



What's New in Oracle Primavera P6 Version 21 PPM

1 Introduction

Oracle released Primavera P6 Version 21 PPM for download from their [eDelivery](#) web site in late 2021.

Oracle has published a tool that you may use to see the enhancement that have been introduced into P6 by comparing two different versions. This is the link to the "[Oracle Primavera P6 Cumulative Feature Overview](#)"

2 Aim

The aim of this paper is to explain the main functional changes that users will see in the Oracle Primavera P6 PPM V21.12 added since the release of P6 PPM V20.12.

3 List of enhancements

- Assignment Cost are Exported
- Users may See and Set Activity Start and Finish Times in the Date Picker box when the User Preferences are set only to show the date
- Financial Period Calendar Selection when Importing an XML file
- Maintain Relationships with External Projects When Importing from Primavera XML Files
- IPMDAR Format Supported for EEPM Databases only
- Resource and Role Cost Spreads Consider Rate Changes Over Time
- Activity Critical Path
- Reduced Milestone Relationship Types



4 Assignment Cost are Exported

The Oracle Cumulative Feature Overview file states *“When you export to Primavera XML, Price Per Unit data for assignments is included in the export file.”*

This statement is a little misleading and I will now explain what I have found. Please note that there are many options that affect how data is imported into a P6 database, but I have used the default options in my tests. You may receive different results with different options. Lastly this is a very difficult topic to document and understand.

4.1 Version 20 XML Import and Export Resource Unit Rate Issue

In summary the current issue with importing an P6 XML project file into Version 20 and earlier is that the imported project may calculate different cost to the project that was exported and the issue is outlined below in my example. The issue occurs when:

- A project is be created, resources assigned and then the resource Unit Rate is changed in the Resource table.
- Thus, at this point in time the resource assignment Unit Rate of an activity is different to the Resource table Unit Rate.
- The activity resource assignment Unit Rate may be recalculated by running **Tools, Recalculate Assignment Costs** or using the **Tools, Schedule, General, Recalculate assignment costs after scheduling**. In this example I did not recalculate the resource assignment costs.
- In this example the Resource table unit rate was \$20.00 per hour and the resource assigned to an activity. Then the Resource rate in the Resource table was then changed to \$40.00 per hour.
- I will demonstrate the differences between exporting and importing an XER and an XML file.
- The project was:
 - Exported as an XER,
 - The resources and project deleted,
 - Then the project imported,
 - The resource was imported into the Resource table with the \$40.00 per hour Unit Rate, as it was exported,
 - The imported project used the resource assignment Unit Rate of \$20.00 per hour that it was exported with and the imported project had the same costs to the exported project.
 - Thus, an XML file imports with exactly the same costs as it was exported.
- The project was next:
 - Exported as an XML using the same process:
 - The resources and project deleted,
 - Then the project imported,
 - The resource is imported into the Resource table with the changed Unit Rate of \$40.00 per hour,
 - The project assignments were recalculated based on the changed Resource table Unit Rate of \$40.00 per hour, not the assigned Unit Rate of \$20.00 per hour and thus the imported project calculated different costs to when it was exported.
- Thus, a project exported and imported as an XML will calculate different costs to the exported project when the Resource table Unit Rate is different to the Activity assigned Unit Rate.
- This has the obvious issue for a contractor that submits a schedule in XML format to a client and the client ends up with resource cost data in their schedule.



For example,

- The project below has a resource assigned at \$20.00 per hour, and then
- The resource unit rate in the Resources table was changed to \$40.00 per hour

Activity ID	Activity Name	At Completion Labor Cost	Original Duration	Start	Finish	Total Floa	2021		January 2022				Febru		
							20	27	03	10	17	24	31	07	
Assignment Cost Exports															
A1000	New Activity	\$800	5d	05-Jan-22	11-Jan-22	0d									

Resource ID Name	Curve	Default Units / Time	Original Lag	Rate Type	Price / Unit	Remaining Duration	At Completion Units	At Completion Cost
AEC.Assignment Cost		8.0h/d	0d	Standard Rate	\$20/h	5d	40.0h	\$800

It was then exported as an XER and XML and both the resource and project deleted and the project imported,

- The XML file again imported correctly.
- XML file on import changed the assigned resources unit rate of \$20.00 per hour to \$40.00 per hour be the same as the Resource table as per the example below:

Activity ID	Activity Name	At Completion Labor Cost	Original Duration	Start	Finish	Total Floa	2021		January 2022				Febru	
							20	27	03	10	17	24	31	07
Assignment Cost Exports														
A1000	New Activity	\$1,600	5d	05-Jan-22	11-Jan-22	0d								

Resource ID Name	Curve	Default Units / Time	Original Lag	Rate Type	Price / Unit	Remaining Duration	At Completion Units	At Completion Cost
AEC.Assignment Cost		8.0h/d	0d	Standard Rate	\$40/h	5d	40.0h	\$1,600

Thus, the imported project has incorrect activity costs.

4.2 Version 21 Changes

When the project was exported and imported into a Version 21 database it behaved in a similar way as in Version 20, but with one minor change. The change that I found in Version 21 was that:

- When the Resource was not deleted after exporting and deleting the project and the Resource table Unit Rate was changed to a third value,
- Then when the file was imported back into P6 V 21 then the activity assignment Unit Rate was calculated based on the Resource table unit rate of the exported project and not the revised third value of the resource Unit Rate existing in the database, which is what happens in Version 20.
- The imported project should use the Activity assigned Resource Unit Rate to calculate the correct project costs, which it does not.

4.3 Assignment Cost are Exported Conclusion and Solution

My testing indicates that the Activity Resource assignment Unit Rate being changed on the import of an XML to the Resource table Unit Rate in the has not been fixed with this enhancement.

If you want the costs to remain the same when importing an XML file, then the Resource table Unit Rates must be the same as the Activity assigned resource Unit Rates when a file is exported and you must be careful when you import an XML project into a database that the resource already exists in.

