

**Technical Whitepaper** 

# Managing physical grouping of infrastructure devices in OpenManage Enterprise Power Manager

#### Abstract

This white paper provides guidance to group devices in a manner that reflects their physical organization in the data center.

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## Revisions

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# Acknowledgments

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# Table of contents

Re	vision	S	2
Ac	knowle	edgments	2
Та	ble of	contents	3
Ac	ronym	ns	5
Ex	ecutive	e summary	6
1	Crea	ating physical groups	7
	1.1	Supported physical group hierarchies	7
	1.2	Physical group hierarchy attributes	7
	1.3	Physical group hierarchy menu	8
	1.4	Creating datacenter physical group	9
	1.5	Creating Room physical group	9
	1.6	Creating Aisle physical group	10
	1.7	Creating Rack physical group	11
2	Editir	ng physical groups	12
3	Addi	ng devices in physical groups	14
	3.1	Adding a discovered server or chassis in a rack	15
	3.2	Adding a discovered storage, network, or non-Dell device in a rack	16
	3.2.1	1 Specifying device unit size and estimated power	16
	3.2.2	2 Adding device to a rack	18
	3.3	Adding an unmonitored device in a rack	19
	3.3.1	1 Creating unmonitored devices	20
	3.3.2	2 Viewing unmonitored devices	21
	3.3.3	3 Editing unmonitored devices	22
	3.3.4	Deleting unmonitored devices	23
	3.3.5	5 Adding unmonitored device to a rack	23
	3.4	Associating a discovered PDU with a rack	25
4	Crea	ating physical group through CSV file	28
	4.1	Sample CSV File	28
	4.2	Importing physical hierarchy from CSV file	29
5	Reor	rganizing devices in physical groups	30
	5.1	Moving devices within a rack	30
	5.2	Moving devices across racks	31
6	Rem	oving devices from physical groups	33
	6.1	Removing a device from a rack	33
	6.2	Disassociating a PDU from a rack	34
7	Visua	alizing Headroom and Underutilized Racks	35
	7.1	Visualizing power and space headroom in Group Details	35

	7.2	Visualizing power and space headroom in overview page	35
	7.3	Visualizing top 10 underutilized racks for power	36
	7.4	Visualizing top 10 underutilized racks for space	36
8	Visua	alizing racks of physical groups	38
9	Delet	ting physical groups	40
10	10 Physical group reports		41
	10.1	Physical group report for space headroom	41
	10.2	Physical group report for power usage	41
11	Conc	lusion	43
12	Tech	nical support and resources	44
	12.1	Related resources	44

# Acronyms

Acronyms	Expansion
OME	Open Manage Enterprise
PMP	Power Manager Plugin
ОМЕРМ	Open Manage Enterprise Power Manager
iDRAC	Integrated Dell Remote Access Controller
СМС	Chassis Management Controller
MSM	Modular System Management
МСМ	Multi Chassis Management
ММ	Management Module
REST	REpresentational State Transfer
GUI	Graphical User Interface
EPR	Emergency Power Reduction
PDU	Power Distribution Unit
API	Application Programming Interface
CSV	Comma-separated values

# **Executive summary**

Use this white paper to organize devices in the console that represent their physical placement in the data center. It also covers the associated benefits of physically grouping the devices in OpenManage Enterprise console and Power Manager plugin.

# 1 Creating physical groups

This section explains how various data center hierarchies can be created in the form of device groups in OpenManage Enterprise where Power Manager plugin is installed. It details out importance of a hierarchy, guidelines for an acceptable hierarchy, and various types of physical groups that can be created using the hierarchy.

### 1.1 Supported physical group hierarchies

There are certain constraints the physical hierarchy must adhere to.

When selecting the **Group Hierarchy** and **Parent Group** fields, ensure that you use the following hierarchy.

Parent Group	Group Hierarchy
Data Center	Room, Aisle, Rack
Room	Aisle, Rack
Aisle	Rack
Rack	NA

 Table 1
 Deployment and Configuration guide definition

The following table depicts the supported creation and movements of physical groups within the physical hierarchy group.

Table Z Thysical groups	Table 2	2	Physical	groups
-------------------------	---------	---	----------	--------

Group type	Data Center	Room	Aisle	Rack
Data Center	No	No	No	No
Room	Yes	No	No	No
Aisle	Yes	Yes	No	No
Rack	Yes	Yes	Yes	No

### 1.2 Physical group hierarchy attributes

The following table provides a list of attribute/field names for creating a physical group along with a brief description about each field, if it is a mandatory field, and the supported inputs for that field.

Field	Description	Mandatory	Value Range
Name	Provide a unique name for the physical group.	Yes	Combination of characters, special characters, and numbers
			Limit: 1–255 characters
Description	Provide brief information about the physical group.	No	Combination of characters, special characters, and numbers
			Limit: 0–255 characters

 Table 3
 Physical groups hierarchy attributes

Group Hierarchy	Defines the category under <b>Parent Group</b>	Yes	<ul> <li>Data Center</li> <li>Room</li> <li>Aisle</li> <li>Rack</li> </ul>
Parent Group	Represents the high- level hierarchy for the physical group	Yes	<ul><li>Physical Hierarchy</li><li>Previously created Physical Groups</li></ul>
Power Capacity (W)	Provide the maximum defined power consumption of the physical group.	Yes, only for the <b>Rack</b> group. Optional for data center, room, and aisle groups.	Recommended limit: 1–629365631
Space Capacity (U- SIZE)	Provide the rack capacity for rack management purpose. <b>Note:</b> This option is only applicable for Racks.	Yes	Recommended limit: 1U – 80U

**Note**: If you are logging in as a Device Manager, only the device groups and devices that are in your scope are available for viewing and management. For example, if you are logging in as a Device Manager DM1 user, you can view only the devices and groups that are assigned to a Device Manager DM1 user.

### 1.3 Physical group hierarchy menu

- 1. Log in to Dell EMC Open Manage Enterprise and navigate to **Devices** page.
- 2. On the **Devices** page, in the left pane, expand the **PLUGIN GROUPS** section.
- 3. In the **Physical Hierarchy** section, click more options, and then click **Create New Physical Group**.
- 4. Each physical group and their siblings in a physical group hierarchy are identified by a unique name.







### 1.4 Creating datacenter physical group

The Datacenter type physical group represents the entire data center. If you plan to manage multiple datacenters in a single console, then ensure that you create multiple data center physical groups.

1. Click **PLUGIN GROUPS > Physical Hierarchy >Create New Physical Group** option to launch physical group creation wizard to provide the physical group's information.

Create Physical Group Wizard Provide the physical group information	0 X
Name	Data Center - India
Description	Data Center India
	(Maximum characters: 255) You have 238 characters left.
Parent Group	Physical Hierarchy -
Group Hierarchy	Data Center 🗸
Power Capacity (W)	100000 🔶
Power Capacity (BTU/Hr)	341000

Figure 2 Create New Physical Group Wizard – Data Center

- 2. Provide **Name** and **Description** for the group.
- 3. Each **physical group** and their siblings in a physical group hierarchy are identified by a **unique** name.

Finish Cancel

- 4. Select the Group Hierarchy as Data Center and Parent Group with the defined power capacity.
- 5. Provide the **Power Capacity (W)** as maximum defined power consumption of the physical group.
- 6. Power Capacity (BTU/Hr) is calculated and displayed based on the Power Capacity (W).
- 7. Click Finish. The Datacenter physical group is created successfully.

The API to create a physical group is: <u>https://<IP>/api/GroupService/Actions/GroupService.CreateGroup</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

### 1.5 Creating Room physical group

The Room type physical group represents sections inside a data center. Use this group to represent a room or a floor which is physically separated from its peers.

1. Click **PLUGIN GROUPS > Physical Hierarchy > Data Center >Create New Physical Group** option to launch Physical Group creation wizard to provide the physical group's information.

