

2V0-621.examcollection.premium.exam.235q

Number: 2V0-621
Passing Score: 800
Time Limit: 120 min
File Version: 6.1



2V0-621

VMware Certified Professional 6 – Data Center Virtualization

Version 6.1

Exam A

QUESTION 1

An administrator wants to provide users restricted access. The users should only be able to perform the following tasks:

- Create and consolidate virtual machine snapshots
- Add/Remove virtual disks
- Snapshot Management

Which default role in vCenter Server would meet the administrator's requirements for the users?

- A. Virtual machine user
- B. Virtual machine power user
- C. Virtual Datacenter administrator
- D. VMware Consolidated Backup user

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Virtual Machine Power User: A sample role that grants a user access rights only to virtual machines; can alter the virtual hardware or create snapshots of the VM

Reference:

<https://communities.vmware.com/thread/480179?start=0&tstart=0>

<https://www.pluralsight.com/blog/tutorials/vmware-access-control-101-roles-and-permissions>

QUESTION 2

Which two roles can be modified? (Choose two.)

- A. Administrator
- B. Network Administrator
- C. Datastore Consumer
- D. Read-Only

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Three of the pre-established roles are permanent, meaning that the privileges associated with that role cannot be modified. These permanent roles are available to a stand-alone ESX or ESXi server, or to vCenter Server. The remaining eight are sample roles which can be modified as needed. These eight roles are exclusive to vCenter Server.

Below are the pre-established roles:

- **No Access:** A permanent role that is assigned to new users and groups. Prevents a user or group from viewing or making changes to an object
- **Read-Only:** A permanent role that allows users to check the state of an object or view its details, but not make changes to it
- **Administrator:** A permanent role that enables a user complete access to all of the objects on the server. The root user is assigned this role by default, as are all of the users who are part of the local Windows Administrators group associated with vCenter Server. At least one user must have administrative permissions in VMware.
- **Virtual Machine Administrator:** A sample role that allows a user complete and total control of a virtual machine or a host, up to and including removing that VM or host
- **Virtual Machine Power User:** A sample role that grants a user access rights only to virtual machines; can

- alter the virtual hardware or create snapshots of the VM
- **Virtual Machine User:** Grants user access rights exclusively to VMs. The user can power on, power off, and reset the virtual machine, as well as run media from the virtual discs.
 - **Resource Pool Administrator:** Allows the user to create resource pools (RAM and CPU reserved for use) and assign these pools to virtual machines
 - **Datacenter Administrator:** Permits a user to add new datacenter objects
 - **VMware Consolidated Backup User:** Required to allow VMware Consolidated Backup to run
 - **Datastore Consumer:** Allows the user to consume space on a datastore
 - **Network Consumer:** Allows the user to assign a network to a virtual machine or a host

Reference:

<https://communities.vmware.com/thread/480179?start=0&tstart=0>

<https://www.pluralsight.com/blog/tutorials/vmware-access-control-101-roles-and-permissions>

QUESTION 3

An administrator with global administrator privileges creates a custom role but fails to assign any privileges to it.

Which two privileges would the custom role have? (Choose two.)

- A. System.View
- B. System.Anonymous
- C. System.User
- D. System.ReadOnly

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

When you add a custom role and do not assign any privileges to it, the role is created as a Read Only role with three system-defined privileges: System.Anonymous, System.View, and System.Read.

Reference:

https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc_50%2FGUID-5ACE7CFA-75EC-4EF3-95E7-19962D76225E.html

QUESTION 4

An administrator wishes to give a user the ability to manage snapshots for virtual machines.

Which privilege does the administrator need to assign to the user?

- A. Datastore.Allocate Space
- B. Virtual machine.Configuration.create snapshot
- C. Virtual machine.Configuration.manage snapshot
- D. Datastore.Browse Datastore

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Take a virtual machine snapshot	On the virtual machine or a folder of virtual machines: Virtual Machine.State.Create Snapshot	Virtual Machine Power User or Virtual Machine Administrator
	On the destination datastore or folder of datastores: Datastore.Allocate Space	Datastore Consumer or Virtual Machine Administrator

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.vmadmin.doc_41/vsp_dc_admin_guide/managing_users_groups_roles_and_permissions/r_required_privileges_for_common_tasks.html

QUESTION 5

An object has inherited permissions from two parent objects.

What is true about the permissions on the object?

- A. The common permissions between the two are applied and the rest are discarded.
- B. The permissions are combined from both parent objects.
- C. No permissions are applied from the parent objects.
- D. The permission is randomly selected from either of the two parent objects.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

If an object inherits permissions from two parent objects, the permissions on one object are added to the permissions on the other object. For example, if a virtual machine is in a virtual machine folder and also belongs to a resource pool, that virtual machine inherits all permission settings from both the virtual machine folder and the resource pool.

Reference:

<https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-72EE3449-79FD-4E7A-B164-26904958540F.html>

QUESTION 6

What is the highest object level from which a virtual machine can inherit privileges?

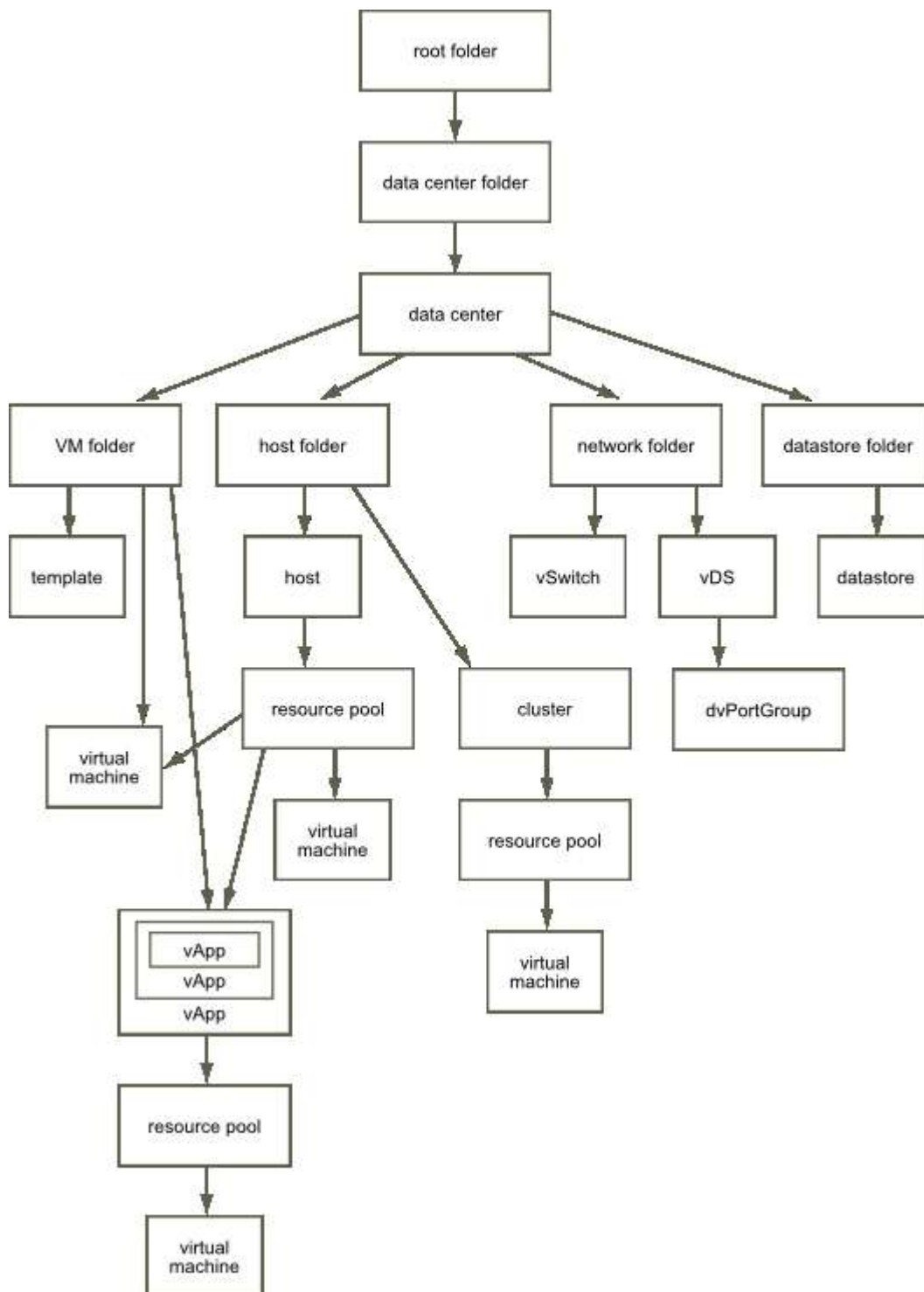
- A. Host Folder
- B. Data Center
- C. Data Center Folder
- D. VM Folder

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:



Reference:

http://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.dcadm.doc_41/vsp_dc_admin_guide/managing_users_groups_roles_and_permissions/c_hierarchical_inheritance_of_permissions.html

QUESTION 7

Which three Authorization types are valid in vSphere? (Choose three.)

A. Group Membership in vsphere.local

- B. Global
- C. Forest
- D. vCenter Server
- E. Group Membership in system-domain

Correct Answer: ABD

Section: (none)

Explanation

Explanation/Reference:

The primary way of authorizing a user or group in vSphere is the vCenter Server permissions. Depending on the task you want to perform, you might require other authorization.

vSphere 6.0 and later allows privileged users to give other users permissions to perform tasks in the following ways. These approaches are, for the most part, mutually exclusive; however, you can assign use global permissions to authorize certain users for all solution, and local vCenter Server permissions to authorize other users for individual vCenter Server systems.

vCenter Server Permissions	The permission model for vCenter Server systems relies on assigning permissions to objects in the object hierarchy of that vCenter Server. Each permission gives one user or group a set of privileges, that is, a role for a selected object. For example, you can select an ESXi host and assign a role to a group of users to give those users the corresponding privileges on that host.
Global Permissions	Global permissions are applied to a global root object that spans all vCenter Server systems. For example, if both vCenter Server and vCenter Orchestrator are installed, you can give permissions to all objects in both object hierarchies using global permissions. Global permissions are replicated across the vsphere.local domain. Global permissions do not provide authorization for services managed through vsphere.local groups. See Global Permissions .
Group Membership in vsphere.local Groups	The user administrator@vsphere.local can perform tasks that are associated with services included with the Platform Services Controller. In addition, members of a vsphere.local group can perform the corresponding task. For example, you can perform license management if you are a member of the LicenseService.Administrators group. See Groups in the vsphere.local Domain .
ESXi Local Host Permissions	If you are managing a standalone ESXi host that is not managed by a vCenter Server system, you can assign one of the predefined roles to users. See the <i>vSphere Administration with the vSphere Client</i> documentation.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-74F53189-EF41-4AC1-A78E-D25621855800.html>

[Global Permissions](#)

Groups in the vsphere.local Domain

QUESTION 8

Which three components should an administrator select when configuring vSphere permissions? (Choose three.)

- A. Inventory Object
- B. Role
- C. User/Group
- D. Privilege
- E. Password

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

To manage permissions from the vSphere Web Client, you need to understand the following concepts:

Permissions	Each object in the vCenter Server object hierarchy has associated permissions. Each permission specifies for one group or user which privileges that group or user has on the object.
Users and Groups	On vCenter Server systems, you can assign privileges only to authenticated users or groups of authenticated users. Users are authenticated through vCenter Single Sign-On. The users and groups must be defined in the identity source that vCenter Single Sign-On is using to authenticate. Define users and groups using the tools in your identity source, for example, Active Directory.
Roles	Roles allow you to assign permissions on an object based on a typical set of tasks that users perform. Default roles, such as Administrator, are predefined on vCenter Server and cannot be changed. Other roles, such as Resource Pool Administrator, are predefined sample roles. You can create custom roles either from scratch or by cloning and modifying sample roles.
Privileges	Privileges are fine-grained access controls. You can group those privileges into roles, that you can then map to users or groups.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-3B78EEB3-23E2-4CEB-9FBD-E432B606011A.html>

QUESTION 9

In which two vsphere.local groups should an administrator avoid adding members? (Choose two.)

- A. SolutionUsers
- B. Administrators
- C. DCAdmins
- D. ExternalPDUsers

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

SolutionUsers	Solution users group vCenter services. Each solution user authenticates individually to vCenter Single Sign-On with a certificate. By default, VMCA provisions solution users with certificates. Do not add members to this group explicitly.
Administrators	Administrators of the VMware Directory Service (vmdir). Members of this group can perform vCenter Single Sign-On administration tasks. Adding members to this group is not usually recommended.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-87DA2F34-DCC9-4DAB-8900-1BA35837D07E.html>

QUESTION 10

An administrator has configured three vCenter Servers and vRealize Orchestrator within a Platform Services Controller domain, and needs to grant a user privileges that span all environments.

Which statement best describes how the administrator would accomplish this?

- A. Assign a Global Permission to the user.
- B. Assign a vCenter Permission to the user.
- C. Assign vsphere.local membership to the user.
- D. Assign an ESXi Permission to the user.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Global Permissions

Global permissions are applied to a global root object that spans solutions, for example, both vCenter Server and vCenter Orchestrator. Use global permissions to give a user or group privileges for all objects in all object hierarchies.

Each solution has a root object in its own object hierarchy. The global root object acts as a parent object to each solution object. You can assign global permissions to users or groups, and decide on the role for each user or group. The role determines the set of privileges. You can assign a predefined role or create custom roles. See [Using Roles to Assign Privileges](#). It is important to distinguish between vCenter Server permissions and global permissions.

vCenter Server permissions	In most cases, you apply a permission to a vCenter Server inventory object such as an ESXi host or a virtual machine. When you do, you specify that a user or group has a set of privileges, called a role, on the object.
Global permissions	Global permissions give a user or group privileges to view or manage all objects in each of the inventory hierarchies in your deployment. If you assign a global and do not select Propagate, the users or groups associated with this permission do not have access to the objects in the hierarchy. They only have access to some global functionality such as creating roles.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-C7702E31-1623-4189-89CB-E1136AA27972.html>

QUESTION 11

Which two methods are recommended for managing the VMware Directory Service? (Choose two.)

- A. Utilize the vmdir command.
- B. Manage through the vSphere Web Client.
- C. Manage using the VMware Directory Service.
- D. Utilize the dc rep command.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

A) dir-cli Command Reference

The dir-cli utility allows you to create and update solution users, create other user accounts, and manage certificates and passwords in vmdir. (link: to see vmdir commands-- <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-4FBEA58E-9492-409B-B584-C18477F041D8.html>)

B) Directory service associated with the vsphere.local domain. This service is a multi-tenanted, multi-mastered directory service that makes an LDAP directory available on port 11711. In multisite mode, an update of VMware Directory Service content in one VMware Directory Service instance results in the automatic update of the VMware Directory Service instances associated with all other vCenter Single Sign-On nodes via Visphere Web Client.

QUESTION 12

What are two sample roles that are provided with vCenter Server by default? (Choose two.)

- A. Virtual machine User
- B. Network Administrator
- C. Content Library Administrator
- D. Storage Administrator

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Network Consumer	Sample	<p>A set of privileges to allow the user to assign virtual machines or hosts to networks, if the appropriate permissions for the assignment are also granted on the virtual machines or hosts.</p> <p>Usually granted on a network or folder of networks. Available on vCenter Server.</p>
------------------	--------	--

Virtual Machine User	Sample	<p>A set of privileges to allow the user to interact with a virtual machine's console, insert media, and perform power operations. Does not grant privileges to make virtual hardware changes to the virtual machine.</p> <p>Privileges granted include:</p> <table><tr><td>■</td><td>All privileges for the scheduled tasks privileges group.</td></tr><tr><td>■</td><td>Selected privileges for the global items and virtual machine privileges groups.</td></tr><tr><td>■</td><td>No privileges for the folder, datacenter, datastore, network, host, resource, alarms, sessions, performance, and permissions privileges groups.</td></tr></table> <p>Usually granted on a folder that contains virtual machines or on individual virtual machines.</p> <p>Available on vCenter Server.</p>	■	All privileges for the scheduled tasks privileges group.	■	Selected privileges for the global items and virtual machine privileges groups.	■	No privileges for the folder, datacenter, datastore, network, host, resource, alarms, sessions, performance, and permissions privileges groups.
■	All privileges for the scheduled tasks privileges group.							
■	Selected privileges for the global items and virtual machine privileges groups.							
■	No privileges for the folder, datacenter, datastore, network, host, resource, alarms, sessions, performance, and permissions privileges groups.							

Reference:

http://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.dcadmin.doc_41/vsp_dc_admin_guide/managing_users_groups_roles_and_permissions/r_default_roles_for_esx_esxi_and_vcenter_server.html

QUESTION 13

Which three services can be enabled/disabled in the Security Profile for an ESXi host? (Choose three.)

- A. CIM Server
- B. Single Sign-On
- C. Direct Console UI
- D. Syslog Server
- E. vSphere Web Access

Correct Answer: ACD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

ESXi Services in the Security Profile

Service	Default	Description
Direct Console UI	Running	The Direct Console User Interface (DCUI) service allows you to interact with an ESXi host from the local console host using text-based menus.
ESXi Shell	Stopped	<p>The ESXi Shell is available from the Direct Console User Interface and includes a set of fully supported commands and a set of commands for troubleshooting and remediation.</p> <p>You must enable access to the ESXi Shell from the direct console of each system.</p> <p>You can enable access to the local ESXi Shell or access to the ESXi Shell with SSH.</p>
SSH	Stopped	The host's SSH client service that allows remote connections through Secure Shell.
Load-Based Teaming Daemon	Running	Load-Based Teaming.
Local Security Authentication Server (Active Directory Service)	Stopped	Part of Active Directory Service. When you configure ESXi for Active Directory, this service is started.
I/O Redirector (Active Directory Service)	Stopped	Part of Active Directory Service. When you configure ESXi for Active Directory, this service is started.
Network Login Server (Active Directory Service)	Stopped	Part of Active Directory Service. When you configure ESXi for Active Directory, this service is started.
NTP Daemon	Stopped	Network Time Protocol daemon.
CIM Server	Running	Service that can be used by Common Information Model (CIM) applications.
SNMP Server	Stopped	SNMP daemon. See <i>vSphere Monitoring and Performance</i> for information on configuring SNMP v1, v2, and v3.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-37AB1F95-DDFD-4A5D-BD49-3249386FFADE.html>

QUESTION 14

An administrator would like to use the VMware Certificate Authority (VMCA) as an Intermediate Certificate Authority (CA). The first two steps performed are:

- Replace the Root Certificate
- Replace Machine Certificates (Intermediate CA)

Which two steps would need to be performed next? (Choose two.)

- A. Replace Solution User Certificates (Intermediate CA)
- B. Replace the VMware Directory Service Certificate (Intermediate CA)
- C. Replace the VMware Directory Service Certificate
- D. Replace Solution User Certificates

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Use VMCA as an Intermediate Certificate Authority

You can replace the VMCA root certificate with a third-party CA-signed certificate that includes VMCA in the certificate chain. Going forward, all certificates that VMCA generates include the full chain. You can replace existing certificates with newly generated certificates. This approach combines the security of third-party CA-signed certificate with the convenience of automated certificate management.

Procedure

1

[Replace the Root Certificate \(Intermediate CA\)](#)

The first step in replacing the VMCA certificates with custom certificates is generating a CSR and adding the certificate that is returned to VMCA as a root certificate.

2

[Replace Machine SSL Certificates \(Intermediate CA\)](#)

After you have received the signed certificate from the CA and made it the VMCA root certificate, you can replace all machine SSL certificates.

3

[Replace Solution User Certificates \(Intermediate CA\)](#)

After you replace the machine SSL certificates, you can replace the solution user certificates.

4

[Replace the VMware Directory Service Certificate](#)

If you decide to use a new VMCA root certificate, and you unpublish the VMCA root certificate that was used when you provisioned your environment, you must replace the machine SSL certificates, solution user certificates, and certificates for some internal services.

5

[Replace the VMware Directory Service Certificate in Mixed Mode Environments](#)

During upgrade, your environment might temporarily include both vCenter Single Sign-On version 5.5 and vCenter Single Sign-On version 6.0, you have to perform additional steps to replace the VMware Directory Service SSL certificate if you replace the SSL certificate of the node on which the vCenter Single Sign-On service is running.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-5FE583A2-3737-4B62-A905-5BB38D479AE0.html>

QUESTION 15

Which three options are available for ESXi Certificate Replacement? (Choose three.)

- A. VMware Certificate Authority mode
- B. Custom Certificate Authority mode
- C. Thumbprint mode
- D. Hybrid Deployment
- E. VMware Certificate Endpoint Authority Mode

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

ESXi Certificate Replacement

For ESXi hosts, you can change certificate provisioning behavior from the vSphere Web Client.

VMware Certificate Authority mode (default)	When you renew certificates from the vSphere Web Client, VMCA issues the certificates for the hosts. If you changed the VMCA root certificate to include a certificate chain, the host certificates include the full chain.
Custom Certificate Authority mode	Allows you to manually update and use certificates that are not signed or issued by VMCA.
Thumbprint mode	Can be used to retain 5.5 certificates during refresh. Use this mode only temporarily in debugging situations

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-5FE583A2-3737-4B62-A905-5BB38D479AE0.html>

QUESTION 16

Lockdown Mode has been enabled on an ESXi 6.x host and users are restricted from logging into the Direct Console User Interface (DCUI).

Which two statements are true given this configuration? (Choose two.)

- A. A user granted administrative privileges in the Exception User list can login.
- B. A user defined in the DCUI.Access without administrative privileges can login.
- C. A user defined in the ESXi Admins domain group can login.
- D. A user set to the vCenter Administrator role can login.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

In normal lockdown mode the DCUI service is not stopped. If the connection to the vCenter Server is lost and access through the vSphere Web Client is no longer available, privileged accounts can log in to the ESXi host's Direct Console Interface and exit lockdown mode. Only these accounts can access the Direct Console User Interface:

- Accounts in the Exception User list for lockdown mode who have administrative privileges on the host. The Exception Users list is meant for service accounts that perform very specific tasks. Adding ESXi administrators to this list defeats the purpose of lockdown mode.
- Users defined in the DCUI.Access advanced option for the host. This option is for emergency access to the Direct Console Interface in case the connection to vCenter Server is lost. These users do not require administrative privileges on the host.

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1008077

QUESTION 17

Strict Lockdown Mode has been enabled on an ESXi host.

Which action should an administrator perform to allow ESXi Shell or SSH access for users with administrator privileges?

- A. Grant the users the administrator role and enable the service.
- B. Add the users to Exception Users and enable the service.
- C. No action can be taken, Strict Lockdown Mode prevents direct access.
- D. Add the users to vsphere.local and enable the service.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Strict Lockdown mode:

In strict lockdown mode the DCUI service is stopped. If the connection to vCenter Server is lost and the vSphere Web Client is no longer available, the ESXi host becomes unavailable unless the ESXi Shell and SSH services are enabled and Exception Users are defined. If you cannot restore the connection to the vCenter Server system, you have to reinstall the host.

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1008077

QUESTION 18

A common root user account has been configured for a group of ESXi 6.x hosts.

Which two steps should be taken to mitigate security risks associated with this configuration? (Choose two.)

- A. Remove the root user account from the ESXi host.
- B. Set a complex password for the root account and limit its use.
- C. Use ESXi Active Directory capabilities to assign users the administrator role.
- D. Use Lockdown mode to restrict root account access.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

root User Privileges

By default each ESXi host has a single root user account with the Administrator role. That root user account can be used for local administration and to connect the host to vCenter Server.

This common root account can make it easier to break into an ESXi host and make it harder to match actions to a specific administrator.

Set a highly complex password for the root account and limit the use of the root account, for example, for use when adding a host to vCenter Server. Do not remove the root account. In vSphere 5.1 and later, only the root user and no other named user with the Administrator role is permitted to add a host to vCenter Server.

Best practice is to ensure that any account with the Administrator role on an ESXi host is assigned to a specific user with a named account. Use ESXi Active Directory capabilities, which allow you to manage Active Directory credentials if possible.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-55F14938-8A2F-4703-8A60-3516F9C3E312.html>

QUESTION 19

An administrator wants to configure an ESXi 6.x host to use Active Directory (AD) to manage users and groups. The AD domain group ESX Admins is planned for administrative access to the host.

Which two conditions should be considered when planning this configuration? (Choose two.)

- A. If administrative access for ESX Admins is not required, this setting can be altered.
- B. The users in ESX Admins are not restricted by Lockdown Mode.
- C. An ESXi host provisioned with Auto Deploy cannot store AD credentials.
- D. The users in ESX Admins are granted administrative privileges in vCenter Server.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Configure a Host to Use Active Directory

You can configure a host to use a directory service such as Active Directory to manage users and groups.

When you add an ESXi host to Active Directory the DOMAIN group **ESX Admins** is assigned full administrative access to the host if it exists. If you do not want to make full administrative access available, see VMware Knowledge Base article 1025569 for a workaround.

If a host is provisioned with Auto Deploy, Active Directory credentials cannot be stored on the hosts. You can use the vSphere Authentication Proxy to join the host to an Active Directory domain. Because a trust chain exists between the vSphere Authentication Proxy and the host, the Authentication Proxy can join the host to the Active Directory domain. See [Using vSphere Authentication Proxy](#).

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-63D22519-38CC-4A9F-AE85-97A53CB0948A.html>

QUESTION 20

Which two advanced features should be disabled for virtual machines that are only hosted on a vSphere system? (Choose two.)

- A. isolation.tools.unity.push.update.disable
- B. isolation.tools.ghi.launchmenu.change
- C. isolation.tools.bbs.disable
- D. isolation.tools.hgfsServerSet.enable

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Disable Unexposed Features

VMware virtual machines are designed to work on both vSphere systems and hosted virtualization platforms such as Workstation and Fusion. Certain VMX parameters do not need to be enabled when you run a virtual machine on a vSphere system. Disable these parameters to reduce the potential for vulnerabilities.

Prerequisites

Turn off the virtual machine.

Procedure

- 1 Find the virtual machine in the vSphere Web Client inventory.
 - A To find a virtual machine, select a datacenter, folder, cluster, resource pool, or host.
 - B Click the **Related Objects** tab and click **Virtual Machines**.
- 2 Right-click the virtual machine and click **Edit Settings**.
- 3 Select **VM Options**.
- 4 Click **Advanced** and click **Edit Configuration**.
- 5 Add or edit the following parameters.

Name	Value
isolation.tools.unify.push.update.disable	TRUE
isolation.tools.ghi.launchmenu.change	TRUE
isolation.tools.mem.SchedFakeSampleStats.disable	TRUE
isolation.tools.getCreds.disable	TRUE
isolation.tools.ghi.autologon.disable	TRUE
isolation.bios.bbs.disable	TRUE
isolation.tools.hgfs.ServerSet.disable	TRUE

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-60E83710-8295-41A2-9C9D-83DEBB6872C2.html>

QUESTION 21

To reduce the attack vectors for a virtual machine, which two settings should an administrator set to false? (Choose two.)

A. ideX:Y.present

- B. serial.present
- C. ideX:Y.enabled
- D. serial.enabled

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Removing Unnecessary Hardware Devices

Any enabled or connected device represents a potential attack channel. Users and processes without privileges on a virtual machine can connect or disconnect hardware devices, such as network adapters and CD-ROM drives. Attackers can use this capability to breach virtual machine security. Removing unnecessary hardware devices can help prevent attacks.

Use the following guidelines to increase virtual machine security.

- Ensure that unauthorized devices are not connected and remove any unneeded or unused hardware devices.
- Disable unnecessary virtual devices from within a virtual machine. An attacker with access to a virtual machine can connect a disconnected CD-ROM drive and access sensitive information on the media left in the drive, or disconnect a network adapter to isolate the virtual machine from its network, resulting in a denial of service.
- Ensure that no device is connected to a virtual machine if it is not required. Serial and parallel ports are rarely used for virtual machines in a datacenter environment, and CD/DVD drives are usually connected only temporarily during software installation.
- For less commonly used devices that are not required, either the parameter should not be present or its value must be false. Ensure that the following parameters are either not present or set to false unless the device is required.

Parameter	Value	Device
floppyX.present	false	floppy drives
serialX.present	false	serial ports
parallelX.present	false	parallel ports
usb.present	false	<u>USB controller</u>
ideX:Y.present	false	<u>CD-ROM</u>

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-822B2ED3-D8D2-4F57-8335-CA46E915A729.html>

QUESTION 22

Which two groups of settings should be reviewed when attempting to increase the security of virtual machines (VMs)? (Choose two.)

- A. Disable hardware devices
- B. Disable unexposed features
- C. Disable VMtools devices
- D. Disable VM Template features

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Securing Virtual Machines

The guest operating system that runs in the virtual machine is subject to the same security risks as a physical system. Secure virtual machines as you would secure physical machines.

Subtopics

[General Virtual Machine Protection](#)

[Configuring Logging Levels for the Guest Operating System](#)

[Limiting Exposure of Sensitive Data Copied to the Clipboard](#)

[Disable Unexposed Features](#)

[Limiting Guest Operating System Writes to Host Memory](#)

[Removing Unnecessary Hardware Devices](#)

[Prevent a Virtual Machine User or Process from Disconnecting Devices](#)

[Prevent a Virtual Machine User or Process from Disconnecting Devices in the vSphere Web Client](#)

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp#com.vmware.vsphere.security.doc/GUID-CF45F448-2036-4BE3-8829-4A9335072349.html>

QUESTION 23

Which password meets ESXi 6.x host password requirements?

- A. 8kMVnn2x!
- B. zNgtnJBA2
- C. Nvgt34kn44
- D. !b74wr

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

ESXi Passwords

By default, ESXi enforces requirements for user passwords.

Your user password must meet the following length requirements.

- Passwords containing characters from one or two character classes must be at least eight characters long.
- Passwords containing characters from three character classes must be at least seven characters long.
- Passwords containing characters from all four character classes must be at least six characters long.

When you create a password, include a mix of characters from four character classes: lowercase letters, uppercase letters, numbers, and special characters such as an underscore or dash.

The password cannot contain the words root, admin, or administrator in any form.

Reference:

<https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-DC96FFDB-F5F2-43EC-8C73-05ACDAE6BE43.html>

QUESTION 24

An administrator would like to use a passphrase for their ESXi 6.x hosts which has these characteristics:

- Minimum of 21 characters
- Minimum of 2 words

Which advanced options must be set to allow this passphrase configuration to be used?

- A. retry=3 min=disabled, disabled, 7, 21, 7 passphrase=2
- B. retry=3 min=disabled, disabled, 21, 7, 7 passphrase=2
- C. retry=3 min=disabled, disabled, 2, 21, 7
- D. retry=3 min=disabled, disabled, 21, 21, 2

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

B-) ESXi Passwords and Account Lockout

For ESXi hosts, you have to use a password with predefined requirements. You can change the required length and character class requirement or allow pass phrases using the Security.PasswordQualityControl advanced option. ESXi uses the Linux PAM module pam_passwdqc for password management and control. See the manpages for pam_passwdqc for detailed information.

ESXi Passwords: ESXi enforces password requirements for direct access from the Direct Console User Interface, the ESXi Shell, SSH, or the vSphere Client. When you create a password, include a mix of characters from four character classes: lowercase letters, uppercase letters, numbers, and special characters such as underscore or dash. (link : <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-DC96FFDB-F5F2-43EC-8C73-05ACDAE6BE43.html>)

QUESTION 25

Which Advanced Setting should be created for the vCenter Server to change the expiration policy of the vpxuser password?

- A. VimPasswordExpirationInDays
- B. VimExpirationPasswordDays
- C. VimPassExpirationInDays
- D. VimPasswordRefreshDays

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Important

To preclude the possibility that vCenter Server is locked out of the ESXi host, the password aging policy must not be shorter than the time it takes to automatically change the vpxuser password.

Procedure

- 1 To change the password length policy, edit the `vpxd.hostPasswordLength` parameter in the vCenter Server configuration file. vCenter Server is running.

Operating System	Default Location
Windows	C:\Documents and Settings\All Users\Application Data\VMware VirtualCenter\bin\config\
Linux	/etc/vmware-vpx/vpxd.cfg

- 2 To change the password aging requirement, use the Advanced Settings dialog box in the vSphere Web Client.
 - a Browse to the vCenter Server system in the vSphere Web Client inventory.
 - b Click the **Manage** tab and click **Settings**.
 - c Select **Advanced Settings** and locate the `VirtualCenter.VimPasswordExpirationInDays` parameter.
- 3 Restart vCenter Server.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-96210743-0C17-4AE9-89FC-76778EC9D06E.html>

QUESTION 26

An administrator has been instructed to secure existing virtual machines in vCenter Server.

Which two actions should the administrator take to secure these virtual machines? (Choose two.)

- A. Disable native remote management services
- B. Restrict Remote Console access
- C. Use Independent Non-Persistent virtual disks
- D. Prevent use of Independent Non-Persistent virtual disks

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

PARAMETER ELEMENT	DESCRIPTION
Code	VMX22
Name	Avoid using independent nonpersistent disks.
Description	<p>The security issue with nonpersistent disk mode is that successful attackers, with a simple shutdown or reboot, might undo or remove any traces that they were ever on the machine.</p> <p>To safeguard against this risk, you should set production virtual machines to use either persistent disk mode or nonpersistent disk mode; additionally, make sure that activity within the virtual machine is logged remotely on a separate server, such as a syslog server or equivalent Windows-based event collector.</p>
Threat	Without a persistent record of activity on a virtual machine, administrators might never know whether they have been attacked or hacked.
Recommendation Level	DMZ
Parameter Setting	<p>If remote logging of events and activity is not configured for the guest, scsiX:Y, mode should be either:</p> <ol style="list-style-type: none"> 1. Not present 2. Not set to independent nonpersistent.
Effect on Functionality	Won't be able to make use of nonpersistent mode, which allows rollback to a known state when rebooting the virtual machine.

PARAMETER ELEMENT	DESCRIPTION
Code	VMX02
Name	Prevent other users from spying on administrator remote consoles.
Description	By default, remote console sessions can be connected to by more than one user at a time. When multiple sessions are activated, each terminal window gets a notification about the new session.
Threat	If an administrator in the virtual machine logs in using a VMware remote console during the session, a nonadministrator in the virtual machine might connect to the console and observe the administrator's actions. This might also result in an administrator's losing console access to a virtual machine. For example, if a jump box is being used for an open console session, and the administrator loses connection to that box, the console session remains open.
Recommendation Level	DMZ
Parameter Setting	RemoteDisplay.maxConnections=1
Effect on Functionality	Only one remote console connection to the virtual machine will be permitted. Other attempts will be rejected until the first session disconnects.

Reference:

<http://www.vmware.com/files/pdf/techpaper/VMW-TWP-vSPHR-SECRTY-HRDNG-USLET-101-WEB-1.pdf>

QUESTION 27

An administrator has recently audited the environment and found numerous virtual machines with sensitive data written to the configuration files.

To prevent this in the future, which advanced parameter should be applied to the virtual machines?

- A. isolation.tools.setinfo.disable = true
- B. isolation.tools.setinfo.enable = true
- C. isolation.tools.setinfo.disable = false
- D. isolation.tools.setinfo.enable = false

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Limit SETINFO Messages

Now if you read through the hardening guide, you'll come across a section that covers informational messages, otherwise known as SETINFO messages.

Now my understanding is that currently there is no limitation on the amount of data that can be sent from VMware tools to the host, so you can imagine it wouldn't be hard to write some code to continuously send huge amounts of data. So let's look at how to limit this to something more acceptable as per the hardening guide.

tools.setInfo.sizeLimit = "1048576"

Now you can actually totally disable this using the following

isolation.tools.setInfo.disable = "true"

But this stops the Virtual Center client from displaying any information about the Virtual Machine, e.g. IP Address, DNS information. So for a production environment I would recommend setting a limit rather than totally disabling.

Reference:

<https://goingvirtual.wordpress.com/2009/07/11/locking-down-vmware-tools/>

QUESTION 28

Which two statements are correct regarding vSphere certificates? (Choose two.)

- A. ESXi host upgrades do not preserve the SSL certificate and reissue one from the VMware Certificate Authority (VMCA).
- B. ESXi host upgrades preserve the existing SSL certificate.
- C. ESXi hosts have assigned SSL certificates from the VMware Certificate Authority (VMCA) during install.
- D. ESXi hosts have self-signed SSL certificates by default.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

B-) ESXi hosts that are upgraded from vSphere 5.x to vSphere 6.0 will continue using their Certificate Authority signed certificates if they were replaced in the previous versions. However, ESXi 5.x hosts that were running self-signed certificates and then upgraded to vSphere 6.0 will have their certificates regenerated using VMware-signed.

For more info link:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2113926

C-) In vSphere 6.0, VMware tried to address SSL certificates in a different manner. It introduced a new component called the "Platform Services Controller." The Platform Services Controller includes a fully-functional certificate authority, called the VMware Certification Authority (VMCA), that automatically

manages the certificates used in vCenter and the ESXi hosts.

There are two steps to complete. First, you need to retrieve the root certificate from vCenter and convert it into something usable. Once you've done that, you need to deploy it as a Trusted Root Certificate. The easiest way to do this with multiple computers is to use Group Policy. Here are the steps to retrieve the certificate:

1. Open your Web browser.
2. Navigate to <https://<fqdn of vcenter>>
3. In the lower right-hand corner, click the Download Trusted Root CA link.----- for more:
<https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vsphere.security.doc/GUID-C91AFFAD-A830-4BBE-BF7C-F779A3AD03F1.html?resultof=%2522%2573%2573%256c%2522%2520>

QUESTION 29

Which three options are available for replacing vCenter Server Security Certificates? (Choose three.)

- A. Replace with Certificates signed by the VMware Certificate Authority.
- B. Make VMware Certificate Authority an Intermediate Certificate Authority.
- C. Do not use VMware Certificate Authority, provision your own Certificates.
- D. Use SSL Thumbprint mode.
- E. Replace all VMware Certificate Authority issued Certificates with self-signed Certificates.

Correct Answer: ABD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

ESXi Certificate Replacement

For ESXi hosts, you can change certificate provisioning behavior from the vSphere Web Client.

VMware Certificate Authority mode (default)	When you renew certificates from the vSphere Web Client, VMCA issues the certificates for the hosts. If you changed the VMCA root certificate to include a certificate chain, the host certificates include the full chain.
Custom Certificate Authority mode	Allows you to manually update and use certificates that are not signed or issued by VMCA.
Thumbprint mode	Can be used to retain 5.5 certificates during refresh. Use this mode only temporarily in debugging situations.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc%2FGUID-4469A6D3-048A-471C-9CB4-518A15EA2AC0.html>

QUESTION 30

When attempting to log in with the vSphere Web Client, users have reported the error:

Incorrect Username/Password

The administrator has configured the Platform Services Controller Identity Source as:

- Type: Active Directory as an LDAP Server
- Domain: vmware.com
- Alias: VMWARE
- Default Domain: Yes

Which two statements would explain why users cannot login to the vSphere Web Client? (Choose two.)

- A. Users are typing the password incorrectly.
- B. Users are in a forest that has 1-way trust.
- C. Users are in a forest that has 2-way trust.
- D. Users are logging into vCenter Server with incorrect permissions.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

A-) As written in the [KB 2034608](#) (Unlocking and resetting the VMware vCenter Single Sign-On administrator password) you can have this problem also in a case of multiple login failure (by default the account get locked if the password is incorrectly entered three times).

For VMware Platform Services Controller 6.0, if you want just to unlock the password:

FAQ'S: VMware Platform Services Controller (PSC) for vSphere 6.0. The PSC contains common infrastructure services such as vCenter Single Sign-On (SSO), VMware Certificate Authority (VMCA), licensing, and server reservation and registration services. https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2113115

B-) Depending on the type of Microsoft Active Directory trusts used in an environment, some features, such as Active Directory user querying and user authentication, may be limited from the vSphere Client and vSphere Web Client. For more info: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2064250

QUESTION 31

Which group in the vsphere.local domain will have administrator privileges for the VMware Certificate Authority (VMCA)?

- A. SolutionUsers
- B. CAAdmins
- C. DCAAdmins
- D. SystemConfiguration.Administrators

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Members of the CAAdmins group have administrator privileges for VMCA. Adding members to these groups is not usually recommended.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-87DA2F34-DCC9-4DAB-8900-1BA35837D07E.html>

QUESTION 32

Which Platform Service Controller Password Policy determines the number of days a password can exist before the user must change it?

- A. Maximum Lifetime
- B. Password Age
- C. Maximum Days
- D. Password Lifetime

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

- Configure SSO policies
 - Password Policy: You can configure the following parameters:
 - Description – Password policy description. Required.
 - Maximum lifetime – Maximum number of days that a password can exist before it has to be changed.
 - Restrict re-use – Number of the user's previous passwords that cannot be set again.
 - Maximum length – Maximum number of characters that are allowed in the password.
 - Minimum length – Minimum number of characters required in the password.
 - Character requirements – Minimum number of different character types required in the password.
 - Identical adjacent characters – Maximum number of identical adjacent characters allowed in the password.

Reference:

<http://davidstamen.com/certification/section-1-configure-and-administer-vsphere-6x-security/>

QUESTION 33

An administrator is configuring the clock tolerance for the Single Sign-On token configuration policy and wants to define the time skew tolerance between a client and the domain controller clock.

Which time measurement is used for the value?

- A. Milliseconds
- B. Seconds
- C. Minutes
- D. Hours

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Time difference, in milliseconds, that vCenter Single Sign-On tolerates between a client clock and the domain controller clock. If the time difference is greater than the specified value, vCenter Single Sign-On declares the token invalid.

Reference:

<https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-50F2D815-4F67-4267-A005-B8158DADCBC9.html>

QUESTION 34

Which VMware Single Sign-On component issues Security Assertion Markup Language (SAML) tokens?

- A. VMware Security Token Service
- B. Administration Server
- C. VMware Directory Service
- D. Identity Management Service

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The STS service issues Security Assertion Markup Language (SAML) tokens. These security tokens represent the identity of a user in one of the identity source types supported by vCenter Single Sign-On. The SAML tokens allow both human users and solution users who authenticate successfully to vCenter Single Sign-On to use any vCenter service that vCenter Single Sign-On supports without authenticating again to each service.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc%2FGUID-90C1E3DC-4397-4BF0-808E-DF3802E56BC6.html>

QUESTION 35

Which two are valid Identity Sources when configuring vCenter Single Sign-On? (Choose two.)

