Challenge #1

By

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Skyfall is an IT Infrastructure and security firm has been tasked by our billionaire friend to come up with a strategy to put together the IT infrastructure and datacenter which will be needed to recolonize Earth after the Zombie's Apocalypse was terminated. The new data center and Infrastructure should accommodate for future expansion on Earth which will be needed as the recolonization project is been executed.

As part of the recolonization project, Skyfall should design a strategy which allows the data and the HumanityLink Software suite to always be available in case of a natural disaster on Earth or an attack by a third party group in this case a new Zombie insurgency. Due to this reason a multi-site design is required.

Project Requirements:

PR1	Select best place on Earth for new Datacenter.
PR2	Secondary site must be on the moon.
PR3	Select and build Hardware Infrastructure for new datacenters.
PR4	The HumanityLink Software will be hosted on the new Hardware. Perfect performance of the Software is priority #1.
PR5	The new environment should also host: a- 25 web servers, b- 5 databases and, c- 10 application servers
PR6	Internal traffic should be micro segmented to eliminate malicious traffic from compromising the performance of the HumanityLink Software Suite.

Project Risks:

R1	Possibility of another Zombie Insurgency is possible.
R2	Need for strong and secured WIFI Connection between sites must be established

Project Constraints:

PC1	Datacenter locations on Earth are minimal to

	none after the Zombie Apocalypse
PC2	WIFI Signal strength between sites must be accounted
PC3	Need to train new employees to maintain both datacenters

Project Assumptions:

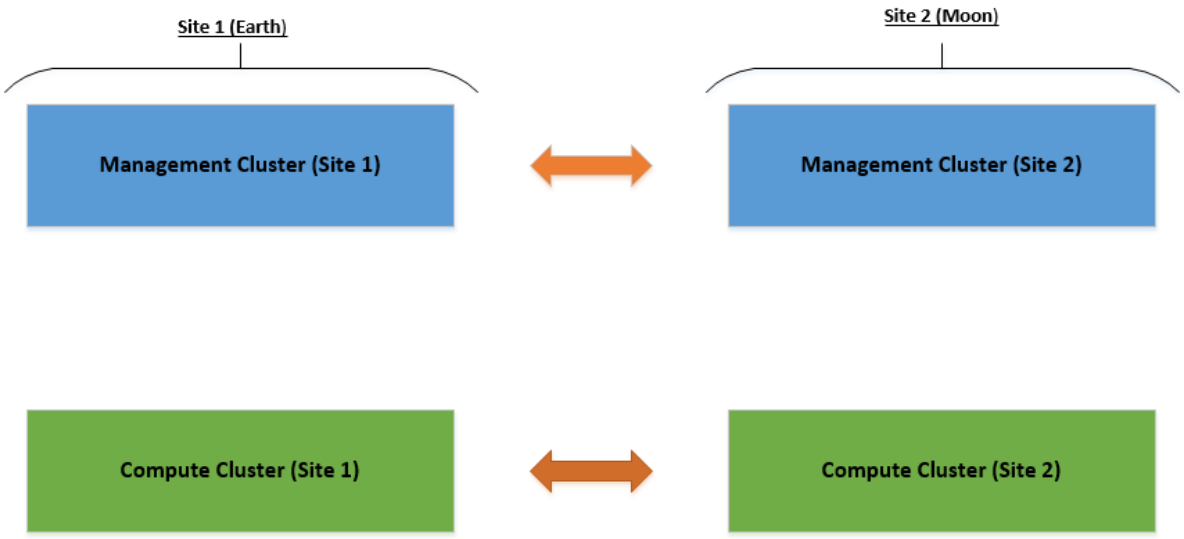
PA1	Due to no specification on clustering for the 5 required DB servers, they will be setup as Standalone DB servers.
PA2	Technical specifications on resources for the 20 web servers were not provided. Servers will be setup using minimal specs.

Taking in consideration the Project requirements provided to Skyfall, this entity is recommending a design composed of 2 main datacenter. Datacenter #1 will be located on Area 51 in the state of Nevada (USA) and Datacenter #2 will be located in ZONE US51 at the Moon. A US Satellite orbing earth will be utilized as a repeater to strengthen the high speed WIFI connection between both datacenters.

