

Session 2258 - Rapidly Provisioning Linux on ProLiant Servers with RDP and Other Tools

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Overview

- RedHat Installation
- HP ProLiant Rapid Deployment Pack (RDP)
- Red Hat Network Installation options
 - Red Hat PXE/DHCP setup & configuration
 - Making Use of the Kickstart process
- Integration with Smartstart Scripting Toolkit
 - Integration with ProLiant Essentials Rapid Deployment Pack
- Resources

Objective

- To automate repetitive installation steps and minimize installation errors
- To centralize system software configurations
- To be able to install a system without boot floppies or distribution media
- To create an initial standard base configuration deployed on new systems

Red Hat Intel Installation Options

- Local (boot.img)
 - Using bootable distribution cdrom or harddrive
 - Using bootable floppy to access cdrom/harddrive distribution
- Network (bootnet.img – NFS, FTP, HTTP)
 - Using bootable network floppy
 - Using PXE/DHCP network boot

ProLiant Essentials Rapid Deployment Pack



- Integrated HP and Altiris solution automates the process of deploying and provisioning server software
<http://h18013.www1.hp.com/products/servers/management/index.html>
- RDP-Windows Edition; Supports both BL and ML/DL product line. Fits best in a mixed OS environment where core services are Microsoft based and there is a need for Linux deployments
- RDP-Linux Edition; Supports both BL and selected ML/DL products – Fits best in a Linux/Unix based environment – does not support Windows deployments
- Provides tools for scripting and disk imaging based deployments, hardware configuration and BIOS updates
- Both Versions use the same concepts of DHCP, PXE, Kickstart tools and integrate Smartstart Scripting Toolkit

Making use of DHCP/PXE

- Physical distribution media and boot floppies are not needed
- Headless installation with proper BIOS configured boot order
- “boot images” can be more dynamic and larger than a floppy

