Service Description

Installation and Implementation of a Dell | EMC Storage Array

Service SKUs

<table>
<thead>
<tr>
<th>Legend</th>
<th>SKU #</th>
<th>Description</th>
<th>Partner</th>
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<tbody>
<tr>
<td>BD2SI2</td>
<td>989-4719</td>
<td>EMC Fibre IMP/INST 2 HOSTS, EDT</td>
<td>EDT</td>
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<tr>
<td>BDSCSI2</td>
<td>987-2599</td>
<td>EMC iSCSI IMP/INST 2 HOSTS, EDT</td>
<td>EDT</td>
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Service Overview

This service provides for the implementation of a Dell | EMC multi-host switched fibre channel (“FC”) storage area network (“SAN”) or direct attached storage (“DAS”) environment (the “Service” or “Services”), as set forth more specifically in this Service Description. This Service includes the physical installation of the storage hardware such as storage array, FC host bus adapters (“HBAs”) (into Dell servers only), FC switches, and disk array enclosures (“DAEs”), and the connection of up to two internet SCSI (“iSCSI”) or FC hosts. This Service includes the design, configuration, and implementation of the storage array to the hosts. This Service is available for Dell | EMC solutions only and is not available for Dell PowerVault™ or EMC® (non-Dell) solutions.

This Service will be provided during the hours of 8:00am to 6:00pm, Customer local time, Monday through Friday, excluding holidays, unless other arrangements have been made through the Dell sales team and the project manager.

Not Included With This Service

- Clustering.
- Performance tuning, system optimization, teaming/load balancing of network interface cards (“NICs”) or other similar services.
- Installation of cables external to the rack.
- Scripting of any kind.
- Installation of any non-storage related hardware or software.
- Installation of any product into an unsupported rack.
- Installation of HBAs and/or drivers into non-Dell servers.
- Installation of non-FC HBAs.
- Configuration or reconfiguration of any existing network environment.
- Configuration of non-FC ports (other than management ports) on FC switches.
- Installation or configuration of advanced or licensed features on any storage product other than as specified in this Service Description.
- Integration of network-attached storage (“NAS”) boxes or other non-standard hosts (except for Dell PowerVault).
- Multiple array implementations.
- More than two fabrics per array.
- Any activities relating to Ethernet networks other than the installation and cabling of Dell PowerConnect™ switches.
- Any activities other than those specifically noted in this Service Description.
Customer’s Responsibilities

- Complete a backup of all existing data and programs on all affected systems prior to the delivery of this Service. DELL WILL HAVE NO LIABILITY FOR LOSS OR RECOVERY OF DATA OR PROGRAMS or loss of use of system(s) arising out of the services or support or any act or omission, including negligence, by Dell or a third-party service provider.
- Place the storage product in the immediate area of the rack or server into which it will be installed.
- Ensure that the required power outlets and power distribution units (“PDUs”) are installed and functional.
- Ensure that all hosts are installed, with supported operating systems and current service packs, peripheral hardware and firmware, and system BIOS.
- Ensure that the existing network environment is properly setup to handle the I/O requirements of any iSCSI hosts and that the appropriate network drops are in place prior to the commencement of this Service.
- Dispose of the packing material and other debris.

Key Service Steps

**Planning:**
1. Review the site environmental and technical readiness requirements.
2. Confirm readiness review and installation dates and highlight dependencies on complete Customer site readiness and product ship dates to meet the planned installation schedule.
3. Ensure that the Customer reviews, accepts, and abides by the terms and conditions of this Service Description.

**Design:**
1. Review and obtain the site technical requirements with the Customer.
2. Verify that the existing hosts meet the minimum hardware and software requirements.
3. Create a valid design based on the Customer’s hardware and software configuration:
   a. Define the storage allocation:
      i. Redundant array of independent disks (“RAID”)/storage groups.
      ii. Logical unit number (“LUN”)/MetaLUN sizing.
      iii. Server assignments.
   b. Define the switch configurations.
   c. Define/confirm that the configuration meets the minimum hardware and software requirements for the environment.
4. Discuss the recommended LAN configurations and security settings for all iSCSI hosts with the Customer, if applicable.

