CSE 265: System and Network Administration

- Making mixed environments work
  - Sharing Resources
    - Common authentication
    - Network name resolution
    - Printers
    - Files
  - Making Windows look like Linux and vice versa
    - Add or configure similar interface/functionality
    - Remote desktops
    - Dual-booting
    - OS Emulation/Virtualization
Mixed environments are the norm

- Windows + UNIX/Linux/Mac
- Why care about Windoze? (thanks to CJ)
  - It’s everywhere (dun dun DUN!)
  - Chances are, more of your clients will be using it than *NIX
  - It has brought computing to the average Joe – billions of ‘em
  - It uses inferior multi-user technology, and we should help them where possible
  - It’s not leaving anytime soon – get over it
Sharing Resources (1)

- Regardless of OS, clients want:
  - Common authentication
    - NIS, LDAP, Active Directory
  - Network name services
    - DNS, NetBIOS, WINS
Sharing Resources (2)

- Regardless of OS, clients want: Access to printers
  - CUPS
  - LPD
  - SMB
  - Novell
  - JetDirect
Sharing Resources (3)

- Regardless of OS, clients want: Access to files
  - NFS
    - UNIX can be client or server
    - PC client is available
  - SMB
    - Windows & UNIX can be client or server
  - Novell – not so popular
  - AFS – prob. upcoming lab
    - OpenAFS.org PC client avail.
    - UNIX can be client or server

```
[brian@davison:~]$ df
Filesystem    1k-blocks  Used  Available  Use% Mounted on
/dev/sda3     30233928  10951964 17746152    33% /      
/dev/sda2     101105    31120    64794    33% /boot
none           1032578     0    1032575    0% /dev/shm
/dev/sda7     24375448    77876  2309366    12% /export
/dev/sda9     2016172    77892  1905910    12% /free
ude2:/backup  115377654   31038688 74878080   23% /snapshots
ude1:/home   60476072   2679840 303980200  47% /home
ude1:/var/spool/mail 15259376   351764   11966775  25% /var/spool/mail
p6:/datasets  230742136 183245336  35172336  83% /datasets
ude4:/raid1   974154816  926783064  44672752  96% /farm/1
ude4:/raid2   9741463800 925498216  45965664  96% /farm/2
p5:/raid     769172016  729507112  31850568  96% /farm/3
ude2:/raid   1156753416 1027518608 139524308  83% /farm/4
p1:/raid     388187088  356760000  27539188  93% /farm/p1
p2:/raid     388187088  114779868  273407432  30% /farm/5
/kato/brian   35008592    8455168  26553344  25% /home/brian/sun-files-win
udows        
ude2:/usr/local 34218636  21403776  11076672  86% /usr/local

[brian@davison:~]$ mount
```

```
auto1 on 'afs' (O:)  Network Drive  1.99 TB  0.99 TB
```
Samba

- Samba can allow for peaceful coexistence between Windows & Linux/UNIX systems wrt:
  - Provide/Assist with Windows Internet Name Service (WINS)
  - Printer sharing
  - Client Authentication
  - Backup PCs (smbtar)
  - File sharing
- Will do only setup of file sharing today
How does Samba do it?

- SMB = Server Message Block
  - SMB is an extension added by MS to allow DOS to redirect calls to NetBIOS
  - NetBIOS = (crude) interface between network and application
- CIFS = Common Internet File System
  - Different paradigm than NFS
    • Per-user authentication
  - Based on protocols from SMB
  - Now supported directly by Linux
Samba Configuration

• Only config file: /etc/samba/smb.conf
• Two daemons
  - `smbd` – file and print services, authentication
  - `nmbd` – NetBIOS name service, browsing
• Start with `/etc/init.d/smbd start`
Samba Status

- Samba runs as a service; usually needs little attention
  - Can check using `smbstatus`

```
brian.local.davison.net[brian]: smbstatus

Samba version 3.0.14a-2
PID   Username      Group         Machine
      ----------------------------------
  3038   karen         karen         familydell   (192.168.0.111)
  3038   brian         brian         familydell   (192.168.0.111)

Service      pid     machine       Connected at
-------------------------------------------------------
IPC$          3038   familydell    Sun Mar 26 23:00:24 2006
backups       3038   familydell    Sun Mar 26 23:01:15 2006

No locked files
```
Samba File Sharing Process

- Install Samba (rpm for RH/Fedora)
- Customize /etc/samba/smb.conf
- Add users and set passwords
  - (Add user using `useradd`)
  - (Set regular user password using `passwd`)
  - Set Samba password using `smbpasswd`
- Restart Samba
  - `/etc/init.d/smb restart`
/etc/samba/smb.conf

- Standard, simple scheme
  
  `[share]`  
  
  `attribute = value`

  # or ; denotes a comment

- Sample Headings:
  
  `[global]` – global settings, network IDs
  
  `[homes]` – users' home directories
  
  `[printers]` – printing utilities
  
  `[public]` – open share to all
Shares and Attributes

- **[global]**
  - workgroup = name of Windows network group
  - netbios name = system name to appear in Windows Network Neighborhood
  - hosts allow = list of IPs or networks (whitespace-delineated) to have access to SMB shares
  - encrypt passwords = yes, for Win98+; no for Win95-

- **[homes]**
  - browseable = yes, will map directly to /home/user; much like “My Documents” ability on campus
  - writable = yes (same as read only = no); by default, all shares are read-only
Common Shares and Attributes

- **[public]**
  - path = path to RW storage space
  - Often also set read only = no and browseable = yes
  - Note: gives full RW access to anyone – be careful

- **[printers]**
  - printable = yes
  - path = /var/spool/samba

- **[music]**
  - path = path to music files
  - public = yes, will allow access to all users
  - write list = list of users that can write
  - invalid users = list of users that cannot access
Accessing Samba/Win Shares

- From Windows Network Places
  - Act and look like normal shares

- From Linux/UNIX
  - Using a file manager (like Konqueror or Nautilus)
  - Mount them
    - in /etc/fstab
      - `//SMB_server/share local_mount_dir smbfs options 0 0`
    - `mount.cifs -o username=name //SMB_server/share mount_dir`
Making Windows look like Linux
(and vice versa)

• Dual-booting
  – Not always convenient
• Add or configure similar interface/functionality
  – OpenOffice.org – Microsoft Office file access
  – WINE – support for many Windows clients
  – cygwin – UNIX-like shell, commands, perl, gcc, etc.
  – ssh clients – access to UNIX shells
  – multi-platform web browsers, chat and email clients
Making Windows look like Linux
(and vice versa)

- Remote desktops
  - X-Windows
    - Display separate from computation
    - Clients available for Windows, built-in to most UNIX
  - Windows Remote Desktop
    - Clients available for Windows + UNIX
  - VNC
    - Real remote desktop, even within browser (Java-based)
    - Any platform can operate any other platform
    - Continue working on whatever PC is nearby
- Services: GoToMyPC.com, LogMeIn.com
Making Windows look like Linux
(and vice versa)

• OS Emulation, Virtualization
  - QEmu
  - VMware
  - Xen
  - Microsoft Virtual PC

  - *And more...* in an upcoming lecture
Resources

- [http://www.samba.org/](http://www.samba.org/)
  - Tons of documentation, including *Using Samba* from O’Reilly, all online
  - Free and commercial clients and servers
  - Shell, X-Windows, gcc and more for PC
- [http://www.openoffice.org/](http://www.openoffice.org/)
  - Microsoft Office compatible files
- [http://www.winehq.com/](http://www.winehq.com/)