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TFTP and syslinux

Install a TFTP server and syslinux:
sudo apt-get install tftpd-hpa
sudo apt-get install syslinux

Make initrd

Generate an initrd with nfs root enabled:
On a Feisty workstation, edit the /etc/initramfs-tools/initramfs.conf, change
BOOT=local to BOOT=nfs:

```
BOOT=nfs
```

Create the new initrd image:
sudo mkinitrd

Copy initrd

Copy the new initrd.img and the kernel into place on the TFTP server:
/var/lib/tftpboot/initrd.img-2.6.20-16-generic
/var/lib/tftpboot/vmlinuz-2.6.20-16-generic

pxelinux.cfg

Edit the PXE boot file /var/lib/tftpboot/pxelinux.cfg/default to point at the
kernel and nfs root server and mount point:

```
default linux  
prompt 0
```

```
label linux  
    kernel vmlinuz-2.6.20-16-generic  
    append root=/dev/nfs initrd=initrd.img-2.6.20-16-generic  
nfsroot=72.166.203.209:/nfsroot/babbage ip=dhcp rw
```

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DHCP

Create DHCP server entries for the PXE boot source, in the example the IP address of the next-server entry is for the TFTP server:

```
group {
    next-server          72.166.203.209;
    filename             "pxelinux.0";

    host BABBAGELAB01 {
        hardware ethernet 00:13:72:87:F5:5b;
        fixed-address 72.166.196.1;
    }
}
```

Network Manager

In shared NFS ROOT filesystem:

NetworkManager interferes with NFS root in Feisty, so disable it with with the following configuration file entries:

```
/etc/default/NetworkManager:
exit
/etc/default/NetworkManagerDispatcher:
exit
```

fstab

Edit the shared /etc/fstab to localize some file systems in tmpfs on each workstation. Along with / as /def/nfs, notice the commented out CD and Floppy, let plugdev/hal/dbus take care of those placing the mount point (/media) in the tmpfs area keeping it local to each workstation:

```
# /etc/fstab: static file system information.
#
# <file system> <mount point> <type> <options> <dump> <pass>
proc /proc proc defaults 0 0
/dev/nfs / nfs defaults 1 1
none /tmp tmpfs defaults 0 0
none /var/run tmpfs defaults 0 0
none /var/lock tmpfs defaults 0 0
none /var/tmp tmpfs defaults 0 0
none /media tmpfs defaults 0 0
#/dev/scd0 /media/cdrom0 udf,iso9660 user,noauto 0 0
#/dev/fd0 /media/floppy0 auto rw,user,noauto 0 0
```

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Windows home directories

Mount Windows servers for home directories, /etc/security/pam_mount.conf, also make sure the mount command does not edit the /etc/mtab file via the -n option:

```
cifsmount /bin/mount -n -t cifs //%(SERVER)/%(VOLUME) %(MNTPT) -o  
"user=%(USER),uid=%(USERUID),gid=%(USERGID)%(before=\", \" OPTIONS)"
```

```
umount /bin/umount -n %(MNTPT)
```

```
volume * cifs srvstul home /winhome/&  
domain=ad.adams.edu,port=445,ip=192.156.134.154,mapchars,dir_mode=0700,file_mode=0  
700,nobrl - -
```

```
volume * cifs srvempl home /winhomestaff/&  
domain=ad.adams.edu,port=445,ip=192.156.134.156,mapchars,dir_mode=0700,file_mode=0  
700,nobrl - -
```

/etc/mtab

The /etc/mtab file gets changed by mount commands, causing problems in a shared environment. Our solution is to make /etc/mtab a symbolic link to /proc/mounts, keeping it local to each workstation. Unfortunately the base mount command overwrites the symbolic link when making edits to /etc/mtab. Mount does have a -n switch which does not update the /etc/mtab file, we are trying this and an rc.local entry to recreate the mtab file if it is not a symlink.

```
mtab -> /proc/mounts
```

mount & umount

We replaced /bin/mount and /bin/umount with wrapper scripts:

```
#!/bin/bash  
/bin/mount-dist -n $*
```

pam_ldap.conf

Use LDAP for account information, /etc/pam_ldap.conf, libnss-ldap.conf:

```
host ldap.adams.edu  
base ou=accounts,dc=adams,dc=edu  
ldap_version 3  
pam_login_attribute uid  
pam_password clear  
nss_base_passwd ou=accounts,dc=adams,dc=edu?one  
nss_base_shadow ou=accounts,dc=adams,dc=edu?one  
nss_base_group ou=groups,dc=adams,dc=edu?one  
ssl_start_tls  
tls_checkpeer no
```

