Topic: Managing, Monitoring, and Maintaining Virtual Machine Installations (WSUS)

Objective:

The objective of Module 12 is to teach students how to **implement Windows Server Update Services (WSUS)**, configure update settings via Group Policy, approve and deploy updates to client computers, and monitor and troubleshoot Windows Server 2016 environments. Additionally, this module covers establishing performance baselines, identifying bottlenecks, and centralizing event log management to maintain server health and availability.

Pre-requisites:

- Lab environment setup with six VMs in VMware Workstation:
    - LON-DC1: Windows Server 2016 Datacenter Evaluation GUI (Domain Controller, Main Server)
    - LON-SVR1: Windows Server 2016 Standard Evaluation GUI
    - LON-SVR2: Windows Server 2016 Standard Evaluation GUI
    - LON-CORE: Windows Server 2016 Datacenter Evaluation CLI
    - LON-CL1: Windows 10 Pro (Domain-joined client)
- All VMs except LON-RHEL are joined to the domain **RPSLAB.COM** via AD DS.
- Administrator credentials for all Windows servers and clients.
- OS installation and basic network configuration completed.
- Access to Server Manager, Group Policy Management, Performance Monitor, and Event Viewer.

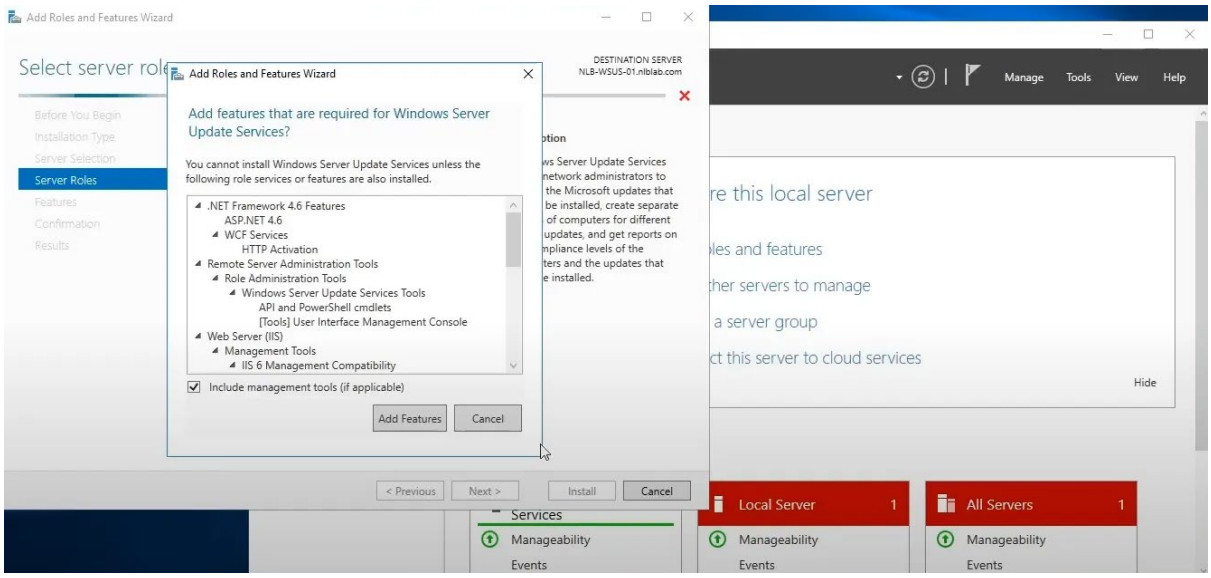
Procedure:

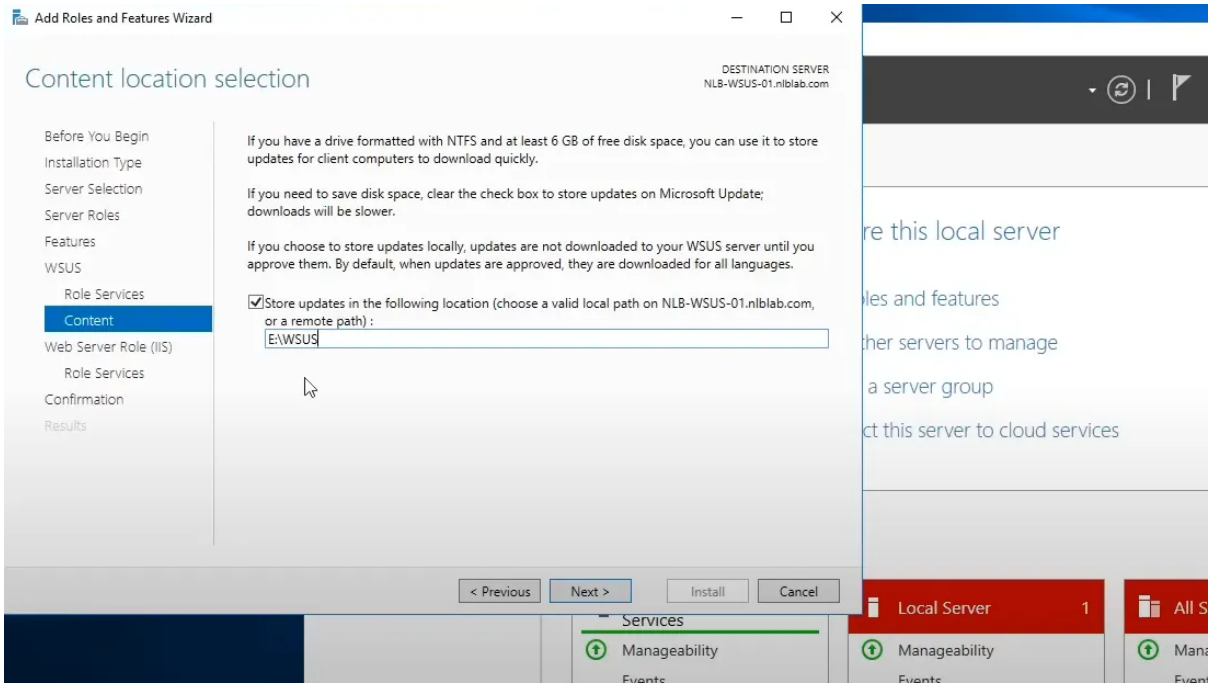
Lab A: Implementing WSUS and Deploying Updates

