



# Resource management

## **A Resource is:**

Any asset that we require to perform a certain task.

## **Project Resources:**

The sum of resources required to perform all the tasks of the project



## Types of Resources

In the projects we use various types of resources:

- Human Resources
- Machinery, tools and equipment
- Capital
- Third party services
- Materials (consumables)



## Definition of the Resource List

In MS Project, information on resources is captured in three categories:

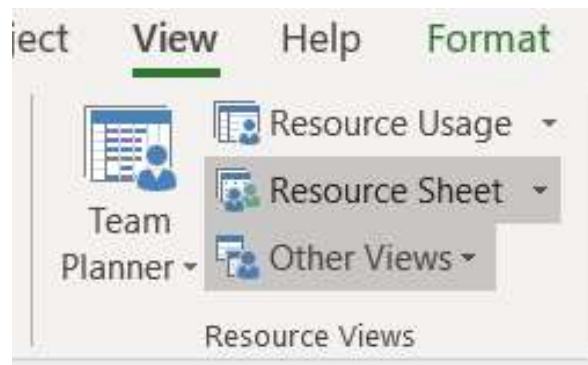
- “Work” (people and equipment)
- “Material” (consumables)
- “Cost”



## Definition of the Resource List

To enter the information on the resources, use the "Resource Sheet" view.

To access this view, on the ribbon menu select **VIEW | Resource Views | Resource sheet**.

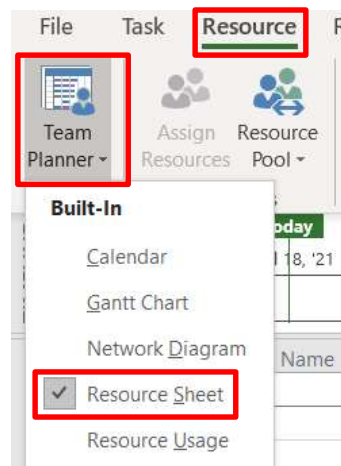




## Definition of the Resource List

You can also use the "RESOURCE" tab to access the "Resource Sheet" view.

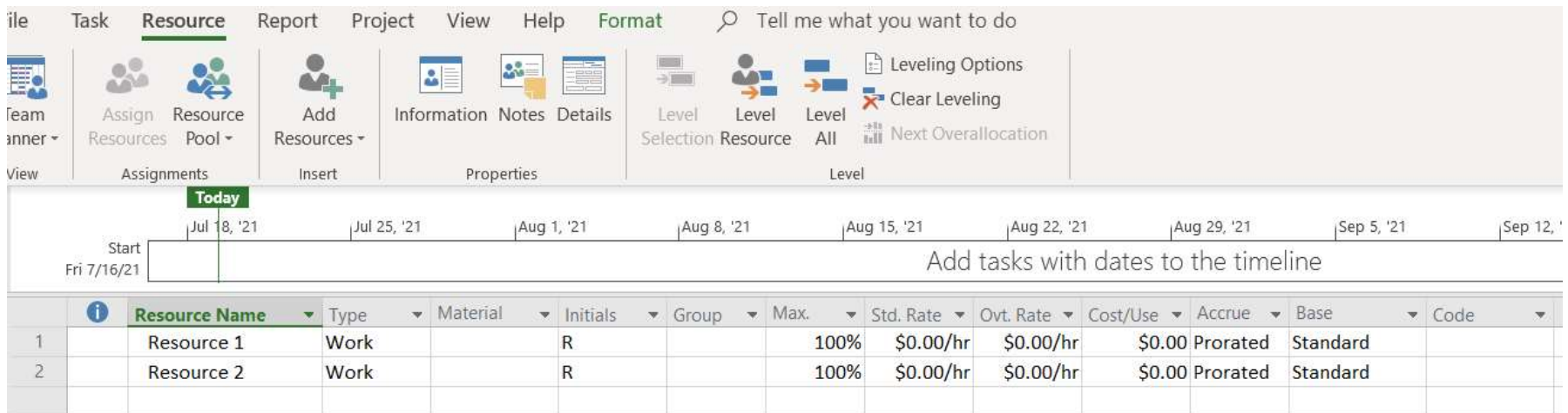
Select RESOURCE | Team Planner | Resource sheet.





## Definition of the Resource List

When selecting the “Resource Sheet” view, a table is displayed where the main data of the project's resources can be entered.



The screenshot shows the Microsoft Project interface with the 'Resource' tab selected in the ribbon. The ribbon includes options like 'Assign Resources', 'Add Resources', 'Level Selection', and 'Level Resource'. Below the ribbon is a timeline showing dates from July 18, '21 to September 12, '21. A table below the timeline lists resources with columns for Resource Name, Type, Material, Initials, Group, Max., Std. Rate, Ovt. Rate, Cost/Use, Accrue, Base, and Code.

	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code
1	Resource 1	Work		R		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
2	Resource 2	Work		R		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	

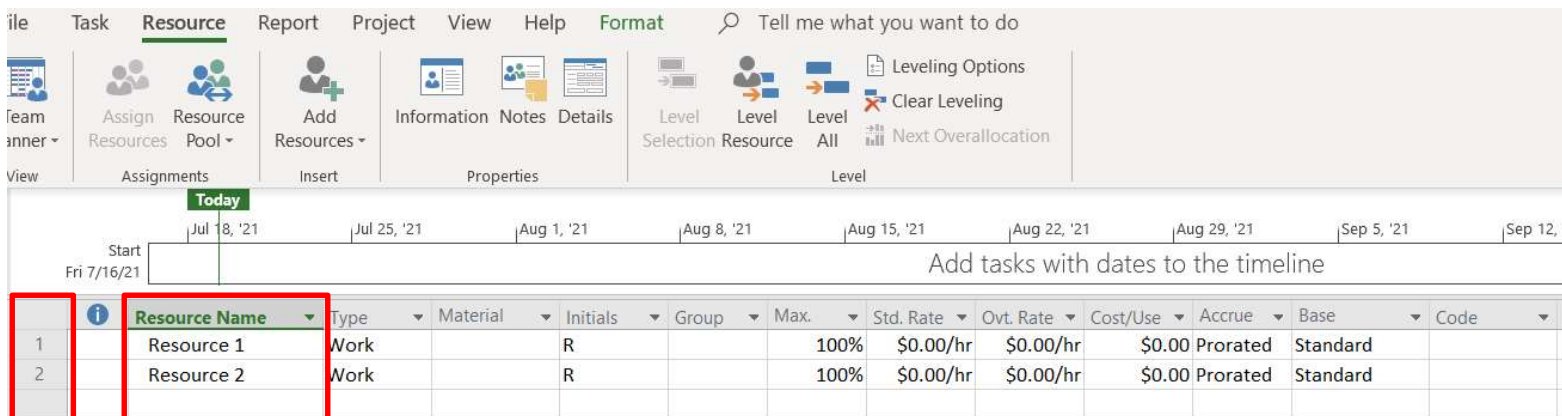


# Available Fields on Resource Sheet

The main fields available in MS Project for resources are described below:

**ID (# identification):** Consecutive resource number generated automatically by MS Project. 1, 2, etc..

**Resource Name:** Name description of the resource.



ID	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code
1	Resource 1	Work		R		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	
2	Resource 2	Work		R		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard	



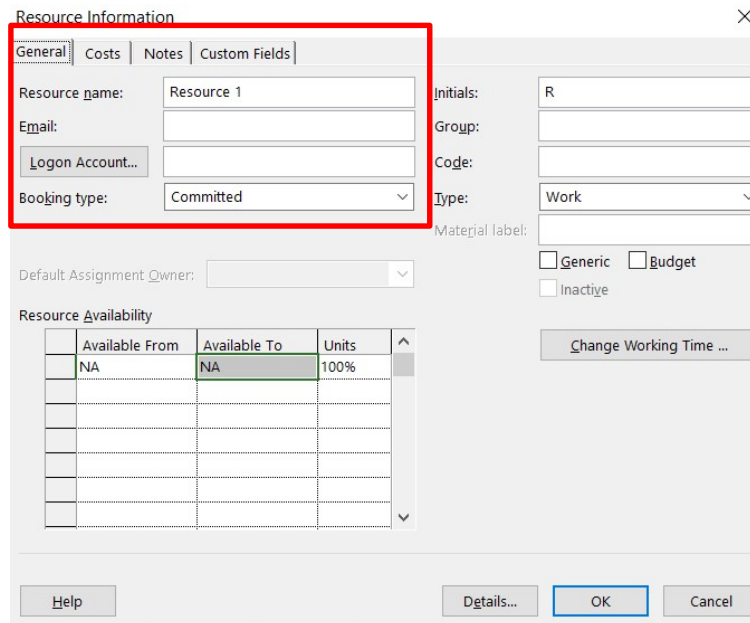


# Available Fields on Resource Sheet

**Email address:** This field is not found by default in the 'Resource sheet'. It can be found in the "Resource Information" window, in the "General" tab.

Here's how to access the field.

**Option 1:** Double click on the resource, in the "General" tab of the "Resource Information" window, locate the "Email



Resource Information

General | Costs | Notes | Custom Fields

Resource name: Resource 1

Email:

Logon Account...

Booking type: Committed

Initials: R

Group:

Code:

Type: Work

Material label:

Generic  Budget

Inactive

Change Working Time ...

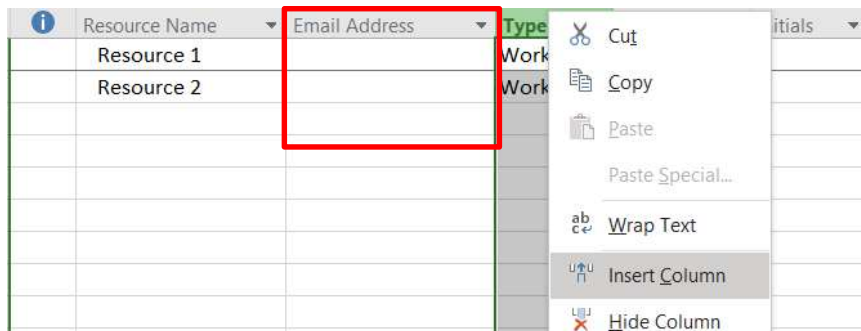
Default Assignment Owner:

Resource Availability

	Available From	Available To	Units
	NA	NA	100%

Help Details... OK Cancel

**Option 2:** On the Main Resource sheet, on the resource name menu, right click, insert column, select Email address (column will appear)



Resource Name	Email Address	Type	Initials
Resource 1		Work	
Resource 2		Work	

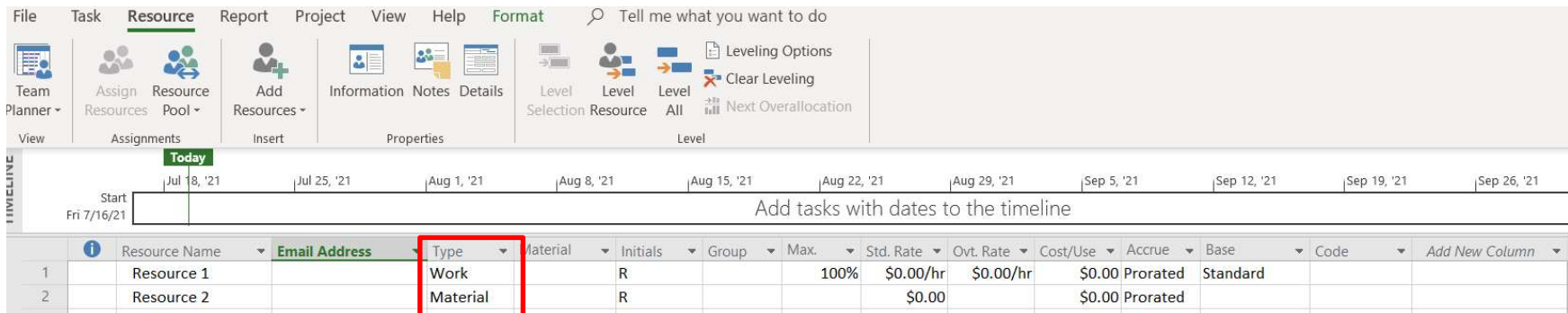
Context menu options:

- Cut
- Copy
- Paste
- Paste Special...
- Wrap Text
- Insert Column**
- Hide Column



# Available Fields on Resource Sheet

**Type:** Specify the type of resource. Select a value from those available in the combo: Labor (for human resources and equipment), Material (for consumable resources) and Cost (for financial resources).



The screenshot shows the Microsoft Project interface with the Resource Sheet view. The 'Type' column is highlighted with a red box, showing 'Work' and 'Material' options. The table below shows the data for two resources.

	Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code	Add New Column
1	Resource 1		Work		R		100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard		
2	Resource 2		Material		R			\$0.00		\$0.00	Prorated			



## Available Fields on Resource Sheet

**Material Label:** For material resources. It is a text type field (not included as a standard by MS Project, as you can type any type of material) where you must type a description of the material's consumption measurement: kilos, meters, units, etc.

The unit of measure for consumption may be different from the unit of measure for the material purchase.

