Chapter 06

Ignite-UX

HP-UX Handbook
Revision 13.00

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Overview

Ignite-UX

- is an installation tool for HP-UX systems. The Ignite-UX clients can be installed from software depots containing the Core OS, patches and applications, or from archived "images". These depots do not necessarily need to be placed onto the Ignite-UX server; any NFS-capable system can be used as the depot server;

- can be used for cloning systems. A so-called Golden System Image will be created from pre-configured source systems. This Golden System Image contains the configuration of the source system, but target specific information like the network configuration and log files will be exchanged. As a prerequisite, the systems must be nearly identical regarding the hardware setup. Additionally, the installed software must be compatible for both systems;

- can use post load scripts to further customize the system being installed;

- can be used to create custom installation media. Bootable tapes and CD-/DVD-ROMs can be created;

- can be used to archive and recover the root volume group (vg00). With `make_tape_recovery` and `make_net_recovery` volume groups (VGs) other than the root volume group can be recovered as well. However, under normal circumstances, these VGs should be backed up using proper backup tools, for example `fbackup`. Do not put Ignite-UX with "backup" and "restore" in one sentence. Ignite-UX is not considered for data backup, but rather for system disaster recovery!

- is free of charge.

All necessary information like the Administration Guide, Release Notes, FAQs, etc. can be found at http://www.software.hp.com/products/IUX. There are also documents to be found in `/opt/ignite/share/doc`.

Obtaining Ignite-UX

For an Ignite-UX server running HP-UX 11i, 11iv2, 11iv3 obtain Ignite-UX version C.x (as of this writing C.7.13.x is the current version). An Ignite-UX C.x server can install HP-UX 11.x OS and applications on Ignite-UX clients.

Ignite-UX added support for HP-UX 11.31 with the C.7.0, February 2007, release. With Ignite-UX version C.7.0, the product bundle that installs on all supported versions of HP-UX has changed from B5725AA to IGNITE. When IGNITE is installed, B5725AA is automatically removed.

If scripts reference the old bundle name, they must be updated to reference the new bundle name. The HP-UX version-specific bundles, such as Ignite-UX-11-23, will not change names.

As of this writing the current version is Ignite-UX C.7.13, September 2011. This will change in the near future. Please check the web at software.hp.com

Ignite-UX is available from these sources in standard Software Distributor (SD) depot format:

Application CD-ROM/DVD

This DVD is supplied with HP-UX OS media.

HP-UX 11i Core OS CD/DVD 1

The Core OS CD already contains the "HP-UX Installation Utilities".

WWW to HP's Software Depot

The software depot is located at:
https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=IGNITEUXB

The main Ignite-UX information page is:

www.hp.com/go/ignite-ux-docs

or

http://h71028.www7.hp.com/enterprise/us/en/os/hpux11i-system-management-ignite-ux.html?jumpid=reg_R1002_USEN

One or more of the individual Ignite-UX bundles may be downloaded or choose the entire product. The version reflects the target client OS to be recovered and not the Ignite-UX server's OS version.

Example: The Ignite-UX server is running HP-UX 11.31; The Ignite-UX clients run HP-UX 11.23 and 11.11. Both bundles for "HP-UX 11iv2 (11.23)" and "HP-UX 11i version 1.0 (B.11.11)" will need to be downloaded. Or "All 3 bundles" can be downloaded.

Ignite-UX Mailing Lists / Updates

To receive a email when a new version of Ignite-UX is available, write an email to: majordomo@hpfcdn.fc.hp.com with following content:

subscribe ignite-ux-notify
<your_email_address>
End

Ignite-UX FAQs

Write an empty email to:
iux_faq@igniteux.fc.hp.com

Changes in the C.7.13 release

The C.7.13 release of Ignite-UX supports the following HP-UX release/architecture combinations:

HP-UX release	HP 9000 systems	HP Integrity systems
B.11.00	No	No
B.11.11	Yes	No
B.11.23	Yes	Yes
B.11.31	Yes	Yes

Note: The **final Ignite-UX release supporting HP-UX 11.00** was C.7.2. The Ignite-UX-11-00 bundle and its contents will not be provided in future releases.

This version can be installed on any server running one of the above releases of HP-UX when downloaded from the Web.

Minimum memory requirements (Operating Environment)

Client OS	IMM*	HP 9000	HP Integrity
B.11.11	128MB	256MB	N/A
B.11.23	N/A	1.0 GB+	1.0 GB+
B.11.31	N/A	1.5 GB	1.5 GB

The IMM size is the size of the initial memory module on HP 9000 (PA-RISC) systems. The first memory module must be large enough to hold the install kernel and install file system.

If installing HP-UX 11i v3, the boot disk must be at least 9 GB. HP-UX 11i v3 requires more space on the HP-UX boot disk than prior HP-UX releases.

Ignite-UX version C.7.13 contains the following new features:

Significant changes to the default system configuration for HP-UX 11i v2 have been made to support software added to HP-UX after initial release, better handle larger mass storage devices and support future updates to other HP-UX releases. In particular, the default sizes of `/stand` and `/` have been increased. Default primary swap size has also been increased for some configurations. These changes are consistent with support for future update to HP-UX 11i v3.

Ignite-UX will now recover the Memory File System (MemFS) configuration. The content is not recovered, but the file system configuration will be preserved.

In response to the request to improve Ignite-UX I/O inventory performance, Ignite-UX has introduced the ability to block particular paths and protocols during inventory. See `instl_adm (4)`.

An example script has been added to simplify creation of recovery DVD media: `/opt/ignite/data/scripts/examples/make_opticaldisc_recovery`. This script can be used to create a recovery DVD if the archive will fit on a single media (image size must be less than 4GB).

Installing Ignite-UX

Installing Ignite-UX Bundles Downloaded from the Net

```
# /usr/sbin/swinstall -s <full path of downloaded file> \*
```

Example: `ignite11_all.tar` downloaded to `/var/tmp`

```
# /usr/sbin/swinstall -s /var/tmp/ignite_all.tar \*
```

NOTE: NetInstall is an obsolete application and should not be found on any currently supported installation of HP-UX. This note is "just in case".

Ignite-UX is a replacement for the Net-Install product. If your server contains the Net-Install bundle (HPUX-Install product), Ignite-UX will require that the NetInstall bundle be removed (using `swremove`), or that you touch the file `/tmp/okay_to_remove_net_install` before

loading Ignite-UX, in which case loading Ignite-UX will automatically remove the NetInstall software. Otherwise loading any of the Ignite-UX software bundles will give an error.

Installing Ignite-UX from Application DVD

Look for the required device file for your DVD drive. If the mount point does not exist, create it with `mkdir`. Then mount the Applications DVD to `/SD_CDROM`.

```
# ioscan -fnkNC disk
```

```
Class   I H/W Path    Driver       S/W State  H/W Type    Description
====================================================================
disk   17 0/0/2/1.0.16 UsbScsiAdaptor  CLAIMED   DEVICE   USB SCSI Stack Adaptor
       /dev/deviceFileSystem/Usb/MassStorage/dsk/disk@hp-1008+294=A60020000001
       /dev/deviceFileSystem/Usb/MassStorage/rdsk/disk@hp-1008+294=A60020000001
```

\# mkdir `/SD_CDROM`
 \# mount /dev/deviceFileSystem/Usb/MassStorage/dsk/disk@hp-1008+294=A60020000001 `/SD_CDROM`

For legacy devices use:

```
# /usr/sbin/ioscan -fnC disk
```

```
Class   I  H/W Path   Driver  S/W State H/W Type Description
====================================================================
disk   0  8/4.5.0     sdisk   CLAIMED   DEVICE    SEAGATE ST32171W
                   /dev/dsk/c0t5d0 /dev/rdsk/c0t5d0
disk   1  8/4.6.0     sdisk   CLAIMED   DEVICE    SEAGATE ST34371W
                   /dev/dsk/c0t6d0 /dev/rdsk/c0t6d0
disk   2  8/16/5.2.0 sdisk   CLAIMED   DEVICE    TOSHIBA CD-ROM XM-5401TA
                   /dev/dsk/c1t2d0 /dev/rdsk/c1t2d0
```

```
# /usr/bin/mkdir /SD_CDROM
# /usr/sbin/mount /dev/dsk/c1t2d0 /SD_CDROM
```

To find out which bundles and filesets are available for installation, use:

```
# /usr/bin/ls /SD_CDROM
```

Then either select the whole bundle for installation with:

```
# /usr/sbin/swinstall -s /SD_CDROM B5725AA
```

Or for example if it is only desired to load the filesets for installing HP-UX 11.00 and 11.i Ignite-UX clients:

```
# /usr/sbin/swinstall -s /SD_CDROM Ignite-UX-11-00
# /usr/sbin/swinstall -s /SD_CDROM Ignite-UX-11-11
```

Installing Ignite-UX from HP-UX 11i CoreOS DVD1

To install Ignite-UX, mark one of the Ignite-UX filesets or the complete bundle B5725AA for installation in the software tab after choosing the Advanced Installation screen.

Ignite-UX servers must have at least 800 MB of free disk space available in /opt/ignite to install support for all HP-UX releases (B.11.11, B.11.23 and B.11.31).
[This information is current as of C.7.9.]

Configuring the Ignite-UX Server

Starting Ignite-UX

The search path `/opt/ignite/bin` has been added to `/etc/PATH` during the installation. To update your current PATH variable source `/etc/PATH` use:

```
# . ./etc/PATH
```

or simply login again. To startup Ignite-UX:

```
# /opt/ignite/bin/ignite
```

If the error message occurs stating the Ignite-UX server not being set up as an NFS server, start **NFS** with:

```
# /usr/bin/vi /etc/rc.config.d/nfsconf

   NFS_SERVER=1
   NFS_CLIENT=1

# /sbin/init.d/nfs.server start
# /sbin/init.d/nfs.client start
```

For HP-UX 11.31:

Verify if /etc/dfs/dfstab already has the following entry:

```
   share -F nfs -o anon=2 /var/opt/ignite/clients
```

Export the share with:

```
   shareall -F nfs
```

For HP-UX 11.23:

Verify if /etc/exports file already has the following entry:

```
   /var/opt/ignite/clients -anon=2
```

Then export the directories with:

```
# /usr/sbin/exportfs –av
```

Configuring the Ignite-UX Server

Either follow the `<Tutorial/Server Setup>` or step out of the tutorial choosing `<Do not show this screen again>` and `<OK>`. Then choose the quick setup selecting `<Options>`

`<Server Configuration...>` from the Ignite-UX screen. The following describes the quick setup.

Server options:

- Select the `<Default Configuration>` box and highlight the Operating System to use from the list. When doing a client installation, this configuration will be installed on targets if no other is specified. The default setting can be overridden on a per-client basis by Ignite-UX.

- Click on the `<Default Printer>` list to display the available (configured) printers. Select the one to use. If needed, use SAM's `<Default Printer>` area to configure a new printer onto the system. This will be the printer for printing the manifest or installation history. The printer address will be checked by Ignite-UX before a job is sent.

- Select the appropriate `<Client Timeout (minutes)>` time, or choose `<off>` , to set the time limit for the client to be connected without responding. This will set a limit on the time since the client install log has been written in. Some points in the installation may require 15 to 30 minutes. A warning note will be displayed if this time is exceeded. Setting Client Timeout to `<off>` disables this notification.

- Use the `<Run client installation UI on>` list to designate where it desired to see the client User Interface for the installation. If an Ignite-UX server configured is, the option is available of running the client installation interface from either the `<target>` (as a Terminal User Interface) or the Ignite-UX `<server>` (as the ignite screen). If the client installation is to be non-interactive (no interface), select `<none>`. The default location for the interface display is the Ignite-UX `<server>`.

