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Total number of questions: 545

Topic 1, Plan, Install and Upgrade VMware ESX/ESXi (120 questions).

Part 1: Install VMware ESX/ESXi on local storage (45 questions).

QUESTION NO: 1

When installing ESX 4.0, where is the Service Console file system located?

- A. In a virtual disk on a local VMFSdatastore
- B. On a local physical disk
- C. In a virtual disk on a local or shared VMFSdatastore
- D. On a local physical disk or on a mapped SAN LUN

Answer: A

The reason for this is the fact that the service console is a VMDK. This VMDK is stored on the local VMFS volume by default in the following location:
esxconsole-/esxconsole.vmdk.

Everyone at this point should be aware that the Service Console is now located in a vmdk on a VMFS partition. The Service Console vmdk must be stored on a vmfs datastore and the datastore must either be local storage or SAN storage that is only presented to the one host

QUESTION NO: 2

An administrator is installing ESX 4.0 on a physical server. Which of the following components would need to be modified or replaced to support a successful installation?

- A. 2 AMDOpteron CPUs
- B. 4GB RAM
- C. 2 LSI Logic LSI7202XP-LCFibre Channel HBAs
- D. 4 Intel PRO 1000 Network Adapters

Answer: C

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, Page 6.
ESX Hardware Requirements

- VMware ESX 4.0 will only install and run on servers with 64-bit x86 CPUs.

-Known 64-bit processors:

-All AMD Opterons support 64 bit.

...

RAM

2GB RAM minimum

Network Adapters

...

- Intel PRO 1000 adapters

QUESTION NO: 3

The default swap partition size for ESX 4.0 is which of the following?

- A. 600MB
- B. 1.6GB
- C. 800MB
- D. 544MB

Answer: A

Mastering VMware vSphere 4 Page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

QUESTION NO: 4

The ESX 4.x Service Console Virtual Disk can be located on (Choose Two):

- A. a VMFSdatastore on software iSCSI attached storage
- B. a VMFSdatastore on non-shared FC attached storage
- C. a VMFSdatastore on locally attached storage
- D. an NFSdatastore

Answer: B,C

Everyone at this point should be aware that the Service Console is now located in a vmdk on a VMFS partition. The Service Console vmdk must be stored on a vmfs datastore and the datastore must either be local storage or SAN storage that is only presented to the one host

Fibre Channel, or FC, is a gigabit-speed network technology primarily used for storage networking

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 6

ESX Hardware Requirements

* SCSI Adapter, Fibre Channel Adapter, or Internal RAID Controller

QUESTION NO: 5

An ESX Administrator plans to install additional supported components on the ESX Server that would increase the memory requirements for the Service Console. Which ESX Server partition would also need to be increased during installation as a result?

- A. /boot
- B. /
- C. vmfs3
- D. swap

Answer: D

Mastering VMware vSphere 4 Page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

QUESTION NO: 6

Which of the following partitions is specific to ESXi 4.0?

- A. usr
- B. swap
- C. vmkcore
- D. scratch

Answer: D

Best Practices for vSphere (ESX 4) Service Console Partitions

The following Custom Partitioning Design is recommended:

Mount Point Type Size

/ ext3 5.0GB

Swap 1600MB

/home ext3 512MB

```
/tmp ext3 2.0GB  
/vmimages ext3 512MB  
/var ext3 2.0GB
```

The installer also automatically creates the following partitions without displaying them:

```
/boot ext3 260MB
```

```
Vmkcore 100MB
```

* Upgrade to ESX 3.5 on systems with separate /usr partition requires manual intervention

Since ESX 4 and 3.5 can use all of the above partitions, the only partitions that can be specific to ESXi 4.0 is /scratch.

QUESTION NO: 7

Which partitions would change the default partition size for /?

- A. /tmp
- B. /home
- C. /usr
- D. /var/log

Answer: C

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 61.

ESX Required Partitions

Mount Point Type Size

/ ext3 *

* Calculated dynamically based on the size of the /usr partition. By default, the minimum size is 5GB and no /usr partition is defined

QUESTION NO: 8

The ESX Service Console file system structure should (Choose Two):

- A. provide separate mount points for /tmp, /var/log and /home
- B. avoid filling /
- C. avoid filling /home
- D. provide separate mount points for /tmp, /var/log, /home and /etc

Answer: A, B

The following Custom Partitioning Design is recommended:

Mount Point	Type	Size
/	ext3	5.0GB
	Swap	1600MB
/home	ext3	512MB
/tmp	ext3	2.0GB
/vmimages	ext3	512MB
/var	ext3	2.0GB

The / (or "root") partition stores the ESX system and all files not stored in another custom partition. If this partition is filled to capacity, the ESX host could crash. It is imperative to prevent this.

QUESTION NO: 9

The /boot partition requires how much free space?

- A. 1.5GB
- B. 2GB
- C. 1GB
- D. 1.25GB

Answer: D

Explanation:

ESX and vCenter Server Installation Guide ESX 4.0 vCenter Server 4.0, page 61

Table 7-1. ESX Required Partitions

Mount Point Type Size Location Partition Description

/boot ext3 The ESX boot disk requires 1.25 GB of free space and includes the /boot and vmkcore partitions. The /boot partition alone requires 1100MB.

Note: the question would be better worded if it referred to /boot disk instead of /boot partition

QUESTION NO: 10

What is the minimum recommended space for swap?

- A. 200MB
- B. 400MB
- C. 600MB
- D. 800MB

Answer: C

Mastering VMware vSphere 4 Page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

QUESTION NO: 11

Your boss wants you to install vSphere 4 server on two HP C-class Blades. Each blade has two dual core CPU's. How many vSphere processor licenses will be needed for this setup?

- A. 4
- B. 12
- C. 2
- D. 8

Answer: A

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 108.
'License keys have a certain amount of capacity. Capacity is based on the number of processors in the host or the number of instances of the software asset. Dual-core and quad-core processors, such as Intel processors that combine two or four independent CPUs on a single chip, count as one processor.'

Therefore since there will be 4 CPUs in total, 4 licenses are required.

QUESTION NO: 12

By default ESX 4 Web Access is enabled;

- A. True
- B. vSphere 4 does not have Web Access
- C. False

Answer: C

Cannot log in to an ESX 4 host with vSphere Web Access

Web Access to ESX 4 is disabled by default.

QUESTION NO: 13

What is the recommended size for the /var/log partition?

- A. 2048MB
- B. 512MB
- C. 2000MB
- D. 1024MB

Answer: C

Mastering VMware vSphere 4, page 25.

'The /var/log partition is where the Service Console creates log files during the normal course of operation. This partition is created with the default size of 2000MB, or 2GB of space.'

QUESTION NO: 14

The Service Console must be installed on a VMFS partition?

- A. True
- B. False

Answer: A

vSphere Upgrade Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 69.

After the upgrade to ESX 4.0, the service console's partitions are stored in a .vmdk file. All .vmdk files, including the esxconsole.vmdk, are stored in VMFS volumes.

QUESTION NO: 15

What is the minimum number of network adapters required for an ESX4 Host?

- A. 4
- B. 2
- C. 3

D. 1

Answer: D

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 6.

ESX Hardware Requirements

Network Adapters

- One or more network adapters

QUESTION NO: 16

What is the default size for the / (root) partition?

- A. 5GB
- B. 1GB
- C. 3GB
- D. 7GB

Answer: A

Mastering VMware vSphere 4, page 24.

Default VMware ESX Partition Scheme

Mount Point Name Type Size

/ Ext3 5000MB (5GB)

QUESTION NO: 17

The default swap partition size for ESX 4.0 is which of the following?

- A. 544MB
- B. 1.6GB
- C. 600MB
- D. 800MB

Answer: C

Mastering VMware vSphere 4 Page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

QUESTION NO: 18

vSphere 4 Client minimum requirements are;

- A. 3GHz CPU, 2GB RAM, 2GB HDD space
- B. 500MHz CPU, 200MB RAM, 1GB HDD space
- C. 266MHz CPU, 2GB RAM, 2GB HDD space
- D. 266MHz CPU, 200MB RAM, 1GB HDD space

Answer: D

Minimum Requirements for the vSphere Client

- * CPU - 1 CPU
- * Processor - 266MHz or faster Intel or AMD processor (500MHz recommended).
- * Memory - 200MB RAM
- * Disk Storage - 1GB free disk space for a complete installation

QUESTION NO: 19

What is the maximum supported limit of RAM that a vSphere Host can have, regardless of Licence editions?

- A. 265GB
- B. 2TB
- C. 1TB
- D. 255GB

Answer: C

Memory Maximums

Size of RAM per host 1TB

QUESTION NO: 20

What is the maximum amount of vNIC's that a vSphere Guest can have?

- A. 4
- B. 10
- C. 1
- D. 2

Answer: B

Table 1. Virtual Machine Maximums

Virtual NICs per virtual machine 10

QUESTION NO: 21

What is the recommended size for the /home partition?

- A. 256MB
- B. 1024MB
- C. 512MB
- D. 1200MB

Answer: C

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 62.

ESX Optional Partitions

Mount Point	Type	Recommended Size
/home	ext3	512MB

QUESTION NO: 22

What is the minimum supported amount of RAM for an ESX4 Host?

- A. 4GB
- B. 1GB
- C. 2GB
- D. 3GB

Answer: C

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 6.

ESX Hardware Requirements

RAM

* 2GB RAM minimum

QUESTION NO: 23

ESX Service Console patches should be applied (Choose Two):

- A. as instructed by VMware authorized technical support personnel
- B. as Red Hat makes patches available
- C. when an issue is identified
- D. as VMware makes patches available

Answer: A, D

After you register your ESX Server license, you will get email notifications of new patches. If you haven't been notified about patches, you can check the ESX Patch update site to get the latest patch info

Patches will be either for security reasons, critical bug fix issues, or general system bugs. Of course, security and critical bug fix patches should be applied as soon as possible. Many of the ESX Server patches are actually for the service console (based on Red Hat Enterprise Linux). Although, don't try to apply Red Hat patches to the service console as you will find out that they don't work

QUESTION NO: 24

What is the maximum amount of RAM that a vSphere Guest can have?

- A. 256GB
- B. 128GB
- C. 255GB
- D. 64GB

Answer: C

Virtual Machine Maximums

RAM per virtual machine 255GB

QUESTION NO: 25

What is the maximum amount of logical processors that a vSphere Host can have?

- A. 8
- B. 18
- C. 32
- D. 64

Answer: D

Compute Maximums

Logical processors per host 64

Reference: Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 5.

QUESTION NO: 26

An administrator is installing ESX 4.0 on a physical server. Which of the following components would need to be modified or replaced to support a successful installation?

- A. 2 AMD Opteron CPUs
- B. 2 LSI Logic LSI7202XP-LCFibre Channel HBAs
- C. 4GB RAM
- D. 4 Intel PRO 1000 Network Adapters

Answer: B

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, Page 6.
ESX Hardware Requirements

64-Bit Processor

- VMware ESX 4.0 will only install and run on servers with 64-bit x86 CPUs.
- Known 64-bit processors:
- All AMD Opterons support 64 bit.

...

RAM

2GB RAM minimum

Network Adapters

...

- Intel PRO 1000 adapters

QUESTION NO: 27

Which of the following partitions is specific to ESXi 4.0?

- A. swap
- B. usr
- C. scratch
- D. vmkcore

Answer: C

ESXi Installable and vCenter Server Setup Guide ESXi 4.0 Installable vCenter Server 4.0, page 34.

About the Scratch Partition

When ESXi boots, the system tries to find a suitable partition on a local disk to create a scratch partition.

For ESXi Installable, the partition is created during installation and is thus selected.

QUESTION NO: 28

ESX 4 Hosts will only run on;

- A. 64bit CPU's only
- B. Intel CPU's only
- C. 32bit and 64bit CPU's
- D. 32bit CPU's only

Answer: A

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 6.
ESX Hardware Requirements

64-Bit Processor

QUESTION NO: 29

What is the recommended size for the /tmp partition?

- A. 512MB
- B. 4096MB
- C. 256MB
- D. 1024MB

Answer: D

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 62.
Table 7-2. ESX Optional Partitions

Mount Point	Type	Recommended Size
/tmp	ext3	1024MB

QUESTION NO: 30

If you want to test VMware vSphere before purchasing, what is the length of the Evaluation period available?

- A. 2 Months
- B. 30 Days
- C. 60 Days
- D. 90 Days

Answer: C

ESXi Installable and vCenter Server Setup Guide, ESXi 4.0 Installable, vCenter Server 4.0, page 97.

After the 60-day evaluation period expires, you are no longer able to perform some operations in vCenter Server and ESX/ESXi.

QUESTION NO: 31

Under which of the following conditions would an administrator consider using the Boot from SAN option for the ESX Host (Choose Two)?

- A. When concern exists that contention might occur between the Service Console and the VMkernel
- B. To easily replicate the Service Console to a remote site
- C. When using Microsoft Cluster Service
- D. In diskless hardware configurations

Answer: B, D

VMware ESX 3.0.0 SAN Booting

Disaster Recovery - Boot images stored on disk arrays can be easily replicated to remote sites where standby servers of the same HW type can boot quickly, minimizing the negative effect a disaster can have to the business

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 52.

Boot from a SAN:

1. If you do not want to handle maintenance of local storage.
2. When you need easy cloning of service consoles.
3. In diskless hardware configurations, such as on some blade systems.

QUESTION NO: 32

What is the size of a Virtual Machine .vswp file if defaults are taken for the VM reservations, limits, and shares?

- A. The VM .vswp file is equal to the amount of virtual memory (VM available memory plus VM overhead) configured for the VM when it was created

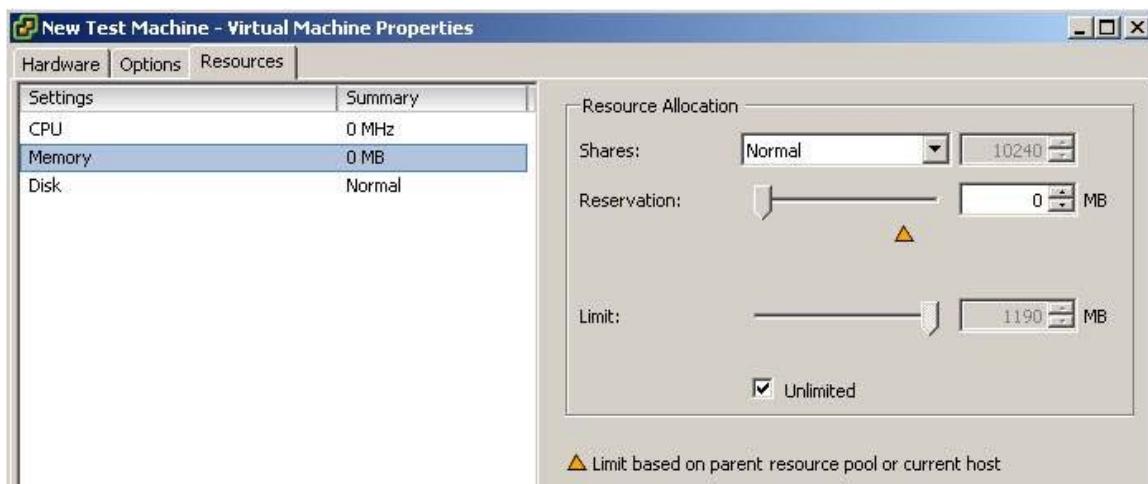
- B. The VM .vswp file is set to zero length when the VM is created and grows as necessary
- C. The VM .vswp file is equal to twice the amount of available memory configured for the VM when it was created
- D. The VM .vswp file is equal to the amount of available memory configured for the VM when it was created

Answer: D

The default VM reservations, limits, and shares are shown below.

Determining the right size for your VMware VMFS data stores.

The .vswp file is a virtual swap file that equals the size of the memory assigned to a VM, minus any memory reservations assigned to a VM, which by default is zero.



QUESTION NO: 33

Installing additional software in the ESX Service Console is supported in which of the following instances?

- A. for improved utilization of the ESX host resources
- B. for hardware management support

- C. for graphical desktop access for administrative purposes
- D. for enhanced virus protection

Answer: B

VMware ESX Server Third-Party Software in the Service Console, page 4

The only circumstance in which you might have to resort to running the software within the ESX Server service console is when you require direct access to hardware.

QUESTION NO: 34

An ESX Administrator plans to install additional supported components on the ESX Server that would increase the memory requirements for the Service Console. Which ESX Server partition would also need to be increased during installation as a result?

- A. vmfs3
- B. /
- C. swap
- D. /boot

Answer: C

Mastering VMware vSphere 4, page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

'It might be necessary to increase the amount of memory granted to the Service Console. ...If additional third party applications are needed to run in the Service Console...then more memory may be needed...'

QUESTION NO: 35

Company.com decides to use a license server for a newly installed Virtual Infrastructure. The infrastructure consists of one vCenter server and two ESX Server hosts, each with two dual core CPUs. DRS, VMware HA and VMotion will be used on all hosts. How many license files need to be installed on the license server?

- B. 2
- C. 4
- D. 25
- E. 1

Answer: E

VMware: Combining .lic license files.

As you may know, the license server for VI3 (provided by FlexLM) can only use 1 license file. This file is called vmware.lic and is stored (latest version) in C:\Program Files\VMware\VMware License Server.

QUESTION NO: 36

What is the maximum number of VMkernel swap files that an ESX Server can have on a single VMFS volume?

- A. 1 per virtual machine
- B. VMkernel swap files must be stored locally on the ESX Server
- C. 1 per virtual disk
- D. 1

Answer: A

Configuration Maximums VMware vSphere 4.0 and vSphere 4.0 Update 1, page 5.

Memory Maximums

Table 4. Memory Maximums

Item Maximum

Swap files 1 per virtual machine

QUESTION NO: 37

What is a requirement for enabling NIC teaming?

- A. A physical NIC is linked to multiple virtual switches
- B. All physical NICs must be of the same type.
- C. Multiple physical NICs are linked to a single virtual switch
- D. All virtual NICs must be of the same type.

Answer: C

Vmware Knowledge Base KB 1004088

To utilize NIC teaming, two or more network adapters must be uplinked to a virtual switch.

The NIC team used for the virtual machine network provides extra capacity as well as failover and keeps the portgroup connected to the network if one of the network adapters fails. The VMotion uplink is ideally connected to its own subnet along with other ESX Server host's VMotion ports to separate its traffic from the virtual machine and Service Console traffic and maximize performance.

An additional network adapter can be uplinked to virtual switch 1 to provide for failover on the Service Console (management) interface, or to a new virtual switch 4 to provide for iSCSI or NFS storage (ideally on its own subnet).

QUESTION NO: 38

A company plans to implement an ESX 4.0 / vCenter infrastructure that includes the following:

- three ESX Server host machines with four physical dual-core processors
- the ability to migrate running virtual machines (VMs) between these hosts without taking them offline
- multiple processor support for certain applications

What licensing is necessary to support these requirements?

- A. 1 vCenter server license, a 24-processor VMotion license, and a 24-processor ESX Server license
- B. 1 vCenter server license, a 12-processor VMotion license, and a 12-processor ESX Server license
- C. 3 vCenter server licenses, 3 VMotion licenses, and 3 ESX Server licenses
- D. 1 vCenter server license, 1 VMotion license, and an ESX Server license for each virtual processor for each running VM

Answer: B

VMware vSphere 4 Compare vSphere Editions for Mid-size and Enterprise Businesses.

	Essentials for Retail	Essentials Plus for Retail	Standard	Advanced	Enterprise	Enterprise Plus
ESX/ESXi	✓	✓	✓	✓	✓	✓
vCenter Server Compatibility	vCenter Server for Essentials, vCenter Server Foundation & vCenter Server Standard	vCenter Server for Essentials, vCenter Server Foundation & vCenter Server Standard	vCenter Server Foundation & Standard			
Cores per Processor	6	6	6	12	6	12
vSMP Support	4-way	4-way	4-way	4-way	4-way	8-way
Memory/Physical Server	256GB	256GB	256GB	256GB	256GB	*No license limit
vShield Zones				✓	✓	✓
VMotion				✓	✓	✓

VMware Multi-Core Pricing & Licensing Policy

How does this policy affect my licensing costs on servers with less than 6 cores per processor?

When upgrading your hardware to multi-core technology, you do not need to pay additional licensing fees for a processor with up to 6-cores per processor. For example, if you purchase a two-socket server with each socket populated with a 6-core processor, you need to purchase only two processor licenses of VMware vSphere or related products for that server.

How does this policy affect my licensing costs on servers with 8-cores per processor?

When upgrading your hardware to a server with 8-cores per processor you may upgrade your license or purchase a new license for VMware vSphere Advanced or Enterprise Plus that allows you to deploy the applicable software on up to 12-cores per processor

1. Three ESX Server host machines with four physical dual-core processors will therefore require $3 \times 4 = 12$ licenses
2. The ability to migrate running virtual machines (VMs) between these hosts without taking them offline requires VMotion, which is licensed as above, so would require 12 licenses of an appropriate version of vSphere.
3. Multi-processor support for applications is based on physical processor availability, and is not separately licensed
4. Each vCenter installation is separately licensed. Since this is a very small site, and there is no indication that additional vCenter servers will be installed, a single license is required for vCenter server.

QUESTION NO: 39

During installation you manually create a local VMFS volume. What is a possible purpose for this volume?

- A. service console swap files for over commitment of service console RAM
- B. decentralized storage for all VMkernel swap activity
- C. VMkernel swap files for locally configured virtual machines
- D. storage for service console log files

Answer: B

Best Practices for vSphere (ESX 4) Service Console Partitions

The swap partition is used to supplement RAM if the service console runs out of physical memory. Therefore A is incorrect.

In-depth ESX Server service console partitioning and provisioning

Because ESX Server's Service Console is based on Red Hat Enterprise Linux, it places its log files in /var/log. Therefore D is incorrect.

The Role of Memory in VMware ESX Server 3, page 3.

When you power on a virtual machine, a corresponding swap file is created and placed in the same location as the virtual machine configuration file (.vmx file). The virtual machine can power on only when the swap file is available. Therefore C is incorrect.

Mastering Vmware vSphere 4, page 219.

Local storage is still used by default in vSphere ESX 4 installations as the ESX userworld swap (think of this as the ESX host swap and temp use). Therefore B is correct.

QUESTION NO: 40

Which partition is required to store core dumps for debugging and for VMware technical support?

- A. vmkcore
- B. vmfscore
- C. vmimages
- D. vmkdump

Answer: A

ESX and vCenter Server Installation Guide ESX 4.0 vCenter Server 4.0, page 62.

vmkcore - Used to store core dumps for debugging and technical support.

QUESTION NO: 41

Which statement is true about running an ESX Server virtual machine on a CIFS share?

- A. ESX Server requires gigabit Ethernet adapter in order for CIFS to be used as datastore.
- B. ESX Server must be on the same LAN as the CIFS server.
- C. ESX Server does not support datastore on CIFS.
- D. ESX Server must be granted as a trusted member of the CIFS server.

Answer: C

ESX Configuration Guide ESX 4.0 vCenter Server 4.0, page 77.

Depending on the type of storage you use, datastores can be backed by the following file system formats:

1. Virtual Machine File System (VMFS) - High-performance file system optimized for storing virtual machines. Your host can deploy a VMFS datastore on any SCSI-based local or networked storage device, including Fibre Channel and iSCSI SAN equipment. As an alternative to using the VMFS datastore, your virtual machine can have direct access to raw devices and use a mapping file (RDM) as a proxy.
2. Network File System (NFS) - File system on a NAS storage device. ESX supports NFS version 3 over TCP/IP. The host can access a designated NFS volume located on an NFS server, mount the volume, and use it for any storage needs.

QUESTION NO: 42

During ESX Server 4.0 installation, selecting "Create a default network for virtual machines" will cause virtual machines to _____.

- A. share a network adapter with the service console
- B. share a bond with all available network adapters
- C. share a port group on VLAN 1
- D. share an internal only virtual switch

Answer: A

If you select Create a default network for virtual machines, your virtual machines share a network adapter with the service console.

QUESTION NO: 43

Where is LUN masking configured? (Choose two.)

- A. on the Fibre Switch
- B. on the host
- C. on the storage processor
- D. on the Ethernet switch
- E. on the firewall

Answer: B, C

LUN Masking in a SAN

There are three places where LUN Masking can be implemented. The first is in the storage, the second is in the servers [the host], and the third is either in a device through which all of the I/O passes or the SAN itself, [the switch]. Each of these has its benefits. In practice, LUN Masking at a customer site is implemented in multiple ways reflecting the different methods used by each vendor.

To implement LUN Masking in the switch would require that a time consuming table look-up be performed that is not currently possible within Implementing LUN Masking due to memory constraints on the fibre channel switch ASIC. This means that all of the data would need to be staged to a central cache before being forwarded on. This is simply not possible with today's technology without increasing the latency by a factor of 10 to 100 times.

Therefore the only practical place to perform LUN masking is on the host or on the storage processor, (B & C).

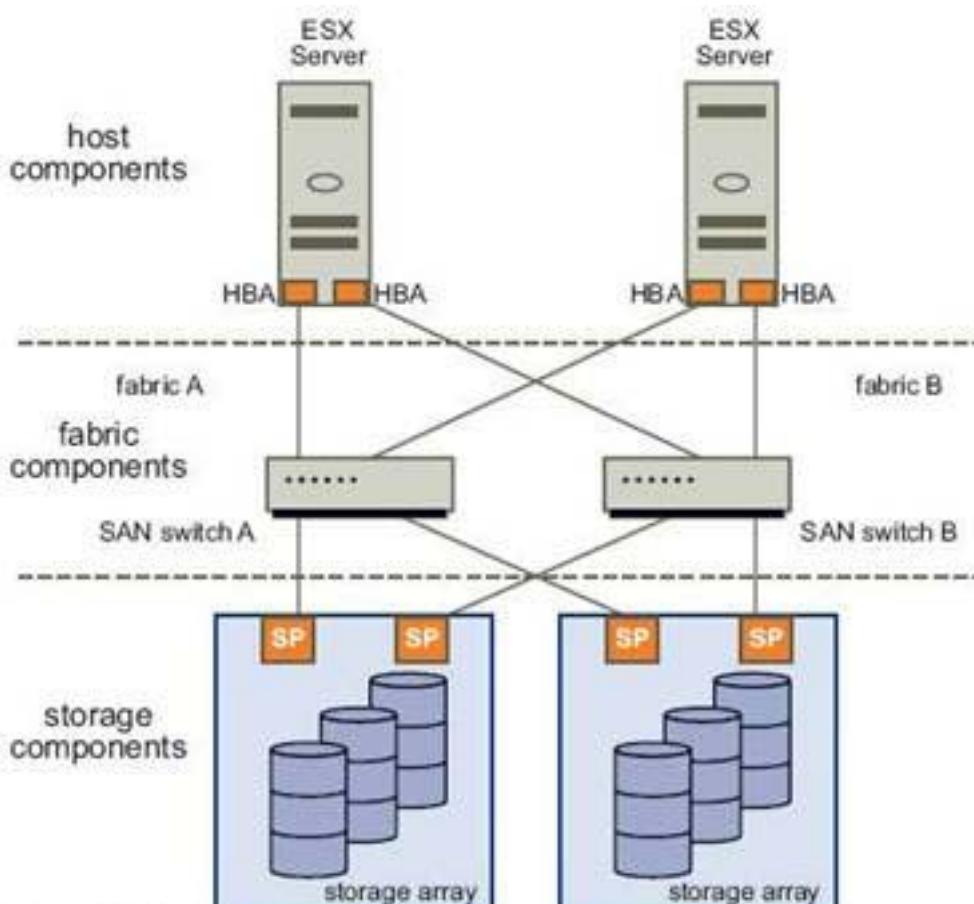


Figure 2. SAN Component Layers

QUESTION NO: 44

What is a valid reason for choosing to boot from local storage rather than choosing to boot from SAN?

- A. MSCS is not supported on boot from SAN.
- B. RDM is not supported on boot from SAN.
- C. VMotion is not supported on boot from SAN.
- D. There is no way to restrict sharing of boot LUNs between ESX Servers on boot from SAN.

Answer: A

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 43.

Boot from SAN Overview

Before you consider how to set up your system for boot from SAN, decide whether it makes sense for your environment.

Use boot from SAN in the following circumstances:

1. If you do not want to handle maintenance of local storage.
2. If you need easy cloning of service consoles.
3. In diskless hardware configurations, such as on some blade systems.

You should not use boot from SAN in the following situations:

1. If you are using Microsoft Cluster Service. [A above].
2. If I/O contention might occur between the service console and Vmkernel

NOTE With ESX Server 2.5, you could not use boot from SAN together with RDM.

With ESX 3.x or later, this restriction is removed

QUESTION NO: 45

A company decides to replace one 8-CPU host with four dual-CPU hosts. This Virtual Infrastructure uses server-based licensing. How many new licenses will be required?

- A. 0
- B. 16
- C. 8
- D. 4

Answer: A

VMware Multi-Core Pricing & Licensing Policy

How does this policy affect my licensing costs on servers with less than 6 cores per processor?

When upgrading your hardware to multi-core technology, you do not need to pay additional licensing fees for a processor with up to 6-cores per processor. For example, if you purchase a two-socket server with each socket populated with a 6-core processor, you need to purchase only two processor licenses of VMware vSphere or related products for that server.

Under the original configuration an 8-CPU host requires (8 x 1) 8 CPU licenses. Under the new configuration four dual-CPU hosts require (4 x 2) 8 CPU licenses.

Part 2: Upgrade VMware ESX/ESXi (15 questions).

QUESTION NO: 1

In order to upgrade to vSphere 4, an ESX host must have a /boot partition of at least:

- A. 100 MB
- B. 150 MB
- C. 50 MB
- D. 200 MB

Answer: A

vSphere Upgrade Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0 vSphere Client 4.0 Page 73

Direct, in-place upgrade from ESX 2.5.5 to ESX 4.0 is not supported, even if you upgrade to ESX 3.x as an intermediary step. The default ESX 2.5.5 installation creates a /boot partition that is too small to enable upgrades to ESX 4.0. As an exception, if you have a non-default ESX 2.5.5 installation on which at least 100MB of space is available on the /boot partition, you can upgrade ESX 2.5.5 to ESX 3.x and then to ESX 4.0.

QUESTION NO: 2

The vSphere 4 Host Update Utility upgrades the (Choose Two):

- A. service console if present
- B. VMFS datastores
- C. virtual machine hardware

D. VMkernel

Answer: A,D

vSphere Upgrade Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 67

'vSphere Host Update Utility

Graphical utility for standalone hosts. Allows you to perform remote upgrades of ESX 3.x/ESXi 3.5 hosts to ESX 4.0/ESXi 4.0. vSphere Host Update Utility upgrades the virtual machine kernel (vmkernel) and the service console, where present. vSphere Host Update Utility does not upgrade VMFS datastores or virtual machine guest operating systems.'

QUESTION NO: 3

Before you upgrade an ESX/ESXi host (Choose Three):

- A. verify current hardware is supported per the vSphere Systems Compatibility Guide
- B. run the VMware CPU Identification Utility
- C. run the vSphere 4 Pre-Upgrade Script from the command line
- D. schedule a maintenance window for 32-bit hardware
- E. compare the md5sum of the downloaded file to the value on the VMware download website

Answer: A,B,E

Ensure that the hardware and/or virtual machine meets the minimum system requirements for VMware vCenter 4.0

You can use vSphere Host Update Utility to upgrade ESX 3.x to ESX 4.0 and ESXi 3.5 hosts to ESXi 4.0. You cannot use vSphere Host Update Utility to convert ESX hosts to ESXi hosts, or the reverse. When you select a host to be upgraded, the tool performs an automated host compatibility check as a preupgrade step. The check verifies that each host is compatible with ESX 4.0/ESXi 4.0, including the required CPU, and has adequate boot and root partition space. In addition to the automated preupgrade script, you can specify a postupgrade configuration script to ease deployment.

Note the preupgrade script is automated and so does not need to be run explicitly.

ESX and vCenter Server Installation Guide, ESX 4.0 vCenter Server 4.0, page 13.

ESX Hardware Requirements

* 64-Bit Processor

QUESTION NO: 4

The following ESX versions are supported for direct upgrading to vSphere 4 (Choose Two):

- A. ESX/ESXi 3.5
- B. ESX 2.1
- C. ESX 2.5.5
- D. ESX 3.0.0, 3.0.1, 3.0.2

Answer: A,D

vSphere Upgrade Guide ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, Page 72

'Upgrade Support for ESX/ESXi:

ESX 3.0.0, ESX 3.0.1, ESX 3.0.2, ESX 3.0.3, ESX, ESXi 3.5 - Yes

ESX 2.5.5 Limited Support'

QUESTION NO: 5

Which of the following are true regarding the ESX Service Console file system structure (Choose Two)?

- A. separate mount points are created for /tmp, /var/log and swap by default
- B. running out of space on /var/log can cause vSphere Client connectivity disruptions
- C. running out of space on / can cause vSphere Client connectivity disruptions
- D. separate mount points are created for /var/log and swap by default

Answer: C, D

Mastering VMware vSphere 4 Page 24.

Default VMware ESX Partition Scheme

Mount Point Name Type Size

/boot Ext3 250MB

/ Ext3 5000MB (5GB)

(none) Swap 600MB

/var/log Ext3 2000MB (2GB)

(none) Vmkcore 100MB

The / (or "root") partition stores the ESX system and all files not stored in another custom partition. If this partition is filled to capacity, the ESX host could crash. It is imperative to prevent this.

Note: The explanation uses partition sizes from VI3 days, not vSphere 4.

QUESTION NO: 6

The vSphere 4 Host Update Utility provides a graphical user interface for (Choose Two):

- A. upgrading ESX hosts in DRS/HA clusters
- B. upgrading standalone ESX/ESXi hosts
- C. performing a host compatibility check
- D. keeping guest operating systems patched

Answer: B, C**vSphere Host Update Utility**

This tool is for upgrading ESX 3.x/ESXi 3.5 standalone hosts to ESX 4.0/ESXi 4.0 and for patching ESXi 4.0 standalone hosts. A standalone host is an ESX/ESXi host that is not managed in vCenter Server.

When you select a host to be upgraded, the tool performs an automated host compatibility check as a preupgrade step.

QUESTION NO: 7

Before you upgrade an ESXi host:

- A. Save the ESXi configuration using vicfg-cfgbackup s from the vCLI
- B. Update the ESXi restore CD with the current ESXi image
- C. Save the current ESXi image to another ESXi server
- D. Copy the embedded ESXi image to a USB flash drive

Answer: A

vSphere Upgrade Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0 vSphere Client 4.0 , page 71.

Back up the host configuration before you begin a host upgrade.

For more information about the VMware vSphere Command-Line Interface and the vicfg-cfgbackup command, see the vSphere Command-Line Interface Installation and Reference Guide.

QUESTION NO: 8

vCenter Update Manager is capable of upgrading which of the following (Choose Three):

- A. VMware Tools
- B. vCenter

- C. Service Console
- D. Virtual Machine Hardware
- E. vSphere Client

Answer: A, C, D

vSphere Update Manager upgrades multiple VMware vSphere components
Table . Upgraded Components

Component	Upgraded by Update Manager
Virtual machine kernel (vmkernel)	Yes
Service console, where present	Yes
Virtual machine hardware	Yes
Virtual Machine Tools	Yes
Guest operating systems	Yes, for SP and patch releases.

QUESTION NO: 9

Additional licensing is required once the number of cores per CPU reaches which of the following?

- A. 8 or more cores
- B. 12 or more cores
- C. 6 or more cores
- D. 16 or more cores

Answer: A

Essentials for Retail, Essentials Plus for Retail, Standard and Enterprise support 6 cores per CPU. Advanced and Enterprise Plus support 12 cores per CPU.

QUESTION NO: 10

After upgrading an ESX host to vSphere 4, which of the following three actions should be taken (Choose Three)

- A. restore files to the service console
- B. connect the host to vCenter if managed
- C. boot into Troubleshooting Mode for proper operation
- D. configure licensing
- E. verify virtual machine operation

Answer: B,D,E

vSphere Upgrade Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0 vSphere Client 4.0, page 79.

After you upgrade an ESX/ESXi host, consider the following:

- View the upgrade logs.
- If vCenter Server manages the host, you must reconnect the host to vCenter Server by right-clicking the host in the vCenter Server inventory and selecting Connect.
- When the upgrade is complete, ESX/ESXi is in evaluation mode. Evaluation mode lasts for 60 days. You must assign an upgraded license to your product within 60 days after the upgrade. Use the License Portal and the vSphere Client to configure licensing. There is no requirement to restore files to the service console after an upgrade Troubleshooting mode is not a valid mode for a vSphere host It makes sense to verify virtual machine operation after an upgrade has taken place.

QUESTION NO: 11

Before you upgrade an ESX host:

- A. back up /var/logs, /usr, /bin and the dmesg output
- B. back up /proc, /mnt, /tmp, custom scripts and all VMFS datastores
- C. back up /home, /etc/init.d and /boot
- D. back up /etc/passwd, /etc/groups, /etc/shadow, /etc/gshadow, custom scripts and local VMFS

Answer: D

vSphere Upgrade Guide ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 71

'Before you upgrade an ESX host, back up the local VMFS file system. This ensures that you will not lose data during the upgrade.'

Procedure

- * Back up the files in the /etc/passwd, /etc/groups, /etc/shadow, and /etc/gshadow directories. The /etc/shadow and /etc/gshadow files might not be present on all installations.
- * Back up any custom scripts.
- * Back up your .vmx files.
- * Back up local images, such as templates, exported virtual machines, and .iso files.'

QUESTION NO: 12

In order to upgrade to vSphere 4, an ESX host must have a /boot partition of at least:

- A. 100MB
- B. 200MB

- C. 150MB
- D. 50MB

Answer: A

vSphere Upgrade Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0 vSphere Client 4.0 Page 73

Direct, in-place upgrade from ESX 2.5.5 to ESX 4.0 is not supported, even if you upgrade to ESX 3.x as an intermediary step. The default ESX 2.5.5 installation creates a /boot partition that is too small to enable upgrades to ESX 4.0. As an exception, if you have a non-default ESX 2.5.5 installation on which at least 100MB of space is available on the /boot partition, you can upgrade ESX 2.5.5 to ESX 3.x and then to ESX 4.0.

QUESTION NO: 13

The vSphere 4 Host Update Utility upgrades the (Choose Two):

- A. service console if present
- B. Virtual machine hardware
- C. VMFS datastores
- D. VMkernel

Answer: A,D

vSphere Upgrade Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 67

'vSphere Host Update Utility'

Graphical utility for standalone hosts. Allows you to perform remote upgrades of ESX 3.x/ESXi 3.5 hosts to ESX 4.0/ESXi 4.0. vSphere Host Update Utility upgrades the virtual machine kernel (vmkernel) and the service console, where present. vSphere Host Update Utility does not upgrade VMFS datastores or virtual machine guest operating systems.'

QUESTION NO: 14

An ESX Administrator plans to install additional supported components on the ESX Server that would increase the memory requirements for the Service Console. Which ESX Server partition would also need to be increased during installation as a result?

- A. /
- B. vmfs3
- C. /boot
- D. swap

Answer: D

Mastering VMware vSphere 4 Page 25.

'As a general rule, swap files are created with a size equal to at least two times the memory allocated to the operating system. The installation process allocates a default amount of 300MB of memory for the Service Console; therefore, the default swap partition size would be 600MB.'

'It might be necessary to increase the amount of memory granted to the Service Console. ...If additional third party applications are needed to run in the Service Console...then more memory may be needed...'

QUESTION NO: 15

An administrator is in the process of upgrading ESX 3.5 Hosts to vSphere. vCenter Data Recovery has been installed and configured to back up the virtual machines in the datacenter. However, after a scheduled backup it appears that not all of the virtual machines selected were successfully backed up. What is most likely the cause for this issue?

- A. The virtual machines which were not backed up are running unsupported Operating Systems.
- B. The affected virtual machines did not have the VDR agent installed
- C. Some of the virtual machines are on the ESX 3.5 hosts.
- D. Some of the virtual machines were running during the backup window.

Answer: C

VMware Data Recovery Frequently Asked Questions (FAQ), April 2009.

VMware Data Recovery is not backward compatible to ESX 3.5 or earlier hosts.

Part 3: Secure VMware ESX/ESXi (21 questions).

QUESTION NO: 1

ESX Service Console patches should be applied (Choose Two):

- A. in accordance with VMware Security Advisories
- B. when advised by VMware authorized technical support personnel
- C. when notified on the VMware Security Blog
- D. in accordance with VMware and RedHat Security Advisories

Answer: A, B

After you register your ESX Server license, you will get email notifications of new patches. If you haven't been notified about patches, you can check the ESX Patch update site to get the latest patch info

Patches will be either for security reasons, critical bug fix issues, or general system bugs. Of course, security and critical bug fix patches should be applied as soon as possible. Many of the ESX Server patches are actually for the service console (based on Red Hat Enterprise Linux). Although, don't try to apply Red Hat patches to the service console as you will find out that they don't work.

QUESTION NO: 2

ESX Service Console patches should be applied (Choose Two):

- A. as VMware makes patches available
- B. as instructed by VMware authorized technical support personnel
- C. as Red Hat makes patches available
- D. when an issue is identified

Answer: A, B

After you register your ESX Server license, you will get email notifications of new patches. If you haven't been notified about patches, you can check the ESX Patch update site to get the latest patch info

Patches will be either for security reasons, critical bug fix issues, or general system bugs. Of course, security and critical bug fix patches should be applied as soon as possible. Many of the ESX Server patches are actually for the service console (based on Red Hat Enterprise Linux). Although, don't try to apply Red Hat patches to the service console as you will find out that they don't work

QUESTION NO: 3

Securing an ESX service console is important because:

- A. VMs depend on the patch level of the service console
- B. Service Console actions can affect all VMs on an ESX host
- C. Service Console permissions are applied to users when logging in to a host via vCenter
- D. VMs run in the service console

Answer: B

With VMware ESX being loaded on top of the server hardware, there are a few points of immediate concern:

1. the VMKernel & its virtualization layer
2. the VMware ESX Service console (based on Red Hat Linux Enterprise)

These two pieces are two very distinct parts of VMware ESX. VMware has periodically released patches for both of these different components although you probably just thought of them as "ESX patches".

Concerning #1, the VMKernel and its virtualization layer is extremely secure. The Guest machines have hardware isolation in place and it seems impossible that a guest VM could somehow compromise the security of the host virtualization layer.

As for #2, with the services console being based on Linux, it will be affected by most of the Red Hat Linux vulnerabilities. Because the service console is a Linux OS with a direct link to the VMKernel, I will focus on securing the service console

QUESTION NO: 4

By default ESX4 is installed with which security settings?

- A. Low and you must configure higher parameters
- B. No security
- C. Medium with minimum ports opened
- D. High with all outbound ports closed

Answer: D

Mastering VMware vSphere 4, page 565

The default mode of operation is High security.

QUESTION NO: 5

ESX Service Console patches should be applied (Choose Two):

- A. when advised by VMware authorized technical support personnel
- B. when notified on the VMware security blog
- C. in accordance with VMware security advisories
- D. in accordance with VMware and RedHat Security Advisories

Answer: A,C

Security Advisories are the official notification of security-related vulnerabilities and issues impacting VMware products. Security Advisories outline complete information on how to protect impacted systems. Each advisory contains a detailed description of the security vulnerability, affected systems, threat severity, risk mitigation techniques for fixing the vulnerability and securing the system

QUESTION NO: 6

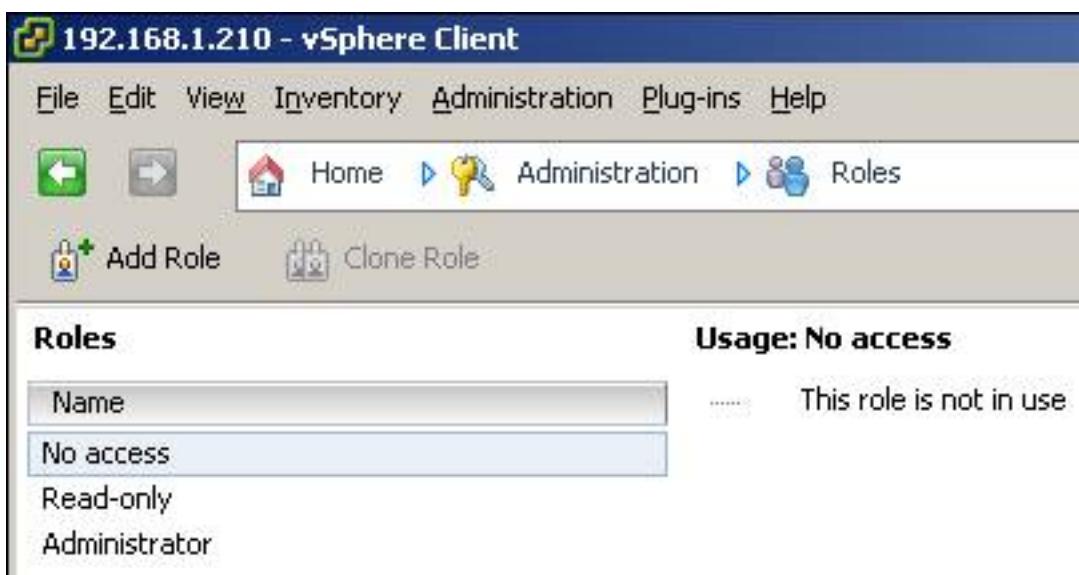
What are the three default roles provided on an ESX Host?

- A. Network Consumer, Datastore Consumer and Resource Pool Administrator
- B. Virtual Machine User, Virtual Machine User and Administrator
- C. Read only, Operator Access and Administrator
- D. No Access, Read Only and Administrator

Answer: D

Mastering VMware vSphere 4, page 387

An ESX/ESXi host has three default roles: No Access, Read-Only, and Administrator



QUESTION NO: 7

The default warning for password expiration on ESX is how many days?

- A. 5
- B. 15
- C. 30

D. 7

Answer: D

Explanation:

Warning time.

- The number of days in advance of password expiration that a reminder is sent. The default is seven days. Warnings are only displayed when logging directly in to the service console or when using SSH.

QUESTION NO: 8

ESX uses which Linux based firewall tool?

- A. IPCop
- B. IPTables
- C. monowall
- D. FireStarter

Answer: B

Mastering VMware vSphere 4, page 564

VMware ESX ships with a firewall that controls traffic into and out of the Service Console. This firewall is based on the Linux iptables firewall.

QUESTION NO: 9

When cloning a role, which of the following applies (Choose Two)?

- A. The cloned role contains all of the same privileges as the original role
- B. The cloned role can be edited during the cloning process to adjust the privileges in the role
- C. The cloned role is not applied to the same users or groups as the original role
- D. The cloned role is applied to the same users and groups as the original role

Answer: A,C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0 , page216

Clone a Role

You can make a copy of an existing role, rename it, and later edit it. When you make a copy, the new role is not applied to the same users or groups and objects

QUESTION NO: 10

Which of the following is a benefit of ESXi over ESX?

- A. Dynamic Resource Allocation
- B. Increased Security and Reliability
- C. Memory Overcommitment
- D. Improved Fault Isolation

Answer: B

The smaller code base of ESXi represents a smaller "attack surface" and less code to patch, improving reliability and security. The functionality of the service console is replaced by remote command line interfaces and adherence to system management standards

QUESTION NO: 11

Which of the following are not valid permissions for a Datacenter Administrator (Choose Two)?

- A. Create a Resource Pool
- B. Create a Virtual Machine
- C. Add a Host
- D. Assign Permissions to a user

Answer: B, D

Managing VMware VirtualCenter Roles and Permissions, page 5.

Datacenter Administrator

Perform actions on global items, folders, datacenters, datastores, hosts [C above], virtual machines, resources [A above], and alarms.

Set up datacenters, but with limited ability to interact with virtual machines [B above].

This includes:

All privileges for folder, datacenter, datastore, network, resource, alarms, and scheduled task privileges groups.

Selected privileges for global items, host, and virtual machine privileges groups.

No privileges for session, performance, and permission [D above] privileges groups.

QUESTION NO: 12

What is a valid use case for the No Access role?

- A. An administrator wants to prevent a user from launching the vSphere Client
- B. An administrator wants to allow only the status of an object to be viewed, but provide no other access
- C. An administrator wants to allow the state and details of an object to be viewed, but provide no other access
- D. An administrator wants to revoke permissions on an object that would otherwise be propagated

Answer: D

Mastering VMware vSphere 4, page 387.

The No Access role can be used if a user was granted access higher up in the inventory.

QUESTION NO: 13

When assigning a user permissions on an ESX Server, which of the following objects cannot be assigned permissions (Choose all that apply)?

- A. Folders
- B. Hosts
- C. Virtual Machines
- D. Resource Pools
- E. None of the other alternatives apply

Answer: E

All of the above objects can be assigned permissions:

Folder

The screenshot shows the vSphere Client interface with the 'Permissions' tab selected. On the left, a tree view shows a folder structure: Production, Test (which is 'not responding'), New York DataCenter, Virtual ESX, and ESX/TestCluster. The 'Test' folder is currently selected. On the right, a table lists permissions for the 'Test' folder. It shows two entries: '\bob' with 'Read-only' role and 'Administrators' with 'Administrator' role. A large 'Add Permission...' button is visible at the bottom of the permission table.

User/Group	Role
\bob	Read-only
Administrators	Administrator

Host

User/Group	Role	Defined in
Steve	Virtual machine power user	Virtual ESX
\bob	Read-only	VM-ESX4-VC... VM-ESX4-VC... ...
Administrators	Administrator	VM-ESX4-VC... VM-ESX4-VC... ...

Add Permission... Refresh

Virtual Machine

User/Group	Role	Defined in
Guest	Test Role	This object
Steve	Virtual machine power user	Virtual ESX
\bob	Read-only	VM-ESX4-VC... VM-ESX4-VC... ...
Administrators	Administrator	VM-ESX4-VC... VM-ESX4-VC... ...

Add Permission... Refresh

Resource Pool

User/Group	Role	Defined in
Steve	Virtual machine power user	Virtual ESX
\bob	Read-only	VM-ESX4-VC... VM-ESX4-VC... ...
Administrators	Administrator	VM-ESX4-VC... VM-ESX4-VC... ...

Add Permission... Refresh

QUESTION NO: 14

When an existing role that has been assigned to users is removed from vCenter Server, which of the following can occur (Choose Two)?

- A. Users or groups are automatically assigned to the next most restrictive role available

- B. Users or groups that had privileges may no longer have any permissions in vCenter
- C. Users or groups can be reassigned to any available role
- D. Users or groups retain the removed role until they are manually assigned a new role

Answer: B, C

See below.



QUESTION NO: 15

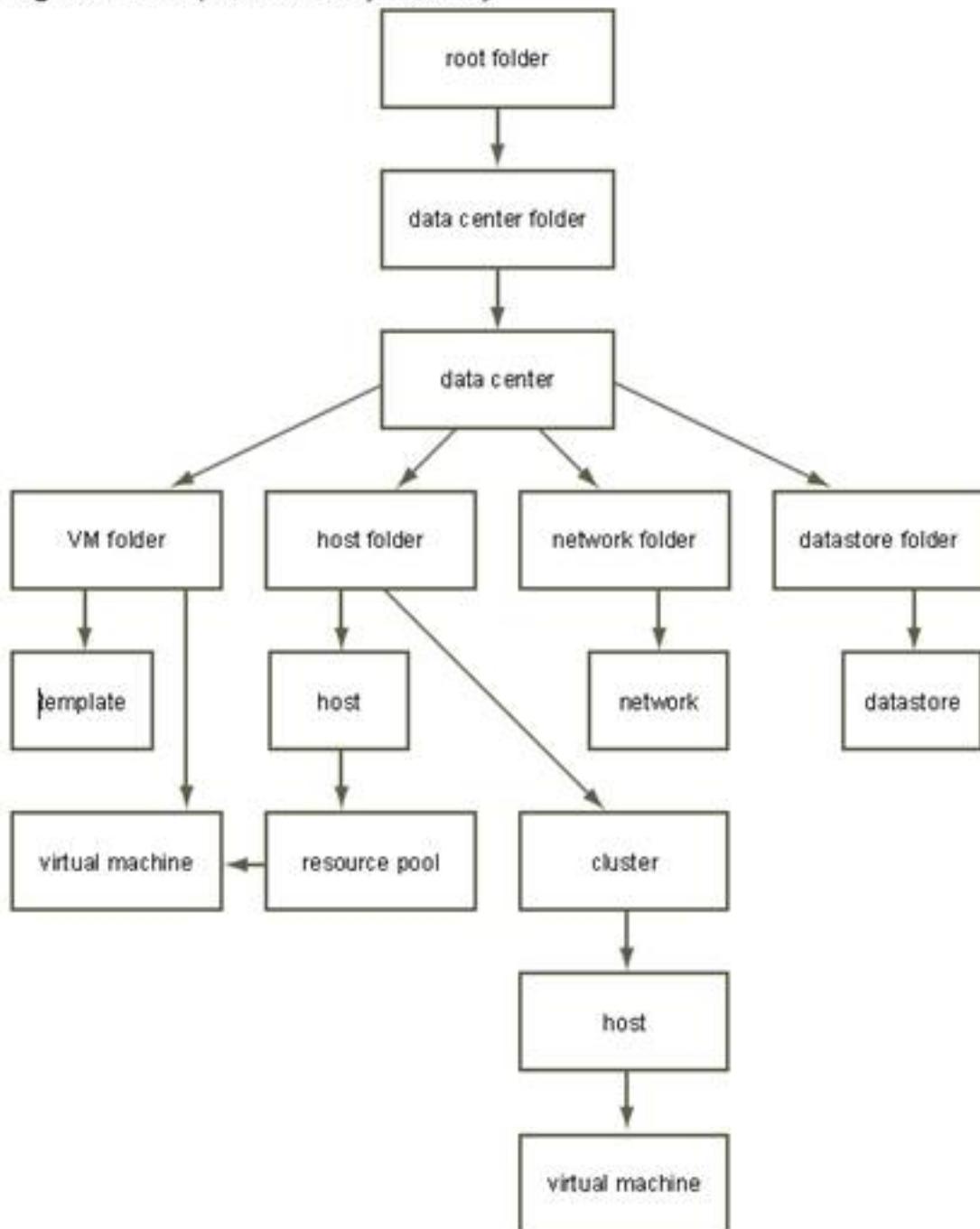
Using vSphere client logged into vCenter you create a new user and assign this user Administrator privileges on an ESX Server. Which privileges will that user have on the DRS Cluster in which this ESX Server resides?

- A. Administrator
- B. Virtual Machine Administrator
- C. No Access
- D. Datacenter Administrator

Answer: C

When you assign a permission to an object, you can choose whether the permission propagates down the object hierarchy. Since a Cluster will be above an ESX host, there will be no propagation of permissions from host to cluster. Therefore the user will have no permissions

Figure 18-2. vSphere Inventory Hierarchy



QUESTION NO: 16

Which pre-defined role can assign permissions to users?

- A. Administrator
- B. Virtual Machine Administrator
- C. Virtual Machine User
- D. Datacenter Administrator

Answer: A

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 214

﻿Table 18-1. Default Roles

Administrator - All privileges for all objects. Add, remove, and set access rights and privileges for all the vCenter Server users and all the virtual objects in the vSphere environment. This role is available in ESX/ESXi and vCenter Server

QUESTION NO: 17

The QA department wants to manage their own virtual machines (VMs). They share an ESX Server cluster with the HR department, and the Finance department.

What is the appropriate role for the QA department members?

- A. Administrator on the VM object
- B. VM Administrator
- C. Resource Pool Administrator
- D. Datacenter Administrator

Answer: C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 213.

When you assign a user or group permissions, you pair the user or group with a role and associate that pairing with an inventory object. A single user might have different roles for different objects in the inventory. For example, if you have two resource pools in your inventory, Pool A and Pool B, you might assign a particular user the Virtual Machine User role on Pool A and the Read Only role on Pool B. This would allow that user to power on virtual machines in Pool A, but not those in Pool B, although the user would still be able to view the status of the virtual machines in Pool B.

QUESTION NO: 18

Which of the following methods can be used to secure access to iSCSI storage when using ESX server? (Choose Two.)

- A. Enable CHAP authentication
- B. Disable promiscuous mode for the virtual switch containing the VMkernel port used for iSCSI
- C. Enable encryption on iSCSI initiator by selecting the iSCSI encrypt option
- D. Place virtual machines and the VMkernel port used for iSCSI on separate virtual switches

Answer: A, D

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 37.

Because the IP networks that the iSCSI technology uses to connect to remote targets do not protect the data they transport, you must ensure security of the connection. iSCSI requires that all devices on the network implement Challenge Handshake Authentication Protocol (CHAP), which verifies the legitimacy of initiators that access targets on the network, (A).

By placing virtual machines and the VMkernel port used for iSCSI on separate virtual switches you could prevent VMs accessing the iSCSI initiator, (D).

QUESTION NO: 19

On an ESX Server, a particular user is assigned the Administrator role. However, when that user logs into the vCenter Server, they have Read Only rights.

What most likely caused this?

- A. ESX Server roles do not propagate to the vCenter Server.
- B. The ESX Server is not authenticating using NIS.
- C. The user is logging in with a different password.
- D. The vCenter Server is not a member of an Active Directory domain.

Answer: A

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 211.

The privileges and roles assigned on an ESX/ESXi host are separate from the privileges and roles assigned on a vCenter Server system. When you manage a host using vCenter Server, only the privileges and roles assigned through the vCenter Server system are available. If you connect directly to the host using the vSphere Client, only the privileges and roles assigned directly on the host are available, (A).

QUESTION NO: 20

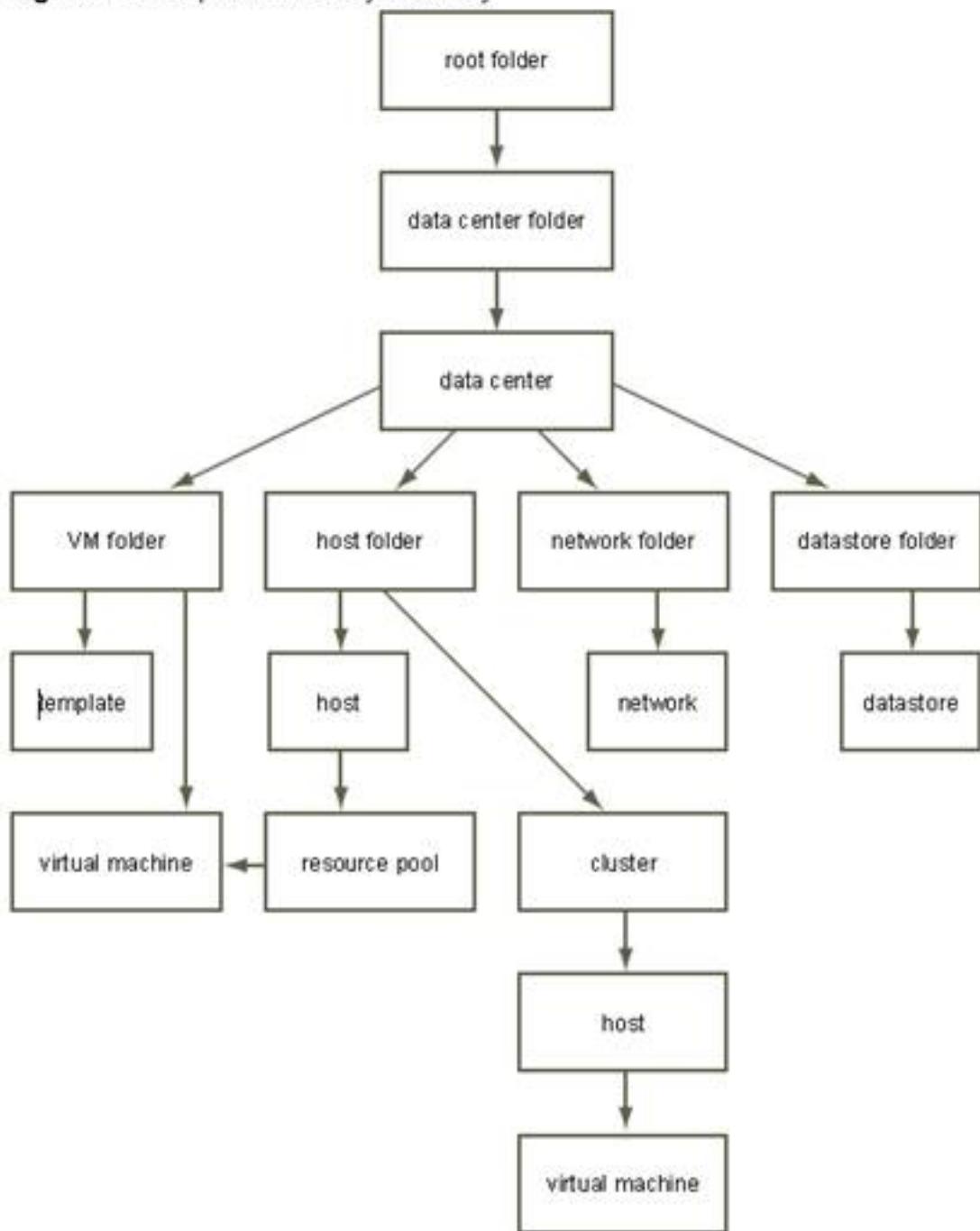
On an ESX Server managed by vCenter, you create a new user and assign this user Administrator Privileges. Which privileges will that user have on the ESX Server cluster in which this server resides?

- A. Cluster User
- B. Administrator
- C. None
- D. Virtual Machine Administrator

Answer: C

When you assign a permission to an object, you can choose whether the permission propagates down the object hierarchy. Since a Cluster will be above an ESX host, there will be no propagation of permissions from host to cluster. Therefore the user will have no permissions

Figure 18-2. vSphere Inventory Hierarchy



QUESTION NO: 21

For what reason would an ESX Server administrator send an end user a remote console URL?

- A. to go directly to the state of a specific virtual machine snapshot that can be resumed by the end user with a vSphere Client
- B. because remote console URLs are used to delegate administrative tasks performed on the ESX service console
- C. to provide a lightweight user interface to a virtual machine without a vSphere Client
- D. for quick access to a specific virtual machine from the vSphere Client

Answer: C

Virtual Infrastructure Web Access Administrator's Guide : Using Virtual Infrastructure Web Access to Manage Virtual Machines : Creating and Sharing Remote Console URLs

Using VI Web Access, you can create a remote console URL of a virtual machine using ordinary Web browser URLs. When creating a remote console URL, you can customize the VI Web Access user interface controls. Using remote console URLs, you can:

- Add the remote console URL to a list of favorite Web pages
- Share the remote console URL with one or more users in an e-mail message

Part 4: Install VMware ESX/ESXi on SAN Storage (19 questions).

QUESTION NO: 1

LUN masking is a process that makes a LUN available to some hosts and unavailable to other hosts.

- A. False
- B. True

Answer: B

LUN (Logical Unit Number) Masking is an authorization process that makes a LUN available to some hosts and unavailable to other hosts.

QUESTION NO: 2

What is the maximum amount of LUNS that a vSphere Host can have?

- A. 128
- B. 256
- C. It depends on whether the Host is using iSCSI or Fibre Channel SAN
- D. 512

Answer: B

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 4.

Storage Maximums

LUNs per host 256

QUESTION NO: 3

SCSI Disk, Fibre Channel LUN or a RAID LUN with unpartitioned space is a requirement for an ESX4 installation?

- A. True
- B. False

Answer: A

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 7.

ESX Hardware Requirements

Installation and Storage

- SCSI disk, Fibre Channel LUN, or RAID LUN with unpartitioned space

QUESTION NO: 4

Which of the following are valid conditions for installing the Paravirtualized SCSI (PVSCSI) adapter in a guest (Choose Two)?

- A. The adapter should be used with the OS virtual disk
- B. The adapter should be used with the data virtual disk
- C. The Guest Operating System must be Windows 2003,2008 or RHEL 5
- D. The Guest Operating Systems can be any guest that supports Paravirtualization

Answer: B, C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 165
VMware recommends that you create a primary adapter (LSI Logic by default) for use with a disk that will host the system software (bootdisk) and a separate PVSCSI adapter for the disk that will store user data, such as a database

Paravirtual SCSI adapters are available for virtual machines running hardware version 7 and greater. They are supported on the following guest operating systems:

Windows Server 2008

Windows Server 2003

Red Hat Linux (RHEL) 5

The following features are not supported with Paravirtual SCSI adapters:

Boot disks

QUESTION NO: 5

A request has been made to the SAN Administrator to provision a new LUN. A LUN (LUN 6) is created and the SAN administrator presents the LUN to the ESX Server using the storage array SAN Management software. After a Rescan operation on the ABC ESX Server, the LUN does not show up. Other LUNs from the same storage array are visible. Which of the following could be the cause (Choose Two)?

- A. Zoning is not set up correctly
- B. The HBA on the active path is shared with the service console
- C. The LUN was not presented to the correct ESX Server
- D. LUN masking on a range of LUNS is enabled on the ESX Server, causing LUN 6 to be ignored

Answer: C, D

Using Storage Area Networks with ESX Server.

Disk arrays carve the storage RAID set into logical units (LUNs) that are presented to the server in a manner similar to an independent single disk. Typically, LUNs are few in number, relatively large, and fixed in size. Therefore it is possible that the LUN was not presented to the correct ESX server, (C above).

For administrative or security purposes, you can use LUN masking to prevent the server from seeing LUNs that it doesn't need to access. Therefore it is possible an incorrect mask has been set up, (D above).

QUESTION NO: 6

What is the proper LUN Masking configuration for LUNs presented to an ESX Host when using the Boot from SAN option?

- A. The Boot LUN and datastore LUNS should be masked so that only one ESX Host can see the LUNs
- B. The Boot LUN and datastore LUNS should be masked so that all ESX Hosts can see the LUNs
- C. The Boot LUN should be masked so that only one ESX Host can see the LUN, while the datastore LUNS should be masked so that all ESX Hosts can see the LUNs

D. The Boot LUN should be masked so that all ESX Hosts can see the LUN, while the datastore LUNS should be masked so that only one ESX Host can see the LUNs

Answer: C

iSCSI SAN Configuration Guide, page 14, 52.

Boot LUNs should only be visible to the server using that LUN to boot. No other server or system on the SAN should be permitted to see that boot LUN.

ESX/ESXi and SAN Use Cases.

You can perform a number of tasks when using ESX/ESXi with SAN. Using ESX/ESXi in conjunction with SAN is effective for the following tasks:

Maintenance with zero downtime

When performing an ESX/ESXi host or infrastructure maintenance, use VMware DRS or VMotion to migrate virtual machines to other servers. If shared storage is on the SAN, you can perform maintenance without interruptions to the user.

Load balancing

Use VMotion or VMware DRS to migrate virtual machines to other hosts for load balancing. If shared storage is on a SAN, you can perform load balancing without interruption to the user.

To enable this functionality, shares storage is required - hence the datastore LUNS should be masked so that all ESX Hosts can see the LUNs

QUESTION NO: 7

An administrator is installing an ESX Host to boot from a SAN LUN. Which of the following two requirements are necessary when configuring the HBA in the ESX Host (Choose Two)?

- A. The HBA must be plugged into the highest available PCI bus and slot number
- B. The HBA must be plugged into the lowest available PCI bus and slot number
- C. The HBA BIOS must be enabled
- D. The HBA BIOS must be disabled

Answer: B, C

VMware ESX Server SAN Configuration Guide, page 61.

ESX Server Configuration Requirements for Booting from SAN

* The HBA BIOS for your QLogic HBA Fibre Channel card must be enabled and correctly configured to access the boot LUN.

* The booting logical unit number (LUN) must be visible from the lowest numbered HBA that has any visible LUNs.

* The boot LUN must be visible from the lowest numbered storage processor (attached to that HBA) that has any visible LUNs.

