box (Choose Tools, Options, Summarization). If all activities in the summary group are assigned to the same calendar, P3 uses that calendar.

Costs and quantities P3 totals cost and quantity data items, such as budgeted cost, budgeted quantity, cost at completion, planned value, and units per timeperiod, by adding the values for each activity in the summary.

Custom data items P3 summarizes custom data items according to type. For example, items representing start dates show the earliest date, and items for finish dates show the latest dates. A precision or numeric custom data item is totaled for the summarized activities. A character-based custom data item displays a blank.

Dates If you display early dates, P3 shows the earliest early (or actual) start and the latest early (or actual) finish dates. The same rules apply for late dates and target early and late dates.

If you display actual dates, P3 shows the earliest actual start (blank if no activities have started) and the latest actual finish (blank if all activities have not finished) dates.

Durations P3 summarizes original and remaining duration values. For activities with no progress, the original and remaining durations are the number of workperiods between the earliest early start and latest early finish dates. If the summary activity has an actual start date, P3 calculates the original duration from the actual start date to the latest early finish date. P3 calculates remaining duration from the “internal” early start date to the latest early finish date, in this case. P3 keeps track of the early start date for each activity even when you assign an actual start date; this is referred to as the “internal” early start date of the remaining duration.

If the summary activity is 100 percent complete, P3 calculates the original duration as the difference between the actual start and the actual finish dates; the remaining duration is zero.

P3 considers nonworktime when summarizing activity data, based on calendar assignments. For example, if all activities in the summary are assigned to the same calendar, P3 uses that calendar. If activities are assigned to different calendars, P3 uses a continuous calendar, unless you enter a specific calendar in the Summary Calculations dialog box (choose Tools, Options, Summarization).

If you display actual duration, P3 calculates the data value as follows:

Earliest Actual Start – Data Date (for activities with no actual finish date)

Earliest Actual Start – Latest Actual Finish (all activities in the summary must have an actual finish date)

Float You can base total float of the summarized data on the start dates, finish dates, or most critical dates. Use the Schedule/Level Calculation Options dialog box to set this option (click Options in the Schedule or Resource Leveling dialog box). If you base float on start dates, and all activities are assigned to the same calendar, total float is the difference between the earliest late start and the earliest early start dates in work-periods. For finish dates, P3 uses the latest late finish and the latest early finish dates to calculate total float. The most critical float is the lowest total float encountered in the detailed activities from each summary group.

If all activities are not assigned to the same calendar, P3 defines total float as the difference between the earliest late start (or finish) and the earliest early start (or finish) dates, based on the calendar specified in the Summary Calculations dialog box.

Progress When summarizing activities, you can base progress on activity durations, resource use, or costs to date. Use the Summary Calculations dialog box to specify how to measure percent complete. The simplest measure uses duration to compare the amount of time remaining to complete the activities to their original duration. The following ratio is used for each summarized group:

$$\frac{[(\text{Sum of the Original Duration} - \text{Sum of the Remaining Duration})$$
$$\div \text{Sum of the Original Duration}] \times 100$$

Resource units and costs provide a more exact measure of actual use within each summarized group. If your project is labor-intensive, you may want to use resource units. If your project includes both labor and materials, the cost method may be the best approach, since P3 does not distinguish between different units of measure for resources. The resource and cost methods calculate the percent complete for each summarized group as the following:

$$(\text{Sum of Earned Value} \div \text{Sum of Budget}) \times 100$$

P3 calculates the earned value as the resource percent complete times the budget. If no resource percent complete is specified, P3 uses the schedule percent complete for the activity. The budget can be taken from either the current or the target schedule. Use the Earned Value Calculations dialog box (choose Tools, Options, Earned Value) to specify which budget to use to calculate earned value.

Resource percent complete is calculated according to the following equations:

$$\begin{aligned} \text{If Budgeted Cost} &= 0, \text{ then} \\ \text{Resource percent complete} &= \frac{\text{Sum of Earned Value Quantity (EVQ)}}{\text{Sum of Budget Quantity}} \end{aligned}$$

$$\begin{aligned} \text{If Budgeted Cost} &\neq 0, \text{ then} \\ \text{Resource percent complete} &= \frac{\text{Sum of Earned Value Cost (EVC)}}{\text{Sum of Budgeted Cost}} \end{aligned}$$

$$\begin{aligned} \text{where EVQ} &= \text{Budgeted Quantity} \times \text{Percent Complete and} \\ \text{EVC} &= \text{Budgeted Cost} \times \text{Percent Complete} \end{aligned}$$



P3 calculates summary resource percent complete if at least one activity in the summary has a resource percent complete; otherwise, the resource percent complete is blank.

Special cases for activity data items Some activity data items cannot be summarized. When summarizing the following data items, an empty column appears:

Activity ID*	Free float
Activity description*	WBS value
Activity type	Character-based custom data items
Activity codes	Blank column

Activity ID*	Free float
Activity ID codes	Project codes**
Cost account (11) (11 characters)	Predecessor/Successor
Cost account (12) (11 characters plus cost category)	Resource curve
Resource	Resource duration
Resource lag	

*When showing subtotals or totals, P3 displays the word Subtotal or Total in the first column of the subtotal or grand total row when either Activity ID or Activity description is defined as the first column.

**The column should contain a value if all activities beneath the band are from the same project. If the values are not all the same, the column is blank.

For descriptions of how dates and durations are summarized, refer to *Dates* or *Durations* earlier in this section.

Target data, comparison data, and variances Each target, comparison, or variance data item can be classified as either a “date” or a “duration” data item.

Customizing PERT Layouts

In this chapter:

What is PERT?

Using Timescaled PERT

Moving Around PERT

Keeping Track of Your Place in PERT

Reducing or Enlarging the View

Modifying Activity Ends and Colors

Formatting Relationship Lines

Changing the Content and Appearance of Activities

Creating Your Own Activity Template

Controlling the Space Between Activities

A PERT layout displays your project as a diagram of activities and relationships. Use PERT to examine the relationships among activities and the flow of work through a project.

Timescaled PERT is also available for you to see activities and relationships along a daily, weekly, or monthly timescale based on relationships or early/actual start dates.

Read this chapter to become familiar with PERT and timescaled PERT, and learn how to customize either type of layout to meet the needs of your project and requirements of your company.

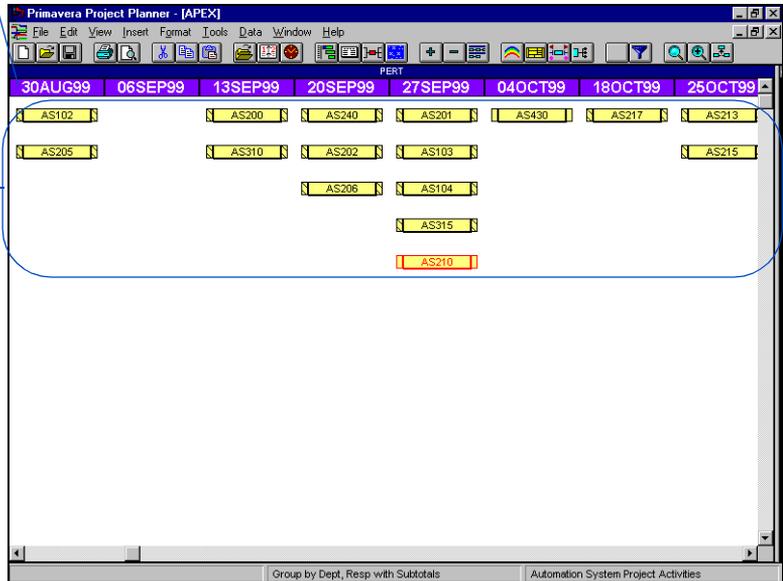
For each activity, the Classic Schedule layout shows activity ID, description, early start, early finish, original and remaining durations, and total float. You can customize the activity boxes to show only the information you want to see. For example, instead of showing early start and finish dates, show WBS codes and calendar IDs. You can adjust the font type, size, and style for the data items in the activity boxes. You can also modify the ends and colors for specific activities so they stand out from the rest of the project. For example, instead of using the standard box shape for all activities, format Engineering activities as ovals.

If you open timescaled PERT, the layout shows all activities in the current filter; if you have not applied a filter, all activities in the open project are displayed. The timescale is shown in daily, weekly, or monthly increments across the top of the layout, beginning with the earliest early start or actual start in the filter. A maximum of 20 activity boxes can appear beneath each day, week, or month according to their scheduled or actual start dates. For example, if the earliest early start date in the filter is 05JAN99, the work week starts on Monday, and the timescale interval is weekly, the first interval in the timescale would be 00:00 04JAN99 to 23:59 10JAN99. Any activities in the project that are scheduled to start or have started within that interval are shown below it in the timescaled PERT layout.

The activity boxes in timescaled PERT contain the same standard information included in the relationship logic version of PERT for each activity represented. You can customize these boxes to include different information, such as resource or cost data, and change the number of activities you want to see for each time increment.

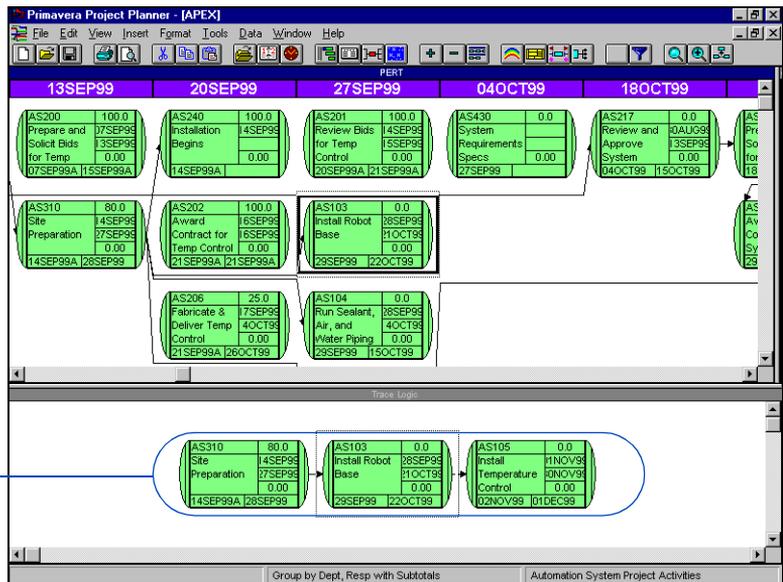
You can change the timescale from weekly (as shown) to daily or monthly by choosing Format, Organize, Arrangement, and selecting a different Timescale Interval option.

These activity boxes contain only the activity ID; change the information, text font, and color by choosing Format, Activity Box Configuration.



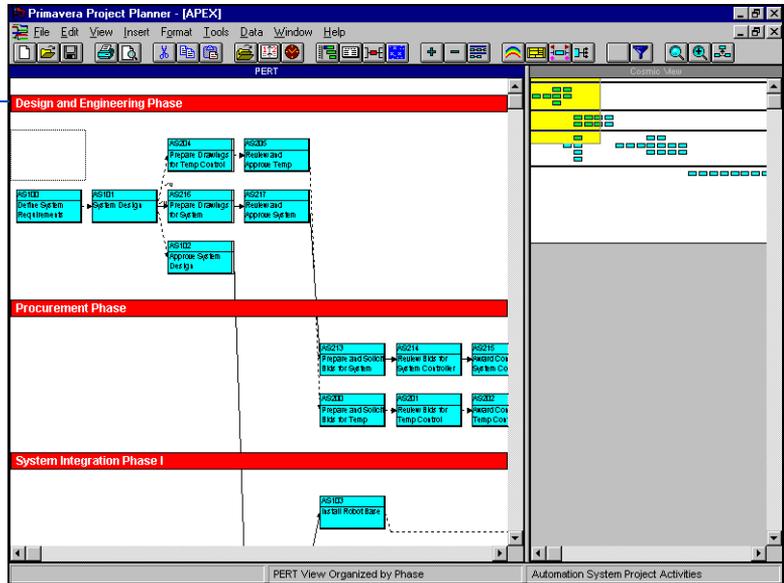
For information on using layouts, see the *Projects and Layouts* chapter.

PERT provides many options for customizing your presentations, as shown in the following examples.



Display Trace Logic to focus on an activity's predecessors and successors.

Organize activities into groups to focus on specific areas of the project, such as department or phase.



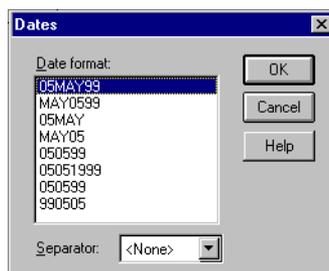
Using Timescaled PERT

A timescaled PERT layout places activity boxes based on relationships or on scheduled early or actual start date. In each case, P3 arranges activity boxes vertically using a daily, weekly, or monthly timescale, which appears across the top of the PERT layout. The activities are shown below each time interval in ascending order by earliest time started or scheduled to start, to latest time started or scheduled to start. P3 calculates the end of the timescale by creating enough time intervals to reflect the latest early or actual start in the current filter.

For information on customizing activity boxes, see *Changing the Content and Appearance of Activities* later in this chapter.

You can control the column width of the time intervals shown by modifying the width of activity boxes (choose Format, Activity Box Configuration). P3 displays up to 20 activity boxes below each time interval to represent those activities that have started or are scheduled to start within that period. If no activities have scheduled or actual start dates within a timescale interval, that interval is not displayed. For example, if no activities are scheduled to start or have started in the week of 11JAN99, the prior week labeled 04JAN99 and the succeeding week labeled 18JAN99 are displayed; the week labeled 11JAN99 is not displayed in the timescale.

You can control the number of activity boxes you want to see, the timescale background and text color, and the font for the timescale text. The timescale date format is based on the setting in the Date Format dialog box (choose Format, Dates).

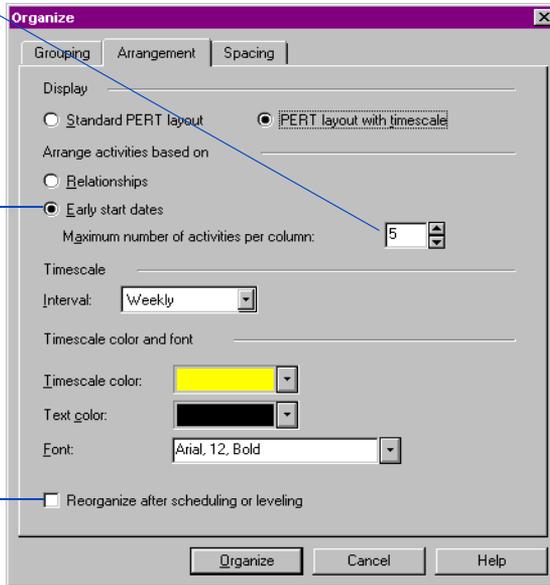


Configure timescaled PERT From a PERT layout, choose Format, Organize, click the Arrangement tab, and choose the PERT Layout with Timescale option.

P3 adjusts the column width and height according to the number of activities you specify if you choose the Early Start Dates option; the width is also affected by the activity box configuration.

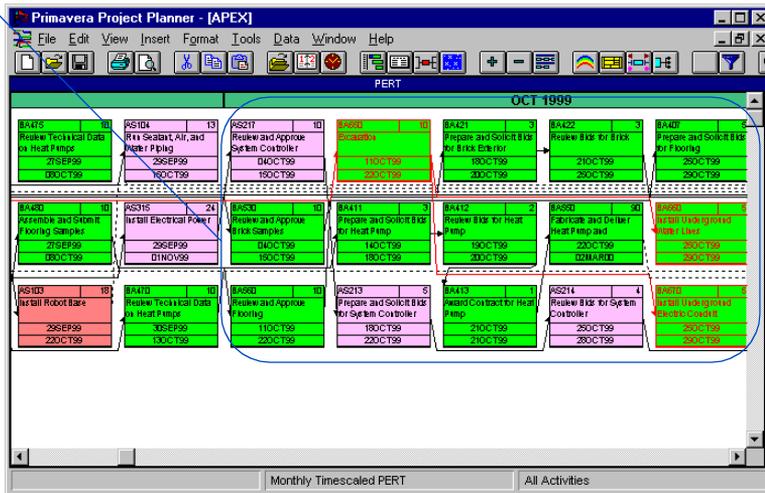
By default, P3 arranges activities by predecessor/successor logic, then places the activity boxes according to early/actual start.

Mark to reorganize activities automatically each time you perform a scheduling or leveling run.



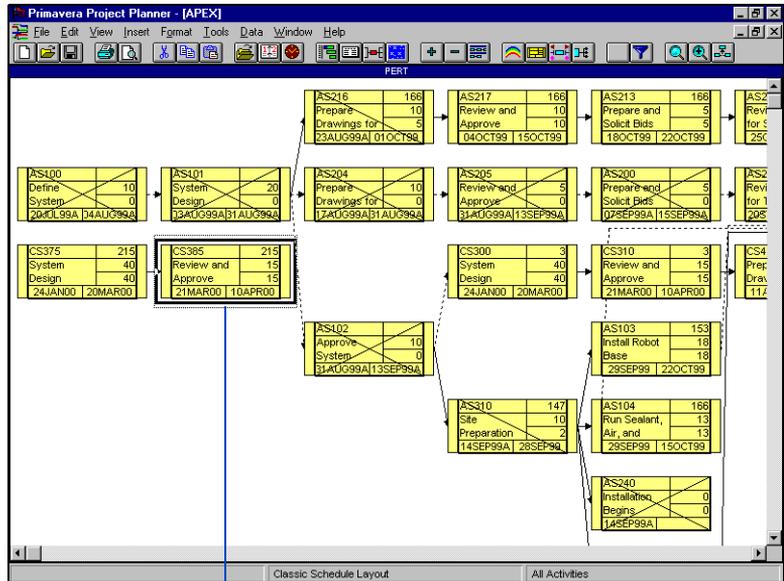
You can show relationships, include Trace Logic which shows the relationship logic for a selected activity in the timescaled layout, and modify activity boxes. You can also insert and delete rows and columns to adjust spacing in the layout.

This timescaled PERT layout specifies a maximum of three activities per column. P3 automatically creates additional columns under the time interval to hold all the applicable activities.



Moving Around PERT

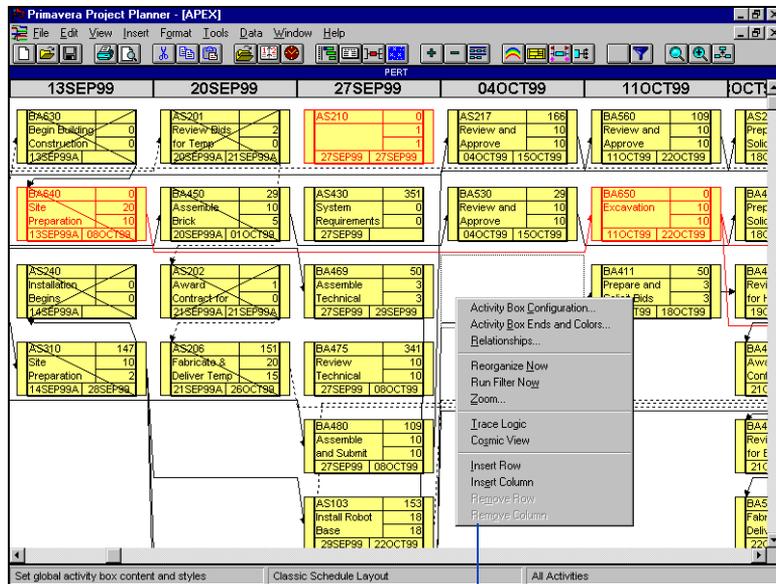
P3 provides several ways for you to move around your project in PERT layouts. Click the scroll bars to move vertically and horizontally.



P3 displays a black outline around a selected activity. Use the mouse or arrow keys to move between activities.

You can also use the keyboard to move around the window.

Quick access to menu commands Instead of navigating the menu bar to access PERT or timescaled PERT commands, right-click anywhere in the layout to access a menu of common functions.



Gain quick access to common PERT commands.

Keeping Track of Your Place in PERT

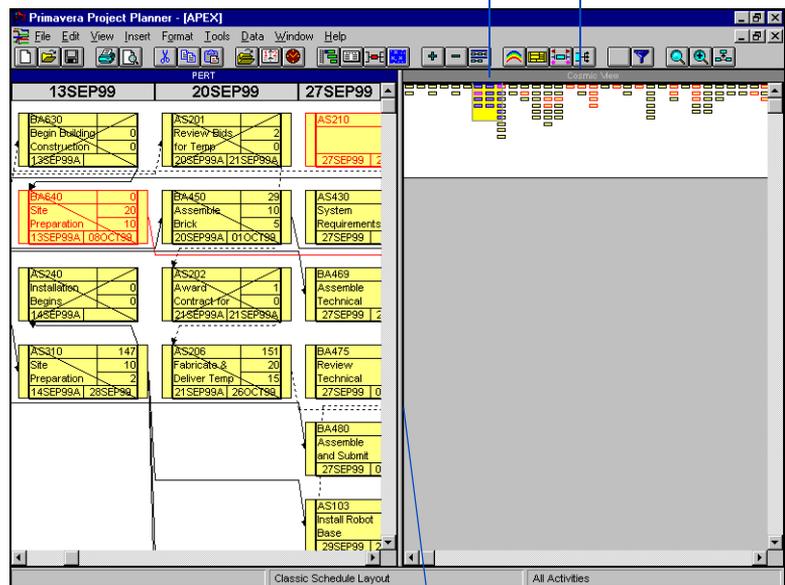


The Cosmic view enables you to navigate PERT and timescaled PERT while keeping track of your position in relation to the entire project. The Cosmic view displays your project at a reduced magnification so you can see almost all of your project on one page.

Display the Cosmic view Choose View, Cosmic View, or right-click in an empty area of the project window and choose Cosmic View. P3 displays the Cosmic view to the right of the PERT or timescaled PERT layout. The Cosmic view shows only activities; relationships and text are not visible.

To view the entire project in the Cosmic view at the smallest magnification, right-click in the Cosmic view and choose Zoom Out.

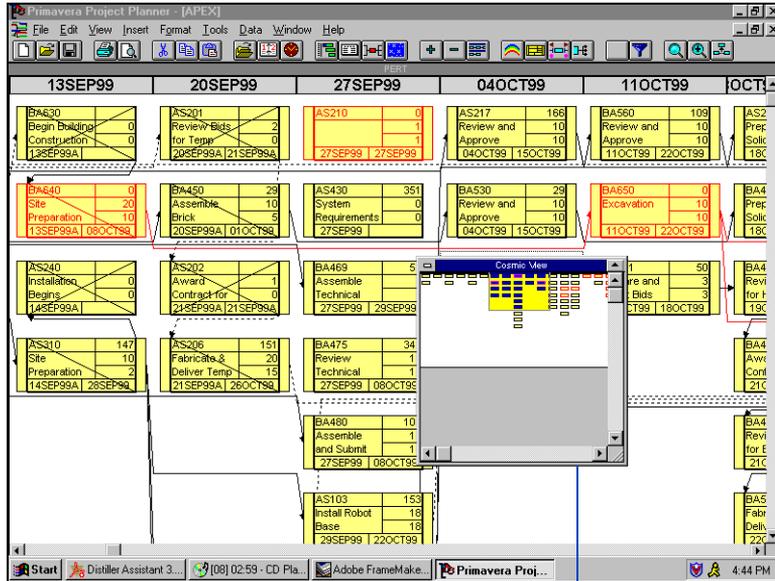
The shaded box represents the portion of the project in the PERT layout. Cosmic view



Drag the vertical split bar left or right to adjust the size of the PERT layout and Cosmic view.

Move around the network Drag the shaded box to the portion of the project you want to view. The PERT layout changes to display that portion of the project.

Move the Cosmic view window You can change the Cosmic view to a movable window. Right-click anywhere in the Cosmic view, then choose **Undock Cosmic View**. P3 reduces the Cosmic view window and places it in your project window.



Undock the Cosmic view so you can place it anywhere in the window.

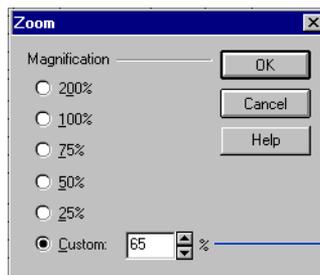
To move the Cosmic view window, drag the title bar. To change the Cosmic view window to a docked window, right-click in the Cosmic view window and choose **Dock Cosmic View**.

Reducing or Enlarging the View



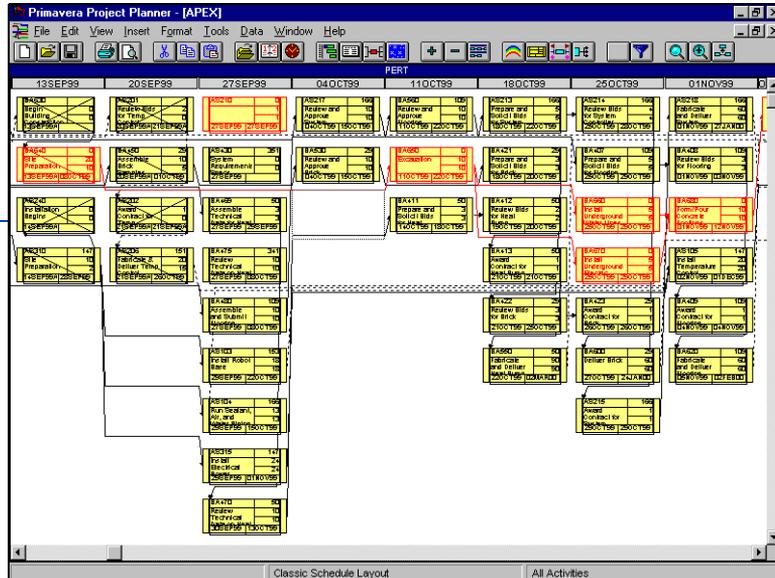
Enlarge your project to focus on details or reduce the size of the view to show the big picture.

Zoom the view To make activity boxes smaller and fit more activities in the window, click the Zoom Out icon. To magnify activity boxes, click the Zoom In icon. P3 zooms down to 25% or as high as 200% in 25% increments. To display the view at a specific percentage, choose View, Zoom and choose the Custom option.



Enter a value between 1 and 400.

A 65% zoom level displays more activities onscreen.



For information on customizing activity boxes, see [Changing the Content and Appearance of Activities](#) later in this chapter.



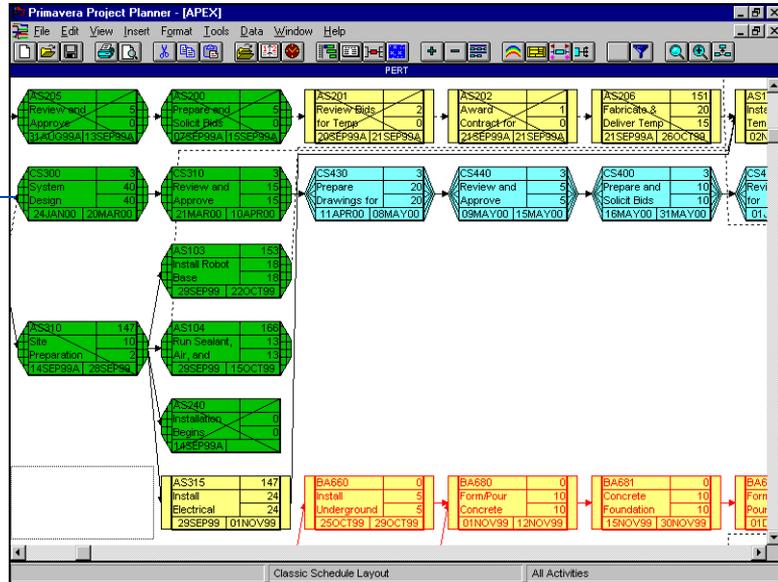
The number of activities that fit onscreen also depends on the activity-box configuration and size. Choose **Format, Activity Box Configuration** to change the size of activity boxes.

Modifying Activity Ends and Colors



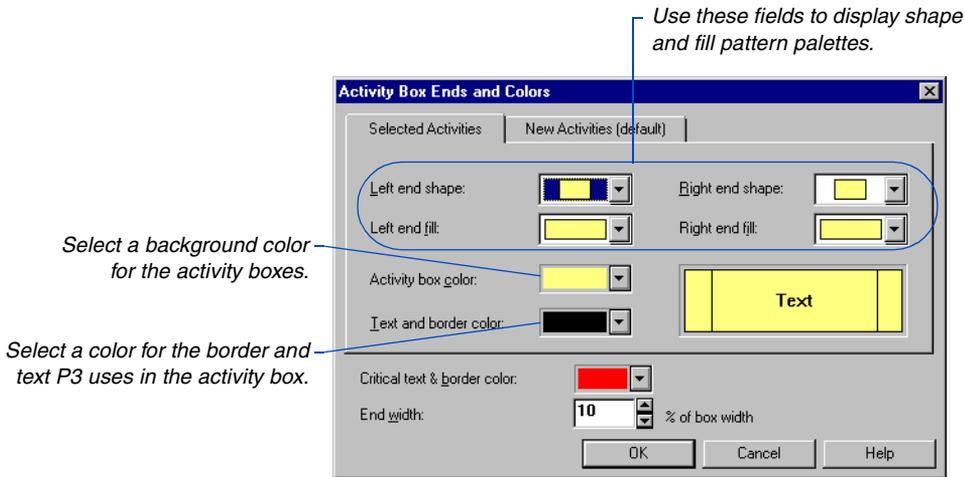
You can change the appearance of specific activities so they stand out from the rest of the project. For example, configure all Engineering activities as yellow ovals, and Purchasing activities as blue squares. You can also assign different patterns to the ends, and change the color of text in the activity box.

Identify groups of activities using different end shapes and colors.



For information about selecting activities in the PERT layout, see the *Working with Activities* chapter.

Customize activity ends and colors Select the activities that you want to change, then choose Format, Activity Box Ends and Colors. You can also right-click anywhere in the project window and choose Activity Box Ends and Colors. To quickly select all activities, choose Edit, Select All.



To select a group of activities based on a common element, such as all activities that are part of the design phase, choose *Format, Filter*.

Customize the appearance of new activities You can also change the shapes and colors of activities that are new to the project or layout. Click the *New Activities* tab and select new end shapes and colors. For example, if your layout contains Programming activities and you run a filter to also show Marketing activities, the Marketing activity boxes will use the settings defined for new activities.

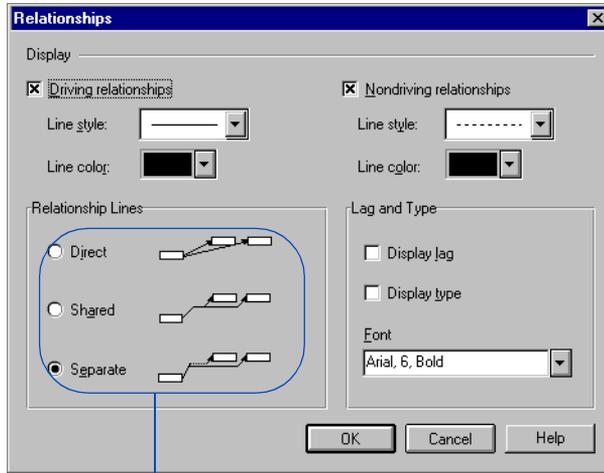
Customize critical activities P3 identifies critical activities by using red as the activity box border and text color. To use a different color for critical activities, select a color in the *Critical Text and Border Color* field. Make sure the critical color will be visible with the current fill color(s) for activity boxes.

Adjust the width of activity box ends P3 sizes activity box ends based on the length of the activity box. To change the end point width, enter a percentage value in the *End Width* field. For example, enter 25 to size the ends as 25 percent of the activity-box length.

Formatting Relationship Lines



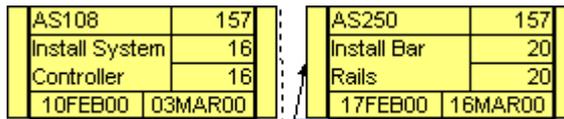
Customize a presentation by changing the line types and colors for driving and nondriving relationships. You can also choose to hide or show relationships that drive the schedule. To modify relationship lines, choose Format, Relationships.



Choose how relationships appear onscreen.

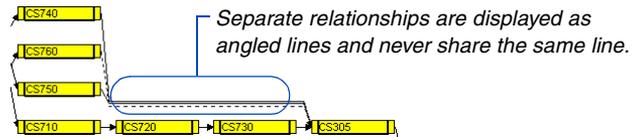
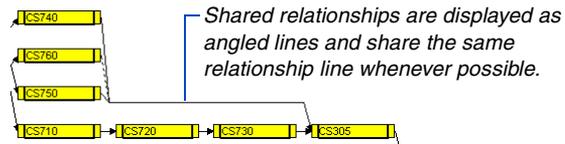
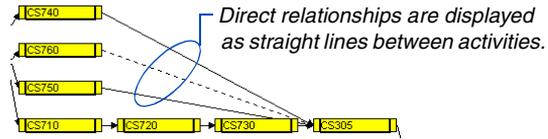
Lag is a delay between an activity and its successor. P3 does not identify finish to start (FS) relationships or relationships with zero lag.

Show relationship types and lag amounts P3 indicates the relationship type and lag amount by displaying abbreviations and values next to the relationship line. To hide these items, clear the Display Lag and Display Type checkboxes. You can also adjust the font type, size, and style in the Font field.



SS 5 represents a start to start relationship with five days lag.

Format the angle of relationships Change how relationship lines are drawn onscreen by choosing the Direct, Shared, or Separate option.

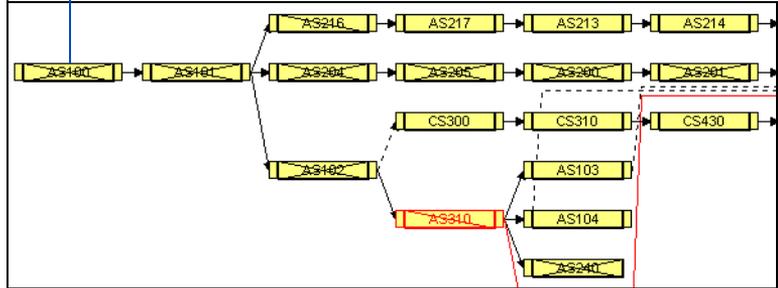


Changing the Content and Appearance of Activities

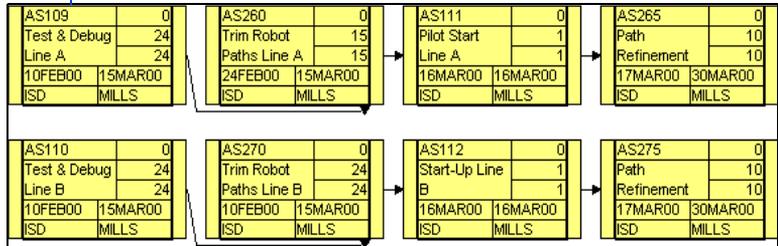


Customize a PERT presentation by changing the type and amount of data that are displayed for activities. P3 provides a set of activity templates that show activity data at various levels of detail.

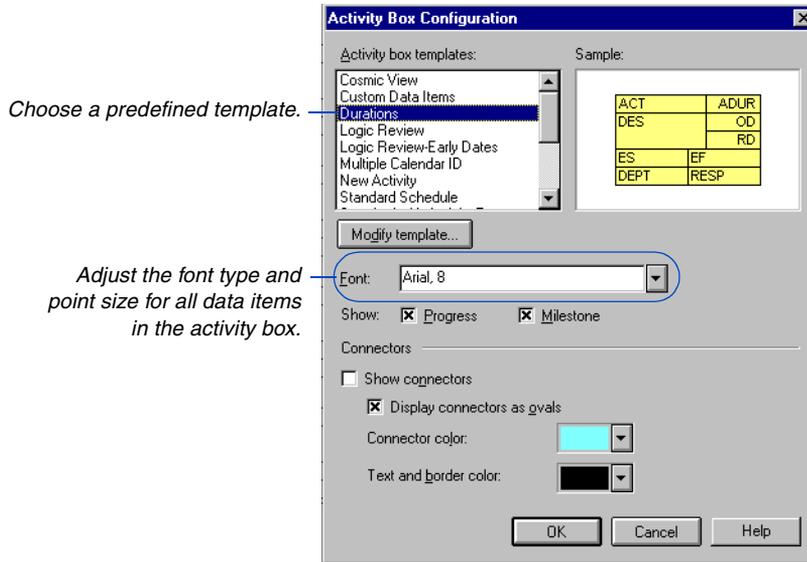
This layout uses a template that shows only the activity ID. Use this format when you need to fit more activities on a page.



Use a template that shows activity details such as ID, description, dates, durations, and total float.



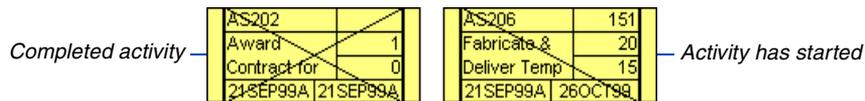
Choose an activity box template Choose Format, Activity Box Configuration. Click the scroll arrows in the Activity Box Template list box. Select the template you want to use and click OK. P3 applies this template to all activities in the project.



Choose a predefined template.

Adjust the font type and point size for all data items in the activity box.

Show or hide progress P3 indicates progress by drawing an X on a complete activity or a slash on an activity in progress. To hide the progress indicators, clear the Show Progress checkbox.



For more information about milestone and flag activities, see the *Working with Activities* chapter.

Show milestones and flags Milestones and flags are activities with no duration that indicate the beginning or end of a major event or group of activities. P3 displays milestone and flag activities with only one end, depending on whether the activity is a start or finish milestone or flag.

A start milestone activity has only a left end, indicating that the activity has no finish dates.

BA809	32
Rough-In	0
Phase Begins	0
09FEB00	

If you clear the Show Milestone checkbox, P3 displays milestones and flags with both ends.

For details on changing the end shapes and colors for activities, see *Modifying Activity Ends and Colors* earlier in this chapter.

You can change the appearance of milestones and flags; for example, you may want to use a pattern for the activity ends so the milestones and flags stand out from the rest of the activities. Select the appropriate milestone and flag activities, then choose Format, Activity Box Ends and Colors.

Displaying Connector Blocks

Sometimes the predecessor or successor of an activity does not appear in a layout because a filter shows only certain activities. As a result, some activities may seem to be missing relationships. You can display connectors to represent activities excluded from the layout.

AS106	147
Set &	18
Connect	18
02DEC99	28DEC99



Connector blocks appear as ovals; they represent activities not included in the current layout. This connector represents the successor to activity AS106.



Connector blocks are not available for timescaled PERT layouts.

Display connector blocks Choose Format, Activity Box Configuration. Mark the Show Connectors checkbox. Then adjust the background, text, and border color for connector blocks.

Creating Your Own Activity Template

P3 provides 15 templates with different activity box formats. If the configuration you want doesn't exist, you can modify a template or create your own template. Start with one of the defined templates, then modify it by adding and deleting rows and choosing the data items to appear in each cell. You can save up to 25 templates for each layout.



You must save the layout to save changes to templates.

Create a new template Choose Format, Activity Box Configuration; click Modify Template. In the Name field, select a template that is similar to the one you want to create, then enter a new name.

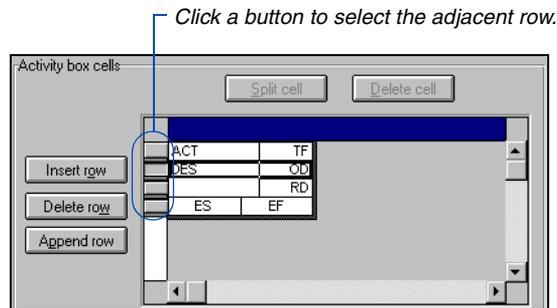
1 To create a new template, enter a new name.

2 Select a data item for the highlighted cell. You can also adjust the alignment and font style for each cell.

3 Adds the new template to the list.

Modify an existing template Choose Format, Activity Box Configuration; click Modify Template. Make the changes you want, then click Change Template.

Add rows Click the button to the left of a row, then click Insert Row. P3 adds the new row above the selected row. To add a row to the bottom of the activity box, click Append Row.



You can also press the Ctrl (Control) key and click a cell to add a cell.

Delete rows Select a row, then click Delete Row.

Add cells Select the cell next to where you want to place the new cell, then click Split Cell. P3 divides the selected cell into two cells.

Delete cells To delete a cell, select the cell and click Delete Cell, or press the Delete key.

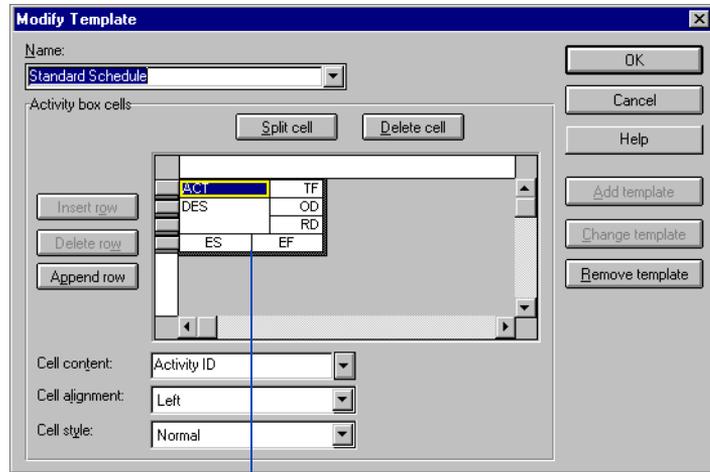
Resize cells Drag a row or cell separator until the cell reaches the size you want.

Resize the activity box Position the mouse at the bottom right corner of the activity box until the pointer changes to a double-headed diagonal arrow, then drag the mouse until the box reaches the size you want.

Transfer templates P3 stores up to 25 activity box templates for each layout. You can use templates stored in another layout to create a new layout; transfer the layout containing the templates and save it as the new layout. If your layout is already established, you can still access templates stored in other layouts by copying and pasting them to and from the Clipboard.

- 1 Select the template you want to copy in the Modify Template dialog box, then press Ctrl+C to copy it to the Clipboard.
- 2 Close the current layout and open the layout where you want to paste the template.
- 3 Open the Modify Template dialog box and click in the template area. Press Ctrl+V to paste the template. P3 does not overwrite the displayed template.
- 4 Specify a name in the Name field, then click Add template to add the template to the current layout.

You must save the layout to save the transferred template.



Click anywhere in the template area, then press **Ctrl+V** to paste a previously copied template.

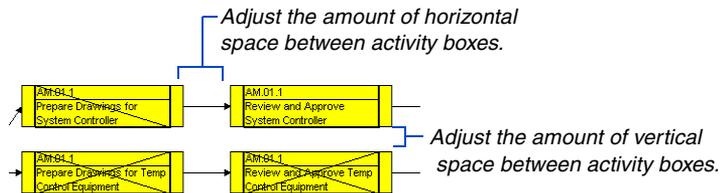
For information on creating default layouts, see the *Projects and Layouts* chapter.



*If you want a specific set of templates for new layouts, save the layout containing these templates as the default layout using the **View, Layout, Make Default** command.*

Controlling the Space Between Activities

You can add space between activities to widen the network, or reduce space to see more activities per page.



Adjust space between activity boxes Choose Format, Organize, then click the Spacing tab. Type new measurements in the Vertical and Horizontal Spacing fields.

Inserting and Removing Rows and Columns

You can expand or decrease your network of activities by inserting or deleting columns or rows in PERT. For example, you may want to add a row and then copy a group of activities to it, or you might want to remove an empty column so you can see more activities in the layout. You can insert and remove rows and columns in both PERT and timescaled PERT; these options are not available for Trace Logic or Cosmic View.

You can also right-click and use the Cut, Copy, and Paste commands to move activity boxes from one place to another.

Insert or delete a row Select the activity box or area of the layout above which you want to insert a row and choose Insert, Row. To delete a row, select an empty row and choose Insert, Remove Row.

Insert or delete a column Select the activity box or area of the layout to the left of which you want to insert a column and choose Insert, Column. To delete a column, select an empty column and choose Insert, Remove Column.



To move an activity box from one row or column to another in PERT, select the box and drag it to the location you want.

Customizing Resource/Cost Profiles and Tables

In this chapter:

Reviewing Resource Assignments Using Profiles

Displaying Resource/Cost Loading in a Table

Specifying Display Options for Profiles and Tables

Tracking Resource Overloads

Overlaying Cumulative Curves on a Profile

Selecting Resources/Cost Accounts

Selecting Multiple Resources for a Table

Stacking Multiple Resource Bars in One Profile

P3 provides resource and cost graphics that you can include as part of your Bar chart to track resource requirements and budgets. Display a profile to view resource use or money spent per timeperiod. Show a curve with the profile to trace accumulated units and costs over time. Display a table to see a spreadsheet of quantities or costs per timeperiod.

Analyze resources or costs for one resource or for a selected group of resources and/or cost accounts based on all activities or only selected activities.

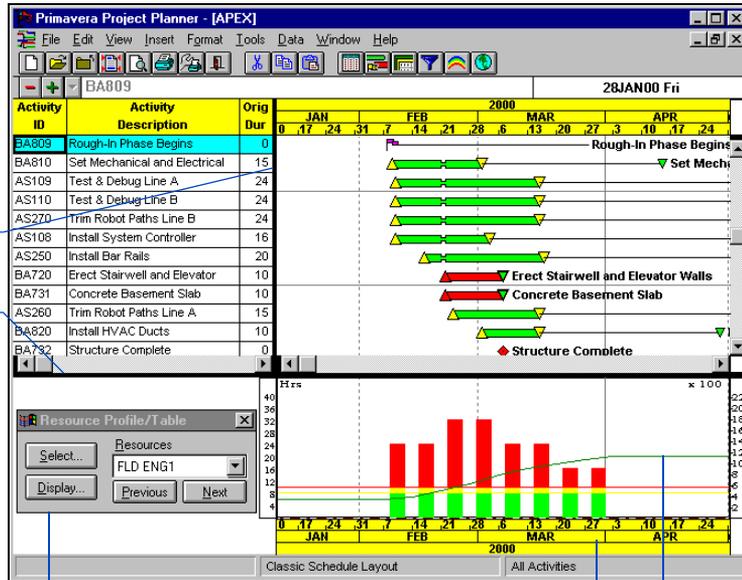
You can keep these graphics displayed while working with the project. As you change project data, P3 automatically adjusts the graphics to reflect the changes.

Reviewing Resource Assignments Using Profiles

Profiles graphically represent resource or cost expenditures by timeperiod. Display a profile in your Bar chart to examine resource availability for all or several activities. If you store period performance, P3 spreads resource and cost expenditures evenly for each update period and spreads expenditures for the current period from the last close out date to the data date. If you do not store period performance, P3 spreads resource and cost expenditures evenly from the resource start through the data date.

Display a resource/cost profile Choose View, Resource Profile. P3 displays the profile at the bottom of the project window and shows use for one resource.

Drag the vertical split bar to adjust the width of the profile.
 Drag the horizontal split bar to adjust the height of the profile.



Resource Profile/Table options box.

The profile shows units per timeperiod.

The curve shows cumulative use.

Two scales appear on the y (vertical) axis on either side of the profile. The left y-axis scale displays the use or cost for the histogram; the right y-axis scale displays the accumulated use or cost for the cumulative curve.

