Chapter 1

Why Are You Here?

Chapter 2

Overview of Project Management

Chapter 3

Overview of Microsoft Project

The Flow of Project Management Software

Project 2010 was designed to help the Project Manager schedule the work of a project and monitor the progress of the project. Some of the high level capabilities of Project 2010 are:

1. The ability to plan and manage a project using Work Breakdown Structure (outline) format
2. Work, duration and cost planning, forecasting and tracking
3. Flexible reporting capabilities and customization
4. Ability to interface with Project Server and Project Portfolio Servers to allow for integration of projects and resource management within an organization (Professional version only)
5. Project 2010 allows for both manual and automatic project scheduling
6. Resource management – planning and forecasting
7. Budget forecasting and tracking
8. Baseline and variance reporting
9. Schedule predictability and what-if scenarios
10. Dynamic schedule management

Project management software has a flow which reflects the project management process:

1. Projects are defined and the decision is made to perform the project
2. More indept planning is conducted to elaborate the tasks, resources and work required to complete the project
3. Projects will start to be performed
4. Tracking information of how the working is getting accomplished is feed back to the project manager and updated into the schedule
5. Stakeholders request changes to the product of the project
6. Reports are produced to reflect project status and schedule
7. Steps 4-6 are repeated until the project is completed
8. When the project is completed a transition will be made to incorporate the product of the project into the businss process.
9. Reflection is made as to how the project was performed looking for process improvement.

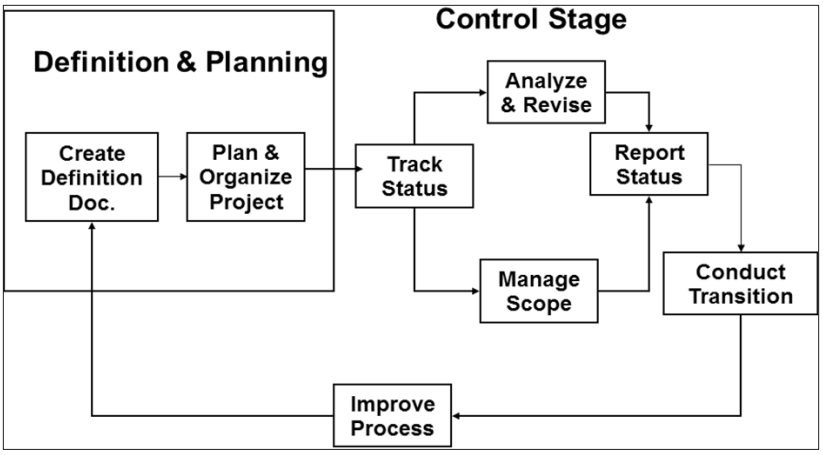

Figure 3-1 PLACEHOLDER

Project 2010 was developed in two versions of project management software:

1. Project 2010 Standard is a desktop application and is considered a stand alone schedule management tool. There are capabilities for managing individual projects as well as management of multiple projects with a shared resource pool.
2. Project 2010 Professional has all of the features of Project 2010 Standard and has the ability to allow publishing of projects to a server environment. This allows for collaboration, communication and resource sharing across projects. A web application is available for on-line project planning, resource updates, and inquiries.

Why Use Microsoft Project?

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What Microsoft Project Will Do for You

Formulate a Strategy

Before a project schedule is created, define what information you are hoping your schedule will return for the work and time you devote to the using the schedule. .

Set your goals for the project schedule:

1. Define the type of information your project schedule should return?
   a. When performing home remodeling you might be interested in when to schedule the contractors.
   b. When developing a software module you might be interested in estimating work hours of resources and costing.
   c. When performing annual maintenance of machinery you might be interested in the timeline and the number of resources needed to accomplish the project.
2. Different projects, by nature, require different levels of detail and tracking. Decide what is right for the project you need to accomplish. The more detail the more complex the schedule will become.
3. What type of metrics (field values ie: work, cost, duration, earned value, etc) will your project management and post-project reporting require?
4. How will you track your project?
5. What are your Stakeholders status reporting expectations? Define at the column level.
6. How much work are you as a project manager willing to do to achieve desired results?

   If Project Managers preplan the requirements and the outputs of the project schedule, the schedule will be more productive and result in more valid data.

   Project Managers have a tendency to make the project schedule

become the project. Preplanning will help project managers avoid this pitfall.

Success Checklist

Checklist to help plan a schedule more effectively:

1. **Goals**: Set the output goals of the schedule. Ask yourself: Management of the schedule is useful when I get what type of information from the schedule?
2. **Schedule**: Is the schedule a checklist of activities or is it tasks that will be managed? If it is a checklist, should it be an Excel list? If one task is late, should it change the dates for future related tasks?
3. **Reporting**: Request details of the content of status reporting required for the project from management. This will help in knowing which pieces of information you will need to focus on during schedule creation and management. It will also help set expectations for stakeholders.
4. **Data**: Gather requirements for data reports: by week? by department? by variance to baseline? etc. Some of this information will be standard in Project 2010 and some will be created using customization features.
5. **Tracking**: Are tasks required to be tracked by the number of hours worked per task or is tracking by percent complete sufficient? Defining the tracking of the project will be tied to the type of metrics that the project schedule will produce.
6. **Earned Value (EV)**: if measuring EV is a requirement, more task details, estimating, baseline and tracking details will be required. This will likely result in more work for the project manager. Is help available for managing the project schedule?
7. **Resources**: What kind of reporting requirements will resources be responsible for during the project and how will the data be used. Will resource availability be updated collected and updated to the project schedule?

Defining output requirements of the schedule will in turn define the benefits of creating and maintaining the schedule. Establishing these goals will help the project manager focus on the benefits of the schedule for each specific project.

Microsoft Project Usage: More Detail, More Work, More Results, Less Detail, Less Work, Less Results

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Versions of Project: Standard, Professional, Office 365, Multiple Versions in 2013

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Overview of Database

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Review of the Ribbon, Back Stage, Quick Launch

Exploring the Ribbon

The Ribbon is the new Fluent User Interface which you will find across Microsoft Office products. While it might look daunting at first, you will be pleased to know that features formerly hidden in a series of menus and submenus are now easy to find and there are new features available right at your fingertips. The series of tabs located at the top of the Ribbon represent the different sectors of work, such as resource management or task management. Starting with the Task tab, you will see it is divided into logical sections called groups. The group names are listed just below a collection of buttons. Buttons that are larger indicate a feature that is frequently used. Some of the important advantages to the Ribbon include:

- Everything is organized on tabs by subject area.
- Information on the Format tab automatically responds to the current working environment and provides “view” relevant buttons. Notice the view-specific heading above the Format tab.
- The size of the buttons adjust based on your available window or screen size so you don’t lose any capabilities, while maintaining maximum work area screen real estate.
- Features are available in a quick one- or two-click fashion.
- You can tailor the Ribbon by adding and/or removing features or by adding a new tab.

The File tab is unique and will be addressed in the next section.

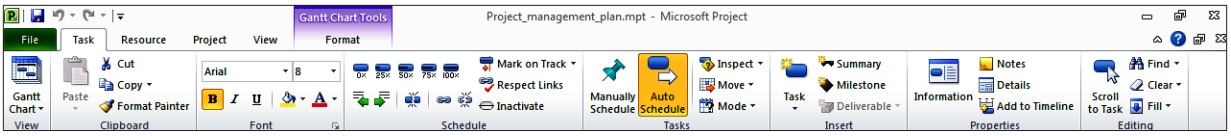


Figure 3-2 Microsoft Project 2010 Ribbon

The Ribbon can be configured to auto-hide or auto-display giving you valuable screen space as you work on your schedule. To set this, click the “minimize the Ribbon” symbol in the upper right-hand corner of the screen.

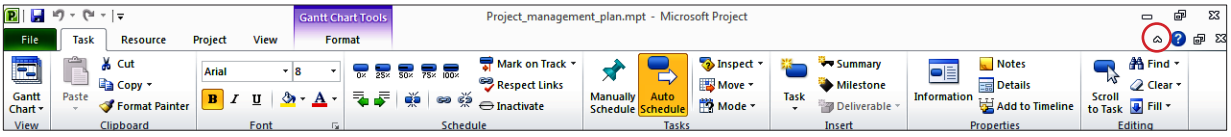


Figure 3-3 Project Ribbon – Expanded

To disable this feature, click the “Expand the Ribbon” symbol in the upper right-hand corner of the screen.

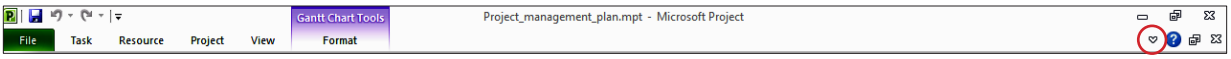


Figure 3-4 Project Ribbon – Minimized

Backstage View (File Tab)

To centrally locate file management activities, they are located on the File tab. Think of what you “do to the entire file” when you enter this area. This area is now known as the Backstage View. Some of the features available include:

- New, open, close, save, and print.
- Connect with SharePoint and create PDF/XPS files.
- Project Options – aligning options to all new projects or only specific projects.

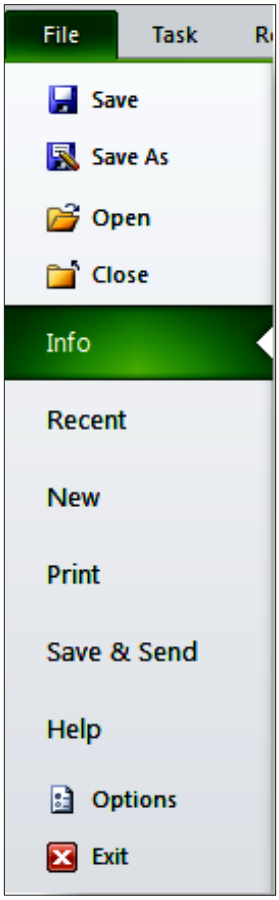


Figure 3-5 Backstage View (File Tab)

To exit Backstage View either click the **File** tab again or click the **Task** tab. Clicking **Exit** will close Project.

Sample Views and Navigation Stuff

Task Views

Task views are accessed through the **Task** ribbon and **Gantt Chart** button located under the Gantt Chart icon. An alternate access point is through the View ribbon. All Gantt Charts contain both the graphic side of the view as well as a table for additional data viewing. All views are available through:

Task ribbon → button under Gantt Chart icon → more views

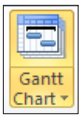


Figure 3-6 PLACEHOLDER

The following is a summary of the most frequently used Task views:

Gantt Chart – the Gantt Chart is a graphic representation of the start and finish dates for a task. In addition to graphic bars, relationship arrows are also displayed. Gantt Charts will have a data table on the left side of the view called the Task Sheet. The default table of data is included called the Entry table which contains fields designed to aid in the planning and scheduling of tasks. The timescale in the view may be adjusted to show different time density timelines. Below is an example of the Gantt Chart view.

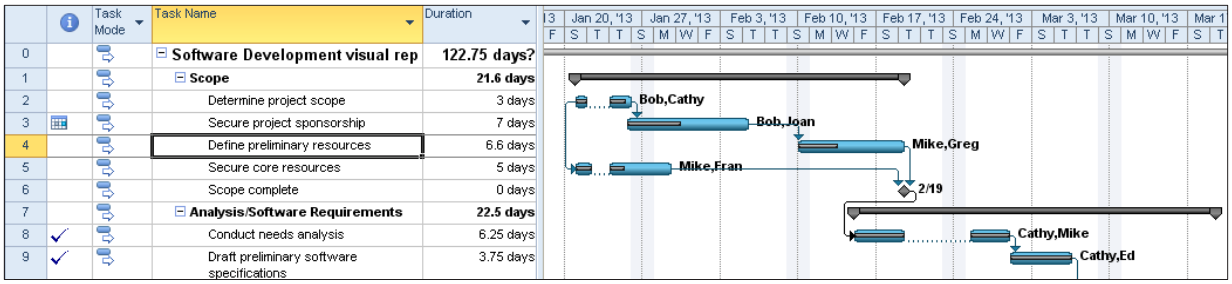


Figure 3-7 PLACEHOLDER

Tracking Gantt – this view will graphically represent of the start and finish dates of a task like the Gantt Chart above but is designed to help during the tracking phase of the project schedule. Percent complete and comparison of baseline versus actual values and future plan are displayed. In the example below, the beige Gantt bars are the baseline and the blue bars is the running schedule.

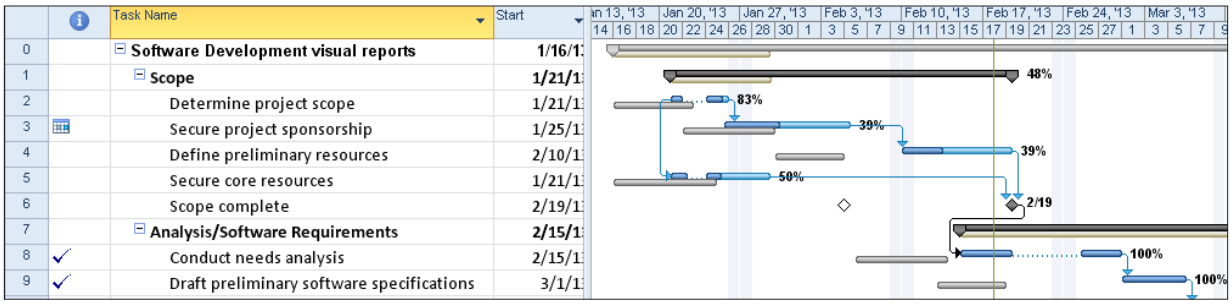


Figure 3-8 PLACEHOLDER

Network Diagram – The Network diagram is designed as a precedence diagram. It shows the predecessors and successors of tasks without regard to timeframe. When in the Network Diagram view, clicking on **Format → Box** styles will explain details about the information represented in the Network Diagram. Double clicking on a task will allows access to task information.

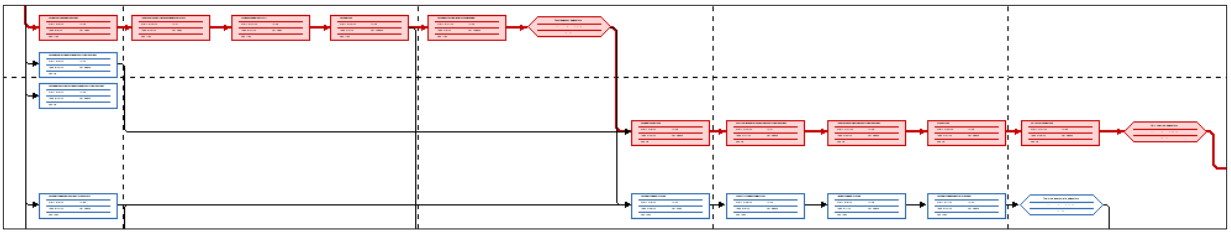


Figure 3-9 PLACEHOLDER

Calendar view – The calendar view shows the project schedule on a calendar. Date range is available as well as limited customization. Double click on any task name to see more information regarding the tasks. Some customization of the view is available.

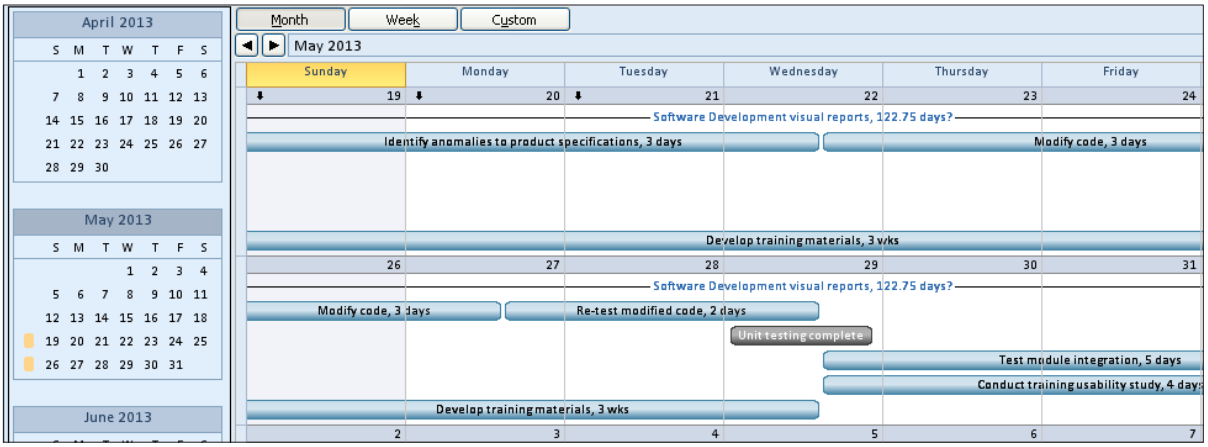


Figure 3-10 PLACEHOLDER

Task Form – The task form shows information about individual tasks. Right clicking in the view will allow changing to 8 different views for task data such as predecessor and successor, resource work, and resource schedule. The Task Form is a light version of the Detail Task Form which contains more per task data.

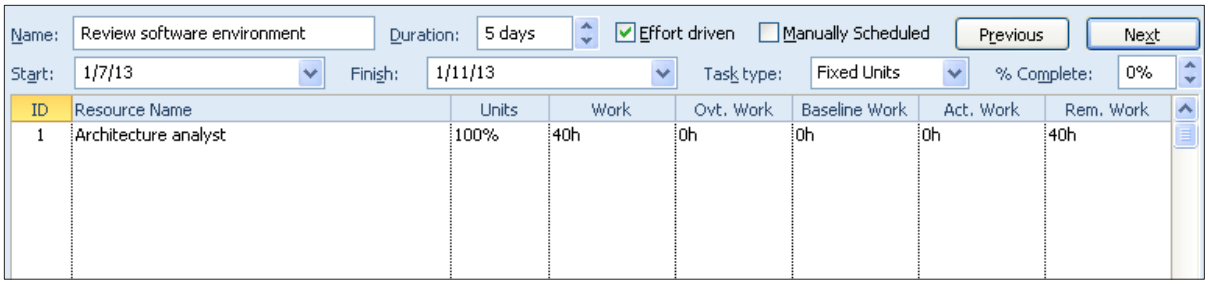


Figure 3-11 PLACEHOLDER

Task Sheet – The task sheet view looks like an Excel table. It is a table of data which is a subset of the approximately 300 fields of the task section of the database. Tables are typically 6-10 columns of data, organized by topic. Some of the most used tables are: Entry, Work, Duration, and Tracking. To switch to another table view, right click in the box above the task numbers and select another table from the list. Another access point is:

View → Tables

	Task Name	Duration	Start	Finish	Predecessors	Resource Names	Add New Column
0	**Infrastructure Deployment**	**141.25 days**	**1/1/13**	**7/17/13**			
1	**Infrastructure Deployment Template**	**141.25 days**	**1/1/13**	**7/17/13**			
2	**Scope**	**4 days**	**1/1/13**	**1/4/13**			
3	Determine project scope	1 day	1/1/13	1/1/13		Project management	
4	Secure project sponsors	1 day	1/2/13	1/2/13	3	Project management	
5	Define preliminary resou	1 day	1/3/13	1/3/13	4	Project management	
6	Secure core resources	1 day	1/4/13	1/4/13	5	Project management	
7	Scope complete	0 days	1/4/13	1/4/13	6		
8	**Analysis**	**30 days**	**1/7/13**	**2/15/13**			
9	**Review Current Infrastructure**	**5 days**	**1/7/13**	**1/11/13**			
10	Review hardware environment	5 days	1/7/13	1/11/13	7	Architecture analyst	

Figure 3-12 PLACEHOLDER

Timeline View – The Timeline View is a very flexible and customizable view. Tasks may be selected to appear on the timeline to give high level reporting capability. In addition, the timeline has the ability to highlight the timeframe it is representing. The Timeline View may be turned when needed on the from the **View** → click box to the left of the timeline option. Formatting is available to colorize the view. Comments and milestone markers may also be added. The Timeline view will be discussed in Module

10.

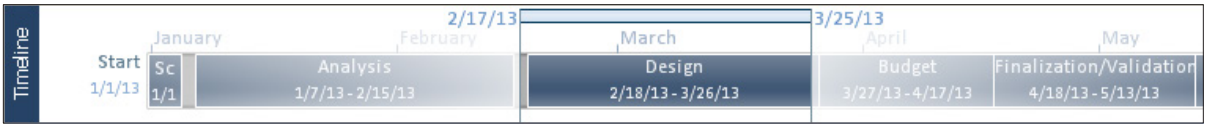


Figure 3-13 PLACEHOLDER

Task Usage – The Task Usage view shows tasks and the resources assigned to the task. Data in this view comes from the Task and Assignment data sections of the database. By default, the work field of data is shown on the right but additional fields may be added to customize the report and make it more usable. The example below is showing when a task is scheduled and the cost of the resource working on the task by week.

		Task Mode	Task Name	Work	Details	bruary 1		March 1		April 1
						2/3	2/17	3/3	3/17	3/31
7			**Analysis/Software Requirements**	**236 hrs**	Work	16h	100h	108h	12h	
					Cost	$1,600.00	$10,000.00	$10,800.00	$1,200.00	
8	✓		Conduct needs analysis	100 hrs	Work	16h	84h			
					Cost	$1,600.00	$8,400.00			
			Mike	*50 hrs*	Work	8h	42h			
					Cost	$800.00	$4,200.00			
			Cathy	*50 hrs*	Work	8h	42h			
					Cost	$800.00	$4,200.00			

Figure 3-14 PLACEHOLDER

Resource Views

Resource views are accessed through the Task ribbon and Gantt chart button under the Gantt Chart icon. They can also be accessed from the Resource ribbon by clicking on the words Team Planner button which is the first button on the on the left side of the ribbon. All views are available through:

Task ribbon → button under Gantt Chart icon → More Views

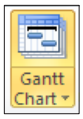


Figure 3-15 PLACEHOLDER

Resource Sheet – The resource sheet provides the table where resources are added into Project 2010. This table is a subset of the over 300 resource data fields available for resources. The default table is called the Entry table. Other tables are available by right clicking in the in the box above the resource number one and selecting another table. Tables are organized by topic.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Architecture analyst	Work		A		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard
2	Project management	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard
3	Deployment resc	Work		D		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard
4	Procurement	Work		P		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard
5	Management	Work		M		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard

Figure 3-16 PLACEHOLDER

Resource Form - The Resource Form shows information and assignments for individual resources. Right clicking in the view will allow changing to 5 different views which shows the resource assignment data in different ways. The Resource Form is very useful for viewing resource cost, work and schedule information by resource.

Name: Bob Initials: B Max units: 100% Previous Next

Costs
Std rate: $100.00/h Per use: $0.00
Ovt rate: $0.00/h Accrue at: Prorated

Base cal: Standard
Group:
Code:

Project	ID	Task Name	Units	Work	Ovt. Work	Baseline Work	Act. Work	Rem. Work
Software Deve	2	Determine project scope	100%	20h	0h	16h	20h	0h
Software Deve	3	Secure project sponsorship	100%	41h	0h	32h	22h	19h
Software Deve	14	Obtain approvals to proceed (concept,	100%	8h	0h	4h	8h	0h
Software Deve	21	Review functional specifications	100%	16h	0h	16h	0h	16h
Software Deve	22	Incorporate feedback into functional s	100%	8h	0h	8h	0h	8h
Software Deve	23	Obtain approval to proceed	100%	4h	0h	4h	0h	4h

Resource Form

Figure 3-17 PLACEHOLDER

Resource Graph – The Resource Graph will show work and cost val-

ues in graphic format for individual resources. The timeline of the graphic display may be altered to show reports at the time density which is most meaningful for the report. Customization is available to change the graphic layout and data included.

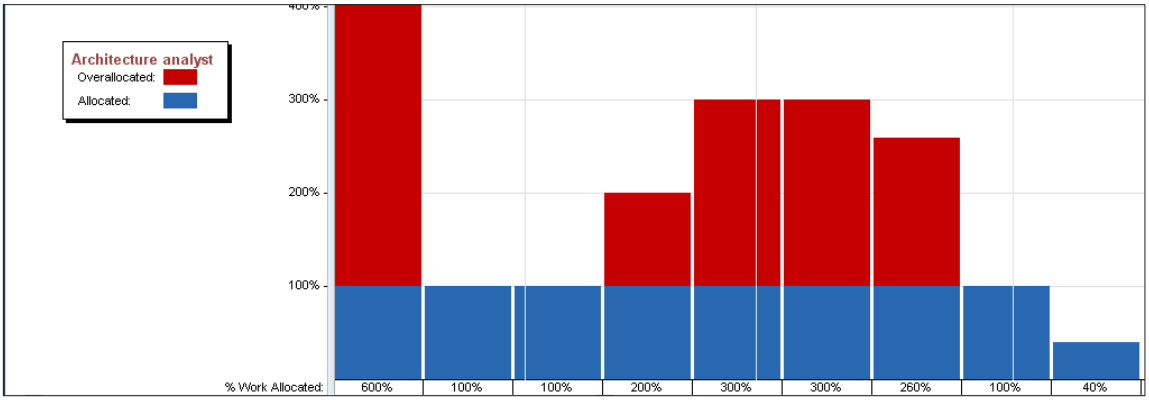


Figure 3-18 PLACEHOLDER

Team Planner – the Team Planner view is also known as a swim lane view. It will show the work of the resources in timeline format. It will also allow for moving task assignments between resources and to alternate timeframes. This will be a very helpful view for resource leveling and smoothing out work loads. It will also show tasks without assignments. This view is available for Project 2010 Professional only.

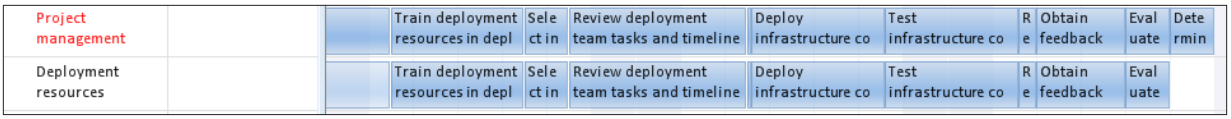


Figure 3-19 PLACEHOLDER

Resource Usage– The Resource Form is a view that shows resources and the tasks assigned to resources. Data in this view comes from the Resource and Assignment data sections of the database. By default the work column is shown on the right side of the screen. In the view below the remaining resource availability has been added.

3	Deployment resources	Work	40h	40h	36h	40h	40h	32h	40h	40h	40h	40h	40h	18h
		Rem. Avail.	0h	0h	4h	0h	0h	8h	0h	0h	0h	0h	0h	22h
	Develop detailed implementation strategy	Work	40h											
		Rem. Avail.												
	Validate implementation strategy in test environment	Work		24h										
		Rem. Avail.												
	Review implementation strategy noting other initiatives	Work		16h										
		Rem. Avail.												

Figure 3-20 PLACEHOLDER

Zoom Ribbon Section, Insert/Hide Column/Timescale/Scroll to Task

Zooming In and Out

Zooming in or out is the way to adjust the bar chart or time scale portion of a view to show more or less detail. For example, you can display Gantt bars across a daily time scale or across a quarterly time scale.

Two popular methods for zooming in and out are using the Zoom Slider and the Zoom options on the View tab. The Zoom Slider is recommended since that option is always displayed even when you navigate to another view.

- You can click the minus and plus buttons to zoom out and zoom in.
- You can drag the zoom indicator in between the zoom out and zoom in buttons.

Figure 3-21 Zoom Slider

Remove or Add a Column

When you hide a column in Project 2010, the column is only removed from view, not deleted from your plan. Keep in mind that hiding a column doesn't remove any information from your plan.

Hide or Remove a Column

To hide a column from a sheet view:

1. In a sheet view, select the column you want to hide by clicking its title.
2. This displays the **Gantt Chart Tools** tab with the **Format** tab underneath in the Ribbon.
3. In the **Format** tab, **Columns** group, click **Column Settings**.
4. Click **Hide Column**. You can also press the **`delete`** key on your keyboard.

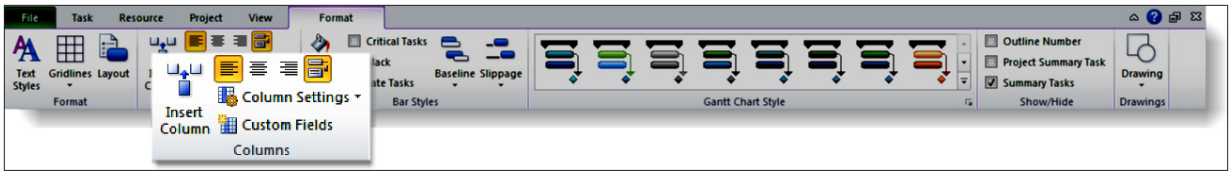


Figure 3-22 Hide or Remove Column Icons

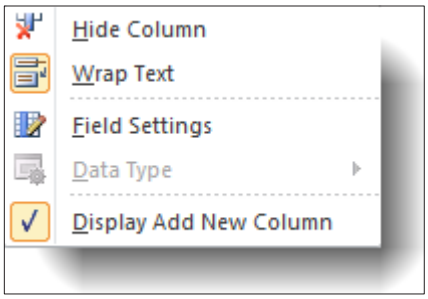


Figure 3-23 Column Settings Dropdown Menu

Add a Column

To add a new column:

1. In a sheet view, select the column to the right of where you want to insert the column.
2. This displays the **Gantt Chart Tools** tab with the **Format** tab underneath in the Ribbon.
3. In the **Format** tab, **Columns** group, click **Insert Column**.

4. A new blank column is displayed to the left of the column that you had selected. Click the dropdown arrow in the title box to specify the type of information from the list of possible column types (or fields) that the column will contain.

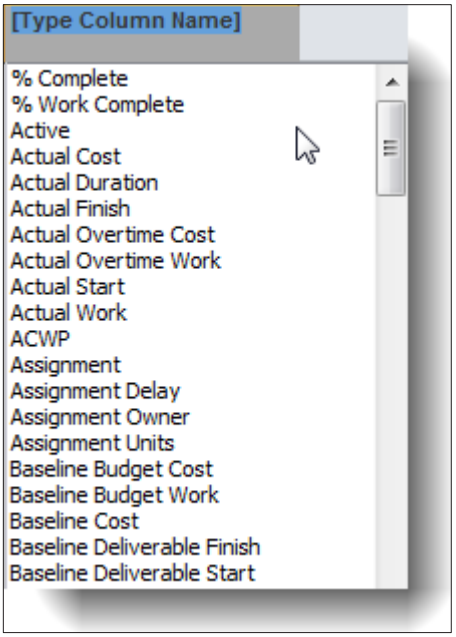
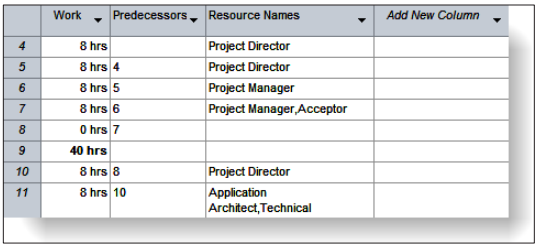


Figure 3-24 Add New Column

Also at the end of every table in a Sheet view (the far right) there is an **Add New Column** option available.



	Work	Predecessors	Resource Names	Add New Column
4	8 hrs		Project Director	
5	8 hrs	4	Project Director	
6	8 hrs	5	Project Manager	
7	8 hrs	6	Project Manager,Acceptor	
8	0 hrs	7		
9	40 hrs			
10	8 hrs	8	Project Director	
11	8 hrs	10	Application Architect,Technical	

Figure 3-25 Add New Column in View

To unhide a previously hidden column, insert the column as you would with any new column.

Using the Scroll to Task Button

Using the Scroll to Task button re-centers the bar chart on the date where a selected task occurs.

To use this feature, complete the following steps:

1. In the **Entry** table, select the task you want to have displayed in the bar chart.
2. On the **Task** tab, **Editing** group, click the **Scroll to Task** button.

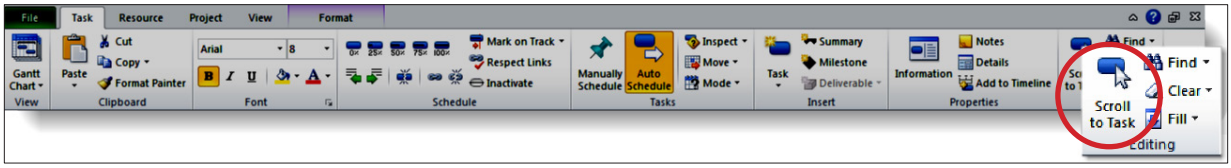


Figure 3-26 Scroll to Task Icon

Project displays the date or dates where the selected task occurs on the bar chart.

Conversely, you can view the name of a task in the Entry table by clicking on its bar in the bar chart. Project will highlight the corresponding task in the Entry table.

Go To and Find

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Keyboard Shortcuts

Key Tips allow you to use your keyboard to navigate through the Quick Access Toolbar and the Ribbon. To turn on Key Tips, simply tap the `Alt` key. You can also press `F10` twice. Follow the letters and numbers that are displayed to use the function you desire.

You can also use keyboard shortcuts to navigate through your project. The following table lists keys that are useful when navigating within views and windows.

Table 3.1 Key Tips and Keyboard Shortcuts

Key Tips & Shortcut	Outcome
Tab	Move right one field in an Entry table or dialog box.
Shift+Tab	Moves left one field in an Entry table or dialog box.
Home	Moves to the beginning of a row or field of information.
End	Moves to the end of a row or field of information.
Page Up	Moves up one screen.
Page Down	Moves down one screen.
Alt + Page Up / Alt + Page Down	Moves left or right one screen on the time scale.
Alt + ⇦ / Alt + ⇨	Moves the time scale one unit left or right (as defined by the bottom time scale tier).

Table 3.1 Key Tips and Keyboard Shortcuts

Key Tips & Shortcut	Outcome
Alt + Home	Moves to the project start date in the bar chart.
Alt + End	Moves to the project finish date in the bar chart.
Ctrl + Home	Moves to the first field in the first row of the Entry table or the same location in any other sheet view.
Ctrl + End, Home	Moves to the first field in the last row of the Entry table or the same location in any other sheet view.
Ctrl + ⇧	Moves to the First Row.
Ctrl + ⇩	Moves to the Last Row.
F1	Turns on Project Help.
F2	Activates in-cell editing for the selected field.
F3	Displays all tasks or resources when a prior filter was applied.
F5	Goes to a specific row ID number or a date on the time scale.
F6	Activates the other pane in a combination or dual-pane view.
F10	Press twice to turns on Key Tips. You can also tap the Alt key.

Table 3.1 Key Tips and Keyboard Shortcuts

Key Tips & Shortcut	Outcome
`Ctrl + Shift + F5`	Displays the Gantt bar for the selected task.
`Ctrl + F4`	Closes the Project window.
`Ctrl + F5`	Changes the Gantt Chart view from maximized to previous size (i.e., view window is separated from Project window).
`Ctrl + F10`	Maximizes the Gantt Chart view and combines it with the Project window.
`Ctrl + F9`	Allows you to turn on and off Auto Calculate.
`Ctrl + F6`	Displays the next open Project window.
`Ctrl + Shift + F6`	Displays the previous open Project window.
`Alt + Spacebar / Alt + Hyphen`	Displays the application control menu.
`Insert`	When the Task ID is selected, a new blank row is added in the Entry table.
`Delete`	When the Task ID is selected, a row is deleted from the Entry table.
`Alt + F3`	Displays the Field Settings dialog box for the active column.
`Alt + F4`	Closes Project.

Table 3.1 Key Tips and Keyboard Shortcuts

Key Tips & Shortcut	Outcome
Shift + F2	Displays Task Information in Gantt Chart view. Displays Resource Information in Resource Sheet view.
Shift + F3	Sorts by ID number.
Shift + F6	Enables the horizontal and vertical split bars in Gantt Chart view.
Shift + F11 / Alt + Shift + F1	Creates a new version of your schedule (e.g., Project: 2).

Chapter 4

Start a Project

Create New Blank

Create Multiple Types

Alternate Create a Project

Templates

SharePoint List

Creating a New Project

When Project 2010 is initiated, a new blank project schedule will automatically appear.

To create a blank project schedule:

- Click **File → New**

  Backstage choices shown below will give you an array of choices of where to begin a new project schedule. As you click the various choices, options and additional data will appear on the right side of the view.
- Double clicking **Blank project** or click **Blank project** and click **Create** will result in creating a blank project file
- **Recent Templates**: Create a project from a recently used template
- **My templates**: Template created my you and saved to your desktop
- **New from an existing project**: Use an existing project schedule to create a new project
- **New project from Excel workbook**: Columns in the Excel workbook will be mapped to fields within Project 2010. The import process is discussed in the next lesson.
- **New from Sharepoint task list**: Project 2010 Professinal only. Tasks will be imported using the URL and security of the Sharepoint site.
- **Office.com templates**: Create a new project from a template that would be downloaded from Office.com on-line
- If the Quick Access Bar was customized to add the **New** button, pressing that button will create a new project schedule

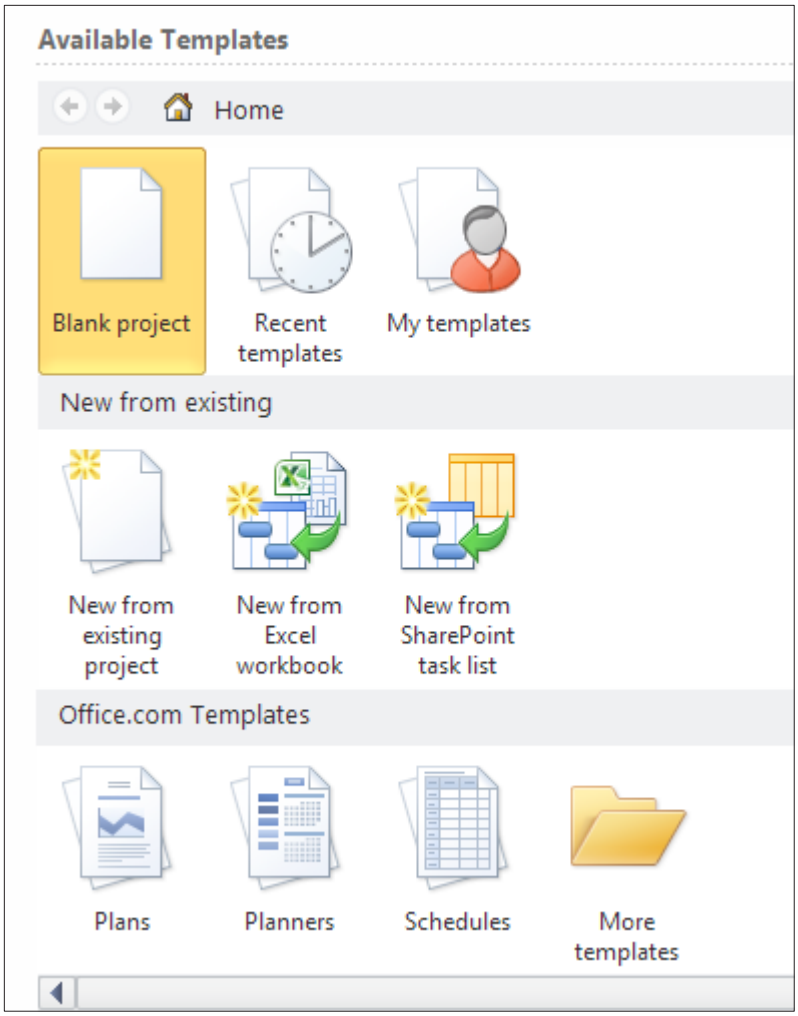


Figure 4-1 PLACEHOLDER

Creating a Project from an Excel Workbook

A project schedule can be created using an Excel Workbook task list. Keep in mind that the fields or columns that are being imported from Excel will be mapped to fields or columns within Project 2010. Pre-planning to know which Excel fields should be mapped to which Project 2010 fields would be helpful.

All options should be pre-set before importing tasks.

To create a project schedule from an Excel Workbook:

1. Click **File → New → New From Excel Workbook**
2. Navigate to the Excel file that contains the tasks to be imported into the schedule, click **Open**
3. Project 2010 Import Wizard will start running – Click **Next**
4. Select whether to use a new map that will be created or an existing Project import map. For this example we will create a new map. Click the radio button next the **New Map** and click **Next**
5. Import can start a new project file, append to the end of an existing project file or merge the data using a merge field. In this example we will create a new project schedule. Click **As a new project** and click **Next**.
6. When the data is brought into Project 2010, select if the data is to be mapped to the Task fields, Resource fields or Assignment fields. Click **Tasks**.
7. If the originating Excel file contains header or title information, click **Import includes Headers**. The system will remove this row (the first line only) as the header row. Click **Next**
8. The Task Mapping form will be used to view some of the data and map which Excel fields will be imported into which Project 2010 fields. Pull down the values in the **Select worksheet name** option and select the sheet name in Excel that contains the data to be imported. After the choice has been made, the data from the sheet will be available for viewing.
9. In the example below, the duration field from the Excel Workbook was able to be automatically mapped to the duration field in Project 2010. However, the Task Name field could not find a match. The correct field name for the

task name field in Project 2010 is “Name”. Click the red error message (**not mapped**) and select the field name of **Name**. Repeat for other fields to be imported. Not all fields are required during the import process which allows the user to pick and choose which ones are appropriate to the schedule. Click **Next** to continue after all columns have been mapped.

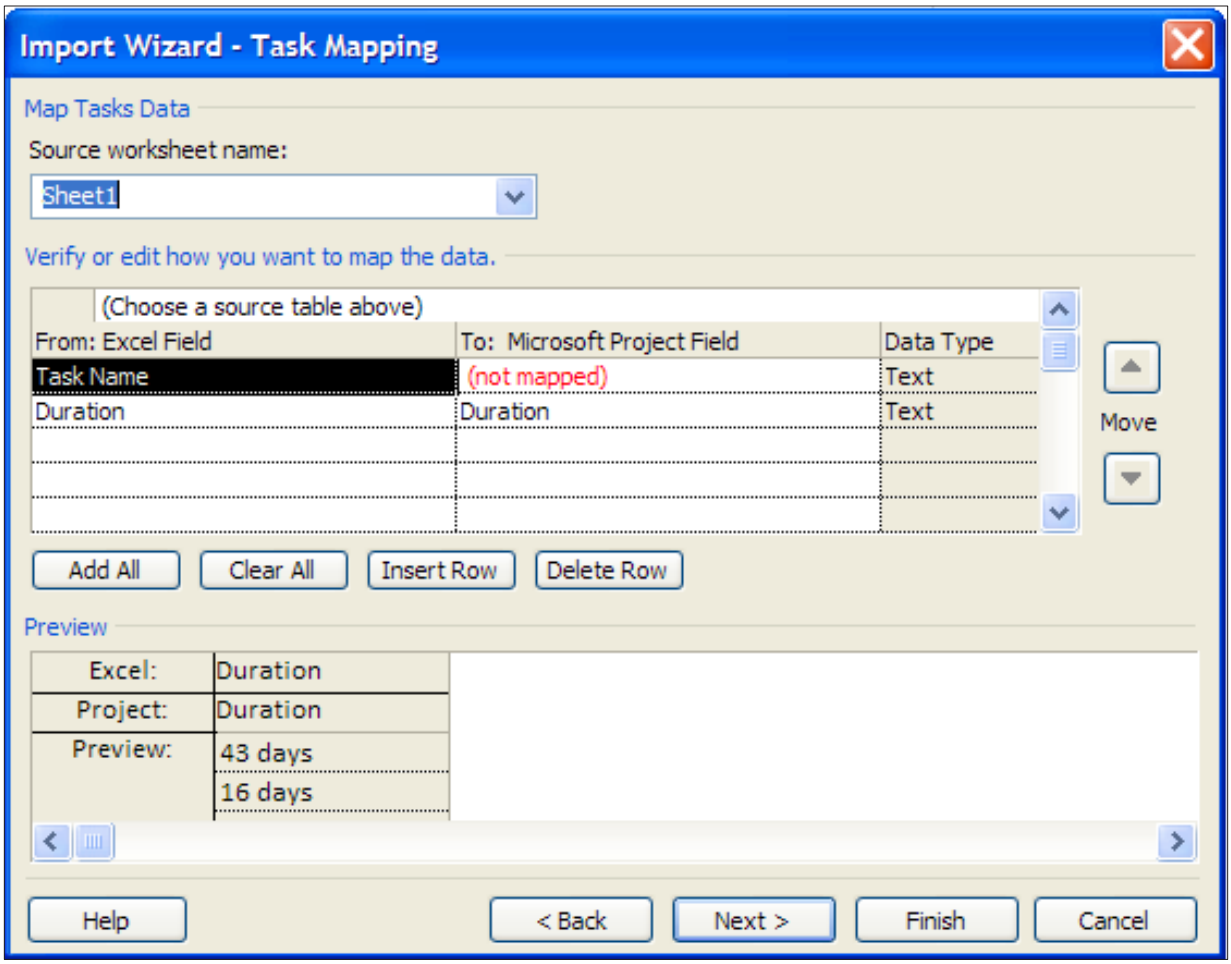


Figure 4-2 PLACEHOLDER

10. The next step offers the option to save the map for future reuse.
    a. To skip saving the map, click **Next**.
    b. To save the map, click **Save Map** and give the map a name.

    An option will be available to use the Organizer to copy the import map into the Global.mpt and save it for future use. The Organizer will be discussed in Module 10.

Click **Finish** to start the import.

11. The new Project 2010 schedule will open with the columns imported.

Creating a Project from a SharePoint Task List

Project 2010 Professional allows for creating a new project by importing a task list from a SharePoint site. The user must have appropriate permissions to the access the SharePoint site and the URL path to insert into the form directing Project 2010 Pro to the location of the task list.

