Configuring VLAN Settings in Lifecycle Controller for Dell PowerEdge Servers

This Dell Technical White Paper provides detailed information about configuring VLAN settings on a network port using Lifecycle Controller on the Dell 12th generation servers and later versions.

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Introduction

This document provides information about setting up and configuring VLAN settings on a Network Port using Lifecycle Controller on the 12th generation servers of Dell to the users.

The VLAN Tagging implementation is based on IEEE 802.1Q. Lifecycle Controller supports the static VLANs which are port-based. It supports the VLAN IDs 1–4094 and the Priority 0–7. The scope of VLAN Settings explained in this white paper is limited to the Lifecycle Controller.

The VLAN settings can be configured to network port to perform various network operations that are supported by Lifecycle Controller such as firmware updates using FTP, Export Lifecycle Log or Hardware Inventory, perform backup and restore to the network share such as NFS and CIFS or configure a DHCP IP address.

For more information about the Lifecycle Controller and supported features, refer to Lifecycle Controller2 1.3 User's Guide available at dell.com/support/manuals.

Note: For the list of the supported and unsupported network cards, refer to Appendix A and Appendix B later in this white paper.

Note: The VLAN settings feature is supported only on the Dell 12th generation servers and later versions.

1 Network Setup for LC GUI with VLAN Settings

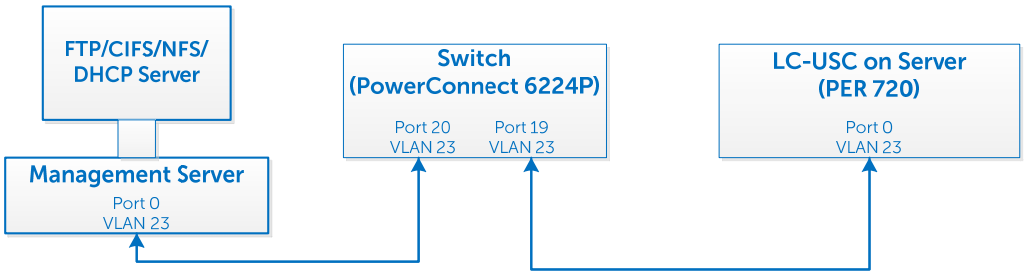

Figure 1 VLAN setup to use network features from LC GUI

As shown in the flow diagram here, you can select a Server Management domain for the Server Management activities on the Dell PowerEdge servers. This can be achieved by using a VLAN, where the management ports can be configured to operate with a particular VLAN ID. This provides an additional security to the system management activities.

The Server Management software supported by the Dell PowerEdge servers such as iDRAC and Lifecycle Controller can be accessed through the network, or a network is needed to perform various Server Management activities. With a dedicated VLAN setup, you can configure all the Managed Server Network ports to operate with a particular VLAN ID.

In the context of Lifecycle Controller, there are several network-dependent features that require DHCP /NFS/CIFS/FTP servers for the network operations. All these servers can be configured to operate with a specific VLAN ID dedicated for the Server Management. In Lifecycle Controller, system network port is used for the network operations, which include Onboard LOMs and add-on cards.

A list of network features supported by LC GUI and the navigation path to each page are listed here:

1. To export the lifecycle log to a Network Share such as a CIFS or NFS, in the left pane click **LifeCycle Log**, and then click **Export LifeCycle Log**,
2. To update the feature, and allow you to provide the FTP site, or the Network Share such as CIFS or NFS at the source location, in the left pane click **Firmware Update**, and then click **Launch Firmware Update**,

Note: To perform firmware updates of different components, store the firmware DUPs at appropriate locations.

3. To allow you to export the Hardware Inventory files or Factory-Shipped Inventory file to a CIFS or NFS share, in the left pane click **Hardware Configuration**, click **Hardware Inventory**, and then click **Export Hardware Inventory** or **Factory Shipped Inventory**.
4. To allow the you to import server profile from either CIFS or NFS share, in the left pane click **Platform Restore**, and then click **Import Server Profile**.

For more information about the earlier mentioned features, and additional features supported by the Lifecycle Controller, refer to the *Lifecycle Controller1.3 User's Guide* available at dell.com/support/manuals.

