Computer Systems & Network Administration

Syllabus & Introduction

Syllabus

Prerequisite

- Basic Linux knowledge

Goals

- Have basic knowledge around system maintenance
- Have basic knowledge around system management
- Have basic knowledge around networking
- Learn how to use modern tools

When you face a new problem, you will have an idea about how to solve the problem without fear of it.

Class Information

- Time: Thu. 1:10pm ~ 4:00pm ([4] 5~7)
- Classroom: 65304@New CSIE Building
- Website: http://moodle.ncku.edu.tw/
- Instructor: Prof. Meng-Hsun Tsai
  E-mail: tsaimh@csie.ncku.edu.tw
  Office: Room 65B01, New CSIE Building ext. 62518
- TAs: 賴大立 宋奕儒
  E-mail: nasa@imslab.org
  Lab: Room 65A04, New CSIE Building ext. 62520-1004

Schedule

- 2/25 Syllabus & Introduction
- 3/4 Install Linux & basic usage
- 3/11 User Management & Service Management
- 3/18 File System
- 3/25 Process Management
- 4/1 (No Class) Spring Vacation
- 4/8 Web & LNMP stack
- 4/15 Talk - 新世代資料處理技術暨演進, Oracle Taiwan
- 4/22 Midterm

Schedule (cont.)

- 4/29 Shell Programming
- 5/6 LDAP - wangth (NYCU)
- 5/13 DNS - lwhsu (NYCU)
- 5/20 TCP/IP & PKI
- 5/27 Linux Container
- 6/3 System & Network Monitoring
- 6/10 Talk - TBA (Cloud Native-related)
- 6/17 Talk - TBA (Security-related)
- 6/24 Final Exam

Grading Policy

- Midterm (30%)
  - Handwritten test
- Final Exam (40%)
  - Handwritten test
  - Hands-on Test
- Lab (30%)
- Bonus (5%)
  - SDN Online Course (5 weeks starting from mid-April on OpenEdu MOOCs platform) (*TBA*)

Lab Information

- A lab for every week
- In principle, you will use the tools introduced in lecture to complete the lab.

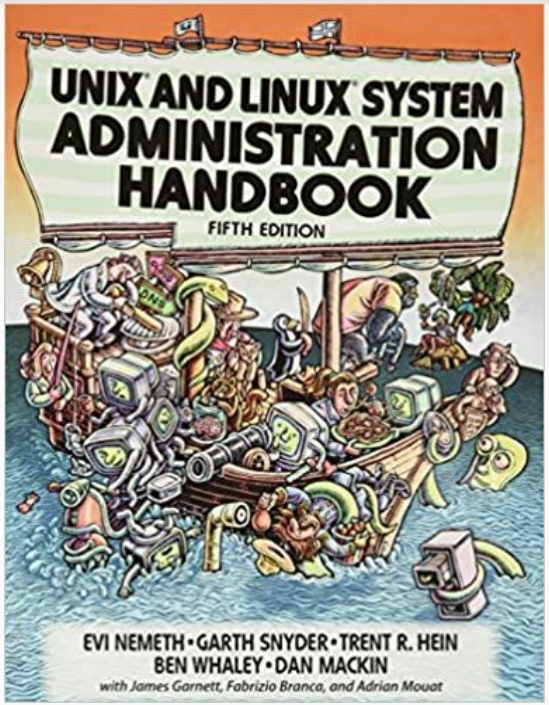
When sending mail...

Please include these information, so TA can help you

- Who you are
- What issue you're facing
- What you have done trying to solve the issue
- Which component do you think is causing the issue
- What type of assistance do you need
- Steps, if the issue is reproducible

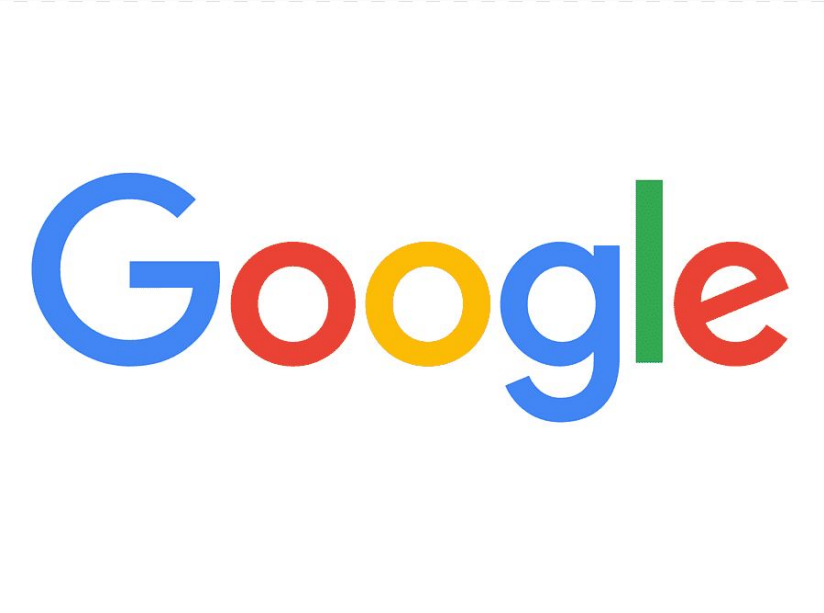
Reference

- Unix and Linux system Administration Hanbook,5e, Addison-Wesley



Reference (cont.)

- Google!