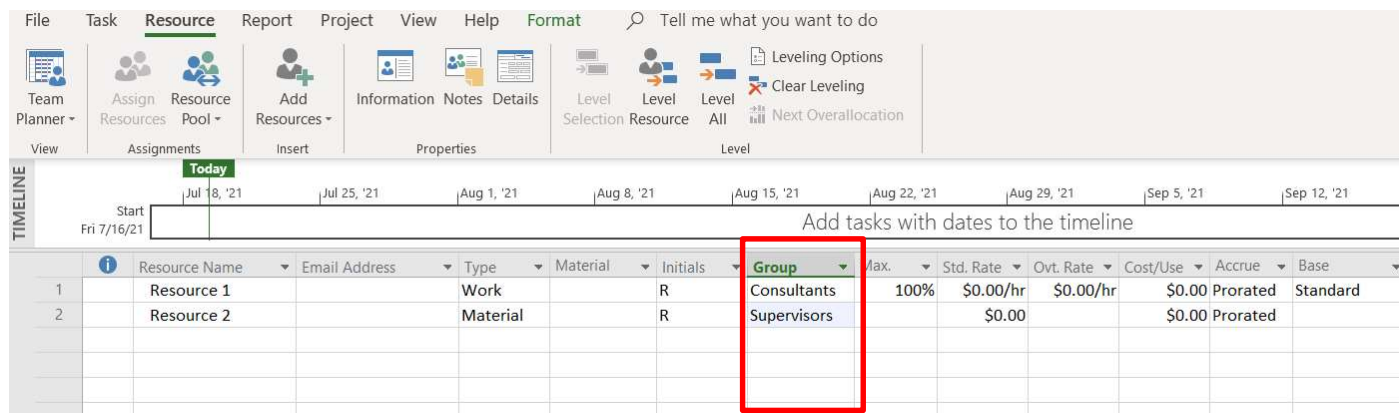


## Available Fields on Resource Sheet

**Group:** Identification label of the resource group to which it belongs. It is a text type field (not validated by MS Project) where you can type a common label for several resources. This label can be used to consolidate information by “Group” of resources.

### Examples:

"Implementation team", "Consultants", "Supervisors".



The screenshot shows the Microsoft Project interface with the Resource Sheet view. The 'Resource' tab is active in the ribbon. The Resource Sheet table is visible, with a red box highlighting the 'Group' dropdown menu for Resource 1 and Resource 2. The dropdown menu is open, showing 'Consultants' and 'Supervisors' as options.

Resource ID	Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Resource 1		Work		R	Consultants	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2	Resource 2		Material		R	Supervisors		\$0.00		\$0.00	Prorated	



## Available Fields on Resource Sheet

**Maximum capacity:** It is used for “Work” type resources and establishes their availability for the project. The value can be displayed as a percentage value or as decimal units.

Units indicate the percentage of a work resource's time that is assigned to a task. There are two types of units in Project: maximum units and assignment units.

**Maximum units:** When you want to specify how much time a work resource has available for work on all tasks in a project. This total is used to calculate how much time a work resource can spend on each task assignment.

Assignment units: When you want to specify how much of a work resource's time is dedicated to a specific task. You also specify assignment units for material resources to indicate the quantity of material being used for the assignment.

- 100% or 1: indicates that a resource is available. 300% or 3: indicates that there are three resources available.
- If you have 10 operators, you can enter 1000% in the maximum capacity field.



# Available Fields on Resource Sheet

Maximum capacity - Procedure to modify the format of the displayed value.

Project Options

General  
Display  
**Schedule**  
Proofing  
Save  
Language  
Advanced  
Customize Ribbon  
Quick Access Toolbar  
Add-ins  
Trust Center

Change options related to scheduling, calendars, and calculations.

Calendar options for this project: Practice W1

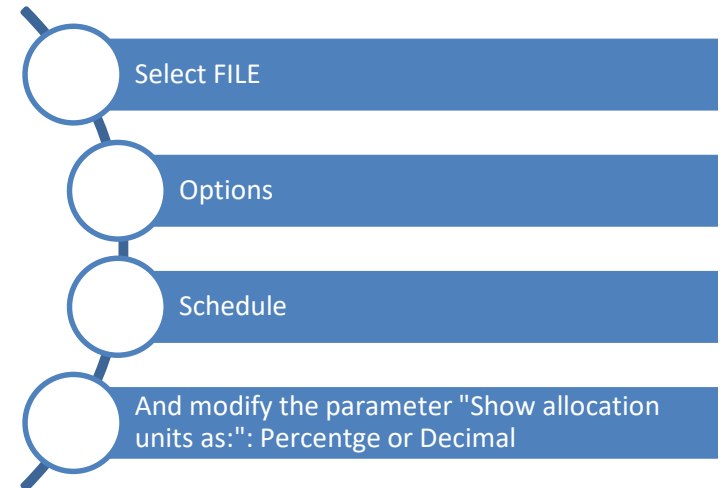
Week starts on: Sunday  
Fiscal year starts in: January  
 Use starting year for FY numbering

Default start time: 8:00 AM  
Default end time: 5:00 PM  
Hours per day: 8  
Hours per week: 40  
Days per month: 20

These times are assigned to tasks when you enter a start or finish date without specifying a time. If you change this setting, consider matching the project calendar using the Change Working Time command on the Project tab in the ribbon.

**Schedule**

Show scheduling messages  
Show assignment units as a: Percentage







## Available Fields on Resource Sheet

**Standard rate:** This rate allows you to pay for the use of resources in the project.

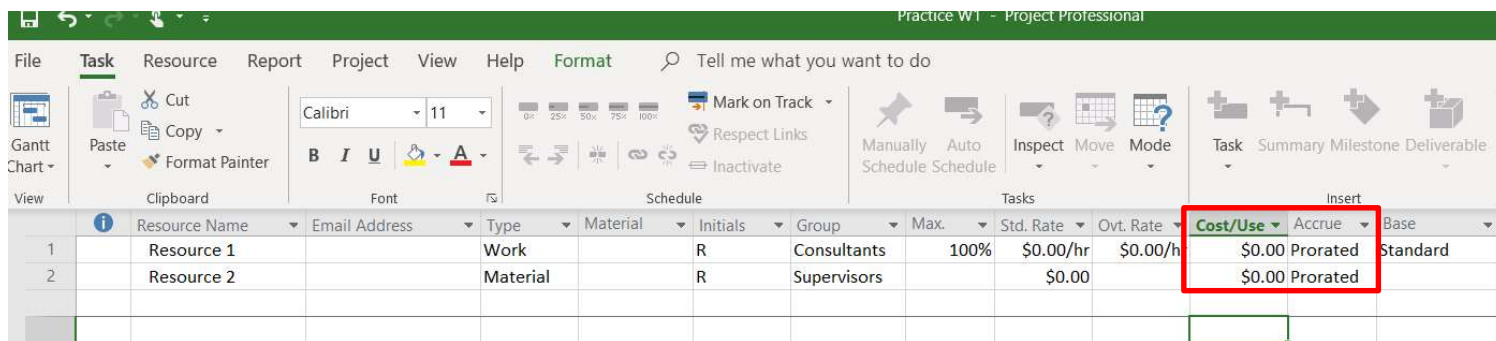
- **If it is a “Work” type resource:** The cost x unit of time is indicated, in normal time. For example: cost per hour of the resource.
  - Overtime rate: Cost x unit of time in overtime, for “Work” type resources.
- **If it is a "Material" type resource:** The unit cost of the resource is indicated, according to the unit of measure described in the column "Material Label".



# Available Fields on Resource Sheet

Cost / Use: Cost of using the resource. This cost is accumulated in each task that uses it, regardless of its duration.

**Example:** The rental of a wagon may have a fixed cost which is the cost per use. In addition to this cost, the standard rate is defined, which will generate a variable cost that depends on the work to be done.



Practice W1 - Project Professional

	Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Resource 1		Work		R	Consultants	100%	\$0.00/hr	\$0.00/h	\$0.00	Prorated	Standard
2	Resource 2		Material		R	Supervisors		\$0.00		\$0.00	Prorated	



## Available Fields on Resource Sheet

**Accrue at:** Defines the way to record the cost of the resource (standard and overtime rate): Start (recorded at the beginning of the task), Prorated (recorded proportionally to the progress of the task) and End (recorded at the end of the task ).