1.1 Configuring VLAN Settings in LC GUI—Process Flow Chart

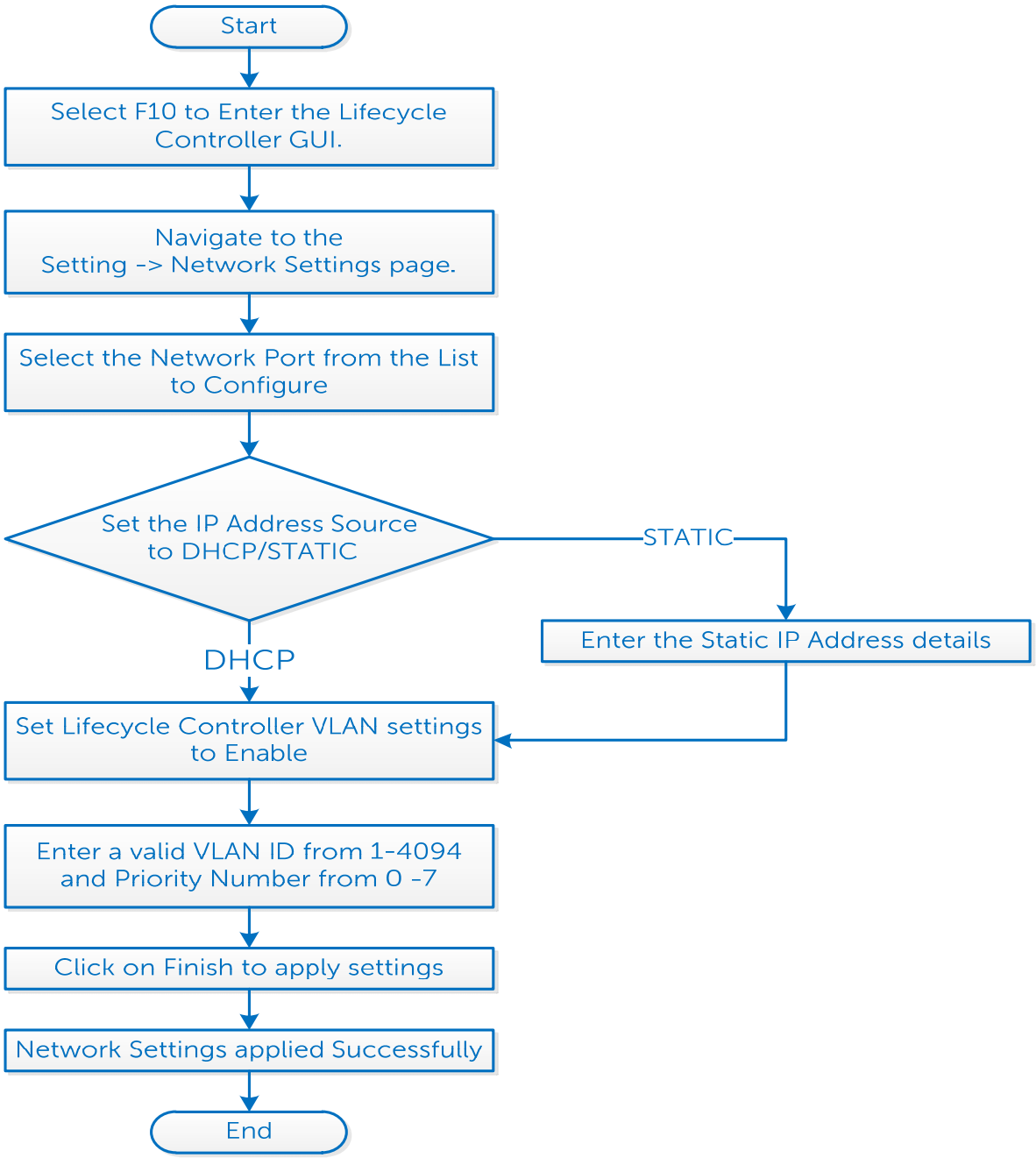

Figure 2 Process Flow Chart showing the tasks to configure VLAN Setting with IP Source as either DHCP or Static