To import tasks from a SharePoint task list into Project 2010 Professional:

1. Click **File** → **New** → **New** from SharePoint Task List

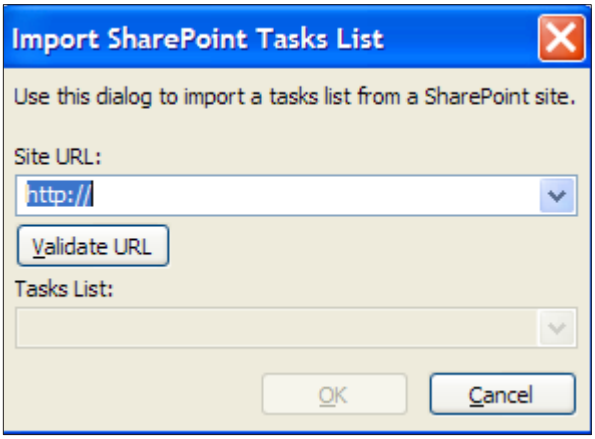


Figure 4-3 PLACEHOLDER

2. Enter the URL in the form as shown above and click **Validate URL**. A list of all the task lists included in the SharePoint site will be displayed. Select the appropriate list and click **OK**.

The list will be imported from the SharePoint site.

This is Pro only – Rolly should add a screen shot here.

Saving the Schedule

Project 2010 provides multiple file formats for a project schedule. The steps to save a file are very similar to other MS Office files.

To save the Project 2010 schedule:

1. Click **File → Save as → select file location**
2. Enter the file name in the File Name area
3. Click **Save** to complete the save. The file will be given a Project 2010 default file extension of .mpp

There is also an option to save the Project 2010 schedule in an alternative file format. Some of the formats are:

- MS Project 2007
- MS Project 2000-2003
- MS Project template 2010 - .mpt file extension
- MS Project template 2007 - .mpt file extension
- MS Excel
- PDF
- XPS
- XML
- CVS
- Text

Save and Send Options

A new feature in Project 2010 is the Save and Send from the backstage view. These options are an easy method of saving projects and sharing project schedules with others. There is also an option to send project files as an attachment to an email as well as publishing the project schedule to a SharePoint site (Project 2010 Pro users only).

To navigate to the options available for Save and Send:

- Click **File → Save and Send → select one of the options offered**

The right side of the screen will change as options are selected

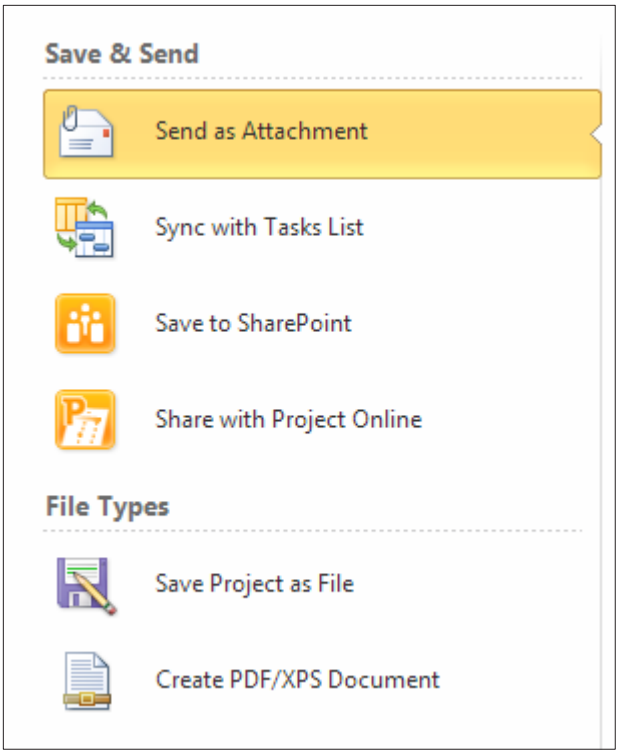


Figure 4-4 PLACEHOLDER

- **Send as Attachment**: sends the project schedule as an attachment to an Outlook email
- **Sync with Tasks List**: use this option to synchronize with a task list in SharePoint. Team members can update task status and the updates can be synchronized back to the project schedule. The URL to the SharePoint site and the task list name will be needed at the time of the synchronization.
- **Save to Sharepoint**: this option will save the project schedule to a Share-point site. (Project 2010 Pro users only)
- **Share with Project Online**: used with Project Server and SharePoint

Save Project as a file: when clicked the right side of the view is shown below. There are several file type options available. Click **Project** and **Save As** to start the save process.

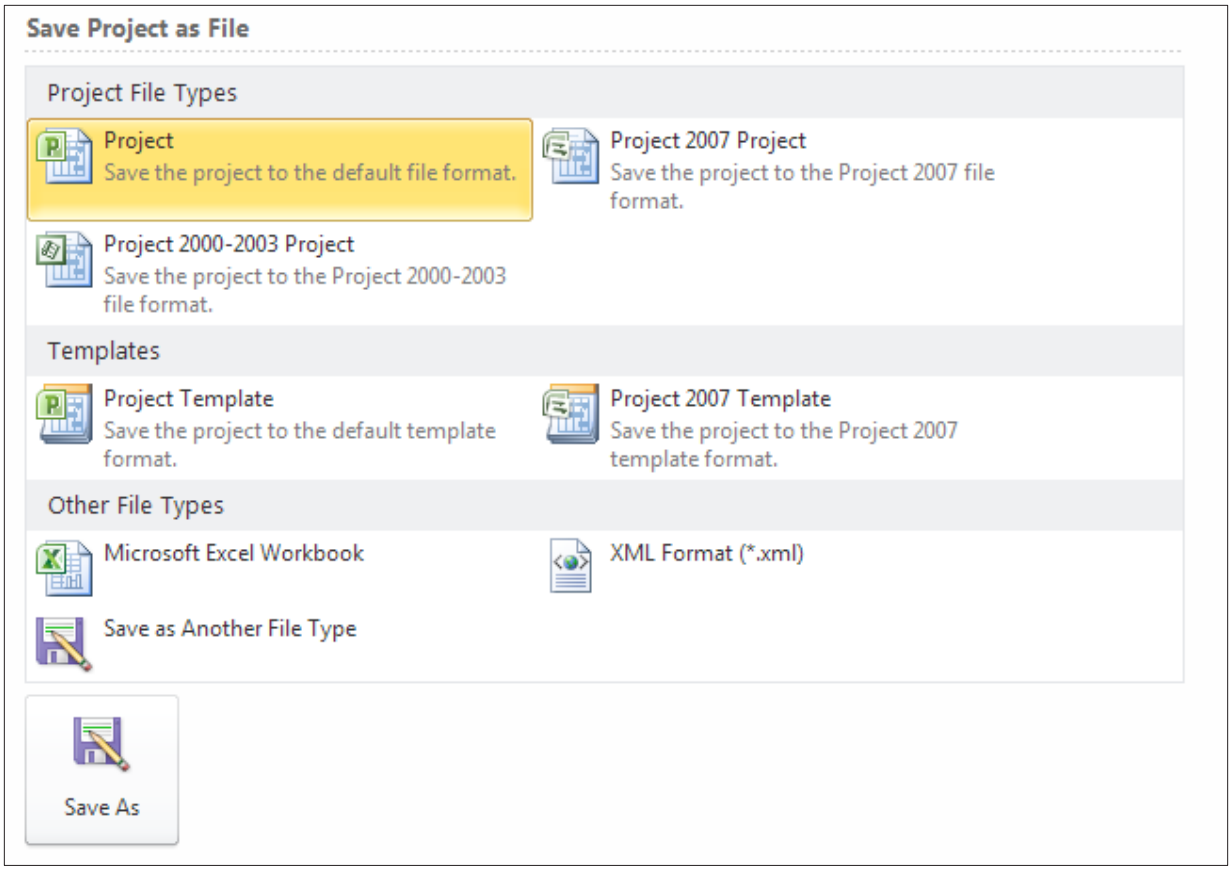


Figure 4-5 PLACEHOLDER

- **Create a PDF/XPS document**: Click Create PDF/XPS, name the file and select PDF or XPS, click OK to complete the save.

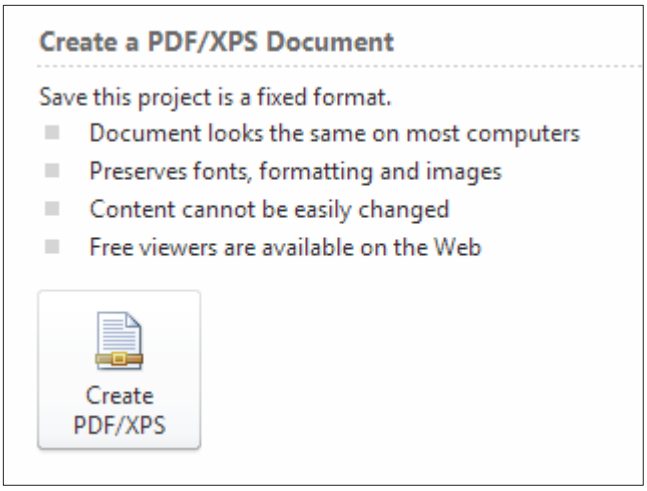


Figure 4-6 PLACEHOLDER

Saving the Schedule

Project 2010 provides multiple file formats for a project schedule. The steps to save a file are very similar to other MS Office files.

To save the Project 2010 schedule:

1. Click **File → Save as → select file location**
2. Enter the file name in the File Name area
3. Click **Save** to complete the save. The file will be given a Project 2010 default file extension of .mpp

There is also an option to save the Project 2010 schedule in an alternative file format. Some of the formats are:

- MS Project 2007
- MS Project 2000-2003
- MS Project template 2010 - .mpt file extension
- MS Project template 2007 - .mpt file extension
- MS Excel
- PDF
- XPS

- XML
- CVS
- Text

Save and Send Options

A new feature in Project 2010 is the Save and Send from the backstage view. These options are an easy method of saving projects and sharing project schedules with others. There is also an option to send project files as an attachment to an email as well as publishing the project schedule to a SharePoint site (Project 2010 Pro users only).

To navigate to the options available for Save and Send:

- Click **File → Save and Send → select one of the options offered**

The right side of the screen will change as options are selected

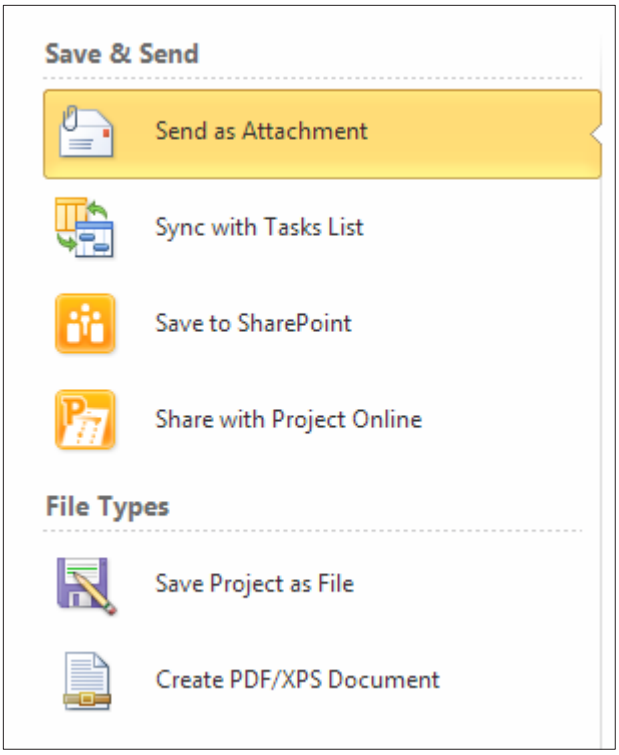


Figure 4-7 PLACEHOLDER

- **Send as Attachment**: sends the project schedule as an attachment to an Outlook email
- **Sync with Tasks List**: use this option to synchronize with a task list in SharePoint. Team members can update task status and the updates can be synchronized back to the project schedule. The URL to the SharePoint site and the task list name will be needed at the time of the synchronization.
- **Save to Sharepoint**: this option will save the project schedule to a Share-point site. (Project 2010 Pro users only)
- **Share with Project Online**: used with Project Server and SharePoint

Save Project as a file: when clicked the right side of the view is shown below. There are several file type options available. Click **Project** and **Save As** to start the save process.

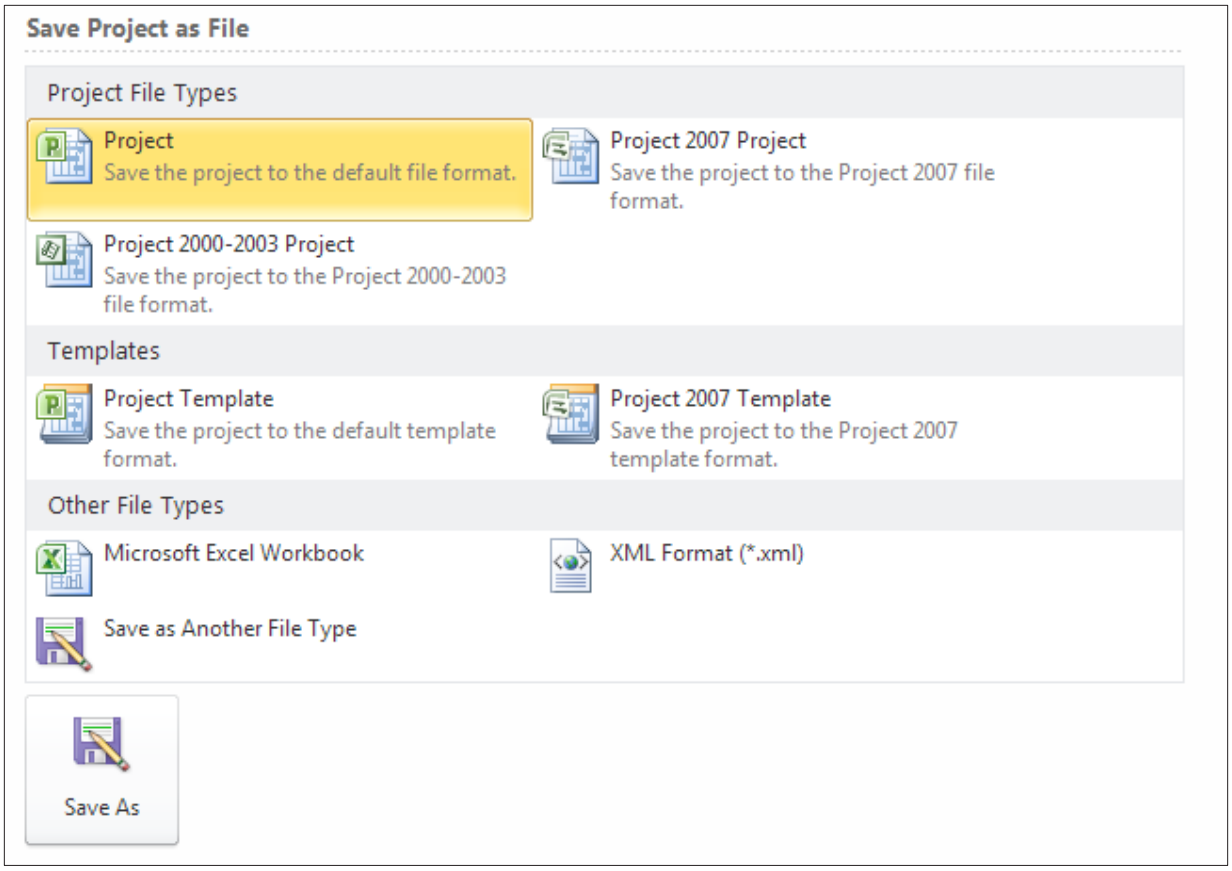


Figure 4-8 PLACEHOLDER

- **Create a PDF/XPS document**: Click Create PDF/XPS, name the file and select PDF or XPS, click OK to complete the save.

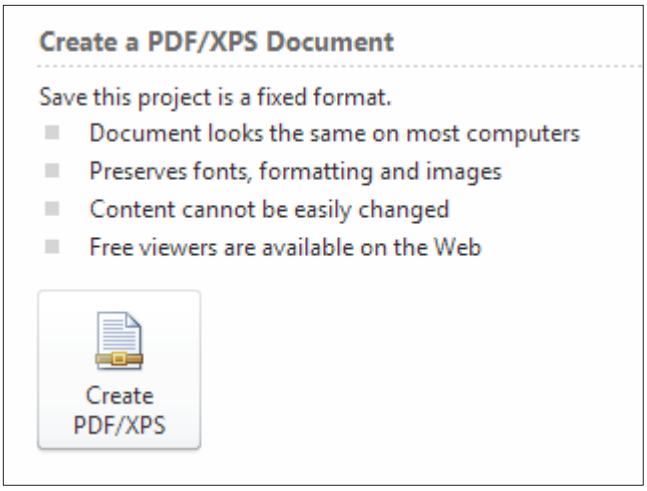


Figure 4-9 PLACEHOLDER

Save and Send Options

A new feature in Project 2010 is the Save and Send from the backstage view. These options are an easy method of saving projects and sharing project schedules with others. There is also an option to send project files as an attachment to an email as well as publishing the project schedule to a SharePoint site (Project 2010 Pro users only).

To navigate to the options available for Save and Send:

- Click **File → Save and Send → select one of the options offered**

The right side of the screen will change as options are selected

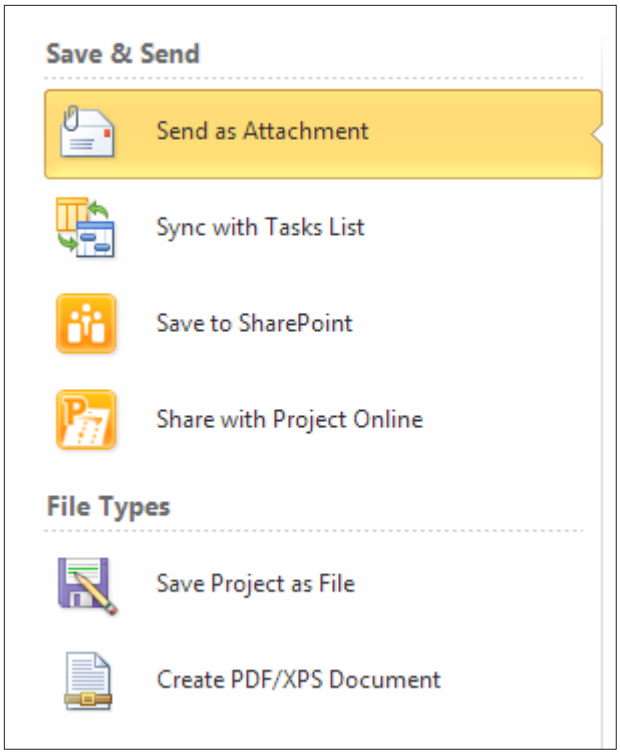


Figure 4-10 PLACEHOLDER

Save and Send Options

A new feature in Project 2010 is the Save and Send from the backstage view. These options are an easy method of saving projects and sharing project schedules with others. There is also an option to send project files as an attachment to an email as well as publishing the project schedule to a SharePoint site (Project 2010 Pro users only).

To navigate to the options available for Save and Send:

- Click **File → Save and Send → select one of the options offered**

The right side of the screen will change as options are selected

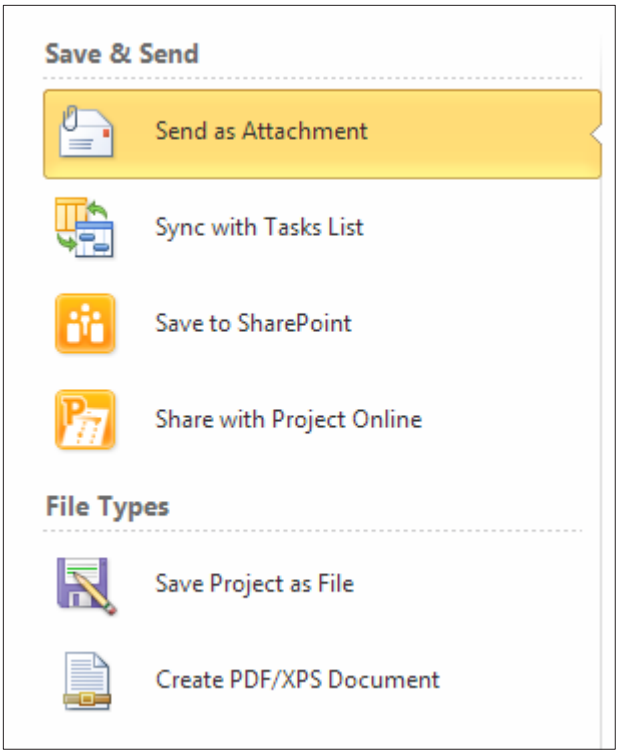


Figure 4-11 PLACEHOLDER

- **Send as Attachment**: sends the project schedule as an attachment to an Outlook email
- **Sync with Tasks List**: use this option to synchronize with a task list in SharePoint. Team members can update task status and the updates can be synchronized back to the project schedule. The URL to the SharePoint site and the task list name will be needed at the time of the synchronization.
- **Save to Sharepoint**: this option will save the project schedule to a Share-point site. (Project 2010 Pro users only)
- **Share with Project Online**: used with Project Server and SharePoint

Save Project as a file: when clicked the right side of the view is shown below. There are several file type options available. Click **Project** and **Save As** to start the save process.

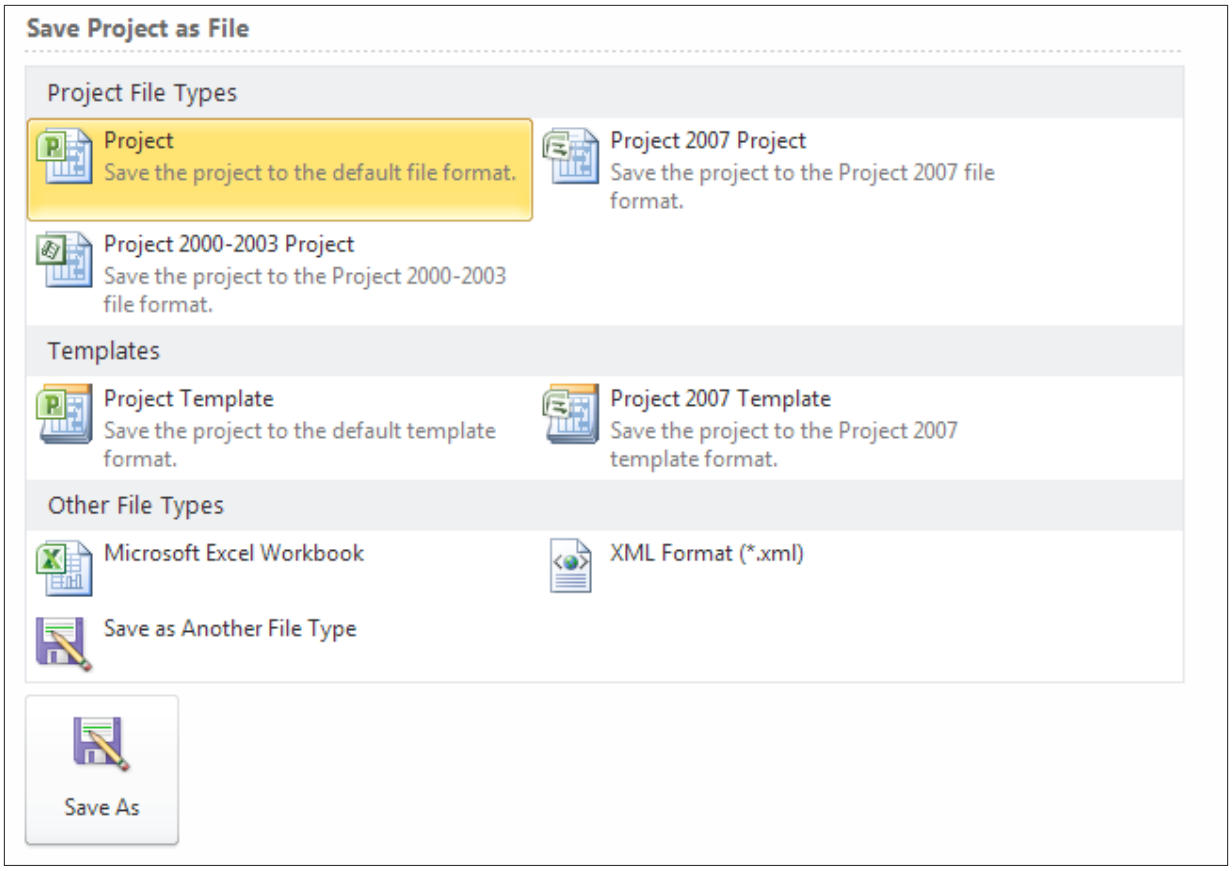


Figure 4-12 PLACEHOLDER

- **Create a PDF/XPS document**: Click Create PDF/XPS, name the file and select PDF or XPS, click OK to complete the save.

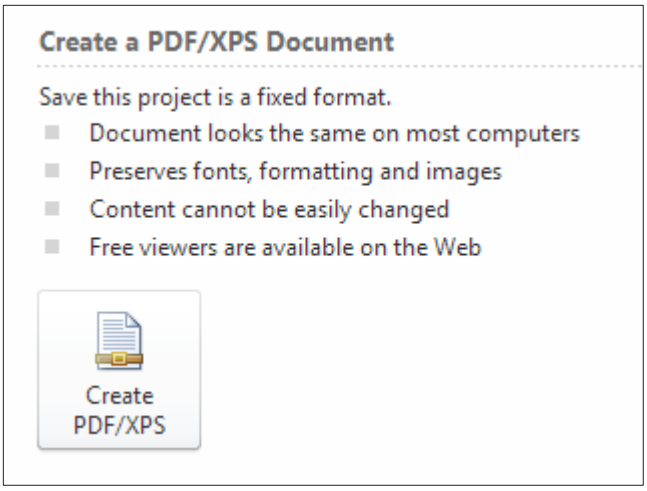


Figure 4-13 PLACEHOLDER

Calendar Overview

Calendars in Project 2010 will determine when a task may be scheduled within the project schedule. It will also influence what defines a day, a week and a month. The calendars will also work hand-in-hand with the calendar options to determine when and how the tasks will be scheduled.

In this lesson we will explore:

1. How calendars work in Project 2010
2. How to create a base calendar
3. How to Set Working Hours and Days
4. How to Set Non-Working Hours and Days
5. How to Set Calendar Options

How Calendars Work in Project 2010?

There are several types of calendars within the Project 2010 system. The following are definitions of available calendars:

- **Base Calendar**: The base calendar which may be used to as a template to create other calendars. A base calendar may also be used as a Project, Resource or Task calendar.
- **Project Calendar**: The project calendar is the calendar assigned to a project and it defines the project working and non-working days. The default name for the Project Calendar is “Standard”.
- **Resource Calendar**: Each resource will have its own calendar which may be based off of a base calendar or the project calendar. Unique resource calendars may also be created.
- **Task Calendar**: A task calendar is assigned to a task to allow for the scheduling of that task in a unique timeframe. For example: tasks which have to occur on a weekend.

How the calendars are used by the software:

A task will be scheduled based on the Project calendar until a resource is assigned to the task. At that time, the Resource calendar will control the scheduling of most tasks. Unless – there is a task calendar assigned which will override the Project and the Resource calendars.

When a project schedule is created, a default calendar of “Standard” is applied to the schedule. This is called the project calendar for the project. The default values on the Standard calendar are: Monday through Friday which are working days, and working time is 8:00 am to 12:00 pm and 1:00 pm to 5:00 pm daily. No holidays are indicated on the calendar. The Standard calendar is also the calendar that will be viewed in the background of the Gantt Chart views. The Calendar Options work hand in hand with the Project Calendar to determine number of hours in a day or week and these values should be in sync with one another. The Calendar options will be discussed in the next section.

By default, 2 additional calendars are included in Project 2010: a 24 hour calendar and a Night Shift calendar. Either of these may be used as Project, Resource or Task calendars.

FAQ’s

Q: Why are there no holidays on the calendars?

A: This is an international program. Holidays vary from country to country.

Q: Is there the ability to add holidays to a calendar the way they can be added in Outlook?

A: No – this is not a capability of the software.

Q: Do I have to recreate the calendar for each project?

A: No – calendars may be created and saved through the Organizer to use in future projects.

The default calendar name for the system is “Standard”. If a different calendar name is selected, each Gantt view will also require changing because Gantt Chart views are set to display the Standard calendar. This change can be made by right clicking in the Gantt view and select Non-working time and changing to the calendar to be seen in the view. Most users keep the Standard calendar because of ease of use.

Setting Working Hours and Days

After the base calendar has been created, decide what the working days (business days) of the project schedule will be. Decide also, how many hours will make up a working day and what times the hours will be. By default, the working days of the calendar are Monday through Friday and the working time is 8:00 am to 12:00 pm and 1:00 pm to 5:00 pm daily or 8 hours working per day.

Ask yourself, how many hours per day do you feel your resources work productively on project work?

The average amount of productive project time in a day for a full time resource is 6 to 6.5 hours. If you are planning projects using an 8 hour day and your resources produce 6.5 hours per day are you planning an unreasonable timeline for your project schedule. After resources are assigned to tasks, the resource availability calendar will be considered in the scheduling equation and the timeline for the project schedule will alter substantially. It is expected that schedules will double in length once actual resources are assigned to tasks.

This difference to the schedule may be handled through adjustments to the project calendar, to the assignments or to the resource calendars. Consider choosing one of the methods and using it as the standard for scheduling projects. Each of the above options has their pros and cons, but it is the crossing of methods that will result in unreliable results in planning a schedule.

To Change the Working Hours of all Days on a Calendar:

1. Click **Project → Change Working Time**

2. Check to ensure the calendar you wish to change is displayed in the **For calendar** list
3. Click **Work Weeks** near the bottom of the dialogue box

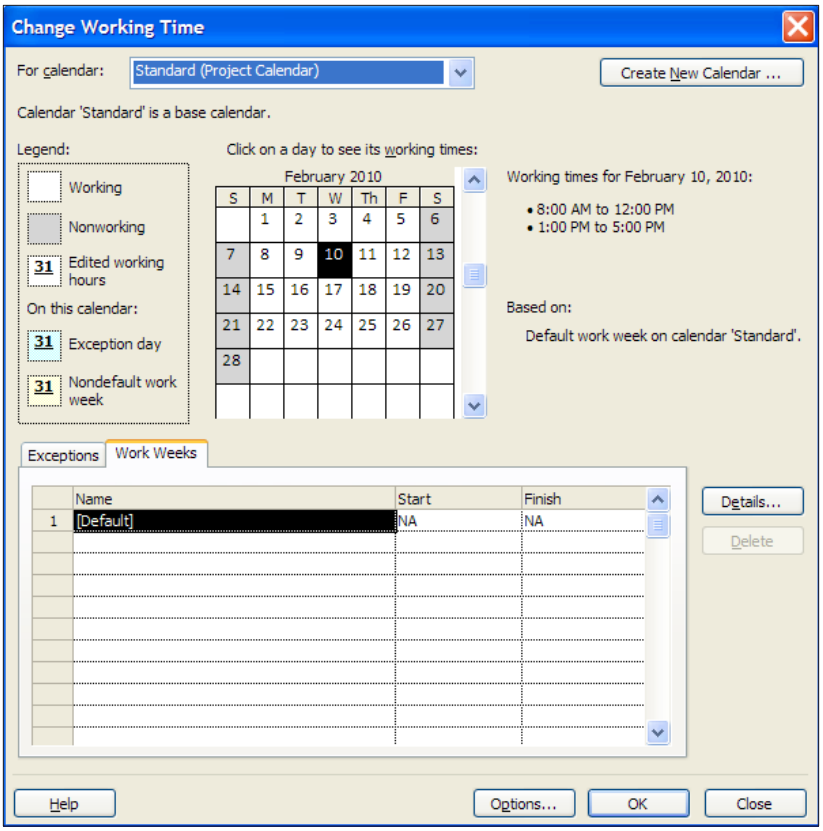


Figure 4-14 PLACEHOLDER

1. After clicking on the **Work Weeks** tab, the word **Default** should be highlighted. Click the **Details** button to the right of the form
2. Click **Monday**, press and hold the **shift** key and click on **Friday**. All of the working days will be selected
3. Click the **3rd radio button, Set day(s) to these specific working times**
4. You will see the standard working times. Make changes to reflect the new values
5. Click **Enter** or **Tab** to move away from the value you have changed
6. Click **OK** to close the form

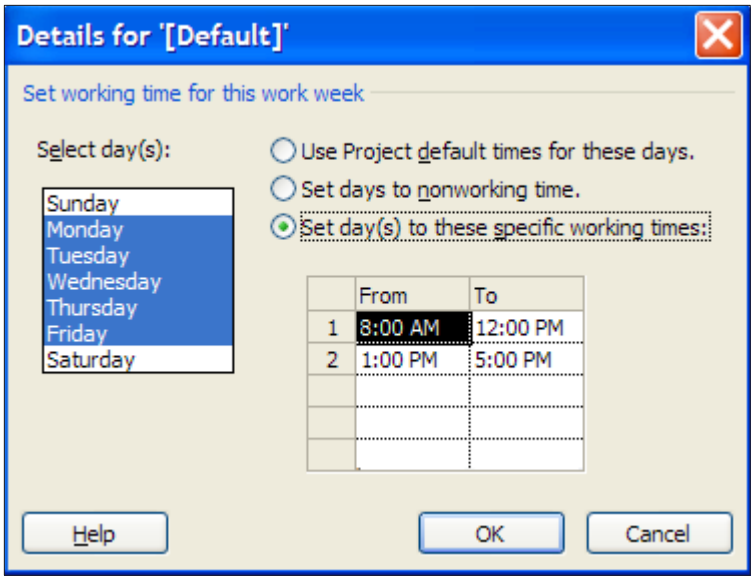


Figure 4-15 PLACEHOLDER

Military time is valid when entering hour values. To change 5:00 pm to 4:00 pm to shorten the work day, simply enter **16** where 5:00 pm is located and click **Enter** or **Tab** and 4:00 pm will appear.

Setting Non-Working Hours and Days

Non-working time is defined in the software as days where work will not be planned or performed. Examples are: national and organizational holidays, training days, company shutdowns, summer hours, etc. Adding these non-working days and times to the project calendar will allow for the scheduling of the tasks to be excluded from these dates.

A frequently asked question is: Is there the ability to add holidays to a calendar the way they can be added in Outlook? The answer is no - this is not a capability of the software. However, creating recurring holidays and

non-working times is a feature of Project 2010.

How to Create a Non-working Day for a Calendar:

1. Click **Project → Change Working Time**
2. Check to ensure sure that the calendar you wish to change is displayed in the **For Calendar** field
3. Click **Exceptions** tab near the bottom of the dialogue box

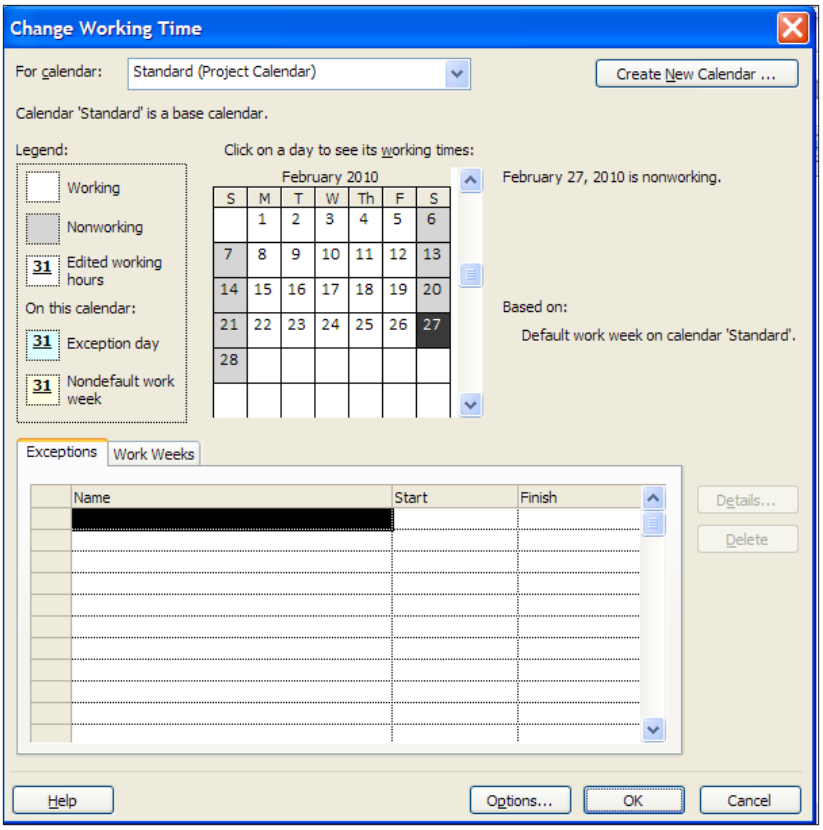


Figure 4-16 PLACEHOLDER

4. In this example, we will set April 8, 2011 as a non-working day. Move the slider on the right side of the calendar down until **April 2011** is displayed in the calendar
5. Click **April 8, 2011**
6. Click in the name field and enter a reason for the non-working day, ie: Company holiday
7. Click **Enter**
8. Repeat for additional non-working days. See the result below

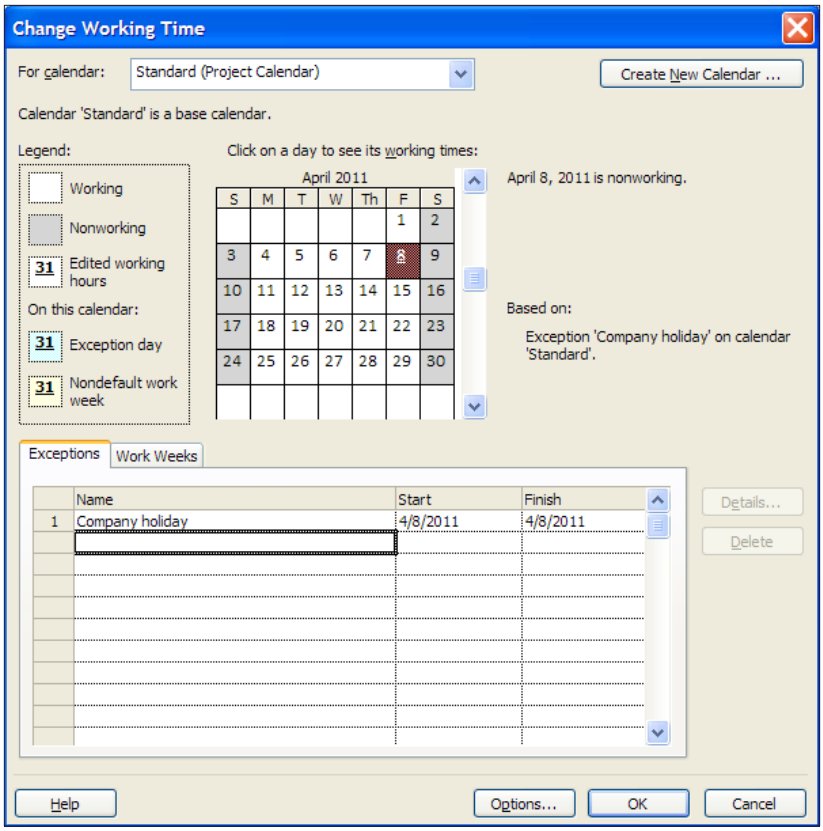


Figure 4-17 PLACEHOLDER

To Create a Recurring Non-working Day for a Calendar:

1. Click **Project → Change Working Time**
2. Check to make sure that the calendar you wish to change is showing in the **For calendar** field
3. Click **Exceptions** the tab near the bottom of the dialogue box
4. In this example, we will set January 1 (New Year's Day) as a recurring non-working day. Move the slider on the right side of the calendar down until **January 2013** is displayed on the calendar
5. Click **January 1, 2013**
6. Click in the first open line in the **Name** field and enter **New Year's Day** for the non-working day
7. Click **Enter**
8. Click back on the words **New Year's Day** and then click on the **Details** button to the right of the form

9. Click **Yearly**
10. Click on January 1
11. Enter the start date
12. Enter a recurrance value or an End by date
13. Click **OK** to close box
14. Check for the recurrance values in the Exceptions line for New Year's Day.

Setting Calendar Options

The Calendar options work hand in hand with the project calendar to determine how tasks will be scheduled. It is imperative that the calendar options match the project calendar to create a consistency in the scheduling values for tasks and assignment values.

To access the Calendar options:

Click **File → Options → Schedule**

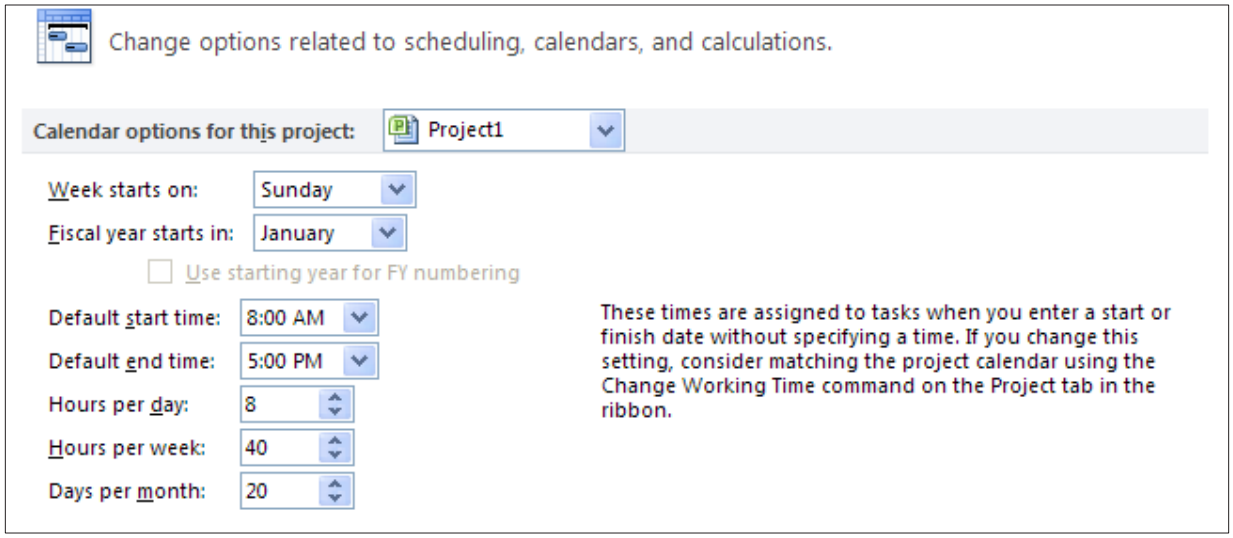


Figure 4-18 PLACEHOLDER

What the options mean:

- **Calendar options for this project**: option to select whether your option choices for the calendar will be held within an individual project or if they will be applied to all new projects.
- **Week starts on**: this choice will affect what is assigned and viewed as the first day of the week. The day chosen will be reflected on the Gantt Chart, Resource Usage, Task Usage and other calendar views.
- **Fiscal Year starts in**: if using this option, select which month will be the start of the fiscal year.
- **Default start and end times**: these values should match the time values on the project calendar. Assigning the project calendar will be discussed in the next lesson. The times stated here will be used to schedule tasks when time is not specified for a task. It will also be used to schedule tasks that do not use relationships. For example: if recurring tasks are created, the tasks will always be scheduled at the start time represented in this option.
- **Hours per day**: when 1 day of work is scheduled, how many hours should 1 day consist of?
- **Hours per week**: when 1 week of work is scheduled, how many hours should 1 week consist of?
- **Days per month**: when 1 month of work is scheduled, how many days should 1 month consist of?

Saving the Calendar

In Project 2010, the calendar that was just created is known as a "custom object". Custom or customized objects may be saved for use in the project the object was created in and used in other projects as well. To save objects the Organizer is used. When Project 2010 was installed on your system, a file named Global.mpt was created. The Organizer is the function that will copy objects into the Global.mpt as well as between project schedules. Calendars are only one of many object types that may be customized and saved for use in other project schedules. The other objects will be discussed in Module 10. In this lesson, we will only address the Calendar.

To save the custom or customized calendar, the object must be copied

using the Organizer.