#### Creating physical groups

Create Physical Group Wizard Provide the physical group information		0 ×
Name	Room 01	
Description	Description	
	(Maximum characters: 255) You have 255 characters left.	
Parent Group	Data Center - India 🗸	
Group Hierarchy	Room	
Power Capacity (W)	100000	
Power Capacity (BTU/Hr)	341000	

Figure 3 Create New Physical Group Wizard – Room

- 2. Provide Name and Description for the Room.
- 3. Select the **Group Hierarchy** as **Room** and **Parent group** as DC or default with the defined power capacity.
- 4. Provide the **Power Capacity (W)** as maximum defined power consumption of the physical group.
- 5. Power Capacity (BTU/Hr) will calculated and displayed based on the Power Capacity (W).
- 6. Click Finish. The Room physical group is created successfully.

The API to create a physical group is: <u>https://<IP>/api/GroupService/Actions/GroupService.CreateGroup</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

### 1.6 Creating Aisle physical group

The Aisle type physical group represents an aisle or a row of racks. You can have multiple aisles based on the actual layout of the racks in a data center.

 Click PLUGIN GROUPS > Physical Hierarchy > Data Center >Room >Create New Physical Group option to launch Physical Group creation wizard to provide the physical group's information.

Create Physical Group Wizard Provide the physical group information		0 X
Name	Aisle 01	
Description	Description	
	(Maximum characters: 255)	
	You have 255 characters left.	
Parent Group	Room 01 ·	
Group Hierarchy	Aisle 🗸	
Power Capacity (W)	100000	
Power Capacity (BTU/Hr)	341000	

Finish Cancel

Finish Cancel

Figure 4 Create New Physical Group Wizard - Aisle

- 2. Provide Name and Description for the Aisle.
- 3. Select the **Group Hierarchy** as **Aisle** and **Parent Group** as room/DC/Default with the defined power capacity.
- 4. Provide the Power Capacity (W) as maximum defined power consumption of the physical group.
- 5. Power Capacity (BTU/Hr) will calculated and displayed based on the Power Capacity (W).

6. Click Finish. The Aisle physical group is created successfully.

The API to create a physical group is: <u>https://<IP>/api/GroupService/Actions/GroupService.CreateGroup</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

### 1.7 Creating Rack physical group

The Rack type physical group represents a single enclosure that accommodates multiple infrastructure devices. A rack has a fixed unit size, which cannot change unless it is physically replaced in the data center. Any device can only be placed inside a rack, and hence, creating a rack group is mandatory to organize devices in a physical hierarchical structure.

 Click PLUGIN GROUPS > Physical Hierarchy > Data Center >Room > Aisle >Create New Physical Group option to launch Physical Group creation wizard to provide the physical group's information.

Create Physical Group Wizard Provide the physical group information		0 X
Name	Rack 01	
Description	Description	
	(Maximum characters: 255) You have 255 characters left.	
Parent Group	Aisle 01 •	
Group Hierarchy	Rack 🗸	
Power Capacity (W)	10000	
Power Capacity (BTU/Hr)	34100	
Space Capacity (U-SIZE)	21	
	Finish Ca	ncel

Figure 5 Create New Physical Group Wizard - Rack

- 2. Provide Name and Description for the Rack.
- 3. Select the Group Hierarchy as Rack and Parent Group as Room/Aisle/DC/default.
- 4. Provide the **Power Capacity (W)** as maximum defined power consumption of the physical group.
- 5. Power Capacity (BTU/Hr) will calculated and displayed based on the Power Capacity (W).
- 6. Provide Space Capacity (U-SIZE) for rack management purpose.
- 7. Click Finish. The Rack physical group is created successfully.

The API to create a physical group is: <u>https://<IP>/api/GroupService/Actions/GroupService.CreateGroup</u>

# 2 Editing physical groups

This section explains about modifying the properties of a physical group after it is created. It also helps to revise the parameters that are crucial for various computations.

1. Click **PLUGIN GROUPS > Physical Hierarchy > Rack >Edit Group** option to launch Physical Group Edit wizard to provide the physical group's information.

#### PLUGIN GROUPS

- Physical Hierarchy
  - 👻 🛔 Data Center India
    - 🔹 👗 Room 01
      - 🗸 🔹 🛔 Aisle 01



#### Figure 6 Option for Edit Physical Group

Edit Physical Group Provide the physical group information		0 ×
Name	Rack 01	
Description	Description	
	Dávimum ohonentare 7551	
	You have 255 characters left.	
Parent Group	Aisle 01 -	
Group Hierarchy	Rack 🗸	
Power Capacity (W)	10000	
Power Capacity (BTU/Hr)	34100	
Space Capacity (U-SIZE)	21	
	Finish	Cancel

Figure 7 Edit Physical Group

- 2. Edit Name and Description for the Rack and Edit Parent Group for changing the hierarchy.
- 3. Edit **Power Capacity (W)** as maximum defined power consumption of the physical group.
- 4. **Power Capacity in (BTU/Hr)** will be calculated and displayed based on the Power Capacity (W) value entered.
- 5. Edit **Space Capacity (U-SIZE)** for rack management purpose.
- 6. Click Finish. The Rack physical group is edited successfully.

The API to edit a physical group is: https://<IP>/api/GroupService/Actions/GroupService.UpdateGroup

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

Note: You cannot edit the Group Hierarchy after creating a physical group.

**Note**: The power capacity for a group is the sum of power consumption of the devices within the group, and a suggestion for the total group power capacity is displayed below the Power Capacity field.

**Note**: If a device is already placed, then the Rack U size cannot be decreased below the highest occupied rack slot.

# 3 Adding devices in physical groups

This section explains about organizing the devices in Rack physical groups. It details out workflows that are associated with adding different types of devices that are supported in OpenManage Enterprise.

- Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to open Manage Rack.
- PLUGIN GROUPS
  - Physical Hierarchy
    - 🔹 🔹 Data Center India
      - r 🔒 Room 01
        - Aisle 01

          Rack 01

          Create New Physical Group
          Edit Group
          Manage Rack
          Delete Group
          Attributes

Figure 8 Physical group hierarchy

#### Use the Manage Rack wizard to:

- Add devices to specific rack slots
- Rearrange devices within a rack
- Remove devices from a rack
- Move device to another rack
- Associate supported devices with a rack

Rack Details	Associated Devices			
Add to Rack S	Slot Rearrange Rack Move Device To Another Rack Remove Device	e(s) From Rack		Space Capacity: 0 of 21 U is used
OT NAME	IDENTIFIER	TYPE	HOSTNAME	MODEL
21				
20				
19				
18				
17				
16				
15				
14				
13				
12				
11				
10				
9				
8				

#### Figure 9 Manage rack

The API to manage a rack is: <u>https://<IP>/api/PowerService/PhysicalGroups/GroupDetails<id>/Devices</u>

Consider the following before managing the devices in a physical group:

- Add the size of the unmonitored device that you plan to add to a physical group.
- Emergency Power Reduction (EPR) is not enabled on the group.
- The rack slot option is available for the following types of devices:
  - Chassis
  - Rack servers
  - Storage
  - Network switches
  - Unmonitored devices.
- Physical groups are automatically added to Power Manager and devices in the physical group are also added as individual to working set, if they have the valid licenses.

### 3.1 Adding a discovered server or chassis in a rack

A discovered Dell server or chassis can be added to a rack without any additional steps. After the devices are added to physical groups, they are part of Power Manager's monitoring list. Hence, it is not recommended to update unit size of these devices as the same is fetched from the device during discovery process. Power Manager automatically starts monitoring various metrics from the ones meeting the criteria that are added to a rack.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack
- 2. To add devices discovered in OpenManage Enterprise, click **Add to Rack Slot**. The **Add Device(s) To Rack Slots** wizard is displayed.