For details on customizing the profile, see *Specifying Display Options for Profiles and Tables* later in this chapter.

P3 displays a Resource Profile/Table options box; click Display to customize the appearance of the profile. Click Select to create a profile based on cost accounts, or a combination of resources/cost accounts.

Select a resource for the profile Click in the Resources field in the Resource Profile/Table options box and select a resource name. To create a profile that shows use for all resources/cost accounts in the project, choose Total.



Select a resource for the profile.

Scroll through profiles of each resource defined in the Resources Dictionary.

Adjust the timescale for the profile The timescale for the profile spans the same number of timeperiods as the timescale for the Bar chart. Use the horizontal scroll bar above the Bar chart to view different timeperiods. As you compress or expand the timescale above the Bar chart, change the timescale font, or show ordinal dates, the timescale for the profile changes accordingly.

For information on adjusting the timescale and sight lines, see the *Customizing Bar Chart Layouts* chapter.

Adjust sight lines The profile shows the same major vertical sight lines that appear in the Bar chart. These sight lines help you identify a time-period for a profile bar or curve. You can modify the placement and appearance of sight lines using the Format, Sight Lines command.

How Does P3 Spread Resources/Costs?

P3 spreads resource and cost values across the dates the assigned resources are scheduled to work according to the activity type. For a task activity, P3 spreads resources over workdays according to the base calendar; for an independent activity, P3 spreads resources over workdays based on their own resource calendars; for a meeting activity, P3 spreads resources over workdays shared by their resource calendars in a combined calendar.

For more information about activity types, see the *Working with Activities* chapter.

The profile bars and table values initially reflect the current estimate. The bars/values before the data date reflect actual to date use/cost. Bars/values after the data date reflect the estimate to complete.

If you store period performance, values are spread evenly in the update period for which they were recorded. The following table shows how P3 displays period performance for a monthly project with the specified closeout dates.

Period	Closeout Date	Update Period	Actual This Period
1	January 14	December 15 - January 14	100
2	February 14	January 15 - February 14	200
3	March 14	February 15 - March 14	300

Month Spread With Actuals

December	50 (half of period 1)
January	150 (half of period 1 and 2)
February	350 (half of period 2 and 3)
March	150 (half of period 3)

If you do not store period performance, P3 spreads the values evenly from the resource start to the data date.

Month Spread Without Actuals

December	150 (600 divided by 4 periods)
January	150
February	150
March	150

Displaying Resource/Cost Loading in a Table

Display a resource/cost table to see a tabular list of use or costs per time-period.

Display a resource/cost table Choose View, Resource Table. P3 displays the table at the bottom of the project window. The table shows resource use for all activities in the layout.

Drag the vertical split bar to adjust the width of the table.

Drag the horizontal split bar to adjust the height of the table.

Resource Profile/ Table options box

The screenshot shows the Primavera Project Planner interface. At the top, there's a menu bar (File, Edit, View, Insert, Format, Tools, Data, Window, Help) and a toolbar. Below that is a project window titled 'Define System Requirements' for '21JUL99 Wed'. The main area displays a Gantt chart with activities like 'Design Building Addition', 'Define System Requirements', 'System Design', etc., with arrows indicating their duration. At the bottom, a 'Resource Profile/ Table' options box is open, showing a table with columns for months (JUL, AUG, SEP, OCT) and rows for resources (Accounts Manager, Analyst-Systems Automation, etc.). The 'Resources' dropdown is set to 'ACCTS'. Buttons for 'Select...', 'Display...', 'Previous', and 'Next' are visible.

For details on customizing the table, see *Specifying Display Options for Profiles and Tables* later in this chapter.

P3 displays a Resource Profile/Table options box; click Display to customize the appearance of the table. Click Select to create a table showing values based on cost accounts, or a combination of resources/cost accounts.

The table lists values for all resources defined in the Resource Dictionary. To jump to a specific resource, click in the Resources field in the Resource Profile/Table options box and select the resource.

Scroll through the rows in the table.

Jump to another resource.

This close-up shows the 'Resource Profile/ Table' dialog box. The 'Resources' dropdown menu is open, showing a list of resources including 'FLD ENG1'. The 'Display...' button is highlighted. Arrows point from the text to the dropdown menu and the 'Display...' button.

Row	Group Name																			
1	Total		25	25	55	45	52	43	61	31	77	62	98	98	124	116	11			

Resource Profile/Table	
Select...	Resources
Display...	Total
Previous	Next

19	26	2	9	16	23	30	6	13	20	27	4	11	18	25
JUL				AUG				SEP				OCT		
1999														

Choose *Total* to see total use per timeperiod for all resources.

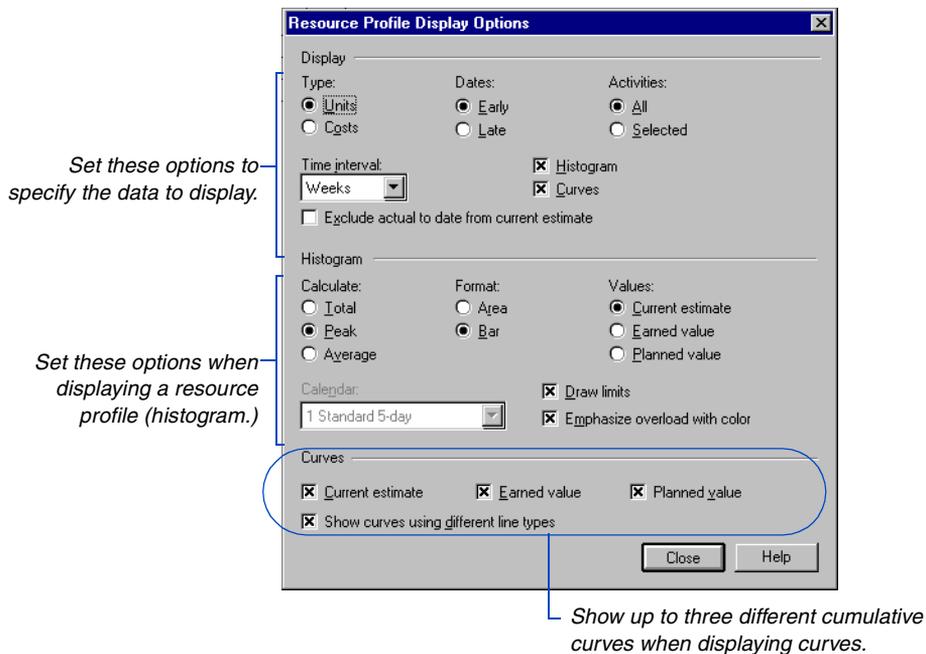
Adjust the timescale for the table The timescale for the table spans the same number of timeperiods as the timescale for the Bar chart. Use the horizontal scroll bar above the table to view different timeperiods. As you compress or expand the timescale above the Bar chart, change the timescale font, or show ordinal dates, the timescale for the table changes accordingly.

If you compress the timescale, the resulting table cells may be too small to show the resource/cost values. In this case, P3 displays an asterisk to indicate truncation. Expand the timescale until the cells are wide enough to show data.

Specifying Display Options for Profiles and Tables

You can customize the profile and table to show costs instead of resource use. You can also adjust the time interval, change the format for the profile bars, show normal and maximum availability limits, and adjust the font for values in the table.

Set display options for profiles or tables With a resource profile or table displayed (choose View, Resource Profile or View, Resource Table), click Display in the Resource Profile/Table options box.



Many display options are the same for the profile and table.

Resource Table Display Options

Display

Type: Units Costs

Dates: Early Late

Activities: All Selected

Time interval: Weeks

Decimals: 0

Font: Arial,8

Exclude actual to date from current estimate

Table

Calculate: Total Peak Average

Values: Current estimate Earned value Planned value

Group name: Resource Description

Calendar: 1 Standard 5-day

Close Help

Show up to two decimal places for resource/cost values.

Change the font for the resource/cost values.

Display the resource's name or its full description in the table.

Display use/costs for selected activities You can examine resource use or cost only for specific activities. Select the activities in Columns, then choose Selected in the Resource Profile/Table Display Options dialog box.

Use the Format, Screen Colors command to change the colors of profiles.

Primavera Project Planner - [APEX]

File Edit View Insert Format Tools Data Window Help

Test & Debug Line A 12JAN00 Wed

Activity ID	Activity Description	Orig Dur	Rem Dur	%	Early Start
AS103	Install Robot Base	18	18	0	29SEP99
AS104	Run Sealant, Air, and Water	13	13	0	29SEP99
AS105	Install Temperature Control	20	20	0	02NOV99
AS106	Set & Connect Robots	18	18	0	02DEC99
AS107	Install System & Misc.	30	30	0	29DEC99
AS109	Test & Debug Line A	24	24	0	10FEB00
AS110	Test & Debug Line B	24	24	0	10FEB00
AS270	Trim Robot Paths Line B	24	24	0	10FEB00
AS108	Install System Controller	16	16	0	10FEB00
AS250	Install Bar Rails	20	20	0	17FEB00
AS260	Trim Robot Paths Line A	15	15	0	24FEB00
AS111	Pilot Start Line A	1	1	0	16MAR00

Resource Profile/Bar chart showing requirements for FLD ENG1. Y-axis: Hrs (0-40). X-axis: Months (JAN, FEB, MAR, APR 2000).

This profile shows the field engineer requirements for a specific group of activities.

The selected time interval affects the width of the table cells. If the resource/cost values do not fit, P3 displays an asterisk.

Change the time interval The profile and table can reflect use or cost per day, week, month, quarter, or year.

The selected time interval and the density of the timescale (controlled from the Bar area), determine the appearance of the profile and table timescales. For example, if the timescale is compressed to show 8 months, there may not be enough space to use a time interval of days for the profile or table. If there is not enough room to show the selected time interval, select a larger time interval, or change the density of the timescale.

Specify resource/cost calculations If you specify a time interval that does not match the project planning unit, select a method for calculating resource/cost information in the profile and table. The following table describes each Calculate option.

Choose To display

Total	The sum of the use/cost for each time interval.
Peak	The highest use/cost value for the time interval. For example, if the project planning unit is days and the profile or table uses a weekly time interval, P3 displays the highest daily value for each week.
Average	The total use divided by the number of time units in the time interval. P3 spreads the actual to date amount from the data date to the early finish date. When showing average use or cost, select a calendar to use for determining the average value by clicking <input type="checkbox"/> in the Calendar field.

Show current estimate, earned value, or planned value Instead of focusing on the current estimate, you can set up the profile and table to show earned value or the planned value by choosing the Earned Value or Planned Value options in the Resource Profile/ Table Display Options dialog box.

Choose Tools, Options, Earned Value to specify whether P3 uses the budget in Target 1 or the current budget to calculate the planned value and earned value.

Marking Earned Value displays units or costs up to the data date for resources/cost accounts in the profile or table, based on the target or current budget. P3 calculates the value of work performed (earned value) by multiplying the resource percent complete by either the Target 1 budget or current budget. If resource percent complete is blank, P3 uses schedule percent complete. Earned value is also called Budgeted Cost for Work Performed (BCWP) or Budgeted Quantity for Work Performed (BQWP).



If you store period performance, P3 uses the actual values as part of the calculation.

Choosing Planned Value displays the budget values spread over the target dates. Bars or table values before the data date display the amount that will be spent or completed by the current data date, based on the target or current budget. Bars or table values after the data date represent the remaining budget (estimate to complete). Planned Value is commonly called Budgeted Cost for Work Scheduled (BCWS).



If you store period performance, changing past period prices after work has started may create cost variances.

Exclude actual data When displaying values for the current estimate, you can exclude actual to date expenditures from the display and show only the estimate to complete. P3 does not show any amounts earned or spent before the data date in the profile.

Mark this checkbox to exclude all amounts earned/spent before the data date from the current estimate histogram and curve.

Resource Profile Display Options

Display

Type: Units Cgsts

Dates: Early Late

Activities: All Selected

Time interval: Weeks

Histogram Curves

Exclude actual to date from current estimate

Histogram

Calculate: Total Peak Average

Format: Area Bar

Values: Current estimate Earned value Planned value

Calendar: 1 Standard 5-day

Draw limits Emphasize overload with color

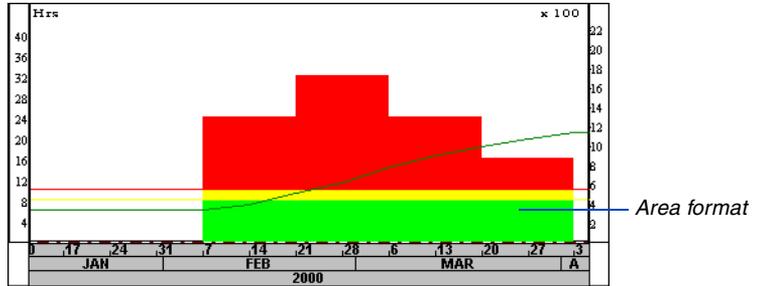
Curves

Current estimate Earned value Planned value

Show curves using different line types

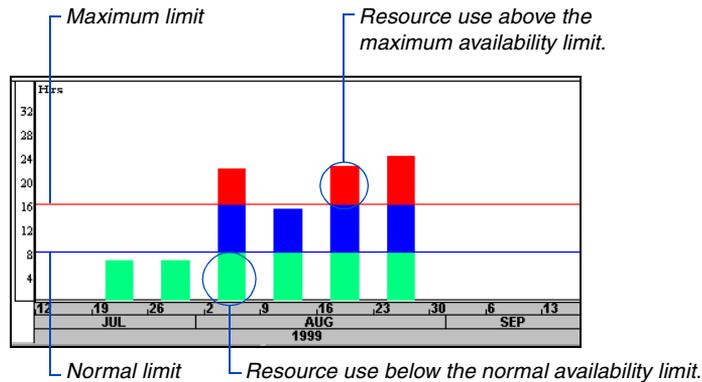
Close Help

Specify the format for profiles The profile can reflect use or cost using a bar or area format; choose Area or Bar in the Resource Profile Display Options dialog box. The area format shows a continuous profile spread across the timescale. The bar format shows individual bars for each timeperiod.



Tracking Resource Overloads

When displaying resource use for one resource, you can format the profile to show areas of resource overloads. Mark the Draw Limits checkbox in the Resource Profile Display Options dialog box; P3 draws normal and maximum limit lines across the profile to identify availability limits. Mark the Emphasize Overload With Color checkbox to highlight portions of the profile that are above the normal and maximum availability limits.



If you use a time interval that is greater than the project planning unit, resource use must be calculated as peak or average to display overloads. Choose Peak or Average in the Resource Profile Display Options dialog box.

You can also track resource overloads using the resource/cost table. P3 displays resource units above the maximum availability limit in red.

Define resource availability limits in the Resource Dictionary. For details, see the *Planning Resources and Costs* chapter.

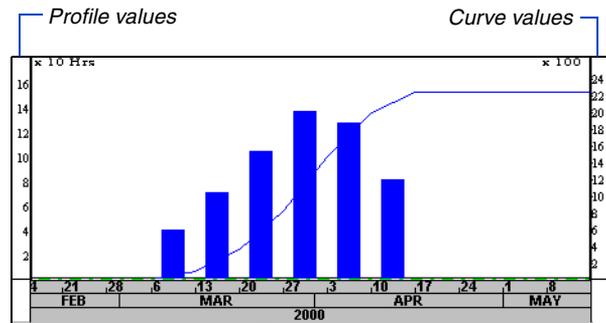
You can customize the colors used for the limit lines and for the normal, above normal, and above maximum limit areas. Choose Format, Screen Colors.

Overlaying Cumulative Curves on a Profile

You can show a cumulative curve with the resource/cost profile to examine accumulated use or cost over a certain timeperiod.

To display only a cumulative curve, clear the Histogram checkbox.

Display a cumulative curve on a resource/cost profile Mark the Curves checkbox in the Resource Profile Display Options dialog box. (To display the Resource Profiles Options dialog box, click Display in the Resource Profile/Table options box.) When you show a histogram and curve, P3 displays two y (vertical) axes.



Right-click anywhere on the curve to display a legend that identifies the curve and shows the exact value for the timeperiod where you clicked.

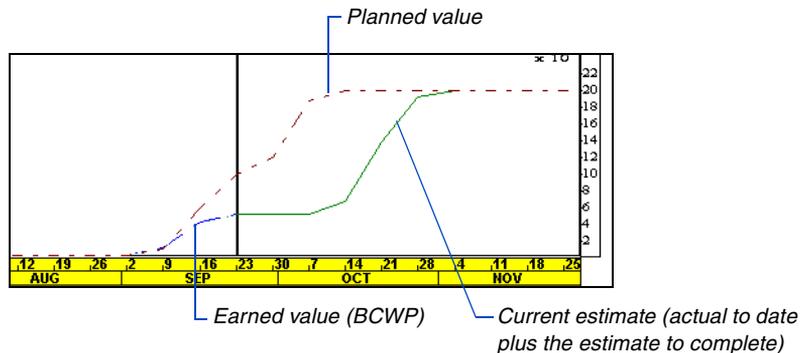
Group Name	Color	Periodic Value	Units
LABORER		32.00	Hrs

You can show up to three different curves to reflect current estimate, earned value, and planned value. Mark the appropriate checkboxes in the Resource Profile Display Options dialog box. The following table describes each type of curve.

This curve	Displays
Current estimate	The accumulated units or costs for the resources or cost accounts in the profile. P3 calculates this based on the actual to date values plus the estimate to complete.
Earned value	Accumulated units or costs up to the data date for the resources or cost accounts in the profile based on the target or current budget. P3 calculates this value by multiplying the resource percent complete by the budget in Target 1 or in the current project. If resource percent complete is blank, P3 uses schedule percent complete.
Planned value	A cumulative amount that will be completed or spent by the current data date. The curve after the data date represents the remainder of the budget. P3 calculates the percent of work that will be completed between the early start date in Target 1 and the data date, then multiplies this percent by the Target 1 or current budget. Choose Tools, Options, Earned Value to specify whether P3 uses the budget in Target 1 or the current budget.

When you show more than one curve, use different line types to distinguish among the different curves. Mark the Show Curves Using Different Line Types checkbox in the Resource Profile Display Options dialog box. P3 draws the current estimate curve as a solid line, the earned value curve as a dashed line, and the planned value curve as a dash-dotted line. This helps you distinguish the different curves when you print to a monochrome printer.

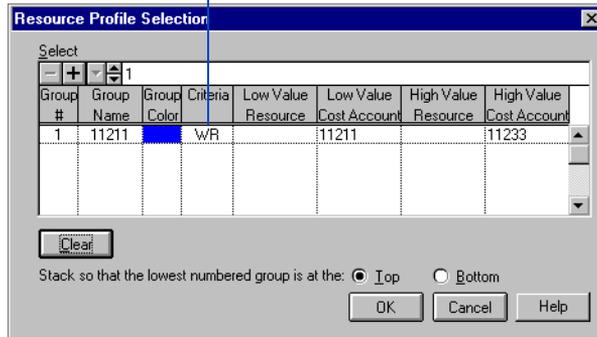
You can also change the colors used for each curve by choosing Format, Screen Colors.



Selecting Resources/Cost Accounts

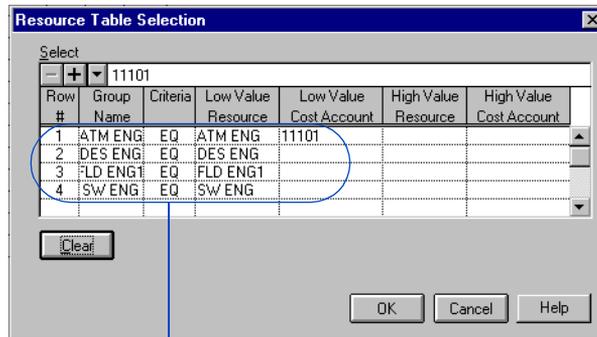
You can show resource/cost information for cost accounts, or a combination of resources/cost accounts. Click Select in the Resource Profile/Table options box to open the Resource Profile Selection dialog box. This dialog box enables you to combine several resources and/or cost accounts into one profile.

Create a profile based on a range of cost accounts.



The Resource Table Selection dialog box enables you to focus on only a few resources/cost accounts, instead of scrolling through all the resources defined for the project.

You can combine resources and cost accounts in the same row of the table.

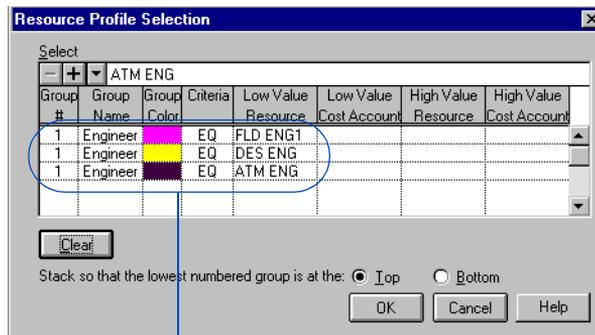


Set up the table to show values for a specific set of resources.

Select resources/cost accounts Click  in the edit bar in the Resource Profile/Table Selection dialog box. Click the Criteria column, then click  to select a criteria code. Select a resource in the Low Value Resource column, and/or a cost account in the Low Value Cost Account column. Use the High Value columns only when creating a profile or table based on a range of data using the WR (within range) criteria code; for example, you may want to see cost values for all cost accounts within the range of 11211 and 11411.

To combine several resources/cost accounts in one profile, make sure the Group # column is set to 1 for each line of selection criteria. Specify a name in the Group Name column.

You can combine several resources into one profile and still examine individual use.



These selection statements create a profile that shows combined use/cost for three resources.

Although the selection dialog boxes differ between the profile and table, P3 uses the same selections for both. For example, if you specify selections to display in the resource profile, you can quickly display a resource table based on the same selection criteria by choosing View, Resource Table, without entering the selection criteria again. To specify new selection criteria, click Clear to erase the current selections. Once you click Clear, P3 cannot retrieve the selections.

Resource and cost account selections When you specify cost account selections for the Resource Profile/Table Selection dialog box, be sure to justify the cost account exactly as it appears in the Cost Accounts Dictionary and in activity assignments.

P3 matches cost accounts exactly as specified. If you leave the cost category position of a cost account (the 12th character) blank, P3 includes only those cost accounts that also have a blank category in their activity assignments. To include all cost categories for an account, specify a wildcard (?) in the last position of the Low or High Value Cost Account column.

Use a question mark as a wildcard in any position in the cost account columns to report on different levels within the cost account structure. For example, select WR of 31??????????? to 33???????????? to produce a summary of accounts that have the value 3 in the first position, are within the range of 1 to 3 in the second position, and have any value in the remaining positions.

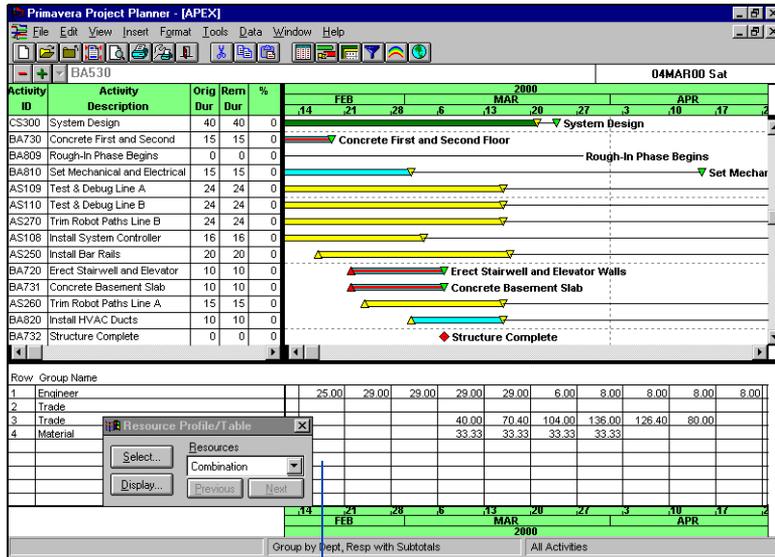
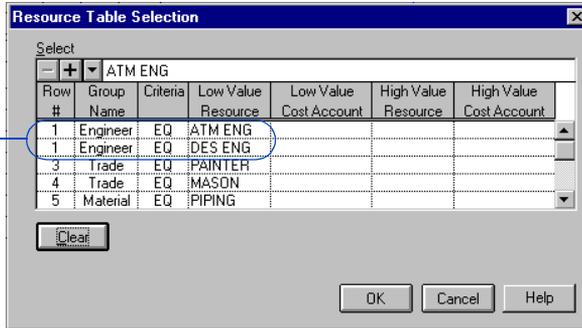
For details about hierarchical resources, see the *Planning Resources and Costs* chapter.

You can roll up or summarize resources by selecting hierarchical resources. A hierarchical resource “bundles” similar resources for reporting or leveling purposes. For example, suppose several engineers (ENG1, ENG2, and ENG3) are assigned to activities. You can summarize all these engineer resources by selecting the hierarchical resource ENG*, where the asterisk (*) is a wildcard. P3 selects and summarizes data for all resources with the specified common prefix. Use only EQ or NE when selecting hierarchical resources.

Selecting Multiple Resources for a Table

You can create a resource/cost table containing rows that show totals for a combination of resources/cost accounts. Use the Resource Table Selection dialog box. Specify the same row number for selection criteria you want to combine.

P3 combines data for these resources in the first row of the table.



This table summarizes the cost per week for three categories of resources.

Stacking Multiple Resource Bars in One Profile

You can combine several resources/cost accounts into one profile, but still see individual use or cost for each resource/cost account. This combination is referred to as “stacking.” Each profile bar is actually several bars stacked above one another. Use the Resource Profile Selection dialog box to create a stacked profile.

Create a stacked profile Specify a different group number to represent each stacked bar.

These selection statements create a profile containing three stacked bars.

Use different colors to identify each resource.

Stack bars in descending or ascending order.

A stacked profile lets you focus on summarized and individual use at the same time.

Choose Combination when you want to use the settings in the Resource Profile Selection dialog box.

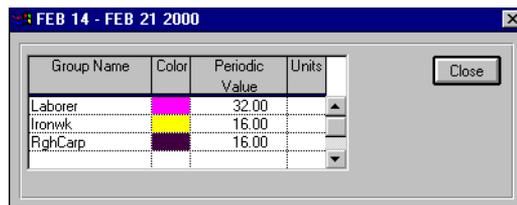
Resource Profile/Table dialog box settings:

- Select...
- Resources
- Combination
- Display...
- Previous
- Next

Bar chart labels: Carpenter, Ironworker, Laborer

You can also create stacked bars based on a combination of resources/cost accounts. Assign the same group number to the appropriate selections in the Resource Profile Selection dialog box. For example, assign the Laborer and Ironworker resources to Group 1. P3 combines the data for both these resources in one stacked bar.

View a legend Click anywhere in the profile to display a legend that identifies each stacked bar and shows the use or cost value for the time-period where you clicked.



Printing Layouts

In this chapter:

Previewing Before Printing

Saving Layouts in Other Formats

Page Setup

Customizing Headers and Footers

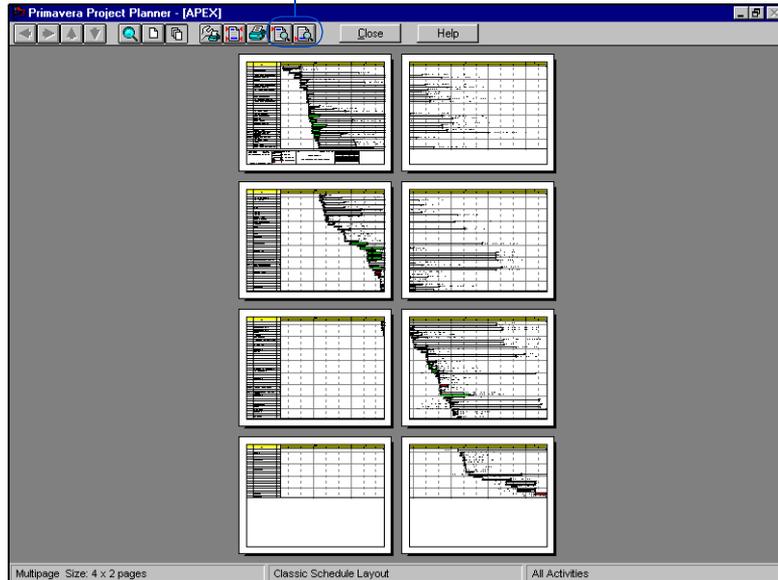
Viewing and Paginating Layouts

You can print any P3 layout using a color or black-and-white printer or plotter. The output is customizable; include any or all of the layout elements you see onscreen. You can also configure header and footer data to add descriptive information and pictures to your layouts.

Previewing Before Printing

You can preview your output as it will appear on paper. P3 simulates the page size, page orientation, and plotter type you specify. The preview reflects the onscreen layout in color, unless you mark the Use Grayscale Output checkbox. Choose File, Print Preview to display the layout as P3 will print it.

Modify header or footer information that appears on the report.

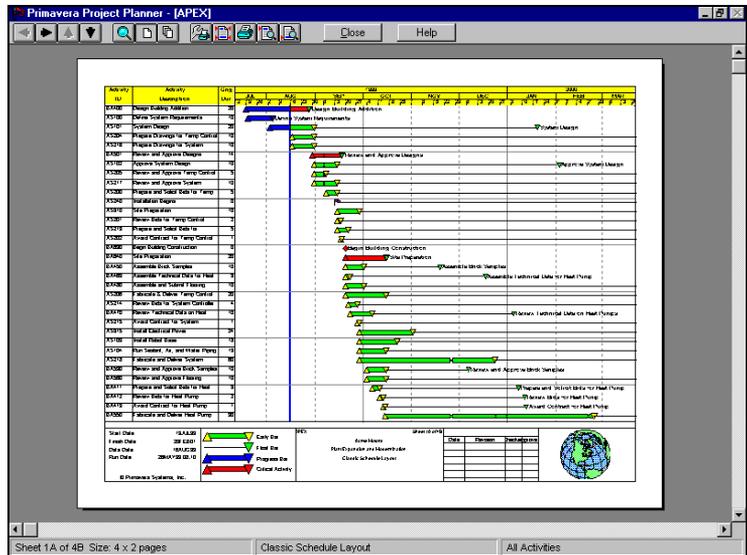


Zoom The mouse pointer changes to a magnifying glass (🔍) as it moves across the image of any page. When viewing single pages, click once to zoom in on an area. In multiple page displays, click once anywhere on a page to view it as a single page.

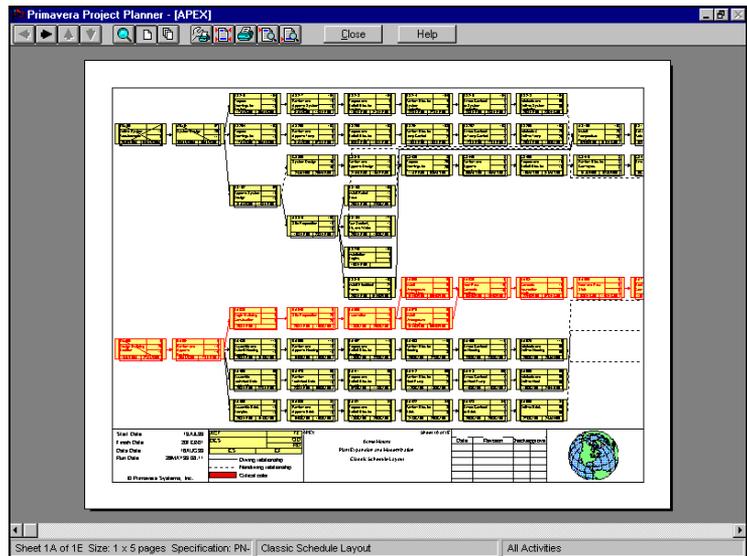
Save time while P3 is drawing a multipage display Press Esc (Escape) while the drawing is in progress. P3 draws blank pages to represent subsequent pages. To view the detail of any blank page, click it.

Scroll a multipage layout When viewing a multipage layout in the single-page mode, use the vertical or horizontal scroll buttons to navigate through the layout. To move several pages at once in either direction without waiting for P3 to draw the intermediate pages, drag the scroll bar and release it.

Single-page Bar chart layout

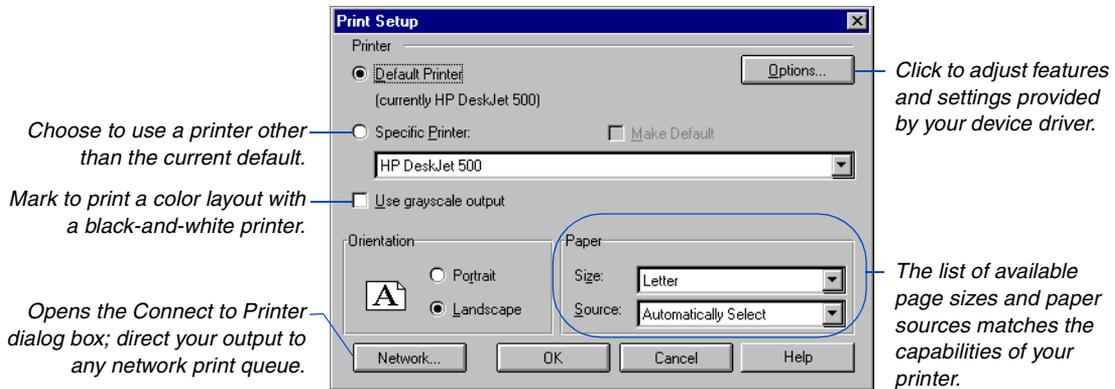


Single-page PERT layout



Selecting a Printer or Plotter

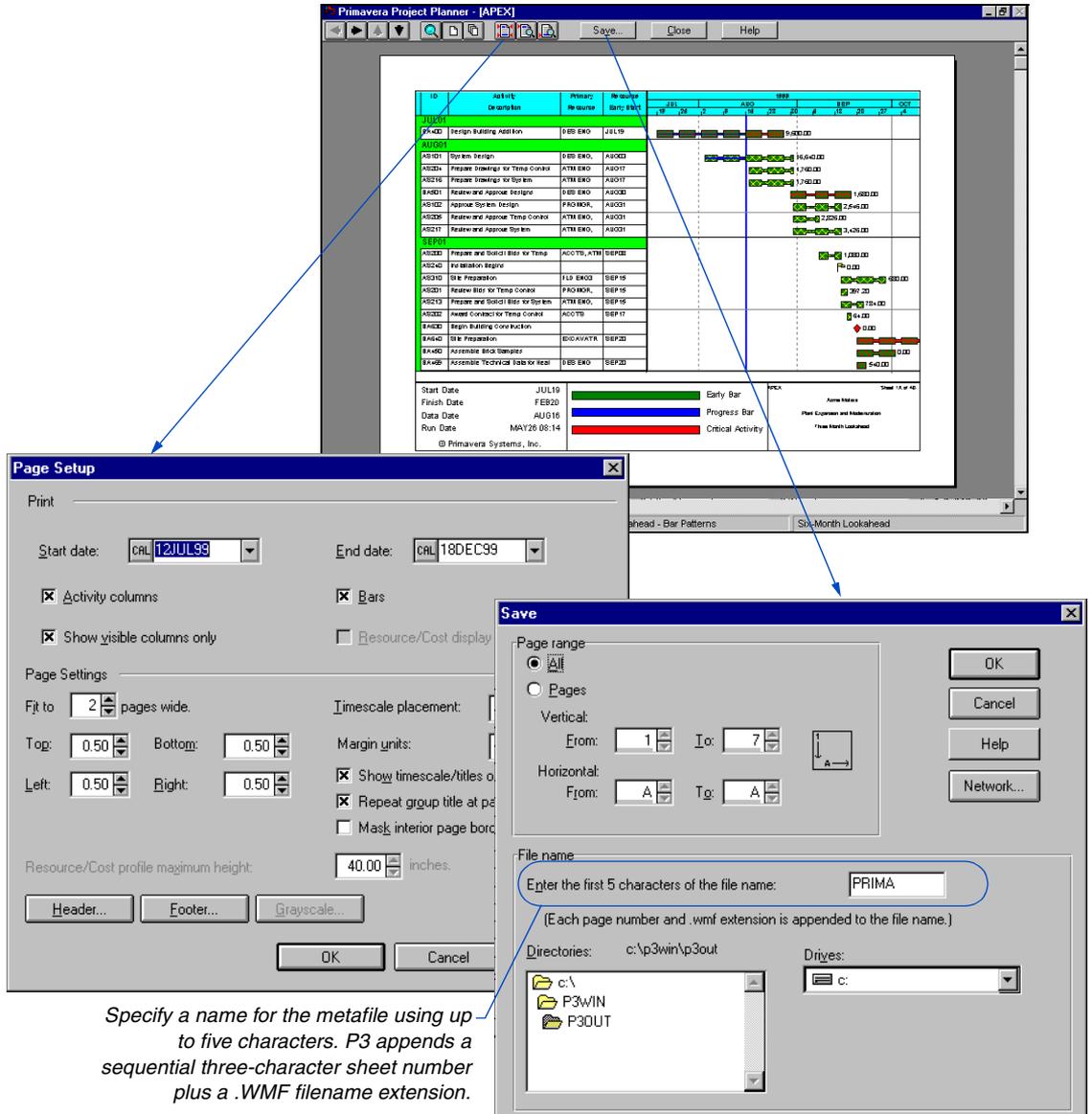
Many properties of your printed layout depend on the capabilities of your printer or plotter. Before tailoring your layout for printing, configure P3 to work with your printer. Choose File, Print Setup.



Save output to files P3 saves the output file using the graphics language of your printer. For example, if you select a Hewlett Packard plotter, P3 creates an HP-GL file. If you select a PostScript printer, P3 creates a PostScript file. When you mark the Print To File checkbox in the Print dialog box and click Print, P3 prompts you for a filename where it stores the output using the graphics language of your printer.

Saving Layouts in Other Formats

You can save an image of your layout as a Windows Metafile. The image looks just like your current layout onscreen. You can paste the saved metafile into files created using other applications such as spreadsheets, databases, and word processor documents. Choose File, Preview Picture to preview the metafile.

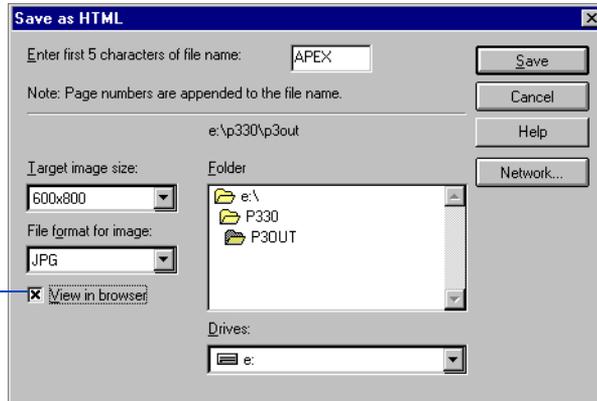


Specify a name for the metafile using up to five characters. P3 appends a sequential three-character sheet number plus a .WMF filename extension.

You can also save layouts in HyperText Markup Language (HTML) format in P3. You can then access the information using any Web browser, such as Microsoft Internet Explorer or Netscape Navigator.

Save layouts in HTML format In P3, open the layout you want to convert to HTML, then choose File, Save As HTML. Type a maximum of five characters for the file name (the project name is the default) with no extension; P3 automatically supplies JPG or PNG (port network graphics) format for the layout image, based on your File Format for Image selection. Select the drive and folder location for the layout file, then click Save. P3 saves the HTML file in the location you specify where you can retrieve it for publishing on the Internet or company intranet.

Preview the layout in HTML format immediately.



Page Setup

Customize the settings for printing each layout, including header and footer settings; P3 saves print settings per layout. Choose File, Page Setup, to specify which data items to display and how to format the page. Click the Header or Footer button to specify the page titles, dates, revision data, and logos that will be displayed at the top or bottom of the printed layout.

Specify the date range the layout will span.

This option is available only if the layout includes a Resource/Cost display.

Use Print Preview to see the number of pages the layout will span. Compress the spacing by specifying a smaller number.

Click to open the Color to Grayscale dialog box. You can define and use shades of gray to represent colors when printing with a monochrome printer.

Activity columns Mark this checkbox to include the Activity columns in the printed Bar chart layout.

Show visible columns only Clear this checkbox to print all defined columns, not just those visible in the layout.

Bars Mark this checkbox to include the activity bars in the printed Bar chart layout.

A layout can span a maximum of eight horizontal pages.

Fit to number of pages wide The default setting, 0, enables P3 to create a printed display with the best fit of data. Use Print Preview to review the layout; you can reduce the number of horizontal pages to fit more data on one page. P3 compresses the timescale so the range of dates you specify fit in the number of horizontal sheets you determine.

Margins and margin units Specify the margins for each page in inches, centimeters, or points. Increase the margins to increase the space bordering the printout. Enter 0 if you print to a continuous plotter and you do not want space between continuous pages.

Timescale placement Place the timescale at the top, bottom, or both the top and bottom of each page. P3 prints the timescale only when you print bars or resource/cost data.

Show timescale/titles on all pages If you plan to print to a continuous plotter or to connect multiple printed pages to form one large sheet, clear this checkbox to show the timescale and the column titles only on the first row of pages. If you plan to view each page separately, mark this checkbox so the timescale and the column titles appear on all pages, regardless of the row.

Repeat group title at page breaks If page breaks fall in the middle of activity groupings, mark this checkbox to repeat group titles at the top of continuation pages.

Mask interior page borders If you plan to print to a continuous plotter or to connect multiple printed pages to form one large sheet, mark this checkbox to mask the interior page borders. If you plan to view each page separately, clear this checkbox so borders appear on each page.

Resource/Cost profile maximum height This option is available if your Bar chart layout includes a Resource/Cost profile. The profile appears on the bottom page of the plot. Specify its maximum height to prevent it from expanding to occupy all empty space at the bottom of the last page. This option is useful when the last page contains only a few activities.

When printing a PERT layout, you can specify different elements than when printing a Bar chart layout.

The screenshot shows the 'Page Setup' dialog box with the following annotations:

- PERT view:** View all activities in PERT.
- Trace logic view:** View only those activities shown in Trace Logic. This option is available only when Trace Logic is displayed and an activity is selected.
- Fit to:** You can specify fewer horizontal or vertical sheets than P3 proposes. P3 compresses the output to fit fewer sheets.
- Mask interior page borders:** Mask interior page borders to improve the appearance of the layout when joining several sheets.
- Allow page breaks to split an activity box:** Clear to move activity boxes that straddle page breaks to the page below or to the right.

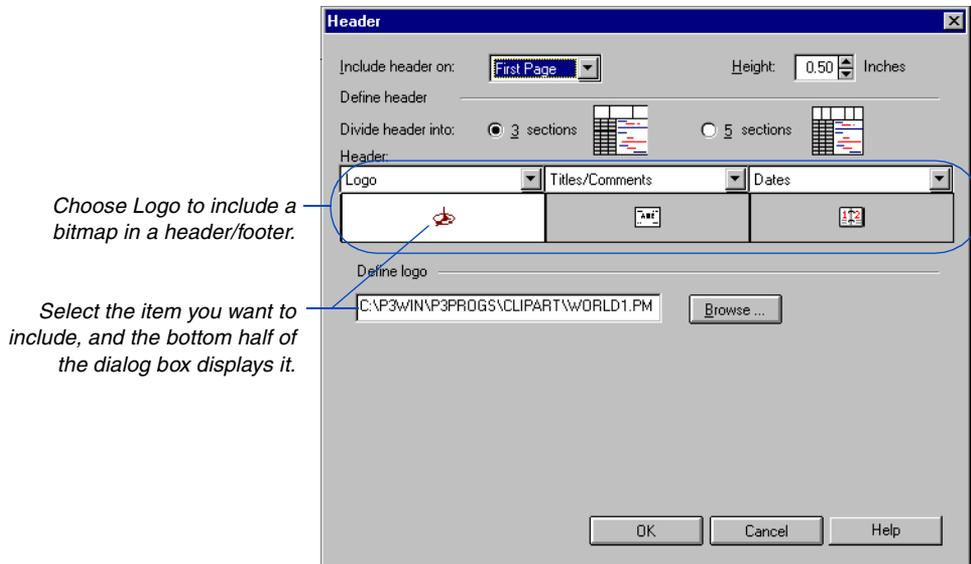
Customizing Headers and Footers

Headers and footers are optional ways to add descriptive information to printed layouts. Headers and footers can appear at the top and at the bottom, respectively, of the first or last page of a printed layout or on all pages or no pages. You determine the content of a header or footer, including items such as the project titles, important dates, Bar chart or PERT legend, a drawing, or a company logo. You can define one header and one footer for each printed layout you create.

To eliminate a header/footer from appearing in the printed layout, select No Pages in the Include On field.

Format a header or footer Choose File, Page Setup, and click the Header or Footer button. (You can also click the Header or Footer icon in the Print Preview toolbar.) In the Include On field, specify on which pages to print the header/footer. Indicate the header/footer height in inches or centimeters. (The Margin Units setting in the Page Setup dialog box determines the unit of measure.)

Choose to divide the header/footer into three or five sections. If you choose five sections, P3 automatically adjusts the spacing of the two sections before and after the center section if you leave one of these sections empty. For example, if you select a data element for the first section, and leave the second section blank, P3 expands the first section into the second section. Select the element you want to place in the header or footer in each section. You can include the same data item with the same or different properties in more than one section. For example, you may want to include two revision boxes—one for the project manager and one for team leaders—in the footer. Set up as many header and footer elements as you want, then click OK.



Choose Logo to include a bitmap in a header/footer.

Select the item you want to include, and the bottom half of the dialog box displays it.

For information about creating, accessing, and attaching symbols, refer to the *Primavera Draw* topic in online Help.

Select a logo or other picture If you select Logo as one of the data items to include in the header/footer, click Browse to define the logo's location. Choose bitmaps (.BMP), metafiles (.WMF), or a Primavera Draw file (.PMT) to include in a header/footer. Include your company logo, a client's logo, or any artwork that improves the meaning of the printed layout. Mark the Preview checkbox in the Primavera Symbol Selection dialog box to preview any logo or symbol before inserting it.

Format page titles and comments Select Titles/Comments as a data item to include a title block, divided into three sections (Left, Center, and Right), in the header/footer. Then select the data, such as Company Name or Data Date, to include in each section. That item is inserted in the text box within brackets, for example, [Project Title]. P3 replaces the bracketed item with its stored name when you print the layout. You can specify a different name or other data by typing over the item. Select the font to use for the text in each section of the title block. For example, use a larger font in bold for titles, and a smaller, nonbold font for dates. If you select a date, such as Target 1 Start Date, P3 uses the date format specified in the Date Format dialog box (choose Format, Dates).

In addition to selecting specific data items, you can type your own text.

The 'Define titles/comments' dialog box is divided into three columns: Left, Center, and Right. Each column has an 'Insert' dropdown menu. Below these are three text boxes containing default text: '[Project Name] Department Distribution' in the Left column, '[Company Name] [Layout Name]' in the Center column, and '[Page X of Y]' in the Right column. At the bottom, there are three 'Font' dropdown menus with values 'Arial,9,B', 'Arial,11,B', and 'Arial,8' respectively.

