Installing OES Linux on HP ProLiant Bladesystem

Authors: Kirk Manzer/Jimmy Vance
HP
Session ID TUT 291

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Overview

Goals

- To show how to install Novell OES Linux on HP ProLiant blades using tools available within OES/SLES 9.

Topics

- Building a PXE Installation Server.
- Building automated and menu driven PXE installation processes.
- Deploy an HP ProLiant blade.
- Access and manage an installed HP ProLiant Blade

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OES Linux Overview

OES Linux

- Built on SLES 9
- Includes:
  - File and Print (iFolder and iPrint)
  - Identity Management Services (eDirectory)
  - Integrated Management tools (iManager)
  - Linux User Management (LUM)
  - Novell Storage Services
- OES software can be configured during installation or at a later time

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Multiple installation choices of OES Linux

- SLES 9 Options:
  - Minimum Installation
  - Minimum Installation with Graphics
  - Full Installation
  - Default
- OES Linux Options:
  - Novell QuickFinder Server
  - Novell ifolder2 Server
  - Novell Virtual Office Server
  - Novell Print Server
  - Novell Product Schema Extensions
  - Novell OES Server (System Default)

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Installing OES Linux on HP Blades

Installing OES Linux on HP Blades

Tools

- HP Rapid Deployment Pack (RDP)
- 3rd party software tools

Utilizing the components in SLES 9/OES Linux to install OES

- Requires a PXE server
- Access to CD-ROM media or ISO images

Our installation:

- Create an installation PXE server
- Load OS CD media on server and install over the network via NFS or HTTP

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Steps to install using OES tools

Setup of Installation Server

- Required Software:
  - PXE
  - DHCP
  - HTTPD
  - NFS (optional)
  - AutoYaST Installation Server

PXE boot blade server to install

Run installation on blade

Automating installation

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Installation Server

Installing O/S:

- Select default installation
- Under Detailed Selection:
  - Select Auto Check Button
  - Select additional Software:
    - DHCP, DNS, and Simple Web Server server
  - Do a search for and select the following:
    - tftp
    - syslinux

Next Steps:

Setup PXE

Load ISO images or CD media

Build custom scripts/menus

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What is PXE

PXE (Pre-boot Execution Environment) forms an interaction between a client and a server using:

- TCP/IP
- DHCP
- TFTP

How PXE works:

- Client initiates by broadcasting a request
- A DHCP server supporting the PXE protocol responds with boot server information
- Client responds to the boot server and is given the name of an executable file
- Client uses tftp to download the file, then executes the file

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Configure installation media on Installation Server

Manual vs Automated Installation

Manual

- Building a menu for PXE installs

Automated

- MAC address files
- autoYaST XML configuration

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Setting up PXE

SLES 9/OES Linux runs DHCPD in a chroot jail. To work properly tftp needs to be configured to work in the chroot environment

```
mkdir -p /var/lib/dhcp/tftpboot/pxelinux.cfg
ln -s /tftpboot /var/lib/dhcpd/tftpboot
cd /tftpboot
ln -s . tftpboot
```

(NOTE: Important - do not forget!)

From CD1 copy the following files

```
cp /media/cdrom/boot/loader/initrd /tftpboot/initrd
cp /media/cdrom/boot/loader/isolinux.bin /
  tftpboot/isolinux.bin
cp /media/cdrom/boot/loader/linux /tftpboot/linux
cp /usr/share/syslinux/pxelinux.0 /tftpboot/pxelinux.0
```


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Setup Installation Server

Execute the commands:

mkdir /srv/exports
mkdir /srv/www/htdocs/config

Launch YAST
Select Misc, select Installation Server
Initial Setup Servers Screen

- click Configure as HTTP/NFS
- enter /srv/exports for directory to contain sources [next]
- Directory alias enter OES [next]
- Source Configuration Screen click configure
- Source Name enter ia32 (I normally install using ISO images so I select the ISO box) [next]
- The system will now ask for the OES Linux CD's in order

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Setup Installation Server

Create an AutoYaST .xml file

- open YAST2 -> Misc -> Autoinstallation
- when the Autoinstallation module starts, you can manually configure each section, or you can select Tools - Create Reference Profile from the menu.
- When creating a reference profile, information is gathered from the running system. Once you have created a reference profile, you can customize the profile for use on other systems.
- Once you have created a file, check the validity of the file with the built-in DTD checker under the tools menu

Copy file to /srv/www/htdocs/config/oes-blades.xml

Edit oes-blades.xml (hostname, subnet, ip address, etc)

