



# Fabric Manager for XC Xpress User's Guide

Dell Engineering  
September 2017

## Revisions

Date	Description
June 2017	Initial release
September	Updated most references to Fabric Manager naming conventions, and limiting guide to XC Xpress.

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 © 2017 Dell Inc. or its subsidiaries. All Rights Reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be the property of their respective owners. Published in the USA. [9/18/2017]

Dell EMC believes the information in this document is accurate as of its publication date. The information is subject to change without notice.



# Table of contents

- Revisions ..... 2
- 1 About Fabric Manager ..... 4
- 2 Prerequisites ..... 5
  - 2.1 Supported network switch list ..... 5
  - 2.2 Downloading Fabric Manager ..... 5
  - 2.3 Launching Fabric Manager..... 6
  - 2.4 Viewing the Fabric Manager report..... 8



# 1 About Fabric Manager

Fabric Manager is a network validation tool. Run the tool using your management workstation. This tool confirms if your network switch is on the recommended switch list and confirms network configuration settings are ready to begin deployment. Currently, this tool is only validated on a Windows workstation and for use with XC Xpress appliances.

**Note:** If Fabric Manager does not validate your switch, this may not mean your switch is unsupported by XC solutions. It means that the following list of requirements must be manually in place for the switch to be validated.

Running this tool verifies the following necessary features are in place on your switch:

- Determines 1 G/10 G capability of the Top-Of-Rack(TOR) switch
- Determines switch models
- Determines switch/network IPv6 capabilities
- Determines if IPv6 is enabled
- Determines switch VLAN capabilities
- Checks for any VLANs configured
- Gathers VLAN mapping, if possible
- Gathers IP subnet information including routing
- Performs TCP/UDP port filter check on XC appliance (internal)
- Performs TCP/UDP port filter check on XC appliance (external)



## 2 Prerequisites

The following information is required before running Fabric Manager:

- Switch IP address
- User ID and password for the switch
- Enable SSH feature in the switch. (Refer to the Deployment Guide to enable/disable SSH)
- A Windows workstation

**Note:** After running this validation tool, for security reasons disable SSH.

### 2.1 Supported network switch list

Table 1 shows verified network switches that are easily validated by Fabric Manager.

Table 1 Validated switch list

Switch Model	Type	OS Version
Dell PowerConnect	PC 8024, PC 8024F	5.1.10.1
	PC6024	3.3.15.1
Dell Networking	S4810 / S60 / S4048 / S5000	9.11.0.0
Cisco	Nexus 3016, Nexus 3048, Nexus 3064	7.0.3.14
Arista	7050 SX / QX	4.17.3

### 2.2 Downloading Fabric Manager

Fabric Manager is a network validation tool. To download to your management workstation:

1. Go to <https://dell.com/xcseriesmanuals>
2. From the dialog box, select the XC430 Xpress appliance.
3. On the left side, click **Drivers & downloads**.
4. Next to **View all available updates for Dell XC430 Xpress Hyper-converge Appliance**, click **Change OS**.
5. Click **Windows Server2012 R2**.
6. Scroll down and click **Applications**.
7. Download `DellPowerToolsFabricManager_X.X.X.XXXX-Win.zip`, save it to a location, and install the tool on your management workstation.

The installer copies three files to `C:\Dell_OEM\DellPowerToolsFabricManager` folder: `README`, `libssh2.dll` and `ptfmcli.exe`

**Note:** The executable and dll must remain in the same directory.



## 2.3 Launching Fabric Manager

XC Xpress supports a list of validated switches. To validate the design of your switch and its configured switch settings, run Fabric Manager using your management workstation.

1. At the command prompt, navigate to the location where the tool is installed and run the executable.

- a. On windows the executable `ptfmcli.exe` is located at:

```
C:\Dell_OEM\DellPowerToolsFabricManager
```

Usage:

```
Windows : ptfmcli.exe [OPTIONS]
```

OPTIONS:

<code>-h</code>	<b>Print this help message and exit</b>
<code>-i &lt;switch-IP&gt;</code>	Switch IP address
<code>-u &lt;username&gt;</code>	Username to use in switch SSH login
<code>-f &lt;file-name&gt;</code>	File containing list of IPv4 addresses of XC nodes to check the reachability (line by line).
<code>-l &lt;log-file&gt;</code>	Log file to write (default: DellPowerToolsFabricManager.log)
<code>-v &lt;verbose-level&gt;</code>	Verbose level to use in log write (default: 3)



Figure 1 Initial screen when Fabric Manager connects to the switch IP address.

