

## Service Description: Dell | EMC Maintenance Service – Standard SAN Healthcheck

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### Service Overview

This service provides for periodic health checks, updates and upgrades on a Dell | EMC Storage Area Network ("SAN") or Direct Attached Storage ("DAS") array environment consisting of a single Dell | EMC storage array and up to 23 hosts (servers) (the "Service" or "Services") as set forth more specifically in this Service Description. The Service consists of three phases: discovery, analysis, and delivery as described in more detail below. This Service is coordinated through Dell's Enterprise Command Centre (ECC) with involvement from the Enterprise Expert Centre to help ensure superior service.

This Service includes an analysis of the logs and configuration of the SAN or DAS environment and its associated components, such as hosts, switches, Host Bus Adapters ("HBA"s) and Disk Array Enclosures ("DAE"s). This Service provides for the upgrade and/or update of the covered software array components in line with the separate software support agreement, the identification of any issues affecting the proper operation of the array, and, if necessary, initiating a call to Dell Storage Support for the Customer, to address any identified issues. Issues outside the scope of this Service must be addressed by the Customer through the normal Dell support processes.

This Service requires a valid Gold or Platinum Plus Enterprise Support agreement for each applicable array and server. Entitlement to this SAN Health Check Service is based on a one-to-one, contract-to-Disk Processing Enclosure ("DPE") ratio. Hence, two DPEs within the same SAN fabric require separate entitlement. All products are to be found in single location.

### Not Included With This Service: The following items are not included as part of the Service:

- Multiple arrays (Disk Processing Enclosure ("DPE") or Storage Processing Enclosure ("SPE")); each array requires a separate Service Agreement
- SANs containing more than 23 hosts, which would require a separate Service Agreement
- Any activities related to hardware or software other than those specifically noted in this Service Description; items not covered include, but are not limited to:
  1. Tape backup devices.
  2. Non-Dell | EMC disk enclosures.
  3. Any Non-Dell hardware.
  4. NAS hardware other than Dell PowerVault.
  5. iSCSI Connections
  6. Tape backup software.
  7. Applications, such as Visual SRM, Exchange, SQL, Oracle and back office applications.
  8. Replication software.
  9. Host Network Operating Systems ("NOS"s) and updates, patches, or Service Packs.
  10. Host peripheral card firmware and drivers.
  11. ERM
  12. Microsoft Exchange, SQL or other back office applications
- Clustering of hosts or applications.

- Performance tuning of the array environment.
- De-installation or re-installation of product(s) or application(s).
- Any design changes or consultation services (such as how to best utilize any enhancements contained in the new software versions).
- Reconfiguration of any of the Customer's hardware or software.

**Customer's Responsibilities: Customers of the Service are responsible for each of the following:**

- **Complete a full backup of all data and programs on affected storage systems prior to Dell arriving at the location to deliver this Service.**
- **DELL WILL HAVE NO LIABILITY FOR LOSS OR RECOVERY OF DATA OR PROGRAMS AND CANNOT PERFORM THE SERVICES UNTIL THE CUSTOMER CONFIRMS AND DEMONSTRATES THAT A FULL BACK UP OF DATA AND PROGRAMS HAS BEEN COMPLETED.**
- Ensure that the Dell | EMC DPE/SPE has an active paid-up Platinum or Gold Enterprise Support Service agreement at the time this Service is performed or is to be performed.
- Customers must schedule and have the SAN Health Check Service delivered within the warranty dates of the SAN.
- Make certain that all software affected by this Service is registered through the Dell | EMC Powerlink website. The registration process can take up to four business days to complete so Customers need to plan in advance of the Service.
- Purchase applicable software from Dell and have a valid software support agreement in place in order to receive software upgrades or updates.
- Ensure that the NOS on each host is at the required Service Pack or Patch level in accordance with the EMC Support Matrix.
- Make appropriate system maintenance window(s) available for Dell (or authorized agents) as needed and subject to the following:
  1. When requesting hardware/software additions, the Discovery phase will not commence until the hardware/software is confirmed to be at the location where the Service will be delivered.
  2. Once the Discovery phase is performed, the Service Delivery phase may only be rescheduled once.
  3. During the Service Delivery phase, the software upgrade will likely cause a temporary loss of connectivity to the hosts attached to the array.
- Ensure that any third party hardware or software components are compatible with any upgrade performed to the Dell | EMC array environment and if necessary, purchase additional services and/or hardware/software from those third parties or Dell in order to assure interoperability within the storage solution.
- Provide at least one technical contact with system administration responsibilities and appropriate system/information access privileges to the hosts, switches and storage arrays.
- Make certain that the storage array is functioning with no open support incidents prior to Dell delivering this Service.
- Refrain from making any changes to the storage array between the discovery and service delivery phase of the maintenance service.
- Customer must allow for the SAN Health Check-related data to be sent to the EMEA Enterprise Expert Centre.
- Customer should not make any changes to the SAN between the discovery and the service delivery phase of the maintenance service (approximately five business days).
- The inter-switch link between the two locations is the customer's responsibility. The Dell assigned storage consultant will only have a coordinating role
- The provision, responsibility, completion and functioning of the Backup/Restore is the individual customers responsibility
- Customers must have access to necessary broadband connection to allow for optimised Webex session

### **Service Features**

#### **Service Scheduling and Hours of Coverage**

Customers purchasing this SAN Health Check Service must choose the duration (1 - 5 years) and the frequency of the service (once or twice a year).

