

Overview

- This Lecture
 - Introduction
 - Reference:
- Next Lecture
 - Network hardware and protocols
 - Reference:

CS engineering cliff

- CS students understand less and less computer systems
- Hands-on experience on computer systems is valuable

Network Management and Security

- What's it about?
 - Originated from system administration, especially for multi-user systems
 - Computer networks and the Internet have broadened the area of system administration
 - System/network administration as a profession
 - Security of computer systems and networks is a serious concern now.

Objectives of the course

- Sound understanding of computer systems, networks, and their security issues with hands-on experience
- Understand and practise every aspect of system and network administration
- Focus on the technical aspect of system, network, and security management
- Use Linux plus Ethernet plus VM as a case study
- A place to test your knowledge of computer systems and networks in a practical way.

Resources

- The COSC301 website
- The textbook: The Lab Handbook (use the **e-copy** online) plus the lecture notes
- Linux manual pages
- Related web sites
 - The Linux Document Project, <http://en.tldp.org>
 - HOWTO documents
- Maybe the above resources are obsolete, the last but most important resort is **Google search!**

Nature of the Course

- Nature of the course
 - No absolute truth.
 - Steadily changing area.
 - De-valued if no hands-on experience.
- How we'll teach it
 - Provide coaching rather than teaching in labs.
 - Lab intensive.
 - Lectures focus on understanding rather than simple recipes.
 - Encourage learning from errors and questions.
 - Encourage team work and interest-driven adventure.

Course Details

- **Assessment**
 - Two assignments worth 10% and 25%
 - Four assessed advanced labs worth 3%, 2%, 5% and 5%.
 - 50% for final examination. Note you have to pass 40% of the final exam.
- **Important points**
 - Participate in lectures and labs.
 - This course is very hierarchical. If you miss labs or lectures you may not be able to follow the rest.
 - Good relationship is a must. This paper is a chance to practise team work in the course as administrators do.
 - Read the lab material before you go to a lab. It will save you a lot of time!

Notice

- Do The Prelab!
 - Before Wednesday
 - Get the *Lab Handbook* by clicking the **Lab Manual** tab at the above course website
 - For each lab, use the lab sheets in the course schedule or download the Lab Manual every week, as it is often updated.
- The COSC301 lab is at Lab F in Owheo Building
 - Email csadmin@cs.otago.ac.nz if you have lab stream clashes
 - See me (Zhiyi) for any other lab problems

System/network administrator

- Successful Administrators
 - No stereotypes. “White/black Cats Theory”
 - Normally if one can keep the users happy he/she is successful (which is very difficult).
 - Life-long learning skills. One’s proud knowledge and expertise today may be obsolete tomorrow (Be prepared to be jobless if you do not keep learning).
- Some myths for new SAs
 - There exists a right answer for every problem.
 - Things should always work in the way we expect.
 - Every problem should have a happy end.

System administrator (cont.)

- Challenges of SAs
 - Not just installing system/software, also about planning and designing an efficient community of computers.
 - Design a logical and efficient network.
 - Easy upgrade for a large number of computers.
 - Decide what and where services are installed.
 - Plan and implement security.
 - Provide a comfortable/convenient environment for users.
 - Develop ways of fixing problems and errors.
 - Efficient administrative skills, e.g. automating.
 - Keep track of new technology and software.

Practice of SAs

- Good practices
 - Look for answers in manuals, newsgroups, and archive of mailing lists. Usually “google” helps for most common problems.
 - Use controlled trial and error for diagnosis.
 - Listen to people who tell us there is a problem. It might be true.
 - Write down problems and solutions in a log book, and write down experiences (highly recommended).
 - Take responsibilities for our actions.
 - Remember to tidy things up regularly.
 - After learning something new, ask yourself “*How does this apply to my work?*”

Superuser

- Superuser (root)
 - What is root (superuser)? A user that has privileges to access/modify all resources of a computer system.
 - Be aware of the double-edged sword
 - Convenient to do anything
 - Powerful enough to damage the system
- Login as superuser (root)
 - System admins should never login as root
 - Many commands can be executed by ordinary users
 - When you need root privilege
 - Use **sudo** or **sudo -s** or **su**

FAQ of labs