# Chapter 8
# -
# Ignite-UX

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# Overview

Ignite-UX …

- primarily is an installation tool for HP-UX 10.x or 11.x systems. The Ignite-UX clients can be installed from software depots containing the Core OS, patches and applications. These depots must not necessarily be placed onto the Ignite-UX server, any system can be used as the depot server.
- can be used for cloning systems. A 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 your system.
- can be used to create your own installation media. You can create bootable tapes and CD-ROMs by placing a LIF (Boot) Header onto the media.
- can be used to back up and restore the root volume group (vg00).
  With `make_tape_recovery` and `make_net_recovery` volume groups (VGs) other than the vg00 can be recovered as well. However, under normal circumstances, these VGs should be backed up using other backup tools , for example `fbackup`.
- 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 some documents at `/opt/ignite/share/doc`.

# Obtaining Ignite-UX

For an Ignite-UX server running HP-UX 11.0 or 11i, obtain Ignite-UX version B.x. An Ignite-UX B.x server can install HP-UX 10.x and 11.x/11i OS and applications on Ignite-UX clients.

For an Ignite-UX server running HP-UX 10.x, obtain Ignite-UX version A.x. An Ignite-UX A.x server can only install HP-UX 10.x clients.

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

## Application CD-ROM/DVD

This CD is supplied with HP-UX 10.x and 11.0 OS media

## HP-UX 11i Core OS CD/DVD 1

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

### HP's Software Depot

The software depot is located at http://www.software.hp.com/products/IUX/download.html

You may download one or more of the individual Ignite-UX bundles or choose the entire product.

**Example:** Your Ignite-UX server is running HP-UX 11.00, your Ignite-UX clients run HP-UX 11.00 and 11.i. You will have to download the Ignite-UX B-version selecting both bundles "download ignite11_11.00" and "download ignite11_11.11" or selecting the entire product "download ignite11_ALL".

### ftp

The access is "blind"; that means the `ls` command is not available in the `/ftp` directory.

```
# /usr/bin/ftp www.software.hp.com
     login: anonymous
     passwd: email_address
     ftp> cd /dist/swdepot
     ftp> bin
     ftp> get file_name.tar
```

file_name choices for 10.20 server/systems:
`ignite_10.01.tar, ignite_10.10.tar, ignite_10.20.tar, ignite_all.tar`

file_name choices for 11.0/11i server/systems:
`ignite11_10.01.tar, ignite11_10.10.tar, ignite11_10.20.tar, ignite11_11.00.tar, ignite11_ALL.tar`

## Ignite-UX Mailing Lists

### Ignite-UX 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

# 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:** 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 CD

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

```
# /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, you can 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 you only want 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 CD1

To install Ignite-UX, you need to mark one of the Ignite-UX filesets or the complete bundle

B5725AA for installation in the software tab after choosing the Advanced Installation screen.

# 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
```

Look up if the `/etc/exports` file already has 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 you want 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 you want 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 you want to see the client User Interface for this installation. If you have a server configured, you can have the choice 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 you reserved an IP, only the client with the corresponding MAC address can be booted with this IP. You also can 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
    15.1.53.181:0x08000969DE78::reserve
```

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

Example /etc/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.

### Setting up a Boot Helper on HP-UX 10.x and 11.x Systems

If the client is not in the same subnet as the Ignite-UX server and the clients need to be booted from the network (the client is currently not running HP-UX 9.x or later), a boot helper needs to be installed. The boot helper must be on a HP-UX system within the subnet of the Ignite-UX client.
**Note:** For setting up a boot helper on 9.x systems, please refer to the Ignite-UX Admin Guide.

**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
```

Now, 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"*.

## Useful Tips Based on Practical Experience

- Everything has 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 your own 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://www.software.hp.com/products/IUX/docs.html, 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 regarding this issue. Check the `/etc/exportfs` and `/etc/inetd.conf` for correct settings. Often the

`/etc/exports` file states `anon=-2` instead of `-anon=2`

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

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

- When changing config files, you should always check them with:

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

  Also check the 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 you have accidentally booted a client:

  1) Stop the boot process and boot into Single User Mode:

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

  2) Boot the hpux kernel:

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

  3) Correct the AUTO file

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

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

- If you have problems booting from a boot server, try following:

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

  You now can see which server wrongly answers the boot request. Or do a

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

  on the Ignite-UX server to see if maybe there isn't any unassigned IP available for the client.

