# Module 14: Windows Server Security And Maintenance

## Explain the process of installing and configuring Hyper-V virtualization in Windows Server 2016.

Hyper-V is Microsoft’s virtualization platform that allows you to create and manage virtual machines on a physical server. It helps in consolidating workloads, testing environments, and running multiple operating systems on the same hardware.  
  
Steps to install and configure Hyper-V:  
1. Open 'Server Manager' → 'Add Roles and Features'.  
2. Choose 'Role-based or feature-based installation'.  
3. Select the server and check the 'Hyper-V' role.  
4. Configure virtual switches for network connectivity.  
5. Complete the installation and restart the server.  
6. Use 'Hyper-V Manager' to create and configure virtual machines.

## How do you monitor server performance and manage event logs in Windows Server?

Monitoring performance ensures the server runs efficiently and helps identify resource bottlenecks, while event logs track system, security, and application events.  
  
Methods to monitor performance:  
- Use 'Performance Monitor' to analyze CPU, memory, disk, and network usage.  
- Create data collector sets to log performance data.  
  
Managing Event Logs:  
- Open 'Event Viewer' from Administrative Tools.  
- Review logs under Application, Security, and System categories.  
- Filter, export, and archive logs for troubleshooting and auditing.

## Describe the different types of storage options available in Windows Server.

Windows Server provides various storage solutions to meet different business needs:  
- \*\*Local Storage\*\*: Physical disks directly attached to the server.  
- \*\*Network Attached Storage (NAS)\*\*: Storage shared over a network using protocols like SMB or NFS.  
- \*\*Storage Area Network (SAN)\*\*: High-speed storage connected via Fibre Channel or iSCSI.  
- \*\*Storage Spaces\*\*: Software-defined storage that pools physical disks into virtual drives.  
- \*\*Cloud Storage\*\*: Integration with services like Microsoft Azure for scalable storage solutions.

## What is the role of File Server in Windows Server, and how do you configure it?

A File Server provides centralized storage and management of files, enabling users to share, access, and secure data. It supports features like file permissions, quotas, and DFS integration.  
  
Steps to configure File Server:  
1. Open 'Server Manager' → 'Add Roles and Features'.  
2. Select 'File and Storage Services' → 'File Server'.  
3. Create shared folders using 'New Share Wizard'.

4. Assign NTFS permissions and share-level permissions.  
5. Configure quotas and File Screening if required.  
6. Test access from client computers.

## Explain the process of implementing and managing Distributed File System (DFS) in Windows Server 2016.

DFS allows administrators to organize shared folders located on different servers into a single logical namespace, making file access easier and improving availability.  
  
Steps to implement DFS:  
1. Open 'Server Manager' → 'Add Roles and Features'.  
2. Install the 'DFS Namespaces' and 'DFS Replication' roles.  
3. Open 'DFS Management'.  
4. Create a new namespace and add shared folders.  
5. Configure DFS Replication to synchronize data across servers.  
6. Test namespace access from client machines.

## Discuss the built-in backup and recovery options available in Windows Server 2016 or 2019.

Windows Server includes 'Windows Server Backup' (WSB) as a built-in tool to protect data. It allows you to perform full server, system state, or custom backups. Recovery options include file-level restore, system state recovery, and bare-metal recovery.  
  
Other features include:  
- Scheduling regular backups.  
- Storing backups on local disks, external drives, or network shares.  
- Using Volume Shadow Copy Service (VSS) for consistent snapshots.

## How do you configure Windows Server Backup to back up critical data?

Steps to configure Windows Server Backup:  
1. Install 'Windows Server Backup' feature via Server Manager.  
2. Open 'Windows Server Backup' from Administrative Tools.  
3. Select 'Backup Schedule' for regular backups or 'Backup Once' for one-time backup.  
4. Choose backup configuration (Full server or Custom).  
5. Select critical volumes, system state, or specific folders.  
6. Specify backup destination (local disk, external drive, or network share).  
7. Complete the wizard to initiate backup.

## Explain the steps for restoring files and folders using Windows Server Backup.

Steps to restore files and folders:  
1. Open 'Windows Server Backup'.  
2. Select 'Recover' from the right-hand menu.  
3. Choose the backup location (local or remote).  
4. Select the date and time of the backup.  
5. Choose 'Files and Folders' recovery type.  
6. Browse and select the files/folders to restore.

7. Restore to the original or alternate location.

## What are some common troubleshooting techniques for Windows Server startup issues?

Common troubleshooting techniques include:  
- Booting into Safe Mode to isolate faulty drivers/services.  
- Using 'Last Known Good Configuration'.  
- Checking Event Viewer for startup errors.  
- Running 'Startup Repair' from Windows Recovery Environment.  
- Using bootrec commands (bootrec /fixmbr, /fixboot, /rebuildbcd).  
- Removing recently added hardware/software that may cause issues.

## How do you troubleshoot network connectivity problems in Windows Server?

Steps to troubleshoot connectivity:  
- Use 'ping' to test connectivity to local and remote hosts.  
- Check IP configuration with 'ipconfig /all'.  
- Verify DNS resolution with 'nslookup'.  
- Ensure firewall rules are not blocking traffic.  
- Test routing using 'tracert'.  
- Review network adapter settings and drivers.  
- Check switch/router configuration if applicable.

## Discuss common Active Directory-related issues and their troubleshooting steps.

Common AD-related issues include:  
- \*\*Replication failures\*\*: Check with 'repadmin /replsummary', verify DNS and network connectivity.  
- \*\*Authentication problems\*\*: Ensure correct time synchronization using NTP.  
- \*\*Group Policy not applying\*\*: Use 'gpresult /r' and check Event Viewer.  
- \*\*DNS misconfigurations\*\*: Verify SRV records in DNS Manager.  
- \*\*Account lockouts\*\*: Use 'Event Viewer' or Account Lockout tools to trace cause.

## Explain how to troubleshoot performance problems on Windows Server 2016 or 2019.

Steps to troubleshoot performance issues:  
- Use 'Task Manager' to check CPU, memory, and disk usage.  
- Use 'Performance Monitor' for detailed metrics.  
- Identify resource-heavy processes and services.  
- Check storage health with 'chkdsk' and disk performance counters.  
- Verify network performance with Performance Monitor and Resource Monitor.  
- Apply updates, optimize startup programs, and adjust server roles if overloaded.