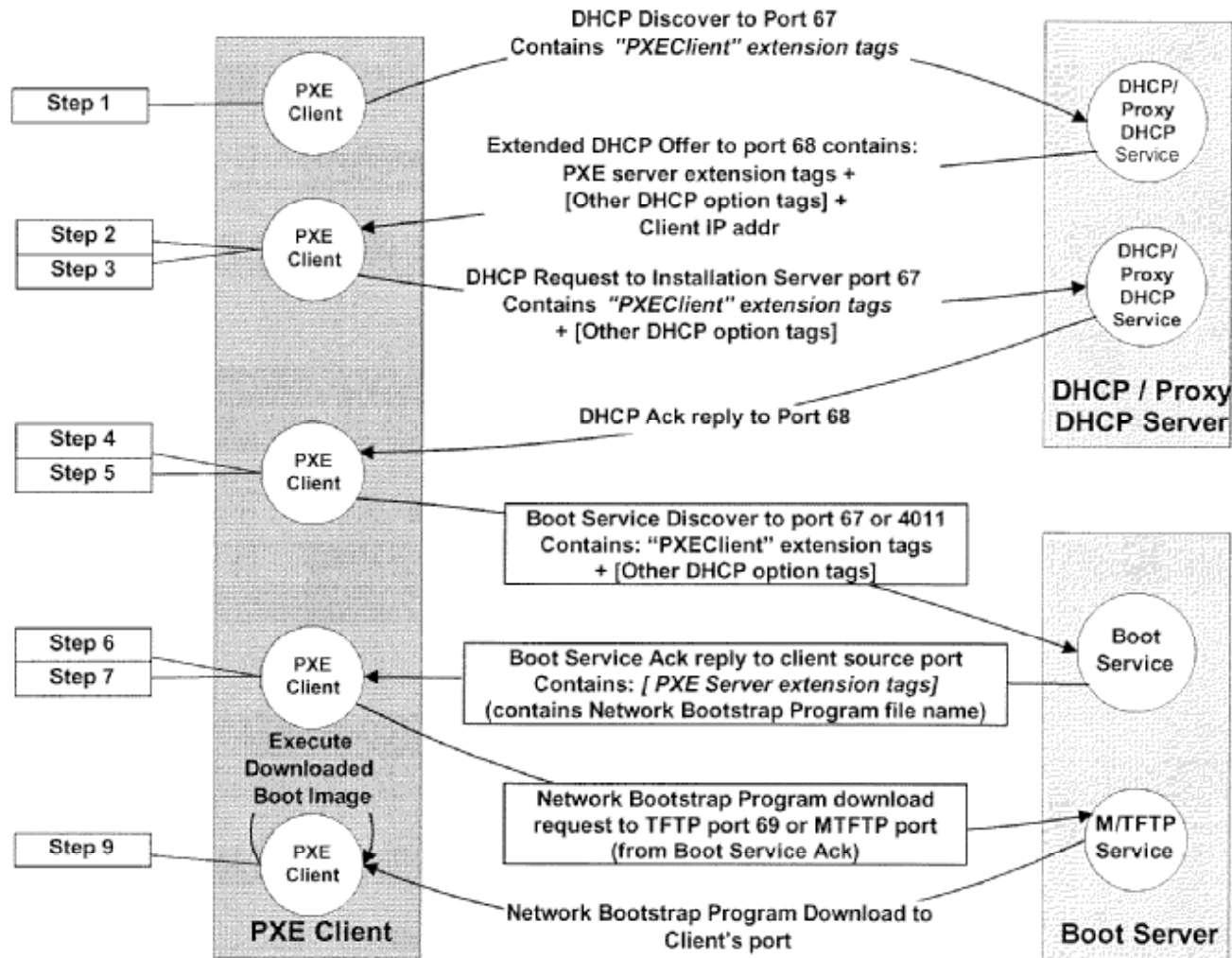
Flow of DHCP/PXE boot process Overview

- PXE ROM in network card sends DHCP broadcast and PXEClient tag
- DHCP/PXE server replies with network parameters and “next-server”
- Client contacts “next-server” and receives network bootstrap program (NBP) and any command options
- NBP downloads linux kernel and initrd image and begins installation

Server Considerations

- DHCP server anywhere on network as long as it is reachable by clients
 - Watch routers, firewall setup on server, ipchains, iptables
- PXE Server has two capabilities
 - proxyDHCP server
 - In parallel with DHCP, supplies boot prompt, menu and PXE Bootserver discovery options (multicast, broadcast, unicast)
 - Must be on same subnet as DHCP server and watch packet forwarding over routers
 - PXE bootserver
 - Provides the boot images

PXE Boot Overview



Red Hat Server Setup

- Make the entire RH distribution available as a NFS mount point
 - Can store ISOs of the cdroms but a fully exploded tree allows for updates and errata changes
 - “RHupdates” directory for “updates” floppy location
 /kits/RH/73/RedHat/RHupdates

Or

 - updates.img file in RedHat/base directory
 - Setup a /tftpboot directory to store boot images used by PXE, TFTP and MTFTP
 - RDP Linux Edition will keep images in the application directory tree
“/opt/altiris/deployment/pxe/images”

Red Hat Server Setup (cont'd)



- Additional RH rpms installed on the system.
 - RH7.3 - dhcp-2.0pl5-8.i386.rpm, pxe-0.1-24.i386.rpm, pxe-0.1-24.src.rpm
 - RH8.0 – dhcp-3.0pl1-9, pxe-0.1-33, pxe-0.1-33.src.rpm
 - RHEL21-QU2 – dhcp2.0pl5-8.i386.rpm, pxe-0.1-31.99.7.3

PXE source kits are needed to re-compile NBP for default boot parameters

RDP Linux Edition ships with dhcp-3.0.1rc9-1cra
- Verify /etc/sysconfig/ipchains and/or iptables settings are not configured to prevent services on required ports

NFS setup

- Copy RedHat cdroms to directories (done as part of RDP Linux Edition installation)
 - RH7.3 - be sure the following files are present to signify all cdrom are located here: .disk1-i386, .disk2-i386 and .disk3-i386
 - RH8.0 - .disk file name is now .disc-info but does not specify disk in filename
- Update /etc/exports with new exported filesystems and restart NFS to re-read the exports file – (RH 8.0 and later requires (async or sync) option parameter on each exported directory)
- Test remote NFS mount – watch for restrictions in /etc/hosts.allow and /etc/hosts.deny
- Check client hostname resolution to prevent timeouts or mount issues either add to hosts file on NFS server or provide DNS lookups