Define the revision box Include one or more revision boxes for making handwritten changes on a printed layout, or include revision notations directly in the box(es). Include up to eight blank rows in which you or project participants can write notes, or specify information for a particular row by right-clicking in the Date column and selecting a date from the pop-up calendar, and then clicking in the Revision column and typing the information to include.

P3 centers the title above the revision box.

Click to add a row.

The 'Define revision box' dialog box features a 'Revision box title' text field containing 'Revisions for September Update' and a 'Font' dropdown set to 'Arial,8'. Below this is a table with a '+' button and a dropdown arrow to its left. The table has four columns: 'Date', 'Revision', 'Checked', and 'Approved'. The first row is highlighted in blue and contains '06SEP00', 'Verify Activity Titles', and 'Verify Activity Durations'.

Customize the dates section Use the Dates section to show project dates, such as start date, finish date, data date, must finish date, target finish date, or production (run) date. You can also include any of these dates in the Titles/Comments section. Right-click in a date cell or click the ▾ at the top of the list box for a selected date cell and select a date. You can include up to six dates in the Date section of each header and footer.

If you are showing dates for an hourly project, all dates will include hours.

The 'Define dates' dialog box has a 'Dates:' section with a '+' button and a dropdown arrow. Below it is a list box with a header 'Data Item' and six rows. The first row is selected and contains 'Start Date'. The second row contains 'Target1 Start Date', and the remaining three rows contain '(None)'. To the right is a 'Font' dropdown set to 'Arial,8'.

Create legends If you print Bar chart or PERT layouts, you can include the corresponding legend in the header or footer. Legends identify the color, bar style, and line types for various bars, activity boxes, and endpoints that appear in the current layout.

ACT	TF
DESC	OD
ES	RD
EF	
— Driving relationship	
- - - - - Nondriving relationship	
■ Critical color	

This PERT legend shows the activity box configuration, the relationship line types, and the critical color used in the current PERT layout.

Select Legend as the data item for a section of the header or footer; PERT Legend appears in the data item list if the current layout is a PERT layout, and Bar Chart Legend appears in the data item list if the current layout is a Bar chart layout. Use the bottom portion of the dialog box to specify the font to use for the legend text.

Viewing and Paginating Layouts

P3 automatically divides the output into pages for viewing in Print Preview and for actual output. To see the location of these “soft” page breaks while viewing the layout, choose View, Page Breaks. The page breaks appear as thick, black lines in PERT, and as thick gray bars in the Bar chart.

To make page breaks visible onscreen, use the Print Preview command or print the display.

For more information about page breaks, see the [Grouping and Sorting Layouts](#) chapter.

In Bars charts, you can specify “hard” page breaks in the layout between activities or activity groups. Use the Format, Organize command and select Yes in the New Page column to indicate the organizational levels for which a new value forces a new page. You can also designate specific activities to create page breaks. Select an activity and choose Insert, Page Break (or press Ctrl+Enter). P3 shows hard page breaks as thick, crosshatched lines.

In PERT, when activities are grouped, you can specify “hard” page breaks between activity groups. Choose Format, Organize and mark the Set New Page For Each Group checkbox.

Page numbering Print Preview initially shows the first page of the printout. The status bar at the bottom of the window indicates the current page number and total number of pages. P3 numbers pages horizontally and vertically; numbers identify rows, and letters identify columns. For example, the first page is 1A and the page to its right is 1B. If the printout is only one page wide, only numbers are used (pages 1, 2, 3, and so on). P3 numbers a printout two columns wide and three rows high as follows:

1A	1B
2A	2B
3A	3B

Reports and Graphics

In this part:

Preparing and Viewing Reports and Graphics

Schedule Reports

Resource/Cost Reports

Matrix Reports

Custom Report Writer

Bar Chart Graphics

Timescaled Logic Graphics

Pure Logic Graphics

Resource/Cost Graphics

Creating P3 Reports with InfoMaker

Publishing Reports on the World Wide Web

Part 5 describes additional ways to communicate information from your project: P3 reports and graphics, InfoMaker reports, and the Primavera Web Publishing Wizard.

P3 reports are pre-formatted, yet flexible reports, providing detailed or summarized project data covering schedule, resource, and cost information. P3 graphics include bar chart, timescaled logic, resource and cost, and pure logic information.

Use the InfoMaker report writer to edit almost any item of data from P3 projects and create totally customized reports with user-designed headings, groupings, and data summarization.

Use Primavera's Web Publishing Wizard to guide you through the steps of publishing reports on a Web page that can be accessed by any project participant, local or remote, through an office network or the Internet.

Preparing and Viewing Reports and Graphics

In this chapter:

Report and Graphic Templates

Viewing, Printing, or Saving Output Options

Producing Reports and Graphics

Selecting and Sorting Information for Reporting

Reviewing Reports and Graphics Onscreen

Moving and Editing Text and Objects Using Look

Moving/Resizing Text Boxes and Other Objects in Look

Customizing Graphics with Look's Drawing Tools

P3 provides reports and graphics that enable you to communicate detailed or summarized information about your projects. You determine the content, format, order, and selection of activities, among other options. Print individual reports or graphics, or a series of reports or graphics. You can also view and edit the reports and graphics onscreen using Look.

This chapter describes how to create each type of report and graphic.

Report and Graphic Templates

Choose Tools, Tabular Reports (or Graphic Reports) and select the schedule and resource/cost reports and graphics best suited to your requirements.

Use the following descriptions as a reference in determining which report or graphic template best communicates the schedule and/or resource and cost information you need.

Schedule reports include project schedule information such as activity ID, original and remaining duration, activity percent complete, and activity codes. You can also create reports that compare the target and original schedules.

Resource/cost control reports detail or summarize the quantities of resources applied or the costs expended for each activity.

Resource productivity/cost, price, and rates reports contain information for measuring productivity.

Earned value reports contain information for evaluating performance and identifying causes of schedule and cost variances.

Tabular resource/cost reports contain information for tracking resource use or cash flow during specific time intervals, and for reviewing past, current, and forecasted resource or cost requirements.

Resource/cost loading reports show a tabular listing of use or cost per timeperiod for selected resources and cost accounts.

Activity matrix reports provide a summary of project data using rows and columns, similar to a spreadsheet.

Resource/cost matrix reports provide a summary of resource data using rows and columns, similar to a spreadsheet.

Custom reports allow you to design your own reports to contain columns based on standard data items and data items you create. You can also define your own calculations for column data.

Timescaled graphics produce Bar chart graphics and graphics that show logic according to time. You can set options such as a multiline activity table, alternative timescales, multiple activity bars on one row, and custom placement for activities. You can also combine bar charts with resource and cost graphics using this graphic type.

Pure logic graphics show relationships between activities without respect to time. You can set options such as vertical title blocks and custom horizontal and vertical spacing.

Resource/cost graphics track resource requirements and costs. You can set options such as multiple profiles on a page and customize profile colors and patterns.

Choosing the Right Report

P3's wide variety of reports provide multi-dimensional views of your project. For a simple one-dimensional view of either schedule or resource/cost data, choose schedule reports, resource/cost control reports, resource productivity/cost, price, and rates reports, earned value reports, tabular resource/cost reports, or resource/cost loading reports. Activity and resource/cost matrix reports add a second dimension because schedule data can be combined with resource/cost data in a crosstab report. Custom reports give you the opportunity to expand the presentation to a third dimension by including custom or calculated data not included in the standard reports.

Viewing, Printing, or Saving Output Options

You decide whether you want to view, print, or save a report or graphic to a file before you set up the reports or graphics you want to produce. Choose Tools, Tabular Reports, Options, or Tools, Graphic Reports, Options. Each subsequent report or graphic uses the output options you choose.

Mark to print selection and sorting criteria on a separate page.

Adjust to change the number of lines per page.

Specify an optional heading to appear on schedule and matrix reports.

Stores each page of a multipage graphic in a separate file.

Mark to eliminate interior borders when printing to a continuous plotter.

Select a proportional or fixed font for graphics displayed in Look.



If you select a Rich Text Format (RTF) font for resource/cost loading, matrix, or custom reports, the Lines Per Page you specify in the Tabular Reports Options dialog box will not be recognized.

Producing Reports and Graphics

You can produce an individual report or graphic, or a series. Choose Tools, Tabular Reports or Graphics Reports, Production and P3 lists all of the report and graphic specifications created in the current project.

The screenshot shows the 'APEX - Production' dialog box. It contains a table with the following columns: ID, Title, and Series. The table lists various reports and graphics, such as 'Summary Early Start Comparison by Dept/Project' (AM-01) and 'Cost Control - Summary by Activity' (CC-01). The Series column contains codes like 'S' and 'S'. A blue circle highlights the ID and Series columns. A blue arrow points from a text box to the ID column.

Specification IDs denote the report or graphic type. For example, AM represents Activity Matrix reports.

Define up to 26 (A to Z) different series. P3 produces the output in specification order (AM first, then CC, then RC, and so on).

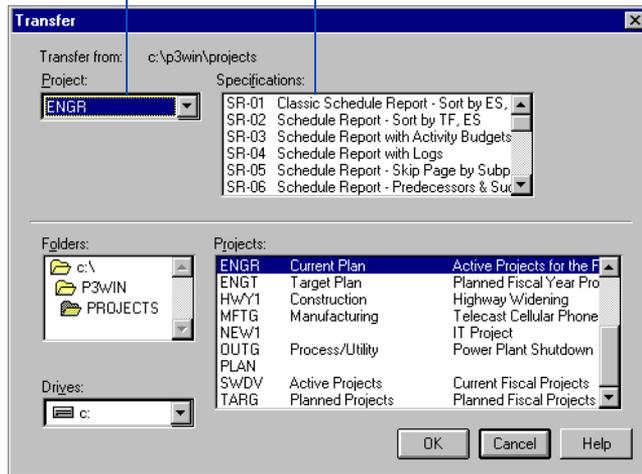
Run an individual report or graphic Select the report or graphic you want to produce, then click Run Individual. P3 prepares the report or graphic according to the settings defined in the Tabular or Graphic Report Options dialog box.

Run a series of reports or graphics In the Series column, assign the same series code to each report or graphic to be printed in the series; choose to print them immediately or save the output to a file. When saving a graphic to a file, enter a name in the Filename column available in the Production dialog box for graphic reports. The filename for each graphic in the series must be different. Click Run Series, then click the series code of the reports or graphics you want to prepare. You can run more than one series at the same time. If you specify Rich Text Format (RTF) output for any specifications in the series, P3 produces the entire series using RTF. (The RTF font is available for Resource Loading, Matrix, and Report Writer Reports.) If RTF is not being used in any reports in a series, P3 prints the series using ANSI (plain text).

Transfer reports and graphics You can move individual or a series of report and graphic specifications from one project to another; or transfer an individual specification to another specification within the same project. Click Transfer in the Production dialog box for reports or graphics to transfer a series, or in the individual specification you want to replace with another specification. Note that P3 overwrites existing specifications and titles in the current (receiving) project. Instead of overwriting an existing specification, you can transfer the specification into a newly added one. Click Add to create a new (empty) specification, then click Transfer. When you transfer an individual report or graphic, it must be the same type of report or graphic as the receiving specification.

In the receiving project, select the project name from which to transfer a series of specifications.

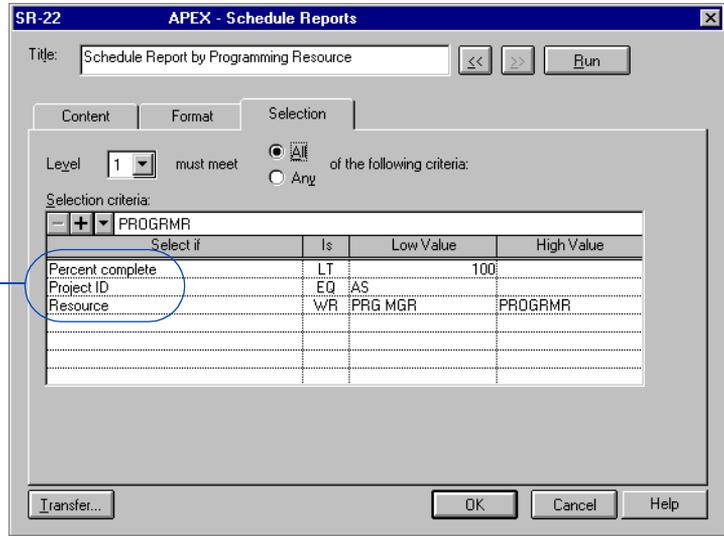
Select the graphic or report specification to transfer to the receiving project.



Selecting and Sorting Information for Reporting

A Selection tab is included on all report and graphic dialog boxes for you to select a specific group of activities for the report or graphic. Use the selection feature in reports and graphics the same way you use filters, which select specific activities to appear in a layout.

This report selects incomplete activities that are part of a specific project and use programming resources.



For more information about selecting activities, see the [Using Filters to Select Activities and Projects](#) chapter.

The resource/cost reports and graphics, and report writer dialog boxes, include a Resource Selection tab that enables you to report on specific resources and/or cost accounts. P3 uses the same method for selecting resources and cost accounts for reports and graphics as for the resource/cost charts in the Bar chart.

Schedule Report Sorted by Early Start, Total Float

ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
BA400	20	0	1	100	ENG	Design Building Addition	19JUL99A	17AUG99A			
AS100	10	0	1	100	ENG	Define System Requirements	20JUL99A	4AUG99A			
AS101	20	0	1	100	ENG	System Design	3AUG99A	31AUG99A			
AS204	10	0	1	100	ENG	Prepare Drawings for Temp Control Equipment	17AUG99A	31AUG99A			
BA501	14	0	1	100	ENG	Review and Approve Designs	18AUG99A	8SEP99A			
AS216	10	5	1	50	ENG	Prepare Drawings for System Controller	23AUG99A	1OCT99		31MAY00	166
AS010	5	0	1	100	ENG	Review and Approve Temp Control Equipment	31AUG99A	13SEP99A			
AS102	10	0	1	100	ENG	Approve System Design	31AUG99A	13SEP99A			
AS205	5	0	1	100	ENG	Review and Approve Temp Control Equipment	31AUG99A	13SEP99A			
AS200	5	0	1	100	PCH	Prepare and Solicit Bids for Temp Control Equip	7SEP99A	15SEP99A			
BA630	0	0	1	100	CON	Begin Building Construction	13SEP99A				
BA640	20	10	1	50	CON	Site Preparation	13SEP99A	8OCT99		8OCT99	0
AS240	0	0	1	100	ISD	Installation Begins	14SEP99A				
AS310	10	2	1	80	ISD	Site Preparation	14SEP99A	28SEP99		27APR00	147
AS201	2	0	1	100	PCH	Review Bids for Temp Control Equipment	20SEP99A	21SEP99A			
BA450	10	5	1	50	PCH	Assemble Brick Samples	20SEP99A	1OCT99		11NOV99	29
AS202	1	0	1	100	PCH	Award Contract for Temp Control Equipment	21SEP99A	21SEP99A			
AS206	20	15	1	25	PCH	Fabricate & Deliver Temp Control Equipment	21SEP99A	26OCT99		2JUN00	151
BA980	1	1	1	0	CON		27SEP99	27SEP99	27SEP99	27SEP99	0
BA469	3	3	1	0	ENG	Assemble Technical Data for Heat Pump	27SEP99	29SEP99	8DEC99	10DEC99	50
BA480	10	10	1	0	PCH	Assemble and Submit Flooring Samples	27SEP99	8OCT99	3MAR00	16MAR00	109
BA475	10	10	1	0	ENG	Review Technical Data on Heat Pumps	27SEP99	8OCT99	31JAN01	13FEB01	341
AS315	24	24	1	0	ISD	Install					
AS103	18	18	1	0	ISD	Install					
AS104	13	13	1	0	ISD	Run Seal					
BA470	10	10	1	0	ENG	Review T					
BA530	10	10	1	0	ENG	Review a					
AS012	10	10	1	0	ISD	Review a					
AS217	10	10	1	0	ISD	Review a					
BA650	10	10	1	0	CON	Excavati					
BA560	10	10	1	0	ENG	Review a					
BA411	3	3	1	0	PCH	Prepare					
BA421	3	3	1	0	PCH	Prepare					
AS213	5	5	1	0	ISD	Prepare					

SR-01 APEX - Schedule Reports

Title: Classic Schedule Report - Sort by ES, TF

Content | **Format** | Selection

Display

Skip line on: <none> Skip page on: <none> Summarize on: <none>

Target comparison

Use: None Target 1 Target 2

Display: Early dates Late dates Full range

Sort by: **Early start** / Total float

Sort on: Ascend / Ascend

Display

Early start Early finish Late start Late finish

Calendar Activity codes Total float Hours

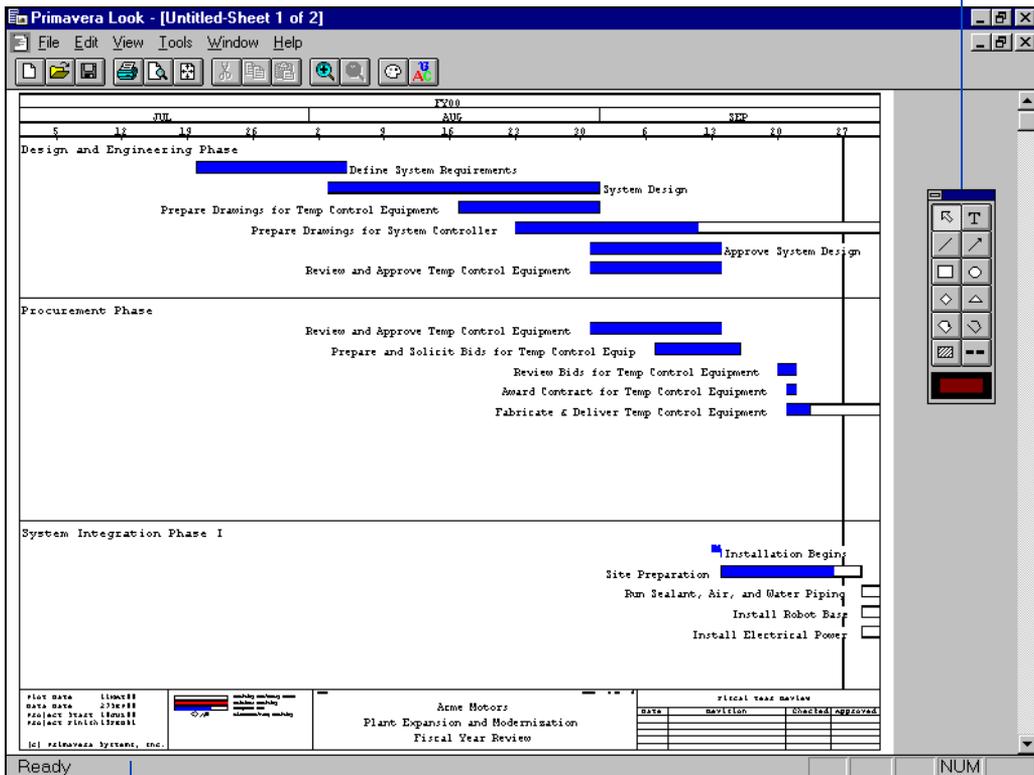
Transfer... OK Cancel Help

Choose up to 20 data items by which to sort activities.

Reviewing Reports and Graphics Onscreen

Use Look to view and edit reports and other text files; and to view, edit, and annotate graphics by adding or deleting text, boxes, lines, and other elements. You can specify fonts, margins, and other print options to customize reports and graphics to suit your requirements.

Look displays the Tools palette automatically with a graphic file.



When you view a report, the status bar contains the current line and column position, and the current typing (insert or overwrite) and selection (horizontal or column) mode.



You can open and view one or several reports or graphics stored anywhere in your workstation or network fileserver; choose Window, Tile to view multiple files simultaneously.

Produce a report or graphic in Look Choose View On Screen in the Tabular or Graphic Reports Options dialog box. You can also start Look by choosing Tools, Look or by double-clicking the Look icon in the Primavera program group.

Open existing reports and graphics Choose File, Open. You can open a maximum of 15 graphics. You can also open Look and Windows Explorer and drag the report or graphic file/folder from Explorer to the Look task bar; Look displays the file.

Save the current report or graphic with a new name Choose File, Save As. Select the drive and folder for the new report/graphic. Choose .OUT for report/text files or .HGL for graphic files in the Save File As Type list box. For example, if you save a graphic to the name “globe,” .HGL becomes GLOBE.HGL. Click OK.

Modifying Graphic Colors

You can change the colors that appear onscreen for graphics, as well as in the printed or plotted copy. Pen plotters automatically match the closest available pen to the color displayed onscreen. Use the Pen Colors dialog box in Look; choose View, Colors, to select a color from a color refiner box, which shows the range of possible colors. Modify a color by adjusting values for Hue (the position of a color along the color spectrum), Saturation (the purity of a hue, ranging from gray to the pure color), and Luminosity (the brightness of the color, ranging from black to white), or for relative amounts of red, green, and blue.

Moving and Editing Text and Objects Using Look

When viewing or creating Rich Text Format (RTF) reports, Look provides word processing capabilities. For information on using these capabilities for matrix, loading, and Report Writer reports, produced using the RTF option, see Look Help.

To move or edit text in reports, first select the text you want to change. Then choose the Edit command (Cut, Copy, Paste, or Delete) you want to apply. You can select rows of text or switch to select columns only.



Look inserts pasted text where you click in a report; Look moves surrounding text accordingly. However, if text is selected (highlighted) in the report, the pasted text replaces the highlighted text.

Select text row(s) Click at the beginning of the text you want to select. Drag the mouse across the text to select it.

You can select text beyond the immediate viewing area; the window scrolls to bring text into view. Click anywhere in the report to unselect the selected text.

Select text column(s) Choose Edit, Column Selection. To switch back to row select, press F5. Follow the preceding instructions to select text.



You can select text appearing in graphics as either a single text object, which you can manipulate like other objects, or as a text box containing characters, which you can edit.

Set report tab stops Choose View, Set Tab Stops. Type a number from 1 to 16 indicating the width (in characters) for each tab stop in the report; Look defaults to 8. You can tab past the visual display area.

To move, size, edit, or apply attributes to an object in a graphic file, first select the object(s) you want to change. An object is selected when selection handles surround it.

Select an object Choose Tools, Selection or click the Selection tool. Click the object you want to select. If you select a metafile object (a .WMF picture file), you can change its attributes after you convert it.

You can select an object outside of the immediate viewing area; the window scrolls to bring the object into view. To unselect a single object, click outside the object in the Look window, press Shift and click the selected object, or select another object.

Select a group of objects Choose Tools, Selection or click the Selection tool. Press the Ctrl key and click the first object for the group. You can select a group of objects beyond the immediate viewing area; the window scrolls to bring the objects into view. To unselect a single object, click outside the object in Look; press Shift and click the selected object; select another object; or choose Edit, Unselect.

To select the last object in the group, press the Shift key and click the object. Look selects any objects fully or partially within the area between the first and last selected object.

Look treats grouped objects as a single object unless you ungroup them by clicking an empty area of Look.

The first and last selected objects each have selection handles; clicking either of these objects creates a box around the group which you can move. To unselect an entire group of objects, click an empty area in Look, select any unselected object(s), or choose Edit, Unselect.

Select multiple objects by adding to the original selection

Choose Tools, Selection. Press the Shift key while you select each additional object. You can select multiple objects beyond the immediate viewing area; the window scrolls to bring the objects into view. Press Shift and click any selected object again to remove it from the group without unselecting the other object(s).

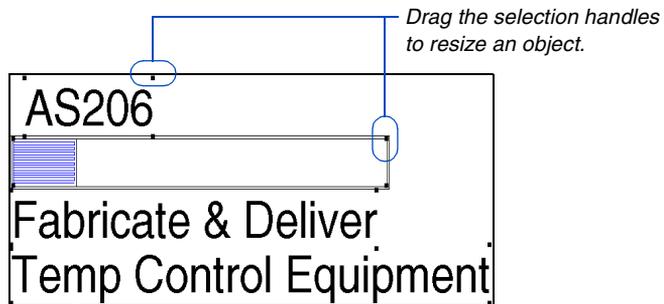
Select all objects Choose Edit, Select All. Look selects and groups all objects in the active window. To unselect all selected objects, choose Edit, Unselect.

Use the Cut, Copy, and Paste commands to manipulate text in a report file or objects in a graphic file, and to exchange data between Look and other applications. Use Cut and Copy to paste data from Look into other applications that accept Text, OEM Text, Look Private, and Metafile formats. Use the Paste command to bring data into Look from other applications in Text, Look Private, or Metafile formats. For example, you can copy a graphic or portion of a graphic from Look then paste it into the bars area of a P3 Bar chart layout.

Moving/Resizing Text Boxes and Other Objects in Look

Select the text box or object you want to move. If you want to switch an object's position, use the Edit, Send to Back or Edit, Bring to Front command. Drag the text box or object to its new location. If you select a selection handle instead of the object, dragging resizes it.

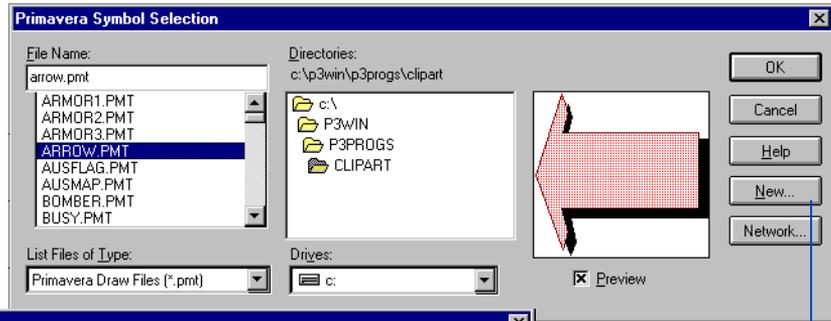
Size or resize a text box or an object Select the text box or object you want to size. Drag a selection handle until the object is the size you want. The following examples demonstrate using Zoom In.



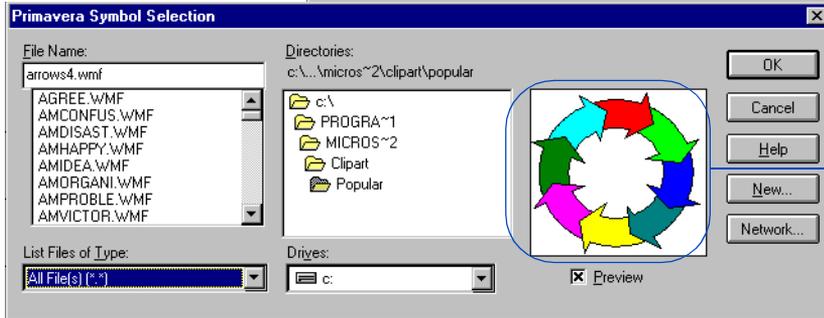
When objects are grouped, dragging a selection handle for any object in the group also resizes all other objects in the group.

Inserting Symbols

Choose Edit, Insert Symbol to insert a symbol or other object in a graphic in Look. If you select a metafile graphic object (.WMF), which is composed of two or more objects, you can modify and annotate it; however, keep in mind that metafile objects may not retain their original attributes once you select them for editing. Choose Edit, Undo to reverse any unwanted changes.



Opens the Primavera Draw application.



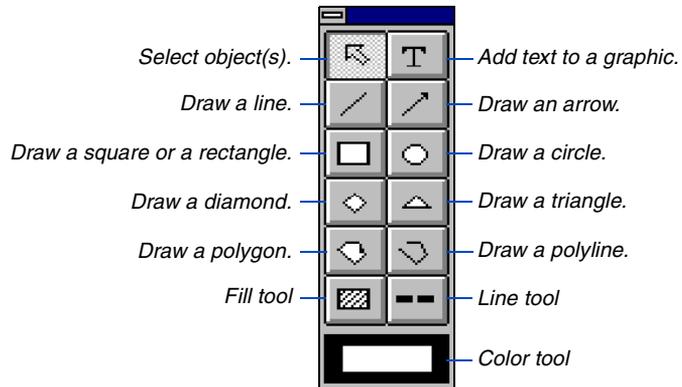
Choose Edit, Insert Symbol to insert a metafile object into a graphic image.

Choose Insert, Symbol to insert symbols in RTF reports.

Customizing Graphics with Look's Drawing Tools

Click the appropriate tools in the Tools palette in Look to modify the graphic to suit your needs. Add lines and shapes, or change the attributes (fill, line type, or color) of a selected object.

Press the Shift key and drag the mouse to draw a square instead of a triangle; to draw a constrained diamond, a circle, or an equilateral triangle click the appropriate tool, press the Shift key and drag the mouse.



Draw polylines or polygons Click either tool in the palette, click where you want the polyline or polygon to start, then drag to draw the first line segment; click to release, then continue with the next line segment. Draw each side in this manner. When you finish, double-click to anchor the polyline or to anchor and connect the end of the last line segment with the first to form an enclosed polygon.

Polygons are multisided, enclosed shapes that can be filled with a pattern or color. Polylines can be either opened or closed, but cannot be filled with pattern or color.

Change the attributes of a graphic object Select an object and choose Tools, Attributes or select an object and click the appropriate attribute tool in the palette. If the palette is hidden, choose Tools, Tool Palette or press Ctrl+T. The attribute changes show onscreen and in the printed graphic. You can also set attributes before creating new objects.

Adjusting Page Margins, Fonts, and Other Print Options

Adjust page margins for printing reports and graphics; the onscreen appearance does not change. However, you can view the adjusted page margins in the report or graphic using Print Preview in Look. You can also set placement options for graphics using Maintain Aspect Ratio. For reports, use Fit to Page prior to printing.

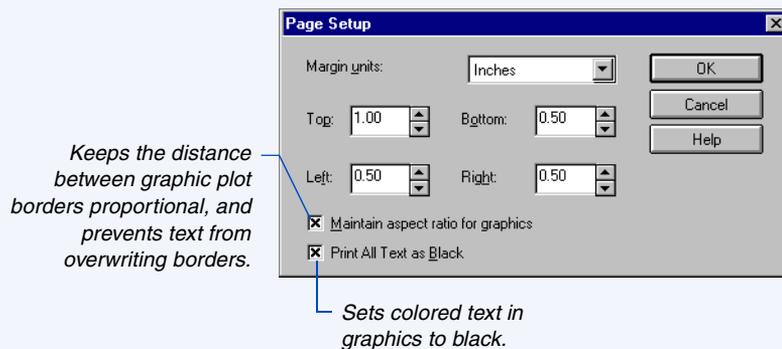
You can also choose different fonts for viewing and for printing reports; choose View, Set Display Font to modify the report font for onscreen view and View, Set Printer Font to modify the printer font for the report; for RTF reports, choose View, Ruler to define tab stops for viewing and printing. For graphics, View, Set Font controls both onscreen and printed fonts. Keep in mind that text in reports and graphics can be printed or plotted in fixed or proportional spacing. We suggest that you do not choose proportional spaced fonts for reports because columns will not align correctly.

Fixed (monospace) fonts use equal spacing for all alphanumeric characters and word spaces such as Courier.

Proportional spaced fonts use different horizontal spacing or set widths for each character such as Times New Roman. For matrix, loading, and Custom Report Writer reports, you can generate output using RTF, which enables you to use proportional fonts and still maintain proper alignment of numbers in columns.

Insert a page break in a report Position the cursor where you want the break and press Ctrl+Enter. To delete the break, select the page break line and press Ctrl+Enter.

Change print options Choose File, Page Setup.



Schedule Reports

In this chapter:

Choosing Content Data Items

Skipping Lines and Pages by Code

Creating Target Comparison Reports

Creating Summary Reports

Schedule reports provide a tabular list of schedule data showing activity IDs, descriptions, durations, float, and early and late schedule dates. Customize reports to show additional data on separate lines; for example, you can display budgets, resources, predecessor/successor activities, and logs.

Choosing Content Data Items

Use the Content tab to choose the type of data to appear in the report. A schedule report always contains the basic Activity code line; this line prints the activity ID, calendar ID (for multiple-calendar projects), durations, percent complete, description, schedule dates, and total float for each activity. You can choose up to eight additional content items per report specification.

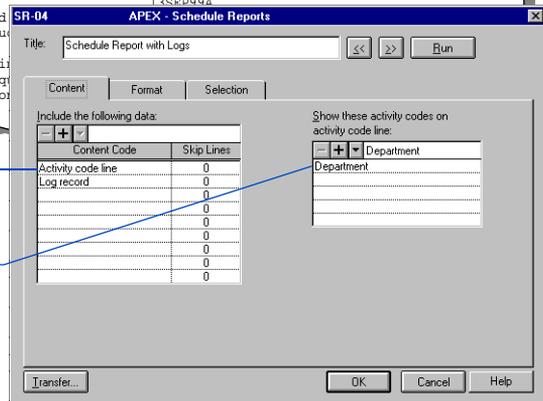
Access schedule reports Choose Tools, Tabular Reports, Schedule. Select an existing specification from the list and click Modify, or click Add to add a specification.

Schedule Report with Logs

ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
BA400	20	0	1	100	ENG	Design Building Addition Develop floor plan and design architectural, mechanical, structural, and foundation. When drawings and specs are complete bid jobs and award contracts.	19JUL99A	17AUG99A			
AS101	20	0	1	100	ENG	System Design System design includes hardware and software components and their integration. A materials listing is also required.	3AUG99A	31AUG99A			
AS204	10	0	1	100	ENG	Prepare Drawings for Temp Control Equipment Engineer required to submit technical spec drawings for temperature control equipment. Additional resource needed to complete this activity on-schedule. Approved change of time and a half increase over original budget.	17AUG99A	31AUG99A			
AS216	10	5	1	50	ENG	Prepare Drawings for System Controller Engineer required to submit technical specs and drawings for system controller.	23AUG99A	1OCT99		31MAY00	166
AS102	10	0	1	100	ENG	Approve System Design Final approval of design is necessary before proceeding.	31AUG99A	13SEP99A			
AS200	5	0	1	100	PCH	Prepare and Solicit Bids for Temp Control Equip Refer to Design specification #01270.	7SEP99A	15SEP99A			
BA630	0	0	1	100	CON	Begin Building Construction Be sure all permits, bonds, and secured before building construction.					
BA640	20	10	1	50	CON	Site Preparation Site preparation includes setting fences and sediment ponds before grading.					

The Activity code line produces the activity information shown.

Choose up to five different activity codes for the Activity code line.



Predecessors and Successors Report

ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
CS770	90	90	1	0	ISD Operation Manuals		16AUG00	20DEC00	9OCT00	13FEB01	37
					S.L.D.F., CS800 .FS 0. 0. 0,						
					P.L.D.F.,*CS315 .FS 0. 15. 0, CS450 .FS 0. 50. 3						
CS700	14	14	1	0	ISD Install Conveyor 211		21AUG00	8SEP00	21AUG00	8SEP00	0
					S.L.D.F.,*CS710 .FS 0. 50. 0,*CS740 .SS 54. 50. 0						
					S.L.D.F.,*CS750 .SS 54. 50. 0,*CS760 .SS 74. 20. 10						
					P.L.D.F.,*CS700 .FS 0. 14. 0,						
CS710	50	50	1	0	ISD Install Conveyor 212		11SEP00	17NOV00	11SEP00	17NOV00	0
					S.L.D.F.,*CS720 .FS 0. 10. 0,						
					P.L.D.F.,*CS700 .SS 54. 14. 0,						
CS740	50	50	1	0	ISD Field Piping		6NOV00	16JAN01	6NOV00	16JAN01	0
					S.L.D.F.,*CS305 .FS 0. 20. 0,						
					P.L.D.F.,*CS700 .SS 54. 14. 0,						

P = Predecessor D = Duration
 S = Successor F = Float
 L = Lag

The asterisk identifies activities with a driving relationship to the listed activity.

Sixty-Day Lookahead by Department

ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
Engineering Department											
AS216	10	5	1	50	MASON	Prepare Drawings for System Co					
BA469	3	3	1	0	MASON	Assemble Technical Data for He					
BA475	10	10	1	0	MASON	Review Technical Data on Heat					
BA470	10	10	1	0	MASON	Review Technical Data on Heat					
BA530	10	10	1	0	ACME	Review and Approve Brick Sampl					
BA560	10	10	1	0	ACME	Review and Approve Flooring					
Purchasing Department											
BA450	10	5	1	50	FOLEY	Assemble Brick Samples					
AS206	20	15	1	25	VENDR	Fabricate & Deliver Temp Contr					
BA480	10	10	1	0	FOLEY	Assemble and Submit Flooring S					
BA411	3	3	1	0	FOLEY	Prepare and Solicit Bids for H					
BA421	3	3	1	0	FOLEY	Prepare and Solicit Bids for H					
BA412	2	2	1	0	FOLEY	Review Bids for Heat Pump					
BA422	3	3	1	0	FOLEY	Review Bids for Brick					
BA413	1	1	1	0	FOLEY	Award Contract for Heat Pump					

Use the rolling date specification to create this type of lookahead report for the timeperiod you choose.

SR-16 APEX - Schedule Reports

Title: Schedule Report - 60 Day Look-ahead by Department

Content Format Selection

Level: 1 must meet All of the following criteria:
 Any

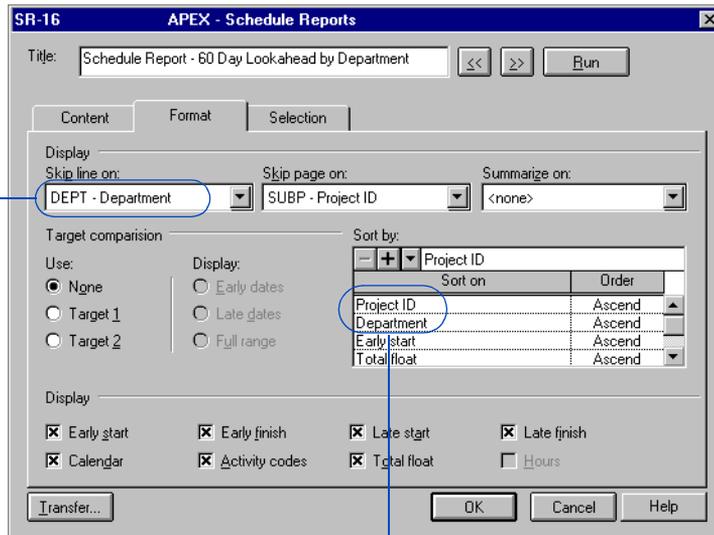
Selection criteria:

Select #	Is	Low Value	High Value
1	w/R	DD+00	DD+60D

Transfer OK Cancel Help

Skipping Lines and Pages by Code

Group data in reports so all data for activities pertinent to a particular person or other element appear together. Use the Format tab to group activities by activity code or activity ID code, and choose whether to start on a new line and/or a new page for each code group. If you enter a page-skipping code, a new page is printed each time the code value changes, with the code description appearing at the top of each page.



Indicate the activity code by which you want to group activities for the report.

If you request a Budgeted cost line, P3 includes subtotals for each code value in the report, together with a report total line.

Always sort first by page-skipping, then by line-skipping, and finally by summary codes.

For more information about aliases, see the [Activity and Project Codes](#) chapter.

To skip pages or lines by more than one code, specify an alias. Create an alias using a combination of up to five activity or ID codes, by clicking the Aliases tab in the Activity Codes Dictionary dialog box (choose Data, Activity Codes). P3 uses the alias title as a page heading or subtitle in the report.

For more information about filter statements, see the *Using Filters to Select Activities and Projects* chapter.

Filtering by Project Code

If you are reporting at the project group level, and the group contains many projects, you can select the specific project code in the Selection tab to fine-tune your report. For example, suppose you created a code that identifies the location of each project. To concentrate on the projects that are located at the same site, you would enter Location EQ Boston as your statement to select only those projects with the Boston value.

Schedule Report Organized By Sponsor

TSNS Financial Institution					PRIMAVERA PROJECT PLANNER		Current Fiscal Projects				
REPORT DATE 11AUG99 RUN NO. 12							START DATE 22JUN99		FIN DATE 6JAN99		
Schedule Report - Organized by Sponsor							DATA DATE 14SEP99		PAGE NO. 1		
ACTIVITY ID	ORIG DUR	REM DUR	CAL	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT
Accounting											
CSANYL1755	0	0	3	100		LOCK Client/Server Project Initiation	13JUL99A				
CSANYL1760	12	0	3	100		LOCK Investigate Current Business Process	13JUL99A	23JUL99A			
CSANYL1765	15	0	1	100		LOCK Investigate Business Organization	13JUL99A	30JUL99A			
CSTEST2880	12	0	3	100		DAY Unit Test Server Components	21JUL99A	4AUG99A			
Operations											
MNCODE400	4	4	1	0	DAY	Spec New Loan Rates	14SEP99	17SEP99	23FEB00	28FEB00	0
MNCODE500	3	3	1	0	DAY	Code New Loan Rates	20SEP99	22SEP99	1MAR00	3MAR00	0
Accounting											
CSANYL1800	20	20	1	0	LOCK	Consider Buy/Build/Sourcing Options	22SEP99	19OCT99	16NOV99	13DEC99	0
Operations											
MNTEST600	5	5	1	0	DAY	Unit Test New Loan Rates	23SEP99	29SEP99	4MAR00	10MAR00	0
MNTEST700	5	5	1	0	DAY	Integration Test New Loan Rates	30SEP99	6OCT99	11MAR00	17MAR00	0
MNIMPL900	1	1	1	0	DAY	Install New Loan Rates	7OCT99	7OCT99	18MAR00	18MAR00	0
Accounting											
CSIMPL0225	12	12	1	0	MURP	Plan Delivery Increments	20OCT99	4NOV99	7OCT99	22OCT99	0
CSIMPL0235	0	0	1	0	MURP	Prepare End Stage Assessment		11NOV99		29OCT99	0
CSDESG0265	7	7	1	0	SMTH	Develop Schedule for Next Stage	12NOV99	22NOV99	1NOV99	9NOV99	0
CSANYL1815	5	5	3	0	LOCK	Analyze Technical Risk	7DEC99	11DEC99	7DEC99	11DEC99	0
CSDESG0280	6	6	3	0	SMTH	Configure Development & Testing Environment	13DEC99	18DEC99	30NOV99	6DEC99	0
CSDESG0290	8	8	3	0	SMTH	Select and Refine Application Style Guide	25DEC99	3JAN00	13DEC99	21DEC99	0
CSDESG0295	10	10	1	0	SMTH	Develop Pilot to Test Architecture	17JAN00	28JAN00	11JAN00	24JAN00	0
CSCODE0435	10	10	3	0	DAY	Revise Technical Architecture	29JAN00	9FEB00	25JAN00	4FEB00	0
CSANYL1825	3	3	3	0	LOCK	Select Iteration Activities	11FEB00	14FEB00	7FEB00	9FEB00	0
CSCODE0450	5	5	3	0	DAY	Specify Background Processing	19MAR00	24MAR00	16MAR00	21MAR00	0
CSCODE0455	6	6	3	0	DAY	Specify External Application Program Interface	25MAR00	31MAR00	22MAR00	28MAR00	0
CSCODE0460	8	8	3	0	DAY	Generate Database	7MAY00	16MAY00	4MAY00	12MAY00	0
CSIMPL0255	5	5	3	0	MURP	Confirm Scope of Future Iterations	12MAY00	17MAY00	28APR00	3MAY00	0
CSDESG0335	3	3	3	0	SMTH	Develop Schedule for Next Stage	24MAY00	26MAY00	10MAY00	12MAY00	0
CSIMPL0260	3	3	3	0	MURP	Conduct End Stage Assessment	27MAY00	30MAY00	4JUN00	7JUN00	0
CSDESG0315	14	14	3	0	SMTH	Build Prototype	27MAY00	11JUN00	13MAY00	28MAY00	0
CSDESG0320	15	15	3	0	SMTH	Exercise Prototype	13JUN00	29JUN00	30MAY00	15JUN00	0
CSTEST2890	20	20	3	0	DAY	Perform Acceptance Tests	30JUN00	22JUL00	1JUL00	23JUL00	0
CSTEST2865	1	1	3	0	DAY	Ensure Data/Transaction Consistency	15JUL00	15JUL00	1JUL00	1JUL00	0
CSTEST2895	6	6	3	0	DAY	Perform Production Tests	18JUL00	23JUL00	4JUL00	9JUL00	0
CSDESG0345	4	4	3	0	SMTH	Collect Volumetric Data	30JUL00	3AUG00	16JUL00	20JUL00	0
CSCODE0505	6	6	1	0	DAY	Assemble the Application Build	8SEP00	15SEP00	25AUG00	1SEP00	0
CSTEST2885	6	6	2	0	DAY	Perform Integration and System					0
CSTEST2875	20	20	3	0	DAY	Unit Test Client Components					0
CSIMPL0240	15	15	2	0	MURP	Allocate Hardware and Software					0
CSDESG0380	9	9	1	0	SMTH	Develop Job Scheduling Process					0
CSCODE0525	3	3	1	0	DAY	Convert Static and Acquire New					0
CSCODE0530	4	4	1	0	DAY	Convert Dynamic Data					0
CSCODE0535	4	4	1	0	DAY	Collate and Store Metrics					0

This report uses the sponsoring department code value to group information. The report skips a line each time the code value changes.

Creating Target Comparison Reports

You must designate a target plan as Target 1 or Target 2 before you can use it for comparison. For details, see the Targets and Progress chapter.

A target comparison report compares the current status of your project to the original plan. To create a target comparison report, use the Format tab. From the Target Comparison options choose Target 1 or Target 2. Mark the Variance checkbox to compare the current and target schedule duration differences.

Choose Target 1 or Target 2 to compare the current schedule to one of the two active targets, then choose the dates on which to base the comparison.

Sort on	Order
Department	Ascend
Early start	Ascend
Early finish	Ascend

Choose Full Range to display the early start and late finish dates.

Target Comparison Report

Acme Motors		PRIMAVERA PROJECT PLANNER		Plant Expansion & Modernization						
REPORT DATE	11MAY99	RUN NO.	27	START DATE	19JUL99	FIN DATE	13FEB01			
Schedule Report Comparison to Target				DATA DATE	27SEP99	PAGE NO.	1			
ACTIVITY ID	TAR DUR	CUR DUR CAL %	CODE	ACTIVITY DESCRIPTION	CURRENT START	FULL RNG FINISH	TARGET START	FULL RNG FINISH	VAR.	
Engineering Department										
BA400	20	22	1	100	MASON Design Building Addition	19JUL99A	17AUG99A	19JUL99	17AUG99	0
AS100	10	12	1	100	MASON Define System Requirements	20JUL99A	4AUG99A	19JUL99	8DEC99	87
AS101	20	21	1	100	MASON System Design	3AUG99A	31AUG99A	2AUG99	7JAN00	88
AS204	10	11	1	100	MASON Prepare Drawings for Temp Control Equipment	17AUG99A	31AUG99A	16AUG99	11APR00	154
BA501	14	15	1	100	ACME Review and Approve Designs	18AUG99A	8SEP99A	16AUG99	7SEP99	-1
AS216	10	5	1	50	MASON Prepare Drawings for System Controller	23AUG99A	31MAY00	16AUG99	24MAY00	-3
AS010	0	9	1	100	EVANS Review and Approve Temp Control Equipment	31AUG99A	13SEP99A	16AUG99		
AS102	10	9	1	100	MASON Approve System Design	31AUG99A	13SEP99A	30AUG99	21JAN00	90
AS205	5	9	1	100	EVANS Review and Approve Temp Control Equipment	31AUG99A	13SEP99A	30AUG99	18APR00	151
BA469	3	3	1	0	MASON Assemble Technical Data for Heat Pump	27SEP99	10DEC99	3SEP99	7DEC99	-3
BA475	0	10	1	0	MASON Review Technical Data on Heat Pumps	27SEP99	13FEB01			
BA470	10	10	1	0	MASON Review Technical Data on Heat Pumps	30SEP99	27DEC99	9SEP99	21DEC99	-3
BA530	10	10	1	0	ACME Review and Approve Brick Samples	4OCT99	29NOV99	20SEP99	22NOV99	-3
BA560	10	10	1	0	ACME Review and Approve Flooring	11OCT99	30MAR00	20SEP99	27MAR00	-3
CS300	40	40	1	0	MASON System Design	24JAN00*	23MAR00	24JAN00*	20MAR00	-3
CS310	15	15	1	0	MASON Review and Approve Design	21MAR00	13APR00	21MAR00	10APR00	-3
CS430	20	20	1	0	MASON Prepare Drawings for Conveyors	11APR00	11MAY00	11APR00	8MAY00	-3
CS440	5	5	1	0	MASON Review and Approve Drawings for Conveyors	9MAY00	18MAY00	9MAY00	15MAY00	-3
Purchasing Department										
AS200	5	7	1	100	FOLEY Prepare and Solicit Bids for Temp Control Equip	7SEP99A	15SEP99A	7SEP99	25APR00	154
AS201	2	2	1	100	FOLEY Review Bids for Temp Control Equipment	20SEP99A	21SEP99A	14SEP99	27APR00	152

This report shows the full range of dates for both the current and target schedules and the variance between them.

