Antonio Cianfrani

Laboratory of Network Design and Configuration

A.Y. 2018/2019

Info

- ## Lectures schedule

    - Friday 14:00 – 19:00 (5 breaks) → **Friday 15:00 – 19:00 (1 break)**

- ## Antonio Cianfrani

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Lectures

- Classical (theory) lectures and practical (lab) activity

- The lab activity will be based on the use of <u>Packet Tracer</u> emulator (Cisco)

  - <u>You need to register to the course so that to have a Cisco Netacad account and to be able to download the software.</u>

- You need your own PC during lab activity (at least groups of two persons)

- The teaching material is available at

  - https://web.uniroma1.it/netlab (Teaching section)

Course Subscription

- Subscribe to the mailing list

  lndc-2019@uniroma1.it

- On the website you will find the teaching material and info

  - Lectures pdf

  - Exam dates

  - Lectures Schedule modifications

Exams

- Two Midterm exams or a classical exam

- Exams (midterms or classical) will require the execution of configuration procedures on your own PC (Cisco Packet Tracer software)

- Midterm exam:

  - final score (accepted or not);

  - first exam date of June (18/06) not available.

Objectives

- The main aim of the LNDC course is to provide practical approach for the management of an Internet Sercive Provider (ISP) network and of a LAN network.

- More in details:
  - to configure an IP network from addressing to routing and troubleshooting
  - to provide advanced configurations of an Ethernet network from Virtual LAN to security solutions

- The course (6 CFU), is composed of two parts
  - Part I (3 CFU): router IP
  - Part II (3 CFU): switch Ethernet

Lectures schedule

Date	Topic
1/3/19	Course Introduction - Networking fundamentals
8/3/19	Cisco Packet Tracer software - Router IP Configuration
15/3/19	RIP routing protocol
22/3/19	OSPF routing protocol
29/3/19	DHCP and NAT
5/4/19	Training lab activity - part I
12/4/19	Midterm exam part I
19/4/19	Easter holiday
26/4/19	?
3/5/19	Ethernet - Virtual LAN (VLAN)
10/5/19	Inter-VLAN Routing - Port Security
17/5/19	Access Control List (ACL)
24/5/19	Training lab activity - part II
31/5/19	Midterm exam part II

Pre-requirements

- **The following topics must be known (an overview will be provided today):**

    - IPv4 protocol

    - TCP/IP protocol stack

    - IP routing

    - LAN

    - MAC protocols

Cisco Academy certification

- It is possible, after the exam completion, to have a fast track (with discount) access to Cisco Netacd Certification

    - CISCO CCNA Routing and Switching (R&S) 1

    - CISCO CCNA Routing and Switching (R&S) 2

- More details during the course.

Thesis projects

- **Research activities:**

  - Segment Routing (SR) (Cisco Grant):

    - **Implementation of advanced features on VPP (open source implementation of a SR router)**

    - Assessment of the Traffic Matrix of an ISP exploiting SR counters

    - Network anomalies detection using Machine Learning techniques

  - Network Function Virtualization (NFV):

    - New protocols to support Service Function Chaining (SFC)

    - Dynamic resources allocation in SFC-enabled networks