## Available Fields on Resource Sheet

- If **"Start"** is used, 100% of the cost is accumulated as real cost by having at least 1% progress of the task.
- If **"Proration"** is used, the cost is accumulated in proportion to the percentage of progress of the task.
- If **"End"** is used, 100% of the cost is accumulated until the task is 100% complete

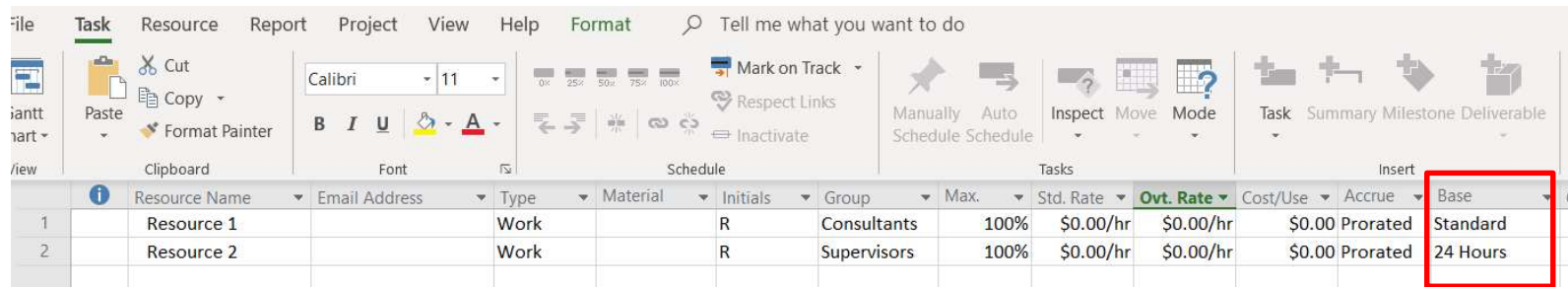


# Available Fields on Resource Sheet

**Base calendar:** Applicable calendar for scheduling the resource.

You can define specific schedules for the project, for resources and tasks. They are all created in the PROJECT | Properties | Change work time.

This parameter establishes the base calendar to be used for the resource, the calendar that defines its working hours.



The screenshot shows the Resource Sheet in Microsoft Project. The 'Base' column is highlighted with a red box, and the dropdown menu is open, showing 'Standard' and '24 Hours' options.

	Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base
1	Resource 1		Work		R	Consultants	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard
2	Resource 2		Work		R	Supervisors	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	24 Hours



## Definition of Resources Names

The names that are specified for the resources can be:

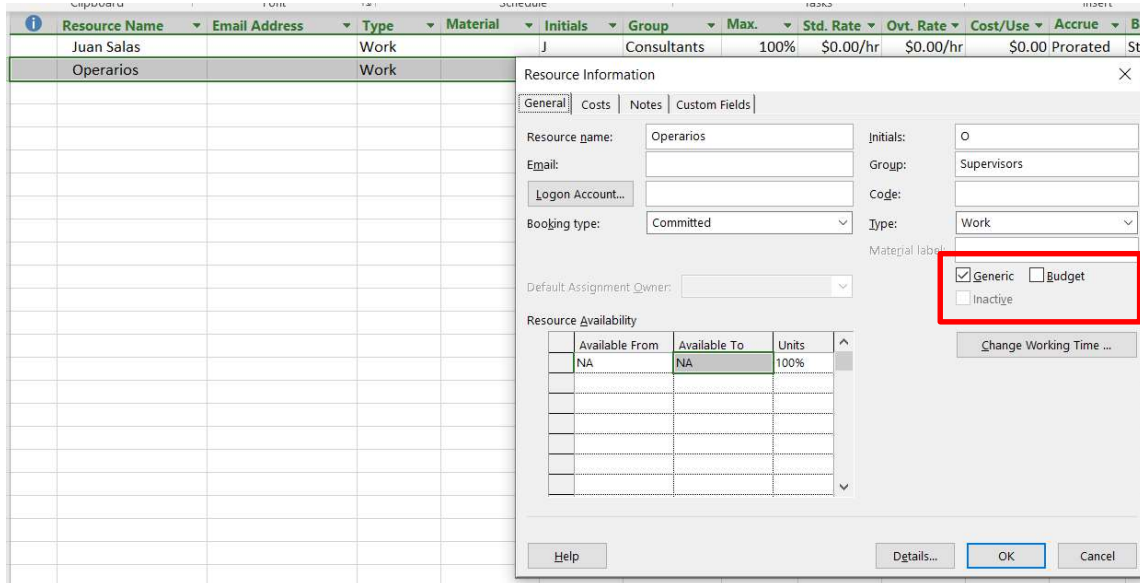
**Specific:** people's names are used. Example: Juan Salas.

**Generic:** job or activity names are used. Example: Operator. How to set up a resource as generic



# Definition of Resources Names

Generic resources show an identification of “Generic Resource” in the “Indicators” column



The screenshot shows a resource sheet with columns: Resource Name, Email Address, Type, Material, Initials, Group, Max., Std. Rate, Ovt. Rate, Cost/Use, Accrue, and Ba. The first two rows are 'Juan Salas' and 'Operarios', both with Type 'Work'. A 'Resource Information' dialog box is open over the 'Operarios' row. The 'General' tab is selected. The 'Resource name' field contains 'Operarios'. The 'Initials' field contains 'O'. The 'Group' field contains 'Supervisors'. The 'Type' field contains 'Work'. The 'Booking type' is 'Committed'. The 'Default Assignment Owner' is empty. The 'Material label' section has three checkboxes: 'Generic' (checked), 'Budget' (unchecked), and 'Inactive' (unchecked). The 'Resource Availability' table has one row with 'Available From' NA, 'Available To' NA, and 'Units' 100%.

Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Ba
Juan Salas		Work		J	Consultants	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Sta
Operarios		Work									

1- Enter the resource information in the view "Resource sheet."

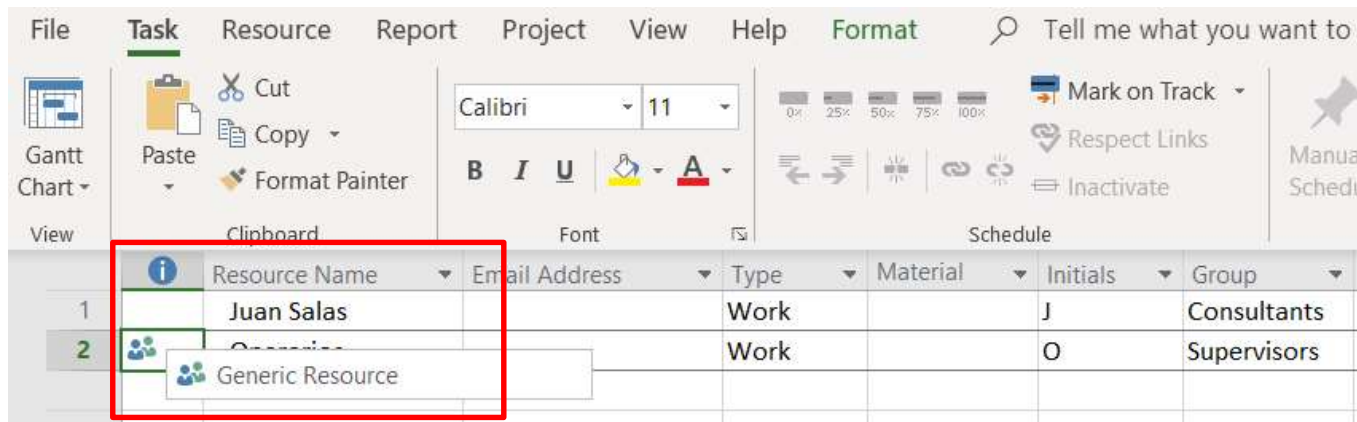
2- If it is a generic name, select the resource and double-click.