To copy a New Base Calendar into the Global.mpt:

1. Click **File → Info → Organizer**
2. Click the **Calendars** tab
3. Click **New Base Calendar** to the right and click **<<Copy**
4. Click **Cancel** to close the box

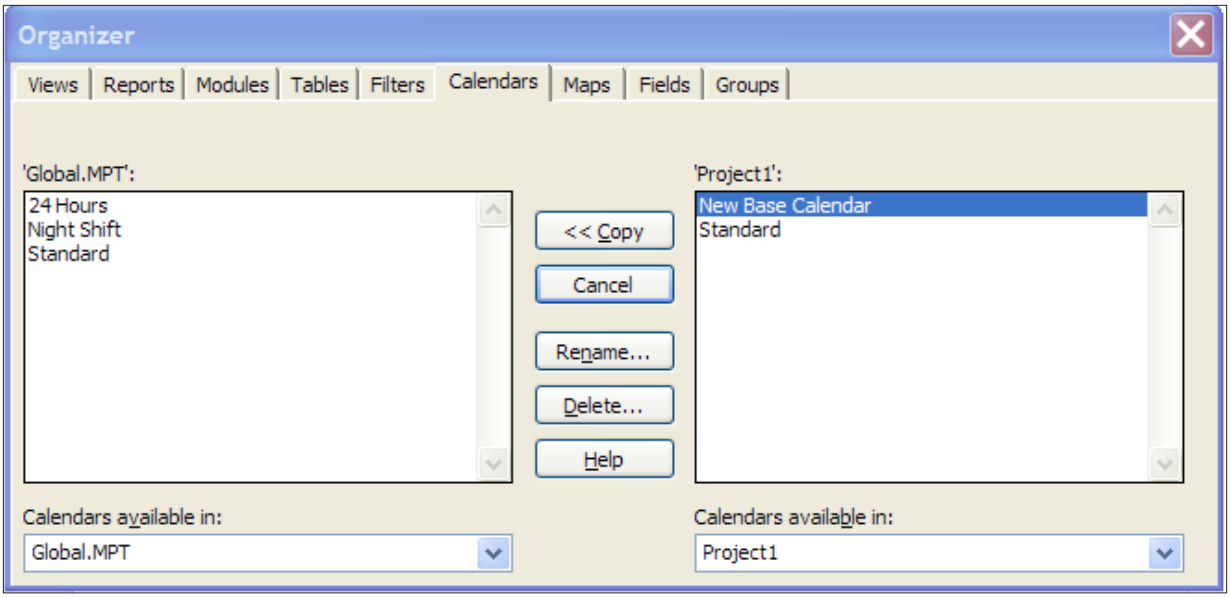


Figure 4-19 PLACEHOLDER

The Calendar will be copied into your local Global.mpt.

Practice: Creating Calendars

The Practice page is where you write detailed instructions for completing work listed as Exercises.

Type the Exercise Title and write a brief summary what the student will be doing in the exercise. Then list your ideas what they will be doing.

SAMPLE

In this practice you will create a Project Server Authentication profile

and then configure the local cache settings in Project Professional 2007.

Exercise 1: Create Project Server Authentication Profile

In this exercise you will create Project Server authentication profile to connect to the Project Web Access site.

Perform the following exercise on the PS07 virtual machine.

1. From the **Start** menu, click **All Programs** → **Microsoft Office** → **Microsoft Office Tools** and click **Microsoft Office Project Server 2007 Accounts**.
2. In the **Project Server Accounts** dialog box, click **Add**.
3. In the **Account Properties** dialog box, and complete the following settings and click **OK**.

Table 4.1 PLACEHOLDER

Setting	Perform the following:
Account Name	Type `Project Server`
Project Server URL	Type `http://epm/pwa`
When connecting	Select **Use Windows user account**
Set as default account	Select check box

Create New Calendar

Calendar Options

The Calendar options work hand in hand with the project calendar to determine how tasks will be scheduled. It is imperative that the calendar options match the project calendar to create a consistency in the scheduling values for tasks and assignment values.

To access the Calendar options:

Click **File → Options → Schedule**

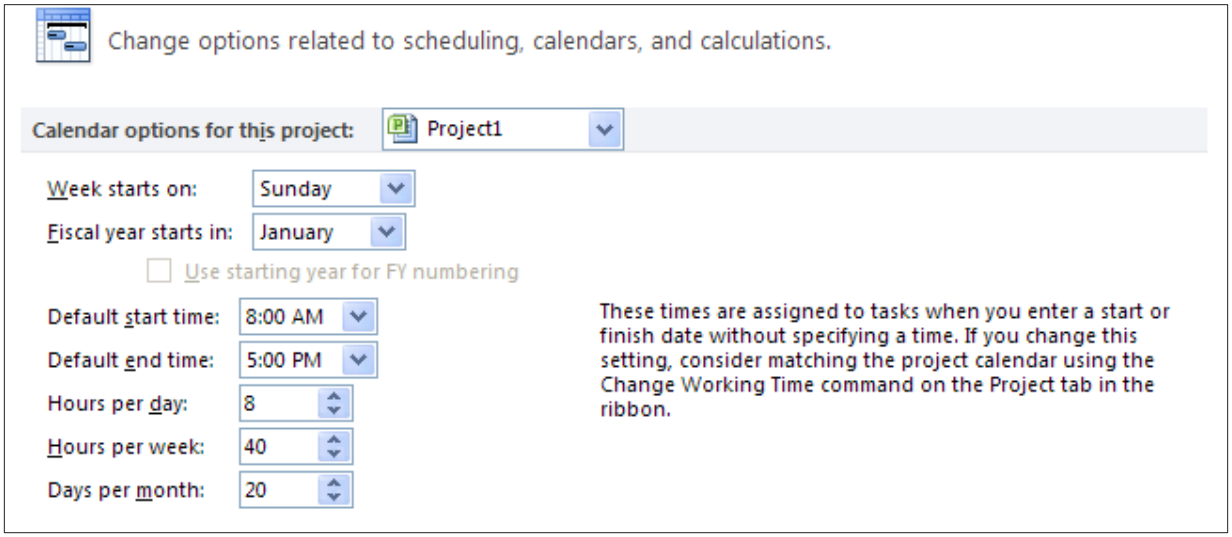


Figure 4-20 PLACEHOLDER

What the options mean:

- **Calendar options for this project**: option to select whether your option choices for the calendar will be held within an individual project or if they will be applied to all new projects.
- **Week starts on**: this choice will affect what is assigned and viewed as the first day of the week. The day chosen will be reflected on the Gantt Chart, Resource Usage, Task Usage and other calendar views.
- **Fiscal Year starts in**: if using this option, select which month will be the start of the fiscal year.
- **Default start and end times**: these values should match the time values on the project calendar. Assigning the project calendar will be discussed in the next lesson. The times stated here will be used to schedule tasks when

time is not specified for a task. It will also be used to schedule tasks that do not use relationships. For example: if recurring tasks are created, the tasks will always be scheduled at the start time represented in this option.

- **Hours per day**: when 1 day of work is scheduled, how many hours should 1 day consist of?
- **Hours per week**: when 1 week of work is scheduled, how many hours should 1 week consist of?
- **Days per month**: when 1 month of work is scheduled, how many days should 1 month consist of?

Project Information

The final project information that should be entered before proceeding with project schedule development is the project start or project finish date as well as indicating which calendar will be used as the project calendar. This information is entered through the Project Information box.

To navigate to the Project Information dialogue box:

Click Project → Project Information

Deciding whether to enter the Project Start date or the Project Finish date will take some consideration. There are pros and cons to either choice:

FAQ: Should I enter a project start and finish date?

Answer: Project 2010 will accept either the start or the finish date but not both.

Entering a start date will indicate that you are planning your schedule as forward scheduling. This will result in:

- All tasks will be scheduled As soon as possible
- The work of the project will determine the project ending date
- You will have a date to manage to and know when you are on time or late with the progress of the project

Entering a finish date will indicate that you are planning your schedule as backward scheduling. This will result in:

- All tasks will be scheduled As late as possible
- The ending date of the project will be locked to a date on the calendar
- You might be planning a project where each task will be required to be completed as planned to achieve the ending date goals.

The most used planning method is that projects are planned from the project start date.

Project Calendar: The default calendar is “Standard”. Whatever calendar is selected will become the scheduling calendar for the project. All tasks will be scheduled using this calendar until a resource is assigned to the task.

Click **OK** to close the box.

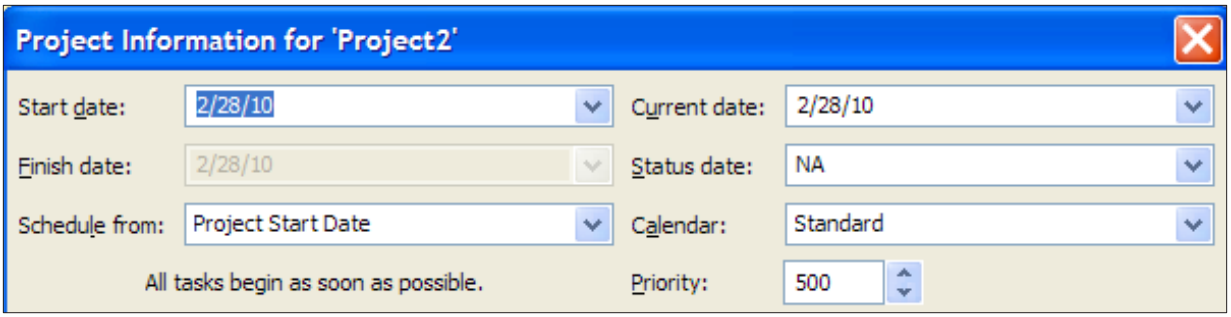


Figure 4-21 PLACEHOLDER

Most project managers have definite deadlines. Consider planning the schedule from ending date to get the schedule short term goals, deadlines and milestone dates. Then switch the project to the start date to manage. Reset the constraints to as soon as possible to enable the schedule to include slack and aid in schedule management.

Plan from Start

Plan from Finish

Project Start Date

Assign Project Calendar

Options

General V Per Project

General options are options which affect how the installation of Project 2010 on a desktop will operate. Display options are options that will help the user interface with Project 2010 software. The options selected are unique to each user and are a personal preference. These options do not have an influence on the ability to create a project schedule.

To navigate to General options:

Click **File → Options → General**

In the Project view section, the user may select the default view for usage of Project 2010 and the date format for dates for reports and views (tables).

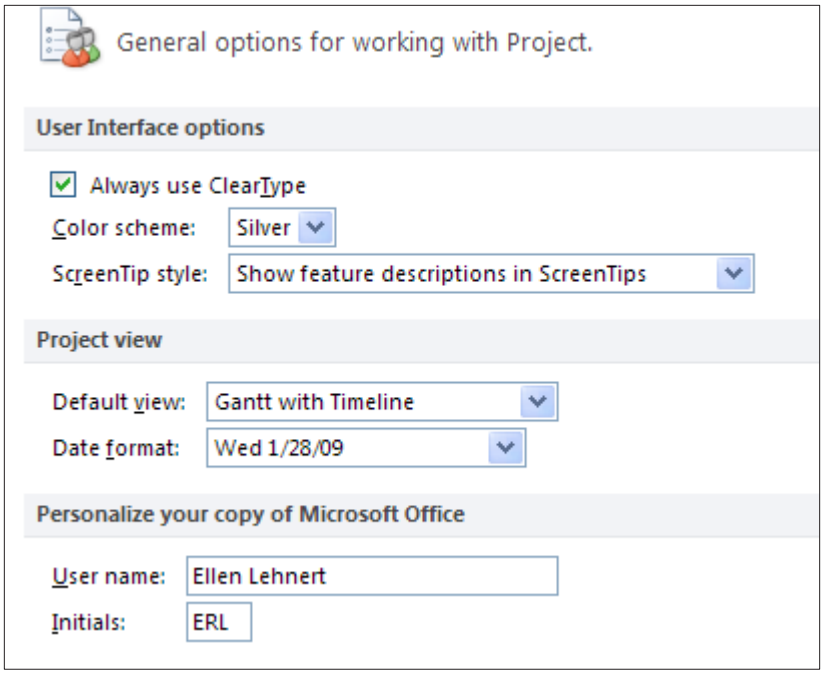


Figure 4-22 PLACEHOLDER

To navigate to Display options:

Click **File → Options → Display**

These options refer to which elements should be viewed on the screen. These options will control which indicators are shown in the indicator column, currency values and if the Entry bar is visible or not.

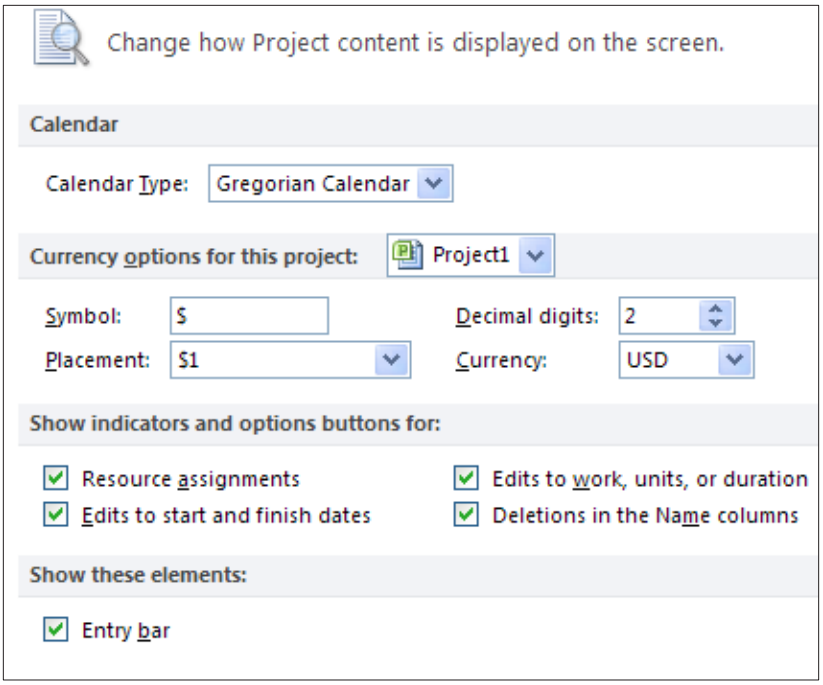


Figure 4-23 PLACEHOLDER

Additional display options are available at:

Click **File → Options → Advanced**

Some of the options that should be considered are:

- **Show this number of recent documents** – optional number, list will show in the Recent tab in the backstage
- **Automatically add new views, tabls, filters and groups to the global** - recommended
- **Settings for duration label values** – Minutes, Days, etc. - may alter as needed
- **Show project summary task** – recommended

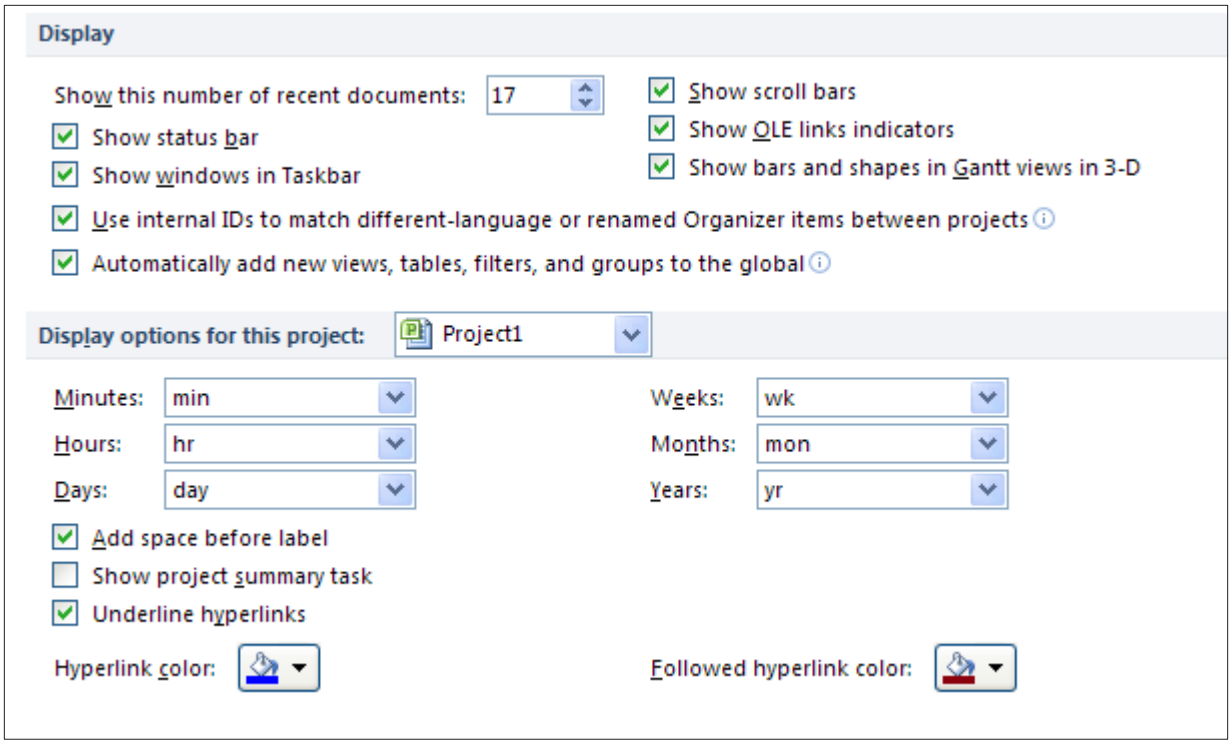


Figure 4-24 PLACEHOLDER

Best practice: Each project schedule has the ability to contain a Project Summary task. The Project Summary task is a zero level task that will serve as a constant grand total for the project schedule. The setting in the above options may be used to turn on the project summary task or use the directions below.

To turn on the Project Summary task:

Click **Task → Gantt Chart**

Click **Format → Project Summary Task** (on the right side of the ribbon)

General: Change the Default View to Gantt Chart

Display: Entry Bar

Scheduling

Define Duration, Work, Task Types and Effort Driven

Scenario 1: Entering a Constant Duration Value

Let's say you would like to enter a duration value that remains constant regardless of the resources that are added or subtracted.

The recommended practice is to estimate the task by entering a duration value, set the task type to Fixed Duration and then assign the resources.

This will cause total work for the task to be calculated.

	Task Name	Duration	Type	Effort Driven
1	Prepare Facilities	1 day?	Fixed Duration	No
2	Begin Registration	5 days	Fixed Duration	No
3				

Figure 4-25 Entry Table with Duration and Optional Fields

The Effort Driven option provides a shortcut to divide the total work for the task across the resources assigned. This is useful for organizations that track costs or track resource assignments in detail.

To follow this approach, insert the Type and Effort Driven columns in the Entry table of Gantt Chart view or display Task Entry view which provides these fields in the lower pane. For more information about modifying views, refer to chapter 7, Using Views.

Scenario 2: Entering a Constant Work Value

You also have the choice to enter a total work value for the task that remains constant regardless of the resources that are added or subtracted. This is also called effort-driven estimating.

The recommended practice is to estimate the task by entering a Work value, set the task type to Fixed Work, and then assign the resources.

This will cause total duration for the task to be calculated.

	Task Name	Duration	Work
1	Prepare Facilities	1 day?	40 hrs
2			

Figure 4-26 Entry Table with Work Field

To follow this approach, insert the Work column in the Entry table of Gantt Chart view. This is where you will enter your total Work estimate.

Do not enter anything in the Duration field. The Type field is also needed and may be inserted as a column or displayed in Task Entry view.

For more information about modifying views, refer to chapter 7, Using Views.

For a more detailed discussion of Task Types, refer to chapter 17, Working with Resources and Task Types.

Task Types, Effort-Driven

Scheduling options are per project options which establish the defaults how a project will be scheduled. These options are unique per project and should be checked before entering tasks into a project schedule. These options also may be changed at any time over the life of the project schedule.

To set the scheduling options:

Click **File → Options → Schedule**

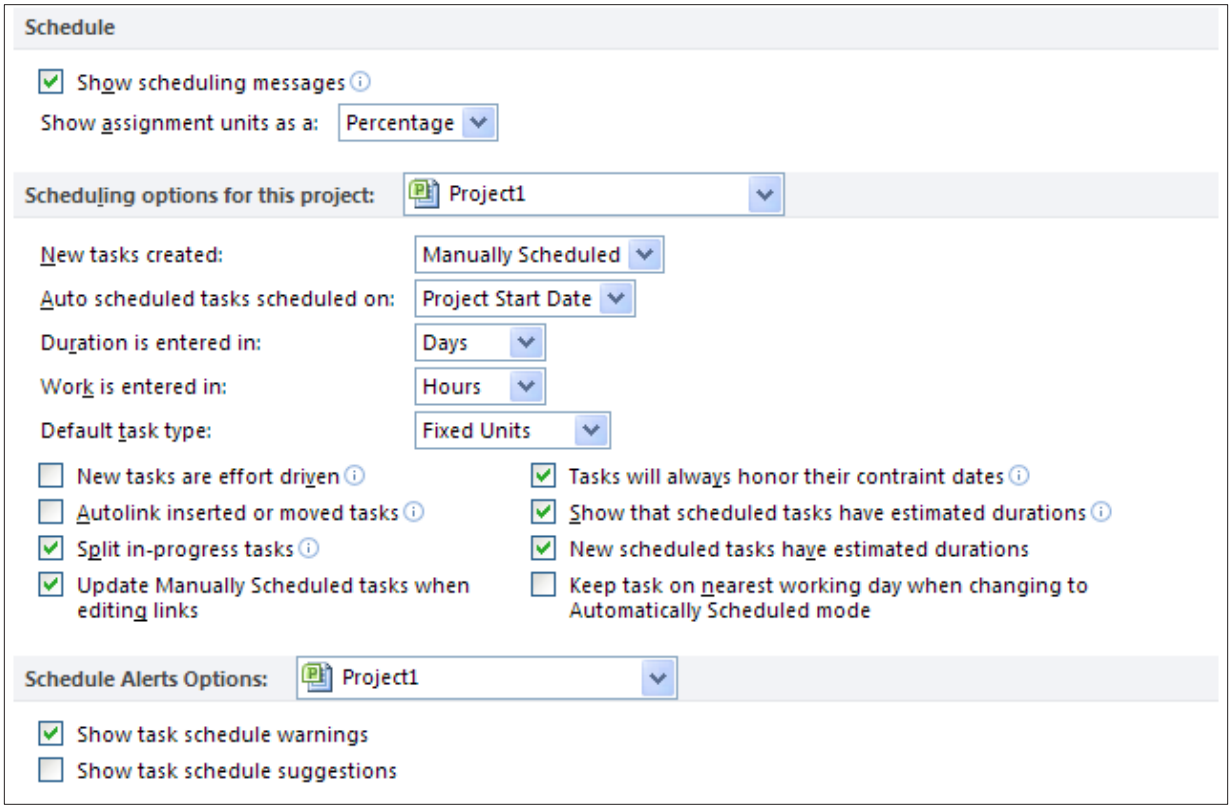


Figure 4-27 PLACEHOLDER

- **Show scheduling messages**: gives the scheduler error messages concerning scheduling inconsistencies and warnings.
- **Show assignment units as a**: options are percentage or decimal. This is user preference. It may be changed at any time without affecting the schedule.

- **Scheduling options for this project**: options that can be assigned to a specific project or all projects.
- **New tasks created**: manually scheduled or automatically scheduled. This is the default value and may be adjusted per task.
  - **Manually scheduled**: tasks will be entered without a start or finish date and without task duration. All values are entered manually.
  - **Auto scheduled**: tasks will be entered with a default duration of 1 day and a start and finish date.
- **Auto scheduled tasks scheduled on**: project state date or current date. If you are managing a long project it might be easier to change this option for all new tasks to start on the current date.
- **Duration is entered in**: minutes, hours, days, weeks, months
- **Work is entered in**: minutes, hours, days, weeks, months
- **Default task type**: Fixed Units, Fixed Duration, or Fixed Work
- **New tasks are effort driven**: check for yes
- **Update Manually Scheduled tasks when updating links**: when tasks are manually scheduled should the project schedule successor tasks based on realtionship links

It is a good idea within an organization to establish a standard for Duration and Work. When duration is discussed or appears on a report it will be easier for stakeholders to understand that duration always means hours or the value that works for the specific project. If you have a 3 year project, you probably will not be planning work at the hour level so weeks might be the duration standard.

Change to Auto Schedule

The column or field in Project 2010 that determines which scheduling mode a task will be scheduled by is called “Task Mode”. By default, you will see this field on the Entry table of the Gantt Chart. This column may be added to any task table.

Setting the automatic or manual scheduling mode may be accomplished in several ways:

To set the scheduling mode for a project or for all future projects:

- **File → Options → Schedule**

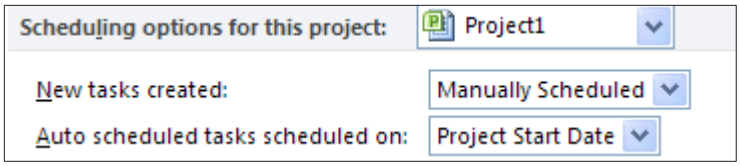


Figure 4-28 PLACEHOLDER

After several tasks are entered you may decide to switch to a different scheduling mode for the addition of future tasks for the project. This can be done quickly using the choice option at the bottom left hand corner of the Gantt Chart view which is shown below. Changing this option will not affect existing tasks in the schedule; it will only affect future added tasks. Click on the button highlighted below for the option to change scheduling modes:

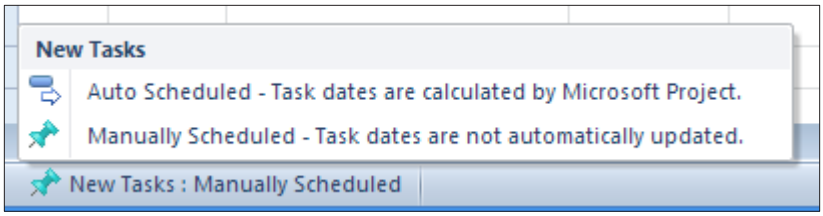


Figure 4-29 PLACEHOLDER

The default Entry Table for the Gantt Chart includes the “Task Mode” column inserted to the left of the Task Name column. This column may be inserted into any table as needed.. The indicators in this column indicate the scheduling mode for the task. In the view below the automatically scheduled tasks have a icon and the manually scheduled tasks have a icon in the Task Mode column. Hover your mouse pointer over the icon and the scheduling mode description will appear. Clicking on the icon will allow for scheduling mode changes per task. Note the different Gantt bar formats for manual v automatically scheduled tasks.

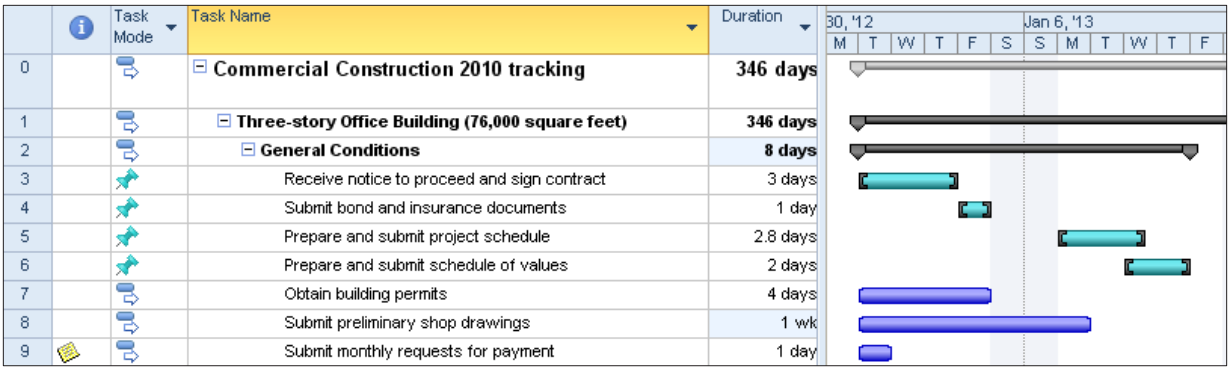


Figure 4-30 PLACEHOLDER

To change the scheduling mode from the Task ribbon:

- Click task to be changed
- Click **Task → Manual Schedule** or **Automatic Schedule**

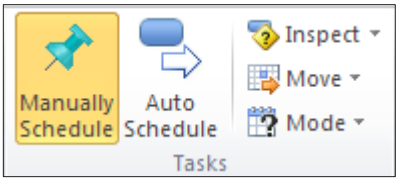


Figure 4-31 PLACEHOLDER

Another way to change the schedulig mode is to double clicking a task to open the Task Information dialogue box. An option is located on the General tab to change the scheduling mode. The options are highlighted in the view below.

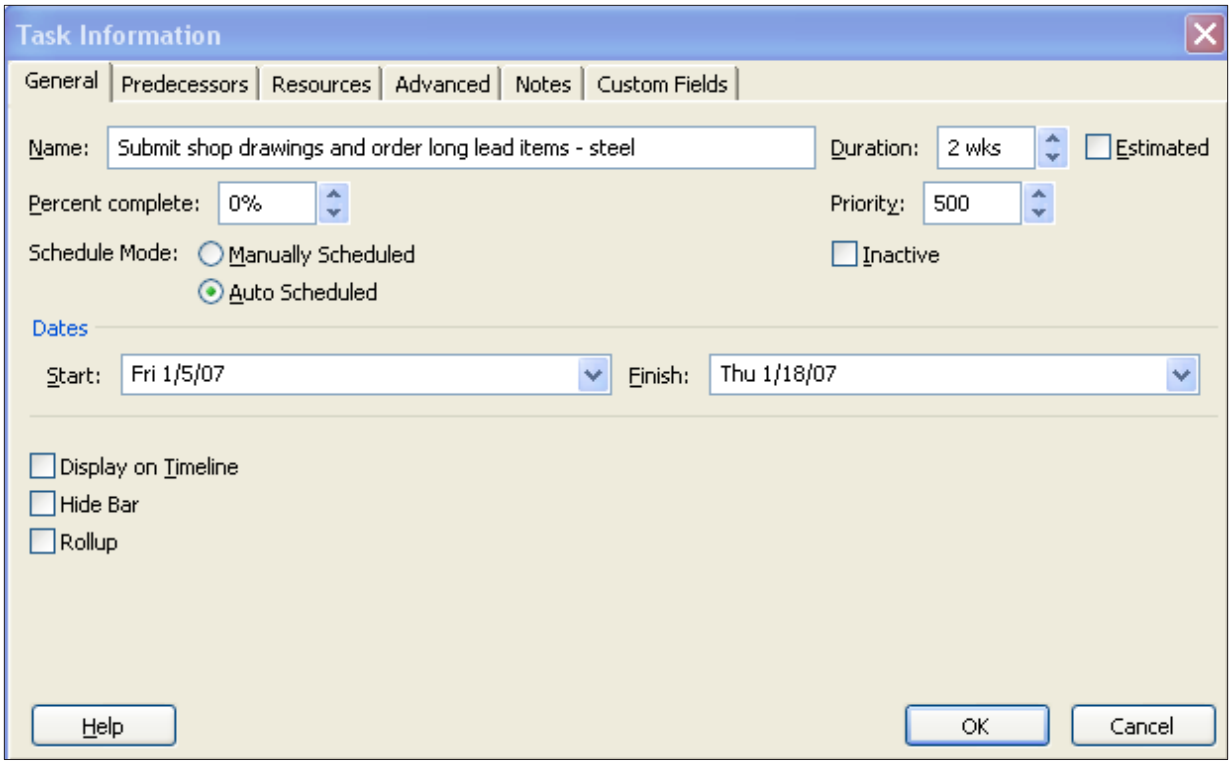


Figure 4-32 PLACEHOLDER

Chapter 5

Constraints and Deadlines

Constraints

What are Constraints?

Constraints are defined as conditions upon which a project must be managed against which can negatively affect budget, quality, schedule and scope.

Some typical constraints might include a lack of:

- Money
- Skilled resources
- Requirements for the project
- Equipment
- Management support
- Time

Even though the above constraints are important to the success of a project, Project 2010 cannot account for these constraints. However, the constraints Project 2010 can help you with are dates.

Tasks may require a target date or start at a specific date, end at a specific date, or require scheduling at the beginning or ending of a timeframe.

Date constraints can be used to refine the project schedule when greater control is needed for specific tasks start or finish dates. Using date constraints, however, will also remove flexibility from the schedule. It is for this reason that the use of constraints be kept to a minimum. Some of the date constraints are more flexiable than others available. The flexible constraints will be the most beneficial during scheduling.

Manual Scheduled tasks can not use contraints. They are used for Auto Scheduled tasks only.

Constraint Types

Constraints are used when a task must be scheduled with a specific date in mind or within a specific time period. When setting constraints, the following pieces of information must be known:

- Constraint type
- Date for the constraint

There are 8 constraint types available in the Project 2010 and all are date dependent:

1. **As Soon As Possible (ASAP)** - default constraint applied to all tasks when a project is scheduled from the project start date. Tasks will be scheduled as early as possible within a timeframe.
2. **As Late As Possible (ALAP)** - default constraint applied to tasks when a project is scheduled from the finish date of the project. Tasks will be scheduled as late as possible within a timeframe.
3. **Finish No Earlier Than (FNET)** - applied to a task that must finish no earlier than a specified date. The constraint date will be applied to the finish date of the task and the task will move forward in time to the date specified for this constraint.
4. **Finish No Later Than (FNLT)** - applied to a task that must finish no later than a specified date. During tracking, tasks will move forward in the schedule. Tasks with Finish No Later Than constraints will move forward and stop at the constraint date.
5. **Start No Earlier Than (SNET)** - applied to a task that must start no earlier than a specified date. The constraint date will be applied to the start date of the task and the task will move forward in time to the date specified for this constraint.
6. **Start No Later Than (SNLT)** - applied to a task that must be started by a specified date. During tracking, tasks will move forward in the schedule. Tasks with a Start No Later Than constraints will move forward and stop at the constraint date.
7. **Must Start On** – applied when a task has a hard start date. The task will move to the constraint date and is fixed on that date.
8. **Must Finish On** - applied when a task has a hard finish date. The task will move to the constraint date and is fixed on that date.

To Add a Task Constraint

Method 1

1. Double-click any cell in the desired task row to launch Task Information.
2. Click the **Advanced** tab
3. In the **Constraint type** drop-down list, choose the desired constraint
4. In the **Constraint date** field, enter or choose the desired date (optional)
5. Click **OK**

If the planning wizard appears because you are creating a constraint on a task with a link to another task, you must select: **Continue. A xx constraint will be set**. Any of the other choices will alter or cancel the constraint type you selected.

To Remove a Task Constraint

Method 1

1. Double-click any cell in the desired task row to launch Task Information.
2. Click the **Advanced** tab
3. In the **Constraint type** drop-down list, choose **As Soon As Possible**
4. Click **OK**

The Constraint date will be automatically cleared.

As Soon As Possible is for schedules calculated from a Project Start Date.

Method 2

1. Highlight cell with either the Start or Finish date
2. Press the **`Delete`** key

This method is typically used when you accidentally enter in the Start or Finish fields

Warning - If you do not have a predecessor link to a task and remove a constraint, the task simply moves to the start of the project and you may lose information related to the desired date for the task. Be sure to create the appropriate links first.

Avoiding Accidental Constraints

The project manager creates constraints when entering a constraint type and date for a task. Constraints can be created in other ways as well, often accidentally.

The most common mistake made in Project is entering dates on auto-scheduled tasks directly in the Entry table portion of the view so that task constraints are created. Unnecessary constraints make it extremely difficult to manage project schedules, and track and update activities within your project.

Constraints on auto-scheduled tasks are set when you do any of the following:

- Enter or select from the date picker pop-up a Start Date directly in the Entry table.
- Enter or select from the date picker pop-up a Finish Date directly in the Entry table.
- Drag a Task Bar in the bar chart left or right.

By setting constraints, you effectively lock those tasks from moving in the future. As your project progress has an ebb and flow of activity that takes the timeline forward or backward, these tasks will remain unmoved and unmovable, and will tend to bring up error messages.

If a Start date is entered for an Automatically scheduled task, a **Start No Earlier Than** constraint will be applied to the task. If a finish date is entered a **Finish No Earlier Than** constraint will be applied.

When working with constraints you may be prompted with a Planning Wizard message. These messages are optional can be turned off individually or globally as desired.

How to Disable the Planning Wizard Messages

Method 1 – Disable an Individual Message

1. In the Planning Wizard dialog box that appears, click **Don't tell me about this again**.

Method 2 – Disable All Messages

1. Click the **File** tab
2. Click **Options**
3. Click **Advanced** in the Project Options dialog box
4. Uncheck **Advice from Planning Wizard**

You can use this process to enable groups of messages that you individually disabled.

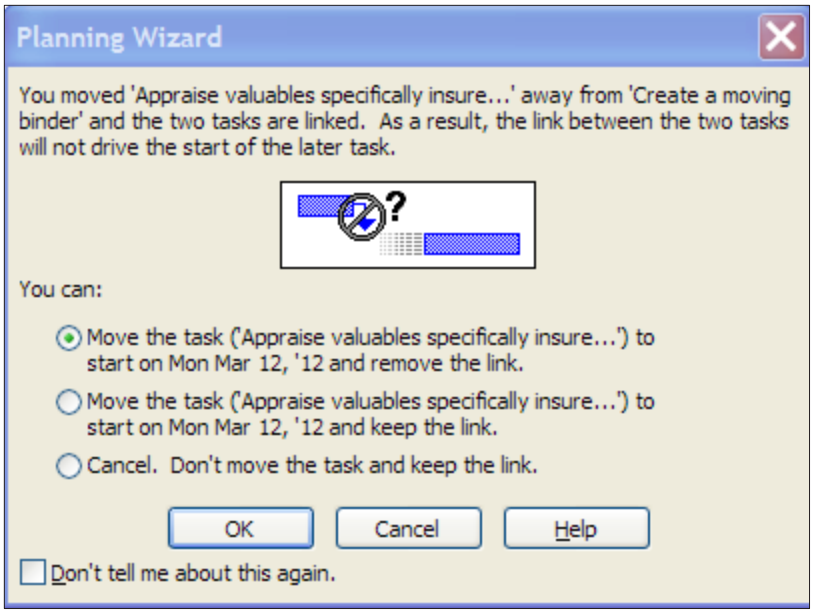


Figure 5-1 PLACEHOLDER

If Planning Wizard messages are turned off, you will not be alerted to possible scheduling errors that might be created as a result of creating a constraint or other scheduling issues.

You may also notice smart tags appearing in cells as you work with constraints. You may click the drop-down arrow next to the caution indicator to review available options.

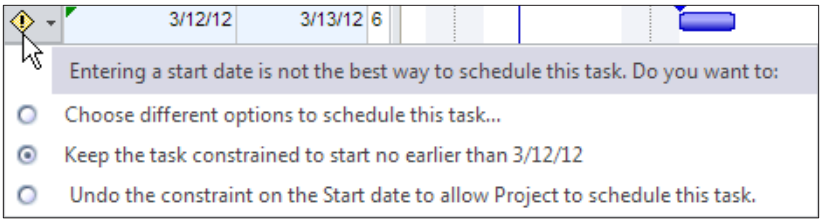


Figure 5-2 PLACEHOLDER

Selecting an option (even the suggested one by Microsoft Project) may alter your previously applied constraint.

Best Practice: If your scheduling style is to enter dates on each task, it is recommended that you use a manual scheduling approach instead of automatic scheduling. This will allow for tasks to be scheduled to the dates entered and will not be subject to the automatic scheduling engine of the software. If a task is scheduled using manual scheduling, the tasks can be changed to automatic scheduling at any time.

Constraints will also be entered as a result of the tracking process which will be discussed in a future module.

Effects of Constraints

Constraints may cause errors in the scheduling of a project that are not readily apparent. Refer to the example below.

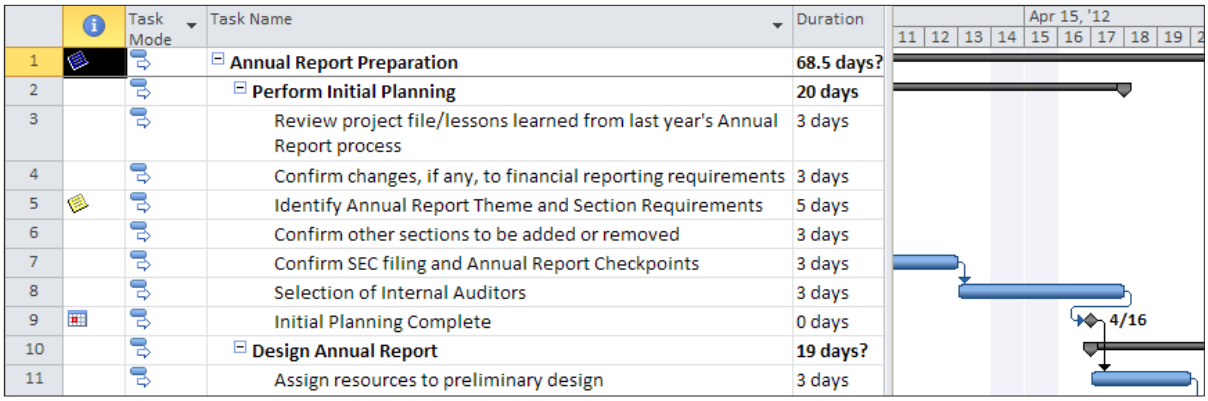


Figure 5-3 PLACEHOLDER

There is an error in the calculation of the date for the task 9 “Initial Planning Complete”. The relationship line after task 8, “Selection of Internal Auditors” flows backwards in time. The reason for this is that task 8 is scheduled to complete on April 17, one day later than the milestone target date of April 16. Tasks that are dependent on task 9 will also be miscalculated.

Monitoring for date calculation errors in your schedule is important.

Best Practices:

- Constraints should be used sparingly.
- Do not enter a constraint based on a random target date. All constraints should have a purpose and a reason why they are created. If you feel you must use constraints or enter start or finish dates for most of your tasks, manual scheduling might be your scheduling style.

Deadlines

Task Deadlines

Deadlines represent a finish date goal or objective for a task. Using a deadline on a task will still allow it to flow with changes to the schedule and will not restrict its start or finish date like a constraint will.

Use deadlines over constraints to eliminate pop-up error messages when planning or executing your schedule.

A project manager should use deadlines to mark targets in the schedule and to provide simple visual cues when a deadline is missed.

To Set a Task Deadline:

1. Double-click any cell in the desired task row to launch Task Information.
2. Click the **Advanced** tab
3. In the **Deadline field**, choose or enter the desired date
4. Click **OK**

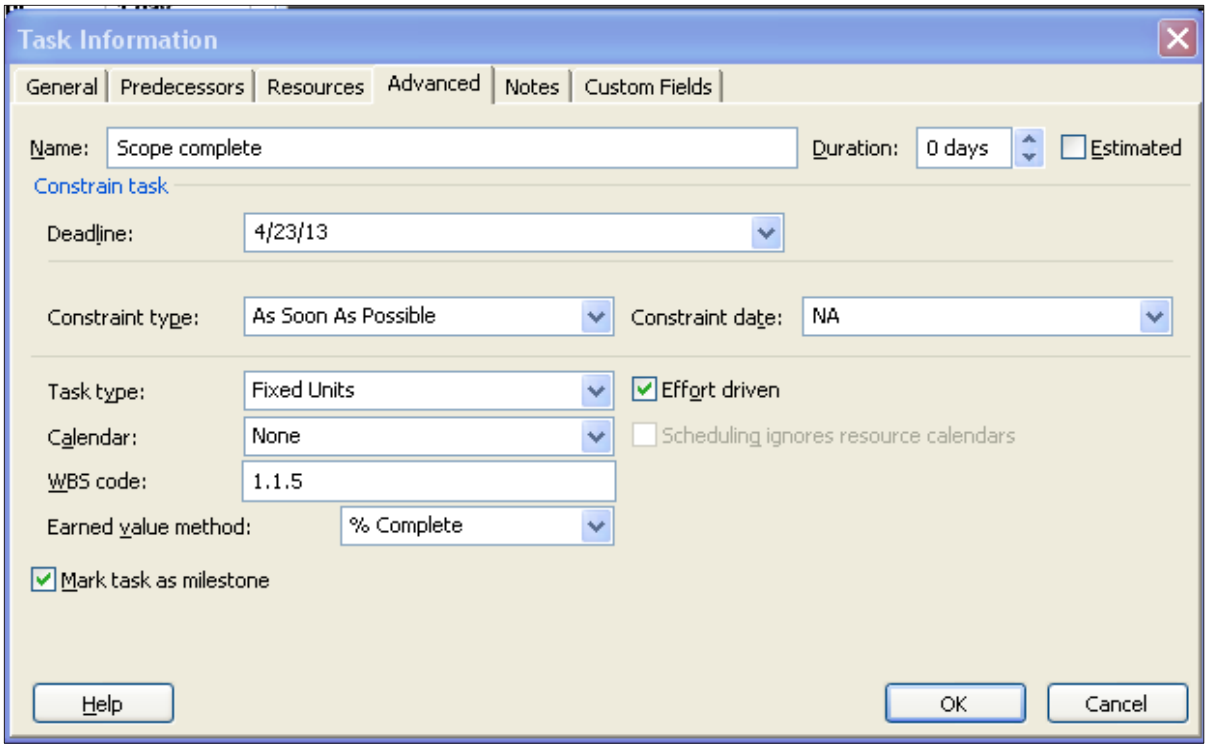


Figure 5-4 PLACEHOLDER

Refer to the following scenarios to further understand deadlines.

A deadline of April 23, 2013 has been assigned to the "Scope Complete" task below. The deadline is represented by the green arrow on the Gantt Chart and does not appear in the Indicator column.

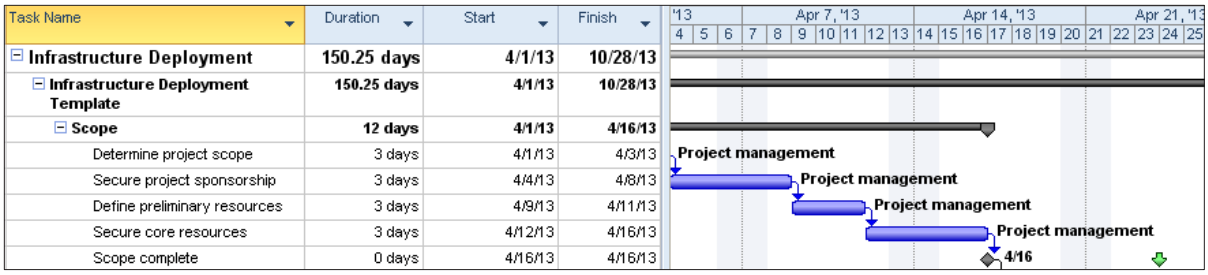


Figure 5-5 PLACEHOLDER

During project execution and tracking of the schedule, tasks will move forward in time. If a task with a deadline moves beyond the deadline arrow,

the task will be considered late. Below is an example of the warning that will appear in the Indicator column if a deadline is not met. Notice the red diamond in the indicator column explaining that the task date has exceeded the deadline date.