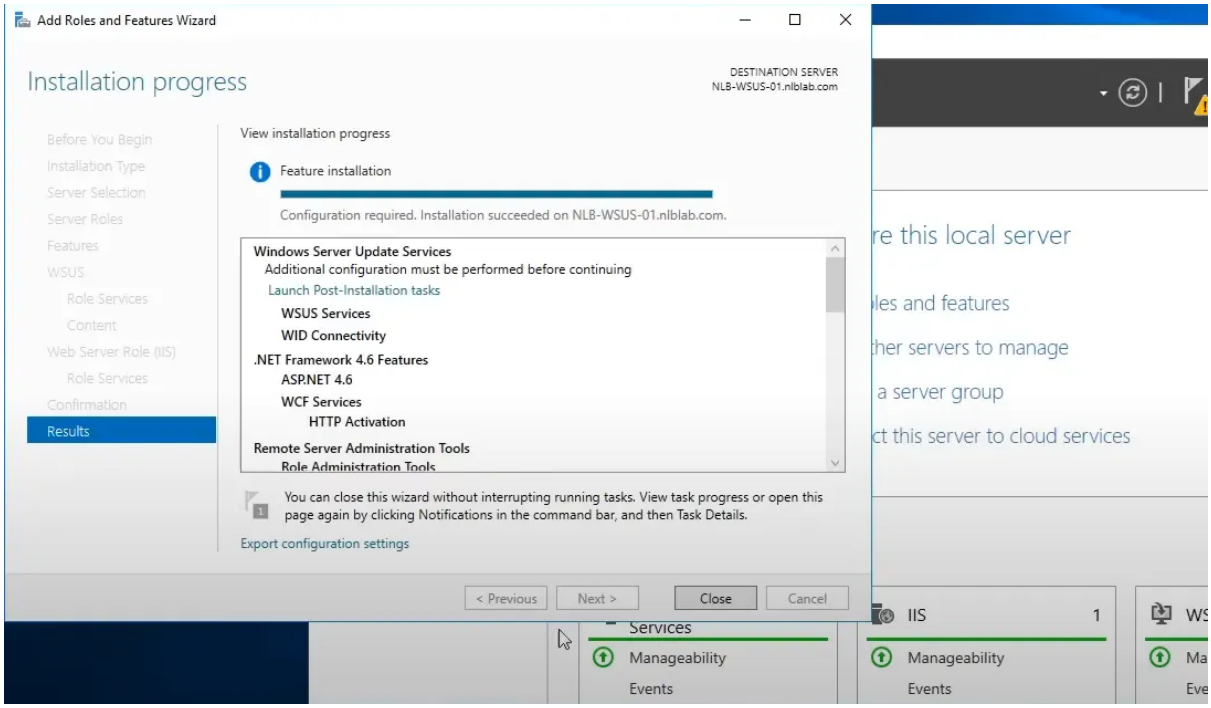
Exercise 1: Implementing WSUS

Steps:

1. Sign in to **LON-SVR4** as Adatum\Administrator.
2. Open **Server Manager** → Manage → Add Roles and Features.
3. Select **Windows Server Update Services (WSUS)**, include required features.
4. Set content location to C:\WSUSUpdates.
5. Complete installation and open **Windows Server Update Services** from Tools.
6. In WSUS Configuration Wizard, set to synchronize from upstream server LON-SVR2.Adatum.com.
7. Complete configuration, ensure group policy and registry settings are used for computers.



