Importing Physical Group and Device Association from a CSV file

Automating Power Manager plugin physical group creation and placement of devices to Rack

Abstract

Considering the fact that recreation of physical group hierarchies are a painful and time taking activities for the users, OpenManage Power Manager facilitates importing the existing hierarchy of a data center from a csv file.

August 2020

# Revisions

|  |  |
| --- | --- |
| Date | Description |
| August 2020 | Initial release |
|  |  |

# Acknowledgements

Author: Rishi Mukherjee

Support:

Other:

The information in this publication is provided “as is.” Dell Inc. makes no representations or warranties of any kind with respect to the information in this publication, and specifically disclaims implied warranties of merchantability or fitness for a particular purpose.

Use, copying, and distribution of any software described in this publication requires an applicable software license.

Copyright © <pub date – rev date> Dell Inc. or its subsidiaries. All Rights Reserved. Dell Technologies, Dell, EMC, Dell EMC and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners. [8/3/2020] [White Paper] [Document ID]

# Table of contents

[Revisions 2](#_Toc47367068)

[Acknowledgements 2](#_Toc47367069)

[Table of contents 3](#_Toc47367070)

[Executive summary 4](#_Toc47367071)

# Executive summary

**Note:** This section is required for Reference Architectures, Best Practices guides, and Technical White Papers. It is optional for Deployment and Configuration guides.

Considering the fact that recreation of physical group hierarchies are a painful and time taking activities for the users, OpenManage Power Manager facilitates importing the existing hierarchy of a data center from a csv file. However, the hierarchy of creating physical groups will remain the same as defined below in this section. There is an additional validation for a check of existence of the devices in OpenManage Enterprise when there are references to devices in the csv file. Only if the devices are discovered in OpenManage Enterprise, the devices are added to Power Manager, else the devices are ignored.

Following table depicts the format of the CSV file. So, while a user imports a csv file, validation checks should be in place. The validation is per row, and the operation will be allowed only when there are no errors, otherwise the control of execution will proceed to the next row.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Data Center | Room | Aisle | Rack\* | Rack Space Capacity\* | Rack Slot \* | Device Identifier |
| DC1 | Room1 | Aisle1 | Rack1 | 21 | 1 | ServiceTag1 |
| DC1 | Room1 | Aisle1 | Rack1 | 21 | 3 | ServiceTag5 |
| DC1 | Room1 | Aisle1 | Rack1 | 21 | 4 | ServiceTag6 |
| DC1 | Room2 | Aisle1 | Rack2 | 48 | 1 | ServiceTag9 |
| DC1 | Room2 | Aisle1 | Rack2 | 48 | 5 | ServiceTag10 |
| DC1 | Room2 | Aisle1 | Rack2 | 48 | 4 | ServiceTag14 |
| DC1 | Room2 | Aisle1 | Rack2 | 48 | 10 | ServiceTag12 |

Table 1 : Example of csv file format(\* specifies mandatory field)

Following table depicts the rules while creating a physical group hierarchy

|  |  |  |
| --- | --- | --- |
| Physical Group | Allowable Children’s | Mandatory |
| Data Center | Room, Aisle, Rack | No |
| Room | Aisle, Rack | No |
| Aisle | Rack | No |
| Rack | Not applicable | Yes |

*Table 1: Rules while creating a physical group hierarchy*

Following table depicts the allowable creation and movements of physical groups

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 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 |

*Table 2: Applicable Rules while creation and movements of physical groups in a physical group hierarchy*

Apart from the grouping structure/hierarchy mentioned in Table 1 and 2, following are the CSV specific considerations on validating the format before importing the file

1. Ensure that there is reference of a device in only one row.
2. Rack name, capacity are the mandatory fields. If there is a device, then the rack slot is also a mandatory field.
3. Each Physical group as siblings in a physical group hierarchy will be identified by a unique name. If there are any duplicate entries, those devices will be ignored during the import operation.
4. Only Rack slot and Device Identifier are unique fields. The remaining fields are same when considering multiple device allocations on the physical group hierarchy.
5. A Device is uniquely identified by a Device Identifier. Identical devices are ignored while importing, only unique devices are allowed in a Rack slot. If the Devices already exists in the physical group are ignored.
6. Import and export of csv file will be allowed only for administrators. Also, while importing, the sanity of the file mentioned in table 1 will be checked and operation will be continued only if check passes.