- A. Radius
- B. NIS
- C. OpenLDAP
- D. LocalOS

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Option	Description
OpenLDAP	The identity source is an OpenLDAP server. OpenLDAP versions 2.4 and later are supported.
Active Directory	The identity source is a Microsoft Active Directory server. Active Directory versions 2003 and later are supported.
Local Operating System	Users local to the operating system where Single Sign On is installed (for example, Windows). There can be only one local operating system identity source.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-B23B1360-8838-4FF2-B074-71643C4CB040.html>

QUESTION 36

An administrator needs to create an Integrated Windows Authentication (IWA) Identity Source on a newly deployed vCenter Server Appliance (VCSA).

Which two actions will accomplish this? (Choose two.)

- A. Use a Service Principal Name (SPN) to configure the Identity Source.
- B. Use a Domain administrator to configure the Identity Source.

- C. Join the VCSA to Active Directory and configure the Identity Source with a Machine Account.
- D. Create a computer account in Active Directory for the VCSA and configure the Identity Source.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation: A-) Configuring Active Directory as Identity Source for use with SSO 6.0 can be done in 2 ways

- a. Use the Machine Account(Any AD Account) b. Use with Service Principal Name
- b. Prerequisites :1. A domain account with domain administrator privileges is required when assigning a SPN to an account. 2. A domain account with domain user privileges is a minimum requirement for the account to be used as the SPN account.

c. <https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vsphere.security.doc/GUID-4D24C6E8-63F5-4E35-862E-B59A03703254.html?resultof=%2522%2573%2570%256e%2522%2520>

C-) **VCSA-** If you want to configure permissions for users and groups from an Active Directory domain to access the vCenter Server components, you must join its associated embedded or external Platform Services Controller instance to the Active Directory domain.

<https://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.vcsa.doc%2FGUID-08EA2F92-78A7-4EFF-880E-2B63ACC962F3.html>

QUESTION 37

An administrator wants to reduce the memory overhead for a 3D graphics enabled virtual machine (VM).

What advanced feature can be added to the VM configuration file to reduce memory overhead?

- A. vga.vgaOnly=TRUE
- B. vga.svgaEnable=FALSE
- C. svgaEnabled=FALSE
- D. svgaDisable=TRUE

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Reduce Memory Overhead for Virtual machines with 3D graphics Option

Virtual machines with the 3D graphics option enabled can have higher memory consumption than other virtual machines. You can reduce the memory overhead by editing the configuration file (.vmx file) of your virtual machines and disabling certain memory related settings. Reducing the memory overhead of virtual machines can help you increase the number of virtual machines per host.

Prerequisites

Verify that your virtual machines are using hardware version 10 or later.

Procedure

- 1 Shut down the virtual machine on which the 3D graphics option is enabled.
- 2 Disable the **Accelerate 3D Graphics** option.
- 3 Upgrade your ESXi host to use the features available in hardware version 10 or later.
- 4 Set the maximum size of your display to the size you need.
- 5 Locate the configuration file (.vmx) of your virtual machine.
- 6 Open the virtual machine configuration file in a text editor and add the line, `vga.vgaOnly=TRUE`. This option removes all graphics and SVGA functionality from your SVGA device, but does not remove the settings that allow BIOS to enter VGA mode.
- 7 Save the changes and exit the text editor.
- 8 Power on your virtual machine and check the display console.
- 9 Verify the memory reservation settings in the vmware.log file.

Reference:

https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.vm_admin.doc%2FGUID-FAB0E2C3-3474-461D-99BC-549F7E21FE85.html

QUESTION 38

An administrator is building a large virtual machine that will require as many vCPUs as the host can support. An ESXi 6.x host has these specifications:

- Six 32-core Intel Xeon Processors
- 256 GB of Memory
- 512 GB Local disk space using VMFS5

What is the maximum number of virtual CPUs that the virtual machine can be allocated?

- A. 64
- B. 128
- C. 192
- D. 256

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The virtual machine maximums represent limits applicable to compute, memory, storage virtual adapters and devices, network virtual devices, virtual peripheral ports, and graphics video device.

Table 2-1. Virtual Machine Maximums

Item	Maximum
Compute	
Virtual CPUs per virtual machine (Virtual SMP)	128

Reference:

<https://www.vmware.com/pdf/vsphere6/r60/vsphere-60-configuration-maximums.pdf>

QUESTION 39

Which two features are available for virtual machines configured with DirectPath I/O? (Choose two.)

- A. Fault Tolerance
- B. Suspend and Resume
- C. Virtual Symmetric Multi-Processing (vSMP)
- D. Virtual Non-Uniform Memory Access (vNUMA)

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

DirectPath I/O

DirectPath I/O allows virtual machine access to physical PCI functions on platforms with an I/O Memory Management Unit.

The following features are unavailable for virtual machines configured with DirectPath:

- Hot adding and removing of virtual devices

- Suspend and resume
- Record and replay
- Fault tolerance
- High availability
- DRS (limited availability. The virtual machine can be part of a cluster, but cannot migrate across hosts)
- Snapshots

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-BF2770C3-39ED-4BC5-A8EF-77D55EFE924C.html>

QUESTION 40

An administrator is creating a new Content Library. It will subscribe to another remote Content Library without authentication enabled.

What information from the published library will they need in order to complete the subscription?

- A. Subscription URL
- B. A security password from the publishing Content Library
- C. Publisher's Items.json file
- D. Username from the publishing Content Library

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Subscribed content library

Creates a content library, which is subscribed to a published content library. You can only sync the subscribed library with the published library to see up-to-date content, but you cannot add or remove content from the subscribed library. Only an administrator of the published library can add, modify, and remove contents from the published library.

Reference:

https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.vm_admin.doc%2FGUID-2A0F1C13-7336-45CE-B211-610D39A6E1F4.html

QUESTION 41

An administrator is assigning a user the Content Library administrator role. The user will only be creating the library for a single vCenter Server.

What is the lowest level of the permission hierarchy that this role can be granted to the user and still allow them to create a Content Library?

- A. Global
- B. Datacenter Folder
- C. Virtual Center
- D. Datacenter

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

QUESTION 42

A user notifies an administrator that Content Libraries are not visible.

What is a possible solution?

- A. Assign the user the read-only role at the global permission level.
- B. Assign the user the read-only role at the vCenter Server root level.
- C. Assign the user the read-only role at the vCenter Server data center level.
- D. Assign the user the read-only role at the vCenter Server cluster level.

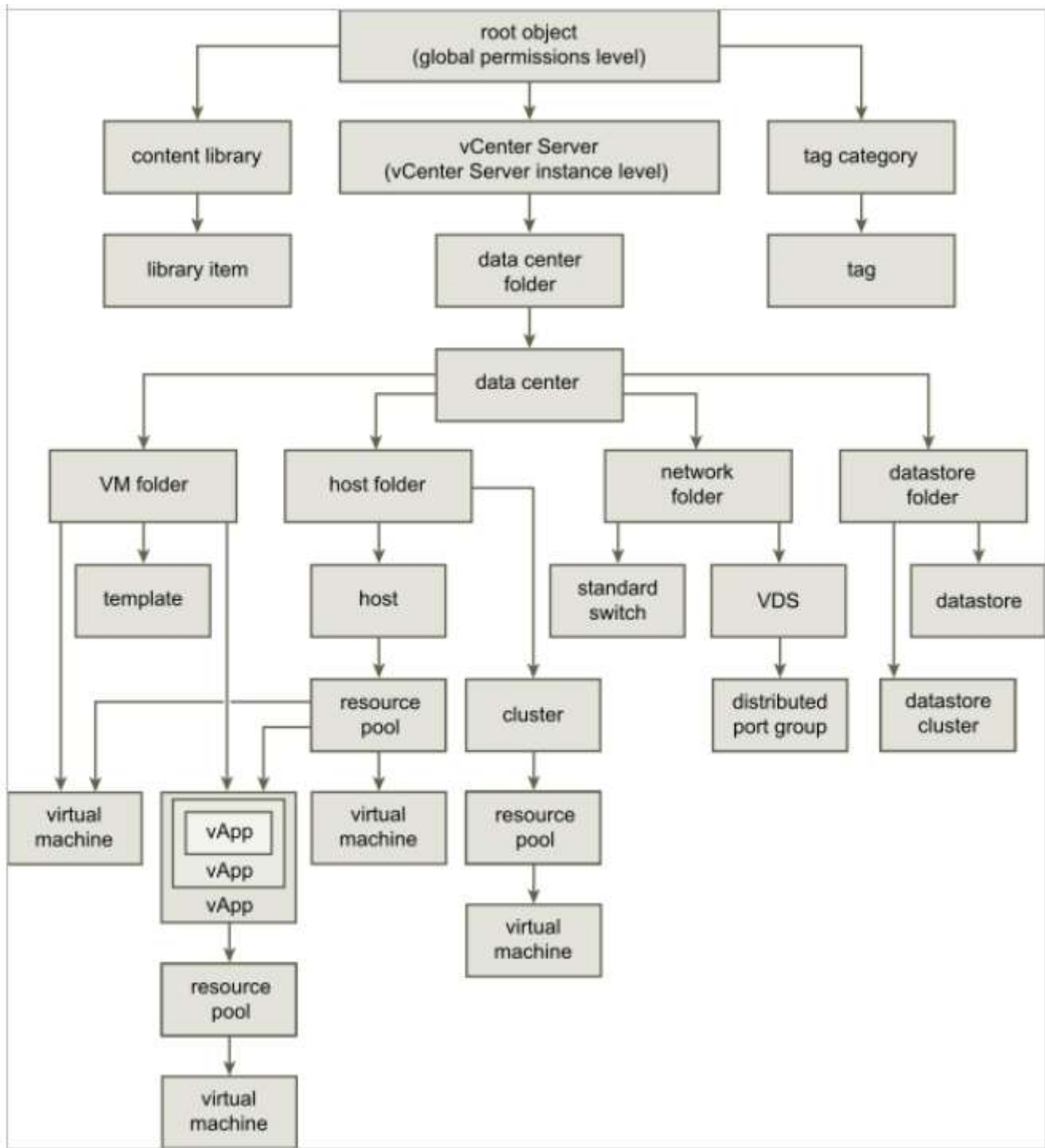
Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:



Reference:

https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.vm_admin.doc%2FGUID-18F4B892-D685-4473-AC25-3195D68DFD90.html

QUESTION 43

When a Content Library is deleted, what happens to the files contained on the backing storage?

- A. The files will be unchanged.
- B. The files will be deleted.

- C. The files will remain and be marked as orphaned.
- D. The containing folder will be marked as orphaned.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Delete a Content Library

When you no longer need a content library, you can invoke the delete method on either the LocalLibrary or the SubscribedLibraryservice depending on the library type.

Procedure

1Access the SubscribedLibrary or the LocalLibrary service by using the vCloud Suite Endpoint.

2Retrieve the library ID you want to delete.

3Call the delete function on the library service and pass the library ID as argument.

All library items cached on the storage backing are removed asynchronously. If this operation fails, you must manually remove the content of the library.

<https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vapi.progguide.doc/GUID-C3A2DD49-BF41-43CD-9AEC-D6F28A9F3AF4.html?resultof=%2522%>

QUESTION 44

Which three connection types are supported between a remote site and vCloud Air? (Choose three.)

- A. Secure Internet Connectivity
- B. Private Connect
- C. Direct Connect
- D. Internet Connectivity
- E. Secure VPN

Correct Answer: ACE

Section: (none)

Explanation

Explanation/Reference:

Explanation:

VPN and Remote Networks

Another aspect of network security is the connectivity you establish between your on premise data center and the vCloud Air cloud. Based on the workload, a virtual machine can have various connectivity needs.

vCloud Air supports Internet, secure VPN, and Direct Connect secure connections between your remote site and the vCloud Air cloud.

Each type of connection has different security features:

- Secure Internet connectivity with firewall rules (a gateway service)
See “About Firewall Rules,” on page 31 in this guide for information.
- Secure VPN:
 - IPsec VPN—secure site-to-site VPN
See “About IPsec VPN,” on page 33 and “Set up an IPsec VPN Connection to a Remote Site,” on page 35 in this guide for information.
 - SSL VPN (Data Center Extension)—extension of your existing IP address range from your on-premise data center into the cloud with Layer 2 extension
See “SSL VPN for Data Center Extension,” on page 36 in this guide for information.
- Direct Connect—private connectivity providing a dedicated, connection (ideal for regulated applications)

Reference:

http://pubs.vmware.com/vca/topic/com.vmware.ICbase/PDF/vcloud_air_networking_guide.pdf

QUESTION 45

An administrator subscribes to the vCloud Air Disaster Recovery service.

Which replicated objects can be directly monitored and managed?

- A. Virtual machine Snapshots
- B. vApps
- C. Virtual machines
- D. ESXi Hosts

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

VMware provides a disaster recovery service that lets you protect your workloads from a disaster or disruptive event by replicating them to the cloud. You can replicate virtual machines from your vSphere-based source site to vCloud Air, and recover and use the replicated virtual machines in the cloud if the source site is unavailable. The Disaster Recovery service is based on vSphere Replication, an extension to VMware vSphere that provides hypervisor-based virtual machine replication and recovery.

You use vSphere Replication at your source site to configure your environment and replicate virtual machines to vCloud Air. You can use vSphere Replication, the vCloud Air portal, or the vCloud Air plug-in to monitor and manage the replicated virtual machines in the cloud.

Reference:

<http://pubs.vmware.com/vchspugin-15/index.jsp?topic=%2Fcom.vmware.vchspugin.doc%2FGUID-92B7E03C-8DDE-4F91-A64C-8E5AF7BD0F66.html>

QUESTION 46

Refer to the Exhibit.

Identity source type:

- ☐ Active Directory (Integrated Windows Authentication)
☒ Active Directory as a LDAP Server
☐ Open LDAP
☐ Local OS

Identity source settings

Name:

Base DN for users:

Domain name:

Domain alias:



Base DN for groups:

Primary server URL:

Secondary server URL:

Username:

Password:

An administrator is adding an Active Directory over LDAP Identity Source for vCenter Single Sign-On, as indicated in the Exhibit.

What is the correct value to configure for the Domain alias?

- A. The domain's NetBIOS name.
- B. The fully qualified domain name.
- C. vsphere.local
- D. A user defined label.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Domain alias

(Optional) The domain's NetBIOS name.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-B23B1360-8838-4FF2-B074-71643C4CB040.html>

QUESTION 47

Refer to the Exhibit.

This host currently has no management network redundancy

An administrator is changing the settings on a vSphere Distributed Switch (vDS). During this process, the ESXi Management IP address is set to an address which can no longer communicate with the vCenter Server.

What is the most likely outcome of this action?

- A. The host will disconnect from the vCenter Server and remain disconnected.
- B. The host will automatically detect the communication issue and revert the change.
- C. The host will stay connected with the change, but show an alert.
- D. The host will disconnect and migrate the vDS portgroup to a standard switch.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: Procedure

1. Connect to the DCUI of the host.

2. From the Network Restore Options menu, select Restore vDS.

3. Configure the uplinks and optionally the VLAN for the management network.

4. Apply the configuration.

The DCUI creates a local ephemeral port and applies the values you provided for the VLAN and uplinks. The DCUI moves the VMkernel adapter for the management network to the new local **port to restore connectivity to vCenter Server**.

Next Steps:

After the connection of the host to vCenter Server is restored, correct the configuration of the distributed port group and re-add the VMkernel adapter to the group.

For information about networking rollback, recovery, and restore, see the *vSphere Networking* documentation: Wait until vCenter Server applies the settings within the next 24 hours.

QUESTION 48

Which secondary Private VLAN (PVLAN) type can communicate and send packets to an Isolated PVLAN?

- A. Community
- B. Isolated
- C. Promiscuous
- D. Primary

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Private VLANs

Private VLANs are used to solve VLAN ID limitations and waste of IP addresses for certain network setups.

A private VLAN is identified by its primary VLAN ID. A primary VLAN ID can have multiple secondary VLAN IDs

associated with it. Primary VLANs are **Promiscuous**, so that ports on a private VLAN can communicate with ports configured as the primary VLAN. Ports on a secondary VLAN can be either **Isolated**, communicating only with promiscuous ports, or **Community**, communicating with both promiscuous ports and other ports on the same secondary VLAN.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-A9287D46-FDE0-4D64-9348-3905FEAC7FAE.html>

QUESTION 49

Which three traffic types can be configured for dedicated VMkernel adapters? (Choose three.)

- A. Discovery traffic
- B. vMotion traffic
- C. vSphere Replication NFC traffic
- D. Provisioning traffic
- E. vSphere Custom traffic

Correct Answer: BCD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Securing System Traffic

Take appropriate security measures to prevent unauthorized access to the management and system traffic in your vSphere environment. For example, isolate the vMotion traffic in a separate network that includes only the ESXi hosts that participate in the migration. Isolate the management traffic in a network that only network and security administrators are able to access. For more information, see *vSphere Security* and *vSphere Installation and Setup*.

System Traffic Types

You should dedicate a separate VMkernel adapter for every traffic type. For distributed switches, dedicate a separate distributed port group for each VMkernel adapter.

Management traffic

Carries the configuration and management communication for ESXi hosts, vCenter Server, and host-to-host High Availability traffic. By default, when you install the ESXi software, a vSphere Standard switch is created on the host together with a VMkernel adapter for management traffic. To provide redundancy, you can connect two or more physical NICs to a VMkernel adapter for management traffic.

vMotion traffic

Accommodates vMotion. A VMkernel adapter for vMotion is required both on the source and the target hosts. The VMkernel adapters for vMotion should handle only the vMotion traffic. For better performance, you can configure multiple NIC vMotion. To have multi NIC vMotion, you can dedicate two or more port groups to the vMotion traffic, respectively every port group must have a vMotion VMkernel adapter associated with it. Then you can connect one or more physical NICs to every port group. In this way, multiple physical NICs are used for vMotion, which results in greater bandwidth.

Note

vMotion network traffic is not encrypted. You should provision secure private networks for use by vMotion only.

Provisioning traffic

Handles the data that is transferred for virtual machine cold migration, cloning, and snapshot creation.

IP storage traffic and discovery

Handles the connection for storage types that use standard TCP/IP networks and depend on the VMkernel networking. Such storage types are software iSCSI, depended hardware iSCSI, and NFS. If you have two or more physical NICs for iSCSI, you can configure iSCSI multipathing. ESXi hosts support only NFS version 3 over TCP/IP. To configure a software FCoE (Fibre Channel over Ethernet) adapter, you must have a dedicated VMkernel adapter. Software FCoE passes configuration information through the Data Center Bridging Exchange (DCBX) protocol by using the Cisco Discovery Protocol (CDP) VMkernel module.

Fault Tolerance traffic

Handles the data that the primary fault tolerant virtual machine sends to the secondary fault tolerant virtual machine over the VMkernel networking layer. A separate VMkernel adapter for Fault Tolerance logging is required on every host that is part of a vSphere HA cluster.

vSphere Replication traffic

Handles the outgoing replication data that the source ESXi host transfers to the vSphere Replication server. Dedicate a VMkernel adapter on the source site to isolate the outgoing replication traffic.

vSphere Replication NFC traffic

Handles the incoming replication data on the target replication site.

Virtual SAN traffic

Every host that participates in a Virtual SAN cluster must have a VMkernel adapter to handle the Virtual SAN traffic.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-D4191320-209E-4CB5-A709-C8741E713348.html>

QUESTION 50

What are two limitations of Link Aggregation Control Protocol (LACP) on a vSphere Distributed Switch? (Choose two.)

- A. IP Hash load balancing is not a supported Teaming Policy.
- B. Software iSCSI multipathing is not compatible.
- C. Link Status Network failover detection must be disabled.
- D. It does not support configuration through Host Profiles.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

LACP Limitations on a vSphere Distributed Switch

Link Aggregation Control Protocol (LACP) on a vSphere distributed switch allows network devices to negotiate automatic bundling of links by sending LACP packets to a peer. However, there are some limitations when using LACP with a vSphere distributed switch.

- LACP only works with IP Hash load balancing and Link Status Network failover detection.
- LACP is not compatible with iSCSI software multipathing.
- vSphere only supports one LACP group per distributed switch, and only one LACP group per host.
- LACP settings do not exist in host profiles.
- LACP between two nested ESXi hosts is not possible.
- LACP does not work with port mirroring.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-3FDE1E96-9217-4FE6-8B76-6E3A64766828.html>

QUESTION 51

Which two features are deprecated in Network I/O Control 3 (NIOC3)? (Choose two.)

- A. Class Of Service (COS) Tagging
- B. Bandwidth Allocation
- C. User-defined network resource pools
- D. Admission control

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation : The upgrade of a NIOC to version 3 is disruptive. Certain functionality is available only in NIOC v2 and is removed during the upgrade to version 3:

- **User-defined network resource pools including all associations between them and existing distributed port groups**

You can preserve certain resource allocation settings by transferring the shares from the user-defined network resource pools to shares for individual network adapters.

- **Existing associations between ports and user-defined network resource pools**

In Network I/O Control version 3, you cannot associate an individual distributed port to a network resource pool that is different from the pool assigned to the parent port group.

- **CoS tagging of the traffic that is associated with a network resource pool**

Network I/O Control version 3 does not support marking traffic that has higher QoS demands with CoS tags. After the upgrade, to restore CoS tagging of traffic that was associated with a user-defined network resource pool, use the traffic filtering and marking networking policy.

Reference: <http://www.virtin.net/2015/09/vcp6-delta-part-7-network-enhancements/>

QUESTION 52

An administrator runs the command `esxcli storage core device list` and sees the following output:
 mpx.vmhba1:C0:T0:L0 Display Name: RAID 5 (mpx.vmhba1:C0:T0:L0) Has Settable Display Name: false Size: 40960 Device Type: Direct-Access Multipath Plugin: NMP Devfs Path: /vmfs/devices/disks/mpx.vmhba1:C0:T0:L0 Status: off Is Local: true

What can be determined by this output?

- A. The device is being used for vFlash Read Cache.
- B. The device is in a Permanent Device Loss (PDL) state.
- C. The device is a local Solid State Device (SSD).
- D. The device is in an All Paths Down (APD) state.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:**Explanation : Symptoms****Permanent Device Loss (PDL)**

- A datastore is shown as unavailable in the Storage view
- A storage adapter indicates the Operational State of the device as Lost Communication
- All paths to the device are marked as Dead
- In the `/var/log/vmkernel.log` file, you see entries similar to:

```
cpu2:853571)VMW_SATP_ALUA: satp_alua_issueCommandOnPath:661: Path "vmhba3:C0:T0:L0" (PERM LOSS) command 0xa3 failed with status Device is permanently unavailable. H:0x0 D:0x2 P:0x0 Valid sense data: 0x5 0x25 0x0.
```

```
cpu2:853571)VMW_SATP_ALUA: satp_alua_issueCommandOnPath:661: Path "vmhba4:C0:T0:L0" (PERM LOSS) command 0xa3 failed with status Device is permanently unavailable. H:0x0 D:0x2 P:0x0 Valid sense data: 0x5 0x25 0x0.
```

```
cpu2:853571)WARNING: vmw_psp_rr: psp_rrSelectPathToActivate:972:Could not select path for device "naa.60a98000572d54724a34642d71325763".
```

```
cpu2:853571)WARNING: ScsiDevice: 1223: Device :naa.60a98000572d54724a34642d71325763 has been removed or is permanently inaccessible.
```

```
cpu3:2132)ScsiDeviceIO: 2288: Cmd(0x4124403c1fc0) 0x9e, CmdSN 0xec86 to dev "naa.60a98000572d54724a34642d71325763" failed H:0x8 D:0x0 P:0x0
```

```
cpu3:2132)WARNING: NMP: nmp_DeviceStartLoop:721:NMP Device "naa.60a98000572d54724a34642d71325763" is blocked. Not starting I/O from device.
```

```
cpu2:2127)ScsiDeviceIO: 2316: Cmd(0x4124403c1fc0) 0x25, CmdSN 0xecab to dev "naa.60a98000572d54724a34642d71325763" failed H:0x1 D:0x0 P:0x0 Possible sense data: 0x5 0x25 0x0.
```

cpu2:854568)WARNING: ScsiDeviceIO: 7330: READ CAPACITY on device "naa.60a98000572d54724a34642d71325763" from Plugin "NMP" failed. I/O error
cpu2:854568)ScsiDevice: 1238: Permanently inaccessible device :naa.60a98000572d54724a34642d71325763 has no more open connections. It is now safe to unmount datastores (if any) and delete the device.
cpu3:854577)WARNING: NMP: nmpDeviceAttemptFailover:562:Retry world restore device "naa.60a98000572d54724a34642d71325763" - no more commands to retry

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2004684

QUESTION 53

What are two use cases for Fibre Channel Zoning in a vSphere environment? (Choose two.)

- A. Increases the number of targets presented to an ESXi host.
- B. Controls and isolates paths in a fabric.
- C. Controls and isolates paths to an NFS share.
- D. Can be used to separate different environments.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation : Using Zoning with Fibre Channel SANs

Zoning provides access control in the SAN topology. Zoning defines which HBAs can connect to which targets. When you configure a SAN by using zoning, the devices outside a zone are not visible to the devices inside the zone.

Zoning has the following effects:

- Reduces the number of targets and LUNs presented to a host.
- Controls and isolates paths in a fabric.
- Can prevent non-ESXi systems from accessing a particular storage system, and from possibly destroying VMFS data.
- Can be used to separate different environments, for example, a test from a production environment.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 54

Which two considerations should an administrator keep in mind when booting from Software Fiber Channel over Ethernet (FCoE)? (Choose two.)

- A. Software FCoE boot configuration can be changed from within ESXi.
- B. Software FCoE boot firmware cannot export information in FBFT format.
- C. Multipathing is not supported at pre-boot.
- D. Boot LUN cannot be shared with other hosts even on shared storage.

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation : Considerations

- You cannot change software FCoE boot configuration from within ESX
- Coredump is not supported on any software FCoE LUNs, including the boot LUN.
- Multipathing is not supported at pre-boot.
- Boot LUN cannot be shared with other hosts even on shared storage

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 55

An administrator notices that there is an all paths down (APD) event occurring for the software FCoE storage.

What is a likely cause?

- A. Spanning Tree Protocol is enabled on the network ports.
- B. Spanning Tree Protocol is disabled on the network ports.
- C. Spanning Tree Protocol is enabled on the storage processors.
- D. Spanning Tree Protocol is disabled on the storage processors.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation : Configuration Guidelines for Software FCoE

When setting up your network environment to work with ESXi software FCoE, follow the guidelines and best practices that VMware offers.

Network Switch Guidelines

Follow these guidelines when you configure a network switch for software FCoE environment:

- On the ports that communicate with your ESXi host, disable the Spanning Tree Protocol (STP). Having the STP enabled might delay the FCoE Initialization Protocol (FIP) response at the switch and cause an all paths down (APD) condition. The FIP is a protocol that FCoE uses to discover and initialize FCoE entities on the Ethernet.
- Turn on Priority-based Flow Control (PFC) and set it to AUTO.
- Make sure that you have a compatible firmware version on the FCoE switch.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 56

Which two statements are true regarding iSCSI adapters? (Choose two.)

- A. Software iSCSI adapters require vmkernel networking.
- B. Independent Hardware iSCSI adapters offload processing from the ESXi host.
- C. Dependent Hardware iSCSI adapters do not require vmkernel networking.
- D. Independent Hardware iSCSI adapters require vmkernel networking.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation : Software iSCSI Adapter

A software iSCSI adapter is a VMware code built into the VMkernel. It allows your host to connect to the iSCSI storage device through standard network adapters. The software iSCSI adapter handles iSCSI processing while communicating with the network adapter. With the software iSCSI adapter, you can use iSCSI technology without purchasing specialized hardware.

Hardware iSCSI Adapter A hardware iSCSI adapter is a third-party adapter that offloads iSCSI and network processing from your host. Hardware iSCSI adapters are divided into categories.

Dependent Hardware iSCSI Adapter

Depends on VMware networking, and iSCSI configuration and management interfaces provided by VMware.

This type of adapter can be a card that presents a standard network adapter and iSCSI offload functionality for the same port. The iSCSI offload functionality depends on the host's network configuration to obtain the IP, MAC, and other parameters used for iSCSI sessions. An example of a dependent adapter is the iSCSI licensed

Broadcom 5709 NIC.

Independent Hardware iSCSI Adapter

Implements its own networking and iSCSI configuration and management interfaces. An example of an independent hardware iSCSI adapter is a card that either presents only iSCSI offload functionality or iSCSI offload functionality and standard NIC functionality. The iSCSI offload functionality has independent configuration management that assigns the IP, MAC, and other parameters used for the iSCSI sessions. An example of a independent adapter is the QLogic QLA4052 adapter.

Hardware iSCSI adapters might need to be licensed. Otherwise, they will not appear in the client or vSphere CLI. Contact your vendor for licensing information

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 57

An administrator is configuring virtual machines to use Worldwide Port Names (WWPNs) to access the storage.

Which two conditions are required? (Choose two.)

- A. The switches in the fabric must be N-Port ID Virtualization aware.
- B. The virtual machines must be using passthrough Raw Disk Mapping (RDMp).
- C. The virtual machines must be using Virtual Machine Disk (VMDK).
- D. The switches in the fabric must be Storage I/O Control aware.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: **N-Port ID Virtualization**

N-Port ID Virtualization (NPIV) is an ANSI T11 standard that describes how a single Fibre Channel HBA port can register with the fabric using several worldwide port names (WWPNs). This allows a fabric-attached N-port to claim multiple fabric addresses. Each address appears as a unique entity on the Fibre Channel fabric

How NPIV-Based LUN Access Works

NPIV enables a single FC HBA port to register several unique WWNs with the fabric, each of which can be assigned to an individual virtual machine.

SAN objects, such as switches, HBAs, storage devices, or virtual machines can be assigned World Wide Name (WWN) identifiers. WWNs uniquely identify such objects in the Fibre Channel fabric. When virtual machines have WWN assignments, they use them for all RDM traffic, so the LUNs pointed to by any of the RDMs on the virtual machine must not be masked against its WWNs. When virtual machines do not have WWN assignments, they access storage LUNs with the WWNs of their host's physical HBAs. By using NPIV, however, a SAN administrator can monitor and route storage access on a per virtual machine basis. The following section describes how this works.

Reference: https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp#com.vmware.vsphere.config_fc.doc_40/esx_san_config/managing_san_systems/c_n-port_id_virtualization.html

QUESTION 58

Which two statements are true regarding VMFS3 volumes in ESXi 6.x? (Choose two.)

- A. Creation of VMFS3 volumes is unsupported.
- B. Upgrading VMFS3 volumes to VMFS5 is supported.
- C. Existing VMFS3 volumes are unsupported.
- D. Upgrading VMFS3 volumes to VMFS5 is unsupported.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Understanding VMFS Datastores

To store virtual disks, ESXi uses datastores, which are logical containers that hide specifics of physical storage from virtual machines and provide a uniform model for storing virtual machine files. Datastores that you deploy on block storage devices use the vSphere VMFS format, a special high-performance file system format that is optimized for storing virtual machines.

Several versions of the VMFS file system have been released since its introduction. The following table shows host-to-VMFS version relationships.

Table 16-1. Host access to VMFS version

VMFS	ESX/ESXi 3.x host	ESX/ESXi 4.x host	ESXi 5.x host	ESXi 6.0 host
VMFS2	RO	RO	N	N
VMFS3	RW	RW	RW	RW
				NOTE You can continue to use existing VMFS3 datastores, but you cannot create new ones. If you have existing VMFS3 datastores, upgrade them to VMFS5.
VMFS5	N	N	RW	RW

- **RW:** Complete read and write support. You can create and power on virtual machines.
- **RO:** Read only support. You cannot create or power on virtual machines.
- **N:** No access. ESXi 5.x and later hosts do not support VMFS2. If your datastore was formatted with VMFS2, first upgrade the datastore to VMFS3 using legacy hosts.

Use the vSphere Web Client to set up a VMFS datastore in advance on a block-based storage device that your ESXi host discovers. A VMFS datastore can be extended to span several physical storage extents, including SAN LUNs and local storage. This feature allows you to pool storage and gives you flexibility in creating the datastore necessary for your virtual machines.

NOTE Pooling ATS-capable hardware creates a spanned VMFS datastore that can use ATS-only locking mechanism. If any device is not ATS-capable, the datastore cannot be ATS-only, but uses ATS+SCSI locking.

You can increase the capacity of a datastore while virtual machines are running on the datastore. This ability lets you add new space to your VMFS datastores as your virtual machine requires it. VMFS is designed for concurrent access from multiple physical machines and enforces the appropriate access controls on virtual machine files.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 59

Which three statements are correct regarding Fibre Channel over Ethernet (FCOE)? (Choose three.)

- A. The network switch must have Priority-based Flow Control (PFC) set to AUTO.
- B. The network switch must have Priority-based Flow Control (PFC) set to ON.
- C. Each port on the FCoE card must reside on the same vSwitch.
- D. Each port on the FCoE card must reside on a separate vSwitch.
- E. The ESXi host will require a reboot after moving an FCoE card to a different vSwitch.

Correct Answer: ADE

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Configuration Guidelines for Software FCoE

When setting up your network environment to work with ESXi software FCoE, follow the guidelines and best practices that VMware offers.

Network Switch Guidelines

Follow these guidelines when you configure a network switch for software FCoE environment:

- On the ports that communicate with your ESXi host, disable the Spanning Tree Protocol (STP). Having the STP enabled might delay the FCoE Initialization Protocol (FIP) response at the switch and cause an all paths down (APD) condition.

The FIP is a protocol that FCoE uses to discover and initialize FCoE entities on the Ethernet.

- Turn on Priority-based Flow Control (PFC) and set it to AUTO.
- Make sure that you have a compatible firmware version on the FCoE switch.

Network Adapter Best Practices

If you plan to enable software FCoE adapters to work with network adapters, specific considerations apply.

- Make sure that the latest microcode is installed on the FCoE network adapter.
- If the network adapter has multiple ports, when configuring networking, add each port to a separate vSwitch. This practice helps you to avoid an APD condition when a disruptive event, such as an MTU change, occurs.
- Do not move a network adapter port from one vSwitch to another when FCoE traffic is active. If you need to make this change, reboot your host afterwards.
- If you changed the vSwitch for a network adapter port and caused a failure, moving the port back to the original vSwitch resolves the problem.

Set Up Networking for Software FCoE

Before you activate the software FCoE adapters, you need to create VMkernel network adapters for all physical FCoE NICs installed on your host.

This procedure explains how to create a single VMkernel network adapter connected to a single FCoE physical network adapter through a vSphere standard switch. If your host has multiple network adapters or multiple ports on the adapter, connect each FCoE NIC to a separate standard switch. For more information, see the *vSphere Networking* documentation.

NOTE ESXi supports the maximum of four network adapter ports used for software FCoE.

Procedure

- 1 Browse to the host in the vSphere Web Client navigator.
- 2 Click **Actions > Add Networking**.
- 3 Select **VMkernel Network Adapter**, and click **Next**.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-storage-guide.pdf>

QUESTION 60

Which two statements are true regarding Virtual SAN Fault Domains? (Choose two.)

- A. They enable Virtual SAN to tolerate the failure of an entire physical rack.
- B. Virtual SAN ensures that no two replicas are provisioned on the same domain.
- C. Virtual SAN ensures that all replicas are provisioned on the same domain.
- D. They require VMware High Availability (HA) to ensure component distribution across domains.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation : **Managing Fault Domains in Virtual SAN Clusters**

If your Virtual SAN cluster spans across multiple racks or blade server chassis in a data center and you want to make sure that your hosts are protected against rack or chassis failure, you can create fault domains and add one or more hosts to each fault domain.

A fault domain consists of one or more Virtual SAN hosts grouped together according to their physical location in the data center. When configured, fault domains enable Virtual SAN to tolerate failures of entire physical racks as well as failures of a single host, capacity device, network link or a network switch dedicated to a fault domain.

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.virtualsan.doc%2FGUID-8491C4B0-6F94-4023-8C7A-FD7B40D0368D.html>

QUESTION 61

An administrator created a six node Virtual SAN cluster, created a fault domain, and moved three of the six nodes into that domain.

A node that is a member of the fault domain fails.

What is the expected result?

- A. The remaining two fault domain members are treated as failed.
- B. The remaining two fault domain members stay protected by the domain.
- C. One of the non-member nodes will be automatically added to the fault domain.
- D. VMware High Availability will restart virtual machines on remaining nodes in the domain.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Defines the number of host and device failures a virtual machine object can tolerate. For n failures tolerated, $n + 1$ copies of the virtual machine object are created and $2 * n + 1$ hosts contributing storage are required. When provisioning a virtual machine, if you do not choose a storage policy, Virtual SAN assigns this policy as the default virtual machine storage policy.

Default value is 1. Maximum value is 3. If fault domains are configured, $2n + 1$ fault domains with hosts contributing capacity are required. A host, which is not part of any fault domain is considered as its own single host fault domain.

Default value is 1. Maximum value is 3.

NOTE If you do not want Virtual SAN to protect a single mirror copy of virtual machine objects, you can specify the Number of failures to tolerate=0. However, the host might experience unusual delays when entering maintenance mode. The delay occurs because Virtual SAN has to evacuate the object from the host for the maintenance operation to complete successfully. Setting the Number of failures to tolerate=0 means that your data is unprotected, and you might lose data when the Virtual SAN cluster encounters a device failure.

NOTE When creating a new storage policy, if you do not specify any value for Number of failures to tolerate, by default, Virtual SAN creates a single mirror copy of the virtual machine objects and tolerates only one failure. However, in the event of a multiple component failures your data might be at risk.

link: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/virtual-san-60-administration-guide.pdf>

QUESTION 62

Where is a Virtual SAN Fault Domain configured?

- A. VMware Virtual SAN Cluster configuration
- B. VMware High Availability Cluster configuration
- C. Distributed Resource Scheduler configuration
- D. Datacenter Advanced Settings configuration

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Procedure**

- 1 Navigate to the Virtual SAN cluster in the vSphere Web Client.
 - 2 Click the **Manage** tab and click **Settings**.
 - 3 Under Virtual SAN, click **Fault Domains and Stretched Cluster**.
 - 4 Click the **Create a new fault domain** icon (+).
 - 5 Type the fault domain name.
 - 6 From the **Show** drop-down menu, select **Hosts not in fault domain** to view the list of hosts that are not assigned to a fault domain or select **Show All Hosts** to view all hosts in the cluster.
 - 7 Select one or more hosts to add to the fault domain.
A fault domain cannot be empty. You must select at least one host to include in the fault domain.
 - 8 Click **OK**.
- The selected hosts appear in the fault domain

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.virtualsan.doc%2FGUID-C365ACE8-7485-4463-A12C-71D1917A4930.html>

QUESTION 63

Which statement is true for the Path Selection Plug-In VMW_PSP_MRU?

- A. VMW_PSP_MRU is default for a majority of active-active and active-passive arrays.
- B. VMW_PSP_MRU will remain on the selected path even if the state were to change.
- C. VMW_PSP_MRU is recommended for Virtual SAN.
- D. VMW_PSP_MRU will have no preferred path setting for the Plug-In.

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

Explanation:

VMW_PSP_MRU

The host selects the path that it used most recently. When the path becomes unavailable, the host selects an alternative path. The host does not revert back to the original path when that path becomes available again. There is no preferred path setting with the MRU policy. MRU is the default policy for most active-passive storage devices.

Reference: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-B7AD0CA0-CBE2-4DB4-A22C-AD323226A257.html>

QUESTION 64

Which two tasks does the Pluggable Storage Architecture (PSA) perform? (Choose two.)

- A. Handles I/O queueing to the logical devices.
- B. Handles physical path discovery, but is not involved in the removal.
- C. Handles physical path discovery and removal.
- D. Handles I/O queueing to FC storage HBAs.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

the PSA performs the following tasks:

- Loads and unloads multipathing plug-ins.
- Hides virtual machine specifics from a particular plug-in.
- Routes I/O requests for a specific logical device to the MPP managing that device.
- Handles I/O queueing to the logical devices.
- Implements logical device bandwidth sharing between virtual machines.
- Handles I/O queueing to the physical storage HBAs.
- Handles physical path discovery and removal.
- Provides logical device and physical path I/O statistics.

Reference: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-C1C4A725-8BE4-4875-919E-693812961366.html>

QUESTION 65

Which two statements are true regarding Storage Multipathing Plug-Ins? (Choose two.)

- A. The default Path Selection Policy is VMW_PSP_MRU for iSCSI or FC devices.
- B. The default Path Selection Policy is VMW_PSP_FIXED for iSCSI or FC devices.
- C. VMW_PSP_MRU is typically selected for ALUA arrays by default.
- D. VMW_PSP_FIXED is typically selected for ALUA arrays by default.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation : By default, the VMware NMP supports the following PSPs:

VMW_PSP_MRU

The host selects the path that it used most recently. When the path becomes unavailable, the host selects an alternative path. The host does not revert back to the original path when that path becomes available again. There is no preferred path setting with the MRU policy. MRU is the default policy for most active-passive storage devices.

Displayed in the vSphere Client as the Most Recently Used (VMware) path selection policy.

VMW_PSP_FIXED

The host uses the designated preferred path, if it has been configured. Otherwise, it selects the first working path discovered at system boot time. If you want the host to use a particular preferred path, specify it manually. Fixed is the default policy for most active-active storage devices.

Note

If the host uses a default preferred path and the path's status turns to Dead, a new path is selected as preferred. However, if you explicitly designate the preferred path, it will remain preferred even when it becomes inaccessible.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-B7AD0CA0-CBE2-4DB4-A22C-AD323226A257.html>

QUESTION 66

What is the command to list multipathing modules on an ESXi 6.x host?