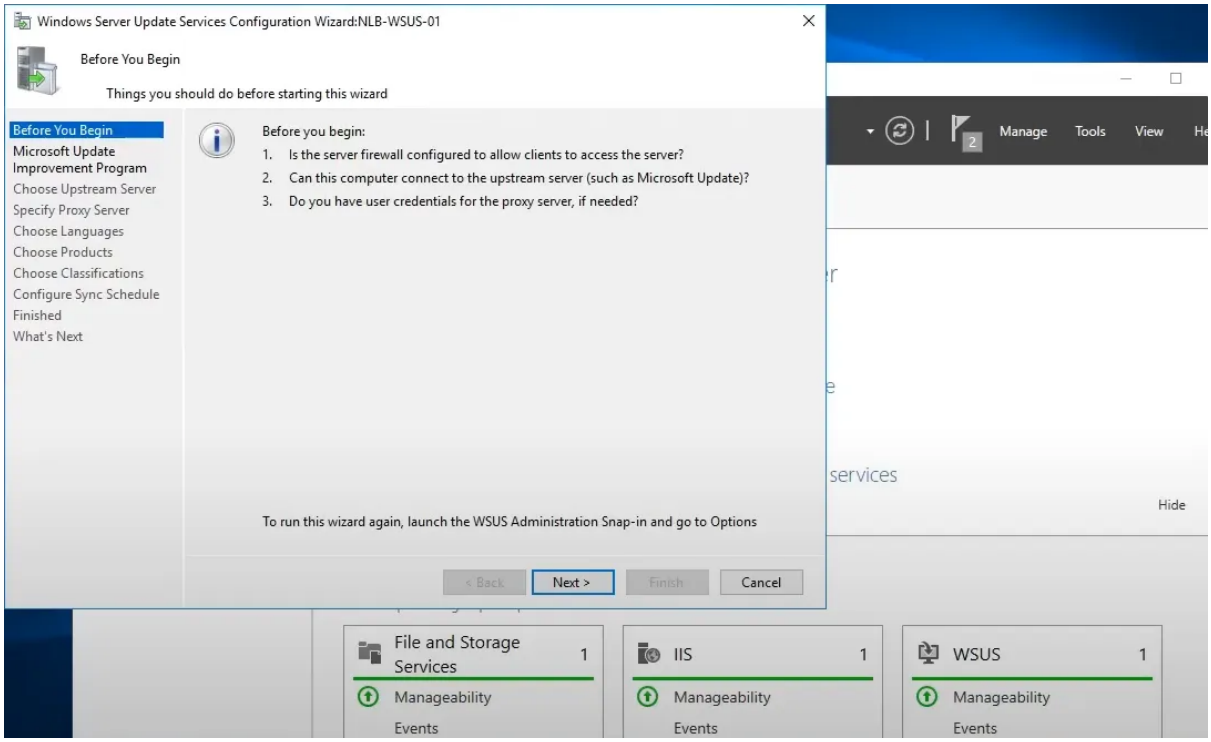


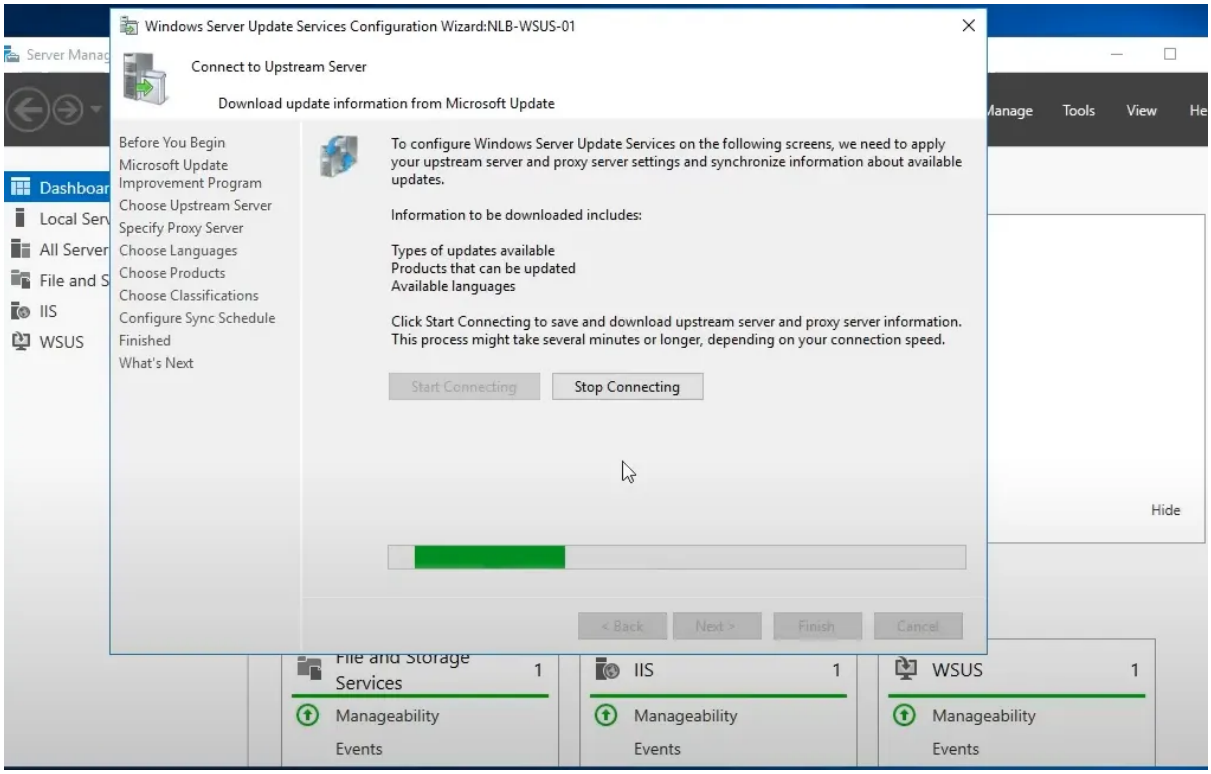


Exercise 2: Configuring Update Settings

Steps:

1. In **WSUS console** on LON-SVR4, create a new computer group named "Research".
2. On **LON-DC1**, open **Group Policy Management**.
3. Create and link a GPO named "WSUS Research" to the Research OU.
4. Edit the GPO:
    - Enable **Configure Automatic Updates**: set to auto download and schedule install.
    - Set **Specify intranet Microsoft update service location**: http://LON-SVR4.Adatum.com:8530.
    - Enable **client-side targeting**: set to group "Research".
5. In **Active Directory Users and Computers**, move LON-CL1 to Research OU.
6. On **LON-CL1** (after restart), verify applied GPO using Gpresult /r.
7. Run Wuauclt.exe /detectnow /reportnow to trigger update detection.
8. In WSUS console, confirm LON-CL1 appears in Research group and needs updates.



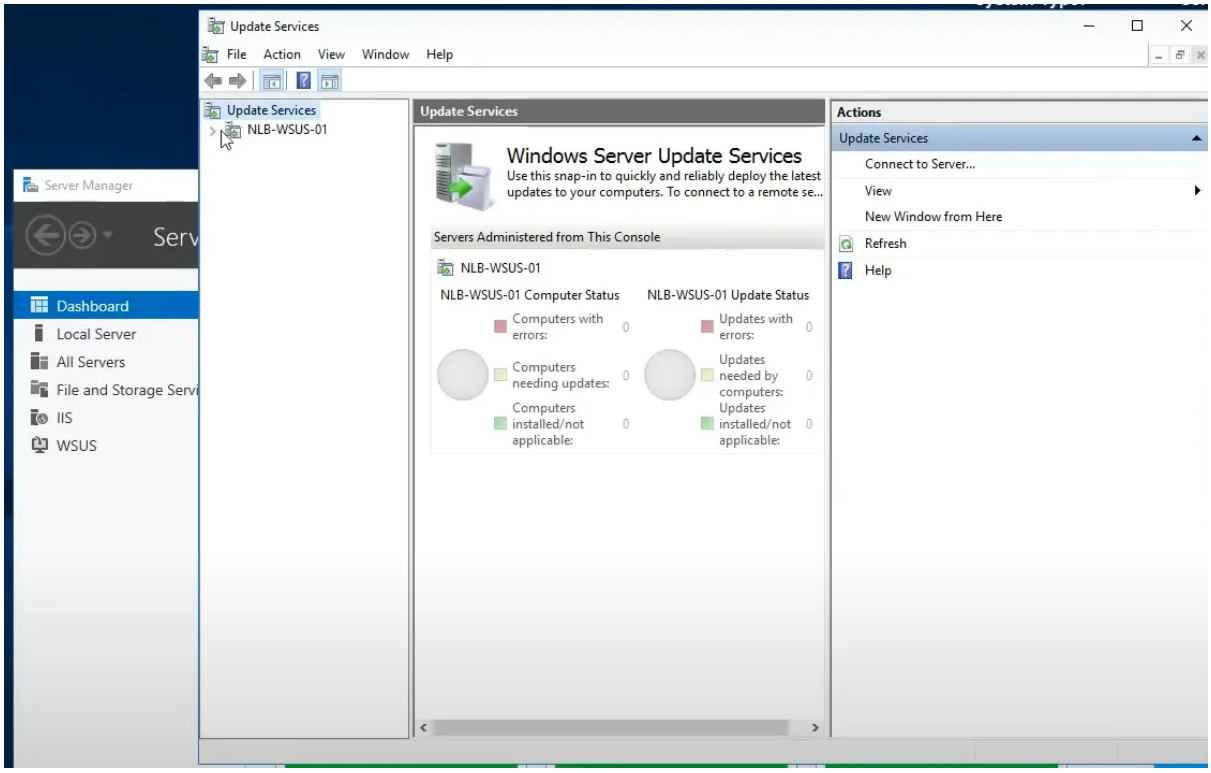


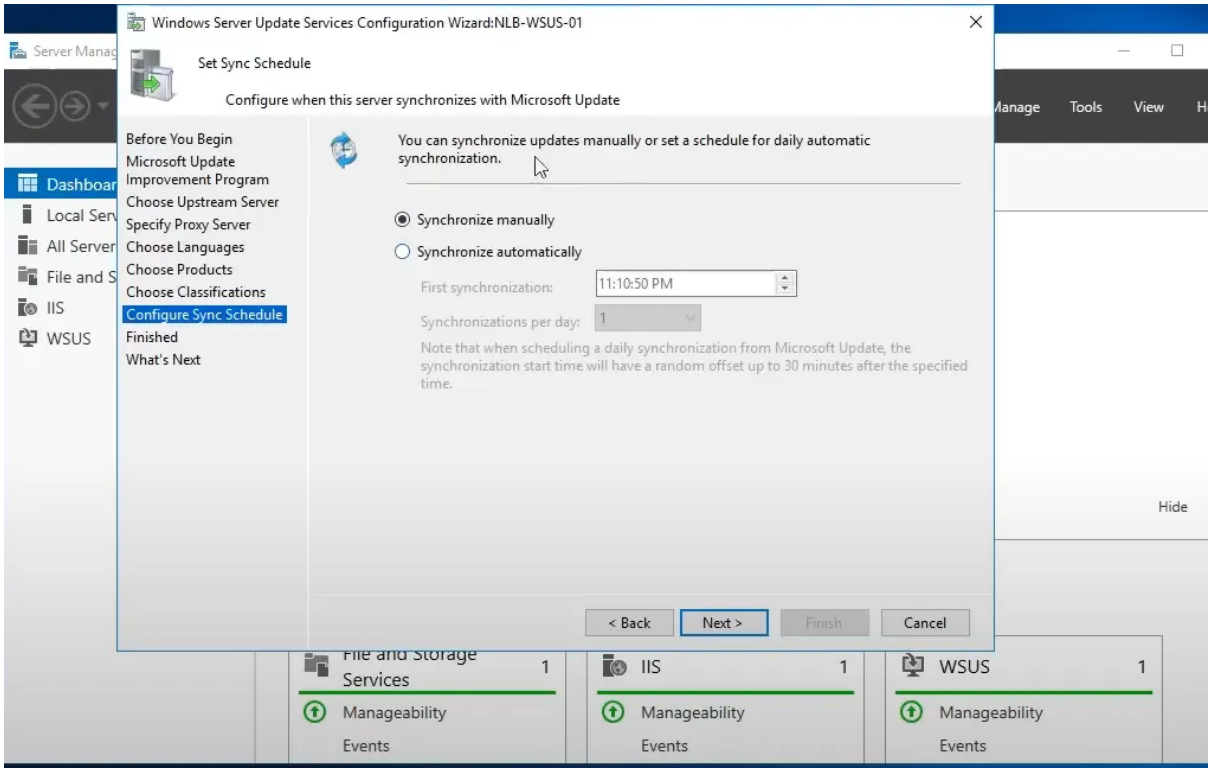
Exercise 3: Approving and Deploying an Update