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Installation Server Config Files – /etc/dhcpd.conf

```
# /etc/dhcpd.conf
option domain-name "domainname.net";
option domain-name-servers 192.168.0.5;
option routers 192.168.0.5;
option ntp-servers 192.168.0.5;
default-lease-time 172800;
authoritative;
######
# Needed for DDNS
ddns-update-style interim;
ignore client-updates;
include "/etc/named.keys";
######
# Needed for PXE boot
filename "/tftpboot/pxelinux.0";
subnet 192.168.0.0 netmask 255.255.255.0 {
  range dynamic-bootp 192.168.0.190 192.168.0.230;
  default-lease-time 172800;
  max-lease-time 259200;
  zone domainname.net. { primary 192.168.0.5; key DHCP_UPDATER; }
  zone 0.168.192.in-addr.arpa. { primary 192.168.0.5; key DHCP_UPDATER; }
}
```


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Installation ServerConfig Files – /etc/exports

```
# /etc/exports
/srv/exports 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/compaq 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/nld 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/oes 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/rhel3u4ia32 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/rhel4ia32 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/rhel4x86_64 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/sles9ia32 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/sles9x86_64 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
/srv/exports/suse9.2 192.168.0.0/255.255.255.0(ro,no_root_squash,async)
```


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Installation Server Config Files – /etc/named.conf

```
#
# /etc/named.conf
#

options {

 # The directory statement defines the name
server's working directory
 directory "/var/lib/named";
 # Write dump and statistics file to the log
subdirectory.  The
 # pathenames are relative to the chroot jail.
 dump-file "/var/log/named_dump.db";
 statistics-file "/var/log/named.stats";
 listen-on-v6 { none; };
 notify no;
};

zone "." in {
 type hint;
 file "root.hint";
};

zone "localhost" in {
 type master;
 file "localhost.zone";
};

zone "0.0.127.in-addr.arpa" in {
 type master;
 file "127.0.0.zone";
};

# Include the meta include file generated by
createNamedConfInclude.  This
# includes all files as configured in
NAMED_CONF_INCLUDE_FILES from
# /etc/sysconfig/named

include "/etc/named.conf.include";
zone "domainname.net" in {
 allow-transfer { localhost; localnets; };
 file "dyn/domainname.net";
 type master;
 allow-update { key DHCP_UPDATER; };
};
zone "0.168.192.in-addr.arpa" in {
 allow-update { key DHCP_UPDATER; };
 allow-transfer { localhost; localnets; };
 file "dyn/0.168.192.in-addr.arpa";
 type master;
};
logging {
 category default { default_syslog; };
 category queries { default_syslog; };
 category xfer-in { default_syslog; };
 category xfer-out { default_syslog; };
};
#
```

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Installation Server Config Files – /etc/named.conf (cont'd)

```
# Add additional configuration files which should be added to /etc/named.conf
# by this mechanism to NAMED_CONF_INCLUDE_FILES in /etc/sysconfig/named.  This
# is possible with the YaST sysconfig or any other editor.
#
# See /usr/share/doc/packages/bind/README.SuSE section
# createNamedConfInclude for more details.
#
include "/etc/named.keys";
# /etc/named.keys
# generated by genDDNSkey on Sat Feb 26 03:37:55 CST 2005

key DHCP_UPDATER {
algorithm hmac-md5;
secret
"PltmjuF5n1oHBluxxVAQVDNkZRkkCAS47T8MLTEl+jK16O9K3hGdFPzBeI9GvjGu7MHSndSmeN369kRkq4
m8/w==";
};
```


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Installation Server – Directory layout of /tftpboot

message
nld-initrd
nld-linux
oes-initrd
oes-linux
options
pxelinux.0
pxelinux.cfg
rescue
rhel3-initrd
rhel3-linux
rhel4-initrd
rhel4-linux
sles9-initrd
sles9-linux
ssd.msg
tftpboot -> .
vnc

/tftpboot/pxelinux.cfg:

default -> isolinux.cfg
isolinux.cfg

File can also contain mac addresses to point to specific install

Each file can be customized for each MAC address, or range of MAC address

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Installation Server Config Files – isolinux.cfg

```
#####
# isolinux.cfg
#
display         message
prompt           1
timeout          400
F1 message
F2 graphics
F3 options
F4 vnc
F5 rescue

default harddisk

# hard disk
label harddisk
  localboot -1

# install OES
label oes
  kernel oes-linux
  append initrd=oes-initrd ramdisk_size=65536 showopts vga=791 install=http://192.168.0.5/install/OES netdev=eth0
#autoyast=http://192.168.0.5/config/sles9-blades.xml

# install SLES9
label sles9
  kernel sles9-linux
  append initrd=sles9-initrd ramdisk_size=65536 showopts vga=791 install=http://192.168.0.5/install/SLES9ia32 netdev=eth0
#autoyast=http://192.168.0.5/config/sles9-blades.xml

# install SLES9 Auto
label sles9auto
  kernel sles9-linux
  append initrd=sles9-initrd ramdisk_size=65536 showopts vga=791 install=http://192.168.0.5/install/SLES9ia32 netdev=eth0
autoyast=http://192.168.0.5/config/part-test.xml

# SuSE 9.2
label suse9.2
  kernel suse-9.2-linux
  append initrd=suse9.2-initrd ramdisk_size=65536 showopts vga=791 install=http://192.168.0.5/install/suse9.2 netdev=eth0

# NLD
label nld
  kernel nld-linux
  append initrd=nld-initrd ramdisk_size=65536 showopts vga=791 install=http://192.168.0.5/install/nld netdev=eth0

# rescue
label rescue
  kernel sles9-linux
  append initrd=sles9-initrd ramdisk_size=65536 showopts rescue=1 install=http://192.168.0.5/install/sles9ia32
```

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Installation Server – config files /etc/xinetd.d/tftp

modify the these lines

```
        server_args = -s /tftpboot -r blksize
        disable     = no
************************************************************
```

```
        #/etc/xinetd.d/tftp
        # default: off
        # description: tftp service is provided primarily for booting or when a
        # router need an upgrade. Most sites run this only on machines acting as
        # "boot servers".
        service tftp
        {
          socket_type     = dgram
          protocol        = udp
          wait            = yes
          user            = root
          server          = /usr/sbin/in.tftpd
          server_args     = -s /tftpboot -r blksize
          disable         = no
        }
```


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Installation Server – Final steps

Once all files configured and copied execute the commands:

chkconfig dhcpd on

chkconfig apache2 on

chkconfig xinetd on

SuSEconfig

rcapache2 start

rcdhcpd start

rcxinetd start

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Installation on the blade

If Manual:

- Access blade through
  - iLO
  - front blade dongle
  - vnc
- PXE boot of blade
- Execute installation

If Automated:

- Power up blade

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iLO (Integrate Lights Out management)

Standard on most DL, ML and all BLp Proliant servers

Custom Embedded processor designed from ground-up for Remote Management

Operational regardless of state of host operating system and host power

Provides full network connectivity with HTTP, SSH, Telnet

Allows for complete Virtual Presence

- Keyboard, mouse, video, media, serial port

Dedicated or shared network interface

Directory Integration, CLI interface

Special features enabling p-Class and blade solutions

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iLO – Virtual Serial Port

Provides remote connection to serial port services of server

Allows for connection to loader, console and agetty operations for logging and administration

Access available over APPLET, telnet, or SSH

Provides ‘short-cut’ power control features without leaving session

Enhanced Linux support for standard IO ports for LILO, GRUB, agetty

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iLO – SSH / Telnet Sessions

SSH and Telnet support added primarily for Linux

- Interested in secure access to
  - Text Remote Console, Virtual Serial Port, and command line tools
  - Commands available to perform standard simple management operations. Commands available are increasing with DMTF standards.

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iLO – Virtual Media

Virtual Media accessible from Linux Browser

- Applet allows connection to floppy and CD-ROM

Scriptable media allows for Apache (or other) web server to provide images for deployment.

- Images appear as physical media to server

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Configuring additional software on a blade

Access blade through desired method

Copy necessary files to blade

Run installation programs

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Accessing blades

iLO

- Allows access of virtual CD and floppy for installing software
- Serial connectivity to iLO

ssh - Secure shell session

- If authenticity has not been established, must answer “y” to continue
- -X option allows gui applications to display on local system
- By default login uses current login name

  ssh –X server1

  ssh 192.168.0.22

  ssh –X username@server1

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Accessing blades

vnc

- Must be activated either at installation or by running YaST
  - Under Network Services
  - Select Remote Administration and enable
- Use Remote Desktop Client to access server
  - On KDE – System -> Remote Access -> Remote Desktop Connection
  - Must use <host>:5901 or <ip>:5901
- Install using vnc
  - Specify on boot command line
  - Cannot see system reboots
  - boot: OES vnc=1 vncpassword=secret ip=<ip addr>

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Management

HP Systems Insight Manager

Combines all of the features from Insight Manager 7 and Servicecontrol Manager

Central management server installed on Linux host and addressed through web browser or command line

Provides comprehensive status information and alerting for ProLiant, HP 9000 and Integrity servers

