Network Administration Practice

Syllabus

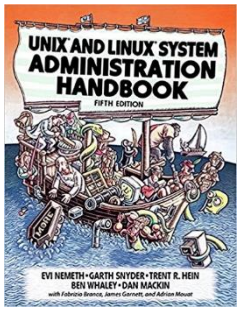
- Website:
  - http://people.cs.nctu.edu.tw/~wangth/course/netadm
- Instructors:
  - 王則涵 wangth@cs.nctu.edu.tw
- Time:
  - Thu. IJK (PM 6:30 ~ 9:20)
- Place:
  - EC122
- TAs:
  - We might get about 5~8 TAs (TBA)
  - Email to TAs: ta@nasa.cs.nctu.edu.tw
  - 3GH every week
- Textbook:
  - Unix and Linux System Administration Handbook (5th Edition)

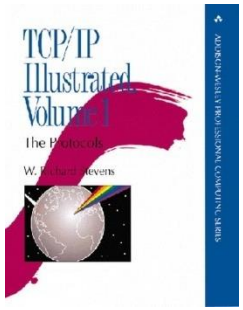
Syllabus – Course Overview

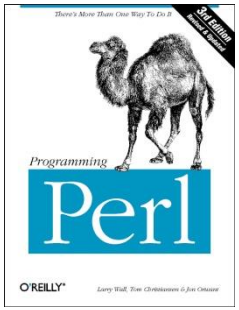
- Main topics
  - Python Programming
  - Networking
    - TCP/IP Networking
    - Network Environment
    - NAT, DHCP, Firewall, FTP, VPN, Proxy, …
  - DNS – BIND (Berkeley Internet Name Domain)
  - Mail System - Postfix
    - SPF (Sender Policy Framework)
    - DKIM (DomainKeys Identified Mail)
    - DMARC (Domain-based Message Authentication, Reporting & Conformance)
  - Network Management

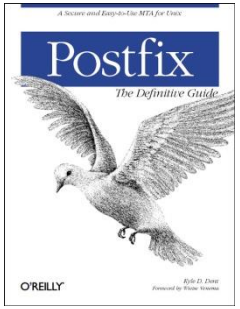
Syllabus – Course Textbook and Reference

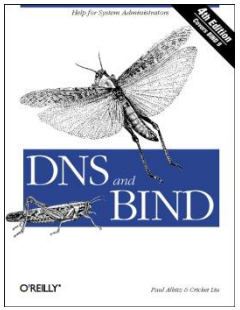
- Textbook
  - Unix and Linux System Administration Handbook (5th Edition)
  - Slides
- Reference book
  - TCP/IP Illustrated Volume 1
  - Programming Perl
  - Postfix
  - DNS and BIND
  - SNMP, SNMPv2, SNMPv3 and RMON 1, 2

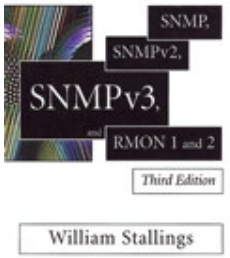






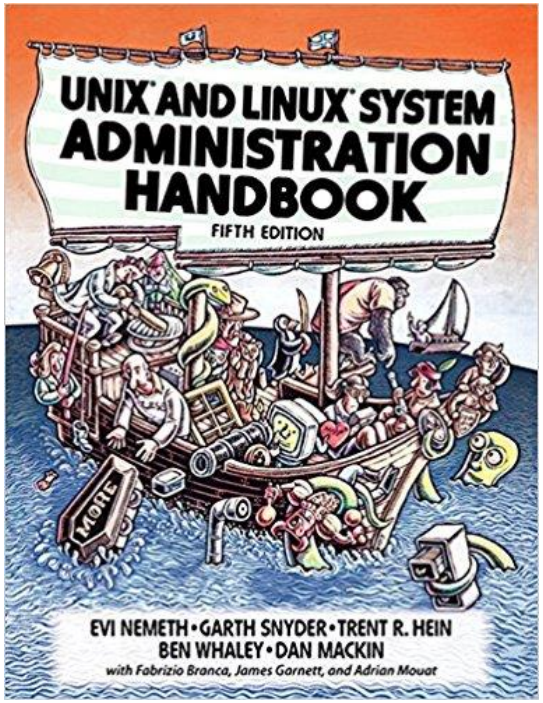






Syllabus – Content

- We will cover the following chapters in this semester (NetAdmPractice):
  - Chapter 15 ~ 18, 21, 23 ~ 25, 30 ~ 32
  - NAT, DHCP, VPN, Proxy, …
  - Python Programming



Syllabus – Text book outline

Part I. Basic Administration

- Chap 1 – Where to start.
- Chap 2 – Booting and Shutting Down
- Chap 3 – The Filesystem
- Chap 4 – Access control and rootly powers
- Chap 5 – Controlling processes
- Chap 6 – User Management
- Chap 7 – Storage
- Chap 8 – Periodic processes
- Chap 9 – Backups
- Chap 10 – Syslog and log files
- Chap 11 – Software installation and management
- Chap 12 – The Kernel
- Chap 13 – Scripting and the Shell
- Chap 14 – Configuration Management

Part II. Networking

- Chap 15 – Physical Networking
- Chap 16 – TCP/IP
- Chap 17 – Routing
- Chap 18 – DNS: Domain Name System
- Chap 19 – NFS: Network File System
- Chap 20 – HTTP: Hypertext Transfer Protocol
- Chap 21 – SMTP: Simple Mail Transfer Protocol
- Chap 22 – Directory Services
- Chap 23 – Electronic Mail
- Chap 24 – Web Applications
- Chap 25 – Network Management and Debugging

Syllabus – Text book outline (Cont.)