Red Hat Kickstart

- Ascii based file (ks.cfg) that provides information to automate most/all of a operating system installation – similar to unattend.txt in Microsoft
- Can be used with both local and network installation options
- Can use a ks.cfg from a reference system using the /root/anaconda-ks.cfg left at installation time
 - Passed to installation as a command line option via vfat floppy, NFS mount point, HTTP URL, cdrom image, custom boot image (initrd), local vfat or ext2 filesystem

Red Hat Kickstart (cont'd)

- `ks` Kickstart over NFS.
- `ks=cdrom:` Kickstart from CDROM
- `ks=nfs:<path>` Kickstart from NFS.
- `ks=<url>` Kickstart via HTTP.
- `ks=hd:<dev>` Kickstart via harddrive
- (dev = 'hda1', for example)
- `ks=file:<path>` Kickstart from a file
- (path = 'fd0/ks.cfg')

Kickstart (cont'd)

- Can specify which ethernet interface to use during connect
 - ksdevice=eth1
 - If option is specified without source device (ks), the installation will attempt to use DHCP to configure the ethernet device and look to the “bootserver” for an NFS mount point.

Kickstart (cont'd)

- If “bootfile” option is provided by DHCP server and begins with a “/”, the absolute path is used
- If it begins with something other than “/”, then “/kickstart” is pre-pended to the string (for example: “/kickstart/ks.cfg”)
- If no “bootfile” option, then it is assume the file is “/kickstart/1.2.3.4-kickstart” where 1.2.3.4 is the dhcp address of the booting system

Be sure default /kickstart directory is available as an NFS mount point in /etc/exports

Kickstart Configurator

- ks.cfg format
 - Some required keywords and subsections
 - Commands section
 - Packages section
 - Pre/Post Section
 - Root password can be included in the clear text or encrypted
- RH-DOCS directory of the Red Hat Distribution has sample
- RH7.X, use ksconfig
- RH8.0, use redhat-config-kickstart

Build a kickstart floppy

- Test in phases to isolate any problems, first make physical test floppy
 - Copy bootnet.img from distribution to floppy
 - # cat bootnet.img > /dev/fd0
 - Create kickstart file from template , or config utility or /root/anaconda-ks.cfg on reference platform.
Warning: config utility cannot edit an existing configuration file only create new ones.
 - If you miss a required element the installation will stop and wait for user input

Build a kickstart floppy (cont'd)

- Copy kickstart file to floppy for testing
 - `mcopy ks.cfg a:\`
(if `mtools rpm` is installed use `mcopy`, otherwise mount the floppy first. Floppy is quite full, may need to delete `.msg` files)
- Boot from floppy to test – enter “`linux ks=floppy`” at command prompt or edit `syslinux.cfg` on the floppy
- Once tested copy `ks.cfg` to the `/kickstart` directory as:
`dhcp-numeric-address-kickstart`
if using DHCP server to assign static ip to client

dhcp setup

- Install dhcp rpm if no other dhcp server exists
 - RH7.3, use dhcp-2.0pl5
 - RH8.0, use dhcp-3.0pl1-9
 - RDP Linux Edition, dhcp provided as part of kit
- Place sample dhcpd.conf file in /etc
 - RH7.3,
/usr/share/doc/dhcp-2.0pl5/dhcpd.conf.sample
 - RH8.0,
/usr/share/doc/dhcp-3.0pl1-9/dhcpd.conf.sample
 - RDP Linux Edition will setup a dhcpd.conf during the installation steps

dhcp setup (cont'd)

- Update dhcpd conf file to include PXE specific options
 - *handled differently between RH7.3 and RH8.0*
 - RH7.3
 - option dhcp-class-identifier "PXEClient";*
 - option vendor-encapsulated-options ff;*
 - RH8.0
 - if substring (option vendor-class-identifier, 0, 9) = "PXEClient"
 - {
 - filename "x86pc/undi/bstrap/BSTRAP.0";
 - option vendor-encapsulated-options ff;
 - next-server 192.168.1.243;
 - }
- Use care if "filename" keyword is defined and what scope/group it is defined within.
 - Filename controls tftp/mtftp boot files as well as RedHat kickstart filenames

PXE Server Setup

- Install both binary and source rpms
 - RH7.3, use Pxe-0.1-24, Pxe-0.1-24.src
 - RH8.0, use pxe-0.1.33, pxe-0.1-33.src
 - RDP-Linux Edition, uses pxelin-800.1-1 provided in kit from Altiris
- Update /etc/services with pxe port mapping
- | | |
|-----|--------|
| pxe | 67/udp |
|-----|--------|
- | | |
|-----|----------|
| pxe | 4011/udp |
|-----|----------|
- | | |
|-------|----------|
| mtftp | 1759/udp |
|-------|----------|