2. At the command prompt, enter the **switch IP address**.
3. At the command prompt, enter the **User Name for the switch SSH login**.
4. At the command prompt, enter the **Password for the switch SSH login**.

After authentication is established, the tool verifies all the required switch capabilities.



- The tool prompts your permission to configure a logical interface to verify the IPv4/IPv6 capability and remove the configured logical interface after the test. If you select “yes”, the tool continues with all the tests including verifying ipv4/v6 capabilities.

```

CA\Dell_OEM\DellPowerToolsFabricManager\ptfmccli.exe
Checking credentials...Done!
Connecting to Switch...

Warning : This tool will verify the IPv4 and IPv6 capabilities of the switch. The tool will add a logical interface and configure a non-existent IP address to that interface.
Once the tool determines the switch IPv4 and IPv6 capabilities, the tool will unconfigure the IP address and then remove the logical interface.
To allow the tool to check the IPv4 and IPv6 capabilities, enter [Yes]
To manually check the IPv4 and IPv6 capabilities (default), enter [No]: yes

Switch Model ..... Pass - Dell Networking S4048-ON, OS Version - 9.11(0.0P2)
Switch Type ..... Pass - Switch is capable of 10G/40G.
IPv4 ..... Pass - IPv4 is enabled
IPv6 ..... Pass - IPv6 is enabled
VLAN ..... Pass - The following VLANs are configured on the switch.
    Configured VLANs - 1, 110, 137
    VLAN Range supported by the switch : 2 - 4094
IP Subnets .....
    Ports In Use; these ports are not available for connecting XC cluster nodes:
    ManagementEthernet 1/1 10.10.66.216
IP Routing ..... No routes configured

Pass : Switch is eligible for XC deployment.
Please find more details :
    Report file : C:\Dell_OEM\DellPowerToolsFabricManager\ptfmccli_Report_20170512T133136.txt
    Log file : C:\Dell_OEM\DellPowerToolsFabricManager\DellPowerToolsFabricManager.log

Press ENTER to exit...

```

Figure 2 Screen display if you select yes.

- If you select “no” for this option, the tool skips the two tests (IPv4 and IPv6 capability) and continues with the remaining steps.

```

Connecting to Switch...

Warning : This tool will verify the IPv4 and IPv6 capabilities of the switch. The tool will add a logical interface and configure a non-existent IP address to that interface.
Once the tool determines the switch IPv4 and IPv6 capabilities, the tool will unconfigure the IP address and then remove the logical interface.
To allow the tool to check the IPv4 and IPv6 capabilities, enter [Yes]
To manually check the IPv4 and IPv6 capabilities (default), enter [No]: no

Switch Model ..... Pass - Dell Networking S4048-ON, OS Version - 9.11(0.0P2)
Switch Type ..... Pass - Switch is capable of 10G/40G.
IPv4 ..... Skipped
IPv6 ..... Skipped
VLAN ..... Pass - The following VLANs are configured on the switch.
    Configured VLANs - 1, 110, 137
    VLAN Range supported by the switch : 2 - 4094
IP Subnets .....
    Ports In Use; these ports are not available for connecting XC cluster nodes:
    ManagementEthernet 1/1 10.10.66.216
IP Routing ..... No routes configured

```



If your switch is not a validated switch by Fabric Manager, you see the screen in Figure 3.

```
C:\Dell_OEM\DellPowerToolsFabricManager\ptfmcli.exe
Switch ip: 10.211.31.201
User: root
Password:
Checking credentials...Done!
Connecting to Switch...
Switch at 10.211.31.201 is not validated by Dell PowerTools Fabric Manager for the XC solution.
Please see deployment guide for steps to validate your network manually.
Fail : Switch did not pass one or more tests required for XC Deployment.
Please find more details :
    Report file : C:\Dell_OEM\DellPowerToolsFabricManager\ptfmcli_Report_20170515T103448.txt
    Log file : C:\Dell_OEM\DellPowerToolsFabricManager\DellPowerToolsFabricManager.log
Press ENTER to exit...
```

Figure 3 Fabric Manager output when the switch is not a validated switch.

7. When you have completed and passed the test, Dell recommends that you disable SSH. SSH is only required to run the test.