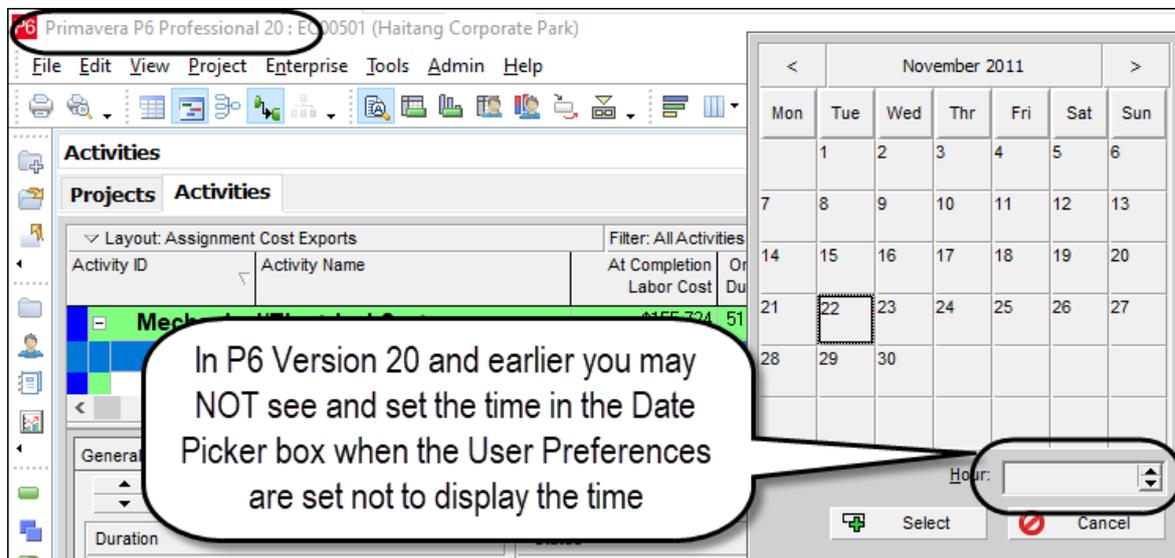
There is one slight change with Version 21 and that is the imported project costs are always calculated based on the exported Resource table unit rates, but this Version is still not using the exported assigned activity Unit Rate.

If you did not understand my text above and you wish import XML projects to calculate the same as exported projects then always ensure that the Resource table Unit Rate in the export database and import database is the same as all Activity resource assignment Unit Rate, or use XER files.

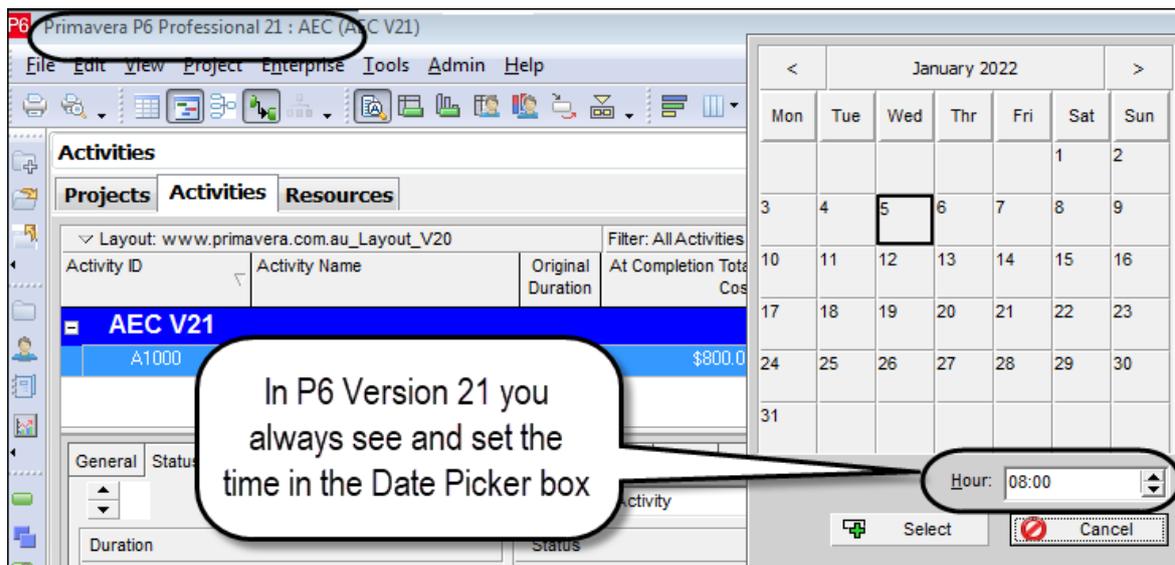
5 Users may See and Set Activity Start and Finish Times in the Date Picker box when the User Preferences are set only to show the date.

This is a great enhancement as P6 usually picks the wrong time when setting Actual dates, Constraints, Suspend and Resume dates when the time is not set to be displayed from the User Preferences.

- P6 Version 20 and earlier the time is not available



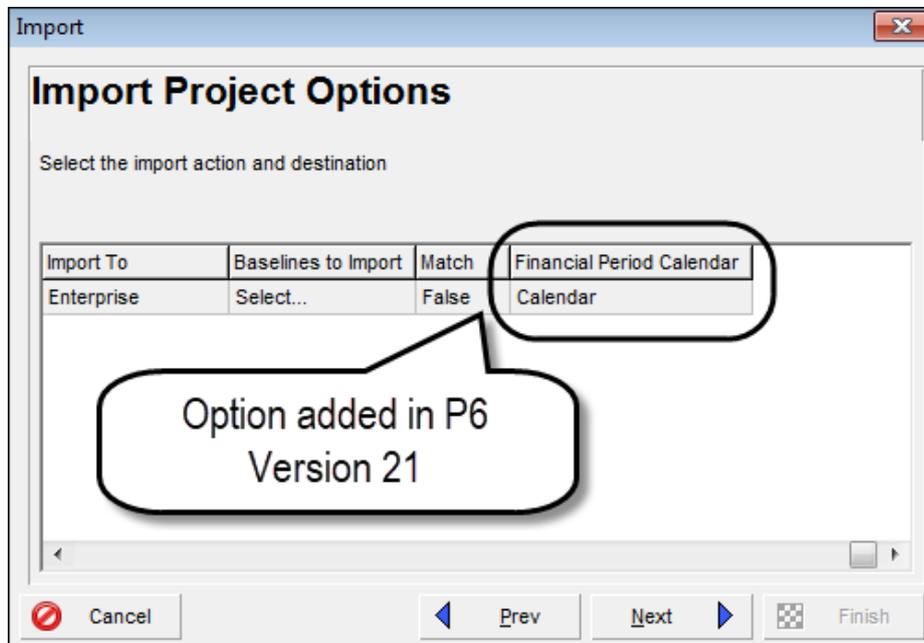
- P6 Version 21 the time may be set from the Date Picker box.



