CSC411: Advanced Networks

Network Management

Note: **This class lecture will be recorded!**
If you do not consent to this recording, please do not ask questions via your video, audio or public chat; send your question to the instructor using the private chat.

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ISO Key Areas of Network Management

- Fault
- Configuration
- Accounting
- Performance
- Security

Fault Management

- Steps
  - Determine problem exists
  - Isolate problem
  - Fix problem, if possible
- Alerts
- Gather data
  - Log
  - Poll
- Fault priorities

Configuration Management

▸ Set up, monitor, control devices
▸ Inventory
  ◦ Autodiscovery
▸ Complex
▸ Steps
  ◦ Gather information
  ◦ Modify configuration
  ◦ Store data (inventory and reports)

Account Management

- Track user utilization
- Billing
- Metrics and quotas

Performance Management

▶ Monitor network
  ◦ Trends
  ◦ Capacity planning
▶ Types of performance assessment
  ◦ Diagnostic assessment
  ◦ Trend assessment

Performance, cont.

- Steps
  - Collect data
  - Analyze data
  - Set thresholds
  - Simulation
- Baseline

- Why is establishing a baseline important?

Security Management

- Secure access to information
  - Control access points
- Steps
  - Identify sensitive information
  - Find access points
  - Secure access points
  - Maintain secure access points

Important Aspects of Network Management

- Availability
- Performance monitoring

- Management done at application layer

Network Management Tools

- Physical layer testing
- Reachability and Connectivity
- Packet analysis
- Network discovery
- Device interrogation
- Event monitoring

Tools, cont.

- Performance monitoring
- Flow analysis
- Routing and Traffic engineering
- Configuration
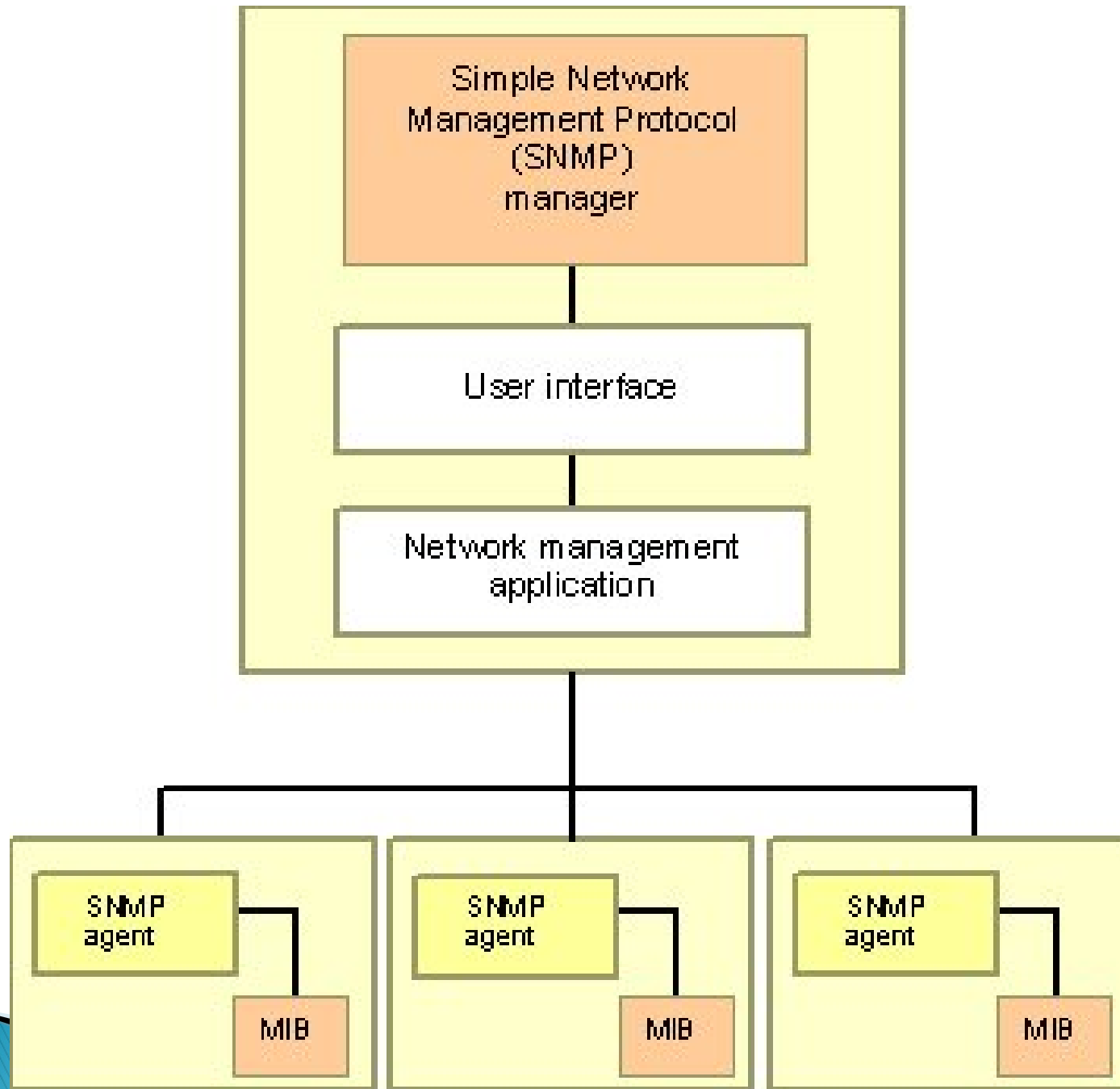- Security enforcement
- Network planning

Examples of Tools Used

▸ What are some tools that might be used by network managers?

- ▸ ping
- ▸ traceroute
- ▸ Packet analyzer
- ▸ Continuity testers
- ▸ Fluke meters
- ▸ OTDR tester

Key Elements of Network Management

- Management station (manager)
- Management agent
- Management information base
- Network management protocol
  - Simple Network Management Protocol (SNMP)

SNMP

- Simple Network Management Protocol
- SNMPv3
- Fetch-store paradigm
  - Stable
  - Simple
  - Flexible

- How can the fetch-store paradigm be used to reset a counter to zero?
- Reboot a device?

Simple Network Management Protocol (SNMP) manager

User interface

Network management application

SNMP agent — MIB

SNMP agent — MIB

SNMP agent — MIB

Managed devices