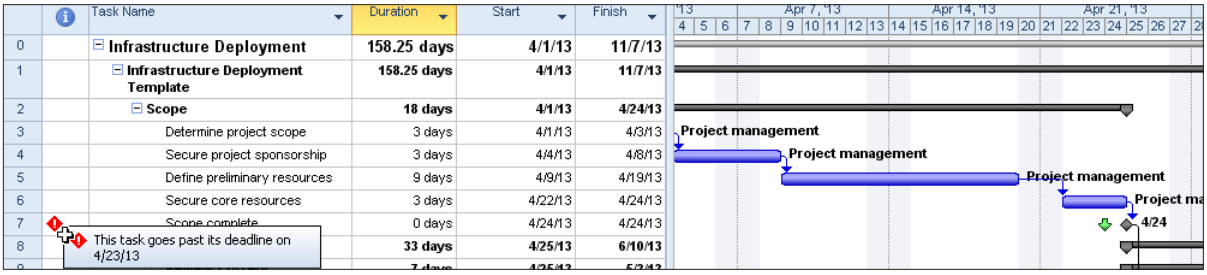


Figure 5-6 PLACEHOLDER

Another indicator to watch would be the Total Slack column. A negative value indicates that tasks are late and have missed or exceeded the deadline. The negative value indicates how many days the deadline was missed by. It is also an indicator of the amount of recovery time required to get the project back on track.

The Total Slack field provides information on auto scheduled tasks.

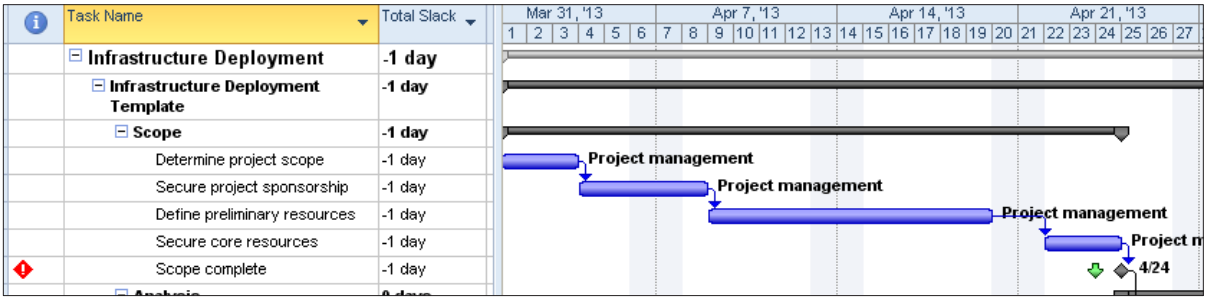


Figure 5-7 PLACEHOLDER

Unlike constraints, do not create date calculation errors in the schedule. Instead, they provide a visual indicator which flags you when deadline targets are missed.

Deadlines can be used in both manual or automatic scheduling mode.

To Remove a Task Deadline

1. Double-click any cell in the desired task row to launch Task Information.
2. Click the **Advanced** tab
3. In the **Deadline field**, select the date and press **Delete**
4. Click **OK**

Best Practices:

- Substitute deadlines for constraints when possible.
- Place deadlines on milestones to help manage short term goals. As long as the deadlines stay on the left side of the milestones, you are doing well.
- If a deadline date has been exceeded, check the Total Slack column or indicators column on auto scheduled tasks to see how much time needs to be made up to get back on schedule.

Split Tasks

Splitting Tasks

There will be times during project scheduling that will require an interruption of work for a particular task. For example when planning a task, some of the work will occur on Monday and the remainder will occur on Monday the following week. In this situation two tasks could be entered or creating a split task would also work. Split tasks are designed for scheduling tasks that start then stop and start again.

When to use split tasks:

- When the work of a long task is required to work around other tasks. Some of the work would be done before a hard date and the remaining portion of the work would be scheduled after the hard date.
- Splits tasks may be used to help even out the resource work load
- 100% of the work for a task is not required to be performed without interruption and could be broken up over time.

To Split a Task

1. Click the Task tab
2. Click the Split Task icon
3. Position the mouse pointer in the middle of the Gantt bar for the desired task
4. Click and drag to the right until the desired split is achieved

Figure 5-8 PLACEHOLDER

Refer to the following tips and guidelines regarding task splitting.

Repeat the above steps to create additional splits

Both auto and manually scheduled tasks can be split.

- Hover the split task mouse pointer over the Gantt bar of the task to be split.

  The screen below will show the information box that will appear.
- As the mouse pointer is dragged the length of the Gantt bar, the date will change in the box. Clicking the mouse pointer will split the task and leave a gap between tasks.

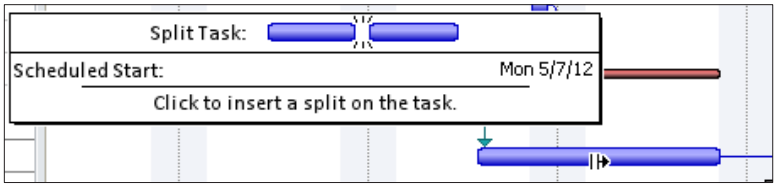


Figure 5-9 PLACEHOLDER

If the schedule has used “day” durations of tasks as the default scheduling increment, the gap in the split task will advance in 1 day increments or 1 week increments if “weeks” was used. A split task is shown in the view below.

Figure 5-10 PLACEHOLDER

The dots between the sections of the task are the split task indicators showing that the task has been split. The individual parts may be dragged back and forth as necessary to achieve timeframes that will work best for the task. Drag the pieces back together will eliminate the split status for the task.

To Unsplit a Task

1. Position the mouse pointer on the left side of a right most bar segment
2. Drag the segment to the left until it connects to the bar segment

Repeat the above steps to reconnect additional segments if needed

There are a few rules, however that you should be aware of when working with split tasks:

- When a task is split, it is still one task and will be treated as such.
- Relationships will be applied to the beginning and ending of the entire split tasks only and not to the individual pieces. The individual parts are not separate tasks and cannot have discrete relationships.
- When resources are assigned, the work will be distributed over the total task duration and task as a whole.
- Constraints are applied to the start or the finish of the entire task and cannot be applied to the individual parts.
- The parts of the task may be dragged back together when needed.
- Tasks may be split multiple times.
- Splitting will refine the workload and the duration of the task.

Hiding bar splits will conceal separations of a task and may create confusion when the task duration does not match the Gantt bar length of the task.

Split bars will occur during the tracking process to represent a task which stopped and restarted or a period of inactivity.

Task Calendar

Applying Task Calendars

There will be times when a task must occur within a unique timeframe and outside of the project calendar parameters. In order to accommodate such instances, users can create a distinctive calendar that can be assigned to a task. In doing so the task will be scheduled in the unique timeframe and not affect the scheduling of the entire project.

Below are some examples of when a task calendar would be used:

- Testing at a bank can only occur after the bank is closed 9pm to 6 am
- A weekend cut over of a software package or upgrade
- Testing of a product that requires a 24/7 test
- A task that must occur on second shift
- Task applied to an resource in an alternate time zone

The first step in using task calendars is creating the calendar using the same process described in Module 2 to create a base calendar. After the calendar is created, it then may be applied to task. The resources assigned to the task will also be required to work in the unique timeframe. There is an option to ignore the resource calendars and allow the scheduling of the resources to be directed by the task calendar for the specific task only.

To Assign a Calendar to a Task

1. Double-click any cell in the desired task row to launch Task Information.
2. Click the **Advanced** tab
3. In the **Calendar** drop-down list, choose the desired calendar
4. If desired, click **Scheduling ignores resource calendars**
5. Click **OK**

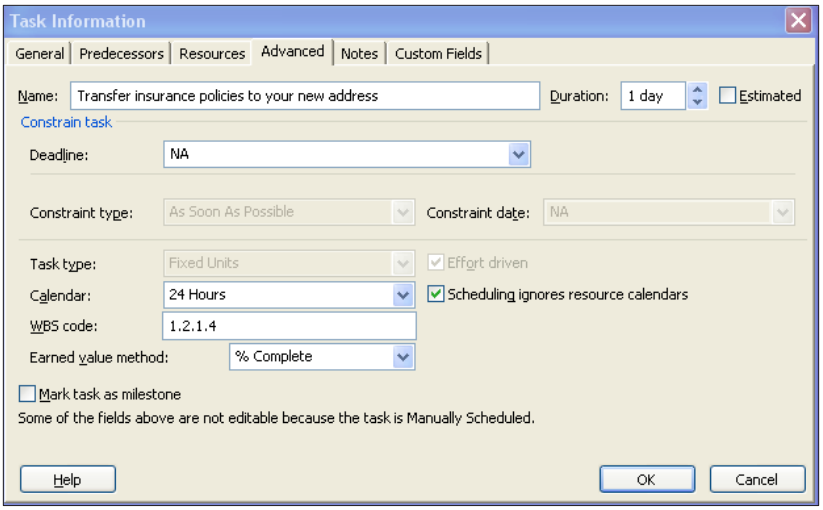


Figure 5-11 PLACEHOLDER

A visual indicator will appear in the Indicator column in the Gantt chart view.

Figure 5-12 PLACEHOLDER

Task calendars may only be applied to automatically scheduled tasks or manually scheduled tasks.

Move Project

Moving the Entire Project Timeline

Typically a project start date might change between the time the project is planned and the project actually starts. There are several methods available to change the project start date. It is important that the tasks are re-scheduled to adjust to the new start date.

The easiest way to change the project start date is use the Project Information box. Changing the start date using this method will move all tasks **without entered dates or constraints** to be rescheduled as of the new start date.

To Change the Project Start Date

1. Click the **Project** tab
2. Click **Project Information** in the Properties group
3. In the **Start date** field, enter or choose the desired new date
4. Click **OK**

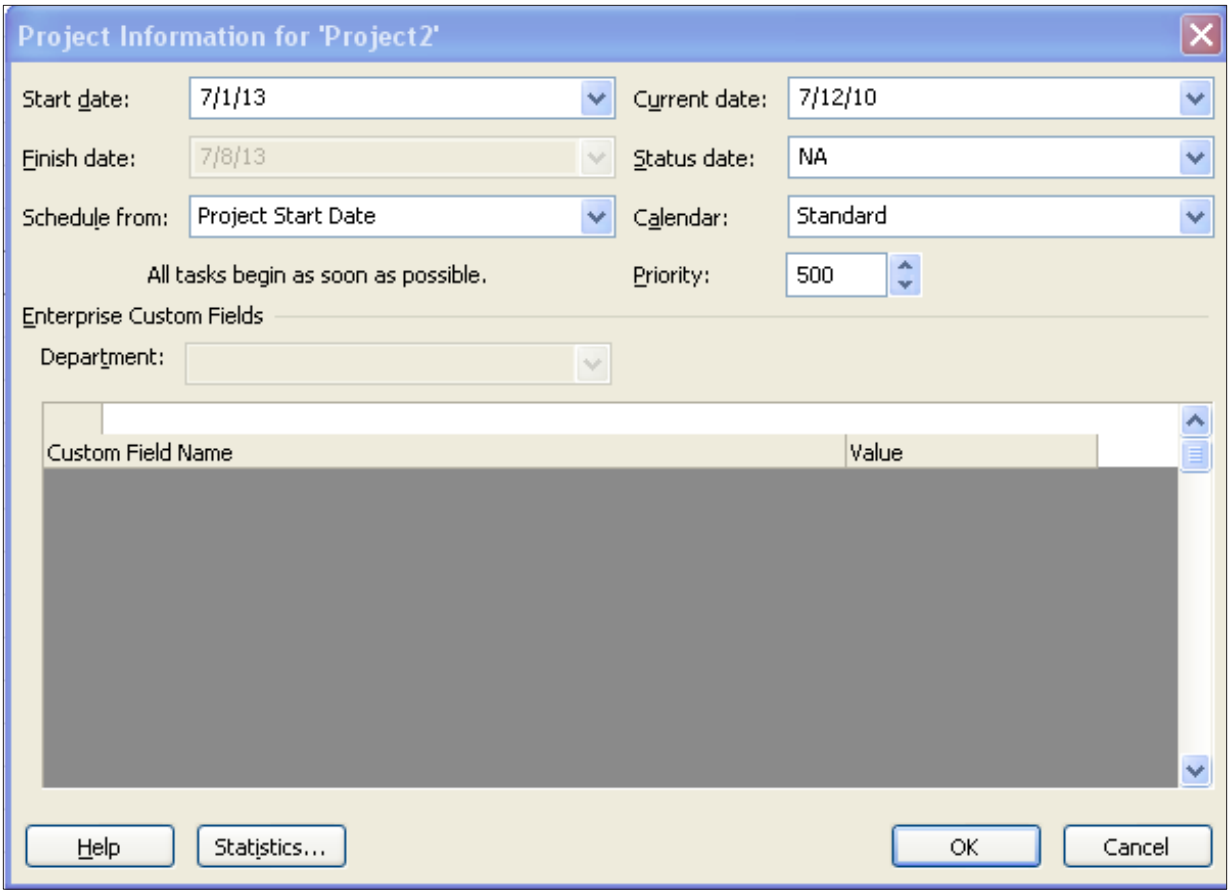


Figure 5-13 PLACEHOLDER

Changing the project start date will **not** reschedule tasks which have entered dates or constraints. Project 2010 provides a function called **Move Project** which will move **all** of the tasks to the new project start date. When tasks with constraints are moved using this function, the constraint dates will be adjusted based on the new project start date.

For example: if a task has a constraint 3 months from the start date of the project and the project start date is moved 6 months the constraint date will be re-scheduled 3 months from the new project start date.

The **Move Project** function also has an option to move project deadlines. If this option is not selected, the Deadlines will remain at the orignial dates and will need to be udpated manually.

To the project start date and move tasks with dates to a new timeframe:

To Move a Project

1. Click the **Project** tab
2. Click **Move Project** in the Schedule group
3. In the **New project start date** field, enter or choose the desired new date
4. Click **Move deadlines**
5. Click **OK**

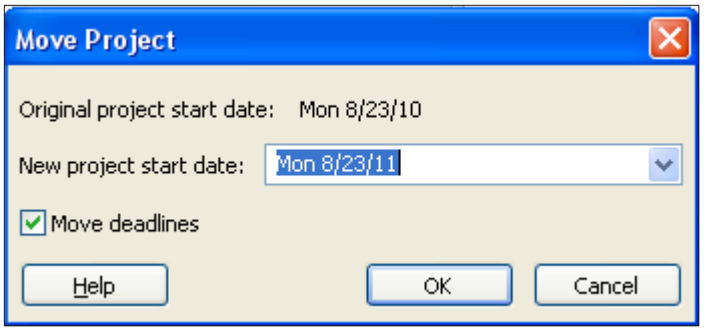


Figure 5-14 PLACEHOLDER

Any task that is not already linked in the schedule will move to the new start date that you enter using either of the methods above.

When you start a project as either a blank schedule or from a template, changing the project start date is recommended as a first step. If your project is fully planned out and has any type of task-related locked dates including deadlines or constraints, moving the project is recommended. This is especially useful when funding for a fully planned project has been delayed.

Task Notes

Adding Notes to Tasks

Each task has a freeform notes field. This field has no character length limitations, allowing for very detailed task notations. The notes field may contain several types of information such as objects, hyperlinks, bulleted lists, etc. Notes may be printed on reports, exported to Excel and may be used as needed throughout the life of the project schedule.

To Add a Task Note

1. Method 1
   a. Double-click any cell in the desired task row to launch Task Information.
   b. Click the **Notes** tab
   c. Enter the note
   d. Click **OK**
2. Method 2
   a. Select any cell in the desired task row
   b. Click the **Task** tab
   c. Click **Task Notes** in the Properties group
   d. Enter the note
   e. Click **OK**

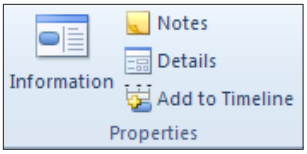


Figure 5-15 PLACEHOLDER

The notes view for a task is shown below:

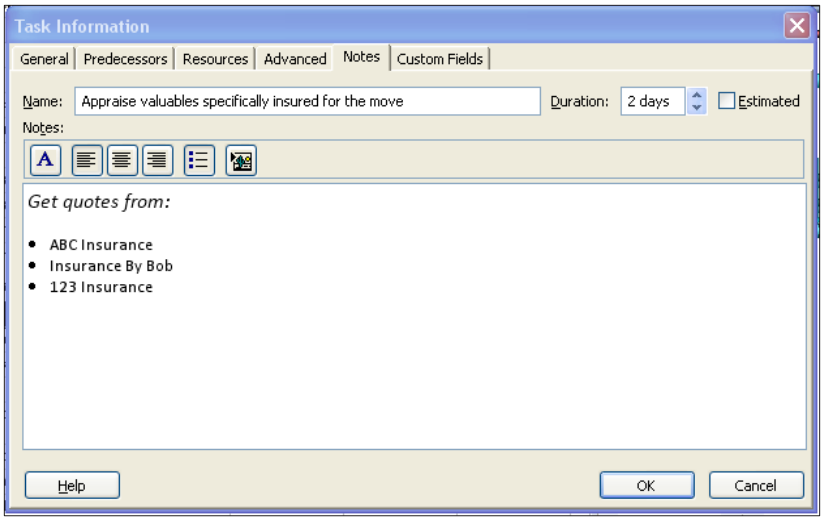


Figure 5-16 PLACEHOLDER

The Indicator column provides a visual indicator that a task note exists. Hovering the pointer over the icon will display the note preview to give the reader an idea of its content.

Figure 5-17 PLACEHOLDER

Notes can be invaluable and should be used during the planning and execution of the project. After the project is completed and a post-project review is conducted, task note information will help in recalling details of what occurred during the performance of tasks.

Best Practice: Although the software allows users to insert images, documents and other objects and files into the notes, users should avoid doing so as it will significantly increase the file size. It is better to insert references or links to where the user can find associated and relevant files.

Chapter 6

Resources

Work, Material, Cost: Resource Types

Without resources doing the work projects would remain a planned schedule. Project 2010 has the ability to offer multiple types of resources to help accomplish the work of a project. The different types of resources are intended to provide flexibility to address most types of resources required during the planning and management of a project.

In this lesson we will discuss the resource types and their intended use:

1. Work resources
2. Cost resources
3. Materials resources
4. Budget resources

Work Resources

Assigning work resources to a project will allow for resource requirement forcasting and project scheduling based on resource availability. Work resources are usually human resources but can also be facilities, equipment rental and other types of resources. Resource costs can be forecasted using resource assignments to provide projected project budgets. Each work resource entry will contain a resource type, grouping, availability calendar, rate tables and other relevant data.

Effective uses of Work Resources are:

- Individual people – actual named resources
- Generic resources – these are job titles that can be used as placeholders to identify resources by skill type, skill level or if a resource is unknown. For example: DBA, Developer level 1, Event Planner, Plumber
- Group resources – used to state the quantity of a specific type of resource. For example: Helpdesk, Movers, Painters, Attendees, Members
- Facilities – a room or area that must be reserved for a period of time

- Contracted resources – external contracted labor
- Equipment – a machine used for a particular number of hours

Cost Resources

Cost Resources are defined as any thing that will add a dollar(s) cost to a project. Use of Cost resources enables the scheduler to add estimated costs during the planning phase of the project. These costs will be updated into the baseline. When actual costs become available during tracking, the actual costs will be updated and compared against the original estimates to provide a variance.

Cost resources will inherently increase the cost for a task and for the project. Cost resources have no effect on work or duration. The cost value is applied to tasks as a flat amount at the time of assigning the cost expense to a task.

Effective uses of Cost resources are:

- Flat estimated cost:
  - Travel expenses estimated in advance
  - Flat amount equipment rental
  - Flat amount facilities rental
- Fees: license fees, permits
- Estimates for meetings expenses or food provided for events
- Estimates for miscellanous project expenses
- Estimates for a flat amount for a fixed bid contracted resource when hours are not accumulated

Best Practice: Project 2010 allows for as many cost resources as needed but for simplicity try to consolidate cost resources and keep them to a limited number. The type of reporting required for the project would drive the quantity of cost resources that will be needed.

Material Resources

Material resources are defined as consumables. For example: Reference books for a new product might cost $50 each and 20 books are needed. A material resource would be created with a cost of $50 per book. An assignment would be entered for a task for 20 books. As a result $1,000 is added to the cost of the project. During tracking, the actual number of books would be entered to adjust the quantity if necessary.

The cost of the material resources are added to the total cost of the project and updated into the project baseline. Material resources do not affect work or duration.

Effective uses of Material resources are:

- Construction: create a material resource for the cost of 1 foot of trim. Enter the number of feet required for the task
- Conference: create a material resource for the cost of giveaway bags. Enter the number of giveaway bags needed for the conference
- Servers: create a material resource for the cost of 1 server. Enter the number of servers needed for the project.

Best Practice: If your project will be using a large quantity of materials such as a construction project, using Excel might be less work and a more effective means of keeping track of materials.

Resource Sheet

A work resource is usually a named person or generic skill type.

- The resource cost is stored in the resource record on the Resource Sheet.
- The number of hours of work will come from the assignment of the resource to the task.
- Assignments units will be the quanitity of the resource.

Resources are entered on the Resource Sheet.

To display the Resource Sheet:

- Click **Task → Gantt Chart view → Resource Sheet**

The default table view of the Resource Sheet is called the entry table view which is shown below. This table is a subset of many resource fields of information that are available. This table represents the most important fields that should have values entered for a resource. More information is accessible through the Resource Information dialog box.

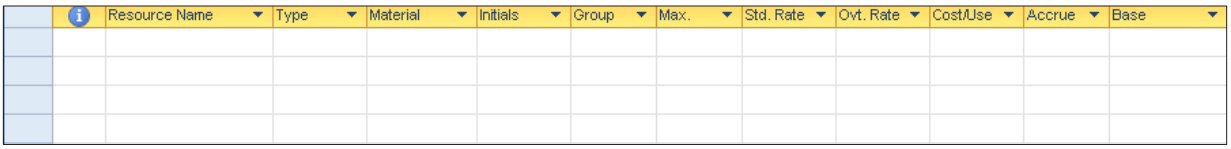
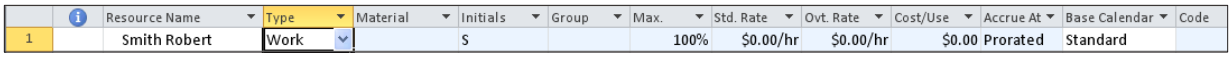


Figure 6-1 PLACEHOLDER

To enter a resource, type the resource name in the “Resource Name” field. The Resource Name is the key field for the resource data.

Many reports and assignment views will display resources in alphabetical order. A standard of last name first name allows for easy location of resources while making assignments. The database does not allow commas or other special characters. When entering first names it is best to use full first names and avoid using nicknames.

After the name is entered, several fields will be populated with default information. The view below shows the default information that is automatically entered:



	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar	Code
1	Smith Robert	Work		S		100%	$0.00/hr	$0.00/hr	$0.00	Prorated	Standard	

Figure 6-2 PLACEHOLDER

The values for these fields are:

Type: Work is the default and will establish Robert Smith as a work resource. Other values are material and cost and can be changed by clicking the down arrow and changing the type selection.

Material: used for Material resources only – skip for work and cost resources.

Initials: enter full initials for resources. Initials may be substituted on Gantt Charts or reports as needed to shorten reports.

Group: Group is technically a free use field. It is usually used for department, location or skill set. It is one of the few fields populated in the task data when an assignment is created. This information is used to generate reports by groupings of resources. A best practice is that an organization set a standard for the use of this field.

Max units: The value shown above is in the default percentage format but can also be viewed as a decimal value.

To change to a decimal value: Click **File → Options → Schedule**

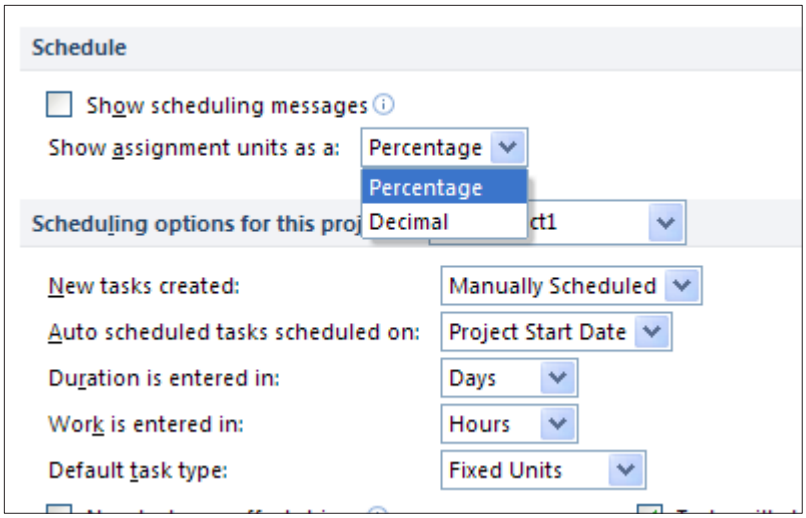


Figure 6-3 PLACEHOLDER

The Max units' value is an indicator of the quantity of a resource that is available. Typically an individual should always have a value of 1 or

100%. When entering a group resource such as the number of people on the Helpdesk, enter the number of resources in the group. Each resource represents 1 unit. The available quantity of the resource will be determined by number of hours in a day x Max units. For example if there are 5 people on the Helpdesk, enter 5 or 500% in the Max Units column. With 5 available resources each one can work 8 hours per day. Helpdesk will have 40 available hours of work per day. When Helpdesk resources are assigned to a task, the Helpdesk will be not be overbooked until 40 hours have been assigned.

Some reference sources recommend using a lesser value in the Max units field to limit a resource's availability. This can produce variable results when creating assignments.

Standard rate: Enter the loaded rate for the resource. A loaded rate is pay scale plus overhead factors. In most organizations, this figure comes from the accounting department with periodic updates. Default is rate per hour but a rate may be enterd as /yr a yearly rate or /w for a weekly rate.

Overtime rate: When using overtime, a rate for the overtime hours may be entered in this field. It will affect only overtime hours entered.

Cost per use: An extra value that may be added to a task over and above the Standard Rate for the resource. For example: A repairman is called to fix a refrigerator. The repairman charges a transportation charge, and hourly rate, plus parts. The cost per use is the transportation charge and would be applied to every task the repairman would be assigned to.

Accrue at: Cost accrual is an indicator of a point in time when costs are incurred. Cost accrual settings have 3 options: incur costs at the start of the task, incur costs at the end of the task, or incur costs throughout the task (prorated). Prorated accrual is the default option.

Base calendar: Each work resource will have a resource calendar associated with it. The resource calendar is based on calendars that have been previously established for the project. The Standard Calendar is the default resource Base Calendar. If the base calendar contains company non-working time it is not necessary to reestablish company holidays, statutory holidays, etc. as all of these will be applied to the resources. Use the dropdown list to select the appropriate calendar for a resource.

The Resource Information dialog box is used to record information about a resource that is not captured in the Resource Sheet.

To view Resource Information dialog box:

- Double click the resource you wish to access

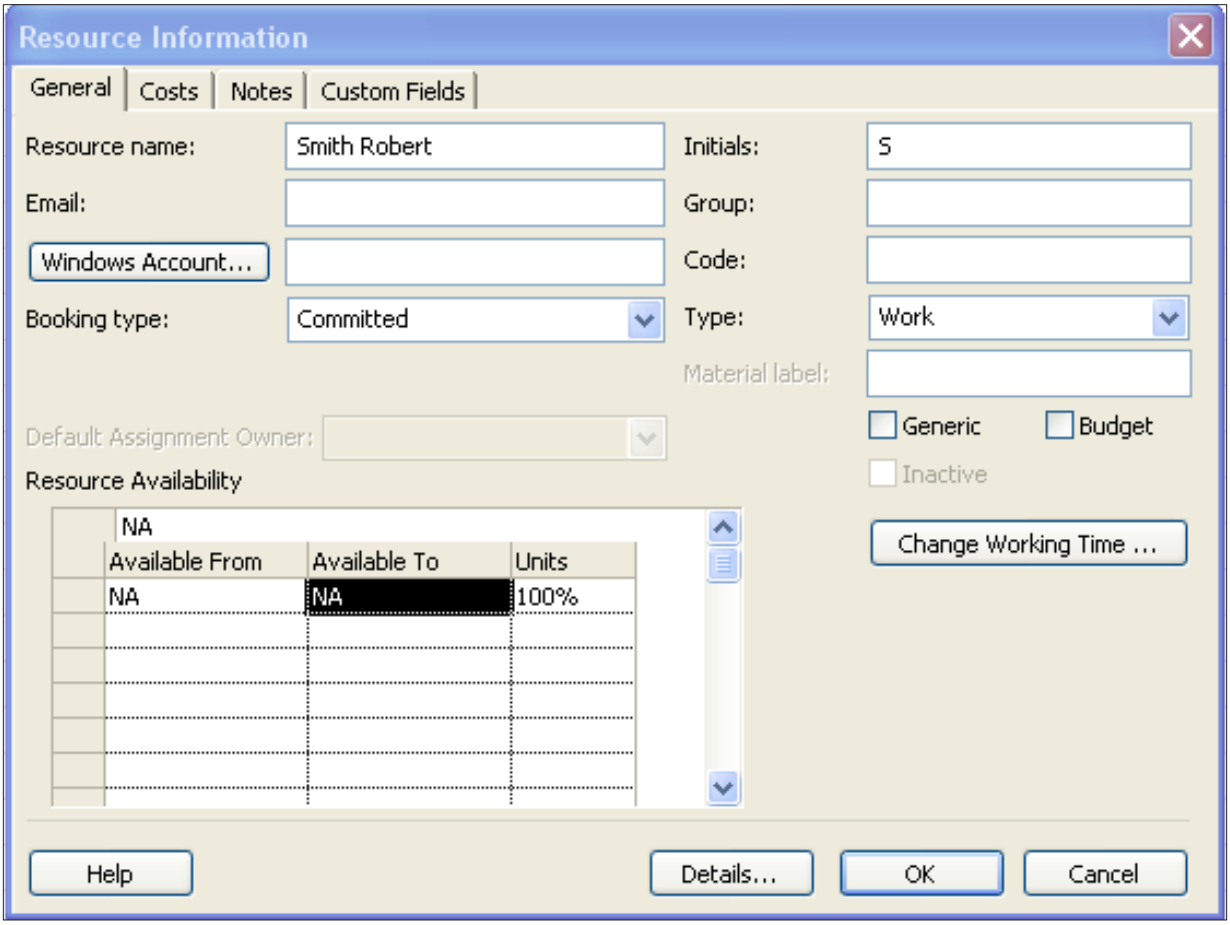


Figure 6-4 PLACEHOLDER

General tab data:

Email: reference only for Project 2010 standard

Windows Account: Project Server 2010 usage only

Booking type: Project Server 2010 usage only

Code: If you have a code associated with a resource, enter it here. Typically this code is a cost center or department cost category. Free use field for users.

Generic: Click this field to indicate that the resource is a generic resource. A generic resource is a skill type resource to be used as a holding value until a human resource is assigned. When generic resources are used, default base calendar for scheduling.

Budget: budget resources only

Inactive: Project Server 2010 use only

Resource availability: Enter dates if the resource is only available for a particular period of time. For example: An outside contractor is hired for a specific length of time. Enter the date ranges the resource will be available.

To change the resource availability calendar:

From the **General** tab, click **Change Working Time** button. The view will appear:

The form looks identical to the form used to change project and base calendars discussed in an earlier module. The view above is the calendar assigned to Smith Robert and it uses the Standard calendar as a base build the calendar for the resource. Changes to this calendar are made in the same way that changes were made to the project calendar.

Click **OK** to close the calendar form.

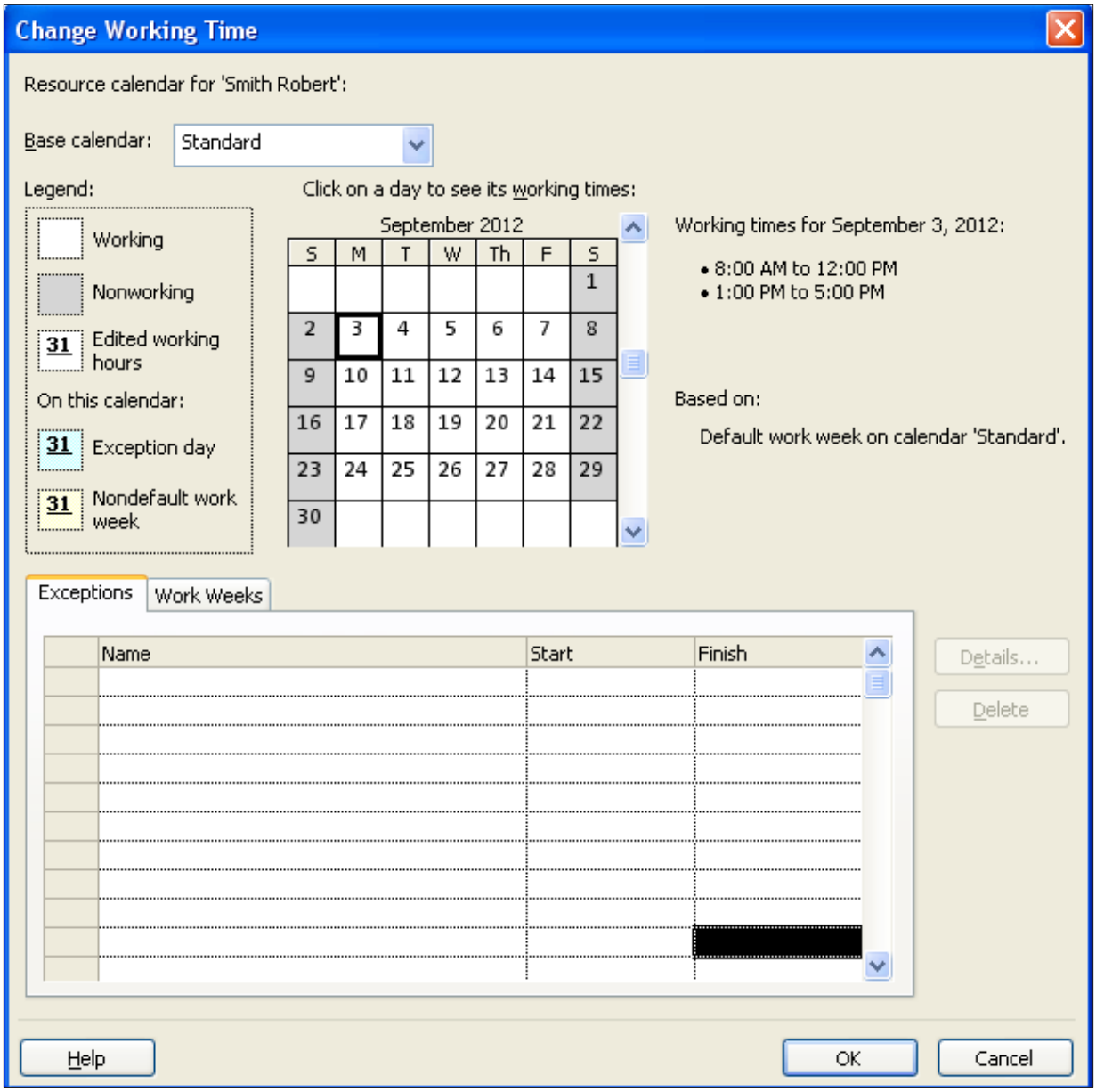


Figure 6-5 PLACEHOLDER

Cost tab data:

Resource costs are stored on the Cost tab. A resource may have up to 5 cost tables to accommodate varying rates. The tables are labeled A, B, C, D, and E. Labels may not be changed. Some resources will charge

different rates when performing different types of work. Each assignment may be assigned a rate table.

If more than one rate table is being used for a resource, enter a note on the Notes tab to help keep track of the purpose of each rate table.

Most organizations using costing experience periodic rate changes. The effective date allows early storage of future rate adjustments and become active based on a cut off date. If a project spans the cut off date, the tasks before the cut off date of the project will be costed at the earlier date rate and the remaining tasks which exceed the cut off date will contain increased rate. It is easy to see that if a project runs late, the cost of the project could increase when using rate tables.

If using resources that come on shore and off shore use the effective date to change rates for resources when they change location.

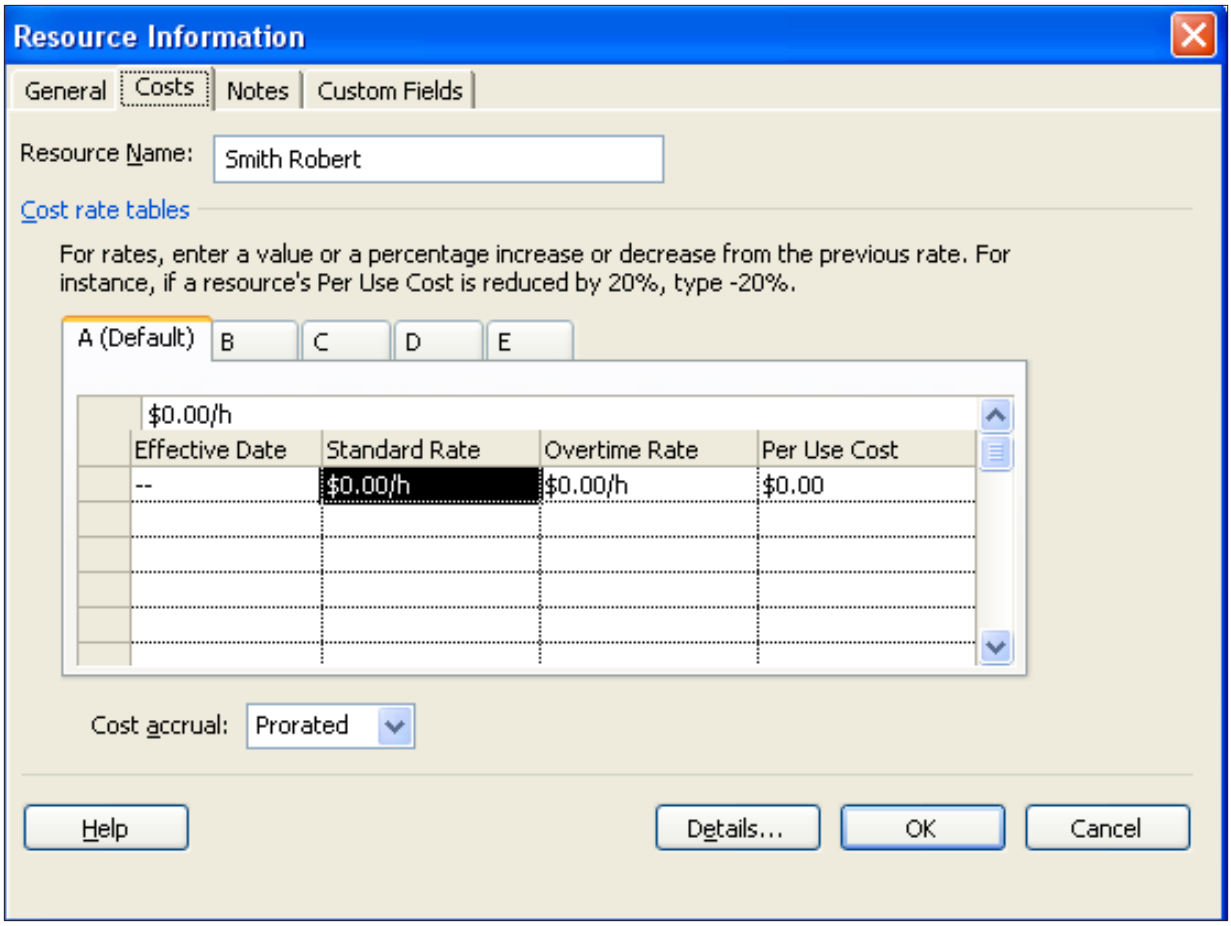


Figure 6-6 PLACEHOLDER

Notes tab data:

Resource notes are treated the same as task notes within Project 2010. Resource note data has the same formatting and flexibility as task notes.

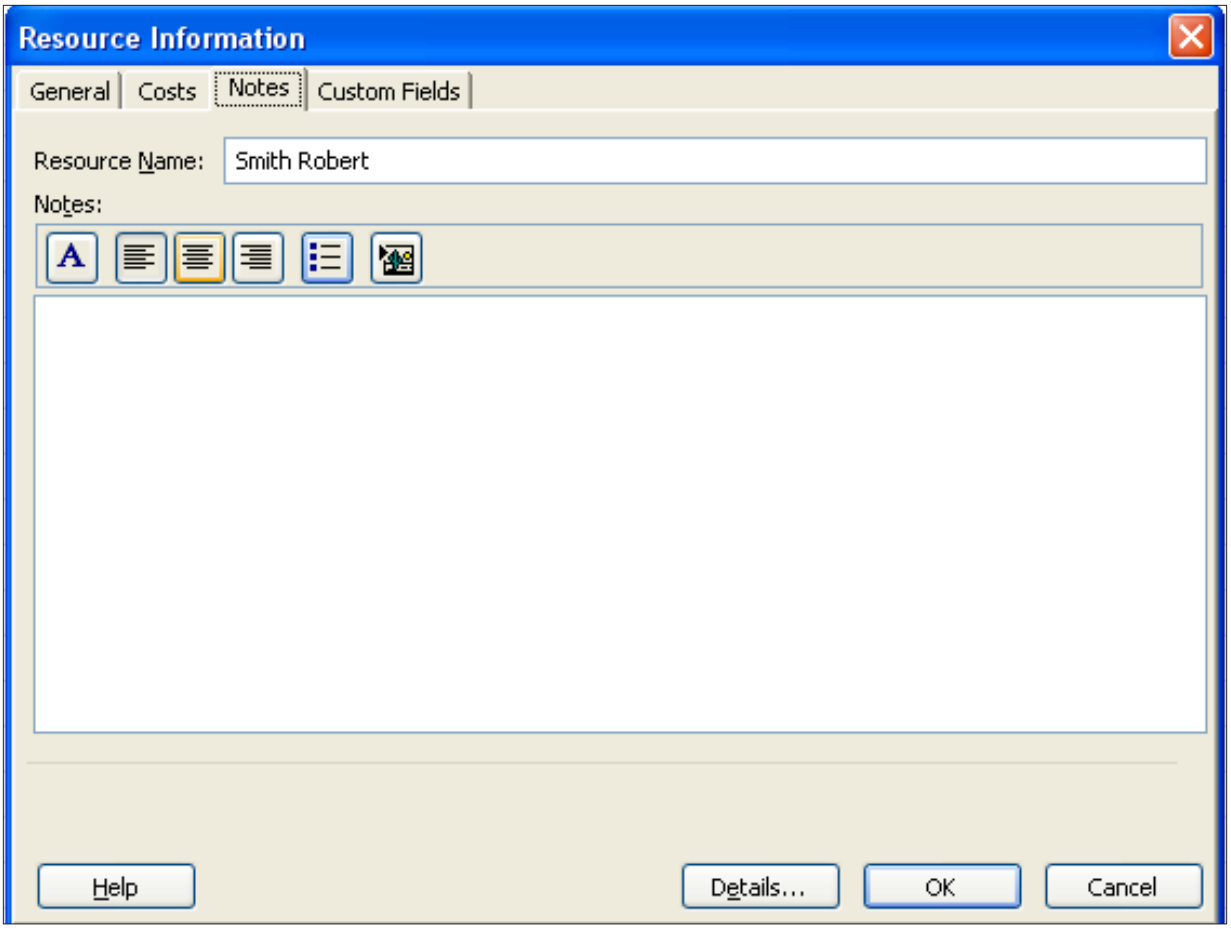


Figure 6-7 PLACEHOLDER

Custom Fields tab data:

If custom fields have been created for resources, they will be available through the custom fields tab.

Resources may be imported from Active Directory and Outlook to be added to the Resource Sheet. Once they are downloaded from these sources, additional information will be required to complete the entries for the resources.

To access the download function for resources click:

- Click **Task → Gantt Chart view → Resource Sheet**

- Click **Resource → Add Resources**
  Add Resource options are shown below.

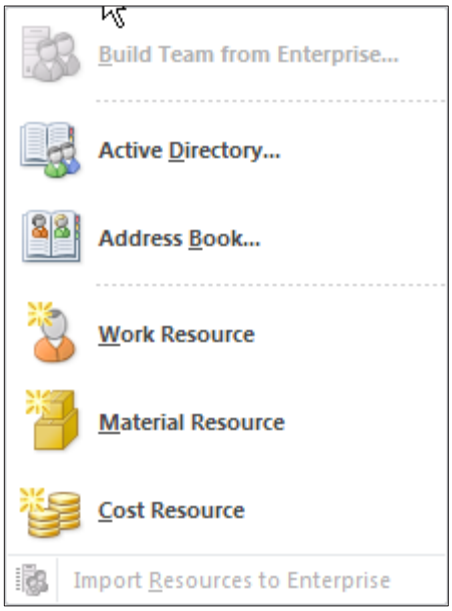


Figure 6-8 PLACEHOLDER

Calendar

Material Resources

Material resources are supplies to be used by the project, such as paint, building materials, equipment, etc. Material resources are valued based on the quantity of material to be used which is assigned to a task.

Below are the fields associated with Material resources.