Select Device(s)	~ ~	∽ <b>▼</b> Adva	nced F	ilters	Clear All i	Filters					
	-	Health	State			Power State	Connection State	Name	Size of Device (U)	Identifier	
		All			~	All 🗸	All 🗸				
		Model				Туре	Managed State				
		All			~	Compute ~	All 🗸				
		- 2	¥	+	NAME		SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGE
		<b>2 8</b>	¢	~			2		PowerEdge R720	Compute	Monit <sup>*</sup>
		<b>2</b> 8	Φ	~			2		PowerEdge R740	Compute	Mana
		<b>2 8</b>	¢	~			2		PowerEdge R740	Compute	Manai
		2 3	Q				3		PowerEdge R940	Compute	Manas
		00	Ċ	~			2		PowerEdge R740	Compute	Mana
		0 8	Q	~			2		PowerEdge R740	Compute	Mana
		00	Φ	~	1		5		PowerEdge T620	Compute	Mana
		00	Ċ	~			2		unknown	Compute	Manas
		00	Φ	~			1		PowerEdge R630	Compute	Mana
		00	Ф	~			2		PowerEdge R730xd	Compute	Monit
		□ 🛛	Φ	~			1		PowerEdge R320	Compute	Mana
		00	Ф	~	AX740	XDAZOSN0.wacdev.com	2		AX-740xd	Compute	Mana
		□ 8	Ф	~	AX740	XDAZOSN1.wacdev.com	2		AX-740xd	Compute	Mana
		-	*				-				···· • *
		68 item(s)	found.	Displa	aying iten	ns 1 - 20.				N 🔍 Page 1	of 4 🕨 🕅

3. In the Select Device(s) section, select the devices and click Next.

Figure 10 Add to Rack Slot – Select Device(s)

The API to view the rack capable devices is: https://<IP>/api/PowerService/PhysicalGroups/CapableDevices

4. In **Add device(s) to rack slots**, by default, the devices are automatically added in the available slots in the rack. To add a device at a specific slot, select the Auto drop-down menu and select the required slot.

Add device(s) to rack slots Power Manager automatically places the devices in th	e empty slot:	s or you can select a	rack slot for each device and click Fin	ish.				0 ×
Select Device(s)	~ .	SLOT	NAME	SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGEI
Add device(s) to rack slots	<b>~</b> (	Auto 🗸		2		PowerEdge R720	Compute	Monit *
	•	Auto 🗸	1	2		PowerEdge R740	Compute	Mana
	•	Auto 🗸		2		PowerEdge R740	Compute	Mana
	•	Ə Auto 🗸		3		PowerEdge R940	Compute	Mana
	4	C						•
	4	item(s) found. Displa	ying items 1 - 4.					
Step 2 of 2							Previous Finish	Cancel

Figure 11 Add to Rack Slot - Add device(s) to rack slot

5. Click **Finish**. The devices that are added are graphically displayed on the **Manage Rack** page.

The API to add devices to the rack is: <u>https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

Manag Add dev	je Rack Vices to specific rack slots, rearrange devices within a rack, remove devices from a rack, and associate supported devices with a rack.								
Rack	Details	Associated Devices							
Add to	o Rack Slot	Rearrange Rack         Move Device To Another Rack         Remo	ve Device(s) From Rack		Space Capacity: 9 of 21 U is used				
SLOT	NAME	IDENTIFIER	TYPE	HOSTNAME	MODEL				
13									
12									
11									
10									
9			Compute	IDRAC-CFCF0C3	PowerEdge R740				
7 6			Compute	iDRAC-BFCF0C3	PowerEdge R740				
5			Compute	idrac~1W43F02	PowerEdge R720				
3 2 1			Compute		PowerEdge R940				

Figure 12 Manage Rack

# 3.2 Adding a discovered storage, network, or non-Dell device in a rack

Add the unit size and estimated power consumption for each discovered device (storage, network, or non-Dell device) before adding them to a rack. You can get the unit size and power consumption estimate from the device specification or from a manual inspection. This step ensures that the device is occupying the right amount of space when added to a rack and contributes to the rack power and space headroom calculations.

Close

#### 3.2.1 Specifying device unit size and estimated power

This section explains about how to specify unit size and estimated maximum power consumption of a device.

- 1. Select one device from the list.
- 2. Right side Device Details for Power Manager panel.
- 3. Click Update Details to update the device details.

OpenManage Enterprise		Search Everything	Q Ø17 ⊭553 🗟0 Ladmin Ø 🌩
🐂 Home 📲 Devices 🎐 Configuration 🧹 🏲 Alerts 🗸 📼 Monitor 🗸 🔅	Application Settings 🗸 🛛 🛡 Plugins 🗸		
	Devices ot group for all groups	55 Ara 8 7 75 Normal 0 161 Infe	
Group Ac     Group Ac	tions • Discovery • Inventory • Refresh Health •	More Actions 👻	
L Storage Devices     V ▼ Advar     Health S     All	nced Filters Clear All Filters State Power State Connection State Name	IP Address Identifier Model Ty	pe Chassis Name Slot Name Managed State
Query Groups	Image: the second se	R MODEL TYPE CH PawerEdge FN 4105 Network Switch	ASSIS NAME
✓ O ≜ PLUGIN GROUPS     ✓ O ≜ Physical Hierarchy     ✓ O ▲ Physical Hierarchy	O         ✓         FNI0M2           O         ✓         0S10         6HMCN	PowerEdge FN 410S Network Switch X2 MX5108NON Network Switch	Steve Detaile
	O         ✓ OS10         6HK7N0           O         ✓         399RG5	2 MX5108NON Network Switch 2 PowerEdge M I/O Ag Network Switch	Quick Actions: Launch SNMP Console
			Device Type: Network Switch Identifier:
			Model: MX5108NON
			Online: Online
(<	und, O item(s) selected. Displaying items 1 - S.		Device Details for Power Manager     Update Details     Size of Device (U):

Figure 13 Device Details for Power Manager

The API to view device details is: https://<IP>/api/PowerService/DeviceDetails

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

- 4. In the Device Details page, provide the Size of Device (U) and Estimated Max Power (W).
- 5. The **Estimated Max Power (BTU/Hr)** is calculated and displayed based on the entered Max Power.
- 6. Click Apply.

Device Details for Power Manager - OS10		0 ×
Size of Device (U)	2	
Estimated Max Power (W)	300	
Estimated Max Power (BTU/Hr)	1023	
		Apply Cancel
igure 14 Update device detai	s for Power Manager	

The API to update the device details is: https://<IP>/api/PowerService/Actions/PowerService.UpdateDeviceDetails

### 3.2.2 Adding device to a rack

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack.
- 2. To add devices discovered in OpenManage Enterprise, click **Add to Rack Slot**. The **Add Device(s) To Rack Slots** wizard is displayed.
- 3. In the Select Device(s) section, select the devices and click Next.

Select Device(s) While adding the devices, Power Manager enables the required required settings on hypervisor, and adds them to Virtual Mac	ed setting hines pa	gs on s age.	ervers i	unning iD	RAC	version 4.40.10.0 or above. A	nd, if the associated hypervisor	r of the server is also dis	covered	in OpenManage Enterpri:	:e, Power Manager en:	⊘ X ables the
Select Device(s)	~ 7	Advar	iced Filt	ers Clear	All Fi	lters						
Add device(s) to rack slots	H	lealth S All	tate			Power State	Connection State	Name		Size of Device (U)	Identifier	
	N	All		v		Type Network Switch 🗸	Managed State					
		12	¥	+ NAP	ME		SIZE OF DEVICE (U)	IDENTIFIER	MODE	L	ТҮРЕ	MANAGE
			Q	~ 0S	10		1		MX51	08NON	Network Switch	Monite <sup>*</sup>
	4											Ť
	1 ite	m(s) fo	und. Di:	splaying it	ems	1 - 1.						
	Avai	lable Ra	ack Spa	ce (U): 10							1 Device(s)	) selected. 🗰
Step 1 of 2											Next	Cancel

Figure 15 Add to Rack Slot – Select Device(s)

The API to view rack capable devices is: <u>https://<IP>/api/PowerService/PhysicalGroups/CapableDevices</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

4. In **Add device(s) to rack slots**, by default, the devices are automatically added in the available slots in the rack. To add a device at a specific slot, select the **Auto** drop-down menu and select the required slot.

