Critical vs Longest Path and Multiple Float Paths in Primavera P6

The critical path is one of the most important parameters a scheduler should be aware of. As a scheduler you must know your schedule inside out, both how it is linked and what consequences arise due to changes or out of sequence work. The project manager should be aware of the critical path and should work on reducing and mitigating risks associated with the critical path.

A common definition of the critical path is:

The critical path is a series of activities that determines a project's completion time. The duration of the activities on the critical path controls the duration of the entire project; a delay to any of these activities will delay the finish date of the entire project

You can either define the critical path by the total float or the longest path in the project network.

However, the question is what is the difference between the two?

In primavera P6, if you use total float as a method, you can define the maximum float time for activities before they are marked as critical. That value can be equal to zero, below zero or above zero. In addition, your total float can be calculated either based on your finish float or your start float or the smallest value among both.

If you select the longest path, the critical path is defined by the longest path regardless of the float.

As a project controller, scheduler or project manager, you may want to switch between those two terms for analysis reasons.

In a way, the longest path is a critical path but not all critical paths are the longest path. Normally when you start a project the path with total float = 0 is the longest path. If you calculate the longest path for a project that has actuals, constraints, and deadlines you will get a path of activities that are important yet not necessarily the longest path. Constrained activities can show negative floats which in turn can drive the float to their successors or predecessors. One needs to be aware of those consequences while choosing the critical path method.

It all boils down to how you want to analyze and communicate your schedule. It may also be reasonable to calculate multiple float paths to monitor the development of those paths between updates. Discipline leads may want to know what their critical path is so you may want to calculate the critical path based on the last activity within that discipline.

Primavera P6 allows you to calculate and show up to 10 float paths and you can calculate the multiple paths either by using free float or total float. Because total float relates to the project as a whole, the total float method should be used if you want the multiple float paths to take into account a project's must finish date. Whereas the free float method should be used if you are focusing on potential disruption impacts within the path itself and need not consider a must finish date.
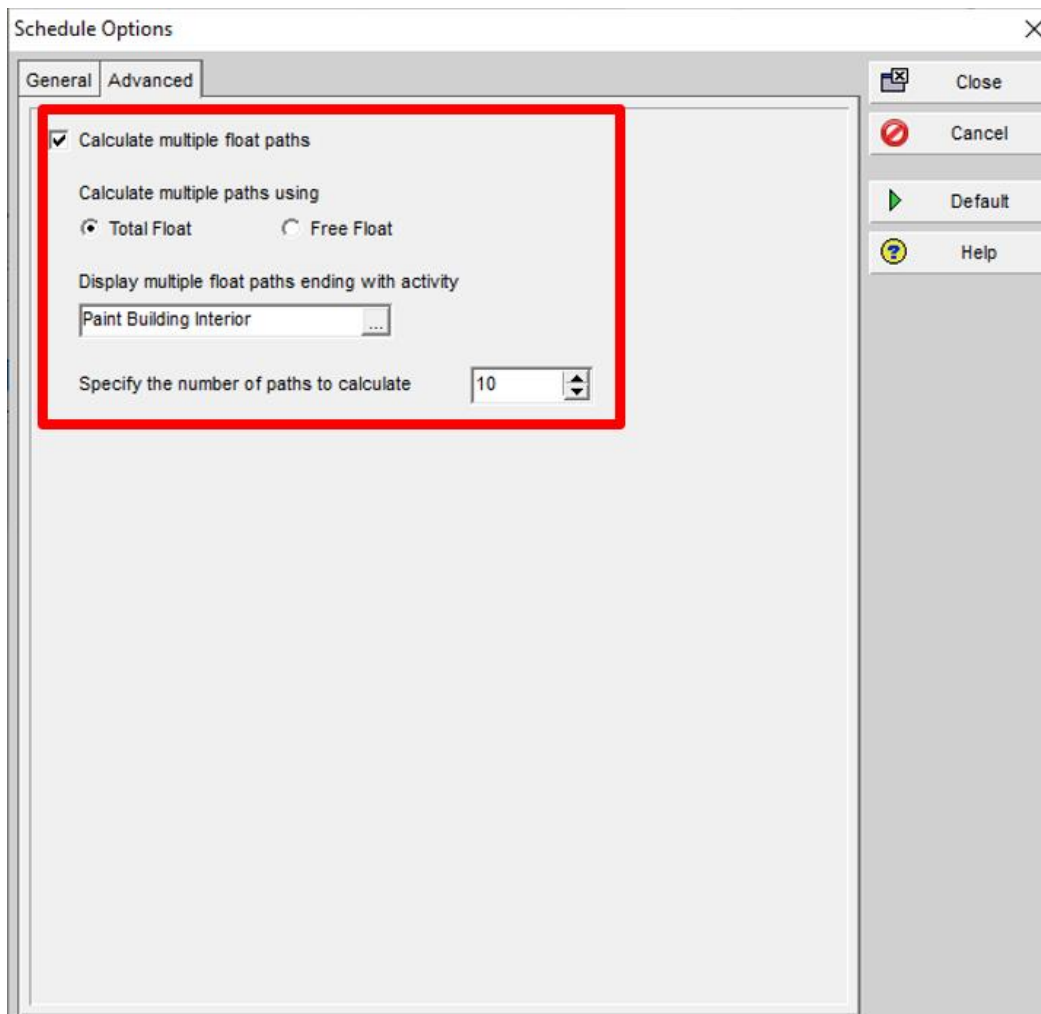
You need to be aware of some challenges that may arise by using longest path. For example, it may capture parallel activities with a finish to finish date and yet only one of those activities is on the critical path. In addition, level of effort activities also appears on the longest path which does not

make sense. A hint about how to fix those challenges is by selecting advanced /calculate multiple float paths, select free float and choose the final activity in the schedule. When working with multiple float paths you should display the columns float path order and float path in the activities page. Float path may have a number from 1 to 10. The number depends on what was selected in the advanced tab. So now if you create a filter to just view the critical activities on float path 1 then you will solve the above challenge