Effort Conditional Scheduling

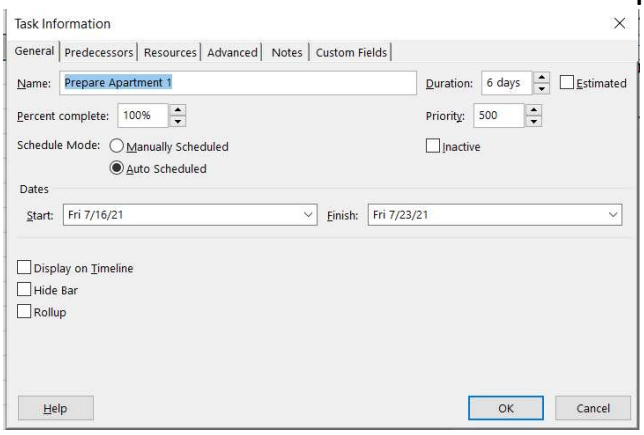
Once you start incorporating resources, costs and changes to these schedules, unexpected changes can be generated in the durations, costs and allocations of resources, among other relevant data, of the project.

Without a proper understanding of the various configuration options for task types in Project, analyzing and correcting those unexpected changes in project scheduling becomes complex.

With an explanation of the theoretical concepts and an example it is intended to explain the behavior of Project according to the various possible configurations of the tasks, with respect to the parameters **"Type of task" and "Conditioned by effort".**

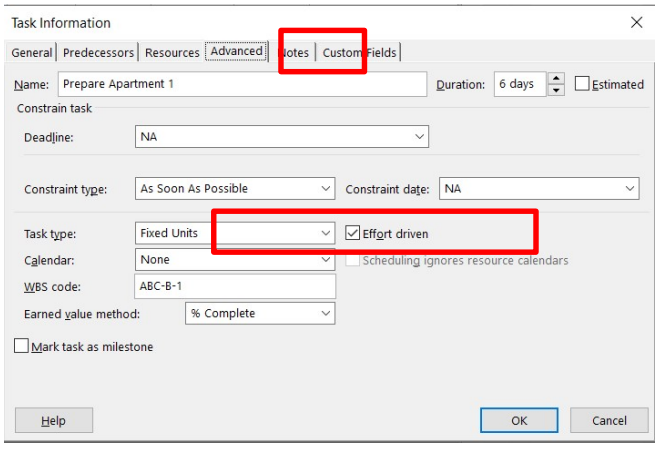
Set up Tasks in Project

When you create the various schedule tasks, they assume certain default values in their different attributes.
To view and edit these values, the **task** is **double-clicked** and the "Task Information" window is displayed.

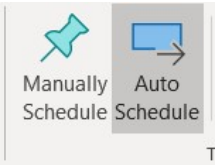


Set up Tasks in Project

When you select the "Advanced" in the "Task Information" window, the "Task Type" and "Effort-Driven" parameters can be displayed.



These two parameters are enabled for editing if the "Task Mode" is "Auto Scheduled".
If the value of this parameter is "Manually Scheduled" they appear disabled and the type of task has the default value of "Fixed Units" and the task does not it is conditioned by effort.



Types of tasks

As seen above, the task types in Project are 3: **"Fixed Duration", "Fixed Work", and "Fixed Units" (default).**

- **Fixed duration:** If the task is of "Fixed Duration", the time required for the completion of the task will be kept fixed, regardless of the resources assigned to it. It relates to the "Duration" column.
- **Fixed work:** Resource work is kept fixed, regardless of the duration of the task. It relates to the "Work" column. This type of task is always conditioned by effort.
- **Fixed units: Keep the percentage of allocation** ofresources to the task fixed, regardless of the duration of the task. Relates to the value of the "Units" column in the assignment of the resource to the task.

Conditioned by effort

If the "Effort Conditioned" check box

- is enabled, when you add or delete resources to the task, the work of the resources will remain fixed, regardless of the duration of the task.
- If it is off, it will keep the duration fixed, regardless of which

resources are added or deleted.

Project Schedule

The duration is estimated with:

- **Relationships between activities:** Each activity in a project is executed based on another.
- **Available** effort: Each activity has a specific availability of resources
- **Historical information**– Points out the specific duration of rare tasks.