3- In the window "Information of the resource", on "General", check the box of "Generic".



## Definition of Resources Names

Generic resources show an identification of “Generic Resource” in the “Indicators” column



	Resource Name	Email Address	Type	Material	Initials	Group
1	Juan Salas		Work		J	Consultants
2	Generic Resource		Work		O	Supervisors





## Availability of Resources

The availability of resources can be define using:

- Availability of units (expressed with percentages or decimal units) for different periods of time.
- Use of a custom business calendar for the resource



# Availability of Resources

Resource Information

General | Costs | Notes | Custom Fields

Resource name: Operarios Initials: O

Email: Group: Supervisors

Logon Account... Code:

Booking type: Committed Type: Work

Material label:

Default Assignment Owner:

Generic  Budget

Inactive

Resource Availability			
	Available From	Available To	Units
	NA	NA	100%

Change Working Time ...

Help Details... OK Cancel

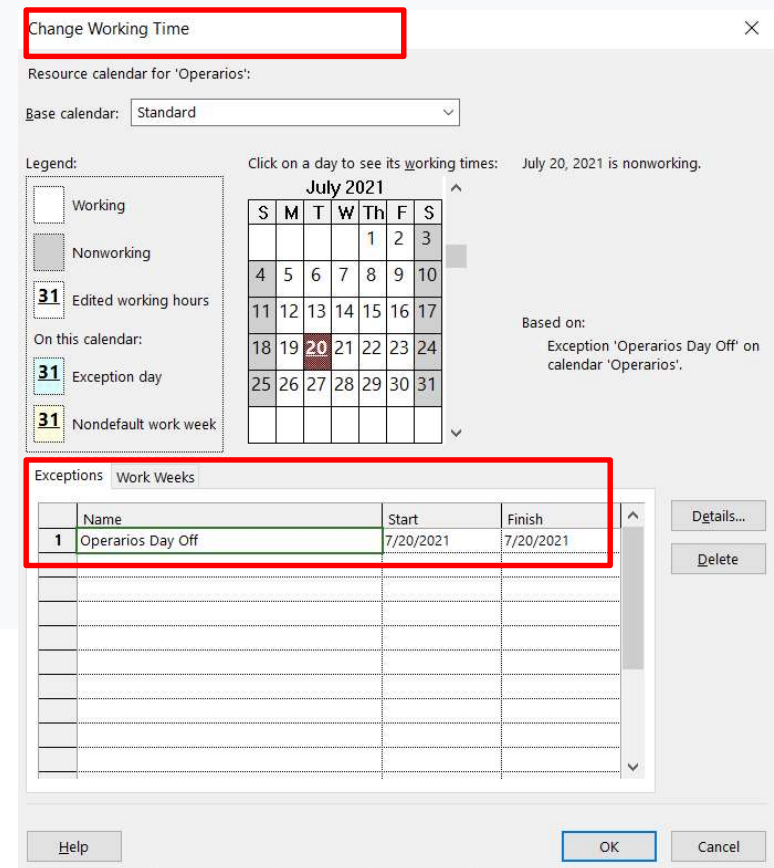
- 1- Enter the resource information in the view. "Resource sheet".
2. Select the resource and double click.
3. Find "Resource information" and the button "Change working time..."



## Availability of Resources

When you select the "Change working time" button, a window is displayed to customize the base calendar specifically, for the selected resource.

It can include your vacations, disabilities, schedule availability for the project, etc



Change Working Time

Resource calendar for 'Operarios':

Base calendar: Standard

Legend:

- Working
- Nonworking
- 31 Edited working hours
- 31 Exception day
- 31 Nondefault work week

Click on a day to see its working times: July 20, 2021 is nonworking.

July 2021

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

Based on:  
Exception 'Operarios Day Off' on calendar 'Operarios'.

Exceptions Work Weeks

	Name	Start	Finish
1	Operarios Day Off	7/20/2021	7/20/2021

Details...  
Delete

Help OK Cancel



## Assign Resources to Tasks

The process of allocating resources to Tasks can be performed in several ways:

1. By typing directly, the name of the resource in the column "Resource Name" of the input table in the Gantt Chart. If the resource entered does not exist in the "Resource Sheet", it is incorporated into it.

	Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessor	Total Slack	Resource Names
		ABC-A	Project Start	0 days	Fri 7/16/21	Fri 7/16/21		0 days	
		<b>ABC-B</b>	<b>Apartment 1</b>	<b>20 days</b>	<b>Fri 7/16/21</b>	<b>Thu 8/12/21</b>		<b>0 days</b>	
		ABC-B-1	Prepare Apartment 1	5 days	Fri 7/16/21	Thu 7/22/21	1	0 days	Painter 1
		ABC-B-2	Paint Apartment 1	10 days	Fri 7/23/21	Thu 8/5/21	3	0 days	
		ABC-B-3	Decoration Apartment 1	5 days	Fri 8/6/21	Thu 8/12/21	4	0 days	
		<b>ABC-C</b>	<b>Apartment 2</b>	<b>20 days</b>	<b>Fri 8/13/21</b>	<b>Thu 9/9/21</b>		<b>0 days</b>	
		ABC-C-1	Prepare Apartment 2	5 days	Fri 8/13/21	Thu 8/19/21	5	0 days	
		ABC-C-2	Paint Apartment 2	10 days	Fri 8/20/21	Thu 9/2/21	7	0 days	



## Assign Resources to Tasks

2. Selecting the resources from the drop list presented in of the column " Resource Name " of the Gantt Chart. Multiple resources can be separated by commas or semicolons

	ABC-B-2	Paint Apartment 1	10 days	Mon 7/26/21	Fri 8/6/21	3	0 days	<div style="border: 2px solid red; padding: 5px;"> <input type="text" value="Painter 1,Painter 2"/> <ul style="list-style-type: none"> <li><input type="checkbox"/> Builders</li> <li><input type="checkbox"/> James Paterson</li> <li><input checked="" type="checkbox"/> Painter 1</li> <li><input checked="" type="checkbox"/> Painter 2</li> </ul> </div>
	ABC-B-3	Decoration Apartment 1	5 days	Mon 8/9/21	Fri 8/13/21	4	0 days	
	<b>ABC-C</b>	<b>Apartment 2</b>	<b>20 days</b>	<b>Mon 8/16/21</b>	<b>Fri 9/10/21</b>		<b>0 days</b>	
	ABC-C-1	Prepare Apartment 2	5 days	Mon 8/16/21	Fri 8/20/21	5	0 days	
	ABC-C-2	Paint Apartment 2	10 days	Mon 8/23/21	Fri 9/3/21	7	0 days	
	ABC-C-3	Decoration Apartment 2	5 days	Mon 9/6/21	Fri 9/10/21	8	0 days	



