Designing and Deploying Server & Storage Solutions for Small and Medium Business

HPATA – Servers & Storage
Study Guide
Rev 1.1
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Unit 1
Explain and recognize industry standard server technologies and their implications on customer needs

1.1 Describe various types of Server Applications and their functionality

1.2 Identify and describe the common industry OS and application solutions stacks currently supported by x86/x64 systems

1.3 Describe the architecture elements of industry standard operating systems

1.4 Describe the common components of data centers
1.1 Describe various types of Server Applications and their functionality

Question:
Using Hyper-V, you can create:

Answer choices:
A. only virtual disks that are a fixed size.
B. virtual disks only from the Hyper-V server.
C. virtual disks before or after creating a virtual machine.
D. virtual disks only after creating a virtual machine.

Explanation:
Using Hyper-V, you can create virtual disks before or after creating a virtual machine. In Hyper-V, you can use the New Virtual Hard Disk Wizard to create a virtual disk before you create a virtual machine. Virtual hard disks are created as files with the .vhd extension and can be managed as if they were actual disks. You can also use the New Virtual Machine Wizard to create a virtual machine and create the virtual disk when you create the virtual machine.

Using Hyper-V, you can create virtual disks after creating a virtual machine. However, you can also create virtual disks before you create a virtual machine by using the New Virtual Hard Disk Wizard.

Using Hyper-V, you can create virtual disks that are a fixed size. However, you can also create virtual disks that can expand in size.

Using Hyper-V, you can create virtual disks from the Hyper-V server. However, you can also perform Hyper-V tasks remotely.

Additional information:
1.2 Identify and describe the common industry OS and application solutions stacks currently supported by x86/x64 systems

Question:
What is the purpose of a RADIUS server?

Answer choices:
A. To provide secure access through an unsecured network
B. To allow a Web server to host multiple Web sites
C. To authenticate remote users who connect through dial-up
D. To provide fault tolerance for a hard disk

Explanation:
The purpose of a Remote Access Dial-up Authentication Service (RADIUS) server is to authenticate users who connect using dial-up, VPN, or wireless connections. Dial-up users can also be authenticated by the remote access server.

A virtual private network (VPN) provides secure access through an unsecured network, such as the Internet. A VPN creates a secured tunnel, using a protocol like Point-to-Point Tunneling Protocol (PPTP), Layer 2 Transport Protocol (L2TP) with Internet Protocol Security (IPSec), or Secure Sockets Tunneling Protocol (SSTP).

A virtual directory allows a Web server to host multiple Web sites. Each virtual directory can be associated with a different name, different port, or both.

Redundant Array of Independent Disks (RAID) provides fault tolerance and optimized performance for hard disks. RAID 0 (disk striping) provides only optimized performance. RAID 1 (disk mirroring) provides fault tolerance by storing the data on two separate hard disks, RAID 5 (disk striping with parity) provides fault tolerance by striping data, along with a parity stripe, across at least three hard disks. RAID 10 provides both optimized performance and fault tolerance by combining disk striping with disk mirroring.

Additional information:
1.3 Describe the architecture elements of industry standard operating systems

Question:
You recently installed an updated device driver for an existing piece of hardware on a customer's server. You restart the computer, but employees can no longer use the hardware device.

What should you do?

Answer choices:
A. Roll back the device driver installation.
B. Disable the device driver.
C. Create a signed device driver package.
D. Boot the computer in Safe mode.

Explanation:
You should roll back the device driver installation. A device driver is a special program required for a computer to operate with a piece of hardware. Device Manager can be used to manage and troubleshoot problems with device drivers. In this case, you have a device that was previously being used, but you could not use it after updating the device driver. You can use Device Manager to roll back the device driver installation and use the previously installed device driver.

You should not disable the device driver. You disable device drivers through Device Manager. When a device driver is disabled or not functioning correctly, you will not be able to use the device.

You should not create a signed device driver package. You would use a signed device driver package to control which device drivers that client computers on the network are allowed to install. A device driver package can be signed with a digital certificate, and then certificates can be installed on the client computers.