- At `<Configure Booting IP Addresses…>` enter IP addresses that have **not** been assigned to a client or reserve the IP of an Ignite-UX client to its LLA address (MAC address). Ignite-UX uses these IP's temporarily to boot clients. If marked as a reserved IP, only the client with the corresponding MAC address can be booted with this IP.

- Optionally edit the `/etc/opt/ignite/instl_boottab` file manually (for more help see the file itself):

  ```
  # /usr/bin/vi /etc/opt/ignite/instl_boottab

  15.1.53.180
  15.1.53.181:
  ```

  Example: `/etc/0x08000969DE78::reserve`

  As an alternative, the `/etc/bootptab` or DHCP can be used for assigning temporary boot IP's (Do not use DHCP unless very familiar with it).

`bootptab` entry for an Ignite-UX client:

```
sysname:\
hn:\
vm=rfc1048:\
ht=ether:\
ha=080009352575:\
ip=15.1.51.82:\
sm=255.255.248.0:\
bf=/opt/ignite/boot/boot_lif
```

Session options:

- `<Confirm New Clients>` controls the appearance of a dialog screen each time a new client is booted from the Ignite-UX server.

- `<Ask for customer information during client installation>`: select this to see the form for `<Customer Name, " System Serial #, and Order Number>` when installing clients.

- `<Show the welcome screen for the install server>`: select this to automatically display the Ignite-UX server Welcome screen. This is a useful default if many new operators run Ignite-UX.

- `<Halt the client after installation>`: select this to cause the client system to halt (rather than reboot) after installation.

- `<Automatically move completed clients to history>`: select this button to automatically add completed clients to the end of the history log, `/var/opt/ignite/clients/history/history.log`. It will also move their config and manifest files to history for future reference. The client icon will be removed from the client-server screen. The client must be complete (fully installed) for this to take place.

Configuring the Ignite-UX Server for Itanium clients

Itanium systems lack the ability to boot directly from the Ignite-UX server unless using the dbprofile configuration at EFI. On PA-RISC systems the target LAN address of the Ignite-UX server can be specified in the boot command "`boot lan.<IP> install`". This is not possible on Itanium, where the "`lanboot`" command on the EFI shell will send a DHCP/BOOTP broadcast into the subnet, choosing the server which answers first. There are two mutually exclusive options available to configure the Ignite-UX server for Itanium clients:

- In HP-UX 11.23, the `bootpd` server has been modified so that it is possible to configure `bootpd` to respond to anonymous Itanium clients.

- The Ignite `instl_bootd` server has been modified so that it will respond to anonymous Itanium clients (not successful on all network environments).

Use `bootpd` method, if:

- Ignite-UX server is running HP-UX 11.23 or greater

- Any release of Ignite-UX is installed

- bootpd is being used, e.g. this machine is a DHCP/BOOTP server

- Manual configuration of files is ok (/etc/dhcptab)

Use `instl_bootpd` method, if:

- The Ignite-UX server is running any OS release

- bootpd is not being used on this machine

- it is desired to use the same method (screens, setup, etc.) for Itanium and PA-RISC clients

- Manual configuration of files is not desired (do not want to manually change /etc/dhcptab or /etc/bootptab)

Using bootpd method:

To use this feature, configure an entry similar to the following in `/etc/dhcptab`:

```
dhcp_device_group:\
   re:\
   ncid:\
   class-id="PXEClient:Arch:00002:.*":\
   lease-time=300:\
   subnet-mask=255.255.255.0:\
   addr-pool-start-address=192.168.1.10:\
   addr-pool-last-address=192.168.1.20:\
   bf=/opt/ignite/boot/nbp.efi
```

The following is a brief explanation for each of the parts of the description above as well as what areas to customize:

`subnet-mask`	the subnet mask of your Itanium client
`addr-pool-*`	starting and ending IP addresses to allocate
`ba:`	broadcast the response
`bf=`	boot file for network bootstrap loader
`class-id`	`00002` stands for Itanium, `00000` would be x86

Restart the `bootpd` daemon.

Using the instl_bootd method:

- `instl_bootd` daemon is used by Ignite-UX to boot PA-RISC clients

- configure `instl_bootd` using the Options:Server Configuration screen

- configuration file is `/etc/opt/ignite/instl_bootptab`

- `instl_bootd` daemon normally runs on ports 1067/1068 (unique) used only for booting PA-RISC clients

- Ignite 4.2 and later: `instl_bootd` has been enhanced to respond to Itanium clients on standard BOOTP network ports 67/68

- in `/etc/inetd.conf`:

  comment out:

  `boots dgram udp wait root /usr/lbin/bootpd bootpd`

  add:

  `boots dgram udp wait root /opt/ignite/lbin/instl_bootd instl_bootd`

  Restart `inetd`

The following are some example steps that have been used to allow an Itanium system to boot from a PA-RISC system.

The following entry was added into in `/etc/bootptab`:

```
iatest:\
     bf=/opt/ignite/boot/nbp.efi:\
     hn:\
     vm=rfc1048:\
     ht=ether:\
     ha=00306e100b32:\
     ip=15.1.51.252:\
     sm=255.255.248.0
```

`iatest`	replace this with the hostname of your Itanium system.
`ha=00306e100b32`	replace this with the MAC address of your Itanium system.
`ip=15.1.51.252`	replace this with the IP address of your Itanium system.
`sm=255.255.248.0`	replace this with the subnet mask of your Itanium system.
`hn:`	tells booptd to pass back the hostname to the client, leave as is.
`vm=rfc1048`	vendor magic cookie, leave as is.

```
ht=ether                    hardware type is Ethernet.
```

For consistency if it was required that PA-RISC systems boot using bootp as well the boot file would be given as:

```
bf=boot_lif:\
hd=/opt/ignite/boot:\
```

or

```
bf=/opt/ignite/boot/boot_lif:\
```

This would allow a PA-RISC system to boot using bootp as well (note that this would preclude the use of the install option to boot lan from the boot console handler).

A `/etc/bootptab` entry is required for each MAC address.

Using a dbprofile (Integrity / Itanium)

Most newer model of Integrity systems have the EFI command function called dbprofile which allows for directed network booting, similar in results to the PA-RISC directed lan boot.

```
Syntax
dbprofile [-dn name [-dhcp][-sip server_ip][-cip client_ip]
[-gip gateway_ip ][-m subnet_mask ][-b "boot_file"]
[-od "optional_data "]]|[-h]
dbprofile [rm name]|[-h]
dbprofile [cp src_name dst_name ]|[-h]
```

```
        Options and Operands:
-dn name Display/create/modify a direct boot profile with the name name.
-dhcp ADHCP server will be used to get the client information.
-sip server_ip Set the static IP address for the boot server to server_ip .
-cip client_ip Set the static IP address for the client to client_ip.
-gip gateway_ip Set the static IP address for the gateway to gateway_ip .
-m subnet_mask Set the subnet mask for the local net work to subnet_mask .
-b "boot_file " Load boot file from the boot server.boot_file is the full path
To the boot file on the boot server.
```

```
Examples:
• To use a dbprofile for directed lanboot:
Shell> lanboot select –dn name
```

• To display settings in the direct boot profile:
```
Shell> dbprofile
```
or
```
Shell> dbprofile -dn test
```
• To create and modify settings in a direct boot profile:
```
Shell>dbprofile -dn test -dhcp -sip 192.168.0.1 \
-m 255.255.255.0
Shell>dbprofile -dn test -b "tmp/nparsys1/loader.efi" \
-od "optional data "
```
Where optional data is the actual data you want to pass to the boot file.

• To copy a direct boot profile:
```
Shell> dbprofile cp test profile
```
• To remove a direct boot profile:
```
Shell> dbprofile rm test
```

Troubleshooting checklist for Itanium boot situations with /etc/bootptab

In setting up an `/etc/bootptab` configuration, there are several places where things can go wrong. Following is a typical error that indicates that the client was unable to boot from the server:
```
Shell> lanboot select
Running LoadFile()
CLIENT MAC ADDR: 00 30 6E 10 0B 32
     PXE-E16: Valid PXE offer not received.
     Exit status code: Invalid Parameter
```

If this error occurs, following is a checklist that can be used to help troubleshoot the problem:

- Check `/etc/inetd.conf` for "`bootps`" and "`tftp`" entries being uncommented. The "`tftp`" line must contain `/opt/ignite` and `/var/opt/ignite` paths.

- Was `inetd` restarted or given an option to re-read the configuration files (`inetd -c`), after they were edited? Is the `inetd` process running?

- Check for entries in `/var/adm/inetd.sec` that may cause `inetd` to deny service to certain clients.

- Check `/var/adm/syslog/syslog.log` whether `inetd` was restarted, and that no error messages are found. Check for messages from "`bootpd`" and "`tftpd`"

Check `bootpd`

- Check the `/etc/bootptab` entry. The MAC address should match the client MAC address. Use "`dhcptools -v`" to validate the format of the `/etc/bootptab` file.

- Check for entries in `/etc/dhcpdeny` to insure that `bootpd` is not set up to deny service for particular clients.

- Check `/var/adm/syslog/syslog.log` for a message from `bootpd` that indicates it was started when a bootpd packet was received.

- Run `ps -ef | grep bootpd` and if an existing process is found, `kill -9` the pid then try the lanboot again.

- If packets were not received, use a tool such as `tcpdump` to check for network packets. Verify that `bootp` packets are being seen by the system.

- Find out if there are other systems on the network that may also be replying to the booting client system.

- If the system booting is on a different subnet to the `bootp` server ensure that any router in between allows the forwarding of `bootp` requests (this is router specific on how it would be configured).

Check `tftpd`

- Check the tftp line in `/etc/inetd.conf` to make certain `/opt/ignite` and `/var/opt/ignite` directories are listed.

- Check the `tftpd` connection manually by using the "`tftp`" command, for example:

  ```
  $ tftp <server-name>

  tftp> get /opt/ignite/boot/nbp.efi /tmp/nbp.efi
  ```

```
      Received n bytes in s seconds

      tftp> quit
```

Caveats: Because the Itanium client sends a broadcast no other DHCP servers should be in the same subnet as the Ignite-UX server and the client. Other DHCP servers my answers faster than the Ignite-UX client, leading to failed installation attempts. Alternatively use a dbprofile.

Setting up a Boot Helper

If the client is not in the same subnet as the Ignite-UX server and the clients need to be booted from the network, a boot helper can be installed. The boot helper must be on a HP-UX system within the subnet of the Ignite-UX client.

Example: The `ignite11_all.tar fileset was downloaded to /var/tmp on the Ignite-UX server.`

```
  # /usr/sbin/swinstall -s <Ignite_Server_IP>:/var/tmp/ignite11_all.tar \
    Ignite-UX.MinimumRuntime
  # /opt/ignite/bin/instl_adm -t <Ignite_Server_IP>
  # /opt/ignite/bin/instl_adm -g <Gateway_to_Ignite_Server>
```

Check your settings with:

```
  # /opt/ignite/bin/instl_adm -d
```

Edit the `/etc/opt/ignite/instl_boottab` or `/etc/bootptab` on the boot helper to assign IP addresses that have **NOT** been assigned to a client or reserve the IP of an Ignite-UX client to its LLA address (MAC address). Please see also *"Configuring the Ignite-UX Server"*.

Remember to configure the boot helper for Itanium clients, if required (see chapter before).

Useful Tips Based on Practical Experience

- All commands need to be executed as the root user. The `umask(1)` must be set to `umask 022`, so every user can read the ignite-UX config files. If these config files are not "world readable", the client boot will stop with an `tftp` error.

- It is strongly recommended to use the standard directories `/var/opt/ignite/data/Rel_B.xx.yy` for any custom config files. If other directories are used, they have to be exported via `tftp` and NFS.