6 Financial Period Calendar Selection when Importing an XML file.

Version 20 introduced the option of different **Financial Period Calendars** for different projects.

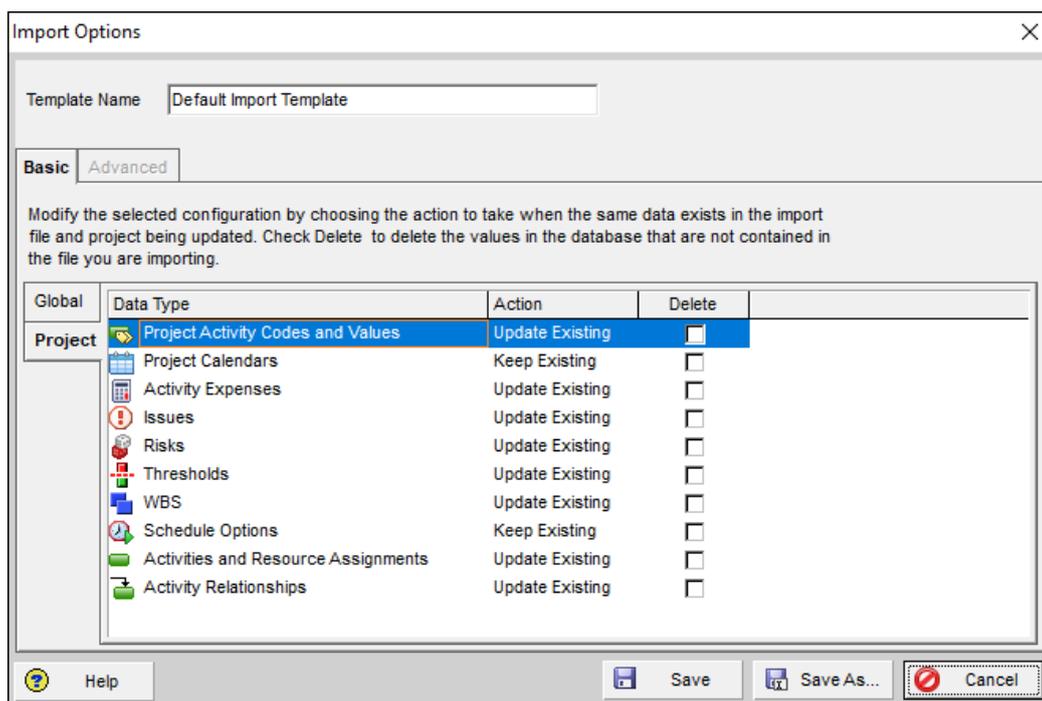
Version 21 introduced the option when importing an XML file to select the Financial Period Calendar to be assigned to a project:



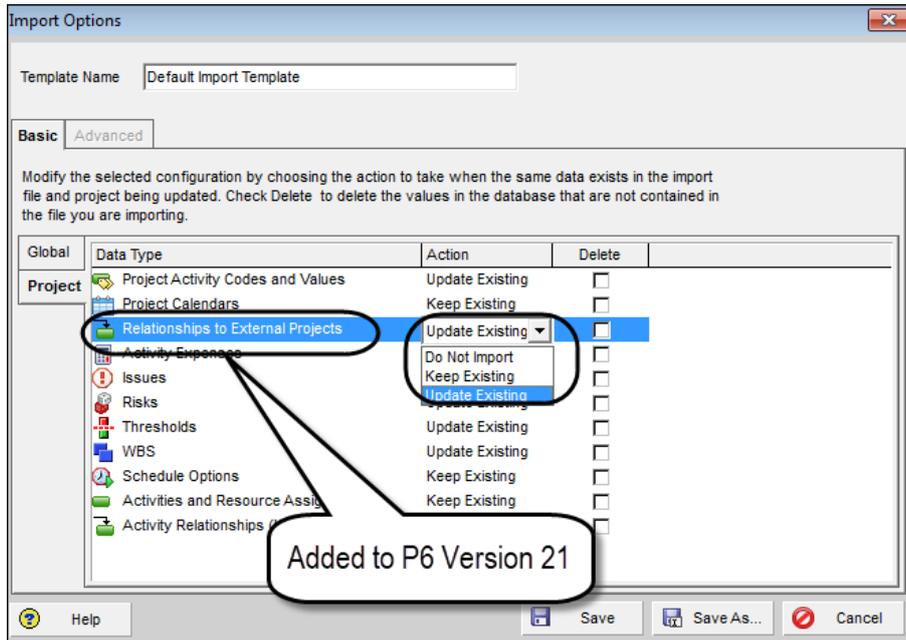
7 Maintain Relationships with External Projects When Importing from Primavera XML Files.

When you import projects from a Primavera XML file, you can choose whether to retain relationships between activities in the project and those in external projects.

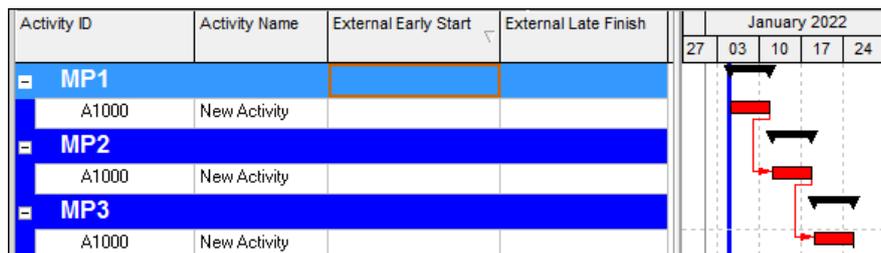
P6 Version 20 XML Project Import Options:



Option added to P6 Version 21:

