



Service description

Installation and Implementation of Dell HPCC NFS Storage Solution - High Availability

Introduction to your service agreement

This service provides for the installation and implementation of Dell HPCC NFS storage solution - High Availability ("NSS-HA") (the "Supported Product" or "Supported Products") of a Dell delivered HPCC NSS-HA solution set forth more specifically in this Service Description (the "Service or Services"). This service includes:

- Physical installation of 2 Dell PowerEdge™ R710 Servers
- Physical installation of up to 28 Dell PowerVault™ MD1200 storage enclosures
- Physical installation of up to 4 Dell PowerVault MD3200 storage enclosure
- Installation of Red Hat® Enterprise Linux® ("RHEL"), version 6.1
- Installation and configuration of Red Hat Cluster Suite
- Installation and configuration of XFS file system
- Installation of Open Fabrics Enterprise Distribution ("OFED") as required
- Installation of OpenManage™ Server Administrator
- Installation of MD3200 management software

A Dell representative will contact the Customer to schedule this Service, allowing for at least a ten business day lead time prior to the start of the Service, based upon a mutually agreed to resource availability. This Service will be provided during normal Dell business hours Monday through Friday (8:00am to 6:00pm Customer local time) unless specified otherwise in Appendix B. Any services beyond normal Dell business hours will be reflected on the Customer's invoice. No service activities shall take place during local, state and/or country holidays unless other arrangements have been made through the sales team and the Dell project manager.

This Service Description ("Service Description") is entered among you the customer ("you" or "Customer") and the Dell entity identified on your invoice for the purchase of this Service. This Service is provided in connection with Customer's separate signed master services agreement with Dell that explicitly authorizes the sale of this Service (as defined herein) or, in the absence of such agreement, Dell's terms of sale applicable to commercial customers, which is available at www.Dell.com/terms (you can access this at www.Dell.com/terms in the United States) or your local Dell.com website and incorporated by reference in its entirety herein.

By placing your order for the Services, utilizing the Services or associated software, or by clicking/checking the "I Agree" button or box on the Dell.com website in connection with your

purchase or within a Dell software interface you agree to be bound by this Service Description and the agreements incorporated by reference herein. If you are entering this Service Description on behalf of a company or other legal entity you represent that you have authority to bind such entity to this Service Description, which case "you" or "Customer" shall refer to such entity.

Service expires 1 year after purchase. EXCEPT TO THE EXTENT APPLICABLE LAW REQUIRES OTHERWISE, YOU MAY USE THIS SERVICE ONE TIME DURING THE 1 YEAR PERIOD FOLLOWING THE DATE OF ORIGINAL PURCHASE ("EXPIRATION DATE"). THE ORIGINAL PURCHASE DATE IS DEFINED AS THE EARLIER OF THE DATE OF THE INVOICE FOR THE SERVICE OR ORDER CONFIRMATION FROM DELL. DELL'S DELIVERY OF THE SERVICE WILL BE DEEMED SATISFIED AFTER THE EXPIRATION DATE EVEN IF YOU DO NOT USE THE SERVICE.

The scope of your Service agreement

Service SKUs

See Appendix A

The key Service steps include

- **Planning:**
 1. Review the site environmental and technical readiness requirements.
 2. Confirm readiness review and installation dates and highlight stringent dependencies on complete Customer site readiness and product ship dates to meet the planned installation schedule.
 3. Ensure that the Customer reviews, understands and accepts the terms and conditions of this Service.
- **Design:**
 1. Review the site environmental and technical readiness requirements.
 2. Ensure that the Customer reviews, understands and accepts the terms and conditions of this Service Description.
 3. Document solution size, i.e. 144TB, 288TB, 576TB or 1152TB
 4. Create a valid design based on the Customer's hardware and software configuration:
 - a. Define the storage allocation as per Dell NSS best-practices:
 - i. Redundant array of independent disks ("RAID") sets.
 - ii. Virtual Disk sizing.
 - b. Define NFS Shares
 - c. Collect and define Customer IP address and Cluster Hostname
 - d. Determine network connectivity type for NSS-HA.
 - e. Define/confirm that the configuration meets the minimum hardware and software requirements for the environment.
- **Implementation and testing:**
 1. Dell NSS device Installation:
 - a. Mount rack related hardware (such as rails, brackets and tray) onto the rack.
 - b. If needed, remove components (such as disks and power supplies) from the server and enclosures to reduce the overall weight.
 - c. Mount the server and storage enclosures into the rack.
 - d. Reinstall any components that were removed from the Servers or enclosures.