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nsswitch.conf

Use LDAP for account information /etc/nsswitch.conf:

```
passwd:      files ldap
group:       files ldap
shadow:     files ldap
```

gdm

Use LDAP for authentication, /etc/pam.d/gdm:

```
##PAM-1.0
auth    requisite      pam_nologin.so
auth    required       pam_env.so
auth    optional       pam_mount.so
@include common-auth
@include common-account
session required      pam_limits.so
session optional     pam_mount.so use_first_pass
@include common-session
@include common-password
@include common-pammount
```

pam LDAP common-auth

LDAP authentication, /etc/pam.d/common-auth:

```
#
# /etc/pam.d/common-auth - authentication settings common to all services
#
# This file is included from other service-specific PAM config files,
# and should contain a list of the authentication modules that define
# the central authentication scheme for use on the system
# (e.g., /etc/shadow, LDAP, Kerberos, etc.). The default is to use the
# traditional Unix authentication mechanisms.
#
#auth    required      pam_unix.so nullok_secure
auth     optional      pam_group.so
auth     sufficient    pam_ldap.so debug use_first_pass
auth     sufficient    pam_unix.so nullok_secure try_first_pass
#auth    sufficient    pam_unix.so try_first_pass likeauth nullok_secure
auth     required      pam_deny.so
#auth    required      pam_nologin.so
```

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pam LDAP common-session

LDAP authentication /etc/pam.d/common-session (having pam_foreground is important so keep it at the top):

```
#  
# /etc/pam.d/common-session - session-related modules common to all services  
#  
# This file is included from other service-specific PAM config files,  
# and should contain a list of modules that define tasks to be performed  
# at the start and end of sessions of *any* kind (both interactive and  
# non-interactive). The default is pam_unix.  
#  
#session      required      pam_unix.so  
session optional      pam_foreground.so  
session sufficient      pam_ldap.so debug  
session sufficient      pam_unix.so
```

local device security

Give all users access to local hardware devices, /etc/security/group.conf:

```
*:*:*;A10000-2400;cdrom,floppy,audio,video,plugdev,scanner,powerdev
```

local hardware access

Give all users local hardware access, /etc/pam.d/common-auth:

```
auth      optional      pam_group.so
```

hostname

Set local hostname, modification to /etc/init.d/hostname.sh start:

```
awk=/usr/bin/awk  
host=/usr/bin/host  
IPADDR=`/sbin/ifconfig eth0 | grep 'inet addr' | $awk -F: '{ print $2 } ' | $awk  
'{ print $1 }'`  
FQHOST=`$host $IPADDR | $awk '{print $5}'`  
FQHOST=${FQHOST%?}  
HOST=`$host $IPADDR | $awk '{print $5}' | $awk -F. '{print $1}'`  
  
echo $FQHOST > /proc/sys/kernel/hostname  
echo "IP Address      : $IPADDR"  
echo "Fully Qualified Hostname : $FQHOST"  
echo "Hostname        : $HOST"
```

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Openoffice.org

Fix OpenOffice.org startup, copy /etc/skel using /etc/profile (note, had to remove all symlinks from openoffice.org user config directory, CIFS does not support symbolic links):

```
if [ ! -e "~/.bash_logout" ]; then
    cp -f /etc/skel/.bash_logout ~/
fi
if [ ! -e "~/.bashrc" ]; then
    cp -f /etc/skel/.bashrc ~/
fi
if [ ! -e "~/.openoffice.org2" ]; then
    cp -fR /etc/skel/.openoffice.org2 ~/
fi
if [ ! -e "~/.profile" ]; then
    cp -f /etc/skel/.profile ~/
fi
```