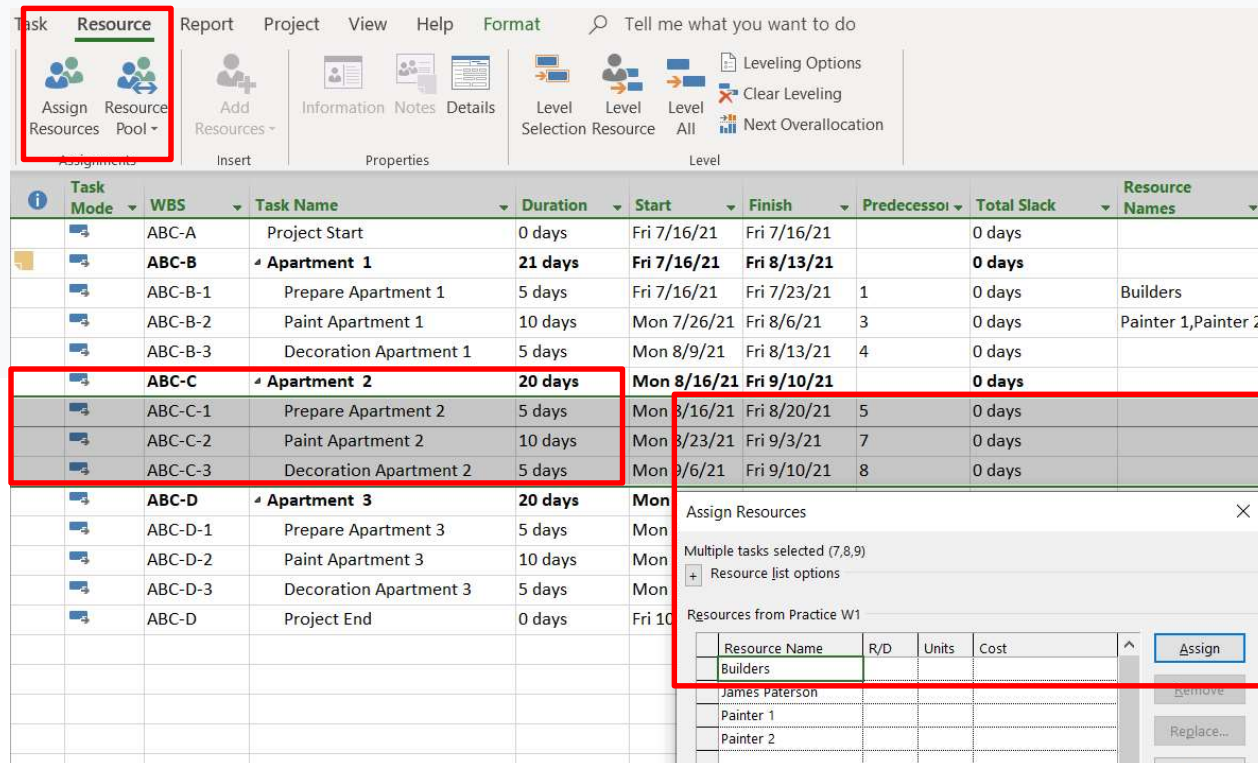
# Assign Resources to Tasks

## 3. Using the option "Assign resources"

1. In the Gantt Chart view, select the tasks.

2. Select Resource on Ribbon Menu and then Assign resources.

3. Select the resources and then click "Assign"



The screenshot shows the Microsoft Project interface. The 'Resource' ribbon is active, with the 'Assign Resources' button highlighted. Below the ribbon is a task list table. The 'Assign Resources' dialog box is open, showing a list of resources from 'Practice W1'. The 'Assign' button is highlighted.

Task Mode	WBS	Task Name	Duration	Start	Finish	Predecessor	Total Slack	Resource Names
	ABC-A	Project Start	0 days	Fri 7/16/21	Fri 7/16/21		0 days	
	ABC-B	Apartment 1	21 days	Fri 7/16/21	Fri 8/13/21		0 days	
	ABC-B-1	Prepare Apartment 1	5 days	Fri 7/16/21	Fri 7/23/21	1	0 days	Builders
	ABC-B-2	Paint Apartment 1	10 days	Mon 7/26/21	Fri 8/6/21	3	0 days	Painter 1,Painter 2
	ABC-B-3	Decoration Apartment 1	5 days	Mon 8/9/21	Fri 8/13/21	4	0 days	
	ABC-C	Apartment 2	20 days	Mon 8/16/21	Fri 9/10/21		0 days	
	ABC-C-1	Prepare Apartment 2	5 days	Mon 8/16/21	Fri 8/20/21	5	0 days	
	ABC-C-2	Paint Apartment 2	10 days	Mon 8/23/21	Fri 9/3/21	7	0 days	
	ABC-C-3	Decoration Apartment 2	5 days	Mon 9/6/21	Fri 9/10/21	8	0 days	
	ABC-D	Apartment 3	20 days	Mon 8/16/21	Fri 9/10/21		0 days	
	ABC-D-1	Prepare Apartment 3	5 days	Mon 8/16/21	Fri 8/20/21	5	0 days	
	ABC-D-2	Paint Apartment 3	10 days	Mon 8/23/21	Fri 9/3/21	7	0 days	
	ABC-D-3	Decoration Apartment 3	5 days	Mon 9/6/21	Fri 9/10/21	8	0 days	
	ABC-D	Project End	0 days	Fri 10/1/21	Fri 10/1/21		0 days	



## Leverage Resource Usage

It can be identified that a resource has work overload (it has scheduled the execution of at least two tasks at the same time), when we see the resource with red letters in the "Resource Sheet".