- A. esxcli storage core list plugin --plugin-class=MP
- B. esxcli storage core list plugin --class-plugin=MP
- C. esxcli storage core plugin list --plugin-class=MP
- D. esxcli storage core plugin list --class-plugin=MP

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Command	Description	Options help
storage core plugin list	List loaded PSA plugins on the system.	--help -h Show the help message. --plugin-class -N Indicate the class of plugin to limit the list to. Allowed values are : Filter: Filter plugins MP: Multipathing plugins VAAI: VAAI plugins all: All PSA Plugins (default)

Reference:

https://pubs.vmware.com/vsphere50/index.jsp?topic=%2Fcom.vmware.vcli.ref.doc_50%2Fesxcli_storage.html

QUESTION 67

Which two solutions require Physical Mode Raw Device Mapping (RDM)? (Choose two.)

- A. Direct access to the storage array device
- B. Virtual Machine Snapshots
- C. Hardware Acceleration
- D. Guest Clustering across ESXi hosts

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

Explanation: A-) Note: RDM is not available for direct-attached block devices or certain RAID devices. You cannot map a disk partition as RDM. RDMs require the mapped device to be a whole LUN.(storage array device)

D-) Guest Clustering----- Physical mode is useful while running SAN management agents or other SCSI target-based software in the virtual machine.

Physical mode also allows virtual-to-physical clustering for cost-effective high availability.

Virtual Machine Snapshots are not available when the RDM is used in physical compatibility mode.

You can use this mode for Physical-to-virtual clustering and cluster-across-boxes.

VMFS5 supports greater than 2 TB disk size for RDMs in physical compatibility mode only. These restrictions apply:

You cannot relocate larger than 2 TB RDMs to datastores other than VMFS5.

You cannot convert larger than 2 TB RDMs to virtual disks, or perform other operations that involve RDM to virtual disk conversion. Such operations include cloning.

FAQ: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1037959

QUESTION 68

A device's vStorage API for Array Integration (VAAI) support status command line output shows:

naa.500253825002a865 VAAI Plugin Name: ATS Status: unsupported Clone Status: unsupported Zero Status: supported Delete Status: unsupported

What is the corresponding VAAI support status in the vSphere Web Client?

- A. Unknown
- B. Supported
- C. Not supported
- D. Unsupported

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation : If you go to **Host > Configuration > Storage**, you can see the Hardware Acceleration Status in the panel on the right side.

For each storage device and datastore, the vSphere Client displays the hardware acceleration support status in the Hardware Acceleration column of the Devices view and the Datastores view.

The status values are Unknown, Supported, and Not Supported. The initial value is Unknown. The status changes to Supported after the host successfully performs the offload basic operations. If the offload operation fails, the status changes to Not Supported.

To determine if your storage device supports VAAI, test the Full Copy VAAI primitive:

1. Using the vSphere Client, browse the datastore and locate a virtual disk (VMDK) of at least 4 MB that is not in use.
2. Copy the virtual disk to a new file.
3. Check the Hardware Acceleration status to verify that it changes from Unknown to either Supported or Not Supported.

Note: VAAI primitives can also be tested by creating a virtual machine with at least one new virtual disk, or cloning a virtual machine.

Can I check the VAAI status from the command line?

▪ On ESXi 5.x

To check the VAAI status, run this command:

```
# esxcli storage core device vaa1 status get
```

You see output similar to:

```
mpx.vmhba1:C0:T1:L0  
VAAI Plugin Name:  
ATS Status: unsupported  
Clone Status: unsupported  
Zero Status: unsupported
```


Delete Status: unsupported

mpx.vmhba1:C0:T0:L0

VAAI Plugin Name:

ATS Status: unsupported

Clone Status: unsupported

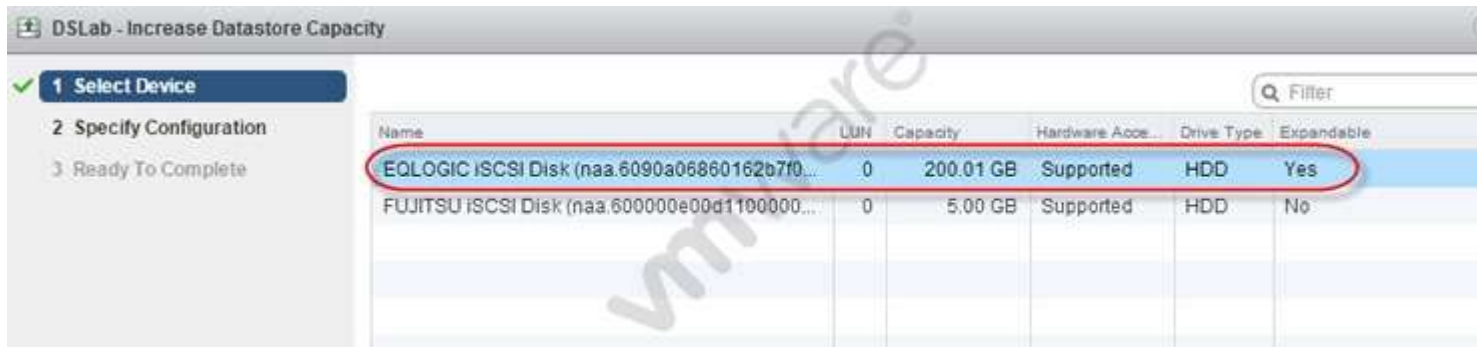
Zero Status: unsupported

Delete Status: unsupported

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1021976

QUESTION 69

Refer to the Exhibit.



What will be the result of selecting the highlighted device?

- A. Datastore will grow up to 200.01GB using the remaining free space on the device.
- B. Datastore will add 200.01GB by adding the device as a second extent.
- C. The device size can be expanded to be larger than 200.01 GB in size.
- D. The device is not suitable for this operation.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

When you need to create new virtual machines on a datastore, or when the virtual machines running on this datastore require more space, you can dynamically increase the capacity of a VMFS datastore.(200 GB)

Use one of the following methods:

-Add a new extent. An extent is a partition on a storage device, or LUN. You can add up to 32 new extents of the same storage type to an existing VMFS datastore. The spanned VMFS datastore can use any of all its extents at any time. It does not need to fill up a particular extent before using the next one.

-Grow an extent in an existing VMFS datastore, so that it fills the available adjacent capacity. Only extents with free space immediately after them are expandable.

<https://kb.vmware.com/kb/1017662>

QUESTION 70

An administrator observes that virtual machine storage activity on an ESXi 6.x host is negatively affecting virtual machine storage activity on another host that is accessing the same VMFS Datastore.

Which action would mitigate the issue?

- A. Enable Storage IO Control.

- B. Configure Storage DRS.
- C. Enable the Dynamic Queue Depth Throttling option.
- D. Configure the Disk.SchedNumReqOutstanding parameter.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Enable Storage I/O Control. When you enable Storage I/O Control, ESX/ESXi monitors datastore latency and adjusts the I/O load sent to it, if datastore average latency exceeds the threshold. Select a datastore in the vSphere Client inventory and click the Configuration tab.

<https://kb.vmware.com/kb/1022091>

QUESTION 71

An administrator is having a problem configuring Storage I/O Control on a Datastore.

Which two conditions could explain the issue? (Choose two.)

- A. A host is running ESXi 4.0.
- B. An ESXi host does not have appropriate licensing.
- C. The vCenter Server version is 5.0.
- D. The vCenter Server License is Standard.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

A-) Storage I/O Control was introduced in vSphere 4.1, taking storage resource controls built into vSphere to a much broader level. In vSphere 5, Storage I/O Control has been enhanced with support for NFS data stores and clusterwide I/O shares. Check [vmware.com esxi versions enhancements](https://kb.vmware.com/kb/1022091), for further troubleshooting

<https://kb.vmware.com/kb/1022091>

B-) If hosts are not licensed at the appropriate level, the option to enable Storage I/O control is grayed out.

Check: <https://kb.vmware.com/kb/2021530>

QUESTION 72

Which three are requirements for configuring Storage I/O Control (SIOC)? (Choose three.)

- A. The datastore must consist of only one extent.
- B. The datastore is managed by a single vCenter Server.
- C. Auto-tiered storage must be compatible with SIOC.
- D. Auto-tiered storage must be SSD or SATA.
- E. The datastore must be VMFS.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation : Storage I/O Control Requirements Storage

I/O Control has several requirements and limitations.

- Datastores that are Storage I/O Control-enabled must be managed by a single vCenter Server system.
- Storage I/O Control is supported on Fibre Channel-connected and iSCSI-connected storage. NFS

datastores and Raw Device Mapping (RDM) are not supported.

- Storage I/O Control does not support datastores with multiple extents.
- Before using Storage I/O Control on datastores that are backed by arrays with automated storage tiering capabilities, check the VMware Storage/SAN Compatibility Guide to verify whether your automated tiered storage array has been certified to be compatible with Storage I/O Control.

Automated storage tiering is the ability of an array (or group of arrays) to migrate LUNs/volumes or parts of LUNs/volumes to different types of storage media (SSD, FC, SAS, SATA) based on user-set policies and current I/O patterns. No special certification is required for arrays that do not have these automatic migration/ tiering features, including those that provide the ability to manually migrate data between different types of storage media.

Reference: http://www.vmware.com/pdf/vsphere4/r41/vsp_41_resource_mgmt.pdf

QUESTION 73

Refer to the Exhibit.

Device Details	
Properties	Paths
Owner	NMP
Partition Details	
Partition Format	GPT
▶ Primary Partitions	1
▶ Logical Partitions	0
Multipathing Policies	
▶ Path Selection Policy	Fixed (VMware)
Storage Array Type Policy	VMW_SATP_EQL

An administrator wishes to provide Load Balanced I/O for the device shown in the Exhibit.

To meet this requirement, which setting should be changed?

- A. Storage Array Type Policy = VMW_NMP_RR
- B. Path Selection Policy = Round Robin (VMware)
- C. Storage Array Type Policy = VMW_SATP_RR
- D. Path Selection Policy = MRU (VMware)

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Round Robin (RR)**: The VMW_PSP_RR policy uses an automatic path selection, rotating through all available paths, enabling the distribution of load across the configured paths.

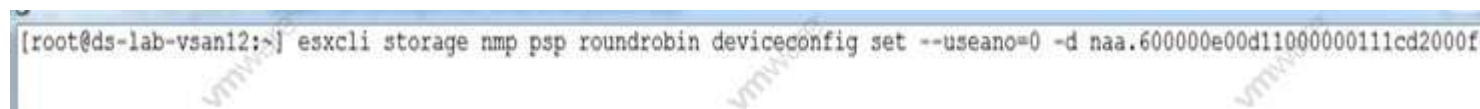
- For Active/Passive storage arrays, only the paths to the active controller will be used in the Round Robin policy.
- For Active/Active storage arrays, all paths will be used in the Round Robin policy.

Note: For logical units associated with Microsoft Cluster Service (MSCS) and Microsoft Failover Clustering virtual machines, the Round Robin pathing policy is supported only on ESXi 5.5 and later.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1011340

QUESTION 74

Refer to the Exhibit.



An administrator is configuring a storage device as shown in the Exhibit.

What is the expected effect on the stated device after running the command?

- A. I/O will rotate on all storage targets regardless of port group state.
- B. I/O will rotate on all storage targets that are Active Optimized state only.
- C. I/O will rotate on all storage targets that are Active Unoptimized state only.
- D. I/O will rotate on all storage targets that are on Available Nodes only.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Command	Description	Options help
storage nmp psp roundrobin device-config set	Allow setting of the Round Robin path options on a given device controlled by the Round Robin Selection Policy.	--bytes -B When the --type option is set to 'bytes' this is the value that will be assigned to the byte limit value for this device. --device -d The device you wish to set the Round Robin settings for. This device must be controlled by the Round Robin Path Selection Policy --help -h Show the help message. --iops -I When the --type option is set to 'iops' this is the value that will be assigned to the I/O operation limit value for this device. --type -t Set the type of the Round Robin path switching that should be enabled for this device. Valid values for type are: bytes: Set the trigger for path switching based on the number of bytes sent down a path. default: Set the trigger for path switching back to default values. iops: Set the trigger for path switching based on the number of I/O operations on a path. --useano -U Set useano to true, to also include non-optimized paths in the set of active paths used to issue I/Os on this device, otherwise set it to false

Reference: https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vcli.ref.doc_50%2Fesxcli_storage.html

QUESTION 75

An administrator is upgrading an ESXi 5.5 host to ESXi 6.x and gets the following error:

MEMORY_SIZE

What does this indicate?

- A. Insufficient memory on the ESXi host to complete the upgrade.
- B. Insufficient memory for Auto Deploy to complete the upgrade.
- C. Insufficient memory in vCenter Server to complete the upgrade.
- D. Insufficient memory for Update Manager to complete the upgrade.

Correct Answer: A

Section: (none)**Explanation****Explanation/Reference:**

Explanation:

A-) ESXi 6.0 requires the NX/XD bit to be enabled for the CPU in the BIOS.

ESXi requires a minimum of 4GB of physical RAM. It is recommended to provide at least 8 GB of RAM to run virtual machines in typical production environments.

To support 64-bit virtual machines, support for hardware virtualization (Intel VT-x or AMD RVI) must be enabled on x64 CPUs.

<http://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-DEB8086A-306B-4239-BF76-E354679202FC.html>

QUESTION 76

An administrator is upgrading an ESXi host from 5.5 to 6.0 and runs the following command:

```
esxcli software vib list --rebooting-image
```

What does this command show?

- A. VIBs active after a reboot.
- B. VIBs that require a reboot.
- C. VIBs that are in the boot image.
- D. VIBs that are third-party.

Correct Answer: A

Section: (none)

Explanation**Explanation/Reference:**

Explanation:

Install vCLI or deploy the vSphere Management Assistant (vMA) virtual machine. See *Getting Started with vSphere Command-Line Interfaces*. For troubleshooting, run esxcli commands in the ESXi Shell.

Procedure

1	<p>Enter one of the following commands.</p> <table border="1"><thead><tr><th data-bbox="269 1304 461 1360">Option</th><th data-bbox="466 1304 1380 1360">Description</th></tr></thead><tbody><tr><td data-bbox="269 1367 461 1493">For VIBs</td><td data-bbox="466 1367 1380 1493"><code>esxcli --server=server_namesoftware vib list --rebooting-image</code></td></tr><tr><td data-bbox="269 1499 461 1625">For Profiles</td><td data-bbox="466 1499 1380 1625"><code>esxcli --server=server_namesoftware profile get --rebooting-image</code></td></tr></tbody></table>	Option	Description	For VIBs	<code>esxcli --server=server_namesoftware vib list --rebooting-image</code>	For Profiles	<code>esxcli --server=server_namesoftware profile get --rebooting-image</code>
Option	Description						
For VIBs	<code>esxcli --server=server_namesoftware vib list --rebooting-image</code>						
For Profiles	<code>esxcli --server=server_namesoftware profile get --rebooting-image</code>						
2	<p>Review the output that is returned.</p> <p>The output displays information for the ESXi image that will become active after the next reboot. If the pending-reboot image has not been created, the output returns nothing.</p>						

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-F0FE86AB-70B1-4E7E-A209-E5C5E0A4E57A.html>

QUESTION 77

An administrator is performing a silent automatic update of VMware Tools on a Windows virtual machine.

What syntax needs to be entered into the Advanced Options box?

- A. /s /v "/qn" /l "c:\Windows\filename.log"
- B. --prefix=/usr/local,/usr/lib,/usr/doc --silent
- C. --prefix=c:\Windows,c:\VMtools --silent
- D. /fs /v "/qn+" /l "c:\Windows\filename.log"

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Procedure**

1	Select Automatic Tools Upgrade .						
2	<p>(Optional) In the Advanced Options field, enter advanced options for the guest operating system.</p> <table> <tr> <th>Op- tion</th><th>Description</th></tr> <tr> <td>Micro soft Win- dows Guest Oper- ating Sys- tems</td><td>Enter <code>/s /v "/qn" /l "Microsoft_Windows_location\filename.log"</code> to perform a silent upgrade of VMware Tools and create a log file in the specified location on the guest operating system.</td></tr> <tr> <td>Linux Guest Oper- ating Sys- tems</td><td> <ul style="list-style-type: none"> ■ Enter <code>--default</code> to perform the default behavior. Perform a silent upgrade of VMware Tools. Install tools bin, lib and doc files in the default /usrdirectory. ■ Enter <code>--prefix=binary_location,lib_location,doc_location</code> to perform a silent upgrade of VMware Tools and install the binary, library, and document files in the specified locations. </td></tr> </table>	Op- tion	Description	Micro soft Win- dows Guest Oper- ating Sys- tems	Enter <code>/s /v "/qn" /l "Microsoft_Windows_location\filename.log"</code> to perform a silent upgrade of VMware Tools and create a log file in the specified location on the guest operating system.	Linux Guest Oper- ating Sys- tems	<ul style="list-style-type: none"> ■ Enter <code>--default</code> to perform the default behavior. Perform a silent upgrade of VMware Tools. Install tools bin, lib and doc files in the default /usrdirectory. ■ Enter <code>--prefix=binary_location,lib_location,doc_location</code> to perform a silent upgrade of VMware Tools and install the binary, library, and document files in the specified locations.
Op- tion	Description						
Micro soft Win- dows Guest Oper- ating Sys- tems	Enter <code>/s /v "/qn" /l "Microsoft_Windows_location\filename.log"</code> to perform a silent upgrade of VMware Tools and create a log file in the specified location on the guest operating system.						
Linux Guest Oper- ating Sys- tems	<ul style="list-style-type: none"> ■ Enter <code>--default</code> to perform the default behavior. Perform a silent upgrade of VMware Tools. Install tools bin, lib and doc files in the default /usrdirectory. ■ Enter <code>--prefix=binary_location,lib_location,doc_location</code> to perform a silent upgrade of VMware Tools and install the binary, library, and document files in the specified locations. 						
3	Click OK .						

The **VMware Tools** label on the **Summary** tab changes to **OK**.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-B3989445-72A9-4749-A996-CDDCD1FA634D.html>

QUESTION 78

An administrator is writing a kickstart script to upgrade an ESXi 6.x host.

In which three locations can the script reside? (Choose three.)

- A. NFS
- B. USB
- C. HTTP
- D. TFTP
- E. PXE

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Scripted ESXi installation**

Running a script is an efficient way to deploy multiple ESXi hosts with an unattended installation.

The installation script contains the configuration data for the ESXi hosts that you want to install. You can apply the script to all hosts that you want to have a similar configuration.

Notes:

- The script must be created using supported commands.
- Ensure you consider all disks that are connected to the host at the time of installation to avoid inadvertently overwriting data. Disk names can vary from machine to machine, one of the settings that you may want to configure and double check in a script is the disk selection for the ESXi installation.
- The host installation script must be stored in a location that the host can access by FTP, HTTP, HTTPS, NFS, USB flash drive, or CD-ROM drive. The installation media can be mounted on the host locally, remotely, or through PXE boot.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2109708#Script

QUESTION 79

Which file determines the location of the installation script during a scripted upgrade?

- A. boot.cfg
- B. ks.cfg
- C. script.cfg
- D. upgrade.cfg

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

About the boot.cfg File

The boot loader configuration file boot.cfg specifies the kernel, the kernel options, and the boot modules that the mboot.c32 boot loader uses in an ESXi installation.

The boot.cfg file is provided in the ESXi installer. You can modify the kernelopt line of the boot.cfg file to specify the location of an installation script or to pass other boot options.

The boot.cfg file has the following syntax:

boot.cfg -- mboot configuration file

#

Any line preceded with '#' is a comment.

title=STRING

kernel=FILEPATH

kernelopt=STRING

modules=FILEPATH1 --- FILEPATH2... --- FILEPATHn

Any other line must remain unchanged.

The commands in boot.cfg configure the boot loader.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-1DE4EC58-8665-4F14-9AB4-1C62297D866B.html>

QUESTION 80

What three supported methods can be used to upgrade a host from ESXi 5.x to ESXi 6.x? (Choose three.)

- A. vSphere Update Manager
- B. vihostupdate
- C. esxcli
- D. vSphere Auto Deploy
- E. esxupdate

Correct Answer: ACD

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Upgrade Options for ESXi 6.0**

VMware provides several ways to upgrade ESXi 5.x hosts to ESXi 6.0 hosts.

The details and level of support for an upgrade to ESXi 6.0 depend on the host to be upgraded and the upgrade method that you use. Verify support for the upgrade path from your current version of ESXi to the version to which you are upgrading. See VMware Product Interoperability Matrixes at http://www.vmware.com/resources/compatibility/sim/interop_matrix.php.

You can upgrade a ESXi 5.x host, asynchronously released driver or other third-party customizations, interactive upgrade from CD or DVD, scripted upgrade, or upgrade with vSphere Update Manager. When you upgrade an ESXi 5.x host that has custom VIBs to version 6.0, the custom VIBs are migrated. See [Upgrading Hosts That Have Third-Party Custom VIBs](#).

Methods supported for direct upgrade to ESXi 6.0 are:

- vSphere Update Manager.
- Interactive upgrade from CD, DVD, or USB drive.
- Scripted upgrade.
- vSphere Auto Deploy. If the ESXi 5.x host was deployed by using vSphere Auto Deploy, you can use vSphere Auto Deploy to reprovision the host with an ESXi 6.0 image.
- The esxcli command.

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-FE668788-1F32-4CB2-845C-5547DD59EB48.html>

QUESTION 81

Which two supported tools can be used to upgrade virtual machine hardware? (Choose two.)

- A. vSphere Web Client
- B. vSphere Update Manager

- C. vmware-vmupgrade.exe
- D. esxcli vm hardware upgrade

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Upgrade Virtual Hardware**

You can upgrade the hardware version of virtual machines to the latest version of ESXi. For virtual machines that are running on ESXi 5.x, VMware recommends that you upgrade the virtual hardware to version 8.

Consider the following points:

- When you upgrade from virtual hardware version 4 to version 8 the upgrade is reversible if you take a virtual machine backup or snapshot before performing the upgrade.
- Upgraded virtual machines cannot be powered on by an ESX 2.x host, even if relocated to a VMFS2 datastore.
- To automate this process, consider using Update Manager for virtual machine upgrades. See the *Installing and Administering VMware vSphere Update Manager* documentation. Update Manager takes automatic snapshots before performing virtual machine upgrades. See [Perform an Orchestrated Upgrade of Virtual Machines with vSphere Update Manager](#).
- When you upgrade virtual hardware, no downtime is required for vCenter Server or ESX/ESXi hosts. For virtual machines, the only significant downtime is the time to reboot the guest operating systems.

Reference: https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc_50%2FGUID-A45CBEE5-C4D2-484E-A699-A5A577244DE0.html

QUESTION 82

What are three recommended prerequisites before upgrading virtual machine hardware? (Choose three.)

- A. Create a backup or snapshot of the virtual machine.
- B. Upgrade VMware Tools to the latest version.
- C. Verify that the virtual machine is stored on VMFS3, VMFS5, or NFS datastores.
- D. Detach all CD-ROM/ISO images from the virtual machines.
- E. Set the Advanced Parameter virtualHW.version = 11

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: Before you upgrade the virtual hardware:

1. Create a backup or snapshot of the virtual machine. For more information, see:
 - *Take a Snapshot in the vSphere Web Client section in the [vSphere 5.1 Virtual Machine Administration guide](#).*
 - *Take a Snapshot in the vSphere Client section in the [vSphere 5.1 Virtual Machine Administration guide](#).*
2. Upgrade VMware Tools. On Microsoft Windows virtual machines, if you upgrade the virtual hardware before you upgrade VMware Tools, the virtual machine might lose its network settings.
3. Verify that all .vmdk files are available to the ESXi/ESX hosts on a VMFS 3, VMFS 5, or NFS datastore.
4. Verify that the virtual machines are stored on VMFS 3, VMFS 5 or NFS datastores.
5. Determine the version of the virtual hardware by selecting the virtual machine from the vSphere Client or vSphere Web Client and clicking the **Summary** tab. The **VM Version** label in the **Compatibility** field displays the virtual hardware version

Reference: <https://kb.vmware.com/selfservice/microsites/search.do?>

QUESTION 83

An administrator wants to upgrade to vCenter Server 6.x.

The vCenter Server:

- Is hosted on a virtual machine server running Microsoft Windows Server 2008 R2, with 8 vCPUs and 16GB RAM.
- Will have an embedded Platform Services Controller.
- Hosts a Large Environment with 1,000 ESXi hosts and 10,000 Virtual Machines.

Why does the vCenter Server not meet the minimum requirements?

- A. Windows Server 2008 R2 is not a supported Operating System for vCenter Server.
- B. The virtual machine has insufficient resources for the environment size.
- C. The environment is too large to be managed by a single vCenter Server.
- D. The Platform Services Controller must be changed to an External deployment.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

vCenter Server for Windows Hardware Requirements

When you install vCenter Server on a virtual machine or physical server running Microsoft Windows server , your system must meet specific hardware requirements.

<https://kb.vmware.com/kb/2107948>

VMware vCenter Server 6.0 Deployment Guide - White Paper ...

<https://www.vmware.com/files/pdf/.../vmware-vcenter-server6-deployment-guide.pdf>

QUESTION 84

An administrator has upgraded a Distributed vCenter Server environment from 5.5 to 6.0.

What is the next step that should be taken?

- A. vCenter Inventory Service must be manually stopped and removed.
- B. vCenter Inventory Service must be changed from manual to automatic.
- C. vCenter Inventory Service must be manually stopped and restarted.
- D. vCenter Inventory Service must be changed from automatic to manual.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

vCenter Server 5.x Distributed Service Migration During Upgrade			
Service Name	Service Location Before Upgrade	Service Location After Upgrade	Post Upgrade Actions
vCenter Inventory Service	Not installed on the vCenter Server system	Installed on the vCenter Server system	<p>vCenter Inventory Service 5.x data is copied to the Inventory Service 6.0 instance that is installed with vCenter Server 6.0. You do not need to copy it manually.</p> <p>vCenter Inventory Service 5.x is still running but no longer used. It must be manually stopped and removed.</p>

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-4BFB12D8-9FCA-4AB1-A44F-2986966F0AD5.html>

QUESTION 85

When upgrading vCenter Server, an administrator notices that the upgrade fails at the vCenter Single Sign-On installation.

What must be done to allow the upgrade to complete?

- A. Verify that the VMware Directory service can stop by manually restarting it.
- B. Verify that the vCenter Single Sign-On service can stop by manually restarting it.
- C. Uninstall vCenter Single Sign-On service.
- D. Uninstall the VMware Directory service.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Prerequisites

- Your current vCenter Single Sign-On must have been installed on a separate virtual machine (VM) or physical server from your vCenter Server instance.
- Verify your configuration meets the upgrade requirements, see [vCenter Server for Windows Requirements](#).
- Complete the preparation to upgrade tasks. See [Before Upgrading vCenter Server](#)
- Verify that you have made a backup of your vCenter Server configuration and database.
- To verify that the VMware Directory Service is in a stable state and can stop, manually restart it. The VMware

Directory service must be stopped for the vCenter Server upgrade software to uninstall vCenter Single Sign-On during the upgrade process.

■ Download the vCenter Server Installer. See [Download the vCenter Server for Windows Installer](#)

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-A94C1617-5F15-402A-B462-1AC6A041C73E.html>

QUESTION 86

During a vCenter Server upgrade, an ESXi 6.x host in a High Availability (HA) cluster fails.

Which statement is true?

- A. HA will fail the virtual machines over to an available host during the vCenter Server upgrade process.
- B. HA is unavailable during the vCenter Server upgrade process.
- C. HA will fail the virtual machines over to an available host after the vCenter Server upgrade completes.
- D. HA will successfully vMotion the virtual machines during the host failure.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

During a vCenter Upgrade the VMware HA Agent on all of the ESXi hosts will be updated. ... it's very likely that the HA agent will fail to initialize the first time when the host restarts.

During a vCenter Upgrade the VMware HA Agent on all of the ESXi hosts will be updated. After this happens the "require reboot" flag is set on the hosts, as explained in

VMware KB 2034945.

QUESTION 87

An administrator is upgrading a vCenter Server Appliance and wants to ensure that all the prerequisites are met.

What action must be taken before upgrading the vCenter Server Appliance?

- A. Install the Client Integration Plug-in.
- B. Install the database client.
- C. Install the ODBC connector.
- D. Install the Update Manager Plug-in.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Prerequisites

- Verify that the clocks of all machines on the vSphere network are synchronized. See [Synchronizing Clocks on the vSphere Network](#).
- Verify that the target ESXi host on which you deploy the vCenter Server Appliance is not in lockdown or maintenance mode.
- Verify that you have sufficient free disk space on the vCenter Server Appliance that you want to upgrade to accommodate the data for the upgrade.
- Verify that port 22 is open on the vCenter Server Appliance that you want to upgrade. The upgrade process establishes an inbound SSH connection to download the exported data from existing appliance.
- Verify that port 443 is open on the source ESXi host on which the vCenter Server Appliance that you want to upgrade resides. The upgrade process establishes an HTTPS connection to the source ESXi host to verify that

the vCenter Server Appliance is ready for upgrade and to set up an SSH connection between the new and the existing appliance.

- Verify that the vCenter Server SSL certificate for your existing vCenter Server Appliance is configured correctly. See VMware Knowledge Base article [2057223](#).
- If you use an external database, back up the vCenter Server Appliance database.
- Create a snapshot of the vCenter Server Appliance that you want to upgrade.
- Install the new version of the Client Integration Plug-In. See [Install the Client Integration Plug-In](#).

Reference: <https://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-6A5C596D-103E-4024-9353-5569263EB427.html>

QUESTION 88

An administrator is upgrading vCenter Server and sees this error:

The DB User entered does not have the required permissions needed to install and configure vCenter Server with the selected DB. Please correct the following error(s): %s

Which two statements explain this error? (Choose two.)

- A. The database is set to an unsupported compatibility mode.
- B. The permissions for the database are incorrect.
- C. The permissions for vCenter Server are incorrect.
- D. The database server service has stopped.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: Cause

This issue occurs when the vCenter Server instance being upgraded is connected to a SQL server which was upgraded and the vCenter Server database compatibility level is not changed to match the SQL server version.

Resolution

To resolve this issue, change the database compatibility level to match the SQL Servers level.

To change the database compatibility level:

1. Right-click the vCenter Server database and click **Properties**.
2. Click **Options**.
3. Change the compatibility level that matches the SQL server version.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2006904

QUESTION 89

Which two vCenter Server services are migrated automatically as part of an upgrade from a Distributed vCenter Server running 5.x? (Choose two.)

- A. vCenter Single Sign-on Service
- B. vSphere Web Client
- C. vSphere Inventory Service
- D. Storage Policy Based Management

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation: vCenter Server 5.x for Windows services that are migrated to become part of the vCenter Server group of services during the upgrade process include:

- Inventory Services
- vSphere Web Client
- vSphere Auto Deploy
- vSphere Syslog Collector
- vSphere ESXi Dump Collector

vCenter Server and vCenter Single Sign-On are the only services that are not migrated. vCenter Single Sign-On instances are upgraded in place to become part of an external Platform Services Controller if they are deployed on a system other than the system where the vCenter Server resides.

Reference:

<https://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-4BFB12D8-9FCA-4AB1-A44F-2986966F0AD5.html>

QUESTION 90

What command line utility can be used to upgrade an ESXi host?

- A. esxcli
- B. esxupdate
- C. vihostupdate
- D. esxcfg

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: ESXi Command-line interface - esxcli

Using the vSphere Command Line Interface (CLI), you can upgrade ESXi 5.x hosts to version 6.0.

For more information about upgrading ESXi 5.x hosts using esxcli commands, see the *Upgrading Hosts by Using esxcli Commands*

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2109711

QUESTION 91

Which log file would you examine to identify an issue which occurred during the pre-upgrade phase of a vCenter Server upgrade process?

- A. vcdb_req.out
- B. vcdb_export.out
- C. vcdb_import.out
- D. vcdb_inplace.out

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Example: Database Upgrade Locations

- For pre-upgrade checks, review the %TEMP%\.. \vcsUpgrade\vcdb_req.out file. The vcdb_req.err file tracks any errors that were identified during the pre-upgrade phase.

Reference:

<https://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-5EAC8B84-0A95-41EC-AAF4-6CBBB3A5152A.html>

QUESTION 92

Which three statements are true when restoring a Resource Pool Tree? (Choose three.)

- A. Distributed Resource Scheduler must be set to manual.
- B. Restoring a snapshot can only be done on the same cluster from which it was taken.
- C. No other resource pools can be present in the cluster.
- D. Restoring a resource pool tree must be done in the vSphere Web Client.
- E. Enabling Enhanced vMotion Compatibility on the cluster is required.

Correct Answer: BCD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Restore a Resource Pool Tree in the vSphere Web Client

You can restore a previously saved resource pool tree snapshot.

Prerequisites

- vSphere DRS must be turned ON.
- You can restore a snapshot only on the same cluster that it was taken.
- No other resource pools are present in the cluster.

Reference:

<https://pubs.vmware.com/vsphere51/index.jsp?topic=%2Fcom.vmware.vsphere.resmgmt.doc%2FGUID-43B3A1EF-B7FF-421C-96FA-33FA230688BB.html>

QUESTION 93

An administrator has created a resource pool named Marketing HTTP with a Memory Limit of 24 GB and a CPU Limit of 10,000 MHz.

The Marketing HTTP resource pool contains three virtual machines:

- Mktg-SQL has a memory reservation of 16 GB.
- Mktg-App has a memory reservation of 6 GB.
- Mktg-Web has a memory reservation of 4 GB.

What would happen if all three virtual machines are powered on?

- A. All three virtual machines can power on, but will have memory contention.
- B. All three virtual machines can power on without memory contention.
- C. Only two of the three virtual machines can power on.
- D. Only one of the virtual machines can power on.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

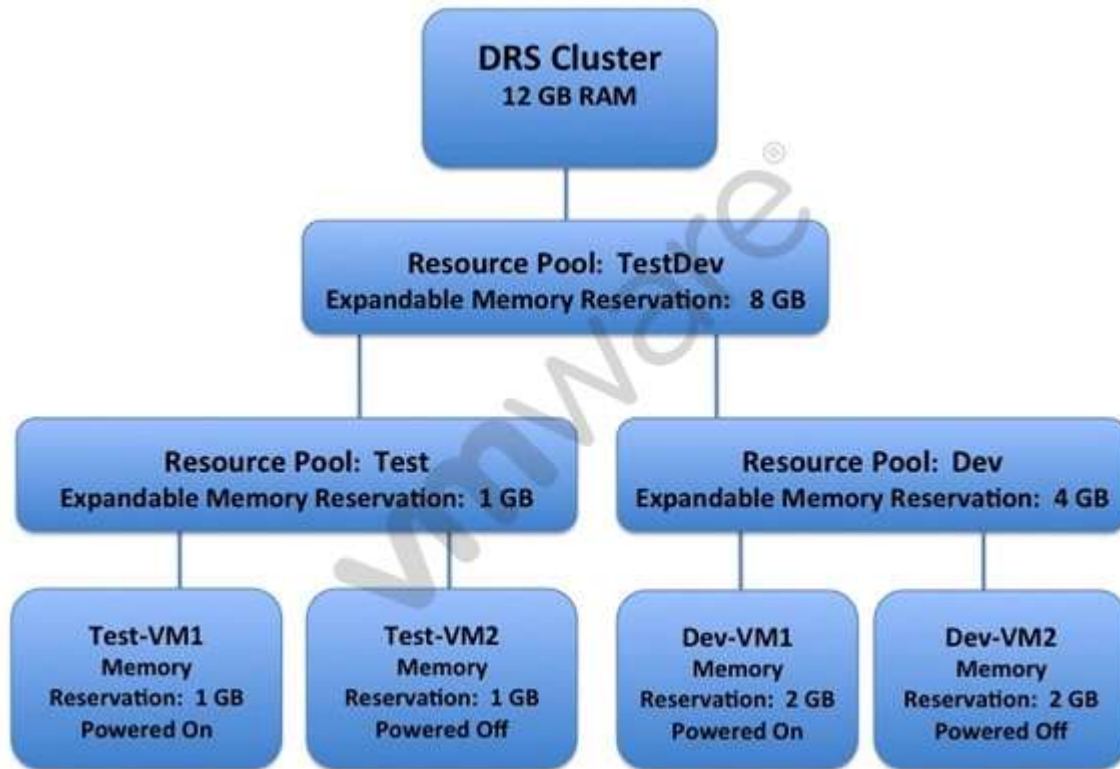
Applying a limit on a vCPU and memory will slow your VM down no matter what because of distribution of resources. Even if there are no other VMs running on that 4 socket quad core host. Powering on all the virtual machine will enables 100% resources to be used by VM hence, only few required VM's will powered "On" which requires the maximum utilization from the available resources.

Example: When a single(or two) VM has a limit of 5000MHz and 16GB, 6 GB Memory = 22gb utilization will be high and is the only VM running on a host than it will run it full speed as it will be constantly rescheduled for 5000MHz and maximum memory(22-24 GB)

Check: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2032906
Or Resource Pool Metrics: <https://pubs.vmware.com/.../GUID-6F436275-169F-4DE5-B393-3B771623C0F8.htm>.

QUESTION 94

Refer to the Exhibit.



An administrator has configured a vSphere 6.x DRS cluster as shown in the Exhibit.

Based on the exhibit, which statement is true?

- A. A virtual machine can be powered on in the Test Resource Pool with a 6 GB Memory Reservation.
- B. A virtual machine can be powered on in the Dev Resource Pool with a 8 GB Memory Reservation.
- C. A virtual machine from both the Test Resource Pool and the Dev Resource Pool can be powered on with a 4 GB Memory Reservation.
- D. No more virtual machines can be powered on due to insufficient resources.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

A virtual machine can be powered on in the Test Resource Pool with a 6 GB Memory Reservation because: Total is 8GB

1Gb used by test resource pool VM which is powered on and 2gb by Test dev pool VM powered on hence distribution is less and expandable memory quota is more/left.

To understand limits and theory check the information given below:

Memory Maximums

The ESXi host maximums represents the limits for ESXi host memory.

Table 3-2. ESXi Host Memory Maximums

Item Maximum

RAM per host 6 TB

12 TB is supported on specific OEM certified platform. See VMware Hardware Compatibility Limits for guidance on the platforms that support vSphere 6.0 with 12 TB of physical memory.

Number of swap files 1 per virtual machine

And,

Resource Pool

Resource pools per host 1600

Children per resource pool 1100

Resource pool tree depth 8

Additional 4 resource pools are used by system internals.

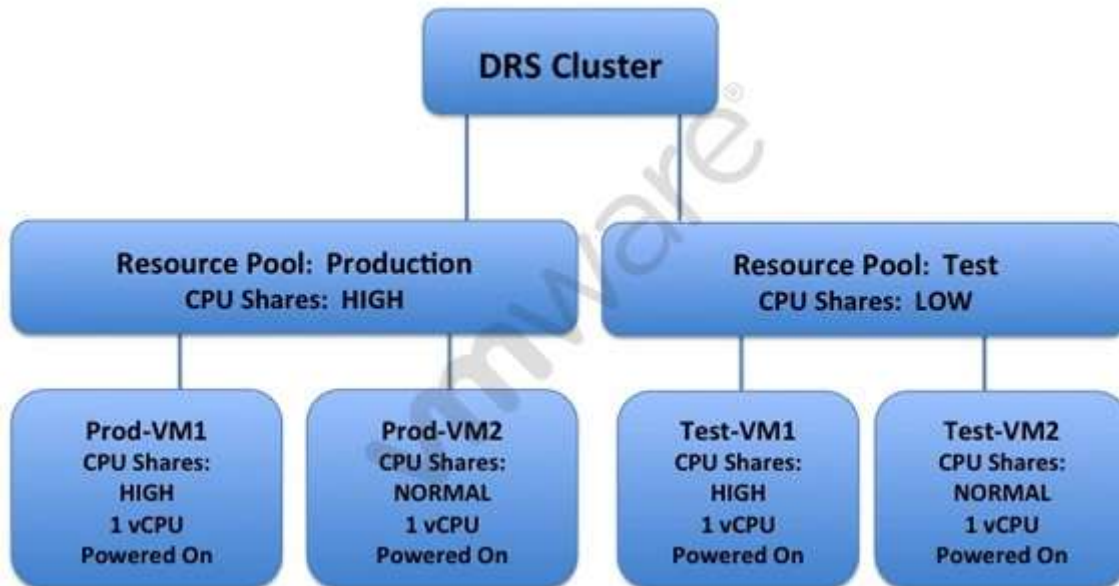
Resource pools per cluster 1600

Configuration Maximums - vSphere 6.0 - VMware

<https://www.vmware.com/pdf/vsphere6/r60/vsphere-60-configuration-maximums.pdf>

QUESTION 95

Refer to the Exhibit.



-- Exhibit --

An administrator has created the DRS cluster shown in the Exhibit.

Based on the exhibit, which statement is true?

- A. Under CPU contention, Prod-VM1 receives four times the CPU resources than Test-VM1.
- B. The Prod-VM1 will always have more CPU resources than all other virtual machines.
- C. The Test-VM2 will always have less CPU resources than all other virtual machines.
- D. Under CPU contention, Test-VM1 will receive 25% of the total CPU resources.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To understand limits and theory check the information given below:

- CPU is calculated like this: [Cluster CPU Cores] * [2,000 for High, 1,000 for Normal, 500 for Low]
- For an example, Our DRS cluster has 100 CPU cores (see the blue section) and thus the math is: $100 * 2,000 = 200,000$ for High and $100 * 500 = 50,000$ for Low.

That's why PROD-VM1 : CPU shares High.

https://www.vmware.com/files/pdf/drs_performance_best_practices_wp.pdf

QUESTION 96

VMware vSphere Replication protects virtual machines from partial or complete site failures by replicating the virtual machines between which three sites? (Choose three.)

- A. From a source site to a target site.
- B. From within a single site from one cluster to another.
- C. From multiple source sites to a shared remote target site.
- D. From a single source site to multiple remote target sites.
- E. From multiple source sites to multiple remote target sites.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Overview of VMware vSphere Replication**

VMware vSphere Replication is an extension to VMware vCenter Server that provides hypervisor-based virtual machine replication and recovery.

vSphere Replication is an alternative to storage-based replication. It protects virtual machines from partial or complete site failures by replicating the virtual machines between the following sites:

- From a source site to a target site
- Within a single site from one cluster to another
- From multiple source sites to a shared remote target site

Reference:

https://pubs.vmware.com/vsphere55/index.jsp?topic=%2Fcom.vmware.vsphere.replication_admin.doc%2FGUID-C987AD18-7C2D-4FA6-B6E4-6B0DDA915A7A.html

QUESTION 97

Which two capabilities does the vSphere Replication Client Plug-in provide? (Choose two.)