- If you are using different DDS drives for backup and recovery, you should always 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:

  1) 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
  ```

  2) 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 you can't boot the client either from hard disk or from network, you can create a bootable tape which will then contact the next available Ignite-UX server.

  a) 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 blocksize of 2k as well as check that the correct Ignite-UX server IP is set with `# /opt/ignite/bin/instl_adm –d !`

  b) 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. You have to increase the `PE size` for larger hard disks.

- You can also write a golden system image onto tape if you have space problems:

  ```
  # /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 you run `make_sys_image`, 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).

**VxVM disk groups is not included:**

Up to Ignite-UX version B.3.7, the disk groups managed by VERITAS Volume Manager (VxVM) cannot be included in the Ignite-UX archive. If they are included, an error will occur. Those disk groups will be left undisturbed and re-integrated to the system after the recovery is complete.

**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`.

# Ignite-UX System Recovery Tools - make_recovery

## Overview

Must be run via command line on the system being backed up and writes to a local tape device.

Creates a bootable recovery (install) tape, which is customized for your machine.

The system recovery tape contains a boot image made by `make_medialif`, a system configuration file produced by `save_config` and a tar archive of the files on your root disk or root VG.

Restricted to vg00 and VGs that contain `/usr`.

**Note:** `make_recovery` was replaced by `make_tape_recovery` and is obsolete since Ignite-UX version A.3.4/B.3.4. It is recommended to use `make_tape_recovery` instead of `make_recovery`.

## Command Line Examples

**Backing up only the core OS using the default device file /dev/rmt/0mn**

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

Only the core OS will be backed up. The minimum core OS consists of `/stand`, `/sbin`, `/dev`, `/etc` and subsets of `/usr`, `/opt` and `/var` that are required during the install process.

**Backing up the complete root VG using the default device file /dev/rmt/0mn**

```
# /opt/ignite/bin/make_recovery –Av
```

-A: The complete root VG (vg00) will be backed up. If /usr is not in the VG, the entire VG on which /usr resides is also archived. Only disks in the root VG and any VG containing /usr will be reinitialized during a system recovery. All other disks and volumes will be left undisturbed and are brought back online after the recovery is complete.

-v: Verbose, the logging can be seen on the display

**Backing up the complete root VG using a non-default tape device file**

```
# /opt/ignite/bin/make_recovery -Av -d /dev/rmt/c0t1d0BESTn
```

-d: Destination, 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 http://www.software.hp.com/products/IUX/docs.html.

**Backing up the root VG to change the system configuration**

```
# /opt/ignite/bin/make_recovery -Av -i
```

-i: If you want to change the system configuration, use this option to automatically change into the interactive mode when later installing from tape. If not used, the non-interactive mode will have to be interrupted with the <return> key within 10 seconds at the beginning of the non-interactive mode.

**Using make_recovery in preview mode**

```
# /opt/ignite/bin/make_recovery –Av –p
```

-p: The following files will be created which can be edited before presuming the tape creation:

/var/opt/ignite/recovery/makrec.append
You can add user specific files to the tape archive here.

/var/opt/ignite/recovery/arch.include
This file determines which files will be included in the tar archive.
Note: Only delete user specific files as deleting other system files can cause corruption of the archive.

/var/opt/ignite/recovery/config.recover
Here, you can change your system configuration like lvol sizes, etc.

After making the desired changes, you can use the –r option to resume the tape creation based on the changes you made.

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

## Verifying the make_recovery tape

**Looking up the log files at**

| | |
|---|---|
| `/var/opt/ignite/logs/makrec.log1` | progress and error log file |
| `/var/opt/ignite/logs/makrec.log2` | 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
```

**Checking the tar archive**

```
# /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**

```
# /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 filename2
```

## Restoring from a make_recovery tape

Please see *"Restoring from a make_tape_recovery tape"*

# 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 vg00, other VGs could be backed up as well.
**Note:** This is not recommended because Ignite-UX is not an Backup Tool. Backup other VGs with other backup utilities such as `fbackup`, `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...>`

Then start the Tape Recovery Archive Creation:

Click on the client icon and select `<Actions> <Create Tape 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_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, they 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 you of the different possibilities.

