

Displaying a Critical Path

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www.projectlearning.net/project_mentor.htm

More useful tips and tricks can be found on the Project Learning blog:

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Related Document(s)

Performing critical path analysis
http://www.projectlearning.net/pdf/X2_1.pdf

Displaying a Critical Path

Introduction

Within Microsoft Project, the Gantt Chart Wizard provides a quick and easy way to change a Gantt chart's appearance. When you run the wizard, it will ask you a series of questions and it will then reformat the chart based upon your responses. Using the wizard is a useful way to quickly reformat a Gantt chart, for example to display the project's critical path.

Whilst the Gantt Chart Wizard is ideal for making quick formatting changes, you have much more flexibility if you edit the bar styles directly. In addition to increased flexibility, this method will also let you apply formatting that the wizard simply can't provide.

Another ideal way to interpret a project's schedule is to use Task Drivers. Displayed in a Task Pane, these task drivers will tell you why a task starts when it does. By clicking back through driving tasks, you can trace a project's critical path from the end of the project back to its start. You can also find out why certain non critical tasks start when they do as well.

These tips and tricks illustrate a number of ways that the Gantt Chart view can be formatted, and how the schedule of the project and its tasks can be interpreted.

Background

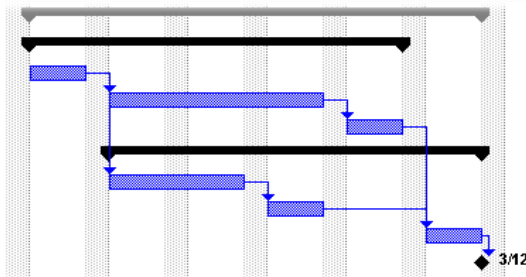
The Gantt chart, and its derivatives (including the Tracking Gantt, Leveling Gantt and Detail Gantt) are the most commonly used views within Microsoft Project. Indeed, Microsoft Project's default view is the Gantt chart. Being the most commonly used view, it is also the most misused.

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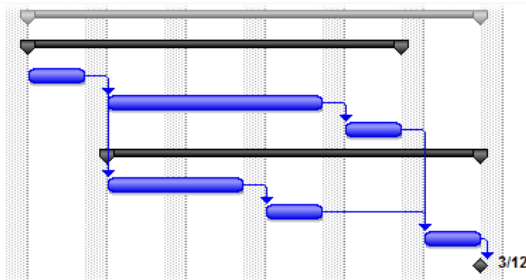
The default Gantt chart view

Without any formatting applied, the timescale part of a Gantt chart looks like this:

Microsoft Project 2000, 2002, 2003:



Microsoft Project 2007:



- The project summary task is depicted in grey.
- Summary tasks are in black, with pointed shapes at their start and finish.
- Normal tasks are shown in blue, with link lines joining them together.
- Milestones are shown as black diamonds, with their start date displayed to their right.


Hints

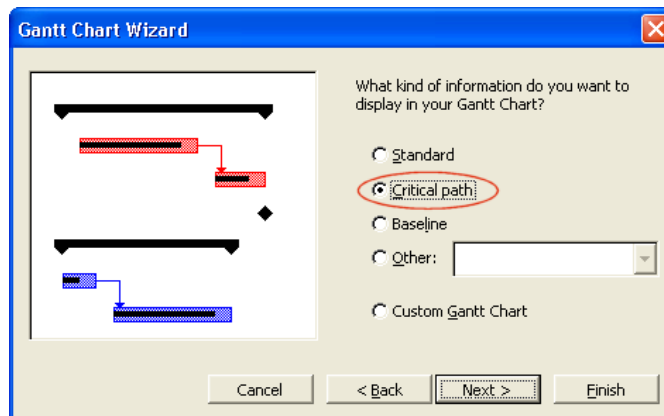
- To revert a view back to its default settings, overwrite it by copying in a clean view from GLOBAL.MPT using the Organizer.
- 3-D Gantt bars are not available in versions prior to Microsoft Project 2007. The ability to display 3-D bars is established within the View tab of the Options dialog box.