- * The boot LUN must be the lowest numbered LUN attached to that storage processor (except for gatekeeper LUNs which are sometimes assigned LUN0).
- * You must remove all internal SCSI drives for all servers.
- * HBA numbers can change automatically when you add and remove PCI adapters, or manually when you edit the /etc/vmware/devnames.conf file. The HBA must be set to the lowest PCI bus and slot number. This enables it to be detected very quickly since the drivers scan the HBAs in ascending PCI bus and slot numbers, regardless of the associated virtual machine HBA number.
- * If you are running an IBM eServer BladeCenter and boot from SAN, you must disable IDE drives on the blades.

QUESTION NO: 8

Which of the following features can be used in combination with Network Attached Storage (Choose Three)?

- A. VMware HA
- B. Virtual Machine Snapshots
- C. Raw Device Mapping
- D. Storage VMotion
- E. MSCS Clustering

Answer: A, B, D

VMware Infrastructure Automating High Availability (HA) Services with VMware HA, page 15.

There are a few basic requirements that your virtual infrastructure system and hosts need to meet so that VMware cluster and HA features operate properly. First, for clusters enabled for VMware HA, all virtual machines and their configuration files must reside on shared storage (Fibre Channel SAN, iSCSI SAN, or SAN iSCSI NAS), because you need to be able to power on the virtual machine on any host in the cluster. [A above]

Introduction to VMware vSphere ESX 4.0 ESXi 4.0 vCenter Server 4, page 19 and 20.

Each datastore is a physical VMFS volume on a storage device. NAS datastores are an NFS volume with VMFS characteristics. VMFS also features failure consistency and recovery mechanisms, such as distributed journaling, a failure consistent virtual machine I/O path, and machine state snapshots. These mechanisms can aid quick identification of the cause and recovery from virtual machine, physical host, and storage subsystem failures [B above]

What Is New in VMware vSphere 4: Storage, page 7.

vSphere introduces several new capabilities to Storage VMotion. When Storage VMotion was introduced in VI3 release 3.5, it had a few limitations which vSphere 4 addresses. Storage VMotion is now fully integrated into vCenter and offers full support for migration across datastores of several protocol choices. Hence the enhanced Storage VMotion capabilities fall squarely in the realm of how vSphere provides an increased set of choices. First the ability to move a VM home from one datastore to another while changing the storage protocol in the process. The source datastore might be FC, iSCSI, or NFS, and the target datastore any of those three. [D above]

QUESTION NO: 9

Company.com wants to increase disk capacity for their VMware vSphere environment.

Management mandates that:

- (1) VMotion must work in this environment
- (2) the existing LAN infrastructure must be used
- (3) the storage must support VMFS volumes

Which storage option would best meet company objectives?

- A. iSCSI
- B. Fibre Channel
- C. NFS
- D. SATA

Answer: A

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 9, 13, 16.

Overview of Using ESX/ESXi with a SAN

Using ESX/ESXi with a SAN improves flexibility, efficiency, and reliability. Using ESX/ESXi with a SAN also supports centralized management and failover and load balancing technologies.

The following are benefits of using ESX/ESXi with a SAN:

You can perform live migration of virtual machines using VMware VMotion.

Therefore this option would meet requirement (1) VMotion must work in this environment

iSCSI SANs use Ethernet connections between computer systems, or host servers, and high-performance storage subsystems. The SAN components include host bus adapters (HBAs) or Network Interface Cards (NICs) in the host servers, switches and routers that transport the storage traffic, cables, storage processors (SPs), and storage disk systems

Therefore this option would meet requirement (2) the existing LAN infrastructure must be used

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

Therefore this option would meet requirement (3) the storage must support VMFS volumes

QUESTION NO: 10

What is a characteristic of a mapped SAN LUN (RDM) set to Physical Compatibility mode?

- A. allows the guest operating system to access the hardware directly
- B. allows the VMkernel to natively access NTFS data on the LUN
- C. allows the virtual machine to use VMware snapshots
- D. allows the LUN to be made into a template

Answer: A

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 59.

Physical compatibility mode allows the guest operating system to access the hardware directly

QUESTION NO: 11

Which network technology does ESX Server require to transfer iSCSI commands?

- A. SNMP
- B. UD
- C. IPX
- D. TCP

Answer: D

In computing, iSCSI, is an abbreviation of Internet Small Computer System Interface, an Internet Protocol (IP)-based storage networking standard for linking data storage facilities. iSCSI uses TCP/IP (typically TCP ports 860 and 3260).

QUESTION NO: 12

How many paths to a LUN can be simultaneously used when Round Robin multi-pathing is enabled?

- A. Round Robin can use up to 4 paths simultaneously to send I/O.
- B. Round Robin can use up to 2 paths simultaneously to send I/O.
- C. Round Robin can be set to use additional paths simultaneously for every 1000 blocks of I/O transmitted.
- D. Round Robin will use only one path to send I/O.

Answer: D

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 25.

Round Robin (RR) Uses a path selection algorithm that rotates through all available paths enabling load balancing across the paths.

Round-Robin Load Balancing

VMware ESX Server 3.5, VMware ESX Server 3i version 3.5, VMware VirtualCenter 2.5, page 1

When one path from the ESX Server host to the SAN becomes unavailable, the host switches to another path. ESX Server hosts can also use multipathing for load balancing.

When to switch - Specify that the ESX Server host should attempt a path switch after a specified number of I/O blocks have been issued on a path or after a specified number of read or write commands have been issued on a path. If another path exists that meets the specified path policy for the target, the active path to the target is switched to the new path.

Since the active path is switched to a new path, it can be assumed that only a single path is ever used at any given time, (D above).

QUESTION NO: 13

If an ESX Server has both local and shared storage, which three partitions are required to reside on local storage? (Choose Three.)

- A. swap
- B. /usr
- C. /boot
- D. VMFS
- E. /

Answer: A, C, E

QUESTION NO: 14

How is storage multi-pathing configured between an ESX Server and a supported storage array?

- A. The multi-pathing driver is provided with ESX Server and is compatible with any supported storage array.
- B. Your storage array vendor must provide you a multi-pathing driver for ESX Server and an agent to be installed in each Guest OS.
- C. Your array vendor must provide you with an agent to be installed in each Guest OS.
- D. Your storage array vendor must provide you with a multi-pathing driver for ESX Server.

Answer: A

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 20.

By default, ESX/ESXi provides an extensible multipathing module called the Native Multipathing Plugin (NMP).

Generally, the VMware NMP supports all storage arrays listed on the VMware storage HCL and provides a default path selection algorithm based on the array type.

QUESTION NO: 15

While performing a clean installation of ESX Server, the following partitions were created using the advanced partitioning option:

/boot = 100 MB
swap = 600 MB
/home = 2000 MB
/vmimages = 10000 MB
/var/log = 1500 MB

VMFS = use all available free space

You receive an error message and cannot continue. What is causing the error (Choose all that apply)?

- A. ESX 3.x no longer requires a swap partition.
- B. /home needs to reside on the SAN.
- C. The /boot partition is too small.
- D. The / partition is missing.

Answer: C, D

ESX and vCenter Server Installation Guide ESX 4.0 vCenter Server 4.0, page 61

Table 7-1. ESX Required Partitions

Mount Point	Type	Size	Location	Partition Description
/boot	ext3	The ESX boot disk requires 1.25 GB of free space and includes the /boot and vmkcore partitions. The /boot partition alone requires 1100MB.		
/	ext3	Calculated dynamically based on the size of the /usr partition. By default, the minimum size is 5GB and no /usr partition is defined.		

Note: the question uses partition sizes from VI3 days, not vSphere 4

QUESTION NO: 16

Which two are requirements when booting from SAN? (Choose Two.)

- A. Boot LUN must have an ID of 1.
- B. The BIOS for the HBA must be enabled and correctly configured.
- C. The boot LUN should be visible to all ESX Servers for HA failover.
- D. The boot LUN should only be visible to the ESX Server that is booting from it.

Answer: B, D

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 31, 47, 48.

To facilitate BIOS configuration, mask each boot LUN so that only its own ESX system can see

it. Each ESX system should see its own boot LUN, but not the boot LUN of any other ESX system. [D above]

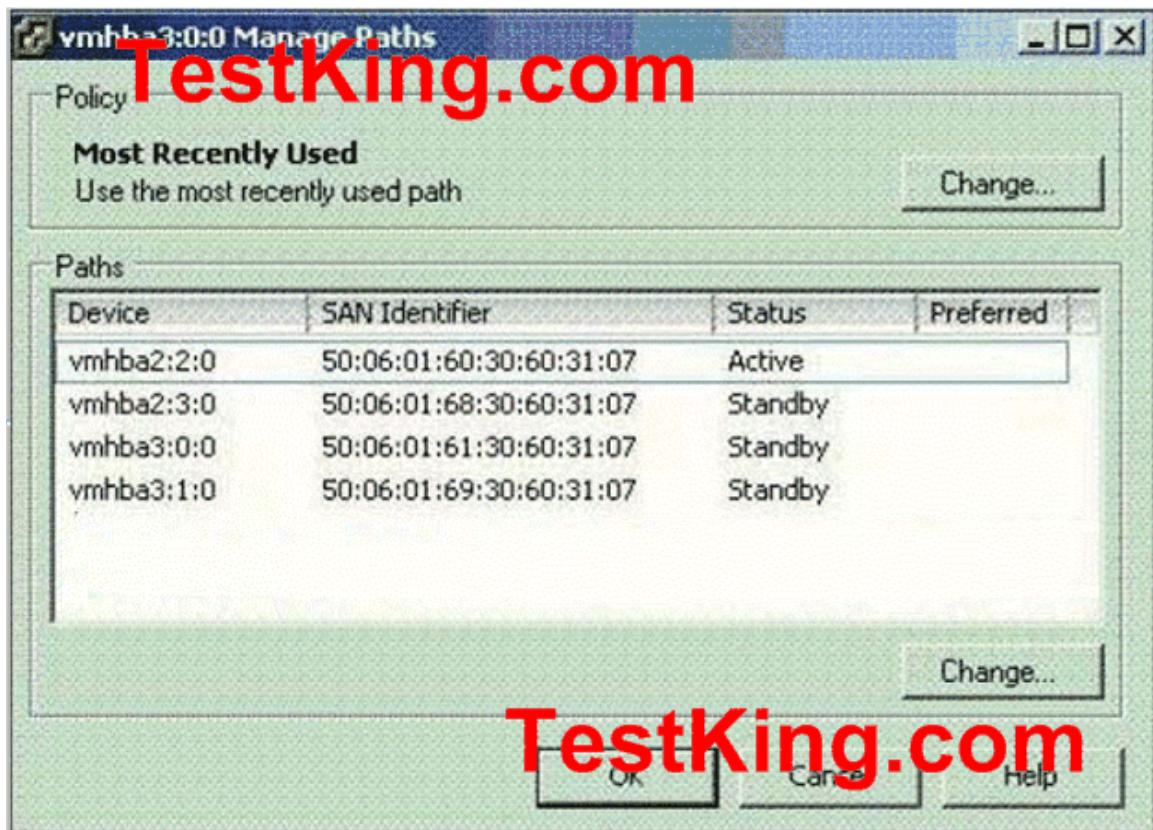
When configuring the QLogic HBA BIOS to boot ESX from SAN, start with enabling the QLogic HBA BIOS [B above]

When you configure the Emulex HBA BIOS to boot ESX from SAN, you need to enable BIOS [B above]

QUESTION NO: 17

Click the Exhibit button. Given the information shown in the exhibit, which three statements are true? (Choose three.) Note: This server has not been modified from the default configuration

Exhibit:



- A. LUN has four paths.
- B. LUN is on an Active/Passive array.
- C. Preferred Path is vmhba2:2:0.
- D. HBA Failover occurred.
- E. LUN is on an Active/Active array.

Answer: A, B, D

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 52, 53, 63, 64

Understanding Storage Device Naming

Runtime Name

The name of the path to the device. The runtime name is created by the host. The name is not a reliable identifier for the device, and is not persistent. Since there are 4 entries, there are 4 paths. [A above]

With both active/active and active/passive storage arrays, you can set up your host to use different paths to different LUNs so that your adapters are being used evenly. Since the Status shows Active for the first entry and Passive for the remainder, the LUN is on an Active/Passive array. [B is correct, and therefore E is incorrect.]

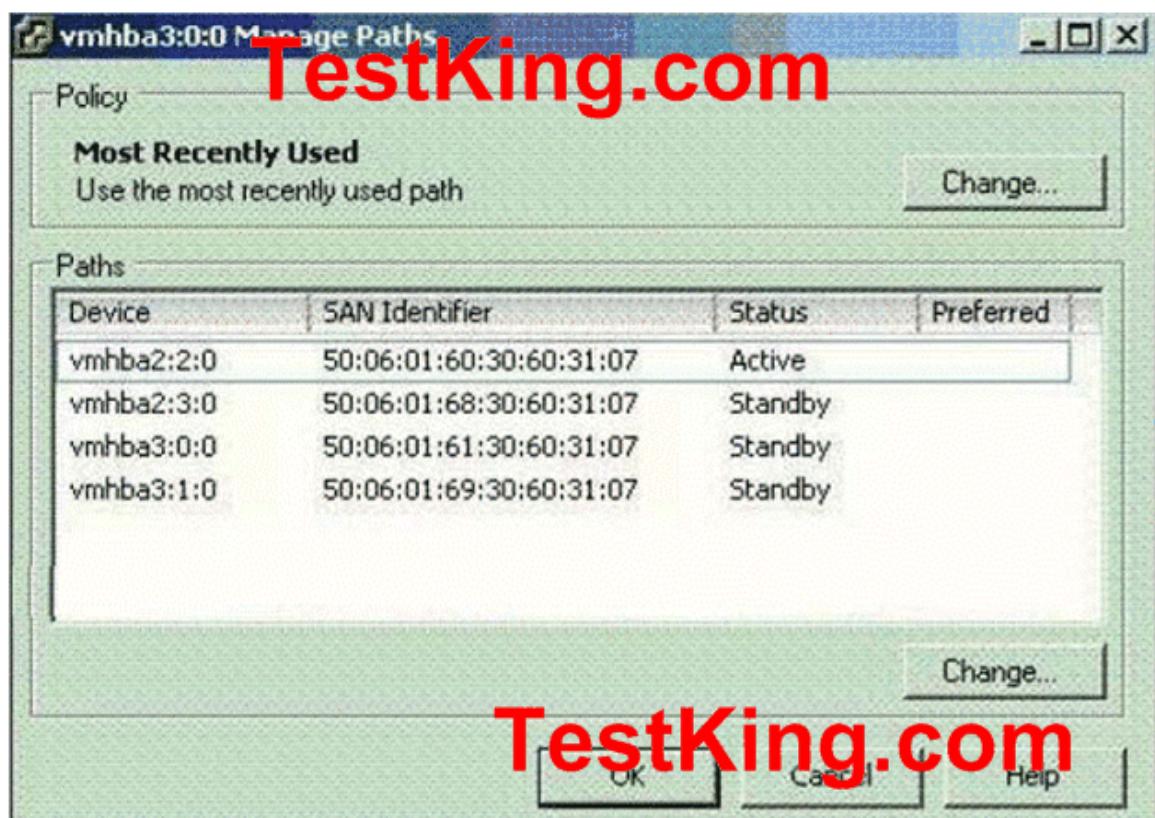
Active/passive arrays use the MRU path policy which does not have a preferred path. Therefore C is incorrect.

Runtime Name - The name of the first path to the device. Since the Runtime Name is vmhba3:0:0 (from the top of the dialog box), and the active device is vmhba2:2:0 then it can be assumed that an HBA Failover occurred. Therefore D is correct.

QUESTION NO: 18

Click the Exhibit button. The exhibit shows paths of a SAN LUN. What is the LUN number?

Exhibit



- A. 1
- B. 0
- C. 2
- D. 3

Answer: B

Understanding Storage Device Naming

Runtime Name

The name of the path to the device. The runtime name is created by the host. The name is not a reliable identifier for the device, and is not persistent. The runtime name has the following format:

vmhba#:C#:T#:L#, where

vmhba# is the name of the storage adapter. The name refers to the physical adapter on the host, not to the SCSI controller used by the virtual machines.

C# is the storage channel number.

T# is the target number. Target numbering is decided by the host and might change if there is a change in the mappings of targets visible to the host. Targets that are shared by different hosts might not have the same target number.

L# is the LUN number that shows the position of the LUN within the target. The LUN number is provided by the storage system. If a target has only one LUN, the LUN number is always zero (0).

For example, vmhba1:C0:T3:L1 represents LUN1 on target 3 accessed through the storage adapter vmhba1 and channel 0.

Therefore vmhba2:2:0, vmhba2:3:0, vmhba3:0:0 and vmhba3:1:0 all have a LUN number of 0.

QUESTION NO: 19

Virtual disks in VMFS-3 volumes can be a _____. (Choose two.)

- A. set of files accompanied by quorum files
- B. single file
- C. set of files
- D. single file with a quorum file

Answer: B, C

What Files Make Up a Virtual Machine?

A virtual disk is made up of one or more .vmdk files. If you have specified that the virtual disk should be split into 2GB chunks, the number of .vmdk files depends on the size of the virtual disk. As data is added to a virtual disk, the .vmdk files grow in size, to a maximum of 2GB each

Part 5: Identify vSphere Architecture and Solutions (19 questions).

QUESTION NO: 1

What are the minimum vSphere Small Business and Medium/Enterprise Editions that include VMware Data Recovery (Choose Two)?

- A. vSphere Standard
- B. vSphere Essentials
- C. vSphere Essentials Plus
- D. vSphere Advanced

Answer: C,D

	ESXi Single Server	Essentials	Essential Plus	Standard	Advanced	Enterprise	Enterprise Plus
ESX/ESXi	ESXi Only	✓	✓	✓	✓	✓	✓
vCenter Server Compatibility	None	vCenter Server for Essentials	vCenter Server for Essentials	vCenter Server Foundation & Standard			
Cores per Processor	6	6	6	6	12	6	12
vSMP Support	4-way	4-way	4-way	4-way	4-way	4-way	8-way
Memory/Physical Server	256GB	256GB	256GB	256GB	256GB	256GB	No license limit
Thin Provisioning	✓	✓	✓	✓	✓	✓	✓
VC Agent		✓	✓	✓	✓	✓	✓
Update Manager		✓	✓	✓	✓	✓	✓
VMSafe		✓	✓	✓	✓	✓	✓
vStorage APIs		✓	✓	✓	✓	✓	✓
High Availability (HA)			✓	✓	✓	✓	✓
Data Recovery			✓		✓	✓	✓
Hot Add					✓	✓	✓
Fault Tolerance					✓	✓	✓
vShield Zones					✓	✓	✓
VMotion					✓	✓	✓
Storage VMotion						✓	✓
DRS						✓	✓
vNetwork Distributed Switch							✓
Host Profiles							✓
Third Party Multipathing							✓

VMware Data Recovery is available in Essentials Plus for Retail, Advanced, Enterprise & Enterprise Plus.

QUESTION NO: 2

Which vSphere Editions include VMware Data Recovery (Choose Two)?

- A. vSphere Standard or higher
- B. vSphere Advanced or higher
- C. vSphere Essentials Plus or higher
- D. vSphere Essentials or higher

Answer: B, C

VMware Data Recovery is available in Essentials Plus for Retail, Advanced, Enterprise & Enterprise Plus

QUESTION NO: 3

Which of the following features is not a part of the vSphere Advanced Edition?

- A. VMware Storage VMotion
- B. VMware Fault Tolerance
- C. VMware Data Recovery
- D. VMware VMotion

Answer: A

Storage VMotion is only available in Enterprise and Enterprise Plus.

QUESTION NO: 4

What is the maximum number of cores that can be used with Standard licensing?

- A. 12
- B. 8
- C. 6
- D. 16

Answer: C

Standard supports 6 cores per Processor.

QUESTION NO: 5

Which new vSphere feature has the following key features?

Disk-based backup and recovery
Data de-duplication
File level full and incremental backup
VSS support
Image level and individual file restore

- A. vSphere Hot Add
- B. vSphere Data Recovery
- C. vSphere vSheild Zones
- D. vSphere VCB

Answer: B

The following is a list of the key features of VMware Data Recovery.

Fast Backup and Restore

Disk-based backup and recovery. Utilizes disk based storage to enable speedy recovery of your virtual machines.

Full and incremental backup of virtual machine. Save incremental changes and enable an efficient backup window.

Image level and individual file restore. Recover entire virtual machine image in the event of a disaster (for virtual machines running any operating system) and recover individual files and directories (for virtual machines running Microsoft® Windows operating system). Individual file restore is currently an experimental feature.

VSS support. Supports Volume Shadow Copy Service (VSS) to enable consistent backups of virtual machines running Microsoft operating systems and applications.

QUESTION NO: 6

Which new vSphere feature is being shown in the exhibit?

Exhibit:



- A. vSphere VCB
- B. vSphere Backup Exec
- C. vSphere Data Recovery
- D. vSphere VMSafe

Answer: C

Enable quick, simple and complete data protection for your virtual machines with VMware Data Recovery, a disk-based backup and recovery solution.



QUESTION NO: 7

Which vSphere feature provides dynamic allocation of storage capacity?

- A. Thinapp
- B. vStorage APIs / VCB
- C. vStorage VMFS
- D. vStorage Thin Provisioning

Answer: D

VMware vStorage Thin Provisioning provides dynamic allocation of storage capacity.

QUESTION NO: 8

Which of the following VMware solutions provides rich, personalized virtual desktops to Thin Clients and repurposed PCs with all the benefits of centralized desktop management?

- A. VMware View
- B. VMware Fusion

- C. VMware ACE
- D. VMware Workstation

Answer: A

Desktop management is centralized and simplified while costs are reduced. VMware View 4 with PCoIP delivers an optimized desktop experience complete with all applications, data and settings, to thin clients and laptops, in the office or on the road.

QUESTION NO: 9

Which of the following VMware solutions provides developers and test engineers the equivalent of a fully-equipped datacenter with dedicated provisioning staff?

- A. VMware vCenter Capacity IQ
- B. VMware vCenter Lifecycle Manager
- C. VMware vCenter Orchestrator
- D. VMware vCenter Lab Manager

Answer: D

Give every engineer the equivalent of their own personal datacenter. In seconds, Lab Manager deploys, captures and shares any system configuration, enabling teams to rapidly prototype new applications, test software releases on a broader range of system configurations and capture, reproduce and resolve defects more easily

QUESTION NO: 10

An administrator needs to verify the functionality of virtual machines created in several different formats prior to converting them to ESX/ESXi. Using VMware Player, which of the following virtual machines can be run directly on an administrator desktop (Choose Two)?

- A. VMware Fusion
- B. Norton Ghost 10
- C. Microsoft Virtual Server/Virtual PC
- D. Acronis True Image

Answer: A, C

When started, the player can open a VMware Configuration file (.vmx), a Virtual PC/Server configuration file (.vmc), or a Symantec Live Recovery file (.sv2i) and will import the settings and create a .vmx file format configuration for future use.

Fusion uses the same virtual machine format as Workstation 6 and Player 2. Generally speaking, you should be able to move a virtual machine between these programs.

QUESTION NO: 11

vCenter Server allows you to centrally manage hosts and use which of the following services that would otherwise be unavailable (Choose Three)?

- A. Host Health Status
- B. High Availability (HA)
- C. Distributed Resource Scheduler (DRS)
- D. Resource Pools
- E. Data Recovery

Answer: B, C, E

Mastering VMware vSphere 4, page 59.

However, to utilize the advanced features of the vSphere product suite - features such as Update Manager, VMotion, VMware DRS, VMware HA, vNetwork Distributed Switches, host profiles, or VMware FT - vCentre Server must be licensed, installed and configured correctly.

VMware Data Recovery datasheet, page 1.

VMware Data Recovery is composed of three main components: 1) The user interface plug-in for VMware vCenter Server, 2) The VMware Data Recovery virtual appliance that manages the backup and recovery process, and 3) The de-duplicated destination storage.

QUESTION NO: 12

Which of the following are benefits of ESXi over ESX (Choose Two)?

- A. Less Code to Patch
- B. Smaller Attack Surface
- C. RCLI support
- D. Scripted Installation

Answer: A, B

The smaller code base of ESXi represents a smaller "attack surface" and less code to patch, improving reliability and security. The functionality of the service console is replaced by remote command line interfaces and adherence to system management standards

QUESTION NO: 13

Suppose you have 10000 Virtual Machines across 2 Datacenters, with approximately 5000 Virtual Machines in each Datacenter. What is the minimum number of vCenter installations and vNetwork Distributed Switches required to support this configuration if all virtual machines were powered on (Choose Two)?

- A. 1 vNetwork Distributed Switch per Datacenter
- B. 4 32-bit Windows based vCenter Servers in Linked Mode
- C. 2 vNetwork Distributed Switches per Datacenter
- D. 4 64-bit Windows based vCenter Servers in Linked Mode

Answer: C, D

Explanation:

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, age 6, 7.

Table 5. Networking Maximums

Total virtual network switch ports per host (vDS and vSS ports) 4096

Since there are approximately 5000 VMs per Datacenter, 2 vNetwork Distributed Switches per Datacenter are required, hence C.

Table 7. vCenter Server Maximums

Powered?on virtual machines (32?bit OS server) 2000
Registered virtual machines (32?bit OS server) 3000
Powered?on virtual machines (64?bit OS server) 3000
Registered virtual machines (64?bit OS server) 4500

Since, the question states 'What is the minimum number of vCenter installations and vNetwork Distributed Switches required to support this configuration if all virtual machines were powered on', and there are 10000 VMs, either 4 vCenter 64?bit OS servers or 5 vCenter 32?bit OS servers are required. Therefore D is required.

QUESTION NO: 14

An administrator manages a site with remote workers, business partners and third-party service providers. These users need access to corporate data and network resources while adhering to security and corporate governance regulations. Which of the following VMware solutions can provide the power and versatility of virtual machines with the security and control of centrally managed desktops?

- A. VMware Server
- B. VMware Lifecycle Manager
- C. VMware View
- D. VMware Workstation

Answer: C

Deliver rich, personalized virtual desktops as a managed service from a virtualization platform built to deliver the entire desktop, not just applications. VMware View 4 allows you to consolidate virtual desktops on datacenter servers and manage operating systems, applications and data independently for greater business agility while providing a flexible high performance desktop experience for end users, over any network.

Deliver desktops as a managed service to reduce costs and gain better reliability, efficiency and security

Get ready for Windows 7 by virtualizing your desktops and applications now

Deliver desktops to remote and branch offices to accelerate provisioning while retaining control

QUESTION NO: 15

What VMware solution is identified by hosting user desktops in a centralized manner and brokering user access?

- A. VMware vCenter Site Recovery Manager
- B. VMware Workstation
- C. VMware vCenter Orchestrator
- D. VMware View

Answer: D

Deliver rich, personalized virtual desktops as a managed service from a virtualization platform built to deliver the entire desktop, not just applications. VMware View 4 allows you to consolidate virtual desktops on datacenter servers and manage operating systems, applications and data independently for greater business agility while providing a flexible high performance desktop experience for end users, over any network.

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Deliver desktops to remote and branch offices to accelerate provisioning while retaining control

QUESTION NO: 16

What is the maximum number of ESX/ESXi Hosts that can be managed with vCenter Foundation?

- A. 5
- B. 6
- C. 3
- D. 10

Answer: C

VMware vSphere 4 Pricing, Packaging and Licensing Overview Whitepaper, page 8.

VMware vCenter Server Foundation. Provides powerful management tools for smaller environments (up to three VMware vSphere hosts) looking to rapidly provision, monitor and control virtual machines.

QUESTION NO: 17

Which of the following vSphere features cannot be used with virtual machines that are enabled for VMware Fault Tolerance (Choose Two)?

- A. RDMs in Virtual Compatibility Mode
- B. VMware SMP
- C. VMware EVC
- D. VMware DRS

Answer: B, D

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 32.

Only virtual machines that support a single vCPU are compatible with Fault Tolerance.
[B above]

DRS features. A fault tolerant virtual machine is automatically configured as DRS-disabled. [D above]

QUESTION NO: 18

What are two reasons why a company would choose to use VMware ESXi instead of using VMware Server 2 (Choose Two)?

- A. The company needs to access their virtual machines remotely and VMware Server 2 does not support a remote console option
- B. The company needs the ability to run dual-processor virtual machines
- C. The company wants to be able to patch the servers hosting their virtual machines with zero virtual machine downtime
- D. The company is virtualizing several physical servers and wants a centralized management option

Answer: C, D

VMware Server Get Started with Virtualization Risk-Free.

Can I manage VMware Server 2 release using an existing or new version of VMware vCenter Server?

No, VMware Server 2 cannot be managed by VMware vCenter Server 2.5. There are no centralized (multi-host) management options available for VMware Server 2. [Therefore D is correct].

What is VMware Remote Console?

The VMware Remote Console allows access to the virtual machine consoles independent of the VI Web Access management interface. A separate window is opened for every virtual machine console that is initiated and the window can be resized as required by the user. Finally, VMware Remote Console can be accessed directly from a desktop shortcut providing independent and instantaneous access to the virtual machine console.

[Therefore A is incorrect]

Key Features

Supports two-processor Virtual SMP, enabling a single virtual machine to span multiple physical processors [Therefore B is incorrect]

QUESTION NO: 19

Which task can be performed using the Web Access Client? Select all that apply.

- A. clone a virtual machine
- B. power on a virtual machine
- C. delete a virtual machine
- D. create a virtual machine

Answer: B, C, D

Explanation:

Key Features of vSphere Web Access

vSphere Web Access has a set of key features that help you manage virtual machines.

Access ESX hosts and vCenter Servers from Linux and Windows systems.

Access virtual machines on ESX hosts and vCenter Server instances without installing the vSphere client.

Create new virtual machines on ESX hosts.

Configure existing virtual machine settings.

Add virtual machines to the inventory.

Remove virtual machines from the inventory.

Perform power operations (start, stop, reset, suspend, and resume) on virtual machines.

Monitor the operation of datacenters, ESX hosts, and virtual machines.

Interact with the guest operating systems running within virtual machines that use the VMware Remote console.

Generate URL and desktop shortcuts for virtual machines.

Create and manage snapshots of virtual machines.

Perform complete virtual machine snapshot hierarchy management

Provide end users with access to virtual machines.

Use client devices (such as CD/DVD drives) from your own computer to install software or copy data

Topic 2, Configure ESX/ESXi Networking (47 questions).

Part 1: Configure Virtual Switches (31 questions).

QUESTION NO: 1

The VMXNET 3 adapter is only supported on which virtual machine hardware version?

- A. Version 6
- B. Version 7
- C. Version 4
- D. All Versions

Answer: B

VMXNET 3 is supported only for virtual machines version 7 and later.

QUESTION NO: 2

What is the name of the new high performance paravirtualized adapter available on vSphere 4?

- A. VMXNET 3
- B. E1000
- C. VMXNET 2
- D. Vlance

Answer: A

VMXNET 3 adapter is the next generation of a paravirtualized NIC designed for performance.

QUESTION NO: 3

ESX uses one of the strongest block ciphers available, what is it?

- A. Blowfish
- B. Serpent
- C. Triple DES
- D. 256 bit AES

Answer: D

Cipher Strength

To ensure the protection of the data transmitted to and from external network connections, ESX Server uses one of the strongest block ciphers available-256-bit AES block encryption.

QUESTION NO: 4

In vSphere 4 what is the Maximum amount of ports supported on a vSwitch?

- A. 1016
- B. 256
- C. Unlimited
- D. 4088

Answer: D

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 6.

Table 5. Networking Maximums

Virtual network switch ports per standard switch 4088



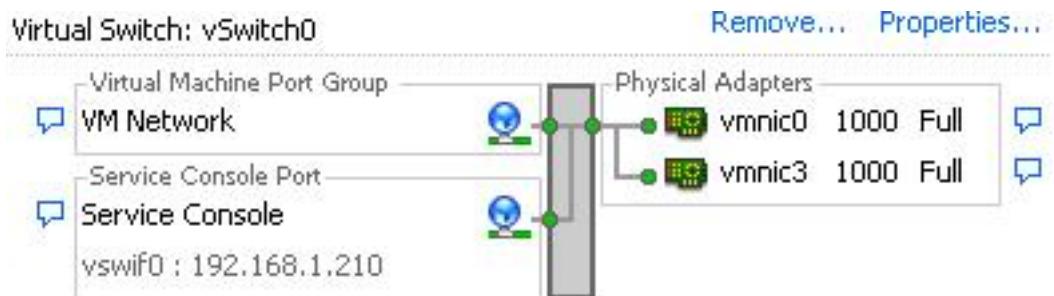
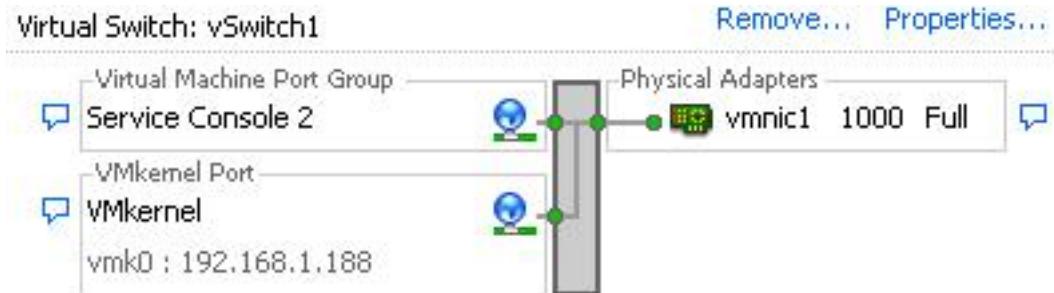
QUESTION NO: 5

vSphere virtual switches are configured, based on the number of physical uplinks bound, in which of the following methods?

- A. vSwitch with a binding to another vSwitch and one or more NICs
- B. vSwitch with none, one or more NICs
- C. vSwitch with bindings to a virtual machine, and HBA and the Service Console
- D. vSwitch with one, two or more NICs

Answer: B





The diagram above shows two vSphere virtual switches configured with zero, one and two physical uplinks respectively.

QUESTION NO: 6

The vSwitch or vSwitch port group policy setting that allows a virtual machine to listen to traffic other than that which is specifically destined for the given VM is?

- A. Forged Transmits
- B. MAC Address Changes
- C. Traffic Shaping
- D. Promiscuous Mode

Answer: D

Promiscuous Mode

- Accept - Placing a guest adapter in promiscuous mode causes it to detect all frames passed on the vSwitch that are allowed under the VLAN policy for the port group that the adapter is connected to.

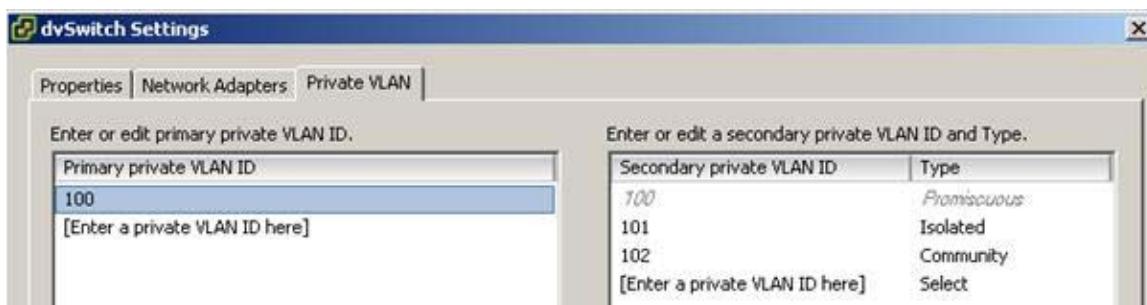
QUESTION NO: 7

The primary VLAN in a Private VLAN is considered?

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

Answer: A

The primary VLAN is considered Promiscuous as shown below.



QUESTION NO: 8

When creating a dvPort group, which of the following port binding options assigns a port to a virtual machine the first time the virtual machine powers on after it has been connected to the dvPort Group?

- A. Dynamic Binding
- B. Static Binding
- C. Flexible
- D. Ephemeral

Answer: A

vSphere4 Documentation Notes vReference.com Version 1.0 Page 1

forbesguthrie@vReference.com Main Documentation Set, page 15.

dvPort group properties include:

Port Binding - when ports are assigned to virtual machines connected to this dvPort group.

Static binding - to assign a port to a virtual machine when the virtual machine is connected to the dvPort group.

Dynamic binding - to assign a port to a virtual machine the first time the virtual machine powers on after it is connected to the dvPort group.

Ephemeral - for no port binding.

QUESTION NO: 9

An administrator is creating a vNetwork Standard Switch with Service Console and VMkernel networking. The administrator has two uplinks attached to the switch, but wants to separate the Service Console and VMkernel traffic to the two uplinks. Which of the following Load Balancing Policies will guarantee this, even if additional management or virtual machine traffic is added to the switch in the future?

- A. Route based on source MAC hash
- B. Use Explicit Failover
- C. Route based on the originating port ID
- D. Route based on IP hash

Answer: B

ESX Configuration Guide ESX 4.0 vCenter Server 4.0, page 43.

Load Balancing Specify how to choose an uplink.

Route based on the originating port ID - Choose an uplink based on the virtual port where the traffic entered the virtual switch. If additional management or virtual machine traffic is added to the switch under this policy, it is possible that different uplinks could be used.
Route based on ip hash - Choose an uplink based on a hash of the source and destination IP addresses of each packet. For non-IP packets, whatever is at those offsets is used to compute the hash. Selection is based on the source and destination IP address under this policy, so it is possible based on the connections IP characteristics that different uplinks could be used.

Route based on source MAC hash - Choose an uplink based on a hash of the source Ethernet. If additional management or virtual machine traffic is added to the switch, since selection is based on the source MAC address, so it is possible that different uplinks could be used.

Use explicit failover order - Always use the highest order uplink from the list of Active adapters which passes failover detection criteria. This is the only policy that specifies the order of uplinks regardless of any connectivity information.

QUESTION NO: 10

Assuming VLANs are not configured, which of the following is true about traffic from a virtual machine connected to a port group on a vNetwork Standard Switch with no uplinks?

- A. Virtual machines on any virtual switch on the same ESX Server can receive the traffic
- B. The virtual switch will drop the packets if no uplink is present
- C. Only virtual machines in the same port group on the virtual switch can receive the traffic
- D. Virtual machines in any port group on the virtual switch can receive the traffic

Answer: D

VMware Virtual Networking Concepts, page 6.

It is possible, and even reasonable, to assign the same VLAN ID to multiple port groups. This would be useful if, for example, you wanted to give different groups of virtual machines different physical Ethernet adapters in a NIC team for active use and for standby use, while all the adapters are on the same VLAN.

Since a port group without an assigned VLAN has an implicit VLAN ID of 0, all port groups without a VLAN ID will be in VLAN0. Multiple port groups with the same VLAN can communicate with each other.

Physical Ethernet adapters serve as bridges between virtual and physical networks. In VMware Infrastructure, they are called uplinks, and the virtual ports connected to them are called uplink ports.

If no uplink exists there will be no communication with physical networks, but traffic will propagate across virtual interfaces connected to the same switch.

QUESTION NO: 11

When configuring the vSwitch NIC teaming policy, what happens when the Notify Switches option is set to Yes?

- A. The physical switch is notified when the location of a virtual NIC changes
- B. The virtual switch is notified when the physical NIC link state changes
- C. The virtual switch is notified when the location of a physical NIC changes
- D. The physical switch is notified when the virtual NIC link state changes

Answer: A

Mastering VMware vSphere 4, page 176.

A vSwitch includes a Notify Switches configuration setting, which when set to Yes, will allow the physical switch to immediately learn of any of the following changes:
A NIC team failover or fallback has occurred.

When a NIC team member fails, or fails back, the virtual NIC connected to the switch will change.

QUESTION NO: 12

Which of the following two statements are true regarding vSphere virtual switch uplinks (Choose Two)?

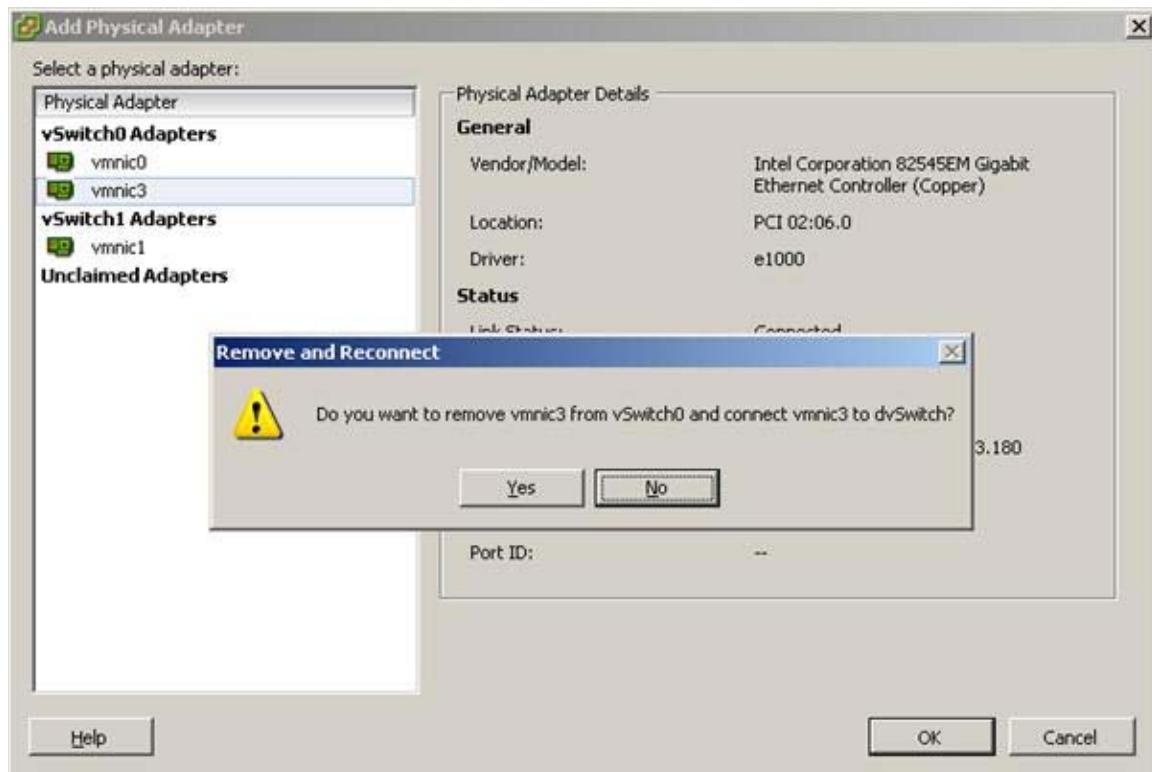
- A. vSphere virtual switches can be configured to use the same uplink
- B. vSphere virtual switches do not need to be configured with an uplink
- C. Multiple vSphere virtual switches cannot be configured to use the same uplink
- D. vSphere virtual switches must be configured with at least one uplink

Answer: B, C

VMware Virtual Networking Concepts, page 6.

Some virtual switches should not connect to a physical network and thus have no uplink port.

If you attempt to assign an uplink port, (previously assigned to a switch), to a second switch, the uplink will be disconnected from the first switch before being connected to the second.



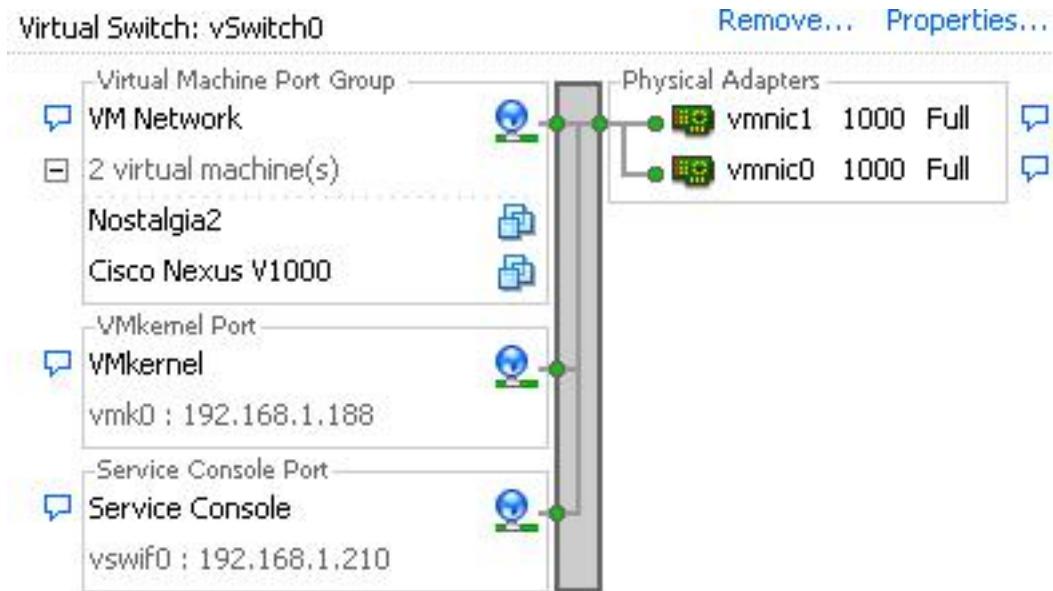
QUESTION NO: 13

The following connection types can all be configured on a single vSwitch?

- A. Service Console and 2 VMkernel port groups
- B. Service Console and 2 virtual machine port groups
- C. Service Console, virtual machine and VMkernel port groups
- D. VMkernel, virtual machine and no Service Console port groups

Answer: C

The screen shot below shows a vSwitch configured with Service Console, virtual machine and VMkernel port groups



QUESTION NO: 14

The vSwitch or vSwitch port group policy setting that allows a virtual machine to transmit packets that contain a MAC address other than the address defined for the VM is?

- A. Promiscuous Mode
- B. Traffic Shaping
- C. Forged Transmits
- D. MAC Address Changes

Answer: C

Forged Transmits

Reject - Any outbound frame with a source MAC address that is different from the one currently set on the adapter will be dropped.

Accept - No filtering is performed and all outbound frames are passed.

QUESTION NO: 15

When using the Explicit Failover option for a virtual switch with multiple uplinks, ESX determines the uplink to use in a failover event by?

- A. using link state tracking to see which uplinks are connected
- B. using beacon probing to discover which uplink has the shortest route

- C. a specified list
- D. using the reported uptime to determine which uplink to select

Answer: C

ESX Configuration Guide ESX 4.0 vCenter Server 4.0, page 43.

Use explicit failover order - Always use the highest order uplink from the list of Active adapters which passes failover detection criteria.

QUESTION NO: 16

Which of the following describes the default behavior of uplinks added to a virtual switch?

- A. Only one uplink can be attached to a virtual switch
- B. The first uplink is active, additional uplinks are standby
- C. The first uplink is active, additional uplinks are unused
- D. All uplinks are active

Answer: D

When an uplink port is added, it defaults to the Active Adapters group, as below.



QUESTION NO: 17

The incorrect application of traffic shaping settings can affect network performance of _____.

- A. traffic only between virtual machines on the same vSwitch
- B. traffic only between virtual machines on different vSwitches on the different ESX Servers
- C. traffic only between virtual machines on different vSwitches on the same ESX Server
- D. general network traffic, including non virtual machine traffic

Answer: D

Traffic shaping is more applicable to traffic restricted by WAN and LAN considerations than traffic traveling within an ESX host, (where bandwidth is typically much higher). Therefore, traffic shaping policies can affect the entire physical and virtual network infrastructure.

QUESTION NO: 18

What methodology does ESX Server use for the implementation of VLANs?

- A. MAC-based policies
- B. protocol-based policies
- C. port group policies
- D. bonds

Answer: C

vSphere 4: Multi VLAN trunking on a port group (VGT).

vSphere 4 allows a port group to be configured with multiple VLANs

QUESTION NO: 19

Which of the following interfaces can be used to create virtual switches?

- A. command line using vmware-cmd
- B. Management User Interface
- C. VI Client
- D. VI Remote Console

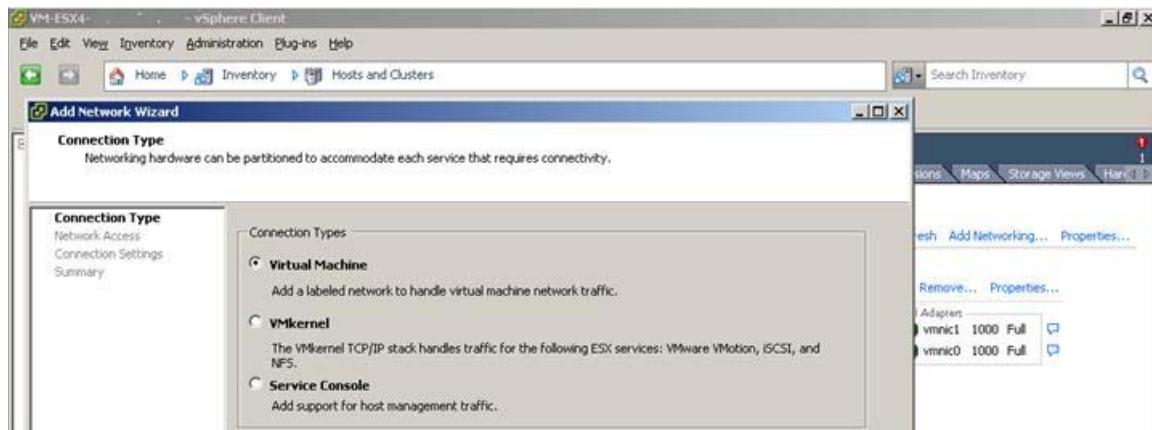
Answer: C

Mastering Vmware vSphere, page 152

`esxcfg-vswitch -a <VSwitch name>` is the command used to create a new vSwitch, so A is incorrect.

Management User Interface and VI Remote Console are not valid options, so B and D is incorrect

The screenshot below shows the vSphere Virtual Infrastructure client being used to create a virtual switch, so C is correct.



QUESTION NO: 20

Which is an important benefit provided by VLANs?

- A. higher network availability
- B. improved memory access
- C. improved security
- D. higher tolerance to broken physical hardware

Answer: C

[Wikipedia Virtual LAN](#)

VLANs are created to provide the segmentation services traditionally provided by routers in LAN configurations. VLANs address issues such as scalability, security, and network management.

QUESTION NO: 21

When setting up the iSCSI software initiator on an ESX Server, which virtual switch port types are required? (Choose Two.)

- A. iSCSI
- B. virtual machine

- C. Service Console
- D. VMkernel

Answer: C, D

With the software-based iSCSI implementation, you can use standard network adapters to connect your ESX/ ESXi host to a remote iSCSI target on the IP network. The software iSCSI initiator that is built into ESX/ESXi facilitates this connection by communicating with the network adapter through the network stack.

Before you configure the software iSCSI initiator, you must perform the following tasks:

- 1 Create a VMkernel port for physical network adapters. [D above]
- 2 Enable the software iSCSI initiator.
- 3 If you use multiple network adapters, activate multipathing on your host using the port binding technique.
- 4 If needed, enable Jumbo Frames. Jumbo Frames must be enabled for each vSwitch through the vSphere CLI. Also, if you use an ESX host, you must create a VMkernel network interface enabled with Jumbo Frames.

Networking Configuration for Software iSCSI Storage

Server Configuration Guide : Networking Scenarios and Troubleshooting : Networking Configuration for Software iSCSI Storage

The storage you configure for an ESX Server host might include one or more storage area networks (SANs) that use iSCSI, which is a means of accessing SCSI devices and exchanging data records using TCP/IP protocol over a network port rather than through a direct connection to a SCSI device. In iSCSI transactions, blocks of raw SCSI data are encapsulated in iSCSI records and transmitted to the requesting device or user.

Before you can configure iSCSI storage, you must create a VMkernel port to handle iSCSI networking and a service console connection to the iSCSI network. [C and D above].

QUESTION NO: 22

Which two statements are true about port groups and VLANs? (Choose Two)

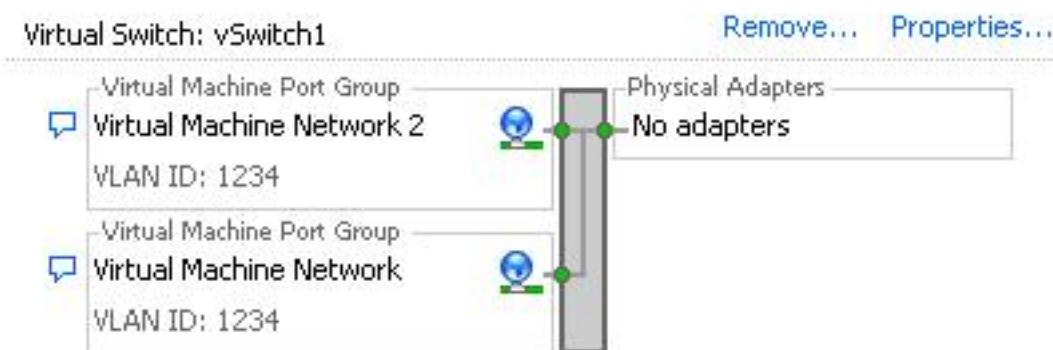
- A. Only one VLAN can be specified in a port group.
- B. The same VLAN cannot be specified in multiple port groups.
- C. Multiple port groups can specify the same VLAN.
- D. Multiple VLANs can be specified in a port group.

Answer: A, C

Mastering Vmware vSphere, page 162.

A port group can be associated with only one VLAN at a time. [A above]

The screen shot below shows two port groups with the same VLAN. [C above]



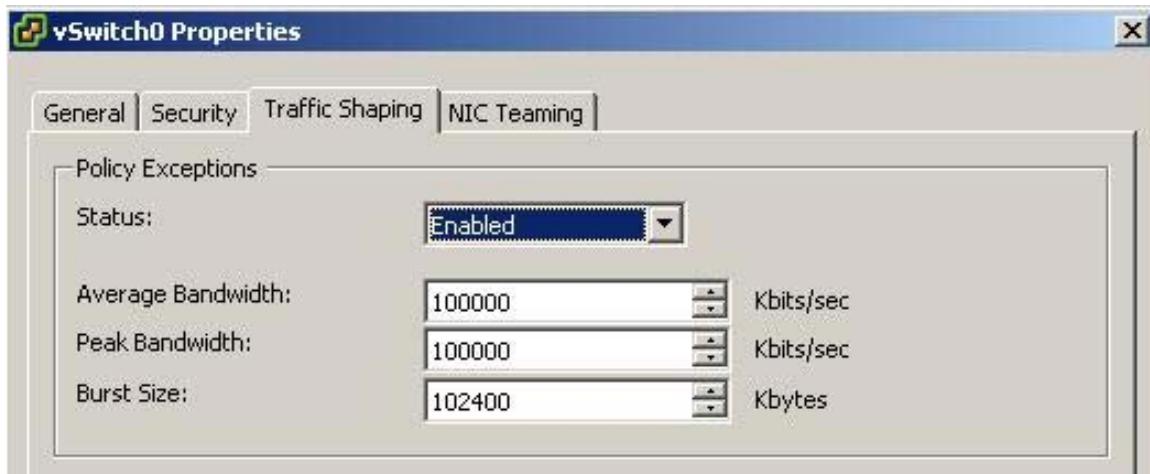
QUESTION NO: 23

Which is a valid traffic shaping adjustment?

- A. minimum bandwidth adjusted in mbps
- B. peak bandwidth adjusted in kbps
- C. peak bandwidth adjusted in mbps
- D. minimum bandwidth adjusted in kbps

Answer: B

See below.



QUESTION NO: 24

What is necessary to connect a running virtual machine to a newly created vSwitch VLAN inside an ESX Server?

- A. power off the virtual machine, connect it to the newly created VLAN, and power it back on again using the VI Client
- B. connect to the newly created VLAN using the VI Client
- C. install the proper network device inside the virtual machine
- D. install the appropriate VLAN tagging software inside the virtual machine

Answer: B

QUESTION NO: 25

Which of the following statements best describe network traffic shaping (Choose Two)?

- A. Network traffic shaping can limit inbound peak bandwidth
- B. Network traffic shaping can limit outbound peak bandwidth
- C. Network traffic shaping can limit inbound average bandwidth
- D. Network traffic shaping can limit outbound average bandwidth

Answer: B, D

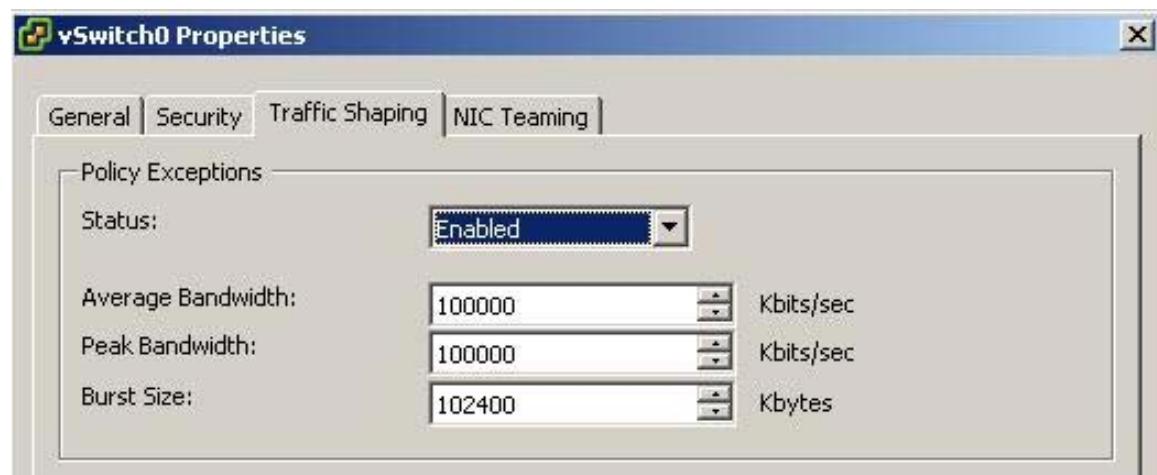
ESX/ESXi allows you to shape outbound traffic on virtual switches. The traffic shaper restricts the network bandwidth available to any port, but may also be configured to temporarily allow "bursts" of traffic to flow through a port at higher speeds.

A traffic shaping policy is defined by three characteristics: average bandwidth, peak bandwidth, and burst size.

Average Bandwidth - Establishes the number of bits per second to allow across a port, averaged over time-the allowed average load.

Burst Size - The maximum number of bytes to allow in a burst. If this parameter is set, a port may gain a burst bonus when it doesn't use all its allocated bandwidth. Whenever the port needs more bandwidth than specified by Average Bandwidth, it may be allowed to temporarily transmit data at a higher speed if a burst bonus is available. This parameter tops the number of bytes that may be accumulated in the burst bonus and thus transferred at a higher speed.

Peak Bandwidth - The maximum number of bits per second to allow across a port when it is sending a burst of traffic. This tops the bandwidth used by a port whenever it is using its burst bonus. This parameter can never be smaller than the average bandwidth.



QUESTION NO: 26

Which of the following statements are true about network traffic shaping? (Choose Two.)

- A. The settings affect only outbound traffic.
- B. The settings affect only inbound traffic.
- C. The settings are defined on a per port group basis.
- D. The settings affect inbound and outbound traffic.

Answer: A, C

Explanation:

"defined on a per port group basis. " could be considered a correct answer because according to the VMWare Infrastructure 3:Install and Configure guide, "Traffic shaping may be defined at the virtual switch OR Port Group level. " The important distinction here is that they can be defined at this level, but they are APPLIED on a per-virtual machine basis or more directly, to the VM's virtual NIC's.

QUESTION NO: 27

Virtual machine (VM) A is connected to virtual switch A, and VM B is connected to virtual switch B.

Which statement is true about the network traffic between A and B?

- A. Traffic between VM A and VM B stays within ESX Server.
- B. Traffic between VM A and VM B flows through the physical NIC.
- C. VM A can communicate with VM B if they have same port group policies.
- D. VM A can communicate with VM B if they have same security policies.

Answer: B

VMware Virtual Networking Concepts, page 5.

Network traffic cannot flow directly from one virtual switch to another virtual switch within the same host.

Therefore an external switch is required.

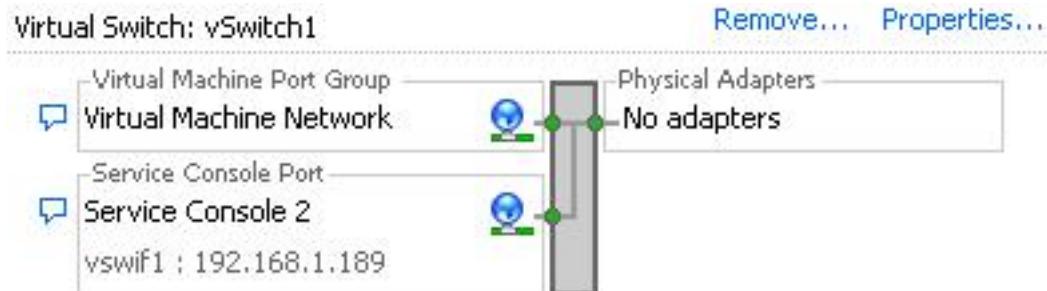
QUESTION NO: 28

Which two statements are true about virtual switches in ESX Server? (Choose two.)

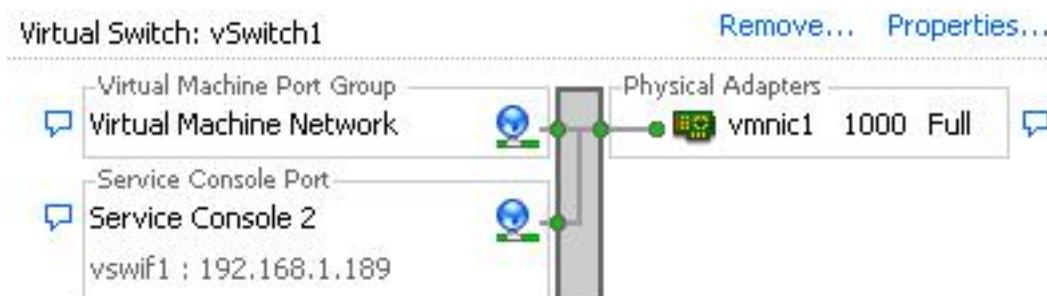
- A. A service console port group can be created on a virtual switch used for virtual machine traffic.
- B. Virtual switches can be created with or without physical NICs.
- C. A VMotion port group must not be created on a virtual switch used for virtual machine traffic.
- D. Virtual switches cannot be created without physical NICs.

Answer: A, B

The screenshot below shows a virtual switch with a service console port group present on a virtual switch used for virtual machine traffic, without a physical NIC.



The screenshot below shows a virtual switch with a service console port group present on a virtual switch used for virtual machine traffic, with a physical NIC.



QUESTION NO: 29

Suppose you have 65 virtual machines configured on a single ESX Server. You want to provide outbound connectivity for all of them. What is the minimum number of virtual switches you would need to support this configuration?

- A. 4
- B. 3
- C. 2
- D. 1

Answer: D

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 6.
Table 5. Networking Maximums

Item Maximum
Virtual network switch ports per standard switch 4088

QUESTION NO: 30

Which two statements are true about network traffic shaping? (Choose two.)

- A. The settings affect only traffic being sent out the uplink adapter to the physical network.
- B. The settings affect all vSwitch traffic.
- C. The settings are defined on a per port group basis.
- D. The settings affect only traffic coming into the uplink adapter from the physical network.
- E. The settings are defined on a per-virtual machine basis.

Answer: A, C

"defined on a per port group basis. " could be considered a correct answer because according to the VMWare Infrastructure 3:Install and Configure guide, "Traffic shaping may be defined at the virtual switch OR Port Group level. " The important distinction here is that they can be defined at this level, but they are APPLIED on a per-virtual machine basis or more directly, to the VM's virtual NIC's.

QUESTION NO: 31

Which two statements are true about internal-only virtual switches? (Choose two.)

- A. They allow a group of virtual machines to communicate only with each other.
- B. They can contain multiple port groups.
- C. They disallow service console access to the virtual machines.
- D. They are required for virtual machines to use private IP addresses.

Answer: A, B

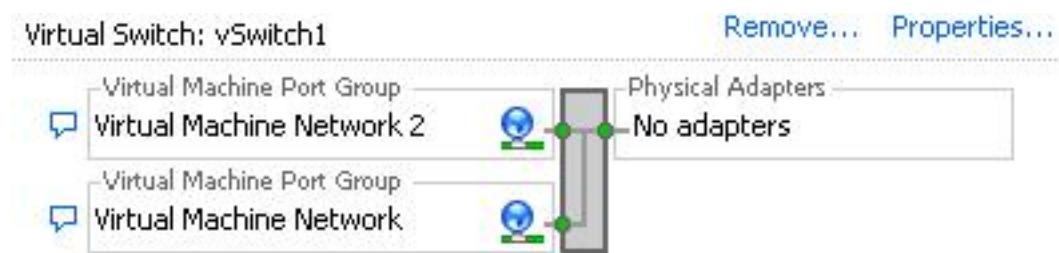
VMware Virtual Networking Concepts, page 6.

Uplink Ports

Uplink ports are ports associated with physical adapters, providing a connection between a virtual network and a physical network. Physical adapters connect to uplink ports when they are initialized by a device driver or when the teaming policies for virtual switches are reconfigured.

Some virtual switches should not connect to a physical network and thus have no uplink port, as shown in Figure 2. This is the case, for example, for a virtual switch that provides connections between a firewall virtual machine and the virtual machines protected by the firewall.

The internal-only virtual switches below contains multiple port groups



Part 2: Configure vNetwork Distributed Switches (6 questions)

QUESTION NO: 1

If you are planning on installing the Cisco Nexus 1000v Distributed Switch on your vSphere cluster, which Licensing package would you need to purchase?

- A. Enterprise Plus
- B. Advanced
- C. Enterprise
- D. Standard

Answer: A

The Cisco Nexus 1000V is VMware Ready Certified (Figure 2) and supports vSphere 4 Enterprise Plus

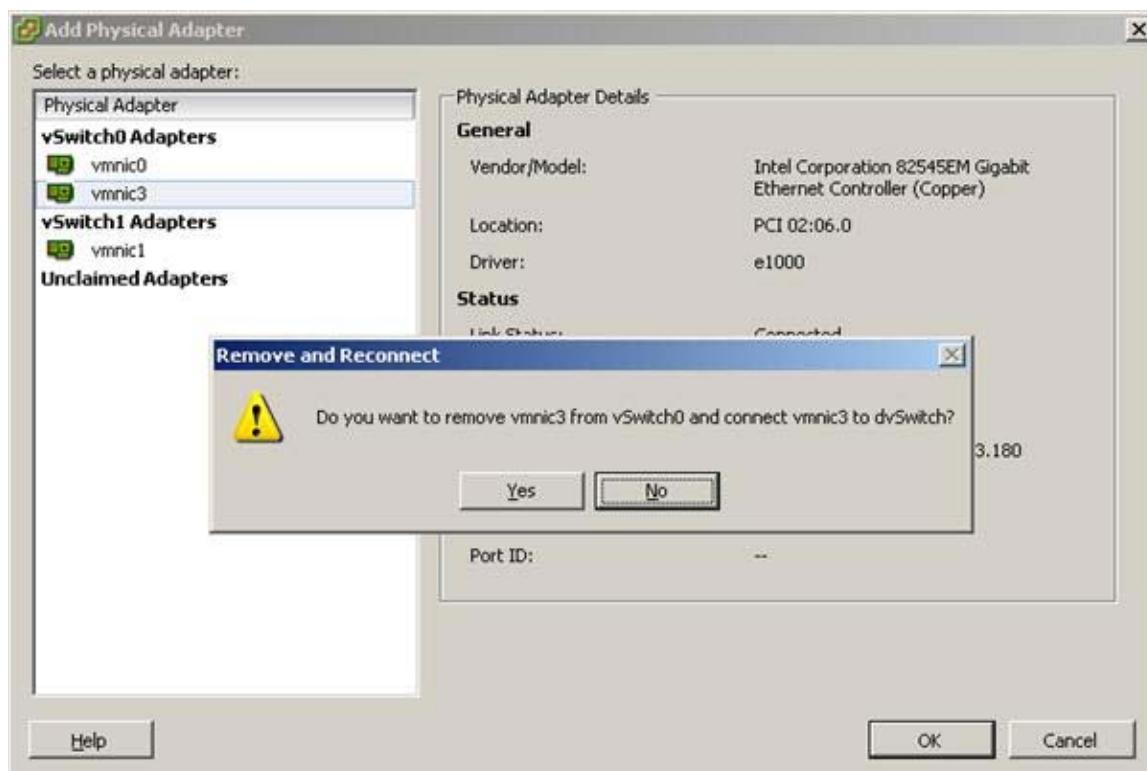
QUESTION NO: 2

An administrator is building a vNetwork Distributed Switch. Which of the following describes what happens if an attempt is made to add an uplink to the switch that is in use by a vNetwork Standard Switch?