You should not boot the computer in Safe Mode. When you boot in Safe Mode, only basic device drivers are loaded. Booting to Safe Mode might be helpful if the computer would not restart or Windows did not function properly after you installed a new device or updated a device driver. After booting with only the basic device drivers, you could then use Device Manager to correct any device driver problems.

Additional information:
1.4 Describe the common components of data centers

Question:
You are planning a new data center for a customer. You need to ensure that power is distributed appropriately throughout the center.

Which component should you include?

Answer choices:
A. UPS
B. TVSS
C. MSSB
D. PLDC

Explanation:
To ensure that power is distributed appropriately throughout the center, you should include a Power Load Distribution Center (PLDC). A PLDC contains breakers and a monitoring panel.

You use an Uninterruptible Power Supply (UPS) to ensure that power to one or more devices is maintained when the primary power source for the device is not available.

A Transient Voltage Surge Suppression (TVSS) device protects other equipment from a spike in electrical power by absorbing or diverting the excess power.

The main switchboard (MSSB) manages incoming power lines and provides electrical power to a data center. A PLDC distributes power from the MSSB and UPS to the rest of the data center.

Additional information:
Unit 2
Recognize and describe HP and industry standard server products and solutions

2.1 Describe health and fault management tools and technologies

2.2 Describe the features and options of various rack series

2.3 Identify and describe Power protection and power management

2.4 Identify and describe network options

2.5 Identify and describe storage options

2.6 Identify and describe standard management solutions for Windows/Linux on x86 and/or x64

2.7 Identify and describe the use and benefits of vendor management utilities such as HP SIM management
2.1 Describe health and fault management tools and technologies

Question:
What is the role of a Health Registration Authority (HRA) in Network Access Protection (NAP)?

Answer choices:
A. Saving client health requirements.
B. Validating and requesting a health certificate for compliant clients.
C. Performing client remediation.
D. Issuing a statement of health (SoH) for each client.

Explanation:
The HRA is responsible for validating and requesting a health certificate for compliant clients. The HRA validates client credentials and sends a request for a health certificate to a certificate authority (CA). The health certificate is required for the client to communicate on an IPSec protected network.

The HRA is not responsible for saving client health requirements. This is the responsibility of the Network Policy Server (NPS). The HRA will check with the NPS to validate the client.

The HRA is not responsible for performing client remediation. This is the role of remediation servers. You can set up one or more remediation servers responsible for different remediation tasks.

The HRA is not responsible for issuing an SoH for each client. The client issues an SoH as it connects to a NAP-protected network. The contents of the SoH are used to determine whether or not the client is compliant with network health policies.

Additional information:
2.2 Describe the features and options of various rack series

Question:
You are planning the rack configuration for a customer. You plan to use two HP S106104 rack units, each of which will house equipment with a total weight greater than 210 pounds (95 kilograms).

Which optional kit should you order for this configuration?

Answer choices:
- E. HP Side Panel Option Kit
- F. HP 10000 Baying Kit
- G. HP 10000 Series Plinth Option Kit
- H. HP 10000 Ballast Option Kit

Explanation:
You should order an **HP 10000 Baying Kit** for this configuration. You can use this kit to connect the two units to each other and optimize stability of the units.

Because side panels are included by default with HP S106104 racks, you do not need to order an HP Side Panel Option Kit.

You use a plinth option kit to anchor a rack to the floor. This kit is recommended for use in locations that experience seismic activity.

Because each rack will house equipment with a total weight greater than 210 pounds (95 kilograms), you do not need an HP 10000 Ballast Option Kit. You use a ballast option kit to add weight to a rack to improve stability if the equipment in the rack weighs less than 210 pounds (95 kilograms).

Additional information:

2.3 Identify and describe Power protection and power management

Question:
You need to manage an HP R1500 G3 UPS for one of your U.S.-based customers by using a browser-based management console. You need to be able to manage the UPS both locally and remotely.