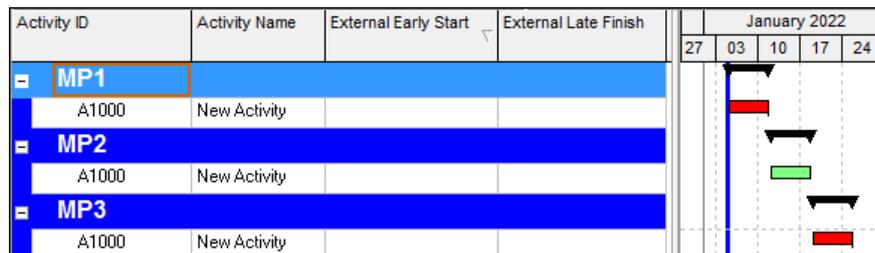


Below are three projects, MP1, MP2 and MP3 with their single activities linked:

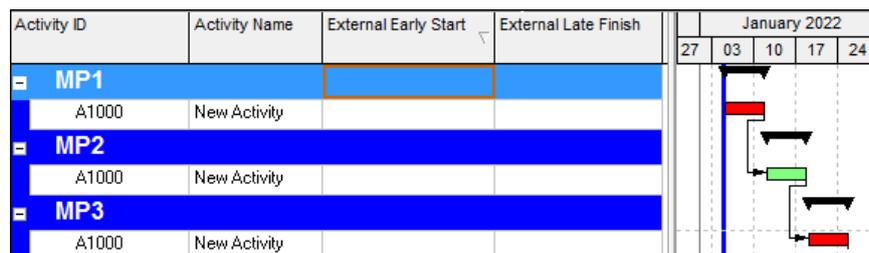


The second project, MP2 was exported, deleted and imported with each of the three options.

- With **Do Not Import**, External Dates not set:



- With **Keep Existing** or **Update Existing** and before Rescheduling,

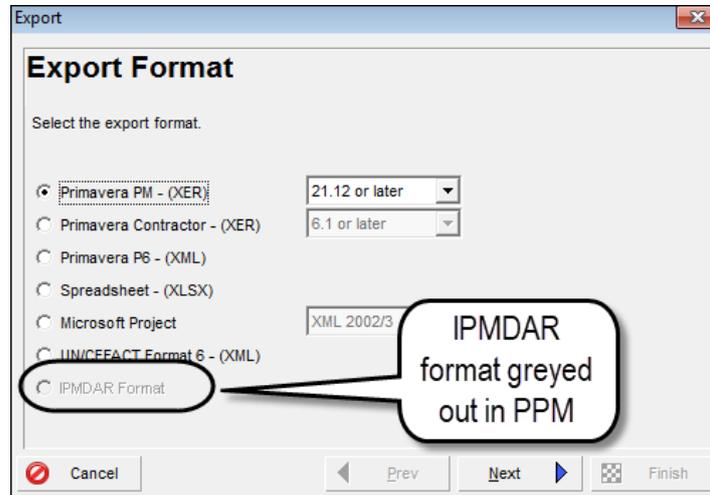


Note: External Early Start and External Early Finish dates are not set with this update thus allows you to import a project and NOT set External Dates when the project have External Relationships.



8 IPMDAR Format Supported for EEPM Databases only.

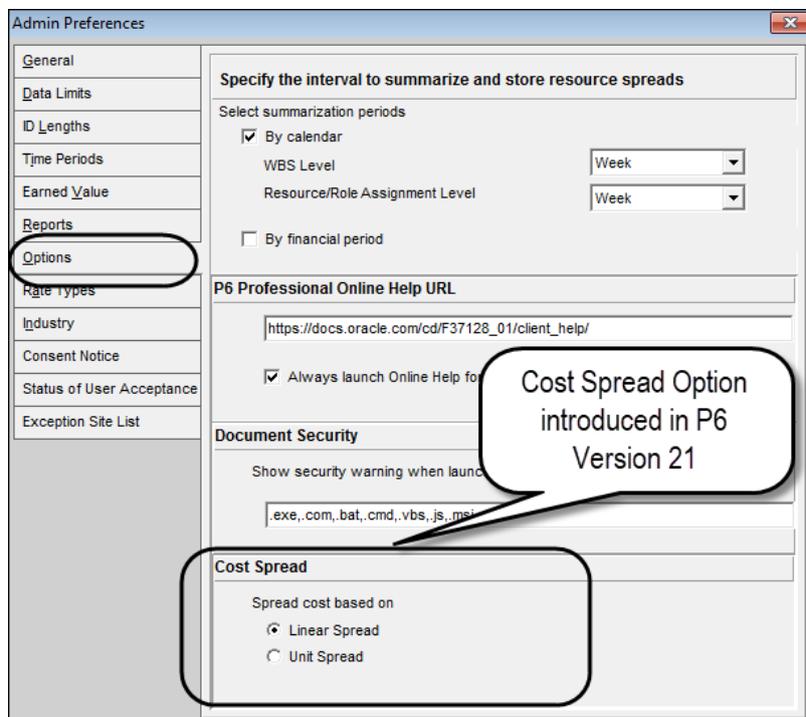
IPMDAR is a project export format required by the US Department of Defence. It is only available when you open an EEM database, when exporting from a PPM database the option is greyed out:



9 Resource and Role Cost Spreads Consider Rate Changes Over Time.

The **Admin Preferences, Options** has introduced a **Cost Spread** option.

This changes how the cost spreads for resources and role rates are reflected in the Resource Usage Spreadsheet and Profile, Activity Usage Spreadsheet and Profile, Tracking View, Resource Assignments window, and Activity Usage Spreadsheets and Profiles, Publishing and Reports.





In earlier versions when a resource rate changed during the duration of an activity then P6 took an average rate for the resource over the activity duration which gave an incorrect cashflow.