- A. Configure connections between vSphere Replication Sites.
- B. Deploy and register additional vSphere Replication Servers.
- C. Reconfigure the vSphere Replication Server.
- D. Configure an external database for a vSphere Replication Site.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

vSphere Replication Client Plug-In

The vSphere Replication appliance adds a plug-in to the vSphere Web Client.

You use the vSphere Replication client plug-in to perform all vSphere Replication actions.

- Configure connections between vSphere Replication sites.
- View all vCenter Server instances that are registered with the same SSO and status of each vSphere Replication extension.
- Deploy and register additional vSphere Replication servers.

- Configure the replication of individual or multiple virtual machines.
- View incoming and outgoing replications.
- Monitor and manage the status of the replications.
- Recover virtual machines.

Reference:

https://pubs.vmware.com/vsphere55/index.jsp?topic=%2Fcom.vmware.vsphere.replication_admin.doc%2FGUID-DEFB63AE-C60C-4606-9F1C-E1B270CA408A.html

QUESTION 98

A vSphere Replication user needs to connect a source site to a target site.

What privilege is needed at both sites?

- A. VRM remote.Manage VRM
- B. VRM datastore mapper.Manage
- C. Host.vSphere Replication.Manage replication
- D. Virtual machine.vSphere Replication.Manage replication

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Role	Privilege	Action	Target object in vCenter server Inventory
VRM Administrator	VRM remote.Manage.VR	Incorporates all vSphere Replication privileges.	vCenter Server root folder with propagation on both sites. Alternatively, vCenter Server root folder without propagation on both sites, virtual machine without propagation on the primary site, target datastore, target virtual machine folder with propagation on the secondary site, target host or cluster with propagation on the secondary site.

Reference:

https://pubs.vmware.com/vsphere51/index.jsp?topic=%2Fcom.vmware.vsphere.replication_admin.doc%2FGUID-A73BC0B8-CA53-4E0E-91F6-17451BB4CAE8.html

QUESTION 99

Which three parameters should be considered when calculating the bandwidth for vSphere Replication?
(Choose three.)

- A. Data change rate
- B. Traffic rates
- C. Link speed
- D. Application type
- E. Hardware type

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: The amount of network bandwidth that vSphere Replication requires to replicate virtual machines efficiently depends on several factors in your environment.

- [Network-based storage](#)
- [Size of dataset](#)
- [Data change rate](#)
- [Recovery point objective \(RPO\)](#)
- [Link speed](#)

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2037268

QUESTION 100

When importing an existing SSL certificate into vSphere Replication Server, which file format is required?

- A. PKCS#12
- B. DER
- C. PEM
- D. PKCS#7

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Converting the signed certificate to PKCS#12 format

After you receive the certificate (ending in .cer or .crt) from your certificate authority. It must be converted to the PKCS#12 format. To convert it requires key files you generated while generating the certificate request and the signed certificate:

1. Copy the signed certificate file to the server where you generated the certificate signing request.
2. Use OpenSSL to generate the PKCS#12 certificate:
openssl pkcs12 -export -in protected.cer -inkey protected.key -name "vrprot" -passout pass:replication55 -out protected.p12
openssl pkcs12 -export -in recovery.cer -inkey recovery.key -name "vrdr" -passout pass:replication55 -out recovery.p12

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2080395

QUESTION 101

Which keystore would a vSphere Replication administrator use to manually add an additional Certificate Authority certificate?

- A. hms-truststore.jks
- B. hms-keystore.jks
- C. certificates.ks
- D. cacerts.ks

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

vSphere Replication can verify remote server certificates either by verifying the validity of the certificate and the thumbprint or by verifying the thumbprint only. By default, vSphere Replication verifies the thumbprint only. If you select the Accept only SSL certificates signed by a trusted Certificate Authority option in the VAMI, this causes vSphere Replication to verify the validity of the certificate as well as the thumbprint. This means that the certificate authority that issued the certificates for vSphere Replication and vCenter Server must be trusted by vSphere Replication. By default, vSphere replication trusts all certificate authorities that the Java Virtual Machine trusts. You can import additional trusted CA certificates in /opt/vmware/hms/security/hmstruststore.jks on the vSphere Replication appliance. To import these certificates, perform these steps:

1. Locate the root certificate authority certificate that was used when generating the vCenter server certificates (usually Root64.cer). If you use a Microsoft certificate authority, this can be re-generated by performing the mentioned in [Creating certificate requests and certificates for vCenter Server 5.1 components \(2037432\)](#). Otherwise, you may be able to export the root certificate using the MMC on a Windows system.
2. Copy the certificate to your replication appliance.

For example, /home directory. A utility such as WinSCP can be used for this.

3. Run this command to import the certificate into the HMS truststore:

```
/usr/java/default/bin/keytool -import -trustcacerts -alias root -file /home/Root64.cer -keystore /opt/vmware/hms/security/hms-truststore.jks -storepass vmware
```

4. Type yes at the prompt and press enter to complete the certificate import process:

Trust this certificate? [no]: yes

5. You see the this text which confirms the import was successful:

Certificate was added to keystore

6. Use this command to verify the certificate is now present in the HMS truststore:

```
/usr/java/default/bin/keytool -list -keystore /opt/vmware/hms/security/hms-truststore.jks -storepass vmware -v
```

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2080395

QUESTION 102

What is the maximum number of snapshot instances in vSphere Replication that can be configured to recover a virtual machine at a specific point in time?

- A. 16

- B. 24
- C. 48
- D. 72

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: When you configure replication of a virtual machine, you can enable multiple point in time (PIT) instances in the recovery settings in the Configure Replication wizard. vSphere Replication retains a number of snapshot instances of the virtual machine on the target site based on the retention policy that you specify. vSphere Replication supports maximum of 24 snapshot instances. After you recover a virtual machine, you can revert it to a specific snapshot.

Reference: <https://pubs.vmware.com/srm-55/index.jsp?topic=%2Fcom.vmware.srm.admin.doc%2FGUID-F3C8A2E9-183E-4DFF-A7D1-43CAEE584149.html>

QUESTION 103

What is the compression algorithm used by vSphere Replication to compress data at the source?

- A. FastLZ
- B. Lz4
- C. Lzr
- D. Lzx

Correct Answer: A

Section: (none)

Explanation

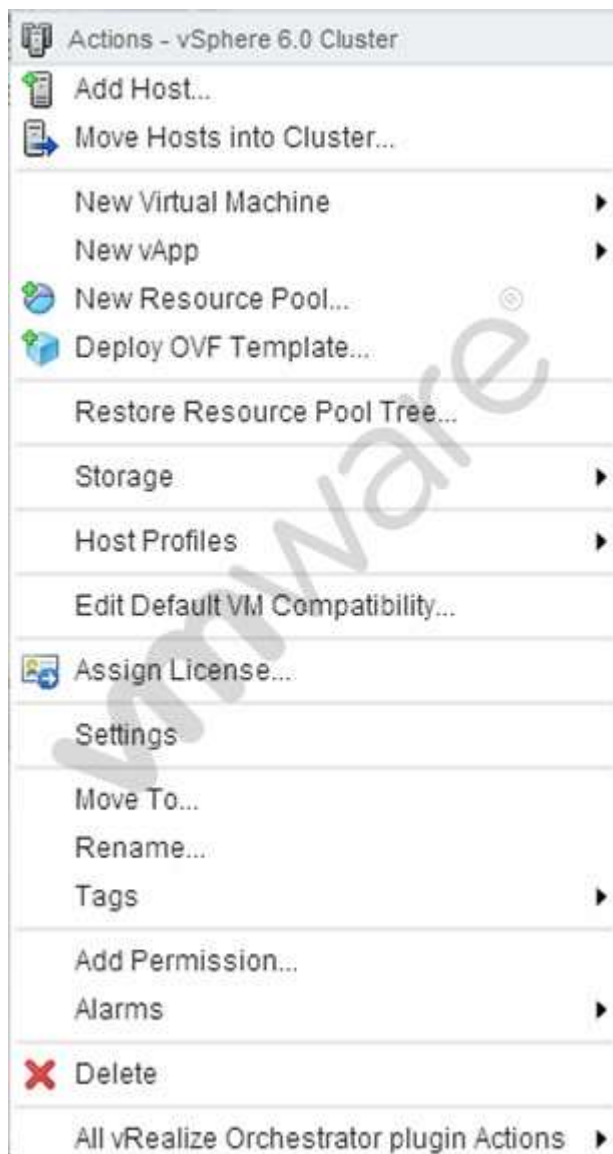
Explanation/Reference:

Explanation: vSphere Replication 6.0 utilizes the [FastLZ compression library](#). This provides a nice balance of speed, minimal CPU overhead, and compression efficiency. When using vSphere 6.0 and vSphere Replication 6.0 at both the source and target locations, updates are compressed at the source and stay compressed until they are written to storage at the target. In cases where there is a mixed configuration, packets may be decompressed at some point in the replication path. For example, if a vSphere 6.0 host is connecting to a vSphere Replication 5.8 virtual appliance, packets will not be compressed over the network. Another example: vSphere 6.0 replicating to a vSphere Replication 6.0 virtual appliance, which is writing to vSphere 5.5 host storage – packets are compressed from the source to the vSphere Replication 6.0 virtual appliance, but are decompressed in the appliance before being written to the vSphere 5.5 storage at the target. Performing this decompression in the vSphere Replication virtual appliance will cause higher vCPU utilization in the appliance. As you can imagine, the most benefit from compression will be realized when running vSphere 6.0 and vSphere Replication 6.0 at both the source and target locations.

Reference: <https://blogs.vmware.com/vsphere/2015/03/vr-60-compression.html>

QUESTION 104

Refer to the Exhibit.



A vSphere 6.x environment is configured with VMware Virtual Volumes (VVOLs). An administrator accesses the cluster Actions menu, as shown in the Exhibit.

Which option is used to create a VVOL on an existing VVOL container?

- A. Storage
- B. Deploy OVF Template
- C. New vApp
- D. Settings

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

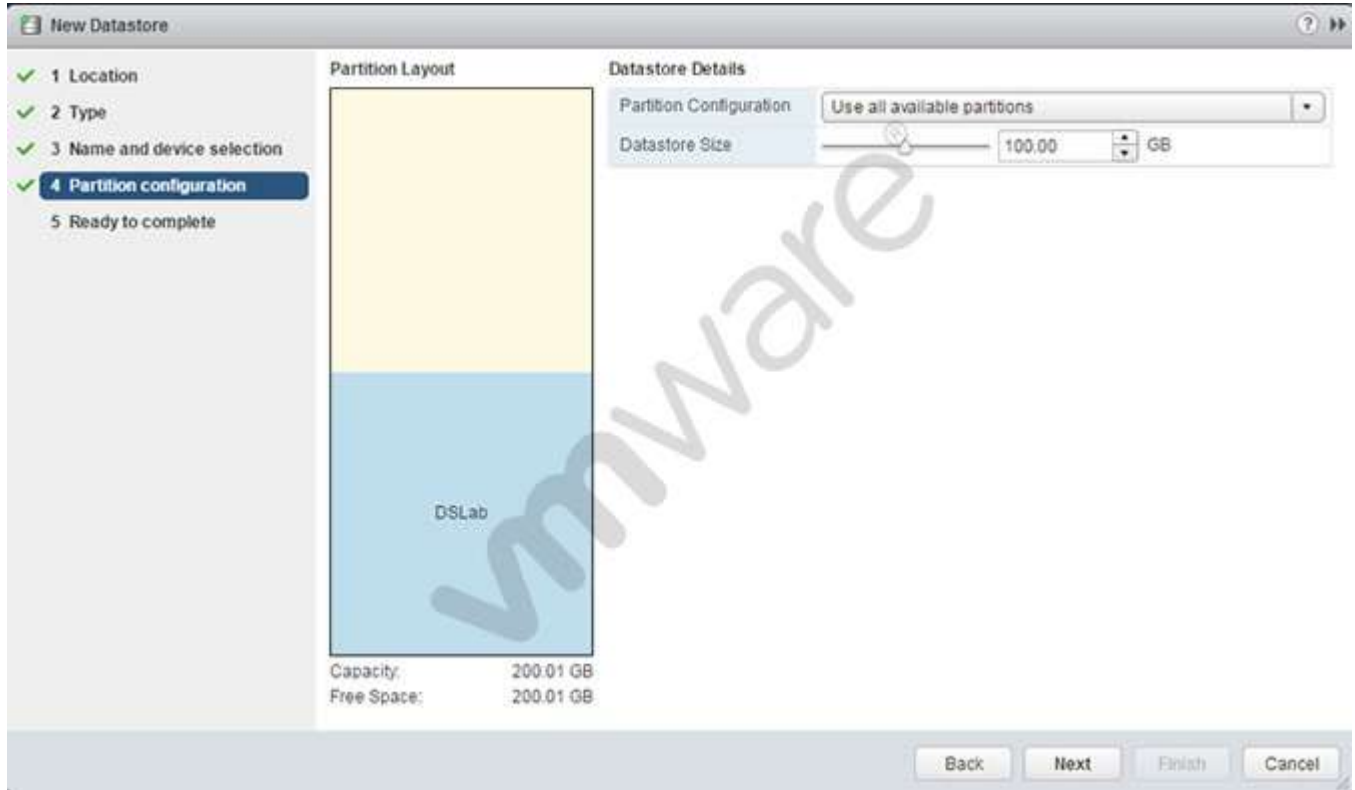
Explanation: Virtual Volumes is an integration and management framework for external storage that provides finer control at the VM-level, streamlines storage operation and offers flexibility of choice.

Virtual Volumes implements the core tenets of the VMware SDS vision to enable a fundamentally more efficient

operational model for storage in virtualized environments, centering it around the VM rather than on the physical infrastructure. - See more at: <http://www.vmware.com/in/products/vsphere/features/virtual-volumes#sthash.tx9lZaOq.dpuf>

QUESTION 105

Refer to the Exhibit.



What will be created upon completion of the steps in this wizard?

- A. 100GB VMFS5 datastore with free space available for expansion
- B. 100GB VMFS5 datastore with free space available for a second datastore
- C. 100GB VMFS3 datastore
- D. 200.01 GB VMFS5 datastore

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: The datastore size selected is 100GB. On completion of this step, 100 GB VMFS datastore will be created.

QUESTION 106

Refer to the Exhibit.

Compatibility

- ❖ The host's CPU hardware does not support the cluster's current Enhanced vMotion Compatibility mode. The host CPU lacks features required by that mode.

10.21.38.107

- ❖ The host's CPU hardware does not support the cluster's current Enhanced vMotion Compatibility mode. The host CPU lacks features required by that mode.

10.21.38.106

An administrator is attempting to enable Enhanced vMotion Compatibility (EVC), but receives the error shown in the Exhibit.

Which condition would explain the error?

- A. The ESXi hosts are not licensed for EVC.
- B. The administrator does not have privileges to enable EVC.
- C. The ESXi host CPU has the Intel No-Execute feature disabled.
- D. The administrator has turned on Intel Virtualization Technology.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation: To resolve the issue, you must enable both **No-Execute Memory Protection** and **Virtualization Technology** features in order for EVC to function. Consult the documentation for your hardware for more information.

To resolve this issue:

1. Enter the BIOS setup (F9 on most systems at boot).
2. Select **Advanced Options**.
3. Select **Processor Options**.
4. Change **No-Execute Memory Protection** to **Enabled**, if necessary.
5. Change **Intel Virtualization Technology** to **Enabled**, if necessary.
6. Reboot the host.
7. Enable EVC in the cluster settings.

Notes:

- Hardware Virtualization is called Intel VT on Intel processors and AMD-V on AMD processors.
- Execute Protection is called Intel eXecute Disable (XD) on Intel processors and AMD No eXecute (NX) on AMD processors.

QUESTION 107

Refer to the Exhibit.

Storage Adapters						
PERC H310 Mini Monolithics						
Adapter	Type	Status	Identifier	Targets	Devices	Paths
vmhba1	SCSI	Unknown		7	7	7
Patsburg 6 Port SATA AHCI Controller						
vmhba36	Block SCSI	Unknown		0	0	0
vmhba0	Block SCSI	Unknown		0	0	0
vmhba35	Block SCSI	Unknown		0	0	0
vmhba37	Block SCSI	Unknown		1	1	1
vmhba38	Block SCSI	Unknown		0	0	0
vmhba34	Block SCSI	Unknown		0	0	0

Adapter Details						
Properties Devices Paths						
Name	Type	Capacity	Operational...	Hardware Acceleration	Drive Type	
Local SEAGATE Disk (naa.5000...	disk	279.40 GB	Attached	Unknown	HDD	
Local SEAGATE Disk (naa.5000...	disk	279.40 GB	Attached	Unknown	HDD	
Local DP Enclosure Svc Dev (t1...	enclosure		Attached	Not supported	HDD	
Local SEAGATE Disk (naa.5000...	disk	279.40 GB	Attached	Unknown	HDD	
Local ATA Disk (naa.500253825...	disk	93.16 GB	Attached	Unknown	Flash	
Local ATA Disk (naa.500253825...	disk	93.16 GB	Attached	Unknown	Flash	
Local SEAGATE Disk (naa.5000...	disk	279.40 GB	Attached	Unknown	HDD	

Refer to the Exhibit. The list of devices attached to vmhba1 will be the basis for configuring a VMware Virtual SAN using Manual Mode.

Based on the exhibit, which two combinations of devices should be used to create Disk Group(s)? (Choose two.)

- A. One Disk Group with one Flash Drive and three HDDs
- B. Two Disk Groups with one Flash Drive and two HDDs each
- C. One Disk Group with one Flash Drive and four HDDs
- D. Two Disk Groups with two Flash Drives and four HDDs each

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

On each ESXi host that contributes its local disks to a Virtual SAN cluster, disks are organized into disk groups. A disk group is a main unit of storage on a host. Each disk group includes one SSD and one or multiple HDDs (magnetic disks).

Virtual SAN uses an aggregation of disk groups to back up a single datastore that is created when you enable Virtual SAN.

In the disk group, the SSD primarily serves as a read cache write buffer, while the HDDs are used for permanent storage. Typically, a higher SSD to HDD ratio, both in size and quantity, improves performance.

Depending on the mode you select when enabling Virtual SAN on a cluster, you can use different ways to organize disks into groups.

Automatic Mode

Virtual SAN claims all available and usable disks and organizes them into default groups with one SSD and one or multiple HDDs. If you add more disks to hosts or add new hosts to the Virtual SAN cluster, all applicable disks are claimed by Virtual SAN. Virtual SAN in automatic mode claims only local disks on the ESXi hosts in the cluster. You can add any remote nonshared disks manually.

Manual Mode

You must specify hosts and disks on the hosts to be used for the Virtual SAN datastore. You have two methods of organizing disks into disk groups, semi-automatic and manual.

When you use the semi-automatic method, Virtual SAN organizes the disks that you specify into default disk groups.

Another option is to manually create user-defined disk groups and select disks for each group. When you create a disk group manually, your main consideration should be the ratio of SSD to Raw HDD capacity.

Although the ratios depend on use cases and workloads, the best practice is to use SSD capacity of at least 10 percent of the total consumed HDD capacity in each disk group, without counting the protection copies. For example, if the size of your Raw HDD capacity on the disk group is 4TB, the recommended SSD capacity is 400GB.

QUESTION 108

An administrator is unable to start the vCenter Server service. The vpxd.log file shows this service failure:

```
[13308 error 'Default' opID=622892-371bf717] CoreDump: Unable to write minidump [13308 error 'Default' opID=622892-371bf717] error -2147024784 : There is not enough space on the disk.
```

What is preventing the start of the service?

- A. Insufficient space on the vCenter Server
- B. Insufficient space on the Database Server
- C. Insufficient space on the VMFS volume
- D. Insufficient space on the ESXi ramdisk

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Symptoms

- Cannot start VMware VirtualCenter Server service
- In the vpxd.log file located at C:\ProgramData\VMware\VMware VirtualCenter\Logs\, you see backtraces similar to:

```
[VpxdClientAdapter] Got vmacore exception: An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full
<YYYY-MM-DD><TIME> [18244 error 'vpxdvpdxVmomi' opID=HB-host-6161@193472-2b600f1f]
[VpxdClientAdapter] Backtrace:
--> backtrace[00] rip 000000018018cd7a
--> backtrace[01] rip 0000000180106c48
--> backtrace[02] rip 000000018010803e
--> backtrace[03] rip 000000018009
<YYYY-MM-DD><TIME> [09356 verbose 'VpxProfiler' opID=HB-host-8535@1072225-79714cc6] [1-] [ORM]
Update: vim.vm.ConfigInfo, Id: 12892 (took 0 ms)
<YYYY-MM-DD><TIME> [12016 error 'vpxdvpdxVmomi' opID=HB-host-154@86503-2d0e7772]
[VpxdClientAdapter] Got vmacore exception: An operation on a socket could not be performed because the system lacked sufficient buffer space or because a queue was full
<YYYY-MM-DD><TIME> [12016 error 'vpxdvpdxVmomi' opID=HB-host-154@86503-2d0e7772]
[VpxdClientAdapter] Backtrace:
--> backtrace[00] rip 000000018018cd7a
```

Cause

This issue occurs because vCenter Server does not have sufficient hard disk space to be allocated for the buffer.

Reference: https://kb.vmware.com/selfservice/search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2083927

QUESTION 109

After deploying a vSphere Platform Services Controller (PSC), an administrator is unable to install vCenter Server. The error displayed is:

Could not contact Lookup Service. Please check VM_ssoreg.log.

Which two actions can be taken to correct this problem? (Choose two.)

- A. Verify that the clocks on the host machines running the PSC, vCenter Server, and the vSphere Web Client are synchronized.
- B. Configure a valid Identity Source for the Platform Services Controller in the vSphere Web Client.
- C. Ensure that there is no firewall blocking port 7444 between the PSC and vCenter Server.
- D. Uninstall and reinstall the Platform Services Controller software.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

1	Verify that the clocks on the host machines running vCenter Single Sign-On, vCenter Server, and the Web Client are synch										
2	View the specific log file found in the error message. In the message, system temporary folder refers to %TEMP%										
3	Within the log file, search for the following messages. The log file contains output from all installation attempts. Locate the last message that shows Initializing registrat										
<table border="1"> <thead> <tr> <th>Message</th><th>Cause and solution</th></tr> </thead> <tbody> <tr> <td>java.net.ConnectException: Connection timed out: connect</td><td> <p>The IP address is incorrect, a firewall is blocking access to vCenter Single Sign-On or vCenter Single Sign-On is overloaded.</p> <p>Ensure that a firewall is not blocking the vCenter Single Sign-On port (by default 443) and that the machine on which vCenter Single Sign-On is installed has adequate free disk I/O and RAM capacity.</p> </td></tr> <tr> <td>java.net.ConnectException: Connection refused: connect</td><td> <p>The IP address or FQDN is incorrect and the vCenter Single Sign-On has not started or has started within the past minute.</p> <p>Verify that vCenter Single Sign-On is working by checking the status of vCenter Single Sign-On service (Windows) and vmware-ssod (Linux).</p> <p>Restart the service. If this does not correct the problem, see the recovery section of the vSphere troubleshooting guide.</p> </td></tr> <tr> <td>Unexpected status code: 404. SSO Server failed during initialization</td><td>Restart vCenter Single Sign-On. If this does not correct the problem, see the Recovery section of the <i>vSphere Troubleshooting Guide</i>.</td></tr> <tr> <td>The error shown in the UI begins with Could not connect to vCenter single sign-on.</td><td> <p>You also see the return code SslHandshakeFailed. This is an uncommon error.</p> <p>It indicates that the provided IP address or FQDN that resolves to vCenter Single Sign-On host was not the one used when you installed vCenter Single Sign-On.</p> <p>In %TEMP%\vm-ssod eg. log, find the line that contains the following message:</p> <p>host name in certificate did not match:</p> </td></tr> </tbody> </table>		Message	Cause and solution	java.net.ConnectException: Connection timed out: connect	<p>The IP address is incorrect, a firewall is blocking access to vCenter Single Sign-On or vCenter Single Sign-On is overloaded.</p> <p>Ensure that a firewall is not blocking the vCenter Single Sign-On port (by default 443) and that the machine on which vCenter Single Sign-On is installed has adequate free disk I/O and RAM capacity.</p>	java.net.ConnectException: Connection refused: connect	<p>The IP address or FQDN is incorrect and the vCenter Single Sign-On has not started or has started within the past minute.</p> <p>Verify that vCenter Single Sign-On is working by checking the status of vCenter Single Sign-On service (Windows) and vmware-ssod (Linux).</p> <p>Restart the service. If this does not correct the problem, see the recovery section of the vSphere troubleshooting guide.</p>	Unexpected status code: 404. SSO Server failed during initialization	Restart vCenter Single Sign-On. If this does not correct the problem, see the Recovery section of the <i>vSphere Troubleshooting Guide</i> .	The error shown in the UI begins with Could not connect to vCenter single sign-on.	<p>You also see the return code SslHandshakeFailed. This is an uncommon error.</p> <p>It indicates that the provided IP address or FQDN that resolves to vCenter Single Sign-On host was not the one used when you installed vCenter Single Sign-On.</p> <p>In %TEMP%\vm-ssod eg. log, find the line that contains the following message:</p> <p>host name in certificate did not match:</p>
Message	Cause and solution										
java.net.ConnectException: Connection timed out: connect	<p>The IP address is incorrect, a firewall is blocking access to vCenter Single Sign-On or vCenter Single Sign-On is overloaded.</p> <p>Ensure that a firewall is not blocking the vCenter Single Sign-On port (by default 443) and that the machine on which vCenter Single Sign-On is installed has adequate free disk I/O and RAM capacity.</p>										
java.net.ConnectException: Connection refused: connect	<p>The IP address or FQDN is incorrect and the vCenter Single Sign-On has not started or has started within the past minute.</p> <p>Verify that vCenter Single Sign-On is working by checking the status of vCenter Single Sign-On service (Windows) and vmware-ssod (Linux).</p> <p>Restart the service. If this does not correct the problem, see the recovery section of the vSphere troubleshooting guide.</p>										
Unexpected status code: 404. SSO Server failed during initialization	Restart vCenter Single Sign-On. If this does not correct the problem, see the Recovery section of the <i>vSphere Troubleshooting Guide</i> .										
The error shown in the UI begins with Could not connect to vCenter single sign-on.	<p>You also see the return code SslHandshakeFailed. This is an uncommon error.</p> <p>It indicates that the provided IP address or FQDN that resolves to vCenter Single Sign-On host was not the one used when you installed vCenter Single Sign-On.</p> <p>In %TEMP%\vm-ssod eg. log, find the line that contains the following message:</p> <p>host name in certificate did not match:</p>										

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-B8D60389-AF95-4368-8AB2-D282CBE0C4A9.html>

QUESTION 110

Which condition would cause a vCenter Server installation to fail when installing on a Windows virtual machine?

- A. The virtual machine does not have at least four vCPUs.
- B. The virtual machine is running Windows Server 2008.
- C. The virtual machine has an E1000 network device.
- D. The virtual machine does not have 16GB of RAM.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: **The vCenter Server installation or uninstallation process might fail or stop responding on Windows Server 2008 R1 SP2**

The Windows Installer on Windows Server 2008 R1 SP2 has issues with handling multiple packages. Because of these issues the vCenter Server installation might stop responding, or if you attempt to install and uninstall vCenter Server a few times, the process might fail.

Workaround: Apply the patch from [Microsoft KB 981669](https://support.microsoft.com/kb/981669) which addresses the Windows Installer issue.

Reference: <https://www.vmware.com/support/vsphere6/doc/vsphere-esxi-vcenter-server-60-release-notes.html#compatibility>

QUESTION 111

Which three ports are used by the vSphere Web Client when connecting directly to an ESXi 6.x host? (Choose three.)

- A. 443 TCP
- B. 902 TCP and UDP
- C. 903 TCP
- D. 5480 TCP
- E. 9443 TCP and UDP

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Port	Purpose	Traffic type
443(default)	<ul style="list-style-type: none"> • HTTPS access • vSphere Client access to vCenter Server • vSphere Client access to ESXi hosts • vSphere Client access to vSphere Update Manager 	Incoming tcp
902(default)	vSphere Client access to virtual machine consoles	Incoming and outgoing tcp, Outgoing udp
903	<ul style="list-style-type: none"> • Remote console traffic generated by user access to virtual machines on a specific host. • vSphere Client access to virtual machine consoles • MKS transactions (xinetd/vmware-authd-mks) 	Incoming TCP

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-installation-setup-guide.pdf>

QUESTION 112

When attempting to connect to a vCenter Server, an administrator observes the following at the top of the vSphere Web Client:

Could not connect to one or more vCenter Server Systems:https://vCenter.corp.com:443/sdk

What three reasons could be preventing the vSphere Web Client from communicating with this vCenter Server? (Choose three.)

- A. The vCenter Server machine is not responding via the network.
- B. An incorrect entry for this vCenter Server exists in the Single Sign-On service.
- C. The SSL certificates do not match the FQDN address for the server.
- D. The Platform Services Controller is external to this vCenter Server.
- E. The DNS entry for the vCenter Server is incorrect.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: This issue occurs in these situations:

- During the re-installation of vCenter Server, it is possible to have the same vCenter Server registered more than once to Single Sign-On (SSO).
- With a previous install of vCenter Server, SSL certificates are not overwritten or removed properly during an

upgrade or re-installation.

Note: If there are previous issues with the certificates, they may not be exposed until the installation and use of the 5.1 Web Client.

Before proceeding with the steps in the Resolution section, ensure that you are not experiencing the issue identified in [vSphere Web Client 5.1 reports this SSL warning after an installation or upgrade: Failed to verify the SSL certificate for one or more vCenter Server Systems \(2036505\)](#).

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2050273

QUESTION 113

An administrator wants to allow users to login to the vSphere Web Client using the Use Windows session authentication check box for faster authentication.

Which three requirements must be met for this feature to be available and functional? (Choose three.)

- A. Install the vSphere Web Client Integration browser plug-in on the vCenter Server and Platform Services Controller machines.
- B. Install the vSphere Web Client Integration browser plug-in on each workstation from where a user will sign in.
- C. The users must be signed into Windows using Active Directory user accounts.
- D. The administrator must create a valid Identity Source in Single Sign-On for the users domain.
- E. The administrator must create a valid Single Sign-On Identity Source using Integrated Windows Authentication.

Correct Answer: BCD

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Procedure**

1 Navigate to the vSphere Web Client login page.

2 If the **Use Windows session authentication** check box is not available, click **Download the Client Integration Plug-in** at the bottom of the login page.

3 If the browser blocks the installation by issuing certificate errors or by running a pop-up blocker, follow the Help instructions for your browser to resolve the problem.

4 Close other browsers if you are prompted to do so.

After installation, the plug-in is available for all browsers.

5 Exit and restart your browser.

After the restart, you can select the **Use Windows session authentication** check box.

Reference: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-C7BF3BD5-76E6-406F-8CF1-309D31F1DEBA.html>

QUESTION 114

An administrator is unable to see performance statistics for only the Past Week performance data. The vCenter Server is using a Microsoft SQL Server Database.

What are three likely causes contributing to this issue? (Choose three.)

- A. Performance statistics are turned off.
- B. The Past Day rollup job is not present.
- C. The stats_rollup_1_proc is not present.
- D. The VMware Performance Charts Service is stopped.
- E. The JDBC URL is incorrect in the vcdb.properties file.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please refer to this link to troubleshoot this issue: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1004382

QUESTION 115

An ESXi 6.x host in the vCenter Server inventory has disconnected due to an All Paths Down (APD) situation. An administrator has corrected the APD issue on the host, but it still remains disconnected.

What action should the administrator take next?

- A. Select Restart Management Agents from the DCUI.
- B. Execute esxcli system settings advanced set -d /Scsi/FailVMIOonAPD.
- C. Modify the advanced parameter /Disk/ApdTokenRetryCount.
- D. Enable the advanced parameter /Misc/APDHandlingEnable.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: **All-Paths-Down (APD)**

- A datastore is shown as unavailable in the Storage view
- A storage adapter indicates the Operational State of the device as Dead or Error
- All paths to the device are marked as Dead
- You are unable to connect directly to the ESXi host using the vSphere Client
- The ESXi host shows as Disconnected in vCenter Server
- In the /var/log/vmkernel.log file, you see entries similar to:

```
cpu1:2049)WARNING: NMP: nmp_IssueCommandToDevice:2954:I/O could not be issued to device
"naa.60a98000572d54724a34642d71325763" due to Not found
cpu1:2049)WARNING: NMP: nmp_DeviceRetryCommand:133:Device
"naa.60a98000572d54724a34642d71325763": awaiting fast path state update for failover with I/O blocked.
No prior reservation exists on the device.
cpu1:2049)WARNING: NMP: nmp_DeviceStartLoop:721:NMP Device
"naa.60a98000572d54724a34642d71325763" is blocked. Not starting I/O from device.
cpu1:2642)WARNING: NMP: nmpDeviceAttemptFailover:599:Retry world failover device
"naa.60a98000572d54724a34642d71325763" - issuing command 0x4124007ba7c0
cpu1:2642)WARNING: NMP: nmpDeviceAttemptFailover:658:Retry world failover device
"naa.60a98000572d54724a34642d71325763" - failed to issue command due to Not found (APD), try
again...
cpu1:2642)WARNING: NMP: nmpDeviceAttemptFailover:708:Logical device
"naa.60a98000572d54724a34642d71325763": awaiting fast path state update...
cpu0:2642)WARNING: NMP: nmpDeviceAttemptFailover:599:Retry world failover device
"naa.60a98000572d54724a34642d71325763" - issuing command 0x4124007ba7c0
cpu0:2642)WARNING: NMP: nmpDeviceAttemptFailover:658:Retry world failover device
"naa.60a98000572d54724a34642d71325763" - failed to issue command due to Not found (APD), try
again...
cpu0:2642)WARNING: NMP: nmpDeviceAttemptFailover:708:Logical device
"naa.60a98000572d54724a34642d71325763": awaiting fast path state update...
```

- A restart of the management agents may show these errors:

Not all VMFS volumes were updated; the error encountered was 'No connection'.
Errors:

Rescan complete, however some dead paths were not removed because they were in use by the system. Please use the 'storage core device world list' command to see the VMkernel worlds still using these paths. Error while scanning interfaces, unable to continue. Error was Not all VMFS volumes were updated; the error encountered was 'No connection'.

-
- You may also see that the device is no longer listed:

```
cpu17:10107)WARNING: Vol3: 1717: Failed to refresh FS 4beb089b-68037158-2ecc-00215eda1af6  
descriptor: Device is permanently unavailable
```

```
cpu17:10107)ScsiDeviceIO: 2316: Cmd(0x412442939bc0) 0x28, CmdSN 0x367bb6 from world 10107 to  
dev "eui.00173800084f0005" failed H:0x1 D:0x0 P:0x0 Possible sense data: 0x0 0x0 0x0.
```

```
cpu17:10107)Vol3: 1767: Error refreshing PB resMeta: Device is permanently unavailable
```

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2004684

QUESTION 116

An administrator notices that the time on an ESXi 6.x host is incorrect.

Which two actions should the administrator take to correct this issue? (Choose two.)

- A. Modify the time for the host using the vSphere client.
- B. Correct the NTP settings in the /etc/ntp.conf file.
- C. Configure NTP from the Direct Console User Interface.
- D. Use the vicfg-ntp command from the vSphere Management Appliance.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: Resolution

To configure NTP on ESX/ESXi 4.1 and ESXi 5.x hosts using the vSphere Client:

1. Connect to the ESX/ESXi host using the vSphere Client.
2. Select a host in the inventory.
3. Click the **Configuration** tab.
4. Click **Time Configuration**.
5. Click **Properties**.
6. Click **Options**.
7. Click **NTP Settings**.
8. Click **Add**.
9. Enter the NTP Server name. For example, pool.ntp.org.

Note: When entering the multiple NTP Server names, use a comma (,) followed by a space () between the entries.

10. Click **OK**.
11. Click the **General** tab.
12. Click **Start automatically** under Startup Policy.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2012069

QUESTION 117

Which command shows the Physical Uplink status for a vmnic?

- A. esxcli network ip get
- B. esxcli network nic list
- C. esxcli network vmnic list

D. esxcli network ifconfig get

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Command	Description
network nic list	This command will list the Physical NICs currently installed and loaded on the system.

Reference: https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vcli.ref.doc_50%2Fesxcli_network.html

QUESTION 118

An administrator decides to change the root password for an ESXi 6.x host to comply with the company's security policies.

What are two ways that this can be accomplished? (Choose two.)

- A. Use the Direct Console User Interface to change the password.
- B. Use the passwd command in the ESXi Shell.
- C. Use the password command in the ESXi Shell.
- D. Use the vSphere client to update local users.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Limit ESXi Access

By default, the ESXi Shell and SSH services are not running and only the root user can log in to the Direct Console User Interface (DCUI). If you decide to enable ESXi or SSH access, you can set timeouts to limit the risk of unauthorized access.

ESXi enforces password requirements for direct access from the Direct Console User Interface, the ESXi Shell, SSH, or the vSphere Client.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-security-guide.pdf>

QUESTION 119

An administrator connects to an ESXi 6.x host console in order to shutdown the host.

Which option in the Direct Console User Interface would perform this task?

- A. Press the F12 key
- B. Press the F2 key
- C. Press Alt + F1 simultaneously
- D. Press Alt + F2 simultaneously

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: ESXi 4.x/5.x/6.0

1. From the Direct Console User Interface (DCUI) screen, press **F12** to view the shutdown-related options for the ESXi host.
 - Press **F2** to shut down.
 - Press **F11** to reboot.
2. From Local or Remote Tech Support Mode, or from an SSH session, run one of these commands:
 - Run the reboot command to restart the host.
 - Run the poweroff command to shut down the host.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1013193

QUESTION 120

An administrator is able to manage an ESXi 6.x host connected to vCenter Server using the vSphere Web Client but is unable to connect to the host directly.

Which action should the administrator take to correct this behavior?

- A. Restart management agents on the ESXi host.
- B. Disable Lockdown Mode on the ESXi host through vCenter Server.
- C. Disable the ESXi firewall with the command `esxcli network firewall unload`.
- D. Reboot the ESXi host.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: ESXi 6.0:

Starting with vSphere 6.0, you can select normal Lockdown mode or strict Lockdown mode, which offer different degrees of lockdown.

Normal Lockdown mode:

In normal lockdown mode the DCUI service is not stopped. If the connection to the vCenter Server is lost and access through the vSphere Web Client is no longer available, privileged accounts can log in to the ESXi host's Direct Console Interface and exit lockdown mode. Only these accounts can access the Direct Console User Interface:

- Accounts in the Exception User list for lockdown mode who have administrative privileges on the host. The Exception Users list is meant for service accounts that perform very specific tasks. Adding ESXi administrators to this list defeats the purpose of lockdown mode.
- Users defined in the DCUI.Access advanced option for the host. This option is for emergency access to the Direct Console Interface in case the connection to vCenter Server is lost. These users do not require administrative privileges on the host.

Strict Lockdown mode:

In strict lockdown mode the DCUI service is stopped. If the connection to vCenter Server is lost and the vSphere Web Client is no longer available, the ESXi host becomes unavailable unless the ESXi Shell and SSH services are enabled and Exception Users are defined. If you cannot restore the connection to the vCenter Server system, you have to reinstall the host.

For more information on Lockdown mode in vSphere 6.0, see the *Lockdown Mode* section in the [vSphere Security Guide](#).

To enable or disable Lockdown mode from the DCUI:

1. Log directly in to the ESXi host.
2. Open the DCUI on the host.
3. Press **F2** for **Initial Setup**.
4. Press **Enter** to toggle the **Configure Lockdown Mode** setting.

To enable or disable Lockdown mode from the vSphere Web Client:

1. Browse to the host in the vSphere Web Client inventory.
2. Click the **Manage** tab and click **Settings**.
3. Under System, select **Security Profile**.
4. In the Lockdown Mode panel, click **Edit**.
5. Click **Lockdown Mode** and select one of the lockdown mode options.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1008077

QUESTION 121

An administrator creates a custom ESXi firewall rule using an XML file, however the rules do not appear in the vSphere Web Client.

Which action should the administrator take to correct the problem?

- A. Load the new rules using `esxcli network firewall reload`.
- B. Load the new rules using `esxcli network firewall refresh`.
- C. Verify the entries in the XML file and then reboot the ESXi host.
- D. Remove the ESXi host from the inventory and add it back.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

- Revert the access permissions of the service.xml file to the read-only default by running the command:

```
# chmod 444 /etc/vmware/firewall/service.xml
```

- Refresh the firewall rules for the changes to take effect by running the command:

```
# esxcli network firewall refresh
```

or

```
# localcli network firewall refresh
```

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2008226

QUESTION 122

An administrator needs two vCenter Servers to be visible within a single vSphere Web Client session.

Which two vCenter Server and Platform Services Controller (PSC) configurations would accomplish this? (Choose two.)

- A. Install a single PSC with two vCenter Servers registered to it.
- B. Install two PSCs in the same Single Sign-On domain with one vCenter Server registered to each PSC.
- C. Install a single PSC with two vCenter Servers registered to it and configure Linked Mode.

- D. Install two PSCs in the same Single Sign-On domain with one vCenter Server registered to each PSC and configure Linked Mode.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

QUESTION 123

An administrator wants to clone a virtual machine using the vSphere Client.

Which explains why the Clone option is missing?

- A. The vSphere Client is directly connected to the ESXi host.
- B. The virtual machine is configured with a thin-provisioned virtual disk.
- C. The virtual machine is configured with outdated Virtual Hardware.
- D. Cloning can only be performed with vRealize Orchestrator.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Clone a Virtual Machine in the vSphere Client

Cloning a virtual machine creates a duplicate of the virtual machine with the same configuration and installed software as the original.