- e. Install Customer provided PDU(s) onto the rack, as needed for the proper power configuration of the server.
 - f. Label all interconnect and power cables per Customer specifications.
 - g. Install and route power and interconnect cables to the servers and enclosures.
 - h. Connect and label the Customer-provided cables to the servers and enclosures (such as network, keyboard, mouse, and video).
 - i. Power up the servers and enclosures, perform initial system boot and ensure that there are no visible fault indicators.
 - j. Verify that all server(s) components have all the proper firmware revisions, and update the firmware as needed.
 - k. Configure IP address for Dell Remote Access Controller ("DRAC") per Customer specifications.
2. RHEL installation:
 - a. For redundant array of independent disks ("RAID") host bus adapters ("HBA"s):
 - i. Enter the RAID utility and configure the physical drives into one or more RAID logical unit number ("LUN"s") according to Dell supported Customer specifications.
 - b. Install the provided OS.
 - c. Enter first-time-boot configuration information, such as license keys, date and time as provided by the Customer.
 - d. Configure the network drivers and protocol parameters into the operating system, including network teaming, as necessary.
 - e. Configure DNS client.
 - f. Use ping to test network connectivity via TCP/IP.
 - g. Set Networking to start on boot.
 - h. Connect the server to the Customer's network, and verify connectivity by logging in remotely.
 - i. Install all necessary NOS patches using native operating system update utility using Customer supplied vendor update network.
 - j. Install Red Hat Cluster Suite and update cluster packages
 3. Install required licenses for NSS functionality.
 4. Connect to XFS repository for customer
 5. Install and configure XFS and NFS packages.
 6. Install OFED as required per design
 7. Install Dell OpenManage Server Administrator
 8. Install Dell MD3200 Management software
 9. Configure NFS shares as per the design.
 10. Mount NFS exports on up to 5 designated NFS clients.
 11. Validate NSS functionality with I/O zone test.
 12. Verify HA functionality by causing a failure on primary node
 13. Remove all packaging material to a Customer designated area within the immediate installation location, or arrange with the Customer for Customer removal.
- **Product awareness:**
 1. Conduct a brief product orientation session and review the associated documentation with the Customer. This overview does not replace any available Dell education courses for this product.
 - **Project closeout:**
 1. Provide documentation to reflect the Services performed.
 2. Obtain Customer acknowledgment of the Services performed.
 - **Assumptions:**
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1. This Service will be in conjunction with on-site or factory implementation services for a supported Dell High Performance Computing Cluster. This Service does not include these services.
2. Customer has a valid Red Hat network account and appropriate connectivity to allow package and kernel updates, as necessary.
3. 1152TB solution will be delivered over 2 file systems
4. Documented storage performance will not be achieved until background drive initialization is complete. Time to complete is dependent on array type and size. Time to initialize these large arrays can be substantial.

Excluded Services

- This Service does not include performance tuning of any kind. This Service is limited to configuring and validating functionality of NSS-HA against Dell best-practices.
- Data Migration or Backup and Restore of any kind.
- Any activities other than those specifically noted in this Service Description.

Service specific Customer responsibilities

- Provide access to internet connection to complete installation
- Open firewall ports as needed for RHN



Terms and conditions about your Service

1 Supported products

This Service is available on select Dell Supported Products such as, OptiPlex™, Latitude™, Precision™, Vostro™, PowerEdge™, PowerEdge SC™, PowerVault™, PowerConnect™, Dell EqualLogic™, Dell | EMC Storage Systems™, Dell Compellent, and select Dell printers, which are purchased in a standard configuration. Supported Products are added regularly so please contact your Dell sales representative to for the most up-to-date list of which Services are available on your Dell products.