What HP product should you use?

Answer choices:
A. HP Power Protector
B. HP Value UPS Manager
C. HP Power Advisor
D. HP Voltage Viewer

Explanation:
You should use **HP Power Protector**, which is a web-based application that enables administrators to manage an HP UPS from a browser-based management console. You can use it to monitor, manage, and control a single UPS locally and remotely.

The HP Value UPS Manager software is included with the HP UPS R3000v and T1000v models only. These HP models are available for customers in India and China only.

You should not use the HP Power Advisor. You would use the HP Power Advisor to estimate the power consumption for computers and racks and determine what power supply components to use.

HP Voltage Viewer does not allow you to manage a UPS.

Additional information:

2.4 Describe the features and options of various rack series

**Question:**
You create three Hyper-V virtual machines on a server running Windows Server 2008.

You need to create a network that allows the virtual machines to communicate with each other, but not with the host computer or other computers on the physical network.

What type of network should you create?

**Answer choices:**
- A. Internal network
- B. External network
- C. Virtual private network
- D. Private network

**Explanation:**
You should create a *private network*. A private network is one that allows multiple virtual machines to communicate with each other, but not with the host computer or other computers on the physical network.

You should not create an internal network. An internal network is one that allows a virtual machine to communicate with the host computer and other virtual machines, but not with any other computers on the network.

You should not create an external network. An external network allows a virtual machine to access the physical network adapter of the host computer, for the purposes of connecting to the physical network.

You should not create a virtual private network (VPN). A VPN is not a Hyper-V network type. It creates a secure channel through an unsecured network.

**Additional information:**
2.5 Identify and describe storage options

Question:
Which is an external network storage device?

Answer choices:
A. PATA
B. SATA
C. NAS
D. DAS

Explanation:
Network Attached Storage (NAS) is an external network storage device. NAS provides shared external network storage that multiple computers can access. NAS is easier to deploy than using a storage area network (SAN).

Direct Attached Storage (DAS) is not a network storage device. DAS is an external storage device attached to a single computer.

Parallel ATA (PATA) is not a network storage device. PATA is a method of connecting a hard drive to a computer. PATA drives, which are also referred to as EIDE drives, use jumpers and do not provide the throughput supported by newer hard drives.

Serial ATA (SATA) is not a network storage device. SATA is a method of connecting a hard drive to a computer. SATA drives provide better throughput than older PATA drives, and use less power. They do not use jumpers and use smaller connectors than PATA drives.

Additional information:
2.6 Identify and describe standard management solutions for Windows/Linux on x86 and/or x64

Question:
For what reason should you use the Microsoft Security Baseline Analyzer (MSBA)?

Answer choices:
A. To determine whether or not network computers have an up-to-date antivirus program installed
B. To verify that network computer security configurations match administrator-specific configuration requirements
C. To directly install missing security updates and service packs to network computers
D. To identify security misconfigurations and missing security updates on network computers

Explanation:
MSBA identifies security misconfigurations and missing security updates on network computers. MSBA supports computers running Windows 2000, Windows XP, or later Windows versions. It also analyzes the configuration of Microsoft Office 2000 and later and SQL Server 7.0 and later.

MSBA does not look to see whether or not computers have antivirus software installed. Instead, it deals with Microsoft security recommendations for supported operating systems and applications.

MSBA checks for Microsoft-recommended security configurations. You cannot check for custom administrator-specified configurations.

MSBA reports, but does not directly install, missing updates. When using Windows Server Update Services (WSUS), you can specify to have MSBA not list any updates that have not been authorized for installation by the administrator.

Additional information:


2.7 **Identify and describe the use and benefits of vendor management utilities such as HP SIM management**

**Question:**
You install HP Systems Insight Manager (SIM) 6.3 for a customer.

What component can you use to initiate the reporting of support cases to HP?

**Answer choices:**
A. The Discovery and Dependency Mapping integration module
B. Automatic Event Handling
C. The HP SIM Care Pack

**Explanation:**
You can use the *Service Essentials* Remote Support Pack to initiate the reporting of support cases to HP.