### Backing up only essential core OS files using the default device file /dev/rmt/0mn

```
# /opt/ignite/bin/make_tape_recovery
```
or
```
# /opt/ignite/bin/make_tape_recovery -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 backed up. `/opt/ignite/recovery/mnr_essentials` lists the files and directories that are considered essential.

### Backing up the complete root VG using the default device file /dev/rmt/0mn

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

or

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

`-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.

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

**Backing up the complete root VG using a non-default device file**

```
# /opt/ignite/bin/make_tape_recovery -Av -a c0t1d0BESTn
```

or

```
# /opt/ignite/bin/make_tape_recovery -Av -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 http://www.software.hp.com/products/IUX/docs.html.

**Backing up 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 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.

**Backing up 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 you to select which files and directories are to be included in the recovery archive.

**Note:** better start directly from the Ignite-UX server. If you use it anyway, 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!

**Backing up the root VG to change the system configuration**

```
# /opt/ignite/bin/make_tape_recovery -Av –I
```
or
```
# /opt/ignite/bin/make_tape_recovery -Av -I -s <Ignite_server>
```

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

**Using make_tape_recovery in preview mode**

```
# /opt/ignite/bin/make_tape_recovery -Av –p
```
or
```
# /opt/ignite/bin/make_tape_recovery -Av –p -s <Ignite_server>
```

`-p:` If the tape was created without stating an Ignite-UX server , the files will be located at `/var/opt/ignite/recovery/latest`.
If the 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`
This file list 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, you can use the `–r` option to resume the tape creation based on the changes you made.

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

## Verifying the make_tape_recovery Tape

**Looking up 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
```

**Checking the tar archive on the tape**

```
# /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**

```
# /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 filename2
```

## 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) Select no intervention with ISL.

5) 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:

```
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 ]`

Then select the option: `[ ] Advanced Installation`

5) Make any desired changes to the file systems, hostname, IP address, timezone, root password, DNS server, and gateway information.

6) Select `[ GO ]` to proceed with the installation.

# Ignite-UX System Recovery Tools - make_net_recovery

## Overview

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

Creates an archive on the Ignite-UX or another Archive Server (must be an NFS server).

Besides the vg00 other VGs could be backed up as well.
**Note:** This is not recommended because Ignite-UX is not a backup tool. Backup other VGs with other backup utilities such as fbackup, tar, etc.

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

## Large File Support for Archives Greater than 2GB

Specific support for large files is needed if archives greater than 2GB are to be created. To support NFS mount and network data transfer of large files, you will need to have NFS PV3 installed on both the client and server. If the client or server is running HP-UX 10.20, the Networking ACE patch (containing the NFS PV3 software) should be installed and updated with a patch cited in the Ignite-UX Release Notes. HP-UX 11.00 and later versions come with PV3 by default. The Ignite-UX Release Notes located at: http://www.software.hp.com/products/IUX/docs.html identify which patches are required for NFS support of archives greater than 2GB for HP-UX 10.20, 11.00 and later. You may also need to download the latest `gzip` Version from http://hpux.asknet.de/hppd/hpux/Gnu/.

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

a) Without Online-JFS, you must create a new file system 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
```

b) 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 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, re-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 you put the archive onto another path or archive server, the directory used to store the archives must be 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

**Backing up 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.

**Backing up 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.

**Backing up 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.

**Backing up 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"*.

**Backing up 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:** better start directly from the Ignite-UX server. If you use it anyway, 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!

## Verifying the Network Recovery Archive

**Looking up 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 |

**Checking 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 you have problems installing for 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 “2002-03-12,09:00”

### Creating the LIF header (Boot Header)

```
# /usr/bin/cd /var/opt/ignite/clients/sys1/recovery/2002-03-12,09:00
# /opt/ignite/bin/make_medialif \
  -f system_cfg -f control_cfg -f archive_cfg \
  -C "2002-03-12,09:00 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)!

**Example:** The mirror disk is `/dev/dsk/c1t6d0`.

Make sure the disk is removed from the root volume group.

```
# /usr/sbin/vgreduce /dev/vg00 /dev/dsk/c1t6d0
```

Create the Boot Header on the mirrored disk.

```
# /usr/sbin/pvcreate -f -B /dev/rdsk/c1t6d0
```

Add the mirrored disk back to the group.

```
# /usr/sbin/vgextend /dev/vg00 /dev/dsk/c1t6d0
```

Copy the boot area to the disk.

