Module 12 Installation, Storage, and

Compute with Windows Server

Install Windows Servers 2016

1. Windows Server 2016 installation requirements

* For starters, an organization will need a 1.4Ghz 64-bit processor, 512 MB of RAM, and 32 GB of disk space. There will also need to be one Ethernet network adapter with at least one-gigabit throughput.

1. Describe Windows Server 2016 editions

* **Includes new datacenter functionality including shielded virtual machines, software-defined networking, storage spaces direct and storage replica.**

1. From which menu we can add and remove server roles?

* **To open Server Manager, click the Server Manager icon in the taskbar or select Server Manager in the Start Menu.**
* **Click Manage in the upper right portion of the screen and click Add Roles and Features to open a wizard.**

1. What is workgroup?

* **A workgroup is a collection of computers on a local area network (LAN) that share common resources and responsibilities. Workgroups provide easy sharing of files, printers and other network resources.**

1. What is domain?

* **Specific to the internet, the term domain can refer to how the internet is structured, and domain also refers to how an organization's network resources are organized. In general, a domain is an area of control or a sphere of knowledge.**

1. What is powershell ?

* **As a scripting language, PowerShell is commonly used for automating the management of systems. It's also used to build, test, and deploy solutions, often in CI/CD environments. PowerShell is built on the .NET Common Language Runtime (CLR). All inputs and outputs are .NET objects.**

1. up gradation v/s migration

* **Upgrading does not directly affect user data; no data is touched, changed, or moved during an upgrade. Migrating data refers to moving data from one Oracle Database into another database previously created for migrating or moving the data.**

1. license and activation model

* **All Our Software Licenses Require Activation. We offer various models to provide flexible activation for all of the software licenses we provide.**

1. Precaution of up gradation

* **Before attempting to upgrade you should backup all your stuff. Or even make a disk snapshot to an external drive. If something goes wrong you can easily revert. If your PC is in the low end of supported specs you should expect the system to get sluggish.**

1. Migration limitation

* **When you migrate lookup maps for new business objects, the migration of a single package that contains both the lookup map records and the business object ...**

1. What is the advantages of server core

* **Because Server Core installs only what is required for a manageable DHCP, File, DNS, Media Services, and Active Directory server, less servicing is required. Because less is installed on a Server Core-based server, less management is required. Because there is less running on the server, there is less attack surface.**

1. What is Nano server

* **"Nano Server is a remotely administered server operating system optimized for private clouds and datacenters. It is similar to Windows Server in Server Core mode, but significantly smaller, has no local logon capability, and only supports 64-bit applications, tools, and agents.**

1. Purpose of Nano server

* **Nano Server is a specialized platform optimized for running modern applications and microservices in cloud and container environments.**

1. Compare GUI v/s core v/s Nano server

* **The company promoted Nano Server as a successor to Server Core, as a smaller, even more secure headless deployment. Microsoft said Nano Server ...**

**Practical**

1. Install server 2016 GUI

* **YES**

1. Install server 2016 server core

* **YES**

1. Assign dual IP address on lan card

* **YES**

1. Upgrade server 2012 to server 2016

* **YES**

1. Change computer name

* **YES**

1. install nano server

* **YES**

1. manage and configure a nano server

* **YES**

1. configure network in nano server

* **YES**

1. join nano server in domain

* **YES**

**Storage solution**

1. compare GPT and MBR

* **The partition styles MBR (Master Boot Record) and GPT (GUID Partition Table) are used to start a hard disc. MBR is the most common format and is compatible with BIOS systems. GPT is a newer type that works with UEFI systems. MBR maps out the partitions of a hard disc using a table.**

1. different between VHD and VHDX

* **VHDX is the newer version of the original VHD file format created by Microsoft. It was introduced with Windows 8 and provides more storage capacity, reliability, and performance flexibility than its predecessor.**

1. what is SMB and NFS

* **Network File System (NFS) and Server Message Block (SMB) are file access storage protocols or rules for efficient file sharing over a network. The ability to communicate, collaborate, and share files effectively is essential for any organization's day-to-day operations.**

1. what is sharing permission

* **Share permissions can be implemented on NTFS and FAT file systems for shared resource. Different permissions are Read, Change and Full control. Permissions are also implemented on Samba.**

1. what is NTFS permission

* **NTFS permissions are used to manage access to the files and folders that are stored in NTFS file systems. To see what kind of permissions you will be extending when you share a file or folder: Right click on the file/folder. Go to “Properties” Click on the “Security” tab.**

1. what is resource ownership

* **Resource Ownership is the creation of a job match for a consumer, which is consistent with the consumer's strengths, resources, priorities, concerns, abilities, capabilities, interests, and informed choice, through the purchase of equipment and/or materials creating an opportunity for an individual to be hired by an ...**

1. what is storage pool

* **A storage pool is a collection of storage volumes. A storage volume is the basic unit of storage, such as allocated space on a disk or a single tape cartridge. The server uses the storage volumes to store backed-up, archived, or space-managed files.**