 - There is probably already defined and can be left alone:

bootps	67/udp
--------	--------

PXE Server setup (pg2)

- Add service definitions to /etc/xinetd.d for mtftp
 - see sample at end of slide deck or use tftp template
 - Check / Update routing tables to handle broadcast and multicast networks
 - If necessary, add to /etc/rc.d/rc.local
 - route add –host 255.255.255.255 eth0
 - route add –net 224.0.0.0 netmask 224.0.0.0 eth0

PXE Server setup (pg3)

- Edit `/etc/pxe.conf` if this server is both DHCP and PXE, otherwise DHCP will not properly bind to ports on reboot
 - Change `UseDHCPPort` to 0
 - Defaults to 1 where DHCP and PXE are NOT on the same server
- Should not have to edit `/etc/mtftpd.conf` unless you add custom images that you want to provide via multicast

PXE Server Setup (pg4)

- Copy RedHat PXEboot kernel and initrd images to the default tftp directory used by PXE

```
# cd /tftpboot/X86PC/UNDI/linux-install
```

```
# cp /kits/images/pxeboot/vmlinuz linux.1
```

```
# cp /kits/images/pxeboot/initrd.img linux.2
```

```
# chmod 555 linux.*
```

This initrd, different from the one on the bootnet.img file, usually has support for all install methods and drivers supported for the installation (ie: Broadcom, SmartArray etc)

RDP Linux Edition uses base filenames as managed.* etc.

PXE Server Setup (pg5)

- All images in the /tftpboot area should be world-readable and executable
- RedHat default kernel images are not BIGMEM configured kernels – (i.e. support more the 960MB of memory) – ok for install process
- Consider using softlinks in linux-install directory for linux.0,linux.1, linux.2 provides an opportunity to easily follow what image is being loaded and you will not need to edit /etc/pxe.conf, /etc/mtftpd.conf or restart daemons

Customizing PXE NBP (Not used on RDP Linux Edition)

- PXE source rpm is placed in
 - `/usr/src/redhat/SOURCES`
 - Apply at least the *pxe-1.0-cmdlinearg.patch* to provide the ability to set default installation command arguments and the flexibility to use it during rescue operations
 - `pxe-linux/nbp.linux/linux.c` is patched with defaults of
- `strncpy(cmdline, "ks console=ttyS0,115200", 23)`

Customizing pxe NBP (Non RDP Linux Edition - cont'd)

- Rebuild the linux.0 (NBP) and copy to the appropriate /tftpboot directory tree
- Prior to RH8.0, pxe-0.1-33, default NBP images do not support more the 960MB of physical memory in the booting system. There is an issue with the download.c module in the NBP when determining actual physical memory size
- Apply patch pxe-1.0-800M-63945.patch from pxe-0.1-33 rpm. CAUTION: this patch updates command line args:
 - strncpy(cmdline,"ks console=ttyS0,115200",23);
 - + strcpy(cmdline,"ks console=ttyS0,115200 console=tty0");

PXE Boot Menu

- NBP provides a PXE Boot Menu to the end user. Default action is defined as first option listed under [X86PC/UNDI/MENU] tag in /etc/pxe.conf
- Access to menu choices by pressing F8 during boot sequence
- Additional boot menu options can be added
 - To prevent a configured server from performing default PXE boot action, disable pxeboot in BIOS or change boot order so PXE is only attempted after local drives.

Other considerations

- Logging of dhcp/tftp/mtftp requests can be found in `/var/log/messages`
- RDP Linux Edition stores PXE log files in `/var/log/altiris/pxe`
- Unique Multicast addresses for images are defined in `/etc/mtftpd.conf`. Should not have to edit unless providing additional options
- Install `tftp-server` rpm on non RDP Linux Edition servers, if you do not or cannot use multicast delivery on the images – can be chroot'd in `xinetd.d` service definition to prevent access to other system files

Other considerations (cont'd)