- An up-to-date `tar`, `pax`, `bootp`, `tftp`, NFS, ARPA and LVM patch level should be installed as well on the Ignite-UX server as well as on the client system. For all needed patches please look up the latest Release Notes at http://h71028.www7.hp.com/enterprise/us/en/os/hpux11i-system-management-ignite-

ux.html?jumpid=reg_R1002_USEN,   chapter *"Required Patches"* in the latest Release Notes at http://www.software.hp.com/products/IUX/docs.html.

- The most problematic when installing from network is permission and network protocol errors. Before installing the client, you should check `tftp`, `inet`, NFS, etc. The `/var/adm/syslog/syslog.log` can be very useful troubleshooting this issue. Check the `/etc/dfs/dfstab` or `/etc/exportfs` and `/etc/inetd.conf` for correct settings. Often the nfs export file states `anon=-2` instead of `-anon=2`

- When changing config files, they should always be verified with:

  ```
  # /opt/ignite/bin/instl_adm -T
  ```

- Also check the ignite server network settings with:

  ```
  # /opt/ignite/bin/instl_adm -d
  ```

- When creating a Golden System Image, make sure that the source system does not have the LLA (MAC address) of the network interface set explicitly. Otherwise, the same LLA will be used by the cloned target system. The LLA is set in the section `HP_BASE100_STATION_ADDRESS` in `/etc/rc.config.d/hpbase100conf`.

- If an installation via `boot_sys` fails or accidentally booted a client:

  o Stop the boot process and boot into Single User Mode:

  ```
  BOOT ADMIN> boot pri isl -> Interact with IPL?  -> n
  ```

  o Boot the hpux kernel:

  ```
  ISL> hpux (;0)/stand/vmunix
  ```

  o Correct the AUTO file

  ```
  # /usr/sbin/mkboot -a "hpux" /dev/rdsk/c0t1d0
  ```

  o If the old HP-UX system has already been overwritten via Ignite-UX, boot the system over the network.

- If problems are encountered booting from a boot server, try the following (for PA-RISC):

  ```
  BOOT ADMIN> boot lan INSTALL -> Interact with IPL?  -> y
  ```

- In this matter it can be seen which server wrongly answers the boot request. Alternatively run:

  ```
  # /usr/bin/tail /var/adm/syslog/syslog.log
  ```

On the server to see if maybe there isn't any unassigned IP available for the client.

- To make a portable low revision DDS backup for recovery, it is suggested to use a DDS1 device file for creating a tape. Using the DDS1 device file makes the tape compatible with other DDS tape drives. Creating a DDS1 device file:

  o Look up the hardware path

  ```
  # /usr/sbin/ioscan -fC tape

  Class  I  H/W Path   Driver   S/W State H/W Type  Description

  ==============================================================

  tape   0  8/16/5.6.0  stape    CLAIMED   DEVICE    HP  C1533A
  ```

  o Create the device file

  ```
  # /usr/sbin/mksf -v -H 8/16/5.6.0 -b DDS1 -n –a
  ```

  This will create the device file, `/dev/rmt/c1t6d0DDS1n`, for example.

- If the client cannot be booted either from hard disk or from network, creating a portable bootable tape which will then contact the next available Ignite-UX server.

  o using `make_medialif`

  ```
  # /opt/ignite/bin/make_medialif -m -l /tmp/helper.lif
  ```

  ```
  # /usr/bin/dd if=/tmp/helper.lif of=/dev/rmt/c1t6d0DDS1n obs=2k
  ```

  Note: Use a DDS1 device and block size of 2k as well as check that the correct Ignite-UX server IP is set with

  ```
  # /opt/ignite/bin/instl_adm –d
  ```

  o using `make_boot_tape`

  ```
  # /opt/ignite/bin/instl_adm -d > tmp_config_file
  ```

  Edit the `tmp_config_file` as appropriate. Then create the bootable tape:

  ```
  # /opt/ignite/bin/make_boot_tape -f tmp_config_file –v \

  –d /dev/rmt/c1t6d0DDS1n
  ```

- Ignite-UX does not set the `maximal physical extents (Max PE per PV)` correspondingly high enough to implement larger hard disk into the VG. These parameters   can   be   set   on   the   Ignite-UX   server.

Note: The `maximum physical extents` of a boot disk is 5628. If desired, increase the `PE size` for larger hard disks.

- A golden system image can be written onto tape if desired:

  ```
  # /opt/ignite/data/scripts/make_sys_image -d /dev/rmt/0m -s local
  ```

- When using `make_sys_image`, important system files are temporarily replaced which leads to intensive disruptions on a productive system, among other things, the name resolution, login, etc. Therefore, if `make_sys_image` is run the system should never be in use by other applications!!!

- If a `make_sys_image` was disrupted e.g. with `# kill -9`, `# shutdown`, etc., then among other things the `/etc/hosts` and the transition links may have also been removed. To recover from missing transition links, do the following in the multi-user run level:

  ```
  # /sbin/pax -r -pe -f /tmp/ign_configure/keepsafe
  ```

  ```
  # /opt/upgrade/bin/tlinstall
  ```

Ignite-UX System Recovery Tools - Limitations

Logical Volume Physical Extent Allocation Not Preserved:

The LVM physical extents allocated to a logical volume may be in a different location on the disk than before. The recovery tools use a very specific and complex algorithm for extending logical volumes to ensure success (such as extending contiguous volumes before non-contiguous).

LVM Disk Mirrors not restored:

The tools will create a recovery tape for a system with mirrored disks, but it will not restore the mirrored disk configuration. If the system is later recovered, previously mirrored volumes will no longer be mirrored. They can be manually re-mirrored after the system is up. For more details, see the white paper `/opt/ignite/share/doc/diskmirror.pdf`.

EFI partition on Itanium systems may grow in size:

Beginning with Ignite-UX version C.6.0.x the default EFI partition size changed from 100MB to 500MB, in order to accommodate enough space for new purposes not yet implemented. If the EFI partition was 100MB it will be resized to 500MB during recovery. This may introduce disk space problems, if the disk is fully used. You can change the default size from 500MB to any other size in the installation routine.

Ignite-UX System Recovery Tools - make_recovery

The `make_recovery` command has been obsolete for some time, but was shipped with Ignite-UX along with its replacements command `make_tape_recovery`. Executing `make_recovery` prompted a note saying:

```
NOTE:    make_recovery(103): The make_recovery command will be replaced by
         make_tape_recovery.  Both commands are supported in this release
         (Ignite-UX   Revision   3.2).     Please   read   the   man   page
         make_tape_recovery(1M)  for  usage  of  the  new  command.   In  a
         future  release,  make_recovery  will  be  replaced  by  a script that
         calls make_tape_recovery.
```

With Ignite-UX version C.6.0.x the `make_recovery` command was dropped completely and is not available.

Be aware that options used with `make_recovery` are not identical with the same options used with `make_tape_recovery`. Example: the "`-A`" option has different meanings for `make_recovery` and `make_tape_recovery`. By default '`make_recovery -A`' archived the complete root volume group, whereas '`make_tape_recovery -A`' will only include "essential" files and directories.

Ignite-UX System Recovery Tools - make_tape_recovery

Overview

- Can be executed locally (also using a Terminal User Interface) as well as from the Ignite-UX server.

- Creates a bootable DDS/DLT tape. It can also span multiple tapes if run locally.

- Besides the root volume group, other volume groups can be archived as well. **Note:** This is not recommended, because Ignite-UX is not a backup tool and will greatly increase recovery time as well as over-write possibly newer data files. Backup data with proper backup utilities such as `fbackup`, `pax`, `tar`, etc.

- The client specific configuration files are either stored locally or on the Ignite-UX server.

- Replaces `make_recovery` since Ignite-UX versions A.3.2/B.3.2.

Creating a make_tape_recovery Tape - Ignite-UX Server GUI

On your host system, allow the Ignite-UX server to access the display with:

```
# xhost +<Ignite_server_name>
```

for example

```
# xhost +host1
```

Export the display if necessary:

```
# export DISPLAY=<hostname>:0
```

for example

```
# export DISPLAY=host1:0
```

On the Ignite-UX server start Ignite-UX as root:

```
# /opt/ignite/bin/ignite
```

In case of a new client, add the new client first:

Choose `<Actions> <Add New Client for Recovery...>`

Start the Tape Recovery Archive Creation:

Click on the client icon and select `<Actions> <Create Tape Recovery Archive ...>`

What will follow are a series of guided screens for additional configuration. **Note:** Do not forget to press `<add selected disk/vg>` for the vg00 in the Archive Content screen if it is desired to backup the complete vg00. Otherwise, only a core OS will be backed up. Other VGs, directories or files may be optionally included or excluded.

Creating a make_tape_recovery tape - Command Line Examples

When the server is stated using the `-s` option, the configuration, log and status files will be created on the Ignite-UX server at:/

`var/opt/ignite/recovery/clients/0x{LLA}/recovery/<date,time>.`

If no Ignite-UX server is stated, the configuration files will be created locally on the client system at `/var/opt/ignite/recovery/<date,time>.`

Note: Every example below shows the command line with and without the `-s` option to remind display the different possibilities.

Archiving only essential core OS files using the default device file /dev/rmt/0mn

```
# /opt/ignite/bin/make_tape_recovery -v
```

or

```
# /opt/ignite/bin/make_tape_recovery -v -s <Ignite_server>
```

Note: `make_tape_recovery` will check if there are configuration files from previously saved archives. If no configuration files exist that have different settings, only a core OS (essential files) will be archived. `/opt/ignite/recovery/mnr_essentials` lists the files and directories that are considered essential.

Archiving the complete root volume group using the default device file `/dev/rmt/0mn`

```
# /opt/ignite/bin/make_tape_recovery –v –x inc_entire=vg00
```

or

```
# /opt/ignite/bin/make_tape_recovery –v –x inc_entire=vg00 -s
<Ignite_server>
```

Note: For VxVM rootdg use: `-x inc_entire=rootdg`

Note: Remember that the "`-A`" option is different from `make_recovery`:

  `-A:`   Based on the files that are specified for inclusion, this option identifies the disk(s) and/or VG(s) that contain these files and includes all files from the disk(s)/VG(s) in the archive. If no further files are specified for inclusion, the default essentials file list `/opt/ignite/recovery/mnr_essentials` is used for specifying the included files.

Archiving the complete root VG using a non-default device file

```
# /opt/ignite/bin/make_tape_recovery –v –x inc_entire=vg00 \
-a c0t1d0BESTn
```

or

```
# /opt/ignite/bin/make_tape_recovery -v –x inc_entire=vg00 -a c0t1d0BESTn
-s <Ignite_server>
```

  `-a:`   Tape drive device file. Always use a no-rewind device file. You can use DDS and supported DLT tape drives. For supported DLT's please see the Release Notes at www.hp.com/go/Ignite-UX.

Archiving complete VGs/disks - including and excluding files and directories

```
# /opt/ignite/bin/make_tape_recovery -x inc_entire=vg00 \
  -x inc_entire=vg01
```

or

```
# /opt/ignite/bin/make_tape_recovery -x inc_entire=vg00 \
  -x inc_entire=vg01 -s <Ignite_server>
```

  `-x inc_entire=vg_name|/dev/dsk/<name>:` Includes all file systems contained on the VG. Use the VG name (such as vg00) when all file systems that are part of that LVM VG are to be included in the archive. Disk can also be specified. For this, use a block

device file of the format /dev/dsk/<name> when specifying a whole-disk (non-LVM) file system.

Further -x arguments:

-x include=file|dir: Includes the file or directory in the recovery archive but does not cross any mount points.

-x inc_cross=file|dir: Includes the file or directory in the recovery archive and crosses mount points to access any directories that are mounted or files contained in directories that are mounted.

