VSANICM8 Notes & Errata

Part Number EDU-EN-VSANICM8-LEC (14-DEC-2023)

Version	Date	Author(s)	Description of Change
01	August 19, 2024	Fabrizio de Luca	Initial Release

Module 2

2-7 vSAN Cluster Types

WRONG —> *This **physical** server can run at either a dedicated witness site or back at the main datacenter* <— the author surely meant to say "**witness**", which can either be physical or virtual.

INCOMPLETE —> ***Cross-Cluster Capacity Sharing**: You can mount remote datastores from one vSAN cluster to another vSAN cluster* <— according to vSAN documentation:

"When you create a vSAN cluster or configure a vSphere cluster for vSAN, you can select the HCI configuration type.

- **vSAN HCI provides compute resources and storage resources. It can share its datastore across data centers and vCenters and mount datastores from other vSAN HCI clusters.**
- **vSAN Compute Cluster is a vSphere cluster that provides compute resources only. It can mount datastores served by vSAN Max clusters.**
- **vSAN Max (vSAN ESA only) provides storage resources, but not compute resources. Its datastore can be mounted by remote vSphere clusters or vSAN HCI clusters across data centers and vCenters".**

[Source: https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-administration/GUID-9113BBD6-5428-4287-9F61-C8C3EE51E07E.html]

2-9 - vSAN Data Storage

WRONG —> *For example, every VMDK is an object, **as is every snapshot*** <— this is wrong with vSAN ESA snapshots, which are NOT storage objects, where the snapshot mechanism uses a highly efficient lookup table using a B-Tree.

[Source: https://core.vmware.com/blog/scalable-high-performance-native-snapshots-vsan-express-storage-architecture]

Module 3

3-11 - vSAN ReadyNode Sizer

OUT-OF-DATE / INCOMPLETE —> ***vSAN ReadyNode Sizer*** <— the vSAN Sizer tool login screenshot needs to be updated to the latest version. Additionally, the manual doesn't provide the tool URL, which is https://vsansizer.esp.vmware.com (provided in slide 3-12).
OUT-OF-DATE —> ***vSAN ReadyNode Sizer requires VMware Partner Connect, customer, or employee login to gather details*** <— after acquisition by Broadcom, you now need a Broadcom account to access the tool in the VMware Cloud infrastructure.

3-15 - vSAN ESA: ReadyNode Profiles

MORE DETAILS —> **Drives Writes Per Day (DWPD)** <— to better understand the concept of DWPD, read the article at https://www.architecting.it/blog/tbw-dwpd/

3-17 - vSAN VMware Compatibility Guide

BOTCHED —> *Link to Notification Service* <— the editor's comment embeds the URL of the Notification Service. It would have been probably better to show the URL in full.

3-22 Remote Direct Memory Access (1)

MORE DETAILS —> *Requires the network to be configured for lossless traffic using* ***data center bridging (DCB)*** <— see https://en.wikipedia.org/wiki/Data_center_bridging

Module 4

4-7 - Choose vSAN Cluster Configuration Types

WRONG —> ***VMware Compute Cluster can mount remote vSAN storage from other vSAN/vSphere clusters*** <— **vSAN** [not VMware, ed.] **Compute Cluster are purpose-built Sphere clusters optimized to consume storage from vSAN Max or vSAN HCI cluster**. You can get more details about Sharing Remote vSAN Datastores at https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-administration/GUID-9113BBD6-5428-4287-9F61-C8C3EE51E07E.html

INCOMPLETE <— **vSAN MAX** doesn't even get mentioned. For more details about vSAN MAX, check https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-administration/GUID-9113BBD6-5428-4287-9F61-C8C3EE51E07E.html#disaggregated-storage-with-vsan-max-0

Module 5

5-9 - Storing User Data in a Custom Namespace Object

BOTCHED —> *The last two methods are not shown on the slides, but include in the lecture notes on the next slide* <— editor's comment that shall have been removed before publishing.

5-34 - vSAN ESA Snapshot Overview

MORE DETAILS —> *vSAN ESA uses a **B+ tree logical map** to point to different blocks of data stored in a single object to assemble a snapshot* <— for more details about B+ tree, see https://www.geeksforgeeks.org/introduction-of-b-tree/

Module 6

6-18 - vSAN OSA: Durability Components for RAID-1

WRONG —> *If this cluster were a three-node, then the **delta** component would be created on the witness node* <— **durability** component, not **delta**.

6-24 - vSAN ESA: Durability Components for RAID-5/6

WRONG —> *If this cluster were a three-node, then the **delta** component would be created on the witness node* <— **durability** component, not **delta**.

Module 7

7-18 - Thin Provisioning

OUT-OF-CONTEXT —> *The example user interface scenario indicates that the vSAN cluster is about 28x oversubscribed* <— this note appears not to be related to the slide content being displayed.