- In the example below I have created a resource that doubled its unit rate from \$20.00 per hour to \$40.00 per hour after the first week:

Resource ID	Resource Name	Resource Type
CS	Cost Spread	Labor

General	Codes	Details	Units & Prices	Roles	Notes	User Defined Fields
Shift Calendar:		Shift: 1				
Effective Date	Max Units / Time	Standard Rate				
01-Jan-22	8/d	\$20/h				
17-Jan-22	8/d	\$40/h				

- With **Linear Spread** option, which is how older versions calculated, an average rate of \$30.00 per hour is used, which is \$240.00 per day:

Activity ID	Original Duration	03	Jan 10							Jan 17								
		hr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat
Cost Spreads																		
A1000	10																	

Resource ID	Activity ID	At Completion Cost	Jan 10							Jan 17						
			Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat
CS	Cost S			\$240	\$240	\$240	\$240	\$240			\$240	\$240	\$240	\$240	\$240	
	A1000	1		\$240	\$240	\$240	\$240	\$240			\$240	\$240	\$240	\$240	\$240	

With **Unit Spread** option the cash flow is calculated correctly:

Activity ID	Original Duration	03	Jan 10							Jan 17								
		hr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat
Cost Spreads																		
A1000	10																	

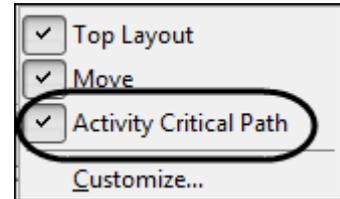
Resource ID	Activity ID	At Completion Cost	Jan 10							Jan 17						
			Sun	Mon	Tue	Wed	Thr	Fri	Sat	Sun	Mon	Tue	Wed	Thr	Fri	Sat
CS	Cost S			\$160	\$160	\$160	\$160	\$160			\$320	\$320	\$320	\$320	\$320	
	A1000	1		\$160	\$160	\$160	\$160	\$160			\$320	\$320	\$320	\$320	\$320	

10 Activity Critical Path

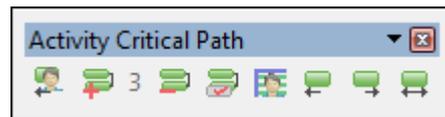
11 Activity Critical Path

There is a new toolbar in Version 21 titled **Activity Critical Path**.

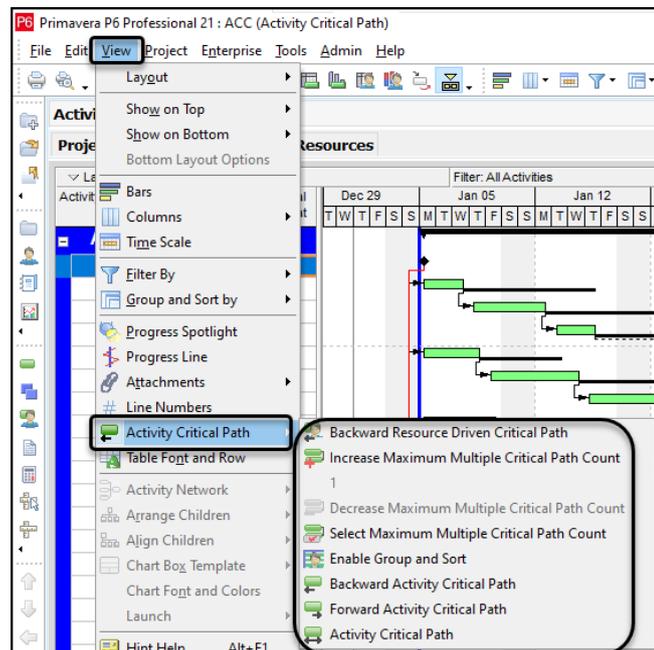
- The new toolbar is displayed by right clicking on any toolbar and checking the **Activity Critical Path** option:



- This will display the toolbar:



- There is also a new menu item on the **View** menu:



- IMPORTANT NOTE:** Clicking on a button will activate the command and clicking again will deactivate the command

The Oracle Cumulative Feature Overview file states:

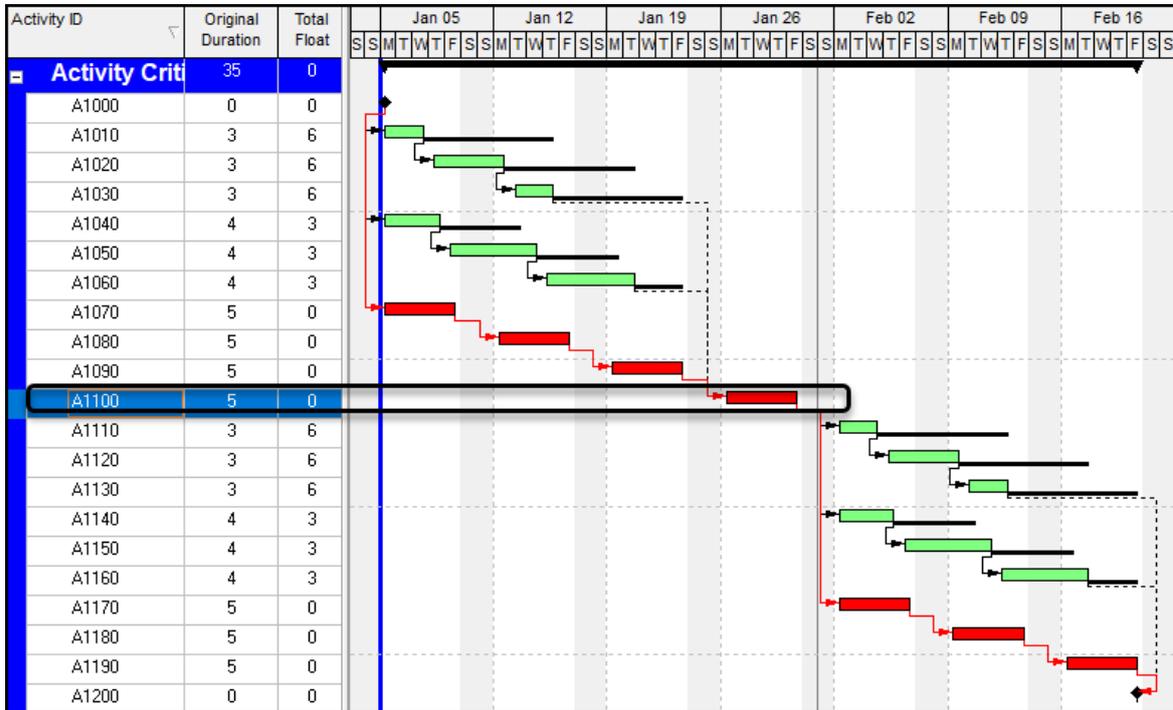
To aid in the resolution of delayed critical paths before they become project over-runs, P6 Professional can show:

- Activities on up to 30 activity-driven critical paths, calculated on the forward pass, backward pass, or forward and backward passes (with or without resource leveling).
- The activities on up to 30 resource driven critical paths, calculated on the backward pass with resource leveling.