You should not use the Discovery and Dependency Mapping (DDM) integration module. You would use this module to ensure that configuration data discovered by HP SIM is imported into the HP uCPMD.

Automatic Event Handling enables you to configure actions to notify appropriate users of failures through e-mail or pager, and enables automatic execution of scripts or event forwarding to enterprise platforms such as HP Operations Manager or HP Network Node Manager.

You would not use an HP SIM Care Pack. An HP SIM Care Pack allows you to work with HP technical support personnel to log and diagnose up to 10 incidents.

**Additional information:**
Unit 3
Plan and design server and storage solutions for SMB customers

3.1 Design, size and validate the solution
3.1 Design, size and validate the solution

Question:

What are two benefits of using these drives? (Choose two.)

Answer choices:
A. They perform over 100 times more Random Write IOPs than a Small Form Factor (SFF) 15K rpm hard drive.
B. Because there are no moving parts, they do not wear out like older spinning hard drive disks do and will last longer than other drives.
C. They provide over 100 times more Random Read IOPs performance than a Small Form Factor (SFF) 15K rpm hard drive.
D. They fit seamlessly into an existing HP server infrastructure using HP universal hot plug carrier.

Explanation:
Two benefits of using these drives are that:

- They provide over 100 times more Random Read IOPs performance than a Small Form Factor (SFF) 15K rpm hard drive.
- They fit seamlessly into an existing HP server infrastructure using HP universal hot plug carrier.

These drives perform 25 times more Random Write IOPs than a Small Form Factor (SFF) 15K rpm hard drive, not 100 times more.

These drives do wear out and weaken with each use. There is a special utility called the HP SMARTSSD Wear Gauge Utility that will let you know how much life is left in the solid state drive.

Additional information:
Unit 4
Install, configure, and upgrade server and storage solutions (including both rack-mount and blade systems) for SMB customers

4.1 Verify the physical installation (setup diagram/specification based on the customer/presales design)

4.2 Install server supported operating system

4.3 Install and configure management software

4.4 Validate, test and document the solution
4.1 Verify the physical installation (setup diagram/specification based on the customer/presales design)

Question:
You are configuring Integrated Lights-Out (iLO) 3 for one of your customers to allow the IT support team members to monitor and configure servers. You need to ensure that iLO users define passwords that are at least eight characters long.

Which node of the iLO 3 console should you use?

Answer choices:
A. Access Settings
B. Security
C. User Administration
D. Management

Explanation:
You should use the Access Settings node of the iLO 3 console to configure the minimum password length. Some other settings that you can configure from this node include the idle connection timeout, the ports to use for Secure Shell (SSH) and Web services, and whether or not a user must log in to use the ROM-Based Setup Utility (RBSU).

You should not use the Security node. You can use this node to perform tasks such as administering Secure Sockets Layer (SSL) certificates, configuring directory settings, and enabling support for securing RBSU.

You should not use the User Administration node. You can use this node to create user accounts for iLO users, to grant permissions to each user account, and to configure settings for directory groups.

You should not use the Management node. You can use this node to configure and test Simple Network Management Protocol (SNMP) alerts and to configure integration with Insight Manager.

Additional information:
4.2 Install server supported operating system

**Question:**
When would you use an unattend.xml file?

**Answer choices:**
A. To centrally manage operating system updates for networked computers  
B. To minimize the effort required to install Windows Server 2008 R2  
C. To ensure that required services are started automatically  
D. To allow or deny users access to specific resources

**Explanation:**
You would use an unattend.xml file to minimize the effort required to install Windows Server 2008 R2. The unattend.xml file is used to perform an unattended installation. The unattend.xml file contains XML elements that define the information the setup program needs to install Windows Server 2008 R2. You can also use an unattend.xml file with Windows Deployment Services (WDS) to perform automated installations on multiple servers on the network.