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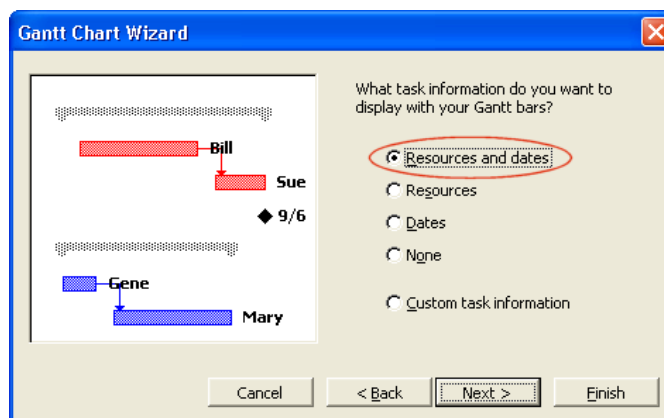
Using the Gantt Chart Wizard

The fastest way to format the appearance of bars on the Gantt chart is to employ the assistance of the Gantt Chart Wizard. This wizard provides a number of formatting options which will change the way the Gantt chart looks, dependant upon user response to the wizard. To invoke the wizard:

- From the Format menu, choose Gantt Chart Wizard (), then click NEXT to enter the wizard.
- To emphasize tasks that are on the critical path, select as below, then NEXT.

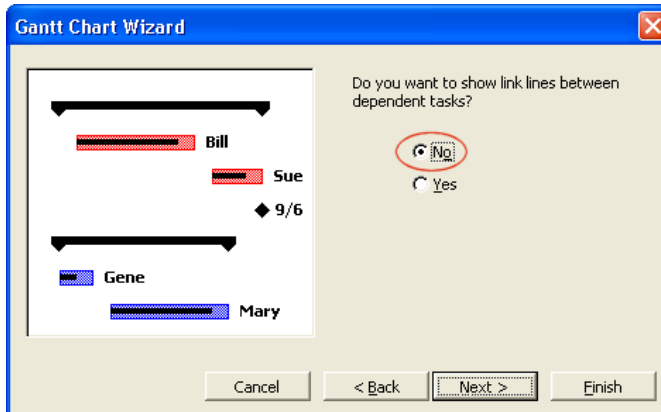


- To display resource names against assignments and dates against milestones, set as below, then NEXT.



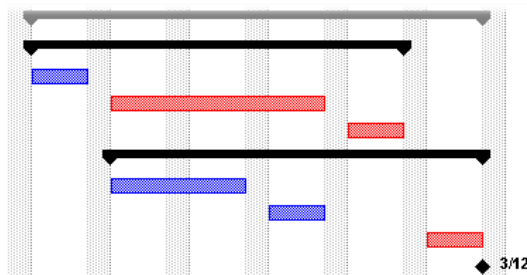
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d. To hide the display of link lines, set as below, then NEXT.

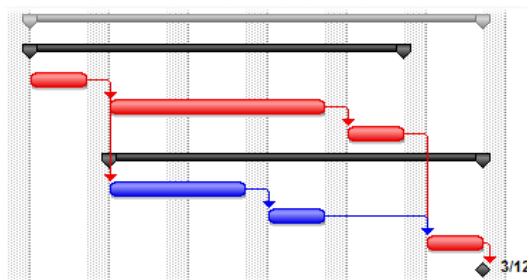


e. A preview of the Gantt chart is provided, the **Format It** applies the formatting and **Exit Wizard** leaves the wizard. The Gantt chart is now formatted as:

Microsoft Project 2000, 2002, 2000:



Microsoft Project 2007:



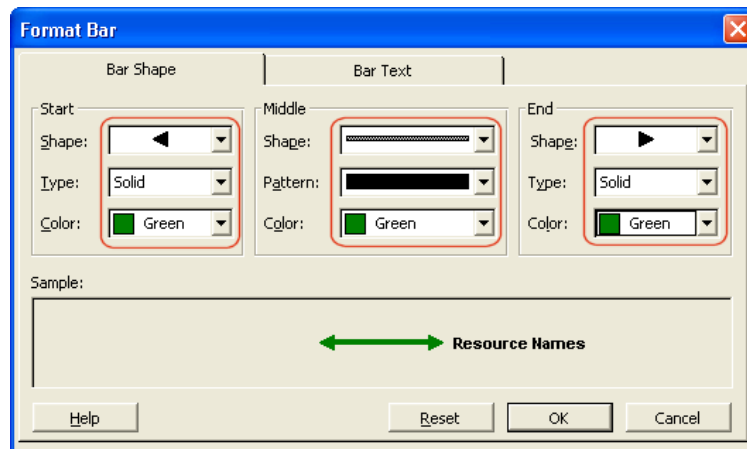
| | |
|--------------|--|
| Hints | <ul style="list-style-type: none">• The 'custom' options provide further formatting choices.• Once Format It has been invoked, the chart will be reformatted. Undo can not reset style changes made by the Gantt Chart Wizard in versions prior to Microsoft Project 2007.• The Gantt Chart Wizard only provides limited formatting options and will remove any previous (manually applied) formatting. |
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Formatting individual bars

Individual bars can also be formatted directly. The change made will only affect that bar and will override the bar's original style. To emphasize one particular bar:

- a. Select the task to change, then choose Bar from the Format menu (or Double-Click on the bar to change).
- b. Make changes to:
 - Start and end shapes.
 - Middle bar shape (thickness) and fill pattern.
 - Bar colors.



- c. Confirm changes with OK. The bar will be displayed as:

Microsoft Project 2000, 2002, 2003:



Microsoft Project 2007:



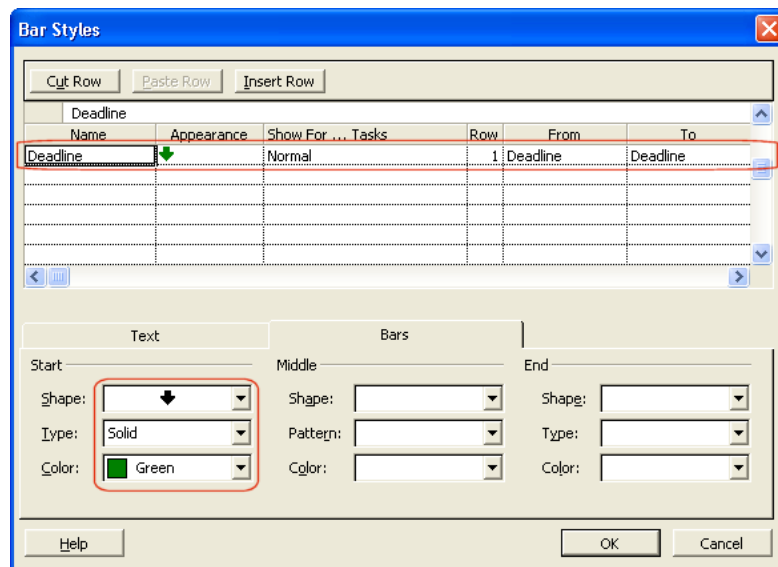
| | |
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| Hints | <ul style="list-style-type: none">• Only format individual bars when it's really necessary - use bar styles for more controlled formatting.• The Gantt Chart Wizard will reset any manually applied bar formatting.• To remove manual formatting, use <input type="button" value="Reset"/> within the Format Bar dialog. To reset for ALL bars, use the select all button first. |
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Formatting bar styles

The purpose of the Gantt Chart Wizard is to provide a quick and easy option to change bar styles, based upon a limited number of options. Formatting the styles manually provides much greater control. For example, to amend the set of styles for the current view by adding or amending a style to display deadlines:

- a. From the Format menu, click Bar Styles (or Double-Click on the chart's background).
- b. Scroll down to the bottom row, then:
 - a. Enter an appropriate name for the style (for example, "Deadline").
 - b. For the bar's appearance, remove the middle bar formatting, then add a start shape and appropriate color.
 - c. In the show for... option, choose 'Normal' from the drop down list.
 - d. For both the from and to options, select 'Deadline' from the drop down list:



- c. Close the dialog with OK.