Optionally, you can customize the guest operating system of the clone to change the virtual machine name, network settings, and other properties. This prevents conflicts that can occur if a virtual machine and a clone with identical guest operating system settings are deployed simultaneously.

Prerequisites

- You must be connected to vCenter Server in order to clone a virtual machine. You cannot clone virtual machines if you connect directly to an ESXi host.

Reference:

https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.vm_admin.doc_50%2FGUID-5C504B67-CDB3-42FC-8B3B-737201A725DD.html

QUESTION 124

An administrator wants to power on a virtual machine (VM) while connected to an ESXi host using SSH. The VM has the following Name and ID:

- VM Name = SQL001
- VMID = 12345

Which command would successfully power on the virtual machine?

- A. vim-cmd vmtoolsd/power.on 12345
- B. vim-cmd vmtoolsd/power.on SQL001
- C. vmware-vim-cmd vmtoolsd/power.on 12345
- D. vmware-vim-cmd vmtoolsd/power.on SQL001

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

ESXi 4.x, 5.x and 6.0

To power on a virtual machine from the command line:

1. List the inventory ID of the virtual machine with the command:

```
vim-cmd vmsvc/getallvms |grep <vm name>
```

Note: The first column of the output shows the `vmid`.

2. Check the power state of the virtual machine with the command:

```
vim-cmd vmsvc/power.getstate <vmid>
```

3. Power-on the virtual machine with the command:

```
vim-cmd vmsvc/power.on <vmid>
```

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1038043

QUESTION 125

What will occur if the `.nvram` file is deleted from a powered off virtual machine?

- A. The `.nvram` file will get created the next time the virtual machine is powered on.
- B. Restoring the file from backup is needed to allow the virtual machine to power on.
- C. The virtual machine will fail to power on and enter an Orphaned state.
- D. The virtual machine will fail to power on and enter an Inaccessible state.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The `.nvram` file. This small file contains the BIOS that is used when the VM boots. It is similar to a physical server that has a [BIOS](#) chip that lets you set hardware configuration options. A [VM also has a virtual BIOS](#) that is contained in the NVRAM file. The BIOS can be accessed when a VM first starts up by pressing the F2 key. Whatever changes are made to the hardware configuration of the VM are then saved in the NVRAM file. This file is in binary format and if deleted it will be automatically re-created when a VM is powered on.

Reference:

<http://searchvmware.techtarget.com/tip/Understanding-the-files-that-make-up-a-VMware-virtual-machine>

QUESTION 126

An administrator tries to connect the vSphere 5.5 Client to an ESXi 6.x host.

What will happen when this takes place?

- A. The operation will fail, since the vSphere Client is deprecated in vSphere 6.x.
- B. The operation will fail and the administrator will need to delete the client and install the 6.x version.
- C. The operation will prompt the administrator to run a script to upgrade the vSphere Client.
- D. The operation will update the vSphere Client silently in the background, then connect.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Whenever a user tries to connect to a higher version of the ESXi host, the user will be prompted to upgrade to the higher version to escape the compatibility issues.

QUESTION 127

After successfully adding a new ESXi 6.x host to vCenter Server, an administrator sees it as Not Responding in the vSphere Web Client interface a few minutes later.

If the issue is caused by a network firewall blocking traffic, which port must be opened to correct this specific problem?

- A. 443 (TCP)
- B. 443 (UDP)
- C. 902 (TCP)
- D. 902 (UDP)

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Port: 902 (Default)

Purpose:

Host access to other hosts for migration and provisioning

Authentication traffic for ESXi and remote console traffic (xinetd/vmware-authd)

vSphere Client access to virtual machine consoles

(UDP) Status update (heartbeat) connection from ESXi to vCenter Server

Traffic Type

Incoming and outgoing TCP, outgoing UDP

Reference:

https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc_50%2FGUID-ECEA77F5-D38E-4339-9B06-FF9B78E94B68.html

QUESTION 128

An administrator is troubleshooting network communications between the vCenter Server and the ESXi 6.x host.

Which log shows the interaction events between these components?

- A. /var/log/syslog.log
- B. /var/log/hostd.log
- C. /var/log/vpxa.log
- D. /var/log/fdm.log

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

When an ESXi 5.1 / 5.5 host is managed by vCenter Server 5.1 and 5.5, two components are installed, each with its own logs:

- /var/log/vpxa.log: vCenter Server vpxa agent logs, including communication with vCenter Server and the

Host Management hostd agent.

- /var/log/fdm.log: vSphere High Availability logs, produced by the fdm service. For more information, see the vSphere HA Security section of the [vSphere Availability Guide](#).

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2032076

QUESTION 129

An administrator is observing slow performance of the vCenter Inventory Service and observes the entries from the wrapper.log file:

Exception in thread "tomcat-exec-2" java.lang.OutOfMemoryError: Java heap space
Exception in thread "http-bio-0.0.0.0-10443-Acceptor-0" java.lang.OutOfMemoryError: Java heap space

What should the administrator do to resolve the problem?

- A. Increase the memory resources of the vCenter Server.
- B. Increase the values using cloudvm-ram-size.
- C. Increase the memory resources of the Platform Services Controller.
- D. Increase the wrapper.java.maxmemory value in wrapper.conf.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Cause

This issue occurs if the allocated JVM maximum memory heap is too low for the VMware Inventory service, VMware Profile-Driven Storage service, or VMware VirtualCenter Web Management service. Several core vCenter Server services use individual configuration files (wrapper.conf) to determine the JVM maximum heap size that each service can use. The VMware Inventory service, VMware Profile-Driven Storage service, and VMware VirtualCenter Web Management service rely on the JVM maximum memory heap configured in their individual wrapper.conf file and play a critical role in the functionality of vCenter Server.

Note: If vCenter Server 5.5 has recently been updated beyond 5.5 U2, see [Upgrading VMware vCenter Server 5.5 to 5.5 U2 or later reduces the JVM maximum memory heap size \(2114669\)](#).

Resolution

This is a known issue affecting vCenter Server 5.x.

To resolve this issue, manually set the inventory size.

To change the JVM maximum memory heap size for a Windows installed vCenter Server 5.x, see, see [Configuring Tomcat server settings in VMware vCenter Server 5.1 and 5.5 \(2021302\)](#).

To manually set the inventory size in vCenter Server Appliance 5.x:

1. Log in to vCenter Server Appliance administration interface (VAMI) URL:
`https://vCenter_Server_FQDNIP:5480`
2. Click the **Services** tab.
3. Change the Inventory Size to Medium or Large, depending on your environment.

Note: The system memory may need to be increased when changing this setting. For more information on environment sizing, see the *Configure Inventory Size for the VMware vCenter Server Appliance* section of the [Configuring Hosts and vCenter Server](#) guide.

4. Restart the VMware Profile-Driven Storage Service and VMware Inventory Service. For more information, see [Stopping, starting, or restarting vCenter Server Appliance services \(2054085\)](#).

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2126282

QUESTION 130

An administrator is troubleshooting a virtual machine that has unexpectedly powered off.

Which two logs should be used to troubleshoot the issue? (Choose two.)

- A. vmware.log
- B. hostd.log
- C. syslog.log
- D. shell.log

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

QUESTION 131

An administrator notices that one virtual machine is in an orphaned state.

What are two reasons that a virtual machine can appear as orphaned? (Choose two.)

- A. A VMware High Availability host failure has occurred.
- B. The virtual machine was unregistered directly on the host.
- C. The ESXi host is disconnected.
- D. The user does not have privilege to access the virtual machine.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please refer to the following link to understand more about the Orphaned State: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1003742

QUESTION 132

What is the minimum Virtual Hardware version required for vFlash Read Cache?

- A. Version 8
- B. Version 9
- C. Version 10
- D. Version 11

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Virtual Machines vSphere Flash Read Cache is available only to virtual machines with hardware version 10 (VMX-10). All legacy virtual machine hardware must be upgraded to hardware version 10 to use Virtual Flash Read Cache.

Reference:

https://www.vmware.com/files/pdf/vSphere_55_Flash_Read_Cache_Whats_New_WP.pdf

QUESTION 133

What are three reasons why a virtual machine might fail to power on? (Choose three.)

- A. The virtual machine is running on an ESXi host which has an expired license.
- B. The virtual machine is running on a datastore which has insufficient disk space for the .vswp file.
- C. The virtual machine is in a cluster with vSphere HA Admission control enabled.
- D. The virtual machine has a disconnected network adapter.
- E. The virtual machine does not have a Virtual Hard Disk assigned.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

When a virtual machine fails to power on, a reason may be logged to the `vmware.log` file for the virtual machine, to the management agent logs, or presented in the client. Review any messages and consider these points:

1. The virtual machine monitor may be asking a question to be answered during startup. A virtual machine may pause the power-on task at 95% to obtain additional information from the administrator. For more information, see [Powering on a virtual machine pauses at 95% while waiting for a question to be answered \(1027096\)](#).
2. Creating a new power-on task may fail if another task for the virtual machine or other component is already in progress, and multiple concurrent tasks on the object are not permitted. For more information, see:
 - [Collecting information about tasks in VMware ESX and ESXi \(1013003\)](#)
 - [vCenter operation times out with the error: Operation failed since another task is in progress \(1004790\)](#).
3. A virtual machine may fail to power on if licensing requirements are not met. For more information, see:
 - [Cannot Power on Virtual Machines, "Not enough licenses installed to perform the operation" Error Message \(7114568\)](#)
 - The *Managing ESX/ESXi and vCenter Server Licenses* section of the [Datacenter Administration Guide for vSphere 4 or higher](#)
 - The *VirtualCenter and ESX Server Licensing Overview* section of the [Installation Guide for VMware Infrastructure 3](#)
4. The virtual machine may be configured to reserve physical memory on the host, but the host memory is over-committed and the required memory is unavailable. For more information, see:
 - [Virtual machine does not power on when there is high CPU reservation \(1001637\)](#)
 - [Powering on a virtual machine fails with the error: memoryAllocation.reservation \(1036914\)](#).
5. The virtual machine may be starting in a VMware High Availability cluster with strict admission control enabled, and there are insufficient resources to guarantee failover for all virtual machines. For more information, see:
 - [Implications of enabling or disabling VMware HA strict admission control when using DRS and VMware DPM \(1007006\)](#)
 - [Diagnosing insufficient fail over capacity on a VMware High Availability Cluster \(1003717\)](#)
 - [Automating High Availability \(HA\) Services with VMware HA whitepaper](#)
6. A file required for starting the virtual machine, such as a virtual disk or swap file, may be unavailable or missing. For more information, see [Investigating virtual machine file locks in ESX/ESXi \(10051\)](#).
7. The virtual machine may have been previously suspended and making use of CPU features which are unavailable or incompatible with the CPU features available on this host. The virtual machine cannot be started without the required features. For more information, see:

- [Powering on a virtual machine from a suspend state or reverting to a snapshot fails \(1038218\)](#)
- [Virtual machines fail to power on due to a suspend state from an incompatible CPU type \(1000241\)](#)
- To retain the suspended state, move the virtual machine back to the host it was originally suspended on and power-on the virtual machine there.
- To discard the suspend state, and power on the virtual machine in a crash-consistent manner, see [Unable to power on a suspended virtual machine using vSphere Client \(1004606\)](#).

8. The virtual machine may require both a VT-capable CPU and the VT feature to be enabled in the host system's BIOS. This is true for all 64-bit virtual machines. If the VT feature is unavailable, the virtual machine may produce the message msg.cpuid.noLongmode. For more information, see [Enabling VT on Intel EM64T Systems for ESX Server 3 \(3282933\)](#).

9. The virtual machine may require another CPU feature which is unavailable on this host. The virtual machine may produce a message similar to msg.cpuid.<FeatureName>, identifying the specific feature it has been configured to require. Move the virtual machine back to the host which has the required CPU features, or edit the virtual machine's configuration to remove the requirement.

10. The virtual machine may start, but quickly fail with an error during startup. Review the contents of the vmware.log file in the virtual machine's directory for any errors or warnings, and search the Knowledge Base for the error or warning. Base your troubleshooting on the specific messages seen in the logs. For more information, see:

- [Determining why a virtual machine was powered off or restarted \(1019064\)](#)
- [Interpreting virtual machine monitor and executable failures \(1019471\)](#)

11. If the virtual machine does successfully power on, but the guest OS doesn't start correctly, there may be an incompatibility between the virtual hardware and drivers within the guest OS. For example, a missing SCSI driver may be required for booting. For more information, see [Windows virtual machine configured to use a BusLogic SCSI controller reports that the operating system does not support the controller \(2007603\)](#).

12. If the guest OS, or a driver or application within the virtual machine experiences a problem during startup, the guest OS may become unresponsive. Continue troubleshooting. For more information, see [Troubleshooting unresponsive guest operating system issues \(1007818\)](#).

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2001005

QUESTION 134

What is the name of the command line utility that checks for VMFS5 metadata corruption?

- A. vmkfstools --check
- B. voma
- C. vmfsanalyzer
- D. esxcli vmfs check

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

In ESXi 5.1, VMware introduced the vSphere On-disk Metadata Analyzer (VOMA) for performing VMFS file system metadata checks. This utility scans the VMFS volume metadata and highlights any inconsistencies to which you may be required to open a support request.

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2001005

QUESTION 135

What are two reasons why a local flash device would be unavailable for use with Virtual SAN? (Choose two.)

- A. It has a VMFS datastore present.
- B. It is in use by the vFlash Read Cache feature.
- C. It is smaller than the minimum capacity required for Virtual SAN usage.
- D. It does not have any partitions created.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Local Flash Devices Are Unavailable for Use with Virtual SAN or Virtual Flash

A local flash device becomes unavailable for virtual flash resource or Virtual SAN configuration when it is formatted with VMFS or any other file system.

Problem

When you attempt to configure either Virtual SAN or virtual flash resource, a local flash disk does not appear on the list of disks to be used.

Cause

This problem might occur when a local flash intended for use with either feature has been already formatted with VMFS. Neither Virtual SAN nor virtual flash can share the flash disk with VMFS or any other file system. Also, because virtual flash and Virtual SAN are mutually exclusive consumers of flash disks, both features cannot share the same flash disk. If the flash disk is already claimed by one feature, for example Virtual SAN, you are not able to use it for another, such as virtual flash, unless you release the disk.

Solution

Use only unformatted flash disks for virtual flash resource and Virtual SAN configuration.

- Avoid formatting the flash disks with VMFS during ESXi installation or Auto Deploy.
- If the flash disk is already formatted with VMFS, remove the VMFS datastore. For information see the *vSphere Storage* documentation.
- To use the flash disk as a virtual flash resource, do not claim this disk for Virtual SAN. If the disk is claimed by Virtual SAN, remove the disk from Virtual SAN. The flash disk is released from Virtual SAN and becomes available on the list of disks to use with virtual flash. For information about removing disks from Virtual SAN, see the *Administering VMware Virtual SAN* documentation.
- If you intend to use the flash disk with Virtual SAN, do not use the disk for a virtual flash resource. If the flash disk is used as the virtual flash resource, remove the virtual flash configuration. The disk becomes available for Virtual SAN. See the *vSphere Storage* documentation.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-A17F5D39-C1F3-47B1-9645-5C247412F370.html>

QUESTION 136

Which three troubleshooting actions should an administrator take to address slow performance when deploying a virtual machine template? (Choose three.)

- A. Increase network throughput by adding additional uplinks to the vSwitch.
- B. Change the destination datastore or volume for the virtual machine template.
- C. Configure a Provisioning Traffic vmkernel port to perform the deployment operation.
- D. Reduce the size of the virtual machine template's virtual disk.
- E. Deploy the virtual machine template to the cluster and allow Distributed Resource Scheduler to register the virtual machine.

Correct Answer: ABC

Section: (none)**Explanation****Explanation/Reference:****Explanation:**

Validate that each troubleshooting step below is true for your environment. Each step will provide instructions or a link to a document, in order to eliminate possible causes and take corrective action as necessary. The steps are ordered in the most appropriate sequence to isolate the issue and identify the proper resolution. Do not skip a step.

1. Verify if the slow deployment is specific to one template or if it affects all templates. To properly test this, VMware recommends to create a brand new template and test the deployment. This provides a clean test of the environment. For more information if template deployment is slow for a single template, see [Deploying a single template is slow in vCenter Server \(1004028\)](#).
2. If you are using ESX (not applicable to ESXi), verify that no processes are over utilizing the resources on the ESX Service Console. For more information, see [Checking for resource starvation of the ESX Service Console \(1003496\)](#).
3. Verify that the network configuration on the ESX/ESXi host is optimized for the best performance, including speed and duplex settings. For more information, see [Configuring the speed and duplex of an ESX/ESXi host network adapter \(1004089\)](#).
4. Verify that the firmware on the RAID controller or HBA is up to date. For more information, see [Checking your firmware and BIOS levels to ensure compatibility with ESX/ESXi \(1037257\)](#).
5. Verify that the local storage or SAN array is configured correctly. For more information, see [Slow ESX/ESXi performance caused by misconfigured local storage or SAN array \(1006602\)](#).
6. Verify on ESX/ESXi 4.1 and above if the storage array devices in the environment support the hardware acceleration functionality and if they are responding correctly to VAAI primitives. If there is no VAAI support on the array cloning or Storage vMotion may fail at 18%. For more information see [Cloning or Storage vMotion fails at 18% with the error: Failed to clone: Connection timed out \(1029244\)](#).

For further information on VAAI, see:

- [vStorage APIs for Array Integration FAQ \(1021976\)](#)
- [Disabling the VAAI functionality in ESX/ESXi \(1033665\)](#)

Note: If your problem still exists after trying the steps in this article, please:

- Gather the VMware Support Script Data. For more information, see [Collecting diagnostic information for VMware products \(1008524\)](#).
- File a support request with VMware Support and note this KB Article ID in the problem description. For more information, see [How to Submit a Support Request](#).

Link: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1004002

QUESTION 137

When attempting to remove a host from a vSphere Distributed Switch (vDS), an administrator observes the error message:

The resource '16' is in use

What are two reasons why this error would be displayed? (Choose two.)

- A. VMkernel network adapters on the vDS are in use.
- B. Virtual machine network adapters are connected to the vDS.
- C. Network I/O Control has been configured on the vDS.
- D. There is active network traffic on the vDS.

Correct Answer: AB

Section: (none)**Explanation****Explanation/Reference:**

Explanation: **Cause**

You cannot remove the host from the distributed switch or delete the host proxy switch because of the following reasons.

- There are VMkernel adapters on the switch that are in use.
- There are virtual machine network adapters connected to the switch.

Reference: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-038AC93F-D710-48ED-8E3B-258A23FB2930.html>

QUESTION 138

An administrator suspects that the MTU value for a vSphere Standard Switch is misconfigured.

Which two commands can determine the value? (Choose two.)

- A. `esxcfg-vswitch -l`
- B. `esxcli network vswitch standard list`
- C. `esxcfg-vss -l`
- D. `esxcli network standard vswitch list`

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: To display a list of vSwitches on the host, and to check that the configuration of the vSwitch is correct:

- Run this command for ESX 3.5 and ESXi/ESX 4.x:

`esxcfg-vswitch -l`

- Run this command for ESXi 5.0:

`esxcli network vswitch standard list`

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1007654

QUESTION 139

Deletion of an NFS datastore generates the following error:

Sysinfo error on operation returned the following status: Busy

Which step can be performed that will allow the deletion to complete successfully?

- A. Storage vMotion any virtual machines on the datastore to another location.
- B. Remove the datastore from the Storage DRS cluster in which it resides.
- C. Verify the value of the NFS.HeartbeatDelta is not set to 0.
- D. Suspend any running virtual machines and unmount the NFS datastore.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To resolve this issue, temporarily stop the VSA plug-in so that the locks on the datastore are released.

To temporarily stop the VSA plug-in:

1. Ensure that no process is locking any files on the datastore:
 - a. Connect to the host using SSH. For more information, see [Using ESXi Shell in ESXi 5.x \(2004746\)](#).
 - b. Check for file locks on the datastore, see [Investigating virtual machine file locks on ESXi/ESX \(10051\)](#).

If the datastore is free of locks continue to step 2. If there are active files locks in place, resolve them and attempt to unmount the NFS mount again.

2. Disable the VSA plug-in from the vSphere Web Client:
 - a. From the Home page of the vSphere Web Client, click **Administration**.
 - b. Under Solutions, click **Client Plug-Ins**.
 - c. Right-click the VSA plug-in and click **Disable**.
3. Stop the VSA service on vCenter Server.
4. Restart the management agents on the host. For more information, see [Restarting the Management agents on an ESXi or ESX host \(1003490\)](#).
5. Unmount the datastore using the vSphere Client.
6. Start the VSA service on vCenter Server.
7. Re-enable the VSA plug-in in the vSphere Web Client:
 - a. From the Home page of the vSphere Web Client, click **Administration**.
 - b. Under Solutions, click **Plug-In Management**.
 - c. Right-click the VSA plug-in and click **Enable**.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2102598

QUESTION 140

An administrator uses the df -h command and notices that an NFS datastore is reporting a capacity of 0 Bytes.

What condition would cause this to occur?

- A. The NFS server on which the datastore resides is down.
- B. The datastore was mounted as Read/Write.
- C. The datastore was mounted as Read-Only.
- D. The datastore was created with NFS version 4.1.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please refer to this link to understand the situation and how to mitigate it: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2073021

QUESTION 141

The command esxcli network vm list displays four virtual machines connected to the Production vSwitch. Within the vSphere Web Client, five virtual machines are seen.

What explains this behavior?

- A. The fifth virtual machine is currently powered off.
- B. The fifth virtual machine has two vnics.
- C. The fifth virtual machine has an invalid IP address.
- D. The fifth virtual machine has an invalid MAC address.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: You can use vCLI network commands to view network statistics and troubleshoot your networking setup. The nested hierarchy of commands allows you to drill down to potential trouble spots.

1 List all virtual machine networks on a host.

```
esxcli network vm list
```

The command returns for each virtual machine the World ID, name, number of ports, and networks, as in the following example.

Reference:

https://pubs.vmware.com/vsphere51/index.jsp?topic=%2Fcom.vmware.vcli.examples.doc%2Fcli_manage_networks.11.4.html

QUESTION 142

An administrator is experiencing network connectivity issues between virtual machines. The virtual machines and hosts are configured as follows:

- VM1 is running on Host1
- VM2 is running on Host2
- Both Host1 and Host2 are attached to the vSphere Distributed Switch dvSwitch1
- Both Host1 and Host2 are using vmnic0 and vmnic1 on dvSwitch1
- Both virtual machines are using the default portgroup for network traffic

What are three settings the administrator should investigate while troubleshooting the connectivity issue? (Choose three.)

- A. VLANs of the physical NICs
- B. Failover order of the uplinks
- C. Virtual NIC connectivity to the dvSwitch
- D. Security policy of the portgroup
- E. Traffic shaping on the portgroup

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please find link to understand more about the connectivity issues https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1003893

QUESTION 143

A task fails while creating a VMFS5 datastore on a disk with these characteristics:

- Was previously used by a Linux server
- Was not erased
- Is visible with the vSphere Web Client

Which action can be performed to resolve the issue?

- A. Delete the partitions on the disk manually with partedUtil first.
- B. Create a VMFS3 file system first, then upgrade it.
- C. Create the VMFS5 file system manually using vmkfstools.
- D. Delete the data with the vmkfstools command.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please refer to link to understand more about it: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2046610

QUESTION 144

A vSphere Web Client task fails while creating a VMFS datastore on a disk with these characteristics:

- The disk was formatted with an Master Boot Record (MBR) partition table
- The disk was not erased
- The disk is visible in the vSphere Web Client

What action needs to be performed to resolve the issue?

- A. Delete the partitions manually with partedUtil.
- B. Create a VMFS3 file system first, then upgrade it.
- C. Create a VMFS5 file system with the command `esxcli storage filesystem add`.
- D. Delete the data with the `vmkfstools` command.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Deleting a partition

A single partition can be deleted from a partition table on a block disk device using the partedUtil command line utility.

To delete a partition, run this command:

```
partedUtil delete "/vmfs/devices/disks/DeviceName" PartitionNumber
```

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1036609# Deleting a partition

QUESTION 145

Which two reasons would prevent Storage Distributed Resource Scheduler (SDRS) from operating on a datastore? (Choose two.)

- A. The datastore has Storage I/O Control disabled.
- B. The datastore is connected to an unsupported host.
- C. The datastore is hosted on an NFS server.
- D. The datastore is hosted on an iSCSI server.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: Storage DRS to datastores is like DRS to hosts. It moves VMDKs from heavily utilized to less utilized datastores according to preset space and I/O metrics, making efficient storage management more achievable.

Storage DRS can run in automatic mode, but most admins are using it in manual mode. This is understandable as we must keep in mind that Storage vMotion is not as light as vMotion, and hence should not be taken lightly. Storage DRS does use other storage management technologies like Storage I/O Control (SIOC), and can benefit from others like Profile-Driven Storage and vSphere API for Storage Awareness (VASA).

QUESTION 146

What are two ways to view the DNS settings for an ESXi 6.x host? (Choose two.)

- A. Use the vicfg-dns command from the vSphere Management Appliance.
- B. View the /etc/resolv.conf file on the ESXi host.
- C. Use vicfg-dns command on the ESXi host.
- D. View the /etc/dns.conf file on the ESXi host.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: To verify that the DNS information in /etc/resolv.conf is correct for your environment, run the command:

```
[root@server root]# cat /etc/resolv.conf
```

Run vicfg-dns without command-specific options to display DNS properties for the specified server.
vicfg-dns <conn_options>

The information includes the host name, domain name, DHCP setting (true or false), and DNS servers on the ESXi host.

Reference: https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vcli.examples.doc%2Fcli_manage_networks.11.8.html

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1003796

QUESTION 147

After configuring a Virtual SAN cluster, an administrator using the vSphere Web Client notices that the Virtual SAN datastore is smaller than expected. The cluster contains:

- Three ESXi hosts
- Each host has one 10GB SDD
- Each host has one 100GB HDD

Why would the Virtual SAN datastore show as 100GB instead of 300GB?

- A. There is a network problem with the Virtual SAN vmkernel ports.
- B. The Virtual SAN VASA provider is disabled.
- C. vSphere High Availability is enabled on the Virtual SAN cluster.
- D. The Virtual SAN cluster must be managed using the vSphere Web Client.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Here we have three ESXi hosts (each with 100GB HDD) which makes the complete storage to 300 GB. It generally shows 100GB instead of 300GB because the three hosts are not able to connect properly due to network issues.

QUESTION 148

An administrator tries to capture network traffic for a virtual machine, but cannot see the expected traffic in the packet capture tool.

Which step can resolve the problem?

- A. Migrate the virtual machine to a Distributed Virtual Switch.
- B. Enable Promiscuous Mode on the relevant port group.

- C. Modify the default value of MAC Address changes.
- D. Enable Forged Transmits on the virtual machine.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: When promiscuous mode is enabled at the portgroup level, objects defined within that portgroup have the option of receiving all incoming traffic on the vSwitch. Interfaces and virtual machines within the portgroup will be able to see all traffic passing on the vSwitch, but all other portgroups within the same virtual switch do not.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1002934

QUESTION 149

An administrator creates a Private VLAN with a Primary VLAN ID of 2. The administrator then creates three Private VLANs as follows:

- Marketing
- PVLAN ID. 4
- PVLAN Type. Isolated
- Accounting
- PVLAN ID. 5
- PVLAN Type. Community
- Secretary
- PVLAN ID. 17
- PVLAN Type. Isolated

Users in the Accounting PVLAN are reporting problems communicating with servers in the Marketing PVLAN.

Which two actions could the administrator take to resolve this problem? (Choose two.)

- A. Change the PVLAN type for the Accounting network to Promiscuous.
- B. Change the PVLAN ID for the Accounting network to 2.
- C. Change the PVLAN type for Marketing network to Promiscuous.
- D. Change the PVLAN ID for Accounting network to 4.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: Please refer to this link for understanding network connectivity issues in detail: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1004109

QUESTION 150

An administrator attempts to place a Storage DRS enabled Datastore into Maintenance Mode. The task never completes, and the Entering Maintenance Mode status remains at 1%.

Which two actions should the administrator take to resolve this problem? (Choose two.)

- A. Set the Storage DRS advanced option IgnoreAffinityRulesForMaintenance = 1.
- B. Set the Storage DRS advanced option IgnoreAffinityRulesForMaintenance = 0.
- C. Disable Storage DRS affinity rules associated with this datastore cluster.
- D. Enable Storage DRS affinity rules associated with this datastore cluster.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Problem**

A datastore in a datastore cluster cannot enter maintenance mode. The Entering Maintenance Mode status remains at 1%.

Cause

One or more disks on the datastore cannot be migrated with Storage vMotion. This condition can occur in the following instances.

- Storage DRS is disabled on the disk.
- Storage DRS rules prevent Storage DRS from making migration recommendations for the disk.

Solution

- If Storage DRS is disabled, enable it or determine why it is disabled. See [Storage DRS is Disabled on a Virtual Disk](#) for reasons why Storage DRS might be disabled.
- If Storage DRS rules are preventing Storage DRS from making migration recommendations, you can remove or disable particular rules.

- In the vSphere Client inventory, right-click the datastore cluster and select Edit Settings.
- Select Rules and click the rule.
- Click Remove.
- Click OK.

- Alternatively, if Storage DRS rules are preventing Storage DRS from making migration recommendations, you can set the Storage DRS advanced option IgnoreAffinityRulesForMaintenance to 1.

- In the vSphere Client inventory, right-click the datastore cluster and select Edit Settings.
- Select SDRS Automation and click Advanced Options.
- Enter 1 in the Value column for IgnoreAffinityRulesForMaintenance.
- Click OK.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-91D4FBBC-0677-44DA-B0F2-43A3504F8CA0.html>

QUESTION 151

Which two scenarios could cause Storage DRS to be disabled on a Virtual Disk (VMDK)? (Choose two.)

- A. The VMDK is an independent disk.
- B. The virtual machine has vSphere Fault Tolerance enabled.
- C. The VMDK is hosted on NFS storage.
- D. The virtual machine has a CD-ROM/ISO image connected.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Storage DRS is Disabled on a Virtual Disk

Even when Storage DRS is enabled for a datastore cluster, it might be disabled on some virtual disks in the datastore cluster.

Problem

You have enabled Storage DRS for a datastore cluster, but Storage DRS is disabled on one or more virtual machine disks in the datastore cluster.

Cause

The following scenarios can cause Storage DRS to be disabled on a virtual disk.

- A virtual machine's swap file is host-local (the swap file is stored in a specified datastore that is on the host). The swap file cannot be relocated and Storage DRS is disabled for the swap file disk.
- A certain location is specified for a virtual machine's .vmx swap file. The swap file cannot be relocated and Storage DRS is disabled on the .vmx swap file disk.
- The relocate or Storage vMotion operation is currently disabled for the virtual machine in vCenter Server (for example, because other vCenter Server operations are in progress on the virtual machine). Storage DRS is disabled until the relocate or Storage vMotion operation is re-enabled in vCenter Server.
- The home disk of a virtual machine is protected by vSphere HA and relocating it will cause loss of vSphere HA protection.
- The disk is a CD-ROM/ISO file.
- If the disk is an independent disk, Storage DRS is disabled, except in the case of relocation or clone placement.
- If the virtual machine has system files on a separate datastore from the home datastore (legacy), Storage DRS is disabled on the home disk. If you use Storage vMotion to manually migrate the home disk, the system files on different datastores will be all be located on the target datastore and Storage DRS will be enabled on the home disk.
- If the virtual machine has a disk whose base/redo files are spread across separate datastores (legacy), Storage DRS for the disk is disabled. If you use Storage vMotion to manually migrate the disk, the files on different datastores will be all be located on the target datastore and Storage DRS will be enabled on the disk.
- The virtual machine has hidden disks (such as disks in previous snapshots, not in the current snapshot). This situation causes Storage DRS to be disabled on the virtual machine.
- The virtual machine is a template.
- The virtual machine is vSphere Fault Tolerance-enabled.
- The virtual machine is sharing files between its disks.
- The virtual machine is being Storage DRS-placed with manually specified datastores

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-B749AAA0-7B67-4A79-BEDC-395DFEC9FC60.html>

QUESTION 152

Refer to the Exhibit.

ADAPTR	PATH	NPTH	CMDS/s	READS/s	WRITES/s	MBREAD/s	MBWRTN/s	DAVG/cmd	KAVG/cmd	GAVG/cmd	QAVG/cmd
vmhba0	-	1	6.68	0.00	0.00	0.00	0.00	0.25	0.03	0.28	0.01
vmhba1	-	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba32	-	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
vmhba33	-	2	184.06	85.35	97.27	5.31	4.88	160.91	0.01	160.92	0.01

An administrator is using the esxtop command to troubleshoot storage performance issues on a virtual machine. The esxtop capture is shown in the Exhibit.

Based on the exhibit, which two statements are true? (Choose two.)

- A. The iSCSI device is experiencing high latency.
- B. The ESXi kernel is experiencing high latency.
- C. The Guest OS is experiencing high latency and response time.
- D. The NFS device is experiencing high latency.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation: A,C -----Using esxtop to identify storage performance issues for ESX / ESXi (multiple versions) (1008205)

Note: In ESXi 5.x and later, you may see messages indicating that performance has deteriorated. For more information, see Storage device performance deteriorated (2007236).

QUESTION 153

An administrator is unable to upgrade a vCenter Server Appliance from version 5.1 Update 2 to version 6.0.

What is a likely reason for this?

- A. vCenter Server Appliance 6.0 does not support upgrades from version 5.1 Update 2.
- B. vCenter Server Appliance must be joined to an Active Directory domain before upgrading to version 6.0.
- C. vCenter Server Appliance 5.1 Update 2 uses an incompatible database for upgrading to version 6.0.
- D. vCenter Server Appliance 6.0 must be upgraded using the vSphere Web Client.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

If your current vCenter Server Appliance version is earlier than 5.1 Update 3, you must upgrade to 5.1 Update 3 or later before upgrading to vCenter Server Appliance 6.0.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-66836F60-A095-4749-86C9-1DAFB5D21070.html>

QUESTION 154

An administrator has migrated a vCenter Server Appliance from version 5.5 to version 6.x. During the migration, the administrator selected DHCP for the appliance and obtained a hostname from the DHCP server. The administrator adjusts the hostname after the migration and uses a static IP and hostname.

What should the administrator do immediately after this change to prevent service failures?

- A. Regenerate the SSL certificates.
- B. Re-register components to Single Sign-On.
- C. Update the /etc/hosts file.
- D. Execute the command `services.restart vmware-vpxd`.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

This is a known issue affecting vCenter Server 6.0.

Currently, there is no resolution.

To work around this issue, regenerate the SSL certificates on the vCenter Server 5.x before upgrading to 6.0.

To regenerate the SSL certificates on the vCenter Server 5.x before upgrading to 6.0,

LinkKB: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2110943

QUESTION 155

An administrator is unable to patch an ESXi 6.x host using VMware Update Manager.

What is an alternative option for patching a host?

- A. Upload the offline bundle to a datastore and execute the command `esxcli software vib install -d` to apply it manually.
- B. Upload the vib to a datastore and execute the command `esxcli software vib install -d` to apply it manually.
- C. Upload the offline bundle to a datastore and execute the command `esxupdate install -v` to apply it manually.
- D. Upload the vib to a datastore and execute the command `esxupdate install -v` to apply it manually.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Update a Host with Individual VIBs

You can update a host with VIBs stored in a software depot that is accessible through a URL or in an offline ZIP depot.

Important

If you are updating ESXi from a zip bundle in a VMware-supplied depot, either online from the VMware Web site or downloaded locally, VMware supports only the update method specified for VMware-supplied depots in the topic [Upgrade or Update a Host with Image Profiles](#).

The **esxcli software vib update** and **esxcli software vib install** commands are not supported for upgrade operations. See [Differences Between vSphere Upgrades and Updates](#) and [Upgrade or Update a Host with Image Profiles](#)

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-1E773360-CB1C-4BC2-B2A4-B73AB5706FAF.html>

QUESTION 156

Which three logs can be reviewed to troubleshoot a vCenter Server upgrade failure? (Choose three.)

- A. vminst.log
- B. vim-vcs-msi.log
- C. pkgmgr.log
- D. vc-upgrade.log
- E. firstboot.log

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Retrieve Installation Logs Manually

You can retrieve the installation log files manually for examination.

Procedure

1 Navigate to the installation log file locations.

■ %PROGRAMDATA%\VMware\vCenterServer\logs directory, usually
C:\ProgramData\VMware\vCenterServer\logs

■ %TEMP% directory, usually C:\Users\username\AppData\Local\Temp

The files in the %TEMP% directory include vminst.log, pkgmgr.log, pkgmgr-comp-msi.log, and vim-vcs-msi.log.

2 Open the installation log files in a text editor for examination.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc%2FGUID-CF80C555-BFB1-4FF1-B4E6-6935D424838E.html>

QUESTION 157

Attempting to update an ESXi 6.x host using the following command:

```
esxcli software vib update -d update.zip
```

Generates the following error:

Could not download from depot at /tmp/index.xml, skipping (('tmp/index.xml', ", "[Errno 4] IOError: <urlopen error [Errno 2] No such file or directory: 'tmp/index.xml'>")) url = /tmp/index.xml

What action should be taken to correct the problem?

- A. Add the full file path to the command.
- B. Use the update option instead of install.
- C. Use the switch -d instead of -v.
- D. Replace esxcli with esxupdate.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Put the full path to the .zip even if you're in the same directory

ex: esxcli software vib install -d /tmp/ESXi600-201504001.zip

Also make sure you're in maintenance mode

How to perform next/related steps: Check:----<https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vsphere.upgrade.doc/GUID-22A4B153-CB21-47B4-974E-2E5BB8AC6874.html?resultof=%2522>

QUESTION 158

A failed upgrade from vCenter Server version 5.x to version 6.0 produces the following error:

[00800 error 'Default'] Database version id '600' is incompatible with this release of VirtualCenter.

What is the cause of the upgrade failure?

- A. There was a database schema upgrade failure during the installation.
- B. The VMWAREVCMSDS service was upgraded before the vCenter Server service.
- C. The VMware Directory Service database failed during the installation.
- D. There was an incompatible ODBC driver version for the database.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Attempts to upgrade the VMware vCenter Server from 5.x to 6.0 might fail when validating the database

Upgrading VMware vCenter Server with an Oracle Database from 5.x to 6.0 might fail. This error occurs when you install a vCenter Server against an external Microsoft SQL database. You need to create the database schema manually by referencing to the information in DB_and_schema_creation_scripts_mssql.txt in the DB scripts folder. An error message similar to the following is displayed:

The user associated with the DSN has insufficient privileges.

This issue is resolved in this release. VMware vCenter Server 6.0 Update 1

check release notes whitepaper on vmware.com
Upgrading from vSphere 5.x to vSphere 6.0 Best Practices (2130664)
https://kb.vmware.com/selfservice/search.do?cmd=displayKC&docType=kc&docTypeID=DT_KB_1_1&externalId=2130664

QUESTION 159

An administrator is troubleshooting a CPU performance issue for a virtual machine.

Which three esxtop counters may demonstrate CPU contention? (Choose three.)

- A. %RDY
- B. %RUN
- C. %MLMTD
- D. %WAIT
- E. %CSTP

Correct Answer: ACE

Section: (none)

Explanation

Explanation/Reference:

Explanation:

- **"%RDY"**

The percentage of time the world was ready to run.

A world in a run queue is waiting for CPU scheduler to let it run on a PCPU. %RDY accounts the percentage of this time. So, it is always smaller than 100%.

+Q: How do I know CPU resource is under contention?+

+A: %RDY is a main indicator. But, it is not sufficient by itself.+

+If a "CPU Limit" is set to a VM's resource settings, the VM will be deliberately held from scheduled to a PCPU when it uses up its allocated CPU resource. This may happen even when there is plenty of free CPU cycles. This time deliberately held by scheduler is shown by "%MLMTD", which will be describe next. Note that %RDY includes %MLMTD. For, for CPU contention, we will use "%RDY - %MLMTD". So, if "%RDY - %MLMTD" is high, e.g., larger than 20%, you may experience CPU contention.+

+What is the recommended threshold? Well, it depends. As a try, we could start with 20%. If your application speed in the VM is OK, you may tolerate higher threshold. Otherwise, lower.+

+Q: How do we break down 100% for the world state times?+

+A: A world can be in different states, either scheduled to run, ready to run but not scheduled, or not ready to run (waiting for some events).+

100% = %RUN + %READY + %CSTP + %WAIT.

+Check the description of %CSTP and %WAIT below.+

+Q: What does it mean if %RDY of a VM is high?+

+A: It means the VM is possibly under resource contention. Check "%MLMTD" as well. If "%MLMTD" is high, you may raise the "CPU limit" setting for the VM. If "%RDY - %MLMTD" is high, the VM is under CPU contention.+

- **"%MLMTD"**

The percentage of time the world was ready to run but deliberately wasn't scheduled because that would violate the "CPU limit" settings.

Note that %MLMTD is included in %RDY.

+Q: What does it mean if %MLMTD of a VM is high?+

+A: The VM cannot run because of the "CPU limit" setting. If you want to improve the performance of this VM,

you may increase its limit. However, keep in mind that it may reduce the performance of others.+

▪ **"%CSTP"**

The percentage of time the world spent in ready, co-deschedule state. This co-deschedule state is only meaningful for SMP VMs. Roughly speaking, ESX CPU scheduler deliberately puts a VCPU in this state, if this VCPU advances much farther than other VCPUs.

+Q: What does it mean if %CSTP is high?+

+A: It usually means the VM workload does not use VCPUs in a balanced fashion. The VCPU with high % CSTP is used much more often than the others. Do you really need all those VCPUs? Do you pin the guest application to the VCPUs?+

Reference:

<https://communities.vmware.com/docs/DOC-9279>

QUESTION 160

Users are reporting CPU related performance problems on the virtual machine Email-Prod throughout the day.

