VCE VXRAIL APPLIANCE
BUILD PREPARATION
OBJECTIVES

• Upon completion of this module, you should be able to:
  – Discuss the build to deployment process for the VxRail Appliance
  – Describe the appliance hardware and the available configuration options
  – Explain the build process that happens at the server vendors manufacturing facility
  – Discuss the steps required to prepare the appliance for operations
  – Complete the pre-site checklist survey
VCE VXRAIL APPLIANCE – SIMPLIFYING IT

• Delivered as a pre-built unit of IT infrastructure.
  – Software installation performed at supplier manufacturing

• Requires site specific customizations before use
  – Wizard guides through configuration process
  – From box to provisioning virtual machines in minutes

Deploy Virtual Machines in Minutes
MYQUOTES ORDERING PATHS
MAY & JUNE 2016

VLP Licensing Only
VxRail 3.5 Software Only*
Hybrid & All Flash Models
2 Use Cases:
New Solution
Upgrade Solution

New Solution Path
MyQuotes: May 7

Upgrade Solution Path
MyQuotes: June 11

- Fully Populated Chassis (4 Nodes)
- Partially Populated Chassis (3,2,1 Nodes)
- Single Node Add
- Single Drive Add

*Ship VxRail 3.0 SW with Q1 HW configs

Rules
- The first appliance in a cluster must contain four nodes
- Hybrid Nodes should not be mixed with All Flash Nodes in the same cluster
- Homogenous nodes and drives within an Appliance
- Drives are evenly balanced across all the nodes on an Appliance

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VCE

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NODE PORTS

1. USB ports
2. VGA port
3. Serial port
4. BMC dedicated management port
5. 10G host port
6. Power LED
7. Power button
• Memory configurations from 128 GB (minimum small) to 512 GB (maximum medium and large)
SATADOM SUB MODULE

SATA DISK ON MODULE - SATADOM

• Small SATA3 (6Gb/s) flash memory module.
  • Simulates a hard disk drive (HDD)
• ESXi is installed on the SATADOM
• Designed to be inserted into a server board SATA connector
VXRAIL APPLIANCE PHYSICAL DRIVES
UP TO 6 PER NODE - 24 DIRECT ATTACHED DRIVES PER ENCLOSURE

• Solid State Disks (SSD)
  – Single Ultrastar SSD 1600MM Series (per node)

• Hard Disk Drives (HDD)
  – Three to Five Ultrastar enterprise-class HDD (per node)
VXRAIL APPLIANCE NETWORK SWITCHES

• Customers can bundle a Connectrix VDX 6740 switch with their order or purchase their own top-of-rack network switches except for the VxRail 60
  – Two 10Gb ports per node

• IP Protocol considerations:
  – Enable IPv4 and IPv6 multicast on all ports connected to VxRail
  – Management VLAN requires IPv6 multicast
  – VSAN VLAN requires IPv4 multicast

• Connectrix VDX 6740 switch:
  – Up to 64 10GB: 48 standard and 16 4x10 40GB QSFPs
  – IPV4 /IPV6 Management
BUILDING THE SYSTEM

APPLIANCE INITIALIZATION

- Build server is used to install the baseline image onto the VxRail Appliances
  - Build network connects the VxRail appliance and build system to automatically install system software
BUILD SERVER DETAIL

Appliance
Node  Node
Node  Node

Web Portal
Steps:
- Verify HW
- Install Software
- Image Datastore
- Validate Appliance
- Confirm install logs

Hardware
Specifications:
- Dual 4 Core CPU
- 64GB of RAM
- Dual 1GB NICs
- 1TB hard disk
- 4 USB 3.0 ports

Image Repository

Secure FTP

PXE Server

*Mobile Build software can be downloaded to a laptop to re-image a system on-site

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BUILD SERVER CONNECTIVITY TOPOLOGY

- Node 1
- Node 2
- Node 3
- Node 4

Connect Appliance 1 (VLAN 100)
Connect Appliance 2 (VLAN 100)
Connect Appliance 3 (VLAN 400)
Connect Appliance 4 (VLAN 400)

VxRail Server

BMC port/1G
NIC1 port/1G

Switch

Network

Build Server

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APPLIANCE IMAGING PREPARATION