Add device(s) to rack slots Power Manager automatically places the devices in the emp	oty slots or you can select a rack slot for each device	and click Finish.				0 ×
Select Device(s)	SLOT NAME	SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGEI
Add device(s) to rack slots	Auto V OS10	1		MX5108NON	Network Switch	Monit 🗘
	<li>1 item(s) found. Displaying items 1 - 1.</li>					•
Step 2 of 2					Previous Finish	Cancel

Figure 16 Add to Rack Slot – Add device(s) to rack slot

5. Click Finish. The devices that are added are graphically displayed on the Manage Rack page.

The API to add devices to rack is: <a href="https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices">https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices</a>

Mana Add de	e RBCK vices to specific rack slots, rearrange devices within a rack, remove devices from a rack, and associate supported devices with a rack.							
Rad	k Details Associated Devices							
Add	to Rack Slot Rearrange Rack	Move Device To Another Rack Remo	ve Device(s) From Rack		Space Capacity: 11 of 21 U is us	ed		
SLOT	NAME	IDENTIFIER	ТҮРЕ	HOSTNAME	MODEL			
21								
20								
19								
18								
17								
16								
15								
14								
13								
12								
11	OS10	6HMCNX2	Network Switch	OS10	MX5108NON			
10	AX740XDA7OSN0 wacdev	3I G7033	Compute	AX740XDAZOSN0 wacdev	AX-740xd			
9								

Figure 17 Manage rack -Non dell device

#### 3.3 Adding an unmonitored device in a rack

If there are infrastructure devices that cannot be discovered in OpenManage Enterprise, add the devices manually in Power Manager to represent the physical structure. After adding the unmonitored device details, you can add the device to a rack. This results in rather accurate space and power headroom calculations and allows basic visualization of the device in the console.

Note: The unmonitored devices are not monitored though Power Manager.

- 1. Launch OpenManage Enterprise, and then click Plugins > Power Management > Power Manager Devices. The Power Manager Devices tab is displayed.
- 2. Click UNMONITORED > Unmonitored Devices. All the Unmonitored Devices details are listed on the tab.

The following table has all the field names of the Unmonitored Devices, their description, if it is a mandatory field and the value range:

Field	Description	Mandatory	Value Range
Device Name	Provide a unique device name.	Yes	Combination of characters, special characters, and numbers Limit: 1–255 characters
Description	Provide brief information about the device you are adding.	No	Combination of characters, special characters, and numbers Limit: 0–255 characters
Hostname	Provide a hostname.	No	Combination of characters, special characters, and numbers. Limit: 1-255 characters

Figure 18 Unmonitored Device attributes

Close

Identifier	Provide a unique identifier for the device.	Yes	Combination of characters, special characters, and numbers. Limit: 1-255 characters
Model	Provide the model name.	No	Combination of characters, special characters, and numbers. Limit: 0-255 characters
Size of Device (U)	Provide the space occupied on the rack.	Yes	Numbers only Limit: 1-80
Estimated Max Power (W)	Provide the defined maximum power that the device can consume.	No	Numbers only Limit: 1–629365631

#### 3.3.1 Creating unmonitored devices

This section is about how to create an unmonitored device.

 Launch OpenManage Enterprise, and then click Plugins > Power Management > Power Manager Devices > UNMONITORED > Unmonitored Devices. The Unmonitored Devices tab is displayed.

OpenManage Enterprise			🖸 14 🔰 90 🗟 0 💄 admin 🕜 🌩
🕈 Home 🔳 Devices 🔗 Conf	guration 🤍 🔰 Alerts 🗸 🖙 Monitor 🗸 🌩 Application Settings 🗸 🛛 🤻 Plugins 🗸		
Power Manager			
Overview Power Manager Dev	ces Policies Emergency Power Reduction Rack View Settings About		
	Unmonitored Devices		
Static Groups	Add Edit Delete Refresh		
Physical Groups	> Y Advanced Filters		
Individual Devices	NAME DESCRIPTION HOSTNAME IDENTIFIER MODEL	SIZE OF DEVICE (U) ESTIMATED MAX POWER	W) LOCATION RACK SLOT
All Monitored Devices	0 item(s) found, 0 item(s) selected. Displaying items 0 - 0.		
▼ UNMONITORED			
Unmonitored Devices			
VIRTUAL MACHINES			

Figure 19 Unmonitored device

2. To add the unmonitored devices, click Add. The Add Unmonitored Devices wizard is displayed.

Add Unmonitored Device Provide realistic values of the device to view accurate rack utilization details.

Device Name	Unmonitored Device 01
Description	
Hostname	
Identifier	XXXXXXX
Model	
Size of Device (U)	2
Estimated Max Power (W)	300
Estimated Max Power (BTU/Hr)	1023

Figure 20 Add Unmonitored Device details

- 3. Provide a unique **Device Name** and **Description** is brief information about the device you are adding.
- 4. Provide a hostname and a unique identifier for the device.
- 5. Provide the model name and space that is occupied on the rack.
- 6. Provide the defined maximum power that the device can consume.
- 7. Click **Finish**. Unmonitored device added successfully.

The API to add unmonitored devices that is not supported in OpenManage Enterprise: https://<IP>/api/PowerService/UserDefinedEntities/Actions/UserDefinedEntities.Create

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

#### 3.3.2 Viewing unmonitored devices

This section explains about how to view the created unmonitored devices.

- 1. Launch OpenManage Enterprise, and then click Plugins > Power Management > Power Manager Devices. The Power Manager Devices tab is displayed.
- Click UNMONITORED > Unmonitored Devices. All the unmonitored devices details are listed on the Unmonitored Devices tab.

OpenManage Enterprise						Search Everything	٩	<b>C</b> 17	F 655	B 0	🚨 admin
🕈 Home 🔳 Devices 🔗 Confi	guration 🧹 🔰 Alerts 🗸 📼 Mon	itor 🗸 🛛 🍄 Application Se	ttings ↓								
🕈 Power Manager											
Overview Power Manager Devi	ices Policies Emergency Pov	wer Reduction Rack V	iew Settings About								
	Unmonitored Devices										
Static Groups	Add Edit Dele	te Refresh									
Physical Groups	➤ ▼ Advanced Filters										
Individual Devices	NAME	DESCRIPTION	HOSTNAME	IDENTIFIER	MODEL	SIZE OF DEVICE (U)	ESTIMATED MAX POW	ER (W) LOC	ATION		RACK SLOT
All Monitored Devices	Unmonitored Device 01			XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		2	300				
	1 item(s) found, 0 item(s) selected. Di	splaying items 1 - 1.									
Unmonitored Devices											
VIRTUAL MACHINES											
Figure 21 Lis	st Unmonitore	d Device o	details								

The API to view all the unmonitored devices: <u>https://<IP>/api/PowerService/UserDefinedEntities/Devices</u>

0 X

Finish

Cancel

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

**Note**: After adding the unmonitored devices in a physical group under a rack, the location and rack slot columns are populated for this device.

#### 3.3.3 Editing unmonitored devices

This section is about how to edit properties of an unmonitored device.

- Launch OpenManage Enterprise, and then click Plugins > Power Management > Power Manager Devices > UNMONITORED > Unmonitored Devices. The Unmonitored Devices tab is displayed.
- 2. Select a device and click Edit.

OpenManage Enterprise							Search Everything		٩	<b>C</b> 17	<b>▶</b> 655	₽ 0	💄 admin
🕈 Home 🔳 Devices 🗇 Confi	guration 🧹 🔰 Alerts 🗸 🖂	E Monitor 🗸 👘 Application S	Settings 🗸 🛛 🤴 Plugins 🤇	/									
Power Manager													
Overview Power Manager Devi	ces Policies Emergen	cy Power Reduction Rack	View Settings A	bout									
▼ MONITORED	Unmonitored Devices	65											
Static Groups	Add Edit	Delete Refresh											
Physical Groups	> T Advanced Filters												
Individual Devices	NAME	DESCRIPTION	HOSTNAME	IDENTIFIER	MODEL		SIZE OF DEVICE (U)	ESTIMATED M	IAX POWER (	W) LOCA	TION		RACK SLOT
All Monitored Devices	Unmonitored Device 0'	1		X00000X			2	300					
▼ UNMONITORED	1 item(s) found, 1 item(s) select	ted. Displaying items 1 - 1.											
Unmonitored Devices													
VIRTUAL MACHINES													

0 X

#### Figure 22Select Unmonitored Device

### Click Finish to update unmonitored device details. Edit Unmonitored Device Provide realistic values of the device to view accurate rack utilization details.

Device Name	Unmonitored Device 01	
escription		
ostname		
entifier	XXXXXXX	
odel		
ze of Device (U)	2	
stimated Max Power (W)	300	
stimated Max Power (BTU/Hr)	1023	
		Finish Cancel

#### Figure 23 Edit Unmonitored Device details

The API to edit unmonitored device details:

https://<IP>/api/PowerService/UserDefinedEntities/Actions/UserDefinedEntities.Update

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

**Note**: If a device is already placed in a rack, then you cannot increase the rack U size if there are no consecutive slots available in the rack.