When the duration of the project depends on the amount of resources that can be applied, one speaks of a project **"Conditioned by effort"**

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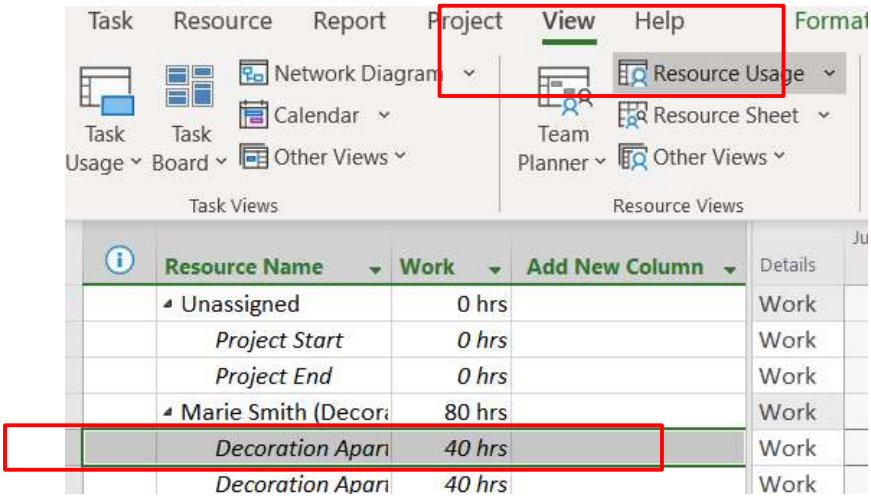
Resource profiles and cost tables

Resource Scheduling

The configuration of the task types allows automatically
adjust the assignment of the work of each resource in each task.

Resources can be used to further adjust this assignment.



Resources

Resources adjust the work assignment of a specific resource into a specific task, using a specific pattern or Work contour.

Resource Usage (Work contour)

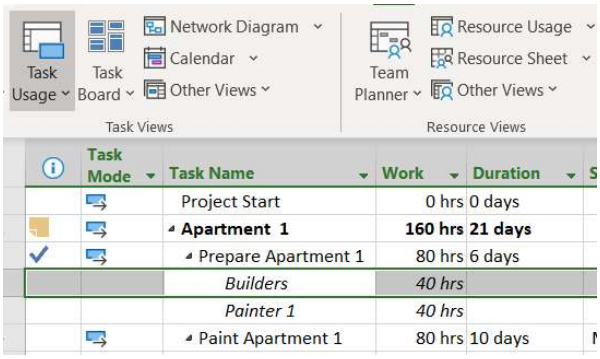
For example, if you consider that a task require more effort on at the start, you can apply the "Back Loaded" pattern to a person's work on that task. In this way, Project will add more work at the beginning than at the end in the task assignment.

Work Profiles (Work contour)

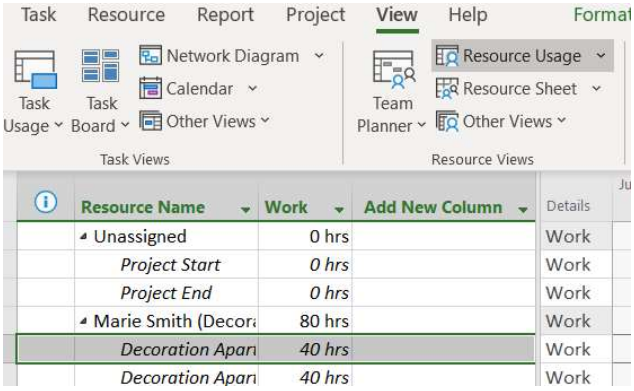
Work profiles can be configured in the **Task Usage** or **Resource Usage**, so this is done in the "Task Views" or "Resource views". As you can see below.

Work Profiles

- If you are located in the "Task Usage" view, double-click the resource name.

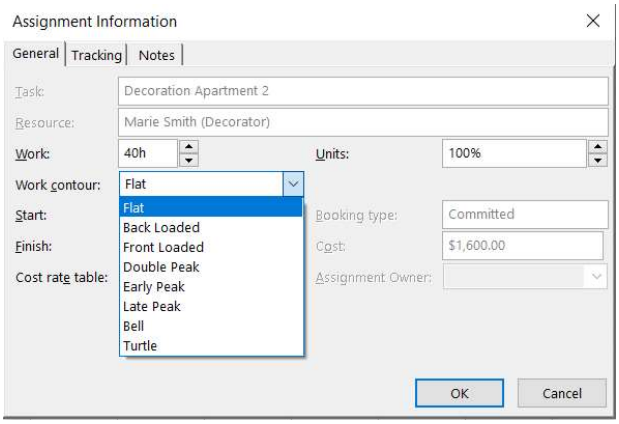


- If you are located in the "Resource Usage" view do double-click the task name.



Work Profiles

The "Assignment Information" window is displayed, select the "General" menu, the "Work contour" parameter will be observed.