At each datacenter the hardware that will be utilized will be composed of servers in 1U and blade format provided by the only server manufacturer available CiscoRus. Skyfall will be creating 2 clusters per datacenter to segregate the management servers from the compute servers.

Conceptual Design

Challenge #1 Conceptual Design



Design Choices:

Choice	Design Decision	Design Implication
Datacenter #1 will be located on Area 51 on earth	Due to the fact that this location used to a US military base, it already contains the accommodations necessary to prevent any attack by any new Zombie or third party insurgency	Local transportation of employees will be a challenge due to its location at the desert.
Datacenter #2 located on ZONE U51 at moon	A US NASA Base located on the moon will be used as colocation for the secondary site for the project.	Location of the base on the moon needs to be accounted for data transmission speed.
Use of a USA Satellite as a WIFI signal repeater	Due to the distance between the Earth and the Moon, a high speed connection is needed to connect both datacenter. To be able to guaranty the strength of the signal the satellite will be	Cost implication to use the US satellite.

	used to forward the signal both ways.	
Management Cluster	The management cluster will be used to host all the virtual machine servers that will be used to manage the virtual infrastructure in each datacenter.	Separate Hardware needed
Compute Cluster	A compute cluster will be used to host the virtual machine corresponding to the HumanityLink software and the rest of the virtual machines requested.	Separate hardware needed

Logical Design

At each datacenter, the Management cluster will be composed of 3 C520 1U nodes from CiscoRus. This cluster will be setup using the vSphere Stark Trek version to manage the virtual infrastructure and ESXi Stark Trek as the Hypervisor of choice. Each node will have the following technical specifications:

4 CPU Sockets (50 cores each)

5 TBs of memory

Dual 250 GBs XSD cards

2 Dual (200 GBs) NIC cards

The compute cluster will be composed of 8 Physical Blade servers B800 from CiscoRus. Each node will have the following hardware specifications:

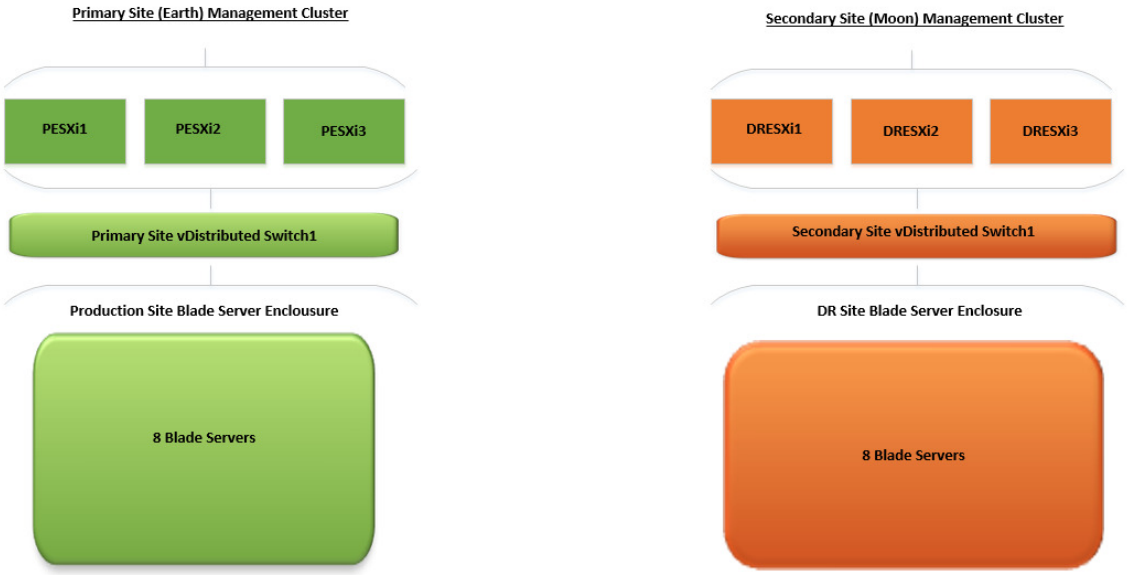
4 CPU Sockets (50 cores each)

10 TBs of memory

Dual 250 GBs XSD cards

Vic2025 cards at (200Gbs)

Challenge #1 Logical Design



Physical Design

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