-x exclude=file|dir: Excludes the file or directory from the archive. When a directory is specified, no files beneath that directory will be stored in the archive.

Archiving choosing the archive contents in interactive mode

```
# /opt/ignite/bin/make_tape_recovery –i
```

or

```
# /opt/ignite/bin/make_tape_recovery –i -s <Ignite_server>
```

-i: Causes make_tape_recovery to run interactively to allow the selection of files and directories to be included in the recovery archive.

Note: It is better run the command directly from the Ignite-UX client system. If remote is used, do not forget to press <add selected disk/vg> for the vg00 in the Archive Content screen to backup the complete vg00. Otherwise only a minimal core OS will be backed up!

Backing up the root VG to change the system configuration

```
# /opt/ignite/bin/make_tape_recovery -v –I -x inc_entire=vg00
```

or

```
# /opt/ignite/bin/make_tape_recovery -v -I -x inc_entire=vg00 -s
<Ignite_server>
```

-I: Cause the system recovery process to always present the interactive menus when booting from the tape during the recovery installation.

Using make_tape_recovery in preview mode

```
# /opt/ignite/bin/make_tape_recovery -v –p …<opts>
```

or

```
# /opt/ignite/bin/make_tape_recovery -v –p -s <Ignite_server> …<opts>
```

-p: If the tape was created without stating an Ignite-UX server , the files will be located at `/var/opt/ignite/recovery/latest`. If an IUX server was stated, the files are at `/var/opt/ignite/clients/<LLA>/recovery/<date,time>`.

Only following files will be created which can be edited before presuming the tape creation: `archive_cfg`, `control_cfg`, `system_cfg`. The files that end in `_cfg` contain configuration information that can be changed, like converting from HFS to JFS.

`flist` lists all files will be included in the tar archive. **Note:** Only delete user specific files as deleting other files can cause corruption of the archive.

After making the desired changes, use the `-r` option to resume the tape creation based on the changes made.

```
# /opt/ignite/bin/make_tape_recovery –r
```

Verifying the make_tape_recovery Tape

Reviewing the log files:

If `make_tape_recovery` was run locally, look up the log files at

`/var/opt/ignite/recovery/<date,time>/`.

If it was run from the Ignite-UX server, look up log files at

`/var/opt/ignite/recovery/clients/0x{LLA}/recovery/<date,time>`.

```
recovery.log            progress and error log file

flist                   tar archive content
```

Checking boot volume on tape (LIF header)

```
# /opt/ignite/bin/copy_boot_tape -u /dev/rmt/0mn -b -d /tmp

# /usr/bin/lifls –l /tmp/bootimage
```

Verifying the tar archive on the tape

Integrity (Itanium) based:

```
# /usr/bin/mt -t /dev/rmt/0mn rew

# /usr/bin/mt -t /dev/rmt/0mn fsf 22

# /usr/bin/tar tvf /dev/rmt/0m          Note: 0m not 0mn
```

PA-RISC based:

```
# /usr/bin/mt -t /dev/rmt/0mn rew

# /usr/bin/mt -t /dev/rmt/0mn fsf 1

# /usr/bin/tar tvf /dev/rmt/0m
```
                                        Note: 0m not 0mn

Extracting single files from the tar archive (Integrity)

```
# /usr/bin/mt -t /dev/rmt/0mn rew
# /usr/bin/mt -t /dev/rmt/0mn fsf 22
# /usr/bin/tar xvf /dev/rmt/0m filename1 tmp/filename2

Note there is no leading '/' when specifying a directory path.
```

Extracting single files from the tar archive (PA-RISC)

```
# /usr/bin/mt -t /dev/rmt/0mn rew
# /usr/bin/mt -t /dev/rmt/0mn fsf 1
# /usr/bin/tar xvf /dev/rmt/0m filename1 tmp/filename2

Note there is no leading '/' when specifying a directory path.
```

Restoring from a make_tape_recovery Tape

automatically

1. Insert the System Recovery tape into the tape drive.
2. Boot the system.
3. Interrupt the boot sequence to redirect it to the tape drive.
4. Allow the install process to complete automatically.

interactive mode (changing system configuration, cloning)

1. Insert the System Recovery tape into the tape drive.
2. Boot the system.
3. Interrupt the boot sequence to redirect it to the tape drive.
4. Cancel the non-interactive installation by hitting the <Return> key when the following messages are displayed:
5. WARNING: The configuration information calls for a non- interactive installation. Press <Return> within 10 seconds to cancel batch-mode installation:

   The "Ignite-UX Welcome" screen will be presented. Select the option: [Install HP-UX]

6. Then select the option: [ ] Advanced Installation

7. Make any desired changes to the file systems, hostname, IP address, timezone, root password, DNS server, and gateway information.
8. Select [GO] to proceed with the installation.

Restoring from a make_tape_recovery Tape on Integrity systems

With the latest firmware, for most systems simply boot from the tape device from the EFI Shell. A set of tables showing minimum firmware revisions and SCSI HBAs that support tape boot is available in the "Ignite-UX Installation Booting" white paper available at:

http://www.hp.com/go/ignite-ux-docs.

The tape device can be added as a boot option via the EFI boot manager menu:

- Select "Boot Configuration" from the Boot Menu.
- Select "Add Boot Entry" from the Boot Configuration menu.
- The EFI Boot Manager will then display a menu listing the available devices to choose from.
- Select the tape drive you wish to boot from.
- Enter a description in the next dialog box.
- Next, you will be prompted for load options. Press Enter at this point without entering anything.
- Press "y" and the changes will be saved to NVRAM.

Alternatively; the EFI Shell command 'tapeboot select' can be used to select and boot from the desired tape device.

The first version of Ignite-UX to support native tape boot for Integrity blade systems is C.7.10.474.

* For older hardware to boot from an Ignite Tape a dual boot process is required.

NOTE! For a successful dual boot process, the Ignite-UX version on the Core-OS media must match the version of Ignite-UX that was used to create the Ignite tape.

* IF NEEDED: Dual Boot process:

Insert the Core-OS DVD-ROM into the DVD-ROM drive.

1. Boot the system.
2. Interrupt the boot sequence to redirect it to the DVD-ROM drive.
3. Cancel the non-interactive installation by hitting the <Return> key when the following messages are displayed:
4. `WARNING: The configuration information calls for a non- interactive installation.`
   `Press <Return> within 10 seconds to cancel batch-mode installation:`

   The "`User Interface and Media Options`" screen will be presented.
5. Check "`Media only installation`" and "`Guided installation`"
6. The "`Media Installation`" screen will be presented.
7. Check "`Boot from CD/DVD, Recover from Tape`" option
8. Choose the appropriate tape drive in the "`Tape Drive Selection`" screen
9. Make any desired changes to the file systems, hostname, IP address, timezone, root password, DNS server, and gateway information.
10. Select `[ GO ]` to proceed with the installation.

Ignite-UX System Recovery Tools - `make_net_recovery`

Overview

The command `make_net_recovery` can be executed locally (also using a Terminal User Interface) as well as from the Ignite-UX server using the Ignite-UX user interface. It creates an archive on the Ignite-UX or other Archive Server (must be an NFS server). It can archive the root volume group AND other volume groups as well.

Note: Archiving VGs other than VG00 is not recommended because Ignite-UX is not a backup tool. Backup other volume groups with proper backup utilities such as `fbackup`, `pax`, `tar`, etc.

The client specific configuration files are stored on the Ignite-UX server.

Large File Support for Archives Greater than 2GB on HP-UX 11.11

Ensure your system has patch:
`PHCO_32116 s700_800 11.11 Software Distributor Cumulative Patch`
or later installed, which updates gzip to handle files larger than 2GB in size.

Determining if your file system supports large files and changing to large file support

Without Online-JFS, a new file system must be created to change the file system to support largefiles. Check if the file system supports large files with:

```
# /usr/sbin/fstyp -v /dev/vgxx/lvolx|grep f_flag


  f_flag: 16   large files are activated
  f_flag: 0    large files are inactive
```

With Online-JFS

```
# /usr/sbin/fsadm -F vxfs /file_system_path
```

If the output shows `largefiles`, then large files are activated. If it shows `nolargefiles` large files are inactive. To change a file system to support large files, do the following:

```
# /usr/sbin/fsadm -F file_system -o largefiles /dev/vgxx/lvolx
```

for example

```
# /usr/sbin/fsadm -F vxfs -o largefiles /dev/vg01/lvol6
```

In order for clients to be affected by the change if the file system is already exported, run:

```
# /usr/sbin/exportfs -av
```

Archive Configuration Policies

When specifying archive content, either via the Ignite-UX GUI or in the `make_net_recovery` command line, the following rules apply:

- No essential file or directory can be excluded.

- Files and directories inside an included directory will be included recursively.

- If a symbolic link to a file or directory is included, only the link will be included in the archive, not the actual file or directory, unless it, too, is included. A warning will be given when the item itself is a symbolic link.

- If a directory is included which contains symbolic links to other files or directories, the symbolic links will be included but not the referenced files or directories, unless they, too, are included. No warnings are given regarding these links.

- If a directory contains local mount points, the files and directories under the local mount points will not be included, by default. This policy can be waived by specifying the option `inc_cross` (include directory and cross-mount points), in the selection interface or command line.

- In case of conflicting entries in the selections, Exclusions take precedence over inclusions.

Exporting the archive directory

The default archive location on the Ignite-UX server is
`/var/opt/ignite/recovery/archives/<hostname>`. The hostname is the name of the system
being archived. If the recovery archive creation is initiated from the Ignite-UX GUI on the
Ignite-UX server and the archive is saved on the Ignite-UX server, the `/etc/exports` file will be
edited automatically. If the archive is placed in another location or archive server, the directory
used to store the archives must be NFS exported from the archive server to each client.

1. On the archive server, create a directory for each client to hold the archive of the client's files. It is best to use the default path but you can also state other paths.

   ```
   # /usr/bin/mkdir -p
   /var/opt/ignite/recovery/archives/<client_hostname>
   ```

2. Change the owner and group to `bin`

   ```
   # /usr/bin/chown bin:bin

   /var/opt/ignite/recovery/archives/<client_hostname>
   ```

3. Edit `/etc/`exports on the archive server to add an entry for each client.

   ```
   # /usr/bin/vi

   /var/opt/ignite/recovery/archives/<client_hostname> \

   -anon=2,access=<client_hostname>
   ```

4. Run the `exportfs` command to have the edits to the exports file take effect:

   ```
   # /usr/sbin/exportfs –a
   ```

Creating a make_net_recovery Archive - Ignite-UX Server GUI

On your host system, allow the Ignite-UX server to access the display with:

```
# xhost +<Ignite_server_name>
```

for example

```
# xhost +host1
```

Export the display if necessary:

```
# export DISPLAY=<hostname>:0
```

for example

```
# export DISPLAY=host1:0
```

On the Ignite-UX server start Ignite-UX as root:

```
# /opt/ignite/bin/ignite
```

In case of a new client, add the new client first:

Choose `<Actions> <Add New Client for Recovery...>`

Start the Tape Recovery Archive Creation:

Click on the client icon and select `<Actions> <Create Network Recovery Archive ...>`. You will now be guided through some screens for additional configuration.

Note: Do not forget to press `<add selected disk/vg>` for the vg00 in the Archive Content screen if you want to backup the complete vg00. Otherwise, only a core OS will be backed up. You may also include other VGs, directories or files and also exclude certain ones.

Creating a make_net_recovery Archive - Command Line Examples

Archiving only essential core OS files

```
# /opt/ignite/bin/make_net_recovery -s <Ignite_server>
```

Note: `make_net_recovery` will check if there are configuration files from previously saved archives. If no configuration files exist that have different settings, only a core OS (essential files) will be backed up. `/opt/ignite/recovery/mnr_essentials` lists the files and directories that are considered essential.