- Watch for timeouts on PXE initialization (can't get DHCP server etc) due to autonegotiation of network ports on switches and / or Spanning Tree Protocol resolutions
- For headless servers that need windowing access, install and configure a VNC server. Red Hat ships the vnc-server rpm – Install and configure as part of kickstart post processing
- minicom-2.00.0-3 rpm is a good communications utility for serial console access on client server

Other considerations (cont'd)

- Install pxelinux rpm (<http://syslinux.zytor.com>) to use the advantages
 - “chaining” boot operations (ie booting DOS then loading the Linux Installation kernel using loadlin) – The kernel that is loaded for legacy systems is memdisk
 - Changing command line parameters in text similar to syslinux.cfg found on the boot floppy instead of re-compiling the NBP
 - Syslinux.cfg files are located on the tftp server and are selected based on a HEX representation of the client IP address and can represent a subnet of systems instead of a single server
192.0.2.91 -> C000025B
 - pxelinux (NBP) does not have have an issue with servers with more than 960MB physical memory.
 - Altiris provides a pxelin server for RDP Linux Edition that functions in the same manner to provide the functionality needed

Smartstart Scripting Toolkit

- HP DOS based utilities environment to automate and/or script configuring the *ProLiant* hardware

V2.1 can be downloaded from

<http://h18013.www1.hp.com/products/servers/management/toolkit/index.html>

This kit also provides an integration and documentation with Microsoft Automated Deployment Service

- Install syslinux rpm to take advantage of “chaining” boot operations (ie booting DOS then loading the Linux Installation kernel) – The kernel that is loaded for legacy systems is memdisk

SystemImager

- System Imager uses a similar process to deploy servers but instead of building from scripted install (kickstart), it uses the rsync utility against a golden master image
- Instead of using the distributions, the server keeps a copy of the disk image (flat file representation of / partition for the client system)
- Keeping clients in updated transfers less data across the wire by features of rsync transferring only the differences between the “files”
- More information available at www.systemimager.org

Resources

- HP Linux for software and driver updates
 - <http://www.hp.com/linux>
- Linux HOWTO documents (www.linuxdoc.org)
 - Linux Installation HOWTO
 - Diskless Nodes HOWTO
 - Network Boot and Exotic Root HOWTO
 - RedHat Linux Kickstart HOWTO
 - MP3 Player Box HOWTO
- Preboot Execution Environment (PXE) Specification
- Intel Boot Agent
- Good Reference on systemimager and pxe booting – “Beowulf Setup Documention” at Univ of Illinios dated 05-06-03 www.uic.edu

Resources (cont'd)

- Automated Linux Network Installs: Kickstart using PXE and Red Hat 7.0 from Datamodel Limited UK
 - <http://www.datamodel.co.uk/>
- Red Hat 7.3 Customization Guide
 - <http://www.redhat.com/docs/manuals/linux/RHL-7.3-Manual/custom-guide/>
 - Red Hat 8.0 Customization Guide
 - <http://www.redhat.com/docs/manuals/linux/RHL-8.0-Manual/custom-guide/>

Q & A





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Backup slides

Sample files

- /etc/exports

 - /kits *.pxedemo.com(ro,sync)

 - /kickstart *.pxedemo.com(ro,sync)

- syslinux.cfg

 - default ks

 - prompt 1

 - timeout 15

 - label ks

 - kernel vmlinuz

 - append ks=floppy initrd=initrd.img lang= devfs=nomount

ks.cfg (RH7.3)

```
# Kickstart file automatically generated by anaconda.
Install
text
lang en_US
langsupport --default en_US en_US
keyboard us
mouse genericps/2 --device psaux --emulthree
skipx
network --device eth0 --bootproto dhcp
nfs --server 192.168.1.100 --dir /kits
rootpw pxdemo
firewall --disabled
authconfig --enablesshadow --enablemd5
timezone America/New_York
Bootloader
reboot
clearpart --linux
part /boot --fstype ext3 --size=100 --asprimary
part / --fstype ext3 --size=7500 --grow --asprimary
part swap --size=1024
%packages
@ Everything
%post
echo "nameserver 192.168.1.100" >> /etc/resolv.conf
```

