**Microsoft server Assignment Module 12 Installation, Storage, and Compute with Windows Server**

**Install Windows Servers 2016**

1. Windows Server 2016 installation requirements

CPU Socket minimum 1.4 GHz (64-bit Processor)

RAM Memory minimum is 512 MB, but Microsoft recommenced 8 GB

Minimum 32 GB Disk Space Requirement

Network: Gigabit (10/100/1000baseT) Ethernet adapter

Optical Storage: DVD drive (if installing the OS from DVD media)

Video: Super VGA (1024 x 768) or higher-resolution

Internet: Broadband access

2. Describe Windows Server 2016 editions

Windows Server 2016 is available in three editions — (Standard, Datacenter and Essentials)

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

Add Roles and Features

4. What is workgroup?

A workgroup is a peer-to-peer windows computer network, where users can use their login credentials only on or her system and not others. It holds a distributed administration wherein each user can manage his machine independently. Most storage is distributed. Each device has its own dedicated storage.

5. What is domain?

A domain is a network of computers and devices that are controlled by one set authority and have specific guidelines. More specifically, a domain is controlled by one particular company that has its own internet presence and IP address. The domain is labeled by its domain name, such as TOPS or www.tops.com.

6. What is powershell ?

PowerShell is a powerful scripting language and command-line shell that you can use to automate tasks, manage systems, and perform various operations.

7. upgradation v/s migration

8. license and activation model

9. Precaution of up gradation

10. Migration limitation

11. What isthe advantages of server core

12. What is Nano server

13. Purpose of Nano server

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

• **Practical**

1. Install server 2016 GUI

2. Install server 2016 server core

3. Assign dual IP address on lan card

4. Upgrade server 2012 to server 2016

5. Change computer name

6. install nano server

7. manage and configure a nano server

8. configure network in nano server

9. join nano server in domain

**Storage solution**

1. compare GPT and MBR

|  |  |  |
| --- | --- | --- |
|  | **MBR (Master Boot Record)** | **GTP (GUID Partition Table)** |
|  |  |  |
| Max Partition Capacity | 2 TB | 9.4 ZB (each ZB is 1 Billion TB) |
| Max Numbers of Partitions | up to 4 primary partitions (or three primary partitions, one extended partition, and unlimited logical drives) | 128 primary partitions |
| Firmware Interface Suport | BIOS | UEFI |
| Operating System Comability | Windows 7 and even older systems like Windows 95/98, Windows XP 32-bit, Windows 2000, Windows 2003 32-bit | Newer systems like Windows 8, 8.1 64-bit, 10, 11. |
| Speed | Slower | Faster |
| More Advanced Technology | Works with more advanced technology | Works with less advanced technology and hardware |

1. different between VHD and VHDX

Allows multiple operating systems to exist on a single host machine. VHD file is commonly used by different operating systems without installing a second hard drive or re-partitioning the origin disk.

|  |  |  |  |
| --- | --- | --- | --- |
| **VHD** | **VHDX** |  | |
|  |  |  | |
| Supported by Windows, Citrix, and Oracle | Supported by Windows | |
| Fixed Size- takes complete size in single file | Variable- easy to manage and differentiate the file with size capacity | |
| Basic format | Advanced format | |
| No Data protection | Protection against data corruption | |
| Limited to 2TB size | 64TB storage capacity |  | |
| Does not support custom Meta-data | Custom meta-data is Fully supported |  | |

3. what is SMB and NFS

4. what is sharing permission

5. what is NTFS permission

6. what is resource ownership

7. what isstorage pool

8. what is basic disk and dynamic disk

9. what is simple volume ,spanned volume

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

11. describe DAS, NAS and SAN

12. what is iscsi initiator and target?

13. what is data duplication?

• **Practical**

1. share “data” a folder and give read / write permission to first user 2. share “data” folder and give read permission to another user

3. share a “data” folder create a file in that folder and remove inheritance permission and give different ntfs permission to different user

4. configure RAID 1 and check redundancy

5. configure RAID 5 and check redundancy

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

7. configure data deduplication

**Implement Hyper-V**

1. what is virtualization

2. type of virtualization and compare it

3. Describe hyper v

4. what is remote management of hyper v

5. what is hyper v manager

6. what is virtual machine and nested virtualization

7. what is dynamic memory

8. what is NUMA

9. describe Virtual Machine functions

10. describe Hyper v functions

11. what is check point

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

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

• **Practical**

1. install hyper v and configure a virtualswitch

2. install virtual machine and install windows 10

3. create a checkpoint

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

**Windows containers**

1. describe containers

2. what is docker?