Task Resource Report Project View Help Format Tell me what you want to do															
Assignments		Insert		Properties			Level								
Resource Name	Email Address	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base				
James Paterson		Work		J	Consultants	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard				
Builders		Work		B	Supervisors	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard				
<b>Painter 1</b>		<b>Work</b>		<b>P</b>	<b>Painters</b>	<b>100%</b>	<b>\$0.00/hr</b>	<b>\$0.00/hr</b>	<b>\$0.00</b>	<b>Prorated</b>	<b>Standard</b>				
Painter 2		Work		P	Painters	100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard				
		Work				100%	\$0.00/hr	\$0.00/hr	\$0.00	Prorated	Standard				



## Leverage Resource Usage

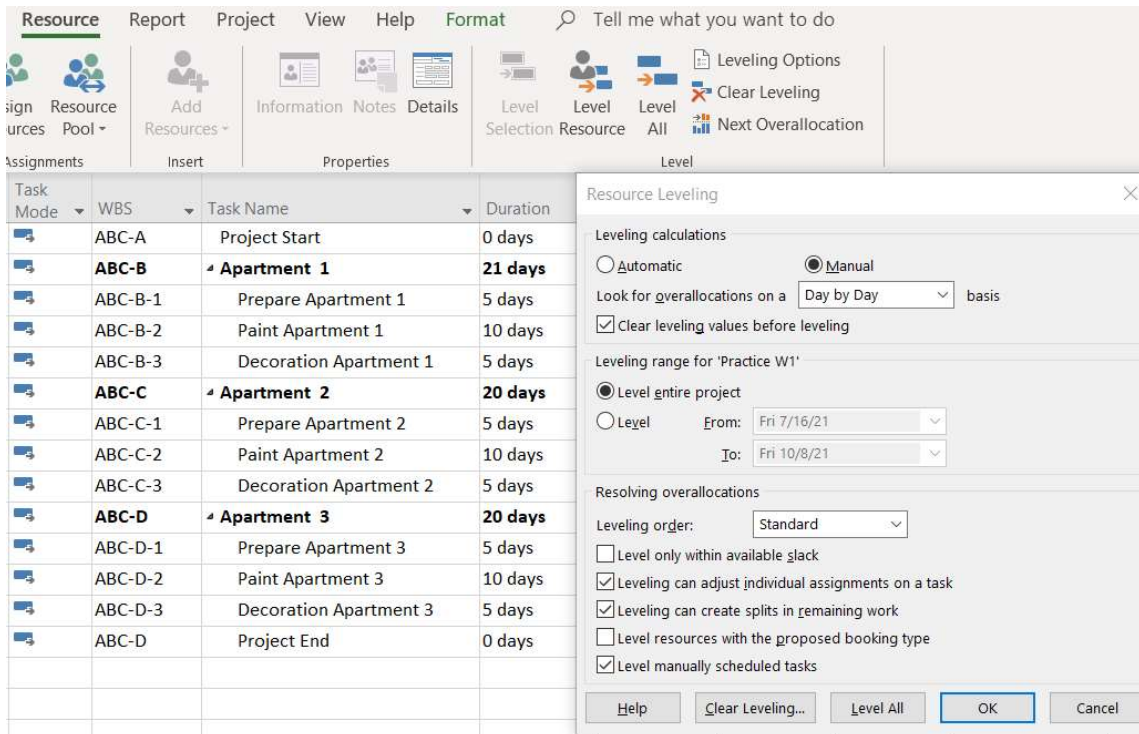
The overload of work drives the need to leverage the use of resources. This can be done by delaying or dividing the conflicting task (s).





# Leverage Resource Usage

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



The screenshot shows the MS Project interface with the Resource Leveling dialog box open. The dialog box is titled 'Resource Leveling' and contains the following settings:

- Leveling calculations:**
  - Automatic
  - Manual
  - Look for overallocations on a **Day by Day** basis
  - Clear leveling values before leveling
- Leveling range for 'Practice W1':**
  - Level entire project
  - Level: From: **Fri 7/16/21**, To: **Fri 10/8/21**
- Resolving overallocations:**
  - Leveling order: **Standard**
  - Level only within available slack
  - Leveling can adjust individual assignments on a task
  - Leveling can create splits in remaining work
  - Level resources with the proposed booking type
  - Level manually scheduled tasks

The background shows a task list with columns for Task Mode, WBS, Task Name, and Duration. The tasks are organized into three apartment groups (ABC-B, ABC-C, ABC-D).

1- Select Resource on Ribbon menu

2. Select Leveling Options

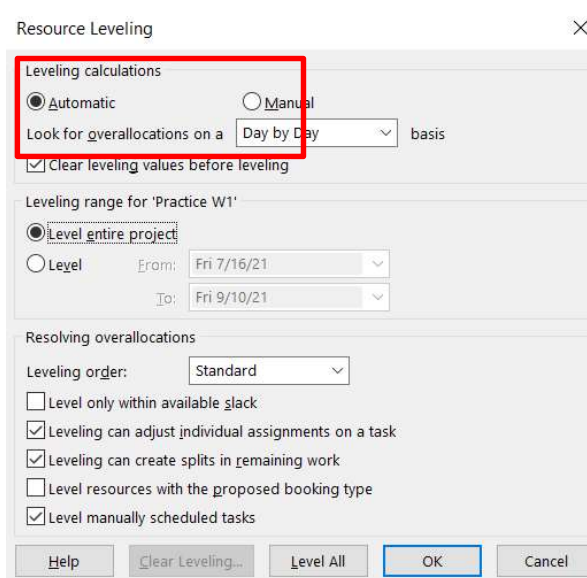
3. Select the resources and then check Automatic Leveling calculations



# Leverage Resource Usage

## Automatic Leveling

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



Resource Leveling

Leveling calculations

Automatic  Manual

Look for overallocations on a **Day by Day** basis

Clear leveling values before leveling

Leveling range for 'Practice W1'

Level entire project

Level From: Fri 7/16/21 To: Fri 9/10/21

Resolving overallocations

Leveling order: Standard

Level only within available slack

Leveling can adjust individual assignments on a task

Leveling can create splits in remaining work

Level resources with the proposed booking type

Level manually scheduled tasks

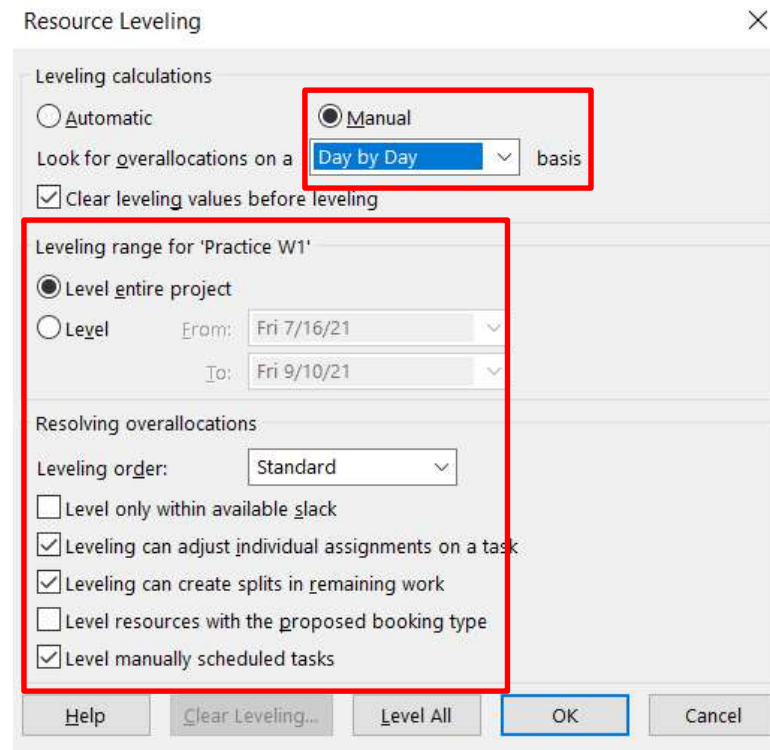
Help Clear Leveling... Level All OK Cancel