- A. The uplink is added and any virtual machines that were using the uplink lose connectivity

- B. The uplink is added and any virtual machines that were using the uplink are added to the vNetwork Distributed Switch
- C. A warning is displayed saying the uplink is currently in use and the uplink cannot be added
- D. The uplink and the vNetwork Standard Switch are added to the vNetwork Distributed Switch

Answer: A



The screenshot above shows an uplink in use by a vNetwork Standard Switch being added to a vNetwork Distributed Switch. The vNetwork Standard Switch is not removed as a result of this operation. No virtual machines are moved as a result of assigning uplink ports.

QUESTION NO: 3

Which are valid network load balancing policies for a vNetwork Distributed Switch
(Select all that apply)?

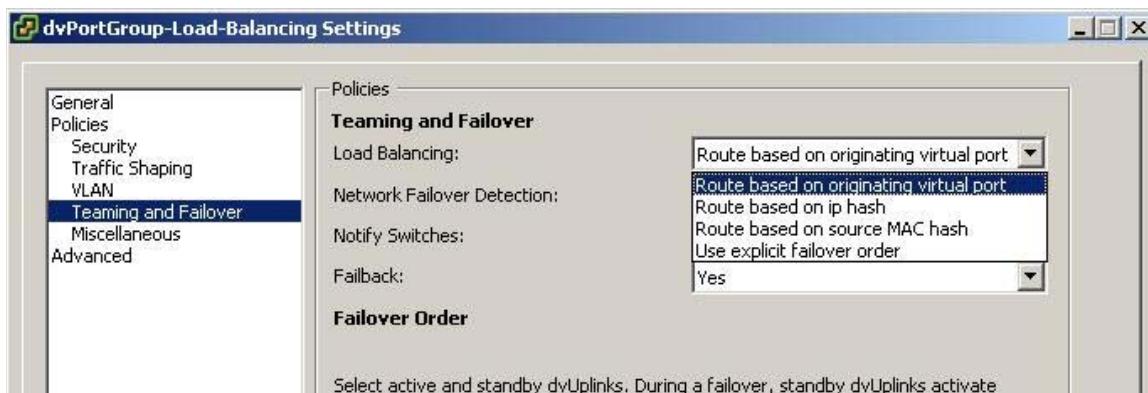
- A. route based on explicit failover order
- B. route based on source MAC hash
- C. route based on source and destination MAC hash
- D. route based on source IP hash
- E. route based on the originating virtual port ID

Answer: A, B, E

Explanation:

Load Balancing - Specify how to choose an uplink.

- * Route based on the originating port ID - Choose an uplink based on the virtual port where the traffic entered the virtual switch.
- * Route based on ip hash - Choose an uplink based on a hash of the source and destination IP addresses of each packet. For non-IP packets, whatever is at those offsets is used to compute the hash.
- * Route based on source MAC hash - Choose an uplink based on a hash of the source Ethernet.
- * Use explicit failover order - Always use the highest order uplink from the list of Active adapters which passes failover detection criteria.



QUESTION NO: 4

A vNetwork Distributed Switch is best described as?

- A. A distributed set of vNetwork Standard Switches on individual ESX Hosts capable of forwarding traffic between hosts
- B. A distributed set of vNetwork Standard Switches that allow a virtual machine to maintain a consistent network configuration between multiple ESX Hosts
- C. A single virtual switch that aggregates existing vNetwork Standard Switches
- D. A single virtual switch shared between multiple ESX Hosts

Answer: D

VMware vSphere 4 Evaluator's Guide, page 66.

A VMware vNetwork Distributed Switch simplifies virtual machine networking by enabling you to set up virtual machine networking for your entire datacenter from a centralized interface. A single Network Distributed Switch spans many ESX hosts and aggregates networking to a centralized datacenter level. vNetwork Distributed Switch abstracts configuration of individual virtual switches and enables centralized provisioning, administration and monitoring through VMware vCenter Server.

QUESTION NO: 5

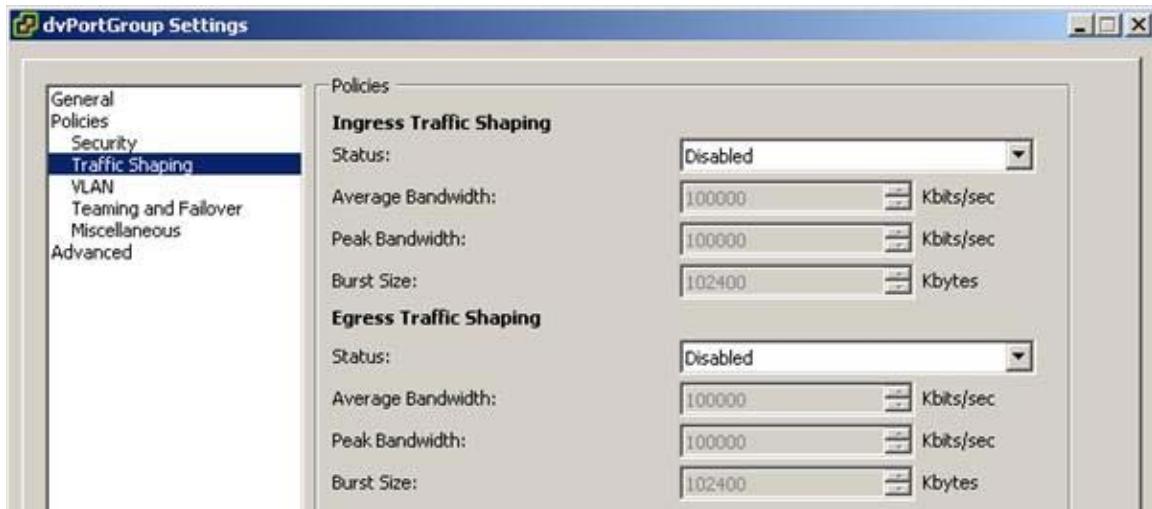
Which of the following describes the functionality of traffic shaping on a vNetwork Distributed Switch?

- A. vNetwork Distributed Switches support Best-Effort Traffic Shaping based on Quality of Service (QoS)
- B. vNetwork Distributed Switches support Egress Traffic Shaping only
- C. vNetwork Distributed Switches support both Ingress and Egress Traffic Shaping
- D. vNetwork Distributed Switches support Ingress Traffic Shaping only

Answer: C

Mastering VMware vSphere 4, page 193.

'with dvSwitch, you can apply shaping policies to both ingress and egress traffic.'



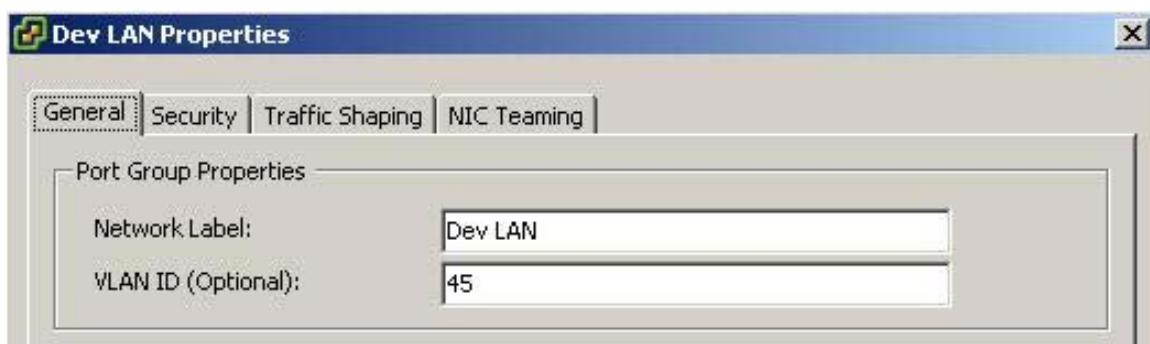
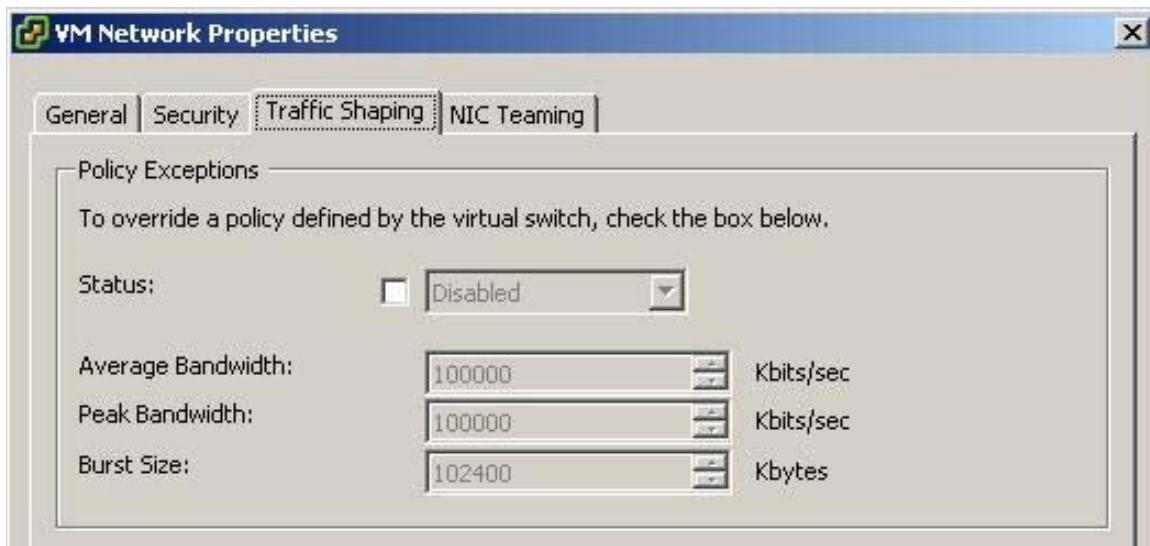
QUESTION NO: 6

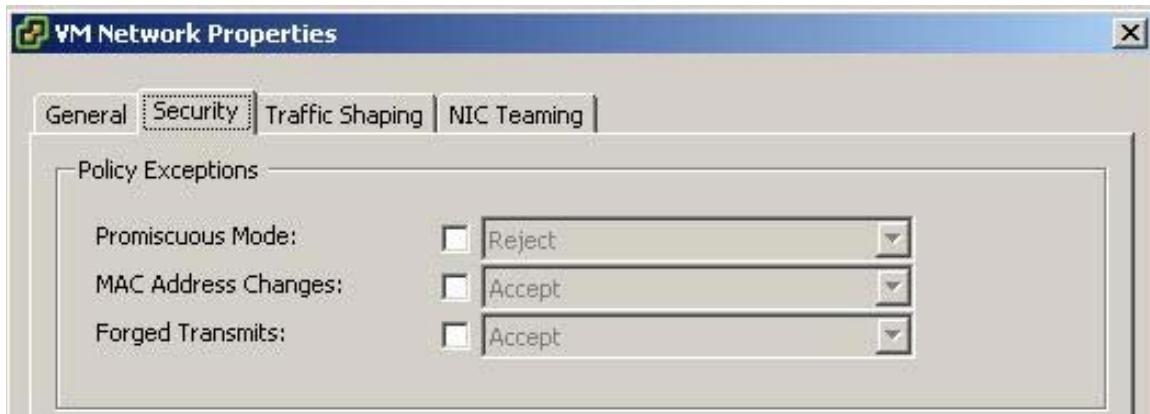
Which of the following network policies is only available with vNetwork Distributed Switches?

- A. Port Blocking Policy
- B. Traffic Shaping Policy
- C. VLAN Policy
- D. Security Policy

Answer: A

The figures below show network policies available with vNetwork Standard Switches: Traffic Shaping Policy, (B), VLAN Policy, (C), and Security Policy, (D).





Part 3: Configure VMware ESX/ESXi Management Network (10 questions)

QUESTION NO: 1

Which of the following functions cannot be performed remotely and must be performed from the ESXi Direct Console (Choose Three)?

- A. Configure a Static IP Address
- B. Restore a Standard Switch
- C. Configure DNS Settings
- D. Restart Management Agents
- E. Test the Management Network

Answer: B, D, E

The below images show that you can configure the IP address (A), and DNS settings (C), remotely using the vSphere client.

esx3. VMware ESXi, 4.0.0, 171294 | Evaluation (60 days remaining)

Summary Virtual Machines Resource Allocation Performance Configuration Users & Groups Events Permissions

vSwitch0 Properties

Ports Network Adapters

Configuration Summary

- vSwitch 56 Ports
- VM Network Virtual Machine ...
- Management Net... VMotion and IP ...

Port Properties

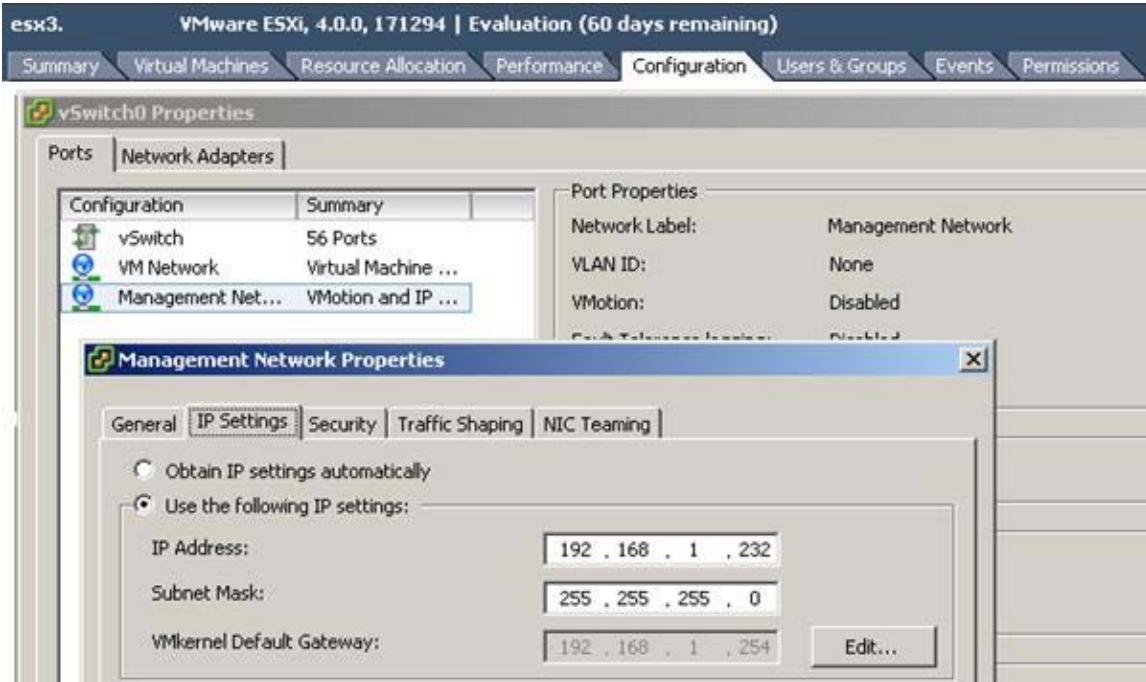
Network Label: Management Network
VLAN ID: None
VMotion: Disabled

Management Network Properties

General IP Settings Security Traffic Shaping NIC Teaming

Obtain IP settings automatically
 Use the following IP settings:

IP Address: 192 . 168 . 1 . 232
Subnet Mask: 255 . 255 . 255 . 0
VMkernel Default Gateway: 192 . 168 . 1 . 254 Edit...





QUESTION NO: 2

Which of the following tasks can be selected from the home page of an ESX Server (Choose Three)?

- A. Browse Objects Managed by this Host
- B. Browse Virtual Machines in this Host's inventory
- C. Download VMware Web Access Client
- D. Browse Datastores in this Host's inventory

E. Download VMwarevCenter Server

Answer: A,D,E

The graphics shows the following tasks can be selected from the home page:

- Download VMware vCenter
- Browse Datastores in this Host's inventory
- Browse Objects Managed by this Host

The screenshot shows the VMware ESX 4 Welcome screen. The top navigation bar includes the VMware logo and the text "VMware ESX 4 Welcome". The main content area has two main sections: "Getting Started" and "For Administrators".

Getting Started

If you need to access this host remotely, use the following program to install vSphere Client software. After running the installer, start the client and log in to this host.

- * [Download vSphere Client](#)

To streamline your IT operations with vSphere, use the following program to install vCenter. vCenter will help you consolidate and optimize workload distribution across ESX hosts, reduce new system deployment time from weeks to seconds, monitor your virtual computing environment around the clock, avoid service disruptions due to planned hardware maintenance or unexpected failure, centralize access control, and automate system administration tasks.

- * [Download VMware vCenter](#)

If you need more help, please refer to our documentation library:

- * [vSphere 4 Documentation](#)

For Administrators

vSphere Web Access

vSphere Web Access streamlines remote desktop deployment by allowing you to organize and share virtual machines using ordinary web browser URLs.

[Log in to Web Access](#)

Web-Based Datastore Browser

Use your web browser to find and download files (for example, virtual machine and virtual disk files).

[Browse datastores in this host's inventory](#)

For Developers

vSphere Web Services SDK

The vSphere Web Services SDK package contains interface definitions, detailed documentation and sample code to help you write your own management programs.

[Download the Web Services SDK](#)

[Browse objects managed by this host](#)

QUESTION NO: 3

An administrator is unable to connect a vSphere Client to an ESXi Host. Which of the following options can be selected from the Direct Console to restore connectivity without disrupting running virtual machines?

- A. Restore the Standard Switch
- B. Restart the Management Agents
- C. Restart the Management Network
- D. Disable the Management Network

Answer: B

When you are not able to connect ESX server to vCenter, or when you cannot connect to ESX server from VI client it may be necessary to restart the management agents on your ESX Server.

QUESTION NO: 4

Traffic Shaping can be configured on the following vSphere elements
(Choose Two)?

- A. On a vNetwork Distributed Switch dvPort or the entire dvPort Group for outbound traffic only
- B. On a vNetwork Standard Switch port group or the entire vSwitch for outbound traffic only
- C. On a vNetwork Standard Switch port group or the entire vSwitch for inbound traffic only
- D. On a vNetwork Distributed Switch dvPort or the entire dvPort Group for inbound and outbound traffic

Answer: B, D

Bi-directional traffic shaping - vDS expands upon the egress only traffic shaping feature of Standard Switches with bi-directional traffic shaping capabilities. Egress (from VM to network) and now ingress (from network into VM) traffic shaping policies can now be applied on DV Port Group Definitions.

QUESTION NO: 5

When creating a Service Console port, what is the purpose of the gateway device
(Choose Two)?

- A. The gateway device is the network adapter used for the default route.
- B. A gateway device is always required.
- C. The gateway device is the Service Console port used for VMkernel networking.
- D. A gateway device is required when 2 or more uplinks are using the same subnet.

Answer: A, D

For the service console, the gateway device is needed only when two or more network adapters are using the same subnet. [D above]

The gateway device determines which network adapter is used for the default route. [A above]

QUESTION NO: 6

Which of the following describe methods of adding Service Console networking to a vNetwork Distributed Switch (Choose Three)?

- A. A Service Console port can be cloned from an existing vNetwork Standard Switch
- B. A Service Console Network Adapter can be associated with an existing port group on a Network Distributed Switch
- C. A Service Console Network Adapter can be created along with a Service Console port group on the selected vNetwork Distributed Switch
- D. A Service Console Network Adapter can be created and added to a Standalone Port
- E. A Service Console port can be migrated from an existing vNetwork Standard Switch

Answer: B, D, E

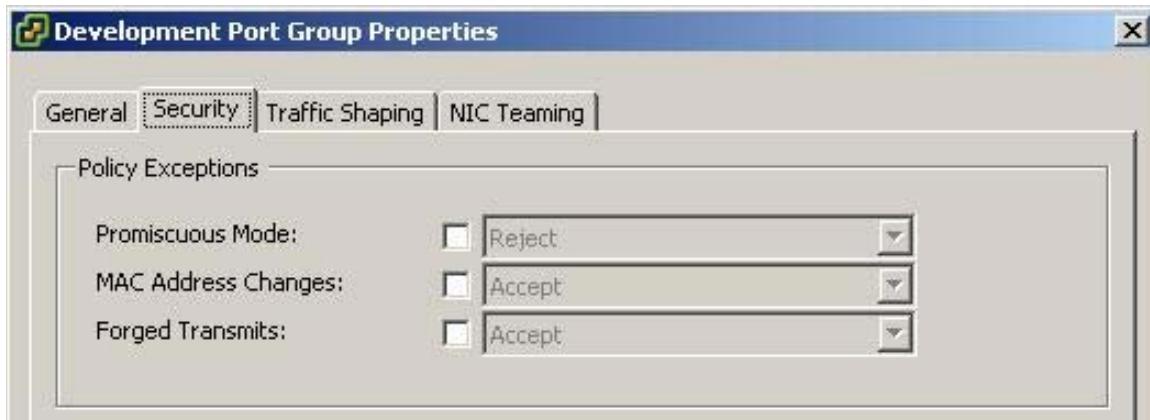
QUESTION NO: 7

Networking policies, such as traffic shaping and security, can be configured on the following vSphere elements?

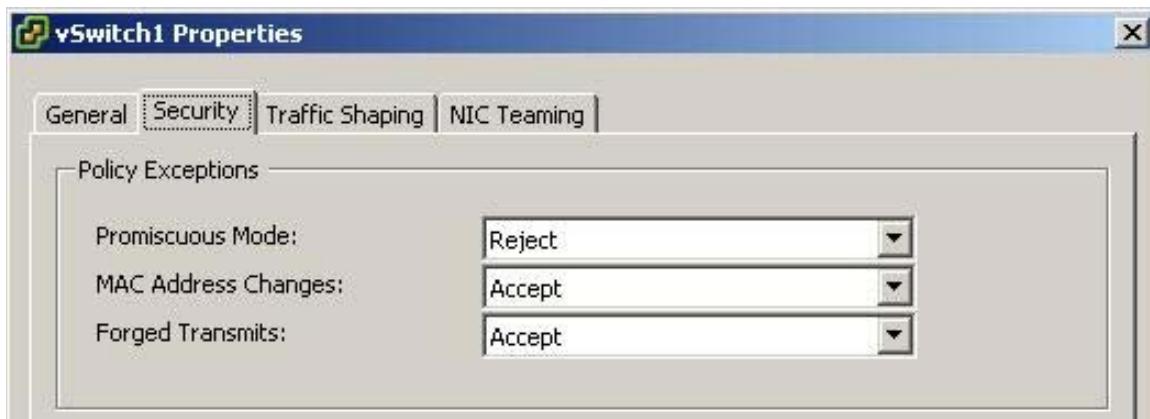
- A. On the port group and the physical network interface
- B. On the port group and the vSwitch
- C. On the vSwitch and the attached virtual machine
- D. On the physical network interface and the vSwitch

Answer: B

Networking policies, such as traffic shaping and security, can be configured on the port group



Networking policies, such as traffic shaping and security, can be configured on the vSwitch



QUESTION NO: 8

When configuring multiple service console connections, which of the following is true?

- A. The service console connections must be attached to different vmnics
- B. The service console connections must be configured on different virtual switches
- C. The service console connection must be configured on different networks
- D. The service console connections must be configured on the same virtual switch

Answer: C

QUESTION NO: 9

In which format does an iSCSI target ID appear?

- A. iqn.<year-mo>.<reversed_domain_name>:<unique_name>
- B. iscsi.<year-mo>.<forward_domain_name>:<unique_name>
- C. iqn.<ip_address>.<reversed_domain_name>
- D. iscsi.<organizational_unit>.<forward_domain_name>:<unique_name>

Answer: A

Wikipedia - iSCSI

Addressing

Special names refer to both iSCSI initiators and targets. iSCSI provides three name-formats:

1. iSCSI Qualified Name (IQN) - Format: iqn.yyyy-mm.{reversed domain name} (e.g. iqn.2001-04.com.acme:storage.tape.sys1.xyz) (Note: there is an optional colon with arbitrary text afterwards. This text is there to help better organize or label resources.) [A above]
2. Extended Unique Identifier (EUI) - Format: eui.{EUI-64 bit address} (e.g. eui.02004567A425678D)
3. T11 Network Address Authority (NAA) - Format: naa.{NAA 64 or 128 bit identifier} (e.g. naa.52004567BA64678D)

QUESTION NO: 10

Which security technology does VMware iSCSI use?

- A. IPSec
- B. PAP
- C. CHAP
- D. MSCHAPv2
- E. AES

Answer: C

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 37.

Because the IP networks that the iSCSI technology uses to connect to remote targets do not protect the data they transport, you must ensure security of the connection. iSCSI requires that all devices on the network implement Challenge Handshake Authentication Protocol (CHAP), which verifies the legitimacy of initiators that access targets on the network.

Topic 3, Configure ESX/ESXi Storage (53 questions).

Part 1: Configure FC SAN Storage (10 questions)

QUESTION NO: 1

What is the maximum HBA's Supported on VMware vSphere 4 Host?

- A. 4
- B. 2
- C. 6
- D. 8

Answer: D

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 4

Table. Storage Maximums

HBAs per host 8

QUESTION NO: 2

What is the name of the globally unique identifier assigned to each Fibre Channel Port?

- A. MAC Address
- B. IP Address
- C. Port_ID
- D. World Wide Name

Answer: D

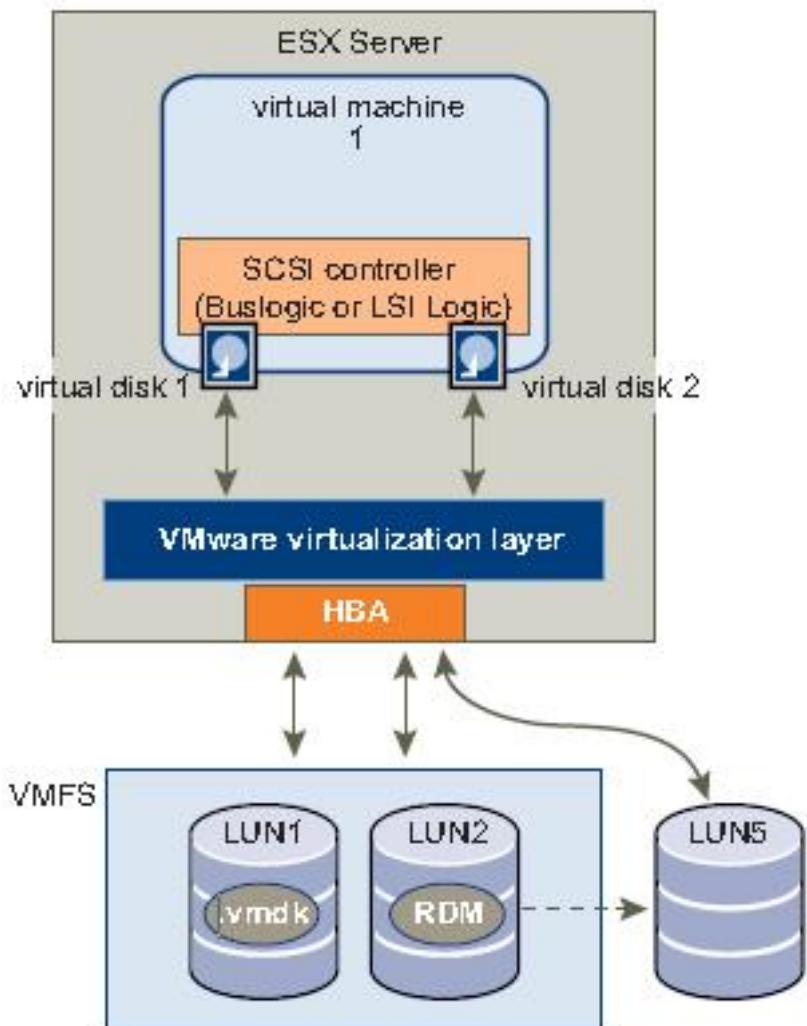
Fibre Channel HBAs are available for all major open systems, computer architectures, and buses. Each HBA has a unique World Wide Name (WWN), which is similar to an Ethernet MAC address in that it uses an Organizationally Unique Identifier (OUI) assigned by the IEEE

QUESTION NO: 3

When writes from a virtual machine are delivered to a Fibre Channel Storage Array, which of the following actions is taken by the VMkernel (Choose Three)?

- A. The file corresponding to the virtual machine is located on the VMFS datastore
- B. The request for blocks on the virtual disk is mapped to blocks on the appropriate physical device
- C. The modified I/O request is sent from the device driver to the physical HBA
- D. The commands are forwarded by the virtual SCSI Controller
- E. The I/O request is converted from binary data form to optical form

Answer: A,B,C



Fibre Channel SAN Configuration Guide ESX Server 3.5, ESX Server 3i version 3.5 VirtualCenter 2.5, page 40.

When a virtual machine interacts with a SAN, the following process takes place:

When the guest operating system in a virtual machine needs to read or write to SCSI disk, it issues SCSI commands to the virtual disk.

Device drivers in the virtual machine's operating system communicate with the virtual SCSI controllers. VMware ESX Server supports two types of virtual SCSI controllers: BusLogic and LSILogic.

The virtual SCSI Controller forwards the command to the VMkernel.

The VMkernel:

Locates the file in the VMFS volume that corresponds to the guest virtual machine disk.
Maps the requests for the blocks on the virtual disk to blocks on the appropriate physical device.

Sends the modified I/O request from the device driver in the VMkernel to the physical HBA (host HBA).

The host HBA:

Converts the request from its binary data form to the optical form required for transmission on the fibre optic cable.

Packages the request according to the rules of the FC protocol.

Transmits the request to the SAN.

Depending on which port the HBA uses to connect to the fabric, one of the SAN switches receives the request and routes it to the storage device that the host wants to access.

QUESTION NO: 4

To prevent non-ESX Servers from seeing VMFS datastores, where should LUN masking be configured?

- A. on the Fibre Channel Switch
- B. on the ESX Host
- C. on the non-ESX Hosts
- D. on the SAN Storage Device

Answer: D

Fibre Channel SAN Configuration Guide ESX 4.0, ESXi 4.0, vCenter Server 4.0, page 44.

'Configure LUN masking on your SAN'

QUESTION NO: 5

An administrator is installing an ESX Host to boot from a SAN LUN. The storage array is an active/passive array. After configuring the boot LUN and installing ESX, the system does not boot properly. Which of the following could cause this issue?

- A. The Storage Processor port specified in the BIOS configuration of the HBA is active
- B. The LUN specified in the BIOS configuration of the HBA is passive
- C. The LUN specified in the BIOS configuration of the HBA is active
- D. The Storage Processor port specified in the BIOS configuration of the HBA is passive

Answer: D

VMware ESX Server SAN Configuration Guide, page 60.

When you boot from an active-passive storage array, the storage processor whose world wide name (WWN) is specified in the BIOS configuration of the HBA must be active. If the storage processor is passive, the QLogic adapter cannot support the boot process.

QUESTION NO: 6

The Runtime Name for a Fibre Channel storage device is equivalent to?

- A. The Universally Unique Identifier (UUID) to the device
- B. The name of the current path to the device in vmhba:C:T:L format
- C. The name of the first discovered path to the device in vmhba:C:T:L format
- D. The Network Address Authority (NAA) name of the device

Answer: C

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 53.

Runtime Name

The name of the first path to the device. The runtime name is created by the host. The name is not a reliable identifier for the device, and is not persistent.

The runtime name has the following format:

vmhba#:C#:T#:L#, where

vmhba# is the name of the storage adapter. The name refers to the physical adapter on the host, not to the SCSI controller used by the virtual machines.

C# is the storage channel number.

T# is the target number. Target numbering is decided by the host and might change if there is a change in the mappings of targets visible to the host. Targets that are shared by different hosts might not have the same target number.

L# is the LUN number that shows the position of the LUN within the target. The LUN number is provided by the storage system. If a target has only one LUN, the LUN number is always zero (0).

For example, vmhba1:C0:T3:L1 represents LUN1 on target 3 accessed through the storage adapter vmhba1 and channel 0.

QUESTION NO: 7

An administrator is configuring an ESX Host with 2 Fibre Channel HBAs. The attached FC Storage Array has two active Storage Processor ports. No zoning is configured. Using Round Robin multipathing, how many paths are used to send data to a VMFS Datastore at any given time?

- A. 4
- B. 1
- C. 2
- D. 3

Answer: B

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 25.

Round Robin (RR) Uses a path selection algorithm that rotates through all available paths enabling load balancing across the paths.

Round-Robin Load Balancing

VMware ESX Server 3.5, VMware ESX Server 3i version 3.5, VMware VirtualCenter 2.5, page 1

When one path from the ESX Server host to the SAN becomes unavailable, the host switches to another path. ESX Server hosts can also use multipathing for load balancing.

When to switch - Specify that the ESX Server host should attempt a path switch after a specified number of I/O blocks have been issued on a path or after a specified number of read or write commands have been issued on a path. If another path exists that meets the specified path policy for the target, the active path to the target is switched to the new path.

Since the active path is switched to a new path, it can be assumed that only a single path is ever used at any given time, (B above).

QUESTION NO: 8

What are two functions of zoning in Fibre Channel Switches (Choose Two)?

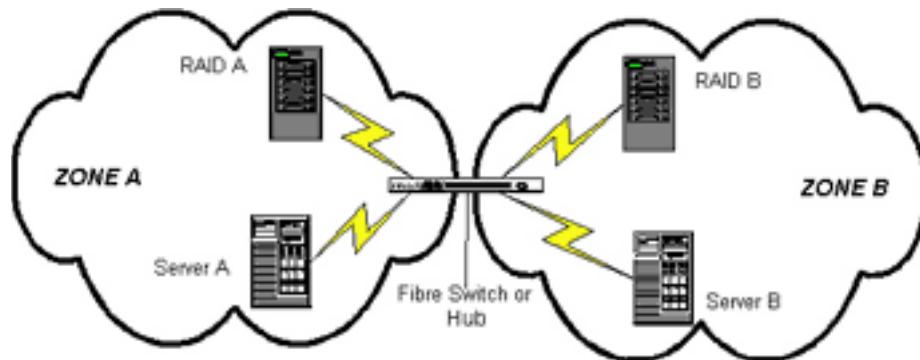
- A. Restrict connections on a storage array to ESX Hosts that utilize the array
- B. Prevents non-ESX Hosts from possibly destroying VMFS data
- C. Controls and isolates LUNs on a Fibre Channel Storage Array
- D. Reduces the number of targets and LUNs presented by a Fibre Channel Storage Array

Answer: A, B

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 53, page 15.

To restrict server access to storage arrays not allocated to that server, the SAN uses zoning. [A above] Typically, zones are created for each group of servers that access a shared group of storage devices and LUNs. Zones define which HBAs can connect to which SPs. Devices outside a zone are not visible to the devices inside the zone.

Since devices outside a zone are not visible to the devices inside the zone it would prevent non-ESX Hosts from accessing and possibly destroying VMFS data. [B above]



QUESTION NO: 9

When configuring a FC-SAN with ESX 4, which of the following are valid requirements and/or recommendations (Choose Two)?

- A. Each LUN should contain only one VMFS datastore
- B. Each LUN must present the same LUN ID number to all ESX/ESXi hosts
- C. Virtual machine multipathing software should be used to perform I/O load balancing to individual LUNs
- D. RDMs should not be used to access raw disks from previous ESX 2.5 or 3.x Hosts

Answer: A, B

iSCSI SAN Configuration Guide , page 44, 66.

LUNs must be presented to each HBA of each host with the same LUN ID number.

Place only one VMFS datastore on each LUN.

QUESTION NO: 10

A virtual machine is using a Fibre Channel attached Raw Device Mapped (RDM) LUN. Which of the following applications used with the virtual machine would require the RDM to be in Physical Compatibility Mode (Choose Three)?

- A. Physical Server to Virtual Machine Clustering
- B. SAN Management Agents
- C. Storage Array based Replication
- D. SCSI-target based software
- E. VMware Snapshots

Answer: A, B, D

Setup for Failover Clustering and Microsoft Cluster Service ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 25.

Cluster Physical and Virtual Machines

A standby host cluster has specific hardware and software requirements. Use RDMs in physical compatibility mode (pass-through RDM). You cannot use virtual disks or RDMs in virtual compatibility mode (non-pass-through RDM) for shared storage. [A is correct].

Physical compatibility mode allows the guest operating system to access the hardware directly. Physical compatibility is useful if you are using SAN-aware applications in the virtual machine. However, a virtual machine with the physical compatibility RDM cannot be cloned, made into a template, or migrated if the migration involves copying the disk.

Virtual compatibility allows the RDM to behave as if it were a virtual disk, so you can use such features as snapshotting, cloning, and so on. [Therefore E is incorrect].

Recommended Detailed Material on RDM's

Physical mode for the RDM specifies minimal SCSI virtualization of the mapped device, allowing the greatest flexibility for SAN management software. In physical mode, the VMkernel passes all SCSI commands to the device, with one exception: the REPORT LUNs command is virtualized, so that the VMkernel can isolate the LUN for the owning virtual machine. Otherwise, all physical characteristics of the underlying hardware are exposed. Physical mode is useful to run SAN management agents [B above] or other SCSI target based software [D above] in the virtual machine.

QUESTION NO: 1

How are new LUNs discovered by an ESX Host?

- A. A rescan operation is required every time a new LUN is added
- B. A reboot operation is required to detect newly presented LUNs
- C. ESX Server automatically detects new LUNs as they are presented
- D. ESX Server periodically performs a rescan operation to detect any new LUNs

Answer: A

iSCSI SAN Configuration Guide, page 26.

The VMkernel discovers LUNs when it boots, and those LUNs are then visible in the vSphere Client. If changes are made to the LUNs, you must rescan to see those changes.

New LUNs created on the iSCSI storage

Changes to LUN access control

Changes in connectivity

QUESTION NO: 2

An ESX Server is configured to access an iSCSI target using CHAP authentication. What happens to the access if CHAP is disabled on the ESX Host?

- A. Access is unaffected until the ESX Server is restarted
- B. Access is removed on the next rescan
- C. Access is unaffected until either the ESX Server or the iSCSI Array are restarted
- D. Access is immediately removed

Answer: C

iSCSI SAN Configuration Guide, page 40.

If you disable CHAP on a system that requires CHAP authentication, existing iSCSI sessions remain active until you reboot your ESX/ESXi host or the storage system forces a logout. After the session ends, you can no longer connect to targets that require CHAP.

QUESTION NO: 3

Using Hardware iSCSI Initiators with ESX/ESXi hosts allows which of the following tasks to be offloaded from the VMkernel (Choose Two)?

- A. Encapsulation of iSCSI PDUs into TCP/IP packets
- B. Encapsulation of I/O requests into iSCSI Protocol Data Units (PDUs)

- C. Mapping requests for blocks on the virtual disk to blocks on the appropriate physical device
- D. Issuing SCSI commands to the virtual disk

Answer: A, B

iSCSI From Wikipedia, the free encyclopedia

An initiator functions as an iSCSI client. An initiator typically serves the same purpose to a computer as a SCSI bus adapter would, except that instead of physically cabling SCSI devices (like hard drives and tape changers), an iSCSI initiator sends SCSI commands over an IP network. An initiator falls into two broad types:

Software initiator

A software initiator uses code to implement iSCSI. Typically, this happens in a kernel-resident device driver that uses the existing network card (NIC) and network stack to emulate SCSI devices for a computer by speaking the iSCSI protocol. Software initiators are available for most mainstream operating systems, and this type is the most common mode of deploying iSCSI on computers.

Hardware initiator

A hardware initiator uses dedicated hardware, typically in combination with software (firmware) running on that hardware, to implement iSCSI. A hardware initiator mitigates the overhead of iSCSI [B above] and TCP [A above] processing and Ethernet interrupts, and therefore may improve the performance of servers that use iSCSI.

QUESTION NO: 4

What is the maximum number of paths allowed in ESX 4.x for an iSCSI LUN?

- A. 8
- B. 4
- C. 2
- D. 16

Answer: A

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 4.

Table 2. Storage Maximums
Hardware iSCSI Initiators

Paths to a LUN 8

QUESTION NO: 5

What is the default port used by iSCSI in a VMware vSphere environment?

- A. 2049
- B. 3260
- C. 902
- D. 443

Answer: B

VMware Consolidated Backup: Adding an iSCSI LUN to ESX Server

Unless you have changed the port that the iSCSI server runs on; port 3260 is fine, as it is the default iSCSI service port.

QUESTION NO: 6

Which of the following components must be modified in order to enable Jumbo Frame support for the Software iSCSI Initiator (Choose Two)?

- A. The virtual machine port group
- B. The iSCSI vmhba
- C. The virtual switch
- D. The VMkernel port

Answer: C, D

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 30.

If needed, enable Jumbo Frames. Jumbo Frames must be enabled for each vSwitch through the vSphere CLI. Also, if you use an ESX host, you must create a VMkernel network interface enabled with Jumbo Frames.

QUESTION NO: 7

Using Hardware iSCSI Initiators with ESX/ESXi hosts allows which of the following tasks to be offloaded from the VMkernel? Select all that apply-

- A. Issuing SCSI commands to the virtual disk
- B. Mapping requests for blocks on the virtual disk to blocks on the appropriate physical device
- C. Encapsulation of iSCSI PDUs into TCP/IP packets
- D. Encapsulation of I/O requests into iSCSI Protocol Data Units (PDUs)

Answer: C, D

Explanation:

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 19.

If the iSCSI initiator is a hardware iSCSI initiator (iSCSI HBA), the HBA performs the following tasks.

Encapsulates I/O requests into iSCSI Protocol Data Units (PDUs). [D above]

Encapsulates PDUs into TCP/IP packets. [C above]

Sends IP packets over Ethernet to the iSCSI storage system.

QUESTION NO: 8

Which of the following CHAP Authentication mechanisms is available when using Software iSCSI, but not Hardware iSCSI? Select all that apply.

- A. Per-Target CHAP
- B. Per-Subnet CHAP
- C. Mutual CHAP
- D. One-way CHAP

Answer: A, C

Explanation:

Software iSCSI support BOTH Per-Target and Mutual CHAP.

For Softare iSCSI only, you can set one-way CHAP and mutual CHAP for each initiator or at the target level.

Hardware iSCSI support CHAP only at the initiator level.

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 37.

ESX/ESXi supports CHAP authentication at the adapter level. In this case, all targets receive the same CHAP name and secret from the iSCSI initiator. For software iSCSI, ESX/ESXi also supports per-target CHAP authentication, which allows you to configure different credentials for each target to achieve greater level of security.

QUESTION NO: 9

Which of the following steps, required for iSCSI software multipathing, must be performed using the esx cli interface?

- A. Binding the VMkernel ports to the selected uplinks
- B. Configuring Dynamic Discovery for the iSCSI software initiator
- C. Connecting the VMkernel ports to the virtual switch

D. Connecting the iSCSI software initiator to the VMkernel ports

Answer: D

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 33.

Using the vSphere CLI, connect the software iSCSI initiator to the iSCSI VMkernel ports.

Repeat this command for each port.

```
esxcli swiscsi nic add -n <port_name> -d <vmhba>
```

QUESTION NO: 10

The Challenge Handshake Authentication Protocol (CHAP) is used with iSCSI on an ESX Server to provide which of the following?

- A. Bi-directional Target authentication
- B. Initiator authentication
- C. LUN Group authentication
- D. Storage Processor authentication

Answer: B

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 37.

Because the IP networks that the iSCSI technology uses to connect to remote targets do not protect the data they transport, you must ensure security of the connection. iSCSI requires that all devices on the network implement Challenge Handshake Authentication Protocol (CHAP), which verifies the legitimacy of initiators that access targets on the network.

QUESTION NO: 11

Which of the following statements are true about software iSCSI? (Choose Two)

- A. It requires a dedicated NIC.
- B. It is enabled by default.
- C. CHAP authentication can be configured.
- D. SendTargets can be configured.

Answer: C, D

iSCSI SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 35, 37.

Set up target discovery addresses so that the iSCSI initiator can determine which storage resource on the network is available for access.

The ESX/ESXi system supports these discovery methods:

Dynamic Discovery Also known as Send Targets discovery. Each time the initiator contacts a specified iSCSI server, the initiator sends the Send Targets request to the server. The server responds by supplying a list of available targets to the initiator. The names and IP addresses of these targets appear on the Static Discovery tab. If you remove a static target added by dynamic discovery, the target might be returned to the list the next time a rescan happens, the HBA is reset, or the host is rebooted.

Static Discovery The initiator does not have to perform any discovery. The initiator has a list of targets it can contact and uses their IP addresses and target names to communicate with them.

Because the IP networks that the iSCSI technology uses to connect to remote targets do not protect the data they transport, you must ensure security of the connection. iSCSI requires that all devices on the network implement Challenge Handshake Authentication Protocol (CHAP), which verifies the legitimacy of initiators that access targets on the network.

CHAP uses a three-way handshake algorithm to verify the identity of your host and, if applicable, of the iSCSI target when the host and target establish a connection. The verification is based on a predefined private value, or CHAP secret, that the initiator and target share.

ESX/ESXi supports CHAP authentication at the adapter level. In this case, all targets receive the same CHAP name and secret from the iSCSI initiator. For software iSCSI, ESX/ESXi also supports per-target CHAP authentication, which allows you to configure different credentials for each target to achieve greater level of security.

QUESTION NO: 12

In ESX3, which of the following is a valid software iSCSI initiator?

- A. vmhba2
- B. vmnic1
- C. vmhba32
- D. iscsi0

Answer: C

QUESTION NO: 13

Which two discovery options does the vSphere Client offer when setting up the iSCSI initiator? (Choose two.)

- A. adaptive
- B. non-selective
- C. dynamic
- D. selective
- E. static

Answer: C, E

Part 3: Configure NFS Datastores (9 questions)

QUESTION NO: 1

Which of the following is true about use of the delegate user functionality that enables access to NFS devices using non-root credentials?

- A. The functionality is not supported with ESX or ESXi 4.x
- B. The functionality is experimental in ESX and ESXi 4.x
- C. The functionality is supported in ESX, but not in ESXi 4.x
- D. The functionality is fully supported in ESX and ESXi 4.x

Answer: A

vSphere4 Documentation Notes vReference.com Version 1.0 Page 1 Main Documentation Set, page 17.

ESX does not support the delegate user functionality that enables access to NFS volumes using non-root credentials.

ESXi does not support the delegate user functionality that enables access to NFS volumes using non-root credentials

QUESTION NO: 2

What is the maximum configurable number of NFS datastores that can be mounted to an ESX/ESXi 4 Host?

- A. 32
- B. 64
- C. 16
- D. 8

Answer: B

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 4.

Table 2. Storage Maximums

NFS datastores 64

QUESTION NO: 3

Which version of NFS does ESX Server require?

- A. version 3 over UDP
- B. version 3 over TCP
- C. version 2 over UDP
- D. version 2 over TCP

Answer: B

ESX Configuration Guide ESX 4.0, vCenter Server 4.0, Page 73.

The NFS client built into ESX uses Network File System (NFS) protocol version 3 to communicate with the NAS/NFS servers

At the time of introduction of Version 3, vendor support for TCP as a transport-layer protocol began increasing. While several vendors had already added support for NFS Version 2 with TCP as a transport, Sun Microsystems added support for TCP as a transport for NFS at the same time it added support for Version 3. Using TCP as a transport made using NFS over a WAN more feasible

QUESTION NO: 4

An ESX Host gains exclusive access to Virtual Machines created on NFS datastores using?

- A. Distributed File Locking
- B. NFS File Locking Protocol
- C. SCSI Reservations
- D. a special .lck-XXX lock file

Answer: D

ESX ESX Configuration Guide ESX 4.0 vCenter Server 4.0

When your host accesses a virtual machine disk file on an NFS-based datastore, a .lck-XXX lock file is generated in the same directory where the disk file resides to prevent other hosts from accessing this virtual disk file. Do not remove the .lck-XXX lock file, because without it, the running virtual machine cannot access its virtual disk file.

QUESTION NO: 5

Which two statements are true about shared storage capabilities on NFS datastores supported by ESX Server (Choose Two)?

- A. You can create Raw Device Mapped (RDM) virtual disks on NFS datastores
- B. You can use Storage VMotion to move virtual machines between NFS datastores
- C. You can cluster virtual machines using MSCS across ESX Servers using an NFS datastore
- D. You can use VMware Consolidated Backup with an NFS datastore

Answer: B, D**QUESTION NO: 6**

Virtual Disks created on NFS datastores are?

- A. in a format dictated by the NFS Server
- B. zeroed thick
- C. thick
- D. thin

Answer: A**QUESTION NO: 7**

Before configuring NFS on ESX Server, what must be configured?

- A. a VMkernel port
- B. the NFS Client service must be enabled in the Security Profile
- C. the NFS Client must be enabled from the Service Console
- D. a Service Console port

Answer: A

QUESTION NO: 8

Which parameters are required when creating an NFS-based datastore in ESX Server?

- A. NFS server CHAP, NFS shared folder name, datastore name
- B. NFS server LUN UUID, NFS shared folder name, datastore name
- C. NFS server World Wide Node Name, NFS shared folder name, datastore name
- D. NFS server hostname, NFS shared folder name, datastore name

Answer: D

QUESTION NO: 9

Which three statements are true about shared storage capabilities on NFS volumes supported by ESX Server? (Choose three.)

- A. You can use VMotion.
- B. You can configure ESX Server to boot from NFS mounted volumes.
- C. You can boot virtual machines stored on NFS mounted volumes.
- D. You can create virtual machines on NFS mounted volumes.
- E. You can create VMFS datastore on NFS mounted volumes.

Answer: A, C, D

Part 4: Configure and Manage VMFS Datastores (21 questions)

QUESTION NO: 1

What is the maximum Raw Device Mapping (RDM) Size Supported on VMware vSphere 4 Host?

- A. 2TB Minus 512B
- B. 2TB
- C. 512GB
- D. 1TB

Answer: A

Storage Maximums

Raw device mapping (RDM) size 2TB minus 512B

QUESTION NO: 2

What is the size of the esxconsole.vmdk?

- A. 1200MB
- B. 800MB
- C. 1000MB
- D. 2400MB
- E. None of the other alternatives are correct.

Answer: A

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 62.

ESX Required Partitions

Mount Point	Type	Size
Not applicable	VMFS3	esxconsole.vmdk: 1200MB

QUESTION NO: 3

The ESX 4.x Service Console Virtual Disk can be located on (Choose Two):

- A. an NFS datastore
- B. a VMFS datastore on locally attached storage
- C. a VMFS datastore on software iSCSI attached storage
- D. a VMFS datastore on non-shared FC attached storage

Answer: B,D

vSphere Upgrade Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 69.

After the upgrade to ESX 4.0, the service console's partitions are stored in a .vmdk fileAll .vmdk files, including the esxconsole.vmdk, are stored in VMFS volumes.

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 62.

Table 7-1. ESX Required Partitions

Mount Point Type Size Location

Not applicable	VMFS3	esxconsole.vmdk: 1200MB *
----------------	-------	---------------------------

* The service console must be installed on a VMFS datastore that is resident on a host's local disk or on a SAN disk that is masked and zoned to that particular host only.

QUESTION NO: 4

Swap, var/log and all the other optional partitions are stored where?

- A. In a Virtual disk called esxconsole-/esxconsole.vmdk
- B. On a Physical disk called esxconsole-/esxconsole.vmdk
- C. Physical disk
- D. Virtual disk
- E. In a virtual disk called esxconsole-<system-uuid>/esxconsole.vmdk

Answer: E

vSphere Upgrade Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, vSphere Client 4.0, page 69.

After the upgrade to ESX 4.0, the service console's partitions are stored in a .vmdk file. These partitions include /, swap, and all the optional partitions. The name of this file is esxconsole-<system-uuid>/esxconsole.vmdk.

QUESTION NO: 5

What is the Maximum VMFS Volume Size?

- A. 64TB minus 16K
- B. 64TB
- C. 2TB
- D. 2TB minus 512B

Answer: A

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 3.

Table 2. Storage Maximums

Volume size 64TB minus 16K

QUESTION NO: 6

An Administrator has determined that storage performance to a group of virtual machines is reduced during peak activity. The virtual machines are all located in a VMFS datastore called Production1.

Which of the following actions could be taken to improve the storage performance of these virtual machines?

- A. Add additional physical storage, expand the underlying volume, then grow the VMFS datastore into
The new space
- B. Change the storage multipathing policy to Most Recently Used (MRU)
- C. Add additional physical storage and add an extent to the VMFS datastore called Production1
- D. Add additional physical storage, create a new VMFS datastore called Production2 on the new storage, then migrate a portion of the virtual machines from Production1 to Production2

Answer: D

Since the question does not refer to lack of storage, adding storage to the existing datastore is unlikely to help, so neither A nor C are likely to improve performance.

Change the storage multipathing policy to Most Recently Used (MRU) will achieve little, since the Most Recently Used path is likely to be the path used anyway.

Storage performance refers to how efficiently, (typically how quickly), storage operates. By adding a new datastore, and migrate a portion of the virtual machines from Production1 to Production2 is likely to reduce the load on the original datastore, and hence improve responsiveness, and hence performance.

QUESTION NO: 7

When planning storage for a Virtual Infrastructure, an administrator chooses a 4MB block size for the VMFS datastore. What is the largest virtual disk that can be created on this datastore?

- A. 256GB minus 512B
- B. 1TB minus 512B
- C. 2TB minus 512B
- D. 512GB minus 512B

Answer: B

Block Size Largest virtual disk on VMFS-2 Largest virtual disk on VMFS-3
1MB 456GB 256GB

2MB 912GB 512GB

4MB 1.78TB 1TB

QUESTION NO: 8

A virtual machine has been configured with N-Port ID Virtualization. The Guest OS virtual disk is placed in a RAID5 datastore, while the Production virtual disk is placed in a RAID1+0 datastore. Why would an administrator consider placing both disks on the same datastore

(Choose Two)?

- A. VMotion can be used with NPIV enabled virtual machines, but not with disks in multiple datastores
- B. Storage VMotion can be used with NPIV enabled virtual machines, but not with disks in multiple datastores
- C. Storage VMotion cannot be used on a virtual machine with NPIV enabled
- D. VMotion cannot be used on a virtual machine with NPIV enabled

Answer: A, C

QUESTION NO: 9

Which of the following are accurate descriptions of the Predictive and Adaptive Schemes for placing VMFS datastores (Choose Two)?

- A. The Adaptive Scheme utilizes a small number of large LUNs
- B. The Predictive Scheme utilizes several LUNs with different storage characteristics
- C. The Adaptive Scheme utilizes several LUNs with different storage characteristics
- D. The Predictive Scheme utilizes a small number of large LUNs

Answer: A, B

Making LUN Decisions.

In the predictive scheme, you:

- * Create several LUNs with different storage characteristics. (B above)
- * Build a VMFS volume in each LUN (label each volume according to its characteristics).
- * Locate each application in the appropriate RAID for its requirements.
- * Use disk shares to distinguish high-priority from low-priority virtual machines. Note that disk shares are relevant only within a given ESX Server host. The shares assigned to virtual machines on one ESX Server host have no effect on virtual machines on other ESX Server hosts.

In the adaptive scheme, you:

- * Create a large LUN (RAID 1+0 or RAID 5), with write caching enabled. (A above)

- * Build a VMFS in that LUN.
- * Place four or five virtual disks on the VMFS.
- * Run the applications and see whether disk performance is acceptable.
- * If performance is acceptable, you can place additional virtual disks on the VMFS. If it is not, you create a new, larger LUN, possibly with a different RAID level, and repeat the process. You can use cold migration so you don't lose virtual machines when recreating the LUN.

QUESTION NO: 10

A VMFS datastore with several running virtual machines is nearing 100% capacity. An administrator intends to grow the datastore so that existing virtual machines will have room for re-sizing, thin provisioning and snapshots. Which action can be taken to provide additional capacity for these functions?

- A. Use VMFS Volume Grow from the Datastore section in vCenter
- B. Add an Extent to the existing Datastore from the Datastore section in vCenter
- C. Add an Extent to the existing Datastore from an ESX Host running the virtual machines in the datastore
- D. Use VMFS Volume Grow from an ESX Host running the virtual machines in the datastore

Answer: D

QUESTION NO: 11

Which of the following statements characterize the VMware Virtual Machine File System (VMFS) (Choose Two)?

- A. SCSI commands issued by virtual machines are passed through to the VMFS file system
- B. The VMFS is optimized to run multiple virtual machines as a single workload
- C. SCSI commands issued by virtual machines are translated at the virtualization layer to VMFS file operations
- D. The VMFS prioritizes single virtual machine workloads for optimal performance

Answer: B, C

QUESTION NO: 12

What is the maximum number of VMFS datastores that can be configured

per ESX Host?

- A. 1024
- B. 256
- C. 512
- D. 128

Answer: B

QUESTION NO: 13

Which of the following is a valid object to add an extent to?

- A. an existing VMFS or NFS datastore
- B. an existing NFS datastore
- C. an existing VMFS datastore
- D. an available unused storage volume

Answer: C

What's New in VMware vSphere 4.0 .

vStorage VMFS Volume Grow - vCenter Server 4.0 allows dynamic expansion of a VMFS volume extent to add capacity to an existing datastore. VMFS Volume Grow is a new method for expanding a datastore without disrupting running virtual machines. After a LUN that backs that datastore is expanded through an array management utility, the administrator can use VMFS Volume Grow to expand the VMFS extent on the expanded LUN.

QUESTION NO: 14

When you delete a VMFS datastore, it is destroyed and disappears from?

- A. only the host that you have deleted it from
- B. the storage device containing the datastore
- C. all hosts in the same DRS/HA cluster
- D. all hosts with connectivity to the datastore

Answer: D

QUESTION NO: 15

Which of the following is information that can be obtained about a VMFS Datastore using Storage Views in the vSphere Client (Choose Two)?

- A. vmhba Adapter used to access the datastore
- B. Runtime Name of the datastore
- C. Multipathing Status for the datastore
- D. Space Used in the datastore

Answer: C, D

QUESTION NO: 16

How are new LUNs discovered by ESX Server?

- A. A reboot operation is required to detect newly presented LUNs.
- B. ESX Server automatically detects new LUNs as they are presented.
- C. ESX Server periodically performs a rescan operation to detect any new LUNs.
- D. A rescan operation is required every time a new LUN is added.

Answer: D

iSCSI SAN Configuration Guide, page 26.

The VMkernel discovers LUNs when it boots, and those LUNs are then visible in the vSphere Client. If changes are made to the LUNs, you must rescan to see those changes.

- * New LUNs created on the iSCSI storage
- * Changes to LUN access control
- * Changes in connectivity

QUESTION NO: 17

What file systems will be mounted under /vmfs/volumes?

- A. all partitions not allocated to the Service console
- B. all partitions allocated to the VMkernel
- C. all partitions listed in the /etc/fstab
- D. all partitions that have a VMFS file system

Answer: D

QUESTION NO: 18

Which three storage solutions are supported for the placement of a VMFS file system during the installation of the ESX Server? (Choose Three.)

- A. SCSI
- B. SAN
- C. ATA RAID
- D. SCSI RAID
- E. ATA

Answer: A, B, D

QUESTION NO: 19

What is the maximum virtual disk size on a VMFS-3 volume? Select the best answer.

- A. 512 GB
- B. 3.6 TB
- C. 1 TB
- D. 2 TB

Answer: D

Explanation:

File size (block size=8MB) 2TB minus 512B)

QUESTION NO: 20

What is the minimum supported hardware requirement to run a VirtualCenter server?

- A. 2 GHz CPU
- B. at least one Gigabit Ethernet adapter
- C. 512 MB RAM unless running a database server on the same machine
- D. 150 MB free disk space

Answer: A

QUESTION NO: 21

On the DRS cluster, which three steps are part of the process of creating a virtual machine (VM) in VirtualCenter 4.0? (Choose three.)

- A. connect the CD-ROM drive to your OS disk image
- B. select the group folder within the server farm in which you want the VM to reside

- C. choose whether you are creating a "Typical" or "Custom" VM
- D. select the resource pool in which you want to run the VM
- E. select a datastore in which to store the VM files

Answer: C, D, E

Topic 4, Install and Configure vCenter Server (60 questions).

Part 1: Install vCenter Server (24 questions).

QUESTION NO: 1

Once vCenter 4.x has been installed, a License Server is required in which of the following instances?

- A. To support ESXi 4.x Hosts
- B. To support ESX 3.5 Hosts
- C. A License Server is no longer required
- D. A License Server is always required

Answer: B

vSphere uses a new centralized license reporting and management structure, which means that if all ESX hosts are upgraded to version 4, no license server or host license file is needed. ESX 3.5 hosts still require access to a license server, which can be used by the vSphere Virtual Center by configuring the License Server option under Administration-Server Settings.

QUESTION NO: 2

What is the maximum amount of characters that a vCenter server name should not exceed?

- A. 25
- B. 10
- C. 20
- D. 15

Answer: D

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 73.

The machine on which you install or upgrade to vCenter Server must have a computer name that is 15 characters or fewer.

QUESTION NO: 3

What is the minimum amount of memory recommended for a vCenter 4 server?

- A. 3GB
- B. 1GB
- C. 2MB
- D. 2GB

Answer: A

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- * CPU - 2 CPUs
- * Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- * Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- * Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 4

Which of the following Ports is not required to be available for vCenter Server?

- A. 443
- B. 902
- C. 80
- D. 25

Answer: D

ESXi Installable and vCenter Server, Setup Guide, ESXi 4.0 Installable, vCenter Server 4.0, page 18.

vCenter Server requires certain ports to send and receive data.

* 80 vCenter Server requires port 80 for direct HTTP connections. Port 80 redirects requests to HTTPS port

* 443. This is useful if you accidentally use http://server instead of https://server.

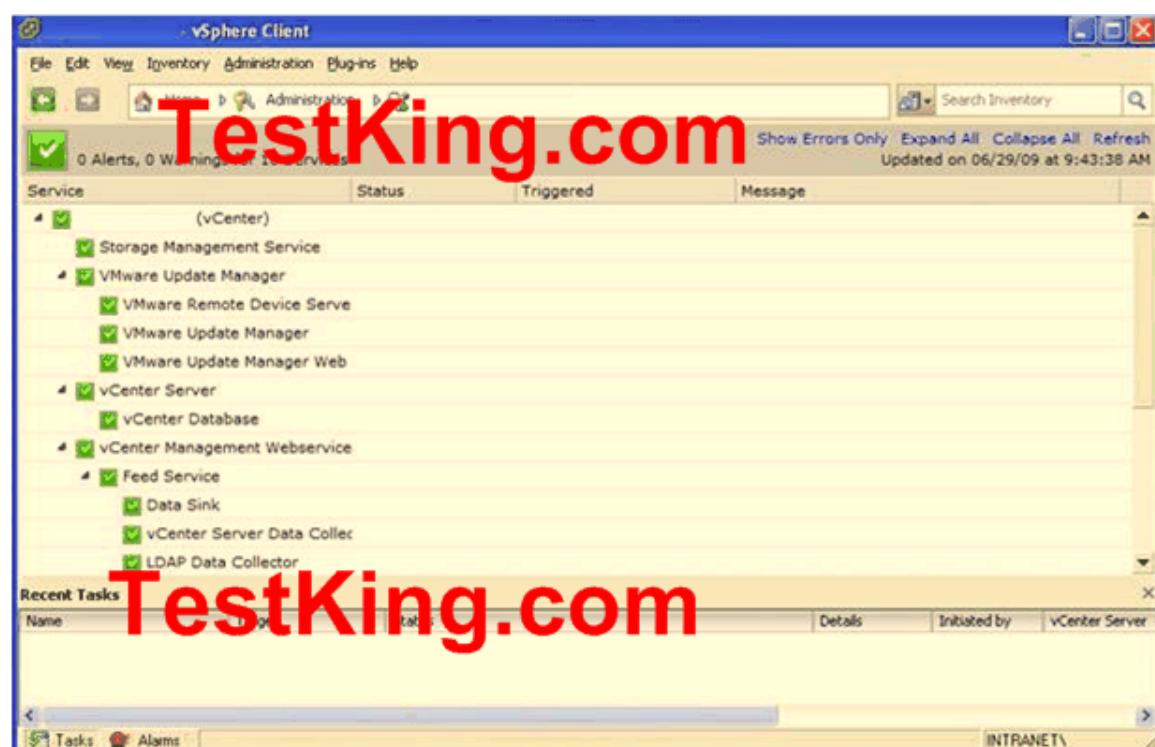
* 389 This port must be open on the local and all remote instances of vCenter Server. This is the LDAP port number for the Directory Services for the vCenter Server group.

- * 443 The default port that the vCenter Server system uses to listen for connections from the vSphere Client.
- * 636 For vCenter Linked Mode, this is the SSL port of the local instance.
- * 902 The default port that the vCenter Server system uses to send data to managed hosts. Managed hosts also send a regular heartbeat over UDP port 902 to the vCenter Server system.

QUESTION NO: 5

Which new feature of VMware vCenter 4 is displayed in the exhibit?

Exhibit:



- A. Host Profiles
- B. vCenter Service Status
- C. Customization Specifications Manager
- D. vCenter Server Settings

Answer: B

The screenshot shows the vSphere Client interface with the title bar "VM-ESX4-VC - vSphere Client". The menu bar includes File, Edit, View, Inventory, Administration, Plugins, and Help. The navigation bar shows Home > Administration > vCenter Service Status. A search bar "Search Inventory" is present. The main content area is titled "vCenter Service Status" with the sub-titles "0 Alerts, 3 Warnings for 2 of 13 Services". A table lists the services with their status and triggered alerts:

Service	Status	Triggered	Message
VM-ESX4-VC (vCenter)	3 warnings		
Storage Management Service	Green icon		
vCenter Server	2 warnings		
vCenter Database	2 warnings		Performance statistics rollup from Past Day to Past Week is Performance statistics rollup from Past Week to Past Month

Below the table, a large warning icon and the text "vCenter Service Status" and "0 Alerts, 3 Warnings for 2 of 13 Services" are displayed.

QUESTION NO: 6

Which Microsoft .NET Framework is required for vCenter Server?

- A. .NET 2.0
- B. .NET 3.0 SP1
- C. .NET 3.5
- D. .NET is not required

Answer: B

ESXi Installable and vCenter Server, Setup Guide, ESXi 4.0 Installable, vCenter Server 4.0, page 17.

'If you install vCenter Server on the E:\ drive or on any custom drive, note the following space requirements:

- * 601MB on the custom drive for vCenter Server
- * 1.13GB on the C:\ drive for Microsoft .NET 3.0 SP1, Microsoft ADAM, Microsoft SQL Server 2005 Express (optional), and Microsoft Visual C++ 2005 Redistributable'

QUESTION NO: 7

Which ports need to be available on vCenter system?

- A. 80, 389, 443, 636
- B. 983, 443, 80, 366
- C. 902, 903, 443, 80
- D. 80, 366, 443, 902

Answer: A

ESXi Installable and vCenter Server, Setup Guide, ESXi 4.0 Installable, vCenter Server 4.0, page 18.

vCenter Server requires certain ports to send and receive data.