1.2 Configuring VLAN Settings in LC GUI

1. To start **Lifecycle Controller**, press **<F10>** during POST.

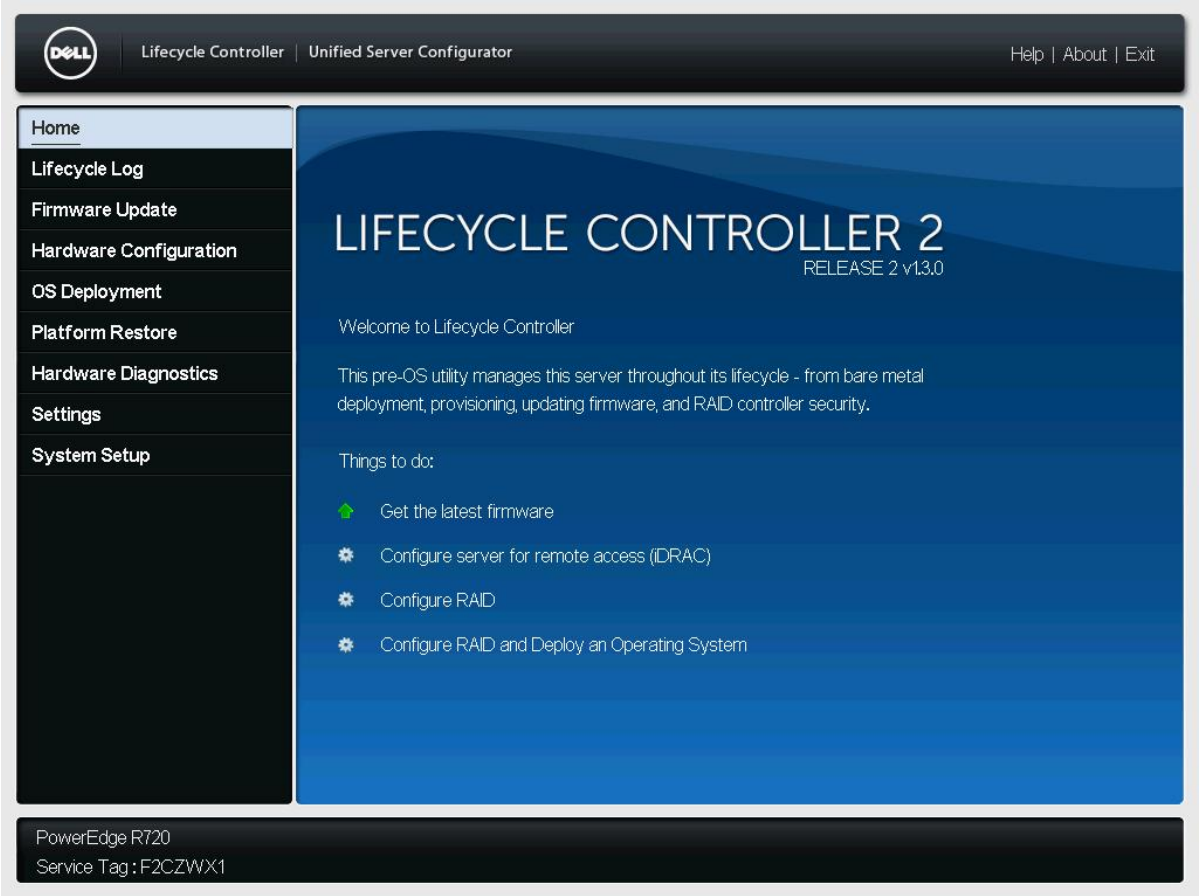

Figure 3 Lifecycle Controller Home page

2. In the left pane, click **Settings**, and then click **Network Settings**.

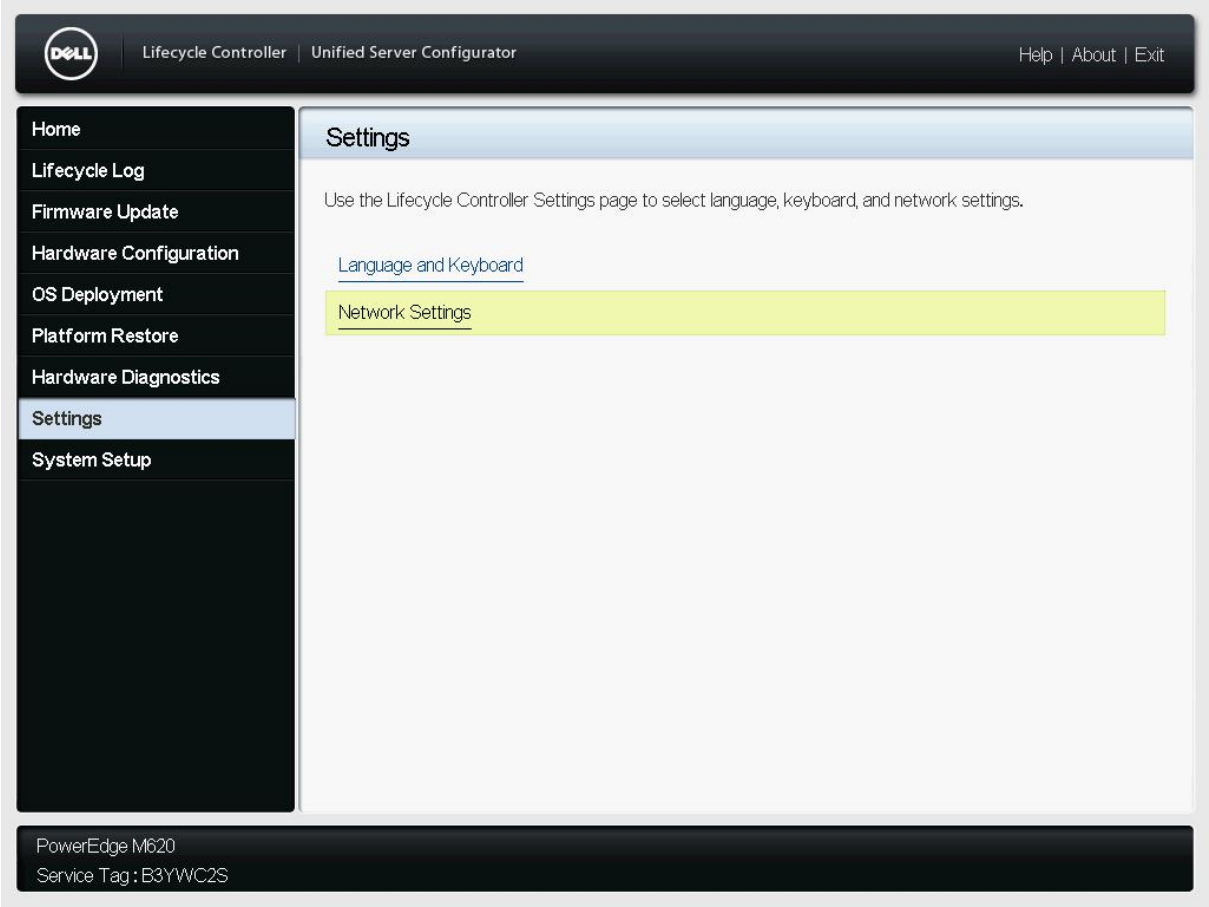

Figure 4 LC GUI Settings Page

1.2.1 Setting DHCP Server as the IP Address Source

1. From the **NIC Card** drop-down menu, select a NIC card.
2. From the **IP Address** drop-down menu, select **DHCP**.
3. To type a priority level and VLAN ID within the specified value, under **Lifecycle Controller VLAN Settings**, select **Enable**.

Note: Make sure network cable is connected to a NIC card which is selected for VLAN settings.

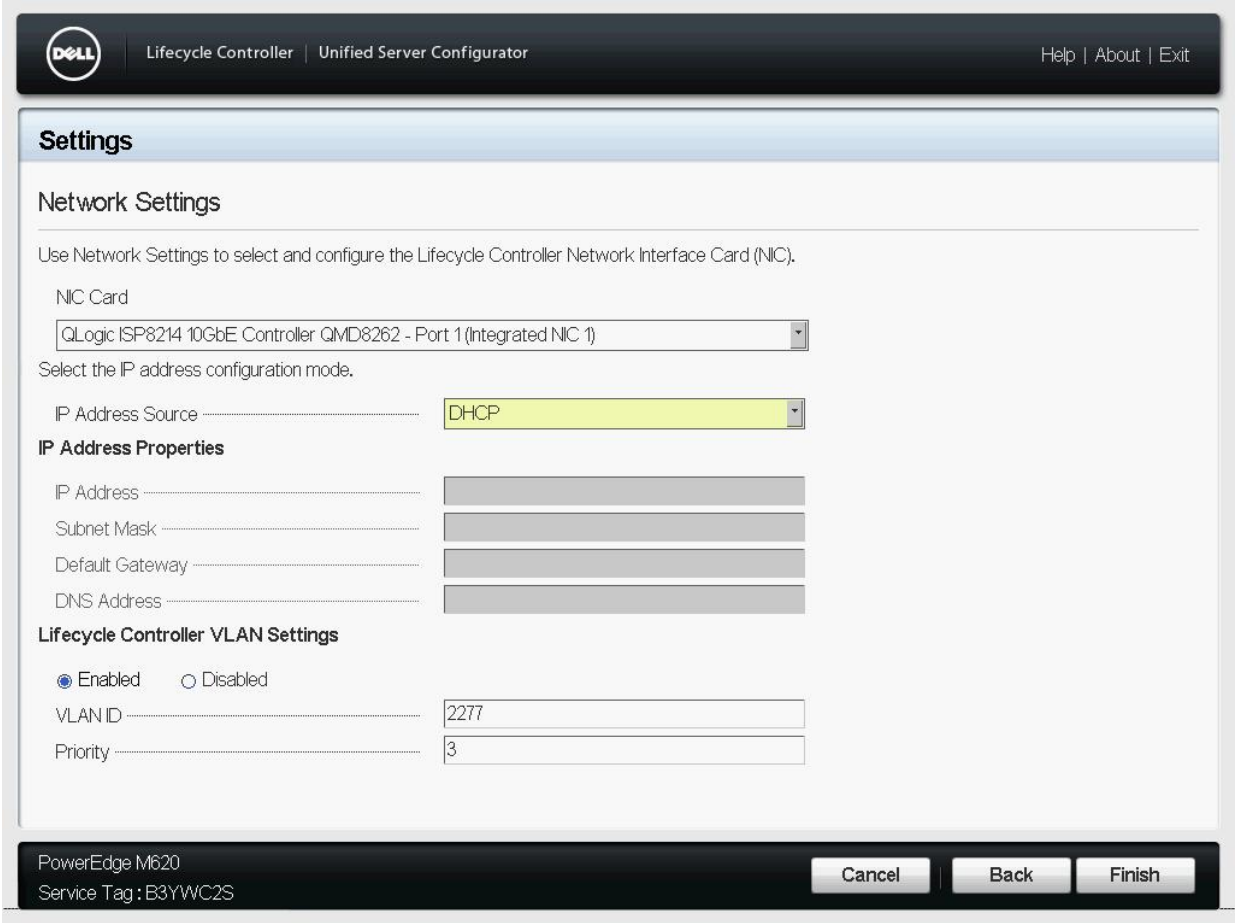

Figure 5 LC UI Network Settings Page

4. After typing appropriate information in the boxes, click **Finish**. Lifecycle Controller takes few minutes to configure the network settings. A message is displayed to indicate that the network settings are successfully updated. A sample screen shot is given here.