dhcpcd.conf (RH7.3) dhcp

```

■ subnet 192.168.1.0 netmask 255.255.255.0 {
■ # --- default gateway
■     option routers          192.168.1.100;
■     option subnet-mask     255.255.255.0;

■     option nis-domain      "pxedemo.com";
■     option domain-name     "pxedemo.com";
■     option domain-name-servers 192.168.1.100;

■     option time-offset     -18000; # Eastern Standard Time
■ range dynamic-bootp 192.168.1.128 192.168.1.255;
■     default-lease-time 21600;
■     max-lease-time 43200;

■ # added for pxe support
■     option dhcp-class-identifier "PXEClient";
■     option vendor-encapsulated-options ff;
■ #
■ # we want the nameserver to appear at a fixed address
■     host dl360r7 {
■         next-server 192.168.1.100;
■         hardware ethernet 00:50:8b:d3:a1:fc;
■         fixed-address 192.168.1.72;
■     }
■     host dl320r2 {
■         next-server 192.168.1.100;
■         hardware ethernet 00:50:8b:e8:2b:f7;
■         fixed-address 192.168.1.86;
■     }
■ }

```

pxe.conf – pg1

- # ***** PXE CONFIGURATION FILE *****
- # Any Line starting with a '#' is treated as a comment line
- # and ignored. However, '#' must be the first character on
- # a line and no spaces before that are allowed.
- # The following entry is the name of the interface on which pxe is going
- # to operate. We use this interface to get the ip address automatically.
- [Network_Interface_Name]
- eth0
- # The following entry will be queried if PXE fails to get
- # the IP address automatically through 'ifconfig' like code built-in. This
- # is only needed if the above interface name is not present in the system
- [OurIpAddress]
- #192.215.100.202
- # This entry shows the base directory of the mfttpd. All file names/paths
- # will be relative to this directory. This is the same name that should
- # be used as the start up argument to the mfttpd daemon.
- [Mfttpd_Root_Directory]
- /tftpboot
- # Set the following entry to 0 if you have a DHCP server running on this
- # system.
- [UseDHCPPort]
- 0
- # Set the entry below to zero if you don't want this system to act
- # as a PXE proxyDHCP
- [StartProxy]
- 1
- # Set the entry below to zero if you don't want this system to act as a
- # PXE boot server
- [startBootService]
- 1
- [MasterProxy]
- 1

pxe.conf – pg2

- # 0 - broadcast discovery is enabled; 1 - broadcast discovery is disabled
- [Discovery_BCast_Disabled]
- 0
- # 0 - multicast discovery is enabled; 1 - multicast discovery is disabled
- [Discovery_MCast_Disabled]
- 0
- # Multicast Discovery address. The boot server would listen on this address
- # for multicast boot server packets.
- [Discovery_MCast_Addr]
- 224.0.1.2
- # Prompt to display on the user screen
- # format of this entry: timeout,<string>
- [Prompt]
- 5,Press F8 to view menu ...
- # This entry is set to 1 if the client should accept only responses
- # from servers in this list
- [Discovery_Server_List_Only]
- 0
- # the format of the discovery_list entry is as follows
- # type of the server, # of entries, Ip address of each entry
- # separated by commas
- [Discovery_List]
- #3,2,192.215.100.49,192.215.100.99
- #65535,1,192.215.100.45
- # In some systems, the all '1' broadcast address 255.255.255.255
- # won't work as the system will fail with a network unreachable message.
- # In those cases, you can use the 'route add -host 255.255.255.255 eth0'
- # command to add a route. Or else, you can define the host portion of the
- # address alone as '1' in the following entry. This entry is not
- # required if your system is set up to transmit
- # broadcast packets on 255.255.255.255
- [Broadcast_ip_address]
- #192.215.100.255

pxe.conf – pg 3

- # Architectures supported
- # format : <arch-type>,<arch-string>
- [PROC_ARCH]
- 0,X86PC
- # Boot server types supported
- [Service_Types]
- 0,BStrap
- 13,linux-install
- # 14,linux-boot
- # Menu string that will be displayed on the client screen
- # after F8 is pressed.
- [X86PC/UNDI/MENU]
- 0,Local Boot
- 13,RH Install Linux
- # 14,Remote Boot Linux
- # Image file name for Linux install boot server type
- # format : <min layer #> <max layer #> <base file name>
- [X86PC/UNDI/linux-install/ImageFile_Name]
- 0
- 2
- linux
- # Image file name for BStrap boot server
- # format : <min layer #> <max layer #> <base file name>
- [X86PC/UNDI/BStrap/ImageFile_Name]
- 0
- 0
- bstrap
- # ----- snip debug settings for presentation -----
- # ----- end of snip for debug
- [END]

