Université Constantine 2
جامعة قسنطينة 2

Network Management

– Course 2 –

Chapter 1 : Introduction to Network Management(2/3)

Introduction

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Concerned Students :

Faculty/Institute	Department	Level	Speciality
NTIC	TLSI	License 3	G.L.

Abstract

Prerequisite

- Communications Networks,
- Communication Protocols

Course objectives

- Introduce the ISO standard for network administration,
- Introduce the architecture of network administration software according to ISO .

1. Network Management

Network Management is characterized by:

- **Centralized**,
- **Remote**,
- **Heterogeneity management**(protocols, hardware),
- **Evolution** of the network,
- **Security** and **Reliability** of transactions.

Network management according to ISO

ISO standard

In **1988**, the ISO 7498/4 standard was published, defining the **main functions** that the **supervision and management systems** must implement. These functions are:

1. Configuration Management

This mission consists of:

- **Designate** and **configure** various elements present on the network,
- **Store** in a database the OS versions and parameters of each machine exp: the *name*, the *IP address*, *routing table*, etc .
- As well as software installed on **each** machine.
- **Display** the network plan and **find out** the technical characteristics of the connected equipment.
- **Schedule** adding resources as needed.

2. Anomaly Management

This function must make it possible to **detect, locate**, **adjust** automatically or **alert** the software or hardware problems that have occurred.

The problems that can arise on a network, generally, are:

- *abnormal* growth of network collision count,
- a *bottleneck* of a disk,
- A *disconnect* or cable break,
- A *misconfiguration* of an equipment,
- A *faulty* interface of a router,
- An *accidental* reset.

3. Performance Management

The **performance management** allows an evaluation of the behavior of the resources and a control of the effectiveness of the communication activities.
This network performance is ensured by maintaining and analyzing logs such as:

- **Network Operation Statistics**: number of frames transmitted, received, or even the occupancy rate of a network segment,

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- **User connection time**, resource exploitation mode.
- **Identification of items** causing a performance **degradation**.

4. Accounting management

It covers some features **depending on the nature of the network and the services offered**, such as:

- Metrics on **resource usage**,
- Control of **quotas** per user and verification of consumption authorizations,
- The **financial management** to evaluate the performance of equipment or an application (service) or to analyze and forecast expenses,
- and finally to study the possibilities of **cost reduction**.

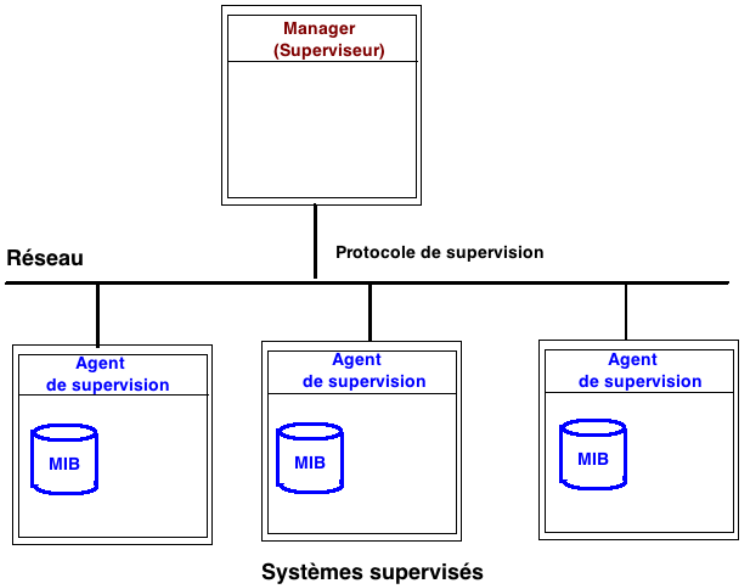
5.Security Management

Its mission is to ensure, **mainly**, the confidentiality of information, i.e. to control:

- the **security relating** to the management of the network itself: (permissions to access management information),
- the **access to sensitive data** between network users (user account, user group, domain...),
- The **protection** of information by **encryption** and **decryption**,
- The **activation or deactivation** of certain services or the modification of certain parameters,
- The **detection of intrusions** from the outside,
- The **detection of malicious attacks** (virus, Trojan, ...).

Management Network Architecture

- An application dedicated to network management is of the Client-server type.
- The Server module called **Manager**, is installed on the supervision station,
- The Client module called **Agent** must be installed on all network equipment to ensure communication and exchange of information with the manager.



Conclusion

This course is dedicated to the main functionalities that a network administration application must provide as recommended by the ISO standard.

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