

## 1. Hardware Maintenance (Simulated in Azure)

- **Task 1.1:** Document preventive maintenance procedures for physical servers, then map them to Azure equivalents (e.g., backups, monitoring, updates).
- **Task 1.2:** Explore Azure **Virtual Machine sizes (CPU, RAM, Storage types)** and match them to traditional hardware components.

## 2. Configure and Commission Infrastructure on Azure

- **Task 2.1:** Deploy a **Windows Server VM** and a **Linux Server VM** on Azure.
- **Task 2.2:** Configure **Virtual Network (VNet), Subnets, and IP addressing**. Connect the VMs to the same network.
- **Task 2.3:** Configure **Network Security Groups (NSGs)** to allow SSH (Linux) and RDP (Windows) access.
- **Task 2.4:** Enable and configure **Azure Monitor and Alerts** for VM performance.

## 3. Software Installation, Update, and Maintenance on Azure VMs

- **Task 3.1:** Install and configure **Windows Server roles** (Active Directory, File Server, IIS Web Server).
- **Task 3.2:** Install and configure **Linux services** (Apache/Nginx, SSH, MySQL/PostgreSQL).
- **Task 3.3:** Perform **system updates**:
  - Windows → sconfig or Windows Update
  - Linux → apt update && apt upgrade OR yum update
- **Task 3.4:** Demonstrate **software lifecycle management**: install → update → uninstall on both VMs.
- **Task 3.5:** Configure **backup and restore** for both Windows and Linux using Azure Backup.
- **Task 3.6:** Create **users and permissions**:
  - Windows AD Users & Groups
  - Linux users (adduser, usermod, file permissions).

## 1. Draw and Cable the SOHO Network

- **Task 1.1:** In Packet Tracer, draw our current setup:
  - A **Wi-Fi router** connected to the internet
  - At least **2 laptops/PCs** (Windows + Linux) connecting to the router (wired or wireless)
  - A **cloud object** to represent the **Internet/Microsoft 365 services**
- **Task 1.2:** Then extend the design into a **small office network**:
  - Add a **switch** with 4–6 laptops/desktops connected
  - Keep the internet connection through the router
  - Show all devices accessing the **Microsoft 365/SharePoint cloud**

## 2. Configure the Network

- **Task 2.1:** Assign an **IP addressing scheme**:
  - Example: Home/Office LAN = 192.168.1.0/24
  - Router LAN Interface = 192.168.1.1 (Gateway)
  - Clients = Dynamic IPs via **DHCP** from the router
- **Task 2.2:** Configure **DHCP** on the router so devices automatically get IP addresses.
- **Task 2.3:** Test connectivity:
  - PC → Router → Cloud (ping test to simulated Microsoft 365 service)
  - Windows ↔ Linux device communication (ping, file sharing test if possible)

## 3. Troubleshooting

- **Task 3.1:** Intentionally break the network in at least **2 ways** (e.g., wrong IP, wrong default gateway, cable misconfigured).
- **Task 3.2:** Use troubleshooting commands:
  - Windows: ping, ipconfig, tracert
  - Linux: ping, ip addr, traceroute
  - Router: show ip interface brief, show running-config
- **Task 3.3:** Fix the issues and restore connectivity.

## Deliverables

1. Packet Tracer .pkt file with both **SOHO and extended office network diagrams**.
2. Short **report (Word/PDF)** including:
  - IP addressing scheme table
  - Screenshots of connectivity tests
  - Troubleshooting process & solutions
3. **Reflection:** How this network mirrors how we currently work (laptops + Wi-Fi + cloud apps).