

# CSE 265:

# System and Network Administration

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- 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

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- 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)

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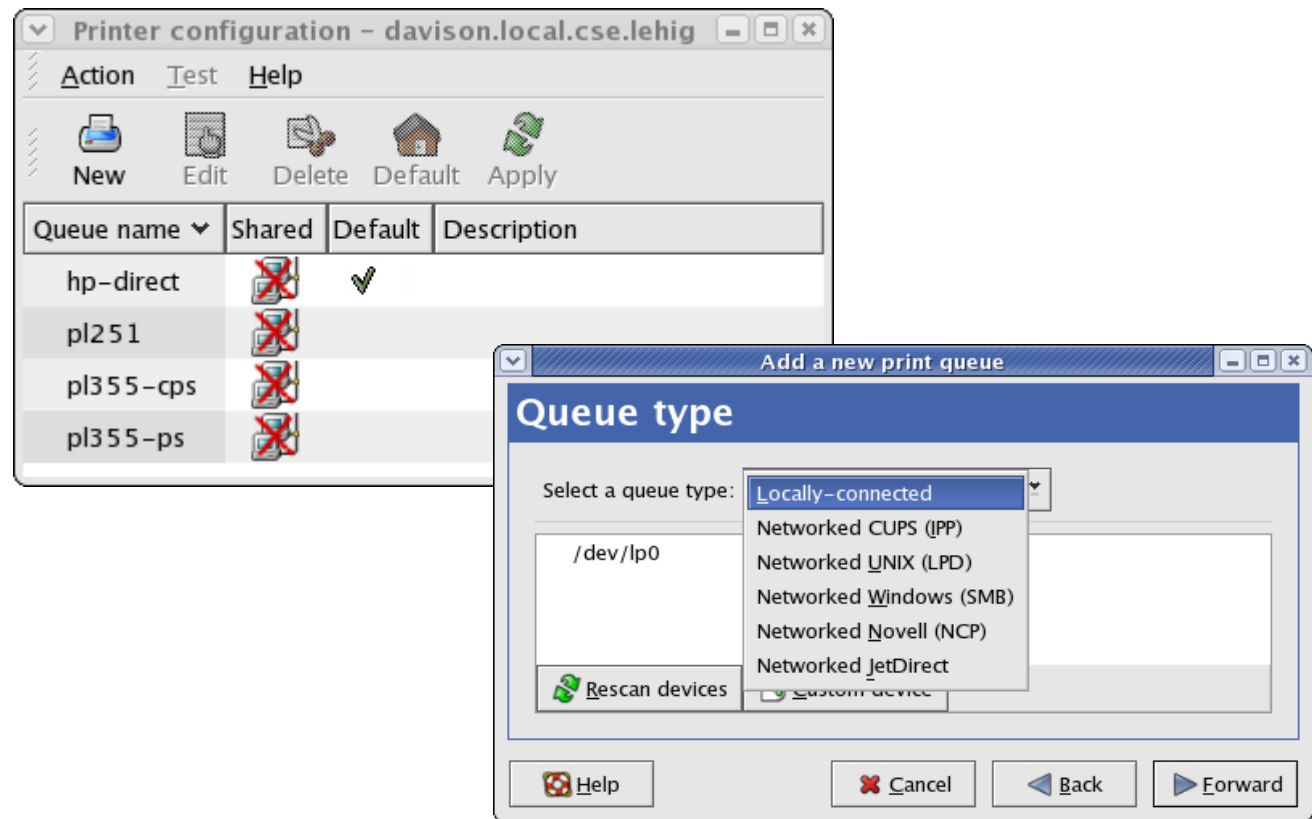
- Regardless of OS, clients want:
  - Common authentication
    - NIS, LDAP, Active Directory
  - Network name services
    - DNS, NetBIOS, WINS



