

CT 320: Network and System Administration

AUTOMATING INSTALLS

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Topics

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1. Why Auto-install?
2. Auto-install features and components.
3. PXE
4. Disk imaging.
5. Kickstart.
6. Post-install synchronization.

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Why Automate Installs?

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1. **Save time.**
Boot the computer, then go do something else.
2. **Ensure consistency.**
No chance of entering wrong input during install.
3. **Fast system recovery.**
Rebuild system with auto-install vs. slow tapes.

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Install Types

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1. **Hard Disk Imaging**
Duplicate hard disk of installed system.
Advantages: fast, simple.
Disadvantages: inflexible, need identical hardware.
2. **Scripted Installs**
Installer accepts input from script.
Advantages: flexible, systems can be different
Disadvantages: more complex

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Auto-Install Features

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- 1. Unattended**
Requires little or no human interaction.
- 2. Concurrent**
Multiple installs can be performed at once.
- 3. Scalable**
New clients added easily.
- 4. Flexible**
Configurable to do custom install types.

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Auto-Install Components

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- **Boot Component**
 - Media (floppy or CD)
 - Network (PXE)
- **Network Configuration**
 - DHCP: IP addresses, network masks, DNS
- **Install Configuration**
 - Media (floppy or CD)
 - Network (tftp, ftp, http, NFS)
- **Install Data and Programs**
 - Network (tftp, ftp, http, NFS)

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PXE

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- **Preboot eXecution Environment**
 - Intel standard for booting over the network.
 - PXE BIOS loads kernel over network.
- **Applications**
 - Diskless clients (use NFS for root disk.)
 - Booting install program.
- **How it works**
 1. Asks DHCP server for config (ip, net, tftp.)
 2. Downloads pxelinux from tftp server.
 3. Boots pxelinux kernel.
 4. Kernel uses tftp'd filesystem image or NFS filesystem.

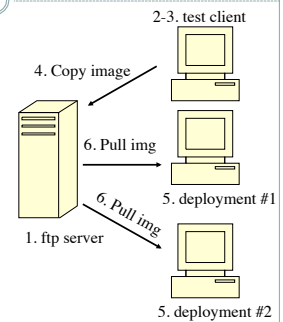
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Disk Imaging

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- 1. Setup ftp server.**
- 2. Install OS image on a test client.**
- 3. Verify test client OS.**
- 4. Copy image to server.**
- 5. Boot clients with imaging media.**
- 6. Clients pull image from ftp server.**



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Slide #8

Using g4u

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1. Enable ftp server (service/chkconfig)
2. Download g4u
3. Copy g4u to a floppy disk (or CD)
`cat g4u-2.1-1.fs >/dev/fdo`
4. Boot installed client with floppy disk.
5. Upload image to server.
`uploaddisk your.ftp.server.com filename.gz`
6. Boot blank client with floppy disk.
7. Install image from server.
`slurpdisk your.ftp.server.com filename.gz`

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Disk Imaging Tools

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- Acronis TrueImage
- Clonezilla (free)
- g4u: Ghost for UNIX (free)
- Symantec GHOST
- System Imager (free)

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Kickstart Components

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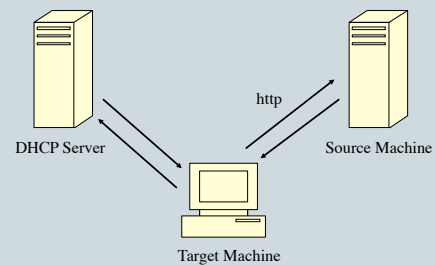
- **Bootable media**
 - Small bootstrap kernel and filesystem.
 - Uses DHCP server to configure system.
- **Source machine**
 - Network server: ftp, http, nfs.
 - Kickstart configuration file(s).
 - Install files (RPMs).
- **Target machine**
 - Machine on which you're installing.
 - Boot with bootable media.

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Kickstart Components

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Source Machine Setup

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1. Start network service.
2. Copy install media--for each CD:

```
mount /mnt/cdrom  
cp -var /mnt/cdrom/RedHat /usr/local/ks  
umount /mnt/cdrom/
```
3. Create config files.
Store under kickstart subdirectory.

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Kickstart Configuration File

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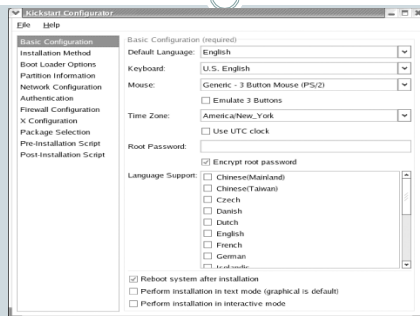
- Describes desired system configuration.
 - Disk partition setup.
 - Network configuration.
 - Language and other configuration items.
 - Package selection.
 - Pre- and post-install scripts for customization.
- Creating a Kickstart file:
 - Original install (located under /root)
 - Kickstart Configurator application
 - Manually

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Kickstart Configurator

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Configuration Options

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- **auth**
 - crypt, md5, nis, ldap, smb, krb5
- **network and firewall**
 - DHCP, static, firewall configuration
- **part**
 - Create disk partitions: size, maxsize, grow.
 - c.f. autopart, clearpart, log, raid.
- **rootpw**
- **xconfig**
- **packages**

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Performing a Kickstart Install

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- **Boot with install media**
 - RHEL CD #1
 - Bootable Kickstart media
- **Specify Kickstart file location**
 - Web: ks=http://<server>/<path>
 - NFS: ks=http://<server>/<path>
 - Floppy: ks=floppy
 - PXE: ks

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Auto-Install Tools

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- DrakX: Mandriva Linux
- FAI: Debian Linux
- Jumpstart: Solaris
- Kickstart: Red Hat Linux

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Synchronization after Install

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- **Synchronizing directories**
 - LDAP
- **Synchronizing files**
 - Network filesystems
 - rsync
- **What about other stuff?**
 - Patches
- **What about automating all this?**
 - For different types of systems too...

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References

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