Communicates using industry standard protocols like WBEM, SNMP and HTTP

Distributed task functionality through secure shell (SSH) allows management and distribution of jobs to one or many systems

Role-based security provides ability to allow/deny access to tools and systems based on individual users

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HP Systems Insight Manager

- Utilizes OS security model for user validation
- Easily extensible through favorite utilities for command line or browser
- Provides an ‘RPM Package Manager’ facility to install, query, delete and verify RPMs
- Discovers and links to open source ‘Webmin’ console for Linux administration

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ZENworks

Formerly Red Carpet

Secure management solution for updating software

Centralized control over software configurations

Use the Update Manager on the clients to update software

Use the Linux Management Server to define packages, channels, and access permissions for clients

Command-line or Web-based interface

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HP SIM and ZENworks together

HP SIM and ZENworks can be installed on the same server

Tested running both on a SLES 9 server with no functional issues

Installation must be performed in the correct method to make both work

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O/S Installation Steps

Install SLES 9

- Verify following software is installed
  - Kernel source
  - Python

Download and install latest Mozilla and Java

Verify Java plug-in for Mozilla

```
cd /opt/Mozilla/lib/plugins;
ln -s /<java>/plugin/i386/ns610-
 gcc32/libjavaplugin_oji.so
```


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Postgresql Installation Steps

Because HP SIM 4.02 depends on a specific version of postgresql it must be installed manually.

Mount the HP SIM CD and copy the SIM installer (T2416BA_4.02.00_Linux.bin) to a new directory, for example, the directory /root/SIM.

Extract the SIM files needed for install using the command:

./T2416BA_4.02.00_Linux.bin --confirm --keep --target <dir>

When asked if you want to continue the installation script answer NO.

The --keep option instructs the installer not to cleanup the extracted files and extracts the files to the mxserver subdirectory.

After the installer exits, go to the mxserver directory and install the postgresql RPMs using one command line:

rpm -Uvh postgresql*7.4.2-36.3.i586.*

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ZENworks Installation Steps

Install ZENworks Linux Management (ZLM) 6.6

- Answer NO to install online
- Answer YES to leave rug and rcd modules after installation
- Accept defaults to other prompts
- After installation completes, run /usr/sbin/rce-init (logged in as user root) to configure the ZLM installation. No other input is required.
- Verify that the ZLM console can be accessed by using Mozilla to go to *https://localhost*
- On first login you will be asked to create an admin id/password

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HP SIM Installation Steps

cd to the mxserver directory within the directory HP SIM was extracted to.

Install the two hpsim RPMs using one command line:

rpm -Uvh hpsim*

After installation finishes run the command:

/opt/mx/bin/mxinitconfig -l

If no errors reported run the command to configure the database:

/opt/mx/bin/mxinitconfig -a

To ensure the SIM modules are running execute the command:

/opt/mx/bin/mxstart

Access the SIM console using:

http://*localhost*:280

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HP SIM Installation Steps

After installation finishes run the command:

/opt/mx/bin/mxinitconfig -l

If no errors reported run the command to configure the database:

/opt/mx/bin/mxinitconfig -a

To ensure the SIM modules are running execute the command:

/opt/mx/bin/mxstart

Access the SIM console using:

http://*localhost*:280

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Making HP SIM and ZENworks work

The installation of HP SIM will make ZENworks no longer function correctly.

To fix ZENworks:

- Open the HP SIM config file:

  /var/lib/pgsql/data/pg_hba.conf

- and the ZLM config file:

  /usr/share/rcserver/pg_hba.conf

- Copy the last three lines (all starting with “local”) from the ZLM configuration file:

  /usr/share/rcserver/pg_hba.conf

- to the end of the SIM configuration file:

  /var/lib/pgsql/data/pg_hba.conf

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Making HP SIM and ZENworks work

Lines should like like:

```
# This file is used for PgSQL configuration
# This is the configuration file for PgSQL 7.3
local  insight_v1_0  mxadmin password
host   insight_v1_0  mxadmin 127.0.0.1 255.255.255.255 password
host   insight_v1_0  mxadmin 10.1.1.72 255.255.255.255 password
local  template1     postgres  ident  postgres
local  rcserver-1-4  all           ident  rcmanager
local  rcserver      all       ident  rcmanager
```


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Making HP SIM and ZENworks work

Save /var/lib/pgsql/data/pg_hba.conf and restart postgresql:

rcpostgresql restart

Verify access to ZLM

https://*localhost*

Verify access to HP SIM

http://*localhost*:280

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Questions?

jimmy.vance@hp.com

kirk.manzer@hp.com

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