Archiving the complete root VG

```
# /opt/ignite/bin/make_net_recovery -Av -s <Ignite_server>
```

   `-A:` Based on the files that are specified for inclusion, this option identifies the disk(s) and/or VGs that contain these specified files and includes all files from the disk(s)/VGs in the archive. If no further files are specified for inclusion, the default essentials file list `/opt/ignite/recovery/mnr_essentials` is used for specifying the included files.

   `-v:` Verbose mode, error and process logs will be displayed.

Archiving the complete root VG to a different archive location

```
# /opt/ignite/bin/make_net_recovery -Av \
  -a archive_server:archive_directory_path -s <Ignite_server>
```

---

for example

```
# /opt/ignite/bin/make_net_recovery -Av -a host2:/my_archives -s host1
```

-a: Specifies the NFS server and location to store the archive. The archive directory must be NFS exported and sufficient disk space is required.

Archiving complete VGs/disks and including and excluding files and directories

```
# /opt/ignite/bin/make_net_recovery -x inc_entire=vg00 \
  -x inc_entire=vg01 -s <Ignite_server>
```

-x inc_entire=vg_name|/dev/dsk/<name>: Includes all file systems contained on the VG. Use the VG name (such as vg00) when you want all file systems that are part of that LVM VG to be included in the archive. You also can specify disks. For this, use a block device file of the format /dev/dsk/<name> when specifying a whole-disk (non-LVM) file system.

Further -x arguments:

-x include=file|dir: Includes the file or directory in the recovery archive but does not cross any mount points.

-x inc_cross=file|dir: Includes the file or directory in the recovery archive and crosses mount points to access any directories that are mounted or files contained in directories that are mounted.

-x exclude=file|dir: Excludes the file or directory from the archive. When a directory is specified, no files beneath that directory will be stored in the archive.

Please see also *"Archive configuration policies"*.

Archiving choosing the archive contents in interactive mode

```
# /opt/ignite/bin/make_net_recovery -i -s <Ignite_server>
```

-i: Causes make_net_recovery to run interactively to allow you to select which files and directories are to be included in the recovery archive.

Note: It is better to initiate directly from the Ignite-UX server. If used remotely, do not forget to press <add selected disk/vg> for the vg00 in the Archive Content screen archive the complete vg00. Otherwise only a core OS will be backed up!

Verifying the Network Recovery Archive

Review the log files at

/var/opt/ignite/recovery/clients/0x{LLA}/recovery/<date,time>/

```
recovery.log          progress and error log file
flist                 tar archive content
```

Reviewing the zipped tar archive

```
# /usr/contrib/bin/gzcat \
  /var/opt/ignite/recovery/archives/<hostname>/<date,time> \
  | tar -tvf - > /tmp/archive_content
```

or

```
# /usr/contrib/bin/gzcat \
  /var/opt/ignite/recovery/archives/<hostname>/<date,time> \
  | tar -tvf - | more
```

Restoring from the Network Recovery Archive

Please see chapter *"Booting and installing an HP-UX client".*

Note: If there are problems installing from a `make_net_recovery` archive, check the `/var/opt/ignite/clients/CINDEX` file and the config files mentioned in the `CINDEX` file. Also make sure that the archive is exported via NFS.

Creating a Bootable Recovery Tape with a make_net_recovery Archive

Note*:* It is important that the archive fits onto a single tape.

Example: The hostname is sys1, the recovery archive is named "2012-01-12,09:00"

Creating the LIF header (Boot Header)

```
# /usr/bin/cd /var/opt/ignite/clients/sys1/recovery/2012-01-12,09:00
# /opt/ignite/bin/make_medialif \
  -f system_cfg -f control_cfg -f archive_cfg \
  -C "2012-01-12,09:00 sys1 recovery image" \
  -a -l /var/tmp/my_lif
```

Now modify the LIF file to set it up for use on the tape:

```
# /opt/ignite/bin/instl_adm -d -F /var/tmp/my_lif > /var/tmp/cfg
```

Edit the `/var/tmp/cfg` file and add the following lines to the end of the file:

```
control_from_server=FALSE
run_ui=TRUE
```

Or, if you just want the recovery to proceed without any interaction, make `run_ui FALSE` and specify to allow warnings, as shown in the following:

```
control_from_server=FALSE
run_ui=FALSE
env_vars += "INST_ALLOW_WARNINGS=10"
```

Then, issue the following command:

```
# /opt/ignite/bin/instl_adm -F /var/tmp/my_lif -f /var/tmp/cfg
```

Writing the LIF Header and the network recovery archive onto tape

Create a DDS1 device file if you do not have one already. A DDS1 device file is compatible with most tape drives:

```
# /usr/sbin/ioscan -fC tape

Class  I  H/W Path    Driver   S/W State H/W Type  Description
==============================================================
tape   0  8/16/5.6.0  stape    CLAIMED   DEVICE    HP  C1533A

# /usr/sbin/mksf -v -H 8/16/5.6.0 -b DDS1 -n -a
```

This will create the device file, `/dev/rmt/c1t6d0DDS1n`, for example. Rewind the tape and write the LIF Header and the archive onto the tape:

```
# /usr/bin/mt -t /dev/rmt/c1t0d0DDS1n rew

# /usr/bin/dd  if=/var/tmp/my_lif of=/dev/rmt/c1t0d0DDS1n  obs=2k
# /usr/bin/dd  \
  if=/var/opt/ignite/recovery/archives/sys1/2002-03-12,09:00
  of=/dev/rmt/c1t0d0DDS1n obs=10k
```

Then rewind the tape again:

```
# /usr/bin/mt -t /dev/rmt/c1t0d0DDS1n rew
```

Recovering Mirrored Disks after Installation with Ignite-UX

It is possible to use Ignite-UX for backing up the root volume group of mirrored disks, but Ignite-UX will not preserve the mirror configurations. The disk mirrors will be lost and must be reconfigured using LVM commands. The boot header of the mirrored disks will be touched as well when recovering using Ignite-UX (`pvcreate`)!

It is possible to script the recreation of the mirror disks during the post recovery scripts.
For more information and detailed examples see the 'Ignite-UX and MirrorDisk/UX" whitepaper at: www.hp.com/go/ignite-ux-docs.

Mapping between device special files and devices cannot be restored during recovery – known issue C.7.0.

During recovery on a system that has more than seven disk and tape devices, Ignite-UX may not successfully remap the device special file names so that they refer to the original devices. Because of this problem, the make_net_recovery and make_tape_recovery commands on HP-UX 11i v3 print a WARNING message and prompt the user to confirm that they wish to continue.

When scripts encounter this prompt, they may hang or fail depending on how the script handles stdin. HP does not support Ignite-UX version C.7.0, even for cold installing HP-UX, after September 2007.

HP recommends that you upgrade to Ignite-UX version C.7.1.x or later to fix this problem. After installing Ignite-UX version C.7.1.x, recreate your tape recovery archive. For network recovery, you can update your Ignite server to Ignite-UX version C.7.1.x and you do not need to recreate the recovery archive.

Ignite-UX and SAS Devices

SAS disks are identified to a system with a unique World-Wide Name (WWN) also known as a World-Wide ID (WWID, sometimes referred to as SAS Address). The I/O stack on HP-UX 11i v2 internally associates that WWN to a hardware path. The hardware path is not a typical hardware path since the hardware path can change if you reinstall or recover the system and the SAS configuration has changed.

On HP-UX 11i v3 the legacy devices for SAS devices are handled similarly to 11i v2, this means if the SAS configuration changes, the legacy devices for SAS devices can change during an install or recovery.

With persistent DSFs on 11i v3 there is a reliable mapping between a SAS device and the persistent DSF. Since the system knows about the correlation between the WWN and the persistent DSF[2] Ignite-UX is able to keep the mapping between persistent DSF and WWN when performing a recovery. This requires you to use Ignite-UX version C.7.2 or above to be able to reliably recover persistent DSFs for SAS devices when you have more than 7 mass storage devices connected to a system

Note: You will have actions to perform when replacing a SAS device on HP-UX 11i v3 since a persistent DSF is tied to a WWN. See the `io_redirect_dsf` manual page on any HP-UX 11i v3 system for more information. If you use legacy devices you may also need to use the `sasmgr` commands `replace_tgt` option.

You should be aware of the following information when you configure RAID LUNs.

Ignite-UX fully supports a configuration where only RAID LUNs are presented to a system. (This includes having a hot spare configured.) Note that the HP PCI/PCI-X SAS MPT Adapter supports a maximum of two RAID LUNs and a hot spare. These restrictions do not apply to the P400 Core I/O card. The P400 Core I/O card presents only RAID LUNs to the system; it is not possible to present individual SAS drives to a system. You must configure the RAID LUNs and hot spare from EFI before installing the system.

If you have a system containing a mixture of RAID LUNs and individual SAS devices, the devices used for the RAID LUNs and the global spare should be configured from Bay 8 working downwards, and the individual SAS drives populated from Bay 1 upwards. Do not change the configuration after system installation.

For more information see the "Ignite-UX and SAS white paper":
http://h20000.www2.hp.com/bizsupport/TechSupport/CoreRedirect.jsp?redirectReason=DocInde
xPDF&prodSeriesId=4077173&targetPage=http%3A%2F%2Fbizsupport2.austin.hp.com%2Fbc
%2Fdocs%2Fsupport%2FSupportManual%2Fc02023868%2Fc02023868.pdf

Creating SD-UX and non-SD-UX Software Depots

Creating an HP-UX Core-OS Depot

It is assumed that the CD-ROM drive is connected at `/dev/dsk/c1t2d0` (to be looked up with `# /usr/bin/ioscan -fnC disk`). **Note:** do not mount the CD-ROM for creating Core-OS depots.

Example 1: A disk depot for an HP-UX 11.23 installation will be created.

Please insert the HP-UX 11.23 Core-OS DVD-ROM. The depot will be named `core_1123` and will be created at `/var/opt/ignite/depots/Rel_B.11.23`.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 -r B.11.23
```

or

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 \
  -d /var/opt/ignite/depots/Rel_B.11.23/core_1123
```

Example 2: A disk depot for an HP-UX 11.31 installation will be created.

Please insert the HP-UX 11.31 Core-OS DVD-ROM. The depot will be named `core` and will be created at `/var/opt/ignite/depots/Rel_B.11.31`.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 -r B.11.31
```

or

```
# /opt/ignite/bin/ make_depots -s /dev/dsk/c1t2d0 \
  -d /var/opt/ignite/depots/Rel_B.11.31/core
```

Example 3: A disk depot for an HP-UX 11iv3 DCOE installation will be created.

Please insert the first of the two HP-UX 11iV3 Core-OS DVD-ROMs in the DVD-ROM drive. The depot will be named dcoe_core and will be created at: /var/opt/ignite/depots/Rel_B.11.31.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c2t3d0 \
  -d /var/opt/ignite/depots/Rel_B.11.31/dcoe_core
```

When the make_depots command has succeeded, please insert the second Core-OS DVD-ROM and repeat above step using exactly the same command line.

Creating an Individual Patch Depot

Example: individual patches for HP-UX 11.23 were downloaded to /tmp/patch_download.