**Implementation and Testing:**
1. Install the storage array components:
   a. Unpack and inspect all hardware prior to installation.
   b. Mount any necessary rack related hardware into the Dell supported rack.
   c. If needed, remove any components (such as: blades, power supplies, drives) to reduce the overall weight.
   d. Mount the storage array components into the rack/rails.
   e. Reinstall any components that were removed from the product.
   f. Install Customer-provided PDU(s) onto the rack, as needed, for the proper power configuration of the product.
   g. Install and route all power and interconnect cables to the storage components.
   h. Attach any management ports to the Customer-provided network drops.
   i. Label all the interconnect cables.
   j. Power on the product and verify basic functionality ensuring that there are no fault indicators.
2. Configure the array within the environment, as per the design:
   a. Enable global security for the array.
   b. Configure Navisphere® Manager:
      i. Confirm that the Navisphere release level is at the approved version; update as necessary.
      ii. Enable Access Logix.
      iii. Enable read/write cache.
iv. Enable statistics logging.

3. Configure the FC switches, as necessary, as per the design:
   a. Confirm that the switch firmware is at the approved version; update as necessary.
   b. Create the storage zones.

4. Configure the storage, as per the design:
   a. Create RAID groups.
   b. Create LUNs.
   c. Create storage groups.
   d. Assign LUNs to storage groups.

5. Configure each FC host, as per the design:
   a. Validate that the host firmware and software is at the approved versions:
      i. On Dell hardware, update as necessary.
      ii. On non-Dell hardware, ensure that the Customer updates as necessary.
   b. On Dell hosts, install the HBAs and driver:
      i. Power cycle the host(s) to ensure a proper boot cycle.
      ii. Install the HBA(s) into the host.
      iii. Ensure that the HBA(s) firmware is at the approved levels; update as necessary.
      iv. Install the HBA driver into the host operating system.
   c. On non-Dell hosts, ensure that the Customer has installed the HBA and driver.
   d. Install and route all the hosts to switch connectivity cables.
   e. Label the interconnect cables.
   f. Configure the hosts:
      i. Install Navisphere agent.
      ii. Install the failover software included with the storage hardware.
      iii. Connect the host connectivity cables.
      iv. Configure/zone host ports to the switch fabrics.
      v. Assign hosts to their appropriate storage groups.

6. Configure each iSCSI host, if applicable, as per the design:
   a. Install the iSCSI initiator.
   b. Configure the iSCSI NIC IP addresses.
   c. Install the failover software included with the storage hardware, as needed.
   d. Install the server utility.

7. Configure the iSCSI parameters on the array, if applicable, as per the design:
   a. Configure iSCSI initiators on the storage device.
   b. Register hosts and confirm connectivity.

8. Configure challenge handshake authentication protocol (“CHAP”), as needed, as per the design:
   a. Disconnect and clear iSCSI initiator settings on all hosts.
   b. Configure the CHAP user and enable it on the storage array.
   c. Configure iSCSI initiator with CHAP on all hosts.

9. Verify host to LUN connectivity:
   a. Partition and format the LUNs, as per the design:
   b. If host is an approved Dell NAS Host, create shares/exports, as set forth in the Design section above.

10. Install Navisphere Analyzer, if purchased with this Service.
11. Configure and test email notification, as per the design.
12. Configure and test phone home feature, if sold with this Service, as per the design.
13. Remove all installation packaging to a Customer-designated area within the immediate installation location, or arrange with the Customer for Customer’s own removal of it.

• **Product Awareness:**
  1. Conduct a brief product orientation session and review the associated documentation with Customer.
  This overview does not replace any available Dell education courses for this product.
  2. Demonstrate the failover capability, if applicable.

• **Project Closeout:**
  1. Provide documentation to reflect the Services performed.
  2. Obtain Customer acknowledgment of the Services performed.
Important Additional Information

Dell is pleased to provide these Services in accordance with this Service Description and the terms and conditions of Customer's applicable signed service agreement with Dell or Dell's third-party service provider, or, in the absence of such an agreement, the terms and conditions of Dell's Customer Master Services Agreement available for US and Latin America Customers at http://www.dell.com/service_contracts/, or for Canada Customers at http://www.dell.ca/servicecontracts/.

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