Health Virtualisation Platform

High Level Blueprint

Date: 24th August 2017
Version: 1.0
Department:TDED

Unclassified

Malta Information Technology Agency, Gattard House, National Road, Blata l-Bajda HMR 9010 Malta
Telephone: (+356) 21234710 Facsimile: (+356) 21234701
Web Site: www.mita.gov.mt

Document Control Information

01. Document reference

TD-MEM-Health Virtual Platform High Lvl blueprint-v1.0.docx

02. Document type

High level design

03. Security classification

Unclassified

04. Synopsis

High level blueprint of the Health Virtualisation Platform

05. Document control

Author	Change controller	Distribution controller
Christian Gatt	Enterprise Architecture Unit	Enterprise Architecture Unit

06. Authorisation

Issuing authority	**Approval authority**
TECO	TECHNOLOGY DIRECTION AND EGOVERNMENT DEPARTMENT
Signature / Date Mark Bartolo Enterprise Architect – TECO Secretary	**Signature / Date** Godwin Caruana Head - TDED

07. Modification history

Version	**Date**	**Author**	**Comments**
Draft 0.1	03/05/2016	Christian Gatt	Draft version for internal review
1.0	24/08/2017	Mark Captur, Roderick Stoner	Version for publication, following internal review

Geo-Clustered Virtualisation Platform for Health Information Systems

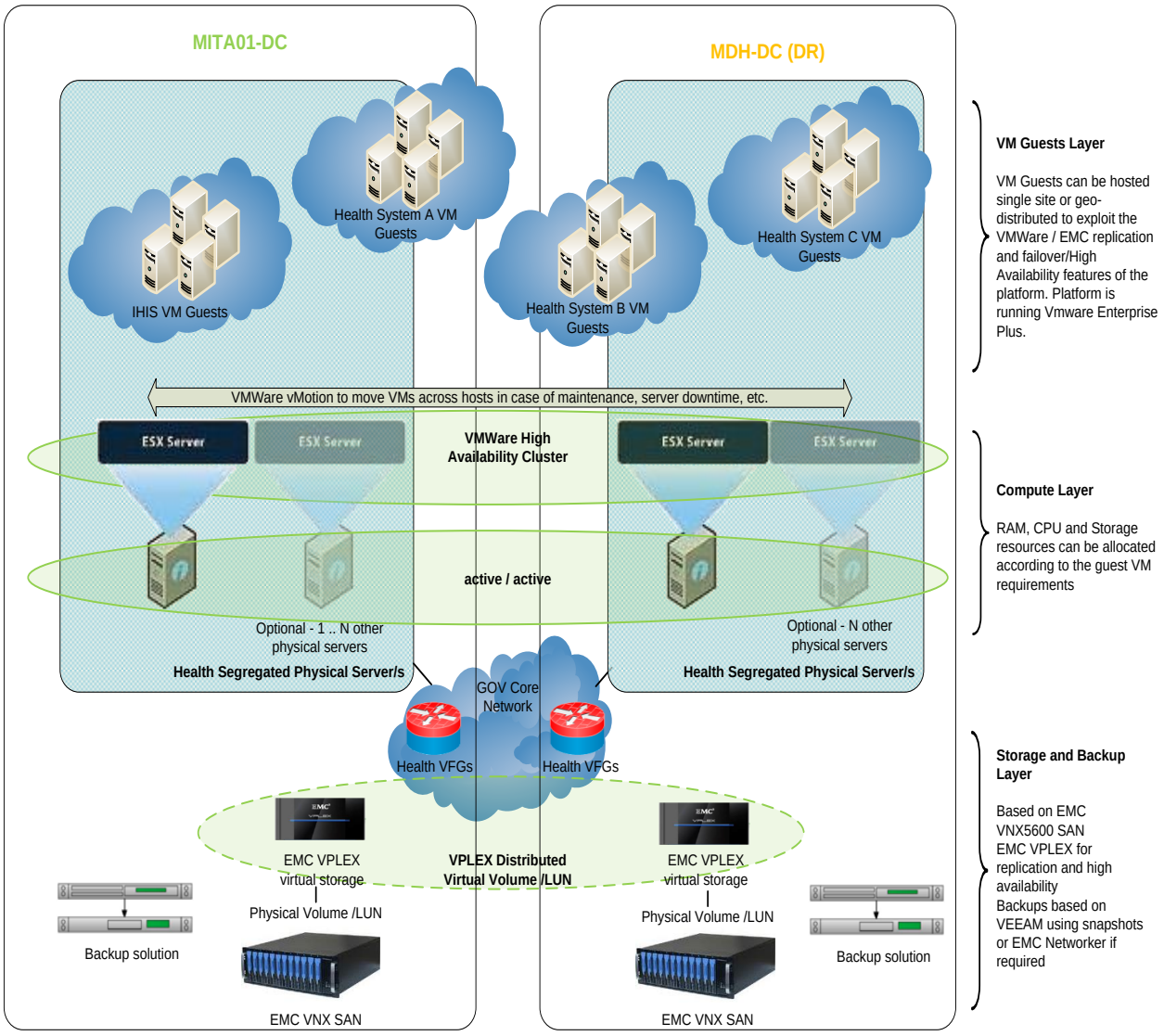

Figure 1: *Health Virtualisation Platform*

Architecture & Technologies

Figure 1 above illustrates the high level building blocks of the Health Virtualisation platform that will host a number of Health Information System (HIS) within Government's data centres.

The proposed architecture takes advantage of virtualisation at the compute, storage and network layers through the use of a number of virtualisation technologies MITA has heavily invested in to provide:

i) a highly available active-active and redundant setup (no single points of failure from a physical infrastructure perspective);
ii) an architecture/infrastructure that could be easily scaled;
iii) a segregated setup dedicated for Health related initiatives;

The proposed architecture takes advantage of a number of highly available features at various layers of the architecture including:

i) Virtualisation at the hypervisor/compute layer through VMware vSphere Enterprise Plus ver 6 High Availability clustering and vMotion/DRS technologies. In the case of failure of one of the ESX hypervisors, the VM payload will automatically be restarted on the second clustered hypervisor node.
ii) Virtualisation at the storage layer through EMC VPLEX Distributed Virtual Volumes that presents two or more physical volumes as one highly available and replicated virtual volume. A VMware datastore will be created on this virtual volume which in turn will persist the virtual machine disks (VMDKs) of each VM redundantly across both SANs and sites(when required);

Storage

Storage will be provided via the two geo-located EMC VNX 5600 storage arrays. Given that the compute will be geo-distributed, the storage will be presented through two geo-located EMC VPLEX appliances. VPLEX provides the flexibility of accessing and replicating the storage from two storage arrays as if they were one via a distributed volume.

A number of LUNs will be created on the VNX array, presented to the VPLEX appliances, converted into distributed volumes and presented to the VMware ESXi hosts.

The client can decide whether to have storage replicated across two site (at a cost) or not depending on the solution design and HA requirements.

Raw Device Mapping (RDMs) are not supported on the platform.

Remote Access

Remote access to the guest VMs will be provided through VPN.

VMWare Management

The Health virtualisation platform be managed through the VMware vCenter setup MITA uses to manage its virtualisation stacks.

Network Connectivity and Routing

The platform is connected to Government's core network whilst all data or requests shall be routed through Health's VPN/Firewall gateways (VFGs).

Backups

MITA manages the backup infrastructure. Guest VMs hosted on the platform will be backed on a VEEAM backup setup (server/s, storage and tape library) that has been procured as part of the Health Virtualisation Platform. Backup Management will be managed centrally through the MITA VEEAM Enterprise Manager. Where required only, EMC Networker can be used to backup guest VMs and/or data appropriately.

Hypervisor and Infrastructure Monitoring

The Hypervisor and underlying infrastructure is monitored through a central monitoring tools.