Work Profiles

Configure the "Work contour" parameter according to the options listed below:

- **Flat:** The number of working hours is evenly distributed over the duration of the task.
- **Back Loaded (Increasing):** The number of hours per time period is low at the beginning and gradually increases up to 100% towards the end of the task. Most of the work is assigned at the end.
- **Front Loaded (Decreasing):** The number of hours per time period is 100% towards the start of the task and gradually decreases towards the end of the task**.**
- **Double peak:** The number of hours per time period is increased twice to 100% over the duration of the task.
- **Early peak:** The number of hours per time period is increased to 100% in the first quarter of the task duration.
- **Late peak:** The number of hours per time period is increased to 100% in the last quarter of the task duration.
- **Bell:** The number of hours per time period is increased to 100% towards half the duration of the task. Initial and final work rates are low.

- **Turtle:** The number of hours per time period is increased to 100% towards half the duration of the task. The difference with the Bell is that the initial and final percentages are higher.

Work Profiles – Considerations

When using work profiles, they will be taken into account the following considerations:

1. After a specific profile is applied, adding new total work values automatically reapply the default profile pattern.
2. The new Work values in the task are first distributed over the affected time period, and then new work values are assigned to the task resources.
3. If the start date of a task or resource is changed, the profile is applied again, based on the new date. All work values are distributed.
4. If you modify the duration of a task, the profile is incremented to include the added time period.
5. If you manually edit a work value, the profile is no longer applied, but you can reapply a profile to redistribute the work values.
6. If you have entered information about the current work of a task or resource, the total or remaining work changes are redistributed over the remaining work values, not the current Work.

Level Resource Usage

You can identify that a resource has work overload (that is, you have at least two tasks scheduled to run at the same time), when we see the resource with red letters in the "Resource Sheet".

		Nombre del recurso	Tipo	Etiqueta de	Iniciales
1		Instructor	Trabajo		I
2		Líder	Trabajo		L

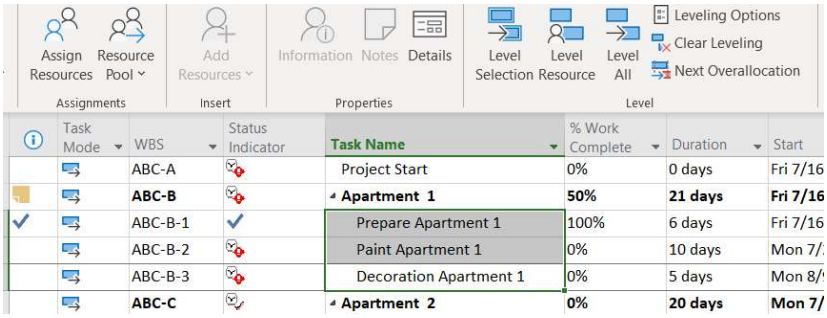
Level Resource Usage

The overload of work leads us to the need to level the use of resources. This can be done by delaying or splitting the conflicting task(s).

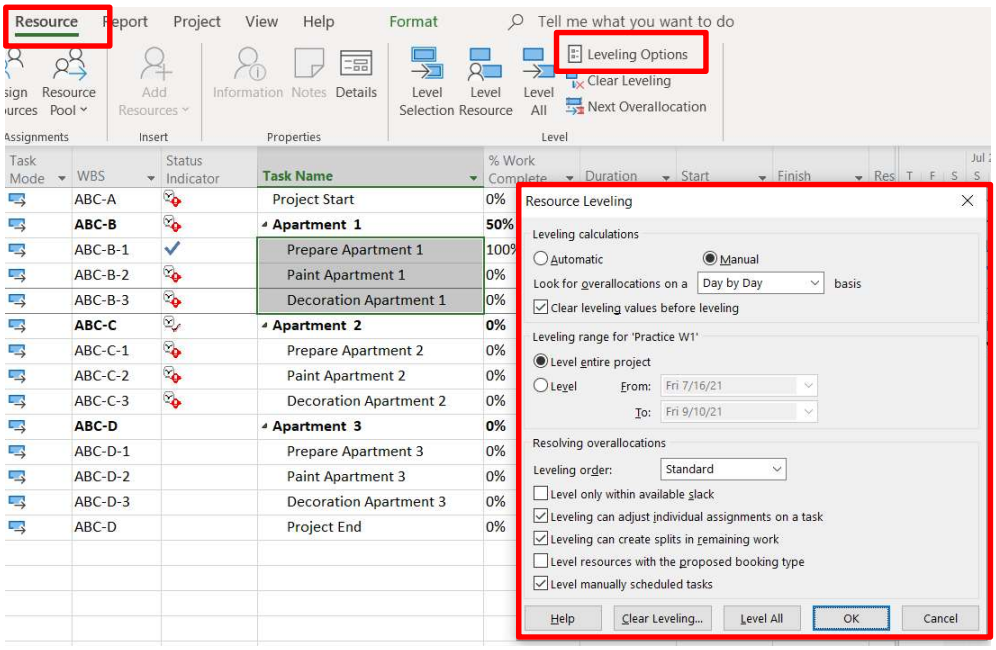
To do this automatically you can use the redistribution options of MS Project.