#### 3.3.4 Deleting unmonitored devices

This section is about how to delete unmonitored devices and the result on the rack after deleting the device.

- Launch OpenManage Enterprise, and then click Plugins > Power Management > Power Manager Devices > UNMONITORED > Unmonitored Devices. The Unmonitored Devices tab is displayed.
- OpenManage Enterprise 🔒 admi Home 🔳 Devices 🗇 Configuration 🗸 🔰 Alerts 🗸 🖂 Monitor 🗸 🌣 Application Settings 🗸 🏺 Plugins 🗸 Power Manager Overview Power Manager Devices Policies Emergency Power Reduction Rack View Settings About Unmonitored Devices MONITORED Static Groups Add Edit Delete Refresh Advanced Filters

  DESCRIPTION Physical Groups HOSTNAME IDENTIFIER MODEL SIZE OF DEVICE (U) ESTIMATED MAX POWER (W) LOCATION RACK SLOT Individual Devices Unmonitored Device 01 XXXXXXXXX 300 All Monitored Devices 1 item(s) found, 1 item(s) selected. Displaying items 1 - 1. Unmonitored Devices VIRTUAL MACHINES
- 2. Select the devices and click Delete.

Figure 24 Unmonitored Device list – select the device for Delete

3. In the confirmation screen, click Yes.

Are you sure you want to delete the so devices?	elected unm	> onitored
	YES	NO

Figure 25 Delete Unmonitored Device – confirmation wizard.

The API to delete an unmonitored device:

https://<IP>/api/PowerService/UserDefinedEntities/Actions/UserDefinedEntities.Delete

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

#### 3.3.5 Adding unmonitored device to a rack

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack.
- 2. To add devices discovered in OpenManage Enterprise, click **Add to Rack Slot**. The **Add Device(s) To Rack Slots** wizard is displayed.
- 3. In the **Select Device(s)** section, select the **Type** as **Unmonitored**. It lists all the unmonitored devices.
- 4. Select the devices and click Next.

#### Adding devices in physical groups

Select Device(s) While adding the devices, Power Manager enables the required required settings on hypervisor, and adds them to Virtual Mach	d setti nines j	ngs on page.	servers	running	g iDRAC	version 4.40.10.0 o	· above. /	And, if the associated hypervis	or of the server is al	so discovered in OpenMana	ige Enterprise, Power Manager	⊘ X enables the
Select Device(s)	~	<b>▼</b> Adva	inced Fi	ilters Cle	ar All F	ilters						
Add device(s) to rack slots		Health	State			Power State		Connection State	Name	Size of Devic	e (U) Identifier	
		All			~	All	~	All 🗸				
		Model				Туре		Managed State				
		All			~	Unmonitored	~	All 🗸				
		1	¥	+ 1	NAME			SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGEI
		0	0	0	Jnmoni	tored Device 01		2	XXXXXXXXX		Unmonitored	Moniti 🕇
	4											*
	1 it	tern(s) f	ound. D	isplayin	g items	1 - 1.						
	Ava	ailable F	Rack Spi	ace (U):	8						1 Device	e(s) selected. 🏛
Step 1 of 2											Next	Cancel

Figure 26 Add to Rack Slot (Unmonitored devices)- Select Device(s)

The API to returns rack capable devices is: https://<IP>/api/PowerService/PhysicalGroups/CapableDevices

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

5. In **Add device(s) to rack slots**, by default, the devices are automatically added in the available slots in the rack. To add a device at a specific slot, select the **Auto** drop-down menu and select the required slot.

Add device(s) to rack slots Power Manager automatically places the devices in the empty	y slots or you can select a rack slot for each device and click Finish.					0 X
Select Device(s)	SLOT NAME	SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGEI
Add device(s) to rack slots	Auto      Unmonitored Device 01	2	XXXXXXXX		Unmonitored	Monit 🖕
	<ul> <li>1 item(s) found. Displaying items 1 - 1.</li> </ul>					•
Step 2 of 2					Previous Finish	Cancel

Figure 27 Add to Rack Slot (Unmonitored devices) – Add device(s) to rack slot

6. Click Finish. The devices that are added are graphically displayed on the Manage Rack page.

The API to add a device as a member to a physical group at the rack level: <a href="https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices">https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices</a>

Rac	k Details Associated Devices					
Add	o Rack Slot Rearrange Rack	Move Device To Another Rack	Remove Device(s) From Rack		Spac	ce Capacity: 13 of 21 U is used
SLOT	NAME	IDENTIFIER	TYPE	HOSTNAME	MODEL	
21						
20						
19						
18						
17						
16						
15						
14						
13	Unmonitored Device 0	******	Unmonitored			
12	of information bevice o		onnontored	Unmonitored		
11	OS10		Network Switch	OS10	MX5108NON	
10	AV740XD470SN0.usedeu		Čeme de	4X740VD4702N0	warden AV 740md	
9	AX740XDA203N0.Wabdev		Compute	AX/#0XDA203N0	Wacdev AX-740X0	

Figure 28 Manage rack – Unmonitored device

### 3.4 Associating a discovered PDU with a rack

A discovered rack Power Distribution Unit (PDU), or a power strip, can be associated with a rack. A rack can have more than one PDUs associated with it. Power-related metrics are automatically monitored from capable PDUs post association. This acts as an alternate source of power consumption data for the rack.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to Manage Rack.
- 2. For associating discovered PDU with the rack in OpenManage Enterprise, click **Associate Device** tab, and click **Associate to Rack**.

Manage Rack Add devices to specific rack slots, rearrange devices withi	n a rack, remove devices	from a rack, and associate sup	ported devices with a ra	ack.				Θ×
Rack Details Associated Devices								
Associate to Rack Remove Device(s)								
□ ₩ NAME	IDENTIFIER	MODEL	TYPE	POWER RATING	OUTLET COUNT	MANUFACTURER	HARDWARE REVIS	FIRMWARE VERSION
4								Þ
0 item(s) found, 0 item(s) selected. Displaying items 0 - 0.								
								Close



3. In the Select Device(s) section, select the devices and click Next.

unduk 🗸		dvanced i	liters clear All r	riters					
	Hea	lth State		Power State	Connection State	Name	Size of Device (U)	Identifier	
	A	di .	~	All ~	All ~				
	Mod	del		Туре	Managed State				
	A	di .	•	PDU V	All Y				
		2 ÿ	+ NAME		SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MAN
		<b>0</b>	~		N/A		MUU3EGM0-12P027-2C20A	PDU	Mon
		<b>0</b>	× 1		N/A	2	AP8659	PDU	Mor
									,

Figure 30 Associating PDUs to physical rack

The API to return rack capable devices: <u>https://<IP>/api/PowerService/PhysicalGroups/CapableDevices</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

#### 4. In the Associate device(s) with rack section, by default the slot is N/A.

Associate device(s) with rack Power Manager automatically places the devices in the empty slots or you can select a rack slot for each device and click Finish.							
Select Device(s)	SLOT NAME	SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGEI	
Associate device(s) with rack	N/A	N/A		MUU3EGM0-12P027-2C20A	PDU	Monit *	
	N/A	N/A		AP8659	PDU	Monit	
	٩					•	
	2 item(s) found. Displaying items 1 - 2.						
Step 2 of 2						0	

Figure 31 Associate Device(s) with rack

The API to add a device as a member to a physical group at the rack level: <a href="https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices">https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.AddMemberDevices</a>

- 5. Click Finish.
- 6. The devices that are added are graphically displayed on the **Manage Rack >Associative Devices** tab.

Manage Rack Add devices to specific rack slots, rearrange dev	ices within a rack, remove devices	s from a rack, and associate suppor	ted devices v	vith a rack.				0 ×
Rack Details Associated Devices								
Associate to Rack Remove Device(s)								
□ ₩ NAME	IDENTIFIER	MODEL	TYPE	POWER RATING	OUTLET COUNT	MANUFACTURER	HARDWARE REVIS	FIRMWARE VERSION
D 🔿 1		MUU3EGM0-12P027-2C20A	PDU	N/A	12	Vertiv	gmmb	5.6.1
D 0 1		AP8659	PDU	N/A	24		02	6.5.6
4								F
2 item(s) found, 0 item(s) selected. Displaying ite	rms 1 - 2.							

