

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
 - 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

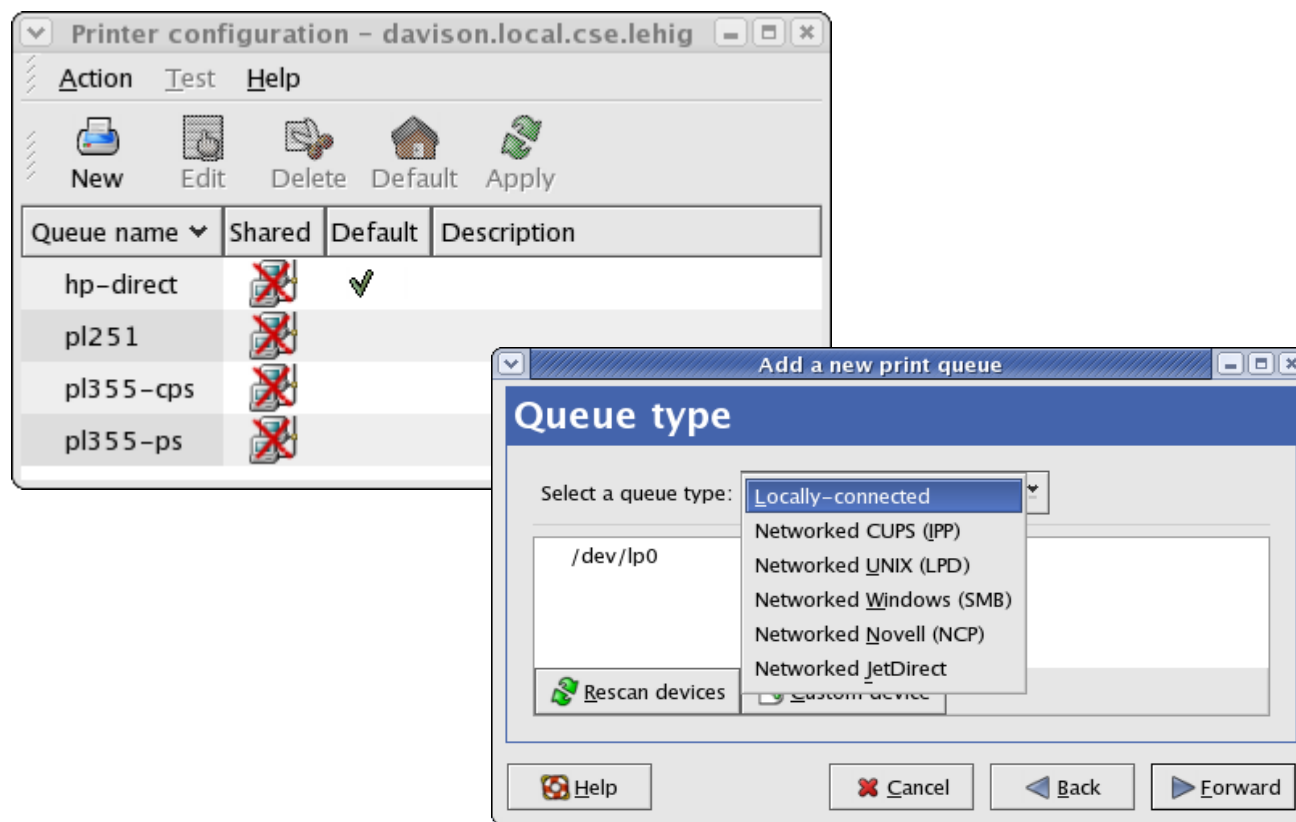
Sharing Resources (1)

- 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 – prob. upcoming lab

- OpenAFS.org PC client avail.
- UNIX can be client or server

```
brian@davison:/home/brian
[root@davison brian]# df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/sda3        30233928 10951964 17746152 39% /
/dev/sda2         101105      31120    64764    33% /boot
none             1032576      0    1032576  0% /dev/shm
/dev/sda7        24375448    77876   23059364  1% /export
/dev/sda5        20161172    77892   19059140  1% /free
wume2:/backup    115377664   31038688 78478080 29% /snapshots
wume1:/home      60476072   26795840 30608208 47% /home
wume1:/var/spool/mail 15259376   3517464 10966776 25% /var/spool/mail
p6:/datasets    230762136 189245336 39172392 83% /datasets
wume4:/raid1     971455816  926783064 44672752 96% /farm/1
wume4:/raid2     971463880  925498216 45965664 96% /farm/2
p5:/raid         769172016  729507112 31850568 96% /farm/3
wume3:/raid     1166753416 1027818608 138934808 89% /farm/4
p1:/raid         388187088  356760800 27519128 93% /farm/p1
p2:/raid         388187088  114779656 273407432 30% /farm/5
//kato/brian    35008512    8455168 26553344 25% /home/brian/sun-files-wi
ndows
wume2:/usr/local 34218656   21403776 11076672 66% /usr/local
[root@davison brian]#
```