You would not use an unattend.xml file to centrally manage operating system updates for networked computers. To accomplish this, you would use Windows Server Update Services (WSUS). WSUS allows you to deploy operating system updates, such as Service Packs or security updates, to client computers on the network. You could install WSUS on a server and configure it to obtain updates from Microsoft Update. Then, you could configure clients to receive the desired updates. Using WSUS, you can also view reports to confirm if any specified updates were not successfully installed.

You would not use an unattend.xml file to ensure that required services are started automatically. To configure services to start automatically, you would use Service Control Manager (SCM). You can use SCM to configure services to start automatically, require that services be manually started, or disable them altogether so they cannot be started.

You would not use an unattend.xml file to allow or deny users access to specific resources. You use file and folder sharing and permissions to allow or deny users access to specific resources.

**Additional information:**
http://download.microsoft.com/download/e/6/3/e63cf2f6-7f71-450b-8e4a-dace88e99456/readme.htm
4.3 What are two benefits of using HP Systems Insight Manager (SIM) 6.3? (Choose two.)

Question:
Which routing topology would most likely continue carrying traffic to all locations even if one communication path fails at a customer's site?

Answer choices:
A. It provides unified server and storage management.
B. It provides simplified delivery of ProLiant software and firmware.
C. It supports extensibility through plug-in applications.
D. It leverages the power of HP Smart Update Manager (HP SUM).

Explanation:
Two benefits of using HP SIM 6.3 are:

- It provides unified server and storage management.
- It supports extensibility through plug-in applications.

Two benefits of HP Service Pack for ProLiant, not of SIM 6.3, are:

- It provides simplified delivery of ProLiant software and firmware.
- It leverages the power of HP SUM.

Additional information:
**4.4 Validate, test, and document the solution**

**Question:**
You need to use SmartStart to configure a server for one of your customers. The server is offline.

Which three utilities can you use? (Choose three.)

**Answer choices:**
A. Insight Diagnostics  
B. Software Version Control  
C. Array Configuration Utility (ACU)  
D. Erase Utility  
E. System Management Homepage

**Explanation:**
In offline mode, you can use Insight Diagnostics, the ACU, and the Erase Utility.

You can use Insight Diagnostics to perform system and hardware component tests.

You can use the ACU to configure array controllers and storage devices.

You can use the Erase Utility to initialize disks, clear drive arrays, and clear non-volatile RAM.

Software Version Control and System Management Homepage are not available in offline mode.

**Additional information:**
Unit 5
Performance-tune and optimize server and storage solutions for SMB customers

5.1 Determine whether performance is optimal; Identify and resolve bottlenecks and tune the system

5.2 Check for known performance issues
5.1 Determine whether performance is optimal; Identify and resolve bottlenecks and tune the system

Question:
When tracking performance on a computer running Windows Server 2008 R2, why would you create a performance baseline?

Answer choices:
A. To collect statistics for future comparison
B. To evaluate the value of a performance counter
C. To log an event to the Windows event log
D. To view the amount of memory that the server is currently using

Explanation:
You would create a baseline when you want to collect statistics for future comparison. A performance baseline is important because it provides original performance information that can then be reviewed and analyzed over a period of time. Capturing a performance baseline gives you something to compare later performance information against. This allows you to monitor and evaluate how performance is affected over time.

You would not create a baseline when you wanted to evaluate the value of a performance counter. You can view performance counters in real time.

You would not create a baseline when you wanted to log an event to the Windows event log. Events can be logged in many ways, such as programmatically in an application or automatically based on events that occur.

You would not create a baseline when you wanted to view the amount of memory that the server is currently using. You could monitor memory usage in real time using Performance Monitor or Task Manager without creating a baseline.

Additional information:
5.2 Check for known performance issues

Question:
You are planning to install a new application on a server running Windows Server 2008. You need to be able to evaluate the application's impact on performance.

What should you do FIRST?

Answer choices:
A. Install the application.
B. Create an alert.
C. Generate a baseline.
D. Create a system state backup.