Resource/Cost Reports

In this chapter:

Resource/Cost Control Reports

**Resource Productivity/Cost,
Price, and Rates Reports**

Earned Value Reports

Tabular Resource/Cost Reports

Resource/Cost Loading Reports

Resource reports organize data by the resource quantity you designate. Cost reports show the cost accounts and currency associated with the resources.

Select the report type that best suits your requirements: Control reports provide detailed or summarized information about the quantities of resources for each activity or for the costs expended for each activity; Productivity reports provide information about the amount of labor being used; Earned Value reports show profit for the amount of work performed; Tabular reports show current and forecasted resource requirements; and Loading reports show day to day usage for each resource as well as total usage.

Resource/Cost Control Reports

Control reports show values for the budget, actual to date, actual this period, estimate to complete, and estimate at completion (forecast); and the variance between the budget and the forecast values. Use the Resource Selection tab to report on specific resource/cost accounts; the Format tab to organize report information; and the Selection tab to report on specific activities.

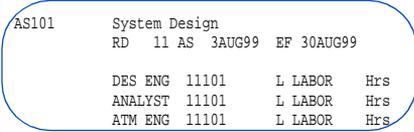
Resource Control Report

ACTIVITY ID	RESOURCE	COST ACCOUNT	ACCOUNT CATEGORY	UNIT MEAS	BUDGET	PCT CMP	ACTUAL TO DATE	ACTUAL THIS PERIOD	ESTIMATE TO COMPLETE	FORECAST	VARIANCE

Acme Motors			PRIMAVERA PROJECT PLANNER			Plant Expansion & Modernization					
REPORT DATE 21MAY99 RUN NO. 24			RESOURCE CONTROL ACTIVITY REPORT			START DATE 19JUL99 FIN DATE 20FEB01					
8:05											
Resource Control - Detail by Activity						DATA DATE 16AUG99 PAGE NO. 1					

AS100	Define System Requirements										
RD	0 AS	20JUL99	AF	4AUG99							
ANALYST	11101	L LABOR	Hrs		40.00	100.0	40.00	8.00	.00	40.00	.00
ATM ENG	11101	L LABOR	Hrs		80.00	100.0	80.00	16.00	.00	80.00	.00
TOTAL :					120.00	100.0	120.00	24.00	.00	120.00	.00

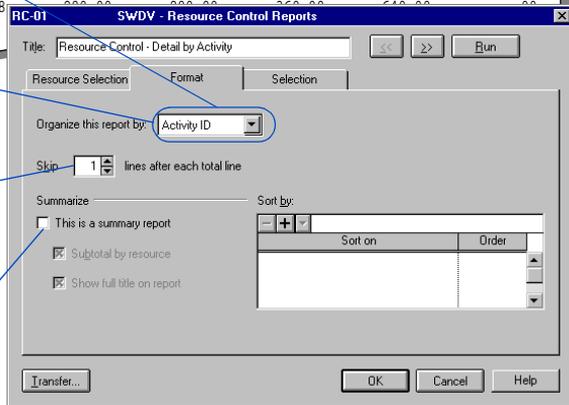
AS101	System Design										
RD	11 AS	3AUG99	EF	30AUG99	LF	19JAN00	TF	97			
DES ENG	11101	L LABOR	Hrs		160.00	45.0	64.00	64.00	96.00	160.00	.00
ANALYST	11101	L LABOR	Hrs		160.00	45.0	72.00	72.00	88.00	160.00	.00
ATM ENG	11101	L LABOR	Hrs		320.00	45.0	144.00	144.00	176.00	320.00	.00
TOTAL :					640.00	43.8	280.00	280.00	360.00	640.00	.00



Organize control reports by activity to see schedule information as well as resource or cost data per activity.

Control the amount of space between the report header and the first line of data, and between the total units or costs and the next line of data.

Produce a one-line total for each activity.



Access resource/cost reports Choose Tools, Tabular Reports, Resource or Cost, then select the type of report that contains the information you require. Select an existing specification from the list and click Modify, or click Add to add a specification.

A detailed control report completely itemizes use or cost for each resource and includes the activity ID and cost account, as shown in the next report. A summary control report that you organize by resource contains 1-line subtotals by resource.

Resource Control Report by Resource

ACTIVITY ID	RESOURCE	COST ACCOUNT	ACCOUNT CATEGORY	UNIT MEAS	BUDGET	PCT CMP	ACTUAL TO DATE	ACTUAL THIS PERIOD	ESTIMATE TO COMPLETE	FORECAST	VARIANCE

Acme Motors			PRIMAVERA PROJECT PLANNER				Plant Expansion & Modernization				
REPORT DATE 24MAY99		RUN NO. 25		RESOURCE CONTROL REPORT				START DATE 19JUL99 FIN DATE 20FEB01			
		9:51						DATA DATE 16AUG99 PAGE NO. 1			
Resource Control - Detail by Resource											

EQUIPMNT - Equipment-Crane											
BA750	EQUIPMNT	13516	E EQUIPMNT	Each	28.00	.0	.00	.00	28.00	28.00	.00
TOTAL EQUIPMNT				Each	28.00	.0	.00	.00	28.00	28.00	.00
=====											
MASON - Mason											
BA750	MASON	13516	L LABOR	Hrs	2240.00	.0	.00	.00	2240.00	2240.00	.00
TOTAL MASON				Hrs	2240.00	.0	.00	.00	2240.00	2240.00	.00
=====											
REPORT TOTALS					2268.00	.0	.00	.00	2268.00	2268.00	.00

A detailed control report organized by resource lists all activities that require that resource. Click the Selection tab to select resources by responsible person, in this case, Andy Mason, Director of Development.

For more information, refer to the Help topic *Select resources/cost accounts on control reports*.

Select resources/cost accounts Use the Resource Selection tab to select the resources and cost accounts to include in control reports. Follow these general rules:

- Select by resource only when you organize by activity and resource.
- Select by cost account only when you organize by cost account.
- Select by cost account wildcard only when you organize by cost account.
- Make no selection to include all resources/cost accounts.

Resource Productivity/Cost, Price, and Rates Reports

Resource productivity or labor indicates the amount produced (output) per unit of resource used (input), for example, the number of feet of piping installed per person-days of work. This measure of productivity helps you identify areas of a project that need performance improvements. You can compare actual rates to budgets and forecasts using the resource productivity report. The cost version (cost, price, and rates reports) displays data in a cost per resource quantity.

Generate a productivity report Assign resources and cost accounts with categories to activities. Develop cost accounts that group the resources (labor input and material output) for a particular work item. For example, suppose you want to measure the productivity of an electrician's day in terms of the number of linear feet of electrical conduit installed. Specify a cost account that represents the installation of electrical conduit and assign it to the electrician and electrical conduit resources.

You can use a consecutive range of cost accounts within a work item. Use the same unit of measure for all labor resources within a cost account; identify each with a designator (such as L for Labor) in the cost category position in the Cost Accounts Dictionary. P3 calculates the labor input by collecting only specified cost accounts with an L in the cost category position.

Use this tab to specify the method P3 uses to calculate the productivity rate.

Express productivity as either labor input per unit of resource output, or invert the ratio to resource output per unit of input labor.

This productivity report shows the budget, quantity to date, and forecast for labor and material resources used for the selected cost account, 13646.

Set up the units and rates for materials and labor in the Resource Dictionary.

The price of the Paint resource is 0.11 per unit.

The labor cost of the Painter is 23.00 per unit.

Specify the range of cost accounts or resources to profile in the Productivity Report.

Productivity Report

Acme Motors			PRIMAVERA PROJECT PLANNER			Plant Expansion & Modernization		
REPORT DATE 24MAY99 RUN NO. 28			PRODUCTIVITY REPORT			START DATE 19JUL99 FIN DATE 20FEB01		
Labor Rate Analysis Report						DATA DATE 16AUG99 PAGE NO. 1		
-----			-----			-----		
COST ACCOUNT	QUANTITY	BUDGET	TO DATE	FORECAST	LABOR	BUDGET	TO DATE	FORECAST
-----			-----			-----		
13646	? - Painting	LABOR UNIT PER PAINTER (HRS)						
		816.00	.00	816.00	784.00	.00	784.00	.96078 .00000 .96078
13646	? - Painting	LABOR UNIT PER PAINT (SF)						
		.00	.00	.00	784.00	.00	784.00	.00000 .00000 .00000

Earned Value Reports

Use the earned value report to evaluate performance by identifying the causes of schedule and cost variances. Performance is measured on a cumulative basis according to units or costs; earned value is calculated as the product of the percent complete and the budget. To report variance values accurately, P3 requires that you first designate a target plan as Target 1.

Earned Value Report

ACME MOTORS				PRIMAVERA PROJECT PLANNER				Plant Expansion & Modernization			
REPORT DATE 24MAY99		RUN NO. 30		EARNED VALUE REPORT - QUANTITY				START DATE 19JUL99		FIN DATE 20FEB01	
13:44								DATA DATE 16AUG99		PAGE NO. 1	
Earned Value Report - Units											
COST ACCOUNT	RESOURCE	ACTIVITY ID	PCT CMPCUMULATIVE TO DATE.....		VARIANCE.....	AT COMPLETION.....		
				ACWP	BCWP	BCWS	COST	SCHEDULE	BUDGET	ESTIMATE	
	ACCTS	- Accounts Manager									
11213	L ACCTS	AS200	.0	.00	.00	40.00	.00	-40.00	40.00	40.00	
11213	L ACCTS	AS201	.0	.00	.00	8.00	.00	-8.00	8.00	8.00	
11213	L ACCTS	AS202	.0	.00	.00	4.00	.00	-4.00	4.00	4.00	
11233	L ACCTS	AS213	.0	.00	.00	.00	.00	.00	16.00	16.00	
11233	L ACCTS	AS214	.0	.00	.00	.00	.00	.00	16.00	16.00	
11233	L ACCTS	AS215	.0	.00	.00	.00	.00	.00	2.00	2.00	
12312	L ACCTS	CS420	.0	.00	.00	.00	.00	.00	2.00	2.00	
13426	L ACCTS	BA411	.0	.00	.00	.00	.00	.00	24.00	24.00	
13426	L ACCTS	BA412	.0	.00	.00	.00	.00	.00	8.00	8.00	
13426	L ACCTS	BA413	.0	.00	.00	.00	.00	.00	2.00	2.00	
13516	L ACCTS	BA421	.0	.00	.00	.00	.00	.00	24.00	24.00	
13516	L ACCTS	BA422	.0	.00	.00	.00	.00	.00	6.00	6.00	
13516	L ACCTS	BA423	.0	.00	.00	.00	.00	.00	2.00	2.00	
13616	L ACCTS	BA407	.0	.00	.00	.00	.00	.00	40.00	40.00	
13616	L ACCTS	BA408	.0	.00	.00	.00	.00	.00	6.00	6.00	
13616	L ACCTS	BA409	.0	.00	.00	.00	.00	.00	2.00	2.00	
	ACCTS	TOTAL	.0	.00	.00	52.00	.00	-52.00	202.00	202.00	

Actual cost for work performed (ACWP), budgeted cost for work performed (BCWP), and planned value, or budgeted cost for work scheduled (BCWS) are compared to report cost and schedule variances.

For information about creating and maintaining target plans, see the Targets and Progress chapter.

If it is specified for a resource, P3 uses the resource percent complete for the activity; otherwise, P3 uses the schedule percent complete. You can base the budgeted amount on budgets from the current or target schedule. Use the Earned Value Calculations dialog box (choose Tools, Options, Earned Value) to indicate which budget should be used to calculate earned value and planned value.

Tabular Resource/Cost Reports

Use the tabular resource usage report to track resource use during specific time intervals. P3 shows up to three different schedules so you can compare past, current, and forecasted resource requirements. The format of the tabular cost report (cash-flow report) is similar to that of the tabular resource report. Both reports compare expenditure rates between periods based on early, late, and Target 1 schedule dates and spread the actual to date values from the resource actual start to the data date.

If you store period performance, tabular reports spread resource quantities and costs evenly for each update period and spread quantities and costs for the current period from the last storage date to the data date. If you do not store period performance, tabular reports spread resource quantities and costs evenly from the resource start through the data date. The report spreads the estimate to complete values evenly from the data date to the finish date.

Tabular Cost Report - Monthly

The screenshot displays the Primavera Project Planner interface. At the top, it shows project details: Acme Motors, Primavera Project Planner, Plant Expansion & Modernization, Report Date 24MAY99, Run No. 38, and Tabular Cost Report - Monthly. The report data includes START DATE 19JUL99, FIN DATE 20FEB01, DATA DATE 16AUG99, and PAGE NO. 1.

PERIOD BEGINNING	---EARLY SCHEDULE--- USAGE CUMULATIVE	---LATE SCHEDULE--- USAGE CUMULATIVE	---TARGET 1 SCHEDULE--- USAGE CUMULATIVE
1JUL99	9000.00 9000.00	9000.00 9000.00	.00 .00
1AUG99	9600.00 18600.00	9600.00 18600.00	11280.00 11280.00
DATA DATE			
1SEP99	2220.00 20820.00	1680.00 20280.00	1684.00 12964.00
1OCT99	37304.00 58124.00	34400.00 54680.00	49160.00 62124.00
1NOV99	76240.00 134364.00	76240.00 130920.00	169620.00 231744.00
1DEC99	108524.00 242888.00	109816.00 240736.00	2144.00 233888.00
1JAN00	311600.00 554488.00	112744.00 353480.00	382440.00 616328.00
1FEB00	148680.00 703168.00	146380.00 499860.00	152200.00 768528.00
1MAR00	80760.00 783928.00	139960.00 639820.00	65515.00 834043.00
1APR00	196315.00 980243.00	159008.00 798828.00	179800.00 1013843.00
1MAY00	72953.00 1053196.00	105128.00 903956.00	35153.00 1048996.00
1JUN00	35686.60 1088882.60	61086.60 965042.60	11238.60 1130234.60
1JUL00	64192.00 1153074.60	188032.00 1153074.60	22160.00 1152394.60
1AUG00	41340.00		3020.00 1185414.60
1SEP00	2800.00		2800.00 1188214.60
1OCT00	.00		.00 1188214.60
1NOV00	10000.00		2000.00 1200214.60
1DEC00	11085.50		2285.50 1212500.10
1JAN01	39328.00		6128.00 1248628.10
1FEB01	4000.00		4000.00 1252628.10

Below the report, a dialog box titled "APEX - Tabular Cost Reports" is open. It shows "Title: Tabular Cost - Monthly Project Cash Flow" and "Run" button. The "Resource Selection" tab is active, showing a table for resource selection:

Profile	Low Value Resource	Low Value Cost Account	High Value Resource	High Value Cost Account
if		12101		

Annotations with blue arrows point from the text below to the dialog box and the report data.

To anticipate cash-flow needs, this report forecasts spending by cost account.

Use the Timescale tab to define report timeperiods and the time interval for the timescale. The timescale you specify determines the time units based on the project data date, start date, and/or finish date, rather than on specific calendar dates.

Tabular Cost Report - Daily

PERIOD BEGINNING		---EARLY SCHEDULE---		---LATE SCHEDULE---		---TARGET 1 SCHEDULE---	
USAGE	CUMULATIVE	USAGE	CUMULATIVE	USAGE	CUMULATIVE	USAGE	CUMULATIVE
RESOURCE/COST ACCOUNT =		GT	12101			TARGET = EARLY	
15DEC99	.00	240744.00	32.00	238052.00	.00	223568.00	
16DEC99	2144.00	242888.00	2144.00	240196.00	.00	223568.00	
17DEC99	.00	242888.00	540.00	240736.00	.00	223568.00	
20DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
21DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
22DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
23DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
24DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
27DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
28DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
29DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
30DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
31DEC99	.00	242888.00	.00	240736.00	.00	223568.00	
3JAN00	.00	242888.00	.00	240736.00	111600.00	335168.00	
4JAN00	.00	242888.00	600.00	241336.00	.00	335168.00	
5JAN00	.00	242888.00	.00	241336.00	.00	335168.00	
6JAN00	.00	242888.00	.00	241336.00	.00	335168.00	
7JAN00	.00	242888.00	384.00	241720.00	.00	335168.00	
10JAN00	.00	242888.00	.00	241720.00	1000.00	415168.00	

Define start and end dates and other parameters that control the timeframe of the report.

Choose the dates to include in each column of the report.

You can export the report data to another application format such as Lotus or dBASE.

Select averages Select the Current average in the Timescale tab to show the average of the early and late schedule totals in the third column of the report. The Current full range shows the calculated resource use or cost as if it were spread from the early start through the late finish of activities.

Show payment lag In tabular cost reports, you can specify that the entire payment of an activity be delayed until after its completion by a specified number of time units. Specify the unit in terms of the planning unit for the project in absolute time. For example, to delay the payment of a resource in a daily project until 30 days after that resource completes an activity, type 30 in the Payment Lag field in the Timescale tab. P3 distributes costs evenly across the duration of the activity if you do not specify a payment lag. Type 0 to apply the payment in the last workperiod of the activity.

Timescale units:	Month
Days shown per week:	7
Payment lag:	1

This field is available only for tabular cost reports.

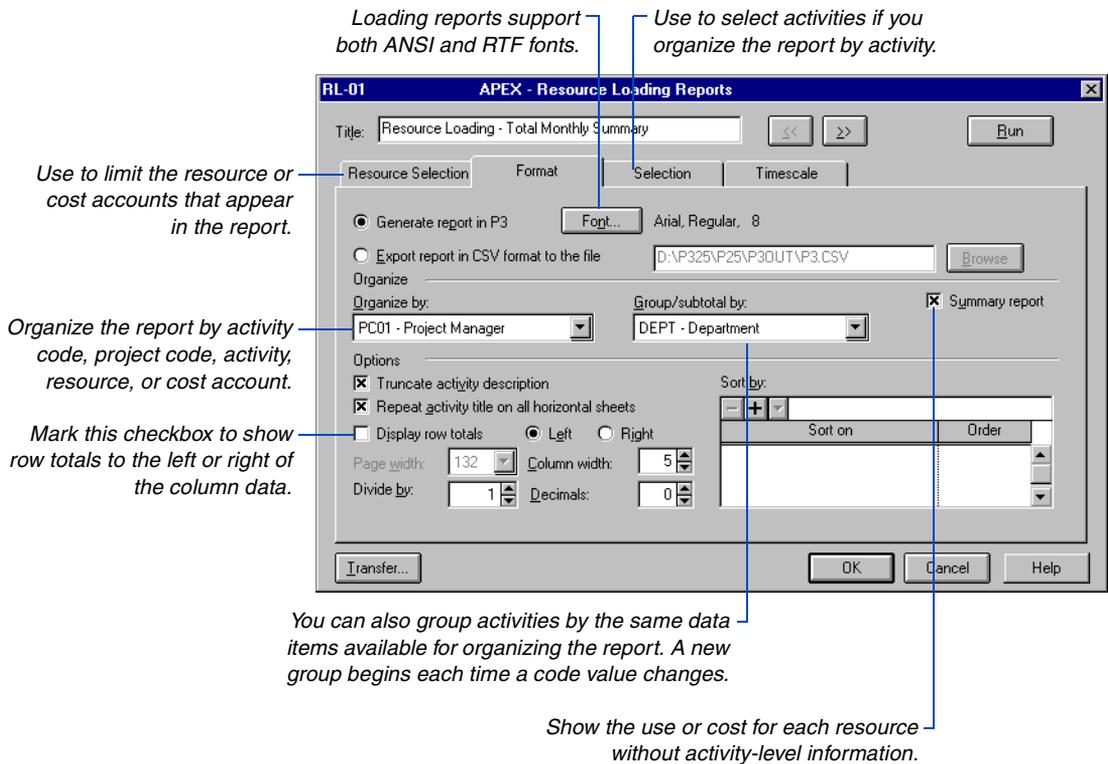
Resource/Cost Loading Reports

Resource/cost loading reports are tabular listings of use or cost by time-period for selected resources and cost accounts, and include subtotals and totals. This example shows total monthly resource requirements for all activities. The report is organized by the Project Manager project code and is grouped (totaled) by the Department activity code.

Resource Loading Report

Acme Motors		PRIMAVERA PROJECT PLANNER										Plant Expansion & Modernization	
REPORT DATE 24MAY99 RUN NO. 45 15:07		RESOURCE LOADING REPORT										START DATE 19JUL99 FIN DATE 20FEB01	
Resource Loading - Total Monthly Summary		TOTAL USAGE FOR MONTH										DATA DATE 16AUG99 PAGE NO. 1	
ACT ID	DESC	JUL 1999	AUG 1999	SEP 1999	OCT 1999	NOV 1999	DEC 1999	JAN 2000	FEB 2000	MAR 2000	APR 2000	MAY 2000	JUN 2000
Lisa Gannon - Project Manager													
ENG	Engineering Departme	96	864	260									
PCH	Purchasing Departmen			150									
ISD	Information Systems			112	616	472	272	336	913	907	144	152	190
TOTAL	GANNON	96	864	522	616	472	272	336	913	907	144	152	190
Jim Green - Project Manager													
ENG	Engineering Departme	300	28	78	24								
PCH	Purchasing Departmen				114								
CON	Construction Departm			432	1168	2495	1563	1773	1748	3981	2234	940	2016
TOTAL	GREEN	300	28	510	1306	2495	1563	1773	1748	3981	2234	940	2016
John Moyer - Project Manager													
ENG	Engineering Departme							36	120	120	136	88	
PCH	Purchasing Departmen											20	6
ISD	Information Systems												
TOTAL	MOYER							36	120	120	136	108	6
REPORT TOTAL		396	892	1032	1922	2967	1835	2145	2781	5008	2514	1200	2212

Use the Format tab to specify report organization, the level of detail, and other options, such as grouping data by project code.



For details about selecting resources and cost accounts, see the *Customizing Resource/Cost Profiles and Tables* chapter.

For details about selecting activities, see the *Using Filters to Select Activities and Projects* chapter.

If you organize the report by resource, cost account, or cost account category, use the Resource Selection tab to limit the resources or cost accounts that appear in the report. If you organize the report by activity, use the Selection tab to select activities. If you organize the report by activity code or project code, use the Selection tab to limit the activities that have a particular activity code or project code value.

When you organize reports by resource, cost account, cost category, activity code, or project code, P3 first groups activities by the organizing item, such as resource or activity code value, and then subgroups them by the code you specify. For example, you can create a resource loading report that is organized by resource and grouped by project code. The resource name appears first, followed by the code description for each project code; activities within each project are listed for the resource. Subtotals show for each group.

Selecting Rich Text as the report font type allows proper alignment of column data using proportional fonts.

You can automatically view a .CSV formatted file in Excel by setting your report options to view files. Choose Tools, Tabular Reports, Options. Under Output, choose View On Screen.

Divide reported quantities/costs Use the Divide By field to divide the reported quantities/costs by a factor that coordinates use with the defined timeperiod. For example, if use or cost for the resource is measured in hours but the report uses a weekly scale, you may want to modify use or cost to yield number of persons per week. To simplify the report, you can divide the quantity by a common factor, such as 40 hours per person per week.

Select a report font Click Font to select the font type for both the report body text and the heading and subtotal text. You can select either Plain Text (ANSI) or Rich Text (RTF) type fonts; selecting RTF-type fonts enables you to select standard fonts (including proportional). P3 calculates the report width using the average character width of the longest word in each column. You can only specify page width by selecting Plain Text in the Font dialog box.



If you select an RTF font, the Lines Per Page you specify using Tools, Tabular Reports, Options, will not be recognized.

Export a report to a comma delimited file In addition to producing the report data “as is,” you can save resource/cost loading reports to a CSV (comma-separated values) file which you can open in another application, such as Excel or Word. You can then manipulate and format the data in the other application to suit your requirements. For example, you can modify the heading text and column justification of the loading report in an Excel spreadsheet.

Choose the Export Report in CSV Format to the File option, then type a filename with a CSV extension. If you do not enter a filename, P3 names the file P3.CSV. Optionally click Browse to select a folder location and filename for the file; P3 supplies the CSV extension if you do not supply it and places the report file in the P3WIN/P3OUT folder by default.

Define timeperiods and time intervals Use the Timescale tab to select start and end dates and the time interval for the timescale. The timeperiod determines the intervals for the horizontal timescale that appears along the top of the report.

Control timeperiods with calendar dates, or create rolling date specifications for reports that you prepare regularly.

To use a fiscal year timescale, mark this checkbox and specify the Start Month of the fiscal year.

Report peak, total, or average use Once you set the timeframe, you can choose to report peak, total, or average use cost for each time interval. Use the option that best suits your resource analysis requirements. Choose Total to report the sum of the use during each time interval. To report scheduled usage only, mark the Exclude Actual Usage checkbox —clear it to report both actual and scheduled usage.

If you store period performance, P3 spreads resource and cost amounts evenly for each update period and spreads expenditures for the current period from the last storage date to the data date. P3 distributes the actual to date amount from the resource actual start to the data date, and the estimate to complete amount from the data date to the early finish date if you request both actual and scheduled usage. If you do not store period performance, P3 spreads resource quantities and costs evenly from the resource start through the data date.

Choose Peak to report the highest use or cost per planning unit during each time interval. Choose Average to report the total use divided by the number of time units during the time interval.

Use the standard month unit A four-week period unit is available if you use a standard month accounting system of four weeks. The four-week period is based on the standard workweek you define when you add a project. Select four-week periods for the Unit field to display values for the first and last days of the defined workweek. For example, if the workweek begins on a Monday and the Start Date is set to a Wednesday, the report will show the usage numbers from Monday. Conversely, if the standard workweek ends on Friday, but the End Date for the Date Range is a Tuesday, usage will be spread to Friday.

To report usage for the four-week period based on the Start and End Dates you specify for the Date Range, mark the Only Include Values Within Date Range checkbox; this affects the usage numbers shown in the first and last columns of the report, but not the column headings. The Column headings are rounded to the beginning of the report interval, but the data only include the values for the date range specified.

Mask weekends If your project is based on a five-day workweek, you can mask the weekends so more worktime data show on each page. Choose Day for Timescale units and type 5 for Days Shown Per Week. Masking a workday from the timescale does not mask data for that day (if work was performed on a weekend day); P3 moves the data to the previous workday. This option also applies to tabular resource/cost reports.

Setting Rolling Dates

If you want to view use or cost for activities that start within a specific timeframe, use rolling dates; then you won't need to modify the report as the project progresses. To set a rolling date, click the icon to the left of the Start or End field, then select the type of date. For example, to use rolling dates based on the data date, choose Data Date; P3 automatically enters DD+0D, which specifies the data date.



The image shows a date selection menu on the left with four options: Calendar Date, Start Date, Data Date (which is selected with a checkmark), and Finish Date. To the right is a horizontal field with 'Start:' and 'End:' labels. The Start field contains 'DD+0D' and the End field contains 'DD+247D'. Both fields have a small downward arrow icon on the right side.

You can modify this statement as necessary. For example, set the timescale to show a two-week timeperiod starting from the data date. Enter DD+0D in the Start field and DD+2W in the End field. You can also use hours, days, months, and years instead of weeks, as shown in the following example.



The image shows a horizontal field with 'Start:' and 'End:' labels. The Start field contains 'DD-6W' and the End field contains 'DD+1M'. Both fields have a small downward arrow icon on the right side.

Choose Start Date or Finish Date to base rolling dates on the project start date or finish date. To include timeperiods prior to the data date, start date, or finish date, replace the plus sign (+) with a minus sign (-). The finish date indicates either the latest calculated project finish date or the imposed project finish date, if one exists.

Matrix Reports

In this chapter:

Creating a Matrix Report

Specifying Data for Matrix Reports

Defining Rows and Column Headings

Formatting a Matrix Report

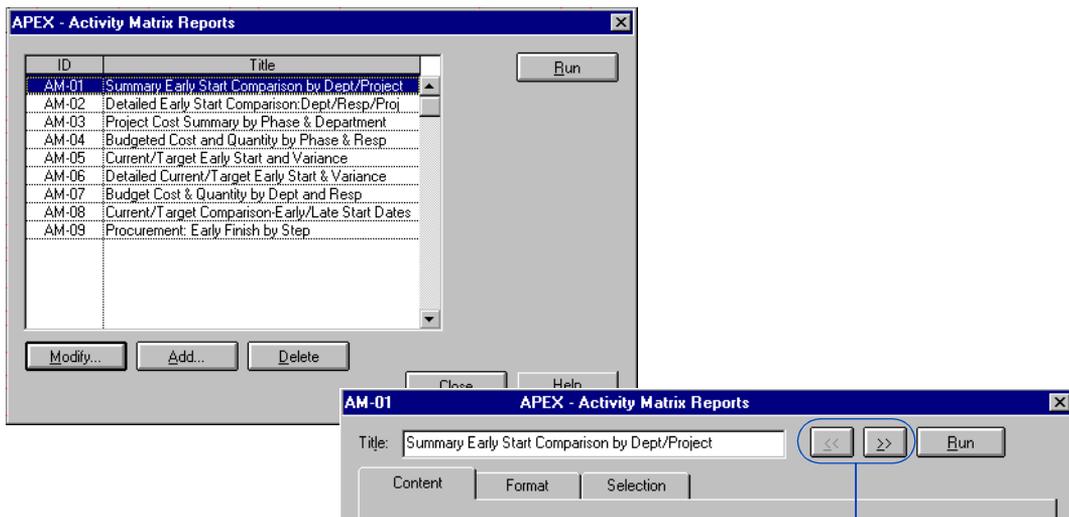
Matrix reports provide a two-dimensional view of your project data, similar to a cross-tab report. Display schedule data, quantity, or cost information in columns and rows, grouped by activity codes and/or resources or cost accounts. For example, you can show the amount of money each department is spending by project.

Creating a Matrix Report

P3 offers two types of matrix reports, activity and resource/cost. Use activity matrix reports to report activity or resource data grouped by activity codes. Use resource/cost matrix reports to review data grouped by resource or cost account.

Create an activity matrix report Choose Tools, Tabular Reports, Matrix, Activity. Click Add to create a new activity matrix report or click Modify to change an existing one. In the Activity Matrix Reports dialog box, specify the content, format, and selection criteria for the report.

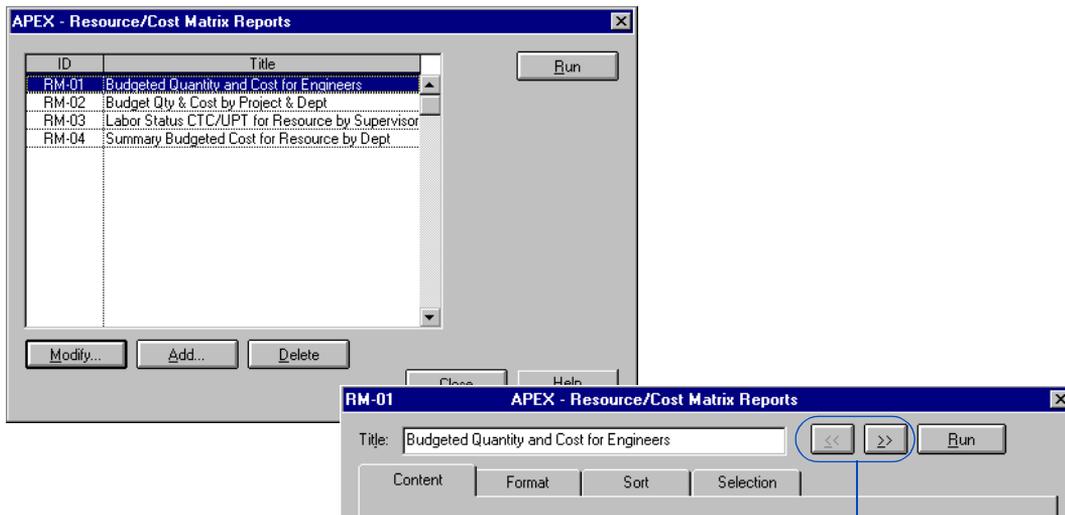
Click Run to create the activity matrix report according to the current specifications.



Click to open the previous or following activity matrix report specification listed.

Create a resource/cost matrix report Choose Tools, Tabular Reports, Matrix, Resource/Cost. Click Add to create a new resource/cost matrix report or click Modify to change an existing one. In the Resource/Cost Matrix Reports dialog box, specify the content, format, sort sequence, and selection criteria for the report.

Click Run to create the resource/cost matrix report according to the current specifications.



Click to open the previous or following resource/cost matrix report specification listed.

Transferring Report Specifications

To transfer an individual specification within a project, click Transfer at any time. To transfer all specifications from another project to the current project, choose Tools, Tabular Reports, Production, and click Transfer.

Specifying Data for Matrix Reports

P3 provides an extensive list of data items you can specify for an activity or resource/cost matrix report, such as activity ID, schedule dates, durations, resources, cost accounts, and variances. These selections determine the values P3 displays in the report cells.

Choose data for activity matrix reports In the Content tab of the Activity Matrix Reports dialog box, specify the information you want the report to show. In the Report On Data Items section, specify up to four data items to include in the report, such as activity type and leveling type.

Acme Motors PRIMAVERA PROJECT PLANNER Plant Expansion & Modernization

REPORT DATE 26MAY99 RUN NO. 23 ----Project Schedule---- START DATE 19JUL99 FIN DATE 20FEB01

15:30 DATA DATE 16AUG99 PAGE NO. 1

Summary Early Start Comparison by Dept/Project

Early Start-Current/Target By Proj

Department	DESCRIPTION	Automated System	Building Addition	Conveyor System	TOTAL
ENG	Engineering Department	20JUL99A 19JUL99	19JUL99A 19JUL99	24JAN00 24JAN00	19JUL99A 19JUL99
PCH	Purchasing Department	08SEP99 07SEP99	20SEP99 03SEP99	16MAY00 16MAY00	08SEP99 03SEP99
ISD	Information Systems Department	15SEP99 14SEP99		07AUG00 24JUL00	15SEP99 14SEP99
CON	Construction Department		20SEP99		20SEP99

AM-01 APEX - Activity Matrix Reports

Title: Summary Early Start Comparison by Dept/Project Run

Content Format Selection

Report on data items: Skip lines: 1

Organization: 1

Group rows by: Department 1

Subgroup rows by: <none>

Group columns by: Project ID

Titles

Header: Early Start-Current/Target By Proj Insert

Automated Delete

	Column 1	Column 2	Column 3
Line 1 title	Automated	Building	Conveyor
Line 2 title	System	Addition	System
Code value	AS	BA	CS

Transfer... OK Cancel Help

This content specification...

...produces a matrix report that compares the early start dates for the current and target projects by department and project.

For detailed information about defining codes and values, refer to the *Activity and Project Codes* chapter.

Specify data for resource/cost matrix reports In the Content tab from the Resource/Cost Matrix Reports dialog box, specify the information you want the report to show. In the Report On Data Items section, click a cell then click and choose up to four resource/cost data items for the report. These selections determine the values P3 displays in the report.

Acme Motors	PRIMAVERA PROJECT PLANNER	Plant Expansion & Modernization
REPORT DATE 26MAY99 RUN NO. 24 15:40	----Project Schedule----	START DATE 19JUL99 FIN DATE 20FEB01
Budgeted Quantity and Cost for Engineers		DATA DATE 16AUG99 PAGE NO. 1

Budget Quantity/Cost for Engineers							
Project Phase	DESCRIPTION	Design Engineer	Field Engineer	Field Engineer 2	Automation Engineer	Operations Engineer	TOTAL
Robotics Automation System							
DESIGN	Design and Engineering Phase	160.00			640.00		800.00
		4800.00			14080.00		18880.00
PROCR	Procurement Phase				44.00		44.00
					968.00		968.00
SYS1	System Integration Phase I		1136.00	336.00	524.00		1996.00
			28400.00	6720.00	11528.00		46648.00
SYS2	System Integration Phase II			6.00	112.00		118.00
				120.00	2464.00		2584.00
		160.00	1136.00	342.00	1320.00		2958.00
		4800.00	28400.00	6840.00	29040.00		69080.00
Office Building Addition							
DESIGN	Design and Engineering Phase	414.00					414.00
		12420.00					12420.00
							16.00
							480.00
							336.00
							336.00
							20160.00
							20160.00
							16.00
							960.00
							960.00
							352.00
							782.00
							21120.00
							34020.00

RM-01 APEX - Resource/Cost Matrix Reports

Title: Budgeted Quantity and Cost for Engineers

Content | Format | Sort | Selection

Report Font:

Report on data items:

- Budgeted quantity
- Budgeted cost

Organization:

Group rows by: Project ID (Skip lines: 1)

Subgroup rows by: Phase (Skip lines: 1)

Titles:

Header: Budget Quantity/Cost for Engineers

	Design		
Line 1 title	Project	Design	Field
Line 2 title	Phase	Engineer	Engineer
Resource		DES ENG	FLD ENG1
Cost Account			

Buttons: Transfer..., OK, Cancel, Help

You can group rows by project ID and phase while each column displays a summarized budgeted quantity and cost for resources.

Budgeted quantity appears as the default data item for new reports; you can change this item.

Defining Rows and Column Headings

The Content tab in the Activity Matrix Reports and Resource/Cost Matrix Reports dialog boxes enables you to specify the values P3 shows in each row and column of the report. You can define up to 25 columns, specifying the order in which they appear, and titles for the report columns and rows. P3 bases the groupings for rows and columns on defined activity codes. In resource/cost matrix reports, you can also report data by resource.

To insert new columns between existing columns, press Insert. Press Delete to remove columns.

Define column data and headings Right-click in the Code Value or Resource/Cost Account field for the appropriate column, then choose a value from the list P3 displays. Press the up arrow key to select the Line 1 or 2 Title fields and type a heading for the column, then press Enter. Continue entering data for each column. If you do not specify a column heading, P3 prints the code value above column data in the report.

AM-01 APEX - Activity Matrix Reports

Title: Summary Early Start Comparison by Dept/Project

Content | Format | Selection

Report Font:

Report on data items: Target 1 ES vs. current ES

Organization: []

Group rows by: Department

Subgroup rows by: <none>

Group columns by: Project ID

Skip lines: 1

Titles:

Header: Early Start-Current/Target By Proj

Column 1	Column 2	Column 3
Automated	Building	Con
Department	System	Adition
AS	BA	ICS

Line 1 title

Line 2 title

Code value

Transfer... OK Cancel

RM-01 APEX - Resource/Cost Matrix Reports

Title: Budgeted Quantity and Cost for Engineers

Content | Format | Sort | Selection

Report Font:

Report on data items: Budgeted quantity, Budgeted cost

Organization: []

Group rows by: Project ID

Subgroup rows by: Phase

Skip lines: 1

Titles:

Header: Budget Quantity/Cost for Engineers

Column 1	Column 2	Column 3
Project	Design	Field
Phase	Engineer	Engineer
Resource	DES ENG	FLD ENG1

Line 1 title

Line 2 title

Resource

Cost Account

Transfer... OK Cancel Help

The header describes the content and organization of the report; P3 displays the header in the center of the report, immediately above the column headings.

Specify the code values P3 shows in the report columns.

Specify the column headings.

Specify the resource or cost account values P3 shows.

Define rows Choose an activity or ID code in the Group Rows By Field. For example, if you group rows by department, each row lists one department code value. P3 shows all code values for the selected code unless you choose activities assigned to specific codes using the Selection tab. You can also select a second activity code in the Subgroup Rows By field for a more detailed report. To define row titles, click the Line 1 Title field in the first column and type a title to identify the values that show in the report rows. Press Enter. Use the Line 2 Title field to enter a title for subgroups.

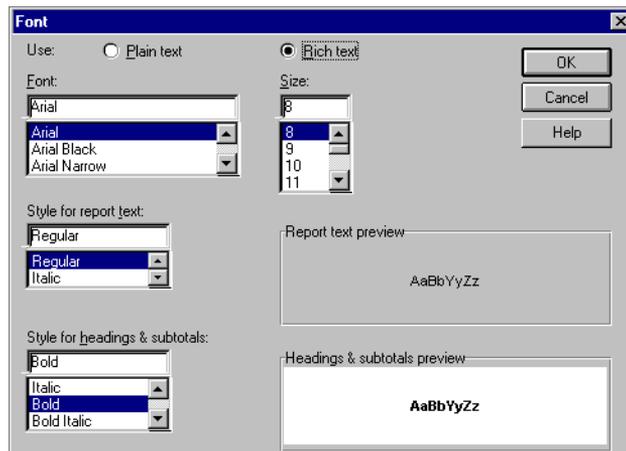
Choose the Rich Text option to align column data correctly when you specify proportionally spaced fonts.

Choosing a Report Font

Click Font in the Format tab to select the font type for both the report body text and the heading and subtotal text. In the Font dialog box, you can select either Plain Text (ANSI) or Rich Text Format (RTF) fonts. Choosing RTF fonts enables you to select standard fonts, including proportionally spaced fonts. P3 calculates the report width using the average character width of the longest word in each column. To specify your own page width, choose the Plain Text option.



If you select an RTF font, the Lines Per Page you specify using Tools, Tabular Reports, Options, will not be recognized.



Formatting a Matrix Report

To fit as much information as possible on each page, specify the widest page width supported by your printer. The page width determines the number of columns displayed in the report. Standard reports usually print in compressed mode at 132 columns per page. Most reports printed at these settings fit on 8 1/2- by 11-inch paper.

Set page widths Choose Tools, Tabular Reports, Matrix, then choose Activity or Resource/Cost. In the Page Width field in the Format tab, choose 132, 230, or 500 columns per page. The greater the page width selected, the more columns are printed in the report. Refer to your printer manual to determine the maximum number of columns you can print per page.

When using RTF output, the Page Width field is unavailable because the printer determines the width of the page.

Enter a number from 0 to 48 to specify the length P3 shows in the report.

The screenshot shows the 'APEX - Activity Matrix Reports' dialog box with the 'Format' tab selected. The 'Title' field contains 'Summary Early Start Comparison by Dept/Project'. The 'Report font' is set to 'Arial, Regular, 8'. The 'Number presentation' is set to 'Number presentation'. The 'Display column totals' checkbox is checked. The 'Display row totals' checkbox is checked, with 'left' and 'right' radio buttons. The 'Divide quantities/costs by' field is set to '1'. The 'Decimal places' field is set to '0'. The 'Date format' is set to 'Date format'. The 'Calendar type' is set to 'Calendar Dates'. The 'Ordinal units' is set to 'Day' and the 'Ordinal start date' is set to '19JUL99'. The 'Options' section includes 'Page width' set to '132' and 'Field width of each data item' set to '13'. The 'Activity codes' section includes 'Title length' set to '40', 'Indent subgroups by' set to '3 spaces', and the 'Repeat code value on all horizontal pages' checkbox checked. The 'Transfer...' button is at the bottom left, and 'OK', 'Cancel', and 'Help' buttons are at the bottom right.

Although you can modify the date format for Bar chart layouts, printed reports always use the DDMMYY format.

Define the width of report cells If the report is based on dates, set the field width to 8, since date fields for daily projects are seven characters long in DDMMYY format, plus one character for the actual date (A) indicator. P3 truncates data (from the right) that is longer than the field width you specify. For example, if you specify 5 characters for a date field, the result is DDMMM. The field width for each data item can range from 1 to 15 characters. The field width also controls the width of the row titles specified in the Line 1 and Line 2 Title fields in the Content tab.

If you choose RTF, P3 automatically defines the field width for that cell as the number of characters for the largest data item in that column. The only time that P3 recognizes field width when using RTF is if the field length you choose is smaller than the longest length in the column or if you report on cost account or activity ID.

Print totals In the Number Presentation section, mark the Display Column Totals checkbox to print totals horizontally across the bottom of the report. P3 shows the totals below each column and after each group and shows a grand total at the bottom of the report. You can also choose to display row totals to the left or right of the column data.

If the report contains numbers based on quantities or costs, use the Divide Quantities/Costs By field to reduce the number of spaces required to print each number. Divide all numbers by an amount such as 10 or 100.

You can also specify 0, 1, or 2 decimal places for quantities or costs.

If you use an ordinal timescale, choose a time unit and specify a start date that is later than the project start date.

Select a date format You can display dates in matrix reports as calendar, workperiod, ordinal, or manufacturing dates. Use the Calendar Type field in the Format tab to choose a date format. Calendar Dates format shows dates in DDMMYY format. Workperiods format displays the workperiod number that corresponds to the early, late, or actual schedule dates, excluding holidays and nonworktime.

For detailed information about summarizing data, refer to the *Summarizing Data* chapter.

Workperiod numbers start with 1. Ordinal Dates show a sequential number for each time unit. Ordinal dates resemble workperiods but include nonworktime or holidays; these dates start with 1. Manufacturing Dates format displays a number for each week consecutively, starting with 1, beginning in January, and including the year (for example, 94-01).



When summarizing data, activity matrix reports display only one value for each report cell. This value summarizes the data for all activities represented by the cell.

Indenting Subgroups

If you subgroup data in a matrix report, you can indent the subgroups to make the row titles easier to read. Use the Indent Subgroups By field in the Format tab. Enter a number from 0 to 9; P3 indents the subgroup the number of spaces you specify from the left margin of the report.

Detailing Activities in a Resource Matrix Report

A resource/cost matrix report can show either summarized or detailed data for each group. To show detailed data, choose Tools, Tabular Reports, Matrix, and Resource/Cost.

In the Format tab, mark the Show Detailed Activities checkbox to list the activities for each group. You can also choose the number of lines to skip between each group. Enter a number from 0 to 9.