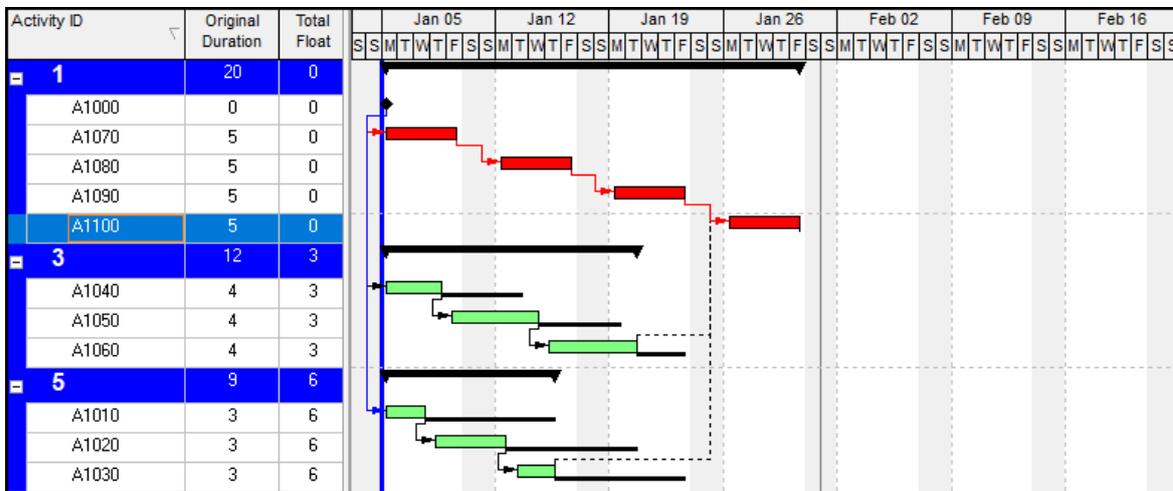
This Oracle description is not clear and I will work through the icons one at a time and explain how the functions work.



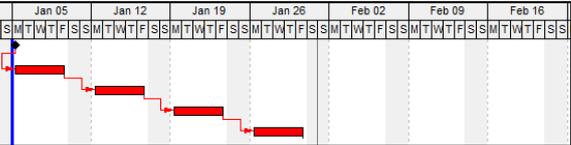
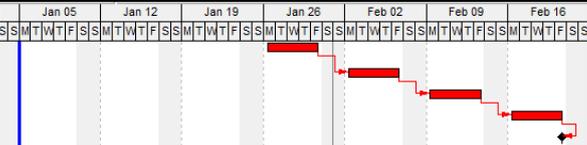
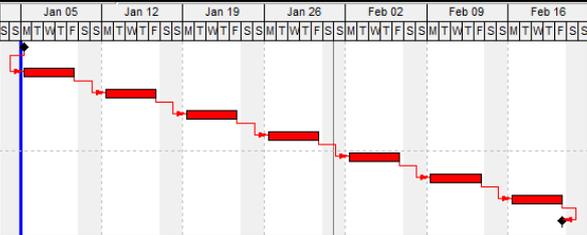
The schedule I will work with is as per below where Activity A1100 is preceded and succeeded by three chains of events with differing Total Float Values:



Users should consider using the **Activity Critical Path** function in conjunction with the **Float Path Order** function to provide a clear view of what is happening.





Command	Function																														
 <p>Backward Activity Critical Path</p>	<p>This option displays the chain of events before a selected activity that has the least amount of Float.</p> <p>If there is a critical path it will display this and if there is not, then it will find the chain of events with the least amount of float to the start of the project and display this as the Backward Activity Critical Path.</p> <p>The picture below displays the Backward Activity Critical Path from activity A1100 which is a chain of events that is on the schedule Critical Path.</p> <table border="1"> <thead> <tr> <th>Activity ID</th> <th>Original Duration</th> <th>Total Float</th> </tr> </thead> <tbody> <tr> <td>A1000</td> <td>0</td> <td>0</td> </tr> <tr> <td>A1070</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1080</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1090</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1100</td> <td>5</td> <td>0</td> </tr> </tbody> </table> 	Activity ID	Original Duration	Total Float	A1000	0	0	A1070	5	0	A1080	5	0	A1090	5	0	A1100	5	0												
Activity ID	Original Duration	Total Float																													
A1000	0	0																													
A1070	5	0																													
A1080	5	0																													
A1090	5	0																													
A1100	5	0																													
 <p>Forward Activity Critical Path</p>	<p>This option displays the chain of events after a selected activity that has the least amount of Float.</p> <p>If there is a critical path it will display this path and if there is not, then it will find the chain of events with the least amount of float to the end of the project and display this as the Forward Activity Critical Path.</p> <p>The picture below displays the Forward Activity Critical Path from activity A1100 which is a chain of events that is on the schedule Critical Path.</p> <table border="1"> <thead> <tr> <th>Activity ID</th> <th>Original Duration</th> <th>Total Float</th> </tr> </thead> <tbody> <tr> <td>A1100</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1170</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1180</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1190</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1200</td> <td>0</td> <td>0</td> </tr> </tbody> </table> 	Activity ID	Original Duration	Total Float	A1100	5	0	A1170	5	0	A1180	5	0	A1190	5	0	A1200	0	0												
Activity ID	Original Duration	Total Float																													
A1100	5	0																													
A1170	5	0																													
A1180	5	0																													
A1190	5	0																													
A1200	0	0																													
 <p>Activity Critical Path</p>	<p>This option displays the chain of events before and after a selected activity that has the least amount of Float</p> <p>Thus, the picture below shows both the Forward Activity Critical Path and Backward Activity Critical Path from Activity A1100.</p> <table border="1"> <thead> <tr> <th>Activity ID</th> <th>Original Duration</th> <th>Total Float</th> </tr> </thead> <tbody> <tr> <td>A1000</td> <td>0</td> <td>0</td> </tr> <tr> <td>A1070</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1080</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1090</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1100</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1170</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1180</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1190</td> <td>5</td> <td>0</td> </tr> <tr> <td>A1200</td> <td>0</td> <td>0</td> </tr> </tbody> </table> 	Activity ID	Original Duration	Total Float	A1000	0	0	A1070	5	0	A1080	5	0	A1090	5	0	A1100	5	0	A1170	5	0	A1180	5	0	A1190	5	0	A1200	0	0
Activity ID	Original Duration	Total Float																													
A1000	0	0																													
A1070	5	0																													
A1080	5	0																													
A1090	5	0																													
A1100	5	0																													
A1170	5	0																													
A1180	5	0																													
A1190	5	0																													
A1200	0	0																													
 <p>Increase Maximum Multiple Critical Path Counts</p>	<p>This increases the value of the Maximum Multiple Critical Path Counts which is displayed in the button below.</p>																														