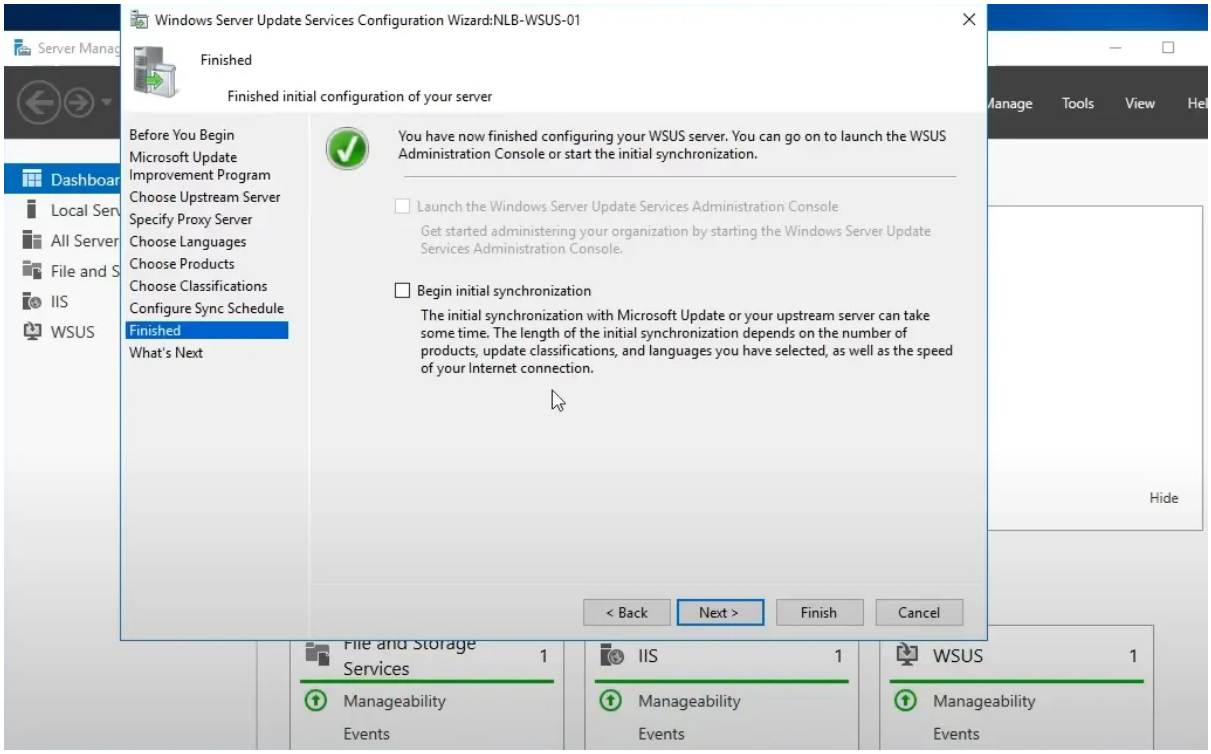
Steps:

1. In **WSUS console** (LON-SVR4), approve update (e.g., KB3140741) for "Research" group.

2. On LON-CL1, run Wuauclt.exe /detectnow, then check for updates in Windows Update.
3. After update installs, verify in **Event Viewer** (Applications and Services Logs → WindowsUpdateClient → Operational) that update events are logged.







Lab B: Monitoring and Troubleshooting Windows Server 2016

Exercise 1: Establishing a Performance Baseline

Steps:

1. On **LON-SVR1**, open **Performance Monitor**.
2. Create a new data collector set ("LON-SVR1 Performance") manually.
3. Add performance counters:
    - Processor: % Processor Time
    - Memory: Pages/sec
    - PhysicalDisk: % Disk Time, Avg. Disk Queue Length
    - System: Processor Queue Length
    - Network Interface: Bytes Total/sec
4. Set sample interval to 1 sec and start the data collector set.
5. Create a workload using PowerShell: create/copy/delete a large file.
6. Stop the data collector set, generate and review the report for baseline values.