Part III. Operations

- ❑Chap 26 – Continuous Integration and Delivery
- ❑Chap 27 – Security
- ❑Chap 28 – Cloud Computing
- ❑Chap 29 – Containers and Virtualization
- ❑Chap 30 – Monitoring
- ❑Chap 31 – Performance Analysis
- ❑Chap 32 – Policy and Politics

Syllabus – Grade Policy

- Mid
  - 15 ~ 20%
- Final
  - 15 ~ 20%
- Exercise
  - 60 ~ 70%
    - No Delay Work
    - 4 exercises
    - 1 term project

Syllabus – Prerequisite

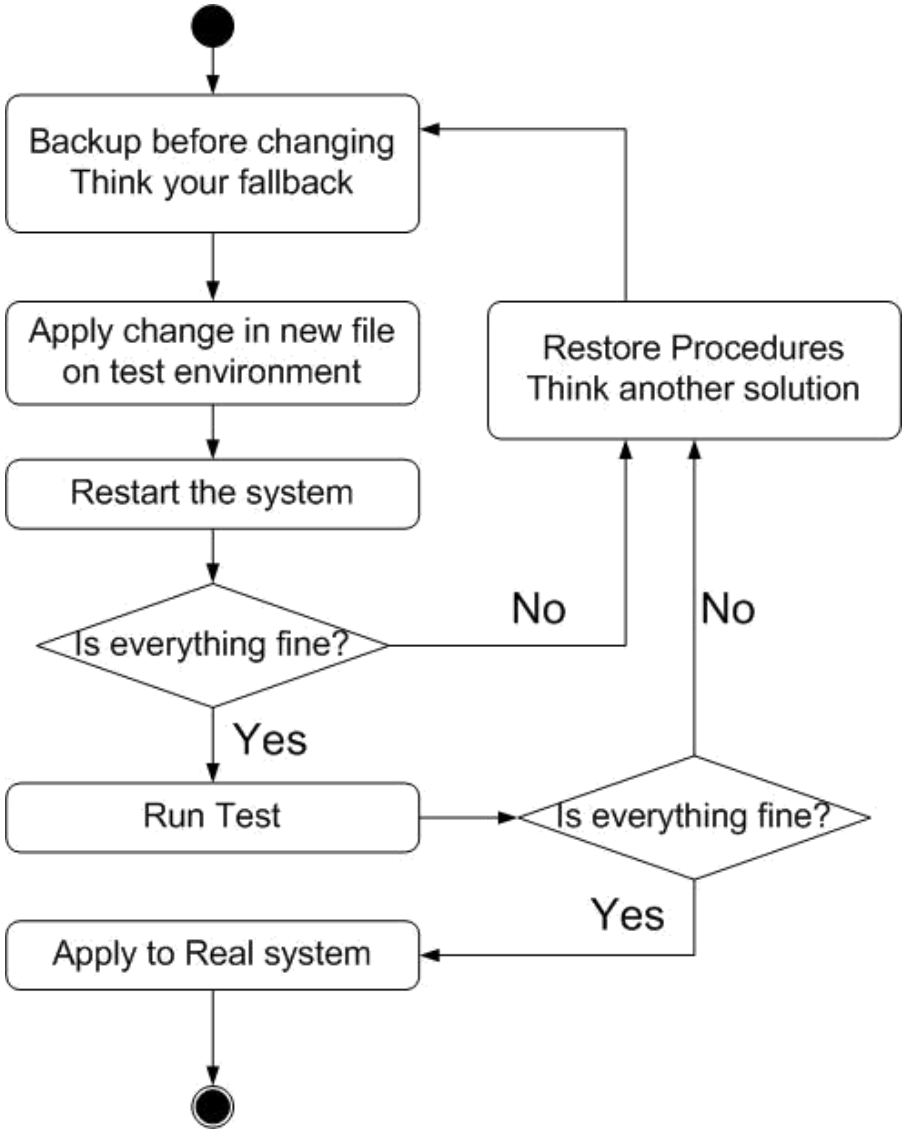
- Background Knowledges
  - It is better to have taken
    - "System Administration Practice" (系統管理實務)
    - "Introduction to Networking" (計算機網路概論)
  - At least
    - Experience of using Unix-like environment
- Environment
  - One dedicated PC (Or dual OS in your PC, VM is also accepted.)
    - With Unix-like OS installed (e.g., FreeBSD, Linux, Solaris, …)
    - FreeBSD is recommended, for the reason TA supports

Attitude

- Attend every class
- Do every exercise
  - As early as possible
  - On your own
- Read book and practice at least 6 hours every week
  - Use Unix-like environment
  - Recommend: more than 1.5 hours/day averagely
- Collect information on the Internet
  - The newer, the better.

When You Perform Any Changes…

- Flow of Change



SA-NA Junction

- FreeBSD
  - 11.1-RELEASE
    - http://people.cs.nctu.edu.tw/~wangth/course/sysadm/slides/01_Install_FreeBSD.pdf
- Install OS and software (ports)
  - http://people.cs.nctu.edu.tw/~wangth/course/sysadm
    - http://people.cs.nctu.edu.tw/~wangth/course/sysadm/slides/02_Installing_Applications.pdf