Resource name: name of the consumable item

Type: Material

Material label: boxes, gallons, feet, each – the label that describes the material

Standard rate: the per unit/each price

Accrue at: accrual rate for the material

Material resource entries are shown below:

Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue At
Smith Robert	Work		RS		100%	$100.00/hr	$0.00/hr	$0.00	Prorated
Paint	Material	gallons	P			$25.00		$0.00	End
PC's	Material	desktops	PC			$2,000.00		$0.00	Prorated
Boxes	Material	each	B			$10.00		$0.00	Prorated

Figure 6-9 PLACEHOLDER

Cost Resource: Lite

Cost resources are used to apply estimated costs specific tasks in a project. Estimated costs are entered during the planning stage and tracked when actual costs are entered during the execution or control stage of the project.

When naming cost resources include “Cost” as the first word in the name. It will be helpful when assigning cost resources for the name to give an indication of the resource type. Resources appear in alphabetical order when creating assignments and including “Cost” as the first word ensures all Cost resources will be grouped together in the list.

To enter a cost resource:

Resource name: For example: Cost travel, Cost food, Cost room rental, etc.

Type: Cost

No other information is required. Below 3 cost resources have been added. The amount of the cost will be added at the time the assignment is created.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue At	Base Calendar
1	Smith Robert	Work		RS		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
2	Paint	Material	gallons	P			$25.00		$0.00	End	
3	PC's	Material	desktops	PC			$2,000.00		$0.00	Prorated	
4	Boxes	Material	each	B			$10.00		$0.00	Prorated	
5	Cost travel	Cost		C						Prorated	
6	Cost food	Cost		C						Prorated	
7	Cost room rental	Cost		C						Prorated	

Figure 6-10 PLACEHOLDER

Assign Cost Resource

The purpose of assigning a cost resource to a task is to add additional estimated costs that the task might incur. Tasks may have multiple cost resources applied but the same resource name may not be applied more than once. Cost resources will not affect the scheduling of a project.

There are several methods available to assign a cost resource to a task. A few are described below:

Create an assignment using the Assign Resources box:

- Click **Task → Gantt Chart**
- Click **Resource → Assign Resources** to display the Assign Resources dialog
- Click on the task you would like to assign a Cost Resource to
- Click the **Cost resource name**
- Enter the amount of the cost in the cost column
- Click **Assign**
- Click **Close to close the box**

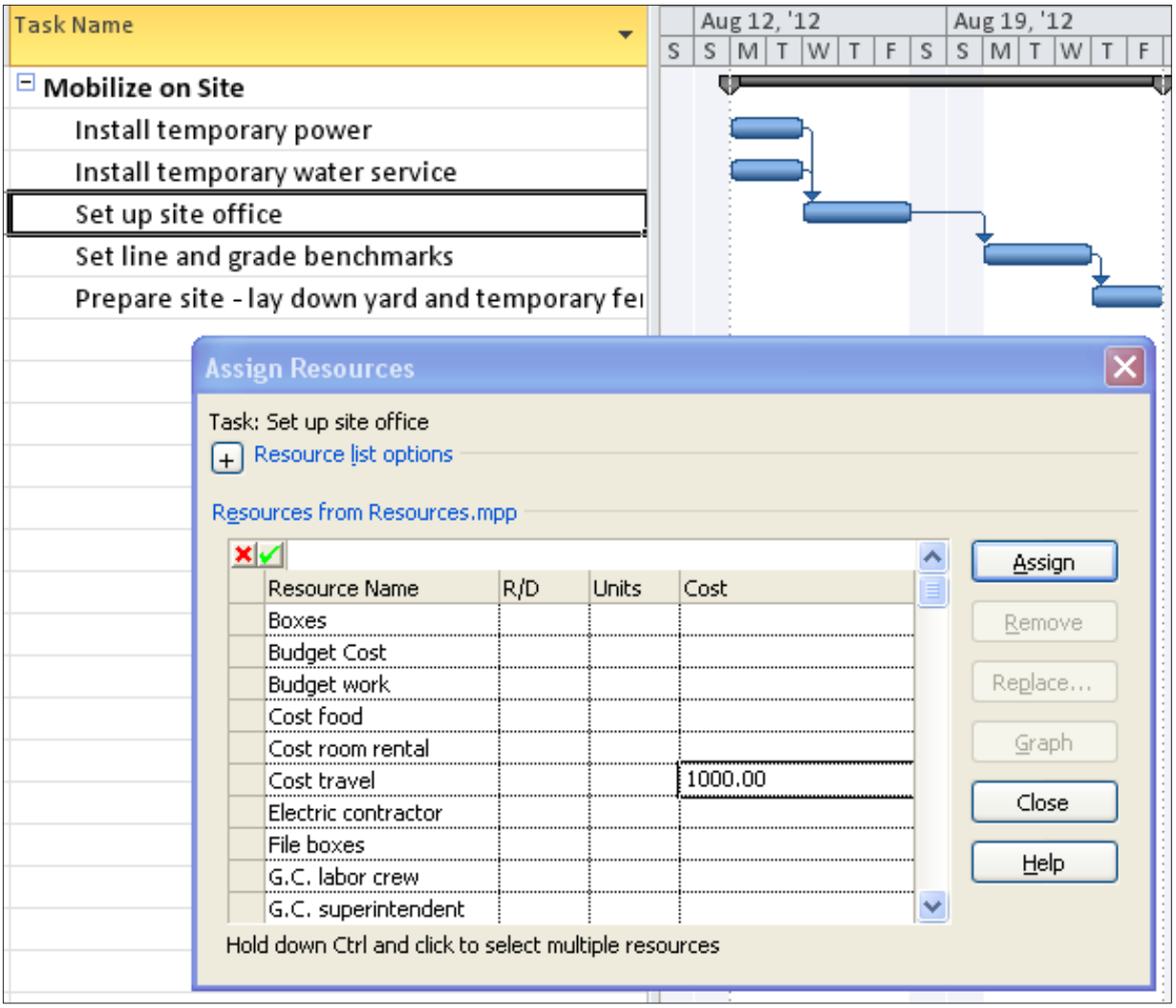


Figure 6-11 PLACEHOLDER

The result of the assignment will appear like this:

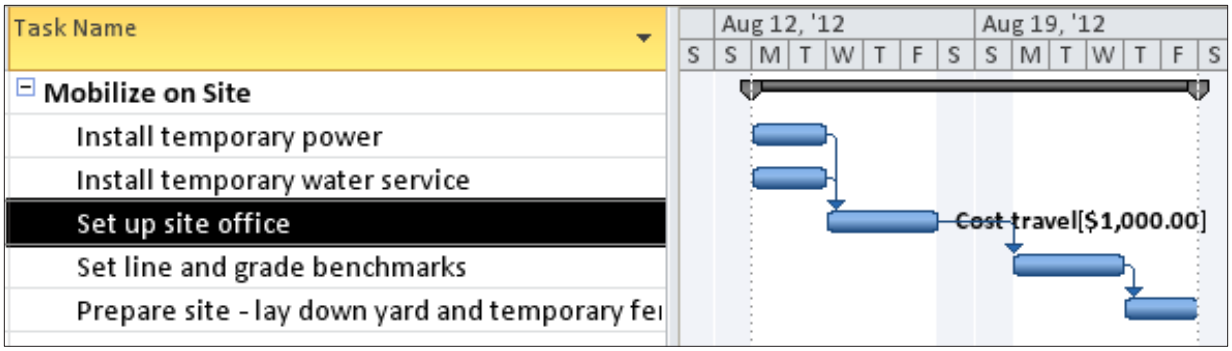


Figure 6-12 PLACEHOLDER

An alternate method of assigning a Cost Resource to a task is through the Task Information dialog box:

- Click **Task → Gantt Chart**
- Double click on the task you would like to assign the cost resource to
- Click **Resources** tab
- Click on the next open line and select the cost resource to apply
- Enter the cost value in the cost column
- Repeat for additional entries
- Click **OK** to close the box

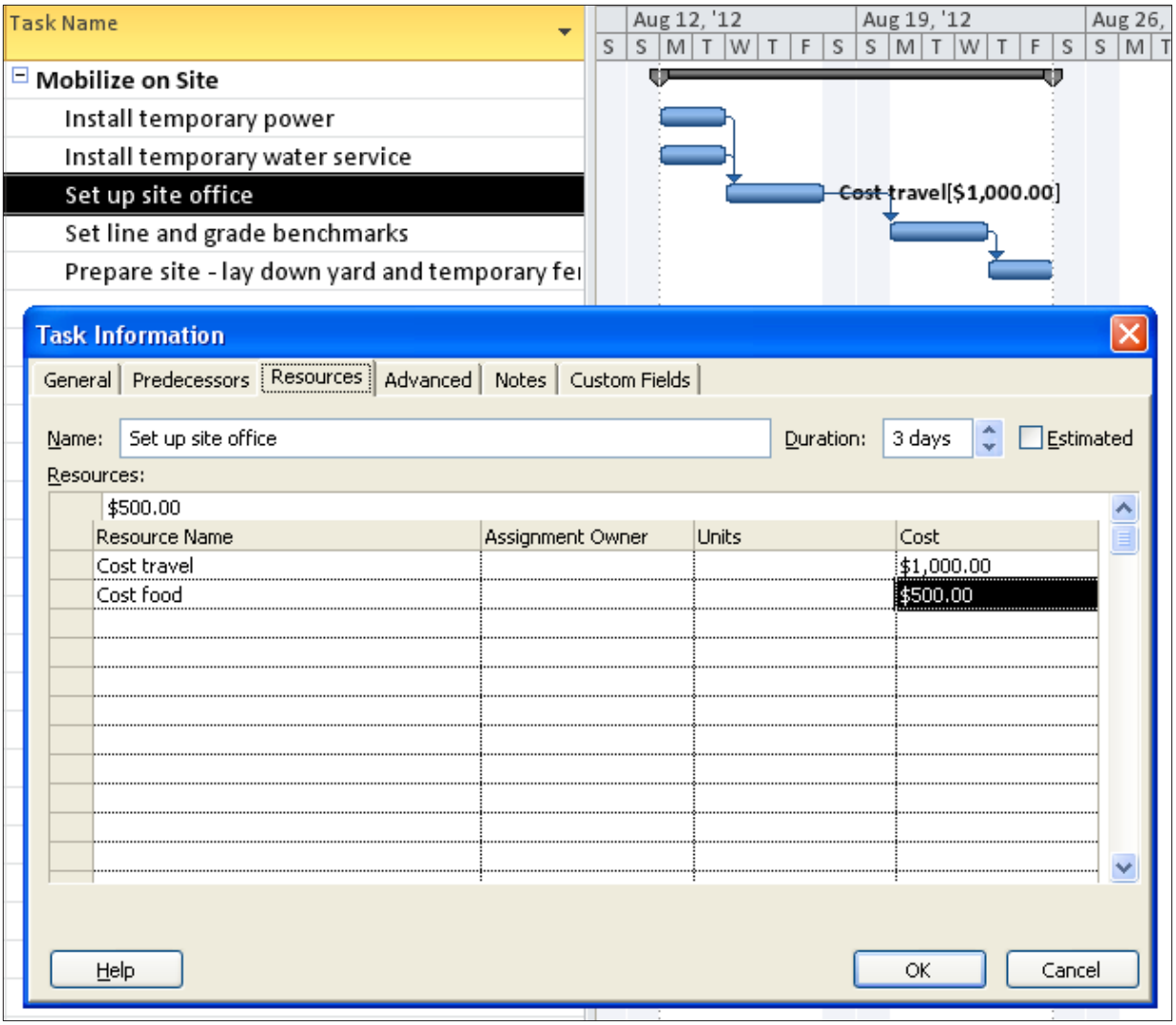


Figure 6-13 PLACEHOLDER

Project 2010 allows entering a new resource name in the Task Information dialog box or the Assign Resources box. The resource will be added to the Resource Sheet as a new resource using the default field values as a work resource which might not be correct for the resource data needed. Additional field values may also be required to complete the resource data correctly. It is a best practice is to create resources through the Resource Sheet.

Assign Material Resource

Assignment of material resources is very similar to assigning a cost resource to a task. A material resource is assigned by entering the number of items for the material resource assignment.

There are several methods of assigning a material resource to a task. A few are described below:

Create an assignment using the Assign Resources dialog box:

- Click **Task → Gantt Chart**
- Click **Resource → Assign resources**
- Click the task you would like to assign a material resource to
- Click on the **Material** resource
- Enter the amount of the number of items in the units column
- Click **Assign**
- Click **Close** to close the box

In the example below, 200 Electrical Connectors were assigned to the Install Temporary Power task.

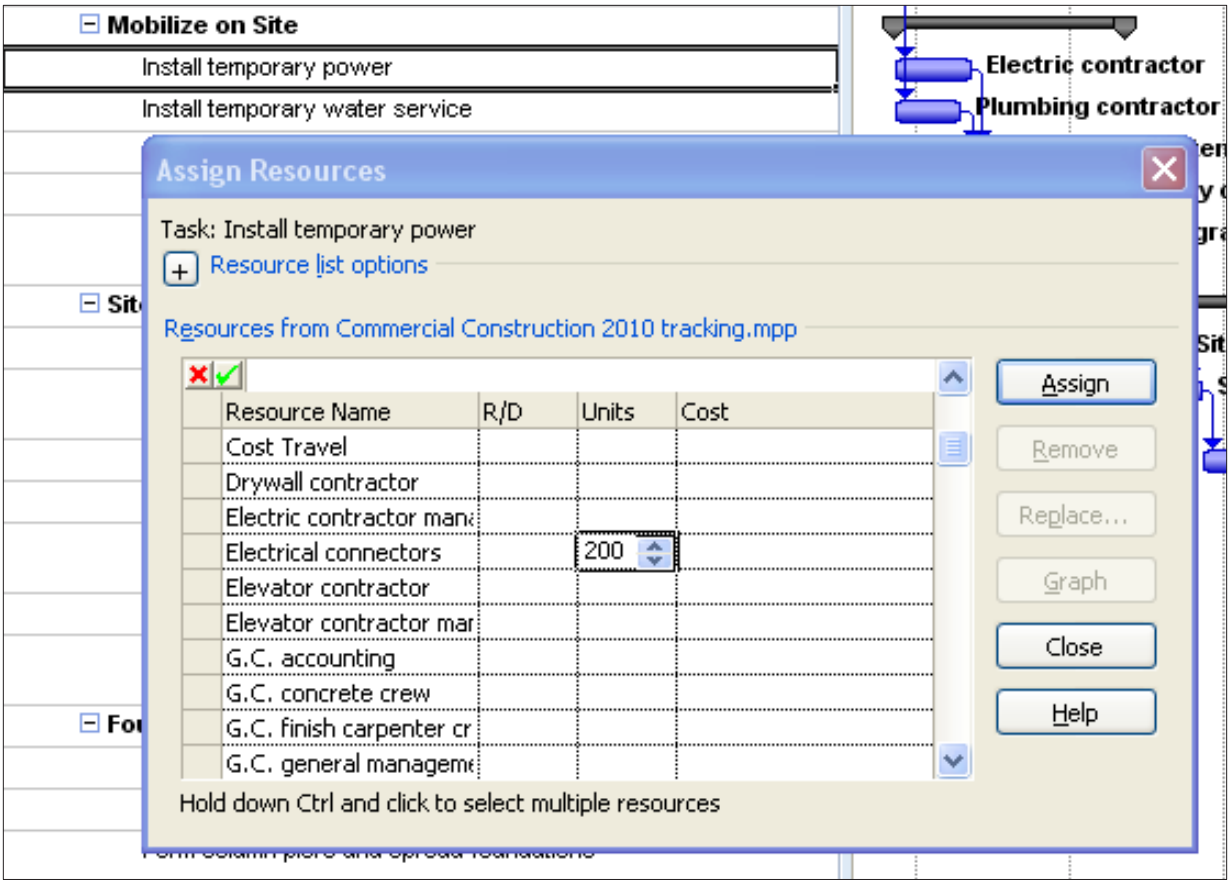


Figure 6-14 PLACEHOLDER

An alternate way of assigning a material resource can be accomplished using the Task Entry view. The Task Entry view is a preset view that displays the Gantt Chart in the upper portion of the screen and the Task Form in the lower portion. The view is shown below.

To display Task Entry view:

- Click **Task → Gantt Chart → More Views → Task Entry → Apply**
- Right click in the bottom pane and select Work

To create the assignment:

- Click the task you wish to assign the resource to
- Click **Resource Name** field in the lower pane
- Click the down arrow in the Resource Name field to display a list of resources
- Select a material resource

- Enter number of units or items in the units field
- Click **OK** button on the Task Form to enter the assignment

In the example below "Fencing material" is the material resource. On the Resource Sheet the material was entered as $20 per foot. 400 linear feet of fencing was entered in the units column for the assignment. Below is the result of the assignment.

When creating assignments or making changes in the Task Form as part of a split screen, the second button on the right of the view will say "Previous" As changes are made the value will change to "OK". The "OK" button must be clicked to have the changes take effect.

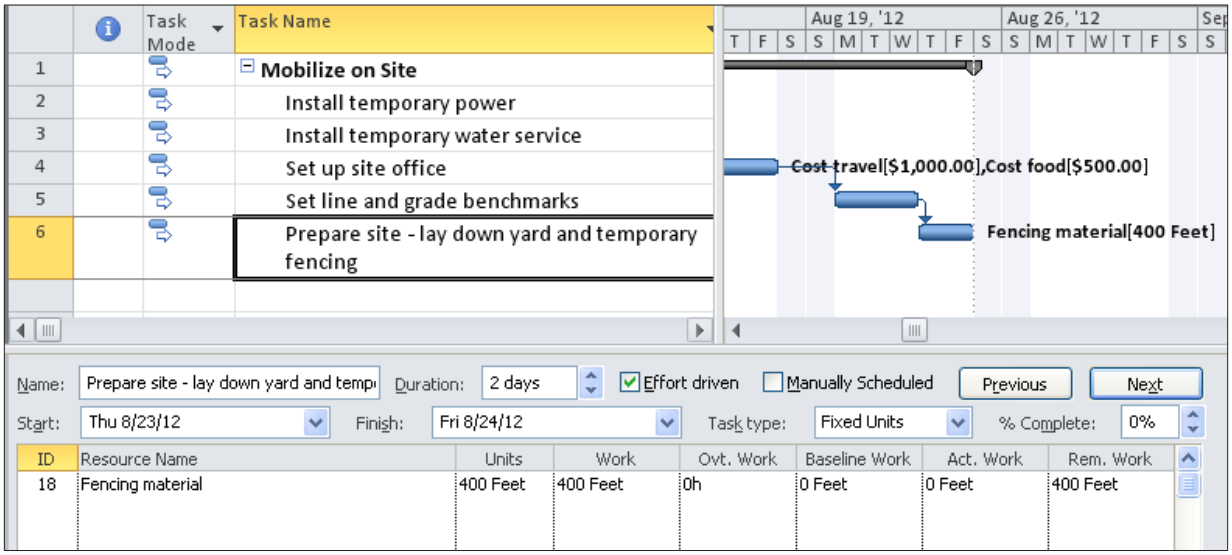


Figure 6-15 PLACEHOLDER

Right click in the bottom pane and select Cost and view will view the cost of the material.

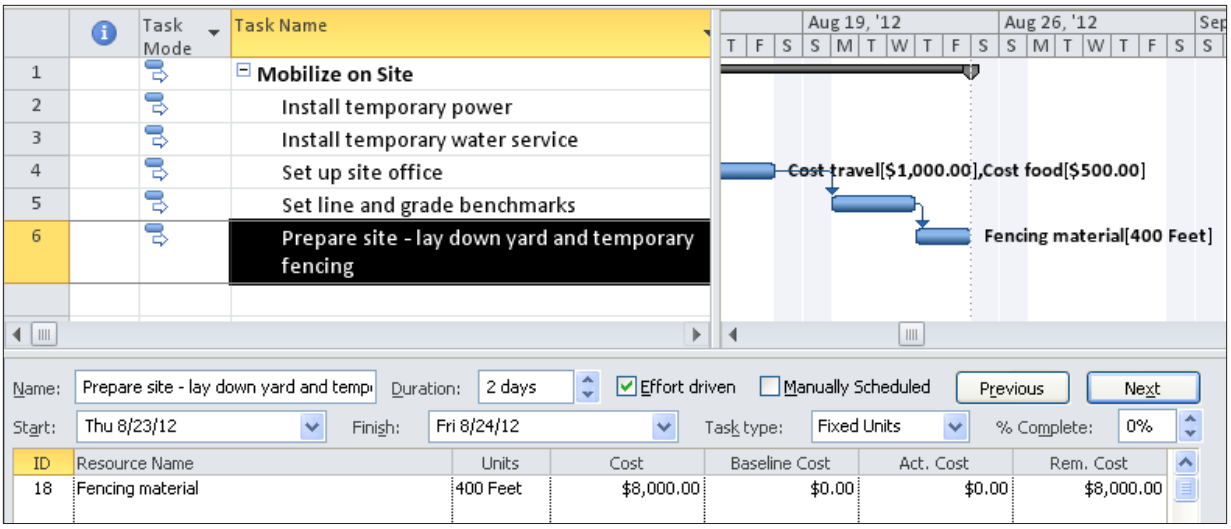


Figure 6-16 PLACEHOLDER

Chapter 7

Fine Tune the Project Schedule

Table Reports: Applying a Filter and or Group

The data in a Project 2010 schedule file can be manipulated to allow viewing data from alternate points of perspectives. Data criteria are entered as a request and data is extracted as a result of the query. When the criteria parameters are removed, the data will return to the original status for the schedule. Groups and filters may be applied to the same table simultaneously to refine the data required for reports.

This lesson examines:

1. What are groups
2. How to use groups
3. What are filters
4. How to use filters

Project 2010 has the ability to create customized groups and filters. This lesson will be addressing software groups and filters that are part of the standard software install. Customized groups and filters are discussed in Appendix A.

What are Groups?

Grouping data allows different ways of looking at the schedule data to help solve problems and answer questions. In a large schedule, grouping becomes a very valuable tool to group data from all task levels based on values within the schedule itself. Groups are created based on the value in a column and viewed through a table or a view. A column does not have to be contained in a table to be used as grouping criteria.

Criteria for Groups are provided for task, assignment and resource groupings and are not interchangeable. Only task groupings may be applied to task views, resource groupings to resource views and assignment groupings to assignment views.

Task Groups provided are:

Table 7.1 PLACEHOLDER

Group name	Grouped by criteria (column name)
Active vs. Inactive	Active
Auto scheduled vs. Manually scheduled	Task Mode
Complete vs. Incomplete	% Complete
Constraint Type	Constraint Type
Critical	Critical
Duration	Duration
Duration then Priority	Duration, Priority
Milestone	Milestone
Priority	Priority
Priority keeping outline structure	Project, Outline number, Priority
Resource	Resource Name
Status	Status

Resource Groups provided are:

Table 7.2 PLACEHOLDER

Group name	Grouped by criteria (column name)
Complete and Incomplete Resources	% Work Complete
Resource Group	Group
Resource Type	Type
Standard Rate	Standard Rate
Work vs. Material	Type

Assignment Groups provided are:

Table 7.3 PLACEHOLDER

Group Name	Grouped by criteria (column name)	Comments
Assignments keeping outline structure	Name, Task outline number	May only be used from Resource Usage view

Creating custom groupings are described in Apprendix A.

How to Use Groups

To apply a Task grouping:

- Reveal a Task based view or table
- **View → Group by** in the Data section
- Select the required grouping
  Standard groups are highlighted below:

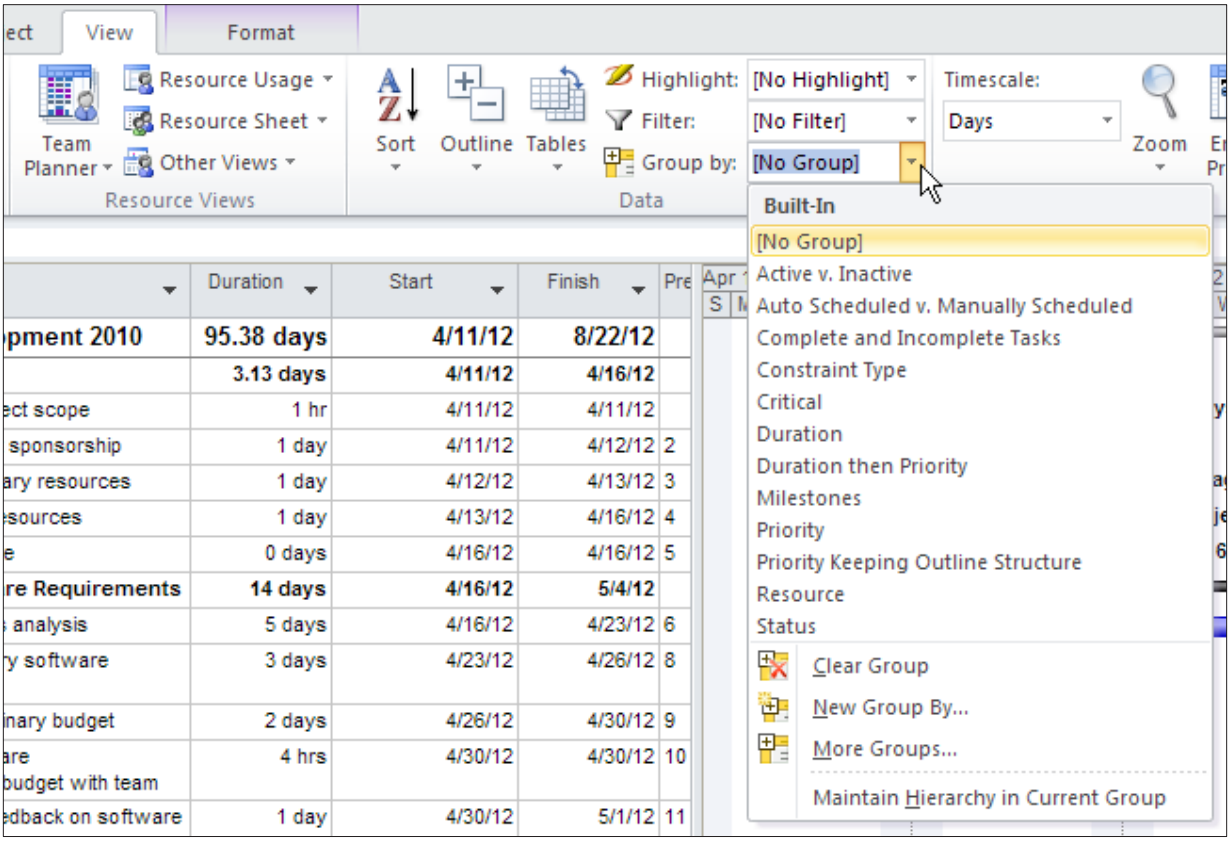


Figure 7-1 PLACEHOLDER

In the example below, the Duration grouping has been applied to the Task Entry table. The group intervals are described at the top of each grouping. Clicking the small box highlighted below to the left of each grouping level title will allow for collapsing and expanding the grouping levels. The view below has the groups expanded to reveal all detail.

Task Mode	Task Name	Duration	Start	Finish	Predecessors
	Duration: 0 days	**0d**	**4/16/12**	**8/22/12**	
	Scope complete	0 days	4/16/12	4/16/12	5
	Analysis complete	0 days	5/4/12	5/4/12	15
	Design complete	0 days	5/24/12	5/24/12	23
	Development complete	0 days	6/25/12	6/25/12	30
	Unit testing complete	0 days	7/16/12	7/16/12	40
	Integration testing complete	0 days	8/1/12	8/1/12	46
	Training materials complete	0 days	7/27/12	7/27/12	55
	Documentation complete	0 days	7/6/12	7/6/12	65,61
	Pilot complete	0 days	8/10/12	8/10/12	72
	Deployment complete	0 days	8/17/12	8/17/12	79
	Post implementation review complete	0 days	8/22/12	8/22/12	84
	Software development template complete	0 days	8/22/12	8/22/12	85
	Duration: 0.13 days	**0.13d**	**4/11/12**	**4/11/12**	
	Determine project scope	1 hr	4/11/12	4/11/12	
	Duration: 0.5 days	**0.5d**	**4/30/12**	**5/24/12**	
	Review software specifications/budget with team	4 hrs	4/30/12	4/30/12	10
	Obtain approvals to proceed (concept, timeline, budget)	4 hrs	5/2/12	5/3/12	13
	Obtain approval to proceed	4 hrs	5/24/12	5/24/12	22
	Duration: 1 day	**1d**	**4/11/12**	**8/22/12**	

Figure 7-2 PLACEHOLDER

To collapse the groupings of data to obtain totals:

- **View → Outline → Level 1**

The collapsed view is shown below. Click the plus signs to view details within a group.

Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
	Duration: 0 days	0d	4/16/12	8/22/12		
	Duration: 0.13 days	0.13d	4/11/12	4/11/12		
	Duration: 0.5 days	0.5d	4/30/12	5/24/12		
	Duration: 1 day	1d	4/11/12	8/22/12		
	Duration: 2 days	2d	4/26/12	8/1/12		
	Duration: 3 days	3d	4/23/12	7/30/12		
	Duration: 4 days	4d	5/15/12	7/20/12		
	Duration: 5 days	5d	4/16/12	8/9/12		
	Duration: 15 days	15d	5/29/12	7/16/12		

Figure 7-3 PLACEHOLDER

To restore all groupings to full detail.

- **View → Outline → All Subtasks**

To remove a grouping:

- **View → Group → No Group** or **Clear Groups**

Grouped reports may be printed.

Groupings have the ability to be grouped using a maximum of 10 grouping values.

What are Filters?

Filters allow the scheduler to request specific data using a column value for filter critiera. Filtered data allows focusing on data that is required for a specific report or query. The column data used to filter a report does not have to be contained in the current view or table. Some filters will request data at the time they are executed to obtain run time values. Filters may also be applied to Project 2010 standard reports and used for data exports as well.

Project 2010 provides preset filters for task, assignment and resource data. Custom filters may also be created and will be addressed in Appendix A. The Autofilter, which is also a feature in Excel, is available in Project and may be used independently as a filter or in addition to other applied filters.

Filters are created as task filters or resource filters. Below is a list of

the standard filters that are part of Project 2010.

Task filters provided are:

Table 7.4 PLACEHOLDER

Filter	Criteria to filter on is contained in field	Requires value entered at run time
Active Tasks	Active	
Automatic scheduled tasks	Task Mode	
Completed Tasks	% complete	
Costs Greater Than…	Cost	X
Cost Overbudget	Cost v Baseline cost	
Created After…	Created	X
Critical	Critical	
Date Range…	Start, Finish	X
In Progress Tasks	Actual start, Actual finish	
Incomplete tasks	% complete, % work complete for the assignment	
Late tasks	Status	
Late/Overbudget Tasks Assigned To…	Resource Name, baseline finish, Finish v Baseline finish, Cost v Baseline cost	X
Linked fields	Linked fields	
Manually Scheduled Tasks	Task Mode	

Table 7.4 PLACEHOLDER

Filter	Criteria to filter on is contained in field	Requires value entered at run time
Milestones	Milestone	
Resource Groups…	Resource Groups	X
Should Start By…	Start v Actual Start	X
Slipped/ Late Tasks	Baseline Finish, Finish v baseline finish, BCWS v BCWP	
Slipping Tasks	Actual finish, Baseline finish, Finish v Baseline finish	
Summary tasks	Summary	
Task range…	ID (range of task ID numbers)	X
Tasks with a Task Calendar Assigned	Task Calendar	
Tasks with Attachments	Objects, Notes	
Tasks with Deadlines	Deadline	
Tasks with estimated Durations	Estimated	
Tasks with Fixed Dates	Constraint type, actual start	
Tasks without Dates	Start, Finish	
Tasks/Assignments with Overtime	Overtime Work	

Table 7.4 PLACEHOLDER

Filter	Criteria to filter on is contained in field	Requires value entered at run time
Top level tasks	Outline level	
Unstarted tasks	Actual Start	
Using Resource In Date Range…	Resource name, Start, Finish	X
Using Resource…	Resource Name	X
Work overbudget	Actual Work vs. Baseline Work	

Resource filters provided are:

Table 7.5 PLACEHOLDER

Filter	Criteria contained in field	Requires value entered at run time
Budget Resources	Budget	
Costs Greater Than…	Cost	X
Cost Overbudget	Cost v Baseline cost	
Created After…	Created	X
Date Range…	Start, Finish	X
Group…	Group	X
In Progress Assignments	Actual start, Actual finish	

Table 7.5 PLACEHOLDER

Filter	Criteria contained in field	Requires value entered at run time
Linked Fields	Linked fields	
Non-budget Resources	Budget	
Overallocated Resources	Overallocated, Assignment	
Resource Range...	ID	X
Resource - Cost...	Type	X
Resource - Material	Type	
Resource - Work	Type	
Resources With Attachments	Objects, Notes	
Resource/Assignments With Overtime	Overtime Work	
Should Start By...	Assignments, Actual Start	X
Should Start/Finish by...	Start, Finish	X
Slipped/Late Progress	Baseline finish, Finish, WCWS	
Slipping Assignments	Actual finish, Baseline finish, Finish	
Unstarted Assignments	Actual start	
Work Complete	% complete	
Work Incomplete	% complete, Work	

Table 7.5 PLACEHOLDER

Filter	Criteria contained in field	Requires value entered at run time
Work Overbudget	Work v Baseline Work	

How to Use Filters

To apply a Task filter from the Gantt Chart View:

- **Task → Gantt Chart**
- **View → Filter → Select Filter**

  The list of filters shown is a short list of standard available task filters.

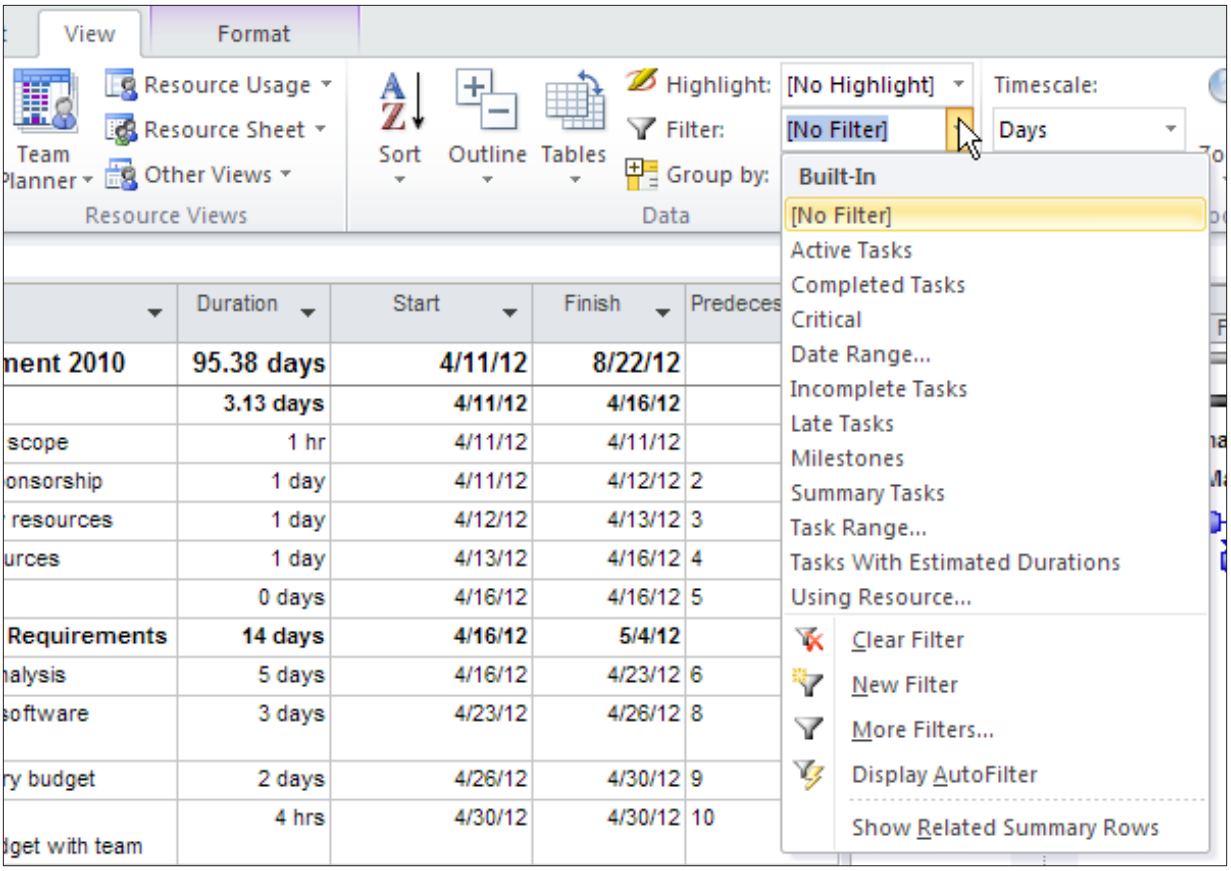


Figure 7-4 PLACEHOLDER

In the example below, the task Milestone filter has been applied. The filter contains the critieria to filter out and show only the detail tasks that contain a value of “Yes” in the Milestone column. The filter defination also indicates that the summary tasks should be included in the view. Milestone reports are very good project status reports because they hide all of the project detail and display the goal points of the project.

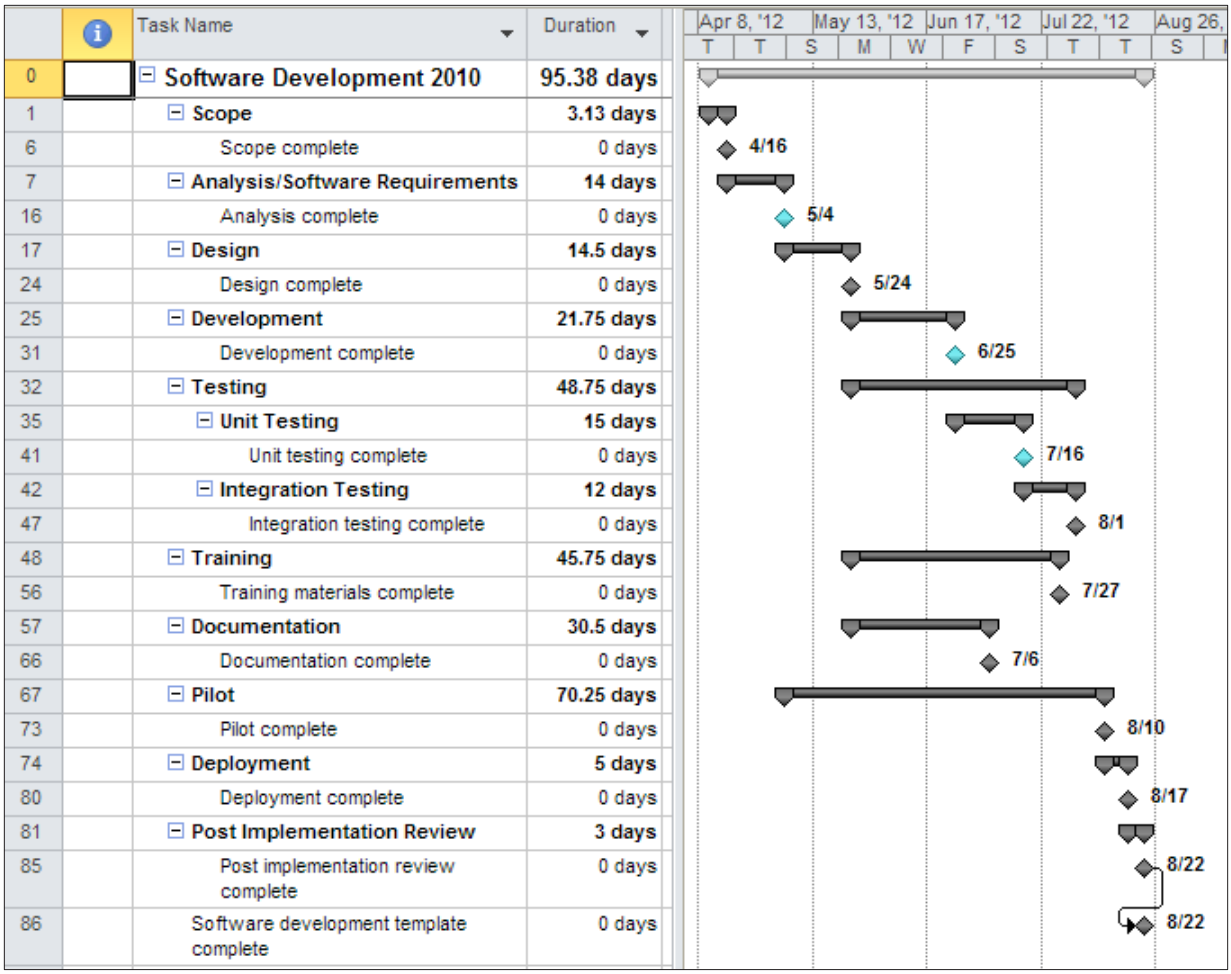


Figure 7-5 PLACEHOLDER

To remove the filter:

- Click **View** → **Filter** → **No filter** or **Clear Filter**

OR

- Click F3

More filters are available by clicking **More Filters** at the bottom of the available filter list. When this option is selected, the box below will appear. In the More Filters dialog box below, there are options to select either Task or Resource filters. The list of available filters for each will be different because the filters are designed to be applied to either task information or resource information.

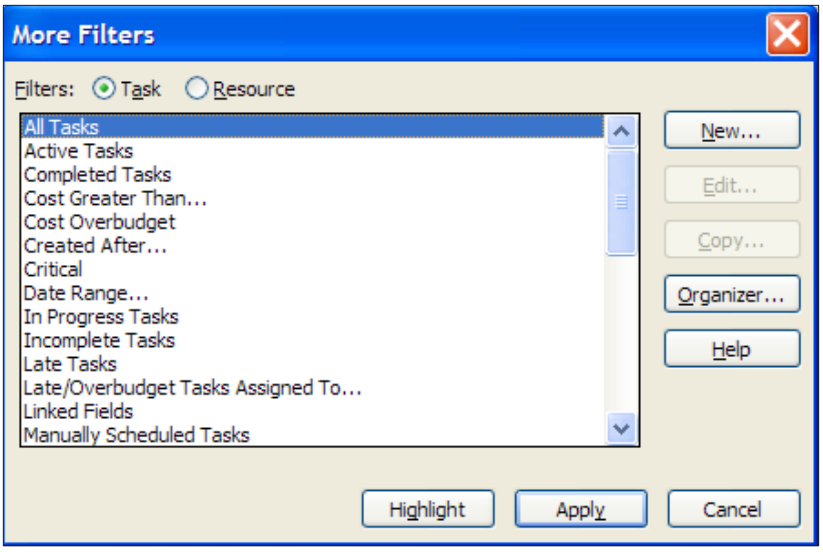


Figure 7-6 PLACEHOLDER

Another option accessable through this dialog box is to use the Highlight filter.

When the Highlight filter is applied all of the data remains visible in the view and filtered data is displayed in blue. Below the same Milestone filter was applied as above requesting the Highlight option. The Highlight filter is removed in the same way as a regular filter is removed.

5		Secure core resources	1 day	4/13/12	4/16/12	4
6		Scope complete	0 days	4/16/12	4/16/12	5
7		**Analysis/Software Requirements**	**14 days**	**4/16/12**	**5/4/12**	
8		Conduct needs analysis	5 days	4/16/12	4/23/12	6
9		Draft preliminary software specifications	3 days	4/23/12	4/26/12	8
10		Develop preliminary budget	2 days	4/26/12	4/30/12	9
11		Review software specifications/budget with team	4 hrs	4/30/12	4/30/12	10
12		Incorporate feedback on software specifications	1 day	4/30/12	5/1/12	11
13		Develop delivery timeline	1 day	5/1/12	5/2/12	12
14		Obtain approvals to proceed (concept, timeline, budget)	4 hrs	5/2/12	5/3/12	13
15		Secure required resources	1 day	5/3/12	5/4/12	14
16		Analysis complete	0 days	5/4/12	5/4/12	15

Figure 7-7 PLACEHOLDER

The Highlight filter may also be applied from the View bar as shown below:

- **View → Highlight → Select a filter**

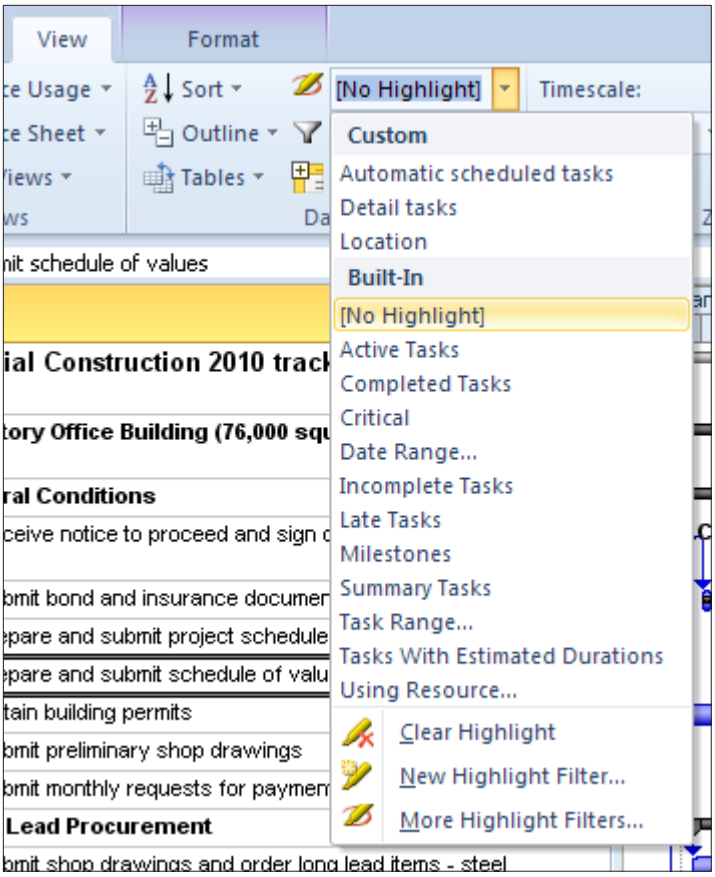


Figure 7-8 PLACEHOLDER

The Autofilter allows filtering of a specific column or multiple columns of data. The column used to filter the table must be visible in the table when using Autofilter. Autofilter cannot be applied to Project 2010 standard project reports or exports of data.