Acme Motors	PRIMAVERA PROJECT PLANNER	Plant Expansion & Modernization
REPORT DATE 26MAY99 RUN NO. 26	----Project Schedule----	START DATE 19JUL99 FIN DATE 20FEB01
16:00		
Summary Budgeted Cost for Resource by Dept		DATA DATE 16AUG99 PAGE NO. 1

Budgeted Cost for Resource by Dept						
Department Supervisor	DESCRIPTION	TOTAL	Programmer	Field Engineer	Electrician	Carpenter
Information Systems Department						
Tom Mills - Director of Hardware Engineering						
AS103	Install Robot Base	3600.0		3600.0		
AS105	Install Temperature Control Equipment	11400.0		5000.0	6400.0	
AS108	Install System Controller	3200.0		3200.0		
AS109	Test & Debug Line A	4800.0		4800.0		
AS110	Test & Debug Line B					
AS260	Trim Robot Paths Line A					
AS265	Path Refinement and Shakedown-Line A					
AS275	Path Refinement and Shakedown-Line B					
AS315	Install Electrical Power					
CS305	Start-Up & Debug System					

You can group by resource and department and show detailed activities for each department.

RM-04 APEX - Resource/Cost Matrix Reports

Title: Summary Budgeted Cost for Resource by Dept

Content | **Format** | Sort | Selection

Report Font: Arial, Regular, 8

Number presentation: _____ Date Format: _____

Display column totals

Display row totals left right

Divide quantities/costs by decimal places: 1 / 1

Activity Codes: _____

Title length: 40

Indent subgroups by: 3 spaces

Repeat code value on all horizontal pages

Calendar type: Calendar Dates

Ordinal units: Day Ordinal start date: 15JUL96

Options: Page width: 132

Field width of each data item: 13

Number of skipped lines: 1

Show detailed activities

Buttons: Transfer... OK Cancel Help

Custom Report Writer

In this chapter:

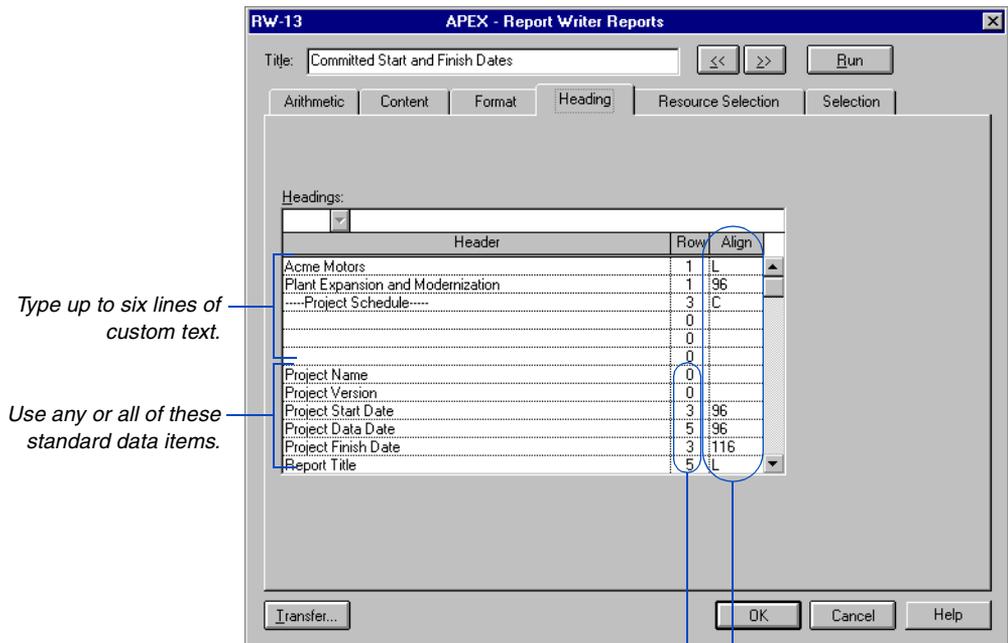
- Customizing Report Headings
- Choosing a Font
- Specifying Report Content
- Calculating and Modifying Report Data
- Grouping and Subtotaling Data
- Summarizing and Subtotaling Data
- Sorting Data
- Summarizing or Detailing Resource Data
- Selecting Activities and Resources

P3 enables you to prepare reports that contain custom or calculated data not included in any standard report. For example, you can create a schedule report to include columns showing revised budgets, commitment dates, or items you calculate based on project data; or you can rearrange the columns of a standard report, or use different report or column headings.

Choose Tools, Tabular Reports, Report Writer to access the report writer.

Customizing Report Headings

In the Report Writer Reports dialog box (Tools, Tabular Reports, Report Writer), click Add to create a new custom report, or click Modify to change an existing one. Click the Heading tab to specify a custom report heading. Specify the text and project data to include, the row on which each will appear, and the alignment or exact column position for the data on each row.



Type up to six lines of custom text.

Use any or all of these standard data items.

Specify the row on which each data item will appear. Type 0 to omit the data item.

For perfect data alignment, specify left, right, center, or type an exact column placement.

ACTIVITY ID	ORIG DUR	REM DUR	CAL ID	%	CODE	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	PLANNED START
BA400	20	10	1	50	MASON	Design Building Addition	19JUL99A	27AUG99	19JUL99
AS100	10	0	1	100	MASON	Define System Requirements	20JUL99A	04AUG99A	19JUL99
AS101	20	11	1	45	MASON	System Design	03AUG99A	30AUG99	02AUG99
AS204	10	10	1	0	MASON	Prepare Drawings for Temp Control Equipment	17AUG99	30AUG99	16AUG99
AS216	10	10	1	0	MASON	Prepare Drawings for System Controller	17AUG99	30AUG99	16AUG99
BA501	14	14	1	0	ACME	Review and Approve Designs	30AUG99	17SEP99	16AUG99
AS205	5	5	1	0	EVANS	Review and Approve Temp Control Equipment	31AUG99	07SEP99	30AUG99
AS102	10	10	1	0	MASON	Approve System Design	31AUG99	14SEP99	30AUG99
AS217	10	10	1	0	EVANS	Review and Approve System Controller	31AUG99	14SEP99	30AUG99
AS200	5	5	1	0	FOLEY	Prepare and Solicit Bids for Temp Control Equip	08SEP99	14SEP99	07SEP99
AS240	0	0	1	0	MILLS	Installation Begins	15SEP99		14SEP99
AS201	2	2	1	0	FOLEY	Review Bids for Temp Control Equipment	15SEP99	16SEP99	14SEP99
AS213	5	5	1	0	FOLEY	Prepare and Solicit Bids for System Controller	15SEP99	21SEP99	14SEP99
AS310	10	10	1	0	MILLS	Site Preparation	15SEP99	28SEP99	14SEP99
AS202	1	1	1	0	FOLEY	Award Contract for Temp Control Equipment	17SEP99	17SEP99	16SEP99
BA630	0	0	1	0	NOLAN	Begin Building Construction	20SEP99		03SEP99
BA469	3	3	1	0	MASON	Assemble Technical Data for Heat Pump	20SEP99	22SEP99	03SEP99
BA450	10	10	1	0	FOLEY	Assemble Brick Samples	20SEP99	01OCT99	03SEP99
BA480	10	10	1	0					
BA640	20	20	1	0					
AS206	20	20	1	0					

Committed Start and Finish Dates

PRIMAVERA PROJECT PLANNER

-----Project Schedule-----

Plant Expansion and Modernization

START DATE 19JUL99 FIN DATE 20FEB01

DATA DATE 16AUG99 PAGE NO. 1-1

The Title and Headings text fields are case-sensitive.

RW-13 APEX - Report Writer Reports

Title: Committed Start and Finish Dates

Arithmetic Content Format **Heading** Resource Selection Selection

Headings:

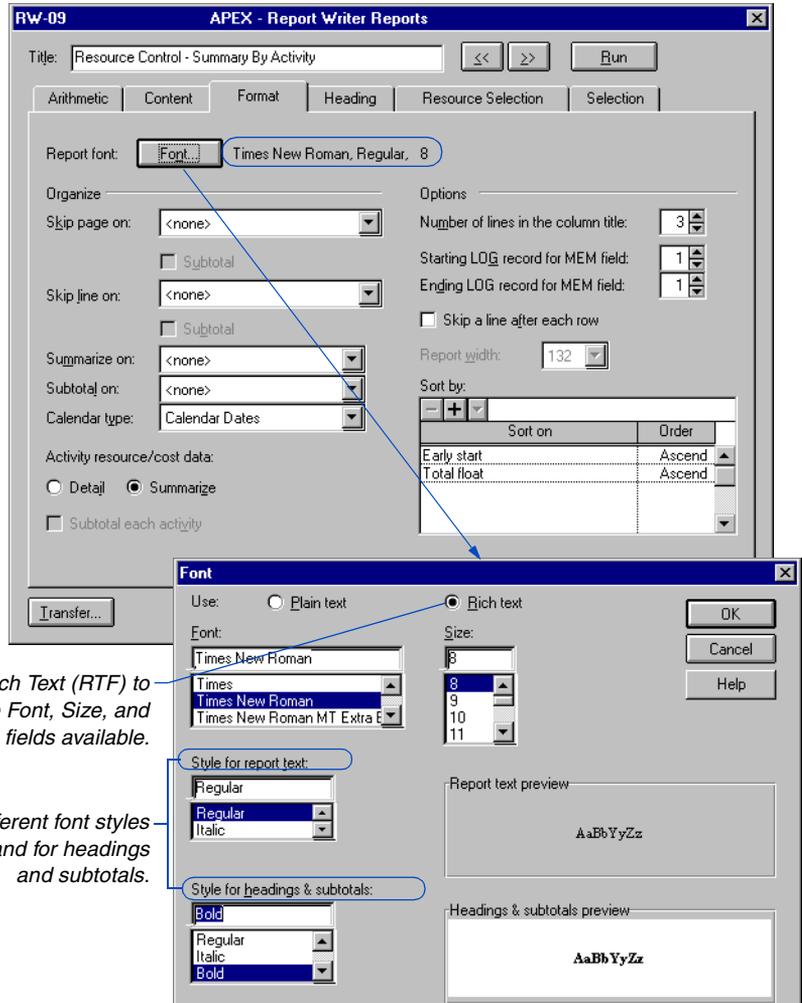
Header	Row	Align
Acme Motors	1	L
Plant Expansion and Modernization	1	96
-----Project Schedule-----	3	C
	0	
	0	
Project Name	0	
Project Version	0	
Project Start Date	3	96
Project Data Date	5	96
Project Finish Date	3	116
Report Title	5	L

Transfer... OK Cancel Help

To create a double-spaced effect, skip a row.

Choosing a Font

You can produce custom reports using plain ANSI text or Rich Text Formatting (RTF) fonts. Rich Text Formatting enables you to produce more attractive reports by using any of the proportionally spaced Windows fonts installed on your system. Click the Format tab to change the report font.



Choose Rich Text (RTF) to make the Font, Size, and Style fields available.

You can select different font styles for the report body and for headings and subtotals.

Acme Motors		PRIMAVERA PROJECT PLANNER			Plant Expansion and Modernization		
REPORT DATE 28MAY99 RUN NO. 31 09:19		Resource Control - Summary by Activity			START DATE 19JUL99 FIN DATE 20FEB01		
Resource Control - Summary By Activity					DATA DATE 16AUG99 PAGE NO. 1-1		

ACTIVITY ID	DESCRIPTION	BUDGET	PCT CMP	ACTUAL TO DATE	ACTUAL THIS PERIOD	ESTIMATE TO COMPLETE	FORECAST
BA400	Design Building Addition	320.00	50	300.00	0.00	20.00	320.00
AS100	Define System Requirements	120.00	100	120.00	24.00	0.00	120.00
AS101	System Design	640.00	45	280.00	280.00	360.00	640.00
AS204	Prepare Drawings for Temp Cont	80.00	0	0.00	0.00	80.00	80.00
AS216	Prepare Drawings for System Co	80.00	0	0.00	0.00	80.00	80.00
BA501	Review and Approve Designs	56.00	0	0.00	0.00	56.00	56.00
AS102	Approve System Design	80.00	0	0.00	0.00	80.00	80.00
AS205	Review and Approve Temp Contro	100.00	0	0.00	0.00	100.00	100.00
AS217	Review and Approve System Cont	120.00	0	0.00	0.00	120.00	120.00
AS200	Prepare and Solicit Bids for T	60.00	0	0.00	0.00	60.00	60.00
AS240	Installation Begins		0				
AS310	Site Preparation	40.00	0	0.00	0.00	40.00	40.00
AS201	Review Bids for Temp Control E	16.00	0	0.00	0.00	16.00	16.00
AS213	Prepare and Solicit Bids for S	40.00	0	0.00	0.00	40.00	40.00
AS202	Award Contract for Temp Contro	4.00	0	0.00	0.00	4.00	4.00
BA630	Begin Building Construction		0				
BA640	Site Preparation	960.00	0	0.00	0.00	960.00	960.00
BA450	Assemble Brick Samples		0				
BA469	Assemble Technical Data for He	18.00	0	0.00	0.00	18.00	18.00
BA480	Assemble and Submit Flooring S		0				
AS206	Fabricate & Deliver Temp Contr	0.00	0	0.00	0.00	0.00	0.00



If you select an RTF font, the Lines Per Page you specify using Tools, Tabular Reports, Options, will not be recognized.

Specifying Report Content

Use the Content tab to include data in a report. Specify the data columns to include, the order of the columns, the column headings and width, the column justification, the number of decimal places, whether to line wrap or truncate text, and whether to total each column.

The screenshot shows the 'APEX - Report Writer Reports' dialog box with the 'Content' tab selected. The title is 'Earned Value Report - Quantity'. The 'Contents' list includes: Line 1 title, Line 2 title, Line 3 title, Data item, Field width, Decimal, Align, Wrap, and Total. A table configuration is shown below with 4 columns and 10 rows. The 'Insert' and 'Delete' buttons are located below the table.

Column 1	Column 2	Column 3	Column 4
COST			PCT
ACCOUNT	RESOURCE	ACTIVITY ID	CMP
ACC	RES	ACT	&PCT
12	8	11	6
0	0	0	0
Left	Left	Left	Right
No	No	No	No
No	No	No	Yes

Annotations:

- You can create your own column headings; use up to three lines for each. Make the field width large enough to accommodate the heading.* (Points to the 'Contents' list)
- Include as many columns as you need; the only limit is the width of your paper. Scroll horizontally to see more columns.* (Points to the 'Insert' button)
- To delete a column, select any cell and click Delete.* (Points to the 'Delete' button)
- Select any cell, click Insert, and P3 inserts a new column; other columns shift to the right.* (Points to the 'Insert' button)

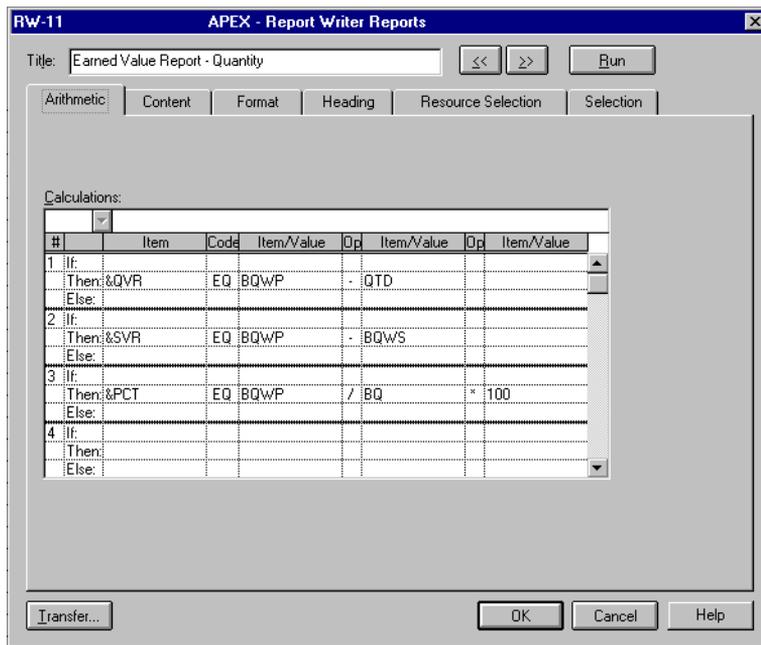
To delete a column, select any cell and click Delete.

Select any cell, click Insert, and P3 inserts a new column; other columns shift to the right.

Calculating and Modifying Report Data

In addition to P3's standard data items, Report Writer can include data you create or calculate in a report.

Use temporary variables Click the Arithmetic tab to specify calculations and create temporary report variables. For example, to calculate variances between current and target budgets or work completed. Store the calculated variances in temporary variables for use in the report.



Calculations performed using Report Writer function like those in the Change tab of the Global Change feature with one important difference: P3 does not store custom report temporary variables; P3 discards temporary variables after running a report.



The names of temporary variables must begin with an ampersand (&). Use two ampersands to base column totals on a calculation, rather than the summation of the numbers in the column.

Use If:Then:Else: statements Use If:Then:Else: statements in the Arithmetic tab of the Report Writer Reports dialog box to manipulate and temporarily store project data. You can also make “scratch pad” calculations and store the results in user-defined temporary variables that you can include in the report.

General Rules for If:Then:Else: statements

- If you specify an If: statement, you must also specify a Then: statement. If: statements are optional. You must, however, define at least one Then: statement.
- You can create a Then: statement without an If: statement when no condition applies. If you want P3 to calculate the column for every activity, leave the If: statement blank.
- You cannot create an Else: statement without an If: or Then: statement.
- You can use blanks in the Data Item or Value column to remove a value, for example, RES EQ “ ” (make sure you use quotation marks). Also, use quotation marks in If: statements to search for keywords such as Resource EQ “ES.”
- The left side of an Else: statement cannot contain an activity data item when the right side of an If: statement contains a resource level data item.
- Use the vertical scroll bar to display additional sets of If:Then:Else: statements. The maximum number of sets is 20.

Operators and valid calculations The following table describes valid calculations and their results using operators in P3.

Operator	Calculation
Addition	Integer + Integer = Integer Integer + Date = Date
Subtraction When you subtract two dates, the result is the difference in calendar workperiods. If you do not specify a calendar in the Summary Calculations dialog box (choose Tools, Options, Summarization), P3 defaults to a 7-day, 24-hour calendar.	Date - Date = Integer Integer - Integer = Integer Date - Integer = Date
Multiplication/Division	Integer * Integer = Integer Integer ÷ Integer = Decimal
Concatenation Use the & symbol as an operator to concatenate or join character strings or data in a column with other character strings. For example, DES & RES produces a report column showing the activity description followed by the resource name.	Item/Value & Item/Value



If any operator is part of a name or description, enclose the entire name or description in quotes. For example, since the statement IF RES EQ "FLD ENG" uses an asterisk in the resource name, the resource name is in quotes.*

Special functions You can use special functions in conjunction with temporary variables and other data items to control the selection of characters in text strings. For example, use the Day option to print the day of the week for any date such as early start. You can also suppress and choose characters in text strings, including titles, resource names, logs, and descriptions. The following table describes the purpose of each special function.

Function	Purpose
RIGHT(item,x)	Extracts x number of characters, starting with the last character in the field. Enclose the data item in parentheses followed by a comma and the number of characters to extract. For example, RIGHT(ACT,3) extracts the last three characters of the activity ID.
LEFT(item,x)	Extracts x number of characters, starting with the first character in the field. Enclose the data item in parentheses followed by a comma and the number of characters to extract. For example, LEFT(ACT,3) extracts the first three characters of the activity ID.
RTRIM(item) (right trim)	Removes trailing blanks from a data-item value.
LTRIM(item) (left trim)	Removes blanks that precede a data-item value.
SS(item,x,y) (substring)	Extracts y number of characters starting at position x. Use this function to extract text from text fields. For example, create a temporary variable and enter the format &NME EQ SS(RP,1,3), where RP is the responsibility code (up to two characters onscreen), 1 is the starting character, and 3 is the number of characters to extract. If you assign the activity the responsibility NOLAN, P3 extracts NOL.
DAY(date)	Prints the day of the week for a specific data type such as Early Start, Early Finish, Actual Start, or Actual Finish. For example, if the report displays a column for early start dates, you can create a column using a temporary variable and write an expression using the Arithmetic tab that displays the day of the week for each date. P3 prints the standard three-character abbreviation for the day of the week (MON, TUE, and so on).

Function	Purpose
DATE()	Prints the current date for use in a formula or with another temporary variable. Use it like any other date, such as Early Start, Early Finish, Actual Start, or Actual Finish. For example, create a report that shows specific actual dates for activities.
STDATE(date)	Temporarily converts the date so you can manipulate it as text. For example, suppose you want to display the early start date followed by the letter P (to show the planned start date) for an activity, based on the custom data item PLST (Planned Start). Enter PLST EQ STDATE(ES) & P to convert the early start date to a string and append the letter P. You can also modify dates using the DAY and STDATE functions.
TTL(item)	Prints resource, cost account, and activity code descriptions. For example, &TM1 EQ TTL(RES) prints the resource description.

Totaling Temporary Variables

In the following example, the variable &&V1 stores the percentage variance between the quantity at completion and the budget.

The column total for &&V1 is the sum of the QAC column divided by the sum of the BQ column, not simply the sum of the &&V1 column.

Click Arithmetic.

The temporary variable &&V1 represents this data item.

Acme Motors
 REPORT DATE 28MAY99 RUN NO. 46
 11:31
 Calculate Variance as Percent of Budget

PRIMAVERA PROJECT PLANNER
 ---Project Schedule---

Plant Expansion & Modernization
 START DATE 19JUL99 FIN DATE 20FEB01
 DATA DATE 16AUG99 PAGE NO. 1

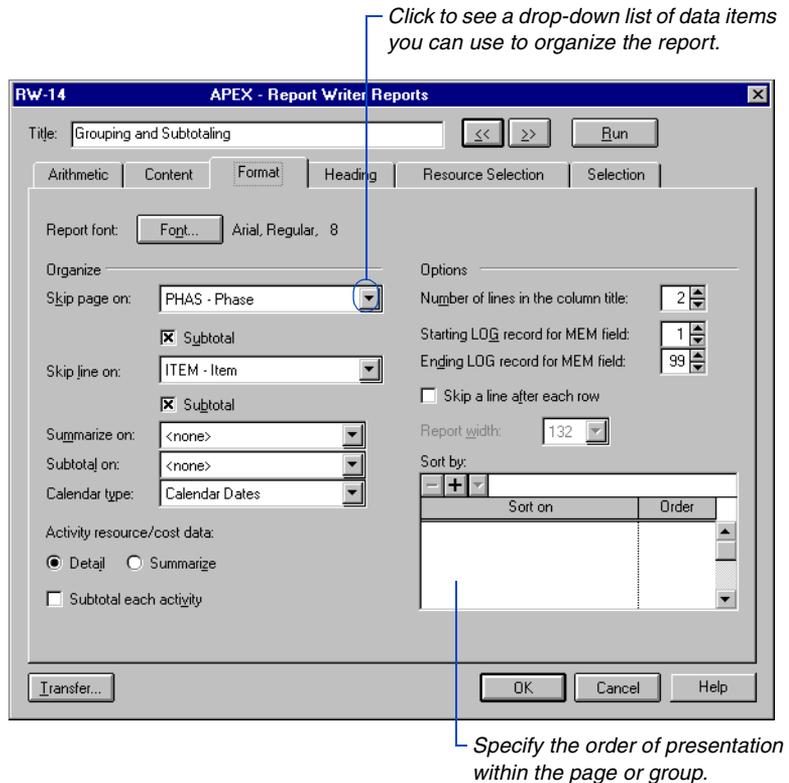
ACTIVITY ID	RESOURCE	BUDGET QUANTITY	QTY. AT COMPLETION	Percent of Budget
AS100	ANALYST	40.00	27.00	67.50
	ATM ENG	80.00	112.00	140.00
		120.00	139.00	115.83

Note the total: 115.83% = (139.00 ÷ 120.00) x 100%

Grouping and Subtotaling Data

The Format tab in the Report Writer Reports dialog box controls many features including the fields to sort, group, and subtotal data. Separate task headings in this chapter discuss other functions of the Format tab.

Group and subtotal using the Skip pages and Skip line features The following example uses the skip and subtotal features to group the activities by phase, and by item within each phase. The report provides clear data in an easy-to-distribute format by subtotaling and starting a new page each time the phase changes, and by skipping a line and subtotaling when the item changes within each phase.



P3 uses PHASE as the primary page-skipping and subtotaling parameter.

ACTIVITY ID	BUDGET QUANTITY	EARLY START	EARLY FINISH	ORIG DUR	REM DUR	PCT COMPL	T1 EARLY START	T1 EARLY FINISH
Temperature Control Equipment								
AS200	40.00	08SEP99	14SEP99	5	5	0	07SEP99	13SEP99
	20.00							
AS201	8.00	15SEP99	16SEP99	2	2	0	14SEP99	15SEP99
	8.00							
AS202	4.00	17SEP99	17SEP99	1	1	0	16SEP99	16SEP99
AS206	0.00	20SEP99	15OCT99	20	20	0	17SEP99	14OCT99
	80.00	08SEP99	15OCT99	28	28	0	07SEP99	14OCT99
System Controller								
AS213	24.00	15SEP99	21SEP99	5	5	0	14SEP99	20SEP99
	16.00							
AS214	16.00	22SEP99	27SEP99	4	4	0	21SEP99	24SEP99
	12.00							
AS215	2.00	28SEP99	28SEP99	1	1	0	27SEP99	27SEP99
AS218	0.00	29SEP99	23DEC99	60	60	0	28SEP99	22DEC99
	70.00	15SEP99	23DEC99	70	70	0	14SEP99	22DEC99
	150.00	08SEP99	23DEC99	75	75	0	07SEP99	22DEC99
	530.00	17AUG99	23DEC99	90	90	0	16AUG99	22DEC99

P3 uses ITEM as the secondary line-skipping and subtotaling parameter.

When you subtotal start dates, P3 reports the earliest start date of the group; for finish dates, the latest finish date.

Summarizing and Subtotaling Data

For information on summary reporting, see the *Schedule Reports* chapter.

P3 reports either detailed or summarized data. In either mode, P3 can produce subtotals at any level of the report structure.

Use the Summarize On and Subtotal On options Use these fields to summarize or subtotal data by activity code, activity ID code, aliases, resource, cost account, or cost category. For each code value, resource, or cost account, P3 reports appropriate summary information based on the data items selected for the report. P3 summarizes data for custom reports the same way as for matrix reports.

P3 lists the earliest early start in the AS project.

P3 calculates the summary percent complete as $\sum(OD-RD) \div \sum(OD)$.

ACTIVITY ID	DESCRIPTION	EARLY START	EARLY FINISH	LATE START	LATE FINISH	TOTAL FLOAT	ORIG DUR	REM DUR	PCT COMP	BUDGET QUANTITY
AS	Robotics Automation System	20JUL99	18JUL00		20FEB01	152	252	233	4	5584.00
BA	Office Building Addition	19JUL99	04AUG00		04AUG00	0	266	246	2	20518.00
CS	Conveyor System	24JAN00	20FEB01	03FEB00	20FEB01	0	275	275	0	3632.00
						0	405	385	2	29734.00

P3 lists the earliest early start date of all three projects in the project group.

Since the early finish equals the late finish, the summary total float is zero.

Sorting Data

Control the order of data presentation by using the Sort On section in the Format tab. Sort by one or more parameters; use either ascending or descending order.

Acme Motors PRIMAVERA PROJECT PLANNER Plant Expansion & Modernization

REPORT DATE 28MAY99 RUN NO. 48 -----Project Schedule----- START DATE 19JUL99 FIN DATE 20FEB01

11:50 DATA DATE 16AUG99 PAGE NO. 2

Sorting Data

ACTIVITY ID	DESCRIPTION	TOTAL FLOAT	EARLY FINISH	LATE FINISH	PCT COMPL
BA421	Prepare and Solicit Bids for Brick Exterior	34	20OCT99	09DEC99	0
BA422	Review Bids for Brick	34	25OCT99	14DEC99	0
BA423	Award Contract for Brick	34	26OCT99	15DEC99	0
BA600	Deliver Brick	34	24JAN00	13MAR00	0
BA913	Install Elevator Cab and Finishes	38	06JUN00	31JUL00	0
BA860	Install Elevator Rails and Equipment	42	03APR00	02JUN00	0
CS770	Operation Manuals	42	20DEC00	20FEB01	0
BA469	Assemble Technical Data for Heat Pump	60	22SEP99	17DEC99	0
BA470	Review Technical Data on Heat Pumps	60	06OCT99	04JAN00	0
BA411	Prepare and Solicit Bids for Heat Pump	60	11OCT99	07JAN00	0
BA412	Review Bids for Heat Pump	60	13OCT99	11JAN00	0
BA413	Award Contract for Heat Pump	60	14OCT99	12JAN00	0
BA550	Fabricate and Deliver Heat Pump and Controls	60	24FEB00	18MAY00	0
AS101	System Design	97	30AUG99	19JAN00	45
AS102	Approve System Design	97	14SEP99	02FEB00	0
BA480	Assemble and Submit Flooring Samples	119	01OCT99	23MAR00	0
BA560	Review and Approve Flooring	119	15OCT99	06APR00	0
BA407	Prepare and Solicit Bids for Flooring	119	22OCT99	13APR00	0
BA408	Review Bids for Flooring	119	27OCT99	18APR00	0
BA409	Award Contract for Flooring				
BA620	Fabricate and Deliver Flooring				
AS240	Installation Begins				
AS310	Site Preparation				
AS315	Install Electrical Power				
AS105	Install Temperature Control Equ				
AS106	Set & Connect Robots				
AS107	Install System & Misc. Compon				
AS109	Test & Debug Line A				
AS110	Test & Debug Line B				
AS260	Trim Robot Paths Line A				
AS270	Trim Robot Paths Line B				
AS111	Pilot Start Line A				
AS112	Start-Up Line B				
AS265	Path Refinement and Shakedown				
AS275	Path Refinement and Shakedown				
AS150	Production Start				
AS113	Install Processor/Software/Data				
AS114	Calibrate Robot Controller & Po				
AS115	Load System Software				
AS600	Manual Operation Ready				
AS116	Program				
AS280	Test Software				
AS285	Debug Software				
AS500	Automatic Operation Ready				
AS117	Startup Procedure Development				
AS118	Training Manuals/System Opera				
AS900	System Buyoff				

RW-15 APEX - Report Writer Reports

Title: Sorting Data

Arithmetic Content **Format** Heading Resource Selection Selection

Report font: Font... Arial, Regular, 8

Organize

Skip page on: <none> Subtotal

Skip line on: <none> Subtotal

Summarize on: <none>

Subtotal on: <none>

Calendar type: Calendar Dates

Options

Number of lines in the column title: 2

Starting LOG record for MEM field: 1

Ending LOG record for MEM field: 99

Skip a line after each row

Report width: 132

Sort by:

Sort on	Order
Total float	Ascend
Late finish	Ascend

Activity resource/cost data:

Detail Summarize

Subtotal each activity

Transfer... OK Cancel Help

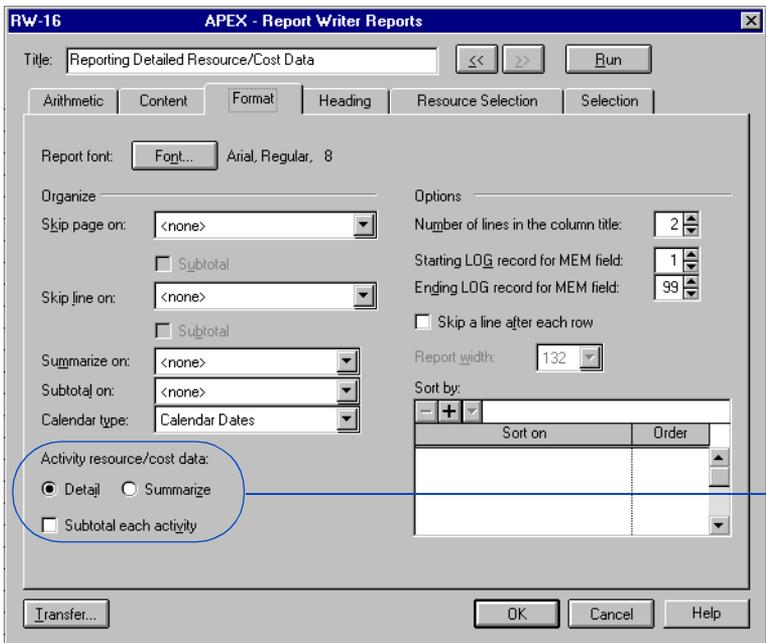
Within each total float group, P3 sorts the activities by ascending late finish date.

Summarizing or Detailing Resource Data

Report Writer displays resource and cost data in either a detailed or a summarized format. Choose the Detail option in the Activity Resource/Cost Data section of the Format tab and the report lists detailed information about each resource assigned to each activity. Choose Summarize and P3 reports a single, summarized number totaling all resources assigned to each activity. The following example illustrates output using the Detail option.

Using the Detail Activity Resource/Cost Data option

Acme Motors		PRIMAVERA PROJECT PLANNER		Plant Expansion & Modernization	
REPORT DATE 28MAY99 RUN NO. 51		----Project Schedule----		START DATE 19JUL99 FIN DATE 20FEB01	
12:11				DATA DATE 16AUG99 PAGE NO. 1	
Reporting Detailed Resource/Cost Data					
ACTIVITY ID	DESCRIPTION	RESOURCE	COST ACCOUNT	BUDGET QUANTITY	BUDGET COST
AS100	Define System Requirements	ANALYST	11101	40.00	1200.00
		ATM ENG	11101	80.00	1760.00
AS101	System Design	DES ENG	11101	160.00	4800.00
		ANALYST	11101	160.00	4800.00
		ATM ENG	11101	320.00	7040.00



Using the Detail option, P3 lists each resource assigned to each activity.

Using the Summarize Activity Resource/Cost Data option

Acme Motors	PRIMAVERA PROJECT PLANNER	Plant Expansion & Modernization
REPORT DATE 28MAY99 RUN NO. 52 12:41	-----Project Schedule-----	START DATE 19JUL99 FIN DATE 20FEB01
Reporting Summarized Resource/Cost Data		DATA DATE 16AUG99 PAGE NO. 1

ACTIVITY ID	DESCRIPTION	RESOURCE	COST ACCOUNT	BUDGET QUANTITY	BUDGET COST
AS100	Define System Requirements	*	11101	120.00	2960.00
AS101	System Design	*	11101	640.00	16640.00
AS102	Approve System Design	ANALYST	11101	40.00	1200.00

RW-17 APEX - Report Writer Reports

Title:

Arithmetic Content **Format** Heading Resource Selection Selection

Report font: Arial, Regular, 8

Organize

Skip page on: Subtotal

Skip line on: Subtotal

Summarize on:

Subtotal on:

Calendar type:

Activity resource/cost data:

Detail **Summarize**

Subtotal each activity

Options

Number of lines in the column title:

Starting LOG record for MEM field:

Ending LOG record for MEM field:

Skip a line after each row

Report width:

Sort by:

Sort on	Order

Using the Summarize option, P3 lists one summary entry per activity. An asterisk represents mixed resource names or cost accounts.

Selecting Activities and Resources

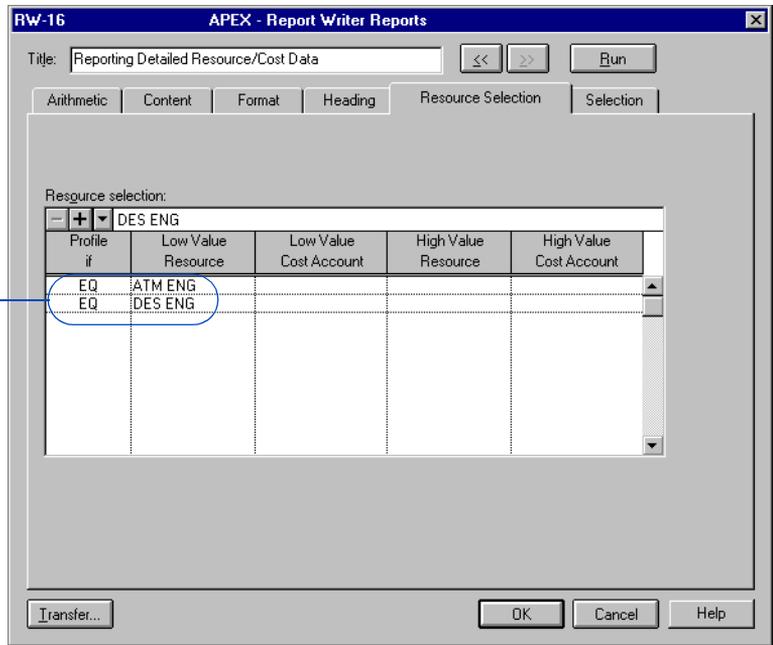
Two separate and distinct types of selection occur during the generation of a report. Specify activity selection using the Selection tab; specify resource selection using the Resource Selection tab.

Activity selection This part of the report specification functions as a filter, selecting the activities Report Writer considers as it evaluates the rest of the report specification.

The report only deals with activities that have log records, by selecting those whose logs are not blank.

Select if	Is	Low Value	High Value
Log record	NE		

Resource selection Specify which resources to include in the report. Activities may have many resources applied to them, but the report can focus on any one or more of them.



The report only includes resource/cost data for Automation and Design Engineers.

Bar Chart Graphics

In this chapter:

- Adding a Bar Chart Specification
- Specifying Activity Data
- Specifying Content
- Specifying the Date Range
- Formatting the Bar Chart Graphic
- Tailoring Visual Aids in the Graphic
- Choosing Pens and Colors
- Specifying Text and Bar Sizes

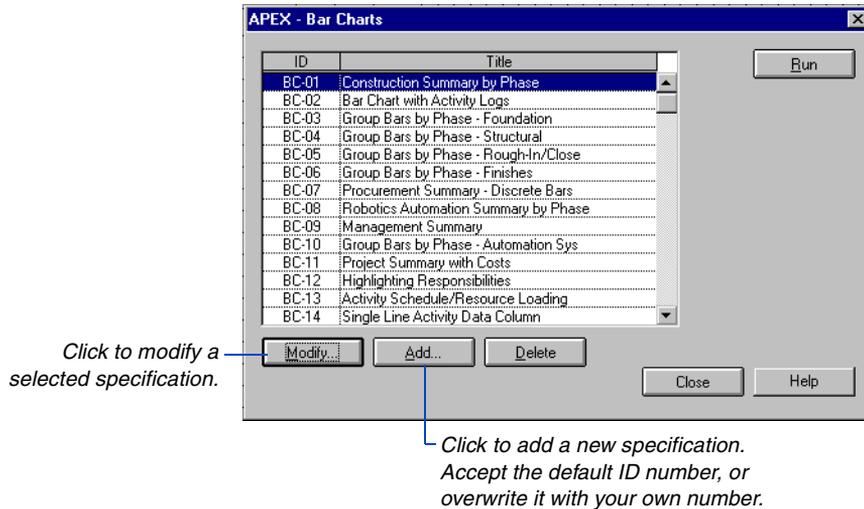
In addition to printing Bar chart layouts, you can produce Bar chart graphics. Select any of the preset templates and modify it to suit your project, or create your own specifications.

Choices in the Activity Data, Content, Date, Format, Pen, Size, Tailoring, and Selection tabs determine the content and appearance of each graphic.

A Bar chart graphic can contain activity data in a tabular area as well as graphical information in the bar area.

Adding a Bar Chart Specification

P3 provides a set of sample Bar chart graphic specifications that you can modify to suit any project. You can copy specifications and add your own. Define an entire set of Bar chart specifications and copy them between projects. Choose Tools, Graphic Reports, Bar to open the list of available Bar charts.



P3 provides settings to determine the content and appearance of a Bar chart graphic; you can modify these settings in any sequence.

The Planning and Control Guide provides several examples of Bar chart graphics.

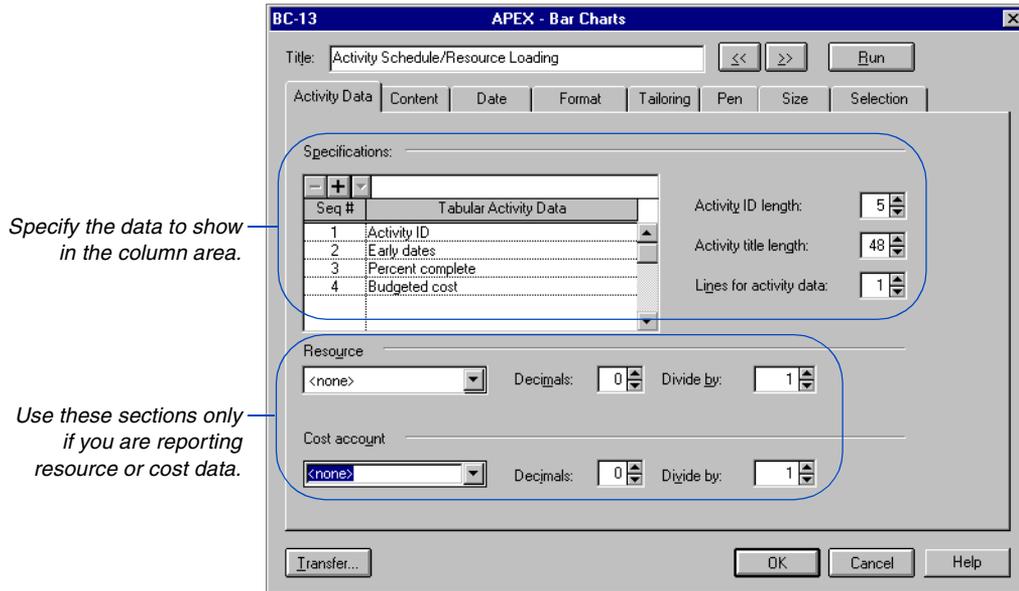


Transferring Graphics Specifications

To transfer an individual specification from another project to the current project, click Transfer at any time. To transfer all specifications from another project to the current project, choose Tools, Graphic Reports, Production and click Transfer.

Specifying Activity Data

Click the Activity Data tab to specify the data items shown in the column area, and the resource or cost account to include.



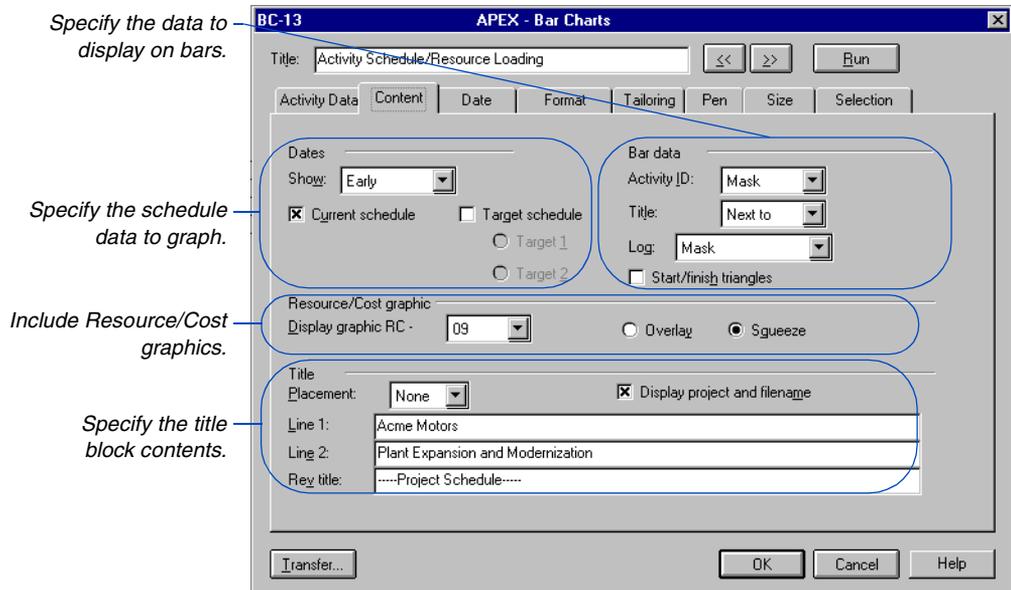
To create a Bar chart graphic with no column area, click the Activity Data tab and delete all entries in the Specifications section.

Tabular-area specifications Select the data to include in the column area of the Bar chart. Save space by displaying only the required portion of the activity IDs and titles. P3 can use more than one line per activity in the column area; an abbreviation, rather than a column heading, identifies each data item so more space is available for the bar area of the graphic.

Resource/cost account specifications When you include resource or cost data in the column area, you can focus the report on a specific resource and/or cost account. If you do not specify one, P3 reports the total of all resources and cost accounts. Specify the number of decimal places to display; P3 truncates the remaining digits. Divide by a constant factor such as 1000 to report in thousands. If budgets are in hours, divide by 8 to report the number of 8-hour labor days rather than total labor hours.

Specifying Content

Specify the data to appear in the bar area of the graphic. Available items include the current early and late schedules plus both target schedules. P3 can display textual data in the bar area above, below, or next to the bars. You can include a resource/cost graphic as well.



Select the schedules to include P3 can draw activity bars based on the early or the late schedule dates. You can display both at once to show float clearly.

P3 can draw data from the current schedule, the target (baseline) schedule, or both. Graphing both schedules provides an excellent visualization of the variance between the target and current schedules.

Select data to display on bars You can place activity IDs, titles, or both above, below, or next to the activities' bars, or mask them. Specify log entries to appear below each activity's data in the column area, below each bar in the graphic area, or mask them. You can also choose to include triangle endpoints on the bars.

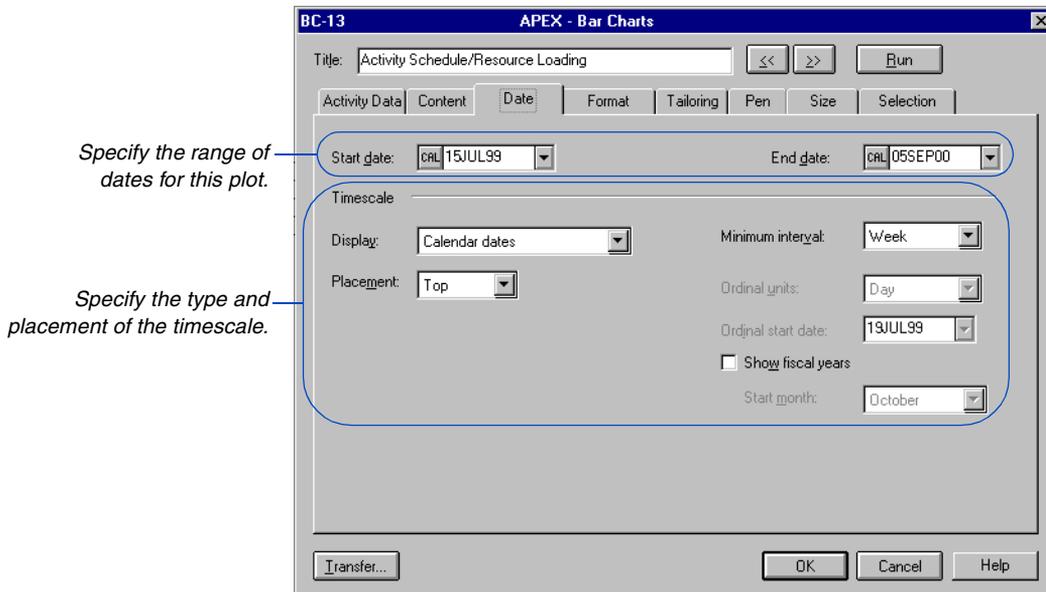
Specify title block position and content You can place the title block at the bottom of the first, the last, or all pages of the Bar chart. Specify the text for the first two lines of the centered, title block heading. P3 supplies the specification's title automatically as the third line. P3 centers the revision title (Rev Title field) over the revision box, which appears on the right side of the title block. If you choose to display the project and plot filenames, P3 prints the project's name in the upper left corner of the central area of the title block. If you choose to save the Bar chart to a file, the complete filename, including the path, appears below the revision box.