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| Hints | <ul style="list-style-type: none">• The Gantt Chart Wizard in Microsoft Project 2000 will not automatically chose a style for deadlines. Within Microsoft Project version 2002 and later, the Gantt Chart Wizard is able to display the necessary style.• If style names are prefixed with "*", they will appear on screen but they will be omitted from the view when it is printed / print previewed.• The bar styles depicted on a printed legend are defined within the Bar Styles dialog and not within page setup.• Create views specifically for screen use or for printouts. |
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Bars displaying text

Text can be applied to the bars on the Gantt chart in addition to the bar formatting. To add a date to the deadline:

- a. From the Format menu, click Bar Styles.
- b. Then, within the Text tab select a relevant field to display, closing the dialog with OK.

| | Text | Bars |
|-------------------------------------|----------|----------|
| <input checked="" type="checkbox"/> | Deadline | |
| | Left | |
| | Right | Deadline |
| | Top | |
| | Bottom | |
| | Inside | |

| | |
|--------------|---|
| Hints | <ul style="list-style-type: none">The default text displayed is: resource names against assignments and start dates against milestones. |
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Adding bars for slack and slip

Additional bar styles can be added to emphasize certain aspects of the project's schedule. For example, bars can be added to display:

- The amount of slack (float) a task contains. Note that this can be shown as both free slack (float) and total slack (float).
- The amount of slippage that the task has encountered.

The styles below describe:

- Total slack (float) as a thin and low purple bar to only display for normal tasks that are noncritical, drawn from the scheduled finish of a task until the latest time that it can be finished by.
- Free slack (float) as a thin and low teal bar to only display for Normal tasks that are noncritical, drawn from the scheduled finish of a task until the latest time that it can be finished by without delaying ANY OTHER task.
- Slippage as a thin and low olive bar to display for Normal tasks the difference between the task's baseline start and its currently scheduled start.

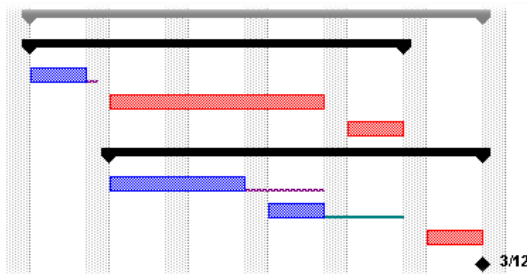
| Name | Appearance | Show For ... Tasks | Row | From | To |
|-------------|------------|---------------------|-----|----------------|-------------|
| Deadline | | Normal | 1 | Deadline | Deadline |
| Total slack | | Normal, Noncritical | 1 | Finish | Total Slack |
| Free slack | | Normal, Noncritical | 1 | Finish | Free Slack |
| Slippage | | Normal | 1 | Baseline Start | Start |

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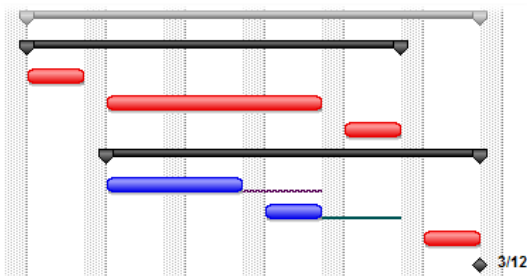
This would be depicted on a Gantt chart as:

- All red tasks as on the critical path.
- The first blue task as noncritical (as it has a task calendar allowing it to finish on a Saturday).
- The second blue task having 5 days of total slack (float) (any delay to it would impact upon the third blue bar).
- The third blue task having 5 days of free slack (float) (any delay to it would not impact any other task until it became critical itself).