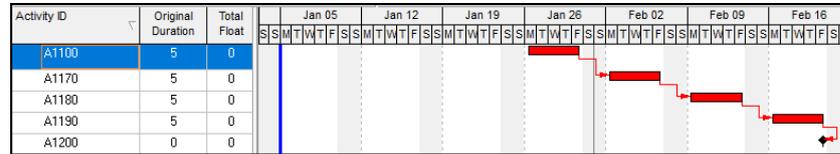


2

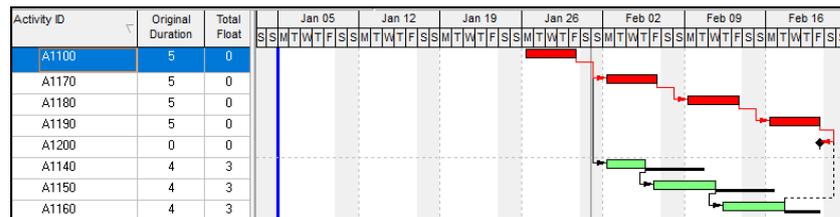
Maximum Critical Path Count

This displays the number of **Maximum Critical Paths** that has been set by the user.

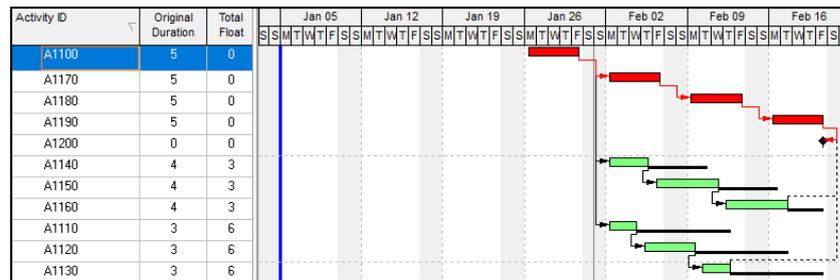
Selecting one **Maximum Critical Path Count**:



Selecting two **Maximum Critical Path Count**:



Selecting three **Maximum Critical Path Count**:



Thus, this command determines how many chains of events you wish to see, consider also using the **Float Path Order** here.



Decrease Maximum Multiple Critical Path Counts

This decreases the value of the **Maximum Multiple Critical Path Counts** which is displayed in the button above.



Select Maximum Multiple Critical Path Counts

This opens a form allowing the setting of the **Maximum Multiple Critical Path Counts**:

Select Maximum Multiple Critical Path Count

2

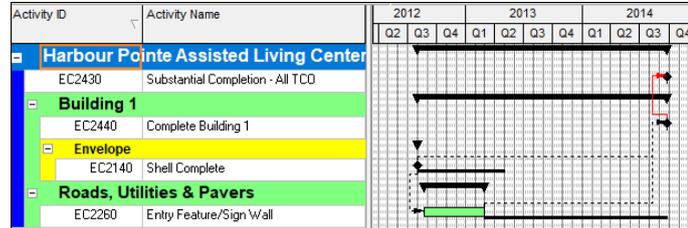
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20



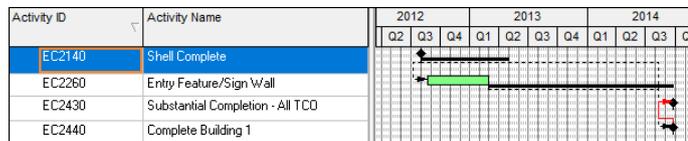

Enable Group and Sort

Clicking this button hides and displays the current applied **Group and Sort bands**. Hiding the bands enables the user to see the chain of events as an uninterrupted single chain of activities:

Group and Sort enabled:



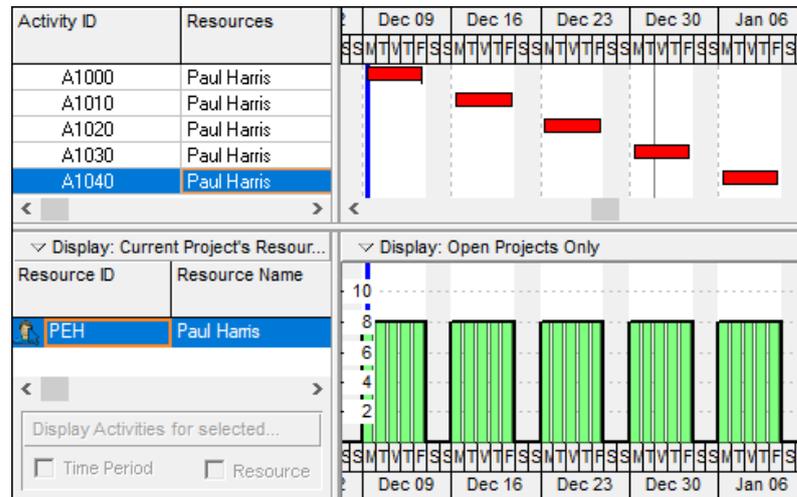
Group and Sort disabled:



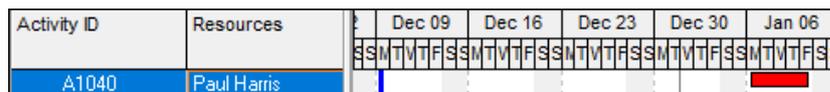
This single Float Path is not on the critical path.