Figure 32 Associate Device(s) list

The API to return all the PDU devices that are associated to a specific rack: https://<IP>/api/PowerService/PhysicalGroups/GroupDetails<id>/AssociatedDevices

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

Note: Ensure that the PDU devices are discovered in OpenManage Enterprise.

Close

# 4 Creating physical group through CSV file

This section is about how to create a physical hierarchy by importing a pre-populated CSV file. Creating numerous groups and adding devices to the physical groups is a time-consuming process for an existing data center using the User Interface. Hence, it is helpful for automating the group creation process for a medium to large scale datacenters. You can replicate the data center structure in a CSV file and import this file in Power Manager to create the physical hierarchy and add the devices to the groups. Also, you can re-import the CSV file when the group is updated to reflect the latest datacenter structure.

Consider the following points before creating and importing the CSV file:

- Only Administrators can import the CSV files.
- OME or PMP can check that the devices mentioned in the .csv are prediscovered in OME.

Ensure that the physical group you are creating adheres to the hierarchy as follows:

Physical group	Supported hierarchies
Data Center	Room, Aisle, Rack
Room	Aisle, Rack
Aisle	Rack
Rack	NA

Table 4 Physical group supported hierarchies

- When creating a rack in a physical group, ensure that you provide the rack name, power capacity, and space capacity.
- Each physical group and their siblings in a physical group hierarchy are identified by a unique name.
- To add a device in a physical group:
  - Ensure that only one device details are entered in each row. A device is identified by a unique identifier. Because the identical devices are ignored while importing, and only the devices with unique identifiers are added in a rack slot.
  - To place the device in a particular slot, ensure that you provide the rack slot information.
- When you are considering multiple device allocations on the same physical group hierarchy, you can duplicate the fields. However, only the rack slot and device identifier are the unique fields.
- View details about the import job by selecting the Physical Group CSV Import Task job on the Jobs page. You can view the status about each row added in the file on the Execution Details page.

### 4.1 Sample CSV File

The following image is an example of the supported format of a CSV file:

	А	В	С	D	E	F	G	Н
1	DATACENTER	ROOM	AISLE	RACK	POWER CAPACITY	SPACE CAPACITY	SLOT	DEVICE IDENTIFIER
2	DC_ADC	ROOM1	AISLE1	RACK1	1500	21	1	C
3	DC_ADC	ROOM1	AISLE1	RACK2	2000	24	5	
4	DC_BDC	ROOM1	AISLE1	RACK1	1500	21	1	НС
5	DC_BDC	ROOM1	AISLE1	RACK2	2000	24	5	B

Figure 33 Sample CSV file format

The following table lists all the field names of the CSV file and their descriptions:

Table 5 Description of	
Column Name	Description
DATACENTER	Data center Name
ROOM	Room Name
AISLE	Aisle Name
RACK	Rack Name
POWER CAPACITY	Rack Power Capacity
SPACE CAPACITY	Rack Space Capacity
SLOT	Rack Slot Number
DEVICE IDENTIFIER	Device Identifier or Service Tag

Table 5 Description of the CSV columns

#### 4.2 Importing physical hierarchy from CSV file

1. Launch OpenManage Enterprise and click Plugins > Power Management > Power Manager Devices>Physical Groups. The Power Manager Devices tab is displayed.

PerManage Enterprise Search Everything O											
🕈 Home 🔳 Devices 🔗 Configuration 🗸 🚩 Alerts 🗸 🖂 Monitor 🗸 🏟 Application Settings 🗸 🏺 Plugins 🧸											
Power Manager											
Overview Power Manager Dev	vices Policies Emergency Power Reduction Rack	View Settings About									
	Physical Groups										
Static Groups	Import Refresh										
Physical Groups	> Y Advanced Filters										
Individual Devices	NAME	LOCATION	DEVICE(S) MONITORED		ADDE	ON					
All March Davidson	Aisle 01	Data Center - India / Room 01	10		May 2	4, 2021 2:4	2:57 PM				
All Monitored Devices	Data Center - India		10		May 2	4, 2021 2:3	9:43 PM				
UNMONITORED	Rack 01	Data Center - India / Room 01 / Aisle 01	5		May 2	4, 2021 2:4	4:23 PM				
VIRTUAL MACHINES	Rack 02	Data Center - India / Room 01 / Aisle 01	2		May 2	4, 2021 2:5	7:13 PM				
	Rack 03	Data Center - India / Room 01 / Aisle 01	1		May 2	4, 2021 2:5	7:33 PM				
	Rack 04	Data Center - India / Room 01 / Aisle 01	1		May 2	4, 2021 2:5	7:49 PM				
	Rack 05	Data Center - India / Room 01 / Aisle 01	1		May 2	4, 2021 2:5	3:06 PM				
	Room 01	Data Center - India	10		May 2	4, 2021 2:4	1:28 PM				
	8 item(s) found. Displaying items 1 - 8.										

Figure 34 Physical group list

2. Click **Physical Groups**, and then click **Import**. The **Import physical groups from CSV file** page is displayed.

Import physical groups from CSV file	Θ×
Refresh the Physical Groups page after importing the physical groups information from a CSV file : Download sample file:	
Import CSV file	
	Cancel

Figure 35 Import physical groups from CSV file

- 3. Optional: To view the format of the CSV file, click **Download sample file**. A sample CSV file is downloaded which you can use as a reference for adding the groups information.
- 4. To upload the CSV file and create the physical groups, click **Import CSV file**. The groups are created successfully after importing the CSV file for valid entries.

# 5 Reorganizing devices in physical groups

This section is about how to move devices within a rack or across racks to reflect physical movements in data center. To keep physical structures up to date in the console to get accurate results.

### 5.1 Moving devices within a rack

This operation is to keep the physical group structure aligned to the data center when a device is physically moved from one rack slot to another.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to Manage Rack.
- 2. Click Rearrange Rack. The Update Rack Slots page is displayed.

Mana Add de	ge Rack vices to spec	ific rack slots, rearrange	devices within a rack, remove devi	ces from a rack, and associate supported devices with	a rack.	0 ×
Rac	k Details	Associated Devices				
Add	to Rack Slot	Rearrange Rack	Move Device To Another Rack	Remove Device(s) From Rack		Space Capacity: 7 of 21 U is used
SLOT	NAME		IDENTIFIER	TYPE	HOSTNAME	MODEL
13						
12						
11						
10						
9						
8						
7	5			Compute		PowerEdge R320
6	1(			Compute	iDRAC-CECE0C3	PowerEdge R740
5						
4	1			Compute	iDRAC-BFCF0C3	PowerEdge R740
3						
2	idrac-1W43	3F02		Compute	W	PowerEdge R720

Figure 36 Manage rack with selected devices

#### 3. To change the slot for a device, click the drop-down menu and select an empty slot.

Upd Upd	ate Rack ate the rac	slot k slo	S at of the device using the drop-down menu.						0 X
SL	DT		NAME	SIZE OF DEVICE (U)	IDENTIFIER	MODEL	TYPE	MANAGED STATE	
	7	~		1		PowerEdge R320	Compute	Managed	^
	1	~	idrac-1W43F02	2		PowerEdge R720	Compute	Monitored	
	3	~		2		PowerEdge R740	Compute	Managed	
	9	~		2		PowerEdge R740	Compute	Managed	-
4									) F

4 item(s) found. Displaying items 1 - 4.

Finish Cancel

Close

Figure 37 Update rack slots

4. Click Finish. The device slot is updated.

The API to update physical group member rack slots is: <a href="https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.UpdateSlots">https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.UpdateSlots</a>

### 5.2 Moving devices across racks

This operation is to keep the structure aligned when a device is physically moved from one rack to another rack.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to Manage Rack.
- 2. Locate the device that you want to move using the vertical scroll bar of the rack and select the device.