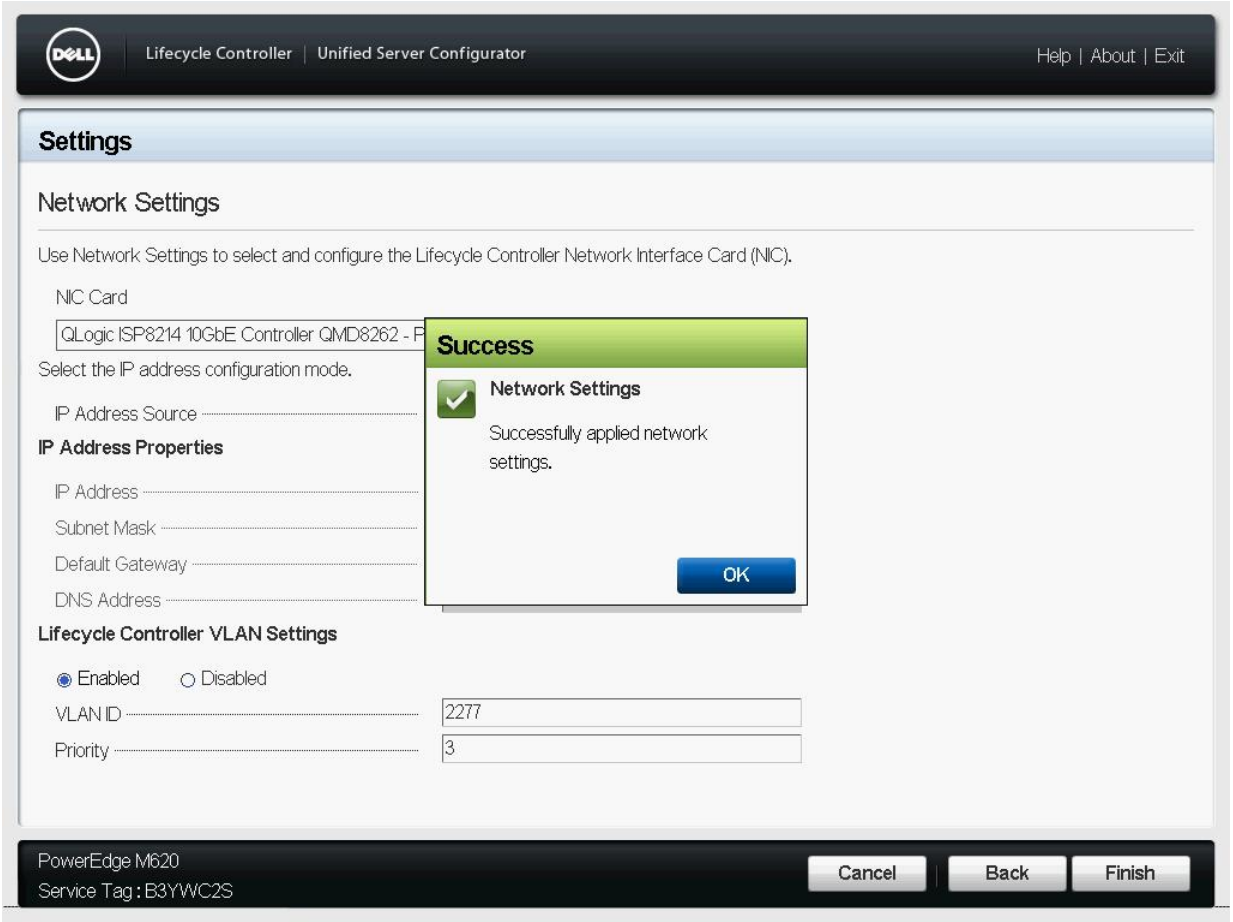

Figure 6 LC UI Network Settings success message

5. To check the IP address properties, in the left pane click **Settings**, and then click **Network Settings**.

Note: 12G servers support only the IPv4 addresses.

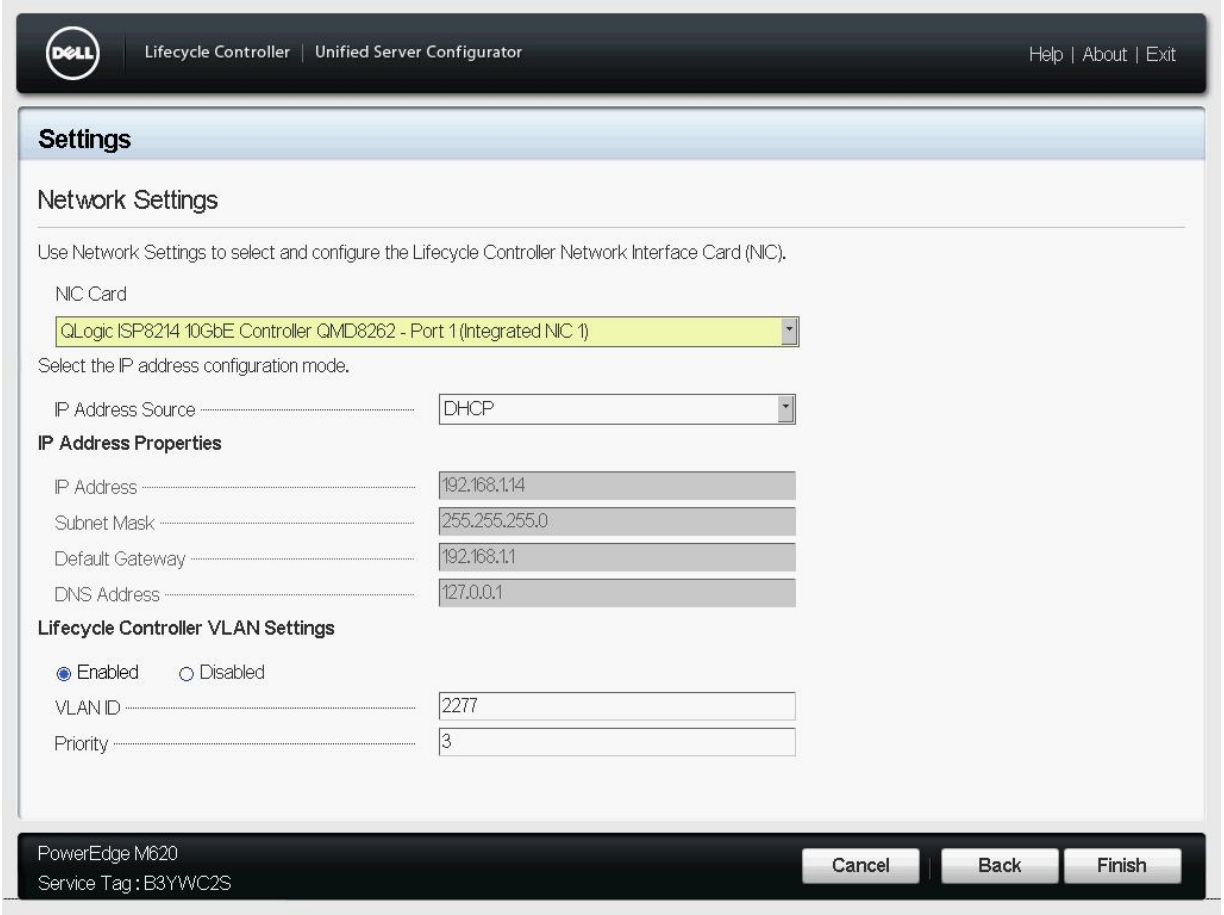

Figure 7 LC GUI Network Settings Page

1.2.2 Setting Static IP as the IP Address Source

1. From the **NIC Card** drop-down menu, select a NIC Card.
2. From the **IP Address** drop-down menu, select **Static**, and then type data in the **IP Address Properties** boxes.
3. To type the priority level and VLAN ID within the specified value, under **Lifecycle Controller VLAN Settings**, select **Enable**.