Device Identifier is the Service Tag or the Serial Number (in absence of a Service Tag)

Pre-Requisites

Following are the pre-requisites:

1. It is expected that this script run on Python version 3.x.
2. Download the following files from <https://github.com/dell/OpenManage-Enterprise/upload/master/Plugins/Power%20Manager> to your local system

* createphysicalgroups.py
* physicalgroups.csv
* configfile.properties

1. Prefilled with the desired inputs in physicalgroups.csv file. The inputs can be incremental. A sample is depicted as below:

DC1,Room1,Aisle1,Rack1,100,42,1,GMJ3GL2

DC1,Room1,Aisle1,Rack1,100,42,3,BN1JR42

DC1,,Aisle1,Rack1,100,21,4,D4QBBS2

DC1,,,Rack1,100,21,10,6SM09X2

,Room1,Aisle1,Rack1,100,48,1,BCF5GY1

,Room1,,Rack1,100,48,5,H2CHH32

,,Aisle1,Rack1,100,48,4,DR6R7C2

,,,Rack1,100,24,4,G72SQ12

,,Aisle4,Rack4,100,24,4,CQ2RG52

1. The console specific parameters need to be configured in configfile.properties. A sample is depicted as below:

[consoleaccessdetails]

ipaddress = 100.96.33.208

username = admin

password = linux

Usage

Run the file createphysicalgroups.py on the system where it is downloaded as mentioned in pre-requisites. This script can be run on Windows and Linux operating systems. The command line interface is:

% python createphysicalgroups.py

The script gets executed in a silent mode and generates following files

* **physicalgroup\_automation.log**: This includes the script logs
* Date-timestamp-based report file having name **report\_<DateTimestamp>.txt**: This includes the final outcome of the execution that reveals which all physical groups are created, failed and result on device to rack group association.

Input File Structure

Individual row of the CSV file constitutes the physical group hierarchy and the device association to a rack slot.

The individual elements in a row in the pre-defined order are:

<DATA-CENTER NAME>,<ROOM NAME>,<AISLE NAME>,<RACK NAME>,<RACK POWER CAPACITY>,<RACK SIZE>,<RACK SLOT NUMBER>,<DEVICE SERVICE TAG>

A sample is depicted as below:

DC1,Room1,Aisle1,Rack1,100,42,1,GMJ3GL2

DC1,Room1,Aisle1,Rack1,100,42,3,BN1JR42

DC1,,Aisle1,Rack1,100,21,4,D4QBBS2

DC1,,,Rack1,100,21,10,6SM09X2

,Room1,Aisle1,Rack1,100,48,1,BCF5GY1

,Room1,,Rack1,100,48,5,H2CHH32

,,Aisle1,Rack1,100,48,4,DR6R7C2

,,,Rack1,100,24,4,G72SQ12

,,Aisle4,Rack4,100,24,4,CQ2RG52

The following section detail out about these elements.

CSV Column Specification

Following are the list of columns that can be specified in the CSV file. Column names are case-insensitive. Absence of any of these does not imply any error.

DATA\_CENTER

|  |  |
| --- | --- |
| Description | Name of the Data Center to use |
| Value Types | String |
| Required | No |
| Constraints | Created if non-existent. |

ROOM

|  |  |
| --- | --- |
| Description | Name of the Room. |
| Value Types | String |
| Required | No |
| Constraints | Created if non-existent. |

AISLE

|  |  |
| --- | --- |
| Description | Name of the Aisle. |
| Value Types | String |
| Required | No |
| Constraints | Created if non-existent. |

RACK

|  |  |
| --- | --- |
| Description | Name of the Rack. |
| Value Types | String |
| Required | Yes |
| Constraints | Created if non-existent. Ensure that you provide the RACK\_CAPACITY and RACK\_POWER for every rack entry. |

RACK\_POWER

|  |  |
| --- | --- |
| Description | Power Capacity of corresponding rack in Watts (W) |
| Value Types | Number |
| Required | Yes, when device type is RACK |
| Constraints | Error if device type is not RACK |

RACK\_CAPACITY

|  |  |
| --- | --- |
| Description | Capacity of corresponding rack in Rack Unit (U) |
| Value Types | 21, 24, 42, 48 or a custom value |
| Required | Yes, when the device type is RACK |
| Constraints | Error if device type is not RACK |

RACK\_SLOT\_NUMBER

|  |  |
| --- | --- |
| Description | Specifies the rack slot number where the device is associated |
| Value Types | Number |
| Required | Yes |
| Constraints | Is unique to avoid error in device association |

DEVICE\_SERVICE\_TAG

|  |  |
| --- | --- |
| Description | Service tag of the device that is associated with rack slot |
| Value Types | String |
| Required | Yes |
| Constraints | A valid service tag of the on-boarded devices in Open Manage Enterprise to avoid error in device association |

Behavior

The script processes one physical group, the defined hierarchy and device to rack group association at a time. Any grouping structure specified for the device is created if they do not exist.

The devices that are mentioned in the CSV file and meant for associating with the Rack group in a defined slot are discovered and on-boarded in Open Manage Enterprise using the discovery task before running the script. However, the physical groups defined are created irrespective of the devices being on-boarded or not. Only on boarded devices are applicable for device association.

The order of the physical group elements mentioned above in “input file structure” section is mandatory; however, the existence of groups is not. You can skip empty groups by commas, but the placeholders separated by commas are mandatory.