3. hyper v containers and windows containers

• **Practical**

1. install windows container

2. install container in core server

3. install container in nano server

**High availability**

1. hyper v live migration

2. what is high availibilty?

3. what is cluster, quorum and witness?

4. describe clusterstorage

5. what is NLB?

6. importance of network in Failover and NLB

7. describe node in cluster and its operation

• **Practical**

1. Install and configure failover cluster for hyper v

2. install and configure NLB for web server

**Maintain and monitorserver**

1. need of updates

2. what is WSUSand importance of WSUS 3 WSUS architecture

3. 4synchronization of update, product and classification 5 wsus group

4. wsus port number and wsus policy

5. what is backup and restore 8 type of backup

6. difference between incremental and differential backup

7. what is full server backup

8. what is use of performance monitor

• **Practical**

1. install and configure wsusserver

2. apply update to particular client group through wsus

3. Take customize backup of data

4. restore backup original location and also another location

5. backup schedule and check it.

6. take full backup

7. performance monitor of current process

8. performance monitor of cpu, memory

**Module: 13 Networking with Windows Server**

**Installing and configure DNS server**

1. Describe DNS operation

2. DNS query—Iterative and Recursive

3. what is forward lookup zone and its resource type

4. what is reverse lookup zone and its resource type

5. what is conditional forwarder

6. what is primary zone,secondary zone and stub zone

7. what is active directory integrated zone

8. primary server,secondary server, cache only server

9. what is aging and scavenging

10. what is MX record

• **Practical**

1. install active directory integrated dns

2. create secondary dns and zone transfer

3. create “A” record

4. create alias

5. create reverse lookupzone

6. make a pointer

7. apply conditional forwareder betwwen two different domain

8. nslookup command

**DHCP**

1. purpose of DHCP  
 2. what is DORA process?

3. what is authorised DHCP server?

4. describe scope, lease duration, DHCP option, exclude address

5. what is reservation?

6. what is dhcp relay agent?

7. describe ipconfig command

• **Practical**

1. install dhcp sever and make authorize

2. create a scope and check on client by ipconfig

3. dhcp database and take backup

4. dhcp failover

5. dhcp relay agent

6. dhcp filter

7. dhcp reservation

**IPAM**

1. what is IPAM and purpose of IPAM

2. why need dedicated server

3. policy for ipam sever

4. which service monitor and manage by IPAM

• **Practical**

1. Install IPAM

2. configure IPAM with six step

3. create dhcp scope using IPAM 4 create DNS zone

4. check monitoring ofsevices

**Remote connectivity and VPN**

1. what is VPN?

2. type of VPN

3. tunneling protocol

4. authentication protocol

5. what is routing

• **Practical**

1. install routing and remote access

2. configure LAN routing

3. configure vpn connection (VPN client)

**Network policy server**

1. what is Radius server

2. what is authentication authorization and accounting

3. RADIUS server operation method and radius client

4. RADIUS port number

5. what is network policies(NPS)?

• **Practical**

1. P1 configure RADIUS for wireless client

2. confiure NPS for remote access

**IPv4 addressing and IPv6 addressing**

1. what is ip address?And type of ip address

2. class of ip address

3. public ip address and private ip address

4. what is static ip address, dhcp and APIPA

5. what is ipv6 address?

6. ipv6 dhcp process

7. what is NAT?

8. what id gateway address?

9. what is loopback address?

10. different type of ipv6 address

11. ipv6 tunnelling

• **Practical**

1. configure ipv6 address manually and test with ping

2. IPv6 address automatically

3. ping utility

4. ipconfig

5. tracert / traceroute

6. dhcpv6

**DFS**

1. what is DFS? And purpose of DFS

2. Define DFS namespace and DFS replication

3. what is folder target?

• **Practical**

1. install DFS namespace and replication

2. configure common namespace

3. configure replication and check

4. configure branch cache

**Advance Network**

1. what is SDN?

2. what is