Microsoft Project 2000, 2002, 2003:



Microsoft Project 2007:



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| Hints | <ul style="list-style-type: none">• A lot of information about the project's schedule is available from bar styles; it is simply a matter of interpreting the information that is displayed.• Bar styles are drawn in row order; lower rows within the Bar Styles dialog can overwrite similar detail on higher rows. |
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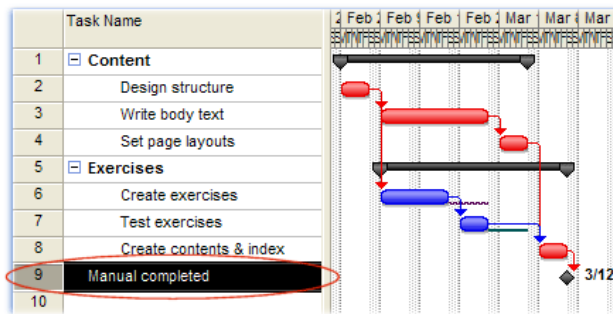
Using the task driver pane (Project 2007 only)


Although the Gantt chart's formatting can provide invaluable information about the project's schedule, it can often be useful to determine exactly why a task starts when it does. This is usually because of a number of factors:

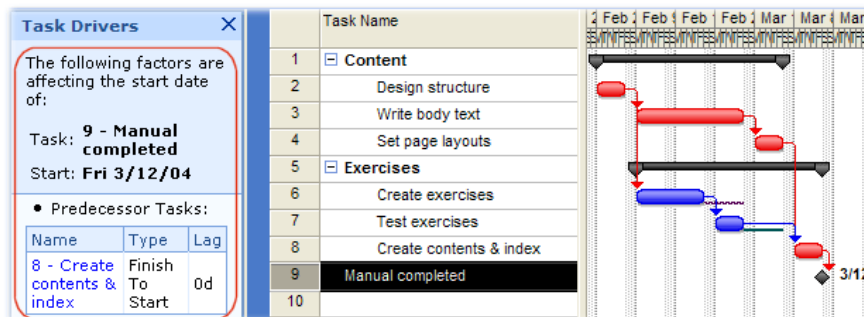
- Dependency links from predecessor tasks.
- Working time and nonworking time scheduled by the project's base calendar or from the task's calendar.
- Resource assignments against the task.
- Constraints applied to the task.

To view task drivers (within a task pane):

- a. Select a task by clicking on its row number:



- b. Click on the Task Drivers button on the Standard toolbar (), then review the information in the task pane:



- o The 'Manual completed' milestone only has a single predecessor that is driving its start date.

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To follow the predecessor link sequence:

- a. Click on the predecessor task hyperlink:

The screenshot shows the 'Task Drivers' pane for task 9, 'Manual completed'. The pane displays the following information:

- Task: **9 - Manual completed**
- Start: **Fri 3/12/04**
- Predecessor Tasks:

| Name | Type | Lag |
|---|-----------------|-----|
| 8 - Create contents & index | Finish To Start | 0d |

The main task list shows task 8, 'Create contents & index', selected. The Gantt chart shows the project schedule with a critical path highlighted in red.

- b. To see the task drivers for the 'Create contents & index' task:

The screenshot shows the 'Task Drivers' pane for task 8, 'Create contents & index'. The pane displays the following information:

- Task: **8 - Create contents & index**
- Start: **Mon 3/8/04**
- Predecessor Tasks:

| Name | Type | Lag |
|--------------------------------------|-----------------|-----|
| 4 - Set page layouts | Finish To Start | 0d |

The main task list shows task 8, 'Create contents & index', selected. The Gantt chart shows the project schedule with a critical path highlighted in red.

- The 'Create contents & index' task has two predecessors. The latest-finishing of these (Set page layouts) is therefore driving the start of 'Create contents & index'.
- As the task is also scheduled by the project calendar, this is also listed as a task driver.