1. what is basic disk and dynamic disk

* **A basic disk is a type of disk that uses partitions to organize data. A dynamic disk is a type of disk that uses volumes to organize data. Volumes can span multiple disks, provide fault tolerance, and offer more flexibility than partitions.**

1. what is simple volume , spanned volume

* **A dynamic simple volume consists of a single contiguous region (or subdisk) on a single physical disk. Dynamic simple volumes can be extended or mirrored. When you extend a simple volume to a noncontiguous region within the same disk or onto additional disks, it becomes a spanned volume.**

1. describe RAID 0 , RAID 1 , RAID 5, RAID 6 , RAID 1 0

* **RAID 0 offers the best performance and capacity, but the worst reliability and security. RAID 1 offers the best reliability and security, but the worst performance and capacity. RAID 5 offers a compromise between performance and reliability, but requires more disks and computational overhead.**

1. describe DAS, NAS and SAN

* **The three systems also use different storage mechanisms: DAS primarily uses hard-drive storage with sectors, NAS uses shared files, and SAN uses block storage. Different technologies are also used for transmitting data. DAS uses IDE/SCSI, NAS uses TCP/IP and Ethernet, and SAN uses Fibre Channel and IP.**

1. what is iscsi initiator and target?

* **It is a protocol for communicating with I/O devices, chiefly storage devices. iSCSI is an IP-based standard for connecting data storage devices ...**

1. what is data duplication?

* **Duplication of data is called data redundancy. Duplication of data should be checked always as data redundancy takes up the free space available in the computer memory. Data redundancy occurs when the same piece of data is stored in two or more separate places and is a common occurrence.**

**Practical**

1. share “data” a folder and give read / write permission to first user

* **YES**

1. share “data” folder and give read permission to another user

* **YES**

3. share a “data” folder create a file in that folder and remove inheritance

permission and give different ntfs permission to different user

* **YES**

1. configure RAID 1 and check redundancy

* **YES**

1. configure RAID 5 and check redundancy

* **YES**

1. configure iscsi target and iscsi initiator and allocate remote storage

* **YES**

1. configure data deduplication

* **YES**

**Implement Hyper-V**

1. what is virtualization

* **Virtualization is technology that you can use to create virtual representations of servers, storage, networks, and other physical machines. Virtual software mimics the functions of physical hardware to run multiple virtual machines simultaneously on a single physical machine.**

1. type of virtualization and compare it

* **Server virtualization. Server virtualization is a process that partitions a physical server into multiple virtual servers. ...**
* **Storage virtualization. ...**
* **Network virtualization. ...**
* **Data virtualization. ...**
* **Application virtualization. ...**
* **Desktop virtualization.**

1. Describe hyper v

* **Hyper-V virtualization is the process of creating multiple VMs using hypervisor-V on a system running Windows. A VM is a software version of a computer running its own OS and programs. A Hyper-V server can help individual VMs to connect to different networks.**

4.what is remote management of hyper v

* **There are two types of remote management when it comes to Hyper-V. First, you can remotely manage the Windows Server Core installation with the Hyper-V Role installed (Windows itself), and then you can manage the Hyper-V Role and Hyper-V specific actions, configuration, and management**

1. what is hyper v manager

* **Hyper-V Manager lets you manage a small number of Hyper-V hosts, both remote and local. It's installed when you install the Hyper-V Management Tools, which you can do either through a full Hyper-V installation or a tools-only installation**

1. what is virtual machine and nested virtualization
2. **Nested virtualization lets you run virtual machine (VM) instances inside of other VMs so you can create your own virtualization environments. To support nested virtualization, Compute Engine adds Intel VT-x instructions to VMs, so when you create a VM, the hypervisor that is already on that VM can run additional VMs.**
3. what is dynamic memory

* **A way or organizing different types of data in the phone's memory. Also referred to as Shared memory. Dynamic memory means that all types of data are stored in the same memory (there is no separate memory for photos, ringtones etc.).**

1. what is NUMA

* **Non-uniform memory access, or NUMA, is a method of configuring a cluster of microprocessors in a multiprocessing system so they can share memory locally.**

1. describe Virtual Machine functions

* **A virtual machine (VM) is a digital version of a physical computer. Virtual machine software can run programs and operating systems, store data, connect to networks, and do other computing functions, and requires maintenance such as updates and system monitoring.**

1. describe Hyper v functions

* **A Hyper-V server can help individual VMs to connect to different networks. As a virtualization platform, it can help your organization virtualize workloads, improve security, and more. It can also allow Windows users to run a Mac OS or Linux on their physical system.**

1. what is check point

* **check·​point: a point at which an inspection or investigation is performed. a checkpoint to uncover drunk drivers.**

12. hyper v networking—virtual nic , hyper v switch

* **Hyper-V Virtual Switch is a software-based layer-2 Ethernet network switch that is available in Hyper-V Manager when you install the Hyper-V server role. Hyper-V Virtual Switch includes programmatically managed and extensible capabilities to connect VMs to both virtual networks and the physical network.**

1. hyper v storage---vhd ,vhdx , fixed size, dynamic expanding

* **There are three types of virtual disks in Hyper-V: fixed-size disks, dynamically expanding disks, and differencing disks. Fixed-size disks offer better performance and are recommended for production workloads, while dynamically expanding disks are more flexible and easier to manage.**

**Practical**

1.install hyper v and configure a virtual switch

* **YES**

1. install virtual machine and install windows 10

* **YES**

1. create a checkpoint

* **YES**

1. P4 create a virtual hdd (vhd) and attach to virtual machine

* **YES**

**Windows containers**

1. describe containers

2. what is docker?