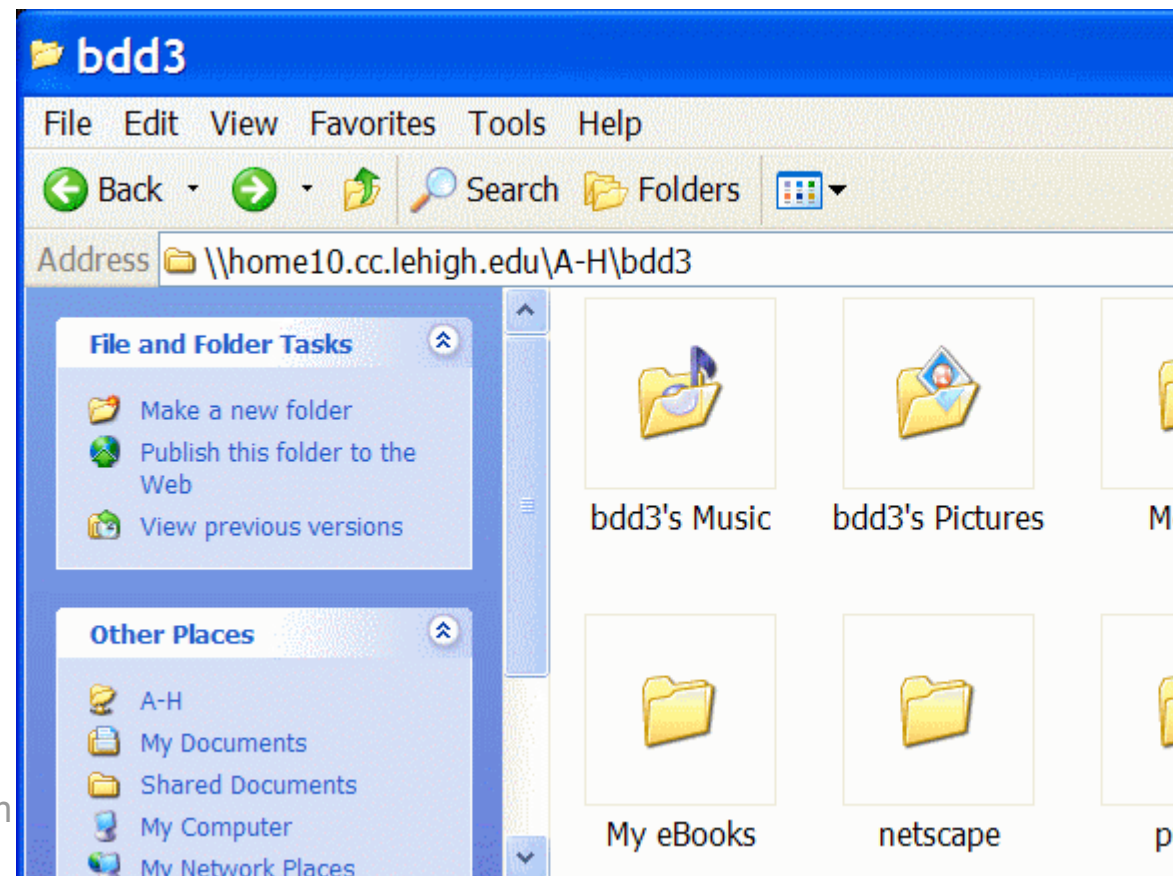
Network Drives

 auto1 on 'afs' (O:)	Network Drive	1.99 TB	0.99 TB
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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
IPC$         3038    familydell   Sun Mar 26 21:55:42 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
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