Bar chart graphics look best when the timescales of the Resource/Cost graphic and the Bar chart match.

Include resource/cost graphics As part of a one-page Bar chart, you can include any Resource/Cost graphic whose specification already exists. Choose whether P3 overlays that image on the entire Bar chart or squeezes the image into the empty space below the last activity bar and to the right of the tabular area.

Specifying the Date Range

The timescale of each Bar chart graphic spans a range of dates. You can include the entire project, or focus on a narrower date range. Specify the range using either fixed or rolling dates.



P3 automatically sizes the timescale to fit the number of horizontal sheets you specify.

Place timescales at both the top and bottom to help identify dates when you work with large-format sheets.

Specify start and end dates Specify the beginning and ending dates for the graphic. P3 ends the timescale at the date you specify, adjusting the physical size of the increments to fit the page. Click the button to the left of each date field, and choose whether to specify the date as a calendar date or as a rolling date based on the project start, the project finish, or the data date. For example, specify a timeframe that will always look forward 4 weeks from the data date by using DD+0W through DD+4W. There is no need to adjust the specification as the data date advances.

Determine the timescale Display options include calendar dates, ordinal dates, and manufacturing weeks. If you display calendar dates, specify the minimum timescale interval. For example, if you specify weeks as the minimum interval, P3 will not indicate days on the timescale. If you display ordinal dates, specify the calendar date of the first ordinal period, and specify the ordinal timescale, which can be hours, days, weeks, months, or years. When using manufacturing weeks, since these options are irrelevant, they are not available. If you include fiscal years, specify the start month of your year. You can place the timescale at the top or bottom of each sheet, or at both the top and bottom.

Formatting the Bar Chart Graphic

Click the Format tab to specify the organization and level of detail in the graphic.

These options apply only to summarized plots.

Coordinate the paging, grouping, and summarizing parameters with a matching sort order.

Use in conjunction with the Date tab settings.

BC-13 APEX - Bar Charts

Title: Activity Schedule/Resource Loading

Activity Data | Content | Date | **Format** | Tailoring | Pen | Size | Selection

Organize

Start new page on: <none>

Group by: DEPT - Department

Summarize on: PHAS - Phase

Group titles in: Graphic area

Orientation: Landscape

Horizontal sheets: 1

Summary graphic

Show individual bars

Place a solid line after each group

Skip description

Drop line if less than 0 characters appear

Connect bars with 2 lines

Sort by

Sort on	Order
Department	Ascend
Actual start	Ascend
Actual finish	Ascend

Transfer... OK Cancel Help

Use formatting options to increase the readability of Bar charts by controlling page skipping, activity grouping, and/or summarization.

Paginate You can start a new page each time a code field's value changes, for example, each time the RESP (responsibility) value changes. This makes it easy to give the responsible person a page of the graphic containing his or her activities.

Group You can group activities by common code values; for example, group all activities sharing a common value for the PHAS code field. This makes it easy to see all activities related by a common value in a code field.

Summarize Summarizing data is an effective way to distill information and obtain an overview. Summarize any activity code or any project in a group. P3 rolls up all data from activities sharing the common value you specify. Summarization in a Bar chart follows the same rules as summarization in a layout. P3 draws the summary bar from the earliest start to the latest finish of the summarized activities.

When you choose to summarize, the options and settings in the Summary Graphic section of the Format tab are available. These options help you customize the presentation of summary data. Some options become available only when you mark the Show Individual Bars checkbox. P3 can also draw horizontal lines between groups of summarized or unsummarized activities to help visually organize the data.

By default, P3 draws a single summary bar to depict the summarized group. You can choose to show individual bars, and P3 draws all discrete activities that comprise the summary end to end. If the activities overlap in time, P3 staggers the bars so nothing is obscured. If you choose to show individual bars, and the discrete activities are not adjacent to each other, P3 can connect them with either a single or a double line, or no connecting line at all; the default is a double line. When you display activity titles on bars, the length of titles can exceed the length of the bars, causing titles to extend into the space required by other activities. P3 resolves this conflict by either omitting a title if fewer than a certain number of characters exist, or by wrapping lines of the title in the space available. Choose the Skip Description or Drop Line option, and specify the critical number of characters.

Group titles P3 groups activities by codes, and displays the code value's description from the Activity Codes Dictionary as the heading for each group of bars. Choose whether to display this heading in the graphic area or in the tabular area of the plot.

Orientation Choose Portrait or Landscape orientation for the plot. This overrides the orientation set for your printer driver, and controls the overall appearance of your plot. Portrait orientation is often suitable for projects with many activities relative to the project's timespan.

The printer, plotter, and sheet size you choose affect the level of detail P3 can display on the timescale.

Horizontal sheets Specify the number of horizontal sheets for the graphic. This setting, in conjunction with the settings in the Date tab, determines the amount of detail P3 displays on the timescale. For example, if a total timespan of two years spreads across three horizontal sheets, P3 may be able to display a timescale with daily accuracy. The same range of dates spread across a single sheet usually results in weekly accuracy.



To include a resource/cost graphic in your Bar chart, specify only one horizontal sheet.

Sort You control the order of activities shown in the Bar chart. To present activities in ID order, leave this section of the dialog box blank.

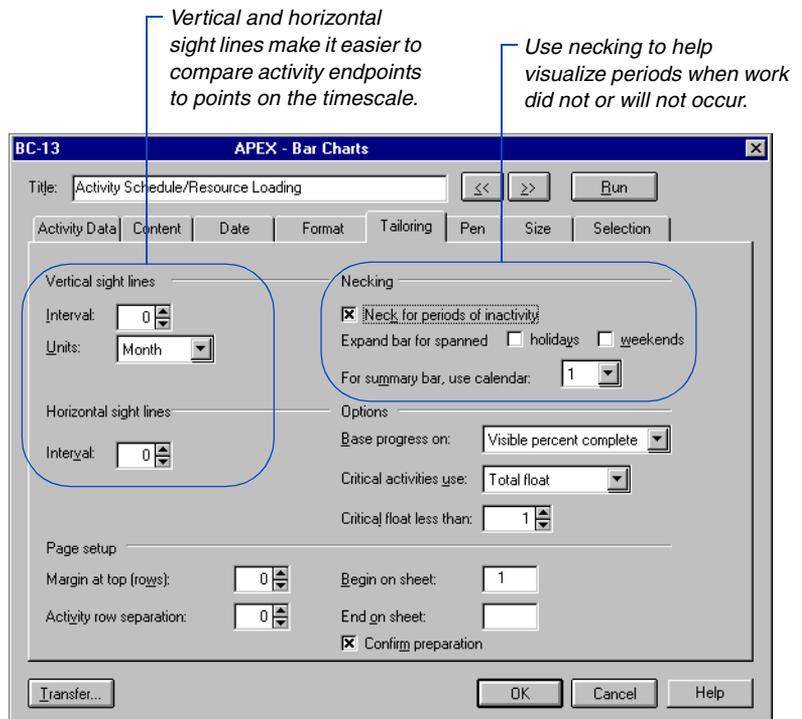
P3 organizes activities according to your page skipping, grouping, and summarizing specifications. Sort first by the page skip parameter, if any; next by the grouping parameter, if any; and then by the summarizing parameter, if any. Control the presentation order within the last of these groupings with additional sort specifications. For example, start a new page when the value of PROJ changes; group within pages by PHAS; summarize within PHAS by ITEM; and present summarized ITEMS in order of descending total float. The sort specification for this example is PROJ, PHAS, ITEM, (descending) TF. Use the vertical scroll bar in the bottom section of the dialog box, and add as many sort parameters as you require.



Project codes are available as a sort and selection parameter on the Selection tab. Use project codes to fine-tune your presentation when you have many projects in a project group, for example, to select only those projects with the same priority.

Tailoring Visual Aids in the Graphic

Use the settings in the Tailoring tab to specify visual aids such as sight lines, space between activities, and other attributes.



Add sight lines P3 can draw vertical sight lines at regular intervals of hours, days, weeks, months, or quarters; horizontal sight lines can appear after a set number of activities.

Neck P3 can reduce the thickness of activity bars to indicate periods when no work occurs or will occur. This process is called necking the bar. Mark the Neck For Periods Of Inactivity checkbox and P3 necks for all inactive periods, including weekends and holidays. You can mark additional checkboxes to limit necking and expand the bar to normal size for spanned holidays and/or weekends. This results in necking only for periods of activity suspension.

Summary bars can include activities assigned to several different calendars. When necking summary bars, P3 reflects the weekends and holidays of only one calendar. Specify the calendar to use.

Visualize progress Specify the amount of each activity bar P3 should fill with the progress indicator. P3 uses the pen and fill pattern specified in the Pen tab to fill the bar. In the Base Progress On field, choose the remaining duration method to fill the bar with progress up to the point where work will resume (usually the data date). Choose Visible Percent Complete or Entire Percent Complete to fill the bar by an amount equal to the activity's percent complete (PCT) multiplied by the physical length of the activity bar. If you select percent complete and some activity bars continue outside the range of the timescale and border, progress can appear based on the length of the bar that is visible (Visible Percent Complete), or progress can appear based on the length of the full bar (Entire Percent Complete). This selection only affects bars that are not fully shown.



Since activity bars span holidays and other nonwork periods, progress indicators drawn with percent complete methods usually do not reach the data date.

Indicate criticality P3 bases the indication of criticality on either total float or longest path. If you specify the longest path, P3 highlights all activities on the longest path through the project. If you specify the total float method, indicate the float threshold below which P3 should consider an activity to be critical. The default setting is 1, and P3 considers any activity with zero or negative total float to be critical.

Set the top margin and row separation You can enhance the appearance and readability of a plot by specifying a top margin, or additional space between activity rows, or both. For both fields, specify the number of blank activity rows to insert.

Specify sheets to print You may want to print selected sheets of a multipage graphic. Specify the sheets to begin and end on. Leave the End On Sheet field blank and P3 produces through the end of the graphic.

If the last sheet contains only a few activities, avoid creating a partial sheet by reducing the point size of bar or text components.

Confirm preparation P3 calculates the number of vertical sheets the graphic contains, based on the number of horizontal sheets and the point sizes you choose. P3 also calculates the number of activities to include on the last sheet. Display this information before producing the plot, then click OK. Clear the Confirm Preparation checkbox if you don't want P3 to wait for your confirmation before printing.

Choosing Pens and Colors

You can enhance the usability of Bar chart graphics using color and crosshatch patterns to identify or emphasize various items.

Choose the pen to use for drawing various elements of the graphic.

Color or crosshatch activity bars based on the value of a code field.

Item	Pen Number	Fill Bar
Critical highlighting	2	Entire bar
Progress highlighting	3	Entire bar
Bar outlines	1	
Text on bars	1	
Text on critical bars	2	
Late date bars	1	

Value	Pen Number	Pattern
ENG	5	XXXX

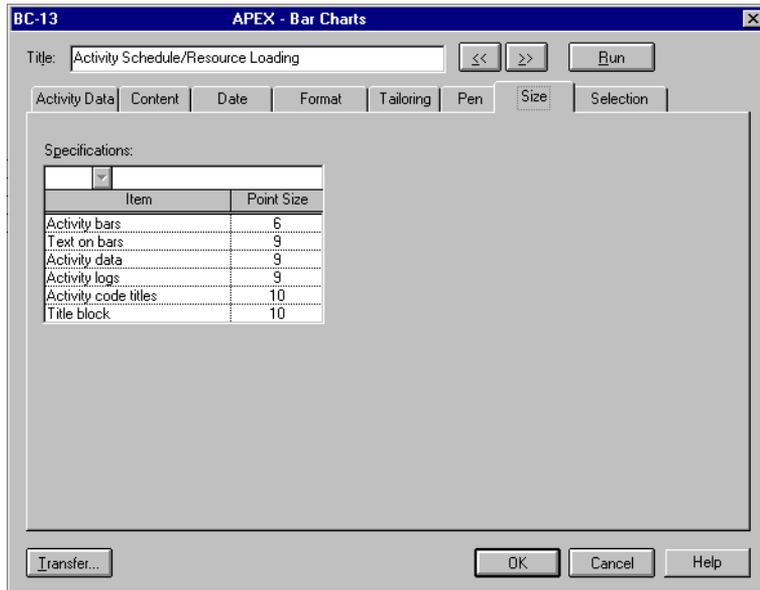
Use pen numbers When specifying that P3 should fill the activity bar to indicate criticality or progress, specify to fill the entire bar, the center of the bar, or none of the bar. Select a pen number. When plotting to a pen plotter, P3 instructs the device to use the pen it finds in a specific pen holder; you control the color of the pen in each holder. When using a black-and-white printer, the pen number is irrelevant. When using an ink-jet printer, the printer automatically matches the output color to the color P3 displays onscreen. If you use the Primavera Plot device driver, you can associate any color you like with any pen number. You can access this driver from the Support folder on the P3 CD.

Use highlighting with crosshatch patterns with printers as well as with color plotters.

Highlight activities by code Select any one of your project's codes and P3 colors or crosshatches activity bars based on their value for that code. For example, you can crosshatch all activities with a RESP value of SMITH with one pattern, and those with the value JONES with another.

Specifying Text and Bar Sizes

Use settings in the Size tab to improve readability or emphasize specific data.



One point, a common printer's measurement, is approximately $1/72$ inch (3.53 mm) in height. Specify the height of printed characters and activity bars in points. When you use large-format pages, specify larger point sizes than when you print small-format pages.

Timescaled Logic Graphics

In this chapter:

Customizing a Timescaled Logic Graphic

Specifying Content

Specifying a Date Range

Formatting a Timescaled Logic Graphic

Tailoring Visual Aids in the Graphic

Specifying Colors for Bars and Text

Specifying Text and Bar Sizes

Sorting Activities in the Graphic

Specifying Activity Criteria

P3 enables you to produce timescaled logic diagrams that show the overall logic of a project according to time.

Use this chapter to define the content and appearance of a timescaled logic graphic, to define the appearance of the timescale, to arrange activities in a particular order, to select specific activities to display in a diagram, and to define colors and patterns.

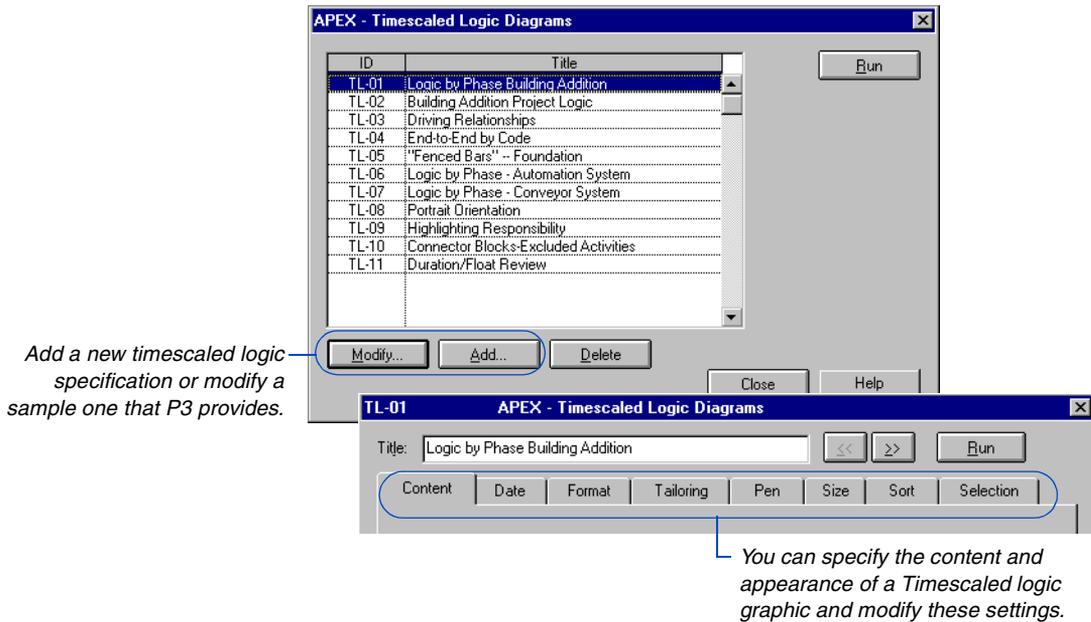
Customizing a Timescaled Logic Graphic

You can also display or print a timescaled PERT layout to see logic according to time.

P3 enables you to create timescaled logic graphics that show logic according to time.

Create a timescaled logic diagram Choose Tools, Graphic Reports, Timescaled Logic, then click Add to create a new timescaled logic diagram, or click Modify to change an existing diagram. In the Timescaled Logic Diagrams dialog box, specify the content, date, format, sorting order, pen color, selection criteria, and size of diagrams.

Click Run to create the timescaled logic diagram according to the current specifications. Click Previous or Next to open the following or previous timescaled logic specification listed.



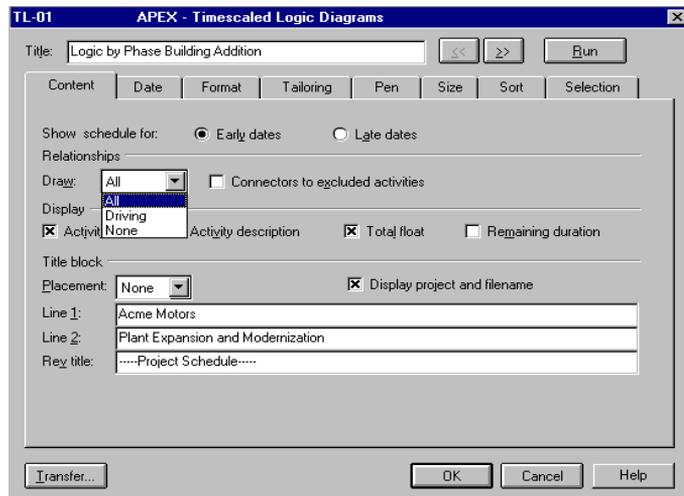
Transferring Graphics Specifications

To transfer an individual specification within a project, click Transfer at any time. To transfer all specifications from another project to the current project, choose Tools, Graphic Reports, Production, and click Transfer.

Specifying Content

In timescaled logic diagrams, you can choose to show early or late schedule dates from the current schedule; and show all relationships, no relationships, or only driving relationships. A driving relationship occurs when an activity drives the early schedule dates for its successors. You can also choose to display activity IDs, activity descriptions, total float, and/or remaining durations, and define the title block.

Choose the following options and specifications from the Content tab in the Timescaled Logic Diagrams dialog box (choose Tools, Graphic Reports, Timescaled Logic, then click the Content tab).



Select schedule dates Choose Early or Late in the Show Schedule section to include these current schedule dates in the graphic.

Display relationship lines Choose a relationship type from the drop-down list in the Draw field to specify which relationship lines P3 shows in the graphic.

The Predecessors and Successors forms indicate driving relationships with an asterisk in the Rel (relationship) column.

P3 draws relationship lines in a timescaled logic diagram the same way as it does in a Bar chart graphic. For example, for conventional relationships P3 draws a relationship line from the end of the predecessor bar to the beginning of the successor bar. However, if activity bars in the timescaled logic diagram are too close, relationship lines may start or finish at a different point on the activity bar.

Display connector blocks You can display connector blocks to show excluded activities in timescaled logic diagrams. Sometimes the predecessor or successor of an activity may not appear because of the specific activities selected or the timescale used. As a result, some activities may appear to be missing relationships. Mark the Connectors To Excluded Activities checkbox to print connector blocks for relationships to activities excluded from the diagram.

P3 shows a connector block as an elongated octagon, together with the activity ID and a partial description. Inside the connector block, P3 also prints the number of the sheet containing the activity. If the connector block replaces an excluded predecessor or successor, P3 draws the connector to Sheet 0, indicating that the activity is excluded from the graphic.

Display activity data Choose the data items that you want to appear in the graphic. P3 shows activity IDs in the top left corner of the bar in the graphic, activity descriptions below the activity bar, and total float and remaining duration in the top right corner.

Specify title block position and content You can place the title block at the bottom of the first, the last, or all pages of the graphic. Specify the text for the first two lines of the centered, title block heading. P3 supplies the specification's title automatically as the third line. If you choose to display the project and plot filenames, P3 prints the project name in the upper left corner of the central area of the title block.

Specifying a Date Range

The timescale of each timescaled logic graphic spans a range of dates. You can include the entire project or focus on a narrower time range. Choose Tools, Graphic Reports, Timescaled Logic, click Add (or select a diagram and click Modify) then click the Date tab in the Timescaled Logic Diagrams dialog box.

If you show the activity ID, remaining duration, or total float in the graphic (specified in the Content tab), the dates appear inside the bar; if you mask these items, the dates appear above the bar.

Specify start and end dates Specify the beginning and ending dates for the graphic. P3 ends the timescale at the date you specify, adjusting the physical size of the increments to fit the page. Click the button to the left of each date field to choose whether to specify the date as a calendar date or as a rolling date based on the project start, the project finish, or the data date. P3 displays the start and finish dates for an activity using a DDMMM format.

Define timescales Instead of using a standard calendar timescale, you can produce a timescaled graphic with a timescale in ordinal dates or manufacturing weeks. Click in the Display field to select a timescale format. P3 determines the time unit that appears on the timescale (such as days, weeks, and months) according to the amount of horizontal space available for the timescale and the begin/end dates specified. If you include fiscal years in the graphic, specify the start month of the year.

When you add a new timescaled graphic, P3 automatically uses a Calendar timescale.

You can place the timescale at the top or bottom of each sheet, or at both the top and bottom.

The screenshot shows the 'APEX - Timescaled Logic Diagrams' dialog box with the 'Date' tab selected. The 'Title' field contains 'Logic by Phase Building Addition'. The 'Start date' is 'CRL 09SEP96' and the 'End date' is 'CRL 08AUG97'. Under the 'Timescale' section, the 'Display' dropdown is set to 'Calendar dates' and the 'Placement' dropdown is set to 'Top'. There are also checkboxes for 'Show fiscal years' (unchecked) and 'Display calendar dates on bars' (unchecked). The 'Start month' is set to 'October', 'Ordinal units' is 'Day', and 'Ordinal start date' is '15JUL96'. Buttons for '<<', '>>', 'Run', 'Transfer...', 'OK', 'Cancel', and 'Help' are visible.

To display dates for milestones, flags, and zero-duration activities, clear the Activity ID, Remaining Duration, and Total Float checkboxes (in the Content tab) so P3 displays calendar dates on top.

For more information about timescales, refer to the [Customizing Bar Chart Layouts](#) chapter.

Calendar dates show days, weeks, months, and years depending on the available space and the minimum time unit set. Ordinal dates show a sequential number for each time unit specified in the Bar chart. Click in the Ordinal Units field to select a time unit (hours, days, weeks, months, or years) that is equal to or greater than the planning unit for the project. Select a start date in the Ordinal Start Date field. Manufacturing dates display a number for each week consecutively, beginning with January.

Change timescale units You can change the begin/end dates, the size of the columns (for Bar chart graphics), and the number of horizontal sheets by labeling the timescale units and choosing a different Minimum Timescale Interval (in the Date tab). For example, suppose the timescale shows a combination of weeks, months, and years but you only want to show months and years. Choose Month as a minimum timescale interval to create a graphic that shows only months and years.

Formatting a Timescaled Logic Graphic

Click the Format tab in the Timescaled Logic Diagrams dialog box to specify the organization and detail level of data in the graphic, and to increase the graphic's readability by controlling page skipping and activity grouping.

If you do not include code descriptions in the Activity Codes Dictionary, P3 shows the code value at the top of each page.

Create page breaks between activity codes You can create page breaks each time an activity code changes by choosing an activity code from the drop-down list in the Start New Page On field. P3 starts a new page each time the selected activity code changes. P3 prints the activity code description at the top of each page; use the Size tab to set the lettering size for the code description.

P3 suppresses the entire activity description if space is insufficient to print the minimum number of characters specified.

P3 separates any activity that cannot display the defined minimum number of characters from the end-to-end chain of activities and places the activity on a separate line.

The screenshot shows the 'APEX - Timescaled Logic Diagrams' dialog box with the 'Format' tab selected. The 'Group by' dropdown is set to 'PHAS - Phase'. The 'Start new page on' dropdown is set to '<none>'. Under the 'Placement' section, the 'Method' dropdown is set to 'End-to-end', and the 'Place by' dropdown is set to 'Driving relationship'. The 'Skip description' radio button is selected, and the 'Break chain' radio button is deselected. A text field next to 'Break chain' is set to '0' with the label 'if less than characters appear'. The 'Custom placement' section has 'None' selected. The 'Orientation' dropdown is set to 'Landscape'. The 'Horizontal sheets' spinner is set to '2'. The 'File' field is empty. The 'Run' button is visible in the top right corner of the dialog.

When you run a timescaled logic diagram, P3 changes the orientation specified in the Print Setup dialog box to match the orientation specified in this field.

For more information about grouping and sorting activities, refer to the [Grouping and Sorting Layouts](#) chapter.

Group activities by code value You can group activities by common code values. For example, group all activities sharing a common value for the PHAS code field. This grouping makes it easy to see all activities related by a common value in a code field.

When using end-to-end placement, P3 automatically places activities by driving relationship. You can also place activities by code value.

Place activity bars A Bar chart layout always shows one activity per row, even when you show relationship lines. On a timescaled logic diagram, you can produce a more compact diagram with a clear straight path of conventionally related activity bars placed end-to-end on the same row.

Click in the Placement Method field and choose a value. If you choose Standard, P3 uses the same hierarchical activity ordering. Although activities are not placed end-to-end, strings of closely related activities are kept together as much as possible. P3 places an activity on the same row as its predecessor only if space is sufficient after considering the bar length, text, and relationship lines. Because activity bars are placed close together, P3 may truncate the activity description. Depending on the available space, P3 decreases the activity ID size, sets it on an angle, or suppresses it.

Choose orientation Timescaled graphics are automatically formatted in landscape orientation (horizontal dimension greater than vertical). However, you can choose portrait format, which provides space for more activities but less space for activity bars and the timescale. Landscape format provides less vertical space for activities and more horizontal space for activity bars and the timescale.

Customizing Activity Placement

For timescaled logic diagrams, you can place activities in a specific row or sheet by creating a custom placement file that contains a list of activities with their associated sheet and line numbers. Custom placement overrides options for grouping, page skipping, placing activities end-to-end, and placing one activity per row.

To create a list of activities and line numbers, in the Format tab of the Timescaled Logic Diagrams dialog box, choose a Custom Placement option. Choose New to create a custom placement file or Existing to use an existing placement file.

Enter a path and filename in the File field or leave the field blank to use the default custom placement file, LAYOUT.TSL. (P3 stores this file in the USERLOC folder.)

Run the timescaled logic diagram and view it onscreen. Note the activities you want to move and the sheet and line to which you want to move them.

The easiest way to determine the new line number is to note the ID of an activity located on the same line, or one above or below it.

When you edit the placement file, you can refer to that activity to determine its line number.

You can only move activities vertically. Placing an activity or text in an area that is already occupied overlays existing activities or text. You cannot move connector blocks and should not move activities with straight-line relationships.

To place activities, open the placement file with any text editor. Locate the activity you want to move and enter the new sheet and line numbers. Save and exit the file.

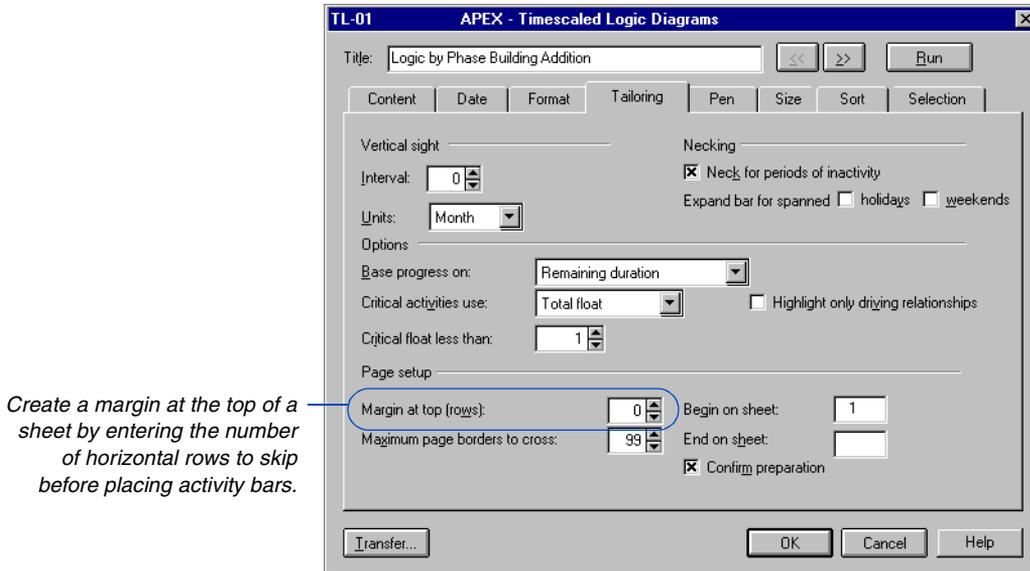
Choose Existing in the Custom Placement field in the Format tab of the Timescaled Logic Diagrams dialog box, and specify the placement file. Click Run to create the diagram with the placement changes.

P3 does not reformat the text on activity bars. For example, if a description wraps to two lines and you move the activity that is beside it, the text still appears on two lines, even though more space is available.



Tailoring Visual Aids in the Graphic

Use the settings in the Tailoring tab to specify sight lines, space between activities, and other attributes that make information in the graphic easier to locate.



Create a margin at the top of a sheet by entering the number of horizontal rows to skip before placing activity bars.

Add sight lines Set the interval at which you want P3 to draw vertical sight lines and specify the units to use: hours, days, weeks, months, or quarters.

Show inactivity by necking You can neck activity bars to show inactive periods for summary bars in a Bar chart graphic, but not for individual detail bars. P3 produces a timescaled graphic with indentations on each bar to show inactivity.

Mark the Neck For Periods Of Inactivity checkbox to have P3 indent nonworkperiods on the activity bar during holidays, exceptions, suspended time, and weekends as defined in the calendar for the project.

For more information about necking activity bars, refer to the *Summarizing Data* chapter.

Choose how you want progress to appear using the Pen tab.

If you choose to neck the bars during periods of inactivity, specify whether to expand (not neck) the bars for spanned holidays, weekends, or both, by marking the Holidays and/or Weekends checkboxes. For example, a period of inactivity may contain a holiday as well as a weekend (for example, Christmas may occur on a Monday). The activity bar can neck only for the holiday (Monday) or only for the weekend. For daily projects, if you expand the bars for weekends the activity bar extends through each weekend.

Identify activity progress You can show progress on a timescaled logic graphic based on an activity's percent complete or remaining duration. P3 indicates progress by highlighting the activity bar or displaying a double horizontal line through it. If you choose Remaining Duration, the progress bar extends from the actual start date of the activity to the point at which work on the remaining duration is scheduled to begin.

Basing progress on percent complete causes the length of the progress bars to equal the product of percent complete times the overall length of the bar. Remember, the length of the bar includes nonworkperiods as well as workperiods; therefore, the percentage point is not necessarily the beginning of the remaining duration. Use this method to show the percentage of the overall duration and the amount of work completed on an activity rather than the time remaining.

Since some activity bars continue outside the range of the timescale and border, choose Visible Percent Complete to display progress based on the length of the bar that is visible. Choose Entire Percent Complete to display progress based on the length of the full bar, which only affects bars that are not fully shown.

Indicate critical activities P3 indicates critical activities based on either total float or longest path. If you specify Longest Path, P3 highlights all activities on the longest path throughout the project. If you specify Total Float, indicate the float threshold below which P3 should consider an activity to be critical. The default setting is 1; P3 considers any activity with zero or negative total float to be critical.

For more information about highlighting critical activities, refer to the *Customizing Bar Chart Layouts* chapter.

Highlight driving relationships When defining critical activities based on total float for timescaled logic diagrams, P3 can highlight only the driving relationships between critical activities. Mark the Highlight Only Driving Relationships checkbox to have P3 highlight only the driving relationships between a critical predecessor and successor, using the pen color selected for Critical Highlighting in the Pen tab. If you don't mark this checkbox, P3 highlights all relationships between critical activities.

Set top margins and row separation You can enhance the readability of a graphic by specifying a top margin in the Margin At Top field.

Limit relationship lines across borders For timescaled logic diagrams that consist of multiple vertical or horizontal sheets, relationship lines that cross borders are match-lined. That is, P3 draws the line to the border of the current sheet and continues it from the border of the adjoining sheet.

Specify the maximum number of page borders these lines can cross in the Maximum Page Borders To Cross field. If a relationship line exceeds this limit, P3 inserts connector blocks for that relationship. Keep the default value of 99 in this field to impose no limit on the number of borders relationship lines can cross.

Specify sheets to print P3 enables you to specify pages of the diagrams you want to print or plot by selecting specific sheets. Use the Begin On Sheet and End On Sheet fields to select a sheet or set of sheets to print or plot. Pages are numbered vertically and horizontally. P3 assigns numbers to vertical sheets, and letters to horizontal sheets. If a timescaled logic diagram consists of two horizontal sheets and three vertical sheets, P3 numbers the sheets as follows:

1A of 3B	1B of 3B
2A of 3B	2B of 3B
3A of 3B	3B of 3B

Specify the beginning and ending page numbers for the graphic. Enter 1 to 2, 1A to 2B, and so on, depending on the combination of horizontal and vertical sheets.

Confirm preparation Mark the Confirm Preparation checkbox to have P3 calculate the number of vertical sheets the graphic contains based on the number of horizontal sheets and the point sizes you choose. P3 also calculates the number of activities to include in the last sheet. Display this information before producing the plot, then click OK or Cancel. Clear this checkbox if you don't need to confirm the calculation before P3 prints the graphic.

Specifying Colors for Bars and Text

P3 enables you to customize the color of certain graphic elements. If you are using a multiple-pen plotter or color printer, you can specify a different pen number for each item in the Elements column box. If you have a single-pen plotter, P3 prompts you to change pens for different colors during plotting.

Choose colors for bars and text Click the Pen tab in the Timescaled Logic Diagrams dialog box and enter pen numbers for each element. You can specify that colors fill the entire bar or only the center of the bar. Enter 0 in the Pen Number field to mask an item.

If you do not customize colors for bars and text, P3 assigns default colors, Pen No. 2 (red) for critical activities and Pen No. 3 (blue) for progress indicators. All other items use Pen No. 1 (black).

Choose the pen to use for drawing various elements of the graphic.

Item	Pen Number	Fill Bar
Critical highlighting	2	Entire t
Progress highlighting	3	Entire t
Bar outlines	1	
Text on bars	1	
Text on critical bars	2	

Highlight activities for code: <none>

Value	Pen Number	Pattern

The text on an activity bar includes the activity ID and description for noncritical activities. Choose a separate color for activity logs.

Customize late date bars, target bars, or current finish indicators

Late date bars appear as dashed bars when both early and late date bars are shown in the same Bar chart. Mask the early date bar, and the late date bar appears as a solid bar outline, using the pen number for bar outlines. Target bars appear as a solid line below the activity bar when you plot both the current and target schedules. If you plot only a target schedule, P3 also shows the activity's finish date from the current schedule. P3 displays the current-finish indicator as an inverted triangle.

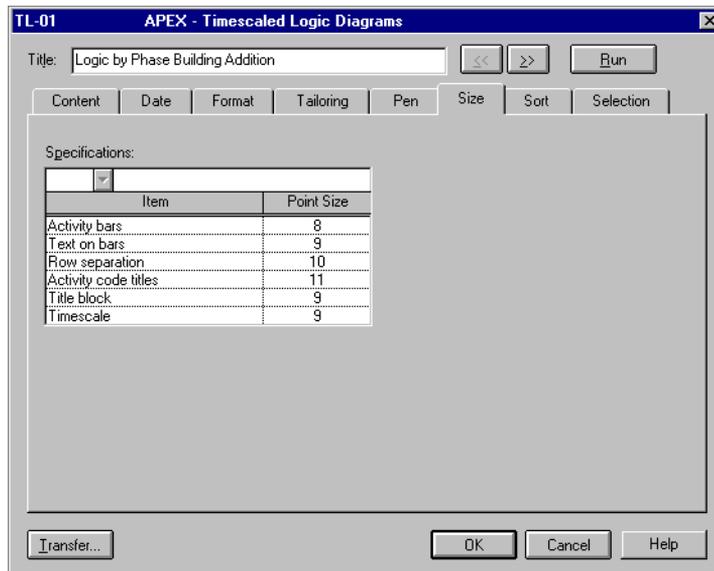
Highlight activities by code value Timescaled graphics enable you to highlight by activity code value to emphasize specific activity groups. Use different colors and patterns to distinguish activities by responsibility, phase, or any other activity code. Select any one of your project's code values and P3 colors or crosshatches activity bars based on their value for that code.

Choose the activity or ID code value in the Highlight Activities For Code field and then select a code value, pen number, and pattern. You can also combine highlighting with grouping or page-skipping. For example, create a timescaled logic diagram grouped by project that highlights activities by department.

Specifying Text and Bar Sizes

In a Bar chart graphic, you can size text in the columns and on activity bars using a variety of font definitions. For timescaled graphics, use the Size tab to adjust the size of text.

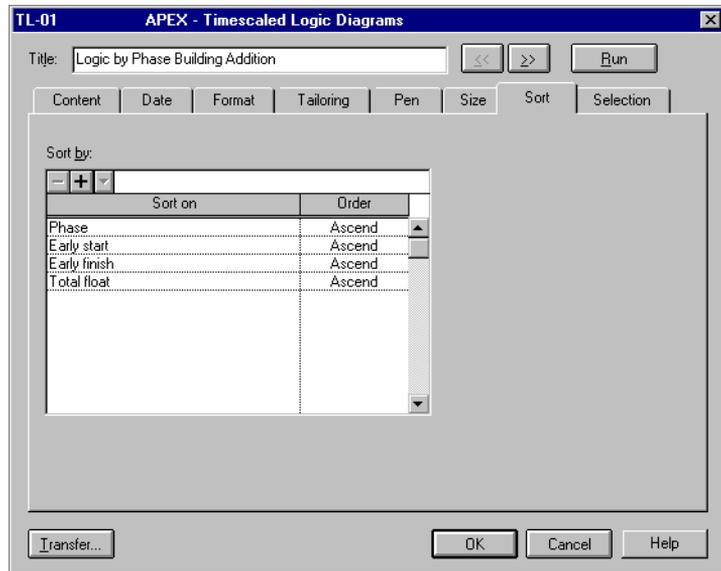
Size text Click the Size tab in the Timescaled Logic Diagrams dialog box. Adjust text size by entering a point size ranging from 3 to 60 (the title-block size cannot exceed 40 points). Use the Row Separation item in the Specifications section to adjust the space between rows of activities. Point size can range from 5 to 200.



Sorting Activities in the Graphic

You can control the order of activities shown in the timescaled logic graphic. To present activities in activity ID order, do not include any sort parameters.

Sort activities Click the Sort tab in the Timescaled Logic Diagrams dialog box. Enter up to 20 items in the Sort On column to arrange activities in a specific order. In the Order column, specify whether to organize activities in ascending or descending order. P3 organizes activities according to the Start New Page On and Group By specifications in the Format tab.



For more information about filter statements, see the [Using Filters to Select Activities and Projects](#) chapter.



Project codes are available as a sort and selection parameter on the Selection tab. Use project codes to fine-tune your presentation when you have many projects in a project group, for example, to select only those projects that are managed by the same person.

Specifying Activity Criteria

You can specify selection criteria by forming a statement with data items, selection criteria, and values. Use this option to select activities to include in the diagram.

Define selection criteria Click the Selection tab in the Timescaled Logic Diagrams dialog box to select activities to appear in the diagram. To include all activities in the project, don't use this tab.

The screenshot shows the 'APEX - Timescaled Logic Diagrams' dialog box with the 'Selection' tab selected. The title bar reads 'TL-01 APEX - Timescaled Logic Diagrams'. The 'Title' field contains 'Logic by Phase Building Addition'. Below the title bar are tabs for 'Content', 'Date', 'Format', 'Tailoring', 'Pen', 'Size', 'Sort', and 'Selection'. The 'Selection' tab is active, showing a 'Level' dropdown set to '1', a 'must meet' label, and two radio buttons: 'All' (selected) and 'Any'. Below this is a 'Selection criteria' section with a table. The table has columns for 'Select if', 'Is', 'Low Value', and 'High Value'. The table contains three rows of criteria:

Select if	Is	Low Value	High Value
Project ID	EQ	BA	
Phase	NE	PROCR	
Phase	NE	DESGN	

At the bottom of the dialog are buttons for 'Transfer...', 'OK', 'Cancel', and 'Help'.

Pure Logic Graphics

In this chapter:

Customizing a Pure Logic Diagram

Specifying Content

Formatting a Pure Logic Diagram

Specifying Activity Criteria

Sizing Text

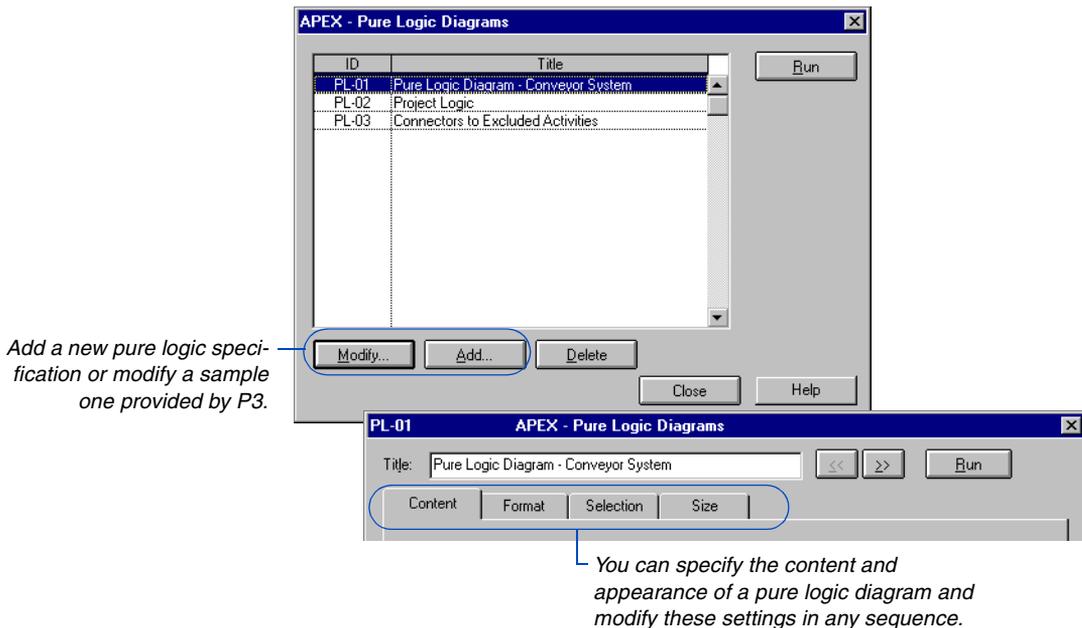
P3 enables you to create logic graphics that show relationships between activities without respect to time. When you create pure logic diagrams, you can set options such as vertical title blocks and custom horizontal and vertical spacing.

Customizing a Pure Logic Diagram

A pure logic diagram shows the sequential relationships between activities in a project without consideration of time. The diagram starts with the first activity with no predecessors and proceeds to the last activity with no successors.

Create a pure logic diagram Choose Tools, Graphic Reports, Pure Logic, then click Add to create a new pure logic diagram or click Modify to change an existing one. In the Pure Logic Diagrams dialog box, specify the content, format, selection criteria, and size of diagrams.

Click Run to create the pure logic diagram according to the current specifications. Click Previous or Next to open the following or previous pure logic specification listed.



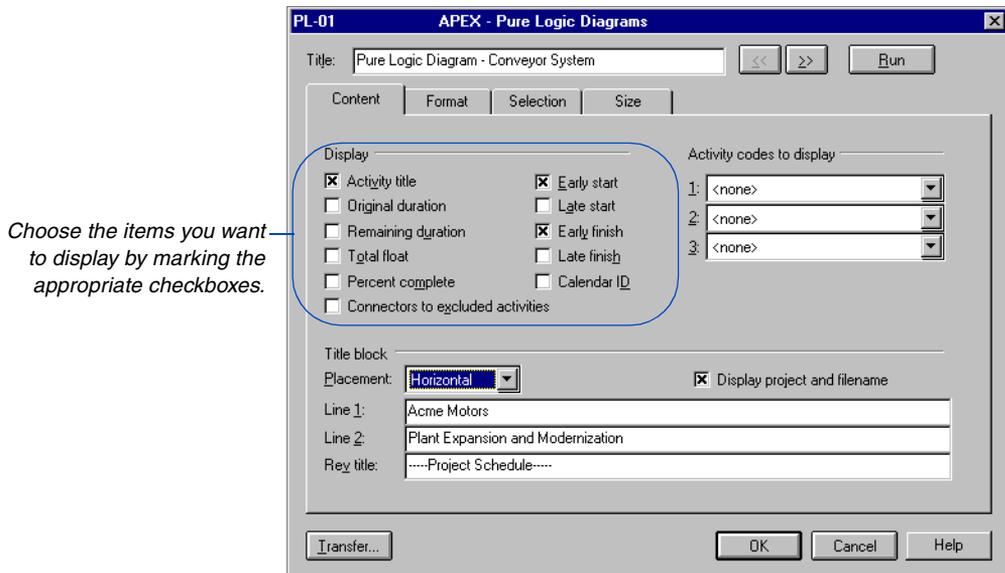
Transferring Graphics Specifications

To transfer an individual specification within a project, click Transfer at any time. To transfer all specifications from another project to the current project, choose Tools, Graphic Reports, Production, and click Transfer.

Specifying Content

P3 shows an activity in a pure logic diagram as a box containing an activity and the various data items you specify. Each activity box can include the activity title, original and remaining durations, early start and finish dates, late start and finish dates, total float, calendar ID, and percent complete.

Display activity details In the Content tab of the Pure Logic Diagrams dialog box, define activity data, activity codes, and connector blocks, and position and customize the title block. P3 always shows the data items in the same position within an activity box.