• Separate the ToR Switch ports to VLAN groups and connect the appliance’s Ethernet ports to the Switch
  – Port 1-8: VLAN 100. Appliance 1’s 4 BMC ports and 4 NIC 1G ports are connected to port 1-8
  – Port 9-16: VLAN 200. Appliance 2’s 4 BMC ports and 4 NIC 1G ports are connected to port 9-16
  – Port 41: trunk mode. Allow access to VLAN 1, 100, 200

• Connect to the standalone server:
  – eth0 to outside network for golden image access
  – eth1 to ToR Switch port 41 for internal software provisioning

• Power on all the hardware:
  – ToR Switch
  – Four nodes in the enclosure
Now let’s watch a short video on the VxRail Build process.
APPLIANCE CONFIGURATION

• System Boots from the internal SDD SATADOM (32GB SLC SATADOM with reservation pool)

• VxRail Node01 – Acts like bootstrap for the appliance
  – Initially holds the VCSA (DRS and vMotion can change this)
  – Contains Log Insight Appliance
  – Contains the VxRail Orchestration Appliance
  – Inside VxRail Appliance are the vmware-marvin and vmware-loudmouth services
  – VxRail VM set to power on with Appliance Start-up/Shutdown settings
  – VMs held on pre-configured Virtual SAN Datastore containing just Node01
Each node runs vSphere 6.0 as the base platform.

Running on ESXi as Virtual Machines:
- vCenter (single instance per VxRail Cluster)
- vCenter Server Platform Controller
- VxRail Manager
- Log Insight

VSAN health check plug-in installed by default and runs on vCenter.
• vCenter is installed and configured to manage the VxRail Appliance virtual environment
  – Virtual network is configured with a vSphere Distributed Switch for appliance network traffic
  – Virtual SAN provides storage capacity across all appliance nodes
• Configuration process create vSphere Distributed Switch (vDS)
  – vmnic1 is assigned as uplink1 and becomes primary NIC for management traffic and shared with all the other traffic
  – 2nd uplink is configured for VSAN
• Can use VLAN tagging to isolate traffic
VXRAIL VIRTUAL NETWORK CONFIGURATION

- Management Network  
  - Used for ESXi node Management
- Virtual SAN  
  - Used for Virtual SAN traffic
- vCenter Service Network  
  - Used for Service VMs
- vSphere vMotion  
  - Used for vSphere vMotion
- Marvin Management Port Group  
  - Used for Internal VxRail communications
VXRAIL CLUSTER DRS AND HA

- vSphere DRS is configured to be fully automated by default
- vSphere HA is enabled by default
VMWARE VIRTUAL SAN

- Initialization process aggregates locally attached disks of hosts in a vSphere cluster
  - Create a distributed shared storage solution with a VSAN Datastore

- Enables rapid provisioning of storage within VMware vCenter

- Simplifies and streamlines storage provisioning and management
  - VM-level storage policies automatically matches requirements with underlying storage resources
Virtual SAN is managed under vCenter.

VSAN Basic Rules

- Min # of ESXi nodes: 3
- Min amount of memory per node: 6 GB
- # of SSDs: 1
- # of HDDs: 3 - 5
- Min # of disk groups: 1
- Max # of disk groups: 5
VSAN DATASTORE

• Single VSAN Datastore
• All VMs use the VSAN Datastore
DEFAULT STORAGE POLICY

• MARVIN-STORAGEPROFILE policy is created during installation
  – This policy uses rules based on VSAN and is able to survive the failure of one node

• MARVIN-SYSTEMSTORAGEPROFILE policy is used exclusively for VxRail internal operations
Marvin Daemon is an Apache Tomcat instance that runs on the VxRail Manager virtual machine – Provides VxRail management interface

Other options
– /etc/init.d/vmware-marvin <stop> <start> <restart>

Must be cycled for configuration changes
– config-static.json has been modified

Network configuration can not be changed!
Loudmouth is the service that discovers and configures nodes on the network during
- Initial configuration
- Appliance expansion

- Assists in replacing failed nodes
- Runs on both the VxRail Manager VM

```
vxrail:~ #/etc/init.d/vmware-loudmouth status
Loudmouth is running.
```

- Each ESXi Server
SUMMARY

• The VxRail Appliance is prebuilt and delivered ready to be configured with customer site specifications

• Once received the appliance must be added to the network following VCE strict network requirements

• A guided process readies the appliance for operations

• The operational state of the VxRail Appliance includes:
  – vCenter to manage the virtual infrastructure and to create guest VMs
  – VxRail Manager to monitor appliance health