بسم الله الرحمن الرحيم

Information Technology Division
Ministry of Health

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މާލެ، ދިވެހިރާއްޖެ

Storage Expansion Technical Report

Introduction

Information is ever changing. It is considered as dynamic factual data that an organization comprises regarding its services. How information stored, managed, protected and distributed affects an organization's services and contributes to its success. Therefore, technology plays a vital role.

In order to enter the digital world, new service processes are introduced, resulting in a rapid increase in the amount of data being collected and generated. Hence, to accommodate these needs, a strategic approach to the storage infrastructure is required.

Storage Area Network (SAN) was implemented in Ministry of Health in 2015, with a plan for 5 years. 2020 being the 5th year, already SAN has reached its storage capacity. In the past 5 years, SAN has been used to store

- Additional of virtual machines
- Software's
- Database
- Health related websites
- Ministry's file server
- Reports and diseases analysis from atolls

Objectives

- Digitalizing health system of Maldives
- Consolidating a mixed environment of Windows and Linux
- Digital archiving of health-related data for the next 5 years
- Extend storage capacity for next 5 years.
- Salvage from untimely data crashes
- For better data visibility and accessibility

Conclusion

With the extra storage capacity, Ministry of Health will reach its goal of digitalizing and hence going paperless by storing an increased amount of data and information in the SAN. Moreover, additional virtual machines can be created allowing more convenience to host websites and applications at different platforms in ministry.

The archiving of data will provide data availability and reliability to the health sector and thus induce better decision making at policy level. This will also enhance performance storage utilization and effectiveness as well improve data protection & consistency.

This solution will not only offer a comprehensive suite of software, hardware and other digital services in a reliable state with simplified data management, but It will also be used to regain control of backup and recovery as well as prepare the Ministry for future requirements.

Recommendations

FORM FACTOR	Large Form Factor (LFF) (3.5 inches) drive enclosure
DRIVE BAY	Twelve (12) LFF (3.5 inch) drive bay
	dual-ported SAS, SEDs and SAS MDL drives should support two I/O modules Should be able to attach the enclosure to LFF or SFF Array head (should include 0.5m mini-SAS to mini-SAS cables) Must support LFF drives including 2TB, 4TB, 6TB, 8TB, 10TB and 12TB drives
DISK DRIVES	12 x HP MSA 4TB 12G SAS 7.2K LFF Hard drive with 3-year warranty for each drive (total 12 Hard drives)

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Specification for HPE MSA 2040 Storage Expansions

QUANTITY	1
FORM FACTOR	Large Form Factor (LFF) (3.5 inches) drive enclosure
DRIVE BAY	Twelve (12) LFF (3.5 inch) drive bay
	dual-ported SAS, SEDs and SAS MDL drives
	should support two I/O modules
	Should be able to attach the enclosure to LFF or SFF Array head
	(should include 0.5m mini-SAS to mini-SAS cables)
	Must support LFF drives including 2TB, 4TB, 6TB, 8TB, 10TB and 12TB drives
DISK DRIVES	12 x HP MSA 4TB 12G SAS 7.2K LFF Hard drive with 3-year warranty for each drive (total 12 Hard drives)
COMPATIBILITY	Support Windows 2012/ 2016 / 2019, VMWare and Linux with clustering
INSTALLATION	Installation and configuration (including rack installation and setup) should be done by the bidder by vendor certified engineers
	Confirmation of appropriate OS patch levels and firmware versions
	Verification and update (as needed) of prerequisite array and host bus adapter (HBA) firmware versions
	Install and activate any included software license
	Deployment of the new disk to existing arrays as per industry best practice
TRAINING	Technical training should be provided for 2 IT staffs by vendor certified engineers
SUPPORT AND WARRANTY	3 Years Warranty
	3 Years Proactive Care 24/7 Service

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