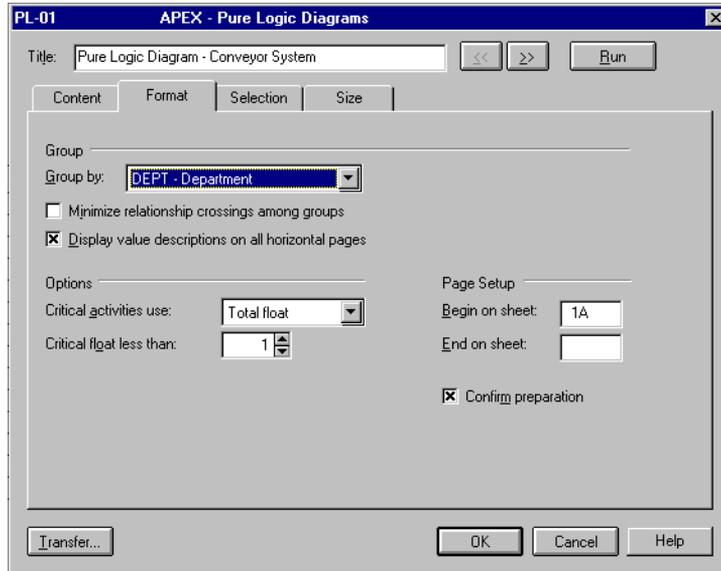


Show activity codes In the Activity Codes To Display section, click and select an activity code from the drop-down list to show the values for the specified codes in the activity box. Each activity box can show up to three activity code values.

Place the title block on the graphic In the Title Block section in the Placement field, choose to position the title block horizontally or vertically, or to mask it. Placing the title block horizontally positions it lengthwise across one of the four corners of the diagram. Since P3 prints a pure logic diagram continuously, only one page shows the title block in multipage diagrams.

Formatting a Pure Logic Diagram

Use the Format tab in the Pure Logic Diagrams dialog box to specify the organization and level of detail of data in the graphic.



Group activities Grouping by activity code enables you to focus on specific activities, such as those belonging to each phase, department, or area. P3 bands the activities in each group together so the diagram is easy to read. Select the code by which to group activities from the Group By field drop-down list.

To access the Activity Codes Dictionary, choose Data, Activity Codes.

Group titles P3 shows the code description for each group at the top of each group near the left margin. If you did not define code descriptions in the Activity Codes Dictionary, P3 shows the code values. If you are grouping by an alias, enter the alias description using the Alias tab in the Activity Codes Dictionary dialog box. Aliases can contain from one to five codes.

Minimize relationship crossings Mark the Minimize Relationship Crossings Among Groups checkbox to optimize the placement of groups and reduce the number of relationship lines that cross between them. Otherwise, P3 places activity groups in alphanumeric sequence by their activity code value, unless you specify a code sequence in the Activity Codes Dictionary dialog box.

For more information about defining critical activities, refer to the *Customizing Bar Chart Layouts* chapter.

Display descriptions on all pages Mark the Display Value Descriptions On All Horizontal Pages checkbox to show activity code values and descriptions on all horizontal pages that span more than one horizontal sheet.

Indicate critical activities P3 indicates critical activities based on either total float or longest path. If you choose Longest Path, P3 highlights all activities on the longest path through the project. If you specify Total Float, indicate the float threshold below which P3 should consider an activity to be critical in the Critical Float field. The default setting is 1; P3 considers any activity with zero or negative total float to be critical.

Specify sheets to print You can print selected sheets of a multipage graphic by specifying the beginning and ending pages. If you leave the End On Sheet field blank, P3 prints all pages in the graphic.

Confirm preparation P3 calculates the number of vertical sheets the graphic contains based on the number of horizontal sheets and the point sizes you choose. P3 also calculates the number of activities to include on the last sheet. To display this information before producing the plot, mark the Confirm Preparation checkbox; then click OK or Cancel when P3 displays the confirmation box. Clear this checkbox if you don't want P3 to wait for your confirmation before printing the graphic.

Specifying Activity Criteria

Use the Selection tab in the Pure Logic Diagrams dialog box to specify criteria for selecting activities included in a pure logic diagram. The criteria consist of statements with data items, selection criteria, and values.

Define selection criteria To limit the activities P3 shows in a pure logic diagram, enter selection criteria statements in the Selection Criteria section and specify whether P3 should select all or any of the criteria. To include all activities in the project, skip this tab.

PL-01 APEX - Pure Logic Diagrams

Title: Pure Logic Diagram - Conveyor System

Content Format Selection Size

Level 1 must meet All of the following criteria:
 Any

Selection criteria:

Select if	Is	Low Value	High Value
Project ID	EQ	CS	

Transfer... OK Cancel Help

For more information about selecting activities, refer to the *Using Filters to Select Activities and Projects* chapter.

Sizing Text

Use the Size tab in the Pure Logic Diagrams dialog box to size elements individually. You can define the size of text, the title block, activity code titles, and relationship information P3 shows in a pure logic diagram.

Size text Enter a point size ranging from 3 to 60 for each element in the diagram; the title-block size cannot exceed 40 points.

P3 automatically adjusts the size of the text in the title block if it is too large or too small to display.

Specify the size of the code titles that appear above each group of activities if you group by activity codes.

Specify the size of the relationship type and lag information displayed next to the relationship lines.

Item	Point Size
Text	7
Title block	9
Activity code titles	7
Abbreviated relationship type	8
Horizontal activity separation	10
Vertical activity separation	12

Changing the Distance Between Activities

Use the Horizontal and Vertical Activity Separation fields in the Specifications section to specify the distance between activities in points. Although you specify the point size in the Size tab of the Pure Logic Diagrams dialog box, P3 determines the actual distance you select in points by the sheet size you choose in the Print Setup dialog box, the point size for the text, and the number of data items you selected to show in the activity box. Enter 999 in the Vertical Activity Separation cell to fill the page with as many activities as can fit on the page size that you specified in the Print Setup dialog box.

Resource/Cost Graphics

In this chapter:

Customizing a Resource/Cost Graphic

Specifying Content

Specifying a Date Range

Formatting a Resource/Cost Graphic

Defining Titles

Specifying Colors, Lines, and Fill Patterns

Specifying Text and Bar Sizes

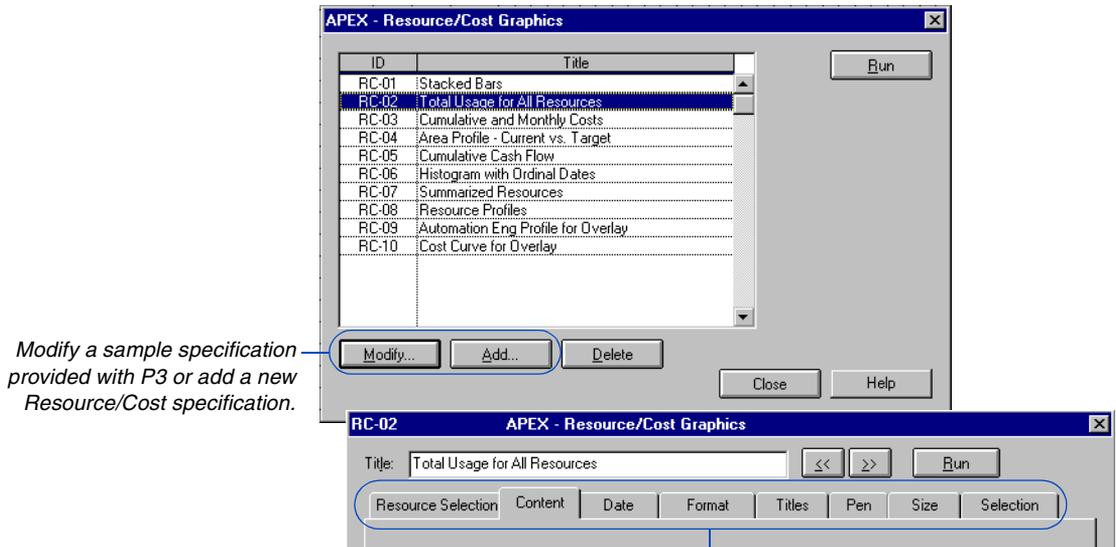
Specifying Activity Criteria

Resource/cost graphics are similar to the resource/cost profiles you can display in Bar chart layouts, with some additional options. For example, resource/cost graphics enable you to display a use or cost value at the top of histogram bars, reflect percentages based on a particular schedule, and display multiple profiles and curves on one sheet.

Customizing a Resource/Cost Graphic

P3 enables you to create resource/cost graphics that track resource requirements and costs. You can set options such as multiple profiles on a page and customize profile colors and patterns.

Create a resource/cost graphic Choose Tools, Graphic Reports, Resource and Cost, then click Add to create a new resource/cost graphic or click Modify to change an existing one. In the Resource/Cost Graphics dialog box, click the appropriate tab to specify the content, date, format, pen color, selection criteria, size, and titles of graphics. Click Run to create the resource/cost graphic according to the current specifications. Click Previous or Next to open the following or previous resource/cost specification listed.



You can specify the content and appearance of a resource/cost graphic and modify these setting in any sequence.

Transferring Graphics Specifications

To transfer an individual specification within a project, click Transfer at any time. To transfer all specifications from another project to the current project, choose Tools, Graphic Reports, Production, and click Transfer.

Specifying Content

Specify different line thicknesses and types to distinguish early and late date curves, and current and Target 1 and 2 curves.

Use the Content tab to specify the data you want to show in the graphic. Available items include current and target schedules, curves, early or late dates, and resource or cost data.

Specify schedules Choose Current, Target 1, and/or Target 2 from the Schedule section. You can compare the current schedule with up to two target schedules. For example, compare project costs to the baseline schedule (Target 1) and to a revised baseline created at the last update (Target 2). The comparison shows how project spending has progressed since the beginning of the project, as well as since the last update. Make sure you specify target projects for the project from which you are creating the resource/cost graphic.

Specify resource or cost data Choose to display resource or cost data in the graphic.

For cumulative curves, display the percentage of resources/costs used or spent.

The screenshot shows the 'APEX - Resource/Cost Graphics' dialog box with the 'Content' tab selected. The 'Title' field contains 'Stacked Bars'. The 'Schedule' section has 'Current' checked. The 'Show data' section has 'Resource' selected. The 'Dates' section has 'Early' selected. The 'Divide by' field is set to 1. The 'Curve' section has 'Cumulative' selected. The 'Cumulative' section has 'Display % on Y axis' checked and 'Base % on:' set to 'Current early'. The 'Histogram' section has 'Format' set to 'Bar' and 'Use/Cost' set to 'Total'. The 'Display data values' checkbox is checked. A blue circle highlights the 'Display % on Y axis' checkbox and the 'Current early' dropdown menu. A blue line points from the text on the left to the 'Display % on Y axis' checkbox. Another blue line points from the text on the right to the 'Display labels' checkbox.

Mark or clear this checkbox to display or mask labels for cumulative curves. P3 automatically prints EARLY and LATE labels for the early and late date curves from the current schedule.

For more information about creating target plans, refer to the *Targets and Progress* chapter.

When you choose to show percentages on a graphic with both histograms and curves, P3 places the percent value on the right y-axis.

Specify schedule dates You can report on resources and costs using the early or late schedule dates, or both. Choose Early, Late, or Both in the Dates section. P3 shows one set of bars or curves for each type of date selected.

Show values Specify a number in the Divide By field to determine how P3 shows resource or cost values in the graphic.

Specify curve types Choose Cumulative, Histogram, or Both in the Curve section.

Set cumulative curve options Choose Display % On Y Axis in the Cumulative section to show the percentage of resources/costs used or spent as compared to the current or target schedules on cumulative curves. P3 displays the percent value on the y-axis instead of an exact number or dollar amount.

In the Base % On field, select the schedule on which P3 bases the percentage. For example, when showing cumulative costs using the current and Target 1 early date schedules, select the Target 1 early schedule as a base. If P3 shows the current early curve above the Target 1 early curve, you've spent (or are forecasted to spend) more than 100 percent of the available funds, according to the baseline plan. If you choose to base percentage on a late schedule, you must also choose to show late dates.

Specify histogram format If you choose Histogram in the Curve section, specify Bar or Area in the Format section. If you choose Bar, the graphic shows a single bar per timeperiod. If you choose Area, the graphic shows a profile spanning the defined timeperiod.

Specify use or cost in histograms Choose Total to summarize use/cost in each time interval. If you store period performance, P3 spreads resource or cost amounts evenly for each update period and spreads quantities or costs for the current period from the last closeout date to the data date. P3 distributes the actual to date amount from the resource actual start to the data date, and the estimate to complete amount from the data date to the early finish date. If you do not store period performance, P3 spreads resource quantities and costs evenly from the resource start through the data date.

Choose Peak to show the highest use/cost in each time interval. Choose Average to calculate the total divided by the number of time units in the time interval.

Specify a calendar If you show average use/cost in the Use/Cost section and the resource/cost accounts are assigned to activities that use different calendars, select the calendar you want to use.

Specify the number of decimal places Specify the number of decimal places (0, 1, or 2) P3 should display for values in the graphic.

Display values in histograms The options for customizing a histogram for resource/cost graphics are the same as those for Bar charts. However, for resource/cost graphics, you can also display the use or cost value above a histogram bar. Mark the Display Data Values checkbox and specify 0, 1, or 2 decimal places for the values. P3 shows the use or cost value at the top of the bar for each time interval, enabling you to see an exact amount per timeperiod without tracing the bar to the y-axis.

Specifying a Date Range

The methods for defining the timescale in resource/cost graphics are the same as for the Bar chart. Resource/cost graphics also enable you to label time intervals. The interval you specify affects the appearance of the timescale: if the timescale shows intervals of days that span many months and you label each day, the date for each day may not be readable. Click the Date tab to define the timescale.

The screenshot shows the 'APEX - Resource/Cost Graphics' dialog box with the 'Date' tab selected. The 'Title' field contains 'Stacked Bars'. The 'Date' tab is active, showing the following settings:

- Display dates:**
 - Calendar
 - Ordinal
 - Show fiscal years
 - Start month: October
 - Start date: 15JUL96
- Time periods:**
 - Start date: CAL 01NOV96
 - End date: CAL 02MAY97
 - Title each: Month
 - Timescale: Week

Buttons at the bottom include 'Transfer...', 'OK', 'Cancel', and 'Help'.

Specify display dates In the Display Dates section, choose Calendar to show calendar dates on the timescale or choose Ordinal to show sequential numbers rather than calendar dates. If you choose Ordinal, specify an ordinal start date. To use a fiscal year timescale, mark the Show Fiscal Years checkbox, then specify a start month for the fiscal year.

Specify start and end dates In the Time Periods section, specify the starting and ending dates for the graphic. P3 ends the timescale at the date you specify, adjusting the width of the increments to fit the page. Click the button to the left of each date field and specify the date as a calendar date or as a rolling date based on the project start, the project finish, or the data date.

For more information about timescales, refer to the *Customizing Bar Chart Layouts* chapter.

Label time intervals Choose a time interval in the Title Each field to label with dates. Choose an interval that is the same as or greater than the timescale interval.

Select timescale units In the Timescale field, select the timescale units to label on the horizontal axis; for example, you can display the date for each day or each week. Choose an interval that is the same as or greater than the project's planning unit.

Formatting a Resource/Cost Graphic

Use the Format tab to specify the organization and level of data detail in a resource/cost graphic.

Quarterly sight lines always start from the beginning of the defined year, for example, 01JAN.

Display sight lines Sight lines are vertical and horizontal lines that help you trace a bar and/or curve to its position relative to the timescale on the horizontal axis, and to values on the vertical axis. P3 shows major sight lines as solid lines and minor sight lines as solid, dashed, or dotted vertical lines placed between major sight lines. You can specify the format for major sight lines in the Graphic Report Options dialog box (choose Tools, Graphic Reports, Options).

In the Major field, click ▾ and choose a time interval from the drop-down list. Use the Intervals field to specify the number of time intervals at which P3 places the sight lines. Enter 0 to suppress sight lines. Specify an interval for minor vertical sight lines that is at least one time interval less than the interval you choose for major vertical sight lines.

To identify areas of resource overload quickly, click the Pen tab, then specify a different pen number and fill pen color and pattern for the portions of the resource bar that are above the normal and maximum limit lines.

For more information about how to define the resource or cost account for each cell, refer to *Displaying Multiple Histograms and Curves* on the next page.

Summarize resources Instead of showing use or cost per time-period, resource/cost graphics can summarize use or cost over a specified timeperiod in one bar. Mark the Summarize By Resource checkbox in the Histogram section. For example, when showing use for three resources over a week, P3 generates one bar for each resource and shows the total, peak, or average use for that week. This format is effective for determining overall resource requirements or costs for a specific timeperiod.

Stack resources Instead of summarizing resources/cost accounts in one bar, you can specify that P3 “stack” several bars above one another. To stack resources, mark this checkbox in the Histogram section. You can also stack resources/cost accounts using area profiles. If you choose to show data values on bars, the values indicate the total, peak, or average use or cost for all stacked resources/cost accounts for that timeperiod.

Choose orientation In the Print section, choose Portrait or Landscape orientation from the drop-down list. This setting overrides the orientation set for your printer driver and controls the overall appearance of your plot. Portrait orientation is often suitable for projects with many activities relative to the project's timespan.

Display multiple graphs Use the Rows and Columns fields in the Print section to show many graphs on one page by dividing it into cells using rows and columns. Each cell can contain a graph showing a different resource or cost account.

Specify sheets to print You may want to print selected sheets of a multipage graphic. In the Print section, specify the beginning and ending sheets. If you leave the End On Sheet field blank, P3 prints all the pages in the graphic.

Confirm preparation P3 calculates the number of vertical sheets the graphic contains based on the number of horizontal sheets and the point sizes you choose. P3 also calculates the number of activities to include on the last sheet. Mark the Confirm Preparation checkbox to display this information before producing the plot, then click OK or Cancel when prompted. Clear this checkbox if you don't want P3 to wait for your confirmation before printing.

Displaying Multiple Histograms and Curves

You can display multiple histograms and/or curves on the same sheet by dividing the graphic report into cells. Specify the number of cells, in the Rows and Columns fields in the Format tab. For example, specify two rows and two columns to divide the graphic into four cells.

Show multiple cells in one graphic
Specify each resource/cost account and assign a group number in the Resource Selection tab.

You can specify up to 24 groups. P3 places as many groups as possible from left to right, based on the number of rows and columns defined in the Format tab, then

continues to the next row and places groups from left to right again.

If you specify more group numbers than the number of available cells, P3 prepares additional pages.

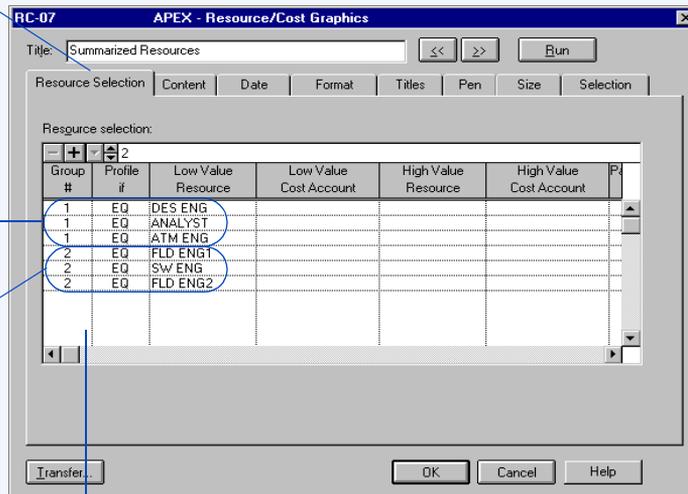
Create a resource/cost graphic with multiple stacked or summarized histograms Specify the same group number for the resource/cost accounts in each cell.

If no criterion is assigned to a group number, or if a group number is not specified, P3 leaves the corresponding cell blank.

Use the Resource Selection tab to specify cell placement of each resource/cost account within the graphic.

These resources are stacked in cell 1.

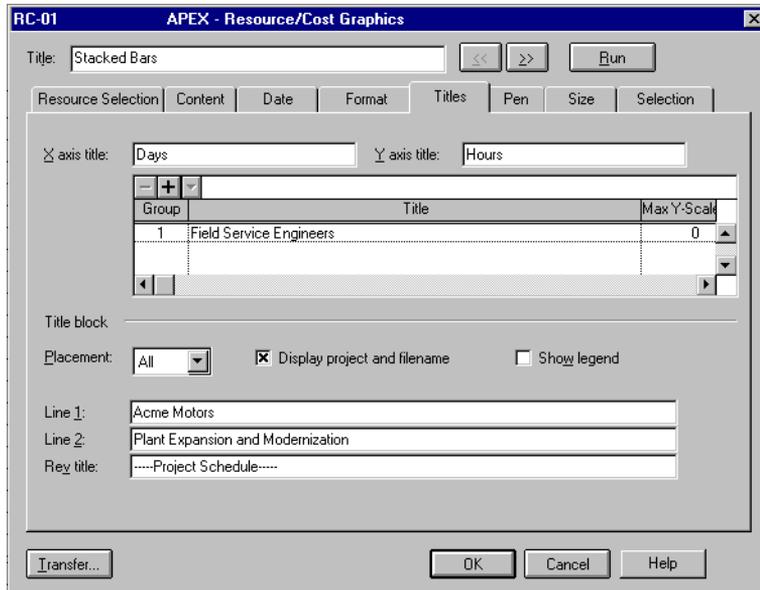
These resources are stacked in cell 2.



Place multiple resources/cost accounts in a single cell by assigning the same Group # to the resource/cost accounts selected.

Defining Titles

Use the Titles tab in the Resource/Cost Graphics dialog box to label the x and y axes, to define a title for the graphic, and to specify a maximum y-axis value.



Define titles Specify a label in the X Axis Title field to appear on the horizontal axis, and in the Y Axis Title field to appear on the vertical axis of the graphic. For example, specify labels that identify the time interval on the horizontal axis and the unit of measure on the vertical axis. When you display multiple graphics, use the Group Titles section to specify a title for each group or cell; P3 prints the title directly above the graphic. If you do not specify a title, P3 uses the resource/cost account titles defined in the Resource Dictionary or Cost Accounts Dictionary.

When stacking or combining resources and cost accounts, specify a title for the graphic if you want a title to appear.

P3 automatically labels the vertical axis according to the highest resource/cost value plotted. However, if a graphic contains several resource histograms with different y-axis values, it may be difficult to compare the graphics because the bar heights differ. You can specify a maximum y-scale value for a specific group in the Max Y-Scale column; for example, specify the highest use or cost value that can appear on the vertical axis. Enter a higher value to make bars appear smaller, or a lower value to make them appear larger.



The y-axis can display values up to three digits long. If the values exceed four digits, P3 displays a scale at the top left corner of each graphic that describes a scaling factor, such as thousands.

When you show both a histogram and a cumulative curve, the maximum y-scale value applies only to the histogram scale.

Specify group titles Enter a title for each group number specified in the Resource Selection tab. If you don't specify titles, P3 uses titles from the Resource Dictionary or Cost Accounts Dictionary. Also enter a maximum y-scale data value for each graph.

Specify title-block position and content You can place the title block at the bottom of the first, the last, or all pages of the graphic. Specify the text for the first two lines of the centered, title-block heading. If you choose to display the project and plot filenames, P3 prints the project name in the upper-left corner of the central area of the title block.

Display a legend P3 displays an optional legend to the left of the title block that shows the pen colors, line types, and patterns that represent the current and target early and late date curves and bars. If you show a stacked resource histogram, P3 shows the legend above the title block and identifies the colors and patterns for each resource/cost account.

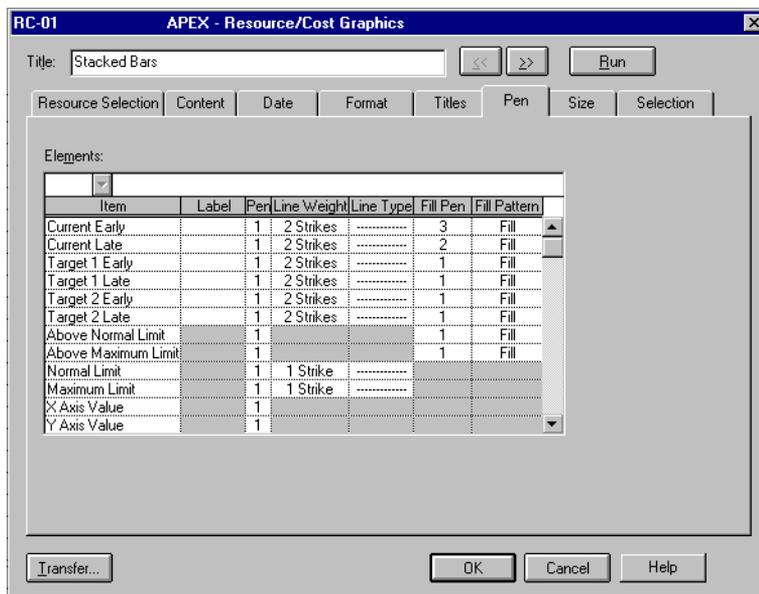
For more information about customizing the title block, refer to the *Printing Layouts* chapter.

If you do not show the title block, P3 places the legend below the timescale. The size of the legend depends on the size of the title block specified in the Size tab. If you mask the title block you can size the legend by sizing the title block in the Size option.

Specifying Colors, Lines, and Fill Patterns

The Pen tab in the Resource/Cost Graphics dialog box enables you to exercise more control over colors, line types, and patterns than profiles created from the Bar chart. For example, you can specify a solid line for cumulative curves for the current schedule and a dashed line for the target schedule.

Choose colors, lines, and fill patterns. Select values for each item listed in the first column. Right-click in the Line Weight, Line Type, and Fill Pattern fields to choose from a list of valid choices. Specify a label, pen number, and fill pen for each item.



Specify the pen number and line thickness and type for the normal and maximum-limit lines.

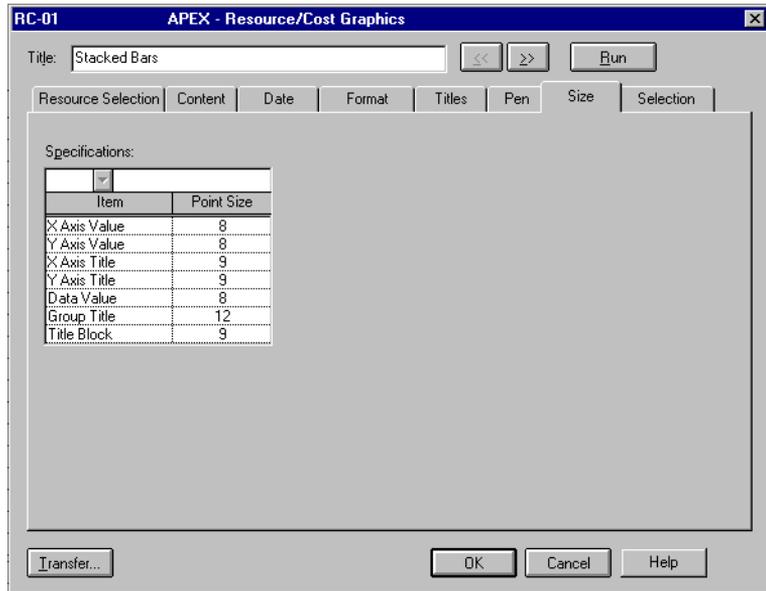
These horizontal lines identify the normal and maximum availability limits as defined in the Resource Dictionary for the project.

Show normal and maximum limits You can identify normal and maximum-limit portions on histograms and show normal and maximum availability lines by defining them in the Pen option. To display them, normal and maximum limits must be defined in the Resource Dictionary; you must choose to show resource data; and you must select only one resource per group or select a hierarchical resource.

When showing total use, the time interval specified in the Date tab must be the same as the planning unit of the project. P3 can display limits for peak and average use regardless of the time interval. Also, the Divide By field in the Content tab must be set to 1 and the histogram summarize and stacking checkboxes in the Format tab must be cleared.

Specifying Text and Bar Sizes

Use the Size tab in the Resource/Cost Graphics dialog box to size text P3 includes in the graphics.



If you choose to hide the title block in the Titles tab, use the Title Block field to select the size of the text in the legend.

Size text Enter a point size ranging from 3 to 60 for each item in the graphic; the title-block size cannot exceed 40 points. The point size you specify for the data values at the top of histogram bars also controls the size of text for labels on cumulative curves. The point size specified for the title block determines the proportional point size for other text in the title block, such as the legend. For example, if you specify 9 points, the title in the middle of the title box is 9 points and text in the legend and revision box is two-thirds of that size, or 6 points.



You can specify a font for Resource/Cost graphic reports in the Graphic Report Options dialog box (choose Tools, Graphic Reports, Options, Font).

If you do not show the title block, P3 places the legend below the timescale. The size of the legend depends on the size of the title block specified in the Size tab. If you mask the title block you can size the legend by sizing the title block in the Size tab.

Specifying Activity Criteria

In the Selection tab for the Resource/Cost Graphics dialog box, you can specify selection criteria by forming a statement with data items, selection criteria, and values. Use this option to select activities to include in the diagram.

For more information about selecting activities, refer to the *Using Filters to Select Activities and Projects* chapter.

Define selection criteria Enter selection statements in the Selection Criteria section to specify the activities P3 includes in the graphic. To include all activities in the project, do not use this tab.

RC-06 APEX - Resource/Cost Graphics

Title: Histogram with Ordinal Dates << >> Run

Resource Selection | Content | Date | Format | Titles | Pen | Size | Selection

Level: 1 must meet All Any of the following criteria:

Selection criteria:

Select if	Is	Low Value	High Value
Project ID	EQ		CS

Transfer... OK Cancel Help

Creating P3 Reports with InfoMaker

In this chapter:

Setting Up P3 Data for ODBC

Setting Up InfoMaker for P3 Reporting

Getting Started Basics

Anatomy of a P3 Report

Using InfoMaker's Design Mode to Edit P3 Reports

Creating a New InfoMaker Report

This chapter describes how to use InfoMaker to create and run reports using P3 data.

Use the sample P3 InfoMaker reports, or customize them to meet your specific needs. You can create a variety of reports that combine P3 data with text, charts, and graphics for richer analysis. Review *Setting Up P3 Data for ODBC* and *Setting Up InfoMaker for P3 Reporting* before creating any reports.

P3 provides online InfoMaker documentation. Refer to the end of the *Setting Up InfoMaker for P3 Reporting* section for instructions on accessing the InfoMaker documentation.

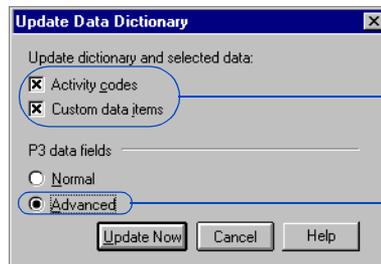
Setting Up P3 Data for ODBC

Before using InfoMaker reports, you need to update P3's data dictionary files from the project you want to access in InfoMaker.

P3 sample InfoMaker reports have been tested to run under the Intersolve driver that is installed with InfoMaker. The sample reports use data from the sample projects APEX, BASE, and OUTG, that are provided with P3.

Update P3's data dictionary files (.DDFs)—FILE.DDF, FIELD.DDF, and INDEX.DDF—from the project you want to access in InfoMaker. These files contain filenames and field definitions that link InfoMaker to your P3 project data files. Whenever you modify activity codes, project codes, or custom data item values, you need to update P3's data dictionary files to ensure that the latest project data are available in InfoMaker for reports.

Create or update the P3 data dictionaries From P3, open the project you want to use for the InfoMaker reports, then choose Tools, Update Data Dictionary.



Mark to include Activity Codes (which includes Project Codes), Custom Data Items, or both, in the update.

Choose to include all P3 fields in the update.



P3 stores the FILE.DDF, FIELD.DDF, and INDEX.DDF files in the P3WIN/PROJECTS folder. All projects in this folder use the same .DDF files for ODBC purposes. If you store projects in another folder, P3 creates another set of .DDF files for that project folder.

Update codes and custom data items When you update .DDFs from a project, you can choose to include activity codes, project codes, and custom data items in the update. The first time you update .DDFs from a project, you may want to include them both in the update. To save time, especially for large projects, clear these checkboxes if you do not plan to include activity codes, project codes, or custom data items in your reports. Whenever you modify codes or custom data item values, you can include them in an update.

To compare the fields available for Normal and Advanced modes, see *P3 Data Tables* in P3 Help.

Choose a mode for updating .DDFs You can update the .DDFs using normal or advanced mode. These modes determine which data fields are available for InfoMaker. Normal mode creates .DDFs containing the most commonly used fields, such as activity ID, early dates, late dates, and total float. Choose Advanced if you want all P3 data fields available.

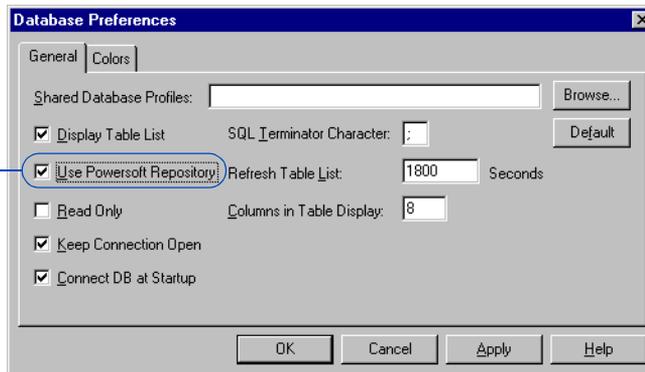
Setting Up InfoMaker for P3 Reporting

If you've modified the project, make sure you update the .DDFs by choosing Tools, Update Data Dictionary, before starting InfoMaker. To start InfoMaker, choose Tools, InfoMaker in P3.

Open report environment In InfoMaker, if a report environment is not open, click the Environment icon to open the most recently used Report environment. If this is the first time you open InfoMaker, the Sybase samples are shown. To open the P3 sample report environment, choose File, Open, and browse to the Report folder in the P3 programs folder (C:/P3WIN/P3PROGS/REPORTS by default). Select the P330RPTS.PBL and click Open.

InfoMaker “Catalog tables...” message When InfoMaker connects to P3's Btrieve data source, it may display the message “Catalog tables could not be created and are not available for use.” Click OK to close the message and continue in InfoMaker. To prevent InfoMaker from displaying this message when you connect to P3 data, in InfoMaker click the Database Painter icon in the toolbar. Click Cancel in the Select tables dialog box. Choose Design, Options and clear the Use Powersoft Repository checkbox. Click Apply, then click OK. Close the database environment window to focus on the Report environment.

Clear to prevent the “Catalog tables...” message.



Create a data source to connect to the P3 sample data This step is necessary only if P3 Setup did not create a connection. Choose Start, Settings, Control Panel, and double-click the 32bit ODBC Administration icon. Click the System DSN tab if your administration version has one; otherwise, use the default. If a data source named P3 Sample Data is not listed, click Add. Select PB INTERSOLV OEM 3.x 32-bit Btrieve driver from the list, then click Finish. In the Data Source Name field, type P3 Sample Data. In the Database Directory field, type the path to the P3 sample projects—C:\P3WIN\PROJECTS by default. Click Apply, then click OK. Close the ODBC Data Source Administrator and Control Panel.

Create a profile Before creating InfoMaker reports based on P3 data, you must also set up a profile in InfoMaker. To do this, in InfoMaker click the DB Profile icon. Click ODBC; click New and then enter a name for the profile, such as P3 Report Data. Select the P3 Sample Data data source from the drop-down list. If you do not see the P3 Sample Data data source, click Cancel and create the data source by following the instructions in the preceding paragraph. Once you select the P3 Sample Data data source, click Apply, then click OK. Click Connect from the Database Profile dialog box. You only need to create a profile for P3 data once.

Set query options Before running the sample InfoMaker reports, change the query options. Choose File, Power Panel. Select Query Governor and click OK. Mark Allow Cross Products and click OK.

For more information about the InfoMaker workspace, see *Chapter 1: The World of InfoMaker* in the *InfoMaker User's Guide*.

InfoMaker's toolbar The InfoMaker PowerBar enables you to access InfoMaker functions.

Icon	Function
 <p>Envt</p>	<p>Manage and organize reports—you can store several reports in one InfoMaker environment—copy or move reports between environments, or create an executable which enables you to run one or more reports without opening InfoMaker or P3.</p>
 <p>Report</p>	<p>Create, modify, run, and print reports.</p>
 <p>Run Rpt</p>	<p>Run and print reports.</p>

Icon	Function
	Define and connect to ODBC for different .DDF files. Profiles link to .DDFs through the data source named in the profile.
	View table design information.
	Create or edit ODBC data sources. Data sources can also be created outside of InfoMaker. If you create the data source in InfoMaker, a database profile is created automatically with the same name as the data source. Use the DB Profile icon to connect to the data source/profile.
	Learn details about InfoMaker tasks.
	Tile open reports vertically.
	Tile open reports horizontally.
	Tile open reports in layers.
	Tile open reports in cascaded windows.
	Exit InfoMaker.

View the InfoMaker online documentation Install the InfoMaker Dynatext reader by running setup from the P3 CD. Click Install InfoMaker then click InfoMaker Dynatext. Once this is installed you can view online documentation at any time by inserting the P3 CD and selecting Start, Programs, Sybase, Online Books.

Getting Started Basics

For details on using environments, see *Chapter 2: Managing Your Environment* in the *InfoMaker User's Guide*.

InfoMaker uses special libraries, called environments, to hold similar reports and forms; each environment is a separate .PBL file. P3 provides one InfoMaker environment (.PBL file) that contains sample P3 reports. The sample reports include some P3 standard reports and reports that include graphics, font formatting, and coloring. When P3 is installed, the sample reports .PBL file is copied to a Report folder in the P3 program files folder (C:\P3WIN\P3PROGS\REPORTS by default). The reports are also located in the P330RPTS.PBL file stored in the SUPPORT\REPORTS folder on the P3 CD. The following table briefly describes each sample report.

Report	Description
Apex_sch_classic_font_changes	Schedule report with bold and italic fonts.
Apex_sch_classic_color_highlight	Schedule report with colors.
Apex_cost_control_detail	Cost control report, detailed by cost account.
Apex_cost_control_sum	Cost control report, summarized by activity.
Apex_sch_drv_succ	Schedule report including only driving relationships.
Apex_matrix	Resource matrix report for budget cost by department.
Apex_matrix_pie_rpt	Resource matrix report with pie chart and bar histogram.
Apex_sch_succ_report	Schedule report with predecessor/successor information.
Apex_res_control_activity	Resource control report, detailed by activity.
Apex_res_control_res	Resource control report, detailed by resource.

Report	Description
Apex_sch_classic	Classic schedule report.
Outg_sch_classic_hourly	Classic schedule report for hourly projects.
Apex_sch_target_comp	Target comparison schedule report.

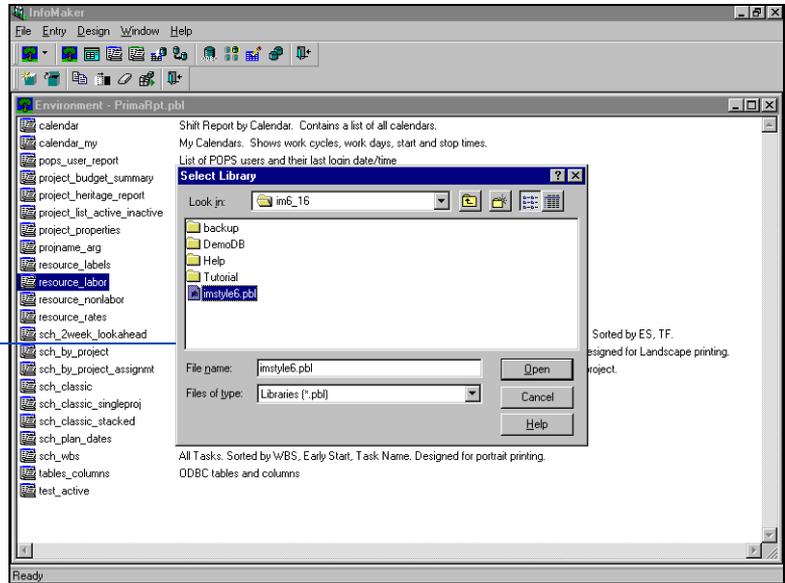


The first time you start InfoMaker and click the Environment icon, the sample Sybase Report environment opens, and InfoMaker connects to the Sybase sample data. To run the P3 sample reports, follow the previous instructions for setting up P3 data and starting InfoMaker.

Preview a sample report Start InfoMaker and perform either of the following steps from the main window:

- Click the Report icon, which then prompts you to open or create a report in the last environment that was open. Select a report and click Preview.
- Click the Environment icon to display the last environment you used and all reports contained in that environment. Right-click a report name and choose Run/Preview.

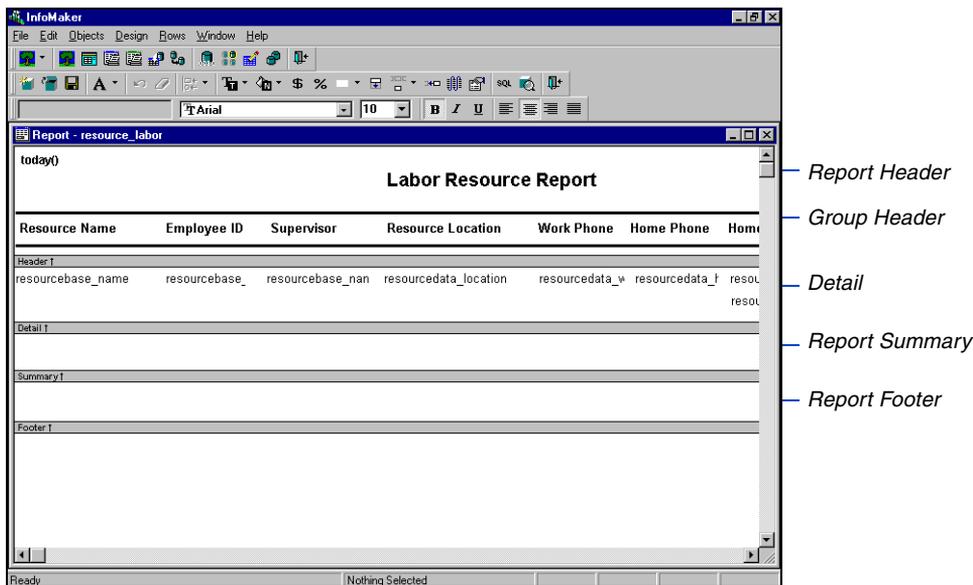
Choose File, Open to select another environment, or .PBL file. By default, P3 reports are located in P330RPTS.PBL.



Anatomy of a P3 Report

The majority of the sample P3 InfoMaker reports use data from the sample project APEX, which comes with P3. Therefore, the sample reports contain APEX data.

In Design mode, P3 reports can be broken down into several sections. Each section is made up of a shaded area which contains report data and a gray band identifying the section. The gray band is below the section to which it belongs.



About the header band The header band contains information that appears at the top of every page in the report. When InfoMaker generates the report, the presentation style determines the contents of the header band. Almost all of P3's reports use the tabular presentation style, so the headings display in the header band, and the columns display in the detail band.

About the detail band The detail band displays data retrieved from P3. Almost all of P3's reports use the tabular presentation style, so the detail band displays column data for each record. You can specify the information InfoMaker should display for each column of the report and add other objects, such as text, pictures, drawing objects, and graphs.

About the summary and footer bands The summary band displays after all the detail rows, often summarizing the information in the report. The footer band displays at the bottom of each page of the report. You can use this band to display the page number and name of the report. These bands can contain any InfoMaker objects, including text, drawing objects, graphs, and computed fields that contain totals.

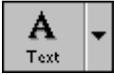
Using InfoMaker's Design Mode to Edit P3 Reports

When you open a report, you enter InfoMaker's Design mode, and another toolbar displays in the InfoMaker window. It contains icons that enable you to edit the design of the report by organizing existing data, inserting new data, or inserting and formatting objects.

You can use the following techniques in InfoMaker to make your printed P3 report meet your company's requirements.



To modify an existing report, open the report and choose File, Save As to make a copy of the report. If you change something by mistake, use the original report as a reference.

Icon	Function
	Displays your report with data. You can print the report, save it in a different format, or send it via E-mail. Click this icon to toggle between Preview and Design mode.
	Define the tables and columns to include in the report, and how the tables are related. Click this icon to toggle between Data and the Design mode.
	Create an object in the report using the Objects drop-down toolbar. Click the down arrow to select different types of objects. You can create the following types of objects: text, pictures, lines, ovals, rectangles, rounded rectangles, columns, computed fields, graphs, reports, OLE objects, and large binary or text database objects.
	Undo your last command.

Icon	Function
	Remove the selected object from the report.
	Align, size, or space selected objects in the report using the Layout drop-down toolbar. Click the down arrow to select options. You can align objects along the left, right, top, or bottom edges; align objects along horizontal or vertical centers; equalize the distance between objects along the horizontal or vertical axis, or equalize the height or width of objects.
	Select the foreground color for the selected object using the Foreground drop-down toolbar. Click the down arrow to select a color.
	Select the background color for the selected object using the Background drop-down toolbar. Click the down arrow to select a color.
	Use currency format for the selected columns or fields.
	Use percent format for the selected columns or fields.
	Specify a border style for the selected object using the Borders drop-down toolbar. Click the down arrow to select border style. Available border styles include: None, Underline, Box, Shadow, 3- D Raised, 3-D Lowered, and Resize.
	Automatically set the height of the field based on the height of the data displayed in the field.

Icon	Function
	Slide objects in the report to remove unwanted white space using the Slide drop-down toolbar. Click the down arrow to select the direction you want to slide objects. You can slide objects to the left, above all, or directly above.
	Remove blank space by sliding objects left.
	Opens the Property Sheet of the selected object. If no objects are selected, opens the Property Sheet for the report.
	Close the report.

Run a report on a different project Open the report in Design mode that you want to run on a project other than APEX, such as APEX_SCH_CLASSIC. Choose File, Save As and save a new report for the project called XXXX_SCH_CLASSIC where XXXX is the project name.

Click the SQL button to open a window that shows the SQL tables and columns included in the report. Right-click in any empty space in the window, then choose Select Tables. The Select Tables list box shows all the project tables available for the report. The tables are identified by the four-character project name, followed by three characters that identify the contents of the table. For example, APEXACT contains all activity information, such as the activity ID, title, dates, durations, float, and assigned activity codes, for the APEX project.

The tables already in the report are from P3's sample projects. Double-click the table from your project that corresponds to the APEX table. For example, double-click the XXXXACT table for your project (for example, SWDVACT) to replace the APEXACT table. From your project's table, select the same fields that were selected from the sample project's table. Repeat this procedure for each sample project table in the report.

After you select all the tables required for the report, examine the fields that join the APEX tables. Infomaker automatically creates joins between tables when you add them to a report, but these automatic joins may be incorrect. To delete an incorrect join, click the join, then click Delete in the Join dialog box. To create the correct join, click the Join button on the Infomaker toolbar, then select the correct join fields from the tables in your project. Repeat this process until you have created all the correct joins for the report. Click Join on toolbar again to turn off InfoMaker Join mode. Click the Where tab at the bottom of the Design screen. If necessary, modify the first four characters of any table name to match your project name. After all the columns are selected from the new tables, right-click each old table (for example, APEXDIR), and choose Close. Click SQL on the toolbar to return to the report Design mode.

