Module IR.2301

Networks Fundamentals

Person in charge: Yousra Chabchoub
Prerequisite: None
Organization: e-learning : 27h ; Lectures : 9h ; Labs : 12h
Evaluation: quiz, labs, final exam
ECTS: 4 credits

Context

This module is part of the Cisco Academy at ISEP. More specifically, it deals with the "CCNA Exploration 1: Introduction to Networks" component of the Academy's program. It addresses the fundamental notions about networks, required for engineers. At the end of this module, students can deepen their learning and pass certification: "200-125 CCNA routing and switching" of Cisco.

Objectives

The objective of this module is to introduce the basic concepts related to the domain of networks, enabling the students to design simple network architectures and to understand the main protocols involved in the establishment of communications.

Skills

In terms of skills, this module aims to enable students to:

- Model complex systems such as networks in order to understand how they work
- Carry out experiments in the field of computer networks, implementing concepts developed during the modeling part

Knowledge

This module enables students to develop the following concepts and skills.

- **Concepts**

    o   Network communication

- OSI layered model (physical layer, data link, network, transport, session, presentation and application)
- Protocols belonging to each layer (TCP / IP, ICMP, ARP, SMTP ...)
- The different network devices
- Network addressing models

- **Know-How**
  - Design an adapted network architecture to the organization of the company (functional constraints, geographical ...)
  - Configure Network Devices: Using the PacketTracer Software
  - Learn the basic commands of the Cisco operating system (IOS)
  - Establish an addressing plan
  - Identify and troubleshoot network problems

Pedagogical Approach

This module is part of a Cisco Academy, containing e-learning, lectures and labs. The lectures and labs will consolidate and experiment the concepts seen in e-learning. The course materials are permanently accessible by the students on an e-learning platform.

References

- On-line courses (e-learning of Cisco Academy)