- * 80 vCenter Server requires port 80 for direct HTTP connections. Port 80 redirects requests to HTTPS port
- * 443. This is useful if you accidentally use http://server instead of https://server.
- * 389 This port must be open on the local and all remote instances of vCenter Server. This is the LDAP port number for the Directory Services for the vCenter Server group.
- * 443 The default port that the vCenter Server system uses to listen for connections from the vSphere Client.
- * 636 For vCenter Linked Mode, this is the SSL port of the local instance.
- * 902 The default port that the vCenter Server system uses to send data to managed hosts. Managed hosts also send a regular heartbeat over UDP port 902 to the vCenter Server system.

QUESTION NO: 8

What is the minimum amount of RAM required for vCenter Server?

- A. 1GB
- B. 3GB
- C. 2GB
- D. 4GB

Answer: B

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- CPU - 2 CPUs
- Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 9

What is the minimum number of CPU's required for vCenter Server?

- A. 2
- B. 1
- C. 8
- D. 4

Answer: A

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- CPU - 2 CPUs
- Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 10

When is it required to use 64Bit CPU's to run vCenter Server?

- A. Never - vCenter wont run on a 64Bit CPU
- B. When you have 200 or less hosts
- C. When you have 200-300 hosts
- D. All the time

Answer: C

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 17.

Table 2-5 summarizes the requirements for an extra-large deployment.

vCenter Server must be hosted on a 64-bit Windows operating system for this configuration.

Table 2-5. Up to 300 Hosts and 3000 Powered-On Virtual Machines

Product	CPU	Memory	Disk
vCenter Server	4	8GB	3GB
vSphere Client	1	500MB	1GB

QUESTION NO: 11

Which of these databases does vCenter no longer support?

- A. Microsoft SQL Server 2005 & 2005 Express
- B. Microsoft SQL Server 2008
- C. Oracle 9i and Microsoft SQL Server 2000
- D. Oracle 10g & 11g

Answer: C

Database Compatibility for vCenter Server (vCenter Server 4 and 4.0 U1)

- * SQL Server 2000 Standard Edition (SP4) - not supported
- * SQL Server 2000 Enterprise Edition (SP4) - not supported
- * Oracle 9i Standard Edition, Release 2 [9.2.0.8] - not supported
- * Oracle 9i Enterprise Edition, Release 2 [9.2.0.8] - not supported

QUESTION NO: 12

vCenter 4 Server minimum requirements are;

- A. 2GHz CPU, 3GB RAM, 2GB HDD space
- B. 2GHz CPU, 2GB RAM, 3GB HDD space
- C. 3GHz CPU, 2GB RAM, 3GB HDD space
- D. 2GHz CPU, 2GB RAM, 2GB HDD space

Answer: A

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- * CPU - 2 CPUs
- * Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- * Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- * Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 13

What is the minimum amount of disk space required for vCenter Server?

- A. 500MB
- B. 4GB
- C. 2GB
- D. 1GB

Answer: C

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- CPU - 2 CPUs
- Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 14

It is recommended you don't install vCenter on a Domain Controller?

- A. False
- B. True

Answer: B

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 84.

Make sure the system on which you are installing vCenter Server is not an Active Directory domain controller.

QUESTION NO: 15

What is the minimum CPU speed required for vCenter Server?

- A. 3GHz
- B. 2GHz
- C. 1GHz
- D. 500MHz

Answer: B

Getting Started with ESX, ESX 4.0, vCenter Server 4.0, page 16

Minimum Requirements for vCenter Server

- * CPU - 2 CPUs
- * Processor - 2.0GHz or faster Intel or AMD processor. Processor requirements might be higher if the database runs on the same machine.
- * Memory - 3GB RAM. Memory requirements might be higher if the database runs on the same machine.
- * Disk storage - 2GB. Disk requirements might be higher if the database runs on the same machine.

QUESTION NO: 16

Which of the following are prerequisites for installing vCenter Server (Choose Three)?

- A. The system vCenter is installed on can be in a workgroup or a domain
- B. The system vCenter is installed on must be a physical server
- C. The system vCenter is installed on must have a Static IP address or be registered with DNS if using DHCP
- D. The system vCenter is installed on can be a virtual machine or physical server
- E. The system vCenter is installed on must belong to a domain

Answer: C, D, E

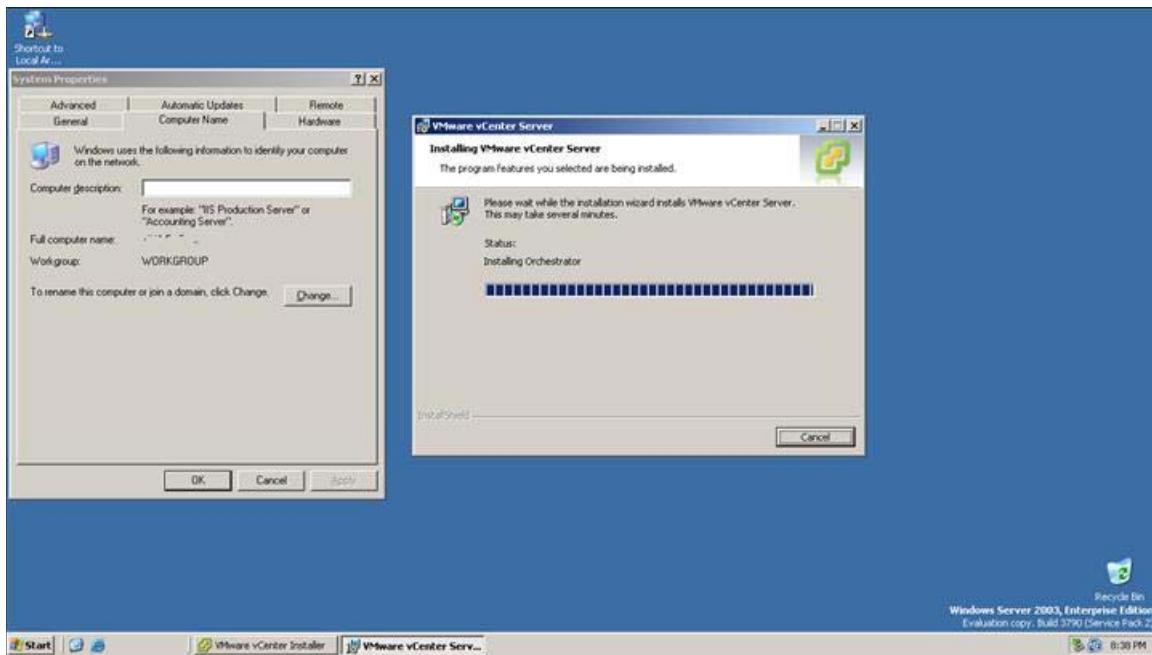
Explanation:

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0 Page 16, 83-84.

The vCenter Server system is a physical machine or virtual machine with access to a supported database. [D above]

The system that you use for your vCenter Server installation must belong to a domain rather than a workgroup. If assigned to a workgroup, the vCenter Server system is not able to discover all domains and systems available on the network when using such features as vCenter Guided Consolidation Service. [E above]

This paragraph is highly confusing, as it contradicts itself. However, in fact vCenter Server can be installed to a system residing in a workgroup, as shown below.



vCenter Server, like any other network server, should be installed on a machine with a fixed IP address and well-known DNS name, so that clients can reliably access the service. If you use DHCP instead of a static IP address for vCenter Server, make sure that the vCenter Server computer name is updated in the domain name service (DNS). [C above]

QUESTION NO: 17

An administrator is installing vCenter in a virtual machine. The selected database is Microsoft SQL Server 2005. Which of the following actions must be taken before vCenter is installed (Choose Two)?

- A. The Microsoft SQL Native Client should be removed

- B. If the guest OS is Windows XP, MDAC 2.8 SP1 must be applied
- C. If the guest OS has MSXML Core Services 6.0 installed, it must be removed
- D. The Microsoft SQL Server Client should be removed

Answer: B, C

ESX and vCenter Server Installation Guide ESX 4.0 vCenter Server 4.0, page 72.

Table 10-1. Configuration and Patch Requirements

Database Type:

- * Microsoft SQL Server 2005

Patch and Configuration Requirements:

- * For Microsoft Windows XP, apply MDAC 2.8 SP1 to the client. Use the SQL Native Client driver (version 9.x) for the client.
- * Ensure that the machine has a valid ODBC DSN entry.
- * If Microsoft SQL Server 2005 is not already installed and the machine has MSXML Core Services 6.0 installed, remove MSXML Core Services 6.0 before installing Microsoft SQL Server 2005.

QUESTION NO: 18

During the installation of vCenter Server, if you choose Join Group, which of the following actions is taken?

- A. The vCenter Server is joined to a Linked Mode group
- B. The vCenter Server is configured for VMware Fault Tolerance
- C. The vCenter Server is clustered with an existing vCenter Server for high availability
- D. The /etc/group file on ESX Hosts managed by vCenter Server are configured for vpxuser authentication

Answer: A

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 91.

Install vCenter Server

10. Select Create a standalone VMware vCenter Server instance or Join Group and click Next. Join a Linked Mode group to enable the vSphere Client to view, search, and manage data across multiple vCenter Server systems.

QUESTION NO: 19

An administrator is installing a vCenter Server to manage 10 ESX hosts and

100 virtual machines. Approximately how much additional space is required to increase the statistic collection level to maximum for all collection periods compared to a standard installation?

- A. 4GB
- B. 6GB
- C. 1GB
- D. 2GB

Answer: B

QUESTION NO: 20

Which of the following are valid reasons for deploying vCenter Server in a virtual machine (Choose Three)?

- A. vCenter Server must be deployed as a virtual machine to be migrated using VMotion
- B. vCenter Server must be deployed as a virtual machine to back it up using vCenter Data Recovery
- C. vCenter Server must be deployed as a virtual machine to be protected by High Availability
- D. vCenter Server must be deployed as virtual machines to join a Linked Mode group
- E. vCenter Server must be deployed as a virtual machine to support failover using Site Recovery Manager

Answer: A, B, C

QUESTION NO: 21

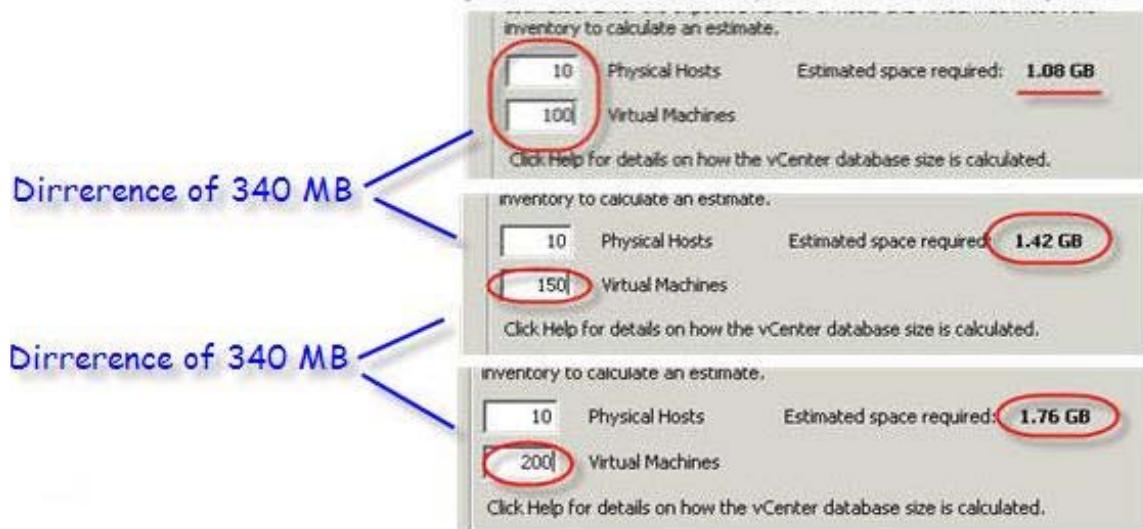
An administrator is creating a database for a vCenter installation. Approximately how much additional space is needed for every 50 virtual machines being managed, assuming statistic collection is at the default level?

- A. 700MB
- B. 1GB
- C. 500MB
- D. 100MB
- E. 340 MB

Answer: E

Explanation:

340 MB is a good approximation. See screenshot below.



QUESTION NO: 22

Suppose you have 10000 Virtual Machines across 2 Datacenters, with approximately 5000 Virtual Machines in each Datacenter. What is the minimum number of vCenter installations and vNetwork Distributed Switches required to support this configuration (Choose Two)?

- A. 1 vCenter Server
- B. 2 vNetwork Distributed Switches per Datacenter
- C. 2 vCenter Servers
- D. 1 vNetwork Distributed Switch per Datacenter

Answer: B, C.

Explanation:

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 6, 7.

Table 5. Networking Maximums

Total virtual network switch ports per host (vDS and vSS ports) 4096

Distributed virtual network switch ports per vCenter 6000

Since there are approximately 5000 VMs per Datacenter, 2 vNetwork Distributed Switches per Datacenter are required, (and would need to be split amongst 2 or more hosts), hence B.

Table 7. vCenter Server Maximums

Powered?on virtual machines (32?bit OS server) 2000

Registered virtual machines (32?bit OS server) 3000

Powered?on virtual machines (64?bit OS server) 3000

Registered virtual machines (64?bit OS server) 4500

Since, there are 5000 VMs per Datacenter, either 2 vCenter 64?bit OS servers are required per datacenter, (regardless of whether the VMs are powered on simultaneously or not) or 2 or 3 vCenter 32?bit OS servers are required per datacenter (3 if more than 4000 machines are powered on simultaneously). Therefore C is required.

QUESTION NO: 23

An administrator is installing vCenter. The selected database is Oracle 11g.

Which of the following steps are required to configure the database for use with vCenter (Choose Two)?

- A. Configure an Oracle Connection for Local or Remote Access
- B. Configure an Oracle Database User
- C. Use a Script to Create a Local or Remote Database
- D. Use a Script to Create the Oracle Database Schema

Answer: B, C

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 78-79.

Configure Oracle Databases

If you use an Oracle database for your vCenter Server repository, you need to configure your database to work with vCenter Server.

Use a Script to Create a Local or Remote Oracle Database

1. When you use an Oracle database with vCenter Server, the database must have certain table spaces and privileges. To simplify the process of creating the database, you can run a script. If you do not use this script, you can create the database manually. [C above].

Configure an Oracle Database User

If you plan to use an Oracle database when you install vCenter Server, you must configure the database user. [B above].

QUESTION NO: 24

You have decided to install vCenter on an existing Windows Server running an application that is accessed through standard HTTP and HTTPS connections, ports 80 and 443.

What will you need to do in order to successfully deploy vCenter?

- A. No additional action is required
- B. You must specify alternate vCenter Web Service ports during installation and manually specify the alternate ports when connecting with the vSphere Client.
- C. You must move the application to another server but keep IIS installed and running on ports 80 and 443 for use with SDK clients.
- D. You must change the vCenter Web Service port to 905 if SDK clients will be used.

Answer: B

ESX and vCenter Server Installation Guide, ESX 4.0, vCenter Server 4.0, page 19 and 91.

Install vCenter Server - Procedure.

12. Enter the port numbers that you want to use or accept the default port numbers and click Next.

vCenter Server requires port 80 for direct HTTP connections. Port 80 redirects requests to HTTPS port 443.

This is useful if you accidentally use <http://server> instead of <https://server>.

The vCenter Server system also uses port 443 to listen for data transfer from the vSphere Web Access Client and other SDK clients.

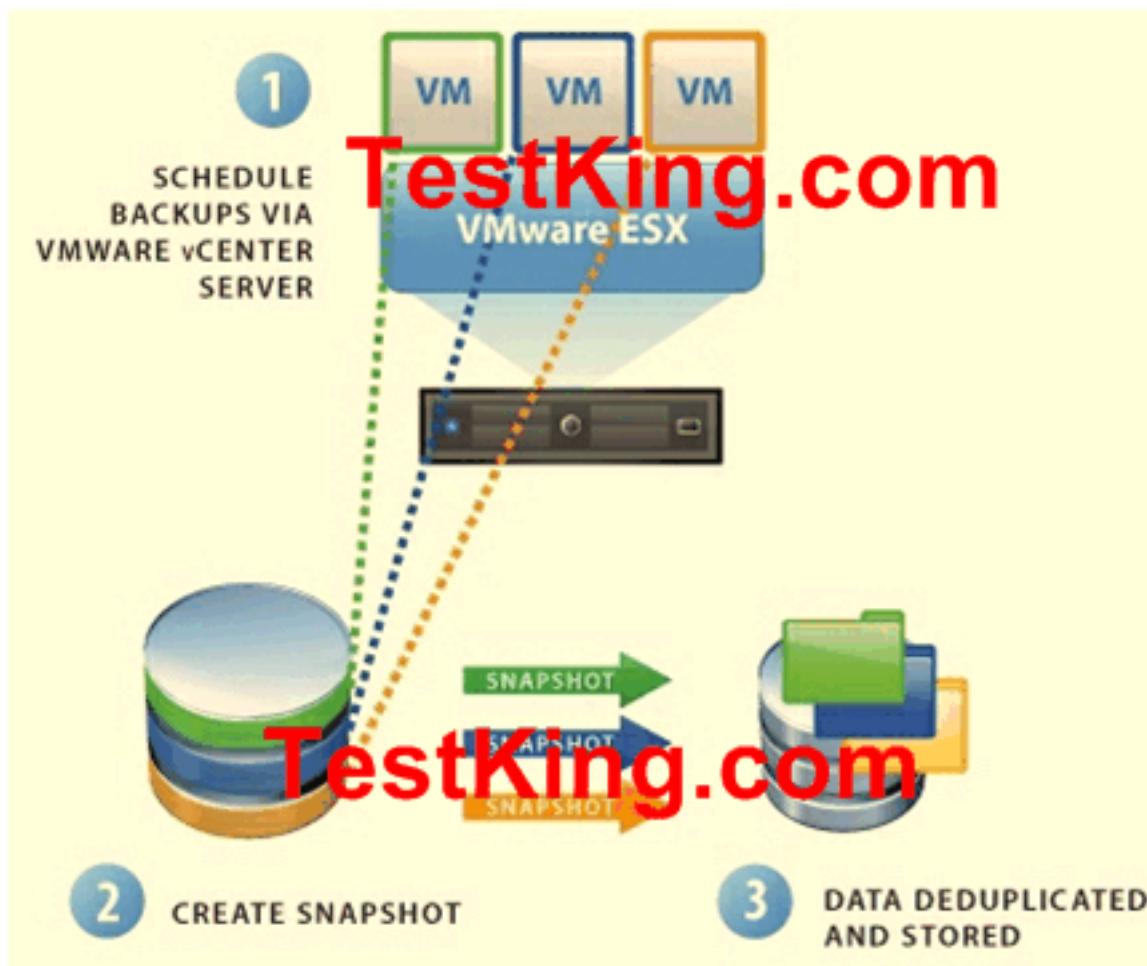
If you use another port number for HTTPS, you must use <ip-address>:<port> when you log in to the vCenter Server system.

Part 2: Manage vSphere Client plug-ins (9 questions).

QUESTION NO: 1

Which new vSphere feature is being shown in the figure in the exhibit?

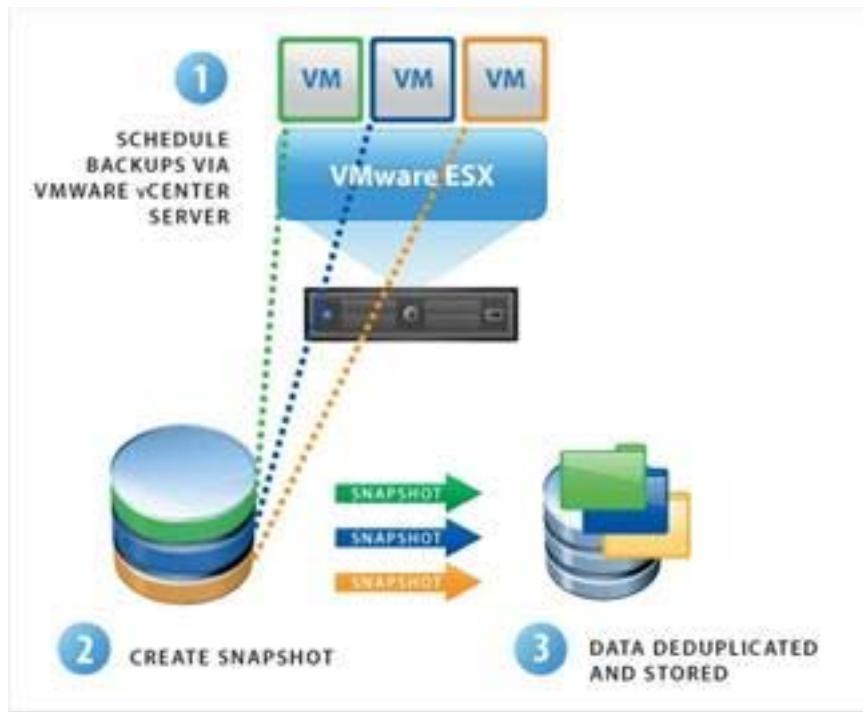
Exhibit:



- A. vSphere VCB
- B. vSphere Data Recovery
- C. vSphere VMSafe
- D. vSphere Backup Exec

Answer: B

Enable quick, simple and complete data protection for your virtual machines with VMware Data Recovery, a disk-based backup and recovery solution.



QUESTION NO: 2

Which new vSphere feature is being shown in the exhibit?

Exhibit:



- A. VMware vCenter Server
- B. VMware vShield Zones
- C. VMware VMsafe
- D. VMware vStorage APIs / VCB

Answer: C

Reference: <http://www.vmware.com/technical-resources/security/vmsafe/usecases.html>

QUESTION NO: 3

Which new vSphere feature is being shown in the figure in the exhibit?

Exhibit:



- A. VMware vSphere
- B. VMware vShield Zones
- C. VMware VMsafe
- D. VMware vNetwork Distributed Switch

Answer: B

VMware vShield Zones enables you to monitor, log and block inter-VM traffic within an ESX host or between hosts in a cluster, without having to divert traffic externally through static physical chokepoints.

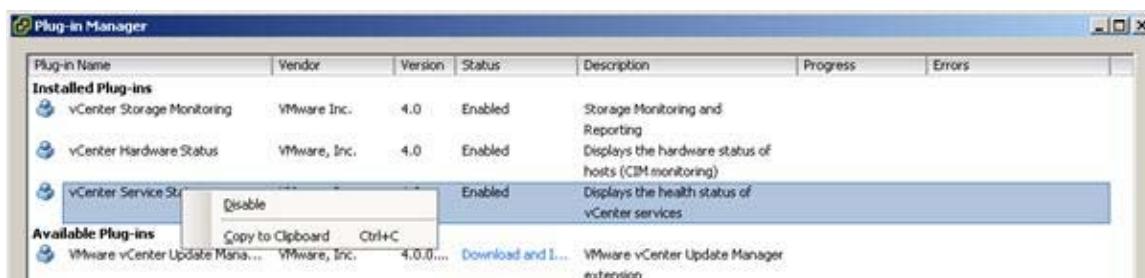
QUESTION NO: 4

Using the Plug-In Manager, which of the following actions can be taken (Choose Two)?

- A. Remove an installed Plug-in
- B. Enable an installed Plug-in
- C. View available Plug-ins that are not installed

D. Configure permissions for a Plug-in

Answer: B,C



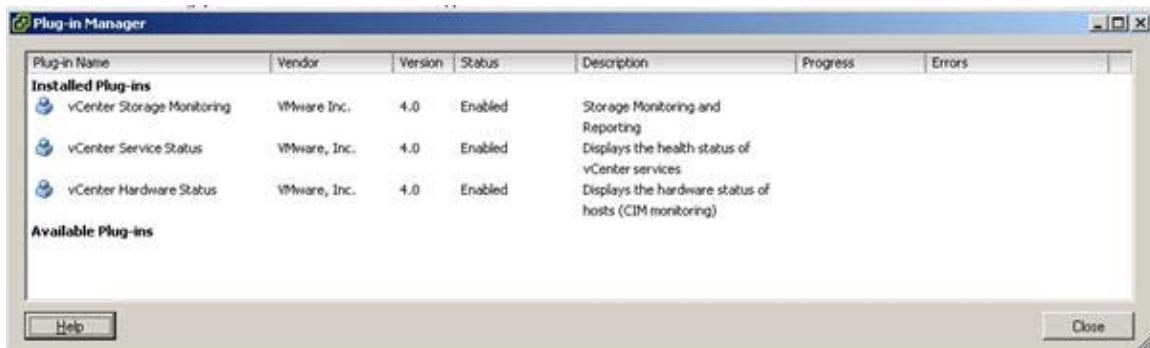
QUESTION NO: 5

Which of the following vCenter plugins are installed with a default vCenter installation (Choose Three)?

- A. VMware vCenter Update Manager
- B. VMware vCenter Storage Monitoring
- C. VMware vCenter Service Status
- D. VMware vCenter Hardware Status
- E. VMware vCenter Converter

Answer: B, C, D

The graphic below shows the default plugins.



QUESTION NO: 6

In vSphere 4, when multiple Multipathing Plugins (MPPs) exist, the Pluggable Storage Architecture (PSA) performs which of the following three tasks (Choose Three)?

- A. I/O queuing to the physical storage HBAs
- B. Association of physical paths with logical devices
- C. Management tasks such as abort or reset of logical devices
- D. Physical path discovery and removal
- E. I/O queuing to the logical devices

Answer: A, D, E

What is Pluggable Storage Architecture (PSA) and Native Multipathing (NMP)?

Pluggable Storage Architecture (PSA)

PSA is a collection of VMkernel APIs that allow third party hardware vendors to insert code directly into the ESX storage I/O path. This allows 3rd party software developers to design their own load balancing techniques and failover mechanisms for particular storage array.

The PSA coordinates the operation of the NMP and any additional 3rd party MPP.

Native Multipathing Plugin (NMP)

VMware provides a generic Multipathing Plugin (MPP), called Native Multipathing Plugin (NMP).

What does NMP do?

- * Manages physical path claiming and unclaiming.
- * Registers and de-registers logical devices.
- * Associates physical paths with logical devices.
- * Processes I/O requests to logical devices:
 - o Selects an optimal physical path for the request (load balance) [B above]
 - o Performs actions necessary to handle failures and request retries.
- * Supports management tasks such as abort or reset of logical devices.[C above]

Since the NMP provides B and C, the PSA must perform A, D and E

QUESTION NO: 7

An administrator wants to restrict the ability of selected administrators to install plug-ins in their vSphere Client applications. Which of the following would accomplish this?

- A. Remove the plug-in or plug-ins from the vCenter Server
- B. Modify the extensions.xml file and remove the unwanted plug-ins
- C. Modify permissions for the administrators and remove the Register Extension privilege
- D. Right-Click on the plug-in under Manage Plug-ins and choose Disable

Answer: C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 302.

Extensions privileges control the ability to install and manage extensions

Table A-6. Extension Privileges

Privilege Name Description

Register extension Registers an extension (plug-in)

QUESTION NO: 8

An administrator decides to use vCenter Data Recovery to back up virtual machines. After downloading the VMware Data Recovery virtual appliance and importing it into vCenter, the administrator does not see the plugin listed as an available plugin in vCenter. What additional action must be taken before the plugin is available in vCenter?

- A. The VMwareDataRecoveryPlugin.msi file must be installed on the system running the vSphere Client
- B. The VMwareDataRecoveryPlugin.msi file must be installed on the VDR Appliance
- C. The vCenter Server Service must be restarted
- D. The VMwareDataRecoveryPlugin.msi file must be installed on the vCenter Server

Answer: A

VMware Data Recovery Administrator's Guide, page 12.

You must install the client plug-in before you can manage VMware Data Recovery.

Procedure

- 1 Run the plug-in installer VMwareDataRecoveryPlugin.msi.

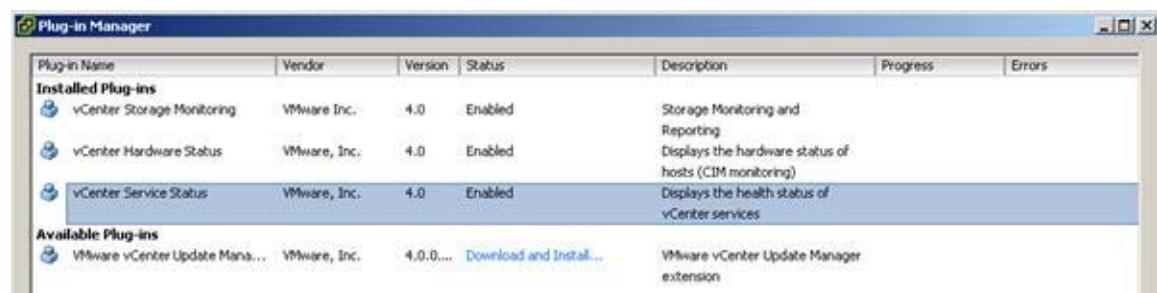
QUESTION NO: 9

Plugins allow access to external applications. To enable a plugin, which of the following steps must have already been completed?

- A. The plugin must be installed using Add/Remove programs on the VirtualCenter Server
- B. The plugin must be selected when VirtualCenter is installed
- C. The plugin must be downloaded and installed
- D. The client component of the application to be used by the plugin must be installed

Answer: C

See below.



Part 3: Configure vCenter Server (11 questions).

QUESTION NO: 1

Once vCenter 4.x has been installed, a License Server is required in which of the following instances?

- A. To support ESX 3.5 Hosts
- B. A License Server is no longer required
- C. To support ESXi 4.x Hosts
- D. A License Server is always required

Answer: A

vSphere uses a new centralized license reporting and management structure, which means that if all ESX hosts are upgraded to version 4, no license server or host license file is needed. ESX 3.5 hosts still require access to a license server, which can be used by the vSphere Virtual Center by configuring the License Server option under Administration-Server Settings.

QUESTION NO: 2

Which ports does VMware Update Manager use? Select five.

- A. 389
- B. 152
- C. 192
- D. 80
- E. 443
- F. 902
- G. 903
- H. 636
- I. 8084
- J. 9084

Answer: D, E, F, I, J

The CORRECT Answer is: 80, 443, 902, 8084, 9084, possibly 1433 and 1521

Port 903 is not used... see list below.

80 = Obtain metadata for the updates

Host to VUM Server

443 = Obtain metadata for the updates

Host to VUM Server

vCenter Server to VUM Server

902 = Push patches and updates from VUM

1433 = To Microsoft SQL Server

1521 = To Oracle connectivity

8084 = SOAP between components of VUM

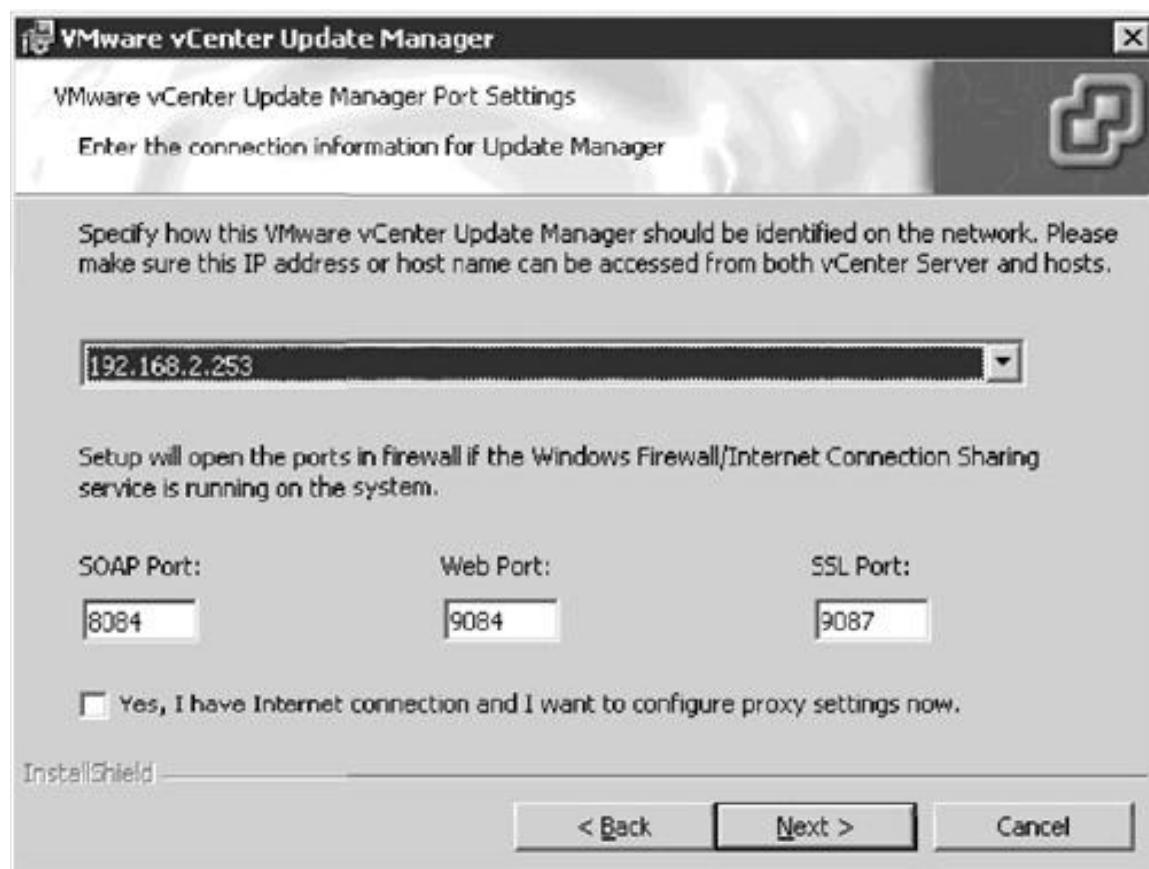
9084 = VUM Web Server. Accessed

903 = VI/vSphere Client to VM Console

VM Remote VM Console

The Update Manager Web server listens on 9084 TCP if the default is not changed during the installation.

The Update Manager SOAP server listens on 8084 TCP if the default is not changed during the installation.



The CORRECT Answer is: 80, 443, 902, 8084, 9084, possibly 1433 and 1521

Port 903 is not used... see list below.

80 = Obtain metadata for the updates
Host to VUM Server
443 = Obtain metadata for the updates
Host to VUM Server
vCenter Server to VUM Server
902 = Push patches and updates from VUM
1433 = To Microsoft SQL Server
1521 = To Oracle connectivity
8084 = SOAP between components of VUM
9084 = VUM Web Server. Accessed

903 = VI/vSphere Client to VM Console
VM Remote VM Console

QUESTION NO: 3

Which of the following are valid use cases for vCenter Server Linked Mode for a vCenter server installed on a 32-bit guest (Choose Two)?

- A. An administrator wants to migrate virtual machines between vCenter Servers
- B. An administrator wants to define permissions once and have them applied to all vCenter Servers
- C. An administrator wants to view Service Status for all vCenter Server inventory objects from one Client
- D. The environment has 400 ESX Hosts

Answer: B, C

vSphere Basic System Administration : Getting Started : Using vCenter Server in Linked Mode : Monitor vCenter Server Services

Monitor vCenter Server Services

When you are logged in to a vCenter Server system that is part of a connected group, you can monitor the health of services running on each server in the group.

The vCenter Service Status screen enables you to view the following information:
A list of all vCenter Server systems and their services, and vCenter Server plug-ins.
The status of all listed items.

The date and time when the last change in status occurred.

Any messages associated with the change in status.

Incorrect answer: The environment has 400 ESX Hosts

32-bit OS for vCenter will only support 200 Hosts and 2000 powered on VM's (3000 registered).

A single instance of vCenter Server 4.0 manages up to 300 hosts and 3000 virtual machines and with Linked Mode you can manage up to 1,000 hosts and 10,000 virtual machines across 10 vCenter Server instances.

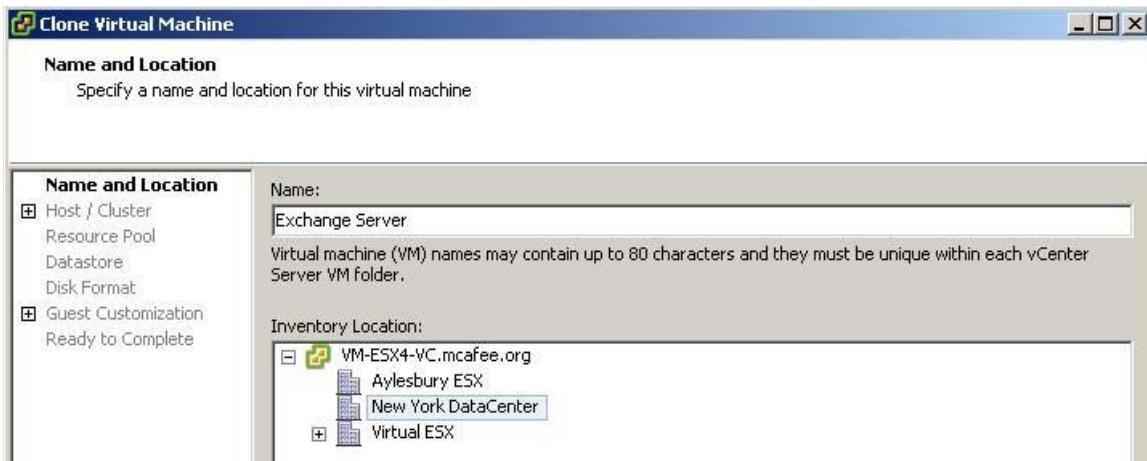
QUESTION NO: 4

Which action can be successfully performed when multiple datacenters are configured in vCenter Server?

- A. Virtual Machines can be failed over to another datacenter (using HA)
- B. Virtual Machines in one datacenter can be VMotion migrated to another datacenter
- C. Virtual Machines can exist on hosts in a DRS cluster that spans datacenters
- D. Virtual Machines in one datacenter can be cloned to another datacenter

Answer: D

The screen shot below shows that when a Virtual Machines in one datacenter is cloned, it can be cloned to any existing datacenter, (D).



QUESTION NO: 5

An administrator wants to export a Map from vCenter to edit and place into support documentation. Which of the following are valid formats for the export (Choose Two)?

- A. .JPG
- B. .CAD
- C. .BMP
- D. .VSD

Answer: A, C

Mastering VMware vSphere 4, page 91

You can save topology maps as JPG, BMP, PNG, GIF, TIFF or EMF file formats.

QUESTION NO: 6

When configuring the Oracle Connection to work remotely with vCenter Server, which of the following is required (Choose Two)?

- A. The TNS Service Name option must be configured in the ODBC DSN

- B. Add the entry open_cursors = 300 to the C:.ora file
- C. The tnsnames.ora file must be edited with the managed host name
- D. Use the Net8 Configuration Utility to add the service name

Answer: A, C

ESX and vCenter Server Installation Guide ESX 4.0, vCenter Server 4.0, page 81-2.

Configure an Oracle Connection for Local Access

VMware recommends that the vCenter Server database be located on the same system as vCenter Server.

Procedure

2. Configure the TNS Service Name option in the ODBC DSN. The TNS Service Name is the net service name for the database to which you want to connect. You can find the net service name in the tnsnames.ora file located in the NETWORK\ADMIN folder in the Oracle database installation location.

Configure an Oracle Connection for Remote Access

A vCenter Server system can access the database remotely.

6. Use a text editor or the Net8 Configuration Assistant to edit the tnsnames.ora file located in the directory C:\Oracle\Oraxx\NETWORK\ADMIN, where xx is either 10g or 11g.

Add the following entry, where HOST is the managed host to which the client must connect.

VPX =

(DESCRIPTION =

(ADDRESS_LIST =

(ADDRESS=(PROTOCOL=TCP)(HOST=vpxd-Oracle)(PORT=1521))

QUESTION NO: 7

To convert a remote physical machine vCenter Converter requires the following TCP ports to be open?

- A. 137, 443 and 902
- B. 139, 902 and 905
- C. 139, 443, 445 and 902
- D. 138, 443, 902 and 905

Answer: C

Required Ports

Converter Enterprise for VirtualCenter (plugin)

Converter Enterprise Server to remote physical machine - TCP 445, 139 and UDP 137, 138

Converter Enterprise Server to VirtualCenter Server - 443

Converter Enterprise Client to Converter Enterprise Server - 443

Physical machine to VirtualCenter Server - 443

Physical machine to ESX Server - 443, 902

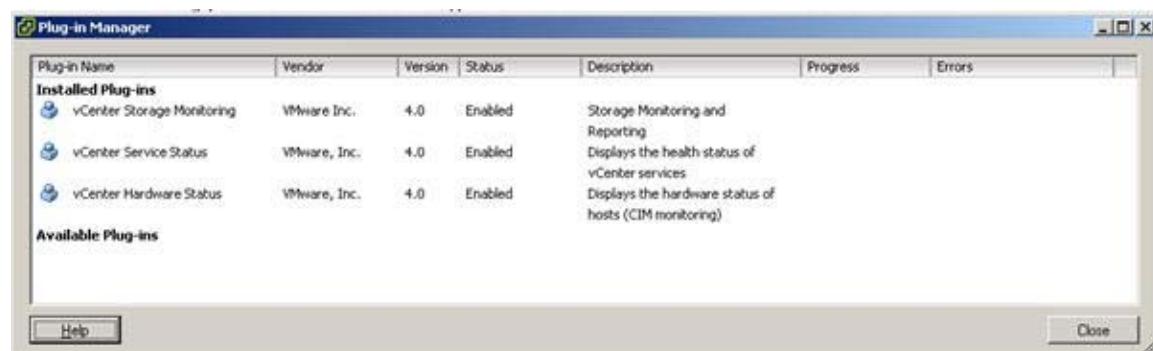
QUESTION NO: 8

Which of the following are modules that are not pre-installed and must be added to a vCenter installation (Choose Three)?

- A. VMware vCenter Storage Monitoring
- B. VMware vCenter Update Manager
- C. VMware vCenter Guided Consolidation
- D. VMware vCenter Converter
- E. VMware vCenter Orchestrator

Answer: B, C, D

The default plug-in modules installed with vCenter:



vCenter Orchestrator Installation and Configuration Guide vCenter Orchestrator 4.0 , page 15.

When you install VMware vCenter Server, Orchestrator (client and server) is silently installed on your system as an additional component.

QUESTION NO: 9

Which pre-defined vCenter Server role can assign permissions to users?

- A. Datacenter Administrator
- B. Virtual Machine Power User
- C. Administrator
- D. Resource Pool Administrator

Answer: C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 214.

Table 18-1. Default Roles

Role	Role Type	Description of User Capabilities
Administrator	system	All privileges for all objects.

QUESTION NO: 10

An administrator wants to enable Guest Customization in vCenter Server for various Windows and Linux virtual machines. Which of the following steps must be performed on the vCenter Server and in the guest virtual machines (Choose Two)?

- A. Microsoft Sysprep tools must be placed on the vCenter Server
- B. Perl must be installed in the Linux guest OS
- C. The Linux Open Source tools must be added to the vCenter Server
- D. The Windows guest OS must be Windows NT4, 2000, 2003 or 2008

Answer: A, B**Explanation:**

If you plan to customize a Windows guest operating system, you must first install the Microsoft Sysprep tools, .

Perl must be installed in the Linux guest OS.

Incorrect answer:

If you plan to customize a Linux guest operating system (this is not required in this scenario), you must first install the VMware Open Source components on your VirtualCenter management server machine.

QUESTION NO: 11

An administrator is configuring vCenter Server to support e-mail notification. Which of the following parameters must be configured in the vCenter Server settings (Choose Two)?

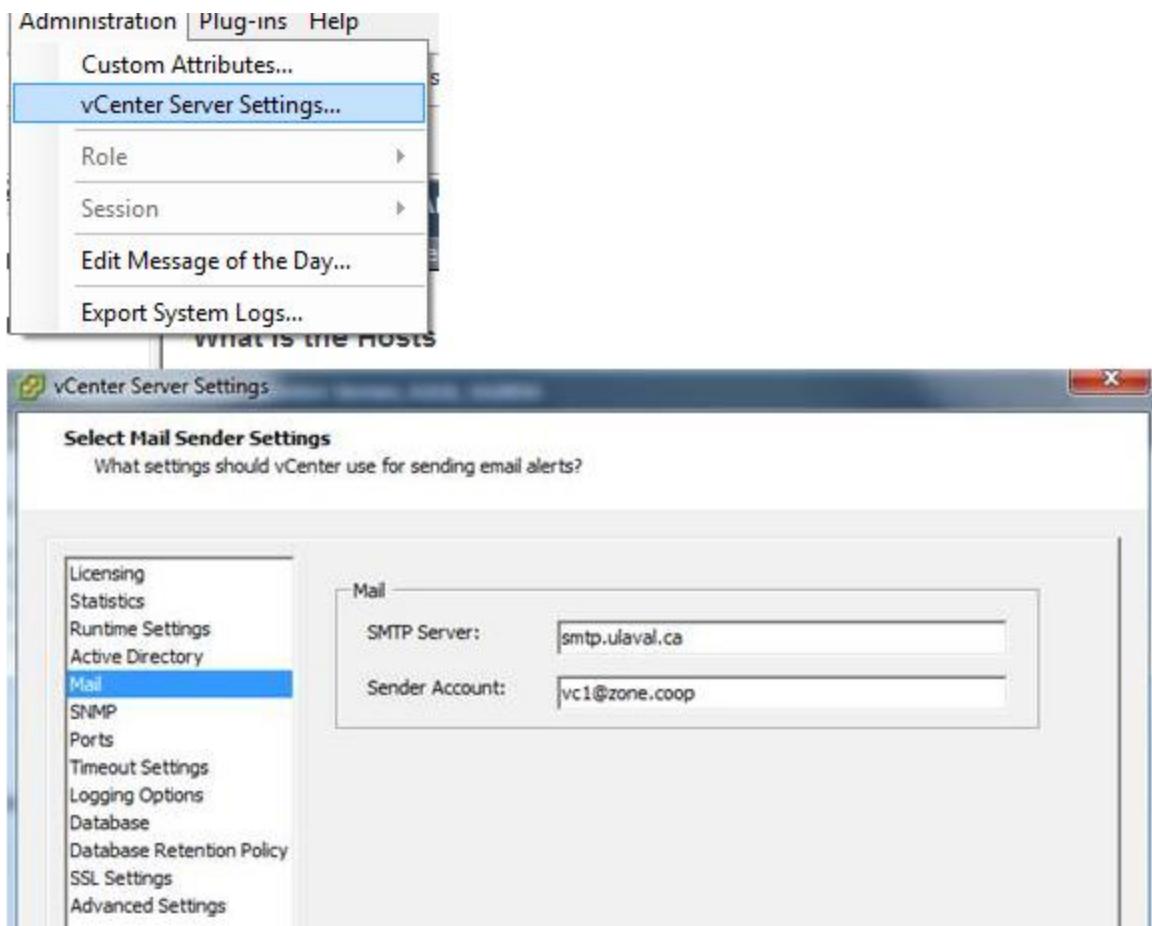
- A. Sender e-mail address
- B. SMTP server information
- C. SNMP address information
- D. Receiver e-mail address

Answer: A, B

Explanation:

The right answer should be Sender e-mail address and smtp server address.

Here is the proof:



Part 4: Configure Access Control (16 questions).

QUESTION NO: 1

To open a Port on a Host's Firewall, what command is used?

- A. esxcfg-firewall -o

- B. esxcfg-firewall -d
- C. esxcfg-firewall -q
- D. esxcfg-firewall -e

Answer: A

Open a port:

```
esxcfg-firewall -o 465,tcp,out,out-smtp
```

QUESTION NO: 2

What command is used to list the services controlled by the firewall?

- A. esxcfg-firewall -c
- B. esxcfg-firewall -s
- C. esxcfg-firewall -q
- D. esxcfg-firewall -o

Answer: B

To list the services currently controlled by the firewall:

```
esxcfg-firewall -s
```

QUESTION NO: 3

To close a Port on a Host's Firewall, what command is used?

- A. esxcfg-firewall -e
- B. esxcfg-firewall -d
- C. esxcfg-firewall -c
- D. esxcfg-firewall -o

Answer: C

Close a port:

```
esxcfg-firewall -c 465,tcp,out
```

QUESTION NO: 4

What command is used to list the current firewall rules on a Host?

- A. esxcfg-firewall -o
- B. esxcfg-firewall -q
- C. esxcfg-firewall -c
- D. esxcfg-firewall -s

Answer: B

To list the firewall rules:

```
esxcfg-firewall -q [servicename]  
esxcfg-firewall -q
```

QUESTION NO: 5

SSH operates on which Port?

- A. 24
- B. 23
- C. 22
- D. 21

Answer: C

The standard TCP port 22 has been assigned for contacting SSH servers.

QUESTION NO: 6

To disable a service on a Host's Firewall, what command is used?

- A. esxcfg-firewall -e
- B. esxcfg-firewall -o
- C. esxcfg-firewall -d
- D. esxcfg-firewall -j

Answer: C

Disable a service:

```
esxcfg-firewall -d [servicename]  
esxcfg-firewall -d sshClient
```

QUESTION NO: 7

In order for changes to a Host's Firewall to be committed, what command must be used?

- A. service firewall restart
- B. service mgmt-vmware restart
- C. service mgmt-vmware start
- D. service mgmt-vmware stop

Answer: B

Type the following command to apply the changes made to the Service Console firewall:

```
service mgmt-vmware restart
```

QUESTION NO: 8

To enable a service on a Host's Firewall, what command is used?

- A. esxcfg-firewall -s
- B. esxcfg-firewall -q
- C. esxcfg-firewall -o
- D. esxcfg-firewall -e

Answer: D

Explanation:

Enable a service:

```
esxcfg-firewall -e [servicename]  
esxcfg-firewall -e sshClient
```

QUESTION NO: 9

To list the current firewall settings which command would you use?

- A. esxcfg-firewall -l
- B. esxcfg-firewall -d
- C. esxcfg-firewall -u
- D. esxcfg-firewall -q

Answer: D

Command Options:

```
/usr/sbin/esxcfg-firewall
```

-q|--query Lists current settings.

QUESTION NO: 10

ESX Service Console user authentication (Choose Two)?

- A. can use a central directory service for password checking only
- B. requires local accounts
- C. requires users to change their passwords every 6 months by default
- D. controls vCenter authentication for vSphere Client users

Answer: A, B

Enabling Active Directory Authentication with ESX Server, page2.

A variety of authentication providers are available for use. ESX Server includes services that can be used to meet your authentication needs but also supports the use of other authentication providers. This is especially useful in cases where a collection of users has already been established, as in organizations using Active Directory. To facilitate the use of such providers, ESX Server includes an option in the esxcfg tool to configure the use of other authentication providers, (A).

ESX Configuration Guide ESX 4.0 vCenter Server 4.0, page 165.

The default installation of ESX uses /etc/passwd authentication as Linux does, but you can configure ESX to use another distributed authentication mechanism, (B).

QUESTION NO: 11

Which vCenter Server role, by default, has performance privileges?

- A. Virtual Machine Power User NO
- B. Virtual Machine Administrator
- C. Resource Pool Administrator NO
- D. Datacenter Administrator
- E. None of the other answers are correct.

Answer: B

Managing VMware VirtualCenter Roles and Permissions, page 5.

Table 1 - Sample roles included in VirtualCenter 2.x

Virtual Machine Administrator (equivalent to the role with the same name in VirtualCenter 1.x)

Perform actions on global items, folders, datacenters, datastores, hosts, virtual machines, resources, alarms, and sessions. This includes:

All privileges for all privilege groups, except permissions.

QUESTION NO: 12

The default ESX service console firewall (Choose Two)?

- A. is configured for high security
- B. blocks all traffic unless specifically allowed
- C. is configured for medium security
- D. allows all traffic unless specifically blocked

Answer: A, B

Mastering VMWare vSphere 4, page 565.

Both incoming and outgoing connections, only those ports necessary for managing the virtual machines and the ESX host are open. The default mode of operation is High security.

QUESTION NO: 13

On an ESX Host, a particular user is assigned the Administrator role. However, when that user logs into the vCenter Server, he has Read Only permissions. What most likely caused this?

- A. ESX Server permission assignments do not propagate to the vCenter Server
- B. The permissions assigned on the ESX Server will not update in vCenter until the next scheduled update interval
- C. The ESX Server is not joined to the Active Directory domain
- D. The user has Read Only permissions specifically assigned to an item, which overrides propagated permissions

Answer: A

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 211.

The privileges and roles assigned on an ESX/ESXi host are separate from the privileges and roles assigned on a vCenter Server system. When you manage a host using vCenter Server, only the privileges and roles assigned through the vCenter Server system are available. If you connect directly to the host using the vSphere Client, only the privileges and roles assigned directly on the host are available, (A).

QUESTION NO: 14

Assuming a user or a group is assigned a single vCenter Server role, if the role is then removed, which of the following occurs?

- A. Users or groups retain the permissions associated with the removed role until they are manually assigned a new role
- B. Users or groups are automatically assigned the Read Only role until an administrator can manually assign a new role
- C. Users or groups assigned the removed role no longer have any permissions in vCenter
- D. A role assigned to existing users or groups cannot be removed until all users or groups are removed from the role

Answer: C

The screenshot below shows that users or groups assigned the removed role no longer have any permissions in vCenter if the default option is selected.



QUESTION NO: 15

Which three are ESX Server pre-defined roles? (Choose three.)

- A. Administrator
- B. Virtual Machine User
- C. No Access
- D. Virtual Machine Administrator
- E. Read Only

Answer: A, C, E

The screenshot below shows the pre-defined roles of an ESX Server.



QUESTION NO: 16

For what reason would an ESX Server administrator send an end user a remote console URL?

- A. because remote console URLs are used to delegate administrative tasks performed on the ESX service console
- B. to go directly to the state of a specific virtual machine snapshot that can be resumed by the end user with a vSphere Client
- C. to provide a lightweight user interface to a virtual machine without a vSphere Client
- D. for quick access to a specific virtual machine from the vSphere Client

Answer: C

Virtual Infrastructure Web Access Administrator's Guide : Using Virtual Infrastructure Web Access to Manage Virtual Machines : Creating and Sharing Remote Console URLs

Using VI Web Access, you can create a remote console URL of a virtual machine using ordinary Web browser.

Topic 5, Deploy and Manage Virtual Machines and vApps (60 questions).

Part 1: Create and Deploy Virtual Machines (30 questions).

QUESTION NO: 1

What is the maximum amount of vCPU's that can be configured on a Virtual Machine if you could use any OS and any Licencing Edition?

- A. 4
- B. 2
- C. It depends on how many CPU's are installed in the host.
- D. 8

Answer: D

Mastering VMware vSphere 4, page 318.

A virtual machine can consist of the following virtual hardware devices:

- Processors: One, two, four or eight processors with VMware Virtual SMP

QUESTION NO: 2

What is the maximum amount of Floppy Devices per Virtual Machine?

- A. 6
- B. 1
- C. 10
- D. 2

Answer: D

Mastering VMware vSphere 4, page 319.

A virtual machine can consist of the following virtual hardware devices:

- Floppy drive: Maximum of two floppy disk drives on a single floppy disk drive controller

QUESTION NO: 3

Which vSphere feature is being shown in the image in the exhibit?

Exhibit:



- A. VMDirectPath I/O
- B. NPIV
- C. VMSafe
- D. PVSCSI

Answer: A

VMDirectPath allows guest operating systems to directly access an I/O device, bypassing the virtualization layer.

QUESTION NO: 4

What does the Virtualized Memory Management Unit (MMU) do and what is it required for (Choose Two)?

- A. Virtualized MMU is required for Virtual Machine Direct Path PCI devices
- B. Virtualized MMU enables memory reclamation from the guest OS

- C. Virtualized MMU is required for the vmmemctl driver
- D. Virtualized MMU enables Hardware Page Table Virtualization

Answer: A, D

Standardized but Flexible I/O for Self-Virtualizing Devices

Hypervisors which support assigning PCI functions to VMs have to provide a virtual PCI (vPCI) bus for each VM so that the guest OS in the VM can discover the assigned PCI devices. Typically the following steps are performed:

1. A device is chosen from the PCI bus to be assigned to a VM.
2. The OS/hypervisor arranges for the device's interrupts to be forwarded to the VM.
3. The OS/hypervisor configures the IO-MMU to permit the device to access the VM's memory. [A above]
4. The OS/hypervisor attaches the device to a VM's vPCI bus.
5. The guest OS discovers the device on its vPCI bus, and loads the device's PCI driver.

QUESTION NO: 5

Company X wants to install Application Y in a virtualized environment. The underlying operating system has to be Windows 2003 SP1. In a physical environment, the application and supporting software have very strict minimum hardware requirements. Which requirement(s) would prohibit the use of this application inside a virtual machine?

- A. a minimum disk size of 2 TB
- B. a minimum of 4 available SCSI adapters
- C. 4 CPUs and 4.5 GB RAM
- D. 3 NICs and 3 SCSI adapters

Answer: A

Explanation:

The max size of a virtual disk is 2TB minus 512B, "a minimum disk size of 2 TB" cannot be met.

"a minimum of 4 available SCSI adapters" is possible because ESX 4 supports up to 4 SCSI adapters per virtual machine.

"4 CPUs and 4.5 GB RAM "is possible because up to 8 CPUs and 255GB RAM are allowed per virtual machine.

"3 NICs and 3 SCSI adapters" is also possible because the number of virtual PCI slots was increased to allow for the configuration maximums as specified in the following URL.

http://www.vmware.com/pdf/vsphere4/r40/vsp_40_config_max.pdf

While "3 NICs and 3 SCSI adapters" would be true for hardware revision 4 because it had 5 free virtual PCI slots, hardware revision 7 does not have that limitation. This practice exam is for vSphere 4 and the question does not specify which hardware version.

QUESTION NO: 6

Which of the following system images is not a supported import option for vCenter Converter?

- A. Norton Ghost 9/10/12 (.gho)
- B. Altiris Image File (.img)
- C. Acronis True Image 9/10 (.tib)
- D. VMware Consolidated Backup (VCB) full backup images

Answer: B

What 3rd party images are supported with VMware vCenter Converter?

VMware vCenter Converter can currently import system images (Windows operating system only) from:

Symantec Backup Exec System Recovery (formerly LiveState Recovery)

Symantec Backup Exec

Norton Ghost

Acronis True Image

StorageCraft

Parallels Desktop

VMware vCenter Converter can run on a wide variety of hardware and supports most commonly used versions of the Microsoft Windows and Linux* operating systems. With this robust, enterprise class migration tool you can:

Restore VMware Consolidated Backup (VCB) images of virtual machines to running virtual machines

QUESTION NO: 7

An administrator wants to use standard images for virtual machine deployment. What are two benefits that can be achieved by creating these images as templates (Choose Two)?

- A. easier to upgrade and manage multiple VMs
- B. less disk space used for base images
- C. base images cannot be directly modified

D. templates deploy faster than cloning

Answer: B, C

VirtualCenter 2 Templates Usage and Best Practices, page 3.

Overview of VirtualCenter 2 Templates

Templates have been redesigned to fit into the new VMware Infrastructure inventory model and have been updated to address the need to keep virtual machines updated with the most recent operating systems and application patches. Instead of saving virtual machine templates in a completely separate inventory, VirtualCenter 2 stores templates into the main inventory with other virtual machines. However, templates are identified by a different icon and by the ability to prevent them from powering on. As such, templates can now be:

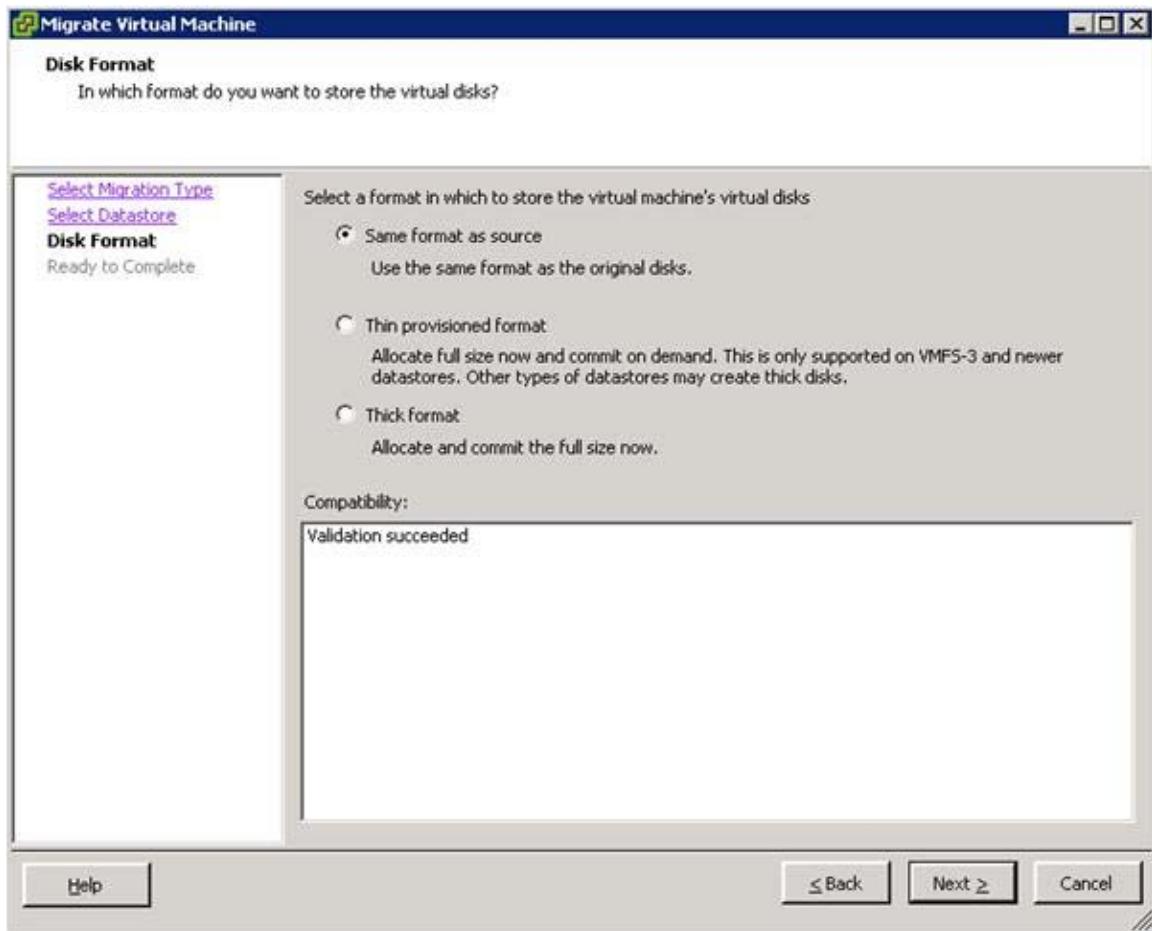
- Viewed from the "Virtual Machines and Templates" or the "Hosts and Clusters" inventory views.
- Quickly converted back and forth between virtual machines that can be powered on and receive updates and templates that cannot be powered on, but can be used as the source images from which to deploy new virtual machines.
- Stored in monolithic (runnable) virtual disk format for quick template-to-virtual machine conversions or stored in sparse (non-runnable) virtual disk format to conserve storage space.

QUESTION NO: 8

With vSphere 4.0 the following operations are possible when working with Virtual Machine disks (Choose Three)?

- A. A single Virtual Machine cannot use both thick-provisioned and thin-provisioned virtual disks
- B. A virtual disk can be converted from thick-provisioned to thin-provisioned while the Virtual Machine is powered on but only through the use of Storage VMotion
- C. A virtual disk can be inflated from a thin-provisioned virtual disk to thick-provisioned while the Virtual Machine is powered on
- D. A single Virtual Machine can use both thick-provisioned and thin-provisioned virtual disks
- E. A virtual disk can be inflated from a thin-provisioned virtual disk to thick-provisioned but only while the Virtual Machine is powered off

Answer: B, D, E



QUESTION NO: 9

An administrator is creating a VM that will be running Windows 2008 Enterprise (64-bit). The application to be installed in the VM requires 8 vCPUs to run effectively. During installation, the only available options are 1,2,3 or 4 vCPUs. Which of the following explains the available vCPU selections?

- A. The ESX Host has 2 AMD dual-core CPUs
- B. The ESX Host has 2 Intel dual-core CPUs
- C. The Virtual Machine Version is 7
- D. 8 vCPU support is only available for 32-bit guest OS VMs

Answer: A

QUESTION NO: 10

An administrator wishes to cold clone a physical server using vCenter Converter. What is the minimum amount of RAM required for this operation?

- A. 136 MB
- B. 128 MB
- C. 256 MB
- D. 264 MB

Answer: D

vCenter Converter Administration Guide vCenter Converter for vCenter Server 4.0, page 23.

To run the VMware vCenter Converter Boot CD requires 264MB of memory on the source physical machine. The recommended memory is 364MB

QUESTION NO: 11

The maximum available memory for a Virtual Machine in vSphere 4.0 is?

- A. 256GB
- B. 128GB
- C. 512GB
- D. 255GB

Answer: D

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 1.

Table 1. Virtual Machine Maximums

RAM per virtual machine 255GB

QUESTION NO: 12

vCenter Converter supports the following types of cloning (Choose Two)?

- A. Local
- B. Staged
- C. Remote
- D. Imaged

Answer: A, C

vCenter Converter Administration Guide vCenter Converter for vCenter Server 4.0, Page 89, 91.

Local cloning - The process of making a copy of a virtual machine residing in the system on which VMware vCenter Converter is running, or making a copy of the physical machine itself for conversion to a virtual machine.

Remote cloning - Making a copy of a virtual machine or a physical machine accessed over the network by VMware vCenter

QUESTION NO: 13

An administrator is using Guided Consolidation and has added a system for Analysis.

After 30 minutes, the status has not changed from Collecting System Information to Analyzing. Which of the following statements indicates why this might occur?

- A. The status change should be immediate and the Guided Consolidation Service status should be checked on the vCenter Server
- B. Guided Consolidation can take up to 24 hours to collect system information before the status changes to Analyzing
- C. Guided Consolidation can take up to 8 hours to collect system information before the status changes to Analyzing
- D. Guided Consolidation can take up to 1 hour to collect system information before the status changes to Analyzing

Answer: D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 94.

NOTE After adding a system for analysis, it can take up to one hour before the status of the newly added system changes from Collecting System Information to Analyzing.

QUESTION NO: 14

Which type of Virtual SCSI adapter must be used for a Windows Server 2008 server in a MSCS cluster?

- A. BusLogic SAS
- B. LSI Logic Parallel
- C. BusLogic Parallel
- D. LSI Logic SAS

Answer: D

Setup for Failover Clustering and Microsoft Cluster Service ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 10.

Table 1-1. Clustering Requirements

Component Requirement

Virtual SCSI adapter	LSI Logic Parallel for Windows 2000 Server LSI Logic Parallel for Windows Server 2003 LSI Logic SAS for Windows Server 2008
----------------------	---

QUESTION NO: 15

A virtual machine has been created using the Typical option. What specific configuration options will be skipped during virtual machine creation (Choose Three)?

- A. Datastore location
- B. Number of vCPUs
- C. Resource Pool
- D. Virtual Machine version
- E. Virtual Memory configuration

Answer: B, D, E

The Typical path shortens the process by skipping some choices that rarely need changing from their defaults.

This path includes the following steps:

- 1 "Enter a Name and Location,"
- 2 "Select a Resource Pool,"
- 3 "Select a Datastore,"
- 4 "Select an Operating System,"
- 5 "Create a Virtual Disk,"

The Custom path provides more flexibility and options. This path includes the following steps.

- 1 "Enter a Name and Location,"
- 2 "Select a Resource Pool,"
- 3 "Select a Datastore,"
- 4 "Select a Virtual Machine Version," [D above]
- 5 "Select an Operating System,"
- 6 "Select the Number of Virtual Processors," [B above]
- 7 "Configure Virtual Memory," [E above]
- 8 "Configure Networks," [E above]
- 9 "Select a SCSI Adapter,"
- 10 "Selecting a Virtual Disk Type,"

QUESTION NO: 16

When is the page file for a Windows guest OS or the swap partition for a Linux guest OS created?