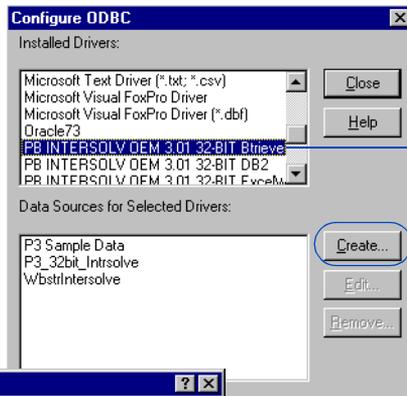
Correct invalid computed expressions After modifying the tables to be used in your report, InfoMaker may display one or more messages in Design mode notifying you that a computed expression (for example, APEXDIR_PROJTITLE), is no longer valid. Click OK in the message box(es), then right-click each object in the report and choose Properties to check for an invalid reference to a table that is no longer part of your report. If any text in the Expression field is contained within /* and */, InfoMaker considers it invalid; click More to correct the problem. Locate the column contained in the Columns dialog box that corresponds to the invalid column and replace the invalid data. For example, you may need to edit a column name (for example, ACTID or APEX_ACID) to refer to your new table name. Also make sure you delete the /* and */ references. Click Apply and OK after making all necessary changes.

Edit report filters Some reports, such as APEX_SCH_DRV_SUCC contain a filter that may need to be revised if you edit the report to use different project tables. To edit a filter, choose Rows, Filter. Replace the four-character table name with your new table name, then click OK.

Store a report environment on the network, so project participants can easily share reports they have created for projects.

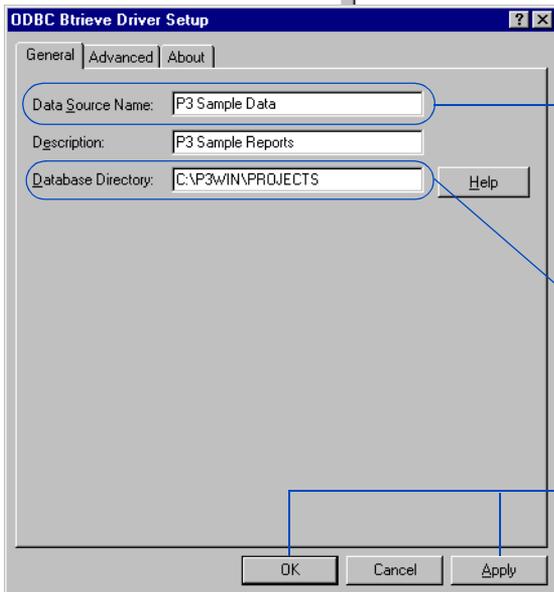
Save the report for your project When you selected the fields from your project tables, InfoMaker added them to the report. Scroll right until you can see these extra fields, then delete them. Choose File, Save, to save the report for your project. Click Preview from the toolbar. InfoMaker displays the report with data from your project.

Create a data source for .DDFs in another folder P3 creates one set of .DDF files for each folder that contains projects. If you have projects stored in a folder other than P3WIN\PROJECTS, you need to create another ODBC data source so that InfoMaker can connect to the .DDF files for the project in that folder. In InfoMaker, click the Configure ODBC icon on the toolbar.



1 Select the PB INTERSOLV ODBC driver.

2 Click to create a new ODBC data source for P3 projects.

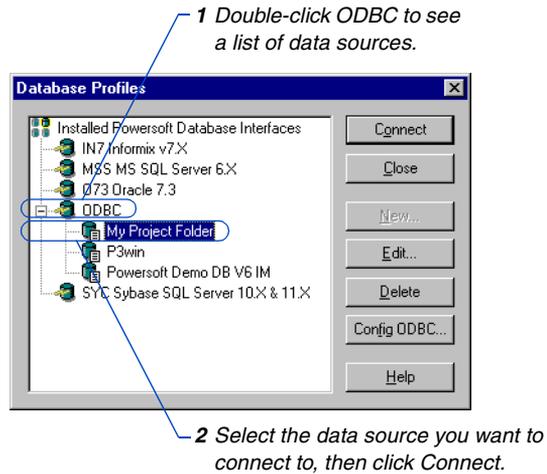


3 Enter a name for the new data source.

4 Type the path to the project files.

5 Click Apply to create the new data source, then click OK.

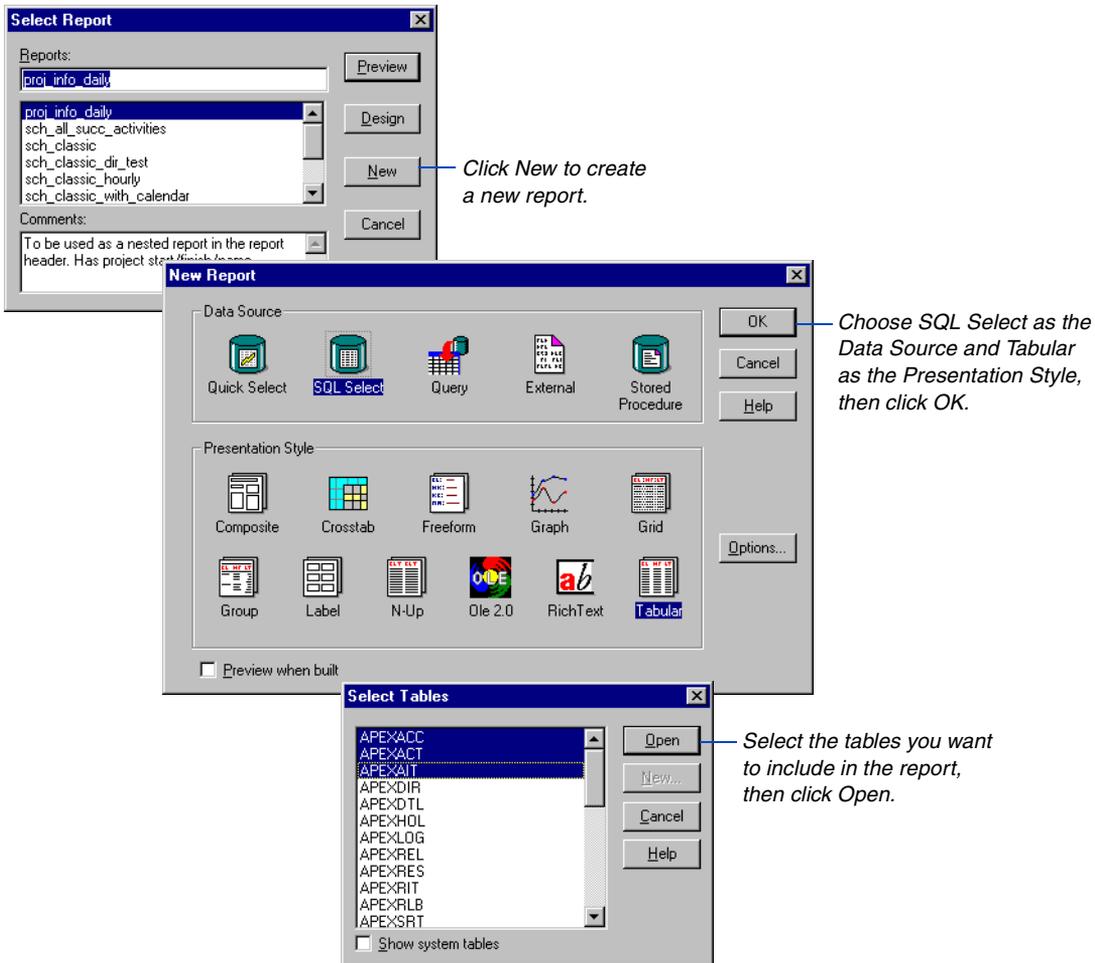
Connect to different data sources If you run reports on a project, you must be connected to the data source that contains that project's data. To connect to another data source, click DB Profiles.



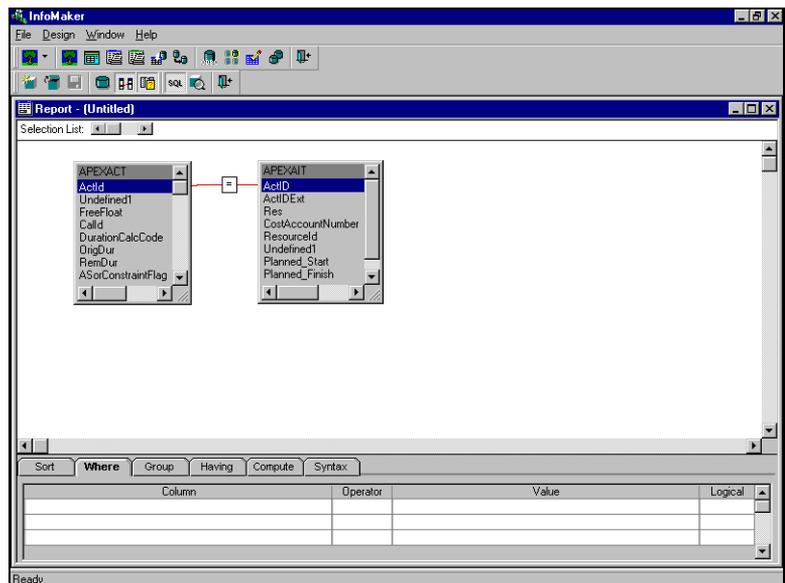
Creating a New InfoMaker Report

Use this section as a basic guide for creating an InfoMaker report using P3 data. Before creating an InfoMaker report, however, we recommend that you review the *Getting Started* section in the *InfoMaker* online *User's Guide*.

Add a tabular report In P3, open the project you want to use for the report, then choose Tools, Update Data Dictionary. Open InfoMaker, open the environment you want to add the new report to, then click Reports on the toolbar.



Join project tables If you have more than one project table in your report, you need to join them using related fields. These fields must contain matching data. For example, the ACT and RES files share the activity ID field in common; therefore you can use the activity ID field to join the two tables. InfoMaker automatically creates joins when you add tables, but the automatic join may be incorrect. To delete these joins, select the join, then click Delete. To create a join, click the Join icon on the toolbar. The cursor changes to a join icon when you move over a table. Select the join column from each table. To leave Join mode, click Join on the toolbar again.



For information on the various formatting features in InfoMaker, review the *InfoMaker User's Guide*.

Select columns to include in the report After you specify the necessary table joins, select the columns from each table that you want to include in the report. Click SQL to return to Design mode where you can format the header, body, and footer of the report, and preview the report.

Publishing Reports on the World Wide Web

In this chapter:

Overview

Defining Categories

Defining Header Information

Defining Projects and Reports

Removing Projects and Reports

Updating Reports

P3's Web Publishing feature enables you to publish project information on the World Wide Web or on an office intranet for others to access.

Use the Primavera Web Publishing Wizard to guide you through the process of creating Web pages that contain the project information you specify. Once the pages are complete, you can transfer them to the Internet or place them on your intranet server. You can also save layouts in HyperText Markup Language (HTML) format in P3. You can then access the information using any Web browser, such as Microsoft Internet Explorer or Netscape Navigator.

This chapter describes how to create and revise documents for use on the World Wide Web.

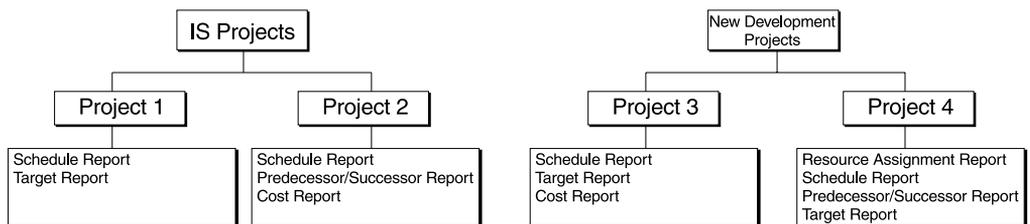
Overview

Since most companies run multiple projects simultaneously, coordination is the key to achieving overall corporate objectives. Each project shares resources with other projects, its activities depend on the accomplishment of activities in other projects, and its information must be available to and shared by participants and management.

To facilitate communicating project data within a company with offices local or worldwide, you can create layouts in P3 and save them in HTML format, and create P3 reports in HTML format using the Primavera Web Publishing Wizard and then place them on a central server—your office network or the Internet.

By publishing project information on a central server, you can maintain a single copy of project layouts and reports, which administrators, management, or individual project managers can access at any time. Using the World Wide Web to disseminate information also supplies the most current project information to remote managers.

Creating a structure of HTML documents Primavera's Web Publishing Wizard creates a hierarchical structure of HTML pages based on the projects and reports you specify. These pages contain hypertext links, or jumps, to the other pages in the structure, enabling you to move between projects and reports and from page to page within a report.



You need only set up the structure once and then, as the projects progress, use the Wizard to add new reports, remove outdated reports, or update existing ones with the latest data.

The first HTML page lists the project categories that have been defined, such as Development Projects, Construction Projects, Information System Projects, and so on. Select a category to display the list of projects, and overview information about each project it contains. Select a project from this list to see the reports that are available. Choose a report to display an HTML page containing that information.

Viewing an HTML structure HTML is a platform-independent language, which means that pages do not have to be viewed using the same type of computer that generated them. Once a P3 manager has created an HTML structure, anyone can use an Internet browser to review HTML documents, whether they are downloaded from the World Wide Web or an office intranet. The following example shows a cost report viewed using a Web Browser.

The screenshot shows a Netscape browser window with the title "[Clinical Research and Development - Cost Report - All Activities]". The browser's address bar is empty. The main content area displays the following information:

Cost Report - All Activities
Clinical Research and Development

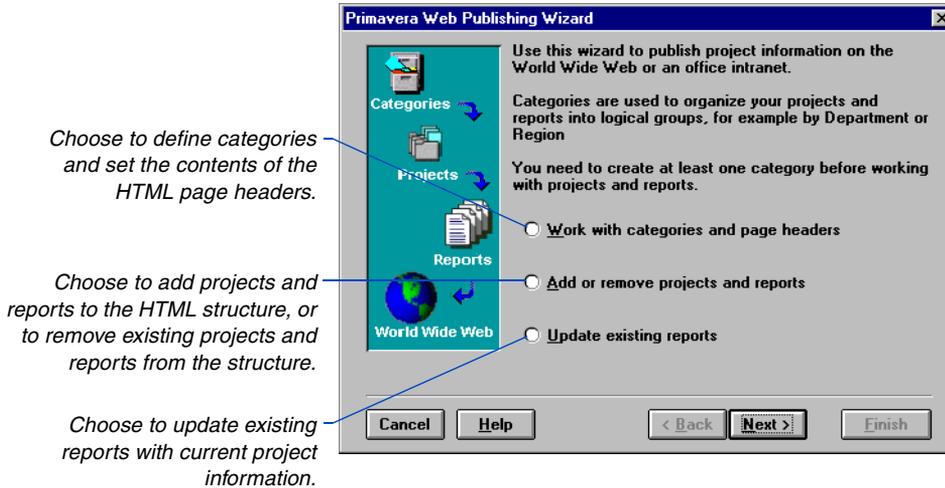
Project Name: CLIN Start Date: 03Jan99 Run Date: 09Jul96
Version: Pharmaceutical Finish Date: 11Jun01 Data Date: 02May99

Act. ID	Description	Rem Dur	PCT	Cost				
				Budgeted	To Date	To Complete	At Completion	Variance
A0005	Scale-up Tablet	63	65	\$72,000.00	\$50,000.00	\$25,200.00	\$75,200.00	(\$3,200.00)
A0015	Validate Manufacturing Process	50	38	\$48,000.00	\$18,000.00	\$30,000.00	\$48,000.00	\$.00
A0025	Final Stability	100	0	\$80,000.00	\$.00	\$80,000.00	\$80,000.00	\$.00
A0065	Pre-NDA Strategy Meetings	42	0	\$4,410.00	\$.00	\$4,410.00	\$4,410.00	\$.00

Using the Primavera Web Publishing Wizard The Wizard helps you designate document categories, choose projects from which to create Web documents, and choose reports to apply to the projects.



If you did not install the Primavera Web Publishing Wizard when you installed P3, the Web Publishing Wizard command on the Tools menu will be unavailable. You can install the Primavera Web Publishing Wizard at any time by running the setup program again and selecting the Primavera Web Wizard option.



To create and maintain HTML reports using the Primavera Web Publishing Wizard

- 1 Define the structure of the projects by establishing categories for your projects.
- 2 Add projects to the categories.
- 3 Add reports for each project; define the reports based on a template or RTF report to disseminate the information for that project.
- 4 Transfer the HTML documents to a central server.
- 5 Update the data contained in the reports at regular intervals.
- 6 Add new reports to projects as they are needed and remove old reports.
- 7 Transfer the updated HTML structure to the central server.

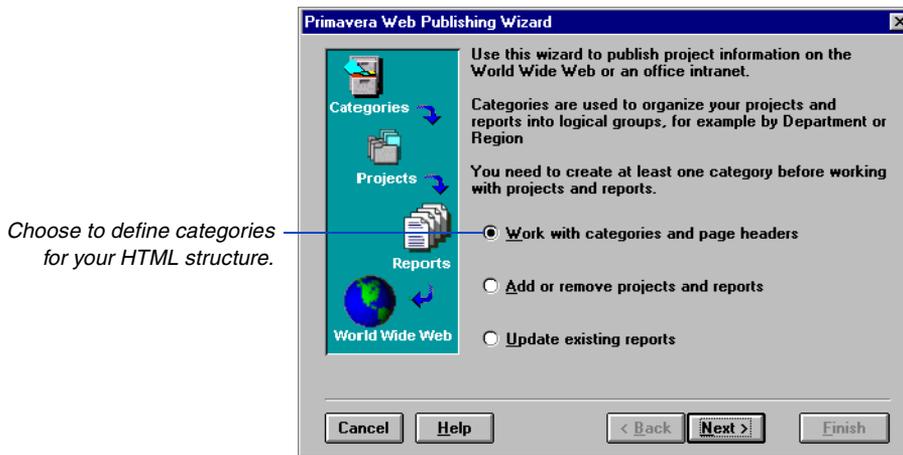


If more than one person will be working with the HTML documents, you should place these files on a network server to facilitate access to the documents.

Defining Categories

Categories are containers used to organize projects into meaningful groups. Establish the categories you require and assign projects to them. If the structure of your Web documents changes later, you can rename categories or reassign projects to different categories.

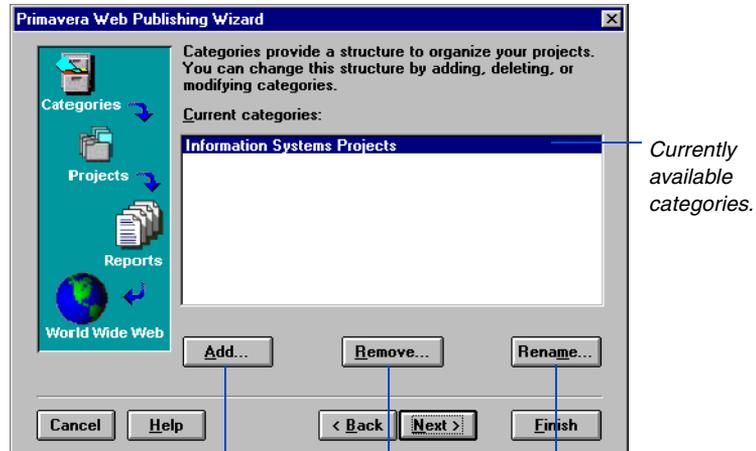
Choose Tools, Web Publishing Wizard to start the Wizard. Move forward through the steps using the Next button, or go back to change an entry using the Back button.



Type or browse the path to the folder where you want to store the HTML files the Wizard creates. This folder can be on your local hard drive or on a network drive, but it must remain constant for the entire document structure.



If more than one person will be working with the HTML documents, you should place these files on a network server to facilitate access to the documents.



Add a new category to the list.

Remove an existing category from the list.

Rename categories keeping the contents of the new category the same as the old.

- If you are creating a new document structure, add the categories that will be necessary to group the projects in the new structure.
- If the existing categories no longer define the overall project structure adequately, or if you decide that a project belongs in a different organizational structure, you can add a new category or categories to the structure.
- Rename a category if the label does not accurately reflect the projects that it includes. When you rename a category, all projects associated with the old category are now associated with the new category. Reassign projects that no longer fit in the new category.



Removing a category also removes the documents for any projects and reports that are associated with the category.

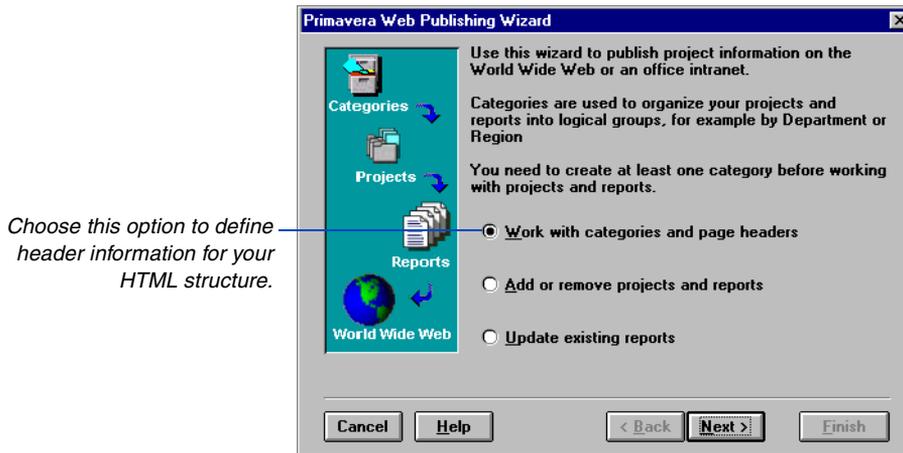
When you finish defining categories, click Continue and the wizard adds the categories to the document structure, then immediately lets you define projects and reports for the categories. To examine the document structure before transferring it to a central server, mark the Open The Reports And Other Documents In Your Web Browser checkbox before you click Finish. To add the categories and exit the wizard, click Finish.



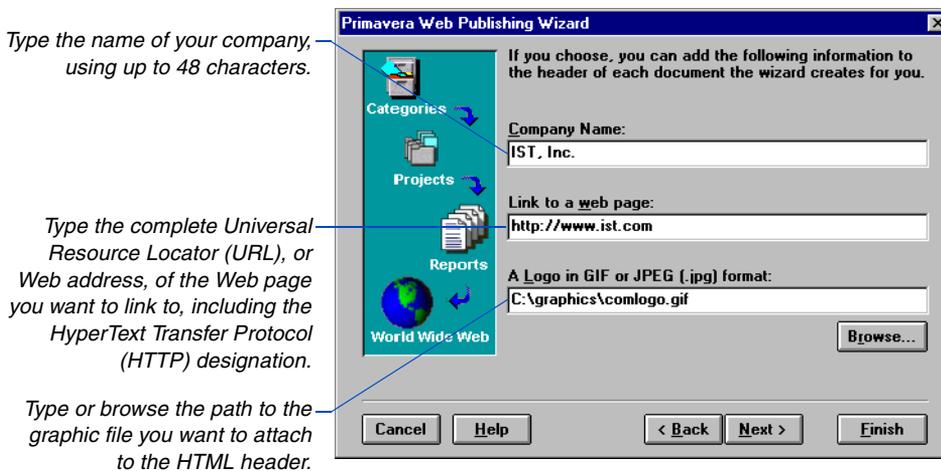
The names for all files and references in your document structure are in uppercase letters. The category page for the document structure is always PRMINDEX.HTM.

Defining Header Information

You can customize your document structure by adding information to the header of each Web page you generate. The header information you designate remains consistent throughout the document structure. Any header information you add is optional. If you do not want to display header information, clear the default settings in the fields and click Next.



Header information can contain the company name, a link to a Web page, and a graphic logo file in .GIF or JPEG (.JPG) format.



Defining Projects and Reports

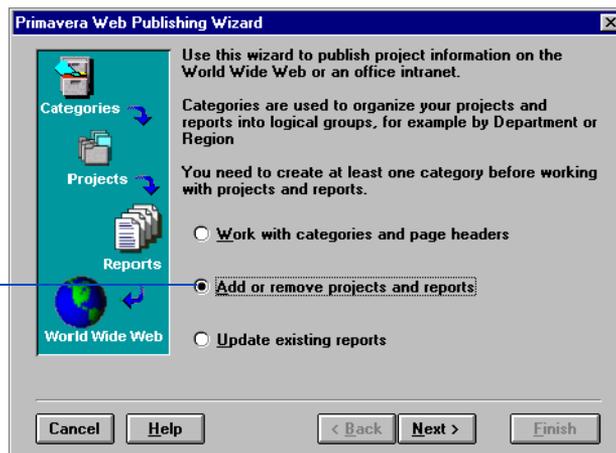
If you have not defined categories for your document structure, see *Defining Categories* earlier in this chapter.

The Primavera Web Publishing Wizard helps you create a structure of HTML documents based on the projects and reports you define. Using the Wizard enables you to keep and manage only one set of documents that others on your team can access using standard Web browsers.

Start the Primavera Web Publishing Wizard Choose Tools, Web Publishing Wizard, or click Continue in the final step of defining categories. Move forward through the steps using the Next button, or return to a previous step using the Back button.

Add project Web pages Select the projects and reports that will form the basis of the HTML structure, or that you want to add to an existing structure.

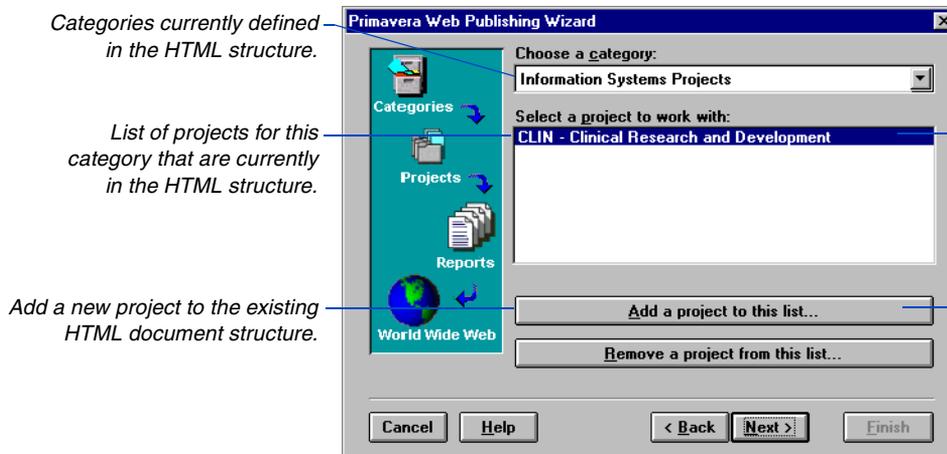
Choose this option to add a new project and define reports for an existing project.



Type or browse the path to the folder where you want to store the HTML files the Wizard creates. This folder can be on your local hard drive or on a network drive, but it must remain constant for the entire document structure.



If more than one person will be working with the HTML documents, you should place these files on a network server to facilitate access to the documents.



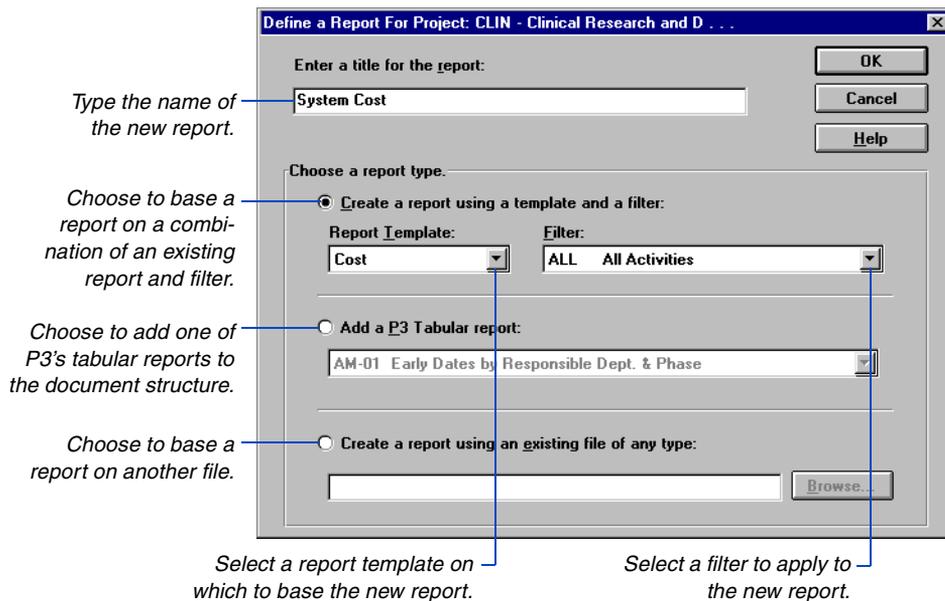
Projects in the hierarchical structure of HTML pages are grouped into categories, such as Development Projects or Information System Projects. You must define categories before you can add projects or reports.

Define reports for projects After you add a project to the HTML structure, define reports for the project to disseminate the project information. Define a set of reports and add those reports to the list. The Primavera Web Publishing Wizard includes five basic report templates:

- Cost Report, showing activity cost information including, Activity ID, Activity Description, Remaining Duration, Percent Complete, Budgeted, To Date, To Complete, At Completion, and Completion Variance Cost.
- Pred/Succ Report, showing activity predecessors and successors including, Predecessor ID, Predecessor Description, Relationship Type, Relationship Lag, Early Start, Early Finish, Total Float, Activity ID, Activity Description, Remaining Duration, Early Start, Early Finish, Total Float, Successor ID, Successor Description, Relationship Type, Relationship Lag, Early Start, Early Finish, and Total Float.
- Resource Assignment Report, showing resource assignments for each activity including, Activity ID, Activity Description, Remaining Duration, Percent Complete, Resource Description, Driving, Units, Budgeted, To Date, To Complete, and At Completion.

- Classic Schedule Report, showing basic activity information including, Activity ID, Activity Description, Remaining Duration, Percent Complete, Early Start, Early Finish, Late Start, Late Finish, and Total Float.
- Target Comparison Report, showing current activity dates compared with target dates including, Activity ID, Activity Description, Original Duration, Remaining Duration, Percent Complete, Early Start, Target Start, Early Finish, Target Finish, and Finish Variance.

You can create a report in the project you selected that contains specific activities by choosing one of the five template reports included with the Primavera Web Publishing Wizard and applying a filter from the project. You can also use one of P3's tabular reports, such as a resource loading report, and convert it to HTML using the Wizard.



After you define the projects and reports that you want to add, click Finish and the Wizard creates the HTML documents. All filenames for these documents are in uppercase letters. Once you create the structure, transfer it to your server.

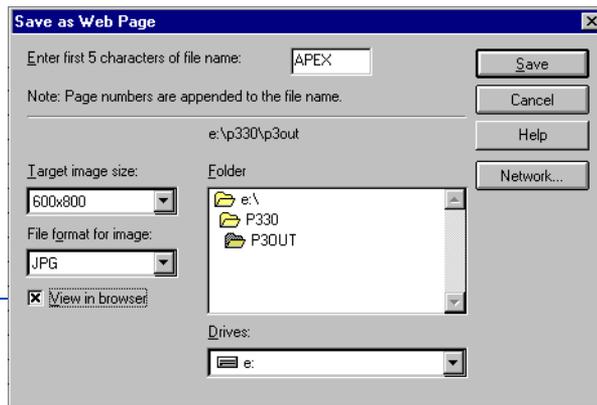
If you want to examine the document structure before transferring it to a central server, mark the Open The Reports And Other Documents In Your Web Browser checkbox before you click Finish. The Primavera Web Publishing Wizard opens the PRMINDEX.HTM file with your browser, allowing you to inspect the document structure.



Reports containing many activities can cause problems with your browser; for this reason, Primavera recommends that you use filters to reduce larger reports into smaller sections.

Save layouts in HTML format In P3, open the layout you want to convert to HTML, then choose File, Save As Web Page. Type a maximum of five characters for the file name (the project name is the default) with no extension; P3 automatically supplies JPG or PNG (port network graphics) format for the layout image, based on your File Format for Image selection. Select the drive and folder location for the layout file, then click Save. P3 saves the HTML file in the location you specify where you can retrieve it for publishing on the Internet or company intranet.

Preview the layout in HTML format immediately.



For more information about File Transfer Protocol, see *Transfer Files to the Internet* in the Web Wizard Help.

Transferring pages to the World Wide Web If you intend to place your HTML documents on the World Wide Web, you will need to transfer them to your server using File Transfer Protocol (FTP). FTP programs are usually available from your Internet provider, or you can download them from their companies' Web sites.

Transfer the entire document structure the first time you create it. When you update the document structure you only need to transfer the updated pages; however, when adding a new report or project to a document structure, the index page(s) for the category or project will be regenerated by the wizard and must also be transferred.

Basing a Report on Another File

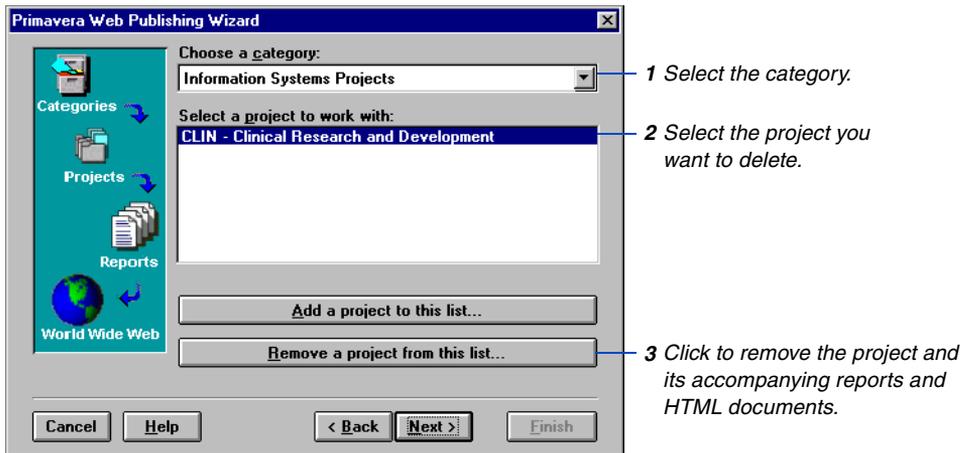
In addition to using the reports provided with the Primavera Web Publishing Wizard, you can base a report on any other type of file. For example, a report can be a .GIF format picture of a construction site, or the schematics for a new circuit board. To base a report on another file type, choose Create A Report Using An Existing File Of Any Type and type or browse the path to the file.

If you choose to base the report on a file type that is not supported by HTML you will need to specify a file association (helper application) on your Web browser in order to view the file. For example, if you add a .PDF (Portable Document Format) file for viewing the layout of a project, define Acrobat Reader as your helper application.

Removing Projects and Reports

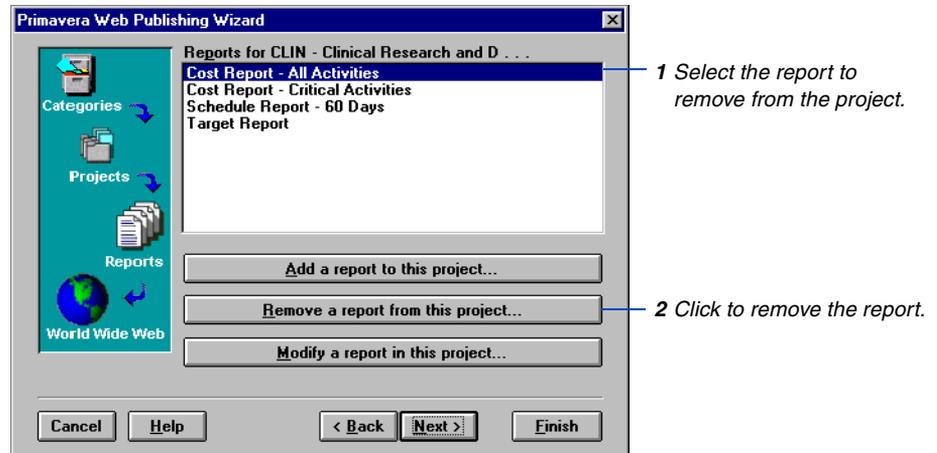
As projects progress, you may find that certain projects or reports are no longer required in your document structure. You can remove these projects and reports from the document structure.

Remove a project Choose Add Or Remove Projects And Reports and type or browse the location of the HTML files.



Removing a project also removes the documents from any reports that are associated with the project.

Remove a report Choose Add Or Remove Projects And Reports and type or browse the location of the HTML files. Select the category and project containing the report(s) you want to remove, then click Next.



For more information about transferring HTML pages to the World Wide Web, refer to *Defining Projects and Reports* earlier in this chapter.

After you specify the projects and reports that you want to remove, click Finish and the Wizard creates the HTML documents. If you want to examine the updated document structure before transferring it to a central server, mark the *Open The Reports And Other Documents In Your Web Browser* checkbox before you click Finish. The Primavera Web Publishing Wizard opens the PRMINDEX.HTM file with your browser, allowing you to inspect the document structure.

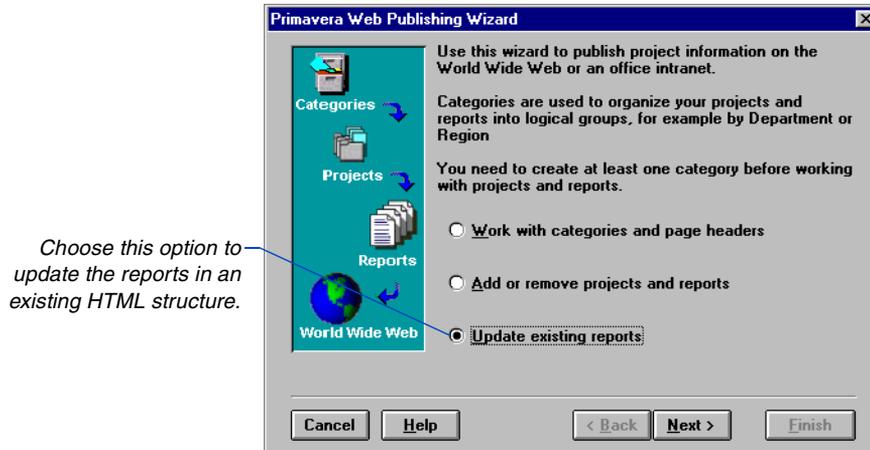
Once you modify the structure, transfer it to your server.



Removing a project or report from the HTML structure does not affect the original project data—it only affects the data within the document structure.

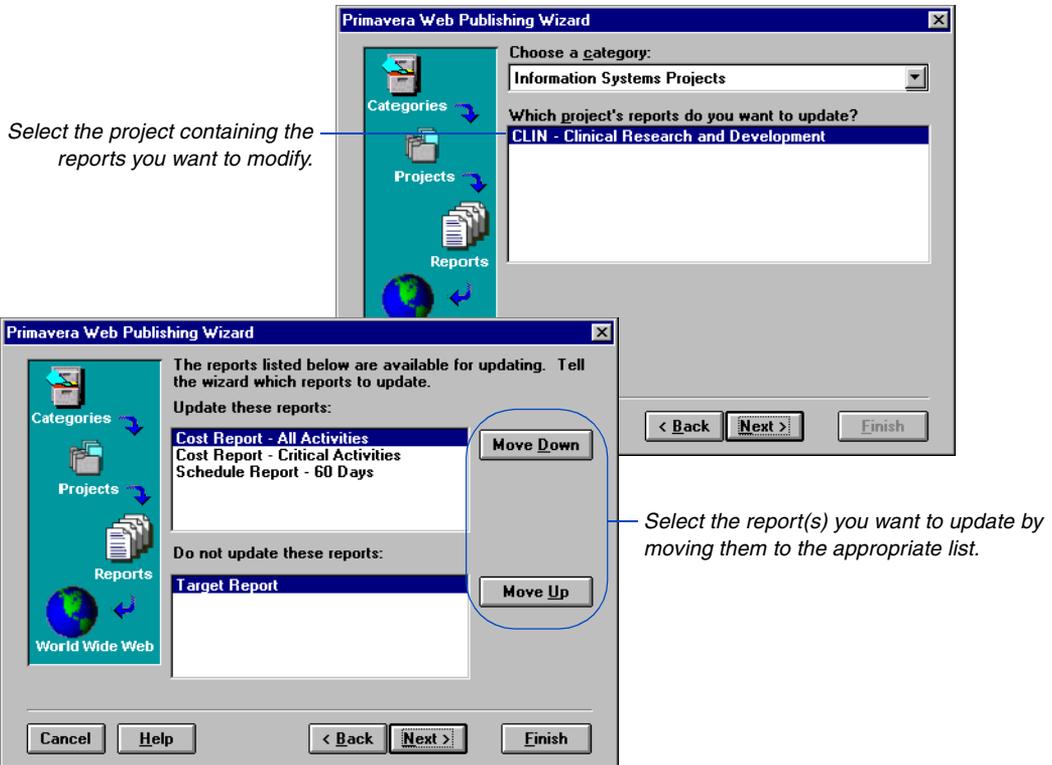
Updating Reports

Once you create a structure of HTML documents, the Primavera Web Publishing Wizard allows you to update the reports in those documents to reflect the changing status of your project.



Type or browse the path to the folder where the HTML files are stored. This folder can be on your local hard drive or on a network drive.

You can update all template-based or tabular reports. To update a report based on another file type, you must delete the original report and re-define the report using the newer file.



For more information about transferring HTML pages to a central server, refer to *Defining Projects and Reports* earlier in this chapter.

After you select the projects and reports that you want to update, click Finish and the Wizard updates the selected reports with the latest data from your project. If you want to examine the updated document structure before transferring it to a central server, mark the Open The Reports And Other Documents In Your Web Browser checkbox before you click Finish. The Primavera Web Publishing Wizard opens the PRMINDEX.HTM file with your browser, allowing you to inspect the document structure.

Once the reports are updated, transfer the latest structure to your server.

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5. **WARRANTY.** Primavera warrants that, for ninety (90) days from the date of invoice (the "Warranty Period"), (i) the SOFTWARE will perform substantially in accordance with Primavera's applicable functional specifications, and (ii) the electronic media on which the SOFTWARE is distributed is free from defects in materials and workmanship. The foregoing warranty is expressly conditioned on your observance of the operating procedures set forth in the written materials accompanying the SOFTWARE. The foregoing warranty shall not apply if the SOFTWARE has been damaged or misused in any respect. **PRIMAVERA DOES NOT WARRANT THAT THE SOFTWARE WILL MEET YOUR REQUIREMENTS OR OPERATE UNINTERRUPTED OR ERROR FREE. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, PRIMAVERA DISCLAIMS ANY AND ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

6. **EXCLUSIVE REMEDY.** Your sole and exclusive remedy for breach of the above warranty is that Primavera shall, if it receives written notice of such breach during the Warranty Period, at its sole option, either (a) correct or cure any reproducible defect in the SOFTWARE in breach of such warranty within a reasonable time by issuing corrected instructions, a restriction, or a bypass, or (b) refund the price paid by you for the SOFTWARE. In the event Primavera furnishes a correction or cure pursuant to clause (a), Primavera shall warrant such correction or cure for the remainder of the original

Warranty Period or sixty (60) days, whichever is longer. OUTSIDE THE UNITED STATES, THESE REMEDIES ARE NOT AVAILABLE WITHOUT PROOF THAT YOU ACQUIRED THIS COPY OF THE SOFTWARE FROM AN AUTHORIZED SOURCE.

7. **LIMITATION OF LIABILITY.** In no event shall Primavera or its suppliers be liable to you or any third party for indirect, special, incidental, economic, consequential or punitive damages (including, without limitation, damages for loss of business profits, business interruption, loss of business information, liabilities to third parties arising from any source, or other pecuniary loss), regardless of the nature of the claim, arising out of the use or inability to use the SOFTWARE, even if Primavera has been advised of the possibility of such damages. In no event shall Primavera's liability exceed the amount paid by you for the SOFTWARE. This limitation of liability is intended to apply without regard to whether other provisions of this Agreement have been breached or have proven ineffective.

8. **AUDIT.** Primavera may, at any time, either request a signed certification by you verifying that the SOFTWARE is being used in accordance with the terms of this Agreement and/or audit your use of the SOFTWARE to ensure compliance with the terms and conditions of this Agreement.

9. **U.S. GOVERNMENT RESTRICTED RIGHTS.** The SOFTWARE is provided with RESTRICTED AND LIMITED RIGHTS. If the SOFTWARE is supplied to the Department of Defense ("DoD") of the United States Government, the SOFTWARE is classified as "Commercial Computer Software" and the DoD only acquires "restricted rights" as defined in Clause 252.227-7013(c)(1) of DFARS. If the SOFTWARE is supplied to any other unit of the United States Government, the Government's rights are as defined in Clause 52.227-19(c)(2) of FAR or, in the case of NASA, as defined in Clause 18-52.227-86(d) of the NASA Supplement to the FAR.

10. **CONFIDENTIALITY.** You acknowledge and agree that: (i) the SOFTWARE and accompanying written materials are confidential; (ii) you will instruct and require all of your employees, agents, and contractors who have access to the SOFTWARE and accompanying written materials to maintain the confidentiality thereof; (iii) you will exercise the same degree of care, but not less than reasonable care, to safeguard the confidentiality of the SOFTWARE and accompanying written materials as you would exercise to safeguard the confidentiality of your own confidential property; and (iv) you will disclose the SOFTWARE and accompanying written materials only to those employees, agents or contractors required to have knowledge of same to perform their duties and whom have agreed in writing to abide by the confidentiality obligations of this Agreement. The foregoing confidentiality provisions shall not apply to any information which (i) you can demonstrate was in your possession prior to receipt, (ii) is or subsequently becomes publicly available without your breach of any obligation owed the disclosing party; (iii) is disclosed to you without restriction on disclosure by a third party who had the right to disclose such information, or (iv) you can demonstrate by written records was independently developed by you without reliance on the SOFTWARE or accompanying written materials.

11. **TERM.** This license is effective upon your completion of registration of the SOFTWARE with Primavera, and shall continue until terminated. You may terminate this license by returning the SOFTWARE, the accompanying written materials and all copies thereof to Primavera. Primavera may terminate this license upon the breach by you of any provision contained in this Agreement. Upon such termination by Primavera, you agree to return the SOFTWARE, the accompanying written materials and all copies thereof to Primavera.

12. **CANADIAN LICENSES.** If you obtained this product in Canada, you agree to the following: The parties confirm that it is their wish that this Agreement, as well as other documents relating to this Agreement, including notices, have been and shall be written in the English language only. Les parties aux présentes confirment leur volonté que cette Convention de même que tous les documents y compris tout avis qui s'y rattache, soient rédigés en langue anglaise.

13. **MISCELLANEOUS.** You may not assign, delegate or otherwise transfer this Agreement or your rights or obligations hereunder without the prior written consent of Primavera. This is the entire agreement and understanding between you and Primavera with respect to the subject matter hereof, and supersedes all prior agreements, representations, negotiations, proposals and understandings, whether written or oral, including those made by sales representatives or dealers of Primavera, concerning the subject matter hereof. This Agreement may not be amended or modified except in writing and signed by authorized representatives of the party against whom the amendment is sought to be enforced. The waiver or failure by either party to claim a breach of any provision shall not be a waiver of any other provision or a subsequent breach of the same provision. Any notices required or permitted to be given to under this Agreement shall be in writing and delivered in person or sent by registered or certified mail, return receipt requested, if to Primavera, to the Vice President of Finance, Primavera Systems, Inc., Three Bala Plaza, Bala Cynwyd, Pennsylvania 19004, and if to you, addressed to your registered user at your registered address. This Agreement shall be governed by the laws of the Commonwealth of Pennsylvania, without regard to conflicts of law principles. The application of the United Nations Convention on Contracts for the International Sale of Goods is expressly excluded.