Computer System Administration

Lecture 1
Setup and Installation
Course Overview

- Basic Systems Administration of Unix and Unix-like operating systems
  - Solaris
  - Irix
  - FreeBSD
- Basic interoperability with Microsoft Windows
Course Structure

• Hands on
  – Limited to 30 individuals
  – Assigned one of 30 machines
  – Participate in "scenarios" designed to exercise skills covered in lecture

• Lecture only

• Slides/Class notes available in printed form at the beginning of each lecture, and on the web-page at the end of each lecture.
Course Structure

• Participation!
Course Layout

• Weekly lectures for the semester
  - 4pm-6pm Wednesdays

• Hands on
  - Optional
  - Will require 1 to 2 hours outside of class to complete each assignment

• Office Hours
  - Tuesdays/Thursdays 2-4pm, Lally 308
  - Open to all
Course Layout

• Scenarios
  - Each project will attempt to be modeled after a real-world style situation, with a specific problem to solve
  - There can be many solutions to the problems.
  - Time permitting we will go over interesting solutions during the following lecture to a problem.

• Groups
  - Groups will be assigned for later projects

• Time
  - 1 to 2 hours per week for scenarios
Lecture 1

Setup and Installation
Machines Available

- SUN SparcStation 5, 10, 20s (10)
  - Various speeds of CPUs
  - Various size hard drives/memory
- Irix Indy2 (10)
  - Uniform CPU/memory
  - 2 varieties of hard drives
- Intel PC (10)
  - Uniform CPU/Memory
  - 2 varieties of hard drives
Installation Basics

- Loading the Media
- Start the *miniroot*
- Partitioning
- Installation
- Configuration
- Deployment
Loading the Media

• Selecting an Operating System
  – Solaris (SparcStation)
  – Irix (Indy)
  – FreeBSD (Intel PC)

• Loading the media
  – CDRom
  – Floppy Disk
  – Network
Starting the Miniroot

• *miniroot*
  
  – Basic set of commands utilities
    
    • Networking
    
    • Disk management
    
    • Packaging tools
    
    • User management
  
  – Usually enough to repair bad installations/corrupt root partitions

• May ask you basic configuration questions
  
  – Hostname, timezone, etc.
Partitioning

• Reserves Disk Space for an operating system or data

• *Type* used to differentiate different uses of each portion of disk
  - *Swap*
  - *Filesystem*
  - *Different types of filesystems*
Partitioning

- Multiple Partitions
  - Dedicated *swap*
  - Isolates *Data* from *OS*
  - Smaller backups
  - Containment of information
  - Security!
Swap Considerations

- Why Swap?
- What Swap?
  - Filesystem?
  - Dedicated Partition?
- Where swap?
  - Position on the hard-drive.
Labeling

• Name your partitions
  – Gives location in the *filesystem* where that *partition* will be accessed through
  – Naming conventions!
Installation

• Select *distribution sets* or *packages*
  – May need to load additional media to access all of the *distribution sets* or *packages* for a given system

• Select location for the installations

• “Commit” the installation
  – Partition the disk
  – Format the filesystems
  – Add swap
  – Copy data from installation media to disk
Configuration

- Adding *users* and *groups*
- Timezone
- Customizing services
  - Email
  - Web
  - Ssh
  - Etc.
- Securing the machine
Deployment

• Making the machine available
  – Placing on a desktop
  – Server/network
• Maintenance
• Updates/Upgrades
Solaris Install

- Network Install
  - <stop>-a
  - boot net - install
Solaris Install

• Steps:
  • RARP to get IP Address
  • TFTP to download bootstrap
  • RARP to get IP Address
  • Bootparam to get server:/path
  • NFS to get kernel
  • RARP to get IP Address
  • Bootparam to get server:/path
  • NFS to get modules/root filesystem
RARP

• Maps *Ethernet Address* to *IP Address*
  - 6 *hex* digits
  - 3 *vendor* digits
  - 3 *machine/host* digits

• Displayed at system startup
TFTP

- Trivial File Transfer Protocol
  - Used to pull system *bootblock* across the network
- Bootblocks are stored in /tftpboot
- Bootblocks are named IP Address in *hex.ID*
Bootparam

• Bootparam
  – Simple configuration protocol
  – root
  – install
  – Boottype
NFS

- Network Filesystem
- Bulk/Heavy-Duty File-transfer Protocol
- Copies Kernel and provides *filesystem* access
Install Process

- Select a Language
  - Default system language, 0 = English

- Select a Locale
  - Default system locale, 0 = Traditional (ANSI)
  - Different “US” Choices for I18N

- “suninstall”
Begin Identifying System

• Enable Ipv6
  – Yes
• Default Route
  – Find One
• Configure Kerberos Security
  – No
• Name Service
  – None
Network Identification

• Part of Network
  – Yes

• Netmask
  – 255.255.255.0

• Time zone
  – Americas/United States/Eastern Time
SunInstall

- **Standard** install
- **I18N**
  - “F2”
- 64bit
  - No
- **Distribution**
  - Core System
Partitioning

- Select default disk
- Preserve Data
  - No
- Auto Layout
  - Accept Defaults
- Customize
  - Move all disk to /

Lecture 1
Finishing the Install

- Mount remote
  - No
- Profile
  - Continue
- Reboot
  - Auto Reboot