The resource settings for the VM and the ESXi host the VM is running on are shown below:

VM:

- Email-Prod
- vCPUs: 4
- Memory: 96GB

ESXi host:

- CPU: 2 x 8 Core Processors
- Memory: 128GB
- NUMA architecture. 2 Nodes

Which two options would alleviate the observed performance problem for Email-Prod? (Choose two.)

- A. Enable the advanced parameter Numa.PageMigEnable.
- B. Enable the advanced parameter Numa.AutoMemAffinity.
- C. Enable CPU affinity to separate 2 vCPUs for each NUMA node.
- D. Enable CPU affinity to bind all vCPUs to one NUMA node.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation: B-) **Memory**

You can change the amount of RAM that a VM will use like this

memsize = "128"

If you don't assign a value for memory VMware will use the default-setting which is 32MB

memsize = "32"

Whenever you assign RAM manually make sure the value is a multiple of 4 - otherwise the VM will not start:

memsize = "255"

causes this error-message:

Memory size 255 not a multiple of 4

<https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vsphere.hostclient.doc/GUID-99E66B59-53A8-42D0-A08F-17DBE7D4A864.html?resultof=%2522>

C-) This is expected behavior based on the current architecture of the scheduler. However, these points help to limit the impact of the issue :Lower the number of vCPUs.

From the example above, you would lower the number of vCPUs from 8 to 6 or less. If the virtual machines are sized such that they are a whole multiple or divisor of the NUMA node size, this helps with the number of virtual machines that you can power on. If 6 vCPU virtual machines are used, you can run up to at least 8 of those

virtual machines (with 100% CPU utilization) without incurring substantial ready times.
<https://www.vmware.com/files/pdf/.../VMware-PerfBest-Practices-vSphere6-0.pdf>

QUESTION 161

An administrator is troubleshooting a performance problem with a virtual machine (VM). The VM and ESXi host configuration is as follows:

- The application which runs within the virtual machine is highly sensitive to memory latency, but has low processor utilization.
- The virtual machine has 6 vCPUs.
- The ESXi host CPU topology has 2 Physical CPU Sockets, each with 8 Logical CPUs.
- The ESXi host CPU has Hyper Threading enabled.

The administrator would like to improve CPU performance for this VM. Other VMs on the host have no performance issues. Which action should the administrator take to resolve the issue?

- A. Set the Advanced Parameter `numa.vcpu.preferHT` = TRUE in the virtual machine configuration file.
- B. Set the Advanced Parameter `numa.vcpu.preferHT` = FALSE in the virtual machine configuration file.
- C. Set the Advanced Parameter `numa.PreferHT` = 1 in the ESXi host configuration file.
- D. Set the Advanced Parameter `numa.PreferHT` = 0 in the ESXi host configuration file.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

On systems with hyper-threading enabled, a wide-VM that makes use of full processor cores across NUMA nodes but has less vCPUs configured than the number of logical processors (hardware threads) in each physical NUMA node might benefit from using logical processors with local memory rather than using full cores with remote memory. This can be configured by setting the `numa.vcpu.preferHT` option to TRUE in the specific VM's advanced configuration.

Reference:

https://books.google.co.in/books?id=GnVvAwAAQBAJ&pg=PA78&lpg=PA78&dq=Advanced+Parameter+numa.vcpu.preferHT&source=bl&ots=o9dp9BqWj&sig=XT1BXwxJ6qeTg_zHfO8uLnZNT0&hl=en&sa=X&ved=0ahUKEwjUy-eejcrNAhWGqY8KHQCKBzwQ6AEIVjAH#v=onepage&q&f=false

QUESTION 162

An administrator has a virtual machine configured with the following settings:

- ESXi version: 5.1
- CPU: vCPUs 6
- Memory: 48GB
- Hardware version: 7
- VMware Tools: Installed

Which two actions must the administrator take in order to utilize vNUMA? (Choose two.)

- A. Upgrade the ESXi host to vSphere 5.5 or later.
- B. Upgrade to Virtual Hardware version 8.
- C. Configure `numa.vcpu.min` to 5
- D. Configure `numa.vcpu.min` to 6

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Using Virtual NUMA

vSphere 5.0 and later includes support for exposing virtual NUMA topology to guest operating systems, which can improve performance by facilitating guest operating system and application NUMA optimizations.

Virtual NUMA topology is available to hardware version 8 virtual machines and is enabled by default when the number of virtual CPUs is greater than eight. You can also manually influence virtual NUMA topology using advanced configuration options.

You can affect the virtual NUMA topology with two settings in the vSphere Client: number of virtual sockets and number of cores per socket for a virtual machine. If the number of cores per socket (cpuid.coresPerSocket) is greater than one, and the number of virtual cores in the virtual machine is greater than 8, the virtual NUMA node size matches the virtual socket size. If the number of cores per socket is less than or equal to one, virtual NUMA nodes are created to match the topology of the first physical host where the virtual machine is powered on.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp#com.vmware.vsphere.resmgmt.doc/GUID-17B629DE-75DF-4C23-B831-08107007FBB9.html>

-----Explanation note-----

Also, Check Page 21,22 https://www.vmware.com/pdf/Perf_Best_Practices_vSphere5.1.pdf

D-) Size your virtual machines so they align with physical NUMA boundaries. For example, if you have a host system with six cores per NUMA node, size your virtual machines with a multiple of six vCPUs (i.e., 6 vCPUs, 12 vCPUs, 18 vCPUs, 24 vCPUs, and so on). Hence answer is D

Also, Check Page 41,42 https://www.vmware.com/pdf/Perf_Best_Practices_vSphere5.1.pdf

QUESTION 163

When troubleshooting a performance related issue, an administrator sees the following warning message on an ESXi Console:

Significant imbalance between NUMA nodes detected. Performance may be impacted.

Which action should the administrator take to correct this problem?

- A. Ensure that the RAM modules are evenly balanced between processor sockets in the physical server.
- B. Ensure that all memory banks associated with CPU Socket 0 in the physical server are completely filled.
- C. Ensure that the physical server has the maximum amount of RAM modules that it can support.
- D. Ensure that all RAM modules in the host are Error-correcting code (ECC) modules.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

This message displays when memory is not evenly distributed between processor sockets.

Each CPU socket has its own RAM slots. To resolve this issue, evenly balance RAM modules between processor sockets. That is, ensure that each bank of RAM slots has the same amount of RAM.

For example, if CPU socket 1 has a total of 8 GB of RAM, ensure that CPU socket 2 also has 8 GB of RAM.

Ensure that memory on the nodes are balanced. For more information and assistance, contact your vendor.

Note: Damaged or faulty physical RAM modules can also cause this issue.

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1018754

QUESTION 164

An administrator observes the following symptoms for a virtual machine:

- CPU usage is consistently above 90%
- CPU ready value is consistently above 20%.
- Application performance is impacted.

Which two actions should the administrator take to improve the performance of this virtual machine? (Choose two.)

- A. Increase the number of vCPUs assigned to this virtual machine.
- B. Decrease the number of vCPUs assigned to this virtual machine.
- C. Verify that VMware Tools is installed on every virtual machine on the host.
- D. Increase the CPU shares assigned to the virtual machine.

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Solutions for Consistently High CPU Usage

Temporary spikes in CPU usage indicate that you are making the best use of CPU resources. Consistently high CPU usage might indicate a problem. You can use the vSphere Client CPU performance charts to monitor CPU usage for hosts, clusters, resource pools, virtual machines, and vApps.

Problem

- Host CPU usage constantly is high. A high CPU usage value can lead to increased ready time and processor queuing of the virtual machines on the host.
- Virtual machine CPU usage is above 90% and the CPU ready value is above 20%. Application performance is impacted.

Cause

The host probably is lacking the CPU resources required to meet the demand.

Solution

- Verify that VMware Tools is installed on every virtual machine on the host.
- Compare the CPU usage value of a virtual machine with the CPU usage of other virtual machines on the host or in the resource pool. The stacked bar chart on the host's Virtual Machine view shows the CPU usage for all virtual machines on the host.
- Determine whether the high ready time for the virtual machine resulted from its CPU usage time reaching the CPU limit setting. If so, increase the CPU limit on the virtual machine.
- Increase the CPU shares to give the virtual machine more opportunities to run. The total ready time on the host might remain at the same level if the host system is constrained by CPU. If the host ready time doesn't decrease, set the CPU reservations for high-priority virtual machines to guarantee that they receive the required CPU cycles.
- Increase the amount of memory allocated to the virtual machine. This action decreases disk and or network activity for applications that cache. This might lower disk I/O and reduce the need for the host to virtualize the hardware. Virtual machines with smaller resource allocations generally accumulate more CPU ready time.
- Reduce the number of virtual CPUs on a virtual machine to only the number required to execute the workload. For example, a single-threaded application on a four-way virtual machine only benefits from a single vCPU. But the hypervisor's maintenance of the three idle vCPUs takes CPU cycles that could be used for other work.
- If the host is not already in a DRS cluster, add it to one. If the host is in a DRS cluster, increase the number of hosts and migrate one or more virtual machines onto the new host.
- Upgrade the physical CPUs or cores on the host if necessary.
- Use the newest version of hypervisor software, and enable CPU-saving features such as TCP Segmentation Offload, large memory pages, and jumbo frames.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.monitoring.doc%2FGUID-5F8147A1-6416-4D29-BA3D-E4CED3966016.html>

QUESTION 165

An administrator is troubleshooting a CPU issue for a virtual machine. The following is seen in esxtop:

- CPU0 is at 100% usage
- The remaining logical CPUs are close to 0%
- %RDY value is consistently above 10%

What is likely the cause of the CPU issue?

- A. The virtual machine has a CPU limit configured.
- B. The virtual machine's guest operating system is configured for SMP.
- C. The virtual machine has CPU affinity configured.
- D. The virtual machine is configured with a CPU reservation.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Using CPU Affinity

By specifying a CPU affinity setting for each virtual machine, you can restrict the assignment of virtual machines to a subset of the available processors in multiprocessor systems. By using this feature, you can assign each virtual machine to processors in the specified affinity set.

CPU affinity specifies virtual machine-to-processor placement constraints and is different from the relationship created by a VM-VM or VM-Host affinity rule, which specifies virtual machine-to-virtual machine host placement constraints.

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.resourcemanagement.doc_41/managing_cpu_resources/c_using_cpu_affinity.html

QUESTION 166

An administrator notices that 8 out of 10 virtual machines have memory ballooning and swapping. However, virtual machine 9 is not ballooning or swapping and virtual machine 10 is not ballooning but is swapping.

Which two statements explain the behavior of virtual machine 9 and virtual machine 10? (Choose two.)

- A. Virtual machine 9 has a 100% memory reservation.
- B. Virtual machine 10 has a memory limit configured.
- C. Virtual machine 9 has memory shares set to HIGH.
- D. Virtual machine 10 does not have VMware Tools enabled or installed.

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

If the memory usage value is high, and the host has high ballooning or swapping, check the amount of free physical memory on the host. A free memory value of 6% or less indicates that the host cannot handle the demand for memory. This leads to memory reclamation, which might degrade performance.

If the host has enough free memory, check the resource shares, reservation, and limit settings of the virtual machines and resource pools on the host. Verify that the host settings are adequate and not lower than those set for the virtual machines.

D-) Verify that VMware Tools is installed on each virtual machine. The balloon driver is installed with VMware Tools and is critical to performance. If VMware tools are not installed/outdated showing on summary tab Ballooning will not work hence swapping will work because it has nothing to do with ballooning.

Fact: If memory is not available the memory can be mapped to the .vswp file on a vmfs or nfs datastore. The virtual machine has no knowledge if the memory is mapped to physical memory or to a disk. **This is called hypervisor swapping**, and this is the last resort for the vmkernel to use this mechanism. (Internal VMware KB article but for external you may check VMBlog or external links: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1003470)

QUESTION 167

An administrator is troubleshooting a virtual machine performance issue using vRealize Operations.

Which two badges would help to identify possible resource contention concerns? (Choose two.)

- A. Health > Workload
- B. Health > Faults
- C. Risk > Time Remaining
- D. Risk > Stress

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The **Workload badge** shows how hard an object is working. A higher workload score indicates that an object is doing more work. Obviously, you don't want objects out there doing zero work, as that is waste but, at the same time, you also don't want objects completely maxed out with a workload score of 100 either. Workload is an absolute measurement that calculates the demand for a resource divided by the capacity of an object. Resources might include CPU, memory, disk I/O, or network I/O. vC Ops will help you to balance workload across your resource objects effectively.

Stress badge reports the stress that an object is under. Just as your stress level is related to your workload, so is the stress score in vC Ops. The stress score is based on long-term high workload (where the workload score is instantaneous workload). Stress in the virtual infrastructure might come from VMs that are undersized, hosts that are overloaded, or datastores with consistently high I/O latency. Stress is reported between 0 and 100 with 100 being very high stress and 0 being no stress.

Reference:

<http://blogs.vmware.com/management/2014/04/david-davis-on-vcenter-operations-post-8-understanding-vcenter-operations-badges.html>

QUESTION 168

A virtual machine is exhibiting these symptoms:

- Memory usage is constantly high (94% or greater) or constantly low (24% or less).
- Free memory is consistently 6% or less and swapping frequently occurs

Which three solutions could correct this problem? (Choose three.)

- A. Verify that VMware Tools is installed on each virtual machine.
- B. Decrease the memory reservation setting, if higher than active memory.
- C. Add physical memory to the host.
- D. Disable the balloon driver in each virtual machine.
- E. Create a memory limit for each virtual machine.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Problem

- Memory usage is constantly high (94% or greater) or constantly low (24% or less).
- Free memory consistently is 6% or less and swapping frequently occurs.

Cause

- The host probably is lacking the memory required to meet the demand. The active memory size is the same as the granted memory size, which results in memory resources that are not sufficient for the workload.

Granted memory is too much if the active memory is constantly low.

- Host machine memory resources are not enough to meet the demand, which leads to memory reclamation and degraded performance.
- The active memory size is the same as the granted memory size, which results in memory resources that are not sufficient for the workload.

Solution

- Verify that VMware Tools is installed on each virtual machine. The balloon driver is installed with VMware Tools and is critical to performance.
- Verify that the balloon driver is enabled. The VMkernel regularly reclaims unused virtual machine memory by ballooning and swapping. Generally, this does not impact virtual machine performance.
- Reduce the memory space on the virtual machine, and correct the cache size if it is too large. This frees up memory for other virtual machines.
- If the memory reservation of the virtual machine is set to a value much higher than its active memory, decrease the reservation setting so that the VMkernel can reclaim the idle memory for other virtual machines on the host.
- Migrate one or more virtual machines to a host in a DRS cluster.
- Add physical memory to the host.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.monitoring.doc%2FGUID-115861E6-810A-43BB-8CDB-EE99CF8F3250.html>

QUESTION 169

An administrator is concerned about possible vCPU over-commitment for an ESXi 6.x host.

Which two Performance Counters should be reviewed in the vSphere Web Client Performance Charts to confirm if there is contention on the host? (Choose two.)

- A. Wait
- B. Ready
- C. Core Utilization
- D. Co-Stop

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To check vCPU over commitment for an Esxi 6.0 host>>>>performance Tab>>>>Graph etc.

Ready - Amount of time the virtual machine was ready to run, waiting in a queue to be scheduled.

Co-Stop - Amount of time a SMP virtual machine was ready to run, but incurred delay due to co-vCPU scheduling contention.

These performance metrics can be reviewed using the Performance tab in the vSphere Client or using the esxtop or resxtop command-line utilities. Choose the most appropriate method for your environment. Make note of the four metrics displayed. Each is measured in milliseconds

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1017926

QUESTION 170

An administrator tries to run esxtop to troubleshoot CPU performance issues, but no output is displayed.

How can the issue be resolved?

- A. esxtop is deprecated in vSphere 6.x, resxtop must be used to produce the desired output.
- B. In esxtop, press f and place an asterisk next to each field that should be displayed.
- C. sudo should be run in front of esxtop to give the administrator the proper permissions.
- D. The esxtop command must be run from the /proc directory to produce output.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Press **F** (Field Order) to modify fields which you want to display. Then hit **Enter** to validate.

```
Current Field order: ABcdeFGHIJKlmnop
* A: DEVICE = Device Name
* B: ID = Path/World/Partition Id
C: NUM = Num of Objects
D: SHARES = Shares
E: BLKSZ = Block Size (bytes)
* F: QSTATS = Queue Stats
* G: IOSTATS = I/O Stats
* H: RESVSTATS = Reserve Stats
* I: LATSTATS/cmd = Overall Latency Stats (ms)
* J: LATSTATS/rd = Read Latency Stats (ms)
* K: LATSTATS/wr = Write Latency Stats (ms)
L: ERRSTATS/s = Error State
M: PAESTATS/s = PAE Stats
N: SPLITSTATS/s = SPLIT Stats
O: VAAISTATS- VAAI Stats
P: VAAILATSTATS/cmd = VAAI Latency Stats (ms)

Toggle fields with a-p, any other key to return:
```

Reference:

<http://www.vladan.fr/storage-performance-troubleshooting-with-esxtop-guide/>

QUESTION 171

Refer to the Exhibit.

6:43:19pm up 46 days 2:17, 502 worlds, 2 VMs, 8 vCPUs; CPU load average: 1.37, 1.35, 1.35
PCPU USED(%): 99 99 100 99 AVG: 99
PCPU UTIL(%): 99 99 99 99 AVG: 99

ID	GID	NAME	NWLD	%USED	%RUN	%SYS	%WAIT	%VMWAIT	%RDY	%IDLE	%OVRLP	%CSTP	%MLMTD	%SW
20672602	20672602	SlowVM	10	202.81	203.52	0.00	589.96	0.00	163.60	0.00	0.73	61.73	0.00	0
20673003	20673003	TestVM	10	199.49	200.02	0.00	599.95	0.07	164.35	0.00	0.66	54.68	0.00	0

An administrator is troubleshooting a CPU performance related problem for the SlowVM virtual machine.

Which three actions should the administrator take to improve CPU performance for SlowVM? (Choose three.)

- A. Increase the number of vCPUs assigned to SlowVM.
- B. Decrease the number of vCPUs assigned to SlowVM.
- C. Power off other VMs running on the same ESXi host.
- D. Increase the CPU limit for SlowVM.
- E. Move SlowVM to another ESXi host with more physical CPU resources available.

Correct Answer: BCE

Section: (none)

Explanation

Explanation/Reference:

Explanation:

CPU Performance Enhancement Advice

#

Resolution

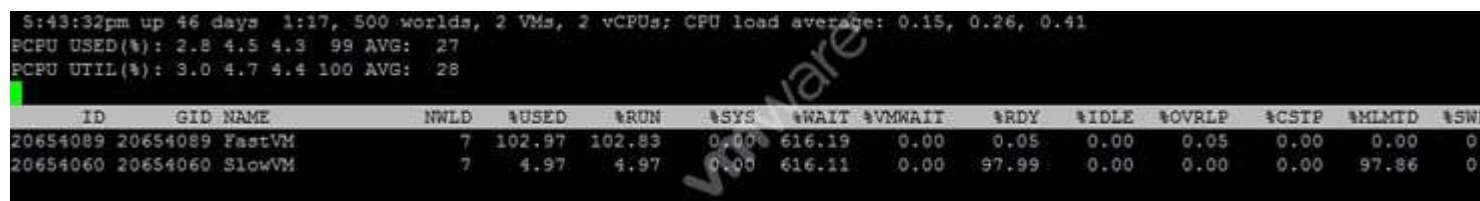
- 1 . Verify that VMware Tools is installed on every virtual machine on the host.
- 2 . Compare the CPU usage value of a virtual machine with the CPU usage of other virtual machines on the host or in the resource pool. The stacked bar chart on the host's **Virtual Machine** view shows the CPU usage for all virtual machines on the host.
- 3 . Determine whether the high ready time for the virtual machine resulted from its CPU usage time reaching the CPU limit setting. If so, increase the CPU limit on the virtual machine.
- 4 . Increase the CPU shares to give the virtual machine more opportunities to run. The total ready time on the host might remain at the same level if the host system is constrained by CPU. If the host ready time doesn't decrease, set the CPU reservations for high-priority virtual machines to guarantee that they receive the required CPU cycles.
- 5 . Increase the amount of memory allocated to the virtual machine. This decreases disk and or network activity for applications that cache. This might lower disk I/O and reduce the need for the ESX/ESXi host to virtualize the hardware. Virtual machines with smaller resource allocations generally accumulate more CPU ready time.
- 6 . Reduce the number of virtual CPUs on a virtual machine to only the number required to execute the workload. For example, a single-threaded application on a four-way virtual machine only benefits from a single vCPU. But the hypervisor's maintenance of the three idle vCPUs takes CPU cycles that could be used for other work.
- 7 . If the host is not already in a DRS cluster, add it to one. If the host is in a DRS cluster, increase the number of hosts and migrate one or more virtual machines onto the new host.
- 8 . Upgrade the physical CPUs or cores on the host if necessary.
- 9 . Use the newest version of ESX/ESXi, and enable CPU-saving features such as TCP Segmentation Offload, large memory pages, and jumbo frames.

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.dcadmin.doc_41/vsp_dc_admin_guide/performance_statistics/c_troubleshoot_cpu.html

QUESTION 172

Refer to the Exhibit.



```
5:43:32pm up 46 days 1:17, 500 worlds, 2 VMs, 2 vCPUs; CPU load average: 0.15, 0.26, 0.41
PCPU USED(%): 2.8 4.5 4.3 99 AVG: 27
PCPU UTIL(%): 3.0 4.7 4.4 100 AVG: 28
```

ID	GID	NAME	NWLD	%USED	%RUN	%SYS	%WAIT	%VMWAIT	%RDY	%IDLE	%OVRLP	%CSTP	%MLMTD	%SW
20654089	20654089	FastVM	7	102.97	102.83	0.00	616.19	0.00	0.05	0.00	0.05	0.00	0.00	0
20654060	20654060	SlowVM	7	4.97	4.97	0.00	616.11	0.00	97.99	0.00	0.00	0.00	97.86	0

Examine the esxtop command output shown in the Exhibit.

Which option would improve application performance for the SlowVM virtual machine?

- A. Increase the number of vCPUs provided to SlowVM.
- B. Decrease the number of vCPUs provided to SlowVM.
- C. Move SlowVM to another ESXi host with more physical CPU resources available.
- D. Increase the CPU limit assigned to SlowVM.

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Determine whether the high ready time for the virtual machine resulted from its CPU usage time reaching the CPU limit setting. If so, increase the CPU limit on the virtual machine.

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.dcadmin.doc_41/vsp_dc_admin_guide/performance_statistics/c_troubleshoot_cpu.html

QUESTION 173

An administrator notices that a Windows virtual machine is using 95% CPU in Task Manager.

Which two actions should be taken to resolve this issue? (Choose two.)

- A. Increase the memory reservation of the virtual machine.
- B. Increase the CPU Shares on the resource pool where the virtual machine resides.
- C. Decrease the CPU reservation of the virtual machine.
- D. Increase the CPU limit on the resource pool where the virtual machine resides.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Determine whether the high ready time for the virtual machine resulted from its CPU usage time reaching the CPU limit setting. If so, increase the CPU limit on the virtual machine.

Increase the CPU shares to give the virtual machine more opportunities to run. The total ready time on the host might remain at the same level if the host system is constrained by CPU. If the host ready time doesn't decrease, set the CPU reservations for high-priority virtual machines to guarantee that they receive the required CPU cycles.

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp?topic=/com.vmware.vsphere.dcadmin.doc_41/vsp_dc_admin_guide/performance_statistics/c_troubleshoot_cpu.html

QUESTION 174

An administrator wants to select a Host Power Management Policy for an ESXi 6.x host that will disable most hardware power management features.

Which Host Power Management Policy should be selected to meet this requirement?

- A. High Performance
- B. Balanced
- C. Low Power
- D. Disabled

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

High Performance

The VMkernel detects certain power management features, but will not use them unless the BIOS requests them for power capping or thermal events

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.resmgmt.doc%2FGUID-4D1A6F4A-8C99-47C1-A8E6-EF3865603F5B.html>

QUESTION 175

An administrator wants to monitor virtual machines on a host and send notifications when memory usage reaches 80%.

What should the administrator create in vCenter Server to accomplish this?

- A. A host alarm that will monitor virtual machine memory usage and set a trigger to email the notification.
- B. A vCenter Server alarm that will monitor virtual machine memory usage and set an action to email the notification.
- C. A host alarm that will monitor virtual machine memory usage and set an action to email the notification.
- D. A vCenter Server alarm that will monitor virtual machine memory usage and set a trigger to email the notification.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Alarm Actions

Alarm actions are operations that occur in response to triggered alarms. For example, email notifications are alarm actions.

Reference:

https://pubs.vmware.com/vsphere-4-esx-vcenter/index.jsp#com.vmware.vsphere.dcadmin.doc_41/vc_client_help/working_with_alarms/c_alarm_actions.html

QUESTION 176

What is the name of the High Availability agent log?

- A. fdm.log
- B. ha.log
- C. vpxa.log
- D. aam.log

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Logs from vCenter Server Components on ESXi 5.1 and 5.5

When an ESXi 5.1 / 5.5 host is managed by vCenter Server 5.1 and 5.5, two components are installed, each with its own logs:

- /var/log/vpxa.log: vCenter Server vpxa agent logs, including communication with vCenter Server and the Host Management hostd agent.
- /var/log/fdm.log: vSphere High Availability logs, produced by the fdm service. For more information, see the vSphere HA Security section of the [vSphere Availability Guide](#).

Reference:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2032076

QUESTION 177

An administrator is attempting to enable Legacy Fault Tolerance (FT) on a virtual machine and observes the following in the vSphere Web Client:

Fault Tolerance has not been licensed on host <hostname>.

What is the minimum licensed edition that supports this configuration?

- A. Standard
- B. Enterprise
- C. Enterprise Plus
- D. Essentials Plus

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Licensing

The number of vCPUs supported by a single fault tolerant VM is limited by the level of licensing that you have purchased for vSphere. Fault Tolerance is supported as follows:

- vSphere Standard and Enterprise. Allows up to 2 vCPUs
- vSphere Enterprise Plus. Allows up to 4 vCPUs

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.avail.doc%2FGUID-57929CF0-DA9B-407A-BF2E-E7B72708D825.html>

QUESTION 178

An administrator is attempting to enable Fault Tolerance on a virtual machine with 4 vCPUs and observes the following in the vSphere Web Client:

Fault Tolerance has not been licensed on host <hostname>.

What is the minimum licensed edition that supports this configuration?

- A. Enterprise
- B. Enterprise Plus
- C. Standard
- D. Essentials Plus

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Licensing

The number of vCPUs supported by a single fault tolerant VM is limited by the level of licensing that you have purchased for vSphere. Fault Tolerance is supported as follows:

- vSphere Standard and Enterprise. Allows up to 2 vCPUs
- vSphere Enterprise Plus. Allows up to 4 vCPUs

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.avail.doc%2FGUID-57929CF0-DA9B-407A-BF2E-E7B72708D825.html>

QUESTION 179

When attempting to place a datastore in Maintenance Mode, the task remains at 1%.

What are two potential causes for this? (Choose two.)

- A. Storage DRS is disabled on one or more virtual machine(s) disk(s).
- B. Storage DRS rules prevent migration recommendations for the disk.
- C. Storage DRS datastores have insufficient space to accommodate failover.
- D. Storage DRS provisioning network has been limited with I/O control policies.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Datastore Cannot Enter Maintenance Mode

You place a datastore in maintenance mode when you must take it out of usage to service it. A datastore enters or leaves maintenance mode only as a result of a user request.

Problem

A datastore in a datastore cluster cannot enter maintenance mode. The Entering Maintenance Mode status remains at 1%.

Cause

One or more disks on the datastore cannot be migrated with Storage vMotion. This condition can occur in the following instances.

- Storage DRS is disabled on the disk.
- Storage DRS rules prevent Storage DRS from making migration recommendations for the disk.

Solution

- If Storage DRS is disabled, enable it or determine why it is disabled. See [Storage DRS is Disabled on a Virtual Disk](#) for reasons why Storage DRS might be disabled.
- If Storage DRS rules are preventing Storage DRS from making migration recommendations, you can remove or disable particular rules.
 - a. In the vSphere Client inventory, right-click the datastore cluster and select **Edit Settings**.
 - b. Select **Rules** and click the rule.
 - c. Click **Remove**.
 - d. Click **OK**.
- Alternatively, if Storage DRS rules are preventing Storage DRS from making migration recommendations, you can set the Storage DRS advanced option IgnoreAffinityRulesForMaintenance to 1.
 - a. In the vSphere Client inventory, right-click the datastore cluster and select **Edit Settings**.
 - b. Select **SDRS Automation** and click **Advanced Options**.
 - c. Enter 1 in the Value column for IgnoreAffinityRulesForMaintenance.
 - d. Click **OK**.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-91D4FBBC-0677-44DA-B0F2-43A3504F8CA0.html>

QUESTION 180

What are two likely causes for a DRS cluster to become unbalanced? (Choose two.)

- A. Migration threshold is too low.
- B. Affinity rules are preventing virtual machines from being moved.
- C. A device is mounted to a virtual machine preventing vMotion.
- D. Migration cost is too low.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Load Imbalance on Cluster

A cluster has a load imbalance of resources.

Problem

A cluster might become unbalanced because of uneven resource demands from virtual machines and unequal capacities of hosts.

Cause

The following are possible reasons why the cluster has a load imbalance:

- The migration threshold is too high.
- A higher threshold makes the cluster a more likely candidate for load imbalance.
- VM/VM or VM/Host DRS rules prevent virtual machines from being moved.
- DRS is disabled for one or more virtual machines.
- A device is mounted to one or more virtual machines preventing DRS from moving the virtual machine in order to balance the load.
- Virtual machines are not compatible with the hosts to which DRS would move them. That is, at least one of the hosts in the cluster is incompatible for the virtual machines that would be migrated. For example, if host A's CPU is not vMotion-compatible with host B's CPU, then host A becomes incompatible for powered-on virtual machines running on host B.
- It would be more detrimental for the virtual machine's performance to move it than for it to run where it is currently located. This may occur when loads are unstable or the migration cost is high compared to the benefit gained from moving the virtual machine.
- vMotion is not enabled or set up for the hosts in the cluster.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.troubleshooting.doc%2FGUID-0C132C85-E7BF-445E-925D-31420A06B01C.html>

QUESTION 181

Which two scenarios would cause a Fault Tolerance-enabled virtual machine to fail to power the Secondary virtual machine? (Choose two.)

- A. The host has entered a Network Partitioned state.
- B. vSphere High Availability (HA) is disabled on the host cluster.
- C. Enhanced vMotion Compatibility (EVC) is enabled on the host cluster.
- D. vSphere Distributed Power Management (DPM) is enabled on the host cluster.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

A-) This issue occurs when the SSL certificate thumbprint presented to the master host is not what the master host is expecting. This is indicated by the thumbprint mismatch error in the fdm.log file of the master

host https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2012649

In general terms, a second virtual machine is created to work in tandem with the virtual machine on which you have enabled Fault Tolerance. This virtual machine resides on a different host in the cluster and runs in virtual lockstep with the primary virtual machine. When a failure is detected, the second virtual machine takes the place of the first one with the least possible interruption of service. More specific information about how this is achieved can be found in the [Protecting Mission-Critical Workloads with VMware Fault Tolerance](#) whitepaper.

B-) You may need to complete this process for multiple clusters. VMware HA can be disabled only if there are no virtual machines with VMware Fault Tolerance (FT) enabled. If there are virtual machines with VMware FT enabled in the cluster you are disabling, turn off VMware FT before disabling VMware HA. The process of turning off VMware FT is described in [Disabling or Turning Off VMware FT \(1008026\)](#).

Note: Virtual Machine Monitoring will also be disabled when HA is disabled.

QUESTION 182

Refer to the Exhibit.



An administrator is reviewing a vSphere Distributed Resource Scheduler (DRS) enabled Cluster and observes unexpected behavior as shown in the Exhibit.

What are three potential causes of the cluster imbalance? (Choose three.)

- A. A local device is mounted to one or more virtual machines.
- B. DRS rules prevent virtual machines from being moved.
- C. vMotion is not configured and enabled.
- D. There are insufficient cluster resources to perform the migration.
- E. DRS has been configured for a conservative migration threshold.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: A-)

A device is mounted to one or more virtual machines preventing DRS from moving the virtual machine in order to balance the load.

B-) The migration threshold is too high.

A higher threshold makes the cluster a more likely candidate for load imbalance.

VM/VM or VM/Host DRS rules prevent virtual machines from being moved.

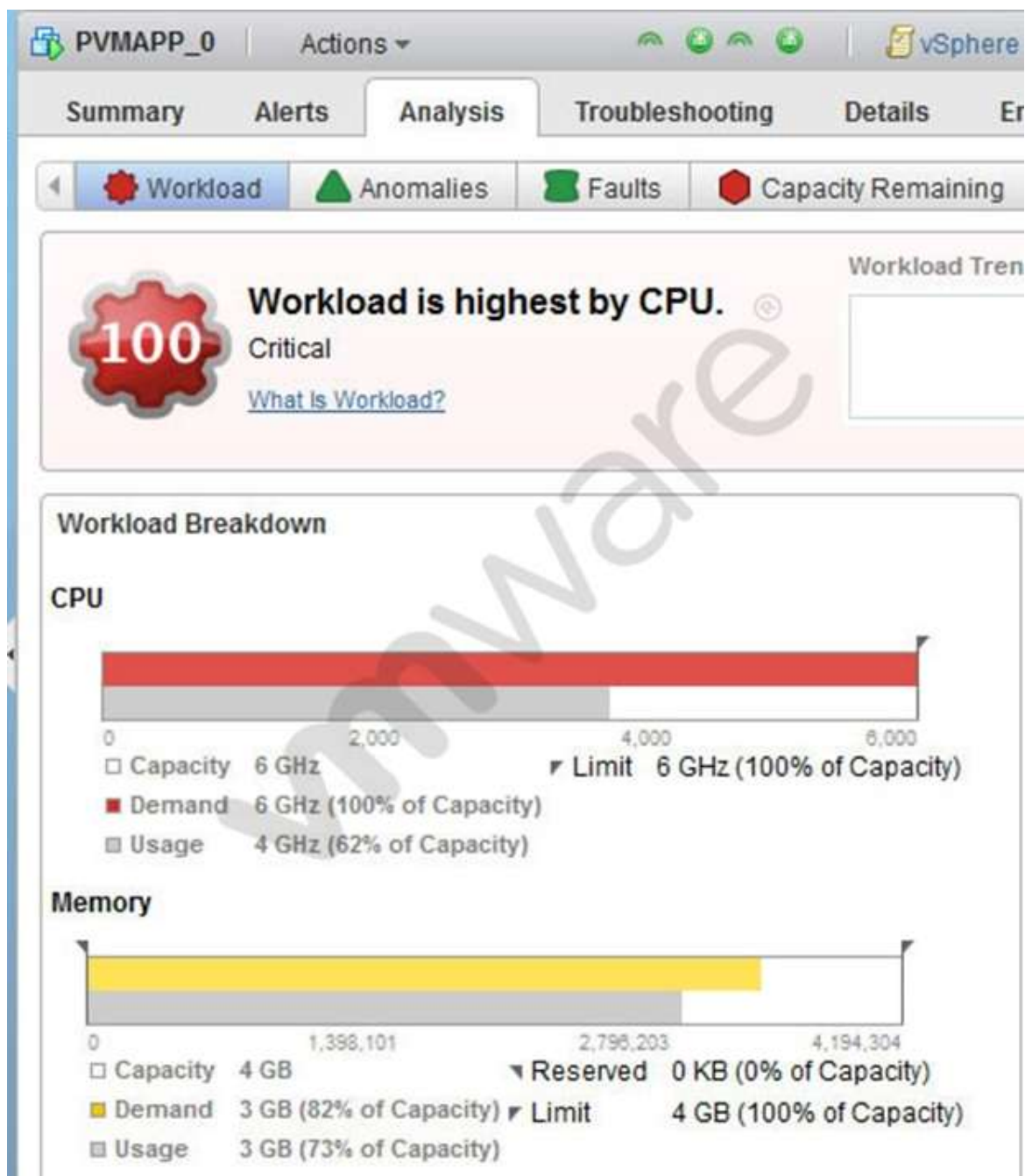
C-) It would be more detrimental for the virtual machine's performance to move it than for it to run where it is currently located. This may occur when loads are unstable or the migration cost is high compared to the benefit gained from moving the virtual machine.

Observe that vMotion is not enabled or set up for the hosts in the cluster, **DRS** does not move any **virtual machines** from a host. ... from this host would violate a **VM/VM DRS** rule or **VM/Host DRS** rule.

<https://pubs.vmware.com/>

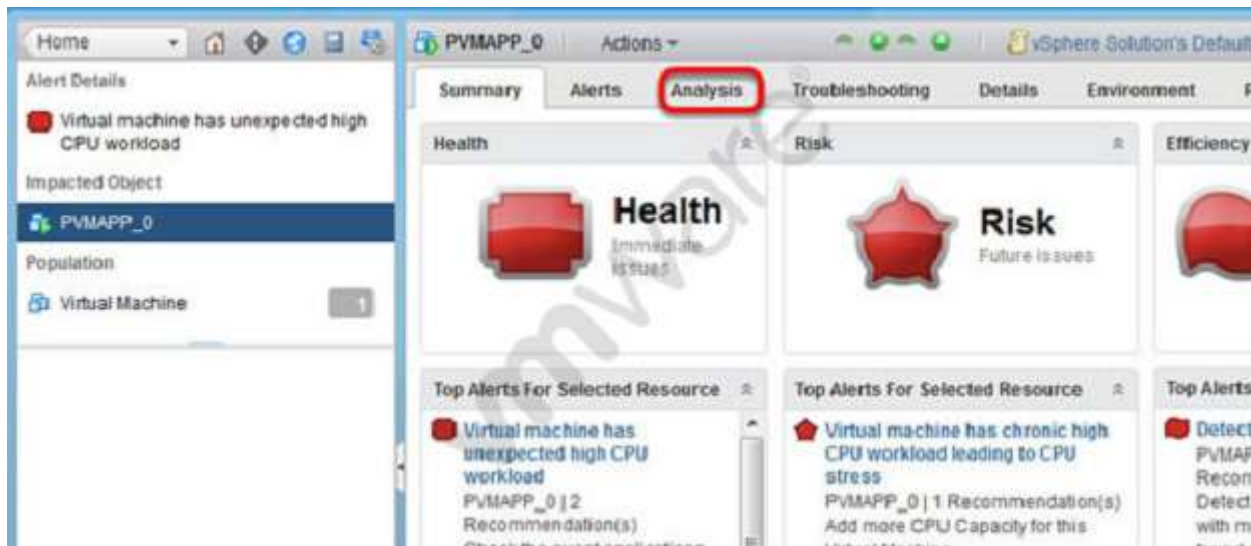
QUESTION 183

Refer to the Exhibit.



An administrator receives vRealize Operations alerts for the Health of the virtual machine PVMAPP_0 as shown in Exhibit 1:

The administrator clicks on the Analysis pane, as shown in Exhibit 2:



Based on the exhibits, what action would correctly address the performance problems observed?

- A. Increase the number of vCPUs for PVMAPP_0.
- B. Increase the allocation of memory for PVMAPP_0.
- C. Increase the Memory limit for PVMAPP_0.
- D. Increase the reservation in MHz for vCPUs for PVMAPP_0.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The default Hardware Version of the vRealize Operations Manager virtual machine is 7, limiting the maximum vCPUs selection to 8. You can upgrade the Hardware Version of the Analytics machine to increase the vCPU limit.

Theoretically, the performance of PVM should be similar or better than HVM. But, this trend tends to break when the vCPU count increases from 20 vCPUS. This problem is counter intuitive and is only observed in case of vCPUs being greater than 20 physical cores. We classify this problem as **sleepy lock anomaly**, which occurs due to the usage of paravirtual interface in the ticket spinlock implementation that has been introduced to solve the [Lock Holder Preemption problem](#) without the architectural support (i.e. [Pause Loop Exiting](#)).

Take steps to analyze the scalability behavior of VMs with high core count (till 80 core). Our preliminary study suggests that besides cache contention bottleneck, the usage of ticket spinlock is another culprit for the degradation. We will take a step further and will try to analyze the scalability characteristics of these monster VMs by running other benchsuitses from Mosbench.

<https://www.vmware.com/support/pubs/vrealize-automation-pubs.htm>

QUESTION 184

Which two identification sources can a vSphere Auto Deploy rule use to identify target hosts? (Choose two.)

- A. Processor Serial Number
- B. Security Identifier
- C. SMBIOS information
- D. BIOS UUID

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation: You specify the behavior of the Auto Deploy server by using a set of rules written in Power CLI. The Auto Deploy rule engine checks the rule set for matching host patterns to decide which items (image profile, host profile, or vCenter Server location) to provision each host with.

The rule engine maps software and configuration settings to hosts based on the attributes of the host. For example, you can deploy image profiles or host profiles to two clusters of hosts by writing two rules, each matching on the network address of one cluster.

The rule engine includes rules and rule sets.

Rules

Rules can assign image profiles and host profiles to a set of hosts, or specify the location (folder or cluster) of a host on the target vCenter Server system. A rule can identify target hosts by boot MAC address, SMBIOS information, BIOS UUID, Vendor, Model, or fixed DHCP IP address. In most cases, rules apply to multiple hosts. You create rules by using Auto Deploy PowerCLI cmdlets. After you create a rule, you must add it to a rule set. Only two rule sets, the active rule set and the working rule set, are supported. A rule can belong to both sets, the default, or only to the working rule set. After you add a rule to a rule set, you can no longer change the rule. Instead, you copy the rule and replace either items or patterns. By default, Auto Deploy uses the name of the rule for the copy and hides the original rule.

Reference:

https://pubs.vmware.com/vsphere50/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc_50%2FGUID-EB22DCFF-C606-43CB-A7BC-068AC79A6237.html

QUESTION 185

An administrator has decided to create 10 ESXi 6.x hosts via Auto Deploy for a new Test/Dev cluster. The hosts are configured to obtain their networking configuration via DHCP.

Which Direct Console User Interface option should the administrator use to renew the DHCP lease for the hosts?