- A. When a Virtual Machine is first powered on
- B. When the Virtual Machine is created
- C. When a reservation is set for the Virtual Machine
- D. When the Guest OS is installed on the Virtual Machine

Answer: D

Understanding the files that make up a VMware virtual machine

When you power on a VM, a memory swap file is created that can be used in lieu of physical host memory if an ESX host exhausts all of its physical memory because it is overcommitted. These files are deleted when a VM is powered off or suspended.

QUESTION NO: 17

Windows VM's use a page file and Linux VM's use a swap partition for virtual memory. When determining the appropriate size for these, which of the following files would be affected?

- A. the Service Console swap partition
- B. the .vmdk file
- C. the -flat.vmdk file
- D. the .vswp file

Answer: C

The -flat.vmdk file. This is the default large virtual disk data file that is created when you add a virtual hard drive to your VM that is not an RDM. When using thick disks, this file will be approximately the same size as what you specify when you create your virtual hard drive.

Since both the Windows page file and Linux swap partition are located on the virtual disk, the -flat.vmdk file will be affected.

QUESTION NO: 18

When creating an MSCS Cluster across 2 ESX 4 Hosts, what type of Virtual Disks can be used?

- A. Raw Device Mapped (RDM) disks in Physical or Virtual Compatibility Mode, or virtual disks on a shared VMFS datastore
- B. Raw Device Mapped (RDM) disks in Virtual Compatibility Mode only
- C. Raw Device Mapped (RDM) disks in Physical or Virtual Compatibility Mode
- D. Raw Device Mapped (RDM) disks in Physical Compatibility Mode only

Answer: C

Setup for Failover Clustering and Microsoft Cluster Service ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 19.

You can create a MSCS cluster that consists of two virtual machines on two ESX/ESXi hosts.

Prerequisites

A cluster across physical hosts requires specific hardware and software.

ESX/ESXi hosts that have the following:

Two physical network adapters dedicated to the MSCS cluster and to the public and private networks.

One physical network adapter dedicated to the service console (ESX hosts) or the VMkernel (ESXi hosts).

Fibre Channel (FC) SAN. Shared storage must be on an FC SAN.

RDM in physical compatibility (pass-through) or virtual compatibility (non-pass-through) mode. VMware recommends physical compatibility mode. The cluster cannot use virtual disks for shared storage.

QUESTION NO: 19

You have a mixture of servers in your datacenter where the CPUs are compatible in every way except that some support NX or XD bit and some do not.

What should you do to minimize the effect of these differences?

- A. You mask the NX/XD bits on the servers that do not support the functionality.
- B. No action is required, as NX/XD bits are masked by default.
- C. You mask the NX/XD bits on the servers that support the functionality.
- D. You mask the NX/XD bits on the virtual machines before you VMotion them.

Answer: D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 153.

Select Advanced > CPUID Mask.

Specify whether you want to hide the host's CPU NX flag from the guest operating system

Hiding the NX flag prevents the guest operating system from making use of this CPU feature, but enables the virtual machine to be moved to hosts that do not include the NX feature. When the NX flag is visible, the guest operating system can make use of the feature, but the virtual machine can be moved only to hosts with the NX capability.

QUESTION NO: 20

What is the maximum number of NICs configurable per virtual machine?

- A. 2
- B. 1
- C. 6
- D. 4
- E. 10
- F. 15
- G. 16

Answer: E

Explanation:

Mastering VMware vSphere 4, page 318.

A virtual machine can consist of the following virtual hardware devices:

Network adapter: Maximum of 10 network adapters

QUESTION NO: 21

Disk shares are applied on a(n) ____ basis.

- A. ESX Server
- B. virtual machine
- C. LUN
- D. virtual machine disk

Answer: D

The screenshot below shows the option to configure the Disk Shares setting for an individual virtual machine disk.

**QUESTION NO: 22**

What are two benefits that result from creating new virtual machines (VMs) using templates instead of creating blank VMs? (Choose Two.)

- A. easier to upgrade and manage multiple VMs
- B. faster deployment
- C. less disk space used in the resulting VM
- D. standardized base images

Answer: B, D

VirtualCenter 2 Templates Usage and Best Practices, page 2 and 3.

The first and simplest reason for using virtual machine templates is efficiency. With templates, many repetitive installation and configuration tasks can be avoided. The result is a fully installed, ready to operate (virtual) server in less time than manual installation.

Templates are also used to help enforce consistency and standards. Deploying from templates, helps to enforce corporate standards such as including Antivirus and management software in any machine connected to the network.

QUESTION NO: 23

VMware Converter Enterprise supports the following types of cloning (Choose Two):

- A. Remote
- B. Staged
- C. Imaged
- D. Local

Answer: A, D

vCenter Converter Administration Guide vCenter Converter for vCenter Server 4.0, page 11.

When you clone remotely, you can access the source machine remotely, as long as it is running and accessible to the network. With local cloning, vCenter Converter runs on the source machine to perform the migration.

QUESTION NO: 24

Which of the following ESX Server memory conservation techniques will always have the LEAST negative effect on the performance of a running VM?

- A. use of the .vswp file
- B. vmmemctl
- C. Transparent Page Sharing
- D. lowering the Reservation variable

Answer: C

QUESTION NO: 25

Which of the following files are part of a typical virtual machine?

- A. BIOS File (.nvram)
- B. VMotion Transfer File (.vmt)
- C. Configuration File (.vmx)
- D. Virtual Disk File (.vmdk)

E. Hardware File (.svr)

Answer: A, C, D

VMware File Extensions

.VMDK -- These files are the actual hard disk of the virtual machine itself, and tend to be the largest file within the folder. You can consider the size of this file to be roughly equivalent to the size of either the disk itself (if you've chosen to use preallocated disks) or the size of the data currently stored on that disk (if you use growable disks). [D above]

.NVRAM -- Consider this file the BIOS of the virtual machine. [A above]

.VMX -- With typically one VMX file per folder, this file holds the configuration information for the virtual machine in a text format. [C above]

.VMXF -- This file, in XML format, includes additional information about the virtual machine if it has been added to a team. If a machine has been added to a team and then later removed, this file remains resident. This file can also be opened and read in a text editor.

.VMTM -- For virtual machines actively participating in a team, this file stores information about that team membership.

.VMEM -- These files, which contain a backup of the VMs paging file, are typically very small or non-existent when the virtual machine is powered off, but grow immediately to the size of configured RAM when the machine is powered on.

.VMSN and .VMSD -- When snapshots are created for a virtual machine, these files are created to host the state of the virtual machine.

.VMSS -- If you've suspended the state of your machine, this file contains the suspended state of that machine. These files typically only appear when virtual machines have been suspended.

.HLOG -- If you have vMotioned the Virtual Machine, this file is created and can be safely deleted.

QUESTION NO: 26

Guided consolidation allows you to perform the following tasks (Choose Three):

- A. Analyze physical systems to determine performance characteristics
- B. Gain an inventory of all model types of physical systems in your datacenter

- C. Discover physical systems in your datacenter
- D. Import performance information from a 3rd party tool for analysis
- E. Consolidate physical systems by converting them to Virtual Machines

Answer: A, C, E

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 89.

VMware vCenter Guided Consolidation, ... involves the following process

Find - You search for and select the physical systems in your datacenter that you want analyzed.

Analyze - Selected physical systems are analyzed and performance data on each selected system is collected. Generally, the longer the duration of the analysis phase, the higher the confidence in the vCenter Server's recommendations.

Consolidate Performance data is compared to the resources available on the virtual machine host systems. The selected physical systems are converted to virtual machines and imported into vCenter Server on the recommended hosts where they are managed along with other components of your virtual environment

QUESTION NO: 27

Guided consolidation shows you the following information after a successful analysis (Choose Three):

- A. CPU Type
- B. System Model
- C. Machine Name
- D. CPU Usage
- E. Memory info and usage

Answer: C, D, E

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 95.

When analysis is complete, the following information appears:

Physical Computer - Displays the host name of the physical system being analyzed or imported. [C above]

CPU Info - Displays the number of CPUs and their clock speed.

Memory Info - Displays the amount of RAM on the system. [E above]

Status - Displays the progress of the analysis.

Confidence - Indicates the degree to which vCenter Server is able to gather performance data about the

system and how good a candidate the system is based on the available data.

CPU Usage - Displays the system's average CPU usage over time. [D above]

Memory Usage - Displays the system's average memory usage over time. [E above]

QUESTION NO: 28

Which of the following indicates how suitable an analyzed system is for Guided Consolidation?

- A. Consolidation Factor
- B. Suitability Metric
- C. Performance Factor
- D. Confidence Metric

Answer: D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 95.

After 24 hours of analysis, vCenter Server indicates a high level of confidence in its recommendations

QUESTION NO: 29

What must be done to allow customization of Windows virtual machines that are deployed from templates?

- A. The location of the sysprep.exe must be specified in config.ini.
- B. Sysprep must be downloaded from Microsoft and installed on the vCenter server.
- C. Nothing needs to be done as the vCenter installer automatically locates and installs Sysprep components.
- D. A sysprep.inf file must be created in a text editor and imported using the customization wizard.

Answer: B

VMware VirtualCenter 1.0 Support Documentation

Install the required components on the Windows machine where the VirtualCenter management server is installed.

If you plan to customize a Windows guest operating system, you must first install the Microsoft Sysprep tools, (B).

QUESTION NO: 30

A company wants to install Application Y in a virtualized environment. The underlying OS has to be Windows 2000 SP4. In a physical environment, the application and supporting software have very strict minimum hardware requirements. Which requirement prohibits the use of the application inside a virtual machine?

- A. 5 NICs
- B. 8 GB RAM
- C. 4 CD-ROM drives
- D. 2 parallel ports
- E. None of the other alternatives apply. All of them are supported.

Answer: E

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 1.

Virtual Machine Maximums

Table 1 contains configuration maximums related to virtual machines.

Table 1. Virtual Machine Maximums

Item: Maximum

RAM per virtual machine: 255GB

IDE devices per virtual machine: 4 (Devices can be either CDROM or disk.)

Virtual NICs per virtual machine : 10

Parallel ports per virtual machine: 3

Part 2: Manage Virtual Machines (23 questions).

QUESTION NO: 1

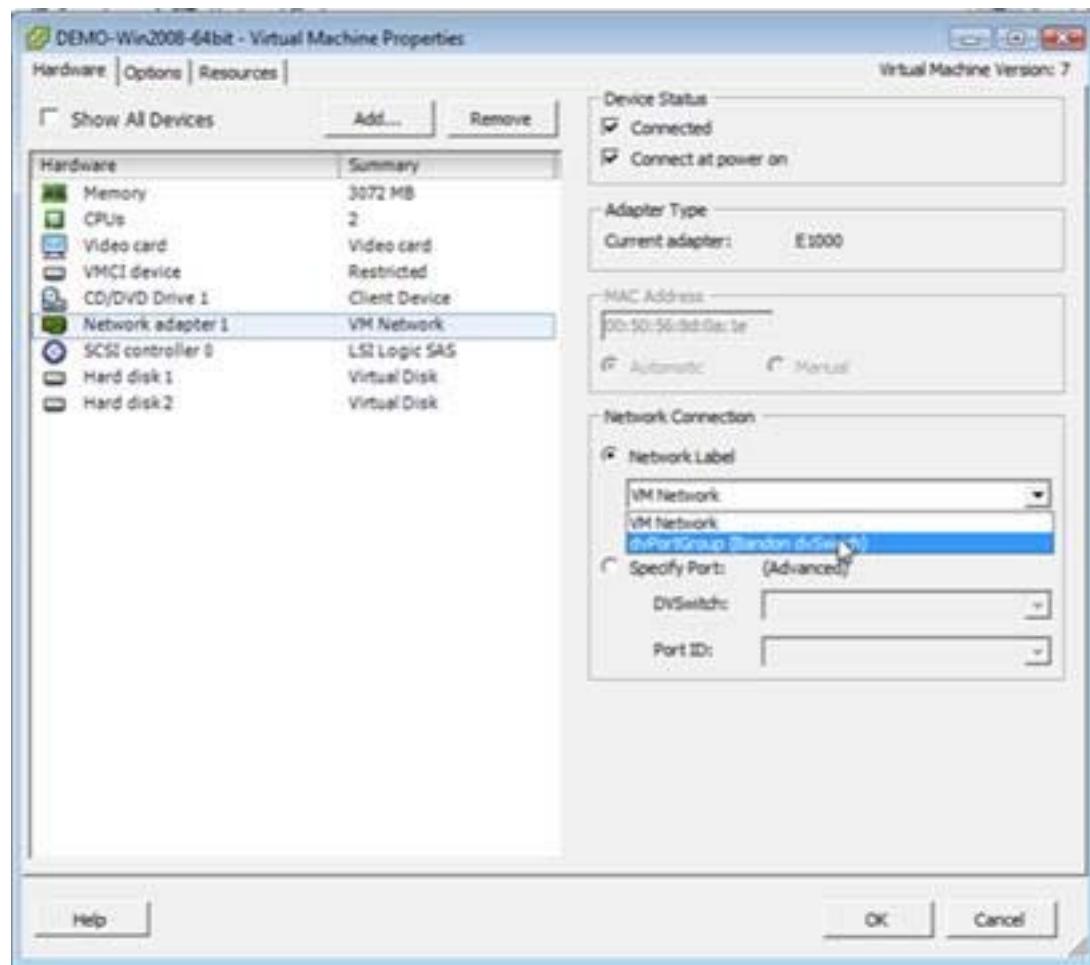
Which of the following methods can be used to migrate a virtual machine from a vNetwork Standard Switch to a vNetwork Distributed Switch (Choose Two)?

- A. Migrate the port group containing the virtual machine from a vNetwork Standard Switch using the Migrate Virtual Machine Networking option
- B. Edit the Network Adapter settings for the virtual machine and select a dvPort group from the list
- C. Select the virtual machine from a list of virtual machines using the Migrate Virtual Machine Networking option
- D. Drag the virtual machine from the vNetwork Standard Switch to a vNetwork Distributed Switch dvPort group in the Configuration tab for the ESX Host

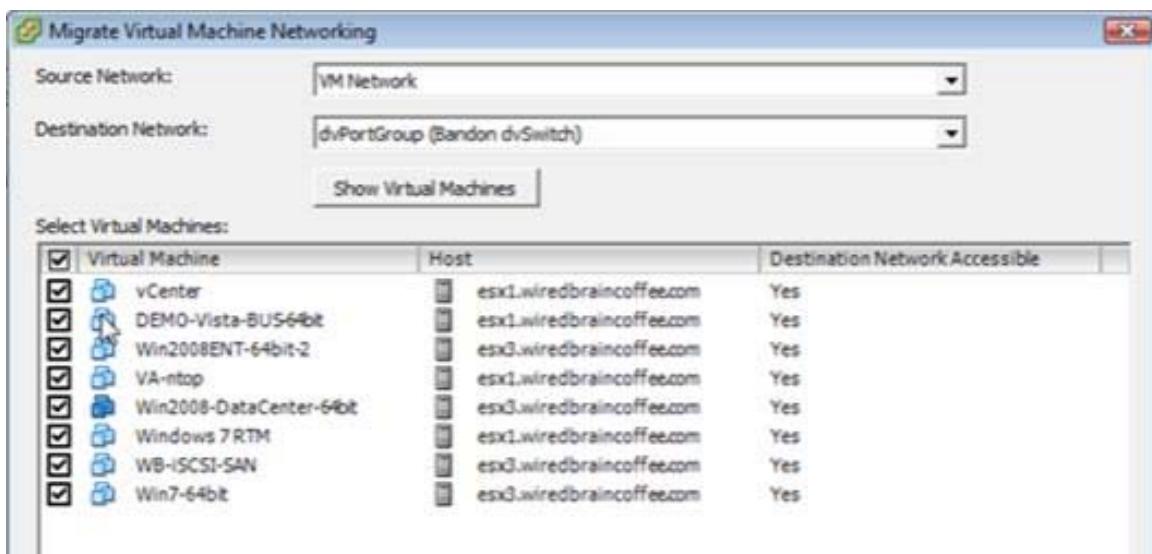
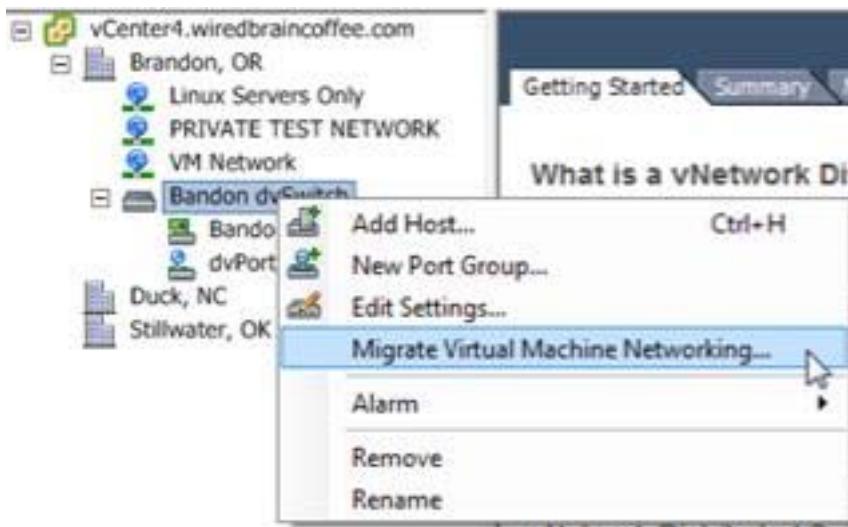
Answer: B,C

Train Signal - VMware vSphere Training - Using the vSphere Distributed Virtual Switch (dvswitch)

B - Edit the Network Adapter settings for the virtual machine and select a dvPort group from the list



C - Select the virtual machine from a list of virtual machines using the Migrate Virtual Machine Networking option



QUESTION NO: 2

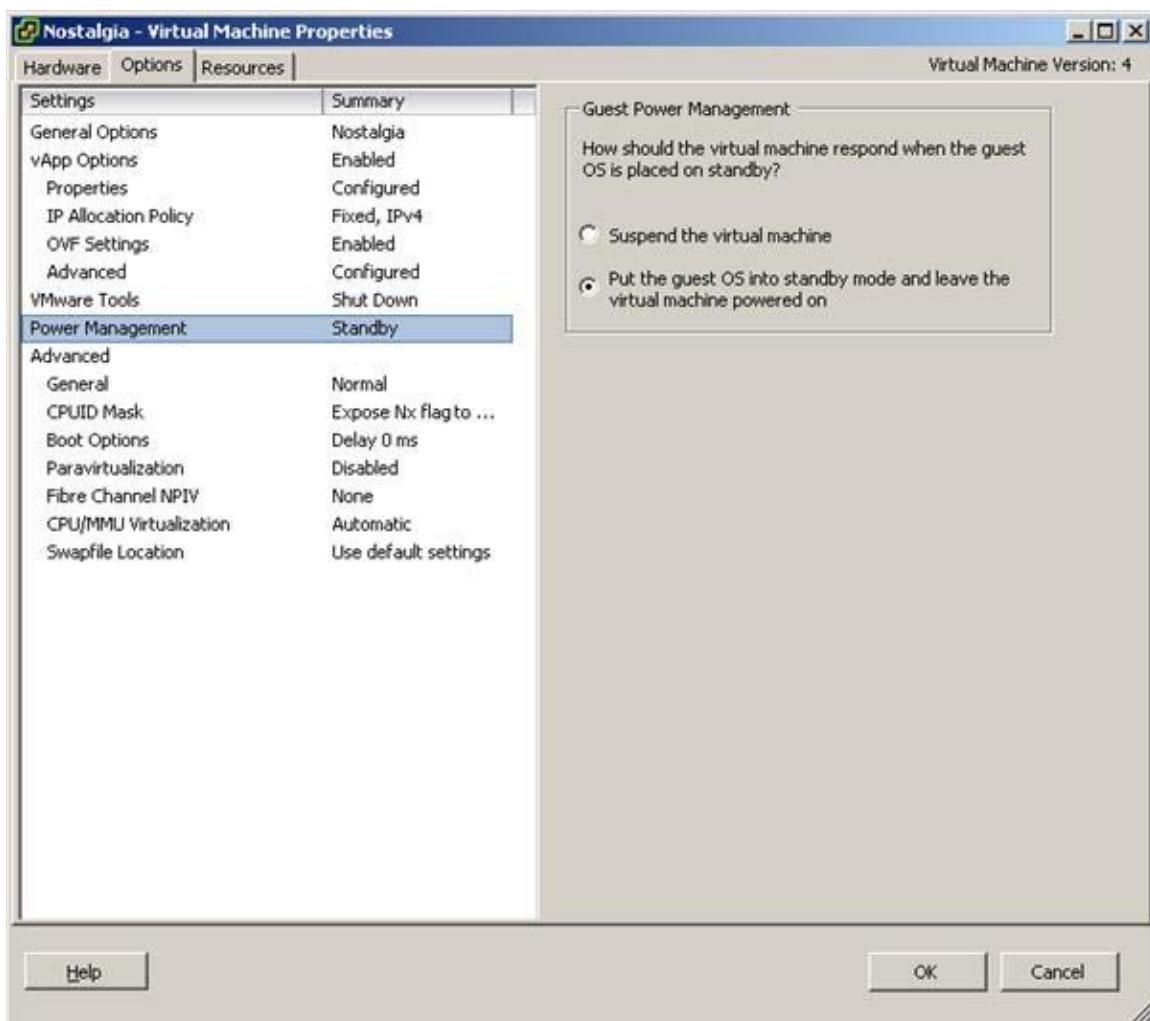
Which of the following Power Management settings can be configured from the Options tab of a Virtual Machine (Choose Two)?

- A. Power off the Virtual Machine
- B. Put the Guest OS in Standby
- C. Shutdown the Guest OS

D. Suspend the Virtual Machine

Answer: B, D

See below:



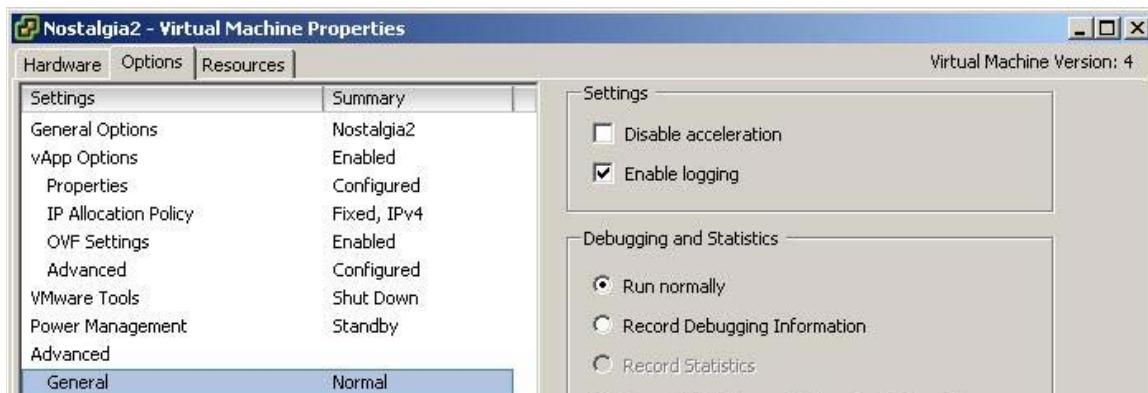
QUESTION NO: 3

A developer wishes to disable logging for a number of virtual machines used for testing purposes, in order to maximize available datastore space. Which of the following methods can be used to disable virtual machine logging?

- A. Manually edit the virtual machine .vmx file and set logging=false
- B. Manually edit the virtual machine .vmx file and set log.keepOld=0
- C. Choose Edit Settings in the vSphere Client. Under Options > Advanced > General, uncheck Enable Logging
- D. Choose Edit Settings in the vSphere Client. Under Options > Advanced > General, check Disable Logging

Answer: C

The screen shot below shows how to enable or disable logging.



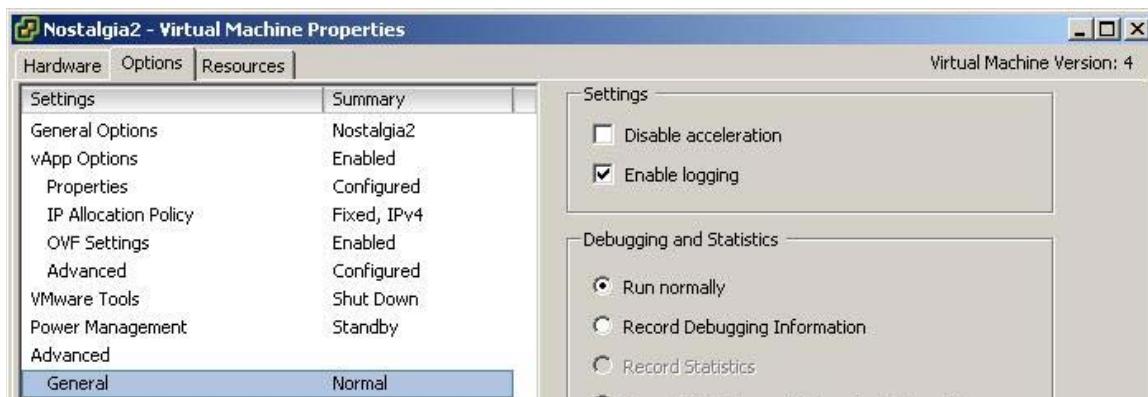
QUESTION NO: 4

A developer wishes to disable logging for a number of virtual machines used for testing purposes, in order to maximize available datastore space. The virtual machines reside on an ESX Host managed by vCenter Server. Which of the following methods can be used to disable virtual machine logging?

- A. Manually edit each virtual machine's .vmx file and set logging=false
- B. From the Configuration tab for the ESX Host running the virtual machines, choose Advanced Settings. Set the Disable Logging parameter to Yes
- C. Edit the settings for each virtual machine. Under Options > Advanced > General, uncheck Enable Logging
- D. Connect a vSphere Client to vCenter Server. Under the Administration drop-down, check Disable Virtual Machine Logging

Answer: C

The screen shot below shows how to enable or disable logging.



QUESTION NO: 5

When configuring the NTP server with MSCS clustered virtual machines, the best practice is ?

- A. Synchronize domain controllers and cluster nodes with a common NTP server, and disable host based time synchronization in the guest.
- B. NTP should not be used in conjunction with MSCS clustered virtual machines.
- C. Synchronize domain controllers and cluster nodes with a common NTP server and enable host based time synchronization in the guest.
- D. Enable host based time synchronization for domain controllers, cluster nodes and guest virtual machines.

Answer: A

Setup for Failover Clustering and Microsoft Cluster Service ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 10.

Synchronize domain controllers and cluster nodes with a common NTP server, and disable host based time synchronization when using clustering in the guest.

QUESTION NO: 6

Establishing a Virtual Machine memory reservation guarantees (Choose Two)?

- A. Minimum virtual memory guaranteed to the Virtual Machine while the VM is running
- B. Physical memory for the VMkernel to start the Virtual Machine
- C. Minimum physical memory guaranteed to the Virtual Machine while the VM is running
- D. Virtual memory for the VMkernel to start the Virtual Machine

Answer: B, C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 24.

Reservation is a guaranteed lower bound on the amount of physical memory that the host reserves for the virtual machine, even when memory is overcommitted. [C above]

QUESTION NO: 7

What are two benefits of Virtual Compatibility Mode for RDMs? (Choose Two.)

- A. passes native SCSI commands to underlying hardware
- B. provides advanced file locking for data protection
- C. provides snapshot capability
- D. provides virtual-to-physical clustering capability

Answer: B, C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 121.

Virtual mode for an RDM specifies full virtualization of the mapped device. It appears to the guest operating system exactly the same as a virtual disk file in a VMFS volume. The real hardware characteristics are hidden. Virtual mode enables you to use VMFS features such as advanced file locking and snapshots.

QUESTION NO: 8

Which two virtual machine (VM) elements are available from the VirtualCenter Web Access Console, but not the ESX Server Web Access Console? (Choose Two)

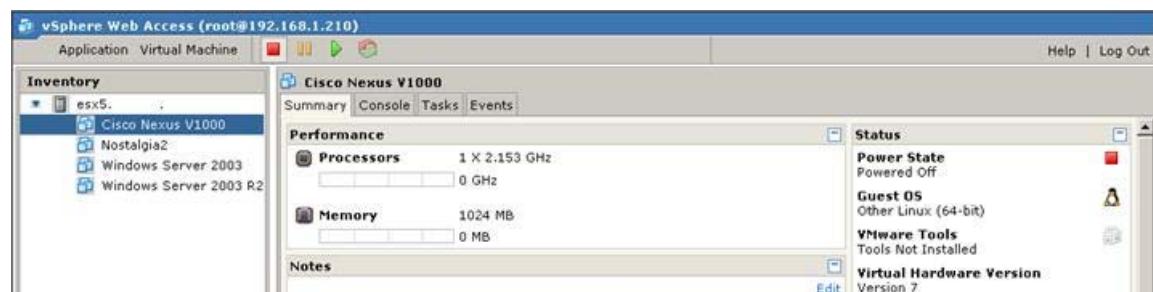
- A. VM Console
- B. VM Alarms
- C. VM Tasks
- D. VM Events

Answer: B, C

vCenter Web Access Console



ESX Server Web Access Console



QUESTION NO: 9

Which statement is true about transparent page sharing?

- A. It only works with Windows.
- B. It is the process of collecting unused memory from the guest OS and returning it to the VMkernel.
- C. It is the method of eliminating duplicate pages of memory allocated to multiple virtual machines.
- D. It only works with supported guest OS.

Answer: C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 74

For example, several virtual machines might be running instances of the same guest operating system, have the same applications or components loaded, or contain common data. In such cases, ESX/ESXi systems use a proprietary transparent page-sharing technique to securely eliminate redundant copies of memory pages.

QUESTION NO: 10

Which of the following tasks can be performed using the Web Access Client?

- A. add a host to a DRS cluster
- B. create a virtual switch
- C. add a virtual disk to a virtual machine
- D. add a VMFSdatastore

Answer: C**QUESTION NO: 11**

Which of the following are true about the share value for a virtual machine after it has been added to a Resource Pool?(Choose Two)

- A. If a previously defined custom share value exists, the %Shares value is maintained
- B. If a previously defined share level (high, medium, low) exists, the %Shares value is adjusted to reflect the total number of shares in use in the Resource Pool

- C. If a previously defined custom share value exists, the %Shares value is adjusted to reflect the total number of shares in use in the Resource Pool
- D. If a previously defined share level (high, medium, low) exists, the %Shares value is maintained

Answer: A, B

vSphere Resource Management Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, page 38-39

When you move a virtual machine to a new resource pool:

If the virtual machine's shares are high, medium, or low, %Shares adjusts to reflect the total number of shares in use in the new resource pool.

If the virtual machine has custom shares assigned, the share value is maintained.

QUESTION NO: 12

Which memory allocation technique allows physical memory to be reclaimed from virtual machine A and redistributed to virtual machine B, possibly forcing virtual machine A to swap internally?

- A. Transparent Page Sharing
- B. Memory Balloon Driver
- C. VMkernel Swap
- D. RAM Overcommit

Answer: B

Memory Provisioning Recommendations for VMware Infrastructure 3 Operational Best Practices, page 7

Memory Ballooning

Memory ballooning is handled through a driver (vmmemctl.sys) that is installed as part of the VMware Tools. This driver is loaded in the guest OS to interact with the VMkernel and is leveraged to reclaim memory pages when ESX memory resources are in demand and available physical pages cannot meet requirements. When memory demands rise on the ESX host, the VMkernel will instruct the balloon driver to "inflate" and consume memory in the running guest OS, forcing the guest operating system to leverage its own native memory management techniques to handle changing conditions.

QUESTION NO: 13

A new ESX Server is set up initially with two virtual machines (VMs) for users to access. The applications will allocate all the memory that is available to them. 20 identical VMs will be installed within six months, which may lead to memory contention. How can the first two VMs be configured so that their performance does not decrease as more VMs are added?

- A. set the memory shares so that the VMs get 10 shares per megabyte of configured memory for the VMs
- B. set a memory limit on the VMs that is a lower value than the configured memory for the VMs
- C. set an expandable memory reservation on the VM that is lower than 50% of the configured memory for the VMs
- D. set a memory reservation on the VMs that is lower than 50% of the configured memory for the VMs

Answer: B

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 24.

At present each virtual machine will potentially gain access to 50% of the available physical memory. Once the additional 20 virtual machines have been provisioned, each virtual machine will average approximately 4% of the available physical memory.

A memory limit is an upper bound on the amount of physical memory that the host can allocate to the virtual machine. The virtual machine's memory allocation is also implicitly limited by its configured size.

Therefore if a memory limit is imposed, it could be used to limit the available memory to a similar value to that available once the additional 20 virtual machines are added.

QUESTION NO: 14

Which of the following actions can be scheduled through the New Task Wizard? (Choose Two)

- A. Create a virtual machine template
- B. Migrate a virtual machine with VMotion
- C. Adding hardware to a virtual machine
- D. Delete a virtual machine
- E. Create from a virtual machine template

Answer: A, B

Explanation:

Managing Scheduled Tasks

You can schedule tasks to occur at designated times. Each schedule task option runs the corresponding wizard for the task and adds a scheduling time option at the end of the wizard. The possible tasks that can be scheduled through the New Task wizard are listed below. Refer to the listed document for information on completing the individual task wizards:

- Change the power state of a virtual machine (refer to [Change Virtual Machine Power States](#))
- Create a virtual machine template (refer to [Creating Templates](#))
- Move a virtual machine with VMotion (refer to [Migration with VMotion](#))
- Create a virtual machine (refer to [Using the New Virtual Machine Wizard](#))
- Make a snapshot of a virtual machine (refer to [Understanding Snapshots](#))
- Customize a virtual machine (refer to [Preparing for Guest Customization](#))
- Add a host (refer to [Adding a Host](#))

Note Any operation can be set as a scheduled task through the VMware Infrastructure API. However, only a subset of all operations can be part of a scheduled task through the VI Client.

QUESTION NO: 15

What are two benefits of Virtual Compatibility Mode for RDMs? (Choose Two.)

- A. provides virtual-to-physical clustering capability
- B. passes native SCSI commands to underlying hardware
- C. provides advanced file locking for data protection
- D. provides snapshot capability

Answer: C, D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 121.

Virtual mode for an RDM specifies full virtualization of the mapped device. It appears to the guest operating system exactly the same as a virtual disk file in a VMFS volume. The real hardware characteristics are hidden. Virtual mode enables you to use VMFS features such as advanced file locking and snapshots.

QUESTION NO: 16

A user has been given access to vCenter using the vSphere Client to administer virtual machines. What else can the user do?

- A. log on to the vCenter server if an administrator grants the Permit Web Access privilege
- B. log on to any ESX Server managed by VirtualCenter
- C. log on to the vCenter server
- D. log on to the vCenter server and any ESX Server managed by vCenter

Answer: C

Since the user has been given access to vCenter using the vSphere Client then as a minimum they must be allowed to log on to vCenter server, since this is required to manage virtual machines. Once logged on, they may then manage virtual machines, (C above). Access to vCenter does not grant any access directly to ESX hosts, so B and D are incorrect. Permit Web Access is not required when accessing vCenter, so A is incorrect..

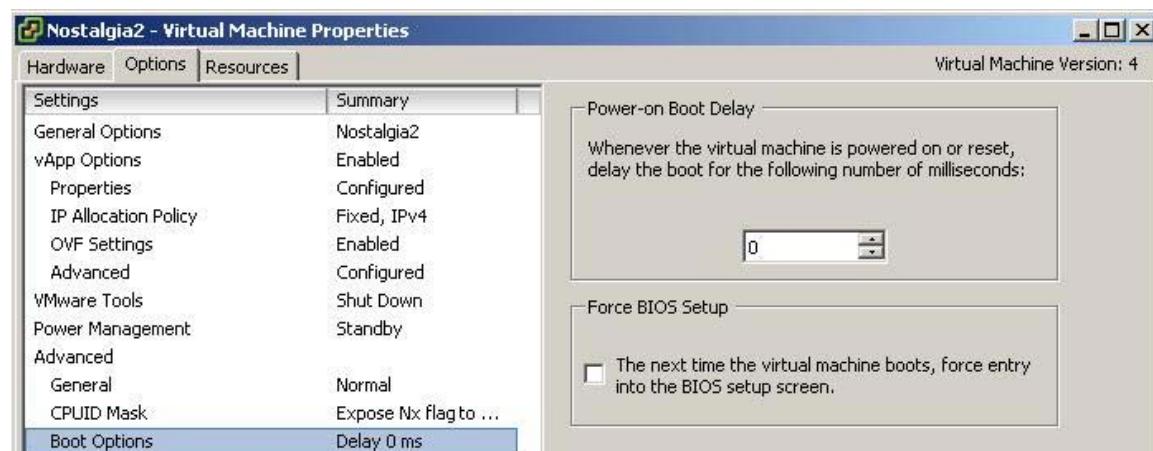
QUESTION NO: 17

Which of the following Advanced Boot Options can be configured from the options tab of a Virtual Machine? (Choose Two)

- A. Change the boot order
- B. Select the Force BIOS Setup option
- C. Select a script to execute on boot up
- D. Specify a boot delay in milliseconds

Answer: B, D

The screenshot below shows that the advanced options provide the facility to select the Force BIOS Setup option and specify a boot delay in milliseconds



QUESTION NO: 18

Which is a valid reason NOT to set CPU affinity on a single VM?

- A. A virtual machine with CPU affinity might not receive all of its reserved CPU resources.
- B. Setting CPU affinity will monopolize a CPU making it unusable for other VMs on the server.
- C. CPU affinity can only be set on hyper-threaded systems.
- D. CPU affinity settings are ignored when using VMotion.

Answer: A

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 21.

Potential Issues with CPU Affinity

Before you use CPU affinity, you might need to consider certain issues.

Potential issues with CPU affinity include:

Affinity can interfere with the ESX/ESXi host's ability to meet the reservation and shares specified for a virtual machine.

QUESTION NO: 19

A standalone ESX Server with two physical CPUs has two running virtual machines (VMs) labeled VMA and VMB. Each VM has two virtual CPUs. VMA has 4000 CPU shares and VMB has 2000 CPU shares. VMA is continuously using 10% of the ESX Server's CPU resources. VMB attempts to use all CPU resources on the ESX Server. Ignore overhead from the service console. What percentage of the ESX Server's CPU resources will VMB be granted?

- A. 50%
- B. 100%
- C. 33%
- D. 90%

Answer: D

Shares specify the relative priority or importance of a virtual machine (or resource pool). If a virtual machine has twice as many shares of a resource as another virtual machine, it is entitled to consume twice as much of that resource when these two virtual machines are competing for resources.

Note however, that VMA and VMB are not competing for resources. VMA is only using 10% of resources, so 90% are available for VMB, (D above).

If both systems were attempting to use more than 100% of total resources, resources would be allocated according to shares, with VMA (4000 CPU shares) receiving 66% of resources and VMB (2000 CPU shares) receiving 33% of CPU resources, (C above but not applicable since machines are not competing for resources).

QUESTION NO: 20

While attempting to start a virtual machine (VM), you get an error message stating that there is insufficient memory available. What can you do to start the VM?

- A. decrease the memory limit of your VM
- B. increase the memory limit of your VM
- C. decrease the memory reservation of your VM
- D. increase the memory reservation of your VM

Answer: C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 14, 25.

Reservation - Is a guaranteed lower bound on the amount of physical memory that the host reserves for the virtual machine, even when memory is overcommitted.

When you power on a virtual machine, the system checks the amount of CPU and memory resources that have not yet been reserved. Based on the available unreserved resources, the system determines whether it can guarantee the reservation for which the virtual machine is configured (if any). This process is called admission control.

If enough unreserved CPU and memory are available, or if there is no reservation, the virtual machine is powered on. Otherwise, an Insufficient Resources warning appears.

Therefore the reservation should be decreased to allow the VM to start.

QUESTION NO: 21

Disk shares manage contention between multiple virtual machines on ____.

- A. different ESX Servers accessing the same LUN only
- B. the same ESX Server and different ESX Servers accessing the same LUN
- C. the same ESX Server accessing the same LUN only
- D. different ESX Servers accessing any LUN

Answer: C

QUESTION NO: 22

Which is a valid reason NOT to set affinity on a single virtual machine (VM)?

- A. Affinity settings are ignored as part of a VMotion
- B. Setting affinity will monopolize a CPU making it unusable for other VMs on the server.
- C. A VM with affinity might not receive 100 percent of the CPU.
- D. Affinity can only be set on hyper-threaded systems.

Answer: C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 19, 20.

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. In this context, the term CPU refers to a logical processor on a hyperthreaded system, but refers to a core on a non-hyperthreaded system. The CPU affinity setting for a virtual machine applies not only to all of the virtual CPUs associated with the virtual machine, but also to all other threads (also known as worlds) associated with the virtual machine. Such virtual machine threads perform processing required for emulating mouse, keyboard, screen, CD-ROM and miscellaneous legacy devices.

Consider your resource management needs before you enable CPU affinity on hosts using hyperthreading. For example, if you bind a high priority virtual machine to CPU 0 and another high priority virtual machine to CPU 1, the two virtual machines have to share the same physical core. In this case, it can be impossible to meet the resource demands of these virtual machines. Ensure that any custom affinity settings make sense for a hyperthreaded system.

QUESTION NO: 23

Which of the following are benefits of using resource pools? (Choose Three.)

- A. access control and delegation
- B. decreased virtualization overhead
- C. isolation between pools, sharing within pools
- D. improved network utilization
- E. flexible hierarchical organization

Answer: A, C, E

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 36.

Why Use Resource Pools?

Resource pools allow you to delegate control over resources of a host (or a cluster), but the benefits are evident when you use resource pools to compartmentalize all resources in a cluster. Create multiple resource pools as direct children of the host or cluster and configure them. You can then delegate control over the resource pools to other individuals or organizations.

Using resource pools can result in the following benefits.

Flexible hierarchical organization-Add, remove, or reorganize resource pools or change resource allocations as needed.

Isolation between pools, sharing within pools-Top-level administrators can make a pool of resources available to a department-level administrator. Allocation changes that are internal to one departmental resource pool do not unfairly affect other unrelated resource pools.

Access control and delegation-When a top-level administrator makes a resource pool available to a department-level administrator, that administrator can then perform all virtual machine creation and management within the boundaries of the resources to which the resource pool is entitled by the current shares, reservation, and limit settings. Delegation is usually done in conjunction with permissions settings.

Part 3: Deploy vApps (7 questions).

QUESTION NO: 1

You may create a new vApp under the following three conditions (Choose Three)?

- A. CPU and memory resources have been allocated in the Resource Allocation page.
- B. Startup and shutdown options have been defined in Service Settings on the summary page.

- C. A DRS-enabled cluster is chosen in the inventory.
- D. A host is selected in the inventory that is running ESX 3.0 or greater.
- E. A folder is chosen in the Virtual Machines and Templates view.

Answer: C, D, E

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 106.

You may create a new vApp under the following conditions:

A host is selected in the inventory that is running ESX 3.0 or greater.

A DRS-enabled cluster is selected in the inventory.

vApps can be created on folders, hosts, resource pools, DRS-enabled clusters, and within other Apps.

QUESTION NO: 2

You may create a new vApp under which of the following conditions
(Choose Two)?

- A. The ESX Server must be version 4.x
- B. The ESX Server can be version 3.0 or later
- C. The ESX Server can be a standalone host or reside in a DRS Cluster
- D. The ESX Server hosting the vApp must in a DRS-enabled Cluster

Answer: B,D

Explanation:

According the documentation of VMware the correct answers should be "The ESX Server can be version 3.0 or later" and "The ESX Server hosting the vApp must in a DRS-enabled Cluster"

"vSphere Basic System Administrator, page 106, Create a vApp"

You may create a new vApp under the following conditions:

A host is selected in the inventory that is running ESX 3.0 or greater.

A DRS-enabled cluster is selected in the inventory.

vApps can be created on folders, hosts, resource pools, DRS-enabled clusters, and within other Apps.

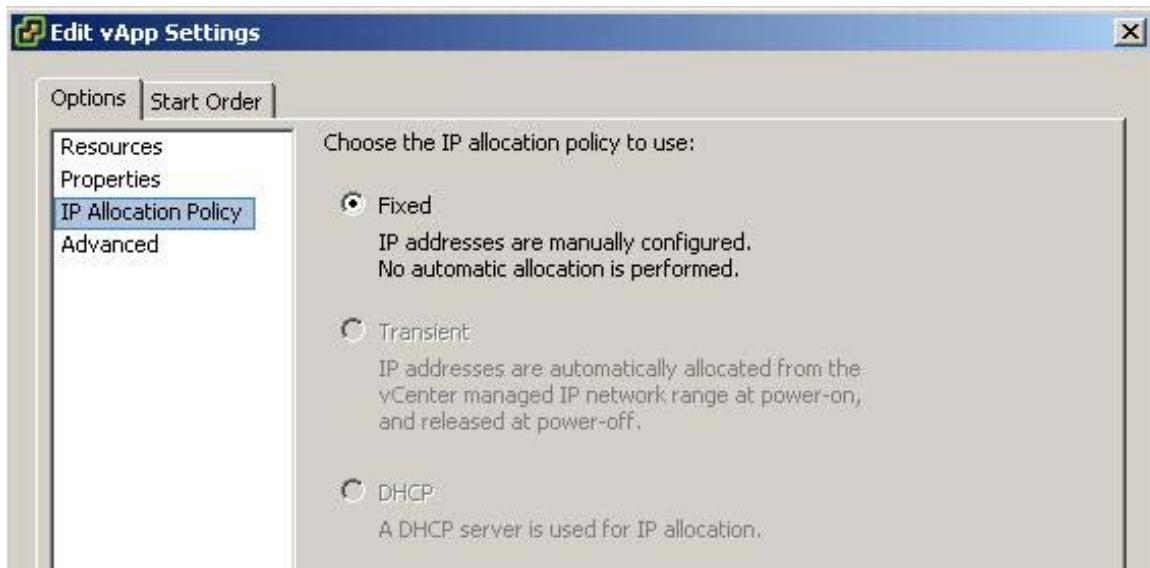
QUESTION NO: 3

An administrator is editing the IP Allocation Policy for a vApp. Which of the following three options are available (Choose Three)?

- A. DHCP
- B. Automatic
- C. Transient
- D. Roaming
- E. Fixed

Answer: A, C, E

See below



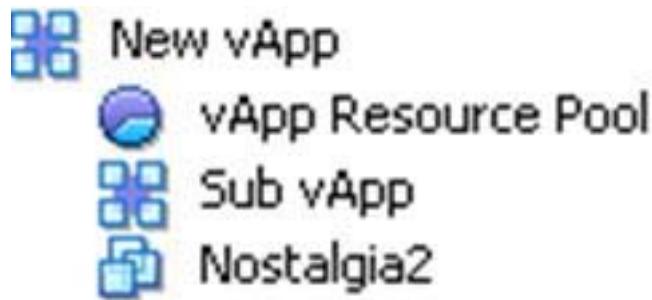
QUESTION NO: 4

Which of the following are valid objects to place in a vApp (Choose Three)?

- A. Folders
- B. Resource Pools
- C. Virtual Machines
- D. vApps
- E. Hosts

Answer: B, C, D

The screenshot below shows a vApp containing a resource pool, a second vApp and a virtual machine.



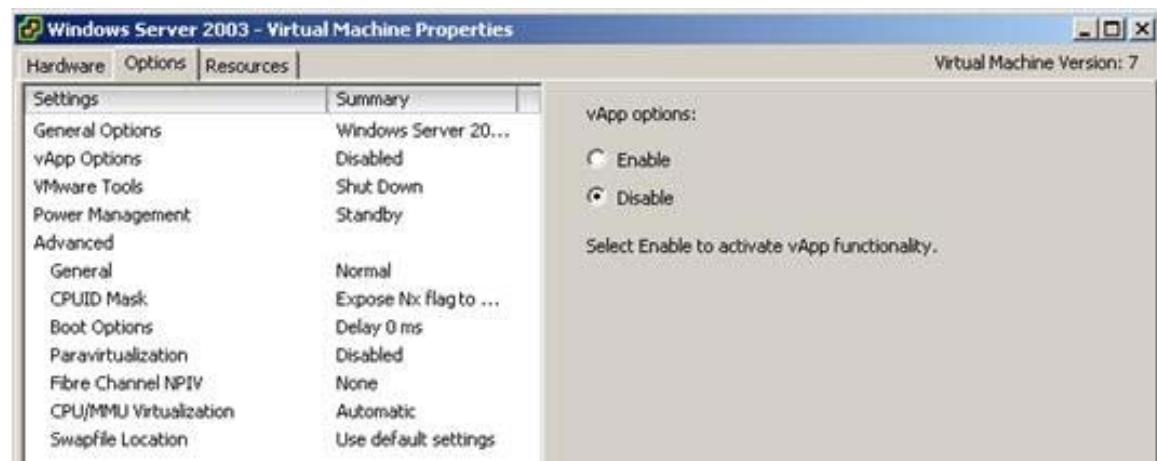
QUESTION NO: 5

Which of the following options cannot be edited if vApp Options is disabled in the Options tab for a Virtual Machine that is part of a vApp (Choose Two)?

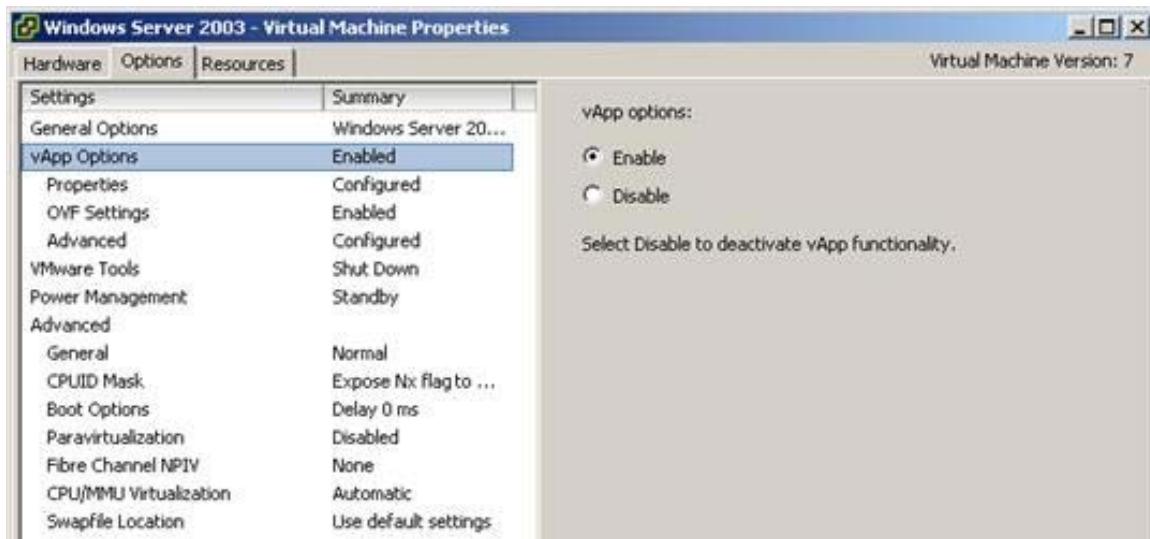
- A. vApp Resources
- B. IP Allocation Policy
- C. vApp Startup and Shutdown Options
- D. OVF Environment Transport

Answer: B, D

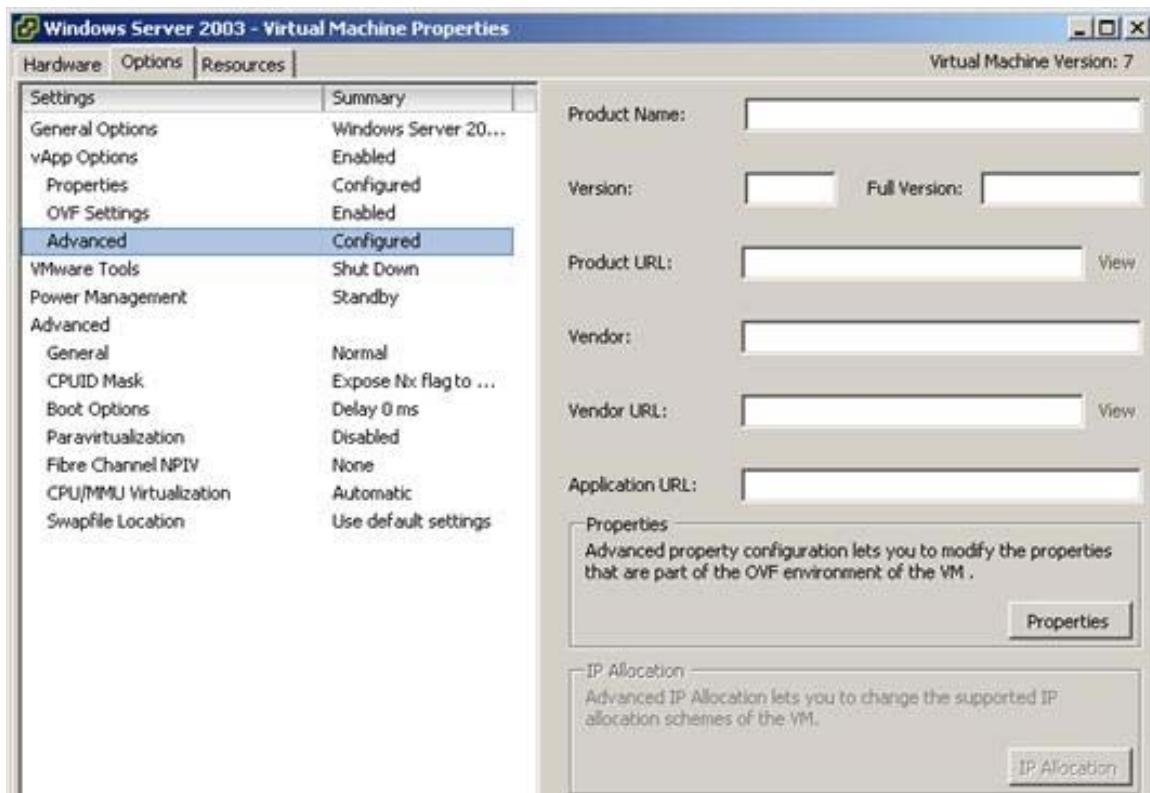
The screen shot below shows vApp Options disabled



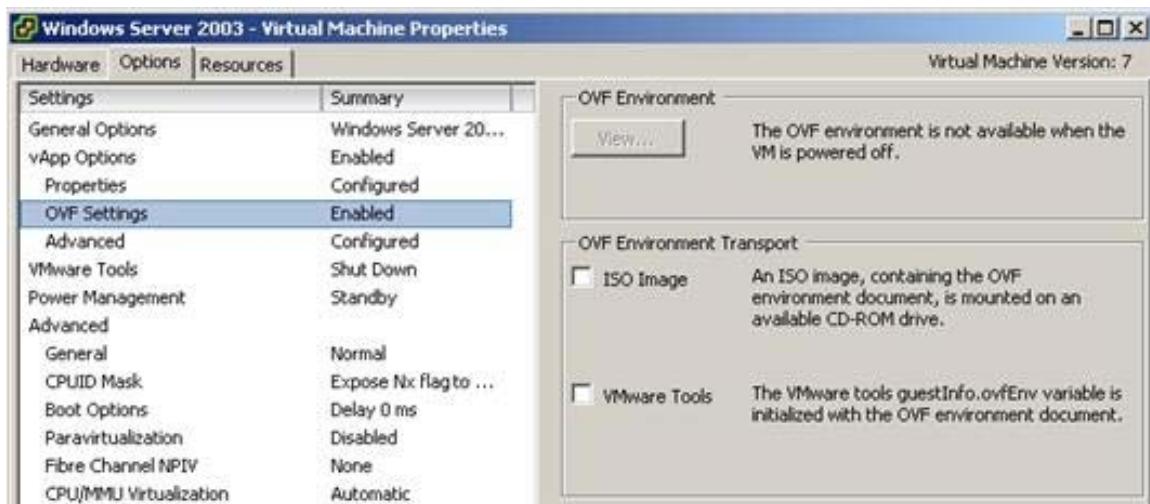
The screen shot below shows vApp Options enabled



Specifying IP Allocation Policy. [B above]



Specifying OVF Environment Transport. [D above]



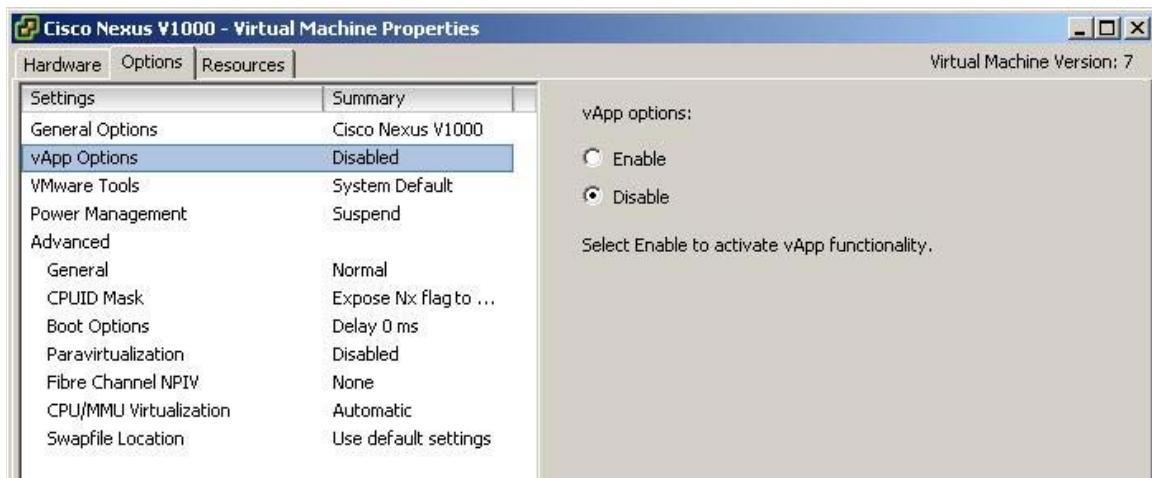
QUESTION NO: 6

Which of the following two options cannot be edited if Appliance Options are disabled
(Choose Two)?

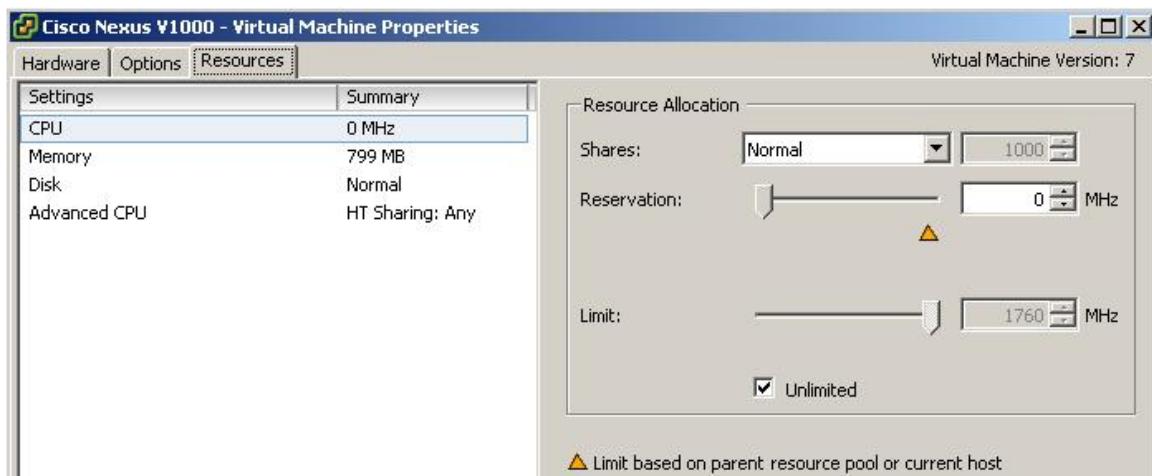
- A. License Agreement
- B. Resources
- C. Properties
- D. Startup and Shutdown

Answer: A, C

This virtual machine has vApp options disabled as below.



Resources configuration options are available [B above incorrect]



StartUp and Shutdown options are available [D above is incorrect]



QUESTION NO: 7

What is the maximum number of characters that can be used when naming a vApp?

- A. 80
- B. 60
- C. 120
- D. 40

Answer: A

vSphere Help Managing VMware vApp : Create a vApp : Name the vpp

Name the vApp

The name you enter is the vApp display name in the inventory.

The name can be up to 80 characters long. This name must be unique within the folder.

Topic 6, Manage Compliance (11 questions).

Part 1: Install, Configure and Manage VMware vCenter Update Manager (8 questions).

QUESTION NO: 1

The vSphere 4 Update Manager upgrades (Choose Three):

- A. Virtual Machine Tools
- B. VMFS datastores
- C. vCenter
- D. Virtual machine hardware
- E. vSphere Client

Answer: A,B,D

Update Manager Key Features

- Automated patching and upgrades with rollback for VMware ESX and ESXi hosts, select online and offline Microsoft Windows and Linux-based virtual machines, as well as for applications from third-party vendors such as Adobe and Mozilla. Snapshots ensure the ability to rollback in case of patching failures.
- A compliance dashboard provides visibility into the patch status of hosts and virtual machines and automated scanning of servers in the data center for compliance to static or dynamic baselines.
- Automated remediation for VMware ESX and ESXi hosts, select Microsoft virtual machines and applications.

- Orchestrated datacenter upgrades use a host upgrade baseline at a cluster, folder or datacenter level. A virtual machine upgrade baseline can also be used to upgrade virtual machine hardware and VMware Tools at once.
- Secure offline virtual machine patching to reduce the risks associated with non-compliant systems joining the corporate network
- Patch staging and scheduling remote sites to reduce bandwidth usage and make patching even easier.
- Integration with VMware DRS for non-disruptive patching of VMware ESX and ESXi hosts.
- Virtual Appliance Upgrades let administrators create pre-defined baselines baselines to scan and upgrade a virtual appliance to the latest released or latest critical virtual appliance version.
- Integration with the vSphere Power CLI lets administrators use PowerShell commands to automate patch management directly from a command line.

QUESTION NO: 2

Following a Remediation with Update Manager, the following error is displayed: Failed to remediate DBVM virtual machine because of an invalid state: Unknown Which of the following actions will allow the virtual machine to be successfully remediated?

- A. Restart the Update Manager Service
- B. Restart the virtual machine
- C. Power Off the virtual machine
- D. Repeat the Remediation process

Answer: B

Administration Guide Update Manager, page 34.

Type - Error.

Message Text - Failed to remediate virtual machine name for updates because of an invalid state: data.state.@enum.VirtualMachine.ConnectionState

Information - Check the virtual machine's state. Consider restarting the virtual machine to facilitate remediation.

QUESTION NO: 3

Which of the following are valid severity levels for Update Manager (Choose Three)?

- A. Critical
- B. Low
- C. Non-Critical
- D. Host Critical

E. Host General

Answer: A, B, E

VMware vCenter Update Manager, Administration Guide, vCenter Update Manager 4.0, page 114.

Table 12-2. VUMV_UPDATES

SEVERITY Update severity information: values are Not Applicable, Low, Moderate, Important, Critical, HostGeneral, and HostSecurity

QUESTION NO: 4

Which of the following is a valid example of a vCenter Update Manager Orchestrated Upgrade?

- A. A virtual machine upgrade that upgrades VM hardware, VMware Tools and patches the guest OS all at once
- B. A virtual machine upgrade that upgrades VM hardware and VMware Tools in a staged manner with No VM downtime
- C. A host upgrade that upgrades multiple ESX/ESXi hosts in a staged manner with no Host downtime
- D. A host upgrade that upgrades and patches ESX hosts, preserving the existing Service Console and Any added applications or components

Answer: A

vSphere Upgrade Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0 vSphere Client 4.0, page 69.

Update Manager allows you to perform orchestrated upgrades of the ESX/ESXi hosts in your vSphere inventory using a single upgrade baseline. vSphere Update Manager upgrades multiple VMware vSphere components

Table 10-1. Upgraded Components

Component Upgraded by Update Manager

Virtual machine kernel (vmkernel) Yes

Service console, where present Yes

Virtual machine hardware Yes

Virtual Machine Tools Yes

Guest operating systems Yes, for SP and patch releases.

QUESTION NO: 5

An administrator finds that scans on virtual machines that were part of a recently completed remediation show that they are still non-compliant. The remediation shows that it completed successfully on the remaining virtual machines. Which of the following are possible causes (Choose Two)?

- A. The updates that are part of the baseline are not applicable to the affected virtual machines
- B. Insufficient disk space exists on the virtual machine for one or more updated in the baseline
- C. The updates that are part of the baseline conflict with running applications
- D. VMware Tools is not installed on the affected virtual machines

Answer: B, C

Administration Guide Update Manager, page 32.

Remediated Updates Continue to be NonCompliant

For Windows virtual machines, check the registry to ensure that the updates were not installed. Search for the Microsoft Knowledge Base (KB) number that pertains to the update in question. These numbers are in:

- * The virtual machine's registry in: HKLM\Software\Microsoft\Updates\KB Number
- * The virtual machine's file system in: C:\Windows\NTUninstall\KB Number

Common explanations for this problem include:

- * Insufficient disk space for Service Pack installation. Retry remediation after freeing up disk space.
- * Conflicts with running applications. Reboot the virtual machine and then retry the remediation operation.

QUESTION NO: 6

Which of the following objects can be updated using vCenter Update Manager (Choose Three)?

- A. Windows, Linux and Solaris Virtual Machines
- B. ESX and ESXi Hosts
- C. Virtual Appliances
- D. VCB Images
- E. Templates

Answer: B, C, E

Updates you specify can be applied to operating systems, as well as applications on scanned ESX/ESXi hosts, virtual machines, and virtual appliances. With Update Manager, you can:

1. Scan for compliance and apply updates for guests, appliances, and hosts.
2. Directly upgrade hosts [B above], virtual machine hardware, VMware Tools, and virtual appliances [C above].
3. Update third-party software on hosts.

Update Manager can scan and remediate (update) powered on, suspended, and powered off virtual machines, and templates [E above], in addition to scanning and remediating hosts. If the upgrade or patching fails, you can revert the virtual machines back to their prior condition without losing data. Update Manager can scan and remediate powered on, VMware Studio registered, Red Hat, Ubuntu, SUSE, and CentOS Linux virtual appliances [Not Solaris so A is incorrect]. You can deploy Update Manager in a secured network without Internet access. In such a case, you can use the VMware vCenter Update Manager Download Service to download patch metadata and patch binaries.