Explanation:
You should generate a baseline. A baseline is a measure of the system's performance. You will compare the system's performance after installing the new application with the baseline to note any differences. You can create a baseline by defining a log that monitors and saves performance counter values. Performance counters are available to track various types of resource usage.

You should not install the application. You should install the application after you generate a baseline.

You should not create an alert. An alert is used to notify an administrator if a performance counter exceeds a threshold. It is not used to evaluate the impact of an application on performance.

Although it is a good idea to create a system state backup before installing an application, doing so is not related to evaluating an application's impact on performance.

Additional information:
Unit 6
Troubleshoot and perform repair/replacement procedures for server and storage solutions for SMB customers

6.1 Troubleshoot common server and storage issues using the HP 6-step troubleshooting methodology
6.1 Troubleshoot common server and storage issues using the HP 6-step troubleshooting methodology

Question:
Which two utilities can you use to terminate an application that is not responding on a computer running Windows Server 2008 R2? (Choose two.)

Answer choices:
A. Task Manager
B. Resource Monitor
C. Performance Monitor
D. Programs and Features
E. Event Viewer

Explanation:
You can use Task Manager to terminate an application that is not responding. You can start Task Manager by right-clicking the Task Bar and choosing Start Task Manager. You can also start it by pressing Ctrl+Alt+Delete. With some operating system versions, you will then need to select to open Task Manager. The Applications tab shows the applications that have been launched. The Status column shows an application as either Running or Not Responding. You can terminate an application by selecting it and clicking End Task. The Processes tab shows each individual process and the resources it is consuming, including CPU time and memory. You can also terminate an individual process.

Resource Monitor also allows you to view the CPU time, memory, disk, and network resources used by each process. You can terminate a process by right-clicking it and choosing End Process.

Performance Monitor allows you to view performance counters for various resources. You can view instantaneous performance counter values, log the values over time, or configure alerts that notify an administrator when a threshold is exceeded. However, you cannot terminate an application or process from Performance Monitor.

Programs and Features allows you to install, modify, and uninstall applications and operating system features. It does not allow you to terminate an application that is not responding.

Event Viewer allows you to view events that are logged by the operating system or by an application, including security audit events. It does not allow you to terminate an application.
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Additional information:

http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/taskman_whats_there_w.mspx
Unit 7
Administer and operate server and storage solutions for SMB customers

7.1 Perform system upgrades

7.2 Design and implement the appropriate fault management solution
7.1 Perform system upgrades

Question:
Which utility can you use to update a specific device driver on a computer running Windows Server 2008 R2?

Answer choices:
A. Windows Update
B. Programs and Features
C. Devices and Printers
D. Device Manager

Explanation:
Device Manager lists the devices installed on a computer. It allows you to update the device driver for a specific device. It also allows you to uninstall a device, roll back a device driver, and troubleshoot problems with a device.

You cannot use Windows Update to update a specific device driver. You use Windows Update to configure automatic operating system updates.

You cannot use Programs and Features to update a device driver. You use Programs and Features to uninstall and modify applications and to install applications that are published using Group Policy. You also use Programs and Features to install Windows features.

You cannot use Devices and Printers to update a device driver. You use Devices and Printers to manage printers and configure various external devices.

Additional information:
7.2 Design and implement the appropriate fault management solution

**Question:**
You need to restore a system state backup to a server running Windows Server 2008 R2.
Which tool should you use?

**Answer choices:**
A. wbadmin
B. ntbackup
C. System Restore
D. Windows RE

**Explanation:**
You should use wbadmin. You can use the wbadmin command-line utility to restore a system state backup, operating system backup, volume backup, or file backup.

You cannot use ntbackup to restore a system state backup on a server running Windows Server 2008 R2. You use ntbackup to restore a file backup created using ntbackup.

You cannot restore a system state backup using System Restore. The System Restore utility is used to restore to a restore point, not to restore a backup.

You cannot restore a system state backup using the Windows Recovery Environment (RE). You use Windows RE to restore a full operating system or critical files backup.

**Additional information:**