tftp – xinetd.d

- # default: off
- # description: The tftp server serves files using the trivial file transfer \
- # protocol. The tftp protocol is often used to boot diskless \
- # workstations, download configuration files to network-aware printers, \
- # and to start the installation process for some operating systems.
- #
- service tftp
- {
- socket_type = dgram
- protocol = udp
- wait = yes
- user = root
- server = /usr/sbin/in.tftpd
- server_args = -s /tftpboot -r blksize -l
- disable = no
- }

mtftp – xinetd.d

- # default: off
- # description: The mtftp server serves files using the trivial file transfer \
- # protocol. The mtftp protocol is often used to boot diskless \
- # workstations, download configuration files to network-aware printers, \
- # and to start the installation process for some operating systems.
- service mtftp
- {
- socket_type = dgram
- protocol = udp
- wait = yes
- user = root
- server = /usr/sbin/in.mtftpd
- server_args = /tftpboot
- disable = no
- }

Sample ks.cfg (RH7.3) post processing



```
■ %post
■ ##
■ ##
■ ##
■ ## Use e100 instead of eeepro100
■ ##
■ cat /etc/modules.conf | sed -e 's,eeepro100,e100,' > /etc/modules.conf.1
■ mv /etc/modules.conf.1 /etc/modules.conf
■ ##
■ ##
■ ##
■ ## Configure LILO/GRUB to show Linux Boot Sequence on both the Serial Console (ttyS0) and Screen #1 (tty1)
■ ##
■ if [ -f /etc/lilo.conf ]; then
■     DEFAULT=`cat /etc/lilo.conf | grep default`
■     cat /etc/lilo.conf | awk "{gsub(\"\$DEFAULT\", \"\$DEFAULT\nappend=\\\"console=ttyS0,9600 console=tty1\\\""); print}" >/etc/li
■ lo.conf.1
■     mv /etc/lilo.conf.1 /etc/lilo.conf
■     /sbin/lilo
■ fi
■ if [ -f /boot/grub/grub.conf ]; then
■     cat /boot/grub/grub.conf | awk '{if ($1 ~ /kernel/){print $0 " console=ttyS0,9600 console=tty1"} else {print}}' > /boot/grub
■ /grub.conf.1
■     mv /boot/grub/grub.conf.1 /boot/grub/grub.conf
■ fi
■ ##
■ ## Do KUDZU serial fix by making serial port "safe" (SAFE=yes)
■ ##
■ cat /etc/sysconfig/kudzu | grep -i "^safe=yes" >/dev/null || ( (cat /etc/sysconfig/kudzu | grep -vi "^safe="; echo SAFE=yes) >>/etc/
■ sysconfig/kudzu.new; mv /etc/sysconfig/kudzu.new /etc/sysconfig/kudzu)
```


Sample ks.cfg post processing (cont'd)

- ##
- ##
- ## Show login prompt on serial port
- ##
- cat /etc/inittab | awk '{gsub("6:2345:respawn:/sbin/mingetty tty6","6:2345:respawn:/sbin/mingetty tty6\n7:2345:respawn:/sbin/agetty
- 9600 ttyS0 vt100"); print}' >> /etc/inittab.new
- mv /etc/inittab.new /etc/inittab

- ##
- ## Allow root to login on the serial port
- ##
- cat /etc/securetty | grep "^ttyS0" >/dev/null || echo ttyS0 >> /etc/securetty
- ##
- ##
- ## Setup ssh keys for use
- ssh-keygen -t rsa -f /root/.ssh/id_rsa -N 'demokey'
- cat /root/.ssh/id_rsa.pub >> /root/.ssh/authorized_keys2
- ##
- ssh-keygen -f /root/.ssh/identity -N 'demokey'
- cat /root/.ssh/identity.pub >> /root/.ssh/authorized_keys
- ##

Sample pxelinux configuration files

- Memdisk-syslinux.cfg

```
default dos
prompt 1
timeout 10
display boot.msg
label dos
    kernel memdisk
    append initrd=7mb-msdos.img
```

Pxelinux.cfg

```
default linux
prompt 1
timeout 10
display boot.msg
label linux
    kernel vmlinuz
    append root=/dev/ram0 initrd=initrd.gz ramdisk_size=49152
ip=::::::eth0:bootp
```




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