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| Hints | <ul style="list-style-type: none">• To turn off task drivers, simply close the task pane.• The schedule of milestones are not affected by calendars.• More involved task driver situations will occur when tasks have constraints applied to them or they have resources assigned to them. |
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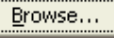
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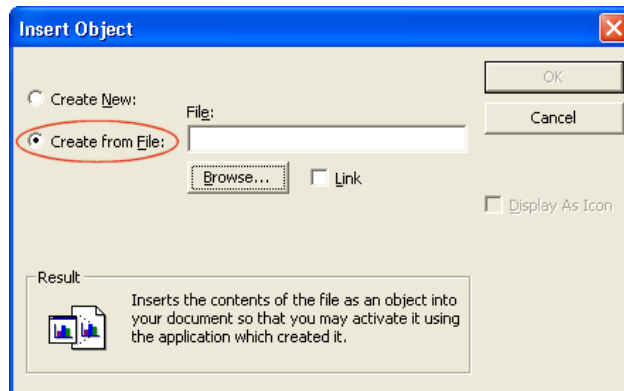
Using drawing tools

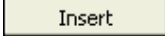
Just as objects can be embedded within tasks, they can also be added to a chart. Examples include:

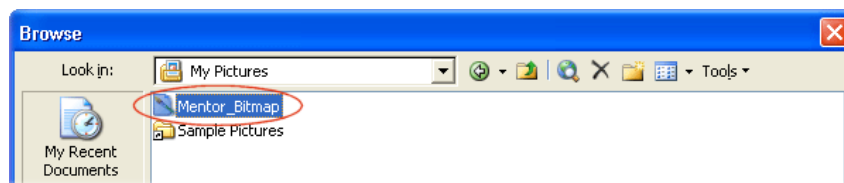
- Adding an image for emphasis.
- Embedding an Excel worksheet providing a cost breakdown for a task.
- Creating an annotation within a text box.

To embed an image:

- a. From the Insert menu, choose Object.
- b. Within the Insert Object dialog, choose to create a new image (using Microsoft Paint tools) or to select an existing image with .



- c. Choose an appropriate image, then , and then confirm with OK.



- d. Embedding the image at the insertion point:



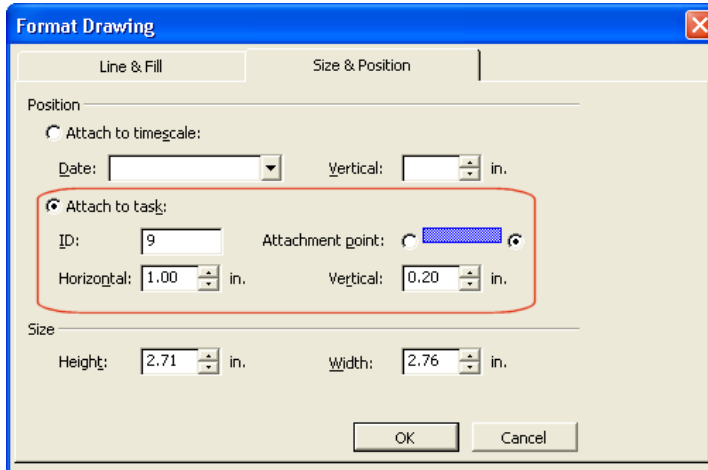
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An object can also be attached to the chart's timescale or to a task:

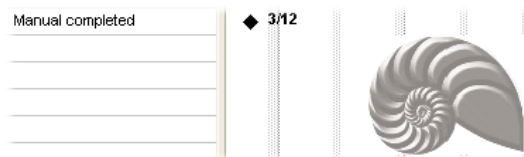
- a. Select the object, then from the Drawing toolbar, select the Attach to Task button

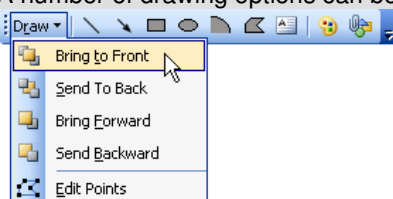


- b. Enter the ID of the task to attach the object to, then confirm with OK.



- c. Creating the attachment:



| | |
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| Hints | <ul style="list-style-type: none">A number of drawing options can be found on the Drawing toolbar:  |
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