How ...

Select resource | Level | Levelling options.



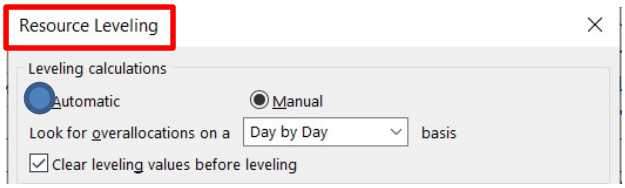
Task Mode	WBS	Status Indicator	Task Name	% Work Complete	Duration	Start
	ABC-A		Project Start	0%	0 days	Fri 7/16
	ABC-B		**Apartment 1**	**50%**	**21 days**	**Fri 7/16**
✓	ABC-B-1	✓	Prepare Apartment 1	100%	6 days	Fri 7/16
	ABC-B-2		Paint Apartment 1	0%	10 days	Mon 7/
	ABC-B-3		Decoration Apartment 1	0%	5 days	Mon 8/
	ABC-C		**Apartment 2**	**0%**	**20 days**	**Mon 7/**



Level Resource Usage

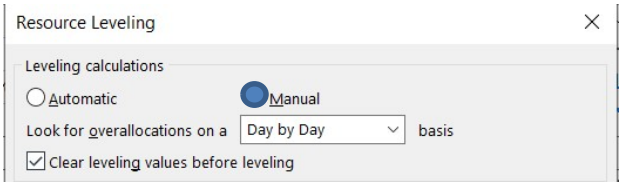
Automatic Levelling

If you select automatic Leveling, Project automatically redistributes the work as conflicts occur, according to the parameters selected in this window.

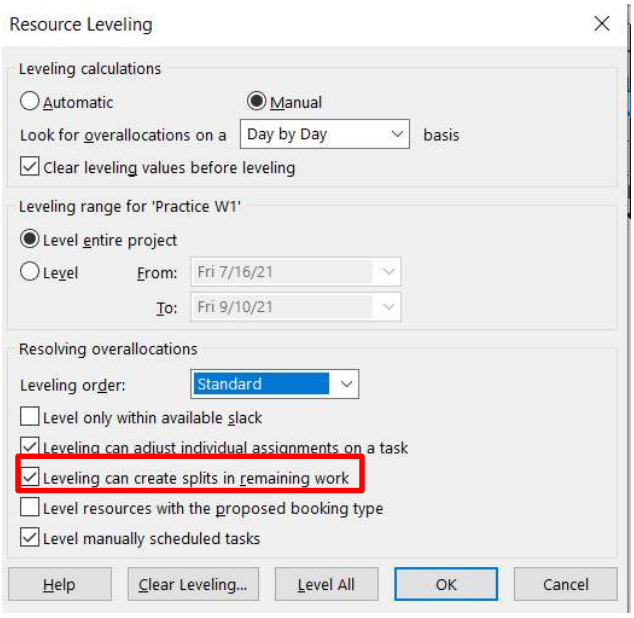


Manual redistribution

If you select manual redistribution, you must check for overhead and run the process manually.

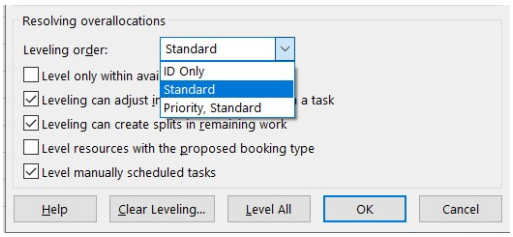


Resource Leveling



Leveling order: This parameter has three options that appear in the combo.

- **ID only**: Of the conflicting tasks, leave scheduled as the first task the one with the lowest ID number, the next is the reschedule to a later date.
- **Standard:** The longest duration is programmed first.
- **Priority, standard:** They are scheduled according to the priority of the tasks. For those with the same priority, the longest-lived one is scheduled first.



Leveling can create division in the remaining work: If this option is selected, if any tasks need to be rescheduled and have already started, it allows you to split the execution of the remaining work.

Level All: Selecting this button runs redistribution. Redistributes the entire project

Level selection: Redistributes the selected tasks.

Level resource: Redistributes the tasks for the selected resources.

Clear Redistribution: Clears any previously added redistribution moves.

Go to the next overallocation: Takes you to the next task line where resource overallocation exists.

Manual redistribution: If you select manual redistribution, you must check for overhead and run the process manually.

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