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 Win\textit{doze}? (thanks to CJ)
  - It’s everywhere
  - Chances are, more of your clients will be using it than UNIX/Linux
  - 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
  - AFS
    - OpenAFS.org PC client avail.
    - UNIX can be client or server
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 RHEL/CentOS)
- 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
  \textit{attribute} = \textit{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-delimited) to have access to SMB shares

- **[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 --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 client programs
  - cygwin – bash/tcsh/zsh 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
  - VirtualBox
  - Windows Virtual PC

- And more...
Resources

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