Unpacking the patches in /tmp/patch_download.

```
# /usr/bin/cd /tmp/patch_download
# for i in PH*
> do
> sh $i
> done
```

Moving the descriptions for example to /tmp/patch_description.

```
# /usr/bin/mkdir /tmp/patch_description
# /usr/bin/mv /tmp/patch_download /*.text   /tmp/patch_description
```

Creating the individual patch depot.

```
# /usr/bin/mkdir /var/opt/ignite/depots/Rel_B.11.23/my_patches
# for i in PH*.depot
> do
> /usr/sbin/swcopy -s ${PWD}/$i \* @   \
  /var/opt/ignite/depots/Rel_B.11.23/my_patches
> done
```

Making sure all installed patches are included in the individual patch depot.

```
# /usr/sbin/swlist -d @ /var/opt/ignite/depots/Rel_B.11.23/my_patches
```

Converting the individual patches into a single bundle and putting the bundle in the patch depot (Ignite-UX can only handle SD bundles).

```
# /opt/ignite/bin/make_bundles -B -n individual_patches \
  -t "HP-UX 11.23 Patches" \
  /var/opt/ignite/depots/Rel_B.11.23/my_patches
```

Running `swlist` again to verify the creation of the bundle.

```
# /usr/sbin/swlist -d @ /var/opt/ignite/depots/Rel_B.11.23/my_patches
```

To display the patches of this bundle, use

```
# /usr/sbin/swlist -l product \
-d @ /var/opt/ignite/depots/Rel_B.11.23/my_patches
```

Changing individual patch depots.

If you need to add additional patches to the depot in the future, simply unshar the patches as described above, `swcopy` them into the patch depot, and rerun `make_bundles`. If you would like to remove a patch from the depot, simply use the `swremove` command and rerun `make_bundles`. The example below removes the patch `PHKL_33650` from the patch depot which was previously named `individual_patches` via the `-n` option.

```
# /usr/sbin/swremove -d individual_patches.PHKL_33650 \
  @ /var/opt/ignite/depots/Rel_B.11.23/my_patches
```

Special Handling of Patches

For issues concerning

- Avoiding Backup Patch Files (Avoid Archiving Patch Files)

- Avoiding Problems With Superseded Patches

Please see the Ignite-UX Administration Guide at www.hp.com/go/ignite-ux-docs

Creating an Application Depot

Example: Copying an application from one of the application DVDs.

If the mount point `/SD_CDROM` does not yet exist, create it with `mkdir`. Then mount the application CD to `/SD_CDROM`. To find out witch products are available for installation, you can use `# ls /SD_CDROM`. For further examples, please see `swcopy (1M)`.

```
# /usr/sbin/swcopy -s /SD_CDROM B3693AA_TRY \
  @ /var/opt/ignite/depots/Rel_B.11.23/my_applications
```

Example 2: Copying applications from a depot

All software from the depot `/my_depots/depot1` which is located on host1 to `/var/opt/ignite/depots/Rel_B.11.23/my_applications will be copied.`

```
# /usr/sbin/swcopy -s host1:/my_depots/depot1 \* \
  @ /var/opt/ignite/depots/Rel_B.11.23/my_applications
```

Creating non-SD-UX Depots

If the source is a non-SD-UX depot, the `make_depots` command is not applicable. Do not attempt to use non-core-OS archives (such as layered applications) that contain files that are loaded in `/var/adm/sw/*` . Delivering files in this directory in this method may corrupt the software distributor database. Please proceed with the next step *"Creating Ignite-UX Config Files for SD-UX and non-SD-UX Depots"*.

Creating Ignite-UX Config Files for SD-UX and non-SD-UX Depots

Example 1: Creating Config Files for all SD-UX depots found in the default location `/var/opt/ignite/depots/Rel_B.xx.yy`

```
# /opt/ignite/bin/make_config -r B.11.23
```

Example 2: Creating config files for all SD-UX depots located at `/my_depots/Rel_B.11.23`

```
# /usr/bin/cd /my_depots/Rel_B.11.23
# for i in *
> do
> /opt/ignite/bin/make_config -s ${PWD}/$i  \
  -c /var/opt/ignite/data/Rel_B.11.23/$i.cfg
> done
```

Example 3: Creating a Config File for one SD-UX Depot located on another system at `/my_depots/Rel_B.11.23/core`

```
# /opt/ignite/bin/make_config -s host1:/my_depots/Rel_B.11.23/core \
  -c /var/opt/ignite/data/Rel_B.11.23/core.cfg
```

Example 4: Creating Ignite-UX Config Files for Individual Patch Depots

```
# /opt/ignite/bin/make_config  \
  -s /var/opt/ignite/depots/Rel_B.11.23/my_patches \
  -c /var/opt/ignite/data/Rel_B.11.23/my_patches.cfg
```

Example 5: Creating Ignite-UX Config Files for Non-SD Depots

A sample config file for a non-coreOS (application) `tar`, `cpio`, `pax` archive can be found at `/opt/ignite/data/examples/noncore.cfg`.

Copy the `noncore.cgf` file to `/var/opt/ignite/data/Rel_B.xx.yy` and edit it manually as described within the sample file itself.

```
# /usr/bin/cp /opt/ignite/data/examples/noncore.cfg \
  /var/opt/ignite/data/Rel_B.11.23/non_SD_config.cfg
```

When done editing this file, check it with

```
# /opt/ignite/bin/instl_adm -T -f \
  /var/opt/ignite/data/Rel_B.11.23/non_SD_config.cfg
```

Managing the INDEX File

The order of the INDEX file determines in which order the depots will be loaded. There must always be a HP-UX release specific config file such as /opt/ignite/data/Rel_B.11.23/config as the first line. If you are using the /var/opt/ignite/config.local file, it should always be the last entry for the cfg clause.

Example 1: using the manage_index command to add the config file /var/opt/ignite/data/Rel_B.11.23/core.cfg into the /var/opt/ignite/INDEX file for the cfg clause "HP-UX B.11.23 Default".

```
# /opt/ignite/bin/manage_index -a -f \
  /var/opt/ignite/data/Rel_B.11.23/core.cfg -c "HP-UX B.11.23 Default"
```

Example 2: adding the required config files manually to the /var/opt/ignite/INDEX file for the cfg clause "HP-UX B.11.23 Default".

```
# /usr/bin/vi /var/opt/ignite/INDEX


        cfg "HP-UX B.11.23 Default" {
                description "This selection supplies a HP-UX B.11.23
        default installation"
              "/opt/ignite/data/Rel_B.11.23/config"
              "/opt/ignite/data/Rel_B.11.23/hw_patches_cfg"
              "/var/opt/ignite/data/Rel_B.11.23/core.cfg"
              "/var/opt/ignite/data/Rel_B.11.23/individual_patches.cfg"
              "/var/opt/ignite/data/Rel_B.11.23/my_applications.cfg"
              "/var/opt/ignite/config.local"
        }
```

Modifying/Adding Depots

Use make_depots, swcopy or swremove to edit your depots. Rerun make_config for the corresponding release to update the config files. Run manage_index for each newly added software depot.

Example 1 - Creating SD-UX Depots for an HP-UX 11.23 Installation

1) Look up the device file for the DVD drive.

```
# /usr/sbin/ioscan -fnC disk

Class  I  H/W Path       Driver  S/W State   H/W Type     Description
=========================================================================
disk   0  8/0/19/0.6.0   sdisk   CLAIMED     DEVICE       IBM  DDRS-34560WS
                         /dev/dsk/c0t6d0    /dev/rdsk/c0t6d0
disk   2  8/16/5.1.0     sdisk   CLAIMED     DEVICE       TEAC DV-W28S-VS
```

```
                          /dev/dsk/c1t1d0   /dev/rdsk/c1t1d0
disk  1  8/16/5.5.0    sdisk   CLAIMED    DEVICE     QUANTUM FIREBALL1050S
                          /dev/dsk/c1t5d0   /dev/rdsk/c1t5d0
```

2) Insert the HP-UX 11.23 Core-OS DVD, but do not mount it. Then create the Core OS depot.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t1d0 -r B.11.23
```

```
#      /opt/ignite/bin/make_depots      -s      /dev/dsk/c1t1d0      \
  -d /var/opt/ignite/depots/Rel_B.11.23/core
```

Note for HP-UX 11i: For the second DVD, repeat `make_depots` with the same syntax.

3) Create the General Release Patch depot:

```
# /opt/ignite/bin/make_depots -s /SD_CDROM/QPK1123 \
   -d /var/opt/ignite/depots/Rel_B.11.23/QPK1123
```

4) Export the depots via NFS, if you did not use the default directory `or you placed the depots on another depot server.`

```
# /usr/bin/vi /etc/exports
```

```
        /ignite/depots -anon=2
```

```
# /usr/sbin/exportfs –av
```

5) Create config files for the depot at `/var/opt/ignite/data/Rel_B.11.23`.

```
# /opt/ignite/bin/make_config -r B.11.23
```

If you have not used the `/var/opt/ignite/data/Rel_B.11.23`, you must specify the config files individually:

```
# /opt/ignite/bin/make_config -v \
  -s host1:/var/opt/ignite/depots/Rel_B.11.23/core \
  -c /var/opt/ignite/data/Rel_B.11.23/core.cfg
```

```
# /opt/ignite/bin/make_config –v \
  -s host1:/var/opt/ignite/depots/Rel_B.11.23/QPK1123 \
  -c /var/opt/ignite/data/Rel_B.11.23/QPK1123.cfg
```

6) Add the configuration to the `/var/opt/ignite/INDEX` file:

Copy the cfg section of "`HP-UX B.11.23 Default`" completely and rename the new section as you like, e.g. "`HP-UX B.11.23 my installation`" and use following scripts:

```
cfg "HP-UX B.11.23 Default" {
      description "HP-UX B.11.23 my installation"
      "/opt/ignite/data/Rel_B.11.23/config"
      "/opt/ignite/data/Rel_B.11.23/hw_patches_cfg"
```

```
       "/var/opt/ignite/data/Rel_B.11.23/core.cfg"
       "/var/opt/ignite/data/Rel_B.11.23/QPK1123.cfg"
       "/var/opt/ignite/config.local"
}
```

7) Verify the INDEX file for errors with:

```
# /opt/ignite/bin/instl_adm -T
```

8) Please see Handbook chapter *"Booting and installing an HP-UX client"* to install the client.

Example 2 - Creating a DVD-ROM SD-UX Depot

Note: You can only create a DVD-ROM depot for installations containing one Core-OS DVD.

1) Look up the device file for the DVD drive.

```
# /usr/sbin/ioscan -fnC disk

Class  I  H/W Path       Driver  S/W State  H/W Type   Description
=================================================================================
disk   0  8/0/19/0.6.0   sdisk   CLAIMED    DEVICE     IBM  DDRS-34560WS
                         /dev/dsk/c0t6d0   /dev/rdsk/c0t6d0
disk   2  8/16/5.1.0     sdisk   CLAIMED    DEVICE     TOSHIBA CD-ROM XM-5701TA
                         /dev/dsk/c1t1d0   /dev/rdsk/c1t1d0
disk   1  8/16/5.5.0     sdisk   CLAIMED    DEVICE     QUANTUM FIREBALL1050S
                         /dev/dsk/c1t5d0   /dev/rdsk/c1t5d0
```

2) Insert the Core-OS DVD and mount it at /SD_DVDROM.