Module 8

8-7 - vSAN Data-at-Rest Encryption Overview

TYPO —> *If an environment is using deduplication and compression (vSAN OSA) or compression-only**.** Encryption occurs after deduplication and compression or compression-only operations, allowing the customer to take advantage of space savings before encrypting* <— there is a typo in the punctuation: these are not two separate sentences, yet just one. The full stop in between is actually a comma. "*If an environment is using deduplication and compression (vSAN OSA) or compression-only**, e**ncryption occurs […]".*

8-16 - Data-at-Rest Encryption Configuration on a New Cluster

MORE DETAILS —> *vSAN 8 U2 allows encryption to be turned on when the cluster is built or afterwards. Encryption cannot be turned off* <— in vSphere 8.0U3:
"Data-at-rest encryption disable for vSAN ESA. You can disable data-at-rest encryption on vSAN ESA clusters at any point after enabling it. vSAN ESA now supports the following operations for data-at-rest encryption: enable encryption, disable encryption, shallow rekey, and deep rekey."
[Source: https://docs.vmware.com/en/VMware-vSphere/8.0-Update-3/rn/vmware-vsan-803-release-notes/index.html#What's%20New]

8-18 - Operational Impact when Activating Encryption

OUT-OF-DATE —> *Encryption cannot be disabled once enabled on vSAN ESA* <— this is no more true as of vSphere 8.0U3.
[Source: https://docs.vmware.com/en/VMware-vSphere/8.0-Update-3/rn/vmware-vsan-803-release-notes/index.html#What's%20New]

Module 9

9-8 - vSAN Stretched Cluster Networking

BOTCHED —> ***200 ms RTT or less for less than ten hosts per data site*** <— the actual site-to-witness latency requirements are the following:

- **Less than 500 ms latency RTT for 1 host per site.**
- **Less than 200 ms latency RTT for up to 10 hosts per site.**
- **Less than 100 ms latency RTT for 11-20 hosts per site.**

[Source: https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-network-design-guide/GUID-F3401655-6EFA-477B-B072-E8F001B50BCC.html]

BOTCHED <— in the slide notes, the links to the "vSAN 8.0U2 Planning and Deployment Guide" and to the "Physical NIC Requirements" documentation page are repeated several times.

9-12 - vSAN Witness Node Sizing

BOTCHED <— in the slide notes, the link to the "Deploying a vSAN Witness Appliance" documentation page is repeated twice.

9-52 - Shared Witness Requirements

BOTCHED <— in the slide notes, the links to the "Deploying a vSAN Witness Appliance" documentation page and to the "Extra-large OVA file size option for shared witness deployment introduced with vSAN 7 Update 2 release" blog article are repeat several times.

Module 10

10-13 - Cross-Cluster Capacity Sharing Maximums and Requirements

BOTCHED / WRONG —> ***A client cluster can mount a max of 10 remote vSAN datastores*** <AND> ***A server cluster can serve its datastore to a max of 5 client clusters*** <— it is quite the opposite! Checking the online documentation, you can verify that:

- **A vSAN HCI or vSAN Max cluster can serve its local datastore to up to 10 client clusters.**
- **A client cluster can mount up to 5 remote datastores from one or more vSAN server clusters.**

[Source: https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-administration/GUID-9113BBD6-5428-4287-9F61-C8C3EE51E07E.html]

Module 11

11-14 - vSAN File Service Reconfiguration

MISLEADING —> *After the initial configuration, the file service domain, network, and* ***directory services can be reconfigured*** <— remember that – as it can be clearly noted from the screenshot in slide 11-12 – "`you cannot change the AD domain, organizational unit, and username after initially configuring vSAN File Services`", therefore the only settings you can change in the **Directory service** page are the **Preferred AD Server(s)** and the AD user **Password**.

[Source: https://docs.vmware.com/en/VMware-vSphere/8.0/vsan-administration/GUID-C97A317A-2701-4EFE-B7D9-D036FE1D1F8F.html#procedure-1]

11-24 - How to Mount an SMB File Share (1)

WRONG SCREENSHOT <— the slide graphic shows a screenshot of an NFS share – the same one used in slide 11-19 –, not an SMB File Share.

Module 12

12-22 - vSAN Cluster Shutdown Logs

MORE DETAILS —> ***Orchestration host*** <— according to the vSAN Operations Guide:

"**Note that in vSAN 8, the Shutdown Cluster was enhanced to provide improved robustness under a variety of conditions, and in vSAN 8 U1, the Shutdown Cluster workflow can be executed using PowerCLI. The workflow accommodates for vSAN clusters that are powering the vCenter Server. The process elects an orchestration host that assists in this cluster shutdown and startup process once the vCenter Server VM is powered off. The selection of the orchestration host is arbitrary, but if the cluster powers a vCenter Server, it will typically elect the host that the vCenter Server VM is associated with**".

[Source: https://core.vmware.com/resource/vsan-operations-guide#sec6737-sub5]

Module 13

13-11 - Network Layer

OUT-OF-DATE —> *https://blogs.vmware.com/virtualblocks/2018/02/28/reliable-network-connectivity-hyper-converged-environments/* <— the URL doesn't work anymore.