

Beginning System Administration DeCal

Week 8

April 5, 2010

Resource Sharing - Resources

- In the media, you have unlimited everything.
- In the real world, you have what you have.
 - Limited resources, unlimited demands.
 - Hardware - Memory, processing speed, storage, space.

Resource Sharing - Costs

- Costs
 - Initial rampup costs
 - Servers
 - Networking
 - Data Storage
 - Consulting
 - Maintenance costs
 - Power - Cooling, backup generators, servers
 - Bandwidth - Cost per MB transferred
 - System upgrades/maintenance
 - Personnel - sysadmins, network admins

Resource Sharing - The SysAdmin

- Decisions
 - Fair access for all clients according to roles
 - Where/How to improve resource utilization
 - Spend more money on RAM!?! Disks?!
 - Money is not the answer to everything.
 - Upgrade Plans
 - Do you have the physical space for your equipment?
 - How will you maintain the new equipment?

Resource Sharing - Why!?

- Limited Disk Space
 - Some people use more space than they are entitled to.
 - Illegal materials, policy enforcement.
- Limited Bandwidth
 - No, you cannot serve your entire music collection here.
- Denial of Service (DOS)
 - An attempt to make a computer resource unavailable to its intended users - Wikipedia

Resource Sharing - Problems

- Problems
 - Legal issues
 - Security issues
 - Availability Issues

Resource Sharing - Quota

- Quotas
 - Impose a limit on user's resources.
 - The quota command.
- Accounting
 - Processor usage
 - Bandwidth
 - Disk Usage
 - Command logging

Administrivia

- One of our core servers went down last night which explains why the class site (And many other things) was down.
 - Apologies for the inconvenience.
 - Of course as good students, you didn't need it up to do your work last minute did you?
- Project spec has been released!
 - Find it on the class page.
 - Put everything you've learned into something awesome.
 - Look at project suggestions (Also on the class site) for inspiration.

Administrivia (cont.)

- Some of you haven't been turning in HW.
 - Don't forget the Half+1 rule.
 - Class is wrapping up soon, may not be many more assignments left.
 - We will still accept assignments until the last day of class 4/26 (Aren't we generous?).

Security - Permissions

- Permissions revisited
 - Three sets of read/write/execute
- Tools
 - The `find` utility can search for files based on permissions (Among other things)
 - Ex] What is the command to list everything with permissions of 777 in and under the current directory?
 - `find . -perm 777`

Security - ACLs

- Access Control Lists
 - Sometimes the default permission groups - owner/group/everyone are too broad.
 - What if you want to share with a single user or multiple groups?
- `setfacl`, `getfacl`
- Allow for more fine-grained control over permissions.

Security - Privileges

- Privilege escalation
 - sudo, su
- Non-privileged users
 - Security vulnerabilities
 - Compromised accounts
 - Look at `ps -ef`. How many processes actually run as root?