```
# /usr/bin/mkdir /SD_DVDROM
# /usr/sbin/mount /dev/dsk/c1t1d0 /SD_DVDROM
```

3) Register the DVD-ROM as an depot with swreg:

```
#/usr/sbin/swreg -l depot @ /SD_DVDROM
```

4) Create a config file of this depot at var/opt/ignite/data/Rel_B.xx.yy/core.cfg:

```
# /opt/ignite/bin/make_config -s /SD_DVDROM \
  -c /var/opt/ignite/data/Rel_B.11.23/core.cfg
```

5) Add the configuration to the /var/opt/ignite/INDEX file:

Copy the cfg section of "HP-UX B.11.23 Default" completely and rename the new section as you like, for example "HP-UX B.11.23 DVD".

Use following scripts:

```
cfg "HP-UX B.11.23 DVD" {
       description "HP-UX B.11.23 my installation"
       "/opt/ignite/data/Rel_B.11.23/config"
       "/opt/ignite/data/Rel_B.11.23/hw_patches_cfg"
       "/var/opt/ignite/data/Rel_B.11.23/core.cfg"
```

```
                    "/var/opt/ignite/config.local"
    }
```

6) Check the INDEX file with:

```
    # /opt/ignite/bin/instl_adm -T
```

7) Please see chapter *"Booting and installing an HP-UX client"* to install the client.

Booting and Installing an HP-UX Client over the network

If the client system is running HP-UX 11.X or later, the bootsys(1M) command can be used or a local network boot to install the client. It can be invoked either from a command shell, or from the Ignite-UX screen.

If the client is currently not up and running HP-UX 11.X or later, the client has to be booted from a local console network boot command. If the client is not in the same subnet as the Ignite-UX server, the client has to be booted from a boothelper or for Integrity systems the EFI command 'dbprofile' can be used. For more details on supported systems, please look up chapter *"Networking Issues"* in the Ignite-UX Release Notes at www.hp.com/go/ignite-ux-docs.

Make sure that there is at least one available IP in the /etc/opt/ignite/instl_boottab, /etc/bootptab or via DHCP on the Ignite-UX server respectively or the boot helper.

Note: The IP must be an unassigned IP! If you do not have any unassigned IP's available and are using the /etc/opt/ignite/instl_boottab, reserve the client's IP and the corresponding MAC address by inserting a line with the reserve option:

```
    # /usr/bin/vi /etc/opt/ignite/instl_boottab

    1.3.4.5:0060B0F99816::reserve          (IP:MAC_address::reserve)
```

Booting the Client from the Ignite-UX Server - Using the User Interface

Note: The clients must be currently running HP-UX 11.x or later.

Starting the Ignite-UX screen:

```
    # /opt/ignite/bin/ignite
```

Booting the client using bootsys: If there is not yet a client icon, select <ACTIONS> <BOOT NEW CLIENT>. Enter the hostname and if required the password. After the client has booted, the client icon will appear on the Ignite-UX screen.

Starting the client installation: Right-click the client icon and choose <INSTALL CLIENT> <New Install>.

Configuring the client installation: Select one of the previously created cfg selections from the `/var/opt/ignite/INDEX` file or a `make_net_recovery` archive. For this, click on `<Configurations:>` from the Basic Tab.

Adjust any other parameters such as selecting the boot disk, etc. For adding/removing Software to be installed, please go to the `<Software>` tab. At the `<System>` tab, adjust system settings such as the hostname, IP adress, etc.

Please go to the `<File System>` tab for tuning file system sizes, LVM parameters, etc. At the `<Advanced>` tab, select or deselect any scripts available from the `/var/opt/ignite/INDEX` file. These scripts will be executed during the final reboot, before the startup scripts (rc scripts) are called.

Starting the installation: Click on the `< Go!>` button. The installation progress can be viewed via the install.log file.

Booting the Client from the Ignite-UX Server - Using the bootsys Command

Note: If an install session from the server has already been run, issuing `bootsys` without the option `-w` will result in an automatic installation without further intervention!

Interactive installation

```
# /opt/ignite/bin/bootsys -w <system_name>
```

Enter the password if required. After the client has booted, the client icon will appear on the Ignite-UX screen. For further options please see the manpage of `bootsys`.

Proceed with step 3) from *"Booting the Client from the Ignite-UX server - Using the User Interface"*.

Automatic installation

To start an automatic installation, please enter:

```
# /opt/ignite/bin/bootsys -a -I <cfg_configuration> -v  <system_name>
```

-a: If no configuration is given with the `-I` option, the defaults will be used for the automatic installation.

-I : Specify a configuration which is listed as a cfg section in the `/var/opt/ignite/INDEX` file. To view which configurations are available, use:

```
# /opt/ignite/bin/manage_index -l
```

Booting Integrity and PA-RISC Clients from the Network

Note: For booting older workstations please see the Ignite-UX Admin Guide at www.hp.com/go/ignite-ux-docs

1) Switch the client on and interrupt the boot sequence pressing any key.

2) Boot from the Ignite-UX server or boothelper using one of these ways:

   a) **PA-RISC**: If your network only has one Ignite-UX server available, enter:

   ```
   BOOT ADMIN> boot lan install
   ```

   Integrity: If the network only has one Ignite-UX server available, enter:

   ```
   EFI shell> lanboot select
   ```

   b) **PA-RISC**: To boot from a specific Ignite-UX server, enter:

   ```
   BOOT ADMIN> boot lan.15.10.18.156 install
   ```

   where 15.10.18.156 is the IP of the Ignite-UX server.

   Integrity: Use the EFI Shell dbprofile command to first create a ip profile.

```
Shell> dbprofile [ -dn name [ -dhcp ] [ -sip server_ip ] [ -cip client_ip ]
[- gip gateway_ip ] [ -m subnet_mask ] [ -b "boot_file" ]
[ -od "optional_data" ]] | [ -h ]
dbprofile [ rm name ] | [ -h ]
dbprofile [ cp src_name dst_name ] | [ -h ]
```

Example:
```
Shell> dbprofile -dn testprofile -sip 192.1.2.1 -cip \
192.1.1.20 -gip 192.1.1.1 -m 255.255.255.0 -b \
"/opt/ignite/boot/nbp.efi"
```

PA-RISC: If the client is not in the same subnet as the Ignite-UX server, direct the installation to a boot helper:

```
BOOT ADMIN> boot lan.15.10.18.156 install
```

where 15.10.18.156 is the IP of the Ignite-UX boot helper. The client will be booted from the boot helper and then redirected to the Ignite-UX server to complete the installation.

c) **PA-RISC**: Otherwise make the system search for servers and pick one or explicitly tell the system where to boot, as follows

```
BOOT ADMIN> search lan install
```

The list of servers will be displayed with IP addresses. Pick the IP address of the Ignite-UX server you want to boot from by entering, for example:

```
BOOT ADMIN> boot lan.15.10.18.156 install
```

where 15.10.18.156 is the IP of the Ignite-UX server or boot helper.

Note: It typically takes two or three searches before the Ignite-UX server will be found, due to a built-in delayed response from the server system.

Integrity: The search option is not available on Integrity based systems.

3) Enter `n` when asked if you want to interact with IPL (there is no IPL on Itanium).

4) If the networking startup fails, press `<Enter>`. **Note:** This behavior is normal. Just enter the networking parameters now. The networking startup will always fail if there are no specified the networking parameters via the bootsys command or the `INSTALLFS` file (`instl_adm` settings).

5) Choose the keyboard if it has not been selected automatically via the `INSTALLFS` file or other config files.

6) Choose `[ Install HP-UX ]`

7) If you want to proceed the installation from the the Ignite-UX server now, please choose:

```
[  *  ] Remote graphical interface running on the Ignite-UX server
```

If you want to proceed the Installation from the Client, please choose

```
[  *  ] Remote graphical interface running on the Ignite-UX server
```

Booting the Client using make_boot_tape (PA-RISC only)

`make_boot_tape` can be used if the client does not support a network boot or if the client is not on the same subnet as the Ignite-UX server.

The system will be booted from the Ignite-UX kernel on the tape and then the Ignite-Ux server will be contacted to proceed with the installation.

Typically the tape is created on the Ignite-UX server, because it contains Ignite-UX server specific information from the INSTALLFS file (edited with instl_adm).

The tape can also be used if you have several lan cards and you want to use another than the built-in lan card for installation. You will be asked which lan card you want to initialize.

1) Create a DDS1 device file for the tape drive first.

```
# /usr/sbin/ioscan -fC tape

Class      I  H/W Path    Driver      S/W State H/W Type  Description
=====================================================================
tape      0  8/16/5.6.0  stape      CLAIMED   DEVICE     HP       C1533A

# /usr/sbin/mksf -v -H 8/16/5.6.0  -b DDS1 -n -a
```

The device file will be called something like /dev/rmt/c1t6d0DDS1n.

2) Check your instl_adm settings and edit them if necessary.

```
# /opt/ignite/bin/ instl_adm -d > /tmp/config_file

# /usr/bin/vi /tmp/config_file

  server="15.140.10.59"

  netmask[]="0xffffff800"
```

3) Create the boot tape

```
# /opt/ignite/bin/make_boot_tape -f /tmp/config_file \
-d /dev/rmt/c1t6d0DDS1n -v
```

4) Proceed to boot from tape to contact the Ignite-UX server.

Performing a non-interactive Ignite-UX Installation

Note: The client will be installed without any user interaction.

1) Adjust the install boot kernel /opt/ignite/boot/INSTALLFS of the Ignite-UX server. Read the current configuration and save it to a defaults file

```
# /opt/ignite/bin/instl_adm -d >/var/opt/ignite/defaults
```

2) Edit the `defaults` file adding following lines:

```
run_ui=false
control_from_server=false
env_vars+="INST_ALLOW_WARNINGS=1"
```

With this step the interactive user interface has been switched off and the client will be installed automatically when booting from the network.

3) It is recommended to make further settings, because during the installation, no parameters can be adjusted like system name and IP address.

Note: Do not forget to take this option out of the configuration after performing the installation of the target client. Additionally ensure that in the `/etc/opt/ignite/instl_boottab`, only the entry for the client to be installed is available. Also ensure that no one else uses the Ignite-UX server while these parameters are set!

Example: Add following parameters:

```
system_name="blubber"
ip_addr="1.2.3.4"
timezone="MET-1METDST"
```

For further information about possible parameter setting, see the instl_adm(4) manpage.

4) When done with all necessary settings, change the boot image `INSTALLFS` after checking the syntax:

```
# /usr/bin/cd /opt/ignite/boot
```

```
# /opt/ignite/bin/instl_adm -T -f /var/opt/ignite/defaults
```

If the syntax is correct, edit the boot image

```
# /opt/ignite/bin/instl_adm -f /var/opt/ignite/defaults
```

5) Before starting the non-interactive installation, verify the used config files (for the Golden Image, SD-UX depots, etc.) before in interactive mode to ensure there are no syntax errors.
6) Please see chapter *"Booting and installing an HP-UX client"* to install the client.

Cloning with Golden System Images

Creating a Golden System Image

Note: Because files like `/etc/hosts` and devices files are temporarily removed from the clients system during the execution of `make_sys_image`, the system should not be in use **!!!**

1) Install the required operating system, patches and applications at the source system and configure it to your needs.

2) Create the archive directory on the Ignite-UX server:

```
# /usr/bin/mkdir –p /var/opt/ignite/archives/Rel_B.xx.yy
```

3) Copy `/opt/ignite/data/scripts/make_sys_image` from the Ignite-UX Server to `/tmp` at the source system and make it executable.

4) Run `make_sys_image` on the source system with following options:

```
# /opt/ignite/data/scripts/make_sys_image –v \
  -f <script with files or directories to exclude> \
  -d <directory to place the archive> \
  -s <ip-address of system to place the archive>
```

for example

```
# /opt/ignite/data/scripts/make_sys_image -v -f /tmp/exclude \
  -d /var/opt/ignite/archives/Rel_B.11.23 -s 10.10.3.4
```

`-f`: It is possible to list single files. For further information please see the man page of `make_sys_image`. In this example, the directories `/space` and `/export` will not be saved into the Golden System Image. The exclude file has following format:

```
# /usr/bin/cat exclude

+ ONLY NO_ARCHIVE

   /space
   /export
```

`-d` : The chosen directory must have enough space. The Image will be created as a gnuzip file and is about half the size of the data to be saved. The directory must be exported via NFS.

-s: Instead of the Ignite-UX server IP, the local IP can be used for creating the System Image locally. Then copy the archive named <hostname>.gz later to the Ignite-UX or another archive server.

Optionally verify the image contents with:

```
# gzcat <hostname>.gz | pax –v | grep <file_name>
```

5) Copy the config files and edited them correspondingly. If the `-s local` option was used first copy the archive to the Ignite-UX server, if Ignite-UX is not installed on the local system.

For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to `/var/opt/ignite/data/Rel_B.11.##/core_archive.cfg`

Edit the copied config files changing following in the section `sw_source`:

```
nfs_source = "<Ignite_Server_IP>:/var/opt/ignite/archives/Rel_B.11.23"
```

Note: This is the path to the archive which has to be NFS exported.

6) Rename the `archive_path` in the section `init sw_sel "golden image1"` so it matches the name of the Golden Image. And if desired change the description as well.