Each Supported Product is tagged with a serial number (the "Service Tag"). A separate service agreement must be purchased by the Customer for each Supported Product. For example, a printer purchased with a laptop system is not covered by the laptop system's service contract: the printer and the laptop will each need their own service contract. Please refer to the Service Tag on your Supported Product when contacting Dell for this Service.

2 Term of service

A This Agreement commences on the date you place your order and continues through the Term of Service. The "Term of Service" begins on the purchase date and extends for the term indicated on the Order Form. The number of systems, licenses, installations, deployments, managed end points or end-users for which Customer has purchased any one or more Services (defined below), the rate or price, and the applicable Term of Service for each is indicated on Customer's order form or other mutually-agreed upon form of invoice, order acknowledgment or purchase order (collectively, "Order Form"). Purchases of Services under this Agreement shall be solely for Customer's

own internal use and not for resale or service bureau purposes.

3 Customer responsibilities

A **Authority to grant access.** Customer represents and warrants that it has obtained permission for both Customer and Dell to access and use the Supported Product, the data on it, and all hardware and software components included in it, for the purpose of providing these Services. If Customer does not already have that permission, it is Customer's responsibility to obtain it, at Customer's expense, before Customer asks Dell to perform these Services.

B **Cooperate with phone analyst and on-site technician.** Customer agrees to cooperate with and follow the instructions given by Dell phone analyst and its on-site technicians. Experience shows that most system problems and errors can be corrected over the phone as a result of close cooperation between the user and the analyst or technician.

C **On-site obligations.** Where Services require on-site performance, Customer must provide free, safe and sufficient access to Customer's facilities and the Supported Product(s). Sufficient access includes ample working space, electricity, and a local telephone line. A monitor or display, a mouse (or pointing device), and keyboard must also be provided (at no cost to Dell), if the system does not already include these items.

D **Maintain software and serviced releases.** Customer must maintain software and Supported Product(s) at Dell-specified minimum release levels or configurations as specified on PowerLink for Dell | EMC Storage or EqualLogic™, or as specified on www.support.dell.com for additional Supported Products. Customer must also ensure installation of remedial replacement



parts, patches, software updates or subsequent releases as directed by Dell in order to keep the Supported Product(s) eligible for this Service.

E Data backup. Complete a backup of all existing data and programs on all affected systems prior to the delivery of this Service by Dell. DELL WILL HAVE NO LIABILITY FOR LOSS OR RECOVERY OF DATA OR PROGRAMS or loss of use of system(s) arising out of this Service or related support activities or any act or omission, including negligence, by Dell or a third-party service provider.

F Third party warranties. These Services may require Dell to access hardware or software that is not manufactured by Dell. Some manufacturers' warranties may become void if Dell or anyone else other than the manufacturer works on the hardware or software. It is Customer's responsibility to ensure that Dell's performance of Services will not affect such warranties or, if it does, that the effect will be acceptable to Customer. DELL DOES NOT TAKE RESPONSIBILITY FOR THIRD PARTY WARRANTIES OR FOR ANY EFFECT THAT THE DELL SERVICES MAY HAVE ON THOSE WARRANTIES.

4 Important additional information

A RESCHEDULING. ONCE THIS SERVICE HAS BEEN SCHEDULED, ANY CHANGES TO THE SCHEDULE MUST OCCUR AT LEAST 8 CALENDAR DAYS PRIOR TO THE SCHEDULE DATE. IF CUSTOMER RESCHEDULES THIS SERVICE WITHIN 7 DAYS OR LESS PRIOR TO THE SCHEDULE DATE, THERE WILL BE A RESCHEDULING FEE NOT TO EXCEED 25% OF THE CUSTOMER PRICE FOR THE SERVICES. CUSTOMER AGREES THAT ANY RESCHEDULING OF THE SERVICE WILL BE CONFIRMED AT LEAST 8 DAYS PRIOR TO COMMENCEMENT OF THE SERVICE.

B Payment for hardware purchased with installation & deployment services.

Unless otherwise agreed to in writing, payment for hardware shall in no case be contingent upon performance or delivery of installation or deployment services purchased with such hardware.

C Commercially reasonable limits to scope of service. Dell may refuse to provide Services if, in its opinion, providing the Services creates an unreasonable risk to Dell or Dell's Service providers or is beyond the scope of Services. Dell is not liable for any failure or delay in performance due to any cause beyond its control. Service extends only to uses for which the Supported Product was designed.

