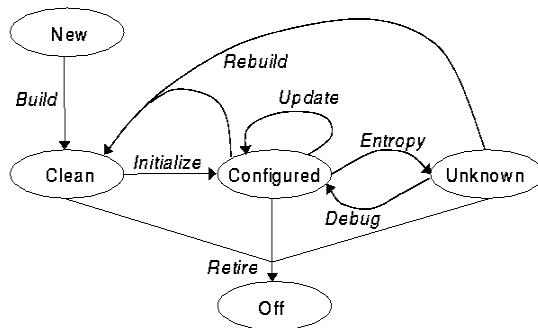


System Administration

Topics

1. Machine Lifecycle
2. Automated Installs
3. Updates
4. Network Configuration

Workstation Management



States of Machines

New

A new machine

Clean

OS installed, but not yet configured for environment.

Configured

Configured correctly for the operating environment.

Unknown

Misconfigured, broken, newly discovered, etc.

Off

Retired/surplussed

State Transitions

Build

Set up hardware and install OS.

Initialize

Configure for environment; often part of build.

Update

Install new software.
Patch old software.
Change configurations.

Why Automate Installs?

1. Save time.
Boot the computer, then go do something else.
2. Ensure consistency.
No chance of entering wrong input during install.
Avoid user requests due to mistakes in config.
What works on one desktop, works on all.
3. Fast system recovery.
Rebuild system with auto-install vs. slow tapes.

Trusting the Vendor Installation

Always reload the OS on new machines.

- You need to configure the host for your env.
- Eventually you'll reload the OS on a desktop, leaving you with two platforms to support: the vendor OS install and your OS install.
- Vendors change their OS images from time to time, so systems you bought today have a different OS from systems bought 6 months ago.

Install Types

1. Hard Disk Imaging

Duplicate hard disk of installed system.

Advantages: fast, simple.

Disadvantages: need identical hardware, leads to many images, all of which must be updated manually when you make a change

2. Scripted Installs

Installer accepts input from script.

Advantages: flexible, systems can be different

Disadvantages: more effort to setup initially

Auto-Install Features

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.

Auto-Install Components

Boot Component

Media (floppy or CD)

Network (PXE)

Network Configuration

DHCP: IP addresses, netmasks, DNS

Install Configuration

Media (floppy or CD)

Network (tftp, ftp, http, NFS)

Install Data and Programs

Network (tftp, ftp, http, NFS)

PXE

Preboot eXecution Environment

Intel standard for booting over the network.

PXE BIOS loads kernel over network.

Applications

Diskless clients (use NFS for root disk.)

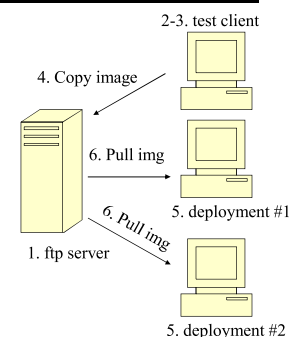
Booting install program.

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.

Disk Imaging

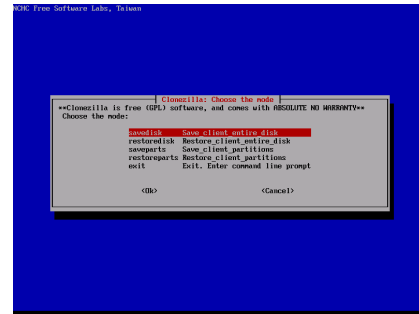
1. Setup ftp server.
2. Install OS image on a test client.
3. Verify test client OS.
4. Copy image to server.
5. Boot clients with imaging media.
6. Clients pull image from ftp server.



Disk Imaging Tools

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

Clonezilla



g4u

```

Welcome to g4u Harddisk Image Cloning U2.2!

Commands:
* Upload disk-image to FTP:  (GZIP=1) uploaddisk serverIP [image] [disk]
* Upload partition to FTP:  (GZIP=1) uploadpart serverIP [image] [disk*part]
* Install harddisk from FTP: slurpdisk serverIP [image] [disk]
* Install partition from FTP: slurppart serverIP [image] [disk*part]
* Clone disks locally:      copydisk disk0 disk1
* Clone partitions locally: copypart disk-part0 disk-part1
* List all disks:           disks
* List partitions:         parts disk
* See all devices:         dmeg
* This screen:             help

[disk] defaults to wd0 for first IDE disk, [disk-part] defaults to wd0d for
the whole first IDE disk. Use wd1 for second IDE disk, sd0 for first SCSI
disk, etc. Default image for slurpdisk is 'rw00d.gz'.

Enjoy!                                     Send comments to hubert@feyrer.de
                                           Donate at paypal@feyrer.de!
                                           http://www.feyrer.de/g4u/

g4u>
  
```

Kickstart Components

Bootable media

- Small bootstrap kernel and filesystem.
- Uses DHCP server to configure system.

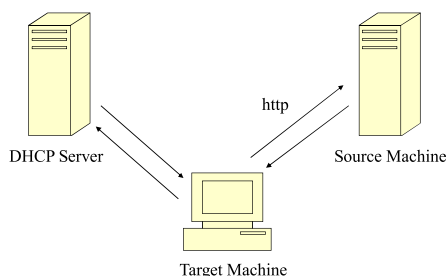
Source machine

- Network server: ftp, http, nfs.
- Kickstart configuration file(s).
- Install files (RPMs).

Target machine

- Machine on which you're installing.
- Boot with bootable media.

Kickstart Components



Kickstart Configuration File

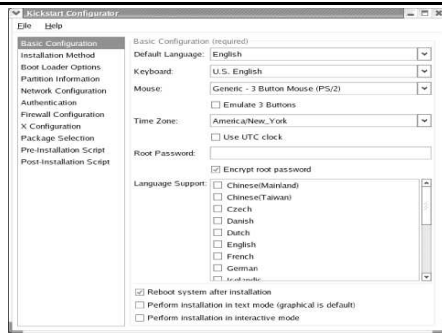
Describes desired system configuration.

- 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

Kickstart Configurator



Configuration Options

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

Auto-Install Tools

DrakX: Mandriva Linux

FAI, Preseed: Debian Linux

Jumpstart: Solaris

Kickstart: Red Hat Linux

Software Update Difficulties

No physical access

– Update process should work w/o physical access.

Host may not be in known state

– Prior updates may or may not have happened.

– Sysadmins or users may have reconfigured.

Hosts may not be there

– Portable computers may not be on your network when you're updating systems.

Host may have live users

– Some updates require no user access or reboots.

One, Some, Many

Failed updates break someone's machine.

Vendor hasn't tested updates in your env.

One, some, many process mitigates risks

One: Test update on one system first.

Some: Test update on group of test systems that are representative of the target systems.

Many: Schedule update for a time that limits disruption and update user systems.

Network Configuration

What's so bad about manual net settings?

– It's only an IP address and netmask.

– What happens if you need to renumber?

Use DHCP instead of manual settings

– Make all changes on a single server.

– Easy to change settings for entire network.

– DHCP can assign static IPs as well as dynamic.

Key Points

Desktop Lifecycle

- New, clean, configured, unknown states.

Automated Installs

- Why: consistency, fast recovery, saves time.
- Install types: imaging vs. scripted.
- Components: boot, network, config, data.
- Think about how Principles of SA apply.

One, Some, Many approach to updates.