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 (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
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/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
  - VirtualBox
  - Microsoft Virtual PC

  - And more… in an upcoming lecture
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.com/**