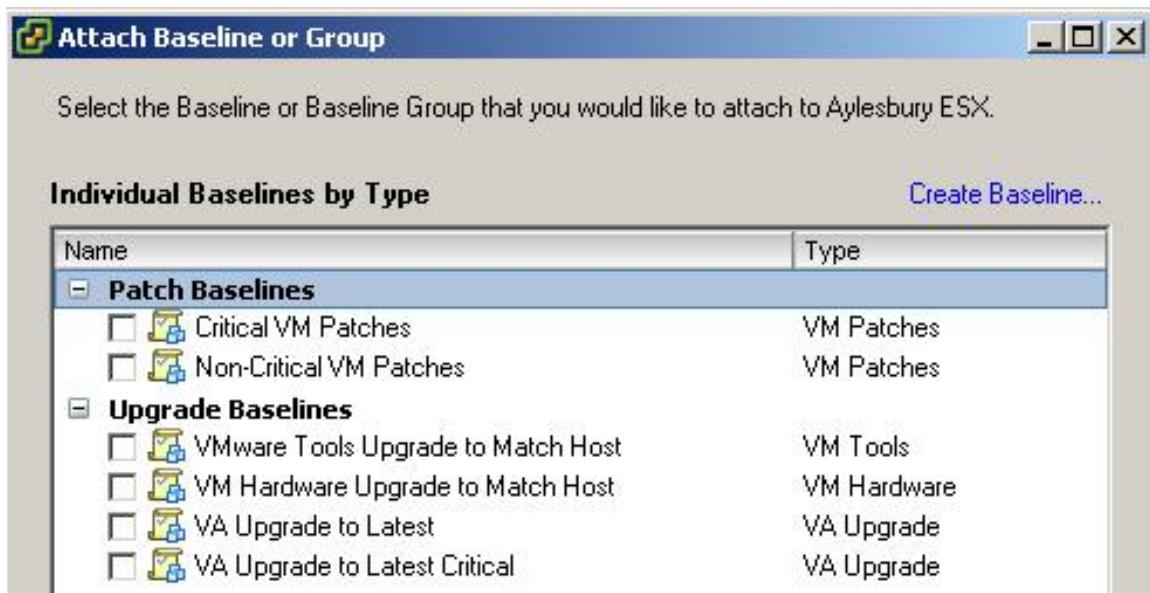
QUESTION NO: 7

Which of the following are valid default upgrade baselines included with vCenter Update Manager (Choose Two)?

- A. VA Upgrade to Latest
- B. VMware Tools Upgrade to Match Host
- C. Host Upgrade to Latest
- D. VMFS Upgrade to Match Host

Answer: A, B

Default Baselines.



QUESTION NO: 8

Which of the following are valid severity levels for host updates in vCenter Update Manager (Choose Three)?

- A. Security
- B. Important
- C. General
- D. Critical
- E. Moderate

Answer: A, C, D

VMware vCenter Update Manager Administration Guide vCenter Update Manager 4.0 f, page 72.

Table 6-2. Patch Details

Window Severity - Severity of the update. For hosts the severity status might be Critical, General, Security, and so on. For virtual machines the severity might be Critical, Important, Moderate, and so on

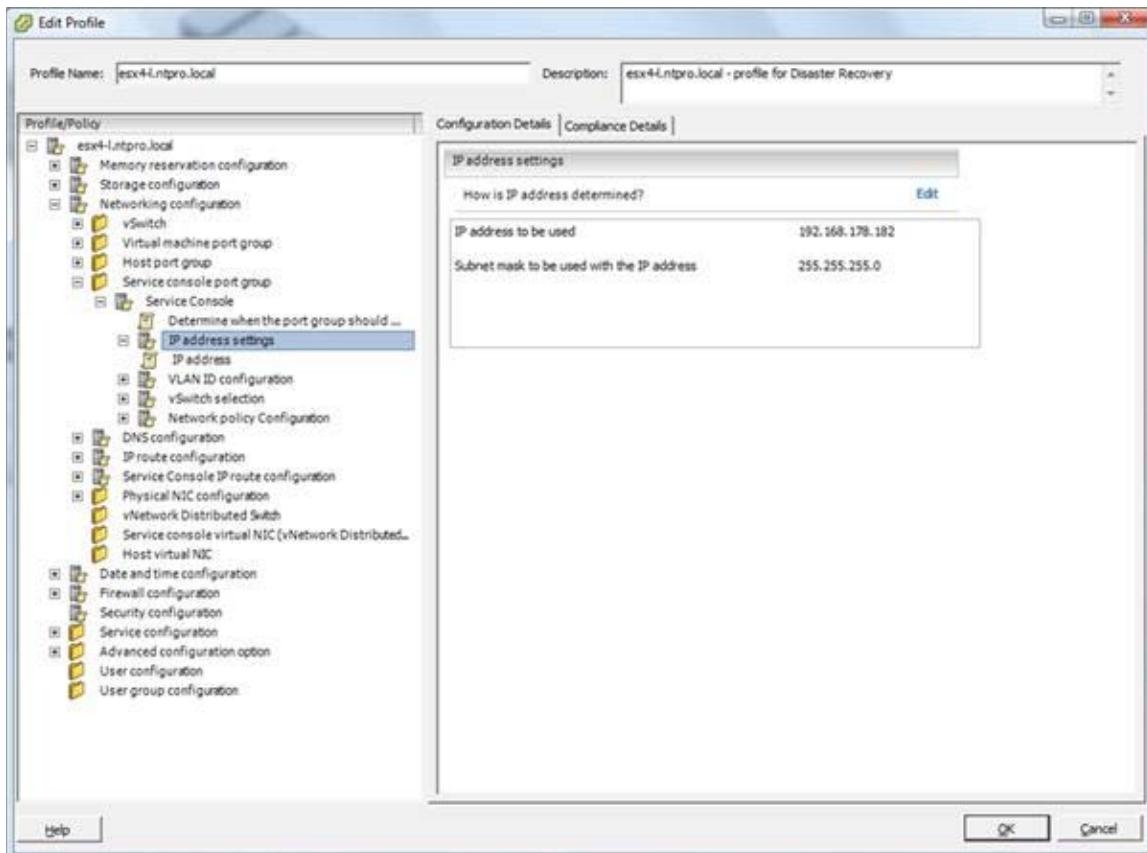
Part 2: Establish and Apply ESX Host Profiles (3 questions).

QUESTION NO: 1

Which of the following are valid sub-profile configurations that may be edited with the Host Profile editor (Choose Three)?

- A. Memory Reservation
- B. CPU Reservation
- C. Advanced
- D. Security
- E. Virtual Machine Options

Answer: A, C, D



QUESTION NO: 2

Which of the following are valid methods of creating a Host Profile (Choose Two)?

- A. Import a profile from an existing .vpf file
- B. Create a profile from an existing ESX 4 Host
- C. Clone a profile from an existing profile
- D. Create a profile using the Profile Editor

Answer: A, B

See below



QUESTION NO: 3

Which of the following would prevent the application of a Host Profile to an ESX Host (Choose Two)?

- A. The host has not been placed into Maintenance Mode
- B. The host is an ESX 3.5 Host
- C. The host has multiple profiles attached
- D. The host is an ESXi Host

Answer: A, B

Vmware Knowledge Base KB 1010732

Applying a Host Profile to a host or cluster

Note: The host must be in maintenance mode before applying it to a profile.

The screenshot below shows the error obtained whilst trying apply a Host Profile to a system not in maintenance mode.



Host profiles from ESX 3.5 U3 to ESX 4.0 U1

As others have stated, you can only use host profiles with ESX 4 hosts. So you can create a profile from an existing ESX 4 host and then apply it to other existing ESX 4 hosts

Topic 7, Establish Service Levels (65 questions).

Part 1: Create and Configure VMware Clusters (23 questions).

QUESTION NO: 1

Distributed Power Management (DPM) requires which technology to be available on the NIC?

- A. NetBIOS
- B. BMC
- C. WOL
- D. DNS

Answer: C

VMware vSphere 4 Evaluator's Guide, page 39.

'Once you turn on VMware DRS for your cluster you can enable the cluster for VMware DPM, which allows the power management of ESX hosts within the cluster. You must also ensure that Wake-on-LAN, IPMI, or iLO are functioning properly on your hosts. Only then can VMware DPM automate the power on and power off of ESX hosts using one of those methods.'

QUESTION NO: 2

What is the maximum amount of Hosts per vSphere HA Cluster?

- A. 16
- B. 8
- C. 64
- D. 32

Answer: D

Table Resource Pool Maximums

Hosts per HA cluster 32

QUESTION NO: 3

An Administrator is configuring a VMware HA Cluster for three hosts and their resident VMs. The HA cluster will be configured to support a single host failure and resource considerations must be enforced during a failover event. To accomplish this task?

- A. There must be enough cluster resources based on memory and CPU reservations to account for any potential host failure
- B. All potential remaining hosts during a failure event must be able to accommodate the sum total of all VM memory configurations
- C. Each host in the cluster must be able to accommodate the VM with the largest configured available memory
- D. Each host in the cluster must be able to accommodate the VM with the highest CPU limit value

Answer: A

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 11.

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts. Therefore there should be sufficient capacity to support any single host failover, (A)

QUESTION NO: 4

In configuring a VMware HA Cluster the System Administrator can configure Admission Control. There are two options: Prevent VMs from being powered on if they violate availability constraints, or Allow VMs to be powered on even if they violate availability constraints. If the System Administrator chooses the option Prevent VMs from being powered on if they violate availability constraints then which of the following apply in the event of an ESX Host failure (Choose Two)?

- A. VMware HA enforces the failover capacity defined for the cluster
- B. Only Virtual Machines with a high restart priority will be restarted on surviving ESX Hosts
- C. Virtual Machines running on failed ESX Hosts will not be restarted on surviving ESX Hosts
- D. VMware HA restarts Virtual Machines on surviving hosts with the most unreserved capacity

Answer: A, D

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 12 and 13.

You can configure VMware HA to tolerate a specified number of host failures. With the Host Failures Cluster Tolerates admission control policy, VMware HA ensures that a specified number of hosts can fail and sufficient resources remain in the cluster to fail over all the virtual machines from those hosts.

In the event of a host failure, the virtual machines running on that host are failed over, that is, restarted on the alternate hosts with the most available unreserved capacity (CPU and memory.)

QUESTION NO: 5

The maximum number of hosts in a VMware HA cluster is?

- A. 8
- B. 32
- C. 24
- D. 16

Answer: B

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 7.

Table 6. Resource Pool Maximums

Item Maximum

HA Cluster

Hosts per HA cluster 32

QUESTION NO: 6

Which of the following are requirements for a fully functional VMware HA cluster (Choose Two)?

- A. sufficient capacity to support at least one host failover
- B. access to shared storage from all hosts
- C. compatible CPUs in each host
- D. a minimum of 2 Service Console ports

Answer: A, B

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 11.

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts. Therefore there should be sufficient capacity to support at least one host failover, (A)

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 20.

All virtual machines and their configuration files must reside on shared storage. So that you can power on the virtual machines using different hosts in the cluster, the hosts must be configured to access that shared storage, (B).

QUESTION NO: 7

An administrator has a mixture of Intel-based ESX Hosts in a DRS cluster where the CPUs are compatible in every way except that some support the NX/XD feature and some do not. What can you do to minimize the effect of these differences (Choose Two)?

- A. Mask the NX/XD bit in the Processor section of the Configuration tab on the ESX Hosts
- B. Mask the NX/XD bit on every virtual machine in the cluster
- C. Enable Rapid Virtualization Indexing
- D. Enable enhanced VMotion compatibility

Answer: B, D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 153.

Select Advanced > CPUID Mask.

1. Specify whether you want to hide the host's CPU NX flag from the guest operating system

Hiding the NX flag prevents the guest operating system from making use of this CPU feature, but enables the virtual machine to be moved to hosts that do not include the NX feature. When the NX flag is visible, the guest operating system can make use of the feature, but the virtual machine can be moved only to hosts with the NX capability.

Enhanced VMotion Compatibility (EVC) processor support

Enhanced VMotion Compatibility (EVC) simplifies VMotion compatibility issues across CPU generations. EVC automatically configures server CPUs with Intel FlexMigration or AMD-V Extended Migration technologies to be compatible with older servers. After EVC is enabled for a cluster in the VirtualCenter inventory, all hosts in that cluster are configured to present identical CPU features and ensure CPU compatibility for VMotion. The features presented by each host are determined by selecting a predefined EVC baseline.

QUESTION NO: 8

Which of the following migration techniques can be used to move virtual disk files to another datastore (Choose Two)?

- A. Storage VMotion
- B. VMotion
- C. Migrating a Suspended Virtual Machine
- D. VMware Data Recovery

Answer: A, C

VMware Storage VMotion Non-Disruptive Live Migration for Virtual Machine Storage Disk Files

VMware Storage VMotion is a component of VMware vSphere[□] that provides an intuitive interface for live migration of virtual machine disk files within and across storage arrays with no downtime or disruption in service

Migrating VMs without VMware VMotion

In his blog, Mike DiPetrillo shows us another example of both the power of the VMware API and the ease of use we get with the VI Toolkit for Windows. His script will move a VM from one ESX host to another, without making use of VMware VMotion.

Mike's script asks you to log into VirtualCenter, then prompts for a source and destination host, as well as a VM to move. After a few sanity checks the VM is suspended, moved and un-suspended. You can do this process manually through the VI Client or automatically with Mike's script.

QUESTION NO: 9

Which technology is required when running a cluster with DRS and VMware HA?

- A. P2V Assistant
- B. VCB
- C. VMotion
- D. Virtual SMP

Answer: C

Resource Management Guide : Creating a VMware Cluster : Cluster Prerequisites

If you want to use DRS for load balancing, the hosts in your cluster must be part of a VMotion network.

QUESTION NO: 10

An ESX Administrator is configuring a VMware High Availability Cluster for three hosts and their resident VMs. The HA cluster will be configured to support a single host failure and resource considerations must be enforced during a failover event. To accomplish this task:

- A. All potential remaining hosts during a failure event must be able to accommodate the sum total of all VMs' available memory configurations
- B. Each host in the cluster must be able to accommodate the VM with the highest CPU limit value
- C. There must be enough cluster resources based on memory and CPU reservations to account for any potential host failure
- D. Each host in the cluster must be able to accommodate the VM with the largest configured available memory

Answer: C

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 11.

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts. Therefore there should be sufficient capacity to support any single host failover, (A)

QUESTION NO: 11

In configuring a VMware HA Cluster the System Administrator can configure Admission Control. There are two options. Do not power on Virtual Machines if they violate availability constraints, or Virtual Machines to be powered on even if they violate availability constraints.

If the System Administrator chooses the option "Do not power on Virtual Machines if they violate availability" then which of the following apply? Select two.

- A. Virtual Machines running on failed ESX hosts will not be restarted on surviving ESX hosts.
- B. VMware HA restarts VM's on surviving host with the most unreserved capacity.
- C. Only Virtual Machines with a high restart priority will be restarted on surviving ESX hosts.
- D. VMware HA enforces the failover capacity defined for the cluster.

Answer: B, D

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 12 and 13.

You can configure VMware HA to tolerate a specified number of host failures. With the Host Failures Cluster Tolerates admission control policy, VMware HA ensures that a specified number of hosts can fail and sufficient resources remain in the cluster to fail over all the virtual machines from those hosts.

In the event of a host failure, the virtual machines running on that host are failed over, that is, restarted on the alternate hosts with the most available unreserved capacity (CPU and memory.)

QUESTION NO: 12

Which of the following are requirements for a VMware HA cluster? (Choose Two.)

- A. a private Ethernet network for all hosts

- B. access to shared storage from all hosts
- C. identical type and quantity of CPUs in each host
- D. access to the virtual machine networks from all hosts

Answer: B, D

Explanation:

Clusters Enabled for HA

For clusters enabled for HA, all virtual machines and their configuration files must reside on shared storage (typically a SAN), because you must be able to power on the virtual machine on any host in the cluster. This also means that the hosts must be configured to have access to the same virtual machine network and to other resources. Each host in an HA cluster must be able to resolve the host name and IP address of all other hosts in the cluster. To achieve this, you can either set up DNS on each host (preferred) or fill in the /etc/hosts entries manually (error prone and discouraged).

QUESTION NO: 13

What is the difference between partially automated and fully automated DRS clusters?

- A. Partially automated clusters are a result of a fully automated cluster becoming yellow.
- B. Fully automated clusters migrate virtual machines to optimize resource usage.
- C. Partially automated clusters migrate virtual machines using a more conservative algorithm.
- D. Fully automated clusters do not take individual virtual machine rules into account.

Answer: B

The screenshot below shows that fully automated clusters migrate virtual machines to optimize resource usage

—Automation Level—

Manual

vCenter will suggest migration recommendations for virtual machines.

Partially automated

Virtual machines will be automatically placed onto hosts at power on and vCenter will suggest migration recommendations for virtual machines.

Fully automated

Virtual machines will be automatically placed onto hosts when powered on, and will be automatically migrated from one host to another to optimize resource usage.

Migration threshold: Conservative



Aggressive

Apply priority 3 or higher recommendations

vCenter will apply recommendations that promise at least good improvement to the cluster's load balance.

QUESTION NO: 14

Which of the following situations will result in VMware HA restarting virtual machines?
(Choose Two.)

- A. A guest OS is manually powered off.
- B. A guest OS fails.
- C. An ESX Server in the cluster is put into Maintenance mode.
- D. An ESX Server in the cluster becomes isolated from the network.

Answer: B, D

VMware vSphere - VMware High Availability

1. Monitors virtual machines to detect operating system and hardware failures.
2. Restarts virtual machines on other physical servers in the resource pool without manual intervention when server failure is detected.
3. Protects applications from operating system failures by automatically restarting virtual machines when an operating system failure is detected [B above]

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 22 and 23.

Host isolation response determines what happens when a host in a VMware HA cluster loses its service console networks (or VMkernel networks, in ESXi) connection but continues running. Host isolation responses require that Host Monitoring Status is enabled. When this occurs, the host executes its isolation response. The responses are: Leave VM powered on, Power off VM, and Shut down VM.

VM Monitoring restarts individual virtual machines if their VMware Tools heartbeats are not received within a set time. You can configure the degree to which VMware HA is sensitive to such non-responsiveness. If you select Enable VM Monitoring, the VM Monitoring service (using VMware Tools) evaluates whether each virtual machine in the cluster is running by checking for regular heartbeats from the VMware Tools process running inside the guest. If no heartbeats are received, this is most likely because the guest operating system has failed or VMware Tools is not being allocated any time to complete tasks. In such a case, the VM Monitoring service determines that the virtual machine has failed and the virtual machine is rebooted to restore service.

Therefore, if an ESX Server in the cluster becomes isolated from the network, it can be configured to shut down a virtual machine, which can then result in VM Monitoring restarting the individual virtual machine, [D above].

QUESTION NO: 15

Which of the following is a key feature of VMware High Availability services?

- A. HA can VMotion Virtual Machines to surviving ESX servers.
- B. HA can automatically restart Virtual Machines from a failed ESX server
- C. HA can take the place of other cluster software, like Microsoft Cluster Services (MSCS)
- D. HA can automatically restart failed ESX Servers.

Answer: B

Explanation:

Only DRS will use VMotion to move Virtual Machines around to adjust to changes in CPU/Memory performance on ESX servers.

QUESTION NO: 16

Which statement is true about running both DRS and VMware HA (HA) on the same cluster?

- A. There is no advantage to running these two technologies on the same cluster as they are completely unrelated.
- B. After a host failure, HA can start virtual machines intelligently using DRS algorithms.
- C. After a host failure, HA will restart virtual machines and DRS will migrate them to balance the workloads.
- D. This is not a recommended configuration.

Answer: C

Automating High Availability (HA) Services with VMware HA, page 4.

- 1. VMware VMotion enables the live migration of running virtual machines from one physical server to another. Live migration of virtual machines enables companies to perform hardware maintenance without scheduling downtime and disrupting business operations. VMotion also allows the mapping of virtual machines to hosts to be continuously and automatically optimized within clusters for maximum hardware utilization, flexibility, and availability.
- 2. VMware DRS works with VMotion to provide automated resource optimization and virtual machine placement and migration to help align available resources with pre-defined business priorities while maximizing hardware utilization.

QUESTION NO: 17

In a fully automated DRS cluster, what can be done to ensure that a specific virtual machine (VM) does not migrate automatically to another host?

- A. do nothing because the DRS cluster must be put in Partially Automated mode to allow this level of control
- B. use the Affinity Wizard to specify manual automation
- C. set the DRS VM options report_section = "8" for the specific VM to Partially Automated
- D. set the DRS VM rule to "keep on this host"

Answer: C

Need help to find the setting Report_Section = "8" in VC

This DRS settings is made to be added in the "Edit Settings" of a cluster on the Tab "Summary" go to "VmWare DRS" and on the down right corner you have "Advanced Options", when opened, you have a row "Option" and a row "Value" "report_section" is to be put in "Option" row and the "8" is to be put in Value. It apparently stops Vmotioning between all nodes of the cluster.

QUESTION NO: 18

vCenter Server is running within a virtual machine (VM) that is part of a VMware HA and DRS cluster. The vCenter VM can migrate between all hosts in the cluster by using VMotion. DRS is configured for partial automation. What happens if the ESX host that is currently running the vCenter VM experiences a power outage?

- A. This situation cannot occur because vCenter cannot be installed on a VMware HA cluster.
- B. All DRS cluster operations will be unavailable until the ESX host is brought back online.
- C. vCenter will stay offline, but all virtual machines on the remaining hosts will continue without interruption.
- D. VMware HA will restart the vCenter VM on another host.

Answer: D

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 11.

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts.

QUESTION NO: 19

What can prevent a successful migration with VMotion?

- A. one of the virtual disks that is a mapped SAN LUN
- B. network cards located in different server slots
- C. a physical CD-ROM that is connected from the virtual machine
- D. different CPU clock speeds

Answer: C

VMware DRS and VMotion: Improve workload balance, prevent problems

Some virtual machines may fail to migrate, whether by automatic VMotion task or if evoked manually. This is generally caused by obsolete virtual machines, CD-ROM binding or other reasons that may not be intuitive

QUESTION NO: 20

You can perform a migration with VMotion on virtual machines with disks on _____.

- A. Fibre Channel-SAN based datastores only
- B. NAS and Fibre Channel SAN-based datastores only
- C. iSCSI and Fibre Channel SAN based datastores only
- D. iSCSI, NAS and Fibre Channel SAN-based datastores

Answer: D

VMware Storage VMotion - Non-Disruptive Live Migration for Virtual Machine Storage Disk Files

Support for multiple storage types.

Implement live migration of virtual machine disk files between and among Fibre Channel, iSCSI, and NAS storage systems.

QUESTION NO: 21

What are three requirements for a VMware HA cluster? (Choose three.)

- A. Private Gigabit Ethernet network for all hosts
- B. access to shared storage from all hosts
- C. identical type and quantity of CPUs in each host
- D. access to the virtual machine networks from all hosts
- E. name resolution between all hosts

Answer: B, D, E

Explanation:

Clusters Enabled for HA For clusters enabled for HA, all virtual machines and their configuration files must reside on shared storage (typically a SAN), because you must be able to power on the virtual machine on any host in the cluster. This also means that the hosts must be configured to have access to the same virtual machine network and to other resources. Each host in an HA cluster must be able to resolve the host name and IP address of all other hosts in the cluster. To achieve this, you can either set up DNS on each host (preferred) or fill in the /etc/hosts entries manually (error prone and discouraged).

QUESTION NO: 22

Which two CPU characteristics must be identical for a successful migration with VMotion between ESX Servers? (Choose two.)

- A. CPU clock speed
- B. CPU stepping
- C. CPU cache size
- D. SSE3 support
- E. CPU vendor

Answer: B,E

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 47.

VMotion transfers the running architectural state of a virtual machine between underlying ESX/ESXi hosts.

CPU vendor:

VMotion compatibility means that the processors of the destination host must be able to resume execution using the equivalent instructions where the processors of the source host were suspended. Processor clock speeds and cache sizes might vary, but processors must come from the same vendor class (Intel versus AMD) [E above] and same processor family to be compatible for migration with VMotion.

CPU: CPU stepping

Processor families such as Xeon MP and Opteron are defined by the processor vendors. You can distinguish different processor versions within the same family by comparing the processors' model, stepping level, and extended features.

In some cases, processor vendors have introduced significant architectural changes within the same processor family (such as 64-bit extensions and SSE3) [D above]. VMware identifies these exceptions if it cannot guarantee successful migration with VMotion.

QUESTION NO: 23

An ESX Server cluster has 15 servers, each with 4 CPUs at 1000 MHz. The QA department runs 30 virtual machines (VMs), each with 4 virtual CPUs. A requirement exists to ensure that no more than 50% of the CPU capacity of the cluster is in use by QA at any one time. You decide to place the QA VMs in a single resource pool. How should you configure the CPU resource settings for the resource pool?

- A. deselect unlimited, set limit of 30000 MHz
- B. select expandable reservation

- C. deselect unlimited, set reservation of 4000, deselect expandable reservation
- D. set shares to normal (4000)

Answer: A

1. The total available CPU resources on each host are (4×1000) 4000 MHz.
2. The total available CPU resources on the cluster are (15×4000) 60000 MHz.
3. By setting a CPU limit of 30000 MHz, $(30000 / 60000)$ 50% of the CPU capacity of the cluster can be used by QA

Part 2: Enable a Fault Tolerant Virtual Machine (4 questions).

QUESTION NO: 1

NPIV (N-Port ID Virtualization) is not supported with Fault Tolerance?

- A. True
- B. False

Answer: A

Mastering VMware vSphere 4, page 494

N-Port ID Virtualization (NPIV) is not supported with VMware FT.

QUESTION NO: 2

Which of the following are valid use cases for VMware Fault Tolerance (Choose Three)?

- A. An administrator wants to provide continuous availability if a business critical application fails
- B. An administrator wants to provide on-demand fault tolerance for a virtual machine during a critical operation
- C. An administrator wants application high availability for applications that are not cluster aware
- D. An administrator wants to provide fault tolerance for one or more physical servers
- E. An administrator wants to provide continuous availability if a critical hardware component fails

Answer: B, C, E

Fault Tolerance Use Cases

1. Applications that need to be available at all times, especially those that have long-lasting client connections that users want to maintain during hardware failure. [E above]
2. Custom applications that have no other way of doing clustering. [C above]

Another key use case for protecting a virtual machine with Fault Tolerance can be described as On-Demand Fault Tolerance. In this case, a virtual machine is adequately protected with VMware HA during normal operation. During certain critical periods, you might want to enhance the protection of the virtual machine. [B above]

QUESTION NO: 3

Which of the following is the technology used by VMware Fault Tolerance?

- A. VMware vSafe
- B. VMware vCluster
- C. VMware vShield
- D. VMware vLockstep

Answer: D

VMware vSphere 4 Evaluator's Guide, page 42.

VMware Fault Tolerance (FT) protects a virtual machine in a VMware HA cluster. VMware FT creates a secondary copy of a virtual machine and migrates that copy onto another host in the cluster. VMware vLockstep technology ensures that the secondary virtual machine is always running in lockstep synchronization to the primary virtual machine.

QUESTION NO: 4

An administrator views the Fault Tolerance pane of the summary tab of a VM and finds that the current status is Not Protected. Which of the following is a valid reason the VM might not be protected (Choose Two)?

- A. Disabled - Fault Tolerance is currently disabled
- B. Stopped - Fault Tolerance has been stopped on the Secondary VM
- C. Need Secondary VM - The Primary VM is running without a Secondary VM and is not protected

D. Need Primary VM - The Secondary VM is running and a new Primary VM can not be generated

Answer: A, C

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, Page 37.

Table 3-2. Reasons for Primary VM Not Protected Status

Reason for Not Protected Status	Description
Starting	Fault Tolerance is in the process of starting the Secondary VM. This message is only visible for a short period of time.
Need Secondary VM [C above]	The Primary VM is running without a Secondary VM, so the Primary VM is currently not protected. This generally occurs when there is no compatible host in the cluster available for the Secondary VM. Correct this by bringing a compatible host online. If there is a compatible host online in the cluster, further investigation might be required. Under certain circumstances, disabling Fault Tolerance and then re-enabling it corrects this problem.
Disabled [A above]	Fault Tolerance is currently disabled (no Secondary VM is running). This happens when Fault Tolerance is disabled by the user or when vCenter Server disables Fault Tolerance after being unable to power on the Secondary VM.
VM not Running	Fault Tolerance is enabled but the virtual machine is powered off. Power on the virtual machine to reach Protected state.

Part 3: Create and Configure Resource Pools (14 questions).

QUESTION NO: 1

A resource pool exists with a memory reservation of 14GB. The pool has 5 single-processor virtual machines and 2 dual-processor virtual machines. Each of these VMs has a memory reservation of 2GB. When an attempt is made to power on the seventh Virtual Machine in the resource pool, a single-processor VM with a 2GB memory reservation, a warning states there is insufficient memory resources to power on the VM. The reason for this warning is?

- A. The VMkernel device drivers are consuming memory

- B. Service Console memory has not been increased to accommodate the virtual machine workload
- C. Overhead memory for the VMs is consuming memory in the resource pool
- D. Memory reservations for the VMs are consuming memory in the pool

Answer: C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 28

Virtual machines incur overhead memory. You should be aware of the amount of this overhead.

Table 3-2 lists the overhead memory (in MB) for each number of VCPUs.

Table 3-2. Overhead Memory on Virtual Machines

Memory (MB)	1 VCPU	2 VCPUs
2048	137.81	198.20

There are currently 6 virtual machines powered up, consuming
 $6 \times 2\text{GB} = 12\text{GB}$
 4 single processor machines, $= 4 \times 137.81 \text{ MB} = 552\text{MB}$
 2 dual processor machines, $= 2 \times 198.20 \text{ MB} = 396 \text{ MB}$
 Total memory consumed is 12.92 GB, so total memory available = 1.08GB

When an attempt is made to power on the seventh Virtual Machine in the resource pool, an additional 2 GB + 137 MB is required. Since this is not available, the machine cannot start.

QUESTION NO: 2

Which of the following are benefits of using resource pools (Choose three)?

- A. access control and delegation
- B. isolation within pools, sharing between pools
- C. separation of resources from hardware
- D. automatically apply reservations and limits to groups of virtual machines

Answer: A, B, C

Why Use Resource Pools?

Resource pools allow you to delegate control over resources of a host (or cluster), but the benefits are especially evident when you use resource pools to compartmentalize all resources in a cluster. You can create multiple resource pools as direct children of the host or cluster and configure them, then delegate control over them to other individuals or organizations. Using resource pools can result in the following benefits:

Flexible hierarchical organization - You can add, remove, or reorganize resource pools or change resource allocations as needed.

Isolation between pools, sharing within pools - Top-level administrators can make a pool of resources available to a department-level administrator. Allocation changes that are internal to one departmental resource pool do not unfairly affect other unrelated resource pools.

Access control and delegation - When a top-level administrator makes a resource pool available to a department-level administrator, that administrator can then perform all virtual machine creation and management within the boundaries of the resources to which the resource pool is entitled by the current shares, reservation, and limit settings. Delegation is usually done in conjunction with permissions settings, which are discussed in the Introduction to Virtual Infrastructure.

Separation of resources from hardware - If you are using clusters enabled for DRS, the resources of all hosts are always assigned to the cluster. That means administrators can perform resource management independently of the actual hosts that contribute the resources. If you replace three 2GB hosts with two 3GB hosts, you don't need to make changes to your resource allocations.

This separation allows administrators to think more about aggregate computing capacity and less about individual hosts.

Management of sets of virtual machines running a multi-tier service - You don't need to set resources on each virtual machine. Instead, you can control the aggregate allocation of resources to the set of virtual machines by changing settings on their enclosing resource pool.

QUESTION NO: 3

Which of the following is true regarding a mixed DRS cluster with Intel and AMD based ESX Hosts (Choose Two)?

- A. VMware HA will failover virtual machines to any host in the cluster
- B. VMware DRS can load balance running virtual machines using all hosts in the cluster
- C. VMotion can move live virtual machines between any two hosts in the cluster
- D. Storage VMotion will function with any host in the cluster

Answer: A, D

DRS Performance and Best Practices VMware® Infrastructure 3

If you are configuring a DRS cluster with heterogeneous hosts, be sure to consider the following factors:

VMotion hardware compatibility-Virtual machines cannot use VMotion to migrate across different CPU types (from Intel to AMD or vice versa)

VMware DRS and VMotion: Improve workload balance, prevent problems

Simply put, DRS ensures that your resource requirements are enforced. You start with a number of VMware host systems, shared storage, same network presence, and resource pools that you define. From there, DRS will balance the workload across the resources you presented to the cluster.

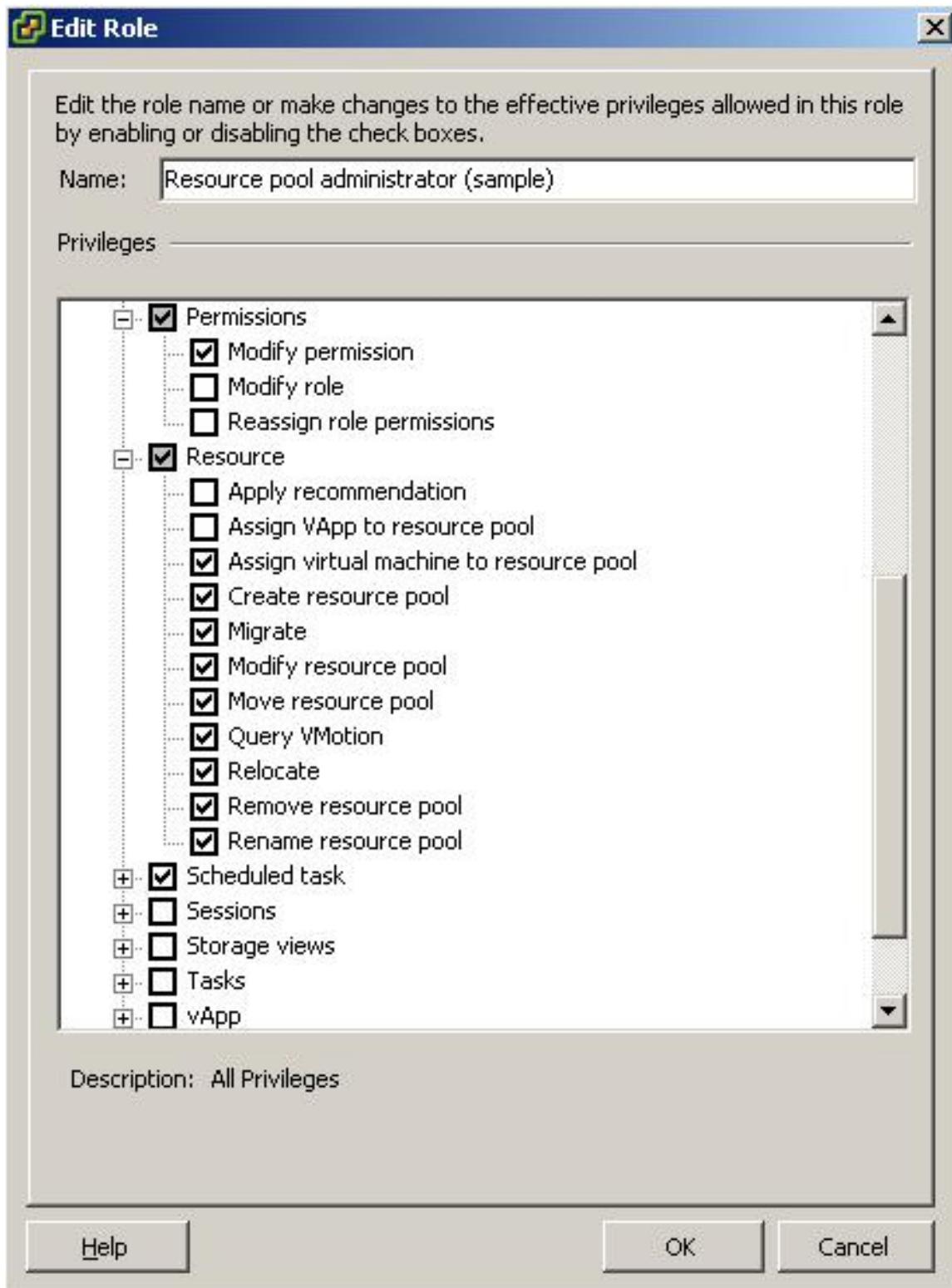
QUESTION NO: 4

Which of the following are valid permissions for a Resource Pool Administrator (Choose Two)?

- A. Assign a vApp to a Resource Pool
- B. Move a Resource Pool
- C. Modify Permissions
- D. Add a Host to a Cluster

Answer: B, C

See below



QUESTION NO: 5

An Administrator notices that when a virtual machine is placed into a resource pool, a warning indicates that the virtual machine would receive a very large percentage of the total shares for memory. Which of the following actions could be taken to resolve this problem?

- A. Increase the memory resource allocation to the resource pool
- B. Change the Shares setting from High to Medium or Low for the virtual machine
- C. Change the Shares setting from custom to High, Medium or Low for the virtual machine
- D. Increase the Share value for the resource pool

Answer: C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 157

The Memory Resources panel lets you allocate memory resources for a virtual machine and specify reservations, limits, and shares. Symbolic values Low, Normal, High, and Custom are compared to the sum of all shares of all virtual machines on the server and, on an ESX host, the service console.

By decreasing the memory share of a particular system, it receives less memory out of the total available memory.

QUESTION NO: 6

An administrator has 2 ESX Hosts, both with a Production and a Test Resource Pool. Which of the following is true when these hosts are added to a cluster that is not enabled for DRS?

- A. The resource pools are combined into a single Production and a single Test pool for the cluster
- B. The resource pools are removed
- C. The resource pools are grafted into the cluster, resulting in 2 sets of separate Production and Test pools
- D. An option is given during the process to graft or combine the pools

Answer: B

The resource pools are removed, as below.



QUESTION NO: 7

Which of the following resources can be managed using resource pools?

- A. I/O
- B. Network
- C. Disk
- D. Memory

Answer: D

vSphere Resource Management Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, page 35.

A resource pool is a logical abstraction for flexible management of resources. Resource pools can be grouped into hierarchies and used to hierarchically partition available CPU and memory resources.

QUESTION NO: 8

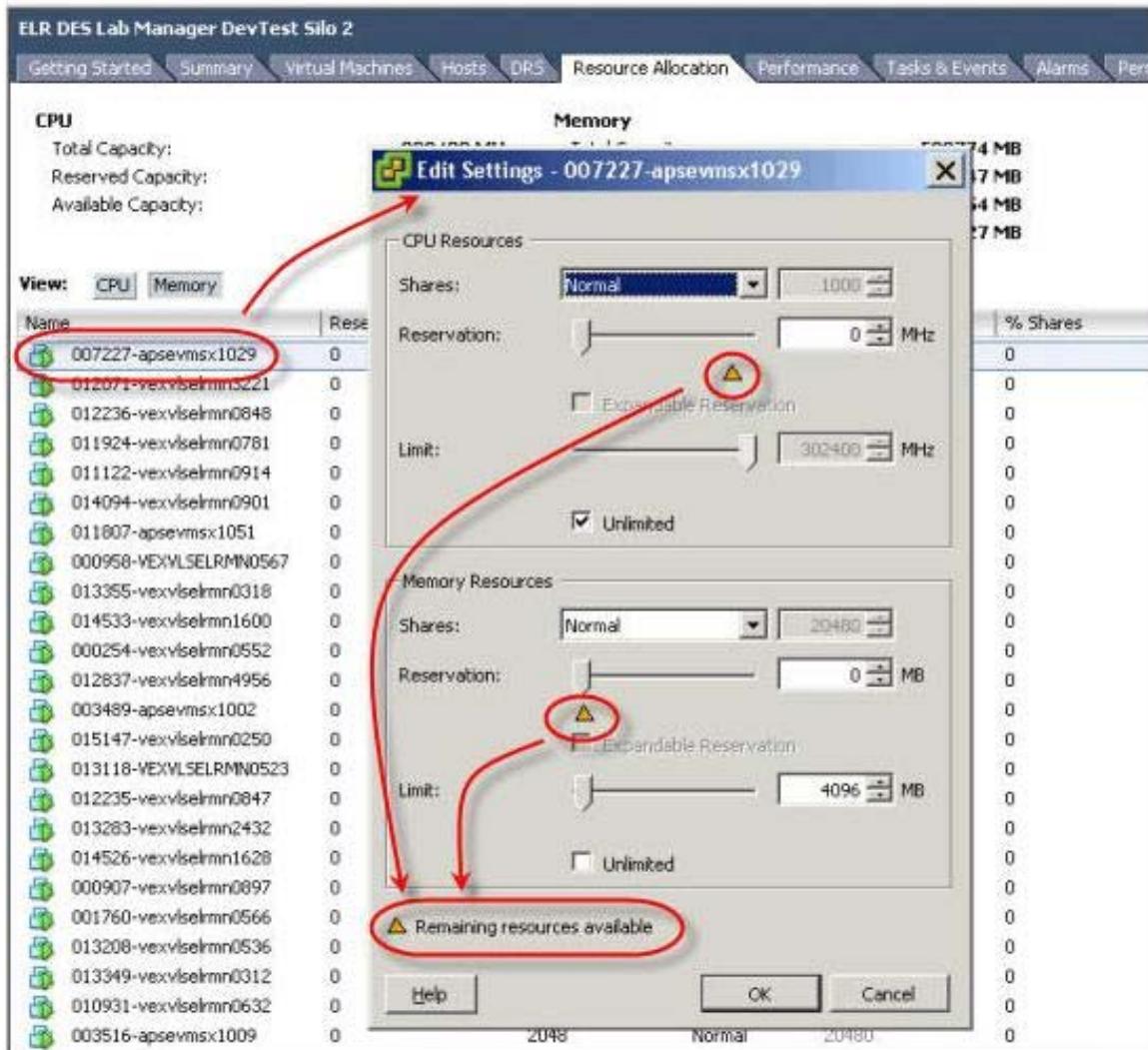
When adjusting the slider to allocate resources for a Resource Pool, the yellow indicator on the resource bar indicates:

- A. A warning flag set at 75% of the available resource amount
- B. The maximum available resource amount
- C. The minimum required resource amount
- D. The recommended resource amount
- E. The remaining resources available

Answer: E

Explanation:

If you have a look for a Virtual machine in a resource pool, in the left bottom corner is written "remaining resources available".



QUESTION NO: 9

Resource pools at the same level are called?

- A. Parent Pools
- B. Root Resource Pools
- C. Sibling Pools

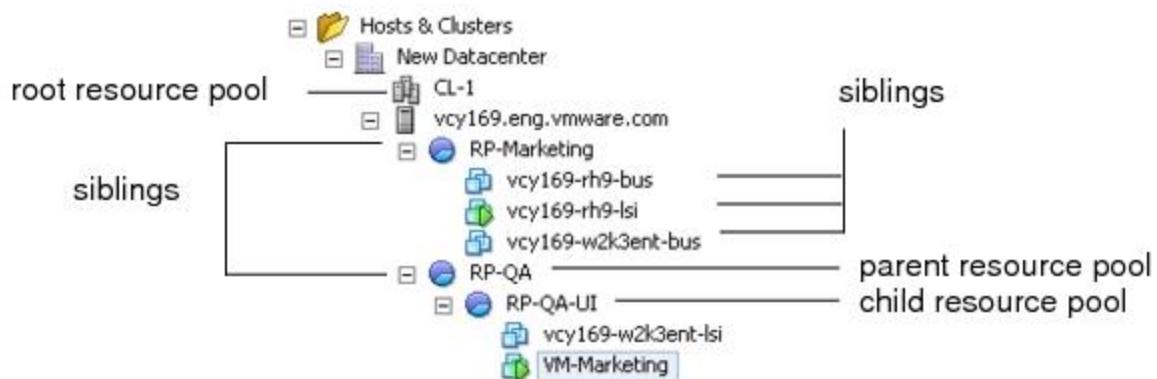
D. Child Pools

Answer: C

Resource Management Guide : Understanding and Managing Resource Pools : What Are Resource Pools?

Resource pools at the same level are called siblings

Figure 3-1. Parents, Children, and Siblings in Resource Pool Hierarchy



QUESTION NO: 10

Exhibit:

Finance

General

Number of virtual Machines: 0
Number of Running Virtual Machines: 0
Number of Child Resource Pools: 0

CPU usage: 20 MHz
Memory usage: 57 MB

CPU

Shares: Normal (4000)
Reservation: 0 MHz
Type: Expandable
Limit: Unlimited

Unreserved: 9496 MHz

Memory

Shares: Normal (163840)
Reservation: 0 MB
Type: Expandable
Limit: Unlimited

Unreserved: 3009 MB

Commands

- New Virtual Machine
- New Resource Pool
- Edit Settings

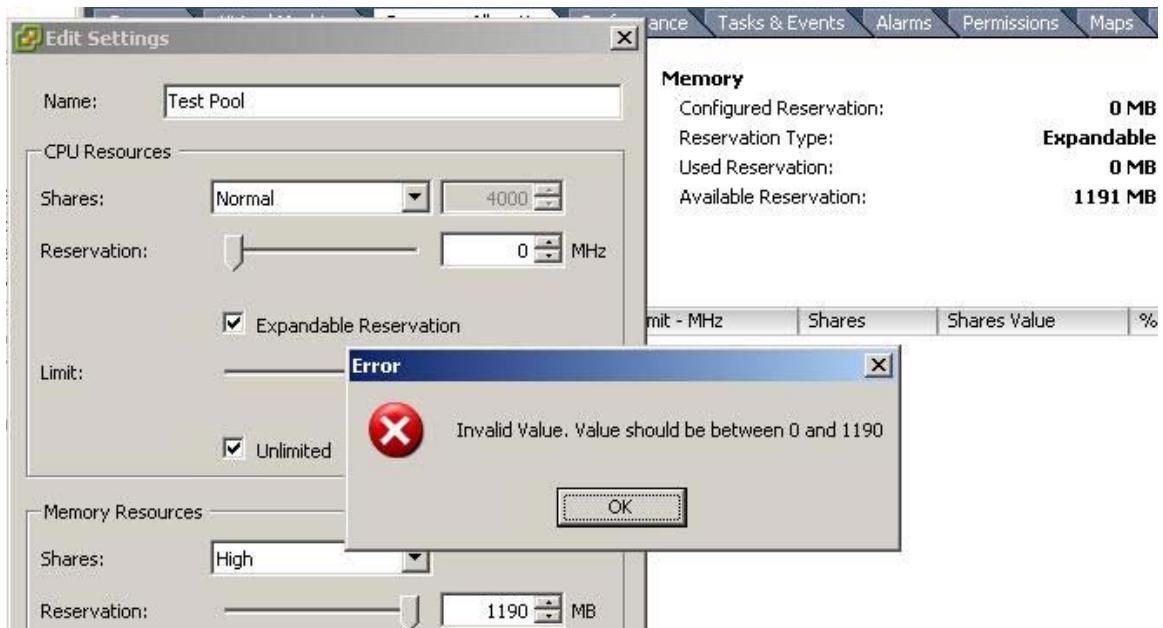
Assuming this is the only virtual machine, and the only resource pool, what is the maximum amount of memory that could be configured for use by the virtual machine that is part of the Finance Resource Pool?

- A. 57 MB less virtual machine overhead
- B. 13375 MB less virtual machine overhead
- C. 16384 MB less virtual machine overhead
- D. 3009 MB less virtual machine overhead

Answer: D

If a memory reservation value higher than the available reservation (unreserved above) is entered in the GUI, it is corrected to a figure just less than this. Therefore D is correct.

Note (A) 57 MB refers to the memory in use, not the memory available, and (C) refers to the memory share value, a relative figure used to divide out total available memory for this pool from total parent pool resources, (the ESX host).



QUESTION NO: 11

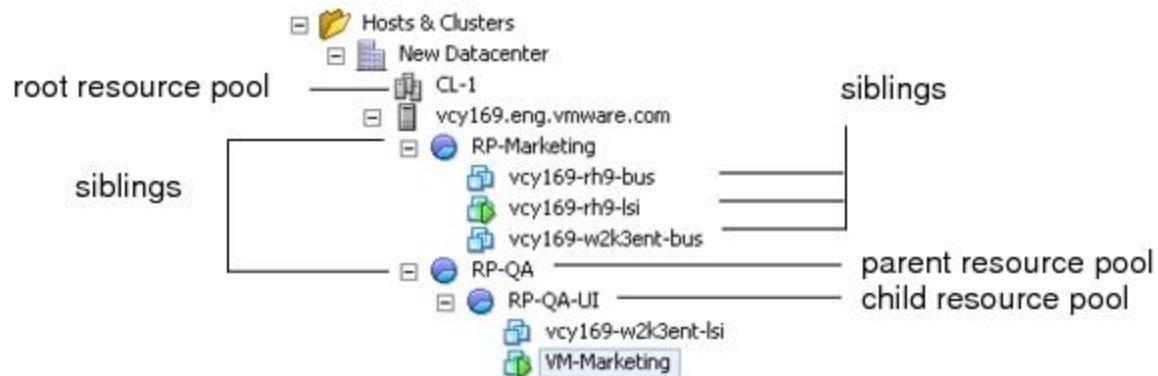
Which statement is true about resource pools?

- A. They may contain one or more child VMware HA clusters.
- B. They may contain one or more child DRS clusters.
- C. They may aggregate groups of resource pools.
- D. They may contain one or more child resource pools.

Answer: D

The graphic below shows a resource pool containing a child resource pool.

Figure 3-1. Parents, Children, and Siblings in Resource Pool Hierarchy



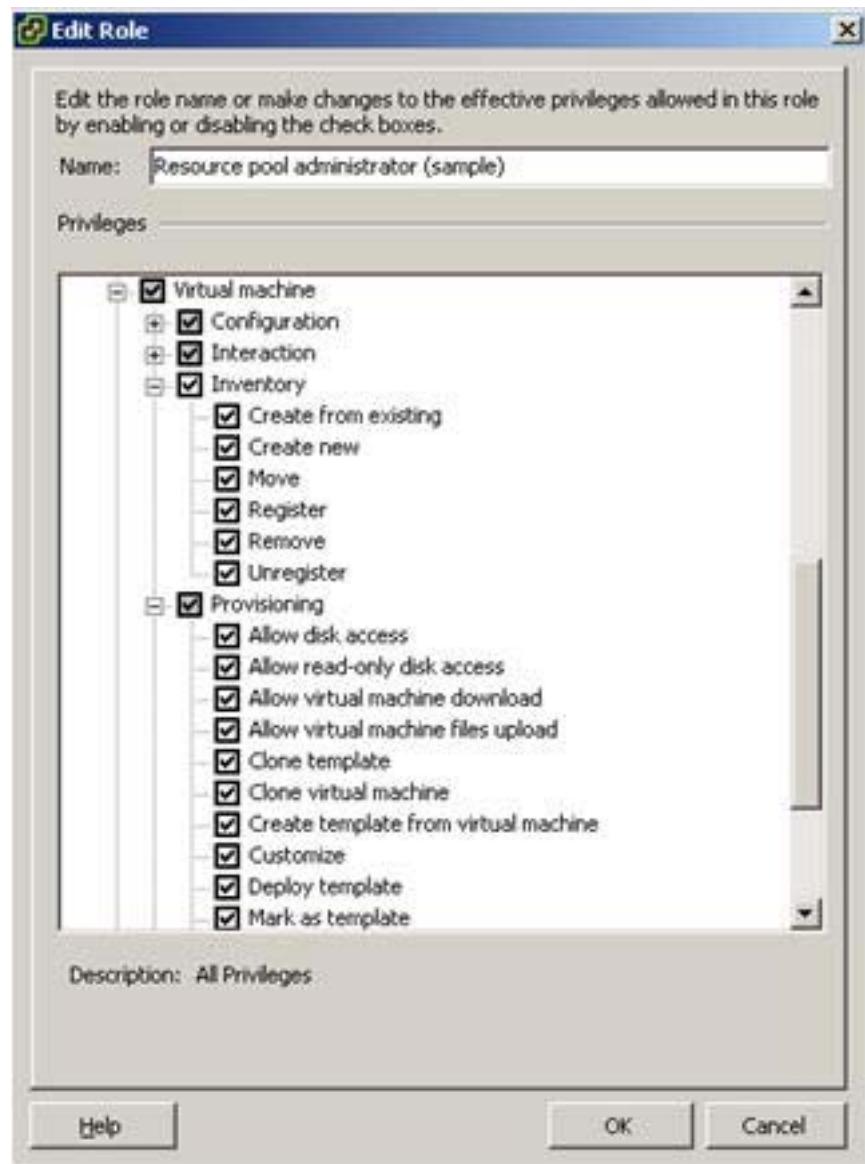
QUESTION NO: 12

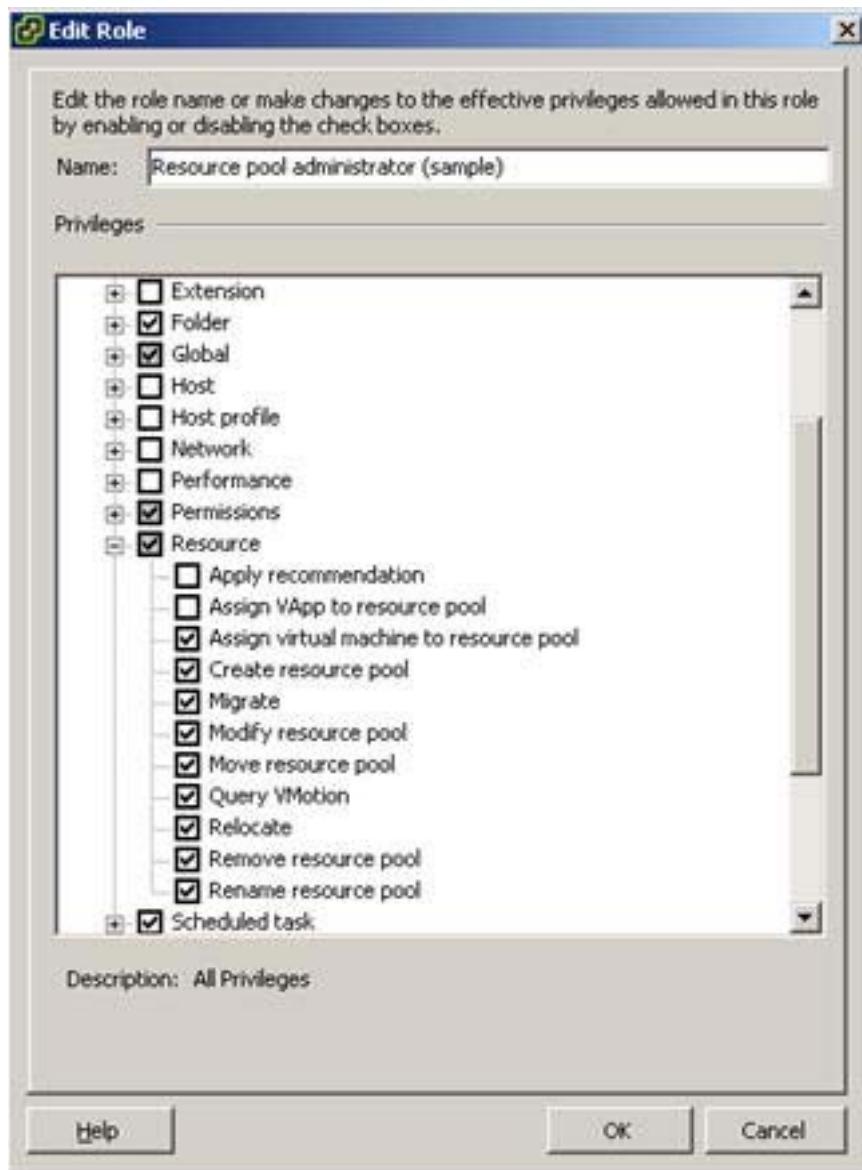
Which three tasks can a Resource Pool Administrator perform? (Choose three.)

- A. create a new template from a virtual machine
- B. change the resource pool resource limits
- C. modify assigned licenses
- D. add a port group to a virtual switch
- E. create a new virtual machine in the resource pool

Answer: A, B, E

The dialog below shows an administrator can create a new template from a virtual machine, modify a resource pool, and create a new virtual machine, and assign a virtual machine to a resource pool, (create a new virtual machine in the resource pool).





QUESTION NO: 13

Which three attributes can you specify when creating a resource pool for CPU or Memory? (Choose three.)

- A. Number of shares
- B. Limit
- C. Limited
- D. Maximum bandwidth
- E. Reservation

Answer: A, B, E

vSphere help.

Add a Resource Pool

In CPU Resources, specify how to allocate CPU resources.

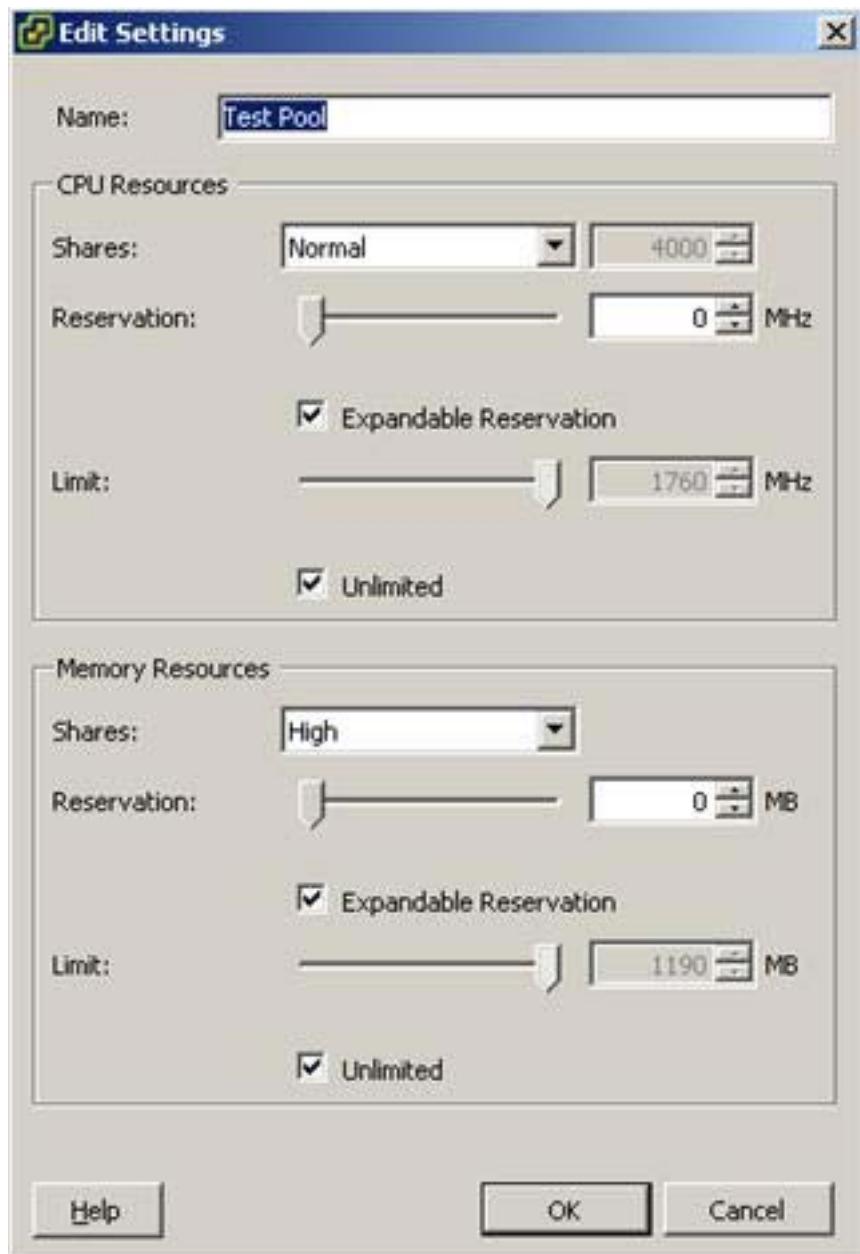
Shares Specify CPU shares for this resource pool with respect to the parent's total CPU resources. Sibling resource pools share resources according to their relative share values bounded by the reservation and limit.

Select Low, Normal, or High specify share values respectively in a 1:2:4 ratio.

Select Custom to give each virtual machine a specific number of shares, which expresses a proportional weight.

Reservation Specify a guaranteed CPU allocation for this resource pool.

Limit Specify the upper limit for this resource pool's CPU allocation. You can usually accept the default.



QUESTION NO: 14

What is the purpose of resource shares?

- A. to prevent starting virtual machines when resources are scarce
- B. to set guaranteed maximum resource usage
- C. to set guaranteed minimum resource usage
- D. to prioritize resources when total resources are scarce

Answer: D

Shares Specify CPU shares for this resource pool with respect to the parent's total CPU resources. Sibling resource pools share resources according to their relative share values bounded by the reservation and limit.

Select Low, Normal, or High specify share values respectively in a 1:2:4 ratio.

Select Custom to give each virtual machine a specific number of shares, which expresses a proportional weight. This will prioritize resources when total resources are scarce, (A).

Reservation Specify a guaranteed CPU allocation for this resource pool.

Limit Specify the upper limit for this resource pool's CPU allocation, (B)

Reservations will prevent starting virtual machines when resources are scarce, (A).

There is no option to set a guaranteed minimum resource usage (C) - resource requirements are dependant on the Virtual machine not the resource pool.

Part 4: Migrate Virtual Machines (6 questions).

QUESTION NO: 1

The OVF format allows virtual machine templates to be?

- A. upgraded
- B. converted
- C. automated
- D. transported

Answer: D

OVF enables efficient, flexible, and secure distribution of enterprise software, facilitating the mobility of virtual machines and giving customers vendor and platform independence

QUESTION NO: 2

What are two benefits of Virtual Compatibility Mode for RDMs, as compared to Physical Compatibility Mode (Choose Two)?

- A. Allows for the use of array-based snapshots
- B. Allows the use of SAN-aware applications
- C. Allows for template creation of the related virtual machine
- D. Allows for cloning

Answer: C, D

Storage options for virtual machines: Raw device mappings, VMFS

RDM limitations

There are two types of RDMs: virtual compatibility mode RDMs and physical compatibility mode RDMs. Physical mode RDMs, in particular, have some fairly significant limitations:

No VMware snapshots

No VCB support, because VCB requires VMware snapshots

No cloning VMs that use physical mode RDMs

No converting VMs that use physical mode RDMs into templates

No migrating VMs with physical mode RDMs if the migration involves copying the disk

No VMotion with physical mode RDMs

QUESTION NO: 3

vCenter Converter allows the following type of conversions (Choose Three)?

- A. Virtual to Physical
- B. Disk Image to Virtual
- C. Physical to Disk Image
- D. Virtual to Virtual
- E. Physical to Virtual

Answer: B, D, E

VMware vCenter Converter

Interoperability: Broad support for source physical machines and image formats

Broad support for source physical machines and image formats.

Source physical machines running 64-bit Windows XP/2003, WinNT SP4+, Windows 2000, Windows XP, Windows 2003, windows Server 2008, and Linux (RHEL, SUSE and Ubuntu)

Source third party images: Microsoft Virtual Server, Microsoft Virtual PC, Parallels Desktop, Symantec Backup Exec System Recovery (formerly called Live State Recovery), Norton Ghost, Acronis, and StorageCraft

Source/Destination virtual machines: VMware Workstation, VMware GSX Server, VMware Player, VMware Server, VMware Fusion, VMware ESX (Managed by VMware VirtualCenter 2.x)

QUESTION NO: 4

During Guided Consolidation, how is disk space for the virtual machine calculated?

- A. The virtual machine disk is equal in size to the source disk
- B. The virtual machine disk is sized to the amount of data contained on the source disk
- C. The virtual machine disk is sized to 125% of the data contained on the source disk
- D. Guided Consolidation prompts for the virtual machine disk size during conversion

Answer: C

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 95.

The following formula is used to resize converted disks:

amount of space used on physical disk * 1.25 = resultant virtual disk size

Virtual disks are set to a size of 4GB or larger.

QUESTION NO: 5

What is the maximum number of systems guided consolidation can simultaneously analyze?

- A. 1000
- B. 500
- C. 250
- D. 100

Answer: D

What's New in VMware vSphere 4.0

Guided Consolidation Enhancements - The Guided Consolidation service is now a modular plug-in to vCenter Server. This service can be installed on a different system than vCenter Server, allowing vCenter Server to perform optimally with lower overheads around consolidation operations. Guided Consolidation is also able to discover and analyze systems that run non-English versions of Windows. Guided Consolidation can concurrently analyze and make consolidation recommendations for up to 100 physical machines at a given time

QUESTION NO: 6

Which of the following system images is not a supported import option for VMware Enterprise Converter?

- A. Symantec Ghost 8 (.gho)

- B. VMware Consolidated Backup (VCB) full backup images
- C. Acronis True Image 9/10 (.tib)
- D. Symantec Ghost 9/10/12 (.sv2i)

Answer: A

Administration Guide Converter Enterprise for VirtualCenter 2.5, page 21.

VMware Converter Enterprise for VirtualCenter can import system images from:
Norton Ghost 9.0, 10.0, 12.0, LiveState 3.0, 6.0, and Symantec Backup Exec System Recovery 6.5, 7.0 (.sv2i)
StorageCraft ShadowProtect (.spf)
Acronis True Image 9, 10 (.tib)
VMware Consolidated Backup (VCB) full backup images

Part 5: Backup and Restore Virtual Machines (17 questions).

QUESTION NO: 1

VMware Data Recovery uses Microsoft Windows Volume Shadow Copy Service (VSS). Which of the follow OS' does not support VSS?

- A. Windows Vista, 32 Bit
- B. Windows Server 2008, 32 Bit
- C. Windows XP, 32 Bit
- D. Windows Server 2003, 32 Bit

Answer: C

VSS is supported on virtual machines with the following guest operating systems:

- Windows Server 2003, 32 bit and 64 bit
- Windows Vista, 32 bit and 64 bit
- Windows Server 2008, 32 bit and 64 bit

QUESTION NO: 2

Using VMware Data Recovery, backing up a VM created on a ESX3.5 host will take longer than a VM created on a ESX4 host?

- A. True
- B. False

Answer: A

VMware Data Recovery Administration Guide Data Recovery 1.1, page 8.

For virtual machines created in vSphere 4.0, the Data Recovery appliance creates a quiesced snapshot of the virtual machine during the backup. The backups use the changed block tracking functionality on the ESX hosts.

For each virtual disk being backed up, it checks for a prior backup of the virtual disk. It uses the change-tracking functionality on ESX hosts to obtain the changes since the last backup. The deduplicated store creates a virtual full backup based on the last backup image and applies the changes to it.

NOTE These optimizations do not apply to virtual machines created with VMware products prior to vSphere

4.0. For example, change tokens are not used with virtual machines created with Virtual Infrastructure 3.5 or earlier. As a result, virtual machines created with earlier VMware versions take longer to back up

QUESTION NO: 3

An administrator uses vCenter Data Recovery to make backups of virtual machines. Checking on the backup jobs run the previous evening, the administrator notices some jobs completed while others did not. Which of the following are possible causes for the failure?

- A. Four backup jobs were running simultaneously, causing new jobs to fail to start
- B. CPU utilization on one or more ESX Hosts exceeded 90 percent prior to one or more jobs executing
- C. Compress the virtual machine files before the backup job runs.
- D. Four restore jobs were running simultaneously, causing new jobs to fail to start

Answer: B

VMware Data Recovery Administrator's Guide, page 7.

Backing Up Virtual Machines

During a backup, Data Recovery creates a quiesced snapshot of the virtual machine. Deduplication is automatically performed with every backup operation. Data Recovery can concurrently back up a maximum of eight virtual machines. To start multiple backups, CPU utilization must be less than 90 percent.

QUESTION NO: 4

Which of the following is true regarding backups created with Vmware Data Recovery?

- A. Backups of ESX 3.x VMs take longer than backups of ESX 4 VMs
- B. Backups of ESX 3.x and later VMs take the same amount of time to complete
- C. Backups of ESX 3.x VMs are not supported
- D. Backups of ESX 3.0 VMs are not supported, but ESX 3.5 VMs are supported

Answer: A

VMware Data Recovery Administration Guide Data Recovery 1.1, page 8.

For virtual machines created in vSphere 4.0, the Data Recovery appliance creates a quiesced snapshot of the virtual machine during the backup. The backups use the changed block tracking functionality on the ESX hosts.

For each virtual disk being backed up, it checks for a prior backup of the virtual disk. It uses the change-tracking functionality on ESX hosts to obtain the changes since the last backup. The deduplicated store creates a virtual full backup based on the last backup image and applies the changes to it.