- A. Restore Network Settings
- B. Test Management Network
- C. Restart Management Network
- D. Network Restore Options

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Restart the Management Network**

Restarting the management network interface might be required to restore networking or to renew a DHCP lease.

Restarting the management network will result in a brief network outage that might temporarily affect running virtual machines.

If a renewed DHCP lease results in a new network identity (IP address or host name), remote management software will be disconnected.

Procedure

- 1 . From the direct console, select **Restart Management Network** and press Enter.
- 2 . Press F11 to confirm the restart.

Reference: https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc_50%2FGUID-E46F9F62-D1BB-4485-815D-08DBAE320CC3.html

QUESTION 186

An administrator is deploying ESXi 6.x hosts using Auto Deploy and wants the image profile to be available, even after closing and opening a new PowerCLI window.

Which command can be used to ensure that image profiles are preserved across PowerCLI sessions?

- A. Set-EsxImageProfile
- B. Export-EsxImageProfile
- C. Save-EsxImageProfile
- D. Preserve-EsxImageProfile

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Detailed Description**

Exports an Image Profile object as either an ESXi ISO image that can be booted up and used as an ESXi installer, or an offline depot ZIP file that contains metadata plus the VIB packages. In both cases, downloads the VIB binaries and validates the VIB signatures.

You can perform the following tasks with the offline depot ZIP file:

- *Import the ZIP into VMware Update Manager for patch remediation
- *Download the ZIP to an ESXi host and used with esxcli for installation
- *Re-import the ZIP into ImageBuilder itself using Add-EsxSoftwareDepot

You can specify either -ExportToIso or -ExportToBundle but not both.

NAME	TYPE	DESCRIPTION	REQUIRED?	PIPELINE INPUT
ImageProfile	ImageProfile	(pipeline input, prompt) Specifies the image profile to export. Takes one of the following forms: *Name of an image profile, as displayed in the Name column of Get-EsxImageProfile, or the Name property of any ImageProfile object *ImageProfile object	True	true (ByValue, ByPropertyName)

Reference: <https://www.vmware.com/support/developer/PowerCLI/PowerCLI501/html/Export-EsxImageProfile.html>

QUESTION 187

Which two are valid compliance results that indicate the need to apply a Host Profile? (Choose two.)

- A. Non-compliant
- B. Inconsistent
- C. Unknown
- D. Disconnected

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation: Check Compliance You can confirm the compliance of a host or cluster to its attached Host Profile and determine which, if any, configuration parameters on a host are different from those specified in the Host Profile.

Procedure

1 Navigate to a Host Profile. The Objects tab lists all Host Profiles, the number of hosts attached to that Host Profile, and summarized results of the last compliance check.

2 Click the Check Host Profile Compliance icon ().

In the Objects tab, the compliance status is updated as Compliant, Unknown, or Non-compliant. A non-compliant status indicates a discovered and specific inconsistency between the profile and the host. To resolve this, you should remediate the host. And unknown status indicates that the compliance of the host could not be verified; to resolve the issue, remediate the host through the Host Profile.

Reference: <https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-host-profiles-guide.pdf>

QUESTION 188

An administrator is using Auto Deploy to create several ESXi 6.x hosts that will be connected to a vSphere Distributed Switch. After the hosts are deployed, the administrator notices that LACP packets are not being sent between them.

Which statement best describes why this issue is occurring?

- A. LACP is not enabled on the vCenter Server.
- B. The LACP support settings do not exist in the host profile.
- C. The LACP installation bundle is not included in the image profile.
- D. LACP has not been configured on the Auto Deploy server.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation: **LACP Limitations on a vSphere Distributed Switch**

Link Aggregation Control Protocol (LACP) on a vSphere distributed switch allows network devices to negotiate automatic bundling of links by sending LACP packets to a peer. However, there are some limitations when using LACP with a vSphere distributed switch.

- LACP only works with IP Hash load balancing and Link Status Network failover detection.
- LACP is not compatible with iSCSI software multipathing.
- vSphere only supports one LACP group per distributed switch, and only one LACP group per host.
- LACP settings do not exist in host profiles.
- LACP between two nested ESXi hosts is not possible.
- LACP does not work with port mirroring.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-3FDE1E96-9217-4FE6-8B76-6E3A64766828.html>

QUESTION 189

An administrator plans to use VMware Converter Standalone to convert a virtual machine to a vSphere environment. The source virtual machine has these properties:

- Running Windows 2008 R2
- Contains one NTFS formatted volume

During conversion, how many virtual disks can the administrator add to the destination virtual machine?

- A. 0

- B. 1
- C. 2
- D. 3

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

After adding virtual disk on Windows 2008 and Windows 2008 R2, you cannot make disk online
Windows 2008 and Windows 2008 R2 virtual machine is configured with Virtual Hardware version 7

You see this error within Windows under Disk Management:

The disk is offline because of policy set by an administrator so the virtual disk will show 0.

Make disk online how follow the KB: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2000767

QUESTION 190

An administrator needs to migrate a legacy physical application server to a virtual machine within a vSphere 6 cluster. As part of the conversion, the administrator must reduce the size of the virtual disks.

What action should the administrator take to create a virtual machine with smaller virtual disks than the original physical server?

- A. Shut down the physical server and use VMware Converter cold cloning with volume-based cloning at the disk level.
- B. Use VMware Converter hot cloning with volume-based cloning at the block level.
- C. Shut down the physical server and use VMware Converter cold cloning with volume-based cloning at the file level.
- D. Use VMware Converter hot cloning with volume-based cloning at the file level.

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

Explanation: When reducing the disk volume size, the cloning operation switches from a Block level clone to a File level clone operation, meaning each individual file on the filesystem is copied over to the virtual machines hard drive rather than a block by block image of the drive.

This can cause issues if the filesystem on the source machine is not in good health (for example, if it is severely fragmented, the physical drive has unrecorded bad sectors, or system files are damaged or missing in the index tables of the NTFS file system).

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1014872

QUESTION 191

An administrator needs to recover disk space on a previously-used thin provisioned virtual disk. The volumes where the administrator needs to recover the disk blocks are on VAAI-compliant storage arrays.

Which two actions should the administrator take accomplish this task? (Choose two.)

- A. Perform a Storage vMotion to another volume in order to force free space recovery to occur. This recreates the volume in a new location and recovers all unused space.
- B. Use VMware Converter to migrate the virtual machine to a new datastore. This will recreate the volumes and recover all unused space.

- C. Issue the vmkfstools -vmfs unmap command within the VMFS volume directory on the ESXi host console.
- D. Execute the esxcli storage vmfs unmap command.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To reclaim unused storage blocks on a VMFS datastore for a thin-provisioned device, run this command:

esxcli storage vmfs unmap --volume-label=*volume_label*|--volume-uuid=*volume_uuid* --reclaim-unit=*number*

The command takes these options:

- -l|--volume-label=*volume_label*
- The label of the VMFS volume to UNMAP. This is a mandatory argument. If you specify this argument, do not use -u|--volume-uuid=*volume_uuid*.
- -u|--volume-uuid=*volume_uuid*

The UUID of the VMFS volume to UNMAP. This is a mandatory argument. If you specify this argument, do not use -l|--volume-label=*volume_label*.

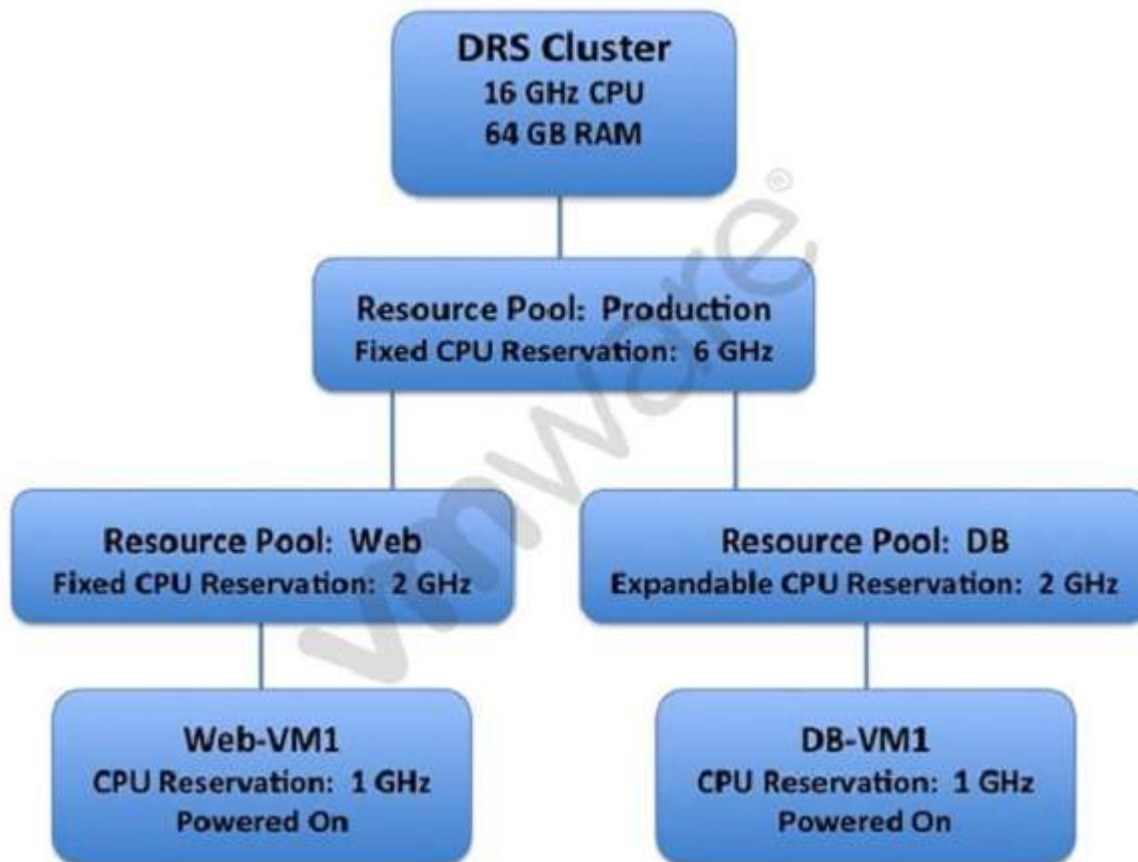
- -n|--reclaim-unit=*number*

The number of VMFS blocks to UNMAP per iteration. This is an optional argument. If it is not specified, the command uses a default value of 200.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2057513

QUESTION 192

Refer to the Exhibit.



A vSphere 6.x DRS cluster is configured as shown in the Exhibit.

Based on the exhibit, which statement is true?

- A. A virtual machine can be powered on in the Web Resource Pool with a 3 GHz CPU Reservation.
- B. A virtual machine can be powered on in the Web Resource Pool with a 4 GHz CPU Reservation.
- C. A virtual machine can be powered on in the DB Resource Pool with a 3 GHz CPU Reservation.
- D. A virtual machine can be powered on in the DB Resource Pool with a 4 GHz CPU Reservation.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Scaling out (not up) your VMs ie: Don't have one 8 vCPU SQL DB server, use 4 smaller 2vCPU VMs
If there is resource contention, RP-QA receives 4GHz and 2GB of memory, and RP-Marketing 2GHz and 1GB.
Otherwise, they can receive more than this allotment. Those resources are then available to the virtual machines in the respective resource pools.

So now you know better than to use reservations to solve CPU contention.

<https://pubs.vmware.com/vsphere-6.0>

QUESTION 193

An administrator wants to set a non-default isolation address of 192.168.1.2 for High Availability.

Which advanced setting would accomplish this task?

- A. Das.isolationaddress0=192.168.1.2

- B. Das.useisolationaddress0=192.168.1.2
- C. Das.defaultisolationaddress0=192.168.1.2
- D. Das.haisolationaddress0=192.168.1.2

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: Details

In VirtualCenter Server 2.0.2 and above, you can specify more than one isolation response address for VMware High Availability (HA). The use of multiple isolation response addresses offers VMware HA a potentially more accurate picture of the network connectivity of a host. There may be situations in which a single isolation address would indicate that a host is in a state of complete isolation from the network, but access to additional isolation addresses would show that only a partial network failure has occurred.

Solution

Multiple isolation response addresses can be specified using the das.isolationaddress0 through das.isolationaddress9 options.

To specify the values for these options in Virtual Infrastructure Client:

1. Select the HA cluster.
2. On the **Summary** tab, click **Edit Settings**.
3. In the Settings dialog, select **VMware HA**.
4. Click **Advanced Options**.
5. In the Advanced Options (HA) dialog, enter the option name and the corresponding value:

- Option: das.isolationaddress0
- Value: A valid IP address other than the default gateway address

Similarly, you can set more isolation response addresses using das.isolationaddress1 through das.isolationaddress9.

6. In the Advanced Options (HA) dialog box, set this option:

- Option: das.usedefaultisolationaddress
- Value: false

Notes:

- You must set this option if you are setting multiple isolation response addresses.
 - Additionally you should configure das.usedefaultisolationaddress to false when the default gateway is a device which cannot be pinged.
7. Click **OK**.
 8. Click **OK**.
 9. Edit settings for the cluster again.
 10. Disable HA and click **OK**.
 11. Edit settings again.
 12. Enable HA and click **OK**.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1002117

QUESTION 194

How does vSphere High Availability calculate the memory slot size of a virtual machine?

- A. Virtual machine memory reservation + overhead of largest virtual machine
- B. Virtual machine memory reservation - overhead of largest virtual machine
- C. Virtual machine memory reservation + overhead of smallest virtual machine
- D. Virtual machine memory reservation - overhead of smallest virtual machine

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Virtual machine memory reservation + overhead of largest virtual machine

Metrics Example: Suppose if :

- Memory (2048MB)
- Memory Overhead (110.63MB)

The first one, Memory, is an easy one. This is the amount of memory you provisioned your VM with, in this case 2048MB. The second field is Memory Overhead. Memory Overhead is the amount of memory the VMkernel thinks it will need to run the virtualized workload, in this case 110.63MB. This typically would include things like page tables, frame buffers etc.

<https://www.vmware.com/files/pdf/.../VMware-PerfBest-Practices-vSphere6-0.pdf>

QUESTION 195

Refer to the Exhibit.

The number of vSphere HA heartbeat datastores for this host is 1, which is less than required: 2

An administrator receives the error message shown in the Exhibit.

Which two actions can be taken to clear the warning? (Choose two.)

- A. Add a Virtual SAN datastore and configure it for High Availability heartbeating.
- B. Set the advanced High Availability parameter Das.heartbeatdsperhost to 1.
- C. Set the advanced High Availability parameter Das.ignoreInsufficientHbDatastore to true.
- D. Add a shared datastore and reconfigure High Availability.

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To disable the HA error message:

7. Log in to vCenter Server.
8. Right-click the cluster and click **Edit Settings**.
9. Click **vSphere HA > Advanced Options**.
10. Under Option, add an entry for das.ignoreInsufficientHbDatastore.
11. Under Value, type true.
12. Click **Cluster Features**.
13. De-select **Turn on vSphere HA** and click **OK**.
14. Wait for all the hosts in the cluster to deconfigure HA, then right-click the cluster and click **Edit Settings**.
15. Click **Cluster Features**.
16. Click **Turn on vSphere HA**.
17. Click **OK**.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2004739

QUESTION 196

In a vSphere High Availability cluster, what is the VM Monitoring I/O stats interval default value?

- A. 60 seconds
- B. 90 seconds
- C. 120 seconds
- D. 180 seconds

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation: The I/O stats interval determines if any disk or network activity has occurred for the virtual machine during the previous two minutes (120 seconds). If not, the virtual machine is reset. This default value (120 seconds) can be changed using the advanced attribute das.iostatsinterval.

Reference: https://pubs.vmware.com/vsphere-50/index.jsp?topic=%2Fcom.vmware.vsphere.avail.doc_50%2FGUID-62B80D7A-C764-40CB-AE59-752DA6AD78E7.html

QUESTION 197

An administrator enables High Availability (HA) on a Virtual SAN cluster.

There are four vmkernel port groups with the following IP addresses assigned:

- Management: 192.168.12.10
- vMotion: 192.168.13.10
- Virtual SAN: 192.168.14.10
- Fault Tolerance: 192.168.15.10

Which IP address will HA use for traffic?

- A. 192.168.12.10
- B. 192.168.13.10
- C. 192.168.14.10
- D. 192.168.15.10

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Give the VMkernel port a label (e.g. iSCSI - if it will purely be used for iSCSI).

Enter the VLAN ID if the pNICs connected to the vSwitch are trunk ports and you have a specific VLAN for this traffic (e.g. a dedicated storage VLAN).

Now if the port will only be used for storage services (iSCSI and NFS),

If the port will be used for all VMkernel services (iSCSI, NFS, vMotion and FT), tick the additional boxes to allow this port to be used also for those services,

Assigned the FT (IP Address)

Clustering is configured to give you, the administrator of an environment, a form of fault tolerance, and VMware has taken this concept to a whole other level. Although VMware does not call FT clustering, it functions the same in that FT will failover the primary virtual machine to a secondary virtual machine. VMware Fault Tolerance (FT) is based on vLockstep technology and provides zero downtime, zero data loss, and continuous availability for your applications.

Next,

- Always assign a reasonably high relative share for the Fault Tolerance resource pool because FT is a very latency-sensitive traffic type.

QUESTION 198

An administrator wants to configure a High Availability cluster to allow virtual machines a 10 minute window to

shut down in the event of a Host Isolation incident.

What two configuration settings would satisfy this requirement? (Choose two.)

- A. Set the advanced option das.isolationshutdowntimeout = 10.
- B. Set the advanced option das.isolationshutdowntimeout = 600.
- C. Configure Host Isolation Response to Shut Down and Restart VMs.
- D. Configure Host Isolation Response to Power Off and Restart VMs.

Correct Answer: BC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

das.isolationShutdownTimeout

The number of seconds an FDM waits for a virtual machine to power off after initiating a guest shutdown before the FDM issues a power off. If the option is unset, 300s is used.

Reference: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2033250

QUESTION 199

A vSphere 6 High Availability cluster has been configured with default settings. Four virtual machines in the cluster have been configured with these priorities:

- Prod-DB. High
- Prod-Email: High
- Prod-VC. Medium
- Dev-VDI: Low

How many VM Overrides would need to be defined at the cluster level to meet the restart priorities?

- A. 1
- B. 2
- C. 3
- D. 4

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

After you create a vSphere HA cluster, you can override the default cluster settings for Restart Priority and Isolation Response for specific virtual machines. Such overrides are useful for virtual machines that are used for special tasks. For example, virtual machines that provide infrastructure services like DNS or DHCP might need to be powered on before other virtual machines in the cluster.

VM Overrides the default or defined to meet the restart priorities : 2 are HIGH and medium, low respectively hence its 2 overrides at cluster level.

<https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-availability-guide.pdf>

QUESTION 200

Which two settings are required for Virtual Machine Component Protection (VMCP) to protect from All Paths Down (APD) and Permanent Device Loss (PDL)? (Choose two.)

- A. Host Monitoring

- B. VM Restart Priority
- C. Virtual machine Monitoring
- D. Response for Host Isolation

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: If either the Host Monitoring or VM Restart Priority settings are disabled, VMCP cannot perform virtual machine restarts. Storage health can still be monitored and events can be issued,

Reference:

<https://pubs.vmware.com/vsphere60/index.jsp?topic=%2Fcom.vmware.vsphere.avail.doc%2FGUID-F01F7EB8-FF9D-45E2-A093-5F56A788D027.html>

QUESTION 201

Which two options are available in the Virtual Machine Component Protection (VMCP) setting Response for Datastore with All Paths Down (APD)? (Choose two.)

- A. Issue Events
- B. Power off and restart virtual machines
- C. Reset virtual machines
- D. Leave Powered On

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

PDL failures

A virtual machine is automatically failed over to a new host unless you have configured VMCP only to **Issue events**.

APD events

The response to APD events is more complex and accordingly the configuration is more fine-grained. After the user-configured **Delay for VM failover for APD** period has elapsed, the action taken depends on the policy you selected. An event will be issued and the virtual machine is restarted conservatively or aggressively. The conservative approach does not terminate the virtual machine if the success of the failover is unknown, for example in a network partition. The aggressive approach does terminate the virtual machine under these conditions. Neither approach terminates the virtual machine if there are insufficient resources in the cluster for the failover to succeed.

If APD recovers before the user-configured **Delay for VM failover for APD** period has elapsed, you can choose to reset the affected virtual machines, which recovers the guest applications that were impacted by the IO failures.

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.avail.doc%2FGUID-F01F7EB8-FF9D-45E2-A093-5F56A788D027.html>

QUESTION 202

Which two statements regarding Distributed Resource Scheduler (DRS) affinity rules are true? (Choose two.)

- A. When two VM-VM affinity rules conflict, the older one takes precedence and the newer rule is disabled.
- B. Using Specify Failover Hosts admission control policy, VM-VM affinity rules are not supported.
- C. DRS gives higher precedence to preventing violations of anti-affinity rules than violations of affinity rules.
- D. It is not possible to create an affinity rule that conflicts with the other rules being used.

Correct Answer: AC

Section: (none)

Explanation

Explanation/Reference:

Explanation: **VM-VM Affinity Rule Conflicts**

You can create and use multiple VM-VM affinity rules, however, this might lead to situations where the rules conflict with one another.

If two VM-VM affinity rules are in conflict, you cannot enable both. For example, if one rule keeps two virtual machines together and another rule keeps the same two virtual machines apart, you cannot enable both rules. Select one of the rules to apply and disable or remove the conflicting rule.

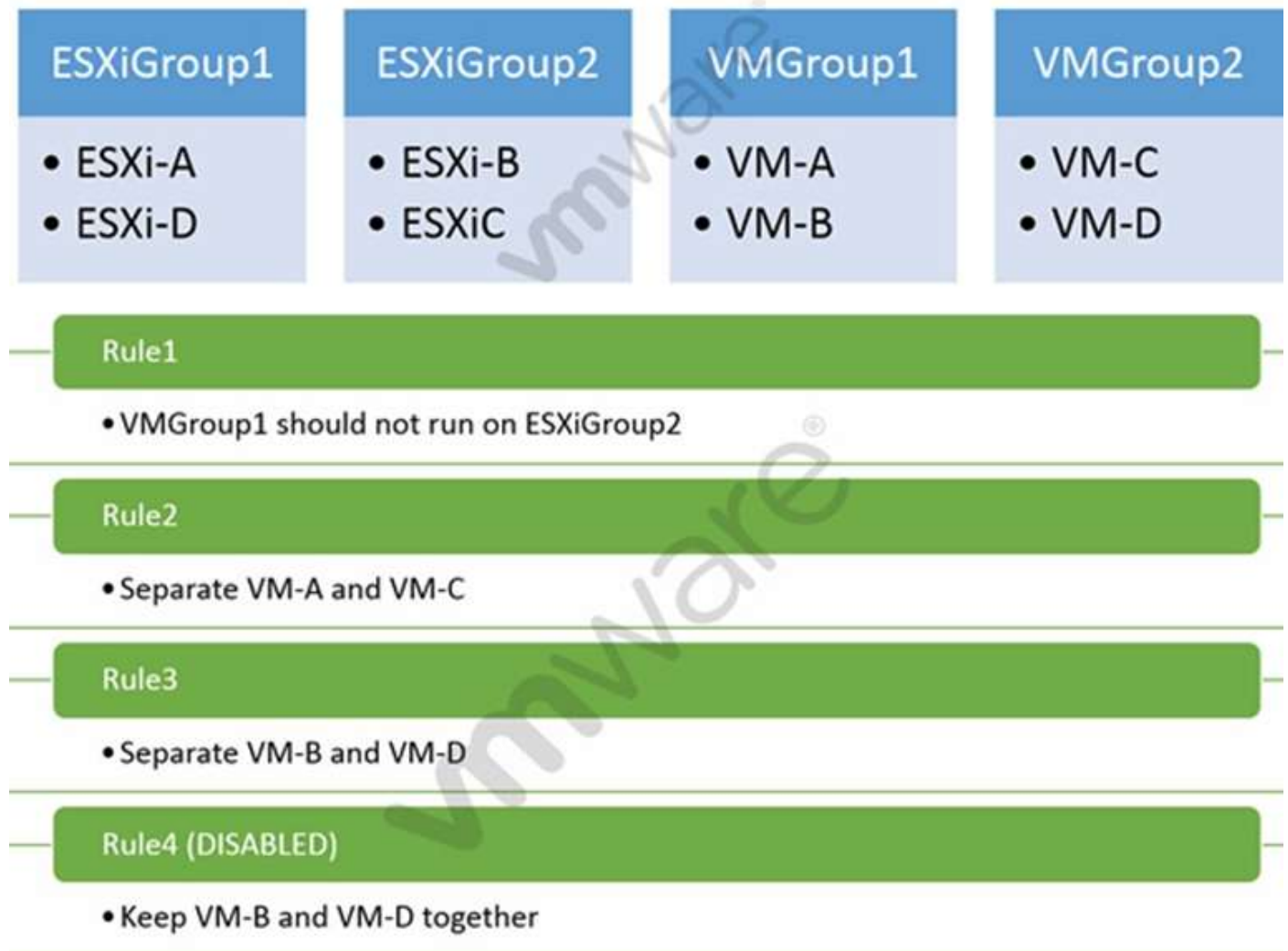
When two VM-VM affinity rules conflict, the older one takes precedence and the newer rule is disabled. DRS only tries to satisfy enabled rules and disabled rules are ignored. DRS gives higher precedence to preventing violations of anti-affinity rules than violations of affinity rules.

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp#com.vmware.vsphere.resmgmt.doc/GUID-69C738B6-5FC8-4189-9CB5-DD90A5A05979.html>

QUESTION 203

Refer to the Exhibit.



An administrator has configured Distributed Resource Scheduler (DRS) groups and Affinity Rules as shown in the Exhibit.

Based on the exhibit, which two statements are true? (Choose two.)

- A. If ESXi-A and ESXi-D failed, VM-A and VM-B would not failover.
- B. A new conflicting affinity rule will be disabled by default.
- C. VM-B and VM-D can run on the same hosts.
- D. The administrator must disable Rule3 in order to enable Rule4.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation : B-) NOTE If you use the Specify Failover Hosts admission control policy and designate multiple failover hosts, DRS does not attempt to enforce VM-VM affinity rules for virtual machines that are running on failover hosts.

D-) vSphere HA and DRS Affinity Rules If you create a DRS affinity rule for your cluster, you can specify how vSphere HA applies that rule during a virtual machine failover. The two types of rules for which you can specify vSphere HA failover behavior are the following: n VM anti-affinity rules force specified virtual machines to remain apart during failover actions. n VM-Host affinity rules place specified virtual machines on a particular host or a member of a defined group of hosts during failover actions. When you edit a DRS affinity rule, select the checkbox or checkboxes that enforce the desired failover behavior for vSphere HA. n HA must respect VM anti-affinity rules during failover -- if VMs with this rule would be placed together, the failover is aborted.

<https://pubs.vmware.com/vsphere-60/topic/com.vmware.ICbase/PDF/vsphere-esxi-vcenter-server-60-availability-guide.pdf>

QUESTION 204

An administrator wants to prevent a priority virtual machine that resides in a vSphere DRS cluster from migrating to other hosts in the cluster.

What configuration step will accomplish this without affecting other virtual machines?

- A. Set VM Overrides to Partially Automated.
- B. Set VM Overrides to Manual.
- C. Configure a VM/Host Rule with the setting Must run on hosts in group.
- D. Configure a VM/Host Rule with the setting Should run on hosts in group.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Option / Description

Manual

Placement and migration recommendations are displayed, but do not run until you manually apply the recommendation.

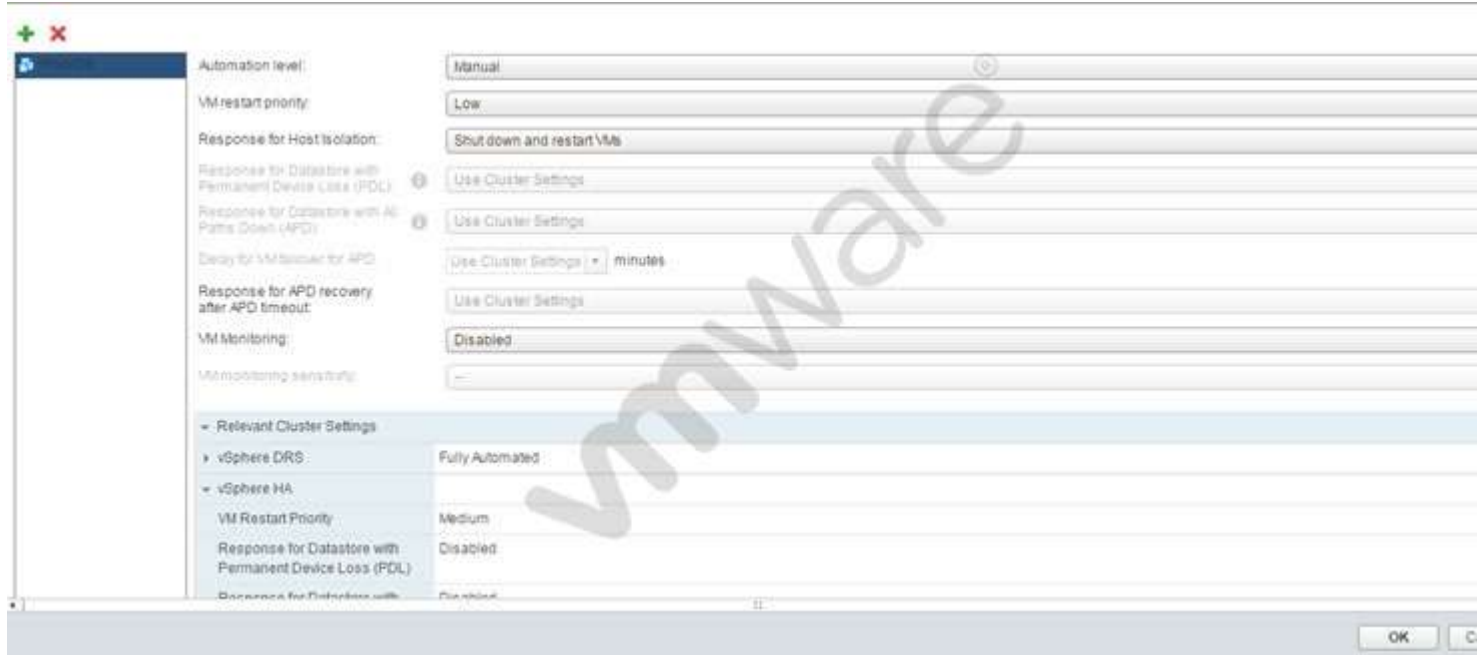
Manual

Placement and migration recommendations are displayed, but do not run until you manually apply the recommendation.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.resmgmt.doc%2FGUID-E83A6B62-37F8-46D0-8D0A->

QUESTION 205

Refer to the Exhibit.



The Prod-DB virtual machine has a VM Override as shown in the Exhibit.

What step, if taken, would require all virtual machines in the cluster to migrate automatically?

- A. Deselect the virtual machine from VM Overrides.
- B. Add all virtual machines to the VM Overrides.
- C. Change Response for Host Isolation to Use Cluster Settings.
- D. Change the Automation level to Use Cluster Settings.

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

QUESTION 206

Refer to the Exhibit.



An administrator reviews the Health of a virtual machine, as shown in the Exhibit.

Based on the exhibit, which three metrics can be used to determine the virtual machine's Workload characteristics? (Choose three.)

- A. CPU
- B. Memory
- C. Network IO
- D. Threads
- E. vNUMA Stats

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Virtual Machine Alert Definitions

The vCenter adapter provides alert definitions that are generated on the virtual machines in your environment.

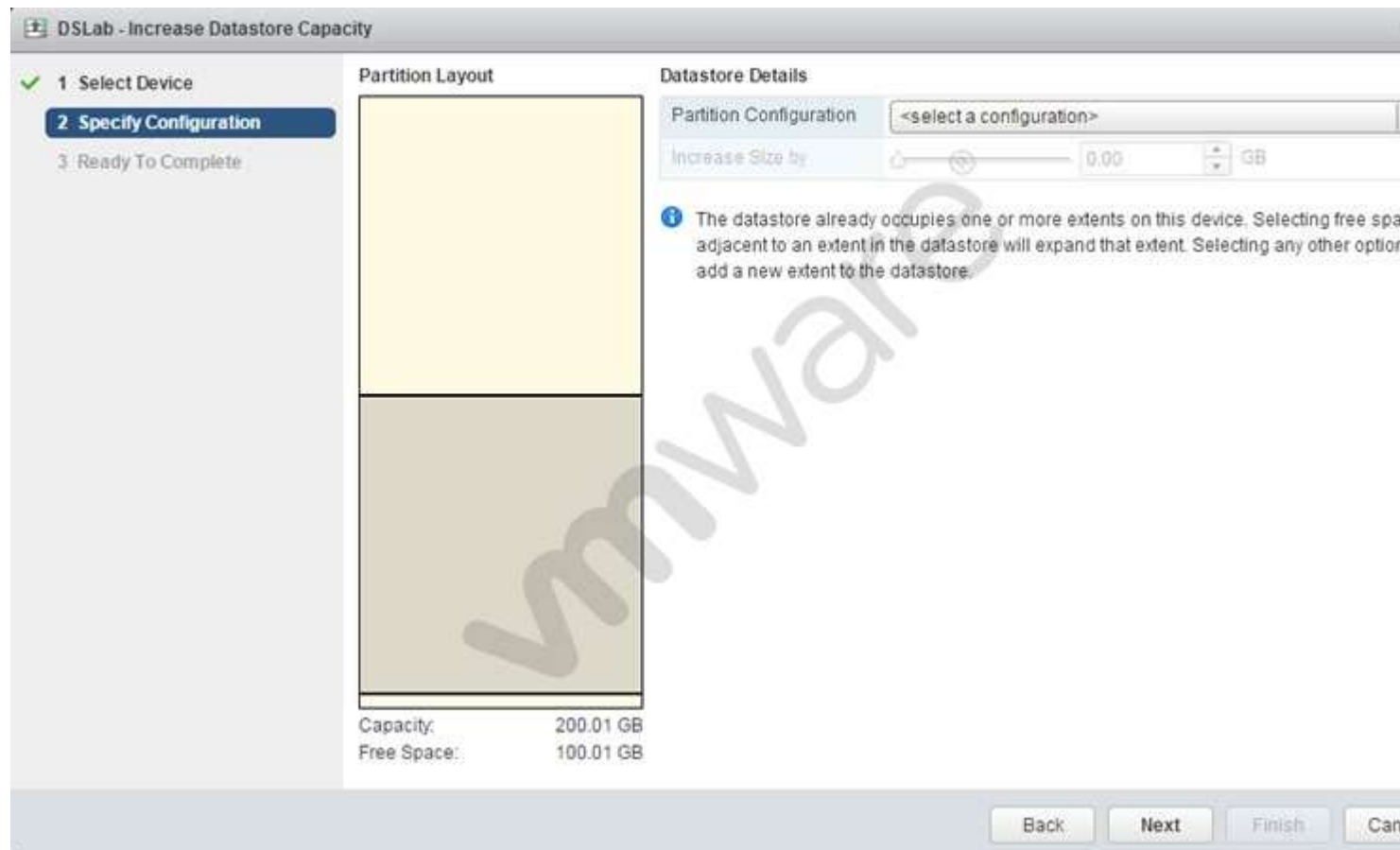
Health/Symptom-based

These alerts have the following impact and criticality information.

Check the Link for detailed info: <http://pubs.vmware.com/vrealizeoperationsmanager-61/index.jsp?topic=%2Fcom.vmware.vcom.core.doc%2FGUID-746FD64E-3380-44A6-A154-0BC63B4624F0.html>

QUESTION 207

Refer to the Exhibit.



An administrator wants to increase the capacity of a VMFS5 datastore; but the Increase Size by slider is not available, as shown in the Exhibit.

How should the administrator resolve this problem?

- A. Select a valid partition configuration from the drop-down menu.
- B. Use fdisk utility to manually resize the partition.
- C. Use the mouse to resize the partition indicated in the Partition Layout.
- D. Clicking Next will prompt for available usable space.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Procedure

1. Select the datastore to grow and click the Increase Datastore Capacity icon.

2. Select a device from the list of storage devices.

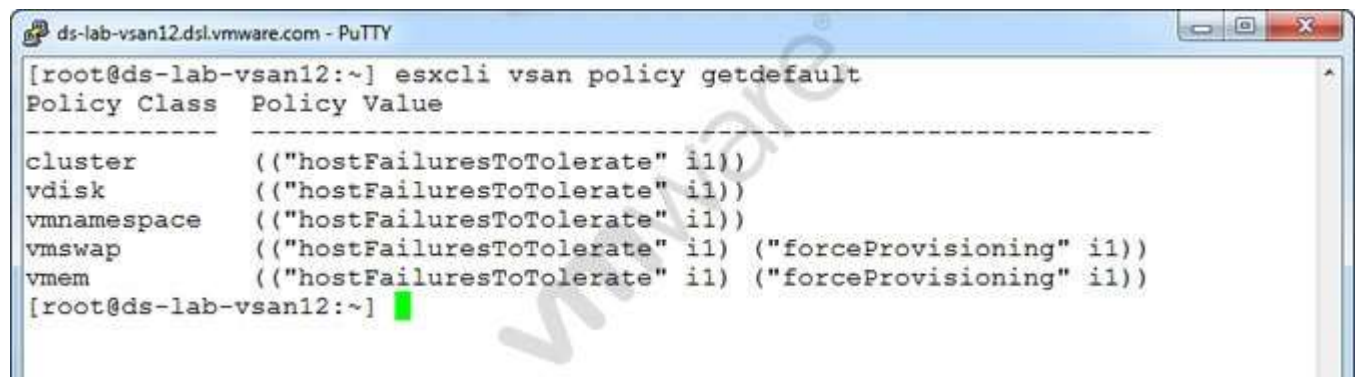
Your selection depends on whether an expandable storage device is available.

Choose the options from Drop down menu list:

Check the link: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-D57FEF5D-75F1-433D-B337-E760732282FC.html>

QUESTION 208

Refer to the Exhibit.



```
ds-lab-vsan12.dsl.vmware.com - PuTTY
[root@ds-lab-vsan12:~] esxcli vsan policy getdefault
Policy Class  Policy Value
-----
cluster      (("hostFailuresToTolerate" 11))
vdisk        (("hostFailuresToTolerate" 11))
vmnamespace  (("hostFailuresToTolerate" 11))
vmswap       (("hostFailuresToTolerate" 11) ("forceProvisioning" 11))
vmem         (("hostFailuresToTolerate" 11) ("forceProvisioning" 11))
[root@ds-lab-vsan12:~]
```

An administrator recently created a Virtual SAN but no Storage Policies were defined. A few virtual machines were deployed to this cluster. The administrator analyzes the default Virtual SAN policy as shown in the Exhibit.

Based on the exhibit, which two statements are true? (Choose two.)

- A. Losing one cluster node will not affect data availability.
- B. Losing one Hard Disk in a cluster node will not affect data availability.
- C. Creating a virtual machine Swap file will fail if it violates default storage policy.
- D. Creating a virtual machine will succeed even if it violates default storage policy.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Policies Rules: Defines the number of host, disk, or network failures a virtual machine object can tolerate. For n failures tolerated, n+1 copies of the virtual machine object are created and 2n+1 hosts with storage are

required.

Default value is 1. Maximum value is 3.

To understand more check the link: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-C8E919D0-9D80-4AE1-826B-D180632775F3.html>

QUESTION 209

Refer to the Exhibit.

Rule-Set 1

Select rules to create your VM storage policy.

- The VM storage policy will match datastores that satisfy any of the rule sets.
- A rule set will match datastores that satisfy all of the selected rules.

Rules based on common capabilities

<Add capability>

Rules based on vendor-specific capabilities VSAN

Number of failures to tolerate 2

Number of disk stripes per object 3

<Add capability>

Rules based on tags

Add tag-based rule...

Storage Consumption Model

A virtual disk with size 100 GB would consume:

Storage space 300.00 GB

Initially reserved storage space 0.00 B

Reserved flash space 0.00 B

A Storage Policy for a Virtual SAN is set to the default policy, as shown in the Exhibit.

Which change would reduce the storage consumption by one third?

- A. Number of failures to tolerate = 1
- B. Number of disk stripes per object = 2
- C. Number of failures to tolerate = 3
- D. Number of disk stripes per object = 1

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

The new policy is added to the list.

What to do next:

Apply this policy to a virtual machine and its virtual disks. Virtual SAN will place the virtual machine objects in accordance with the requirements specified in the policy. For information about using and editing storage policies, see About Virtual Machine Storage Policies.