To turn on the Autofilter:

- **View → Filter → Display Autofilter**

  A down arrow will appear when Autofilter is turned on.

		Task Name	Duration	Start	Finish	Predecessor
0		**Software Development 2010**	**95.38 days**	**4/11/12**	**8/22/12**	
1		**Scope**	**3.13 days**	**4/11/12**	**4/16/12**	
2		Determine project scope	1 hr	4/11/12	4/11/12	
3		Secure project sponsorship	1 day	4/11/12	4/12/12	2

Figure 7-9 PLACEHOLDER

To activate Autofilter:

- Click the down arrow for the column
- Select a value

Below illustrates the options of available when using the Autofilter to filter the Resource Name column in the Task Entry table. Every column will contain unique data and the Filters offered will change with the columns selected:

Multiple options become available:

- Column A-Z sort
- Column Z-A sort
- Group on this field
- Filters

To select the Project Manager resource only:

- Click **Select All** to clear all checkboxes
- Click **Project Manager**

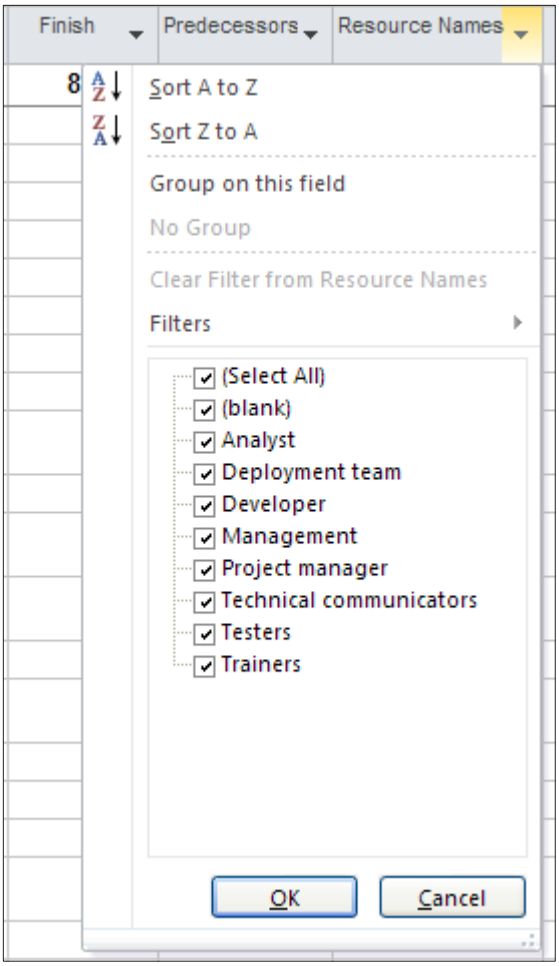


Figure 7-10 PLACEHOLDER

Below is the result of applying this filter. A funnel icon appears in the Resource Name column as an indicator to show which column is being used to filter the table. Note that all of the tasks in the Resource Name column contain the value Project Manager.

Task Name	Duration	Start	Finish	Predecessors	Resource Names
Software Development 2010	**95.38 days**	**4/11/12**	**8/22/12**		
Scope	**3.13 days**	**4/11/12**	**4/16/12**		
Define preliminary resources	1 day	4/12/12	4/13/12	3	Project manager
Secure core resources	1 day	4/13/12	4/16/12	4	Project manager
Analysis/Software Requirements	**14 days**	**4/16/12**	**5/4/12**		
Develop preliminary budget	2 days	4/26/12	4/30/12	9	Project manager
Review software specifications/budget with team	4 hrs	4/30/12	4/30/12	10	Project manager,Analyst
Develop delivery timeline	1 day	5/1/12	5/2/12	12	Project manager
Obtain approvals to proceed (concept, timeline, budget)	4 hrs	5/2/12	5/3/12	13	Management,Project manager
Secure required resources	1 day	5/3/12	5/4/12	14	Project manager
Design	**14.5 days**	**5/4/12**	**5/24/12**		
Obtain approval to proceed	4 hrs	5/24/12	5/24/12	22	Management,Project manager
Pilot	**70.25 days**	**5/4/12**	**8/10/12**		
Identify test group	1 day	5/4/12	5/7/12	16	Project manager
Post Implementation Review	**3 days**	**8/17/12**	**8/22/12**		
Document lessons learned	1 day	8/17/12	8/20/12	80	Project manager
Distribute to team members	1 day	8/20/12	8/21/12	82	Project manager
Create software maintenance team	1 day	8/21/12	8/22/12	83	Project manager

Figure 7-11 PLACEHOLDER

To clear the filter and restore the data to its original state:

- Click F3

OR

- Click the funnel symbol
- Clear filter from <column name>

Many filters will include summary as well as detail tasks. Summary tasks may be turned off to view detail tasks only. To turn off Summary tasks:

- **Format** → uncheck the **Summary Task** checkbox

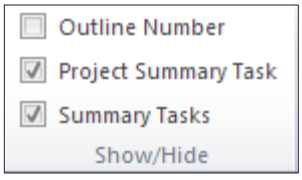


Figure 7-12 PLACEHOLDER

Sorting Tasks or Resources in a View

Project initially arranges tasks according to ID number which is located in the far left column of the Gantt Chart view. To make it easier to work with your tasks, you may want to temporarily or permanently rearrange them. You can rearrange the order of tasks based on a particular type of information, including start date, finish date, priority, cost, and ID.

When you sort a project that contains summary tasks, Project maintains the outline levels and bases the sort on the summary task values. For example, if you sort a group of summary tasks by start date, Project bases the order on the start date of each summary task. Project then sorts the tasks within each summary task.

You can also sort resources in most resource views. By default, resources are arranged in ascending order based on the ID number, but you can sort resources by cost or name.

You can also perform a custom sort by specifying up to three sort fields. Sorting by more than one field is helpful when more than one task contains the same information in some fields. For example, if you sort by the duration and more than one task has the same duration, you can determine the order of those tasks by sorting by an additional field, such as the start date.

To sort activities:

1. Click the **Sort** dropdown arrow located in the Ribbon, **View** tab. **Data** group.
2. Select the desired option from the list.

Practice: Working with Groups and Filters

The Practice page is where you write detailed instructions for completing work listed as Exercises.

Type the Exercise Title and write a brief summary what the student will be doing in the exercise. Then list your ideas what they will be doing.

SAMPLE

In this practice you will create a Project Server Authentication profile and then configure the local cache settings in Project Professional 2007.

Exercise 1: Create Project Server Authentication Profile

In this exercise you will create Project Server authentication profile to connect to the Project Web Access site.

Perform the following exercise on the PS07 virtual machine.

1. From the **Start** menu, click **All Programs** → **Microsoft Office** → **Microsoft Office Tools** and click **Microsoft Office Project Server 2007 Accounts**.
2. In the **Project Server Accounts** dialog box, click **Add**.
3. In the **Account Properties** dialog box, and complete the following settings and click **OK**.

Table 7.6 PLACEHOLDER

Setting	Perform the following:
Account Name	Type `Project Server`

Table 7.6 PLACEHOLDER

Setting	Perform the following:
Project Server URL	Type `http://epm/pwa`
When connecting	Select **Use Windows user account**
Set as default account	Select check box

Leveling and Views that Show the Assignments

Once assignments are created, refining them and looking at them from different points of view is not only helpful but necessary. If resource allocations and future resource demands are your goals for using Project 2010, taking a deeper look at the results of how the assignments were created will be essential.

In this lesson we will take a look at:

- Resource Usage view
- Task Usage view
- Team Planner view

Resource Usage View

The purpose of the Resource Usage view is to allow viewing and updating of assignments from the resource point of view. This view displays all assignments created for a resource as well as assignment details for time and cost information and enables fine tuning of assignments. Details maybe viewed at any timescale density that is appropriate for your project.

Using this view will also allow access to the Assignment information box where you can adjust the rate charts used per task and resource assignment contouring.

Some of the details available in this view will answer the following questions?

- How much availability does a resource have? Per day, per week, etc.
- What is the cost of having a resource work on a task?
- Are all of the tasks assigned to a resource appropriate for the resource?
- How many hours per day/week/month is a resource assigned to a task?
- Is a resource overallocated? (Overbooked)
- What is the future demand for a resource for this project?

- What is the total number of hours and cost for a resource assigned to the project?
- What tasks to avoid assigning resources to.
- During tracking, what is the remaining work on a task for a resource?

Looking at the view below, the G. C. Procurement manager is assigned to a quantity of work at the week level. The detail of the work is displayed to the right and the total amount of work assigned to the resource is displayed to the left. The greyed numbers at the top of each resource are the total number of hours for the timeframe. In the view below, the week of January 16, G. C. Procurement is assigned to work 36 hrs. The 36 hours is distributed over 2 detailed tasks.

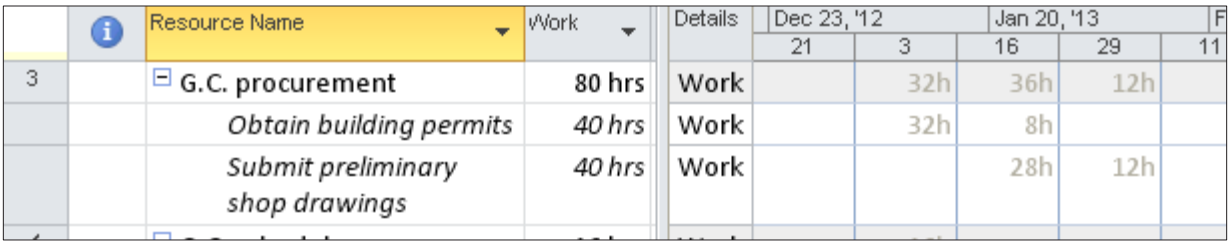


Figure 7-13 PLACEHOLDER

Using the timescale zoom in the lower right corner of the screen (or double clicking on the timescale), to zoom to a per day or per week level of detail. This view may also be customized by adding columns of additional data on both the left and right sides of the view shown below.

Figure 7-14 PLACEHOLDER

To add columns on the right side of the screen:

- Right click on the right side
- Select the desired column(s) from the short list

OR

- Right click on the right side
- Select **Detail** styles
- Click on a column on the left
- Click **Show**
- With the field selected on the right, the color may be changed

Note: the color change is for the title rows only

- Click **OK**

While in this view, there are also buttons on the Format ribbon bar which will help customize the view. The “Add Details” is the same form as the detail styles option above. Below is a view of the Format ribbon for the Resource Usage view.

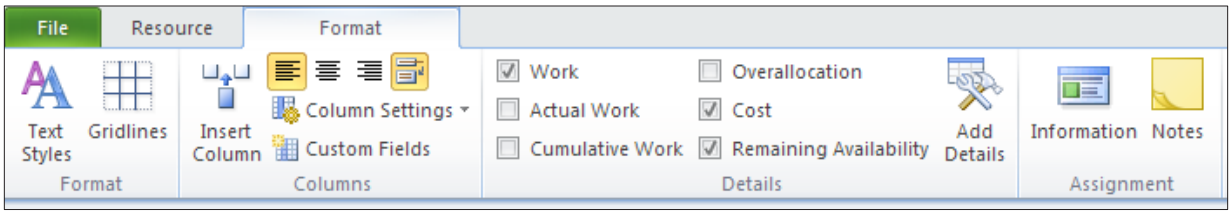


Figure 7-15 PLACEHOLDER

In the view below, the Remaining Availability and Cost fields have been added. The G. C. Procurement resource is assigned 80 hours to the project. He is also showing availability of 4 hours per day during the timeframe shown. The task “Obtaining building permits” is showing a 50% or 4 hours per day assignment. Using the resources standard rate, the daily costto the project will be $400.00 per day.

	Resource Name	Work	Details	7	8	9	10	11
3	G.C. procurement	80 hrs	Work	4h	4h	4h	4h	4h
			Rem. Avail.	4h	4h	4h	4h	4h
			Cost	$400.00	$400.00	$400.00	$400.00	$400.00
	Obtain building permits	*40 hrs*	Work	4h	4h	4h	4h	4h
			Rem. Avail.					
			Cost	$400.00	$400.00	$400.00	$400.00	$400.00
	Submit preliminary shop drawings	*40 hrs*	Work					
			Rem. Avail.					
			Cost					

Figure 7-16 PLACEHOLDER

Cost rate tables are assigned to resources through the Resource Sheet using the Resource Information dialog box, Cost tab. 5 rate scales are available per resource, however only one may be used per task. The rate scales are labeled A-E and cannot be renamed. Rates will have trigger dates to enable increases to be entered in advance. Using the option outlined below allows assignment of a specific rate table to a task.

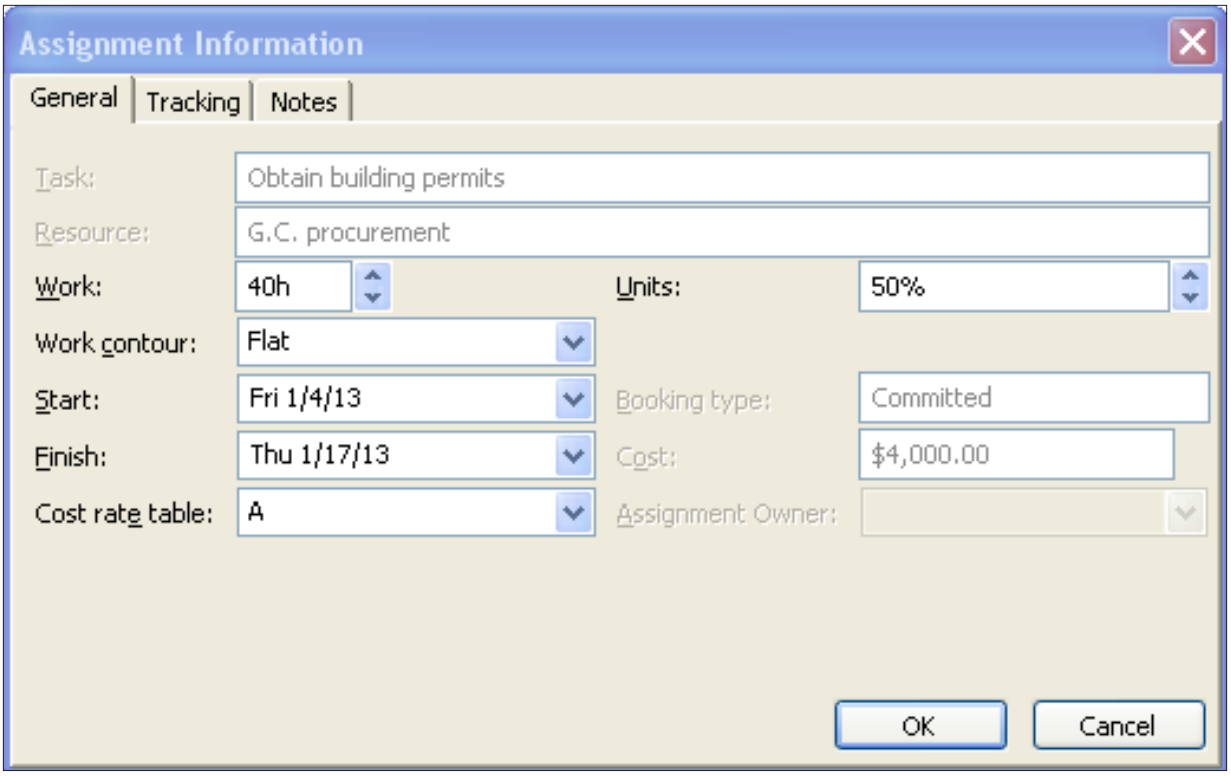


Figure 7-17 PLACEHOLDER

Below is an example of rate scale A applied to the task "Obtain building permits" and B has been assigned to "Submit Preliminary Shop Drawings". The work of the first task is at a different rate than the work of the second task.

Resource Name	Cost Rate	Details	7	8	9	10	11
G.C. procurement		Work	4h	4h	4h	4h	4h
		Rem. Avail.	4h	4h	4h	4h	4h
		Cost	$400.00	$400.00	$400.00	$200.00	$200.00
Obtain building permits	*A*	Work	4h	4h	4h		
		Rem. Avail.					
		Cost	$400.00	$400.00	$400.00		
Submit preliminary shop drawings	*B*	Work				4h	4h
		Rem. Avail.					
		Cost				$200.00	$200.00

Figure 7-18 PLACEHOLDER

The Resource Usage view may be used for resource work distribution worksheets. When this view is printed, a timeframe maybe added to allow for more focused printing. Insert a page break between resources to print separate reports for each resource.

In future modules we will discuss applying filters and groupings to views which will increase value of reports obtainable from this view.

Task Usage View

Task Usage view is very similar to the Resource Usage view, however, the content is viewed from the task perspective. Each task is displayed with the resources assigned to the task. The scheduler will be able to see a complete picture of the details of assignments. This view may also be used for changing or fine tuning assignments. Details maybe viewed at any timescale density that is appropriate for your project.

Using this view will help to answer some of the following questions:

- What resources are assigned to a task?
- Which tasks are overallocated and where?
- Which tasks do not have a resource assigned?
- What are the total cost and number of hours of a task?
- What is the remaining work of a task?
- What is the Value of Baseline vs. Actual Work and Cost for a task?
- How many resources do I need to have to complete a task?
- What percent allocations are my resources assigned to tasks?

Adding column information works the same as adding information to the Resource Usage view above:

To add columns on the right side of the screen:

- Right click on the right side
- Select one of the columns from the short list

OR

- Right click on the right side
- Select “Detail styles”

- Click on a column on the left
- Click “Show”
- With the field selected on the right, the color may be changed
  Note: the color change is for the title rows only
- Click OK

Project 2010 has provided a ribbon bar for the Task Usage view. Buttons on this bar are available to help with formatting and changing the information viewed. The Details sections will add and remove columns on the right side of the grid.

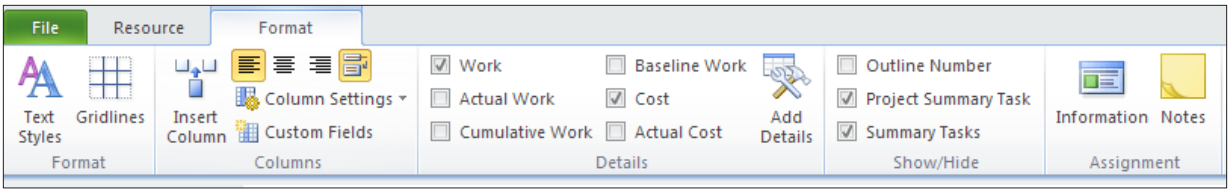


Figure 7-19 PLACEHOLDER

Below is an illustration of the Task Usage view showing work and cost for the “Obtain building permits” task. You will note that there are 2 resources assigned and they are not performing the same amount of the work and are working different times. They are also assigned different hourly rates.

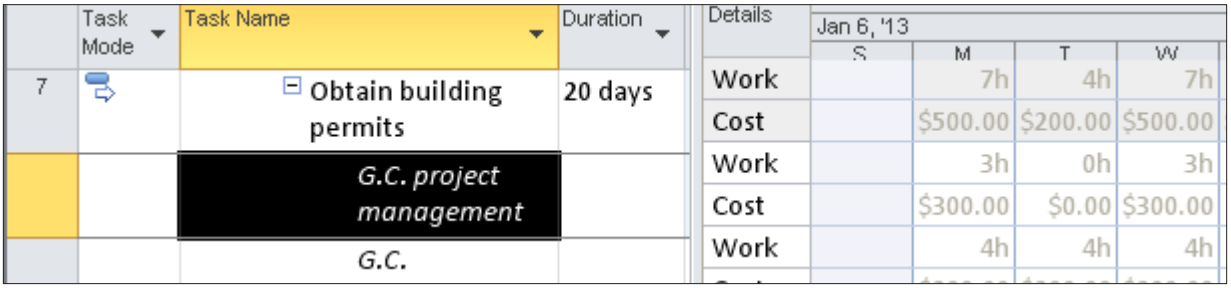


Figure 7-20 PLACEHOLDER

In future modules we will discuss using filters and groupings to give more dimension to the reports that can be obtained from this view.

Team Planner View

The Team Planner view is new in Project 2010. The purpose of this view is to show resources and their assignments using a Gantt style format. The team planner view will help the scheduler identify overallocations within the schedule, level workloads, reassign resources to tasks and identify problems in the schedule from the resource point of view. This type of view is also known as Swim Lanes.

Team Planner view is only available in Project 2010 Professional.

Team Planner view is divided into 2 sections. The upper section contains one row for each resource, with bars to the right representing assigned work. The lower section contains bars representing tasks without resources.

To view the Team Planner:

Task → Gantt chart → Team Planner

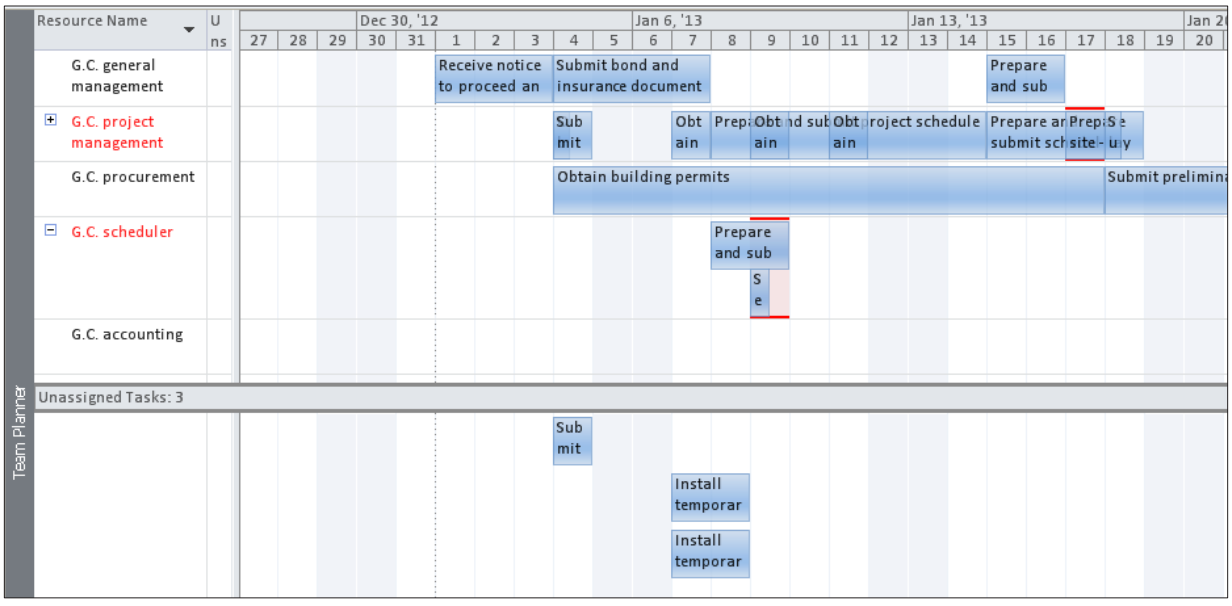


Figure 7-21 PLACEHOLDER

Below is a chart to help with understanding how to read the indicators

of the Team Planner view:

Table 7.7 PLACEHOLDER

Feature	Meaning
A vertical orange line	Today's date
Tasks colored in darker blue	Progress on the task
Teal colored tasks	Manually scheduled tasks
Gray colored tasks	External tasks
Light blue colored tasks	Un-started tasks
Gaps in timelines for resources	Under-allocated resource or unavailable
Red lines on the top and bottom of the task	Overallocated tasks
Resource name in red	Overallocated resource
Task bars colored black	Tasks that are late
Shaded day on calendar	Non-working day for the resource. This data is coming from the resource availability calendar
Top pane – pink blocks of time	Overallocated time

Below are some of the keystrokes that will help you work with the information in this view.

Table 7.8 PLACEHOLDER

Action	Result
Double click the resource name	Resource Information dialog box
Double click a work task bar	Task Information dialog box
Timescale density	Adjust as needed – lower right corner
Hover over task	Pop up of task details
Double click on timescale	Opens the timescale box to alter scale values
Right click on a task	More options:
Right click on an assignment – Reassign to:	This option presents a list of all resources in the schedule, including resources already assigned to the task. Select a resource to reassign to the task or select unassigned option and all assignments will be removed from the task.
Right click on an assignment – Inactivate:	Task will disappear from the Team Planner view. To reactive, return to Gantt chart view.

Things to know about when working with Team Planner view:

- Only active tasks will show in the team planner view.
- Bars may be dragged back and forth to even out workloads as well as move assignments from one resource to another.
- An unassigned task may also be moved (dragged) from the unassigned area (bottom) to a timeframe for a resource. The default assignment will be at 100% units.

- Unassigned tasks in the lower pane are aligned with their planned start dates.
- If automatic scheduling is the task mode for a task, the task type will come into play for the assignment when moved from one resource to another.
- When tasks are moved from one resource to another, assignments will be created for the new resource at the same percent allocation that the original resource was assigned.
- For automatically scheduled tasks, dragging tasks to change dates will create a start no earlier than constraint. This constraint might cause problems in calculating the schedule.
- Error messages will be returned when there is a relationship conflict when moving tasks.
- When moving manually scheduled tasks, all moves will be accepted and no constraints will be set.
- Tasks may be assigned to resources without being scheduled.
- A box in the upper pane represents an assignment and not a task. If a task has several resources assigned, when you move the boxes you are moving the assignment for an individual only.
- To reactivate a task, return to the Gantt view.
- Percent complete tracking will mark the tasks completed as planned. More information regarding tracking will be discussed in the tracking module.

To the right of each resource name is a column titled “Unscheduled tasks”. Unscheduled tasks may be dragged to this column to be assigned to a resource. If there is no duration value to the task, some work will be assigned to the resource. If there is a duration value on the task, the resource will be assigned at 100% and work will be calculated. Even though a work value exists for the task, the task will be considered a duration-only task.

In the example below, the task “Calculate moving expenses” is an automatically scheduled task and is not assigned to a resource.

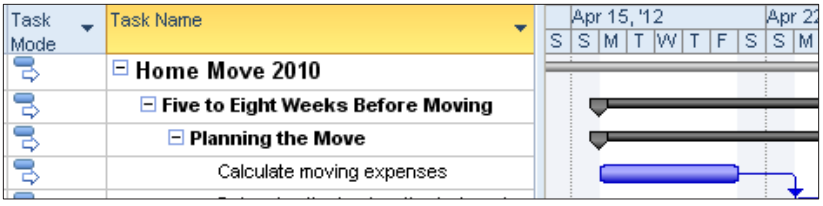


Figure 7-22 PLACEHOLDER

In the Team Planner view, a task is dragged from the unassigned area

in the lower portion of the view to the “Unscheduled tasks” column to the right of the resource name column. The task bar changes to teal to indicate that it is a manually scheduled task. Below is the team planner view with the task reassigned but not scheduled to Bob Smith. The task is not visible in the assignment bar area of the view.

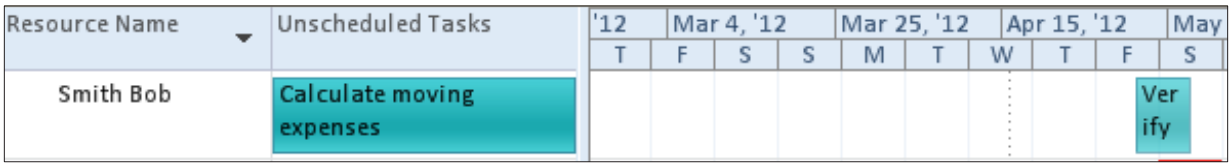


Figure 7-23 PLACEHOLDER

The Gantt chart for the assignment is shown below. Note the task type is manually scheduled and the Gantt bar is showing a format of unknown duration.

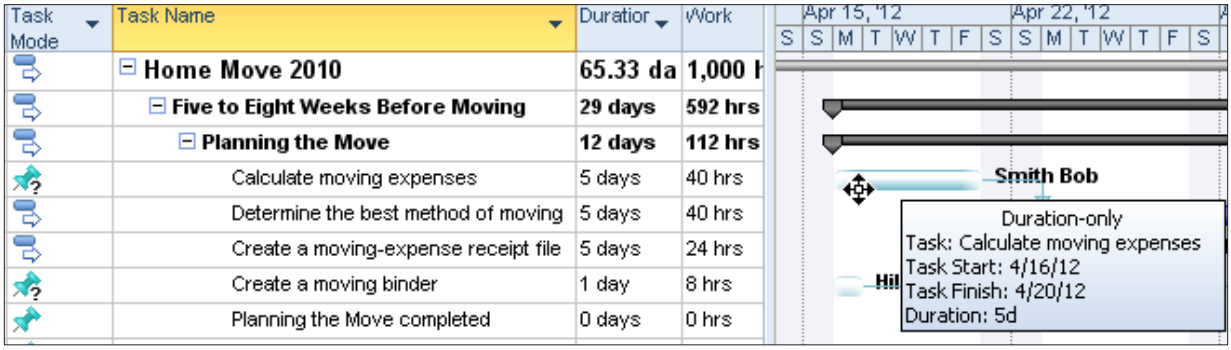


Figure 7-24 PLACEHOLDER

A ribbon formatting bar is available when using the Team Planner view. Tools are available for deeper formatting of this view. Show/Hide buttons add or remove data from the view.

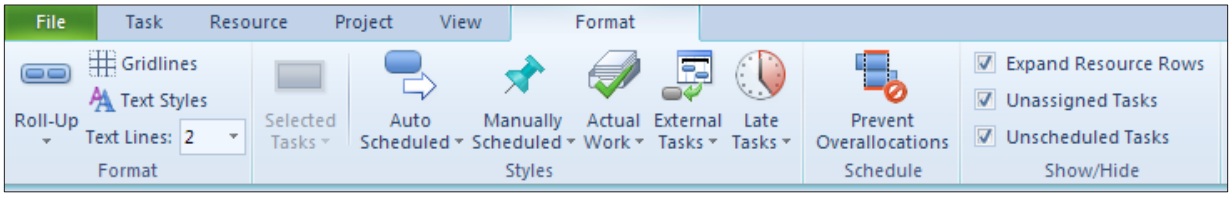


Figure 7-25 PLACEHOLDER

In future modules we will learn how to add buttons to the ribbon bars. A helpful addition to the Resource bar is adding the Scroll to task button.

Practice: Viewing Resource Assignments

The Practice page is where you write detailed instructions for completing work listed as Exercises.

Type the Exercise Title and write a brief summary what the student will be doing in the exercise. Then list your ideas what they will be doing.

SAMPLE

In this practice you will create a Project Server Authentication profile and then configure the local cache settings in Project Professional 2007.

Exercise 1: Create Project Server Authentication Profile

In this exercise you will create Project Server authentication profile to connect to the Project Web Access site.

Perform the following exercise on the PS07 virtual machine.

1. From the **Start** menu, click **All Programs** → **Microsoft Office** → **Microsoft Office Tools** and click **Microsoft Office Project Server 2007 Accounts**.
2. In the **Project Server Accounts** dialog box, click **Add**.
3. In the **Account Properties** dialog box, and complete the following settings and click **OK**.

Table 7.9 PLACEHOLDER

Setting	Perform the following:
Account Name	Type `Project Server`
Project Server URL	Type **`http://epm/pwa`**
When connecting	Select Use Windows user account
Set as default account	Select check box

Leveling and Views that Show the Assignments

Most project manger's work daily to make sure that all work is covered by appropriate resources that have enough time available to do the work necessary to complete a project. When resources are overbooked they are called Overallocated.

In this lesson we will discuss:

1. Understanding overallocations
2. Views to discover overallocations
3. Manually leveling resources
4. Automatic leveling of resources

Understanding Overallocations

Each resource is assigned a calendar when entered on the Resource Sheet. The calendar is customized to contain the availability of the resource. When more work is assigned to a resource than time available on their resource calendar, the resource is considered to be overallocated. The overallocation calculation is looking at resource assignments on a minute by minute basis. If a resource is overbooked for even 1 minute, the resource is considered overallocated.

When a resource is overallocated, a red person symbol appears in the indicator column. This indicates that there is an overallocated resource assigned to the task but will not indicate which resource is affected. Even though resources are overallocated, assignments can continue to be created.

Below is a view of tasks with overallocated resources:

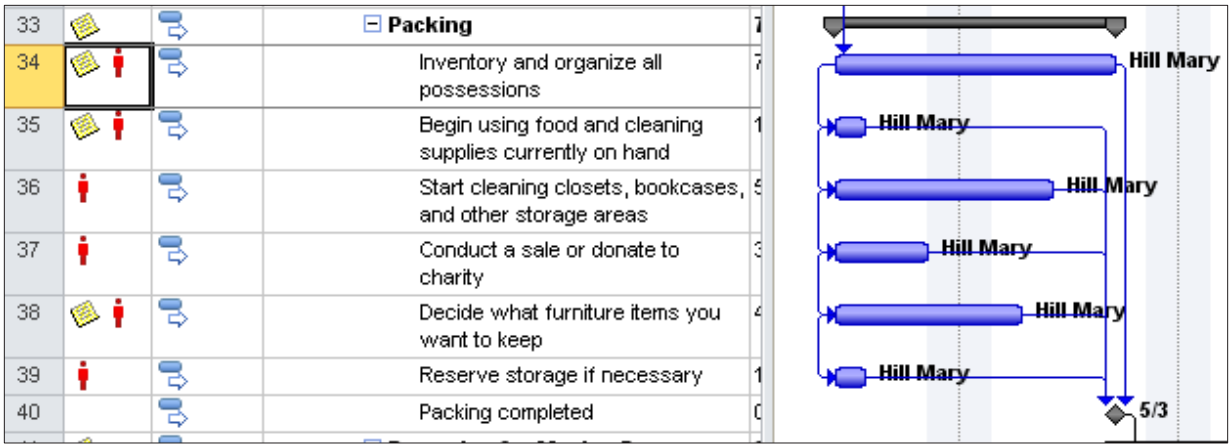


Figure 7-26 PLACEHOLDER

Views to Identifying Overallocations

There are several views in Project 2010 that will help analyze resource overallocations. After an overallocation situation is discovered, research should be carried out to understand where the overallocation exists.

The views below will help locate these problems:

- Resource sheet
- Resource graph
- Resource allocation view
- Team Planner

Resource Sheet: shows resources that are overallocated in red and will also display a yellow warning diamond in the indicators column. This indicates that the resource is overallocated on at least one assignment.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Smith Bob	Work		S		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
2	Taylor Sue	Work		T		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
3	Chu Eric	Work		C		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
4	Hill Mary	Work		H		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
5	Cook Cathy	Work		C		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
6	Adams Larry	Work		A		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
7	Project Mgr.	Work		P		100%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
8	Ron	Work		R		25%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
9	Joan	Work		J		50%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard
10	Mike	Work		M		75%	$100.00/hr	$0.00/hr	$0.00	Prorated	Standard

Figure 7-27 PLACEHOLDER

In the case of Mary Hill and Larry Adams, both are overallocated somewhere in the schedule. We will need to look at other views to get additional information.

The Resource Graph view will show what days a resource is over-allocated in a graphic format.

To view the Resource Graph:

Task → Gantt chart → Resource Graph

- Click the slider at the bottom of the left of the screen to scroll through the resources. Stop when a resource name is in red.
- **Resource → Next overallocation** button
- The graphic bars will advance to the first overallocated resource. Continue clicking the **Next Overallocation** button until all overallocations have been viewed. An error message will display when all overallocations are shown for a particular resource.

The view below shows Mary Hill's 100% capacity shows an indicator line. The blue bars below the line are within her 100% capacity limits. The red bars above the line represent her overallocations based on her resource calendar. Peak Units are displayed in the lower portion of the graphic. This represents the number of resources required to accomplish the work at the current level of assignment by this resource. This example shows that we will need 600% of Mary or 6 Mary's to complete the work.

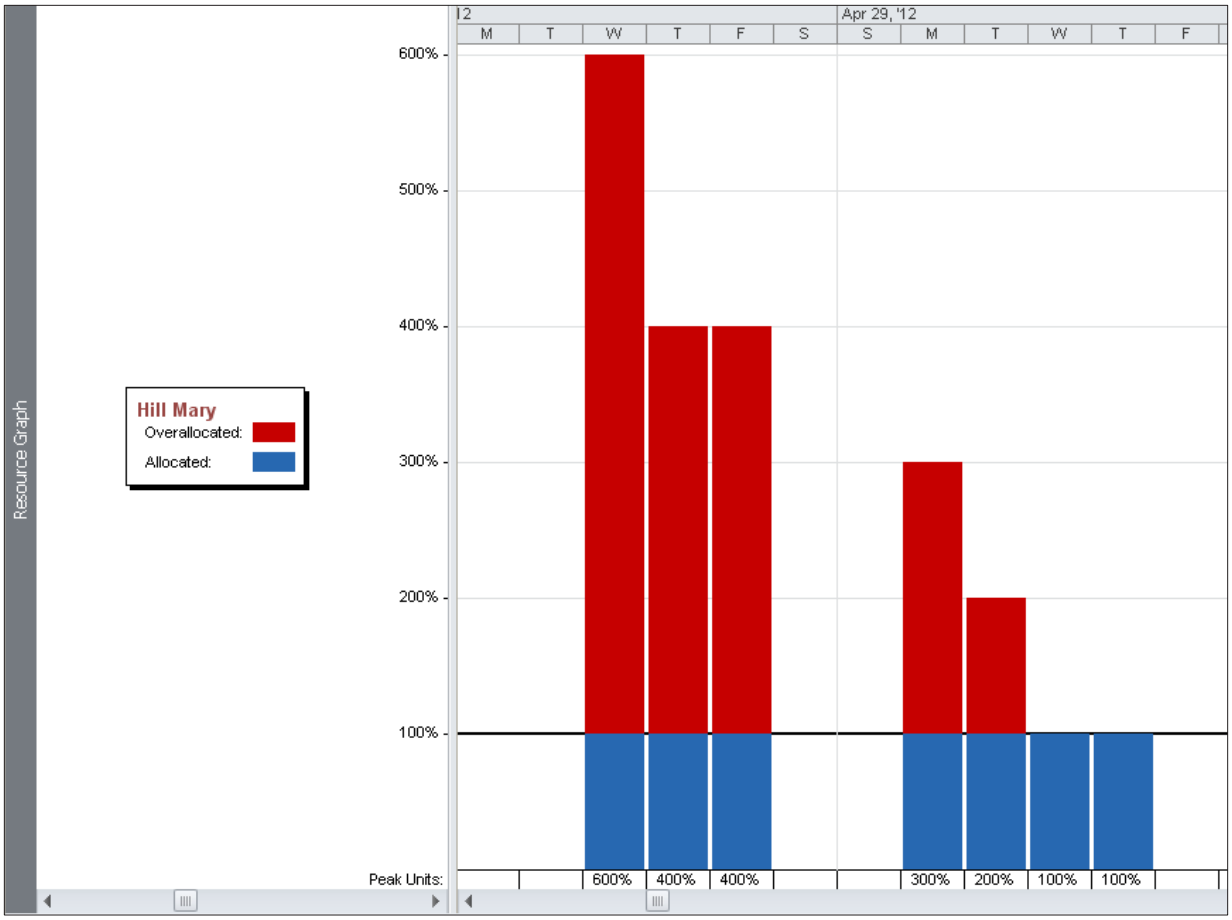


Figure 7-28 PLACEHOLDER

The Resource Graph view may also be customized by right clicking the Peak Units line and selecting other values to be shown on the graph. Below are the option choices for data that is available to be shown using this view. Further customization is also available using the format bar available for the Resource Graph shown below.

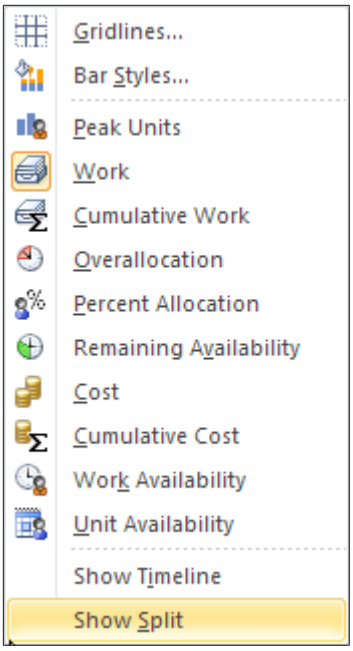


Figure 7-29 PLACEHOLDER

To resolve overallocations in the schedule, more information will be needed. We still need to find out more information about what tasks are involved and for how many hours. The Resource Allocation view is a split view with the Resource Usage view on the top and the Leveling Gantt view on the bottom. This view allows the scheduler to see what tasks are involved and when they are scheduled. Getting the full picture of what other tasks the resource is assigned to and who is assigned to the tasks with the resource, will give the scheduler more information to make an informed decision.

To reveal the Resource Allocation view:

- **Tasks → Gantt chart → More Views → Resource Allocation view → Apply**
- Click on the overallocated resource (in red)
- Click **Scroll to task** button to bring Mary's work into view

In the view below Mary is overallocated between April 25 and April 30. We can see that she is fully assigned at 100% to several tasks. Some of the tasks have a second resource assigned.

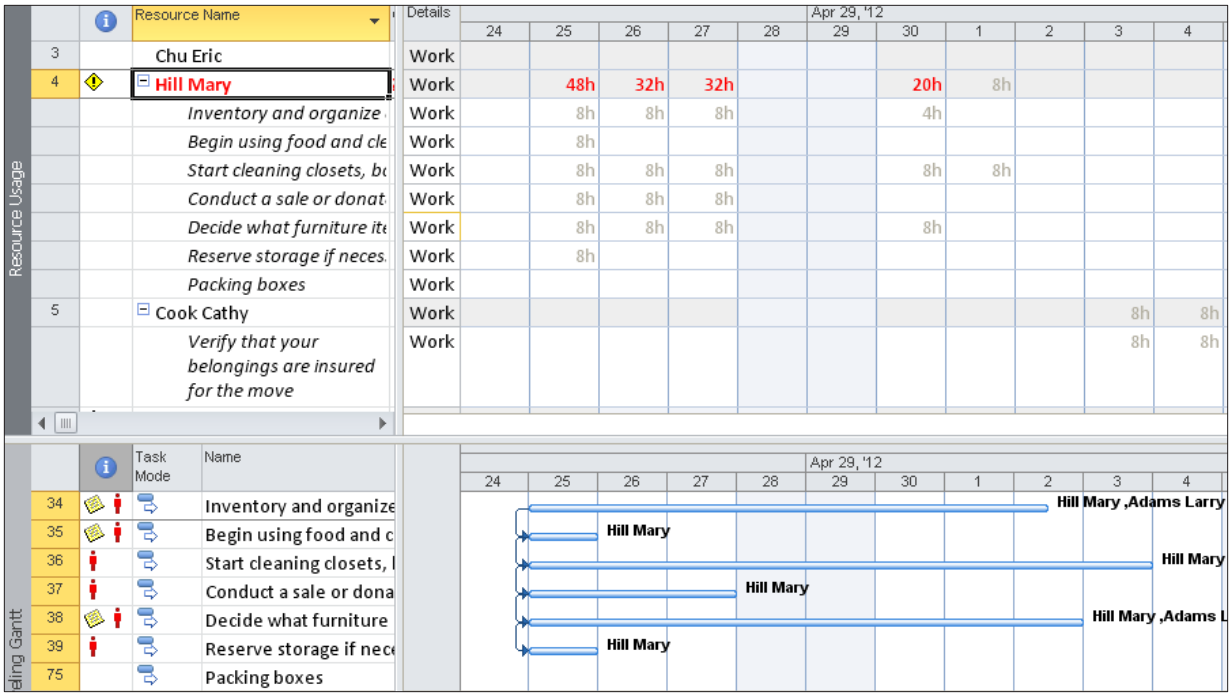


Figure 7-30 PLACEHOLDER

The following is the same information viewed through Team Planner:

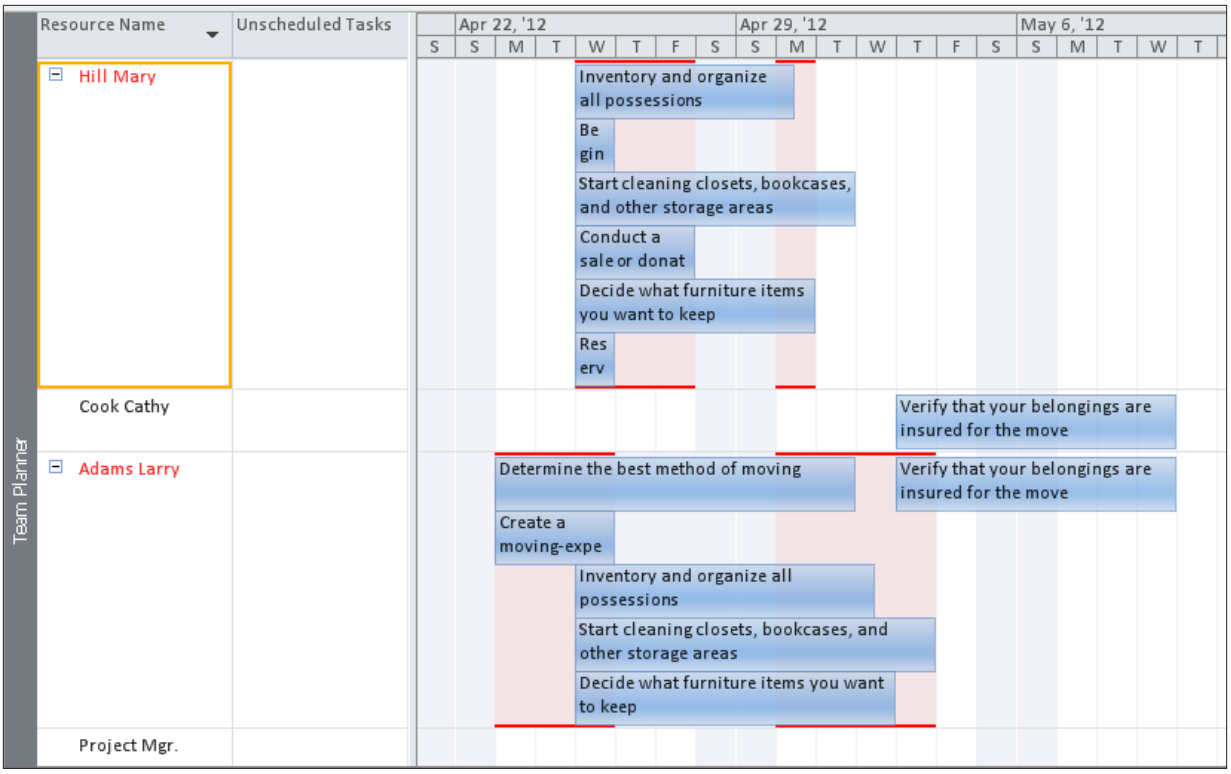


Figure 7-31 PLACEHOLDER

Mary's overallocations are flagged in red with the background in pink. Multiple task assignments may be viewed simultaneously.

