

Course Outline: Network Management Systems (NMS)

Course Overview

- Target Audience: Beginners, entry-level IT support, and diploma students.
- Format: Step-by-step guidance, high-visual learning, and foundational hands-on labs.
- Goal: Understand how a network is monitored and how to use management tools.

Module 1: Introduction to Network Management

- What is NMS?: Why do we need to monitor networks?
- The Core Elements: Understanding the Manager (the software) and the Agent (the network device).
- The "Languages" of NMS: Simple introduction to SNMP (Ping, Up/Down status) and Syslog (Logs).
- Hands-on Lab: Using the ping and traceroute commands to manually check device availability.

Module 2: Network Topology & Device Discovery

- Map Your Network: How to read and create a basic network map (Topology).

- Finding Devices: How management software automatically finds routers and switches on a network.
- IP Addressing Basics: Ensuring management software can reach every device.
- Hands-on Lab: Installing a basic, free IP scanner tool to discover all connected devices on a local network.

Module 3: Performance Monitoring

- What to Watch: Monitoring Device Health (Is the device too hot? Is the CPU at 100%).

- **Bandwidth Monitoring:** Checking if the internet or local links are slow or full.
- **Interface Status:** Checking if a network cable is unplugged or a port is down.
- **Hands-on Lab:** Setting up a simple dashboard (like PRTG free edition or Spiceworks) to watch real-time computer and router traffic.

Module 4: Alerts and Simple Troubleshooting

- **Understanding Alerts:** What do Red, Yellow, and Green statuses mean?
- **Setting up Notifications:** How to get an email or notification when a critical switch goes offline.

- First-Step Troubleshooting: Using NMS logs to identify which cable or device failed.
- Hands-on Lab: Unplugging a test device to trigger an email/dashboard alert and reading the error log.

Module 5: Basic Configuration & Backup Management

- Device Configurations: What is a startup-config vs. a running-config?
- Why Backups Matter: How to save a device's settings before it breaks or loses power.
- Password Basics: Securing access to

routers, switches, and the NMS tool itself.

- Hands-on Lab: Manually copying and backing up a router configuration file to a central computer.

Final Practical Assessment: The Network Watcher

Students will be given a small, pre-configured network of 3–4 devices. Their task is to add these devices to a basic management software dashboard, fix one

intentionally unplugged cable based on the software's alerts, and generate a simple "Network Health Report.