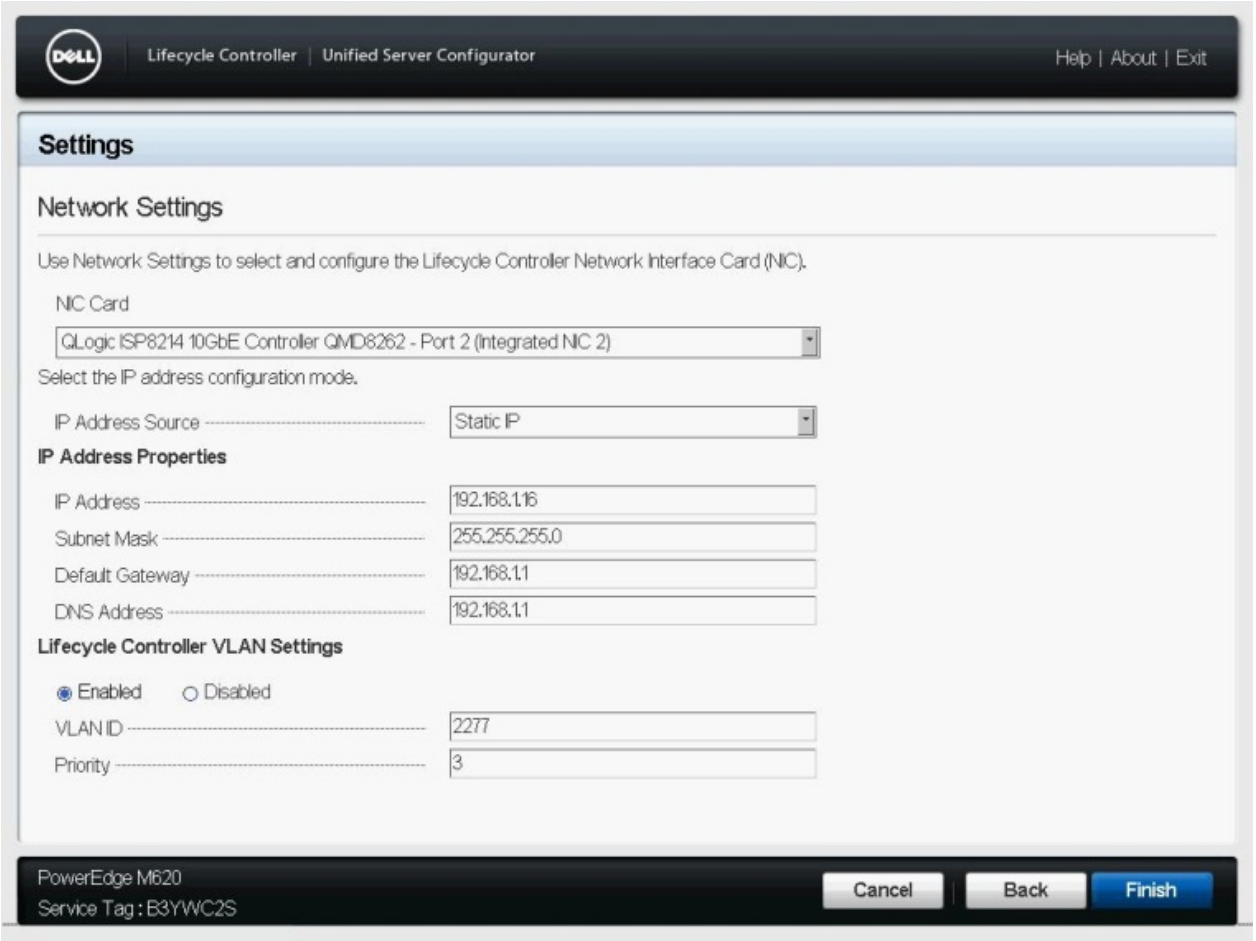

Figure 8 VLAN Settings Enabled

Note: Make sure that the network cable is connected to the NIC card that is selected for the VLAN settings.

A message is displayed to indicate that the network settings are successfully updated. A sample screen shot is given here.

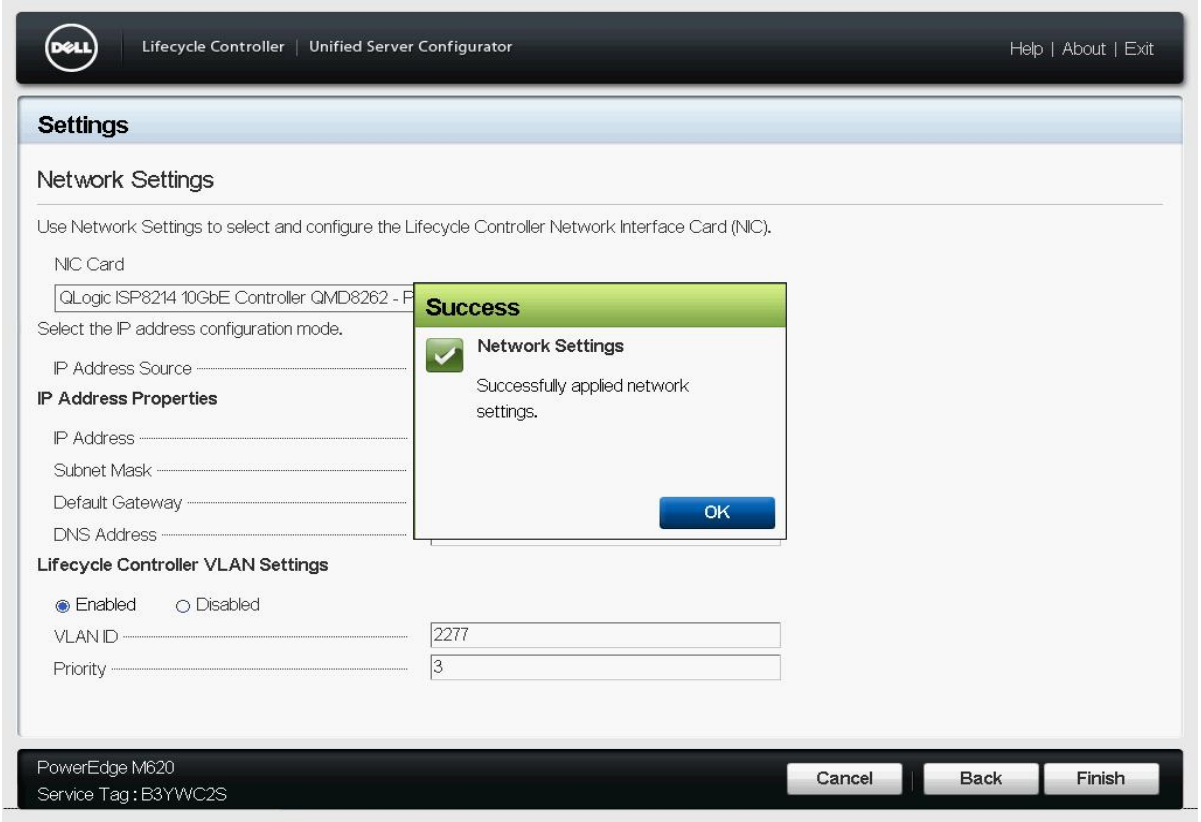

Figure 9 LC UI Network Settings success message

2 Error Scenarios and Resolution

1) *LNK0005: Unable to Connect to DHCP server*

Description: If you make sure that the network cable is connected and the network configuration settings are correct, then an error message will be displayed. A sample screen shot is given here.