Leveling Resources Manually

Project 2010 has a function called Resource Leveling that can help level the work of the resources. It is designed to move assignments forward or backward within time limits to attempt to level or smooth the workload for the resources and remove or lessen overallocations.

Automatic resource leveling in Project 2010 is designed to move resource assignments to a point in time where, based on the resource

calendar, the resource has time available. If resources have a capacity of 160 hours of work available in a month and they are assigned to 200 hours of work, the project duration will extend outwards to schedule the work via resource leveling. To level resources, and keep to the original time line, either or both of the following should occur: the percentage of capacity of the resources is increased, or more resources are added. Failure to do either will result in an inability to complete some of the planned work.

Manual resource leveling should always be tried before attempting automatic leveling. Leveling is most effective when performed by a project manager who is most familiar with the work and the people.

The following are some suggestions for effective manual resource leveling:

- Add more people necessary skills to tasks
- Obtain more time from the people you already have (nights, weekends, etc)
- Outsource a portion of the work
- Negotiate deadlines to see if extensions are possible
- Move the best resources to the most critical tasks. There is less risk and greater probability of these resources completing the tasks on time.
- Give a lesser skilled resource to a highly skilled resource as an assistant. This is a win-win. The highly skilled resource will give the lesser skilled resource some of the lower level work. The lesser skilled resource will learn something new. Might increase cost.
- Cancel vacations
- Adjust relationships
- Break long tasks up into shorter tasks and divide the work over more resources if possible. Under-allocated resources will be better utilized
- Break long tasks around fixed dates. Do some of the work before and complete the work after.

Leveling Resources Automatically

Once the decision is made that leveling needs to occur, there are several ways to level resources within the software. The different options are:

- Team planner – manually move assignments around
- Format ribbon bar – prevent overallocations

- Resource ribbon bar – level one or all resources
- Resource ribbon bar – leveling options to control how leveling occurs
- Resource ribbon bar – clear leveling

The Gantt chart below shows a summary group of automatically scheduled tasks. The tasks are all scheduled to complete on May 3. Each task has 2 assigned resources, Mary Hill and Larry Adams. They also have indicators that each of the tasks is overallocated.

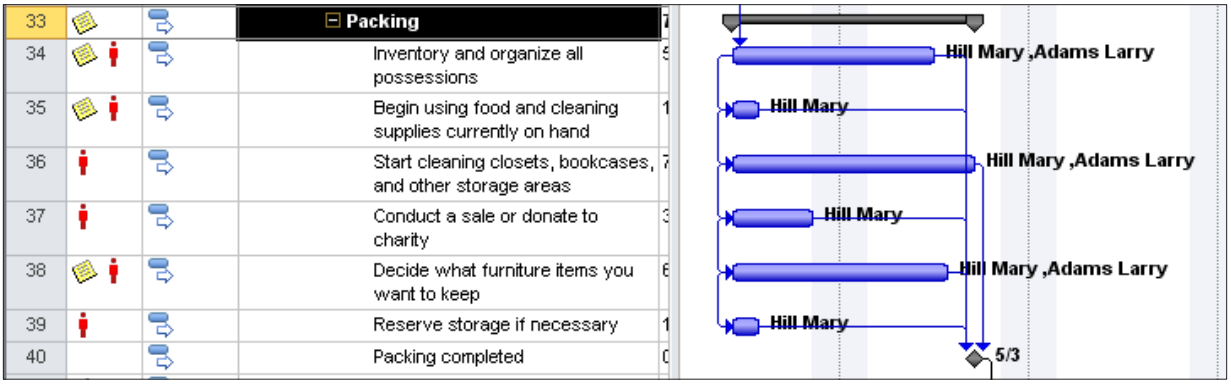


Figure 7-32 PLACEHOLDER

Team planner:

In the team planner view below, Mary Hill and Larry Adams are both overallocated and require leveling. Overallocated tasks are represented by displaying red lines around them.

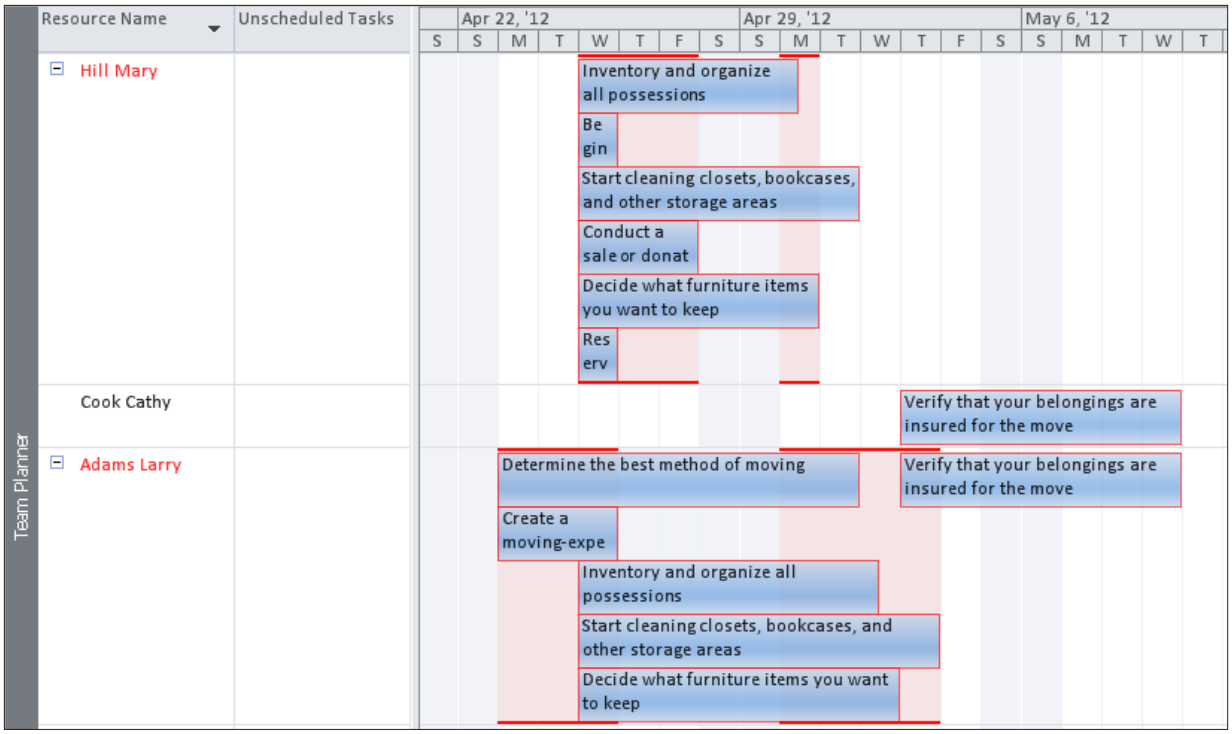


Figure 7-33 PLACEHOLDER

The resource ribbon bar offers several leveling options:

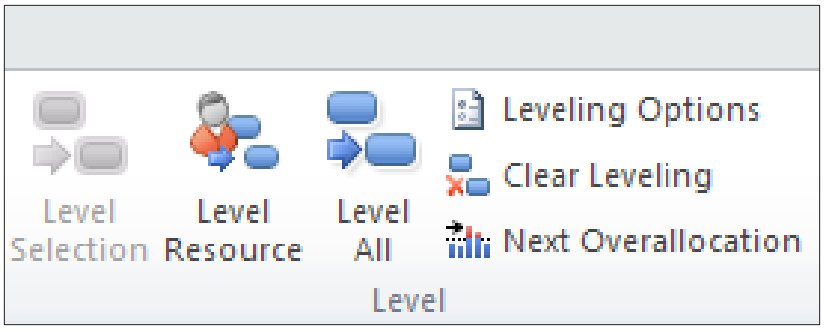


Figure 7-34 PLACEHOLDER

Select one resource and click **Level Selection**. The result is the selected resource will be leveled. When leveling resources from the Team Planner view, only the assignment is adjusted and not the entire task. Click **Level All** to level all tasks for the entire project.

Below is the Team Planner view with all resources leveled. Before leveling, the project was scheduled to complete on May 3rd. After leveling, the project will now complete on May 23rd.

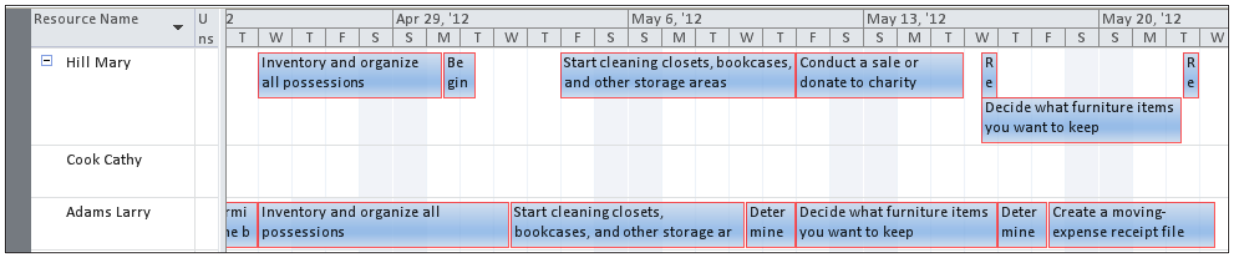


Figure 7-35 PLACEHOLDER

Leveling does not hurt the schedule and should be tested to see the results. Leveling can be removed at any time. To the right of the Level All button, there is a Clear leveling option.

In Team Planner view, click **Format** tab to view the Format menu bar. There is an option button labeled Prevent Overallocations. When this option is turned on, all resources will be leveled and continuously re-leveled with each task change. Additional assignments are created in other views. Returning to Team Planner view will refresh leveling.

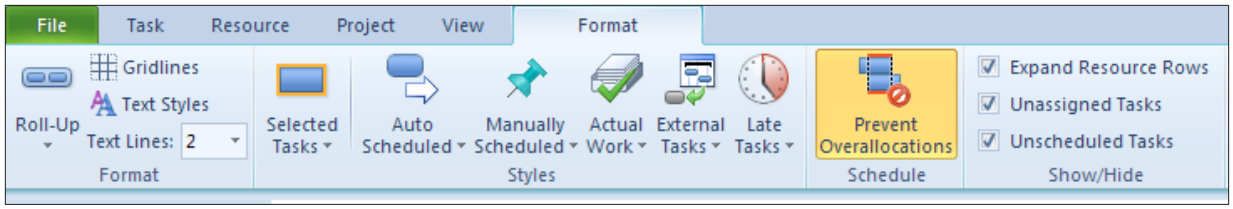


Figure 7-36 PLACEHOLDER

In the Team Planner allows drag and drop assignments to aid in the leveling process. Tasks may be manually move and reassigned as needed.

In the example below, the Resource Allocation view is shown with Mary Hill selected in the top pane. When leveling resources, the Resource Allocation view is effective for viewing the results of leveling.

To display Resource Allocation view:

Click **Task → Gantt chart → Move Views → Resource Allocation view → Apply**

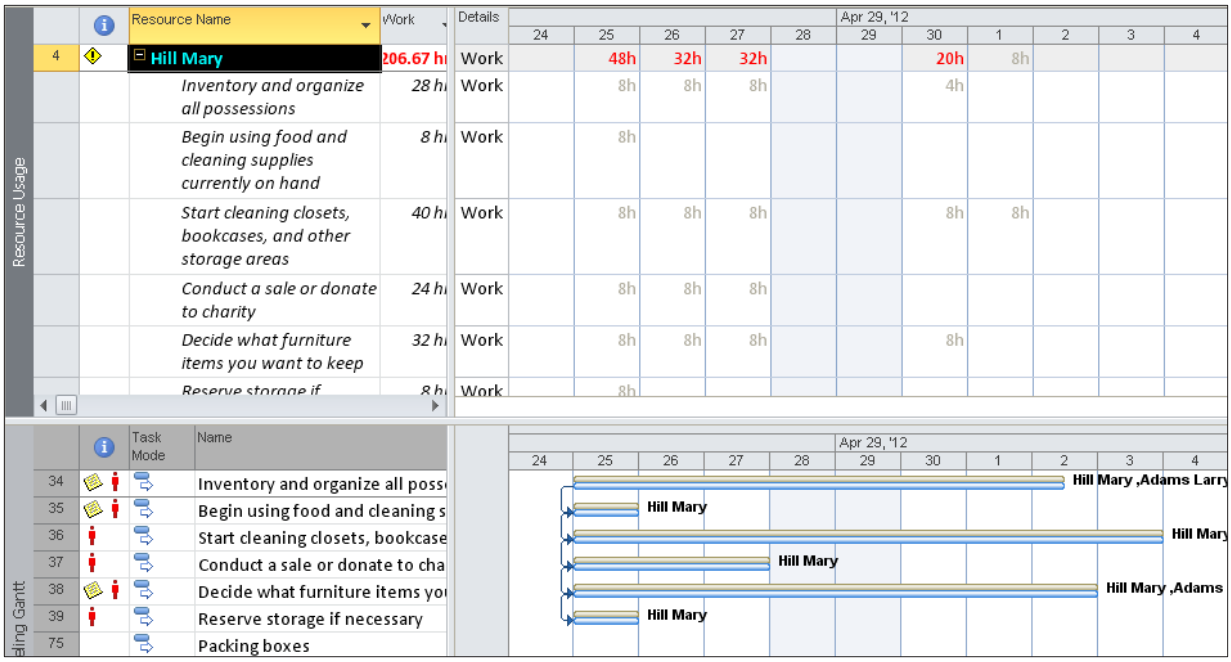


Figure 7-37 PLACEHOLDER

Another approach to leveling is Leveling Options on the Resource bar. When leveling the schedule using the Resource Leveling dialog box, leveling may be performed for resources, individual tasks or the entire project. After leveling is applied, the Leveling Gantt in the lower pane will display a comparison of the original schedule represented with tan bars and the result of leveling with blue bars.

To display Resource Leveling dialog box:

Resource → Leveling options

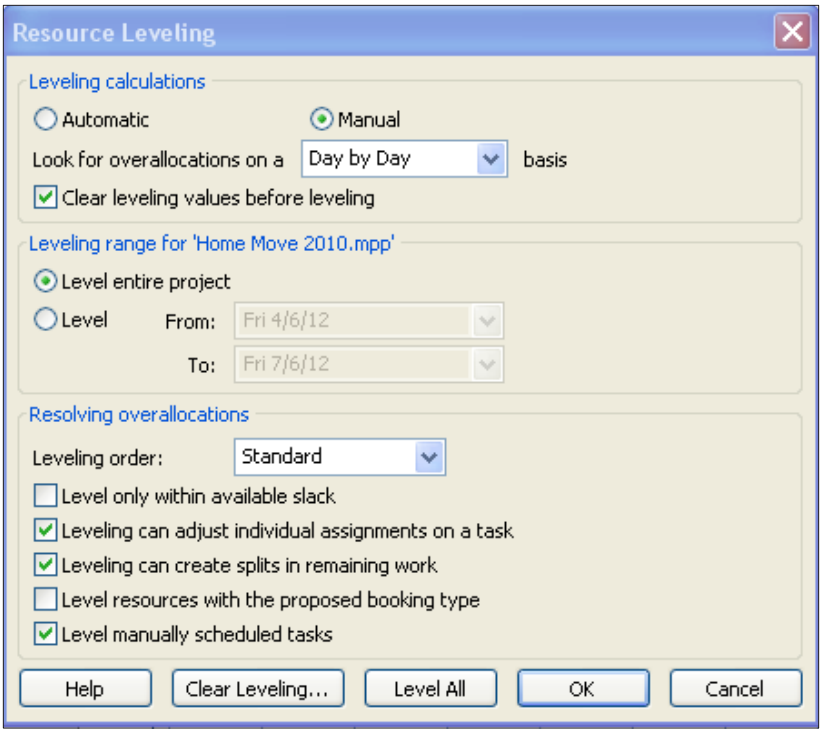


Figure 7-38 PLACEHOLDER

The values in the form are as follows:

- **Automatic or Manual**: the automatice option will level the schedule with each task change. For greater leveling control, Manual leveling is recommended.
- **Look for overallocations on a**: day by day is the default value. The program will attempt to make sure that all resources are not overbooked by even 1 minute during any day. Week by week allows some days to be longer and others may be shorter but the total hours for the week must match the availability calendar. Consider the length of the project when making this choice. Avery short project is better suited to the day by day option.
- **Clear leveling values before leveling**: Clears leveling from other leveling attempts.
- **Entire project or range of dates**: Start with the entire project. Smaller timeframes may be used for future leveling actions.
- **Leveling Order**:
  - **ID Only**: levels tasks with higher ID number first.

  - **Standard**: uses task duration, dependencies, slack, task dates, constraints, tasks without successors and priorities to level the tasks.
  - **Priority Standard**: all tasks and projects have a priority setting of 1-1000 with 1000 being the highest. This leveling option, awards priority to the higher priority value tasks and those tasks are considered first during leveling.
- **Level within available slack**: locks the project end date and all tasks will be leveled within the current time period.
- **Leveling can adjust individual assignments on a task**: leveling will never remove or replace a resource on a task. This option refers to the concept of keeping all resources together on the task or can they perform their work individually. This option is being set for the entire schedule which might not be the case. There is a field on each task that will control this option called Level Assignments. To make this a task level value, insert the column Level Assignments and set the value for individual tasks.
- **Leveling can create splits in remaining work**: allows the remaining work of a task to be split. This option can be controlled at the individual task level using the task field Leveling Can Split.
- **Resources with Proposed booking types**: affects Project Server 2010 users only. Should planned, but uncomitted resources for the project, be included in the leveling process?
- **Level manually scheduled tasks**: includes manually scheduled tasks when leveling.

Below is a view of the post leveled tasks. Note the tan bars showing what the schedule looked like before the leveling and the blue bars representating the after status. The ending date is far beyond the original scheduled date. By dragging the split bar up to the top of the screen, the Resource Usage view will disappear and the entire view will be the Leveling Gantt. This view will show the affect of leveling for the entire project.

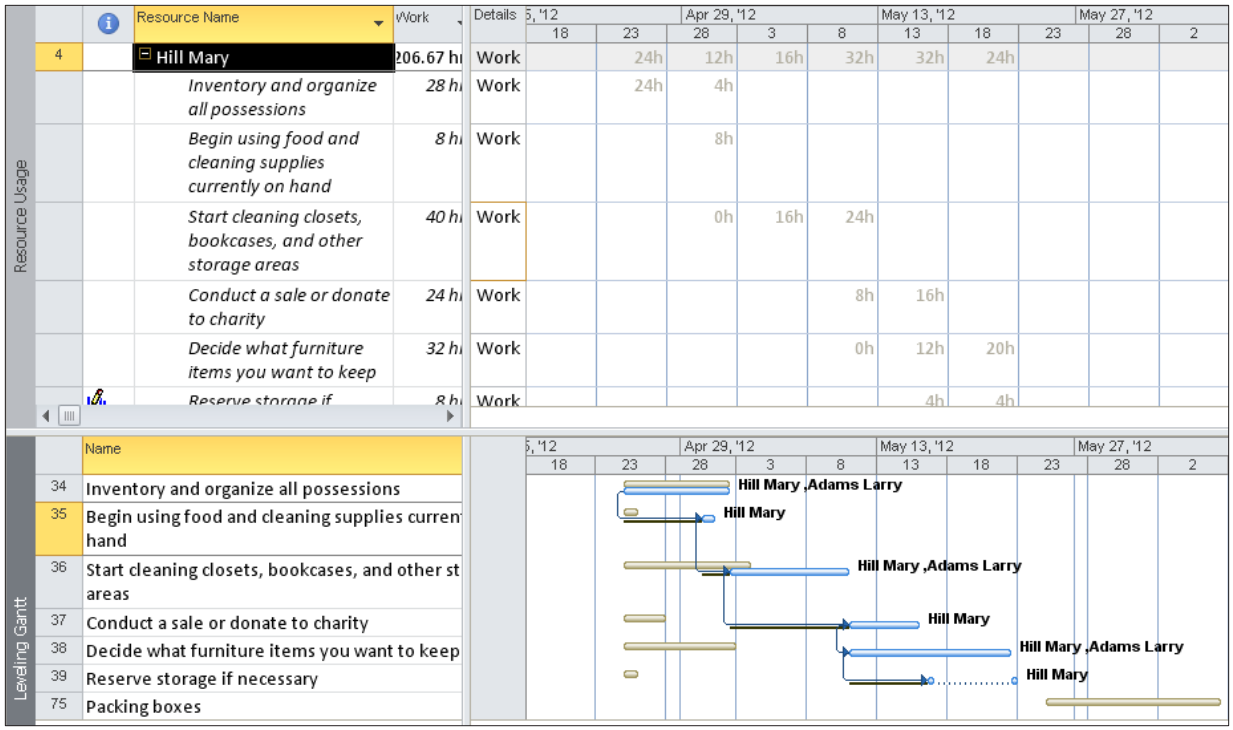


Figure 7-39 PLACEHOLDER

Practice: Resolving Resource Overallocations

The Practice page is where you write detailed instructions for completing work listed as Exercises.

Type the Exercise Title and write a brief summary what the student will be doing in the exercise. Then list your ideas what they will be doing.

SAMPLE

In this practice you will create a Project Server Authentication profile and then configure the local cache settings in Project Professional 2007.

Exercise 1: Create Project Server Authentication Profile

In this exercise you will create Project Server authentication profile to connect to the Project Web Access site.

Perform the following exercise on the PS07 virtual machine.

1. From the **Start** menu, click **All Programs** → **Microsoft Office** → **Microsoft Office Tools** and click **Microsoft Office Project Server 2007 Accounts**.
2. In the **Project Server Accounts** dialog box, click **Add**.
3. In the **Account Properties** dialog box, and complete the following settings and click **OK**.

Table 7.10 PLACEHOLDER

Setting	Perform the following:
Account Name	Type `Project Server`
Project Server URL	Type **`http://epm/pwa`**
When connecting	Select Use Windows user account
Set as default account	Select check box

Real World Application of Scheduling – Resolving Resource Conflicts

Resource scheduling not only involves assigning resources to tasks, it also involves keeping track of and changing resources once a project has begun.

Shortening the Schedule

Once you create your schedule, arrange the tasks, and assign resources to the tasks, you may realize that the schedule does not meet your original goals. You may have a deadline or a budget that you must meet. Listed below are several ways to shorten your schedule. The method you choose depends on your individual project and resources.

The best way to shorten your project is to shorten the critical path. The critical path includes those tasks that affect the duration of the project. If a critical task finishes late, it delays the entire project. If a critical task finishes early, it shortens the duration of the project. If you shorten the length of the critical path, you shorten the duration of your project, and your project finishes sooner.

Some options to consider for shortening the project schedule are:

- Assign additional resources
- Assign a resource to work overtime
- Increase working time (calendar)
- Break task into smaller tasks
- Overlap key activities (multi-tasking)
- Delete tasks
- Redefine quality (less time on activities)
- Break project into phases
- Change dependencies of tasks

Resolving Resource Overallocation

The most common resource conflict is that a resource is overallocated. This means they have more work assigned to them then they can realistically complete in the given time frame.

While there are multiple ways to manage resource allocation, it is important to find and analyze resource overallocation and evaluate the overall effect on the project schedule.

Finding Overallocated Resources

When you assign a resource to work on tasks that overlap or occur at the same time, you overallocate the resource. The resource is overallocated when they cannot complete all of the tasks to which they are assigned during the workday as defined in the base and resource calendars.

Using Indicators

In the Gantt Chart view, you will immediately be notified if there is an over-allocated resource on a task when the red stick figure appears. If you hover the cursor on this icon, the display indicates resources are overallocated. This indicator is a handy and quick visual cue to identify overallocated resources.

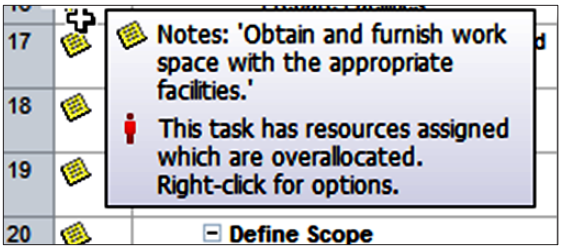


Figure 7-40 Overallocated Resource

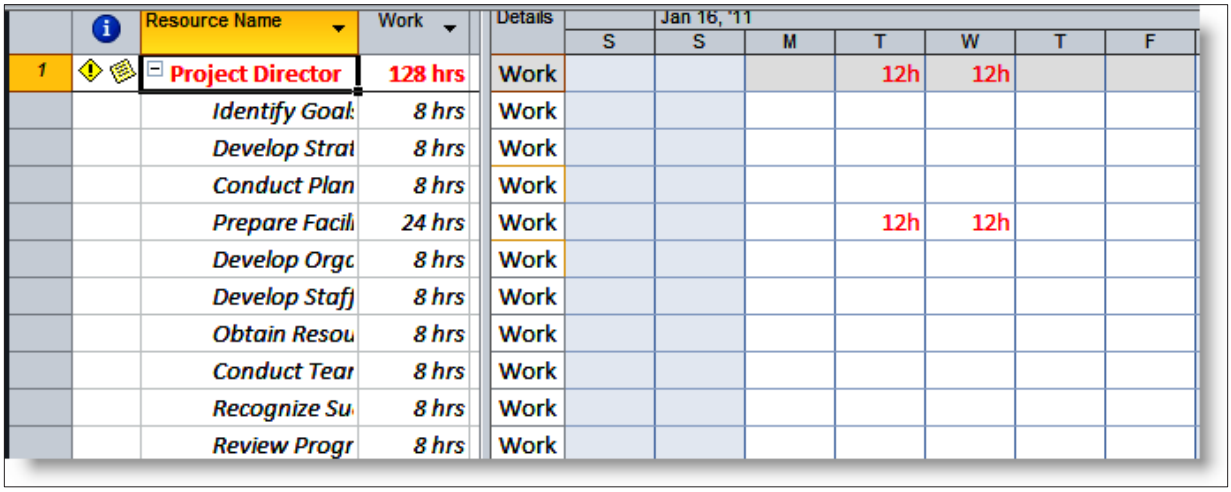
Using the Resource Usage View

You will notice that many views show that a resource is overallocated by providing red indicators or by listing the resource as bold and red. You can apply the techniques illustrated with the Resource Usage view to other views that display resources.

The Resource Usage view lists each resource in the resource pool, their collection of tasks, and the number of hours the resource is scheduled during a particular time period.

To display the Resource Usage view and locate overallocations:

4. On the **View** tab, **Resource Views** group, click the **Resource Usage** button.
5. Select the name of a resource that is overallocated (bold and red).
6. On the **Resource** tab, **Level** group, click the **Next Overallocation** button.



	Resource Name	Work	Details	Jan 16, '11						
				S	S	M	T	W	T	F
1	**Project Director**	**128 hrs**	Work				12h	12h		
	Identify Goal	*8 hrs*	Work							
	Develop Strat	*8 hrs*	Work							
	Conduct Plan	*8 hrs*	Work							
	Prepare Facil	*24 hrs*	Work				12h	12h		
	Develop Orgc	*8 hrs*	Work							
	Develop Staf	*8 hrs*	Work							
	Obtain Resou	*8 hrs*	Work							
	Conduct Tear	*8 hrs*	Work							
	Recognize Su	*8 hrs*	Work							
	Review Progr	*8 hrs*	Work							

Figure 7-41 Overallocated Resources in Resource View

Using the Resource Allocation View

The Resource Allocation view is a combination view that shows resource assignments in a Resource Usage pane along with a personal Gantt chart in the lower pane. The advantage of this view is you can see both numerically and visually what a resource is working on and use either the upper or lower pane to quickly make modifications.

To use the Resource Allocation view to identify resource commitment issues:

1. On the **View** tab, **Resource Views** group, click **Other Views**, and click **More Views** from the dropdown list.
2. In the **More Views** dialog box, select **Resource Allocation**.
3. Click **Apply**.

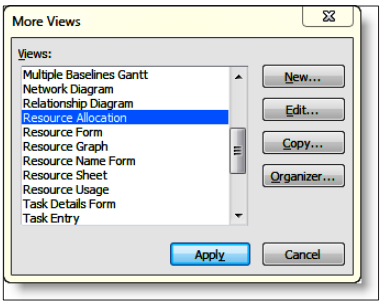


Figure 7-42 More Views Dialog

4. Select the name of a resource that is overallocated (bold and red).
5. On the **Resource** tab, **Level** group, click the **Next Overallocation** button.

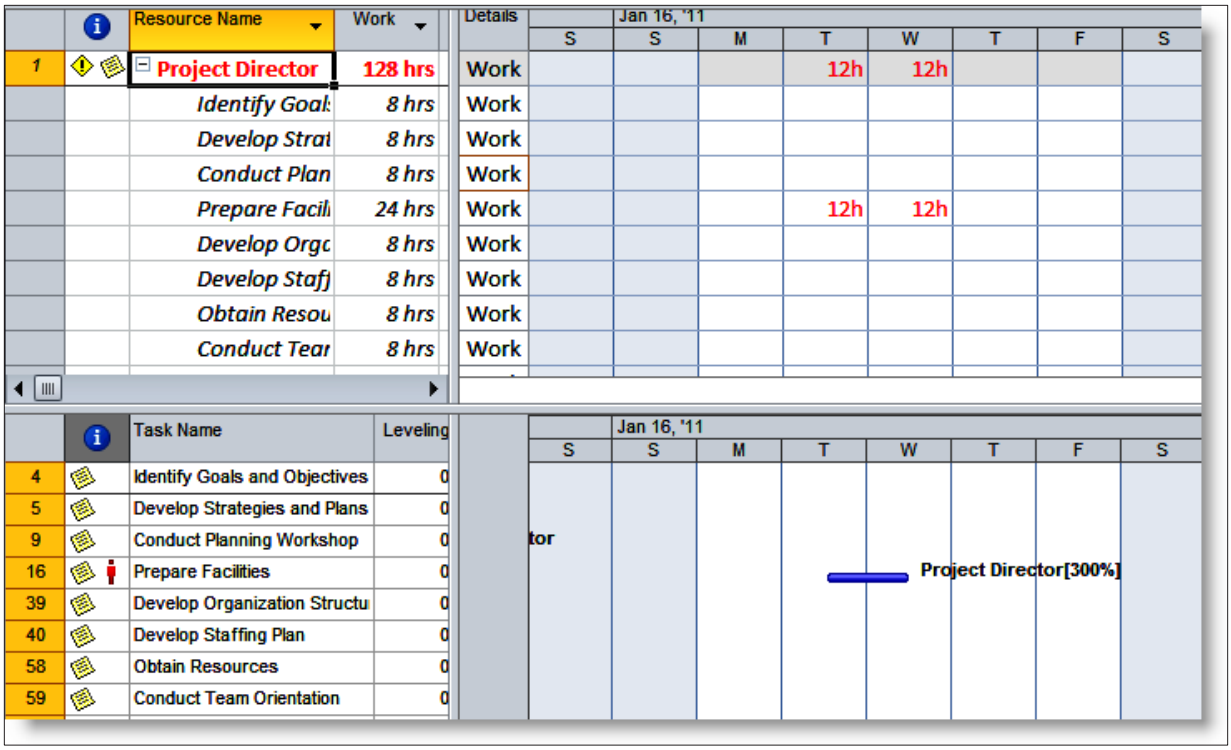


Figure 7-43 Resource Allocation View

Notice how easy it is to identify which time period is causing the resource overload issue.

You can press **`Alt + Home`** to shift the time scale to the beginning of the project so the Next Overallocation button looks for overallocations from day one of the project.

Using the Team Planner View

The Team Planner view displays resources on the left, and displays the tasks along a timeline in a more graphical format than the previous view.

To display the Team Planner view and locate overallocations:

1. On the **Task** tab, **View** group, click the dropdown arrow next to **Gantt Chart**.
2. Click **Team Planner**.
3. Locate the resource that is overallocated (red) and scroll to navigate through the timeline until you see groups of tasks with red lines above/below. That is where the overregulation issue is highlighted for you.

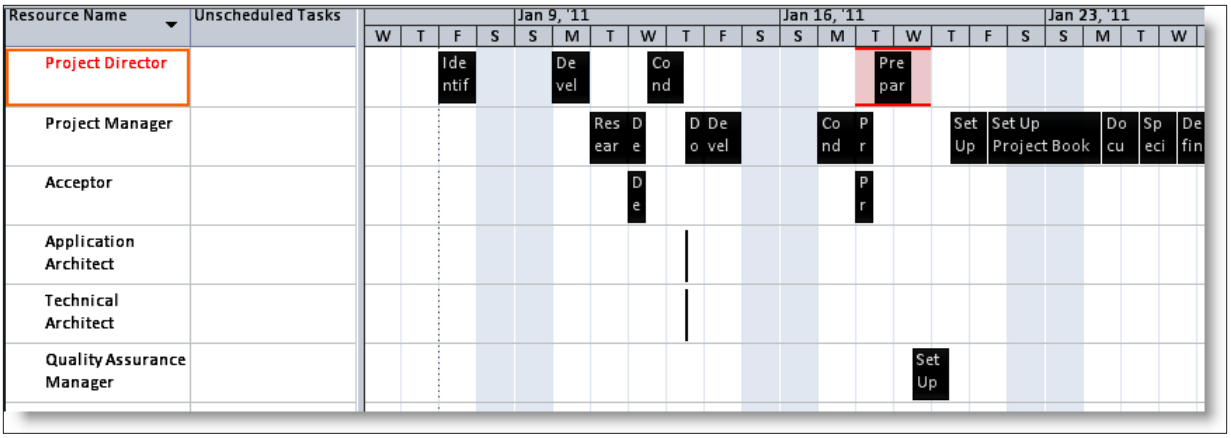


Figure 7-44 Team Planner View

Methods for Resolving Resource Conflicts

In this section, you will be exposed to many different methods for analyzing and resolving resource conflicts. It will be up to you to determine the correct mix of options for the schedule. Some methods will be more manually driven, while other methods will take advantage of some automatic features in Project. Methods that are more automated may have more of a ripple effect that aren't expected so be sure to carefully choose the appropriate method. This list of methods is not meant to cover every possible scenario, but instead is presented to give suggested scenarios that are popular and easy to use. No order of priority is indicated with this list.

Using Indicator Suggestions

For tasks that have a red stick figure in the indicators column, that means there is a resource conflict on the task. You can use shortcuts in Project to help fix that. Simply right click on the indicator field or name of the task and apply one of the options listed such as: **Fix in Task Inspector** or **Reschedule to Available Date**.

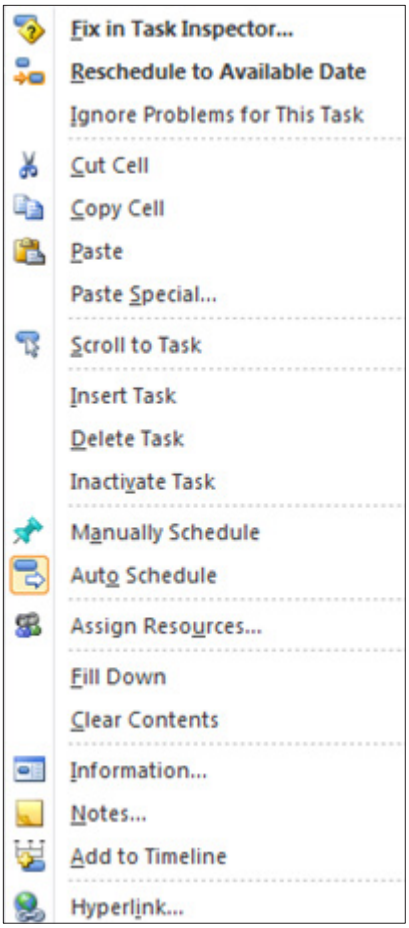


Figure 7-45 Context Menu from Overallocated Resource

Using Task Inspector

One option in the right click short-cut menu is the Task Inspector. Using this option gives you a pane to the left side of the Entry table. The advantage of Task Inspector is it provides critical information about the task and information about what is occurring at a specific time and gives you

options to correct any issues, including hyperlinks to the feature or area where you can make a change.

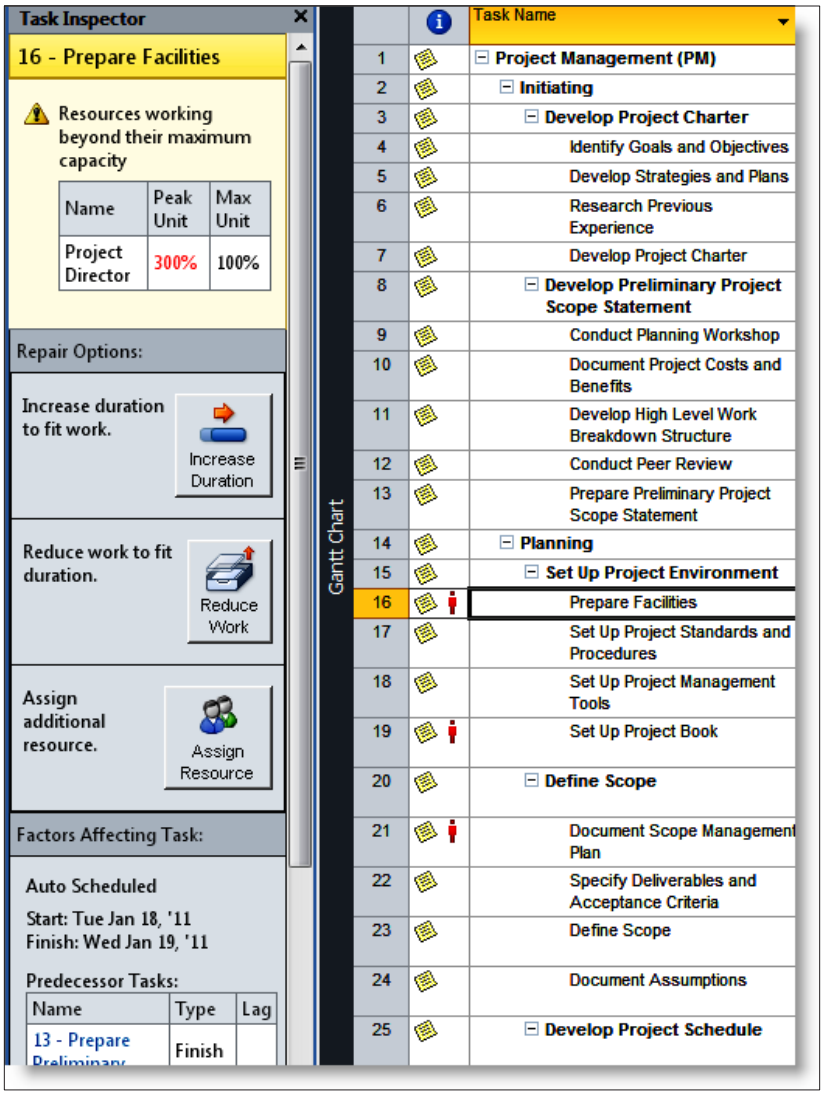


Figure 7-46 Task Inspector

Don't forget to consider the ripple effect of making a change to one task. As other tasks respond to this change, you may see a change in the critical path or introduce other resource conflicts.

Changing Resource Assignments

When you look at resource assignments individually, you might see that one resource is very overworked; however, when you look at resources collectively, you might notice that some resources are underworked. One of the best ways to solve resource issues is to more equitably distribute the work. For example, Ricardo is assigned to a task at 150% while Angelica is assigned to a task at the exact same time at 25%. If you can find a way to shift some of Ricardo's work to Angelica, you will take better advantage of the availability of both resources. Changing assignments can be done in many different views. One useful way to change assignments is to:

1. Navigate to the **Resource Allocation** view.
2. Select the overallocated resource in the upper pane.
3. Select the task in question in the lower pane.
4. Double click on the **Task Name** in the lower pane. The **Task Information** dialogue box appears.
5. Make any necessary adjustments to the task.
6. Click **OK**.

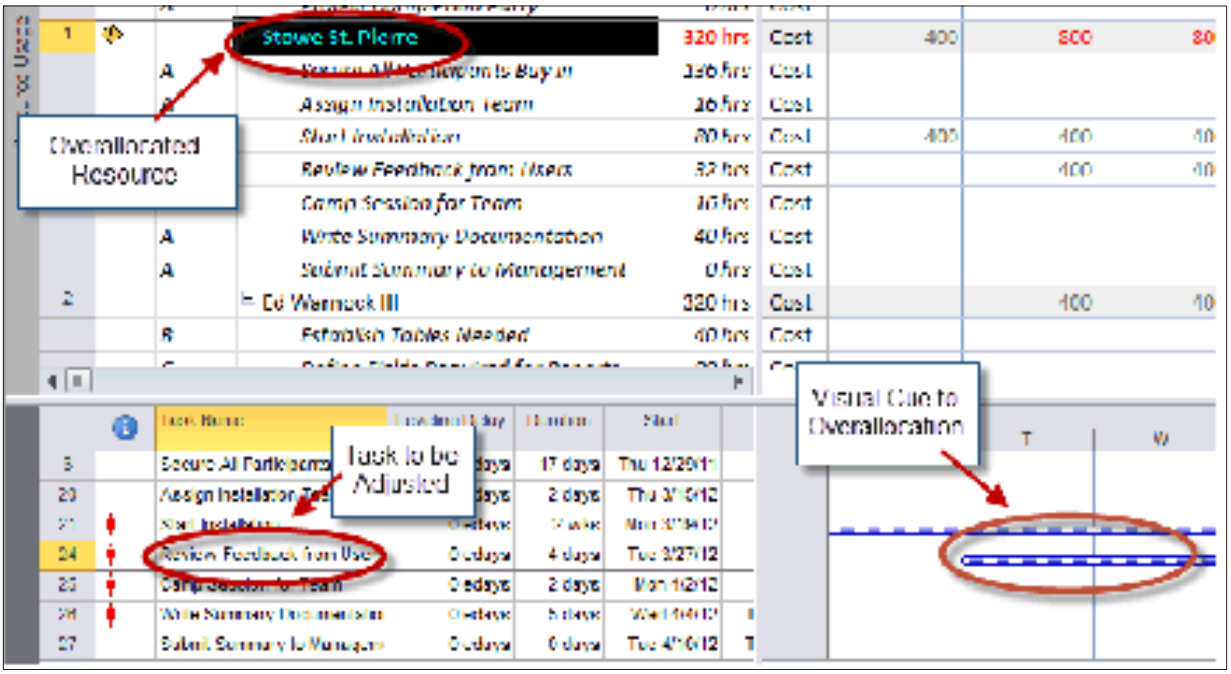


Figure 7-47 Resource Allocation View

When you return to the Resource Allocation view, it will recalculate and remove that task from the resource you had selected. You may need to reselect that resource again if you want to see an updated lower pane and be able to continue making adjustments.

Delaying a Resource Assignment

Instead of using the leveling techniques mentioned earlier, you can choose to individually delay work on a resource assignment. Some reasons for this could include the resource is not needed until a portion of the task is underway or the resource is simply unavailable at the beginning of the task and they are showing overallocated.

To delay a resource assignment:

1. On the **Task** tab, **View** group, click **Gantt Chart**.
2. On the **View** tab, **Split View** group, click the checkbox for **Details**. This will display the lower pane.
3. Ensure your desired task is selected in the upper pane.
4. In the lower pane, position your mouse on the empty area to the right side and right click, in the subsequent pop-up menu click **Schedule**.
5. Enter the delay in the most appropriate column.
   - **Leveling delay** – the time you want to postpone the task. If this is the only resource on the task, the entire task will move.
   - **Delay** – the time you want to postpone the work for the resource. Works best in conjunction with a reduction in the assignment work for the task. For example, let's say you have two people on an 8 hour task (duration) for a total of 16 hours (work). One person is doing design work and will be needed for all 8 hours, while the other person is doing a quality check and only needs to be on the task for 2 hours. If you change the work for the quality resource to 2 hours and enter a delay of 6 you are indicating the resource will not start until 6 hours of the task have already passed. The quality resource is now free to work on other tasks during the 6 hour wait period.
6. Click **OK**.

