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THAPAR INSTITUTE
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Course: Computer and Communication Networks

Topic: Network Management System

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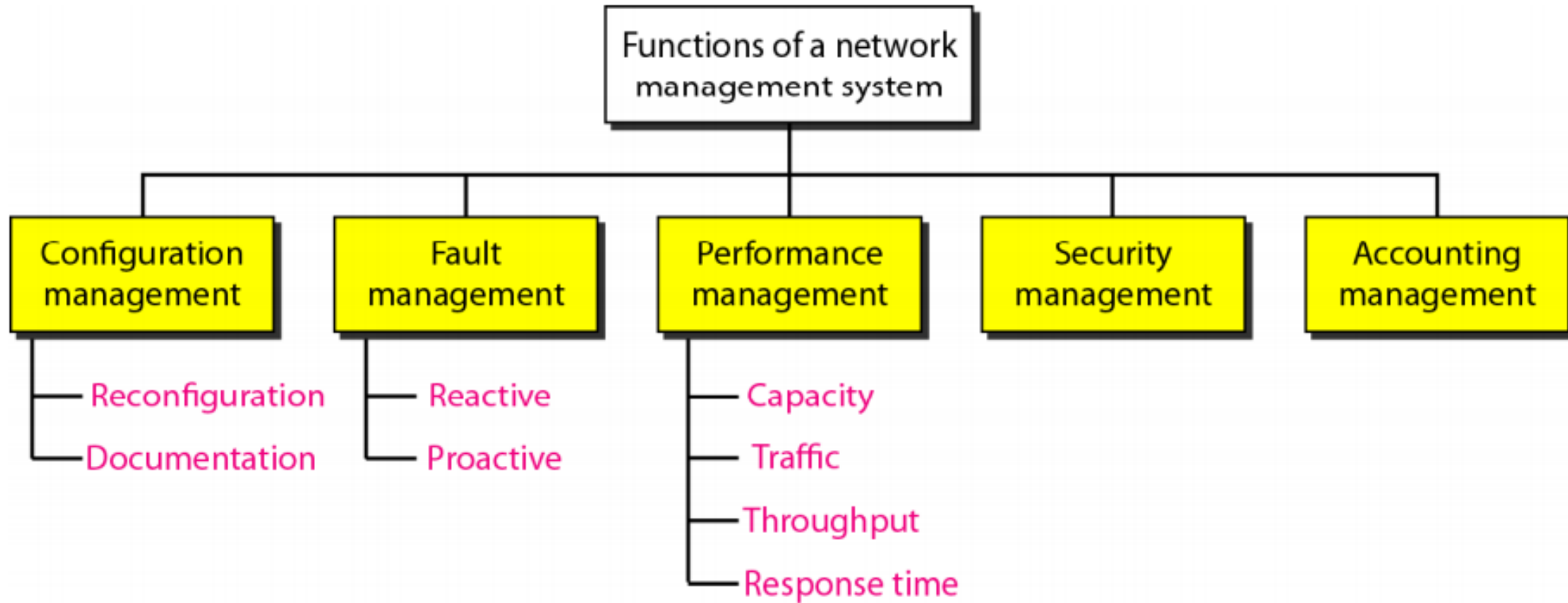
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Network Management System

- *Network management* as monitoring, testing, configuring, and troubleshooting network components to meet a set of requirements defined by an organization.
- These requirements include the smooth, efficient operation of the network that provides the predefined quality of service for users.
- To accomplish this task, a network management system uses hardware, software, and humans.

Functions of a network management system



Configuration Management

- The **configuration management** system must know, at any time, the status of each entity and its relation to other entities.
- Configuration management can be divided into two subsystems:
 - ✓ *reconfiguration*
 - ✓ *documentation*.
- **Reconfiguration**: which means adjusting the network components and features, can be a daily occurrence in a large network. There are three types of reconfiguration: *hardware reconfiguration*, *software reconfiguration*, and *user-account reconfiguration*.

- hardware reconfiguration : Hardware reconfiguration covers all changes to the hardware.
- software reconfiguration Software reconfiguration covers all changes to the software.
- user-account reconfiguration User-account reconfiguration is not simply adding or deleting users on a system. It must also consider the user privileges, both as an individual and as a member of a group

- *Documentation*

- The original network configuration and each subsequent change must be recorded meticulously. This means that there must be documentation for *hardware, software, and user accounts*.
- Hardware documentation normally involves two sets of documents: maps and specifications.
- Software documentation includes information such as the software type, the version, the time installed, and the license agreement.
- User account Most operating systems have a utility that allows the documentation of user accounts and their privileges. The management must make sure that the files with this information are updated and secured

Fault Management

Fault management is the area of network management that handles this issue. An effective fault management system has two subsystems:

- ✓ *reactive fault management*
- ✓ *proactive fault management.*

reactive fault management

- A reactive fault management system is responsible for detecting, isolating, correcting, and recording faults. It handles short-term solutions to faults. Three Steps:
 - ✓ detect the exact location of the fault.
 - ✓ isolate the fault
 - ✓ correct the fault

Proactive Fault Management

- Proactive fault management tries to prevent faults from occurring. Although this is not always possible, some types of failures can be predicted and prevented.

Performance Management

- **Performance management**, which is closely related to fault management, tries to monitor and control the network to ensure that it is running as efficiently as possible.
- Performance management tries to quantify performance by using some measurable quantity *such as capacity, traffic, throughput, or response time*.
- *Capacity*: Every network has a limited capacity, and the performance management system must ensure that it is not used above this capacity.
- *Traffic* can be measured in two ways: internally and externally. Internal traffic is measured by the number of packets (or bytes) traveling inside the network. External traffic is measured by the exchange of packets (or bytes) outside the network.

- *Throughput*: Performance management monitors the throughput to make sure that it is not reduced to unacceptable levels.
- *Response Time*: Response time is normally measured from the time a user requests a service to the time the service is granted.
- Other factors such as capacity and traffic can affect the response time.

Security & Accounting Measurement

Security management is **responsible** for controlling access to the network based on the predefined policy.

Accounting management is the control of users' access to network resources through charges. Under accounting management, individual users, departments, divisions, or even projects are charged for the services they receive from the network. Charging does' not necessarily mean cash transfer; it may mean debiting the departments or divisions for budgeting purposes.

• Thank You