3. hyper v containers and windows containers

**Practical**

1. install windows container

* **YES**

1. install container in core server

* **YES**

1. install container in nano server

* **YES**

**High availability**

1. hyper v live migration

* Live Migration is the Hyper-V most similar type of migration with the known vMotion from VMware. Live Migration is the option that is triggered manually or automatically and is also the simplest type of migration. The Live Migration process starts by copy to the destination node the VM state and memory that is used.

1. what is high availibilty?

* High availability means that an IT system, component, or application can operate at a high level, continuously, without intervention, for a given time period. High-availability infrastructure is configured to deliver quality performance and handle different loads and failures with minimal or zero downtime.

1. what is cluster, quorum and witness?

* The cluster quorum is the majority of voting nodes in the active cluster membership plus a witness vote. A quorum witness can be a designated disk witness or a designated file share witness. No majority (disk witness only) No nodes have votes.

1. describe cluster storage

* Each controller, its storage, its network connectivity, and the instance of ONTAP running on the controller is called a node. Nodes are paired for high availability (HA). Together these pairs (up to 12 nodes for SAN, up to 24 nodes for NAS) comprise the cluster

1. what is NLB?

* Network Load Balancer offers extremely low latencies for latency-sensitive applications. Network Load Balancer preserves the client side source IP allowing the back-end to see the IP address of the client. This can then be used by applications for further processing.

1. importance of network in Failover and NLB

* Network Load Balancer (NLB) appliances provide centralized management and failover capabilities for network devices like routers, firewalls, switches, and more. These appliances are designed to improve application performance, reliability, availability, and scalability.

1. describe node in cluster and its operation

* Clusters are groups of servers that are managed together and participate in workload management. A cluster can contain nodes or individual application servers. A node is usually a physical computer system with a distinct host IP address that is running one or more application servers.

**Practical**

1. Install and configure failover cluster for hyper v

* YES

1. install and configure NLB for web server

* YES

**Maintain and monitor server**

1. need of updates

* Saves you time and trouble later. Ultimately, most of the advantages of updating regularly boil down to saving you time and effort at a later date. Updates are a painless way to minimize the chances of more serious issues that require troubleshooting, time, and money to address.

1. what is WSUSand importance of WSUS 3 WSUS architecture

* It helps distribute updates, fixes, and other types of releases available from Microsoft Update. You can use WSUS to reliably and securely manage, distribute, and install updates for Microsoft products in an organization's IT network. Some of the product examples include Windows Defender, Windows 10, and Office.

1. 4synchronization of update, product and classification 5 wsus group

* The update will automatically synchronize with WSUS if you have the Windows 10, version 1903 and later product and Upgrades classification selected for synchronization. In the Configuration Manager console, go to the Software Library workspace, expand Windows Servicing, and select the All Windows Feature Updates node

1. wsus port number and wsus policy

* WSUS Service Port (optional, default: 8530) - Specify the WSUS Database Service port to connect to. By default, WSUS is configured to use HTTP (non-SSL) over port 8530, and HTTPS (SSL) over port 8531. If WSUS Service Port is left blank and Use SSL for WSUS Service Connection is not selected, port 8530 is used.

1. what is backup and restore 8 type of backup

|  |  |  |
| --- | --- | --- |
| * **Backup type** | * **Date backed up** | * **Restore time** |
| * Full backup | * All data | * Fast |
| * Incremental backup | * Only new/modified files and folders | * Moderate |
| * Differential backup | * All data since last full | * Fast |
| * Mirror backup | * Only new/modified files and folders | * Fastest |

1. difference between incremental and differential backup

* A differential backup strategy only copies data changes since the last full backup. On the other hand, an incremental data backup strategy copies data changes since the last backup.

1. what is full server backup

* A full backup is a complete copy of a business or organization's data assets in their entirety. This process requires all files to be backed up into a single version. It is the best data protection option in terms of speed of recovery and simplicity because it creates a complete copy of the source data set.

1. what is use of performance monitor

* **The Performance Monitor can be used to display real-time performance information as well as collect performance data using Data Collector Sets and by saving the information in log files.**

**Practical**

1. install and configure wsus server

* YES

1. apply update to particular client group through wsus

* **YES**

1. Take customize backup of data

* **YES**

1. restore backup original location and also another location

* **YES**

1. backup schedule and check it.

* **YES**

1. take full backup

* **YES**

1. performance monitor of current process

* **YES**

1. performance monitor of cpu, memory

* **YES**