## 2.4 Viewing the Fabric Manager report

After Fabric Manager runs all the tests, it updates the log file and creates a report file in the same directory location of where Fabric Manager is located.

Fabric Manager logs all the messages, commands and outputs in detail in the log file (default name: DellPowerToolsFabricManager.log) .

The report file is used to determine any warnings or errors that occurred and what corrective actions are required before you can create the XC clusters. The file is in a .txt file format and the file name includes the date and time, the report was run.





```

Dell Networking S4810, OS Version - 9.11(0.0), IP address 10.10.66.219:
Pass : Switch is eligible for XC deployment.
See log file and report file for details:

=====
Report for Network Switch at 10.10.66.219:
-----

Switch Model:      Pass - Dell Networking S4810, OS Version - 9.11(0.0)
Switch Type:      Pass - Switch is capable of 1G/10G/40G.
IPv4:             Pass - IPv4 is enabled
IPv6:             Pass - IPv6 is enabled
VLAN:             Pass - The following VLANs are configured on the switch.
                  Configured VLANs - 1, 12
                  VLAN Range supported by the switch : 2 - 4094
IP Subnets:      Ports In Use: these ports are not available for connecting XC cluster nodes:
                  TenGigabitEthernet 0/22  15.15.15.1
                  TenGigabitEthernet 0/46  192.168.40.1
                  fortyGigE 0/60         192.168.50.1
                  ManagementEthernet 0/0   10.10.66.219
                  Vlan 12                192.168.10.1

Details:
-----
VLAN Mapping:
*  NUM  Status  Description  Q Ports
   1    Active
   12   Inactive
      U Te 0/0-21,23-31,34-44,47
      T Te 0/45

Interface Configuration:
Interface      IP-Address  OK Method Status  Protocol
TenGigabitEthernet 0/22  15.15.15.1  NO Manual up      down
TenGigabitEthernet 0/46  192.168.40.1 YES Manual up      up
fortyGigE 0/60   192.168.50.1 YES Manual up      up
ManagementEthernet 0/0  10.10.66.219 YES Manual up      up
Vlan 12        192.168.10.1 NO Manual up      down

IP Routing:     Reachable Networks
                -----
                192.168.40.0/24
                192.168.50.0/24

=====
Please refer to Dell Power Tools Fabric Manager user guide at Dell.com/xcseriesmanuals.

```

Figure 4 Sample report message.

Table 2 Report messages definition

Term	Definition
Switch Model	Displays the switch type, model and the current operating system version on the switch. If your switch is not a validated switch by Fabric Manager, manually verify you have the items in section 1.3. If that fails, contact your Dell sales representative to purchase the proper switch.
Switch Type	Specifies whether the switch is capable of 1 G, 10 G or 40 G. XC deployment requires a minimum of 1 G. If the switch does not supports the minimum, then the test results fail.
IPv4	If the switch is IPv4 capable, the test results pass. If the switch is not IPv4 capable, the test results fail.
IPv6	If the switch is IPv6 capable, the test results pass. If the switch is not IPv6 capable, the test results fail.
VLAN	Displays the VLAN capability and configured VLANs on the switch. If the switch is capable of VLAN, the test results pass, otherwise results fail.
IP Subnet	The tool reports all the configured interfaces as “Ports in use.” These ports are not available for connecting XC cluster nodes.



Term	Definition
IP routing	Tool that reports the configured routes on the switch.
Firewall Check	<p>This test only executes if the tool detects that it is running on Windows XC node. XC needs the following ports to be open for the foundation and discovery to work properly. The tool will open these ports on Windows firewall.</p> <ul style="list-style-type: none"> <li>• UDP on port 13000 (Nutanix discovery protocol)</li> <li>• TCP on ports 8000 (Foundation GUI)</li> <li>• TCP on 9442 (proxy)</li> <li>• TCP on 9443 (applet control)</li> </ul>
Details	The Details section reports the configured interfaces with IP address and VLANs to port mapping.

If your switch is not a validated switch, do the following manual steps:

1. Verify you have a 1/10 G capable network.
2. Verify you have IPv6 enabled.
3. Verify your management workstation is on the same subnet as your appliances.
4. Verify that the TCP/UDP ports are enabled.

If the above verifications fail, correct any issues or contact your Dell sales representative to purchase a validated switch.