Solution:

a. Try to verify if the network cable is connected and the network configuration settings are correct. Else, retry the operation.
b. Update the **Network Interface Controller (NIC) Card** firmware to the latest version, and then retry the operation.

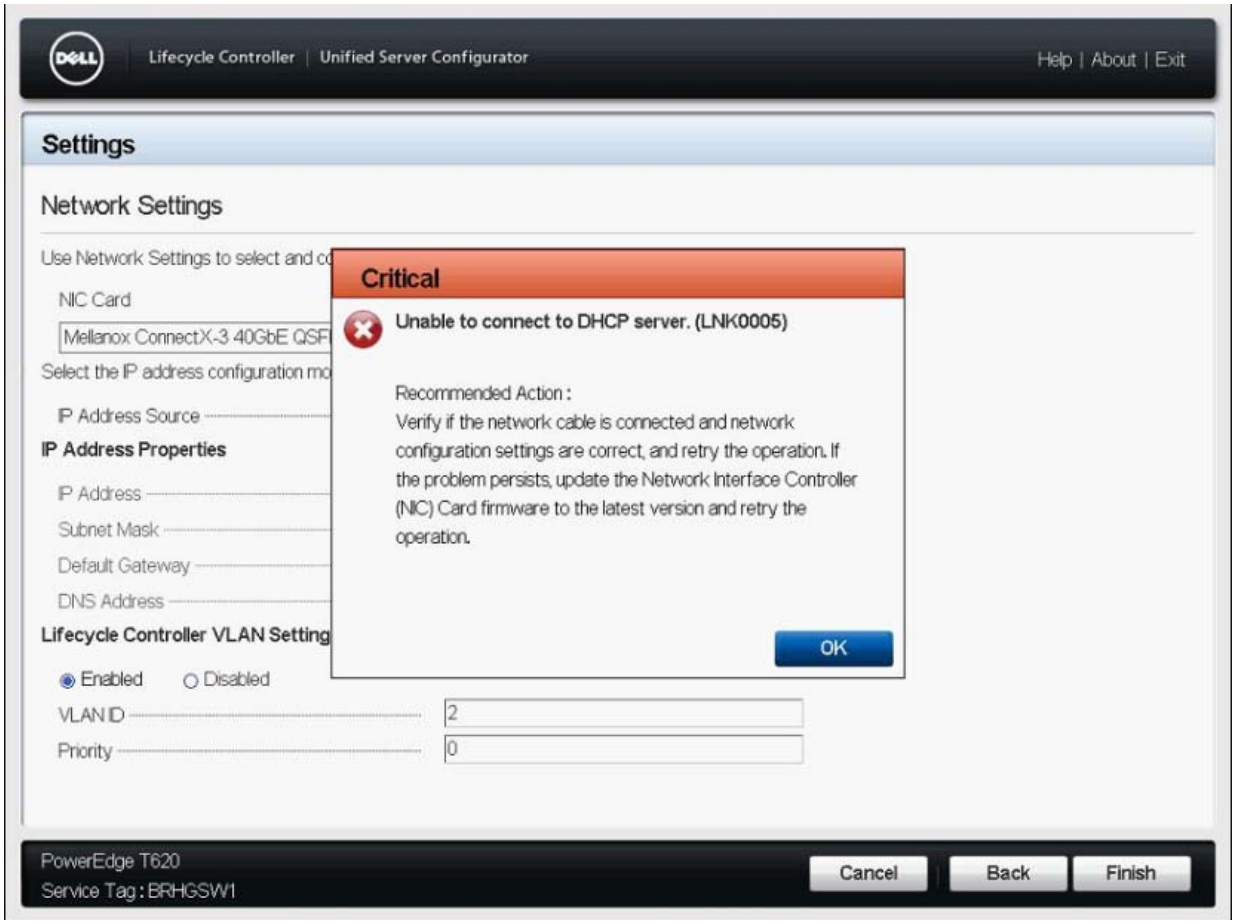

Figure 10 LC GUI network settings critical error message

3 Warning Scenarios and Resolution

1) *Invalid VLAN ID*

Description: A warning message is displayed to indicate if any letters, special character,s or a value typed is not within 1–4094.

Solution:

a) Type a numeric value between 1-4094 for VLAN ID.