# 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

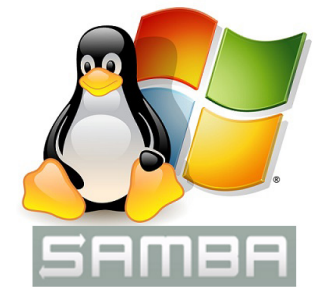
- OpenAFS.org PC client avail.
- UNIX can be client or server

```
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]#
```

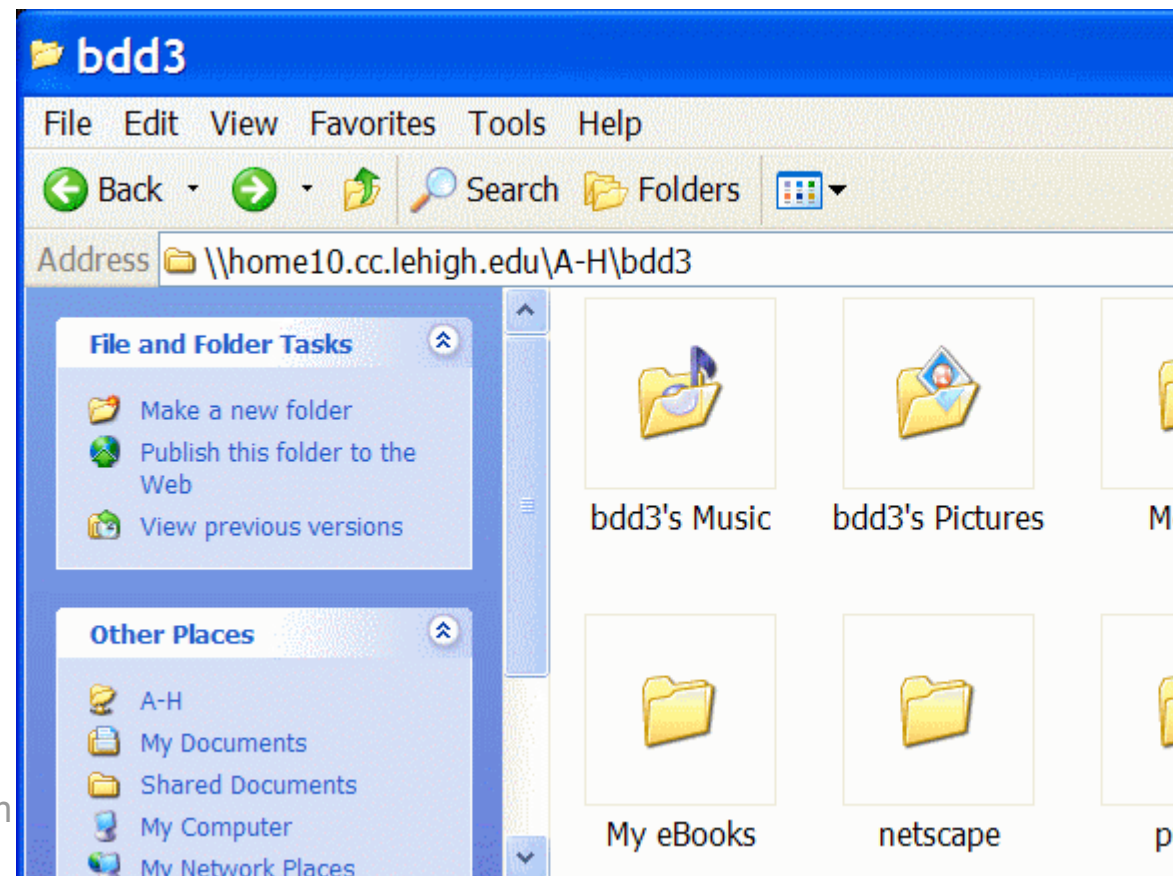
## Network Drives

 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?