Backward Resource Driven Critical Path

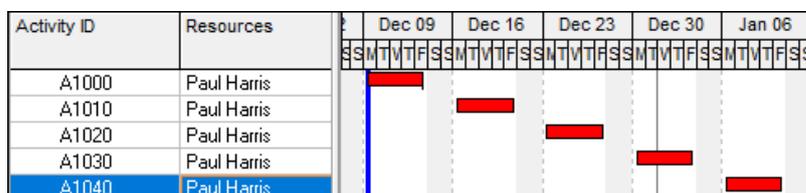
The schedule below has no relationships between activities and have been levelled.



When selecting A1040 and **Backward Activity Critical Path** you will see the result below:



When selecting A1040 and **Backward Resource Driven Critical Path** you will see the result below:





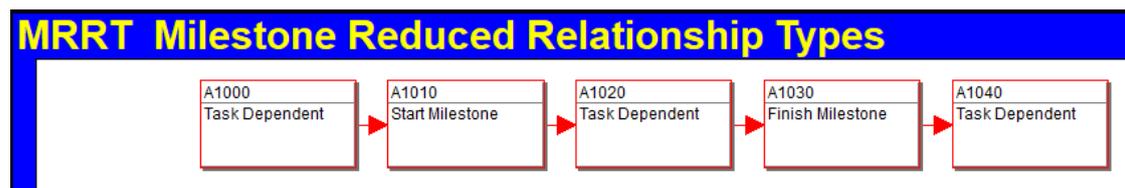
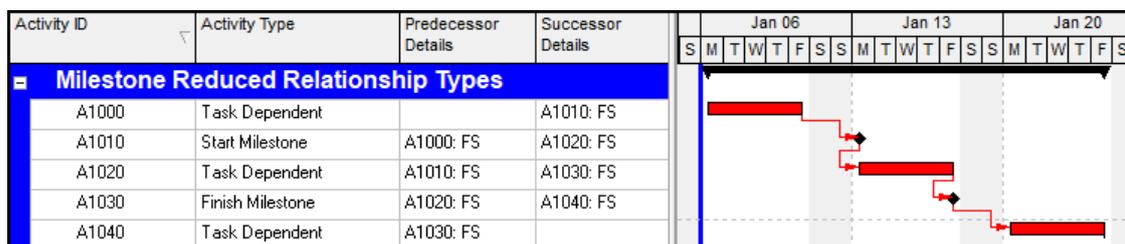
12 Milestone Reduced Relationship Types

P6 Version 20 and earlier supports more relationship types than P6 Version 21.

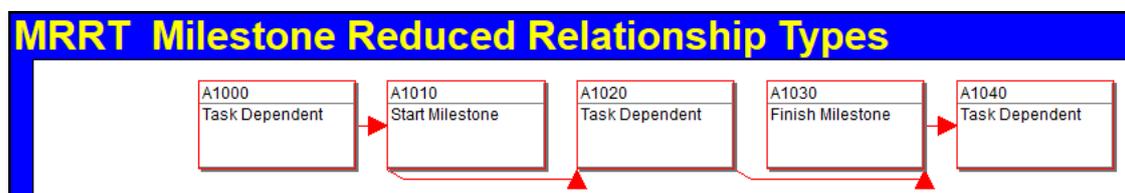
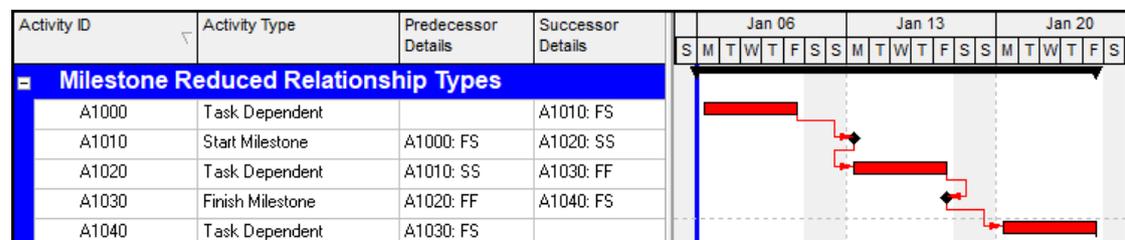
	Start Milestone Predecessors	Start Milestone Successors	Finish Milestone Predecessors	Finish Milestone Successors
P6 Version 20 & earlier	FS and SS	FS, SF and SS	FF, FS and SF	FF and FS
P6 Version 21	FS and SS	SF and SS	FF and SF	FF and FS

Thus, in Version 21 Chain Linking does not result in all the predecessors and successors being a FS relationship and some people would say that this is no longer a critical path program:

- P6 Version 20 Chain Linking



- P6 Version 21 Chain Linking



Projects imported into P6 Version 21 from earlier versions bring in and acknowledge the old relationship types, but these Start Milestone FS and Finish Milestone FF cannot be set in Version 21.

Should you wish your Milestones to be linked with FS relationships, in the traditional way, then just add the Milestones as tasks, add the relationships and then change the task to a Milestone.

Paul E Harris
 Director Eastwood Harris Pty Ltd
 9 December 2022



EASTWOODHARRIS

CREATE AND UPDATE AN UNRESOURCED PROJECT USING ELECSOFT (ASTA) POWERPROJECT VERSION 16

DESCRIPTION OF COURSE – The course objectives are to teach participants how to create projects without resources, formatting, printing, creating a baseline and updating an un-resourced project. Successful completion of all the course workshops will confirm that the objectives have been met.

Day 1 – Create an Unresourced Project

- Introduction to Asta Powerproject
- Navigation and Setting Options
- Creating and Editing Calendars
- Creating and Editing Tasks
- Summary Tasks
- Linking Tasks to create a Critical Path Scheduler
- Reschedule
- Constraints

Day 2 – Formatting, Reports and updating an Unresourced Project

- Other Task Types
- Formatting the Display
- Code Libraries
- Filters
- Grouping and Sorting Tasks
- Printing and Reports
- Baselines
- Updating an Unresourced Project
- User Definable Fields and WDS

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