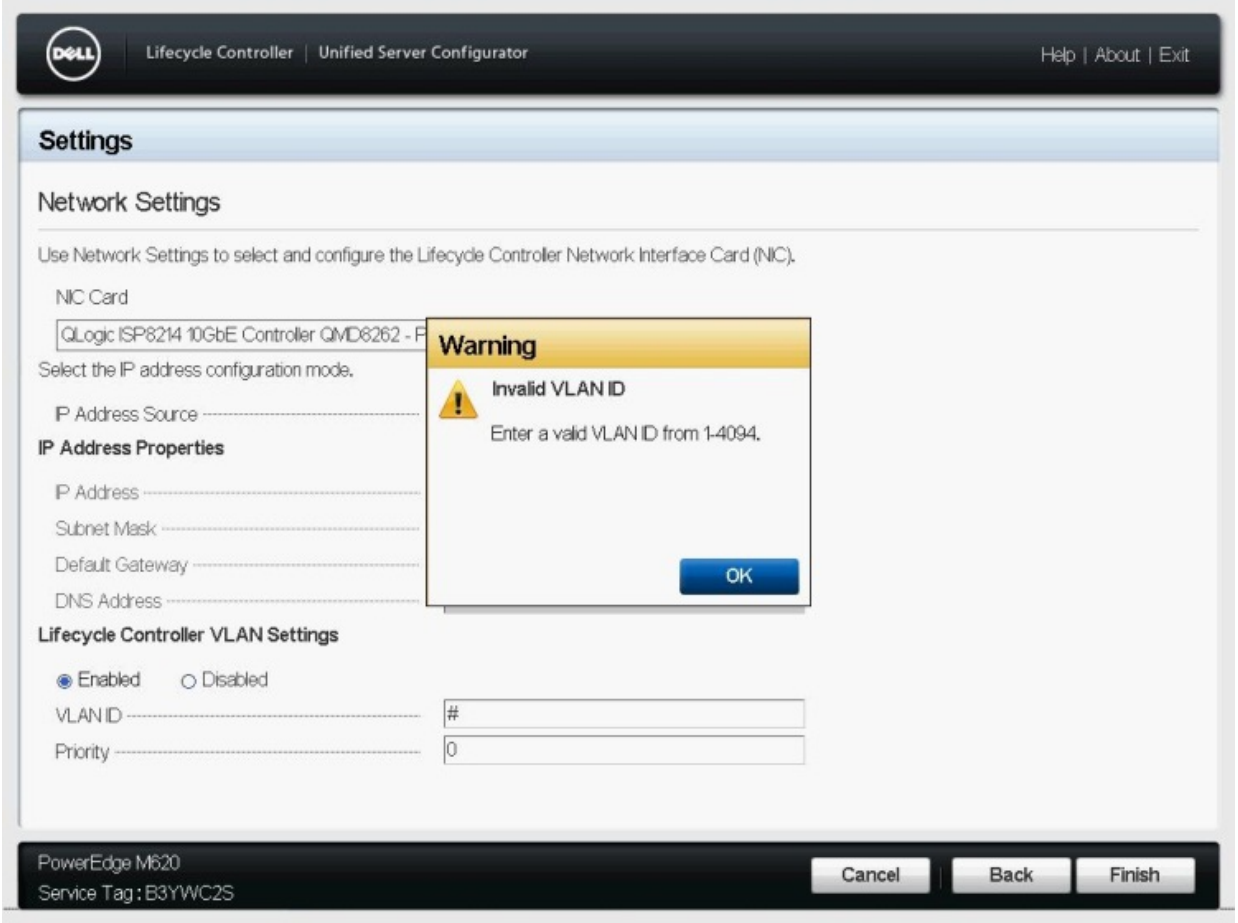

Figure 10 LC UI Network Settings invalid VLAN ID warning message

2) *Invalid Priority Number*

Description: A warning message is displayed to indicate if any letters, special characters, or a value typed is not between 0-7.

Solution:

a) Type a numeric value between 0–7 for priority number.

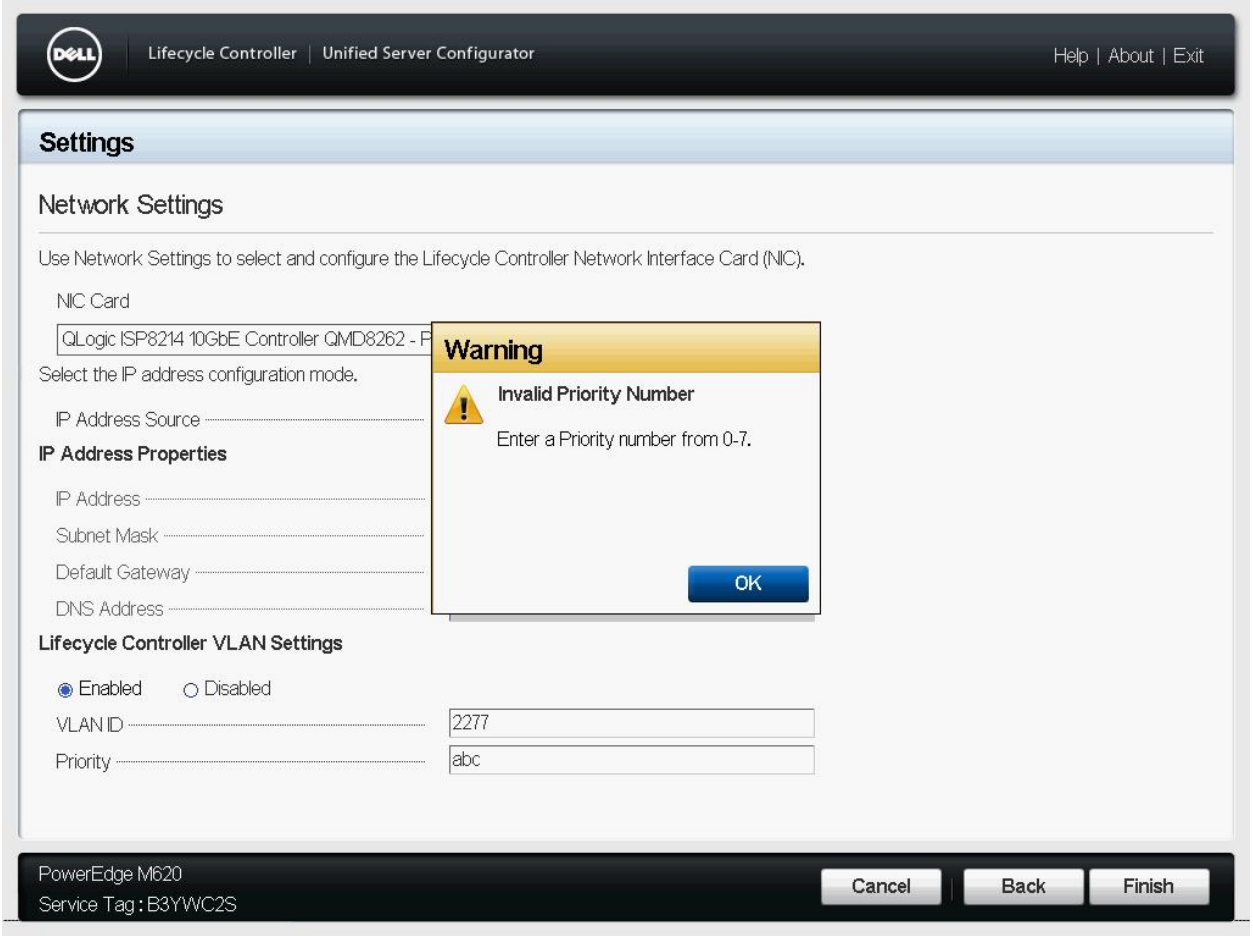

Figure 11 LC UI Network Settings invalid Priority Number warning message

4 Frequently Asked Questions

1. **Can I use the FC Network Cards for Lifecycle Controller VLAN Settings?**

   Ans: You cannot use the FC Network Cards.

2. **What are the VLAN Settings required to access the ftp.dell.com?**

   Ans: The default VLAN Settings (VLAN ID–1 and Priority–0).

3. **Can I configure multiple ports and use in LC UI?**

   Ans: The LC GUI works with the latest configured port.

5 Best Practices

For recommended actions in case of any errors while configuring DHCP or STATIC Server, refer to the "Error Scenarios and resolution", "Warning Scenarios and resolution" sections in this white paper.

5.1 Technical White Paper

Table 1 Technical white paper definition

Is	Is not
• Is tested and validated on all the 12G servers, having LC2 1.3.0 and iDARC 1.50.50 versions.	• Is NOT supported on 11G or 12G servers having LC2 1.2.0 version or earlier.

A Supported Network Interface Cards For VLAN Settings Using LC GUI

To configure VLAN Settings, on the Lifecycle Controller page, go to **Settings → Network Settings** for all the Dell supported network cards such as Broadcom, Intel, Qlogic, and Mellanox.

Note: All FC cards are not supported for VLAN Settings in LC UI such as Brocade, Emulex, and Qlogic.

To know the cards are either Ethernet or FC, refer to the *Lifecycle Controller1.3 User's Guide* available at dell.com/support/manuals.