D Optional services. Optional services (including point-of-need support, installation, consulting, managed, and professional, support or training services) may be available for purchase from Dell and will vary by Customer location. Optional services may require a separate agreement with Dell. In the absence of such agreement, optional services are provided pursuant to this Agreement.

E Assignment. Dell may assign this Service and/or Service Description to qualified third party service providers.

F Cancellation. Dell may cancel this Service at any time during the Service term for any of the following reasons:

- Customer fails to pay the total price for this Service in accordance with the invoice terms;
- Customer refuses to cooperate with the assisting analyst or on-site technician; or
- Customer fails to abide by all of the terms and conditions set forth in this Service Description.

If Dell cancels this Service, Dell will send Customer written notice of cancellation at the address indicated on Customer's invoice. The notice will include the reason for cancellation and the effective date of



cancellation, which will be not less than ten (10) days from the date Dell sends notice of cancellation to Customer, unless state law requires other cancellation provisions that may not be varied by agreement. IF DELL CANCELS THIS SERVICE PURSUANT TO THIS PARAGRAPH, CUSTOMER SHALL NOT BE ENTITLED TO ANY REFUND OF FEES PAID OR DUE TO DELL.

G Geographic limitations & relocation. This Service will be delivered to the site(s) indicated on the Customer's invoice. This Service is not available at all locations. Service options, including service levels, technical support hours and onsite response times will vary by geography and certain options may not be available for purchase in Customer's location. Dell's obligation to supply the Services to relocated Supported Products is subject to local service availability and may be subject to additional fees, and to inspection and recertification of the relocated Supported Products at Dell's then current time and materials consulting rates. Customer will provide Dell with sufficient and safe access to Customer's facilities at no cost to Dell for Dell to fulfill Dell's obligations.

H Transfer of service. Subject to the limitations set forth in this Service Description, Customer may transfer this Service to a third party who purchases Customer's entire Supported Product before the expiration of the then-current service term, provided Customer is the original purchaser of the Supported Product and this Service, or Customer purchased the Supported Product and this Service from its original owner (or a previous transferee) and complied with all the transfer procedures available at www.support.dell.com. A transfer fee may apply. Please note that if Customer or Customer's transferee moves the Supported Product to a geographic location in which this Service is not available (or is not available at the same price) as Customer paid for this Service, Customer may not have coverage or may incur an additional charge to maintain the same categories of support coverage at the new location. If Customer chooses not to pay such additional charges, Customer's Service may be automatically changed to categories of support which are available at such price or a lesser price in such new location with no refund available.

For more information about any of our service offerings, please contact your Dell representative or visit www.dell.com/services

Availability varies by country. To learn more, customers and Dell Channel Partners should contact your sales representative for more information.

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Appendix A

Service SKUs

US SKU

SKU	Description	Partner
953-8939	Installation and Implementation of Dell HPCC HA-NFS Storage Solution	EDT
996-4229	Installation and Implementation of Dell HPCC HA-NFS 144/288TB Storage Solution	EDT
996-4239	Installation and Implementation of Dell HPCC HA-NFS 576TB Storage Solution	EDT
996-4249	Installation and Implementation of Dell HPCC HA-NFS 1152TB Storage Solution	EDT



Appendix B

Exceptions to Dell business hours

Country	Dell business hours
St. Kitts, St. Lucia, St. Vincent, Trinidad, Virgin Islands, Rest of English speaking Caribbean	7:00 AM to 4:00 PM
Barbados, Bahamas, Belize, Costa Rica, El Salvador, Grand Cayman, Guatemala, Honduras, Jamaica, Panama, Puerto Rico, Rep. Dominicana, Suriname, Turks and Caicos	8:00 AM to 5:00 PM
Australia, Bermuda, China, Haiti, Hong Kong, Japan, Korea, Malaysia, Netherland Antilles, New Zealand, Singapore, Taiwan, Thailand	9:00 AM to 5:00 PM
Argentina, India, Paraguay, Uruguay	9:00 AM to 6:00 PM
Bolivia, Chile	9:00 AM to 7:00 PM