```
archive_path = "<hostname>.gz"

description = "My Golden System Archive"
```

7) Obtain file system size information of the Golden Image with `archive_impact`:

```
/opt/ignite/lbin/archive_impact -t -g \

/var/opt/ignite/archives/Rel_B.11.23/<hostname>.gz
```

Exchange the current sample `"impacts"` lines of the config file with the output of the `archive_impact` command, for example:

```
impacts = "/" 30 Kb
impacts = "/etc" 1722 Kb
impacts = "/opt" 123430 Kb

...
```

8) Add the new configuration to the `/var/opt/ignite/INDEX` file:

```
cfg "HP-UX B.11.23 Golden Image" {
        description "HP-UX B.11.23 archive"
        "/opt/ignite/data/Rel_B.11.23/config"
        "/var/opt/ignite/data/Rel_B.11.23/core_archive.cfg"
        "/var/opt/ignite/config.local"
}
```

9) Verify the `INDEX` and config files with:

```
# /opt/ignite/bin/instl_adm -T
```

10) Ensure that the client and the archive directory are exported via NFS.

```
     # /usr/bin/vi /etc/exports
             /var/opt/ignite/clients -anon=2
             /var/opt/ignite/archives/Rel_B.11.23 –ro,anon=2


     # /usr/sbin/exportfs –av


     For HP-UX 11.31:

# vi /etc/dfs/dfstab
share -F nfs -o anon=2 /var/opt/ignite/clients
share -F nfs -o anon=2 /var/opt/ignite/archives/Rel_B.11.23
# shareall -F nfs
```

11) Please see chapter *"Booting and installing an HP-UX client"* to install the client.

Creating a Bootable Golden System Image Tape

Note: Because files like `/etc/hosts` and devices files are temporarily removed from the clients system during the execution of `make_sys_image`, the system should not be in use!

Please repeat step 1) to 4) of chapter *"Creating a Golden System image"*.

5) Copy the config files and edited them correspondingly:

    For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to
    `/var/opt/ignite/data/Rel_B.11.##/golden_image_cd.cfg`

6) Change following in the section `sw_source`:

    ```
    source_type="MT"
    change_media=FALSE        ← uncomment this line
    ```

7) Then comment these lines:

    ```
    # nfs_source = "15.1.54.123:/var/opt/ignite/archives"
    # ftp_source = "anonymous@15.1.54.123:iux"
    # remsh_source = user@15.1.54.123
    ```

    Rename the `archive_path` in the section `init sw_sel "golden image1"`, so it matches the name of the Golden Image:

    ```
    archive_path = "<hostname>.gz"
    ```

    and eventually change the description

    ```
    description = "My Golden System Archive"
    ```

    Obtain the file system size information of the Golden Image with `archive_impact`:

    ```
    # /opt/ignite/lbin/archive_impact -t -g \
      /var/opt/ignite/archives/Rel_B.11.23/<hostname>.gz
    ```

    Exchange the current sample `"impacts"` lines of the config file with the output of the `archive_impact` command, for example:

    ```
    impacts = "/" 30 Kb
    impacts = "/etc" 1722 Kb
    impacts = "/opt" 123430 Kb
    …
    ```

8) In the next step an HFS file system needs to be created which is a little larger than the Golden Image:

    ```
    # /usr/sbin/lvcreate -L <image+10%-MB> -n goldenimage /dev/vg00
    ```

```
# /usr/sbin/newfs -F hfs -f 2048 /dev/vg00/rgoldenimage
```

`respectively` for an Image > 2GB

```
# /usr/sbin/newfs -F hfs -f 2048 -o largefiles /dev/vg00/rgoldenimage

# /usr/bin/mkdir /bootcd

# /usr/sbin/mount /dev/vg00/goldenimage /bootcd

# /usr/bin/cp /tmp/<hostname>.gz /bootcd

# /usr/sbin/umount /bootcd
```

9) Then create the boot (LIF) header for the tape. For example, create a LIF image based on `/var/opt/ignite/data/Rel_B.11.23/core_archive.cfg` . The LIF image will be named `uxinstlf_tape`. For further information please see the manpage of `make_medialif`.

```
# /opt/ignite/bin/make_medialif\
  -f /opt/ignite/data/Rel_B.11.23/config\
  -f /var/opt/ignite/data/Rel_B.11.23/core_archive.cfg\
  -l /var/opt/ignite/data/Rel_B.11.23/uxinstlf_tape
```

10) The next step would be to write the LIF header and the Golden Image onto tape. Therefore, use a Non-Rewind DDS-1 Device, for example:

```
# /usr/bin/mt -t /dev/rmt/c0t3d0DDS1n rew
# /usr/bin/dd if=/var/opt/ignite/data/Rel_B.11.23/uxinstlf_tape \
  of=/dev/rmt/c0t3d0DDS1n obs=2k
# /usr/bin/dd if=/var/opt/ignite/archives/Rel_B.11.23/<hostname>.gz \
  of=/dev/rmt/c0t3d0DDS1n obs=10k
# /usr/bin/mt -t /dev/rmt/c0t3d0DDS1n rew
```

11) Completed a bootable tape. When installing from it, you will receive the "Welcome" screen of the Cold Installation process. You can also change system parameters like file system sizes just as in any other type of Ignite-UX recovery.

Creating a Bootable Make_net_recovery DVD-ROM

Note: The make_net_recovery image must be 4.0 Gigs or smaller in size. This is a CDFS limitation.

The script `make_opticaldisc_recovery` can be found in the directory `/opt/ignite/data/scripts/examples/`.　It is designed to create a make_net_recovery image including vg00, then using the DVD- RW drive on the Ignite server directed to, burn the image as a bootable recovery DVD using the Ignite server's DVD-RW drive.

Detailed usage information is available via

```
# make_opticaldisc_recovery -?
```

Additional information is located at the start of the script.

Customized Creation of Bootable CD/DVD Media

The `make_media_install` script greatly simplifies the creation of custom bootable CD/DVD media. With one simple command line a CD/DVD can be created. Additionally, `make_media_install` can write golden archives to a bootable DVD.

The `make_media_install` script was introduced with Ignite-UX version C.6.2.241 to simplify the creation of bootable media. This script can be used to replace the instructions for building installation CDs and DVDs in the *Ignite-UX Administration Guide*.

All HP-UX 11i v2 and HP-UX 11i v3 bootable CD/DVDs created with `make_media_install` support both Itanium®-based and PA-RISC boot.

The script can be found at `/opt/ignite/data/scripts/examples/make_media_install`. Detailed usage information is available via

```
# make_media_install -?
```

Additional information is located at the start of the script.

This white paper assumes the system running `make_media_install` has a CD or DVD writer. The `make_media_install` script will automatically write the `.iso` image (default file name is `image.iso`) to the CD/DVD. If there is no writable CD/DVD available, the script will halt with a message similar to

```
:-[ LOAD TRAY failed with SK=5h/ASC=24h/ACQ=00h]: I/O error
```

and the .iso file will remain in the iso_directory specified with the `-m` option. Ensure there is enough disk space in the `iso_directory` to hold the `.iso` image.

Two-Step Recovery CD/DVD

Two-step media recovery using a bootable CD/DVD is necessary to restore from tapes created with the Ignite-UX command **make_tape_recovery** on certain Itanium-based systems that do not support direct tape boot. See the section regarding tape recovery with no tape boot support in the *Ignite-UX Administration Guide* for more information on two-step media recovery.

Two-step media recovery requires the version of Ignite-UX on the tape, on the bootable CD/DVD, and on the system creating the CD/DVD media to be identical. If you do not have a matching Operating Environment DVD, the `make_media_install` script can be used to easily create a bootable CD/DVD with the correct Ignite-UX version.

Example *Create HP-UX 11i v3 bootable CD/DVD media for two-step media recovery*

On a system with a CD/DVD writer and the same version of Ignite-UX as on your tape, execute the following command (*iso_directory* is the target directory for the *.iso* media file and the –r option specifies the release, such as *B.11.23* or *B.11.31*):

```
# make_media_install –r B.11.31 –m iso_directory
```

Golden Archive DVD

Golden Archive media can be built for PA-RISC systems, Itanium-based systems, or both since the bootable DVD created with `make_media_install` on HP-UX 11i v2 or 11i v3 will support boot for either architecture. The golden archive, however, can only be installed on a system matching the architecture type it was created from.

The `make_media_install` script will generate impact statements for you, using either the –l command line option or the default *$ImpactLevelDefault*. See the start of the script for more information.

The following examples write golden archives created with the `make_sys_image` command to DVD.

Note: Large golden archives may not fit on a DVD. The image.gz file is limited to 4GB in size due to CDFS limitations. For more information, see the sections FILE SIZES and IMAGE SIZE at the start of the `make_media_install` script.

Example: *Put an Itanium-based HP-UX 11i v3 golden archive on a DVD*

On a system with a DVD writer, execute the following commands. (The `iso_directory` is the target directory for the `.iso` media file. The `-r` option specifies the release – valid values for Itanium-based systems are B.11.23 and B.11.31. The `-o` option specifies the hardware architecture - the only valid value for an Itanium-based system is **IA**.)

```
# mkdir /var/opt/ignite/media/pseudo_root/archive

# cp goldenarchive.gz /var/opt/ignite/media/pseudo_root/archive

# make_media_install –r B.11.31 –o IA –a goldenarchive.gz \

–m iso_directory
```

Example: *Put a PA-RISC HP-UX 11i v2 golden archive on a DVD*

On a system with a DVD writer, execute the following commands. (The `iso_directory` is the target directory for the `.iso` media file. The `-r` option specifies the release, such as B.11.11, B.11.23, or B.11.31. The `-o` option specifies the hardware architecture – valid choices on a PA-RISC system are: **32**, **64v**, or **64w**.)

```
# mkdir /var/opt/ignite/media/pseudo_root/archive

# cp goldenarchive.gz /var/opt/ignite/media/pseudo_root/archive

# make_media_install -r B.11.23 -o 64w -a goldenarchive.gz \
-m iso_directory
```

Example: *Put two HP-UX 11i v2 golden archives, one Itanium-based and one PA-RISC, on a DVD*

The Itanium-based golden archive can only be installed on another Itanium-based system. Similarly, the PA-RISC golden archive can only be installed on another PA-RISC system. The DVD will be able to boot either type of architecture.

On a system with a DVD writer, execute the following commands. (The file suffixes `.pa.gz` and `.ia.gz` replace the `make_media_install -o` option. The `iso_directory` is the target directory for the `.iso` media file. The `-r` option specifies the release, such as B.11.23, or B.11.31.)

```
# mkdir /var/opt/ignite/media/pseudo_root/archive

# cp PAgoldenarchive.pa.gz /var/opt/ignite/media/pseudo_root/archive

# cp IAgoldenarchive.ia.gz /var/opt/ignite/media/pseudo_root/archive

# make_media_install -r B.11.23 -a PAgoldenarchive.pa.gz \
-a IPgoldenarchive.ia.gz -m iso_directory
```

Additional information

Ignite-UX Administration Guide:

Ignite-UX and vPars: To use Ignite-UX with HP-UX Virtual Partitions (vPars) refer to HP-UX Virtual Partitions Administrator's Guide