Sl. No	Description	Vendor
1	57810S DP 10G SFP+ ADAPTER (Full Height)	Broadcom
2	57810S DP 10G SFP+ ADAPTER (Low Profile)	Broadcom
3	57800S DP 10G BASE-T ADAPTER (Full Height)	Broadcom
4	57800S DP 10G BASE-T ADAPTER (Low Profile)	Broadcom
5	5720 DP 1G ADAPTER (Full Height)	Broadcom
6	5720 DP 1G ADAPTER (Low Profile)	Broadcom
7	5719 QP 1G ADAPTER (Full Height)	Broadcom
8	5719 QP 1G ADAPTER (Low Profile)	Broadcom
9	57800S QP rNDC (10G BASE-T + 1G BASE-T)	Broadcom
10	57800S QP rNDC (10G SFP+ + 1G BASE-T)	Broadcom
11	5720 QP rNDC 1G BASE-T	Broadcom
12	57810S DP bNDC KR	Broadcom
13	5719 QP 1G Mezz	Broadcom
14	57810S DP 10G KR Mezz	Broadcom

15	Broadcom 57840S Quad Port 10G SFP+ Rack NDC	Broadcom
16	Broadcom 57840S-k Quad Port 10GbE Blade KR NDC	Broadcom
17	i540 DP 10G BASE-T ADAPTER (Full Height)	Intel
18	i540 DP 10G BASE-T ADAPTER (Low Profile)	Intel
19	Intel DP 10GBASE SFP+ (Full Height)	Intel
20	Intel DP 10GBASE SFP+ (Low Profile)	Intel
21	i350 DP 1G ADAPTER (Full Height)	Intel
22	i350 DP 1G ADAPTER (Low Profile)	Intel
23	i350 QP 1G ADAPTER (Full Height)	Intel
24	i350 QP 1G ADAPTER (Low Profile)	Intel
25	i540 QP rNDC (10G BASE-T + 1G BASE-T)	Intel
26	i350 QP rNDC 1G BASE-T	Intel
27	i520 DP bNDC KR	Intel
28	DP 10Gb KR Mezz	Intel
29	DP 10Gb KR Mezz	Intel
30	I350 QP 1G Mezz	Intel
31	DP 10Gb SFP+/DA CNA (Full Height)	Qlogic
32	DP 10Gb SFP+/DA CNA (Low Profile)	Qlogic
33	10G DP bNDC KR	Qlogic
34	Qlogic QME8262-k Mezz	Qlogic
35	Qlogic CCRD NTWK 12G 10KR	Qlogic
36	Mellanox ConnectX-3 Dual Port 10 GbE KR Blade Mezzanine Card	Mellanox

37	Mellanox ConnectX-3 Dual Port 10 GbE DA/SFP+ Network Adapter (Full Height)	Mellanox
38	Mellanox ConnectX-3 Dual Port 10 GbE DA/SFP+ Network Adapter (Low Profile)	Mellanox
39	Mellanox ConnectX-3 Dual Port 40 GbE QSFP+ Network Adapter (Full Height)	Mellanox
40	Mellanox ConnectX-3 Dual Port 40 GbE QSFP+ Network Adapter (Low Profile)	Mellanox

B Unsupported Network Interface Cards For VLAN Settings Using LC GUI

To configure VLAN settings from LC GUI (as these cards are not listed on the Network Settings page) and to know the cards are either Ethernet or FC, refer to the *Lifecycle Controller1.3 User's Guide* available at dell.com/support/manuals.

Sl. No	Description	Vendor
1	Cat II Dual Port SFP+ CNA (NPAR, FCoE, SR-IOV, ISoE) (Full Height)	Brocade
2	Cat II Dual Port SFP+ CNA (NPAR, FCoE, SR-IOV, ISoE) (Low Profile)	Brocade
3	Catapult II Dual Port 10Gb KR CNA Mezz(NPAR, FCOE, SR-IOV, ISoE)	Brocade
4	Catapult I BR1741M Dual Port CNA Mezzanine	Brocade
5	BR1020 10GB CNA Stand-up card (Full Height)	Brocade
6	BR1020 10GB CNA Stand-up card (Low Profile)	Brocade
7	B-815 HBA 8Gbps Single Port (Full Height)	Brocade
8	B-815 HBA 8Gbps Single Port (Low Profile)	Brocade
9	B-825 HBA 8Gbps Dual Port (Full Height)	Brocade
10	B-825 HBA 8Gbps Dual Port (Low Profile)	Brocade
11	Qlogic FC8 Mezz	Qlogic
12	QLE2662 Dual Port FC16 (Full Height)	Qlogic
13	QLE2662 Dual Port FC16 (Low Profile)	Qlogic
14	FC16 QLE2660 Single Port (Full Height)	Qlogic
15	FC16 QLE2660 Single Port (Low Profile)	Qlogic
16	FC16 QME2662 Mezz	Qlogic

17	CRD,CTL,FC8,HB,QME2572,BLDE,V2	Qlogic
18	QLE2460 8Gbps Single Port (Full Height)	Qlogic
19	QLE2462 8Gbps Dual Port (Full Height)	Qlogic
20	QLE2560 8Gbps Single Port	Qlogic
21	QLE2562 8Gbps Dual Port	Qlogic
22	CRD,CTL,FC16,2P,LPE16002,EMLX (Full Height)	Emulex
23	CRD,CTL,FC16,2P,LPE16002,LP,EMLX (Low Profile	Emulex
24	CRD,CTL,FC16,1P,LPE16000,EMLX (Full Height)	Emulex
25	CRD,CTL,FC16,1P,LPE16000,LP,EMLX (Low Profile)	Emulex
26	CRD,CTL,FC8,HBA,SC,LPE12000,V2 (Full Height)	Emulex
27	CRD,CTL,FC8,HBA,SC,LPE12000 (Low Profile)	Emulex
28	CRD,CTL,FC8HBA,DLC,LPE12002,V2 (Full Height)	Emulex
29	CRD,CTL,FC8HBA,DLC,LPE12002v(Low Profile)	Emulex
30	LPE11002 FC4 HBA	Emulex
31	LPe1150 FC4 HBA	Emulex
32	LPe1205 FC8 HBA	Emulex
33	LPe16000 Single Port FC16 HBA (Full Height)	Emulex
34	LPe16000 Single Port FC16 HBA (Low Profile)	Emulex
35	LPe16002 Dual Port FC16 HBA (Full Height)	Emulex
36	LPe16002 Dual Port FC16 HBA (Low Profile)	Emulex
37	FC16 Mezz	Emulex

C Configuration Details

Table 2 Component table

Component	Description
Firmware version	LC2 1.3.0 and iDRAC 1.50.50
Application	Lifecycle Controller
Server	All Dell PowerEdge 12G servers

D Additional Resources

Support.dell.com is focused on meeting your needs with proven services and support.

DellTechCenter.com is an IT Community where you can connect with Dell Customers and Dell employees for the purpose of sharing knowledge, best practices, and information about Dell products and installations.

Referenced or recommended Dell publications:

- Dell EqualLogic Configuration Guide: http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/19852516/download.aspx

Referenced or recommended Microsoft publications:

- Microsoft SQL Server 2008: Disk Partition Alignment Best Practices for SQL Server: http://msdn.microsoft.com/en-us/library/dd758814.aspx

Referenced or recommended Dell publications:

- LifeCycle User Guide: http://en.community.dell.com/dell-groups/dtcmedia/m/mediagallery/19852516/download.aspx