Manag Add de	nage Rack 0 X X X X X X X X X X X X X X X X X X									
Rac	k Details	Associated Devices								
Add t	o Rack Slot	Rearrange Rack	Move Device To Another Rack	Remove Device(s) From Rack		Space Capacity: 9 of 21 U is used				
SLOT	NAME		IDENTIFIER	TYPE	HOSTNAME	MODEL				
13										
12										
11										
10										
9 8	1(			Compute	iDRAC-CFCF0C3	PowerEdge R740				
7 6	1			Compute	iDRAC-BFCF0C3	PowerEdge R740				
5 4				Compute	idrac-1W43F02	PowerEdge R720				
3 2 1	1(			Compute		PowerEdge R940				

Close

Move Cancel

#### Figure 38 Manage Rack

3. Click **Move Device to Another Rack.** The **Select Group** page is displayed to select the rack to move the devices.

Select Group Select the rack to move the device.					0 X
> <b>T</b> Advanced Filters					
GROUP NAME	LOCATION	SPACE CAPACITY (U)	SPACE (U)	HEADROOM (U)	
Rack 02	Data Center - India / Room 01 / Aisle 01	21	0	21	
Rack 01	Data Center - India / Room 01 / Aisle 01	21	9	12	
4					÷
2 item(s) found. Displaying items 1 - 2.					

Figure 39 Select group

4. Click **Move** to move the device to another rack.

The API to move a device to another rack is: <u>https://<IP>/api/PowerService/PhysicalGroups/Actions/PhysicalGroup.MoveDevice</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

**Note**: If there is any EPR on the group and the device is removed from the group, then the EPR is also deleted from the moved device.

**Note**: If there is an EPR on the destination group, then the movement of the device to this group is blocked.

# 6 Removing devices from physical groups

This section explains about how to remove devices from rack physical groups. This is important when you are decommissioning the devices in a data center.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to Manage Rack.
- 2. Locate the device that you want to move using the vertical scroll bar of the rack and select the device(s).

### 6.1 Removing a device from a rack

This operation is to remove a device from a rack after it is decommissioned.

1. Click **PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack** option to Manage Rack.

Manag Add de	lanage Rack 0 X dd devices to specific rack slots, rearrange devices within a rack, remove devices from a rack, and associate supported devices with a rack.										
Rac	< Details	Associated Devices									
Add t	o Rack Slot	Rearrange Rack Move Device To Another Rack	Remove Device(s) From Rack		Space Capacity: 7 of 21 U is used						
SLOT	NAME	IDENTIFIER	ТҮРЕ	HOSTNAME	MODEL						
13											
12											
11											
10											
9			Compute	IDRAC-CFCF0C3	PowerEdge R740						
7			Compute	iDRAC-BFCF0C3	PowerEdge R740						
6 5											
4											
3 2 1	1		Compute		PowerEdge R940						

Figure 40 Manage rack with selected device(s)

- 2. Click Remove Device(s) From Rack.
- 3. In the confirmation page, click Yes. The devices are removed from the rack.



Figure 41 Remove Device(s) – confirmation box

The API to remove a device from rack is: https://<IP>/api//PowerService/PhysicalGroups/Actions/PhysicalGroup.RemoveMemberDevices

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

**Note**: If you have applied an Emergency Power Reduction (EPR) on the device or a group, then you cannot remove the device or group from Power Manager.

Close

**Note**: When the device is removed from the rack, it is still monitored in Power Manager if it is added as an individual device in Power Manager.

### 6.2 Disassociating a PDU from a rack

This operation is to remove the association of a PDU with a rack after it is physically removed from a rack. A PDU is removed from a rack if it is being decommissioned or if it is associated with another rack in the data center.

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack > Manage Rack option to Manage Rack
- 2. Click **Manage Rack** wizard to add devices to specific rack slots, rearrange devices within a rack, remove devices from a rack, and associate supported devices with a rack.
- 3. To disassociate a discovered PDU with a rack in OpenManage Enterprise, click **Associate Device** tab.

Rack Details Associated Devices								
Associate to Rack Remove Device(	s)							
	IDENTIFIER	MODEL	TYPE	POWER RATING	OUTLET COUNT	MANUFACTURER	HARDWARE REVIS	FIRMWARE VERSION
🗹 🔿 1		MUU3EGM0-12P027-2C20A	PDU	N/A	12	Vertiv	gmmb	5.6.1
0 1		AP8659	PDU	N/A	24		02	6.5.6
								+

#### Figure 42 Associative device list

The API to view all the PDU devices that are associated to a specific rack: <u>https://<IP>/api/PowerService/PhysicalGroups/GroupDetails(GroupID)/AssociatedDevices</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

- 1. Select the PDU's from the list and click **Remove Devices.**
- 2. In the confirmation page, click **Yes**. The devices are disassociated from the rack.



Figure 43 Disassociate device - confirmation box

The API to remove device from a physical group at the rack level: <u>https://<IP>/api//PowerService/PhysicalGroups/Actions/PhysicalGroup.RemoveMemberDevices</u>

# 7 Visualizing Headroom and Underutilized Racks

This section is about how power and space headroom can be observed in physical groups. This helps to determine current density of infrastructure devices in a data center. The information also helps in data center planning activities by clearly highlighting the available power and space at each group hierarchy level.

### 7.1 Visualizing power and space headroom in Group Details

- 1. Click PLUGIN GROUPS > Physical Hierarchy > Rack.
- 2. Click Group Details tab, and then click Headroom tab.
- Headroom has two sections that show the Power Headroom and Space Headroom. The Power Headroom shows the used and available power capacity. And, the Space Headroom shows the used and available space capacity rack.

							<i>a</i>	<b>1</b>				
UpenM	lanage Enterprise				Search Everything	ч	216	P 121	C R O	📥 admin	0 3	
🕈 Home 🛛	🗏 Devices 🛛 🕫 Configuration 🗸 🔰 Alerts 🗸 🖂 M	lonitor 🗸 🗳 Application Settings 🗸 🛛 🛱 Plugins 🗸										1
S 🛔 ALL	DEVICES	🖥 Rack 01										
🕶 🕴 🛔 syst	TEM GROUPS											
→ ± H	ICI Appliances	Devices			( Alerta							
→ ± H	lypervisor Systems				$\smile$							
• O ≛ N	Nodular Systems	Devices (5) Group Details										
🕨 🖬 🛔 N	letwork Devices											
🖬 🛔 P	DU Devices	Metrics and Monitoring History	Alert Thresholds	Policies and EPR	Headroom							
) 🖸 🛔 S	ervers											
▶ ≛ S	itorage Devices											
	TOM GROUPS	Headroom										
	Juery Groups	Power Headroom		C	Space Headroom							C
🛔 S	tatic Groups											
		011sed : 474 W	Available - 9526 W			119 - hael		🔿 Availabla	12.11			
▼ 😳 🛔 PLUG	GIN GROUPS	•										
<b>- 0</b> ≜ P	hysical Hierarchy											
• O #	Data Center - India						_					
~ 0	3 🖺 Room 01											
•	Aisle U1											
	S Ack U1											
	S 🛔 Rack U2				_	1		_				
		Power Capacit	7: 10000 W			Space Cap	pacity: 21 L	J				

Figure 44 Power and space headroom – group details

The API to view all the devices such as supported and unsupported or either of them under the physical

group in a rack: <a href="https://<IP>/api/PowerService/PhysicalGroups/GroupDetails(<GID>)/Devices">https://<IP>/api/PowerService/PhysicalGroups/GroupDetails(<GID>)/Devices</a>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

### 7.2 Visualizing power and space headroom in overview page

1. Launch OpenManage Enterprise, and then click **Plugins > Power Management >Overview**.



Figure 45 Power and space headroom – Overview page

### 7.3 Visualizing top 10 underutilized racks for power

This dashlet provides information about the racks that are consuming minimum power among all the racks available in Power Manager. This information is useful to identify those racks which can host more devices. This information is useful to move devices across racks reducing the burden on other racks that have the highest power consumption.



Figure 46 Top 10 underutilized racks (for power)

### 7.4 Visualizing top 10 underutilized racks for space

This dashlet provides information about the racks that are consuming minimum space in the data center. This information is useful to perform capacity planning and to identify the racks that have the capacity to accommodate more devices. This is especially useful when you are planning to purchase more devices for the data center.