After Customer has chosen the duration and frequency of the Service, Dell will then contact the customer to schedule the Service\*.

The SAN Health Checks require advance notice scheduling with a minimum three-week lead time, subject to resource availability.

The hours of coverage for the Service are:\*

- Discovery and Analysis phases: carried out within local business hours Monday to Friday excluding Public Holidays
- Service delivery phase: carried out any time 24 x 7
- For new systems, the Service will be scheduled from 6 months up to 1 year after shipment, depending on the frequency chosen. For Service on existing systems, the first SAN health check will be scheduled within 30 days.

\* Timing subject to resource availability

### **Key Service Steps**

#### **Discovery**

The first phase of the Dell | EMC Health Check Service process focuses on data gathering. This phase is performed remotely by the Enterprise Expert Centre.

Dell may use a discovery tool called 'Wrangler' to enable this information pull along with our Webex tools.

1. The following information will be collected for review:
  - a. Storage processor event logs.
  - b. Storage processor configuration logs.
  - c. Switch configuration and event logs.
  - d. Storage array related host information:
    - i. NOS and service pack versions.
    - ii. HBA driver revision.
    - iii. HBA firmware (utilities or downtime may be required).
    - iv. Failover software versions and path status information.
    - v. Navisphere Agent/CLI versions.
    - vi. Event logs (varies based on operating system).

#### **Analysis**

1. The second phase of the Dell|EMC Health Check Service will review the following logs and identify current or potential issues in the environment that may be impacting functionality and reliability. This phase is performed remotely by the Enterprise Expert Centre. The design workbook will be analysed in addition to the following logs:
  - a. Storage processor event logs – Array related events that affect the productivity of the DPE and DAE devices.
  - b. Storage processor configuration logs – potential device configuration issues, array based software revisions and host connectivity status as seen by the array.
  - c. Switch configuration and event logs – port-by-port review looking for error counters that would indicate a failure or potential failure on devices outside of the host or DPE (examples include, but are not limited to, cables and internal switch related hardware).
  - d. Storage array related host information – Analysis of Storage array related software revisions, path status, event logs (these events include, but are not limited to, HBA driver, failover software, device timeouts on Storage array based Logical Unit Number (“LUNs”) or Read/Write events on Storage array based LUNs).

2. Notify the Customer regarding the steps required for Service delivery including but not limited to, preparation, time required to perform the Services and potential issues. This information will be included in a customer-specific Statement of Work for Phase 3 - Service Delivery.

3. Non SAN HealthCheck issues that are noticed during the discovery and analysis phase, for example but not limited to, Disk failures, need to be addressed before the SAN Health Check Service can be carried out.

### **Service Delivery**

The final phase of the Dell | EMC SAN Health Check Service process will include a software update of the SAN with the customers consent, testing of the remote monitoring system and a health assessment summary presented to the customer.\*\* This phase is performed onsite or remotely depending on the requirements.

\*\*note: once discovery is performed the service delivery phase may only be rescheduled once. Customers must please plan for these maintenance windows appropriately.

1. Upgrade or update of the array software and firmware as necessary. This is subject to the customer having a separate and current software upgrade maintenance agreement and includes:
  - a. Navisphere Manager.
  - b. Navisphere Agent.
  - c. Array Base code/flare code.
  - d. HBA driver.
  - e. HBA firmware.
  - f. Switch firmware.
  
2. If the Customer has purchased and implemented the following software, it will also be updated:
  - a. Access Logix.
  - b. Dell ClarAlert.
  - c. MirrorView/A and MirrorView/S.
  - d. Navisphere Analyzer.
  - e. PowerPath
  - f. SANCopy.
  - g. SANCopy/E for AX100, AX150, and CX300.
  - h. SnapView.
  
3. If issues are discovered that are affecting the functionality and reliability of the array, contact Dell Storage Support to initiate a resolution for the Customer pursuant to the Customer's existing support agreement. Additional charges could apply unless covered by the Customer's existing support agreement.

### **Project Closeout:**

1. Verify the following:
  - a. Successful reboot of the storage array.
  - b. Visibility of LUNs/Virtual Disks to the appropriate hosts.
  - c. Email home functionality.
  
2. Provide documentation to reflect the work performed

### **Important Additional Information**

Service as described herewith is available in EMEA only. The customer may contact their Dell Sales Representative for information on the availability of service outside of EMEA.

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