The OK and Previous buttons alternate as active buttons. If you see the OK button, you have changes pending that have not been accepted.

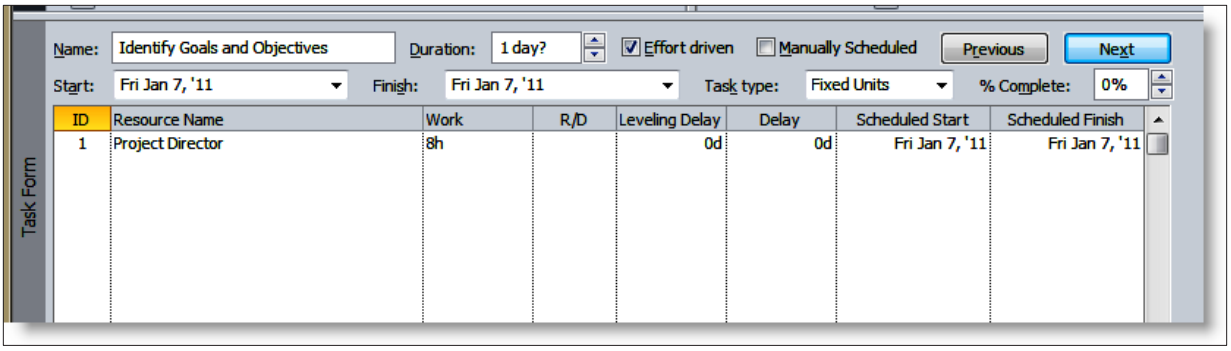


Figure 7-48 Delay a Resource

Splitting a Task

Another option for resolving resource allocation is to split a task. This keeps the beginning of a task occurring as scheduled, but the remaining work can be allotted to a different day.

As an example, a resource is assigned to two tasks occurring at overlapping times. Task one is reviewing a document and is scheduled for Monday and Tuesday. Task two is drafting a document and it is scheduled for Tuesday and Wednesday. Task two must occur on Tuesday and Wednesday as those are the only days a remote resource will actually be in the office for a face-to-face working session. Task one can be split to begin on Monday, but complete on Thursday.

Splitting a task is an important feature as it keeps an accurate history of when the task began, as well as an accurate history of the modified completion. It is also a best practice to add a note as to why the task was split. This will provide additional historical information.

To split a task:

1. In the **Gantt Chart** view, select the desired task.
2. In the **Task** tab, **Schedule** group, click the **Task Split** button. Note that the cursor changes.
3. Place the cursor at the desired point to split the task.

4. Click and drag the remaining work to the new time.

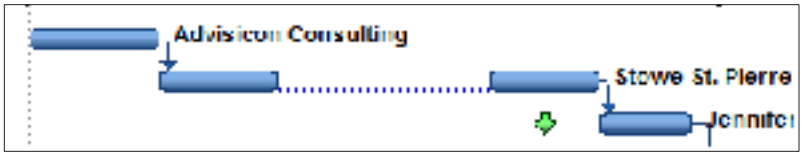


Figure 7-49 Split Task

Assigning a Work Contour

When you assign a resource to a task, Project spreads the work out evenly over the duration of the task unless you specify otherwise. For example, if you assign a resource 100% to work 80 hours on a ten-day task, Project assigns eight hours of work per day. This is a flat contour.

Not all tasks require that the work be spread equally (a flat contour). For example, consider the building of a fine custom wooden cabinet, which is one task in a project that involves furnishing a house. The carpenter purchases the wood and other components, which requires trips to several specialty stores. He spreads the trip out over several days, while using some of his time to finish his previous project. Then he works full days for three weeks cutting and assembling the cabinet. In the middle of construction, he puts in some overtime.

After the construction phase is completed, he stains the wood, which takes two hours. The stain has to dry overnight. The next day, he applies a coat of varnish, which takes two hours. It, too, has to dry overnight.

The next day, he sands the varnish and applies another coat, which takes three hours. He applies three more coats of varnish, repeating the progress.

On the last day, he buffs the final coat, which takes an hour. Most of the work on the cabinet occurs during the middle of the project, peaking during a few days of overtime. Work at the beginning and end of the task is part-time.

You can change the work contour in one of two ways:

- Manually modify the working hours in the time scale grid on the right side of the Task Usage or Resource Usage views.
- Change the work contour option.

To adjust work contours:

1. On the **View** tab, **Task Views** group, click **Task Usage**.
2. Locate the task and specific resource where you want to change the contour.
   - Option 1 – On the grid on the right-hand side, change the hours for the row where the resource name is listed. Notice the edited work indicator appears.

Figure 7-50 Edited Task Icon

- Option 2- Double click the name of the resource and in the **Assignment Information** dialog box, in the **Work contour** list, choose your desired contour pattern and click **OK**. Notice the appropriate work contour indicator appears.

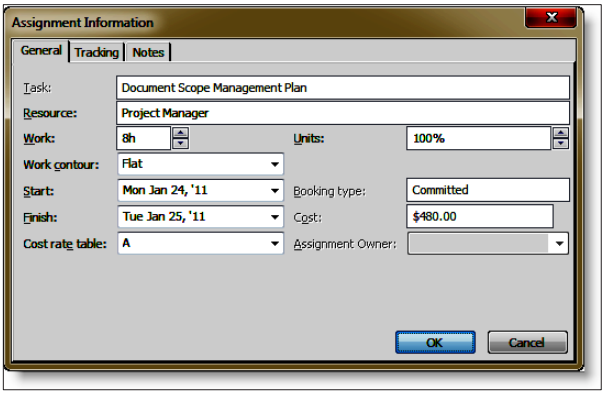


Figure 7-51 Assignment Information Dialog

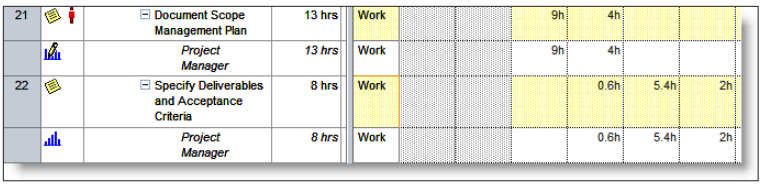


Figure 7-52 Work Contour

Using the Team Planner View

The Team Planner view is very visually pleasing and allows you to manage your schedule by resources instead of by task. Overallocations can be quickly corrected here and the impact on the resource or other resources is also quickly visible.

To use the Team Planner View:

1. On the **Task** tab, **View** group, click the dropdown arrow next to **Gantt Chart**, and click **Team Planner**.
2. Locate the task that is causing a conflict (red lines above/below highlight the task), and simply drag the task to a new time period for the same resource or drag it to another resource.

   Optionally – You can right click on the task and take advantage of features available in the short-cut menu (such as reassign to another resource).

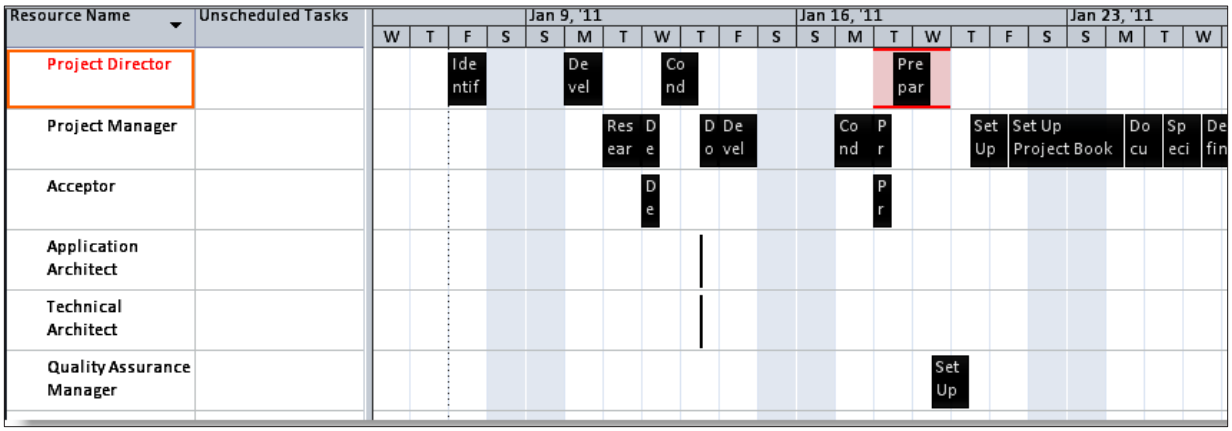


Figure 7-53 Team Planner View

The Team Planner view is also an easy way to assign tasks that currently do not have resources assigned to them. Unassigned tasks will appear at the bottom of the Team Planner view and can be dragged and dropped to the appropriate resource.

Dragging a task to a new location will create a constraint on that task since you are essentially forcing it to happen a particular time. If you want to avoid constraints, use the Gantt Chart view and make other adjustments such as changing links or reassigning tasks.

Applying Leveling Features

Leveling is a feature in Project that can be used to solve overallocations. While the software can't dream up a creative solution, it is able to shift, delay, and split tasks to take advantage of open spaces in your project where resources might be underallocated or where tasks can be delayed without shifting the end date. Should you choose, you can also indicate that your end date is flexible so there are more options for leveling to correct overallocations. Before you use leveling, be sure to consider the following scenarios and options.

These are three leveling scenarios you can choose:

Level Selection – use this option when you are in a task view and want to fix overallocated resources on specific tasks. This will leave overallocations for those same resources on other tasks untouched. Typically this option can help when you need to make sure you meet your commitments on the selected task(s), but do not want to address other tasks at the same time.

Level Resource – use this option when you are in a resource view and want to fix overallocations by resource. This choice would be suggested when you know that the availability of a specific resource will not change and you have to get the work done using this limited availability.

Level All – this option is when you want to fix overallocations across the entire project across all resources.

When you click Leveling Options, the following dialog box appears:

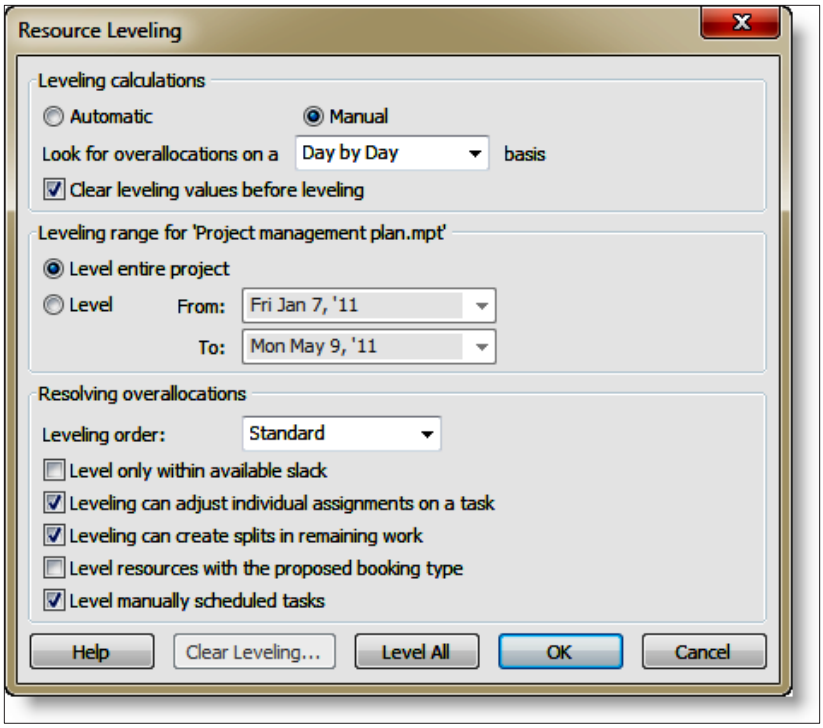


Figure 7-54 Resource Leveling Diagram

Please consider the following when selecting your options:

- Automatic is not recommended since it will level your project continuously without warning. Tasks will be delayed before you realize anything has happened.
- While Project offers an auto leveling feature to resolve overallocation, it is recommended that the project manager resolve overallocation manually. Overallocation can be a complex issue and requires analysis. Utilizing the auto leveling feature can diminish your ability to analyze and uncover the root cause of the overallocation.
- Consider changing Leveling order to “Priority, Standard” if you have set priority numbers on your tasks.
- Best Practice – Only use priority numbers to lock exception tasks down. For example, setting a task to a priority number of 1000 will make sure that they task does not move when you level. Essentially you are setting the task to be highest priority.

The Team Planner view is an interactive format allowing you to drag and drop activities directly on the right portion of the screen to alleviate

overallocations. Also of note is that unassigned tasks will appear at the bottom and can be assigned to resources by dragging and dropping them on the grid on the right.

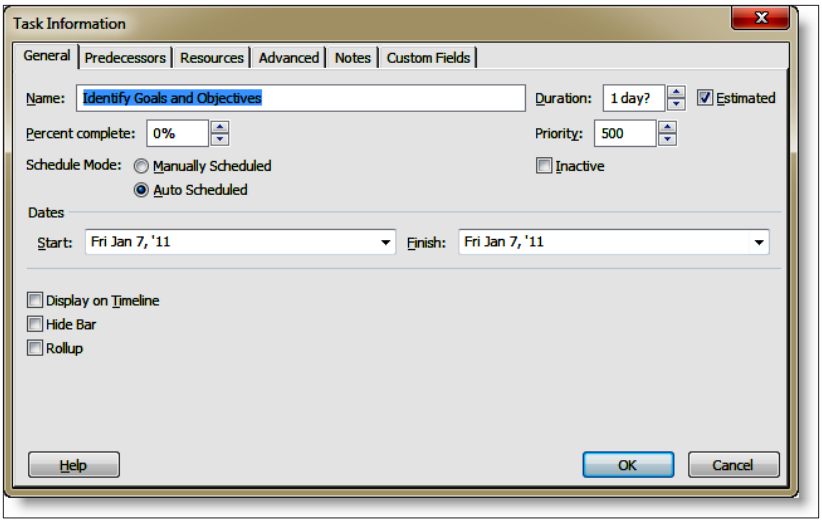


Figure 7-55 Task Information Dialog – General Tab

- "Level only within available slack" attempts to delay only non-critical tasks. The drawback to this feature is it limits Project's ability to fix things.
- Best Practice – Run leveling first with the "Level only within available slack" option enabled to protect your critical path and observe the benefits before turning this option off and running leveling.
- "Leveling can adjust individual assignments on a task" means when a task is staffed with multiple resources, Project has the flexibility to move work resource by resource instead of moving the entire task and all resources at once.
- "Leveling can create splits in remaining work" means a task can be split as needed to get around other tasks that can't be moved.

Be sure to review the splits created in your Project and undo the action if necessary. For example, if the result of this is a task that is split into 10 pieces, this is probably not a good result.

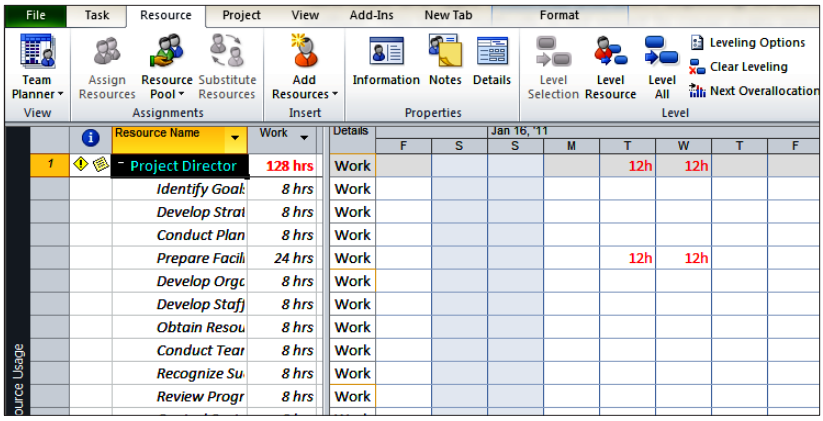


Figure 7-56 Leveling

To level your project:

1. On the **View** tab, **Resource Views** group, click **Resource Usage**.
2. On the **Resource** tab, **Level** group, click **Leveling Options** and make your desired selections.
3. If necessary, select the desired resource(s). Otherwise, choose the desired leveling option in the **Level** group on the **Resource** tab.

Critical Path

What is a Critical Path

The Critical Path is the longest path of tasks through the network of tasks for the schedule. It represents the timeline of the schedule and establishes the end date for the project. It is the minimum time that it will take to complete the project. Tasks not included in the network of tasks will not be included in critical path calculation. For a more accurate critical path calculation, all tasks should have a predecessor and a successor except the first and last tasks of a project. Checking the contents of the predecessor and successor columns to make sure all tasks have valid entries is helpful.

Any task on the critical path is known as a Critical Task. If a critical task slips, the end date of the project will be negatively affected.

Scheduling factors contributing to Critical Path calculation include:

- Relationships between tasks
- Lead and Lag time
- Duration of tasks
- Constraints
- Task Calendars
- Resource Availability
- Resource Assignments

Project 2010 will automatically recalculate the critical path each time a task is changed. The calculation is making a forward and backward pass through the schedule looking for time gaps between tasks. This time gap is called slack which is also known as float. If a task has slack, it is considered non-critical. When a task has no slack, it is considered critical. Slack can be both a positive or negative value.

Every project schedule should include float or slack in order to address contingencies. No project will run exactly as planned. Float or slack will provide the extra time needed to handle unknown problems that will arise during the execution of a project.

There are 2 types of slack calculated in Project 2010:

- Total slack is the amount of time a task can slip without affecting the end date of the project.
- Free slack is the amount of time a task can slip and affect only the successor task. If a task does not have a successor, free slack will be the same as total slack.

This type of critcal path calculation is based on tasks. Resources can also be critical within a project schedule. During the execution of the project, different resources will become critical at different points within the schedule. If a critical resource is not available at a critical point, the entire project could be affected as well as the ending date.

Frequently, during the execution of a project, a task that was not originally on the critical path will become critical. Careful tracking and monitoring of the critical path during the management of the project will help keep the project manager on track to achieve the goal of their projected end date.

Manually scheduled tasks and critical path

Manually scheduled tasks will be included in the critical path calculation if they have dependencies and duration. In the absence of dependencies, only tasks that push the end date of the schedule will appear on the critical path.

The default for Project 2010 critical path calculation is to recalculate the critical path every time a task is changed. In very large schedules, critical path recalculation can slow the schedule development process. For this reason, automatic calculation may be turned off and the calculation manually triggered when the scheduler is ready.

To turn off automatic schedule calculation:

- **File → Options → Schedule**

  Calculation option

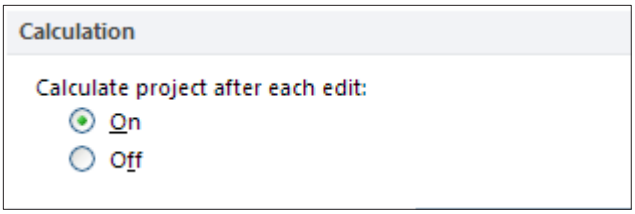


Figure 7-57 PLACEHOLDER

To calculate a project on demand:

- **Project → Calculate Project**

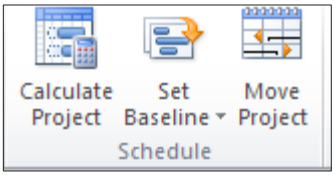


Figure 7-58 PLACEHOLER

Formatting Views to Display Critical Path

Slack is essentially scheduling breathing space for a project. The greater the slack, the more breathing space you will have to help manage problems that will occur during the performance of the project. If a schedule fails to include slack, the plan for the schedule might be unobtainable. Since projects are never performed exactly as scheduled, slack becomes essential to achieving the goal date for the project.

Each time a task is changed in Project 2010, the critical path is recalculated automatically. There is a column labeled “Critical” that contains a Yes or No value. This column is reset as a result of critical path calculation and could change as the project progresses and changes. Formatting of Gantt Charts and other views depend on the “Critical” column to

determine how view formatting should appear. Many of the views are not pre-formatted to show the critical path. The formatting may be turned on as necessary.

To turn on and show the critical path formatting:

- **Task → Gantt view**
- **Format → Critical Path**

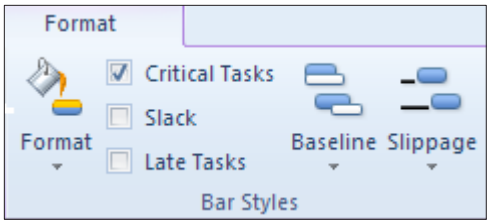


Figure 7-59 PLACEHOLDER

The critical path is shown as red Gantt bars and the non-critical tasks appear a blue Gantt bars.

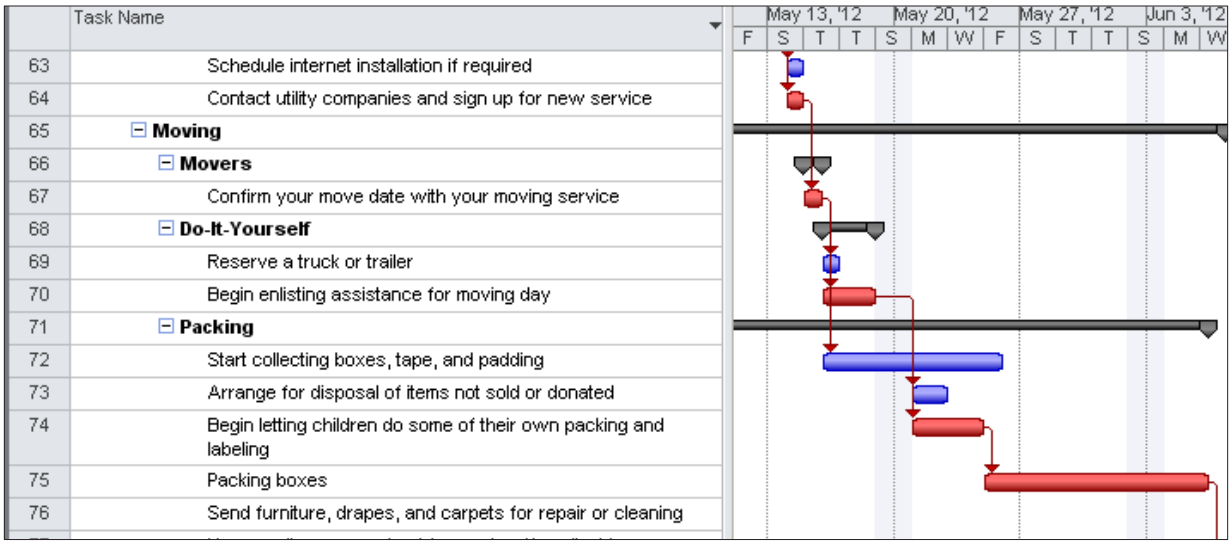


Figure 7-60 PLACEHOLDER

To get what is called a waterfall or tasks in sequence critical path, apply the critical filter and all non-critical tasks will be hidden. .

To filter the schedule for critical path:

- **Task → Gantt Chart view**
- **Format → Filter → Critical**

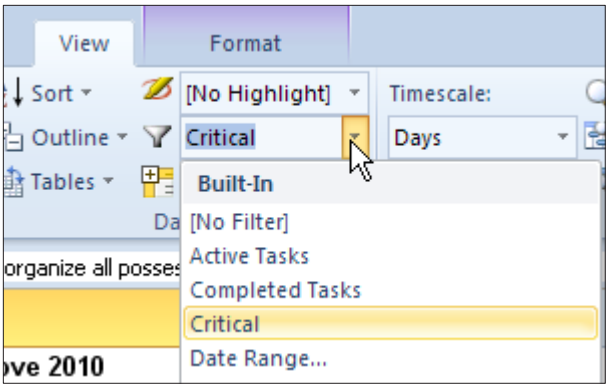


Figure 7-61 PLACEHOLDER

In the view below the Critical filter has been applied. All non-critical tasks have been hidden. The view is an example of a waterfall critical path.

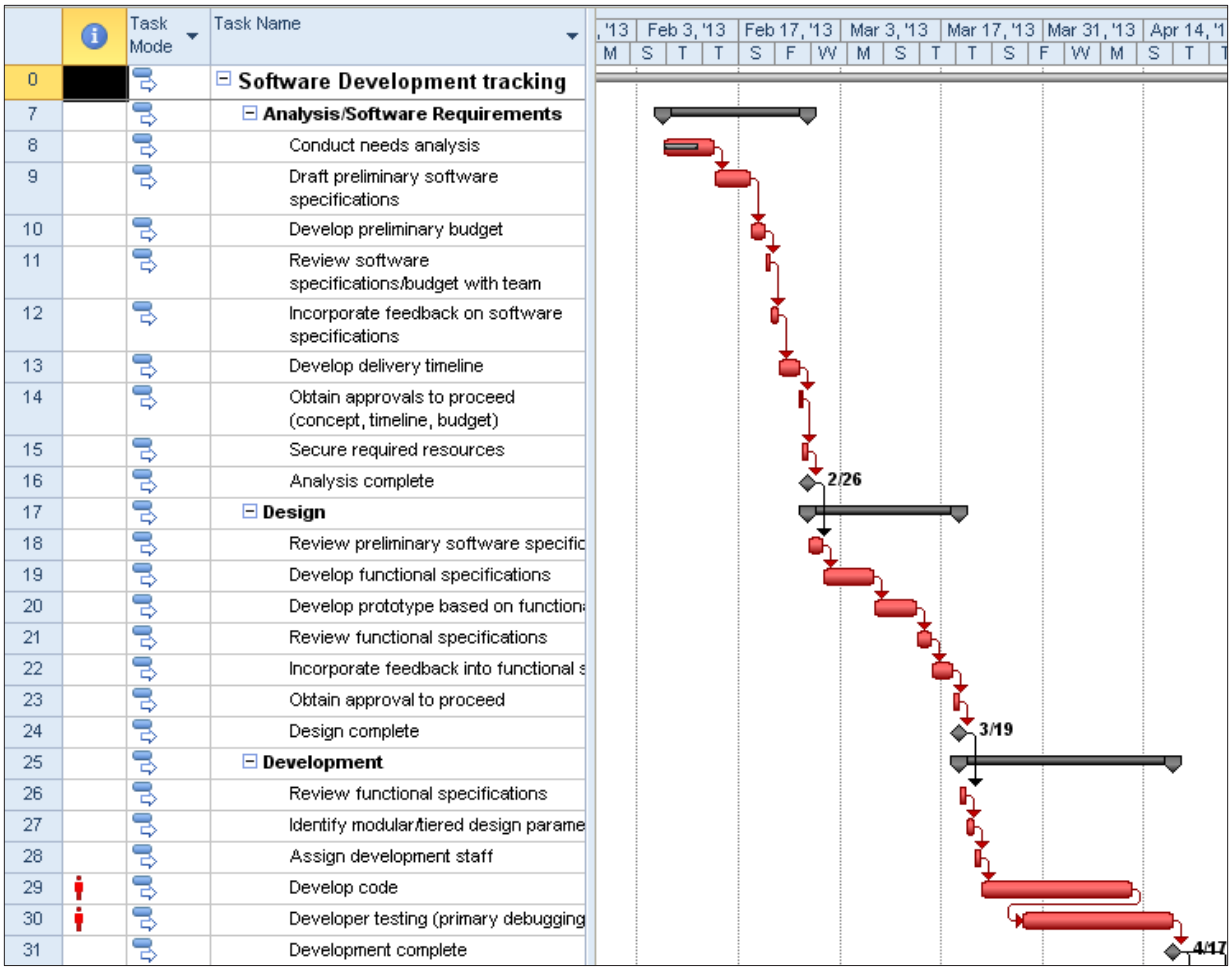


Figure 7-62 PLACEHOLDER

Turning off summary tasks is helpful as well

To turn off summary tasks shown on the Gantt Chart view:

- **Format → Summary Tasks**

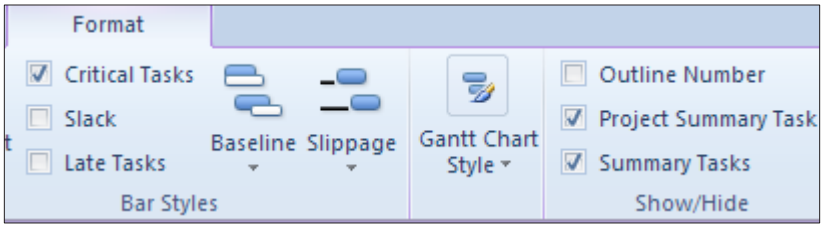


Figure 7-63 PLACEHOLDER

Knowing where slack in your schedule is located will help when making scheduling decisions.

To view the slack in the schedule on the Gantt Chart view:

- **Format → Slack**

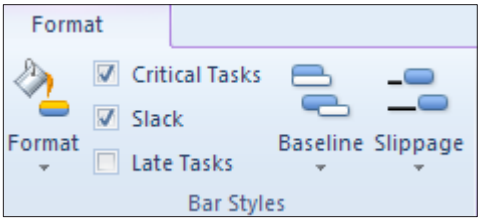


Figure 7-64 PLACEHOLDER

Below is a view formatted to show the schedule slack line indicators. Slack is represented by black lines extending to the right of the task Gantt bar. For clarity, in the example below, relationship arrow lines have been turned off.

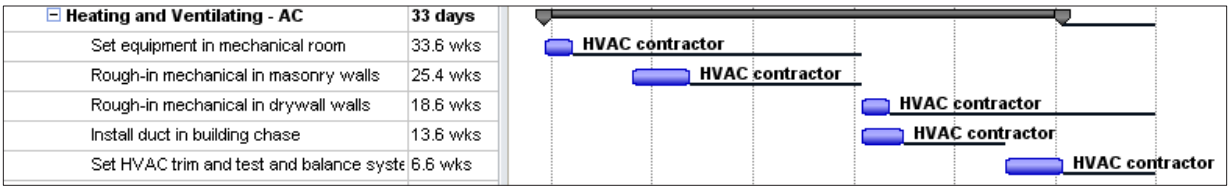


Figure 7-65 PLACEHOLDER

Setting Slack Tolerance

When a task has zero slack the task is considered critical and any change in the end date for the task will negatively affect the project end date. Tasks with slack of 1 minute or more are considered non-critical. It is unlikely that 1 minute of slack is sufficient to prevent a task from moving from a non-critical to critical state.

Project 2010 provides the ability to define a per project critical task tolerance level. This setting will allow the scheduler to control what the

tolerance point between critical and non-critical tasks should be. Using the total duration of the project as a guide, shorter duration projects should have lower tolerance points than longer duration projects. All cutoff points are stated in number of whole days only. The result of the critical path calculation is shown in the Total Slack column. The value in this column is used when calculating the Critical Path and determining when a non-critical task becomes critical.

To insert the Total Slack column into a table:

- **Task → Gantt Chart**
- Right click a column heading
- Select **Insert Column**
- Click the **T** key
- Select **Total Slack**

In the example below, the Total Slack column has been added to the table. Critical path formatting is turned on. All tasks in view are considered non-critical. Note the values in the total slack column show several tasks have less than 1 day of slack.

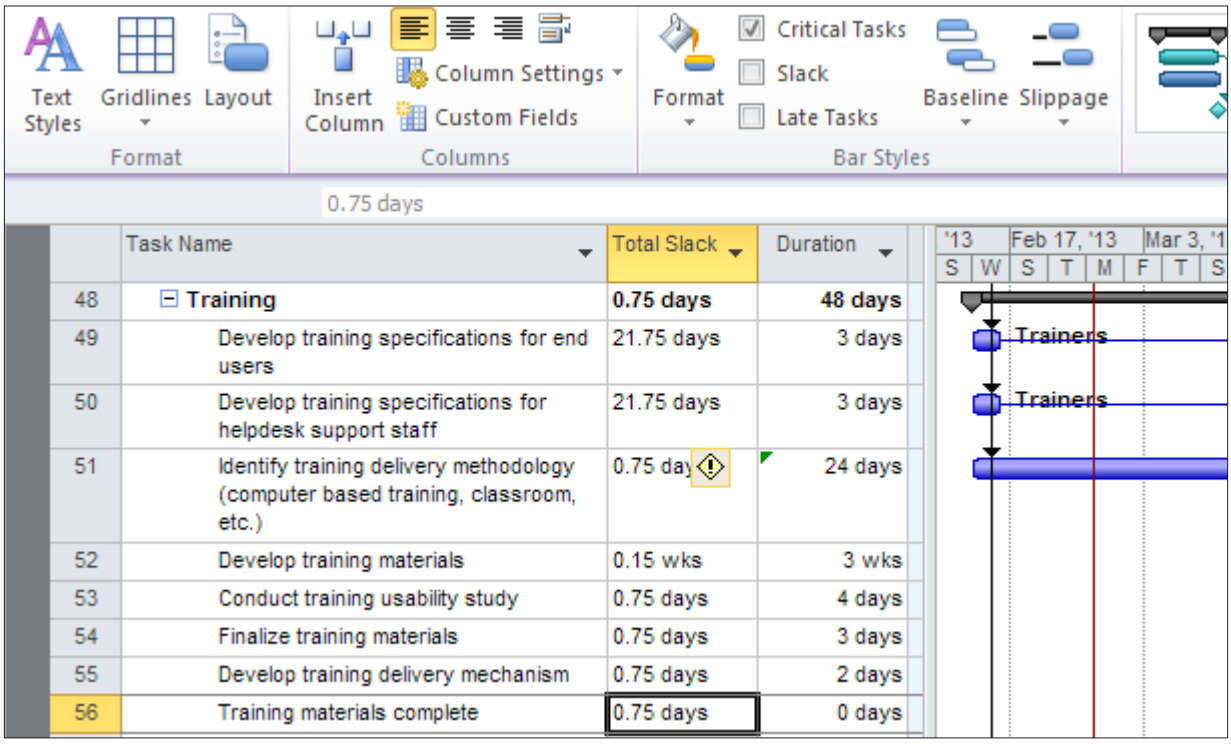


Figure 7-66 PLACEHOLDER

The task crtical path tolerance setting is located in the Advanced Options section. The default tolerance value is zero days. Changes to the tolerance level are in whole days only. The tolerance level setting can be applied to a single specific schedule or all schedules.

To navigate to Advanced Options:

- **File → Options → Advanced**

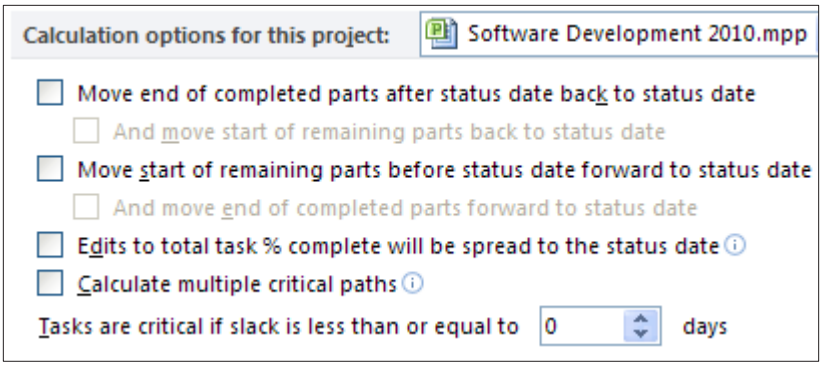


Figure 7-67 PLACEHOLDER

In the example below, the option has been changed to 3 days. Any task with less than 3 days of total slack will be considered critical. In the view below, several tasks have .75 days of slack and are not considered critical. Note the differences in the formatting of the critical path.

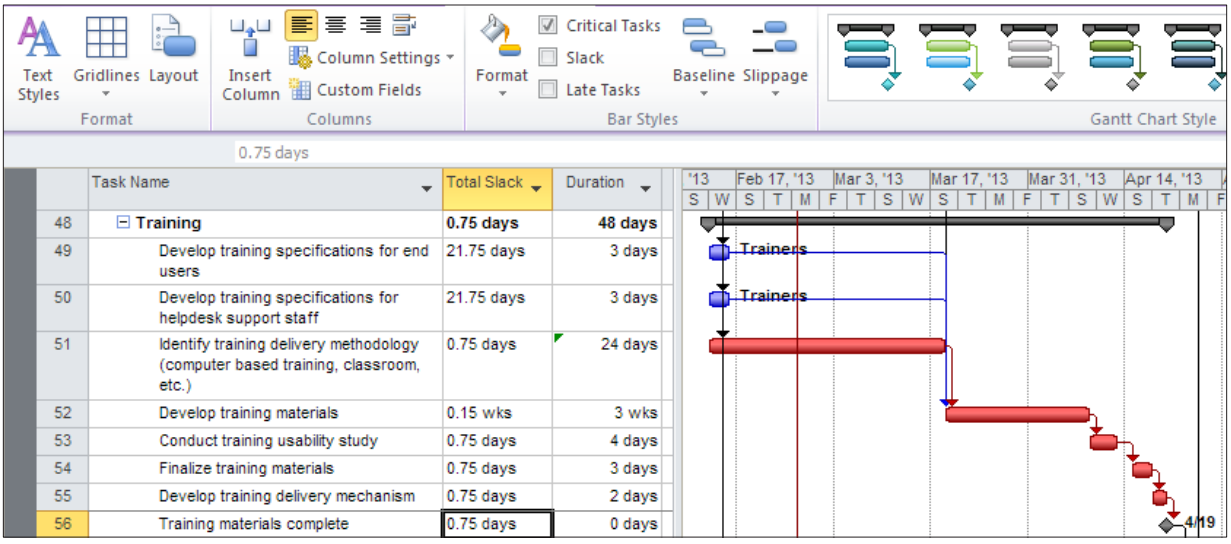


Figure 7-68 PLACEHOLDER

This formatting may be treated as an alert to knowing which tasks acould have impact on the ending date for the project. Once a task is flagged as critical, it will be included in filters, grouping, and reports as a critical task.

Negative slack was discussed earlier in the module concerning constraints. Negative slack tasks will appear as critical when formatting for the critical path.

Crashing the Critical Path

Once you have displayed the critical path, you will have a better understanding of the specific tasks which are driving the ending date of your project schedule. Project Managers are usually asked to cut time out of the project schedule to shorten the critical path or length of the project. Since the crtical path is determining the project length, cutting time from the critical tasks will affect the project ending date. Cutting time out of the timeline for the project is known as Crashing the Schedule. When crashing the schedule, automatic project calculation is preferred because the timeline will actively change with each task change.

Below are a few suggestions which could be applied to crtical tasks to help shorten the critical path.

- Create as many parallel paths as possible. Changing task relationships to start-to-start or finish-to-finish will shorten the critical path. Beware that you may need more resources which could also in turn increase cost.
- Add as much realistic lead time as possible. Additional resources may be necessary.
- Increase working time on resource calendars. When resources are working longer hours, the work should be completed sooner.
- Remove as many constraints as possible.
- Move critical resources from non-critical tasks to critical tasks. The more experienced resources can usually accomplish the work faster and with less re-work and risk.
- Group tasks by duration as shown in this module. The longest tasks have more duration and present more opportunity to save time.

- Take long tasks and break them into smaller tasks. Try to put the smaller tasks in parallel and assign non-critical resources.
- Add evenings and weekends to gain more working time
- Question whether all tasks are really necessary and within project scope? Delete or inactivate (see below) unnecessary tasks
- Question whether the assignments are correct? Are the right people assigned to the correct amount of work? Finding errors and correcting them might reduce project time.
- Check that predecessors and successors are correct and appropriate. Blanks in the Predecessors and Successors columns indicate a missing relationship. Show all subtasks, turn off summary tasks and use the autofilter to filter for blanks. F3 to remove the filter.
- Check the Total Slack column. If the amount of Total Slack is large, there is a possibility the task is missing relationships.
- Don't be afraid to try some what-if scenarios on a copy of the file.

If it is determined that a task is might not be necessary within a project schedule, Project 2010 allows the scheduler to switch a task to inactive mode. This removes the task from the critical path calculation but leaves the task in the schedule in case it can be activated again.

In the project below, the critical path is indicated in red. The project is scheduled to end on March 22.

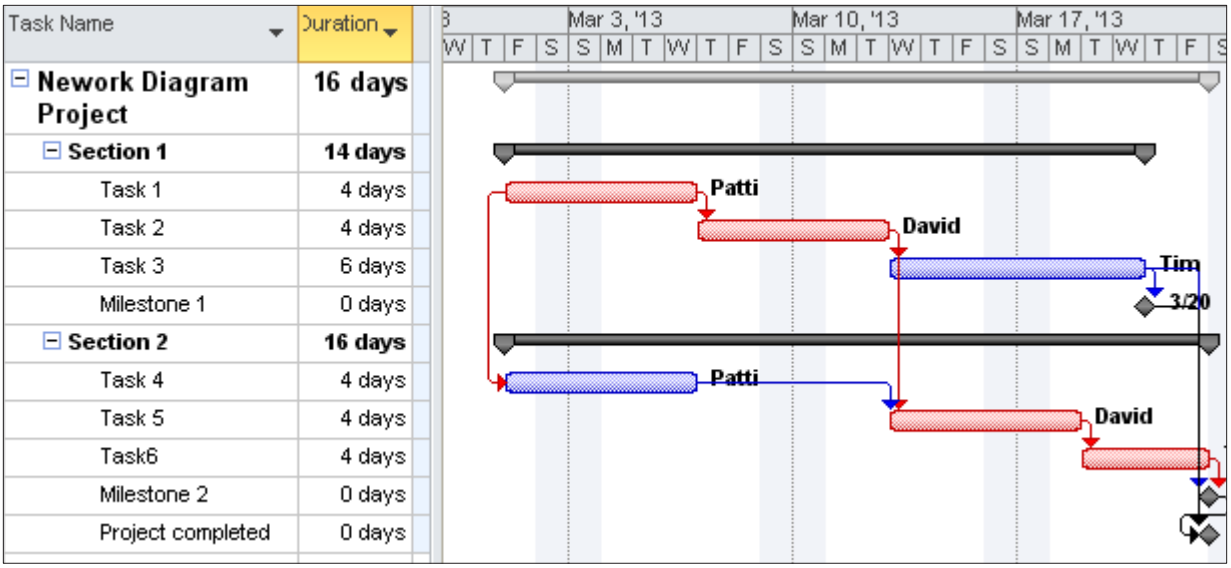


Figure 7-69 PLACEHOLDER

In the example below, we will inactivate Task 5.

To inactive a task:

- Click on the **task**
- Click on **Task → Inactivate**

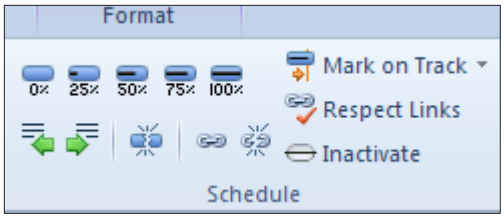


Figure 7-70 PLACEHOLDER

Below is the result of toggling the task to an inactive state:

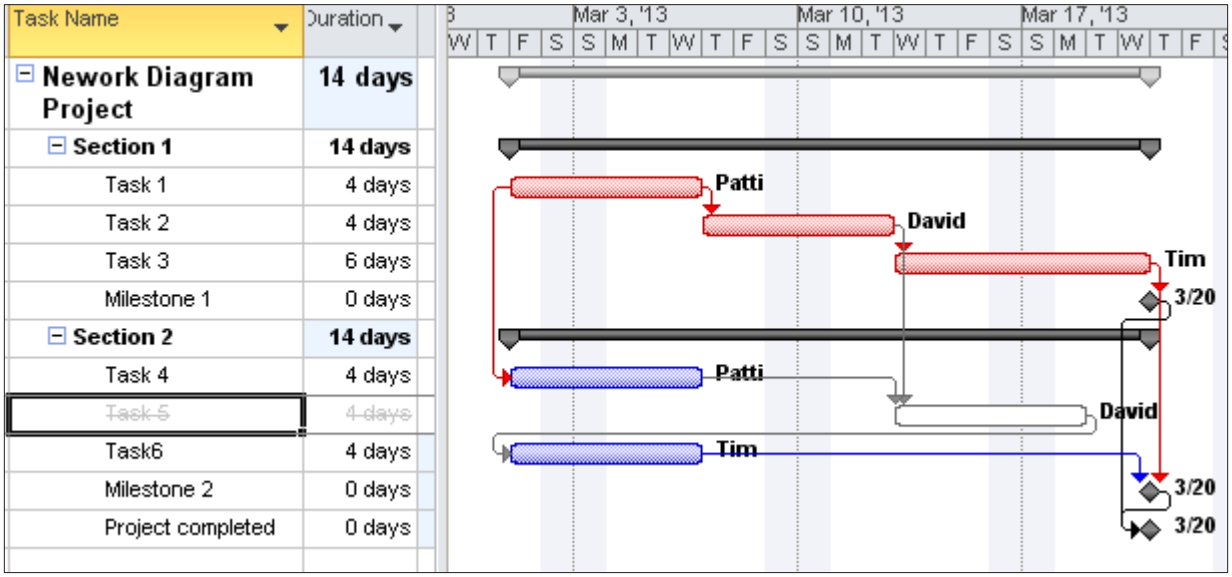


Figure 7-71 PLACEHOLDER

The task that was inactivated was on the critical path. The software now treats the task as if it is not there. The links are no longer valid and as a result the successor task returns to the start date of the project. The critical path has changed as well as the ending date. Since Task 5 is now inactive, the relationship between Task 4 and Task 6 was also eliminated and needs to be reestablished. The inactive task can remain in the schedule and may be activated if necessary.