Exercise 2: Identifying the Source of a Performance Problem

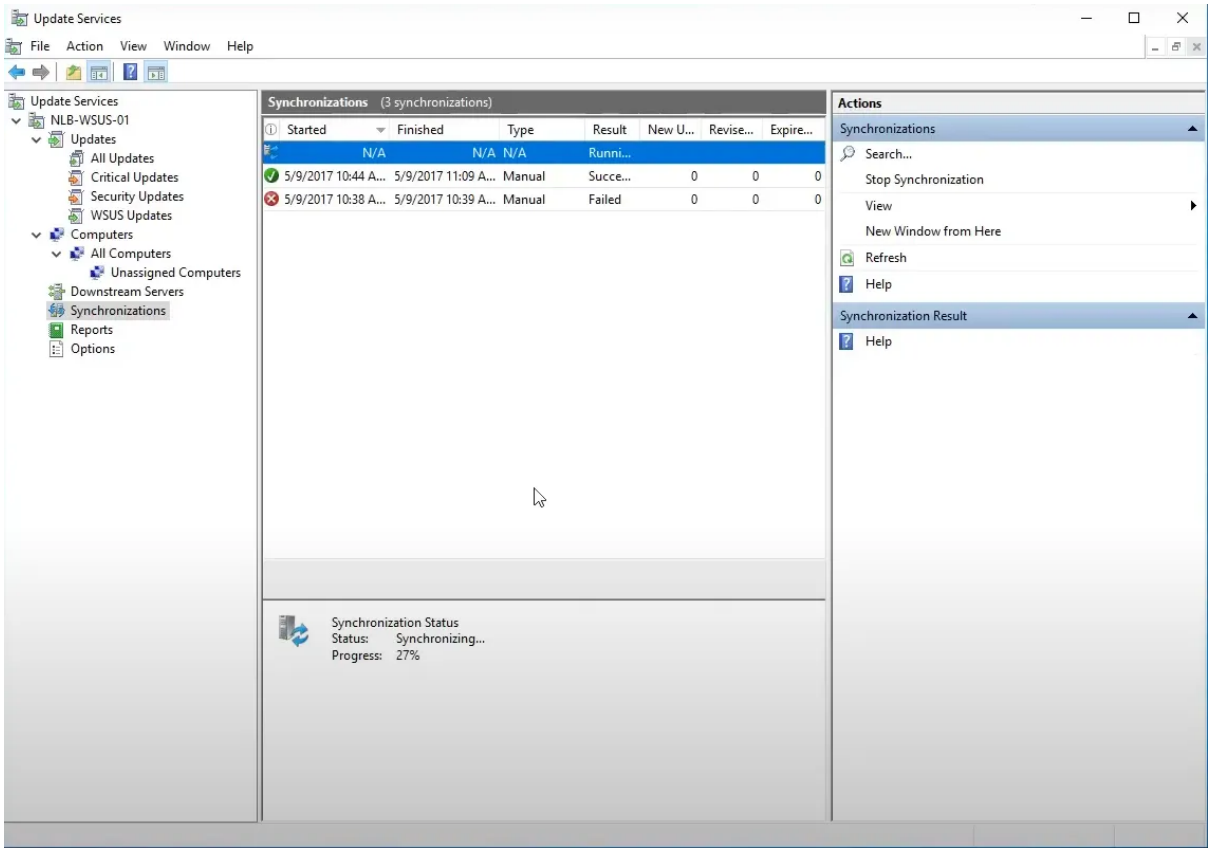
Steps:

1. Start the performance data collector set again.
2. Create additional server workload by running a stress script (e.g., StressTest.ps1).
3. Stop data collector set and analyze the report for performance differences (memory/disk/processor activity).
4. Recommendation: Monitor processor workload to avoid capacity issues.

Exercise 3: Viewing and Configuring Centralized Event Logs

Steps:

1. On LON-DC1, enable WinRM: winrm quickconfig.
2. In Active Directory, add LON-SVR1 to Administrators group.
3. On LON-SVR1, run Wecutil qc to configure for event collection.
4. In **Event Viewer** on LON-SVR1, create a subscription for LON-DC1 events (Collector initiated).
5. Configure event types and sources (Critical, Warning, etc.).
6. On LON-DC1, in Performance Monitor, create a data collector set to log % Processor Time alerts above threshold.
7. Run workload on LON-DC1 using stress script.
8. View forwarded events on LON-SVR1; confirm performance-related alerts are present.



Conclusion:

By following the above procedures of Module 12, you will have:

- **Implemented WSUS** to automate and centralize update management for your domain-joined Windows servers and clients.
- Used **Group Policy** to target and manage update settings and deployment groups.
- Approved and verified the installation of Microsoft updates to specific client groups.
- Established **performance baselines** and applied stress tests to identify bottlenecks and make maintenance decisions.
- Configured **centralized event log collection and performance alerts** for real-time monitoring and troubleshooting across your lab environment.

These skills are essential for ongoing maintenance, health, and performance optimization of enterprise server environments and will benefit you in real-world, production-grade IT infrastructure management.