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CONFIGURING iSCSI REMOTE BOOT ON DELL POWEREDGE SERVERS WITH INTEL ADAPTERS

Booting servers from an Internet SCSI (iSCSI) storage area network further enhances the enterprise advantages of iSCSI, helping significantly reduce the time needed to deploy new or replacement servers. This article provides hands-on guidance for configuring iSCSI remote boot on Dell™ PowerEdge™ servers with Intel® Ethernet adapters.

Ongoing demand for data center resources continues to generate tremendous growth potential for servers and storage, and in many data centers such rapid growth is straining the capacities of environmental control, power, and space. In response to this demand, many organizations are using Internet SCSI (iSCSI) technology in storage area networks (SANs), which can provide significant advantages in enterprise environments—including increased flexibility, scalability, and resource utilization compared with direct attach storage, and simplified management and a reduced cost of entry compared with traditional Fibre Channel SANs.¹

Organizations can further take advantage of the benefits of iSCSI by adding iSCSI boot capabilities to an existing iSCSI SAN. By allowing administrators to simply configure new or replacement servers to use an appropriate boot image stored on the SAN, rather than completely re-imaging these servers, iSCSI boot can help significantly reduce the time needed to deploy new servers or recover from an unplanned server replacement. When performing

server recovery operations or adding, moving, or changing servers, using iSCSI to boot Dell PowerEdge servers with Intel Ethernet server adapters from a centralized image on a Dell PowerVault™, Dell EqualLogic™, or Dell/EMC SAN can help significantly reduce server downtime while simplifying IT management.² Administrators can configure and manage iSCSI boot settings using a simple Intel pre-boot menu in their Dell PowerEdge server.

CONFIGURING iSCSI SAN BOOT

Dell PowerEdge servers equipped with Intel Ethernet adapters and running the Microsoft® Windows Server® 2003 OS with Service Pack 1 (SP1) or later—together with Microsoft iSCSI Software Initiator 2.02 or later—enable comprehensive support for iSCSI boot. Because native support greatly simplifies the task of connecting to iSCSI SANs, upgrading to these versions is highly recommended.

Before a server can perform an iSCSI boot, it must be configured to boot from an OS image

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¹ For more information on the advantages of iSCSI, see “iSCSI: Changing the Economics of Storage; Part 1—Understanding iSCSI in Enterprise Environments,” by Travis Vigil, in *Dell Power Solutions*, May 2007, DELL.COM/Downloads/Global/Power/ps2q07-20070335-Vigil.pdf.

² For more information on iSCSI remote boot, see “Optimizing iSCSI SANs with Intel PRO Server Adapters and iSCSI Remote Boot,” by Jordan Plawner, in *Dell Power Solutions*, August 2007, DELL.COM/Downloads/Global/Power/ps3q07-20070441-Intel.pdf; and “Accelerating Application Traffic with Intel 10 Gigabit Ethernet Server Adapters,” by Jordan Plawner and Travis Vigil, in *Dell Power Solutions*, February 2008, DELL.COM/Downloads/Global/Power/ps1q08-20070597-Intel.pdf.

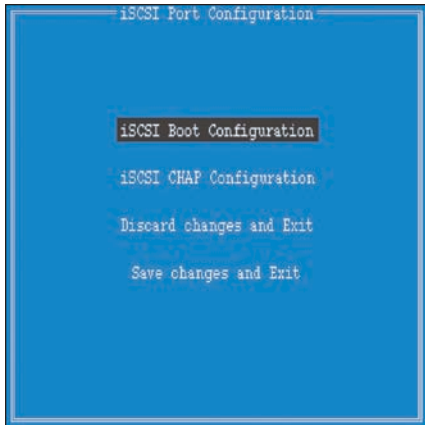


Figure 1. Intel iSCSI Port Configuration menu

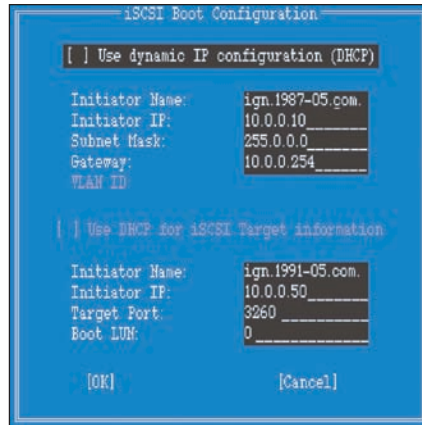


Figure 2. Intel iSCSI Boot Configuration menu using centralized DHCP configuration

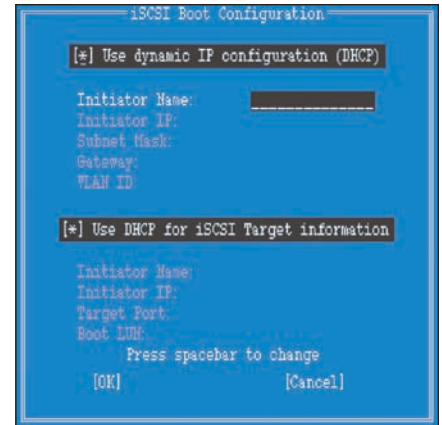



Figure 3. Intel iSCSI Boot Configuration menu set up for manual server configuration

stored at a designated IP location on the iSCSI SAN. On a Dell PowerEdge server using an Intel server adapter, administrators start this process by pressing Ctrl+D at the boot prompt to configure the option ROM through the Intel preboot menu. After selecting the Intel Ethernet interface port to be used as either the primary or secondary iSCSI boot initiator, they can next select “iSCSI Boot Configuration” in the iSCSI Port Configuration menu to configure IP addressing as well as the target and initiator information (see Figure 1).

Centralized DHCP configuration is selected by default in the iSCSI Boot Configuration menu for ease of deployment (see Figure 2). The DHCP server is responsible for assigning the IP address to the host initiator, the target name, the IP address, and a well-known TCP port and boot logical unit (LUN). Using a centralized DHCP iSCSI configuration helps simplify physical deployment by allowing boot information to reside on the DHCP server. Administrators should typically make topology changes to the iSCSI boot configuration at a single location for multiple boot hosts, rather than at each individual server. However, they can choose to manually configure individual servers by deselecting “Use dynamic IP configuration (DHCP)” (see Figure 3).

After saving the IP and iSCSI configurations, administrators can next select “iSCSI CHAP Configuration” in the iSCSI Port Configuration menu to configure login security settings, after which the setup is complete. When the server is next powered up or restarted, it boots its preconfigured BIOS and runs the iSCSI initiator firmware to connect to a bootable target partition on the SAN. The server treats the remote SAN partition as a bootable disk to connect and load the OS image from the designated target location, and typically boots as quickly as it could if the SAN partition were a local disk.

ENHANCING DATA CENTER MANAGEMENT

Centralizing data and OS images on a SAN can be a critical part of building scalability and flexibility into the infrastructure of even the smallest data centers. By taking advantage of iSCSI technology to simplify the process of booting servers from a SAN, organizations can increase flexibility while easing deployment, server replacement, and disaster recovery processes throughout the data center. 

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