Deploying Operating System on iSCSI & FCoE LUN

This Dell Technical White Paper provides steps to explain the deployment of OS on iSCSI & FCoE LUN on the 12th generation servers of Dell.

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Executive Summary

This whitepaper gives the basics of Operating system deployment to an iSCSI LUN & FCoE LUN on the 12th generation servers of Dell.
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**Introduction**

This whitepaper describes installing, enabling, and configuring for Internet Small Computer System Interface (iSCSI), and Fibre Channel over Ethernet (FCoE) for universal converged network adapters (UCNAs).

Boot from SAN is the process of booting a server directly from a disk operating system (DOS) image located on a storage area network (SAN). When booting from SAN, the storage device is typically identified by its World Wide Port Name (WWPN) and a Logical Unit Number (LUN). By extending the server system boot basic input/output system (BIOS), boot from SAN functionality is provided by the boot BIOS contained in the Dell server. When properly configured, the controller then permanently directs the server to boot from a logical unit (physical disk drive) on the SAN as if it was a local physical disk drive.

**iSCSI Overview**

iSCSI is an (Internet Protocol) IP–based storage networking standard for linking data storage facilities. By carrying SCSI commands over IP networks, iSCSI is used to facilitate data transfers over intranets and to manage storage over long distances. iSCSI can be used to transmit data over local area networks (LANs), wide area networks (WANs), or the Internet and can enable location-independent data storage and retrieval.

**iSCSI–based SAN Architecture**
Deploying Operating System on iSCSI and FCOE LUN

Flow Chart for OS Deployment Using iSCSI LUN

Start

(1) Boot, and then press <F10> to go to Lifecycle Controller
(1) Boot, and then press <F2> to go to System Setup

(2) Enable iSCSI

(3) Enter appropriate values for the Controller settings

(4) In Storage array, enter the Initiator IQN and create a Volume

(5) On the host server, enter the target IQN and the target IP address

(6) Boot to the OS media device

(7) Select the iSCSI LUN

(8) Install OS

End
Deploying Operating System on iSCSI and FCOE LUN
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Configuring iSCSI Boot Parameters for Qlogic and OS Installation

By setting up a basic iSCSI boot configuration, you can configure your initiator, contact network devices, and set up an iSCSI boot target. When setting up a basic iSCSI boot configuration you must do the following:

1. Press F10 to open Lifecycle Controller.

![Lifecycle Controller Interface]

2. In the left pane, click **System Setup**, and then click **Advanced Hardware Configuration**.

![Advanced Hardware Configuration Interface]
3. On the **System Setup** page, click **Device Settings**.

4. Select Qlogic adapter and configure the iSCSI initiator name and enable boot support.
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5. Restart the server.

6. Boot to OS media, select iSCSI LUN during installation, and then complete the installation.

**Note:** If there are multiple controllers in your system, your iSCSI Initiator name may be different for each controller.

For other network cards, different adapter settings are present. Refer to the mentioned references.

Intel and Broadcom:

**FCoE Overview**

FCoE provides a method to transport Fibre Channel frames on top of an Ethernet infrastructure. In summary, unaltered Fibre Channel frames are encapsulated in an Ethernet header, sent over a lossless Ethernet fabric, and un-encapsulated when they reach the target.

**FCoE—based SAN Architecture**
Flow Chart Showing OS Deployment Using FCoE LUN

1. Boot, and then press <F10> to go to Lifecycle Controller
2. Enable FCoE, and then enter target WWN
3. Enter appropriate values for the Controller settings
4. In Storage array, enter the Initiator WWN and create a Volume
5. On the host server, check for the connected LUN
6. Boot to the OS media device
7. Select the FCoE LUN
8. Install OS

End
Deploying Operating System on iSCSI and FCOE LUN
Configuring FCoE Boot Parameters for Qlogic and OS Installation

To support an FCoE boot process, a network adapter on the host must have a specially configured FCoE boot firmware. When you configure the firmware, you enable the adapter for the software FCoE boot and specify the boot LUN parameters.

1. Press F10 to open Lifecycle Controller.
2. In the left pane, click **System Setup**, and then click **Advanced Hardware Configuration**.

3. On the **System Setup** page, click **Device Settings**.

4. Select Qlogic adapter and configure
5. Restart the server.

6. Boot to OS media and Select FCoE LUN during installation and complete the installation.

For other network cards, different adapter settings are present. Refer the mentioned references.

Intel: http://en.community.dell.com/techcenter/extras/m/white_papers/20118779.aspx

Bcom: http://en.community.dell.com/techcenter/extras/m/white_papers/20242976.aspx

Deploying Operating System on iSCSI and FCOE LUN

**Abbreviations**
- BIOS: Basic Input/Output System
- HII: Human Interface Infrastructure
- IP: Internet protocol
- iSCSI: Internet Small Computer System Interface
- FCoE: Fibre Channel over Ethernet
- LUN: Logical unit number
- RAID: redundant array of independent disks
- SAN: storage area network
- SCSI: Small Computer System Interface
- WWN: World Wide Name

**References**
- [http://i.dell.com/sites/content/business/solutions/whitepapers/en/Documents/Instructions_to_Perform_Boot_from_iSCSI_for_Dell_Storage_Arrays.pdf](http://i.dell.com/sites/content/business/solutions/whitepapers/en/Documents/Instructions_to_Perform_Boot_from_iSCSI_for_Dell_Storage_Arrays.pdf)