

Network

Network Architecture and Services

IDENTIFICATION

CODE : TC-3-S2-EC-NAS
ECTS : 2.0

HOURS

Lectures : 12.0 h
Seminars : 2.0 h
Laboratory : 16.0 h
Project : 0.0 h
Teacher-student
contact : 30.0 h
Personal work : 20.0 h
Total : 50.0 h

ASSESSMENT METHOD

Un QCM test for 1 hour, and Practical
test for 40 minutes.
Some session of practical work is
evaluated by a written report.

TEACHING AIDS

All course materials, subjects TD
and TP are available on Web site,
<http://moodle.insa-lyon.fr>

TEACHING LANGUAGE

French

CONTACT

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AIMS

This course introduces metropolitan and traditional remote networks, based on the 4TC NRP course. It addresses the various architectures of implanted networks and the terms that allow them to be characterized and selected.

This EC is part of the teaching unit Network Modeling and Architectures (TC-4-S1-MAR) and contributes to the following skills:

C6 Implement, implement, develop, deploy networks and protocols
Capacity: Design and deploy an MPLS, M-BGP and MPLS VPN network architecture,
Capacity: Scaling quality of service with DiffServ, RSVP,
Capacity: Traffic engineering with MPLS TE and development of a QoS policy
Capacity: Implement a VoIP network, SIP phones, IPBX, Call Center, IVR
Capacity: Define an IPSec network security policy.
Knowledge: Virtual Private Networks, 802.1Q, VLAN, GRE Tunnel,
Knowledge: Data Encryption
Knowledge: MPLS, LDP protocols, VRF technology, M-BGP routing
Knowledge: Voice over IP, SIP, RTP / RTCP protocols,
Knowledge: Quality of Service, DiffServ Models, RSVP and MPLS TE Traffic Engineering
Knowledge: Configuration of active elements [switch, router] in these network architectures

A5 Process data
Knowledge: Data Encryption

In addition, it requires the following skills:

C2 Specify, design and model communication networks and protocols
B3 Interact with others, work in a team
C5 Implement, implement, develop, deploy systems for transmission and processing of
signals / images / data

CONTENT

This course introduces the architectures of local networks IP [LAN] and wide networks like FR, RNIS, ATM [WAN]. Several services will be introduced, voice over IP, Security in terms of access, filtering, availability, IPSec VPNs and associated protocols, ISAKMP, SHA, DES, principles about Quality Of Service, and basics of MPLS about new network engineering and QoS designing .

BIBLIOGRAPHY

- [1] Laurent Toutain, "Réseaux locaux et Internet", Hermes réseaux et télécommunications
- [2] Alexis Ferréro, "Réseaux locaux commutés et ATM", InterEditions
- [3] Pierre Rolin "Réseaux haut débit" Hermes réseaux et télécommunications
Réseaux
- [4] Andrew Tanenbaum "Réseaux", Prentice Hall, Dunod, 1998
- [5] Guy Pujolle, "Les réseaux", Eyrolles, 1998
- [6] Jean-Luc Montagnier "Pratique des réseaux d'entreprise", Eyrolles
- [7] Michel Priem, Frédéric Priem, "Ingénierie des WAN", InterEdition

PRE-REQUISITE

Networks Introduction 3TC-NET

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