



# Introduction to Network Administration

Module 6, Review

## 6.1.4 Introduction to NOS

- Operating systems which support multi-user capability:
  - Linux
  - Windows XP
  - Windows 2000

# 6.1.5 Microsoft NT, 2000, and .NET

- Windows 2000 Professional can be a file server, a print server, an FTP server, and a web server, but will only support up to ten simultaneous connections.
- Windows .NET Server is built on the Windows 2000 Server kernel, but tailored to provide a secure and reliable system to run enterprise-level web and FTP sites in order to compete with the Linux and UNIX server operating systems.

## 6.1.6 UNIX, Sun, HP, and LINUX

- When UNIX first started to be marketed commercially in the 1980s, it was used to run powerful network servers, not desktop computers.

## [ 6.1.7 Apple ]

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- These enhancements provide Mac OS X with support for protected memory, preemptive multitasking, advanced memory management, and symmetric multiprocessing.

## 6.2.1 Introduction to network management

- Network Management Application is a collection of software which includes a GUI interface for monitoring and managing the network

## 6.2.3 SNMP and CMIP standards

- To solve the security shortcomings of SNMPv1 and SNMPv2c, SNMPv3 provides secure access to MIBs by authenticating and encrypting packets over the network.

## 6.2.4 SNMP operation

- Examples of network management applications are Ciscoworks2000, HP Openview, and SNMPv2c.

## 6.2.4 SNMP operation

- The communication between the manager and the agent is carried out by an application layer network management protocol. SNMP uses User Datagram Protocol (UDP) and communicates over ports 161 and 162. It is based on an exchange of messages. There are three common message types:
- **Get** – Enables the management station to retrieve the value of MIB objects from the agent.
- **Set** – Enables the management station to set the value of MIB objects at the agent.
- **Trap** – Enables the agent to notify the management station of significant events.

## 6.2.4 SNMP operation

- All the management information of a particular agent is stored in the management information base on that agent. An agent might keep track of the following:
  - Number and state of its virtual circuits
  - Number of certain kinds of error messages received
  - Number of bytes and packets in and out of the device
  - Maximum output queue length, for routers and other internetworking devices
  - Broadcast messages sent and received
  - Network interfaces going down and coming up

## 6.2.5 Structure of management information and MIBs

- SNMP uses a Management Information Base to hold information collected on the network.

## 6.2.6 SNMP protocol

- SNMP uses UDP as a transport protocol.
- Each SNMP message contains a cleartext string, called a community string.
- The community string is used like a password to restrict access to managed devices.
- SNMPv3 has addressed the security concerns raised by transmitting the community string in cleartext.

## 6.2.6 SNMP protocol

- There are three types of SNMP messages issued on behalf of an NMS.
- They are GetRequest, GetNextRequest and SetRequest. All three messages are acknowledged by the agent in the form of a GetResponse message.

## 6.2.7 Configuring SNMP

- There are several strings that can be used to specify location of the managed device and the main system contact for the device.
- Router(config)#**snmp-server location**  
*text*
- Router(config)#**snmp-server contact**  
*text*

## 6.2.7 Configuring SNMP

- More than one read-only string is supported.
- The default on most systems for this community string is public. It is not advisable to use the default value in an enterprise network.
- Authorized management stations are able to both retrieve and modify MIB objects

## 6.2.8 RMON

- RMON gathers statistics on a segment by analyzing every frame on the segment.

## [ 6.2.9 Syslog ]

- To enable logging to all supported destinations:
- Router(config)#**logging on**