Also Check:

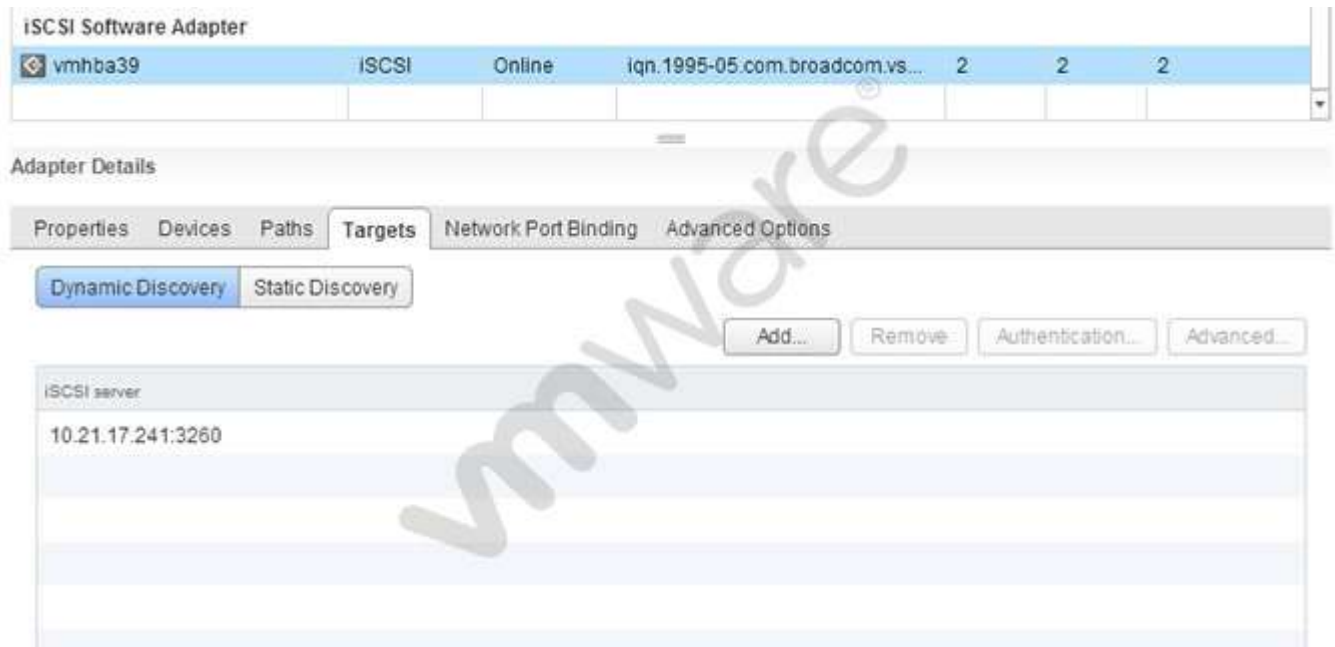
Policies Rules: Defines the number of host, disk, or network failures a virtual machine object can tolerate. For n failures tolerated, $n+1$ copies of the virtual machine object are created and $2n+1$ hosts with storage are required.

Default value is 1. Maximum value is 3.

To understand more check the link: <https://pubs.vmware.com/vsphere-55/index.jsp?topic=%2Fcom.vmware.vsphere.storage.doc%2FGUID-C8E919D0-9D80-4AE1-826B-D180632775F3.html>

QUESTION 210

Refer to the Exhibit.



Which tab shows the Hardware Acceleration support status?

- A. Devices
- B. Properties
- C. Paths
- D. Advanced Options

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

To know the detailed info about the tab:

If you go to **Host > Configuration > Storage**, you can see the Hardware Acceleration Status in the panel on the right side.

For each storage device and datastore, the vSphere Client displays the hardware acceleration support status in the Hardware Acceleration column of the Devices view and the Datastores view.

The status values are Unknown, Supported, and Not Supported. The initial value is Unknown. The status changes to Supported after the host successfully performs the offload basic operations. If the offload operation fails, the status changes to Not Supported.

Check link KB: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1021976

QUESTION 211

Refer to the Exhibit.

```

7:03:33pm up 17 days 6:15, 750 worlds, 21 VMs, 47 vCPUs; CPU load average: 0.17, 0.24, 0.28
Power Usage: 158W, Power Cap: N/A
PSTATE MHZ:

```

CPU	%USED	%UTIL	%C0	%C1	%C2
0	8.0	17.5	18	52	30
1	4.9	11.9	12	49	39
2	7.7	15.8	16	63	21
3	3.3	8.0	8	56	36
4	9.3	19.0	19	64	17
5	3.8	9.4	9	65	26
6	5.2	11.6	11	60	28
7	6.8	14.1	14	54	32
8	4.8	10.6	11	77	12
9	4.4	9.4	9	55	35
10	3.2	7.6	9	76	14
11	3.5	8.0	8	59	33
12	13.8	25.8	24	34	41
13	7.4	14.9	15	35	50
14	13.6	25.6	26	26	48
15	3.6	7.9	8	44	48
16	6.8	13.3	13	23	63
17	3.5	7.5	7	31	62
18	6.4	12.5	12	33	55
19	3.4	7.2	7	29	64
20	2.7	5.7	6	37	58
21	5.2	9.6	10	19	72
22	4.5	8.7	9	33	58
23	4.4	8.5	8	41	51

An administrator is troubleshooting intermittent poor performance of virtual machines in a vSphere 6.x cluster. Investigating esxtop data shows that the only statistic that stands out is %CSTP as depicted in Exhibit 1:

ID	NAME	USED	UTIL	%C0	%C1	%C2	%CSTP	%CSTP	%CSTP	%CSTP	%CSTP	%CSTP
0	VM0000000000000000	18	197.29	18	52	30	0.00	0.00	0.00	0.00	0.00	0.00
1	VM0000000000000000	12	197.29	12	49	39	0.00	0.00	0.00	0.00	0.00	0.00

The administrator proceeds to switch to the Power Management screen and observes the data depicted in Exhibit 2:

CPU	%USED	%UTIL	%C0	%C1	%C2
0	8.0	17.5	18	52	30
1	4.9	11.9	12	49	39
2	7.7	15.8	16	63	21
3	3.3	8.0	8	56	36
4	9.3	19.0	19	64	17
5	3.8	9.4	9	65	26
6	5.2	11.6	11	60	28
7	6.8	14.1	14	54	32
8	4.8	10.6	11	77	12
9	4.4	9.4	9	55	35
10	3.2	7.6	9	76	14
11	3.5	8.0	8	59	33
12	13.8	25.8	24	34	41
13	7.4	14.9	15	35	50
14	13.6	25.6	26	26	48
15	3.6	7.9	8	44	48
16	6.8	13.3	13	23	63
17	3.5	7.5	7	31	62
18	6.4	12.5	12	33	55
19	3.4	7.2	7	29	64
20	2.7	5.7	6	37	58
21	5.2	9.6	10	19	72
22	4.5	8.7	9	33	58
23	4.4	8.5	8	41	51

Based on the information in the exhibits, which two configurations are probable causes of the poor performance? (Choose two.)

- A. The active power policy is set to Low Power.
- B. The host has active Sleep States configured in the BIOS.
- C. The active power policy is set to High Performance.
- D. The host has active Power States configured in the BIOS.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation: A and B

Analyzing esxtop columns

Refer to this table for relevant columns and descriptions of these values:

Column Description

CMDS/s

This is the total amount of commands per second and includes IOPS (Input/Output Operations Per Second) and other SCSI commands such as SCSI reservations, locks, vendor string requests, unit attention commands etc. being sent to or coming from the device or virtual machine being monitored.

In most cases, CMDS/s = IOPS unless there are a lot of metadata operations (such as SCSI reservations)

DAVG/cmd This is the average response time in milliseconds per command being sent to the device.

KAVG/cmd This is the amount of time the command spends in the VMkernel.

GAVG/cmd This is the response time as it is perceived by the guest operating system. This number is calculated with the formula: DAVG + KAVG = GAVG

Link: https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1008205

And, BIOS:

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=1018206

QUESTION 212

An administrator has recently configured HA on a cluster. After reviewing the summary tab on one of the hosts, the warning in Exhibit 1 is displayed:

This host currently has no management network redundancy

The administrator proceeds to view the management network port group data shown in Exhibit 2:



The administrator then views the management network vSwitch as shown in Exhibit 3:



Based on the exhibits, which two steps should be taken to ensure redundancy on the management network? (Choose two.)

- A. Move vmnic1 to Standby adapters.
- B. Add an additional vmknix to the Network Adapters and move it to Active adapters.
- C. Set the advanced HA configuration parameter das.ignoreRedundantNetWarning to True.
- D. Uncheck the Override Failover Checkbox on the management network port group.

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

Explanation: A and D

Use Load Balancing and Failover policies to determine how network traffic is distributed between adapters and how to reroute traffic in the event of an adapter failure.

The Failover and Load Balancing policies include the following parameters:

Load Balancing policy: The Load Balancing policy determines how outgoing traffic is distributed among the network adapters assigned to a standard switch. Incoming traffic is controlled by the Load Balancing policy on the physical switch.

Failover Detection: Link Status/Beacon Probing

Network Adapter Order (Active/Standby)

In some cases, you might lose standard switch connectivity when a failover or failback event occurs. This causes the MAC addresses used by virtual machines associated with that standard switch to appear on a different switch port than they previously did. To avoid this problem, put your physical switch in portfast or portfast trunk mode.

Link: <https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.networking.doc%2FGUID-D5EA6315-5DCD-463E-A701-B3D8D9250FB5.html>

QUESTION 213

Refer to the Exhibit.

Adapter	Type	Status	Identifier	Targets	Devices	Paths
vmhba34	Block SCSI	Unknown		0	0	0
QLogic NetXtreme II iSCSI Adapter						
vmhba32	iSCSI	Unbound	bnx2i-001018ed2ab0(iqn.1998...	0	0	0
vmhba33	iSCSI	Unbound	bnx2i-001018ed2ab2(iqn.1998...	0	0	0
iSCSI Software Adapter						
vmhba39	iSCSI	Online	iqn.1995-05.com.broadcom.vs...	1	1	1

The Exhibit shows the status of vmhba32 and vmhba33 as Unbound.

What is a likely reason for this status?

- A. The host bus adapter is not associated with a vmknix.
- B. The Dynamic Target Discovery was not configured.
- C. The Static Target Discovery was not configured.
- D. The host bus adapter is not associated with a vmknix.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

For sharing a volume across hosts, a VMFS volume is bound to its underlying block device storage. When a low level block copy is performed to copy or move the VMFS volume, the copied volume will be unbound. When using Broadcom network interfaces with Hardware iSCSI Offload capabilities such as BCM5709 and BCM57711, each of the network interfaces shows up as individual storage adapters in the Configuration tab of an ESX host and each adapter also has an individual IQN. However, when you configure the adapter for iSCSI, you observe these symptoms:

You are unable to add any discovery addresses.

When observing the Dynamic or Static Discovery tabs in the iSCSI Initiator Properties window, you see the message:

The host bus adapter is not associated with a vmknix. To configure targets the adapter should be associated with a vmknix. Refer to the VMware documentation to associate the adapter with a vmknix.

vSphere 6.0 Documentation Center - VMware

www.vmware.com/a/info/?id=1320

QUESTION 214

Refer to the Exhibit.

-- Exhibit --



Review the Exhibit. An administrator has configured permissions for a group called VMGroup and a user named VMUser. A new Role has been created called PowerVM. The group and role have these characteristics:

- PowerVM role can power on VMs
- VMGroup granted PowerVM role on VMFolder
- VMUser is a member of VMGroup
- VMUser granted No Access on VMFolder

Based on the exhibit, which statement best explains why VMUser is denied access to the VMFolder?

- A. The VMUser permission overrides the VMGroup permission.
- B. The No Access role overrides the PowerVM role.
- C. The VMGroup permission overrides the VMUser permission.
- D. The PowerVM role overrides the No Access role.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation:

User Permissions Overriding Group Permissions:

This example illustrates how permissions assigned directly to an individual user override permissions assigned to a group that the user is a member of.

In this example, permissions are assigned to a user and to a group on the same object.

Role 1 can power on virtual machines.

Group A is granted Role 1 on VM Folder.

User 1 is granted No Access role on VM Folder.

User 1, who belongs to group A, logs on. The No Access role granted to User 1 on VM Folder overrides the group permission. User 1 has no access to VM Folder or VMs A and B.

Example 3: User Permissions Overriding Group Permissions

<https://pubs.vmware.com/vsphere-60>

The setting in vSphere is a property of the ESX(i) host, found within the configuration tab in the Virtual Machine Startup/Shutdown options section.

A VM startup sequence can be set with timing for each host.

The properties section will allow the startup options to be configured. It is a good idea to shorten their startup time if the hosts power up and are ready to go. This may not be the case with SAN or NAS systems in use, which may take more time to start up.

To power on a virtual machine from the command line:

List the inventory ID of the virtual machine with the command:

```
vim-cmd vmsvc/getallvms |grep <vm name>
```

Note: The first column of the output shows the vmid.

Check the power state of the virtual machine with the command:

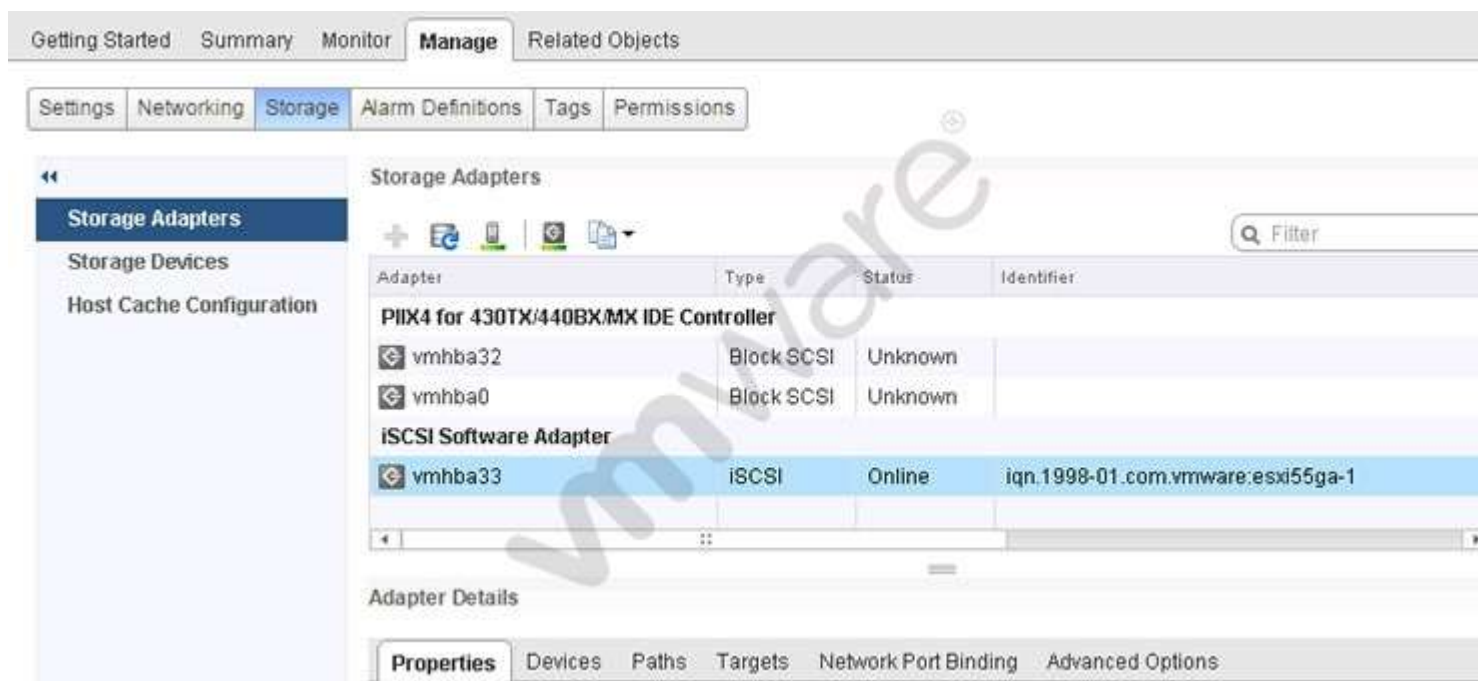
```
vim-cmd vmsvc/power.getstate <vmid>
```

Power-on the virtual machine with the command:

```
vim-cmd vmsvc/power.on <vmid>
```

QUESTION 215

Refer to the Exhibit.



An administrator would like to add Challenge Handshake Authentication Protocol (CHAP) to an iSCSI adapter. The administrator accesses the Storage Adapters menu as shown in the Exhibit.

In which tab can the task be accomplished?

- A. Properties
- B. Advanced Options
- C. Targets
- D. Devices

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Explanation: **Procedure**

- 1 Access the iSCSI Initiator Properties dialog box.
- 2 On the General tab, click CHAP.
- 3 To configure one-way CHAP, under CHAP specify the following:
 - a. Select the CHAP security level.
 - Do not use CHAP unless required by target (software and dependent hardware iSCSI only)
 - Use CHAP unless prohibited by target
 - Use CHAP (software and dependent hardware iSCSI only). To configure mutual CHAP, you must select this option.
 - b. Specify the CHAP name.
Make sure that the name you specify matches the name configured on the storage side.
 - To set the CHAP name to the iSCSI initiator name, select Use initiator name.
 - To set the CHAP name to anything other than the iSCSI initiator name, deselect Use initiator name and type a name in the Name text box.
 - c. Enter a one-way CHAP secret to be used as part of authentication. Use the same secret that you enter on the storage side.
4. To configure mutual CHAP, first configure one-way CHAP by following the directions in [Step 3](#).

Make sure to select Use CHAP as an option for one-way CHAP. Then, specify the following under Mutual CHAP:

- a. Select Use CHAP.
 - b. Specify the mutual CHAP name.
 - c. Enter the mutual CHAP secret. Make sure to use different secrets for the one-way CHAP and mutual CHAP.
5. Click OK.
 6. Rescan the initiator.

Reference: <https://pubs.vmware.com/vsphere-51/index.jsp#com.vmware.vsphere.storage.doc/GUID-488A90C3-4826-4EB7-BAA4-E9C799AA2C02.html>

QUESTION 216

Refer to the Exhibit.



An administrator receives an error on a vSphere cluster as shown in the Exhibit.

Based on the exhibit, which three configuration changes can resolve the error? (Choose three.)

- A. Change the Admission Control policy for the cluster.
- B. Adjust CPU and Memory reservations of the virtual machines.
- C. Increase the amount of failover resources in the cluster.
- D. Reconfigure the ESXi host cluster for High Availability.
- E. Disable Virtual Machine Monitoring.

Correct Answer: ABC

Section: (none)

Explanation

Explanation/Reference:

Explanation: A,B&C

vSphere HA Admission Control

vCenter Server uses admission control to ensure that sufficient resources are available in a cluster to provide failover protection and to ensure that virtual machine resource reservations are respected.

Three types of admission control are available.

Host Ensures that a host has sufficient resources to satisfy the reservations of all virtual machines running on it.

Resource Pool Ensures that a resource pool has sufficient resources to satisfy the reservations, shares, and limits of all virtual machines associated with it. vSphere HA Ensures that sufficient resources in the cluster are reserved for virtual machine recovery in the event of host failure.

Link:


https://pubs.vmware.com/vsphere-60/index.jsp#com.vmware.vsphere.avail.doc_50/GUID-53F6938C-96E5-4F67-9A6E-479F5A894571.html

QUESTION 217

Refer to the Exhibit.

VM/Host Rules



Add... Edit... Delete

Name	Type	Enabled	Conflicts	Defined By
 Marketing Rule	Run VMs on Hosts	No	0	User

VM/Host Rule Details

Virtual Machines that are members of the VM Group should run on hosts that are members of the Host Group.

Add... Remove Add... Remove

Marketing Group Members	Primary Group Members
 Marketing	 10.21.38.106

vSphere HA Rule Settings Edit...

vSphere HA can enforce VM/Host rules when restarting virtual machines.

VM anti-affinity rules	vSphere HA must respect rules during failover
VM to Host affinity rules	vSphere HA should respect rules during failover

An administrator manages a High Availability (HA)/Distributed Resource Scheduler (DRS)-enabled cluster and has configured the affinity rule shown in the Exhibit.

Which two statements best describe the configuration shown in the exhibit? (Choose two.)

- A. HA will not failover Marketing to ESXi hosts that are not in the Host Group.
- B. HA will failover Marketing to ESXi hosts that are not in the Host group.
- C. DRS will attempt to keep Marketing on the ESXi host 10.21.38.106.
- D. DRS will not attempt to keep Marketing on the ESXi host 10.21.28.106.

Correct Answer: BD

Section: (none)

Explanation

Explanation/Reference:

Explanation: B & D

As per exhibit Rule settings:

VM-Host Affinity Rules

A VM-Host affinity rule specifies whether or not the members of a selected virtual machine DRS group can run on the members of a specific host DRS group.

Unlike a VM-VM affinity rule, which specifies affinity (or anti-affinity) between individual virtual machines, a VM-

Host affinity rule specifies an affinity relationship between a group of virtual machines and a group of hosts. There are 'required' rules (designated by "must") and 'preferential' rules (designated by "should".)

A VM-Host affinity rule includes the following components.

One virtual machine DRS group.

One host DRS group.

A designation of whether the rule is a requirement ("must") or a preference ("should") and whether it is affinity ("run on") or anti-affinity ("not run on").

Because VM-Host affinity rules are cluster-based, the virtual machines and hosts that are included in a rule must all reside in the same cluster. If a virtual machine is removed from the cluster, it loses its DRS group affiliation, even if it is later returned to the cluster.

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.resmgmt.doc%2FGUID-2FB90EF5-7733-4095-8B66-F10D6C57B820.html>

QUESTION 218

Refer to the Exhibit.

To provide access to a service or client, check the corresponding box.

By default, daemons will start automatically when any of their ports are opened, and stop when all of their ports are closed.

Name	Incoming Ports	Outgoing Ports	Protocols	Daemon
Required Services				
Secure Shell				
<input type="checkbox"/> SSH Client		22	TCP	N/A
<input checked="" type="checkbox"/> SSH Server	22		TCP	N/A
Simple Network Man...				
Ungrouped				

▼ Service Details	N/A
Status	N/A
▼ Allowed IP Addresses	Connections not allowed from all IP address
IP Addresses	<input type="checkbox"/> Allow connections from any IP address
	192.168.1.0/24,192.168.2.220
	Enter a comma-separated list of IP addresses. E.g.: 111.111.111.111, 111.111.111/22

OK Cancel

An administrator has configured a firewall rule as shown in the Exhibit.

Which statement best describes the ESXi 6.x firewall rule?

- A. Connections from the ESXi host to all devices on the 192.168.1.0 network and 192.168.2.220 on port 22 are allowed.
- B. Connections coming from IP addresses from the 192.168.1.0 network and 192.168.2.220 on port 22 are allowed.
- C. TCP Connections coming from IP addresses from the 192.168.1.0 network and 192.168.2.220 on port 22 are not allowed.

- D. TCP Connections from the ESXi host to all devices on the 192.168.1.0 network and 192.168.2.220 on port 22 are not allowed.

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

Explanation:

PoRT 22 SSH on ESXi allowed :

“Allow connections from any IP address,” or, you can select “Only allow connections from the following networks” and enter an IP address or subnet. You can enter multiple IP addresses and subnets, separated with a comma.

By default, there is a set of predefined firewall rules that can be enabled/disabled for the ESXi host from the vSphere Client.

These firewall services can be enabled/disabled for the defined ports (UDP/TCP) from the vSphere Client.

However, if you need to enable the service on a protocol that is not defined, you must create new firewall rules from the command line.

For example, the DNS Client service can be enabled/disabled only on UDP port 53.

To enable DNS for TCP:

Open an SSH connection to the host. For more information, see Using ESXi Shell in ESXi 5.0 and 6.0 (2004746).

List the firewall rules by running the command:

esxcli network firewall ruleset list

https://kb.vmware.com/selfservice/microsites/search.do?language=en_US&cmd=displayKC&externalId=2008226

QUESTION 219

Which two statements are true regarding upgrading from a Distributed vCenter Server 5.x to vCenter Server 6.x? (Choose two.)

- A. vCenter Single Sign-On becomes part of the Platform Services Controller
- B. The vCenter Server service is not migrated during the upgrade process.
- C. The vSphere License Service is migrated to the new vCenter Server 6.x instance.
- D. vCenter inventory Service becomes part of the Platform Services Controller

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

Explanation:

vCenter Server and vCenter Single Sign-On are the only services that are not migrated. vCenter Single Sign-On instances are upgraded in place to become part of an external Platform Services Controller if they are deployed on a system other than the system where the vCenter Server resides.

Reference:

<https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.upgrade.doc%2FGUID-4BFB12D8-9FCA-4AB1-A44F-2986966F0AD5.html>

QUESTION 220

An administrator needs to configure a storage solution for a vSphere 6.x implementation with these characteristics:

- Snapshot support
- vMotion Capability
- Clustering across multiple ESXi hosts
- Database application with high transaction count
- vFlash Read Cache

Which solution meets all of the stated requirements?

- A. A vmdk located on a Shared VMFS datastore
- B. A Virtual Mode Raw Device Mapped LUN
- C. A Physical Mode Raw Device Mapped LUN
- D. A virtual SAN-based vdmk

Correct Answer: B

Section: (none)

Explanation

Explanation/Reference:

QUESTION 221

An administrator has a virtual machine (VM) that uses a shared USB device.

Which option will allow the VM to utilize vMotion while retaining the maximum possible functionality?

- A. Disable the USB device from the VM.
- B. Remove the device from the VM
- C. Configure the VM to support vMotion while the device is connected
- D. Enable migration support for the individual USB device's

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

QUESTION 222

An administrator is configuring an identity source for Single Sign-On. The administrator will use the machine that Single Sign-on is running on, but does not want all users on the machine to be visible to SSO.

Which identity Source meets this requirement?

- A. LocalOS
- B. Active Directory as an LDAP service
- C. OpenLDAP
- D. Active Directory (Integrated Windows Authentication)

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

QUESTION 223

An administrator is building a large virtual machine that will require as many vCPUs as the host can support. An ESXi 6.x host has these specifications:

- Four 24-core Intel Xeon Processors
- 256 GB of Memory
- 512 GB Local disk space using VMFS5

What is the maximum number of virtual CPUs that the virtual machine can be allocated?

- A. 64
- B. 96
- C. 128
- D. 192

Correct Answer: C

Section: (none)

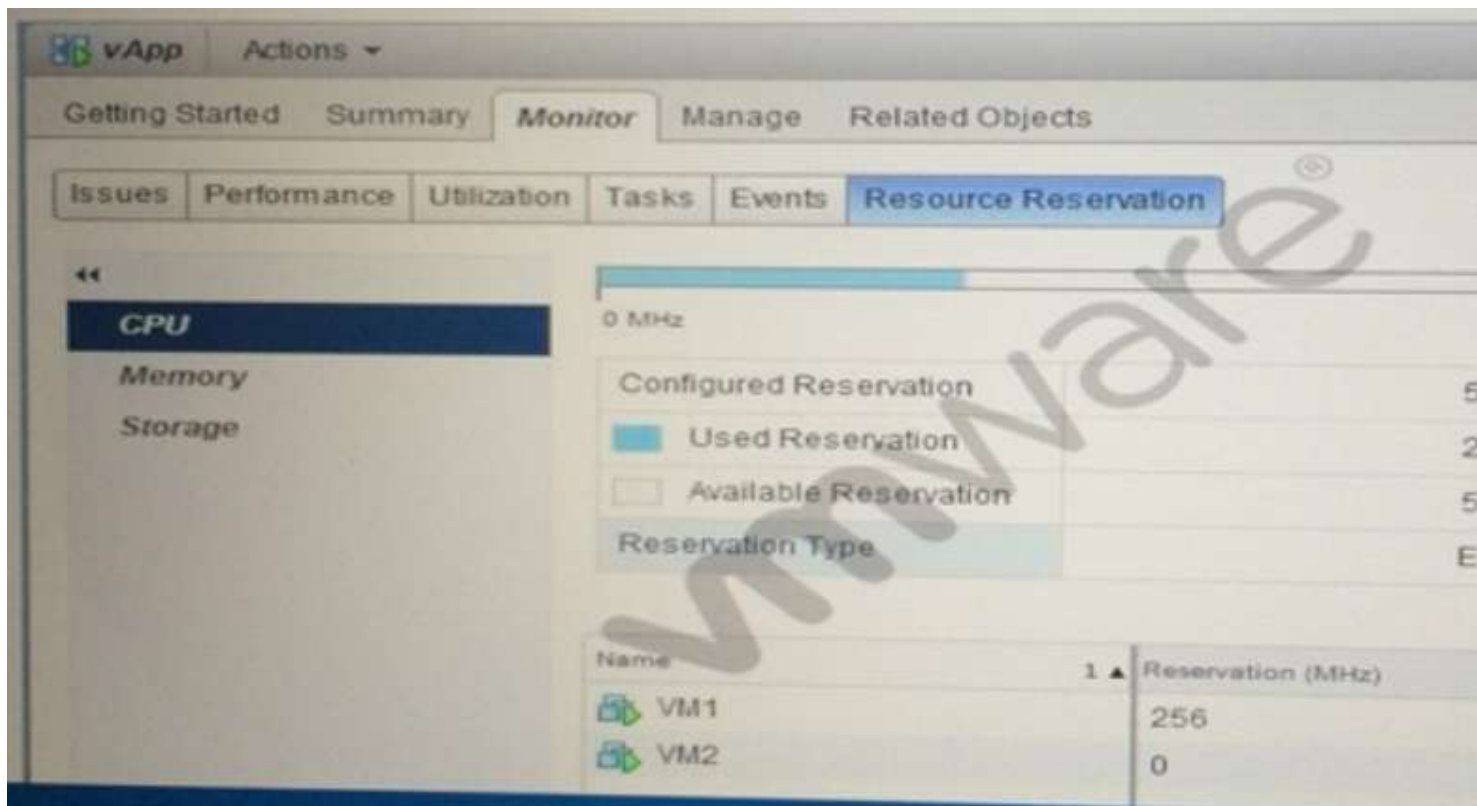
Explanation

Explanation/Reference:

Reference: <https://www.vmware.com/pdf/vsphere6/r60/vsphere-60-configuration-maximums.pdf> page 9

QUESTION 224

An administrator has noticed that virtual machine VM2 in the vApp show in the Exhibit is demonstrating poor performance.



Which three changes, if performed separately, would improve the performance of **VM2**? (Choose three.)

- A. Remove the CPU limit on the vApp.
- B. Remove the CPU limit on the resource pool
- C. Increase the CPU reservation on virtual machine **VM1**.
- D. Power off virtual machine **VM1**.
- E. Increase the CPU reservation on virtual machine **VM2**.

Correct Answer: ADE

Section: (none)

Explanation

Explanation/Reference:

QUESTION 225

An administrator wants to configure an ESXi 6.x host to use Active Directory (AD) to manage users and groups. The AD domain group **ESX Admins** was previously created.

Which two conditions should be considered when planning this configuration? (Choose two.)

- A. If administrative access for **ESX Admins** is not desired, an alternate AD group must be used.
- B. The users in **ESX Admins** are granted administrative privileges in vCenter Server.
- C. The users in **ESX Admins** are not restricted by Lockdown Mode.
- D. An ESXi host provisioned with Auto Deploy cannot store AD credentials.

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

QUESTION 226

To reduce the attack vectors for a virtual machine, which two settings should an administrator set to **false**? (Choose two.)

- A. keyboard.present
- B. vmnicX:Y.present
- C. ideX:Y.present
- D. serial.present

Correct Answer: CD

Section: (none)

Explanation

Explanation/Reference:

Explanation:

Removing Unnecessary Hardware Devices

Any enabled or connected device represents a potential attack channel. Users and processes without privileges on a virtual machine can connect or disconnect hardware devices, such as network adapters and CD-ROM drives. Attackers can use this capability to breach virtual machine security. Removing unnecessary hardware devices can help prevent attacks.

Use the following guidelines to increase virtual machine security.

■	Ensure that unauthorized devices are not connected and remove any unneeded or unused hardware devices.		
■	Disable unnecessary virtual devices from within a virtual machine. An attacker with access to a virtual machine can access a CD-ROM drive and access sensitive information on the media left in the drive, or disconnect a network adapter to isolate the virtual machine from its network, resulting in a denial of service.		
■	Ensure that no device is connected to a virtual machine if it is not required. Serial and parallel ports are rarely used in a datacenter environment, and CD/DVD drives are usually connected only temporarily during software installation.		
■	For less commonly used devices that are not required, either the parameter should not be present or its value must be false. The following parameters are either not present or set to false unless the device is required.		
	Parameter	Value	Device
	floppyX.present	false	floppy drives
	serialX.present	false	serial ports
	parallelX.present	false	parallel ports
	usb.present	false	USB controller
	ideX:Y.present	false	CD-ROM

Reference:

<https://pubs.vmware.com/vsphere-51/index.jsp?topic=%2Fcom.vmware.vsphere.security.doc%2FGUID-822B2ED3-D8D2-4F57-8335-CA46E915A729.html>

QUESTION 227

An administrator is implementing a vSphere 6.x environment containing one vCenter and five ESXi hosts. The administrator has just finished deploying the vCenter Server appliance with an embedded Platform Services Controller (PSC) and needs to ensure that default security certificates within the vSphere 6.x environment are replaced with new certificates.

What should the administrator do to complete this task the least administrative effort?

- A. Replace the VMCA root certificate before adding the ESXi hosts to vCenter Server.
- B. Create ESXi host security certificates using the SSL Thumbprint mode to ensure consistency among all hosts.
- C. Add the ESXi hosts to vCenter Server before updating the VMCA root certificate on the PSC.
- D. Make VMCA an Intermediate Certificate Authority to ensure each added ESXi host receives the same certificate.

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

QUESTION 228

Which two conditions would prevent an administrator from upgrading an existing vCenter Server Appliance to vSphere 6.x? (Choose two.)

- A. The administrator did not export the appliance configuration.
- B. The ESXi Host that the appliance will run on has not been placed into Maintenance Mode.
- C. The administrator is using an appliance with an embedded Platform Services Controller.
- D. The appliance has been configured to use an external Single Sign-On server.

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

QUESTION 229

An administrator is creating a new Content Library. It will subscribe to another remote Content Library without authentication enabled. Optimal performance is desired for the configuration.

What two steps should be taken to set up the library?

- A. The library should be published externally.
- B. The Subscription URL should be provided.
- C. A datastore should be used for this library.
- D. A file system should be used for this library.

Correct Answer: BC

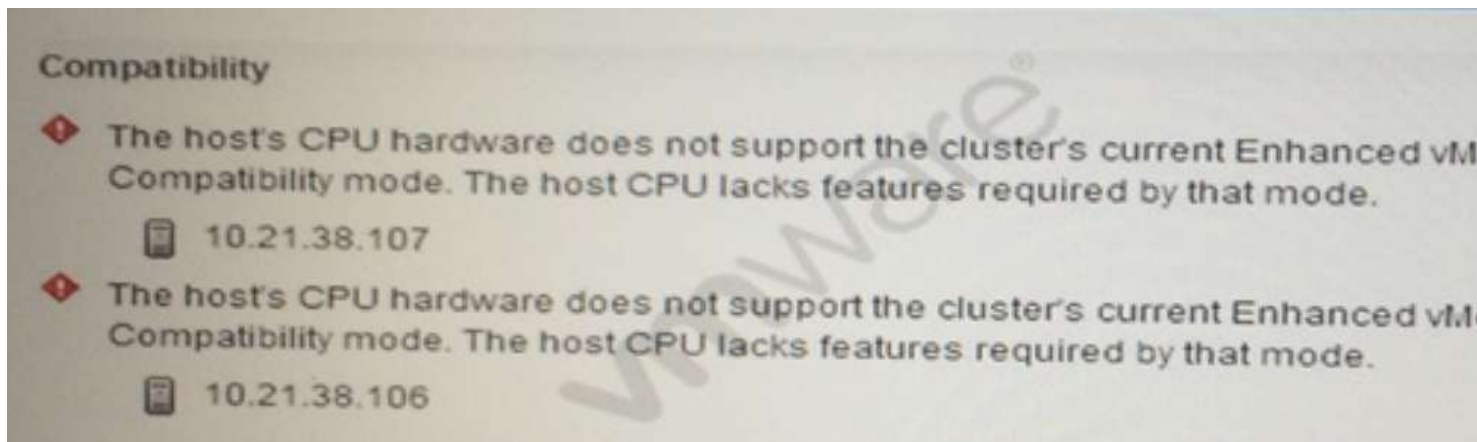
Section: (none)

Explanation

Explanation/Reference:

QUESTION 230

Click the Exhibit.



Which three conditions would explain the error? (Choose three.)

- A. EVC is using a newer baseline than the hosts in the Exhibit.
- B. The ESXi hosts have an incompatible version of Streaming SIMD Extensions (SSE).
- C. The ESXi hosts have the Intel No-Execute feature disabled.
- D. EVC is using an older baseline than the hosts in the Exhibit.

E. The EXSi host does not have the Intel VT-d feature enabled.

Correct Answer: ABC

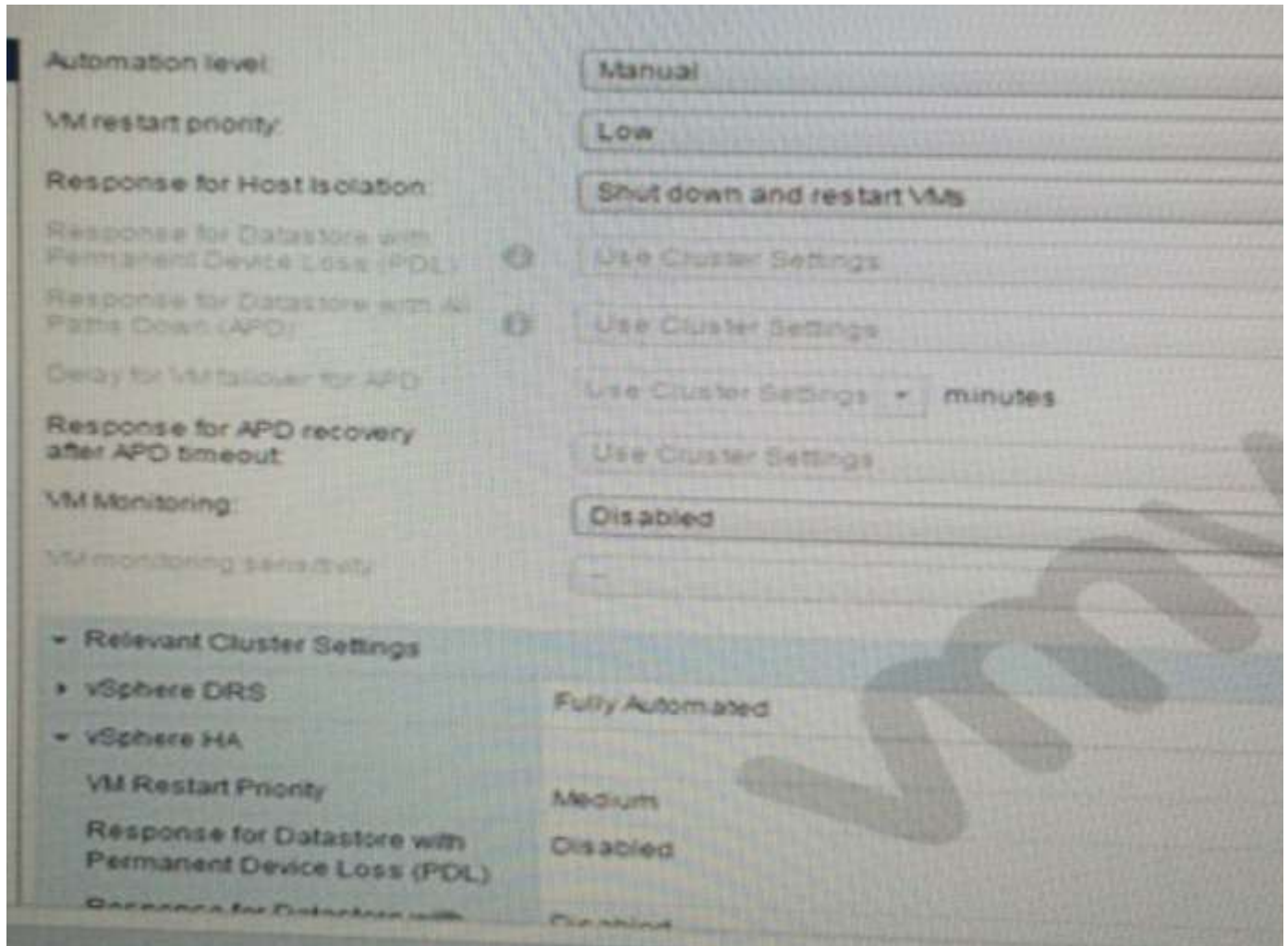
Section: (none)

Explanation

Explanation/Reference:

QUESTION 231

The **Prod-DB** virtual machine has a **VM Override** as shown in the Exhibit:



What step, if taken, would require all virtual machines in the cluster to migrate automatically?

- A. Change a **Response for Host Isolation** to **Use Cluster Settings**.
- B. Deselect the virtual machine from **VM Overrides**.
- C. Add all virtual machines the **VM Overrides**.
- D. Change the **Automation level** to **Use Cluster Settings**.

Correct Answer: D

Section: (none)

Explanation

Explanation/Reference:

QUESTION 232

When operating with Distributed Resource Scheduler (DRS) and Distributed Power Management (DPM), what two statements explain the impact of disabling vSphere High Availability admission control? (Choose two.)

- A. DRS will evacuate virtual machines from hosts and places in maintenance or standby modes regardless of the impact this might have on failover requirements.
- B. VMware DPM will place hosts in standby mode even if doing so violates failover requirements.
- C. DRS does not evacuate virtual machines from a host for the purpose of placing it in maintenance or standby modes if placing the host in this state would violate failover requirements.
- D. VMware DPM does not place hosts in standby mode if doing so would violate failover requirements.

Correct Answer: AB

Section: (none)

Explanation

Explanation/Reference:

QUESTION 233

Which VMware Single Sign-On component handles STS authentication requests?

- A. Identity Management Service
- B. Administration Server
- C. VMware Directory Service
- D. Security Token Service

Correct Answer: A

Section: (none)

Explanation

Explanation/Reference:

Reference: <https://pubs.vmware.com/vsphere-60/index.jsp?topic=%2Fcom.vmware.vsphere.install.doc%2FGUID-90C1E3DC-4397-4BF0-808E-DF3802E56BC6.html>

QUESTION 234

An administrator observes that virtual machine storage activity on an ESXi 6.x host is negatively affecting virtual machine storage activity on another host that is accessing the same VMFS Datastore.

Which action would mitigate the issue?

- A. Enable the **Dynamic Queue Depth Throttling** option.
- B. Configure Storage DRS.
- C. Enable Storage I/O Control.
- D. Configure the `Disk.SchedNumReqOutstanding` parameter.

Correct Answer: C

Section: (none)

Explanation

Explanation/Reference:

QUESTION 235

An administrator needs to migrate a very large virtual machine to vCloud Air from a branch office.

Which two components can be used to meet this requirement? (Choose two)

- A. Offline Data Transfer
- B. vCloud Air Disaster Recovery
- C. Data Center Extensions
- D. vCloud Connector

Correct Answer: AD

Section: (none)

Explanation

Explanation/Reference:

Reference: <http://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/products/vcloud-air/vcloud-air-faq.pdf>