NOTE These optimizations do not apply to virtual machines created with VMware products prior to vSphere

4.0. For example, change tokens are not used with virtual machines created with Virtual Infrastructure 3.5 or earlier. As a result, virtual machines created with earlier VMware versions take longer to back up

QUESTION NO: 5

What is the maximum number of backup or restore jobs that VMware Data Recovery can run concurrently?

- A. 16
- B. 2
- C. 8
- D. 4

Answer: C

VMware Data Recovery Administrator's Guide, page 7.

Backing Up Virtual Machines

During a backup, Data Recovery creates a quiesced snapshot of the virtual machine. Deduplication is automatically performed with every backup operation. Data Recovery can concurrently back up a maximum of eight virtual machines. To start multiple backups, CPU utilization must be less than 90 percent.

QUESTION NO: 6

VMware Site Recovery Manager requires which of the following two VMware products as part of the solution (Choose Two)?

- A. VMware Data Recovery
- B. VMware ESX/ESXi
- C. VMware HA
- D. VMware vCenter Server

Answer: B, D

VMware vCenter Site Recovery Manager 4.0 Evaluator's Guide, page 9.

VMware vCenter Site Recovery Manager Automated Disaster Recovery.

Site Recovery Manager integrates tightly with VMware vSphere, VMware vCenter Server.

Evaluator's Guide Site Recovery Manager provides protection for the operating systems and applications encapsulated by the virtual machines running on ESX. A Site Recovery Manager server must be installed at the protected site and at the recovery site. The protected and recovery sites must each be managed by their own vCenter Server.

QUESTION NO: 7

An administrator decides to use vCenter Data Recovery to backup some key virtual machines. Which of the following describes the process needed to install vCenter Data Recovery?

- A. Download the OVF and copy it to a datastore that is visible to the managed hosts.
Right-click on the .ovf file and choose Add to Inventory
- B. Download the OVF and import it using the vSphere Client
- C. Run the vCenter installer using Custom as the choice for type of installation then follow the prompts to install the tool.
- D. Locate the folder on the vCenter media and install VDR to the vCenter Server

Answer: B

VMware Data Recovery Administration Guide Data Recovery 1.1, page 14.

To install the backup appliance, you must have vCenter Server and an ESX 4.0 or ESXi 4.0 host running in your environment.

- 1 From the vSphere Client, select File > Deploy OVF Template.
- 2 Select Deploy from file, and then browse to VmwareDataRecovery_OVF10.ovf and select it.
- 3 Review the OVF file details.
- 4 Review the End User License Agreement. If you agree to the terms, accept them.
- 5 Select a location for the backup appliance in the vSphere inventory.
- 6 Select the host or cluster to which the backup appliance is to be deployed.
- 7 Select a datastore to store the virtual machine files.
- 8 Review the IP address allocation screen.
- 9 Select a timezone setting.
- 10 Review the deployment settings and click Finish.

The backup appliance is now deployed into your environment.

QUESTION NO: 8

When backing up a virtual machine using a backup client in the Service Console, which of the following benefits are realized?

- A. Load on the ESX Server is reduced
- B. Individual virtual machine files can be easily restored
- C. Backup time is reduced since the backup occurs in the virtual Ethernet
- D. A full virtual machine restore is possible

Answer: D

QUESTION NO: 9

What is the technology VMware Data Recovery uses to back up a Windows 2003 virtual machine?

- A. Volume Shadow Copy Service
- B. Crash-consistent quiescing
- C. LGTO SYNC driver
- D. EMC Autostart Manager

Answer: A

VMware Data Recovery.

VSS support. Supports Volume Shadow Copy Service (VSS) to enable consistent backups of virtual machines running Microsoft operating systems and applications.

QUESTION NO: 10

When backing up a virtual machine using a backup server running in another virtual machine on the same ESX Server, which of the following benefits are realized?

- A. A full virtual machine restore is possible
- B. Backup time is reduced since the backup uses CPU cycles
- C. A backup window is not needed
- D. Load on the ESX Server is reduced

Answer: B**QUESTION NO: 11**

What can you do to minimize the downtime to the virtual machines (VMs) when taking an ESX Server down for maintenance?

- A. migrate the VMs to a different datastore
- B. suspend VMs to preserve state information
- C. create a clone of the VM
- D. migrate the VMs with VMotion

Answer: D

VMware VMotion Live Migration for Virtual Machines Without Service Interruption, page 1.

VMware® VMotion□ enables the live migration of running virtual machines from one physical server to another with zero downtime, continuous service availability, and complete transaction integrity.

QUESTION NO: 12

What are two characteristics of VMware Consolidated Backup? (Choose Two.)

- A. Image-level backups of virtual machines can be performed
- B. A plugin integrates the VCB UI into VirtualCenter
- C. LAN-free backups of virtual machines can be performed
- D. File-level backups of Windows and Linux virtual machines can be performed

Answer: A, C

VMware Consolidated Backup - Cost-Effectively Back Up Your Virtual Machines

File level full and incremental backup. Recover individual files and directories (for virtual machines running Microsoft® Windows operating system).

Image level backup. Recover entire virtual machine image in the event of a disaster (for virtual machines running any operating system).

VMware vSphere VMware Consolidated Backup

Eliminate backup traffic with LAN-free virtual machine backup utilizing tape devices

QUESTION NO: 13

What are three advantages of VCB over conventional agent-based methods of backing up a virtual machine's (VM's) data? (Choose three.)

- A. allows selection of files and directories from the guest file system of a Linux VM
- B. enables LAN-free backup and avoids undue overloading of the datacenter network
- C. helps to eliminate the need for a backup window by using a "hot" snapshot-based backup
- D. reduces the load on the ESX Server by moving backup tasks to a backup proxy machine
- E. makes it possible to do both file-based and full-system backup of the same VM simultaneously

Answer: B, C, D

Eliminate backup traffic from your network to improve the performance of production virtual machines.

Eliminate backup traffic with LAN-free virtual machine backup utilizing tape devices. Reduce the load on ESX Server and allow it to run more virtual machines.

VMware Consolidated Backup - Enable Non-Disruptive Backup for Virtual Machines

VMware Consolidated Backup takes a virtual machine snapshot and mounts the snapshot to the backup proxy server. As part of this process, the virtual machine is quiesced to ensure that the entire state of the virtual machine is captured at the point in time the snapshot is created

QUESTION NO: 14

What is the advantage of installing backup client software in a Linux virtual machine's guest OS?

- A. This configuration enables individual files to be selected for backup or restore.
- B. This configuration enables immediate booting from a restored virtual machine.
- C. This configuration enables LAN-free backup.
- D. This configuration enables ESX Server to do backup and restore operations.

Answer: A

QUESTION NO: 15

You are trying to decide whether to back up virtual machines (VMs) using a backup agent in each guest OS or using a backup agent in the service console. When is it most appropriate to use the guest OS strategy rather than the service console strategy to back up VMs? (Choose two.)

- A. when space for storing backups is severely limited
- B. when quick recovery of full systems is a priority
- C. when the current backup software license is per-server and is very costly
- D. when all of the VMs must operate 24 hours a day, 7 days a week

Answer: A, D

QUESTION NO: 16

What are two advantages of VCB over conventional agent-based methods of backing up a virtual machine's (VM's) data? (Choose Two.)

- A. enables LAN-free backup and avoids undue overloading of the datacenter network
- B. makes it possible to do both file-based and full-system backup of the same VM simultaneously
- C. helps to eliminate the need for a backup window by using an online, snapshot-based backup
- D. allows selection of files and directories from the guest file system of any VM

Answer: A, C

Eliminate backup traffic from your network to improve the performance of production virtual machines.

Eliminate backup traffic with LAN-free virtual machine backup utilizing tape devices.

VMware Consolidated Backup - Enable Non-Disruptive Backup for Virtual Machines

VMware Consolidated Backup takes a virtual machine snapshot and mounts the snapshot to the backup proxy server. As part of this process, the virtual machine is quiesced to ensure that the entire state of the virtual machine is captured at the point in time the snapshot is created

QUESTION NO: 17

What are two characteristics of VMware Consolidated Backup? (Choose two.)

- A. It performs file level backups for Windows virtual machines.
- B. It requires backup agents in virtual machines.
- C. It allows the use of Fibre Channel tape from agents within the virtual machines.
- D. It performs image level backups for Windows virtual machines.

Answer: A, D**VMware Consolidated Backup - Cost-Effectively Back Up Your Virtual Machines**

File level full and incremental backup. Recover individual files and directories (for virtual machines running Microsoft® Windows operating system).

Image level backup. Recover entire virtual machine image in the event of a disaster (for virtual machines running any operating system).

Topic 8, Perform Basic Troubleshooting and Alarm Management (112 questions).

Part 1: Perform Basic Troubleshooting for ESX/ESXi Hosts (17 questions).

QUESTION NO: 1

The VMKcore is used for storing core dumps for Debugging and Technical Support?

- A. True
- B. False

Answer: A

The vmkcore partition temporarily stores log and error information should the VMkernel crash.

QUESTION NO: 2

Guided consolidation shows you the following information after a successful analysis (Choose Two)?

- A. CPU Clock Speed
- B. Network Usage
- C. Hardware Profile
- D. Memory Utilization

Answer: A, D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 95

When analysis is complete, the following information appears:

- * Physical Computer - Displays the host name of the physical system being analyzed or imported.
- * CPU Info - Displays the number of CPUs and their clock speed.
- * Memory Info - Displays the amount of RAM on the system.
- * Status - Displays the progress of the analysis.
- * Confidence - Indicates the degree to which vCenter Server is able to gather performance data about the system and how good a candidate the system is based on the available data.
- * CPU Usage - Displays the system's average CPU usage over time.
- * Memory Usage - Displays the system's average memory usage over time.

QUESTION NO: 3

To restart the VMware Host Agent on an ESX Host, which command would you use?

- A. service mgmt-vmware restart
- B. service vmware-hostd restart
- C. service vmware-vpxa restart

D. service mgmt-hostd restart

Answer: A

Restarting the Management agents on an ESX or ESXi Server

To restart the management agents on ESX host:

1. Log in to your ESX Server as root from either an SSH session or directly from the console of the server.
2. Type service mgmt-vmware restart

```
[root@esx5 ~]# service mgmt-vmware start
Starting VMware ESX Management services:
VMware ESX Host Agent is already running
  Availability report startup (background) [ OK ]
[root@esx5 ~]# service mgmt-vmware restart
Stopping VMware ESX Management services:
  VMware ESX Host Agent Watchdog [ OK ]
  VMware ESX Host Agent [ OK ]
Starting VMware ESX Management services:
  VMware ESX Host Agent (background) [ OK ]
  Availability report startup (background) [ OK ]
```

QUESTION NO: 4

What is a function of the vmmemctl driver?

- A. enables swapping of the virtual machines
- B. allows the operation of unsupported guest OS types
- C. enables transparent page sharing
- D. reclaims unused memory from the guest OS

Answer: D

The vmmemctl driver collaborates with the server to reclaim pages that are considered least valuable by the guest operating system.

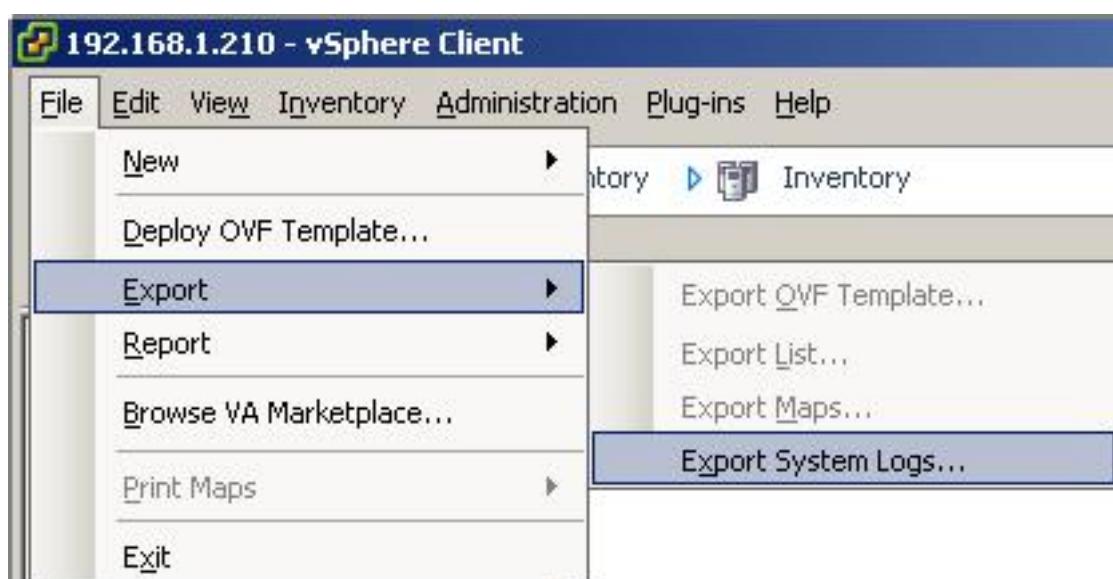
QUESTION NO: 5

An Administrator is troubleshooting an ESX 4.x Host and needs to export diagnostic information. The ESX Host is not managed by a vCenter Server. How can the information be gathered using the vSphere Client?

- A. The vSphere Client can only be used to export diagnostic data from an ESX Host managed by vCenter
- B. From the Administration navigation, select System Logs, then click the Export System Logs. Select The ESX Host and click OK
- C. From the Administration Drop-Down Menu, select Export Diagnostic Data, select a location and click OK
- D. From the vSphere Client, click File, Export and Export System Logs, select a location and click OK

Answer: D

See below.





QUESTION NO: 6

Which of the following resources can be viewed using the vCenter Maps
(Choose Two)?

- A. HA Resources
- B. Network Resources
- C. Datastore Resources
- D. Host Resources

Answer: C, D

vSphere Client Online Help

The Map Relationships panel contains the following views:

Virtual Machine Resources - Shows relationships between the virtual machines on a host and networks or datastores, depending on the options selected.

Host Resources - Shows relationships between the host and virtual machines, networks or datastores, depending on the options selected.

Datastore Resources - Shows relationships between the datastore and host or virtual machine, depending on the options selected.

Custom Map - Lets you select any combination of relationships other than the host-oriented and virtual machine-oriented options. The Custom Map option is preset with all relationships selected.

QUESTION NO: 7

By default, if you remove a user from an Active Directory domain who is currently logged in to vCenter Server, which of the following actions is taken?

- A. The user is given a warning they are about to be logged out and given a 1 hour grace period
- B. The user can remain logged in indefinitely, but once they log out they cannot log back in
- C. The user can remain logged in for up to 24 hours
- D. The user is logged out of vCenter Server and cannot log back in

Answer: C

QUESTION NO: 8

If you cannot connect to a standalone ESX Host with the vSphere client, which command would you use to verify that the VMware Host Agent is running (Choose Two)?

- A. vmware -v
- B. ps -ef | grep hostd
- C. service mgmt-vmware status
- D. esxcfg-info

Answer: B, C

Vmware-hostd is the VMware Host Agent.

The screenshots below shows ps -ef | grep hostd being used to confirm the VMware Host Agent is running;

```
[root@esx5 ~]# ps -ef | grep hostd
root      21121      1  0 Jan11  tty1      00:00:00 /bin/sh /usr/bin/vmware-watchdog
-s hostd -u 68 -q 5 -c /usr/sbin/vmware-hostd-support /usr/sbin/vmware-hostd /etc/vmware/hostd/config.xml -u
root      21128  21121  0 Jan11 ?      00:23:19 /usr/lib/vmware/bin/vmware-hostd
/etc/vmware/hostd/config.xml -u
```

and service mgmt-vmware status used to show the status of the VMware Host Agent daemon.

```
[root@esx5 ~]# service Mgmt-VMware status
VMware-hostd (pid 21128) is running...
[root@esx5 ~]# _
```

QUESTION NO: 9

In order to reach the BIOS of a Virtual Machine (Choose Two)?

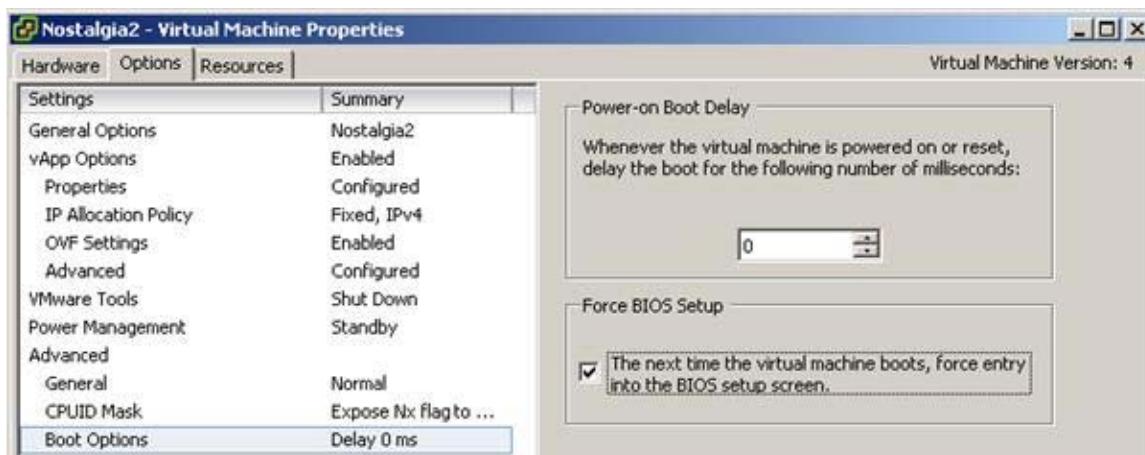
- A. The System Administration can power on the Virtual Machine and press F2 as the VM starts up
- B. The System Administrator can edit the .vmx settings for the Virtual Machine
- C. The System Administrator can manually edit the .NVRAM file in the Virtual Machine's home directory
- D. The System Administrator can force the Virtual Machine to boot into the BIOS by changing a Virtual Machine property

Answer: A, D

Power on the Virtual Machine and press F2 as the VM starts up



Configuring the Virtual Machine to boot into the BIOS by changing a Virtual Machine property.



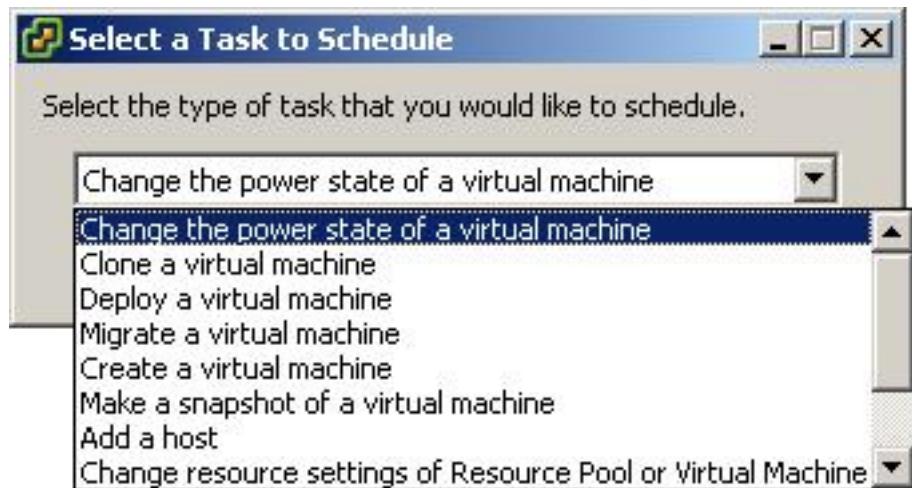
QUESTION NO: 10

Using the vSphere Client, which of the following actions can be scheduled through the New Task Wizard (Choose Two)?

- A. Create a snapshot of a virtual machine
- B. Enter Maintenance Mode
- C. Add a host
- D. Change the power state of a host

Answer: A, C

See below



QUESTION NO: 11

In the vSphere Client the Virtual Machine Resource Allocation tab shows Host Memory and Guest Memory.

What is the meaning of these terms? (Choose two)

- A. Host memory is the actual memory usage of the Virtual Machine.
- B. Guest Memory is the actual memory usage of the Virtual Machine
- C. Host memory is the amount of physical memory that has been allocated to a Virtual Machine
- D. Guest Memory is amount of physical memory that has been allocated to a Virtual Machine

Answer: A, D

vSphere Help

Host Memory

This section displays information about host memory usage. [A above]

Table 36. Host Memory Usage

Label	Description
Consumed	Actual consumption of physical memory that has been allocated to the virtual machine.
Overhead Consumption	Amount of consumed memory being used for virtualization purposes

Host memory therefore refers to the current usage of memory rather than the current allocation,

Guest Memory

This section displays information about guest memory usage. [B above].

Table 37. Guest Memory Usage

Label	Description
Private	Amount of memory backed by host memory and not being shared.
Shared	Amount of memory being shared.
Swapped	Amount of memory reclaimed by swapping.
Ballooned	Amount of memory reclaimed by ballooning.
Unaccessed	Amount of memory never referenced by the guest.

QUESTION NO: 12

An administrator wants to apply Disk Shares to ensure proper storage performance. These shares are configured on which object?

- A. Resource Pool

- B. Storage Adapter
- C. Virtual Machine
- D. Datastore

Answer: C

The screenshot below shows Disk configured on a Virtual Machine



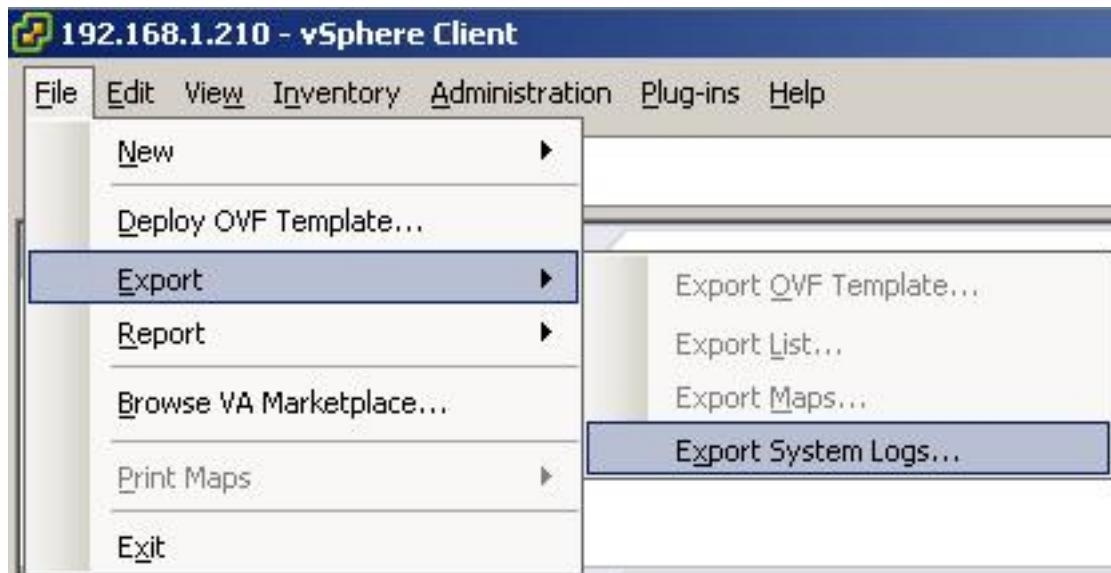
QUESTION NO: 13

An ESX Administrator is troubleshooting an ESX 4.0 Server and needs to export diagnostic information. The ESX Server is not connected to vCenter. How can the information be gathered using the vSphere Client?

- A. Click, File, Export and Export Diagnostic Data, select a location and click OK.
- B. From the Administration Drop-Down Menu, select Export Diagnostic Data, select a location and click OK.
- C. Click the Administration Button, select System Logs, then click the Export Events button. Select the ESX Server and click OK.
- D. The vSphere Client can only be used to export diagnostic data from an ESX Server attached to VirtualCenter.
- E. Click, File, Export and Export System Logs, select a location and click OK.

Answer: E

The screenshot below shows diagnostic information can be exported.



QUESTION NO: 14

Under which circumstance will a virtual machine always fail to power on?

- A. when there is no free space in VMFS
- B. when the virtual machine's reservation cannot be guaranteed
- C. when the host's license server became inaccessible 24 hours ago
- D. when the virtual machine's memory is configured at greater than 3.6 GB

Answer: B

Resource Management Guide : Resource Management Jumpstart : Understanding Virtual Machine Resource Allocation : Virtual Machine Attributes: Shares, Reservation, and Limit

Reservation specifies the guaranteed reservation for a virtual machine. The server allows you to power on a virtual machine only if the CPU and memory reservation is available

QUESTION NO: 15

A new LUN has been presented to ESX Servers A and B. A new VMFS-3 volume is created on the LUN using a vSphere client attached to ESX Server A. The new datastore is visible on ESX Server A, but not on ESX Server B. What steps must be taken to make the datastore visible to ESX Server B?

- A. reboot ESX Server B
- B. perform LUN masking on ESX Server B

- C. perform a Rescan operation on ESX Server B
- D. repeat the steps taken on ESX Server A on ESX Server B

Answer: C

iSCSI SAN Configuration Guide, page 26.

The VMkernel discovers LUNs when it boots, and those LUNs are then visible in the vSphere Client. If changes are made to the LUNs, you must rescan to see those changes.

- * New LUNs created on the iSCSI storage
- * Changes to LUN access control
- * Changes in connectivity

QUESTION NO: 16

If a virtual machine (VM) experiences a monitor panic, where does the ESX Server core dump file get created?

- A. in the core dump partition, if created
- B. in the /home partition
- C. in the same directory as the VM's .vmx file
- D. in the local VMFS volume

Answer: C

QUESTION NO: 17

Which problem is MOST likely to be due to bad physical memory?

- A. VMkernel panics
- B. slow performance
- C. errors on virtual machines' virtual SCSI buses
- D. virtual machines not starting

Answer: A

Part 2: Perform Basic Troubleshooting for VMware FT and Third-Party Clusters (6 questions).

QUESTION NO: 1

SMP is supported on FT protected machines?

- A. True
- B. False

Answer: B

Mastering VMWare vSphere 4, page 494

VMware FT currently supports only those VMs with one vCPU. SMP and multiprocessor VMs are not supported.

QUESTION NO: 2

Fault Tolerance supports thin provisioned disks?

- A. False
- B. True

Answer: A

VMware vSphere 4 Evaluator's Guide, page 43.

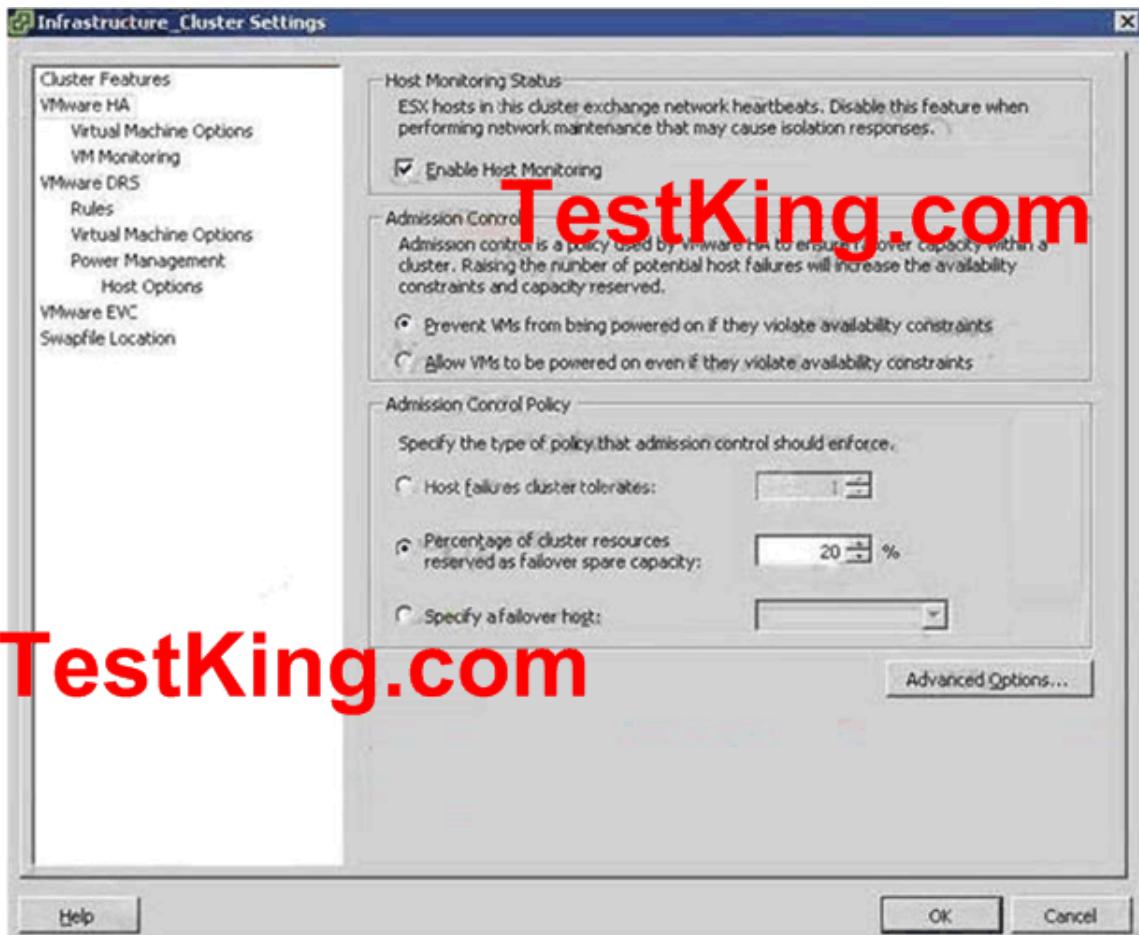
Step 1: Turn on VMware Fault Tolerance for a virtual machine

1. Once your cluster is enabled with VMware HA, you can protect any virtual machine with VMware FT, given that the following prerequisites are met:

1. The ESX host must have an FT-enabled CPU. For details please refer to <http://kb.vmware.com/kb/1008027>.
2. Hosts must be running the same build of ESX.
3. Hosts must be connected via a dedicated FT logging NIC of at least 1 Gbps.
4. Virtual machine being protected must have a single vCPU.
5. Virtual machine's virtual disk must be thick provisioned

QUESTION NO: 3

Exhibit:



The information shown in the exhibit must be configured to support which cluster feature?

- A. DRS
- B. DPM

- C. EVC
- D. HA

Answer: D

The dialog below shows the affect of enabling Vmware HA.



The dialog below shows the VMware HA, (cluster feature) configuration dialog.



QUESTION NO: 4

Which of the following occurs if VMware Fault Tolerance is enabled for a virtual machine in a DRS/HA cluster, but Host Monitoring is not enabled for VMware HA?

- A. If the primary FT VM fails, the secondary FT VM does not take over
- B. Memory reservations for the FT VM cannot be upheld and there might not be sufficient resources to restore redundancy if an HA event occurs
- C. If the primary FT VM fails, a new secondary FT VM is not created and the VM is no longer redundant
- D. Anti-affinity rules for the FT VM cannot be upheld and both the primary and secondary FT VM could reside on the same host

Answer: C

QUESTION NO: 5

Thanks to Anti-affinity rules, VMware Fault Tolerant virtual machines are?

- A. Never located within the same cluster
- B. Sometimes located on the same host, but only in a powered off state
- C. Never located on the same host
- D. Sometimes located on the same host if an HA event occurs

Answer: B

QUESTION NO: 6

While verifying host connectivity to datastores using Topology Maps, you see that one of the hosts in a DRS/HA Cluster has a red X.

What does this indicate?

- A. The host cannot access the selected datastore
- B. The host cannot be contacted to update the Topology Map
- C. The host is not compatible for VMotion migration
- D. The host has failed as part of an HA event

Answer: C

Part 3: Perform Basic Troubleshooting for Networking (17 questions).

QUESTION NO: 1

Host certificate checking is enabled by default and SSL certificates are used to encrypt network traffic.

- A. False
- B. True

Answer: B

ESX Configuration Guide, ESX 4.0, vCenter Server 4.0, page 172.

Host certificate checking is enabled by default and SSL certificates are used to encrypt network traffic.

QUESTION NO: 2

Which of the following commands can be used to display information about virtual switches?

- A. ifconfig
- B. esxcfg-info
- C. vmware-info
- D. esxcfg-vswitch

Answer: B, D

Explanation:

One of the first things you can do is inspect the current virtual switch configuration. This is done with the following command:

esxcfg-vswitch -l

QUESTION NO: 3

A network administrator has asked you to enable NetQueue to improve networking performance for virtual machines on an ESX Host. Where is this feature enabled (Choose Two)?

- A. On the virtual NIC in the virtual machine
- B. On the Properties tab for the virtual switch
- C. On the physical network adapter driver
- D. In the Advanced Settings for the VMkernel

Answer: C, D

Enabling Support for NetQueue on the Intel 82598 10 Gigabit Ethernet Controller

To enable VMDq:

1. Enable NetQueue in VMkernel using VI3 Client.

a. Choose Configuration > Advanced Settings > VMkernel.

b. Select the checkbox for VMkernel.Boot.netNetqueueEnabled.

2. Enable the ixgbe module in the service console of the ESX Server host:

```
# esxcfg-module -e ixgbe
```

3. Set the required NetQueue options for the ixgbe module:

For a single port and the maximum number of receive queues, use the command:

```
# esxcfg-module -s "InterruptType=2 VMDQ=16" ixgbe
```

For two ports, add the values in a comma-separated list for each parameter as shown in the following example:

```
# esxcfg-module -s "InterruptType=2,2 VMDQ=16,16" ixgbe
```

QUESTION NO: 4

By default, VMware supports the following Path Selection Policies (Choose Three)?

- A. Least I/O
- B. Least Busy
- C. Fixed
- D. MRU (Most recently used)
- E. Round Robin

Answer: C, D, E

A "Multivendor Post" on using iSCSI with VMware vSphere

When it comes to path selection, bandwidth aggregation and link resiliency in vSphere, customers have the option to use one of VMware's Native Multipathing (NMP) Path Selection Policies (PSP), 3rd party PSPs, or 3rd party Multipathing Plug-ins (MPP) such as PowerPath V/E from EMC.

VMware ships with a set of native SATPs, and 3 PSPs: Fixed, Most Recently Used (MRU), & Round Robin (RR). Fixed and MRU options were available in VI3.x and should be familiar to readers. Round Robin was experimental in VI3.5, and is supported for production use in vSphere (all versions)

QUESTION NO: 5

Which type of virtual NIC must be used for a 32 bit Windows Server 2003 server in an MSCS cluster?

- A. Flexible
- B. vmxnet
- C. e1000
- D. pro1000

Answer: C

QUESTION NO: 6

Which of the following network drivers is only supported with Virtual Machine version 7?

- A. E1000
- B. vmxnet3
- C. Enhanced vmxnet
- D. Flexible

Answer: B

VMXNET 3 is supported only for virtual machines version 7 and later

QUESTION NO: 7

In vSphere, a bound physical NIC can be configured to transmit and receive Jumbo Frames. What is the Maximum Transmission Unit (MTU) for Jumbo Frames in vSphere?

- A. 5000
- B. 9000
- C. 9500
- D. 5500

Answer: B

ESX Configuration Guide ESX 4.0 vCenter Server 4.0, page 58.

Jumbo frames allow ESX to send larger frames out onto the physical network. The network must support jumbo frames end-to-end. Jumbo frames up to 9kB (9000 bytes) are supported.

QUESTION NO: 8

When an explicit failover order has not been configured on a virtual switch with multiple uplinks, what determines which uplink is used when a failover event occurs?

- A. The uplink with the shortest route
- B. The next available uplink on the list
- C. The reported uptime for the surviving uplinks
- D. The first available uplink that reports a positive Link State

Answer: C

Networking Virtual Machines Jon Hall Technical Trainer, VMWORLD 2006, slide 27.

Failover is implemented by the VMkernel based upon configurable parameters

1. Failover order: Explicit list of preferred links (uses highest-priority link which is up)
2. 1. Maintains load balancing configuration
2. Good if using a lower bandwidth standby NIC
3. Rolling failover -- preferred uplink list sorted by uptime [C above]

The uplink with the shortest route - all uplinks are on the same network and so have the same route [A is incorrect]

The next available uplink on the list has not been defined if explicit failover order is not selected [B is incorrect]

QUESTION NO: 9

Which of the following resource management techniques could be used to relieve a network bottleneck caused by a VM with occasional high outbound network activity?

- A. apply traffic shaping to the port group containing the virtual machine
- B. apply traffic shaping to the other VMs in the same port group
- C. apply traffic shaping to the VM with high activity
- D. convert the switch from a vNetwork Standard Switch to a vNetwork Distributed Switch

Answer: A

Edit the Traffic Shaping Policy for a Virtual Switch - Vcenter Help

ESX/ESXi allows you to shape outbound traffic on virtual switches. The traffic shaper restricts the network bandwidth available to any port, but may also be configured to temporarily allow "bursts" of traffic to flow through a port at higher speeds.

Procedure

- 1 Log in to the vSphere Client and select the server from the inventory panel.
- 2 Click the Configuration tab and click Networking.
- 3 Select a vSwitch and click Properties.
- 4 Click the Ports tab.
- 5 Select the vSwitch and click Edit.
- 6 Click the Traffic Shaping tab.
- 7 Select Enabled from the Status drop-down menu to enable traffic shaping policy exceptions.
The Status policy here is applied to each virtual adapter attached to the port group, not to the vSwitch as a whole. If you enable the policy exception in the Status field, you set limits on the amount of networking bandwidth allocation for each virtual adapter associated with this particular port group. If you disable the policy, services have a clear connection to the physical network by default.
- 8 For each traffic shaping policy, enter a bandwidth value.

QUESTION NO: 10

The remote console performance for a virtual machine on an ESXi Host appears to be degraded. Which of the following could be a possible cause of the problem (Choose Two)?

- A. The physical NIC assigned to the VMkernel port group has a speed or duplex mismatch
- B. The virtual NIC assigned to the virtual machine has a speed or duplex mismatch
- C. The physical NIC assigned to the virtual machine port group containing the affected virtual machine has a speed or duplex mismatch
- D. The physical NIC assigned to the Service Console port group has a speed or duplex mismatch

Answer: A, C

QUESTION NO: 11

An administrator needs to determine the current network adapter configuration for an uplink on an ESX Host. Which of the following items can be viewed from the Network Adapters section of the Configuration tab using the vSphere Client (Choose Three)?

- A. Jumbo Frame support
- B. Wake on LAN support
- C. Observed IP ranges
- D. Speed and Duplex settings
- E. TCP Segmentation Offload (TSO) support

Answer: B, C, D

The screenshot below shows Speed and Duplex settings, Observed IP ranges and Wake on LAN support items.

The screenshot shows the VMware ESXi 4.0.0 configuration interface under the 'Configuration' tab. On the left, there's a navigation tree under 'Hardware' with options like Processors, Memory, Storage, Networking, and Network Adapters selected. The main pane displays 'Network Adapters' settings for an '82545EM Gigabit Ethernet Controller (Copper)' card. It lists four virtual NICs (vmnic3, vmnic2, vmnic1, vmnic0) with their respective speeds (1000 Full), configurations (Configured: 1000 Full), switches (dvSwitch or vSwitch0), MAC addresses, observed IP ranges (e.g., 86.142.243.180-86.142.243.180), and Wake on LAN support status (No). The 'Wake on LAN Supported' column shows 'No' for all four entries.

Device	Speed	Configured	Switch	MAC Address	Observed IP ranges	Wake on LAN Supported
82545EM Gigabit Ethernet Controller (Copper)						
vmnic3	1000 Full	1000 Full	dvSwitch	00:0c:29:de:a0:16	86.142.243.180-86.142.243.180	No
vmnic2	1000 Full	1000 Full	dvSwitch	00:0c:29:de:a0:0c	86.142.243.180-86.142.243.180	No
vmnic1	1000 Full	1000 Full	vSwitch0	00:0c:29:de:a0:02	86.142.243.180-86.142.243.180	No
vmnic0	1000 Full	1000 Full	vSwitch0	00:0c:29:de:a0:f8	86.142.243.180-86.142.243.180	No

QUESTION NO: 12

Beacon Probing is used in vSphere networking to?

- A. identify which uplink has the longest reported uptime
- B. discover alternate default gateway addresses
- C. identify when an upstream link failure has occurred
- D. discover which uplink has the shortest route

Answer: C

VMware Knowledgebase KB 1005577

What is beacon probing? When is it recommended to be used?

Beacon Probing is a network failover detection mechanism that sends out and listens for beacon probes on all NICs in the team and uses this information, in addition to link status, to determine link failure.

QUESTION NO: 13

VMware Converter Enterprise requires the following TCP ports to be open:

- A. 139, 902, 905
- B. 139, 443, 902
- C. 139, 443, 445
- D. 443, 902, 905

Answer: C

Required Ports

Converter Enterprise for VirtualCenter (plugin)

- * Converter Enterprise Server to remote physical machine - TCP 445, 139 and UDP 137, 138
- * Converter Enterprise Server to VirtualCenter Server - 443
- * Converter Enterprise Client to Converter Enterprise Server - 443
- * Physical machine to VirtualCenter Server - 443
- * Physical machine to ESX Server - 443, 902

QUESTION NO: 14

Exhibit:



Which statement is true about the network performance of the virtual machine (VM) shown in the exhibit?

- A. Virtual Switch auto-negotiation settings need to be adjusted to improve performance.
- B. The VM can send traffic as fast as the underlying physical NIC.
- C. The underlying physical NIC is configured for 100 Mbps/half-duplex.
- D. The VM can send at the maximum of 10 Mbps.

Answer: B

QUESTION NO: 15

What are the two possible storage multipathing policies that you can set on an ESX Server 3.0? (Choose two.)

- A. Most Recently Used (MRU)
- B. Open Shortest Path First (OSPF)
- C. Persistent Binding
- D. Fixed
- E. Dynamic Load Balancing

Answer: A, D

Fibre Channel SAN Configuration Guide ESX Server 3.5, ESX Server 3i version 3.5 VirtualCenter 2.5, page 42.

You can choose a multipathing policy for your system, either Fixed or Most Recently Used

QUESTION NO: 16

You want to troubleshoot poor remote console performance. Which is a possible cause of the problem?

- A. The physical NIC assigned to the virtual machine port group has a speed or duplex mismatch.
- B. The virtual machine has an IP address conflict.
- C. To conserve memory, the ESX Server has initiated Transparent Page Sharing.
- D. The virtual NIC assigned to the virtual machine has a speed or duplex mismatch.

Answer: A**QUESTION NO: 17**

You are experiencing traffic overload on an Uplink network adapter. Which three actions can be taken to reduce the overload? (Choose three.)

- A. move virtual machines to other vSwitches to reduce contention
- B. add NIC teaming to increase the available bandwidth
- C. add the VMkernel TCP/IP networking stack to improve performance
- D. move virtual machines to other VLAN port groups on the same vSwitch
- E. configure traffic shaping to reduce contention

Answer: A, B, E

Part 4: Perform Basic Troubleshooting for Storage (10 questions).

QUESTION NO: 1

An administrator is configuring software iSCSI multipathing. Which of the following is the minimum required configuration for Round Robin multipathing?

- A. Configure 2 VMkernel ports. Bind each port to a different uplink on the same virtual switch. Choose the Round Robin Path Selection Plugin (PSP)
- B. Configure 2 VMkernel ports. Connect each port to a unique virtual switch with uplinks on separate subnets. Choose the Round Robin Path Selection Plugin (PSP)
- C. Configure 1 VMkernel port. Bind the port to multiple uplinks on the same virtual switch. Choose the Round Robin Path Selection Plugin (PSP)
- D. Configure 1 VMkernel port. Connect the port to a switch with multiple uplinks. Choose the Round Robin Path Selection Plugin (PSP)

Answer: A

A "Multivendor Post" on using iSCSI with VMware vSphere

So - setup in 4 easy steps:

Step 1 - configure multiple vmkNICs

Ok, the first obvious (but we're not making any assumptions) is that you will need to configure multiple physical Ethernet interfaces, and multiple vmkernel NIC (vmkNIC) ports.

Step 2 - configure explicit vmkNIC-to-vmNIC binding.

To make sure the vmkNICs used by the iSCSI initiator are actual paths to storage, ESX configuration requires the vmkNIC is connected to a portgroup that only has one active uplink and no standby uplinks. This way, if the uplink is unavailable, the storage path is down and the storage multipathing code can choose a different path.

Step 3 - configuring the iSCSI initiator to use the multiple vmkNICs

Then the final step requires command line configuration. This step is where you assign, or bind, the vmkNICs to the ESX iSCSI initiator. Once the vmkNICs are assigned, the iSCSI initiator uses these specific vmkNICs as outbound ports, rather than the vmkernel routing table.

Step 4 - Enabling Multipathing via the Pluggable Storage Architecture

VMware ships with a set of native SATPs, and 3 PSPs: Fixed, Most Recently Used (MRU), & Round Robin (RR). Fixed and MRU options were available in VI3.x and should be familiar to readers. Round Robin was experimental in VI3.5, and is supported for production use in vSphere (all versions)

Configuring NMP to use a specific PSP (such as Round Robin) is simple and easy. You can do it in the vSphere Client under configuration, storage adapter, select the devices, and right click for properties.

QUESTION NO: 2

Which of the following are default displayed fields when viewing a report for a VMFS Datastore in the Storage Views tab (Choose Two)?

- A. Swap Space
- B. Multipathing Redundancy for VM
- C. Space Used
- D. Virtual Disk Space

Answer: B, C

See below

The screenshot shows the VMware ESX 4.0.0 interface with the title bar "192.168.1.210 VMware ESX, 4.0.0, 171294". The top navigation bar includes links for Summary, Virtual Machines, Resource Allocation, Performance, Configuration, Tasks & Events, Alarms, Permissions, Maps, and Storage View. The "Storage View" link is highlighted. Below the navigation is a toolbar with "View: Reports" selected and "Maps". The status bar indicates "Last Update Time: 17/01/2010 11:23:22" and "Update...". A search bar for "VM or Multipathing Status contains:" is present. The main content area displays a table for a VMFS Datastore named "Nostalgia2". The table has columns: VM, Multipathing Status, Space Used, Snapshot Space, and Disks. The data row shows: Nostalgia2, Partial/No Redundancy, 102.40 MB, 0.00 B, and 1 disk.

VM	Multipathing Status	Space Used	Snapshot Space	Disks
Nostalgia2	Partial/No Redundancy	102.40 MB	0.00 B	1

QUESTION NO: 3

An administrator is updating a program running on a virtual machine. The update file has been downloaded as an .iso file and placed on a shared NFS datastore. An attempt to mount the .iso to the virtual machine fails, but subsequent testing shows that the .iso can be mounted to a VM running on another ESX Host. Which of the following steps should be taken to enable access to the .iso for the affected VM?

- A. Remount the NFS volume to the ESX server running the affected VM
- B. Rescan all datastores
- C. Reboot the ESX Server running the affected VM
- D. Reboot the NFS Server

Answer: A

QUESTION NO: 4

Which of the following types of datastores can be unmounted? (Choose Two)?

- A. Only NFS datastores configured as Read Only
- B. VMFS datastore copies mounted with resignaturing
- C. VMFS datastore copies mounted without resignaturing
- D. Any NFS datastore

Answer: C, D

QUESTION NO: 5

What is the maximum number of LUNs that can be assigned per ESX Host?

- A. 255
- B. 128
- C. 127
- D. 256

Answer: D

Configuration Maximums VMware® vSphere 4.0 and vSphere 4.0 Update 1, page 4.

Table 2. Storage Maximums

Fibre Channel

* LUNs per host 256

QUESTION NO: 6

Which of these factors indicates a high likelihood that the performance of a virtual machine is being constrained by disk I/O?

- A. A large number of kilobytes read and written
- B. A large number of virtual disks on its SCSI bus
- C. A large number of disk shares
- D. A long SCSI queue length

Answer: D

QUESTION NO: 7

When you delete a VMFS datastore from an ESX Host, which of the following occurs?

- A. all hosts that were configured to use the datastore will no longer see the datastore, but it will remain on the storage device and can be remounted as needed
- B. only hosts in the same DRS/HA cluster no longer see the datastore, but it will remain on the storage device and can be remounted as needed
- C. all hosts that were configured to use the datastore will no longer see the datastore and it is deleted from the storage device
- D. the datastore will no longer be available to the host that it was deleted from, but all other hosts that were configured to use the datastore will remain connected

Answer: C

QUESTION NO: 8

An administrator is reporting slow access to datastores from multiple ESX Hosts. The datastores are all FC SAN on ESX 3.x and ESX 4 Hosts. Which of the following two actions can be taken to improve performance (Choose Two)?

- A. Unload the LUN Masking driver using the vmkload_mod -u qla2300
- B. Unload the FSAUX driver using the vmkload_mod -u fsaux
- C. Unload the NFS driver using the vmkload_mod -u nfsclient
- D. Unload the VMFS-2 driver using the vmkload_mod -u vmfs2

Answer: C, D

QUESTION NO: 9

Which of these factors indicates a high likelihood that a virtual machine's performance is being constrained by disk I/O?

- A. A long SCSI queue length
- B. A large number of virtual disks on its SCSI bus
- C. A large number of kilobytes read and written
- D. A large number of disk shares

Answer: A

QUESTION NO: 10

What are the three possible storage multi-pathing policies that you can set in ESX Server? (Choose Three.)

- A. Persistent Binding
- B. Most Recently Used (MRU)
- C. Open Shortest Path First (OSPF)
- D. Round Robin
- E. Fixed

Answer: B, D, E

Fibre Channel SAN Configuration Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 62.

By default, VMware supports the following path selection policies. If you have a third-party PSP installed on your host, its policy also appears on the list.

1. Fixed (VMware) The host always uses the preferred path to the disk when that path is available. If the host cannot access the disk through the preferred path, it tries the alternative paths. The default policy for active-active storage devices is Fixed.
2. Most Recently Used (VMware) The host uses a path to the disk until the path becomes unavailable. When the path becomes unavailable, the host selects one of the alternative paths. 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 active-passive storage devices and is required for those devices.
3. Round Robin (VMware) The host uses an automatic path selection algorithm rotating through all available paths. This implements load balancing across all the available physical paths. Load balancing is the process of spreading server I/O requests across all available host paths. The goal is to optimize performance in terms of throughput (I/O per second, megabytes per second, or response times).

Part 5: Perform Basic Troubleshooting for HA/DRS and VMotion (36 questions).

QUESTION NO: 1

A VM using VMDirectPath I/O cannot be VMotioned?

- A. False
- B. True

Answer: B

VMDirectPath I/O for virtual machines. Enhance CPU efficiency for applications that require frequent access to I/O devices by allowing select virtual machines to directly access underlying hardware devices. Other virtualization features, such as VMware VMotion[□], hardware independence and sharing of physical I/O devices will not be available to the virtual machines using this feature

QUESTION NO: 2

What is the meaning of a red, or critical, indicator on a DRS cluster?

- A. At least one host in the cluster is attempting to go into Maintenance Mode
- B. Yellow clusters will become red after 15 minutes if DRS is unable to dynamically balance the load
- C. Red clusters indicate virtual machines are using more resources than the fixed reservation allows
- D. Red clusters are the highest priority and will receive resource allocations first

Answer: C

Red DRS Cluster

A cluster enabled for DRS becomes red when the tree is no longer internally consistent and does not have enough resources available. For example, a DRS cluster turns red if the virtual machines in a fixed resource pool use more resources than the Reservation of that resource pool allows.

QUESTION NO: 3

Raw Device Mapping using Physical Compatibility Mode is supported with which of the following vSphere features (Choose Two)?

- A. Virtual Machine Snapshots
- B. High Availability (HA)
- C. VMotion
- D. Cloning

Answer: B,C

Mastering VMware vSphere 4, page 270-1.

Physical compatibility mode (pRDM)

The inability to take a native Vmware snapshot of a pRDM also means that features that depend on Vmware snapshots (the vStorage API's for Data Protection, Vmware Data Recovery, and Storage vMotion) don't work with pRDMS.

VMware -Raw Device Mapping (RDM)

With Physical compatibility mode you VM can access LUN directly. This is generally used from the application inside VM wants to directly access LUN. However using physical compatibility mode you lose the option to clone a VM, make it a template and migration when it involves moving disks.

QUESTION NO: 4

Which of the following conditions could prevent HA from powering on a virtual machine (Choose Two)?

- A. The VM has a low priority setting
- B. Strict admission control is configured
- C. The target host is not compatible with the virtual machine
- D. The VM is connected to the ESX Host CD-ROM drive

Answer: A, B

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 13.

Admission control imposes constraints on resource usage and any action that would violate these constraints is not permitted. Examples of actions that could be disallowed include:

Powering on a virtual machine.

Migrating a virtual machine onto a host or into a cluster or resource pool.

Increasing the CPU or memory reservation of a virtual machine.

Admission Control

Admission control is a policy used by VMware HA to ensure failover capacity within a cluster. Raising the number of potential host failures will increase the availability constraints and capacity reserved.

- Prevent VMs from being powered on if they violate availability constraints
- Allow VMs to be powered on even if they violate availability constraints

VM restart priority determines the relative order in which virtual machines are restarted after a host failure. Such virtual machines are restarted sequentially on new hosts, with the highest priority virtual machines first and continuing to those with lower priority until all virtual machines are restarted or no more cluster resources are available.

QUESTION NO: 5

It appears that a virtual machine (VM) in a DRS Cluster is having performance problems because it does not have enough CPU resources available.

Which of the following methods could be used to improve performance and reduce CPU contention of this VM while maintaining compatibility with DRS (Choose Two)?

- A. increase CPU shares for this VM to High
- B. set the CPU reservation for this VM to the Average CPU Utilization and the CPU limit for this VM to Peak CPU Utilization
- C. set CPU affinity on the VM
- D. set the CPU reservation for this VM to 100%

Answer: A, B

Assume the VMs CPU usage on the host looks like this currently

Assume the cluster has 4000 GHz total CPU available, and that currently the VM has 1000 MHz reserved to it, and peaks at 2000 MHz.

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 155.

The values Low, Normal, High, and Custom are compared to the sum of all shares of all virtual machines on the server. Therefore if you increase CPU shares for this VM to High, it will gain proportionally more resources, improve performance and reduce CPU contention. Therefore A is correct.

If you set the CPU reservation for this VM to the Average CPU Utilization, (which will be a value between 1000 MHz and 2000 MHz) and the CPU limit for this VM to Peak CPU Utilization 2000 MHz. This will cause the VM to gain additional resources, and should improve performance. Therefore B is correct.

Affinity rules

In general, don't specify affinity rules unless you have specific reasons to do so. This will give DRS the maximum flexibility to consider all options for resource management and hence enable the most efficient resource placement. Setting CPU affinity will not increase available resources. Therefore C is incorrect.

Resource Management and DRS Best Practices

The following guidelines can help you achieve optimal performance for your virtual machines:

When specifying the reservations for virtual machines, always leave some headroom; do not commit all resources. As you move closer to fully reserving all capacity in the system, it becomes increasingly difficult to make changes to reservations and to the resource pool hierarchy without violating admission control. In a DRS-enabled cluster, reservations that fully commit the capacity of the cluster or of individual hosts in the cluster can prevent DRS from migrating virtual machines between hosts. Therefore D is incorrect.

QUESTION NO: 6

A virtual machine has been created with a guest OS virtual disk in one datastore and a data virtual disk in another datastore. Snapshots are being used on the virtual machine. Under which of the following conditions can the virtual machine be successfully migrated (Choose Two)?

- A. When using Cold Migration to move between AMD and Intel CPUs
- B. When using Cold Migration to move the Virtual Machine to a different datastore(s)
- C. When using Storage VMotion
- D. When using VMotion migration

Answer: A, B

When using Cold Migration, migration between AMD and Intel CPUs is allowed - so A is correct

When using Cold Migration, migration between change of datastore is allowed - so B is correct

Comparison of Migration Types

Slide 7-93

Migration type	Power state	Change host/ datastore ?	Across datacenters ?	Shared storage required?	CPU compatibility?
Cold	Off	Host or datastore or both	Yes	No	Different CPU families allowed
Suspended VM	Suspended	Host or datastore or both	Yes	No	Must meet CPU compatibility requirements
VMotion	On	Host	No	Yes	Must meet CPU compatibility requirements
Storage VMotion	On	Datastore	No	No	N/A

When using VMotion migration VMs with snapshots cannot be migrated - so D is incorrect

Storage VMotion Guidelines and Limitations

Slide 7-98

Guidelines:

- > Spend time planning and coordinating with administrators.
- > Perform during off-peak hours.
- > Ensure that source host has access both to source and target datastores.

Limitations:

- > Virtual machines with snapshots cannot be migrated.
- > The virtual machine must be powered off to concurrently migrate to another host and datastore.
- > Up to four concurrent Storage VMotion migrations can occur.

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 196

Storage VMotion Requirements and Limitations

A virtual machine and its host must meet resource and configuration requirements for the virtual machine disks to be migrated with Storage VMotion.

Storage VMotion is subject to the following requirements and limitations:

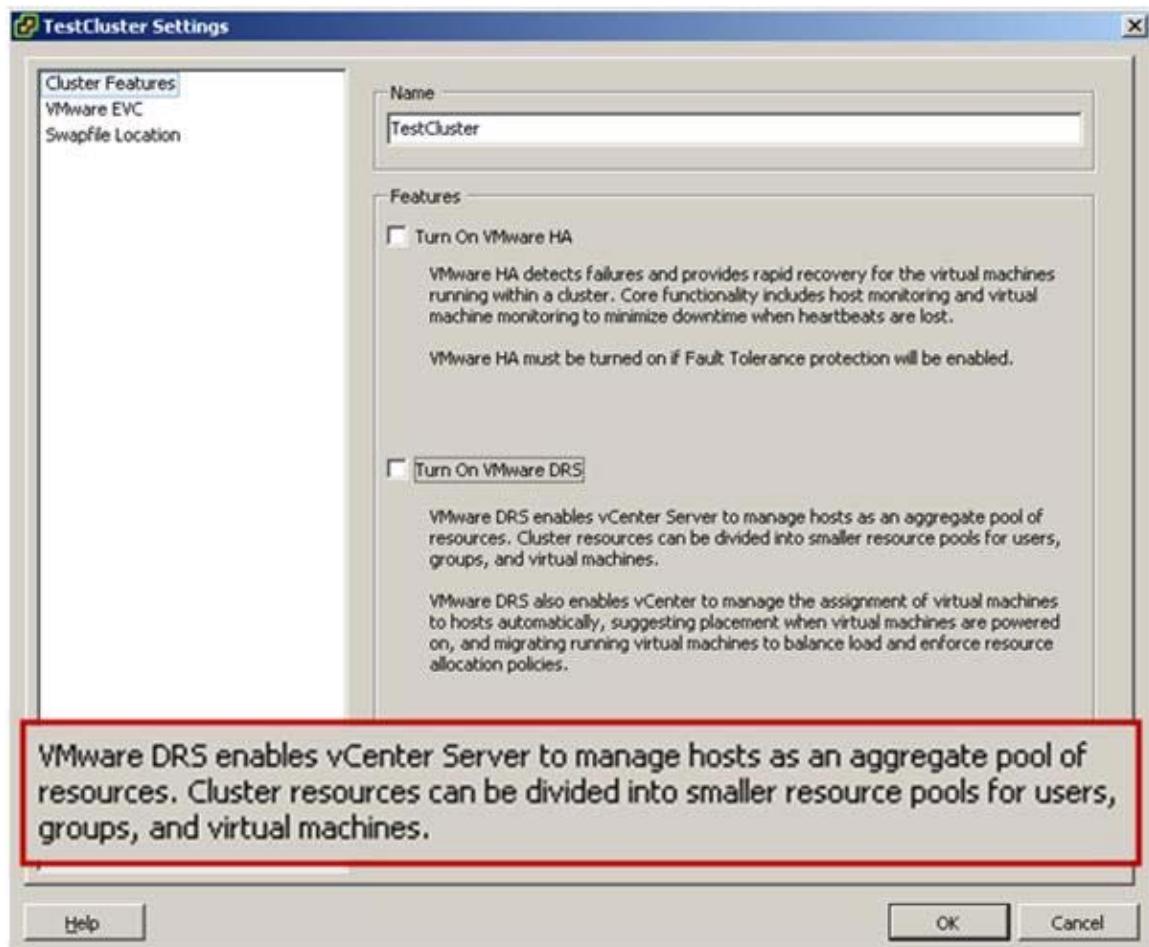
Virtual machines with snapshots cannot be migrated using Storage VMotion. - so C is incorrect

QUESTION NO: 7

During an attempt to create a new ABC resource pool in a cluster, the New Resource Pool selection appears to be unavailable. What could be the cause?

- A. DRS has not been enabled on the cluster
- B. The cluster has too few resources to create a new resource pool
- C. There are no servers in the cluster
- D. VMware HA has not been enabled on the cluster

Answer: A



QUESTION NO: 8

When attempting to VMotion migrate a newly built running virtual machine, the migration fails. Which of the following conditions would cause a failed migration under these conditions?

- A. The number of processor cores differs between the source and target hosts
- B. The source host supports hyperthreading, but the target host does not
- C. NPIV has been enabled on the virtual machine, and VMotion is not supported with NPIV
- D. VMI Paravirtualization Support has been enabled for the virtual machine, but is not supported on the target host

Answer: D

Migrating VMI-enabled virtual machines to platforms that do not support VMI

If you have suspended a virtual machine that uses VMI on an earlier release of a VMware product, you cannot resume the virtual machine on a VMware product which does not support VMI.

You cannot vMotion VMI-enabled virtual machines from earlier releases to future products that do not support VMI.

Instead, use cold migration to transition the VMI-enabled virtual machine to a future VMware product. Power the virtual machine off and then power it back on in the future VMware product.

QUESTION NO: 9

Which of the following steps are required to successfully install VMware Data Recovery (Choose Two)?

- A. A shared backup disk or tape device must be designated
- B. The VMware Data Recovery Backup Appliance must be installed to a managed ESX Host
- C. The Client Plug-in must be installed in the vSphere Client
- D. The VMware Data Recovery server component must be installed on the vCenter Server

Answer: B,C

VMware® Data Recovery 1.0 Evaluator's Guide, page 9.

You have to ensure the VMware Data Recovery Plug-In has been properly installed, and the backup appliance has been properly imported and configured before proceeding.

QUESTION NO: 10

An administrator has a 6 node DRS cluster. Using vCenter Update Manager, what is the maximum number of host upgrade operations that can be performed at any given time in this cluster?

- A. 4
- B. 1
- C. 8
- D. 2

Answer: B

Mastering VMWare vSphere 4, page 126.

Table 4.1: Limits for vCenter Update Manager

VUM OPERATION MAX TASKS PER HOST

Host Upgrade 1

QUESTION NO: 11

Which of the following are requirements for successful VMotion migration (Choose Two)?

- A. Gigabit Ethernet networking must exist between the source and destination hosts
- B. Virtual Machines must have access to the same subnets on the source and destination hosts
- C. CPUs with the same clock speed and cache size must exist on both the source and destination hosts
- D. Virtual Machines cannot be configured to use RDMs

Answer: A, B

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0Page 48.

VMotion Requirements

To enable the use of DRS migration recommendations, the hosts in your cluster must be part of a VMotion network. If the hosts are not in the VMotion network, DRS can still make initial placement recommendations.

To be configured for VMotion, each host in the cluster must meet the following requirements:

The virtual machine configuration file for ESX/ESXi hosts must reside on a VMWare Virtual Machine File System (VMFS).

VMotion does not support raw disks or migration of applications clustered using Microsoft Cluster Service (MSCS).

VMotion requires a private Gigabit Ethernet migration network between all of the VMotion enabled managed hosts. [A above].

Whilst it may not be an absolute requirement that virtual machines must have access to the same subnets on the source and destination hosts for VMotion to occur, if virtual machines do not have this access, then they can no longer communicate, thus rendering a VMotion migration unsuccessful. [B is correct].

Processor Compatibility

VMotion compatibility means that the processors of the destination host must be able to resume execution using the equivalent instructions where the processors of the source host were suspended. Processor clock speeds and cache sizes might vary, but processors must come from the same vendor class (Intel versus AMD) and same processor family to be compatible for migration with VMotion. [C is incorrect].

VMotion and RDMs

You can VMotion a VM that uses RDM as long as the RDM is configured in virtual compatibility mode. [D is incorrect].

QUESTION NO: 12

An administrator is configuring a VMware HA Cluster for three hosts and their resident VMs. The HA cluster will be configured to support a single host failure and resource reservations must be enforced during a failover event. Assuming default settings, how does HA determine the failover capacity determined?

- A. Using the highest CPU Reservation and the Available Memory values for any given virtual machine in the cluster
- B. Using the highest CPU Reservation and Memory Reservation values of any given virtual machine in the cluster
- C. Using an average of the total CPU Reservation and Available Memory values of all virtual machines In the cluster
- D. Using an average of the total CPU Reservation and Memory Reservation values of all virtual machines in the cluster

Answer: B

QUESTION NO: 13

DRS on a cluster with two ESX Hosts is set to Fully Automated mode. One server in the cluster is running at 98% CPU utilization, while the other host is running at 52% utilization.

Upon analysis, it appears that none of the virtual machines (VMs) are being migrated to the other server, and no recommendations are being generated. Which of the following are the most likely causes of the problem (Choose Two)?

- A. The ESX Server has CPU features that are incompatible with other hosts in the cluster
- B. The VMotion licenses for the cluster have expired
- C. The current DRS Migration Threshold setting is too conservative
- D. Insufficient resources exist to perform the VMotion migration

Answer: A, D

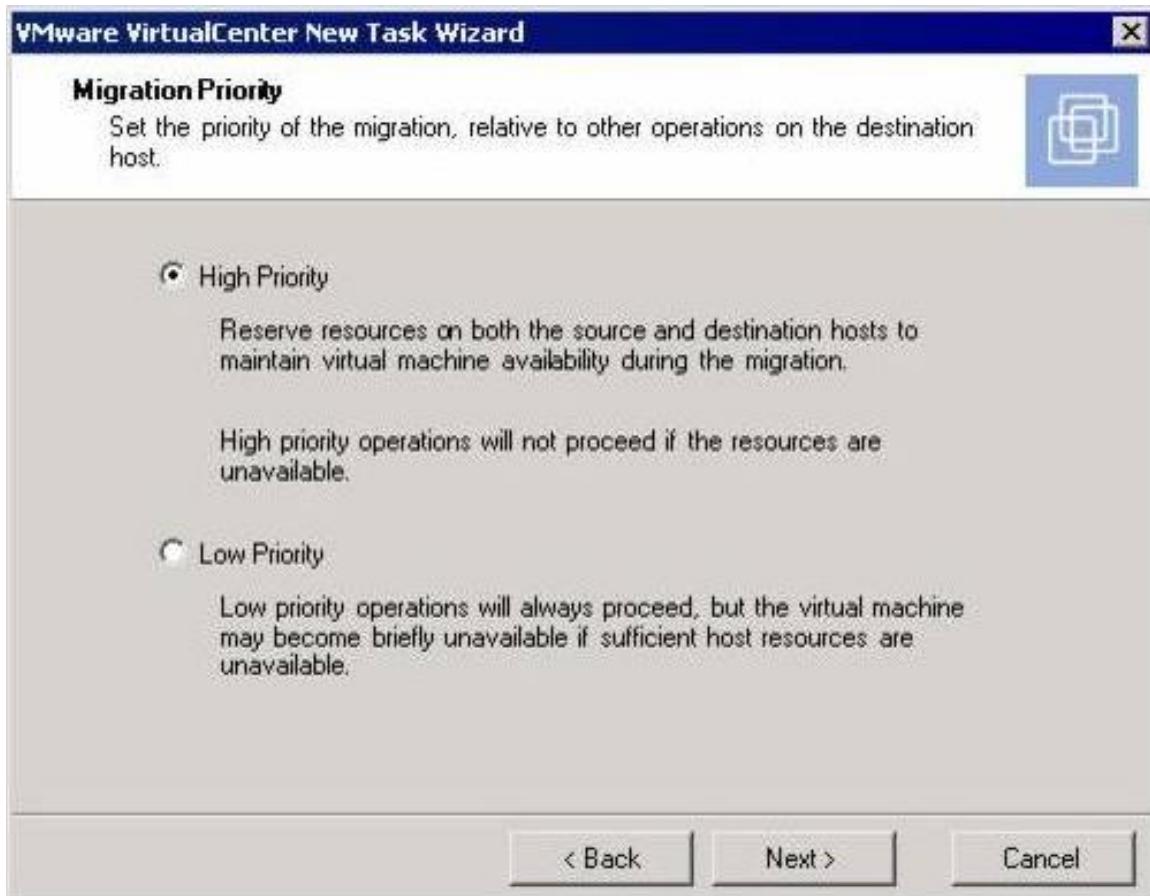
QUESTION NO: 14

When migrating a machine with VMotion, what is the difference between High Priority and Low Priority (Choose Two)?

