Introduction to PRL

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Lecturers

- In-class lectures
  - Fulvio Risso (fulvio.risso[at]polito.it)
- Cabling
  - Piero Nicoletti
- Labs and exercises
  - Guido Marchetto (guido.marchetto[at]polito.it)

Please contact the proper person when you have questions
Course mission

The course aims at presenting the most important technologies related to Local Area Networks, and giving some information about how to engineer these infrastructures.

Additional topics include Cabling and Data Centers.
Course Outline

- LANs and Ethernet basics
- High Speed Ethernet
- Bridging and Spanning Tree
- Switching
- Design of Switched Networks
- Advanced Topics (Rapid Spanning Tree, QoS, ...)
- VLAN
- L3 Switching
- Design of Campus Networks
- Data Centers
- L7 switching and Content Delivery Networks
- Cabling
Prerequisites

- IP and the most important protocols of the TCP/IP suite
  - ARP, IP, DNS, TCP, UDP
- IP Network design
  - IP addressing, subnetting
- Packets generated on the network in the most common conditions
  - E.g. ping www.mydomain.com
  - Open a web page
  - Interaction with the DNS
  - With and without hot ARP/DNS caches
In-class exercises

- Limited in number
  - Not enough time for exercises in class
- Students must practice with exercises
  - Having everything solved by the professor does not help the learning process
- An extensive set of exercises (several already solved) and closed-answer questions are available on the course web site
Homework (1)

- Six different topics
  - Ethernet, IP Traffic Analysis, L2 forwarding, Spanning Tree, VLANs, Network Design
- Weekly deadlines (please check the calendar)
- Please ask the professors if you cannot understand your assignments
- Submission: by **HAND** to one of the professors (during teaching or lab hours)
  - Handwritten text is perfectly fine
- Solutions published the week after
  - Student will not get a corrected version of their exercises
  - For questions on possible errors, etc., ask the professors
Homework (2)

- Why to do the homework
  - During 2009, the percentage of students who passed the exam ramped from about 50% to 91% (PRLC) and 71% (LMAND)
  - In any case, up to 2 points bonus for who submitted 5 out of 6 homework
    - Valid only in the current academic year
    - To be summed to the exam grade only if the exam itself is $\geq 18$
Lab assignments (1)

- Lab is a unique opportunity
  - Real devices, not just toys
- Objectives
  - Touch what we teach in classroom
  - Facilitate the learning process
- Three assignments
  - Filtering Database, Spanning Tree Protocol, VLANs
Lab assignments (2)

- We feed the lab is fairly easy
  - In any case, up to 1 point bonus
  - Same rules of the homework

- Possibility to do everything from remote
  - ADSL is perfectly fine

- Same rules already in place for homework
  - Report to be delivered by hand to the professors
  - 1 point to be summed...bla bla... if you deliver all the three labs
  - Strict deadlines
Schedule

- 4.5 hours/week
  - Some spare hours at the end of the course
  - Partly in classroom, partly in lab
    - No fixed schedule for class/lab
      - Depends on what we have to do
    - Please check the online calendar week after week

- Lab: LADISPE (ground floor, next to classroom 12)

- Lab Hours = Consultancy Hours
  - Please use those hours for having hints about the course topics, exercises, homework, lab, etc
Exam rules

- Written exams
  - 18 multiple-choice questions
    - 1 point: in case of correct answer
    - 0 points: in case of missing answer
    - -0.5 points: in case of wrong answer
  - 3 exercises
    - 4 points each
- Pass if (exam >= 18)
  - Then, we’ll sum the points to gained in homework and lab assignments
Exam schedule

- Two exams in summer
  - End June
  - Mid-July
- One exam in September
- Another in February
- Additional exams in the “laureandi” sessions

- Outcomes of the past exams
Exam replacements

- No assignments available *in addition* to the exam

- A few assignments are available that *replace* the exam
  - An in-depth analysis of some selected topics (e.g., Application-layer processing, Storage Area Network Protocols, etc)
  - Lab exercises
    - Captures, case studies
  - Some additional titles are listed on the course web page

- The student must have an *average mark* > 27
Students who were enrolled in the past

- The outline of the course is almost unchanged from the old PRLC/LMAND
- You can keep the rules valid in your year
  - Lab grades are still valid
Text books

- Baldi, Nicoletti. Switched LANs (in Italian) (or)
- Seifert, Edwards. The All-New Switch Book: The Complete Guide to LAN Switching Technology (in English)

But...
- Both do not cover all the topics
- Slightly outdated (the former)
- Please take your own notes in class
Logistics (1)

- Course website
  - http://netgroup.polito.it/teaching/prl/
- Day-by-day calendar (Google-based)
- Online slides
  - Available (hopefully) before the class

! Warning!

! Slides are not enough!

! Homework and labs are very important!
Logistics (2)

- Class live recording (on http://didattica.polito.it/)
  - For who cannot attend to the class
- Auto-learning lectures
  - Available on the “Portale della didattica”
- Prof. hours for consultancy
  - Before/after the class
  - Face-to-face meetings
    - Check for rules on the professor’s website:
    - http://sites.google.com/site/fulviorisso/
Questions?