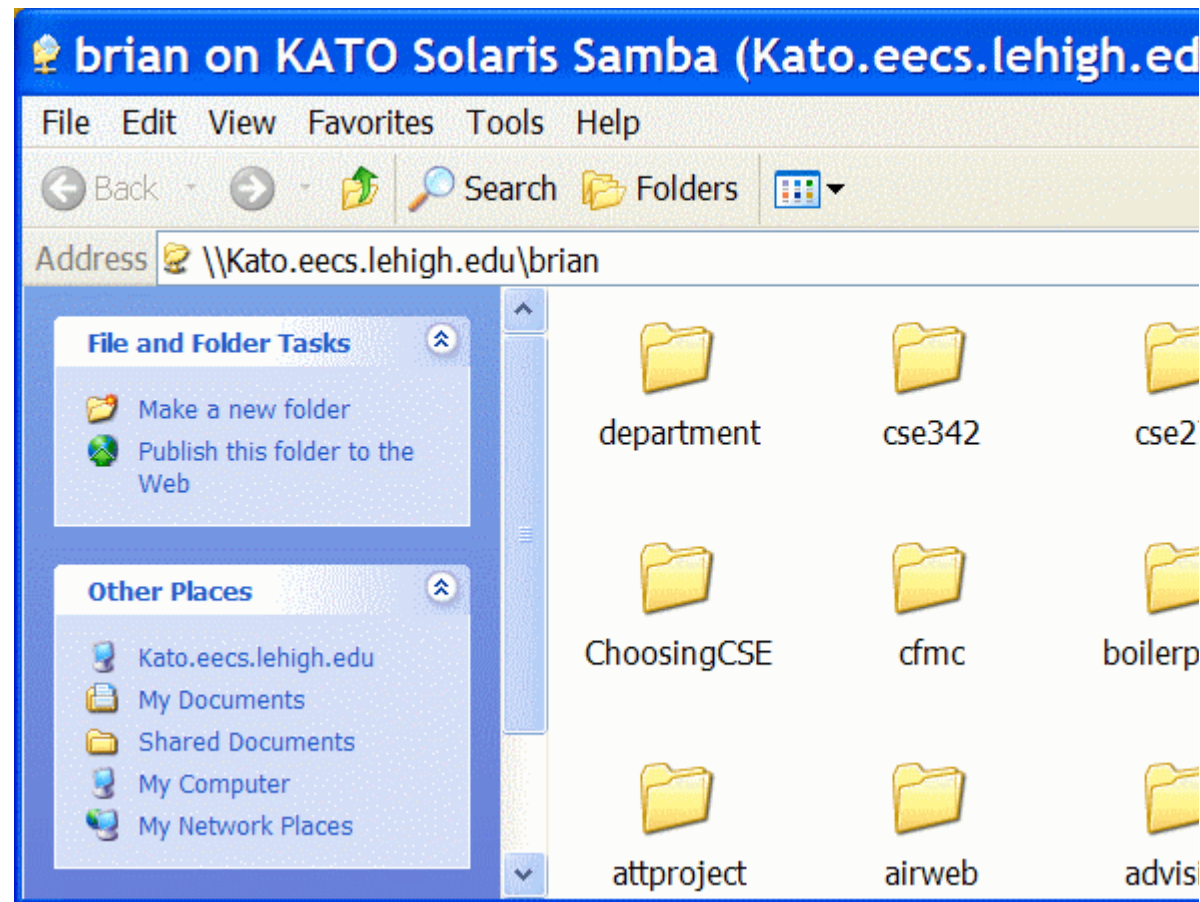
- [global]
 - workgroup = name of Windows network group
 - netbios name = system name to appear in Windows Network Neighborhood
 - hosts allow = list of IPs or networks (whitespace-delineated) to have access to SMB shares
- [homes]
 - browseable = yes, will map directly to `/home/user`; much like “My 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

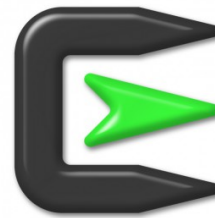
- From Windows Network Places
 - Act and look like normal shares
- From Linux/UNIX
 - Using a file manager (like Konqueror or Nautilus)
 - Mount them
 - in /etc/fstab
 - `//SMB_server/share local_mount_dir smbfs options 0 0`
 - `mount.cifs -o username=name //SMB_server/share mount_dir`



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 client programs
 - 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
 - Windows 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.org/>