# Leverage Resource Usage

## Manual Leveling

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



Resource Leveling

Leveling calculations

Automatic  Manual

Look for overallocations on a **Day by Day** basis

Clear leveling values before leveling

Leveling range for 'Practice W1'

Level entire project

Level From: Fri 7/16/21 To: Fri 9/10/21

Resolving overallocations

Leveling order: Standard

Level only within available slack

Leveling can adjust individual assignments on a task

Leveling can create splits in remaining work

Level resources with the proposed booking type

Level manually scheduled tasks

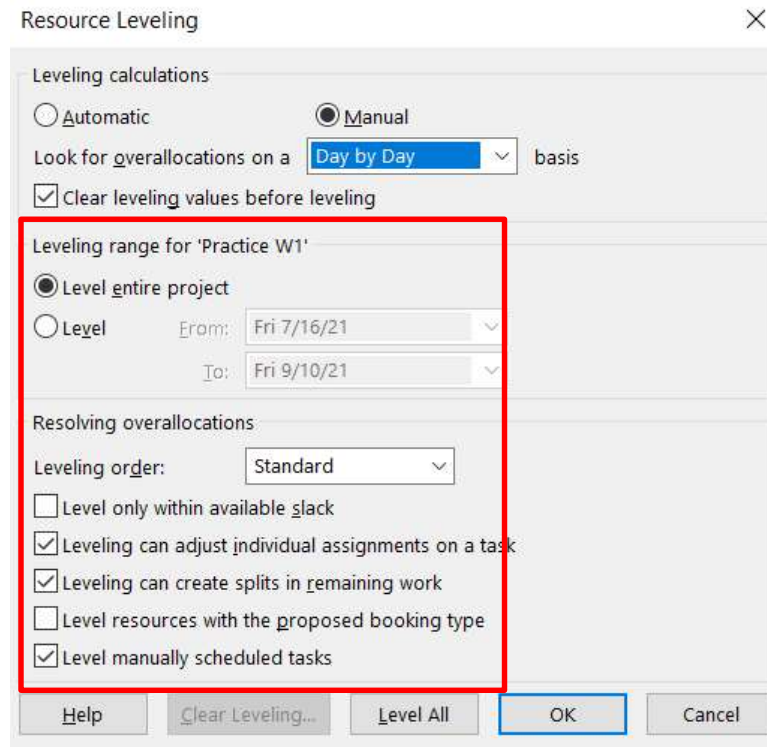
Help Clear Leveling... Level All OK Cancel



# Leverage Resource Usage

## Leveling Parameters

You can select from drop list the leveling order by Standard, Id only, priority standard



Resource Leveling

Leveling calculations

Automatic  Manual

Look for overallocations on a **Day by Day** basis

Clear leveling values before leveling

Leveling range for 'Practice W1'

Level entire project

Level From: Fri 7/16/21 To: Fri 9/10/21

Resolving overallocations

Leveling order: Standard

Level only within available slack

Leveling can adjust individual assignments on a task

Leveling can create splits in remaining work

Level resources with the proposed booking type

Level manually scheduled tasks

Help Clear Leveling... Level All OK Cancel

# Leverage Parameters

## Leveling order

- Identifier only (ID only): Of the tasks in conflict, the one with the lowest ID number is scheduled as the first task, the next is rescheduled later.
- Standard: The longest duration is scheduled first.
- Priority, standard: They are scheduled according to to the priority of the tasks. If the task has the same priority, the one with longest duration is scheduled first.

## Leveling Parameters

Redistribution can create division in the remaining work: If this option is selected, if any task needs to be rescheduled and has already started, it allows to divide the execution of the remaining work.

Level All: Selecting this button executes the redistribution of all overallocated tasks.

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

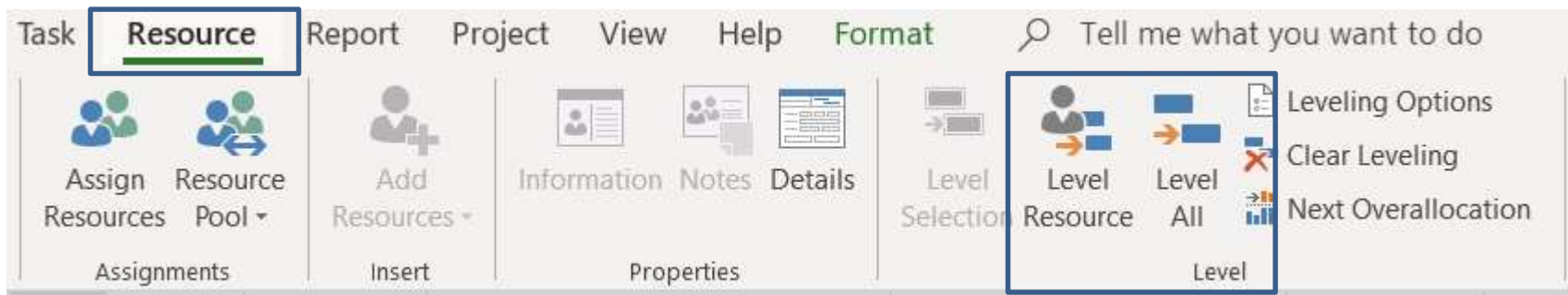


# Leverage Resource Usage

## Other Options on the Resource Tab

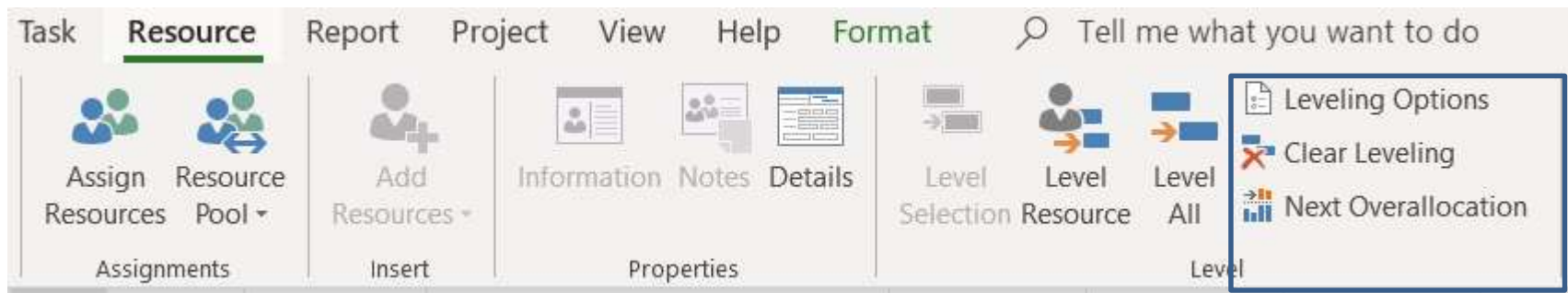
Level All: Level all selected tasks

Level resources: Level the tasks for the selected resources



Clear Leveling: Deletes any previously added redistribution settings.

Next over-allocation: It leads to the next task line where there is over-allocation of resources.







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