- A. High priority reserves resources on the host and destination. High priority migrations always succeed.
- B. High priority reserves resources on the host and destination. High priority migrations will not proceed if the resources are unavailable.
- C. Low priority does not reserve resources on the host and destination. Low priority migrations always succeed.
- D. Low priority does not reserve resources on the host and destination. Low priority migrations will not proceed if the resources are unavailable.

Answer: B, C

See below.



QUESTION NO: 15

What function does VMware Enhanced VMotion Compatibility provide?

- A. The ability to VMotion virtual machines between Intel and AMD processors
- B. The ability to VMotion virtual machines between CPUs with hardware virtualization and CPUs Without this support
- C. The ability to VMotion virtual machines between CPUs with a common supported baseline
- D. The ability to VMotion virtual machines between ESX Hosts with different core counts

Answer: C

VMware VMotion and CPU Compatibility

VMware Enhanced VMotion Compatibility (EVC) facilitates VMotion between different CPU generations. When enabled for a cluster, EVC ensures that all CPUs within the cluster are VMotion compatible.

QUESTION NO: 16

Assuming the appropriate HA configuration options have been selected, which of the following situations would result in VMware HA restarting virtual machines (Choose Two)?

- A. A guest OS is manually powered off
- B. A guest OS fails
- C. An ESX Server in the cluster becomes isolated from the network
- D. An ESX Server in the cluster is put into Maintenance Mode

Answer: B, C

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 11, 12, 23.

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts.

If you select Enable VM Monitoring, the VM Monitoring service (using VMware Tools) evaluates whether each virtual machine in the cluster is running by checking for regular heartbeats from the VMware Tools process running inside the guest. If no heartbeats are received, this is most likely because the guest operating system has failed or VMware Tools is not being allocated any time to complete tasks. In such a case, the VM Monitoring service determines that the virtual machine has failed and the virtual machine is rebooted to restore service. [B above]

Host network isolation occurs when a host is still running, but it can no longer communicate with other hosts in the cluster. With default settings, if a host stops receiving heartbeats from all other hosts in the cluster for more than 12 seconds, it attempts to ping its isolation addresses. If this also fails, the host declares itself as isolated from the network. When the isolated host's network connection is not restored for 15 seconds or longer, the other hosts in the cluster treat it as failed and attempt to fail over its virtual machines. [C above]

In a cluster using DRS and VMware HA with admission control turned on, virtual machines might not be evacuated from hosts entering maintenance mode. This is because of the resources reserved to maintain the failover level. You must manually migrate the virtual machines off of the hosts using VMotion.

QUESTION NO: 17

vCenter Server is running within a virtual machine (VM) that is part of a VMware HA and DRS cluster. The vCenter Server VM can migrate between all hosts in the cluster by using VMotion. DRS is configured for partial automation.

What happens if the ESX host that is currently running the vCenter Server VM experiences a power outage?

- A. This situation cannot occur because vCenter Server cannot be installed on a VMware HA cluster
- B. vCenter Server will remain offline, but all virtual machines on the remaining hosts will continue without interruption
- C. VMware HA will restart the vCenter Server VM on another host
- D. All DRS cluster operations will be unavailable until the failed ESX Host is brought back online

Answer: C

QUESTION NO: 18

In Guided Consolidation, a higher Confidence Metric indicates which of the following?

- A. The source machine is a better candidate for virtualization
- B. The data collected from the source machine is more reliable
- C. A given destination ESX Server is a better fit for the source machine
- D. The displayed destination ESX Server is the best fit from all available ESX Servers

Answer: B

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 95.

About the Confidence Metric

One important metric displayed in the Analysis tab is the Confidence metric. During the analysis phase, performance data about each selected system is collected. This data is used to find a host with resources that match the collected data to determine a recommendation for each candidate.

The recommendation indicates how well suited, based on the collected data, a candidate is to a particular virtual machine host system. Confidence refers to the reliability of the recommendation and it is a function of the duration of the analysis. Recommendations based on longer periods of analysis - and therefore more performance data - receive a higher level of confidence.

QUESTION NO: 19

An ESX Server in a DRS cluster is placed into Maintenance Mode. Which of the following conditions are true (Choose Two)?

- A. If the DRS cluster is in fully automated mode, DRS will make a migration recommendation and then VMotion Virtual Machines to other ESX servers
- B. If the DRS cluster is in partially automated mode then the Virtual Machines that have a High Restart Priority will be moved to another ESX Server
- C. If the DRS cluster is in partially automated mode then the vCenter Administrator must VMotion Virtual Machines to another ESX Server
- D. If the DRS cluster is in fully automated mode, DRS will automatically VMotion Virtual Machines to other ESX Servers

Answer: C, D

QUESTION NO: 20

Which of the following can be configured or modified from the Resource Allocation tab of a DRS Cluster (Choose Two)?

- A. virtual machine CPU share value
- B. expandable reservation for resource pools in the cluster
- C. virtual machine memory reservation
- D. share priority for resource pools in the cluster

Answer: A, C

The screenshot shows modification of the virtual machine CPU share value

Available Capacity: 1191 MB

Name	Reservation - MHz	Limit - MHz	Shares	Shares Value	% Shares
Nostalgia2	0	Unlimited	Normal	1000	50
Cisco Nexus V1000	0	Unlimited	Low	1000	50

The screenshot shows modification of the virtual machine memory reservation

Available Capacity: 1191 MB

Name	Reservation - MB	Limit - MB	Shares	Shares Value	% Shares
Nostalgia2	64	Unlimited	Normal	640	5
Cisco Nexus V1000	799	Unlimited	Normal	10240	94

QUESTION NO: 21

An administrator is checking a HA/DRS Cluster for Compliance. Which of the following occurs if a host profile is not attached to the cluster?

- A. The compliance check uses the default Datacenter host profile
- B. The compliance check asks for a valid host profile
- C. The cluster is checked for specific HA, DRS and DPM cluster requirements
- D. The compliance check generates an error

Answer: C

QUESTION NO: 22

An administrator finds that a VMotion and Storage VMotion operations do not succeed on a virtual machine. The virtual machine has been configured with N-Port ID Virtualization. The virtual machine has two data RDMs, one using a RAID5 LUN and one using a RAID0+1 LUN. When created, the mapping file for the RAID5 LUN was created on the same datastore as the virtual machine, while the mapping file for the RAID0+1 LUN was placed in a datastore used for production data virtual disks.

Which of the following statements are true about this configuration (Choose Two)?

- A. Storage VMotion cannot be used with NPIV
- B. VMotion cannot be used unless both mapping files are placed on the same datastore
- C. Storage VMotion cannot be used unless both mapping files are placed on the same datastore
- D. VMotion cannot be used with NPIV

Answer: A, B

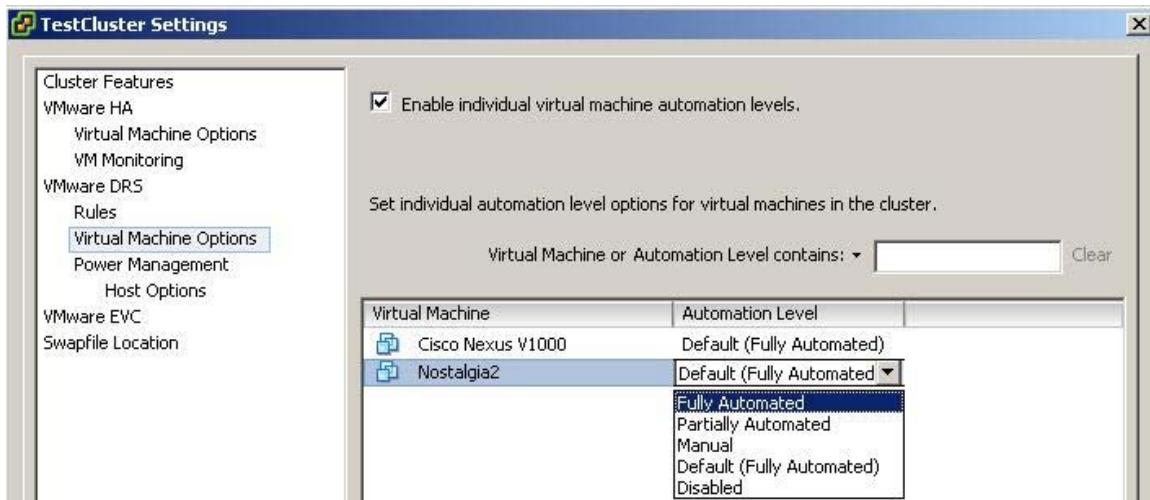
QUESTION NO: 23

In a fully automated DRS cluster, what can be done to ensure a particular VM does not migrate automatically to another host?

- A. use the Affinity Wizard to specify Manual Automation mode
- B. set the DRS VM rule to keep on this host
- C. do nothing because the DRS cluster must be put in Partially Automated mode to allow this level of control
- D. set the DRS VM options for the particular VM to Partially Automated mode

Answer: D

The screenshot below shows the DRS VM option for a particular VM can be set to Partially Automated mode



QUESTION NO: 24

Which of the following can be configured or modified from the Resource Allocation tab of a DRS Cluster? (Choose Two.)

- A. CPU reservation for any virtual machine in the cluster
- B. Memory reservation for child resource pools
- C. Fixed or Expandable Reservation Type for any virtual machine in the cluster
- D. CPU reservation for child resource pools

Answer: A, C

The screenshot shows modification of the virtual machine CPU reservation

Name	Reservation - MHz	Limit - MHz	Shares	% Shares	Type
New vApp	0	Unlimited	Normal	80	Expandable
Cisco Nexus V1000	0	Unlimited	Normal	20	N/A

The screenshot shows modification of the Fixed or Expandable Reservation Type

Name	Reservation - MHz	Limit - MHz	Shares	Shares Value	% Shares	Type
New vApp	0	Unlimited	Normal	4000	80	Expandable
Cisco Nexus V1000	0	Unlimited	Normal	1000	20	Fixed

QUESTION NO: 25

An application in a virtual machine has failed. The virtual machine can still be accessed. Under which condition will VMware HA restart the failed application?

- A. VMware HA will never restart the application.
- B. VMware HA will restart the application every time, as long as the cluster is not red.
- C. VMware HA will restart the application every time, as long as the Restart Priority is not set to Disabled.
- D. VMware HA will only restart the application if the VMware tools are running.

Answer: A

vSphere Availability Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 23.

VM Monitoring restarts individual virtual machines if their VMware Tools heartbeats are not received within a set time. VMware HA cannot restart a failed application on a guest, as it is only monitoring the virtual machine. Therefore A is correct.

QUESTION NO: 26

For a cluster with two ESX hosts, one using Intel processors and other using AMD processors, which of the following statements is true? (Choose Two)

- A. VMware DRS can load balance live VMs among hosts
- B. VMotion can move live VMs from one host to another
- C. Storage VMotion can move a virtual machine disk file from one storage device to another
- D. VMware HA can failover VMS from one host to another in case of a host failure

Answer: C, D

Storage VMotion can move a virtual machine disk file from one storage device to another if using different CPU types, since this simply involves moving the storage location. [C above]

Comparison of Migration Types

Slide 7-93

Migration type	Power state	Change host/ datastore ?	Across datacenters ?	Shared storage required?	CPU compatibility?
Cold	Off	Host or datastore or both	Yes	No	Different CPU families allowed
Suspended VM	Suspended	Host or datastore or both	Yes	No	Must meet CPU compatibility requirements
VMotion	On	Host	No	Yes	Must meet CPU compatibility requirements
Storage VMotion	On	Datastore	No	No	N/A

VMware HA provides high availability for virtual machines by pooling them and the hosts they reside on into a cluster. Hosts in the cluster are monitored and in the event of a failure, the virtual machines on a failed host are restarted on alternate hosts. Since the VM is restarted, the new host will not need to continue executing instructions previously running on the failed host; so there is no need for any CPU compatibility requirements to be met. [D above]

QUESTION NO: 27

Which two conditions can cause a combined VMware DRS/HA cluster to change to a red status? (Choose Two.)

- A. DRS is in the process of balancing resources among hosts in the cluster when an HA event occurs.
- B. The current failover capacity is smaller than the configured capacity.
- C. A DRS-only host has been added to an HA cluster.
- D. All the primary hosts in the cluster are not responding.

Answer: B, D

QUESTION NO: 28

A virtual machine performance graph shows Memory Swap In to be at 95%. Users of the VM are complaining that performance is slow.

Which of the following actions can be done to increase performance of the VM? (Choose Two)

- A. decrease the memory reservation of the VM
- B. decrease the memory limit of the VM
- C. increase the memory reservation of the VM
- D. move the VM using VMotion to another server

Answer: C, D

QUESTION NO: 29

What is the meaning of a red DRS cluster?

- A. At least one host in the cluster is attempting to go into Maintenance mode.
- B. Yellow clusters will become red after 15 minutes if DRS is unable to dynamically balance the load.
- C. Red clusters indicate virtual machines are using more resources than the fixed reservation allows.
- D. Red clusters are the highest priority and will receive resource allocations first.

Answer: C

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 59.

A cluster enabled for DRS becomes invalid (red) when the tree is no longer internally consistent, that is, resource constraints are not observed.

The total amount of resources in the cluster does not affect whether the cluster is red. A cluster can be red, even if enough resources exist at the root level, if there is an inconsistency at a child level.

You can resolve a red DRS cluster problem either by powering off one or more virtual machines, moving virtual machines to parts of the tree that have sufficient resources, or editing the resource pool settings in the red part.

QUESTION NO: 30

An ESX Server in DRS cluster is placed into Maintenance Mode. Which of the following conditions are true? (Choose Two)

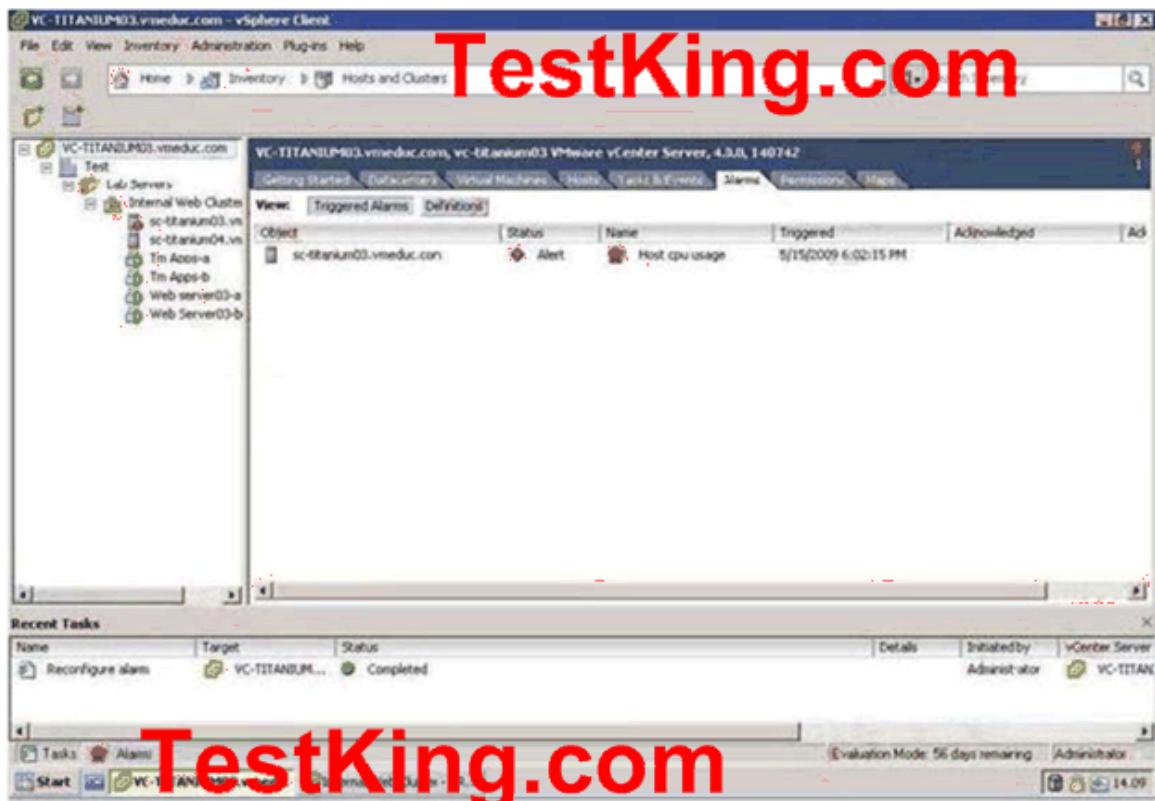
- A. If the DRS cluster is in fully automated mode, DRS will automatically VMotion Virtual Machines to other ESX Servers
- B. If the DRS cluster is in fully automated mode, DRS will make a migration recommendation and then VMotion Virtual Machines to other ESX servers.
- C. If the DRS cluster is in partially automated mode then the Virtual Center System Administrator must VMotion Virtual Machines to another ESX Server.
- D. If the DRS cluster is in partially automated mode then the Virtual Machines that have a High Restart Priority will be moved to another ESX Server.

Answer: A, C

When the cluster goes into maintenance mode, the virtual machines are moved to another ESX host by VMotion. Should the DRS cluster be configured for all manual operations, the migration via VMotion is approved within the Virtual Infrastructure Client, then VMotion proceeds with the moves.

QUESTION NO: 31

Exhibit:



Users are having difficulty accessing a web server since a new web application was configured to run on sc-titanium03.vmeduc.com. The ABC vSphere client reports the error shown in the exhibit. DRS is set to fully automated mode, but the problem has not resolved.

Which of the following actions could be taken to resolve the issue?

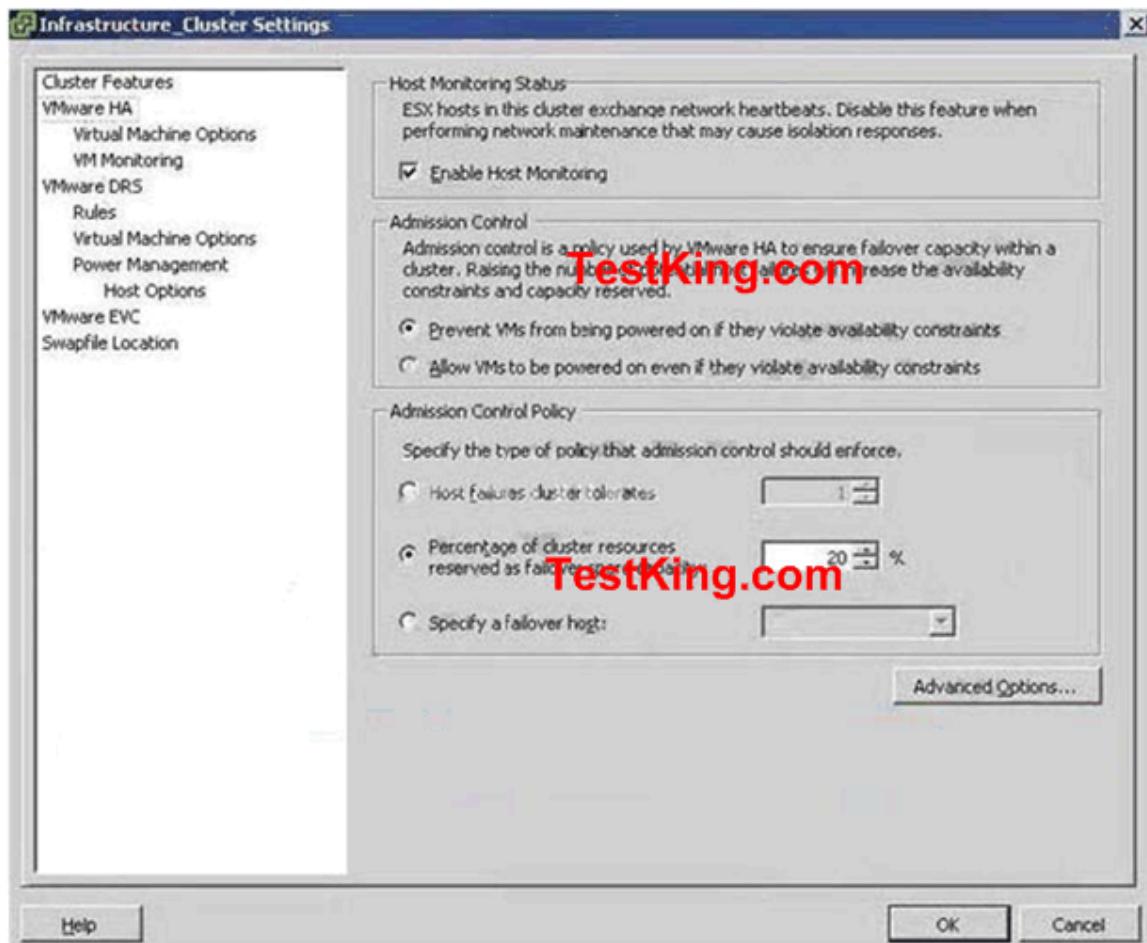
- A. Hot add another CPU to the web server virtual machine.
- B. Add another server to the cluster.

- C. Power down one or more virtual machines on the host running the web server virtual machine and migrate them to the other server in the cluster.
- D. Migrate one or more running virtual machines on the host with the web server virtual machine to the other host in the cluster.

Answer: C

QUESTION NO: 32

Exhibit:



An administrator has a DRS/HA cluster with 5 ESX 4 Hosts. When trying to start a new web server Virtual Machine, an error is displayed saying insufficient resources exist for HA. Based on the HA configuration shown in the exhibit, how can this issue be resolved (Choose Two)?

- A. Specify one of the servers to be a failover host

- B. Allow virtual machines to be powered on even if they violate HA availability constraints.
- C. Add another server to the cluster.
- D. Change the percentage of resources to reserve to 30%.

Answer: B, C

vSphere Help - Adding Inventory Objects : Editing a Cluster : Configure VMware HA Options

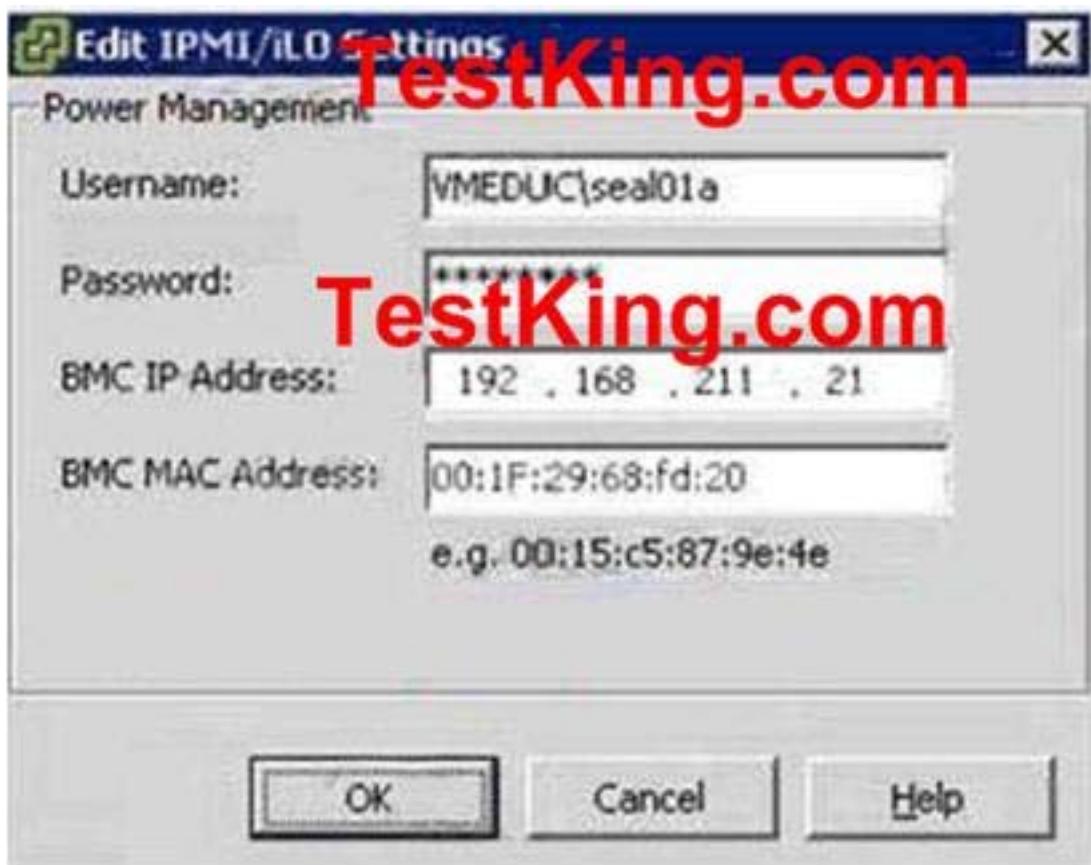
Select an Admission Control option.

Prevent VMs from being powered on if they violate availability constraints.
Allow VMs to be powered on even if they violate availability constraints. Select this option if you want the capability of powering on more virtual machines than the VMware HA failover level can support. If you select this option and power on enough virtual machines to violate failover, the cluster icon turns red and failover is no longer guaranteed. [B above]

Adding an additional host to the cluster will increase overall cluster resources, and should allow the VM to be started. [C above]

QUESTION NO: 33

Exhibit:



You have a newly set up 2 node cluster with HA and DRS enabled with DRS in fully automated mode. While testing DRS, you notice no virtual machines are moving from one ESX host to any other despite great disparity in resource utilization between the ESX hosts. Based on the information shown in the exhibit, what is the best solution for this problem?

- A. Enable the VMkernel port for VMotion.
- B. Remove the uplink used by the VMkernel port group and connect the proper uplink.
- C. Disable HA for this cluster.
- D. Change the IP address to 10.0.0.204 for the VMkernel interface.
- E. No conclusions can be drawn from the exhibit.

Answer: E

No correct answer is shown. It's not possible to draw any conclusions from the exhibit.

QUESTION NO: 34

DRS on a cluster is set to "Fully Automated", at its most aggressive setting. One particular server in the cluster is running at 98% CPU utilization. You notice that none of the virtual machines (VMs) are being placed on other servers. What are two possible causes of the problem? (Choose two.)

- A. The VM options report_section = "8" in the DRS Settings on that cluster for all of the VMs on that server are set to Manual.
- B. No other server in the cluster has enough resources to accommodate any of the VMs on the overloaded server.
- C. An Affinity Rule for those particular VMs has been set to "Separate Virtual Machine" for the VMs on the overloaded host.
- D. The guest OS types for the VMs do not support DRS.

Answer: A, B

QUESTION NO: 35

One of the hosts in a cluster of 10 hosts requires maintenance. This host is currently running two virtual machines (VMs) for a total of 30% CPU utilization. What is the best practice for repairing the hardware?

- A. place the VMs on the host in Maintenance mode
- B. place the host in Offline mode
- C. repair the server while running VMs
- D. place the host in Maintenance mode

Answer: D

vSphere Resource Management Guide ESX 4.0 ESXi 4.0 vCenter Server 4.0, page 55.

You place a host in maintenance mode when you need to service it, for example, to install more memory. A host enters or leaves maintenance mode only as the result of a user request.

Virtual machines that are running on a host entering maintenance mode need to be migrated to another host (either manually or automatically by DRS) or shut down. The host is in a state of Entering Maintenance Mode until all running virtual machines are powered down or migrated to different hosts. You cannot power on virtual machines or migrate virtual machines to a host entering maintenance mode.

By placing the host in Maintenance mode you will ensure no Maintenance modems are migrated to this server. [D above]

QUESTION NO: 36

Exhibit:



You have a newly set up 2 node cluster with HA and DRS enabled with DRS in fully automated mode. While testing DRS, you notice no virtual machines are moving from one ESX host to any other despite great disparity in resource utilization between the ESX hosts. Based on the information shown in the exhibit, what is the best solution for this problem?

- A. Enable the VMkernel port for VMotion.
- B. Remove the uplink used by the VMkernel port group and connect the proper uplink.
- C. Disable HA for this cluster.
- D. Change the IP address to 10.0.0.204 for the VMkernel interface.
- E. No conclusions can be drawn from the exhibit.

Answer: E

Explanation:

A VMkernel port needs to be enabled for VMotion.

Part 6: Create and Respond to vCenter Connectivity Alarms (3 questions).

QUESTION NO: 1

An administrator is responsible for enabling file access for desktop users. A number of users have logged complaints that they cannot access their files. An alert in the vSphere client states that storage connectivity to all hosts has been triggered. The ABC storage screen indicates everything is connected, but the alert has not been acknowledged. Which of the following would successfully correct the user access issue?

- A. Reconnect the storage containing the users files to the host which is running the File sharing virtual machine.
- B. Tell each user to reboot their computers.
- C. Rescan the storage on the File sharing virtual machine on which the users are seeing the problem.
- D. Rescan the storage on all the hosts in the cluster.

Answer: D

Explanation:

Perform a rescan each time you make one of the following changes

*Zone a new disk array on the SAN to an ESX/ESXI host.

*Create new LUNs on a SAN

*Change the path masking on a host

*Make a change to a host in a cluster

QUESTION NO: 2

Recently, a ABC network interface card in an ESX 4 host has been experiencing inconsistent connectivity states. Which of the following two methods could be used to quickly identify the issue and immediately notify an administrator so the issue can be resolved (Choose Two) ?

- A. Set up an alarm with the Network Redundancy Degraded trigger and configure an SNMP trap for notification when the connection is lost
- B. Set up an alarm with the Lost Network Connectivity trigger to send an e-mail for notification when The connection is lost
- C. Set up an alarm with the Lost Network Connectivity trigger and configure an SNMP trap for notification when the connection is lost
- D. Set up an alarm with the Lost Network Redundancy trigger to send an e-mail for notification when the connection is lost

Answer: B, C

QUESTION NO: 3

Users are complaining that they cannot access their files located on a file server virtual machine. The vSphere client shows a triggered alarm stating disk latency is beyond the default threshold for the datastore where the user file server is located. The Path Selection Policy has been set by the ESX Host to Fixed with default path settings.

Which of the following two options could be used to increase performance of the file server VM (Choose Two)?

- A. Change the Path Selection Policy to Round Robin
- B. Change the Path Selection Policy to Most Recently Used (MRU)
- C. Use disk shares to increase the priority for the datastore housing the file server VM
- D. Use Storage VMotion to move the file server VM to a datastore with lower latency

Answer: A, D

Part 7: Create and Respond to vCenter Utilization Alarms (14 questions).

QUESTION NO: 1

During peak operating hours, an Administrator finds that a business critical application is not performing as well as during normal hours. Which of the following memory management methods could be used to guarantee the application performs well at all times?

- A. Set a Reservation equal to the Average Memory utilization of the virtual machine running the application
- B. Set a Reservation equal to the Peak Memory utilization of the virtual machine running the application
- C. Set the Share level to High for the virtual machine running the application
- D. Set the Share level to High for the virtual machine running the application and set all other virtual machines to Low

Answer: B

Memory Provisioning Recommendations for VMware Infrastructure 3 Operational Best Practices page 8.

Memory Reservations, Limits, and Shares

Memory Reservations are an ESX Server memory management technique used to control how memory is allocated from an either an explicit or implicit resource pool by the VMkernel to a virtual machine or group of virtual machines.

Reservations consist of two settings - a reservation, or guaranteed amount of physical memory that will always be available to the virtual machine(s), and a limit, which is the absolute maximum physical memory a virtual machine or group of virtual machines can consume on the host

During peak operating hours, by definition more systems and more resources including memory, will be being consumed. Therefore memory reservation is required. By setting a reservation equal to the peak memory utilization, this will guarantee the application receives all memory it requires.

QUESTION NO: 2

A user wants to receive an email notification when the virtual machine CPU usage enters a warning state, and again when the condition has been resolved. Which two state changes must be selected to receive the appropriate notifications (Choose Two)?

- A. red-green state change
- B. green-yellow state change
- C. yellow-red state change
- D. yellow-green state change

Answer: B, D

Explanation:

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 235.

VMware uses colors to denote alarm severity:

Normal - green

Warning - yellow

Alert - red

You can set alarms to trigger when the state changes from green to yellow, yellow to red, red to yellow, and yellow to green.

When the virtual machine CPU usage enters a warning state, it will change from Normal (green) to Warning (yellow). When the condition has been resolved it will change from Warning (yellow) to Normal (green).

QUESTION NO: 3

A Windows virtual machine (VM) is experiencing poor application performance. The suspected issue is a lack of available memory. Windows Task Manager shows 30% of the memory within the VM is not currently being used. What does this indicate and what could be checked next?

- A. The VM has memory available, however it may not actually have physical memory available. VMkernel swap activity on the ESX Server host should be checked next.
- B. Windows Task Manager is not reading actual memory usage in the VM. Windows System Monitor should be used to get a precise reading on memory usage.
- C. The application problems are definitely due to a non-memory related problem. CPU affinity settings should be checked for this VM.
- D. The application problems are definitely due to a non-memory related problem. CPU utilization should be checked next using Windows Task Manager.

Answer: A

The poor application performance due to suspected lack of available memory suggests paging is the cause of the issue. If Windows Task Manager shows 30% of the memory within the VM is not currently being used, then paging must be occurring within the VM host. Therefore poor application performance should now be checked.

QUESTION NO: 4

A group of ABC virtual machines has been deployed using thin disks due to limited storage space availability. The storage team has expressed concern about extensive use of this type of provisioning. Which of the following actions can be taken to inform an administrator when an unacceptably large number of virtual machines are being deployed using thin disk provisioning?

- A. Modify the default Datastore Usage on Disk alarm with a determined percentage. Create a trigger For the alarm with an e-mail or SNMP notification option.
- B. Use the default Host Storage Status alarm. Create a trigger for the alarm with an e-mail or SNMP notification option.
- C. Create an alarm for Datastore Disk Overallocation and determine an appropriate percentage. Create A trigger for the alarm with an e-mail or SNMP notification option.
- D. Create an alarm for Disk Usage and determine the appropriate amount. Create a trigger for the Alarm with an e-mail or SNMP notification option.

Answer: C

QUESTION NO: 5

Several Virtual Machines residing in a resource pool are exhibiting poor performance, and a critical VM in the pool appears hung. The resource pool has been allocated exactly 500 MHz of CPU and does not have the Expandable Reservation option selected. The cluster in which the resource pool resides has a total of 6000 MHz, with 1000 MHz available. Which step can be used to increase the performance of the critical VM?

- A. increase the CPU Reservations on the resource pool
- B. increase the CPU Limit on the resource pool
- C. increase the CPU Limit on the critical VM
- D. increase the CPU Reservations on the critical VM

Answer: B

QUESTION NO: 6

A Windows virtual machine (VM) viewed through Task Manager shows CPU utilization averaging 95-100%. What does this indicate?

- A. The VM is utilizing most of the CPU resources allocated to it. The CPU Ready value should be checked to determine if this is a resource constraint.
- B. The VM CPU reservation is not sufficient.
- C. The VM has an impending performance problem. The running processes in Windows Task Manager should be checked to determine what applications are consuming CPU resources.
- D. The VM has CPU affinity set to CPU 0 and is competing with the service console for CPU resources. esxtop should be run to confirm the diagnosis.

Answer: A

QUESTION NO: 7

A user's permission set is modified so that they can no longer create alarms. What will happen to the alarms already created by this user?

- A. Alarms will be triggered if the event occurs.
- B. Alarms will never be triggered.
- C. Alarms will be triggered for critical state changes only.
- D. Only ESX host alarms will be triggered.

Answer: A

QUESTION NO: 8

It appears that a virtual machine (VM) is having performance problems because it does not have enough CPU resources available. Which of the following methods could be used to guarantee a VM gets 100% of a CPU on the host when it needs it? (Choose Two.)

- A. set the CPU limit for this VM to 100%
- B. set CPU affinity on that VM, pinning it to CPU 1 and set CPU affinity on all other VMs so that they specifically cannot use CPU 1
- C. set CPU affinity on that virtual machine, pinning it to a CPU 1
- D. set the CPU reservation for this VM to 100%

Answer: B, D

vSphere Resource Management Guide, ESX 4.0, ESXi 4.0, vCenter Server 4.0, page 37, 75.

Table 4-1. Resource Pool Attributes

Field - Reservation

Description - Guaranteed CPU or memory allocation for this resource pool. A nonzero reservation is subtracted from the unreserved resources of the parent (host or resource pool).

Setting the CPU reservation for this VM to 100% will prevent any other VM from accessing this CPU.

CPU Affinity - A virtual machine should use only the processors on a given node. By Setting CPU affinity on that VM, pinning it to CPU 1 and setting CPU affinity on all other VMs so that they specifically cannot use CPU 1, will prevent any other VM from accessing this CPU.

QUESTION NO: 9

What will most benefit a CPU-constrained VM?

- A. the installation of a third-party management tool in the guest OS
- B. the installation of the vmxnet virtual adapter
- C. a decrease in the CPU-limit value
- D. an increase in CPU shares

Answer: D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 155.

The values Low, Normal, High, and Custom are compared to the sum of all shares of all virtual machines on the server. If you increase CPU shares for this VM, it will gain proportionally more resources, improve performance and reduce CPU contention. Therefore D is correct.

QUESTION NO: 10

A user wants to receive an email notification when the virtual machine CPU usage enters a critical state, and again when the problem has been resolved. Which two state changes must be chosen to receive the appropriate notifications? (Choose Two.)

- A. green-yellow state change
- B. yellow-red state change
- C. red-green state change
- D. yellow-green state change

Answer: B, D

Answer: B,D

vSphere Basic System Administration vCenter Server 4.0 ESX 4.0 ESXi 4.0, page 235.

VMware uses colors to denote alarm severity:

Normal - green

Warning - yellow

Alert - red

You can set alarms to trigger when the state changes from green to yellow, yellow to red, red to yellow, and yellow to green.

When the virtual machine CPU usage enters a critical state, it will change from Warning (yellow) to Critical (red). When the condition has been resolved it will change from Warning (yellow) to Normal (green).

QUESTION NO: 11

Which of the following are valid choices for optimizing performance of Virtual Machines? (Choose Three.)

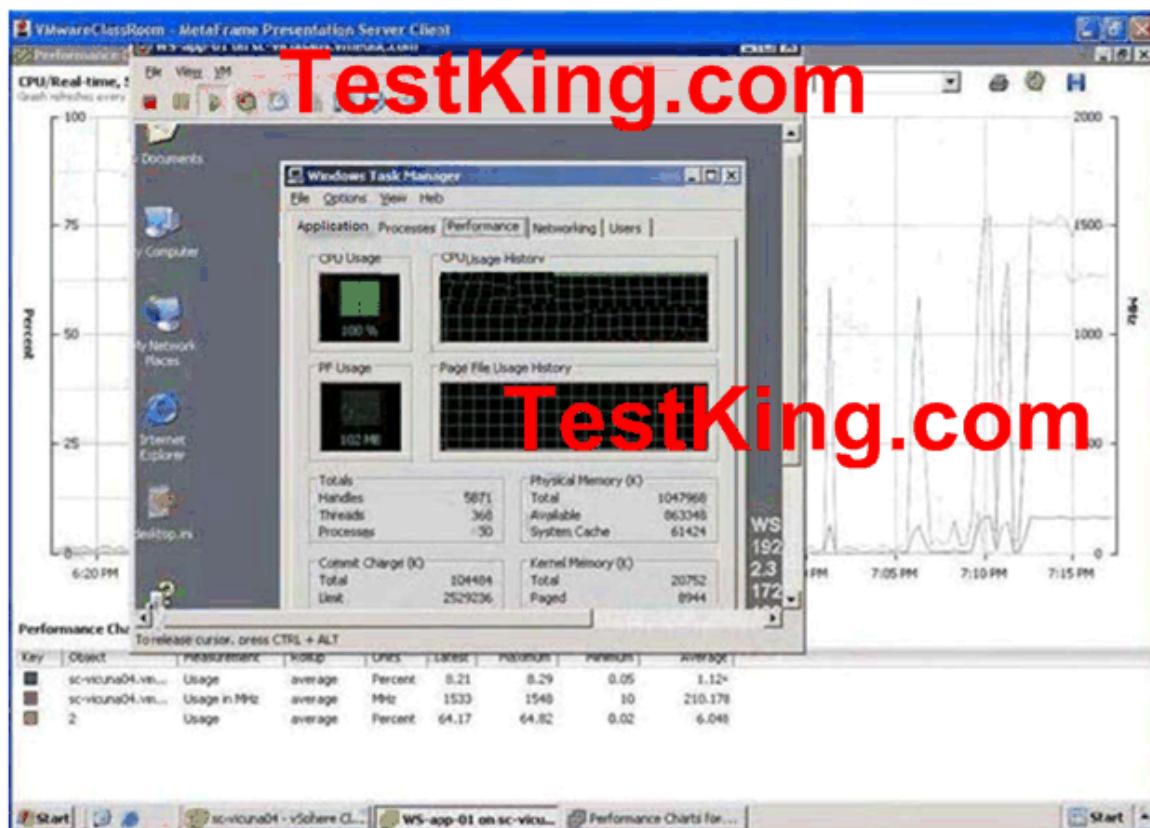
- A. Disable unused devices such as COM ports, Floppy drives, and CD ROM drive.
- B. Avoid installing VMware tools on resource intensive virtual machines.

- C. Defragment attached VMFS-3 volumes.
- D. Tune and size virtual machine operating systems as you would on physical hosts.
- E. Keep virtual machines that have similar resource requirements on the same host.

Answer: A, D, E

QUESTION NO: 12

Exhibit:



An administrator has deployed a new virtual machine on an ABC ESX Host, sc-vicuna04.vmeduc.com. Users are complaining of poor performance on the application running on the virtual machine. Performance tools display the results shown in the exhibit.

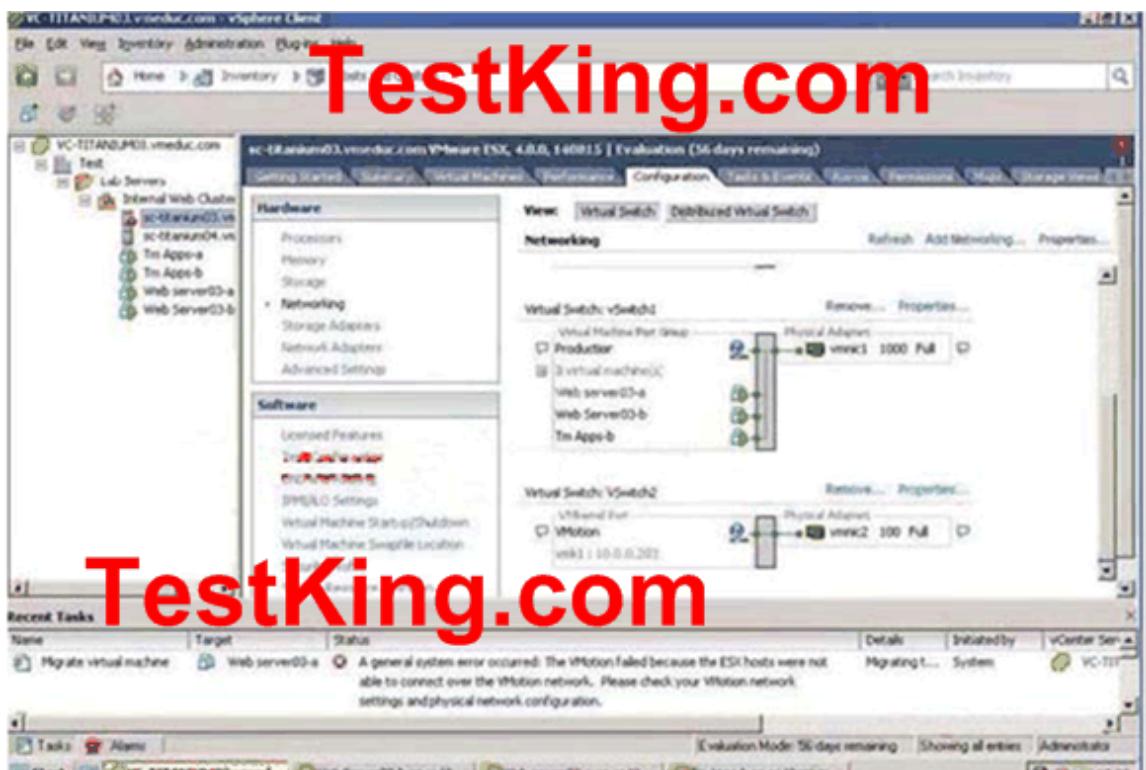
Which two tasks could you perform to try to improve the user experience (Choose Two)?

- A. Remove the limit on the CPU settings of the virtual machine.
- B. Add another vCPU to the virtual machine.
- C. Migrate the virtual machine to another ESX host.
- D. Remove CPU affinity on the Advanced CPU setting of the virtual machine.

Answer: A, B

QUESTION NO: 13

Exhibit:



An administrator has received reports of poor network performance with a ABC virtual machine. Which of the following steps would improve the network performance of this virtual machine (VM)?

- A. Adjust shares for the virtual NIC on the virtual machine
- B. Add an additional uplink to the virtual switch this virtual machine is attached to
- C. Traffic shape this virtual machine
- D. Increase memory to the virtual machine

Answer: B

QUESTION NO: 14

You have a dual-processor virtual machine (VM) that has affinity set so that the virtual CPUs are pinned to CPU 3 and 4 in VirtualCenter. The VM also has a reservation setting guaranteeing it 100% of available resources for those two CPUs. Performance is poor in this VM, however performance for all other VMs on this host is acceptable. What can you do to improve performance for this VM?

- A. set CPU affinity on all other VMs prohibiting them from using CPU 3 and 4
- B. remove the reservations on the CPUs in order to allow the VMkernel to switch the virtual CPUs between CPU 3 and 4 as needed
- C. change the CPU share allocation from 'Normal' to 'High'
- D. change the CPU affinity settings to ensure that the virtual CPUs are running on two separate physical CPUs on the host

Answer: D

Part 8: Monitor vSphere ESX/ESXi and Virtual Machine Performance (10 questions).

QUESTION NO: 1

Users are complaining that a Windows application server Virtual Machine configured with 1GB RAM is not performing satisfactorily. An administrator opens the Performance Tab for the guest virtual machine and adds the counter for Memory Ballooned in MB. The Performance Chart displays a value of 240.

Which of the following actions should be taken?

- A. Add more memory to the Virtual Machine.
- B. Migrate the Virtual Machine to another host.
- C. Monitor memory ballooning from the ESX host Performance Tab
- D. Adjust the Mem.CtlMaxPercent to read 75.

Answer: B

Memory Provisioning Recommendations for VMware Infrastructure 3 Operational Best Practices, page 11.

Memory Balloon - This counter reflects the total amount of memory the VMkernel is effectively "borrowing" from virtual machines via the VMTools balloon driver running inside the guest OS. Balloon driver activity indicates over-commitment of ESX host memory. By default, the VMkernel may balloon up to 65% of a virtual machine's configured RAM.

Users are complaining that a Windows application server is not performing satisfactorily. The Memory Balloon counter indicates that memory is being borrowed by the Vmkernel from the virtual machine, indicating that the host has insufficient memory to service requirements from all virtual machines. Therefore either more memory should be added to the host or the guest should be moved to a system with more free memory.

QUESTION NO: 2

The recommended maximum memory value displayed when configuring a VM represents?

- A. The value that the OS vendor reports as being optimal for performance
- B. The maximum value the guest OS supports
- C. The threshold above which a host's physical memory is insufficient to run the virtual machine at optimal performance
- D. The threshold needed in order for the ESX Host to satisfy a reservation value

Answer: C

The virtual machine settings editor also shows a value for the maximum amount of memory for best performance. If you have only one virtual machine running on the host and you set virtual machine memory to this value, the virtual machine can run entirely in RAM. A virtual machine running completely in RAM performs better than a virtual machine that must swap some of its memory to disk.

QUESTION NO: 3

When memory is reclaimed from a virtual machine using vmmemctl, what is the maximum amount that can be reclaimed by default?

- A. 50% of the unreserved memory
- B. 65% of the available memory
- C. 65% of the unreserved memory
- D. 50% of the available memory

Answer: C

Memory Provisioning Recommendations for VMware Infrastructure 3 Operational Best Practices, page 11.

Memory Balloon - This counter reflects the total amount of memory the VMkernel is effectively "borrowing" from virtual machines via the VMTools balloon driver running inside the guest OS. Balloon driver activity indicates over-commitment of ESX host memory. By default, the VMkernel may balloon up to 65% of a virtual machine's configured RAM.

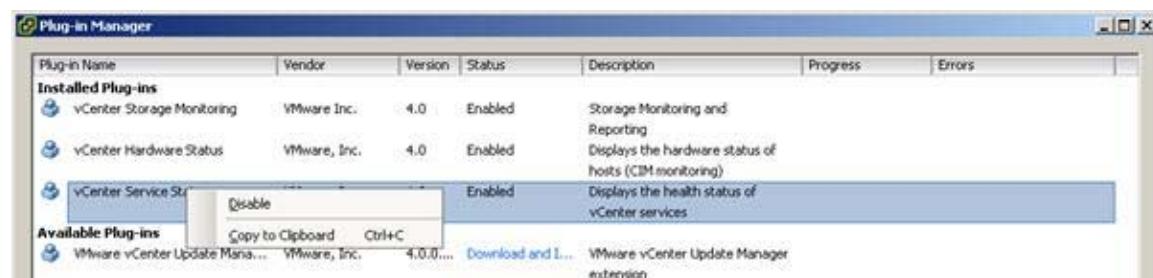
QUESTION NO: 4

An administrator wants to monitor the health status of an ESX Host. When the host is highlighted in the vSphere Client, the Hardware Status tab is not visible. Which of the following explains the problem and the action needed to resolve this issue?

- A. The vCenter Hardware Status Plug-in is not enabled. Enable the Plug-in using the Plug-in Manager
- B. The name of the vCenter Server system could not be resolved. Fix the DNS issue or edit the extensions.xml file and replace the vCenter Server name with the IP address
- C. The security settings for Internet Explorer are too high. Allow scripting of Internet Explorer Web Browser must be set to Enabled
- D. Alarm Actions have not been enabled for this host. Right-Click the host and choose Enable Alarm Actions from the Alarm option

Answer: A

See below



QUESTION NO: 5

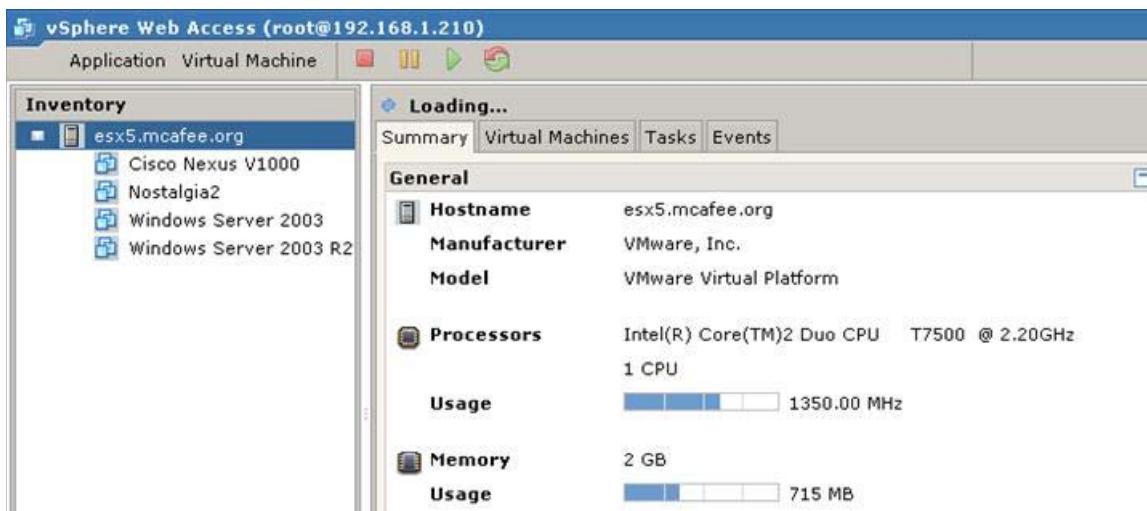
Web Access can be used to monitor a virtual machine's _____. (Choose Two)

- A. memory utilization in MB

- B. disk utilization in Mbps
- C. network utilization in Mbps
- D. CPU utilization in MHz

Answer: A, D

The screenshot below shows both CPU and memory can be monitored from Web Access. Note that the screenshot is from an ESX host.-



QUESTION NO: 6

Which memory conservation technique allows the secure elimination of redundant copies of memory pages between virtual machines on the host?

- A. Memory Balloon Driver
- B. VMkernel Swap
- C. RAM Overcommit
- D. Transparent Page Sharing

Answer: D

Memory Provisioning Recommendations for VMware Infrastructure 3 Operational Best Practices page 7.

Transparent Page Sharing is a process executed frequently by the VMkernel that scans physical memory to identify redundant virtual machine memory pages. When a match is found, the physical page is marked read-only. The VMkernel removes the duplicate page from physical RAM and the page table is adjusted to redirect the virtual machine's virtual page back to the read-only page in physical RAM. This mechanism results in increasing memory that is shared among running virtual machines over time.

QUESTION NO: 7

What must a system administrator do to enable monitoring of a VM heartbeat with supported third-party SNMP monitoring tools?

- A. install VMware tools
- B. purchase a separate SNMP license from VMware
- C. import VMware MIBs
- D. purchase a VMware-aware version of the SNMP monitoring tool

Answer: C

QUESTION NO: 8

The remote console performance for a virtual machine on an ESX Server appears to be degraded. Which of the following could be a possible cause of the problem?

- A. The physical NIC assigned to the virtual machine port group containing the affected virtual machine has a speed or duplex mismatch.
- B. To conserve memory, the ESX Server has initiated Transparent Page Sharing.
- C. The virtual NIC assigned to the virtual machine has a speed or duplex mismatch.
- D. The virtual machine has an IP address conflict.

Answer: A

QUESTION NO: 9

Exhibit:



The graph shown in the exhibit indicates a problem with which of the following resources?

- A. CPU
- B. Memory
- C. Network
- D. Disk

Answer: D

QUESTION NO: 10

Exhibit:



The graph shown in the exhibit indicates which of the following?

- A. Average amount of time SCSI reads and writes spend in the queue
- B. Average amount of time required to read and write from the Guest OS to the Virtual Machine virtual Disk file
- C. Average amount of time spent by the VMkernel processing SCSI read and write commands
- D. Average amount of time spent reading and writing to the physical storage device

Answer: B

Topic 9, VI 3.5 questions (18 questions).

Part 1: ESX/ESXi 3.5 questions (10 questions).

QUESTION NO: 1

What are valid methods of installing the Virtual Infrastructure Client? (Choose Two.)

- A. download and run the Virtual Infrastructure Client installation program from the vCenter Server with a Web Browser
- B. using Virtual Center Server installer, choose the custom install option and select the Virtual Infrastructure Client from the list
- C. run the Virtual Infrastructure Client installer from the Virtual Center installation media
- D. use the MSI installer file from the Virtual Center installation media to publish the application with Active Directory

Answer: A, C

QUESTION NO: 2

If the ESX Server does not have access to shared storage, which two additional partitions are required to be created on local storage? (Choose two.)

- A. VMFS
- B. /usr
- C. VMkernel swap
- D. vmkcore
- E. /var

Answer: A, D

QUESTION NO: 3

During the installation of ESX Server, you decide to manually define the partitioning scheme. Which two are recommended minimum partition sizes? (Choose two.)

- A. /= 5000 MB
- B. swap = 544 MB
- C. /usr = 2048 MB
- D. /boot = 1250 MB
- E. /etc = 1500 MB
- F. None of the other alternatives are correct.

Answer: A, D

Table 7-1. ESX Required Partitions

Mount Point	Type	Size	Location	Partition Description
/boot	ext3	1.25 GB	The ESX boot disk	The ESX boot disk requires 1.25 GB of free space and includes the /boot and vmkcore partitions. The /boot partition alone requires 1100MB.
/	ext3	Calculated dynamically	based on the size of the /usr partition	By default, the minimum size is 5GB and no /usr partition is defined.

QUESTION NO: 4

What are two reasons why a company would choose to use VMware Server 1.x instead of using ESX Server 3.x? (Choose two.)

- A. ESX Server 3.x does not support the storage hardware the company wants to use.
- B. The company wants to utilize NIC teaming for network path failover and load balancing.
- C. VMware Server 1.x is a lower-cost solution for departmental virtualization projects.
- D. The company wants to virtualize a large number of physical machines running legacy operating systems in their datacenter.
- E. VMware Server 1.x allows users to run the same number of virtual machines per CPU core as ESX Server 3.x does at the same performance levels at a lower cost.

Answer: A, C

QUESTION NO: 5

A company wants to install Application Y in a virtualized environment. The underlying operating system has to be Windows NT 4.0 SP6a. In a physical environment, the application and supporting software have very strict minimum hardware requirements. Which requirements prohibit the use of an application inside a virtual machine? Select all that apply.

- A. 4 GB RAM
- B. 2 CPUs
- C. 8 separate disks
- D. 3 NICs
- E. The other options are all false. No requirement prohibit the use.

Answer: E**Explanation:**

None of the other options are correct.

Virtual Machine Maximums

Table 1 contains configuration maximums related to virtual machines.

Item Maximum

SCSI controllers per virtual machine 4

Devices per SCSI controller 15 [C incorrect]

Devices per virtual machine (Windows) 60

Devices per virtual machine (Linux) 60

Size of SCSI disk 2TB

Number of virtual CPUs per virtual machine 4 [B incorrect]

Size of RAM per virtual machine 65532MB (64GB ? 4MB) [A incorrect]

Number of NICs per virtual machine 4 [D incorrect]

Number of IDE devices per virtual machine 4

QUESTION NO: 6

Which statement is true about the installation of Virtual Infrastructure Web Access?

- A. It is always installed on VirtualCenter and is optional on ESX Server.
- B. It is optional on both ESX Server and VirtualCenter.
- C. It is always installed on ESX Server and VirtualCenter.
- D. It is always installed on ESX Server and is optional on VirtualCenter.

Answer: D

ESX Server 3 Installation Guide ESX Server 3.5 and VirtualCenter 2.5, page 14, 81, 83-92

A browser lets you download the VI Client from the VirtualCenter Server or ESX Server hosts. When you have appropriate login credentials, Web Access also lets you perform limited management of your VirtualCenter Server and ESX Server hosts.

The VMware ESX Server 3.5 installation includes the following components:

VMware ESX Server - Software to manage and serve virtual machines.

VMware VI Web Access - Software to allow Web browser access to the ESX Server host

Note there is no option to deselect the VMware VI Web Access component during the installation, so it is always installed on ESX Server.

QUESTION NO: 7

Your desktop PC, like all desktop PCs at your office, has the Virtual Infrastructure Client application installed. Your PC cannot connect to a certain virtual machine (VM) on your ESX Server. Which troubleshooting test would be LEAST helpful in determining the cause of this problem?

- A. try to connect to a different VM
- B. try to ping the DNS hostname of your service console
- C. try to ping the IP address of a VM that is known to be up and working
- D. try to ping the IP address of your service console

Answer: C

Ping is used to test connectivity. If you know you are trying to troubleshoot connectivity, pinging a VM that is already up and working would be unlikely to indicate why your PC cannot connect to another virtual machine.

QUESTION NO: 8

ESX 3.0 Server supports access to _____ LUNs during the initial installation process.

- A. 64
- B. 255
- C. 128
- D. 32
- E. 256

Answer: C

ESX Server 3 Installation Guide ESX Server 3.5 and VirtualCenter 2.5, page 83.

Although ESX Server supports up to 256 LUNs for operation, the installer supports a maximum of 128 LUNs

QUESTION NO: 9

In a VI 3 environment, iSCSI dynamic discovery (Choose Two)

- A. uses "get target" requests.
- B. uses "send target" requests.
- C. is the only discovery option available for iSCSI software initiators.
- D. is used along with static discovery on iSCSI software initiators.

Answer: B, C

QUESTION NO: 10

Which of the following can be used to configure an ESX 3 server with a hardware iSCSI initiator?

- A. Intel E100 nic
- B. Brocade 2110 card
- C. QLogic QLA4050 card
- D. Intel E1000 nic

Answer: C

Part 2: Virtual Center questions (8 questions).

QUESTION NO: 1

What is the minimum version of Windows supported to run VirtualCenter?

- A. Windows Server 2003 SP1
- B. Windows 2000 Server SP3 with .NET Framework
- C. Windows 2000 Server SP1
- D. Windows 2000 Server, SP4 with Update Rollup 1
- E. Windows Server 2003

Answer: D

ESX Server 3 Installation Guide ESX Server 3.5 and VirtualCenter 2.5, page 18.

VirtualCenter Server Software Requirements

The VirtualCenter Server is supported as a service on the 32?bit versions of these operating systems:

- Windows 2000 Server SP4 with Update Rollup 1
- Windows XP Pro SP2
- Windows 2003 Server SP1 (all releases except 64?bit)
- Windows 2003 Server R2

QUESTION NO: 2

Virtual Center 2.X supports which two database products for production use? (Choose Two.)

- A. MySQL
- B. Microsoft SQL Server
- C. Oracle
- D. Microsoft MSDE

Answer: B, C

ESX Server 3 Installation Guide ESX Server 3.5 and VirtualCenter 2.5, page 18.

VirtualCenter Database Requirements

VirtualCenter supports the database formats listed in Table 2?1.

Each database requires some configuration adjustments in addition to the basic installation. See "Preparing the VirtualCenter Server Database" on page 66.

Table 2-1. Supported Database Formats (SEE UPDATE)

Database Type

- Microsoft SQL Server 2000 Standard
- Microsoft SQL Server 2000 Enterprise
- Microsoft SQL Server 2005 Enterprise
- Microsoft SQL Server 2005 Express SP2
- Oracle 9i release 2 Standard
- Oracle 9i release 2 Enterprise
- Oracle 10g Standard Release 1 (10.1.0.3.0)
- Oracle 10g Enterprise Release 1 (10.1.0.3.0)
- Oracle 10g Standard Release 2 (10.2.0.1.0)
- Oracle 10g Enterprise Release 2 (10.2.0.1.0)

QUESTION NO: 3

Which statement is true about VirtualCenter and the License Server?

- A. The License Server may be installed on a separate machine, but VirtualCenter requires a server-based license.
- B. The License Server must be installed during VirtualCenter installation and must always run on the same server as VirtualCenter.

- C. VirtualCenter cannot be installed without an operational License Server online.
- D. If deploying a License Server is not desirable, VirtualCenter can be installed using a host-based license file.

Answer: A

ESX Server 3 Installation Guide ESX Server 3.5 and VirtualCenter 2.5, page 30, 49.

Location of the License Server

VMware recommends that you follow the default installation and place your license server on the same machine as your VirtualCenter Server. This has the advantage of simplicity of setup, as well as guaranteeing VirtualCenter?to?license server communications. Change this only if you have a good reason, such as an existing FLEXnet license server.

At least one instance of a VirtualCenter license is required for VI Foundation, VI Standard, and VI Enterprise editions. The following VirtualCenter editions are available:
VirtualCenter Foundation - This edition lets you manage up to three ESX Server hosts. If you need to manage more than three hosts, upgrade to VirtualCenter edition.
VirtualCenter - This is an enterprise level edition that lets you manage up to the system maximum number of hosts. For information about system maximums, see Configuration Maximums for VMware Infrastructure 3.

QUESTION NO: 4

A VirtualCenter login that worked correctly in the past is suddenly no longer working. It fails to authenticate with the previous login ID. Assuming there are no network problems and that all servers are up and running, where is the problem located?

- A. in the VirtualCenter database's security tables
- B. in the VirtualCenter management agent on the host
- C. in the VirtualCenter management server's security functionality
- D. in the user's account properties in Active Directory
- E. in the Virtual Infrastructure client's security configuration settings

Answer: D

Basic System Administration ESX Server 3.5, ESX Server 3i version 3.5 VirtualCenter 2.5, page 265.

VirtualCenter users - Authorized users for VirtualCenter are those included in the Windows domain list referenced by VirtualCenter or local Windows users on the VirtualCenter host. You cannot use VirtualCenter to manually create, remove, or otherwise change users.

If you need to manipulate the user list or change user passwords, you must do so through the tools you normally use to manage your Windows domain.

QUESTION NO: 5

You have a Windows virtual machine (VM) that is performing poorly. You suspect high CPU utilization is the culprit. To definitively ascertain the cause of the performance problem, you should look for a _____.
fs

- A. low CPU Ready value in VirtualCenter
- B. high CPU Ready value in VirtualCenter
- C. high CPU Usage % in a third-party monitoring tool installed in the VM
- D. high CPU Usage % value in Windows Task Manager

Answer: B

QUESTION NO: 6

Which statement is true about the database used for VirtualCenter evaluations?

- A. Evaluation licenses do not allow VirtualCenter to connect to a remote database.
- B. The optional MSDE database can only be used if installed prior to running the VirtualCenter installer.
- C. The VirtualCenter installer provides the option to automatically install and configure an MSDE database.
- D. MS Access may be used as an evaluation database, but it must be upgraded before VirtualCenter is used in a production environment.

Answer: C

QUESTION NO: 7

A VirtualCenter Administrator assigned you Administrator privileges on an ESX Server Cluster. You are unable to connect the Virtual Infrastructure Client to the ESX Server directly. What is a possible cause of this problem?

- A. You need Administrator privileges on the server and all of its resource pools.
- B. You still have a Virtual Infrastructure Client connected to the VirtualCenter server.

- C. Administrators are not allowed to log in to ESX Servers.
- D. User names and permissions are not propagated from VirtualCenter to ESX Servers.

Answer: D

Basic System Administration ESX Server 3.5, ESX Server 3i version 3.5 VirtualCenter 2.5, page 265, 266.

A user is an individual authorized to log in to an ESX Server host or to VirtualCenter. Users on a host fall into two categories: those who can access the ESX Server host through VirtualCenter and those who can access the host by directly logging in to the host from VI Client, VI Web Access, a third-party client, or a command shell. These two categories draw users from different sources:

VirtualCenter users - Authorized users for VirtualCenter are those included in the Windows domain list referenced by VirtualCenter or local Windows users on the VirtualCenter host.

Direct access users - Users authorized to work directly on an ESX Server host are those added to the internal user list by default when ESX Server is installed or by a system administrator after installation.

Even if the lists maintained by an ESX Server host and VirtualCenter appear to have common users (for instance, a user called devuser), these users should be treated as separate users who have the same name

QUESTION NO: 8

An alarm in VirtualCenter can be configured to perform which three actions? (Choose three.)

- A. disable the balloon driver
- B. reboot a virtual machine
- C. run a script
- D. reboot an ESX Server
- E. send an e-mail

Answer: B, C, E

Basic System Administration ESX Server 3.5, ESX Server 3i version 3.5 VirtualCenter 2.5, page 314, 315.

There are several types of alarm notification methods:
Send a notification email message [E above]

Send a notification trap

Run a script [C above]

Suspend the virtual machine

Power off the virtual machine

Reset the virtual machine [B above]