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- 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

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- 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

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- 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

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- 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

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- [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

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- [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

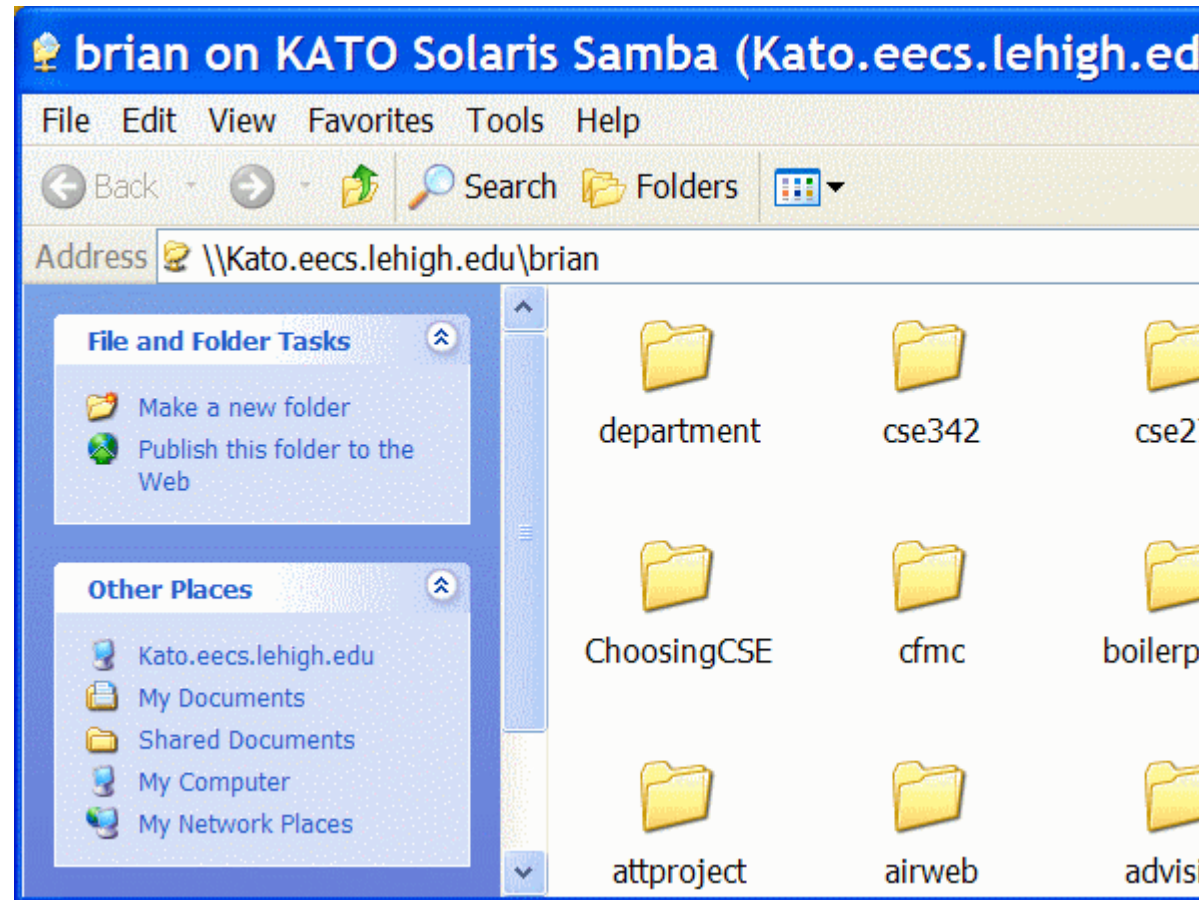
- Using a file manager (like Konqueror or Nautilus)

- 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`**

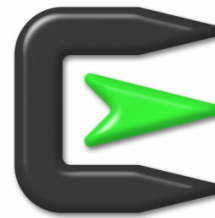


# Making Windows look like Linux

*(and vice versa)*

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- 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)*

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- 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](http://GoToMyPC.com), [LogMeIn.com](http://LogMeIn.com)



# Making Windows look like Linux

*(and vice versa)*

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- OS Emulation, Virtualization
  - QEmu
  - VMware
  - Xen
  - VirtualBox
  - Windows Virtual PC
  
  - *And more...*

# Resources

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- <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/>