#### Visualizing Headroom and Underutilized Racks



Figure 47 Top 10 underutilized racks (for space)

# 8 Visualizing racks of physical groups

This section explains about how to view all racks within a physical group. It provides a bird's eye view of data center structure making it easy to perform various operations on racks and constituent devices.

1. Launch OpenManage Enterprise, and then click **Plugins > Power Management > Rack View**. The **Rack View** tab is displayed.

OpenManage Ente	erprise							۹ 🖸
🕆 Home 🛛 🗏 Devices	🕏 Configuration 🗸	🚩 Alerts 🗸 🖂 Monitor 🗸 📢	Application Settings ~	🕈 Plugins 🗸				
Power Manag	ger							
Overview Power Ma	anager Devices Po	licies Emergency Power Reduct	ion Rack View Setti	ngs About				
✓▼ Advanced Filters Ck	ear All Filters							
Group Name		Health State	Power State		Connection State		Туре	
Physical Hierarchy	•	All	~ All	~	All	~	All	~
🚺 Rack 01 (Da	🚺 Rack 02 (Da	🚺 Rack 03 (Da	🚺 Rack 04 (Da	🚺 Rack 05 (Da				
21	21	21	21	21	1			
20	20	20	20	20				
19	19	19	19	19				
18	18	18	18	18				
17	17	17	17	17				
16	16	16	16	16				
15	15	15	15	15				
14 📕	14	14	14	14				
13	13	13	13	13				
12	12	12	12	12				
11 mm P009P42	11	11	11	11 🔳 OS10				
10	10	10	10	10				
9	9	9	9 MINWINPC	9				
8	8 7 <b>=</b> 5QQ56Z1	8 AX7525N01.wa	8 MINWINPC	8 7				
6	6	6	6	6 MIN-9AVCPV54				
5	5	5 AX740XDA2OSN	5 MINWINPC	5 📕 WIN-5IHBQVR5				
4	4	4	4	4 📕 WIN-2IGKHQV8				
3 10	3	3	3	3 MINWINPC				
2	2 WIN-FAS1M1	15 2 59DHH32	2 100.96.27.13	2 JYKMNW1-R270				

Figure 48 Rack View

2. Click **Rack Name** to expand the Context Menu with **Manage Rack**, **Group Details** and **Create Policy**.

Rack 05 (Da	·
	Manage Rack
21	Group Details
20	Create Policy
19	

Figure 49 Rack view options

3. Mouse hover to the **Rack Name**. A tooltip is displayed with details about the rack name with hierarchy, and the number of monitored and unmonitored devices.

Rack 05 (Da	:	
21	Rack Aisle	05 (Data Center - India / Room 01 / 01)
20	Monito	ored Device(s): 0
19	Unmo	nitored Device(s) : 2
18		

4. Mouse hover a **Device.** A tooltip is displayed with details about the device name, model, type and average power.

Figure 50 Rack view – rack details tooltip

L		
10 9	AX740XDAZOSN	
8	localhost.bl	AX740XDAZO SN0.wacdev.com(3LGZ03 3)
7 6	WIN-9AVCPV54	Model : AX-740xd
5	WIN-5IHBQVR5	Avg Power: 278 Watt
4	WIN-2IGKHQV8	· · · · · · · · · · · · · · · · · · ·

Figure 51 Rack view – device details tooltip

**Note**: Some devices that are part of a physical group do not have a link because, the device is not supported in Power Manager.

**Note**: If you are logging in as a Device Manager, only the device groups and devices that are in your scope are available for viewing and management. For example, if you are logging in as a Device Manager DM1 user, you can view only the devices and groups that are assigned to a Device Manager DM1 user.

# 9 Deleting physical groups

This section explains about how to delete a physical group from the console. You can delete a group from Power Manager console when they no longer exist in the data center or if they were created for trial purposes.

1. Click **PLUGIN GROUPS > Physical Hierarchy >Delete Group** option to launch the Confirmation box.



#### Figure 52 Delete physical group

#### 2. Click **Yes** to delete the physical group.

Are you sure you want to delete group (I	Data Cente	er - India)?
	YES	NO

Figure 53 Delete group - confirmation box

The API to delete a group is: <u>https://<IP>/api/GroupService/Actions/GroupService.DeleteGroup</u>

For more information about the Power Manager APIs, see the OpenManage Enterprise Power Manager API document available on the support site.

Note: Ensure that Emergency Power Reduction (EPR) is disabled on the physical group.

### 10 Physical group reports

These reports are by default that is displayed after installing Power Manager. This report contains predefined parameters which when run gives device data over a certain time interval.

### 10.1 Physical group report for space headroom

- **Type**: Built-In
- **Description**: This report contains space headroom detail of physical groups added in Power Manager.
- **Advantages**: The benefit of this report is to know the space headroom information. You can use it for capacity planning in a data center.

#### Below is a sample of the report run:

vnload Email		neadiooni ke	port for Physic		
ower Manage	r: Space Headroom	Report for Physic	cal Groups		Jun 11, 2021 8:00:41 PM
escription: Thi	s report contains spa	ce headroom detail	of physical groups	s added in Power Manager	
GROUP NAME	LOCATION	TOTAL SPACE (U-SIZE)	UTILIZED SPACE (U-SIZ.	UTILIZATION PERCENT	
Room 01	Data Center - India	105	49	46.67	*
Aisle 01	Data Center - India / R.	. 105	49	46.67	
Rack 02	Data Center - India / R.	. 21	7	33.33	
Rack 02 Rack 04	Data Center - India / R Data Center - India / R	. 21	9	33.33 42.86	
Rack 02 Rack 04 Rack 01	Data Center - India / R Data Center - India / R Data Center - India / R	. 21 . 21 . 21	7 9 14	333 4286 667	
Rack 02 Rack 04 Rack 01 Rack 03	Data Center - India / R Data Center - India / R Data Center - India / R Data Center - India / R	. 21 . 21 . 21 . 21	7 9 14 6	8333 4286 6667 2857	
Rack 02 Rack 04 Rack 01 Rack 03 Rack 05	Data Center - India / R Data Center - India / R	. 21 . 21 . 21 . 21 . 21 . 21	7 9 14 6 13	83.33 42.86 66.67 28.57 61.90	

Figure 54 Space headroom report for physical group space headroom details

### 10.2 Physical group report for power usage

- Type: Built-In
- **Description**: This report contains overall power usage, and available headroom of physical groups added in Power Manager.
- **Advantages**: The benefit of this report is to know the power headroom. You can use it in capacity planning.

The following is a snippet after running the report:

orts > Power M	Manager: Power	Headroom Re	eport for Physical Groups 8	
Power Manager:	Power Headroom	Report for Physi	cal Groups Jun	11, 2021 8:03:57 PM
Description: This	report contains over	all power usage an	d available headroom for Physical groups added in Power Manager	
GROUP NAME	LOCATION	ALLOCATED POWER (W	. STRANDED POWER (W	
Room 01	Data Center - India	100000	97539	^
Aisle 01	Data Center - India / R	100000	97539	
Rack 02	Data Center - India / R	10000	9722	
Rack 04	Data Center - India / R	10000	9786	
Rack 01	Data Center - India / R	10000	9306	
Rack 03	Data Center - India / R	10000	9578	
Rack 05	Data Center - India / R	10000	9147	
Data Center - India		100000	97539	
4				•

Figure 55 Space headroom report for physical group power usage

**Note**: If you are logging in as a Device Manager, only the device groups and devices that are in your scope are available for viewing and management. For example, if you are logging in as a Device Manager DM1 user, and a group G1 is assigned to the Device Manager DM1 user, you can view only the devices in the G1 group.

# 11 Conclusion

Using this white paper that one can easily create and maintain physical structure of a data center in OpenManage Enterprise console and Power Manager. And, the benefits of using these features are covered.

12 Technical support and resources

Dell.com/support is focused on meeting customer needs with proven services and support.

### 12.1 Related resources

- Knowledge Base for Dell EMC OpenManage Enterprise Link.
- Knowledge Base for Dell EMC OpenManage Enterprise Power Manager Link.
- Dell EMC OpenManage Enterprise Power Manager Version 2.0 User's Guide Link.
- Dell EMC OpenManage Enterprise Power Manager RESTful API Guide version 2.0 Link.
- Dell EMC OpenManage Enterprise Power Manager 2.0 Release Notes Link.