SA / NA Introduction

What’s a system administrator

- A person who is responsible for the upkeep, configuration, and reliable operation of computer systems; especially multi-user computers, such as servers.
- The system administrator seeks to ensure that the uptime, performance, resources, and security of the computers they manage meet the needs of the users, without exceeding a set budget when doing so.
- To meet these needs, a system administrator may acquire, install, or upgrade computer components and software; provide routine automation; maintain security policies; troubleshoot; train or supervise staff; or offer technical support for projects.

https://en.wikipedia.org/wiki/System_administrator

System Administrator’s tasks

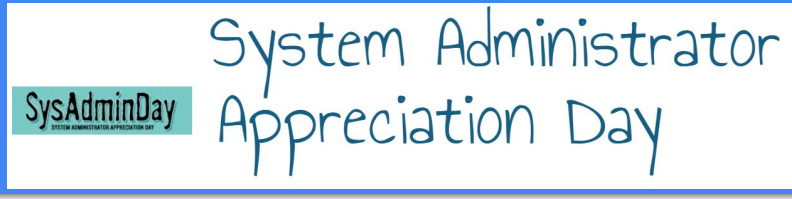
- Install / Update OS / app / service
- Monitor system performance
- User management
- Access Control management
- Configuration management
- Infrastructure management
- Log collection
- Audit
- Security

Not System Administrator’s tasks

- Fix your laptop at 3 A.M.
- Help someone install Google Chrome on their computer
- Build company website
- Replace toner in your printer
- Brew coffee

- http://www.sysadminday.com/

System Administrator



- Is a thankless job
  - Nobody need you when everything's fine, they only need you when there's something wrong.
- Guidelines for System Administrator
  - Know how things really work
  - Plan it before you do it
  - Make it reversible
  - Make changes incrementally
  - Test before you unleash it.

System Administrator Appreciation Day July 30, 2021 – 22nd Annual

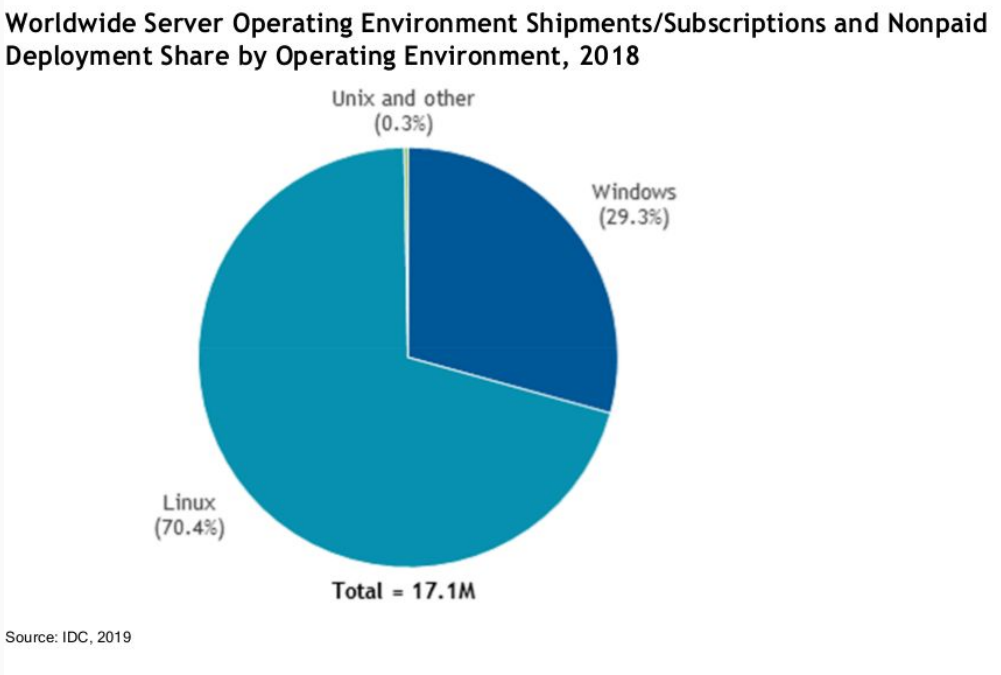
Your network is secure, your computer is up and running, and your printer is jam-free. Why? Because you've got an awesome sysadmin (or maybe a whole IT department) keeping your business up and running. So say IT loud; say IT proud …

How about Network Administrator?

- NA is very similar to SA
  - But NA specializes in Network, SA specializes in OS
  - NA shares lots of basic knowledge with SA
  - Generally, start from SA, learn some techniques in NA, then choose your path

Why choose Linux?

- Market share
  - Red Hat: Leading the enterprise Linux server market
  - Linux is much more popular than Windows when choosing server operating system



Why not FreeBSD?

- Although UNIX and Linux have very similar user experiences, there are still some differences when maintaining those OSs.
- Lots of servers are running Linux, while less and less servers are running FreeBSD.
- For your future, we are choosing Linux over FreeBSD.

We expect you to...

- Type / Run every command you've learned in this course by yourself
  - It's very IMPORTANT, as it's the fastest way to learn these techniques
- Be curious
  - There's always new stuff to learn, we can't cover all of the aspect.
  - Stay hungry, stay foolish
- Challenge your TA
  - If you think there's some error in this class, please don't hesitate to tell us.
  - We love challenges, so bring it on.

If you want to learn about cloud computing...

- Try AWS Educate
  - Global leader in cloud computing
- Azure for Students is also a good choice.
- After this course, it should be easy for you to get to know these cloud providers.