```
# /usr/sbin/mkboot -l /dev/rdsk/c1t6d0
# /usr/sbin/mkboot -a \"hpux -lq\" /dev/rdsk/c1t6d0
```

Allocate the mirrors. Mirrors must be allocated for all logical volumes that were previously mirrored.

```
# /usr/sbin/lvextend -m 1 /dev/vg00/lvol1 /dev/dsk/c1t6d0
# /usr/sbin/lvextend -m 1 /dev/vg00/lvol2 /dev/dsk/c1t6d0
# /usr/sbin/lvextend -m 1 /dev/vg00/lvol3 /dev/dsk/c1t6d0
...
```

Update the BDRA and LABEL file.

```
# /usr/sbin/lvlnboot -r /dev/vg00/lvol3
# /usr/sbin/lvlnboot -b /dev/vg00/lvol1
# /usr/sbin/lvlnboot -s /dev/vg00/lvol2
# /usr/sbin/lvlnboot -d /dev/vg00/lvol2
```

# 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 10.20 workstation installation will be created.

Please insert the HP-UX 10.20 Core-OS CD-ROM for workstations (700 systems). The depot will be named `core_700` and will be created at `/var/opt/ignite/depots/Rel_B.10.20`.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 -r B.10.20 -a 700
```

or

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 \
  -d /var/opt/ignite/depots/Rel_B.10.20/core_700
```

***Note:*** If you want to create an HP-UX 10.20 depot on an 11.x Ignite-UX server, you must additionally use the `-x layout_version=0.8` option.

If you would like to create a depot for an HP-UX B.10.20 server, please specify `-a 800` or use the `-d` option to specify `core_800`.

**Example 2:** A disk depot for an HP-UX 11.00 installation will be created.

Please insert the HP-UX 11.00 Core-OS CD-ROM. The depot will be named `core` and will be created at `/var/opt/ignite/depots/Rel_B.11.00`.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t2d0 -r B.11.00
```

or

```
# /opt/ignite/bin/ make_depots -s /dev/dsk/c1t2d0 \
  -d /var/opt/ignite/depots/Rel_B.11.00/core
```

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

Please insert the first of the two HP-UX 11i Core-OS CD-ROMs in the CD-ROM drive. The depot will be named `mcoe_core` and will be created at:
`/var/opt/ignite/depots/Rel_B.11.11.`

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c2t3d0 \
  -d /var/opt/ignite/depots/Rel_B.11.11/mcoe_core
```

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

## Creating a Support Plus Patch Bundle Depot

Because the SupportPlus CD-ROM contains not only one, but several depots in form of patch bundles, the CD-ROM must be mounted first. If the mountpoint `/SD_CDROM` does not yet exist, create it with `mkdir`. Mount the SupportPlus CD to `/SD_CDROM`. To find out witch depots are available for installation, you can use `# ls /SD_CDROM`.

**Example 1:** A support plus patch bundle depot for an HP-UX 10.20 workstation installation will be created.

```
# /opt/ignite/bin/make_depots -s /SD_CDROM/XSW700GR1020 \
  -d /var/opt/ignite/depots/Rel_B.10.20/XSW700GR1020
```

***Note:*** If you want to create HP-UX 10.20 depots on an 11.x Ignite-UX server, you must additionally use the `-x layout_version=0.8` option.

**Example 2:** A support plus patch bundle depot for an HP-UX 11.00 installation will be created.

```
# /opt/ignite/bin/make_depots -s /SD_CDROM/QPK1100 \
  -d /var/opt/ignite/depots/Rel_B.11.00/QPK1100
```

**Example 3:** A support plus patch bundle depot for an HP-UX 11i-installation will be created.

```
# /opt/ignite/bin/make_depots -s /SD_CDROM/GOLDQPK11i \
  -d /var/opt/ignite/depots/Rel_B.11.11/GOLDQPK11i
```

## Creating an Individual Patch Depot

**Example**: individual patches for HP-UX 11.00 were downloaded to `/tmp/patch_download`.

1) Unpacking the patches in `/tmp/patch_download`.

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

2) 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
```

3) Creating the individual patch depot.

```
# /usr/bin/mkdir /var/opt/ignite/depots/Rel_B.11.00/my_patches
# for i in PH*.depot
> do
> /usr/sbin/swcopy -s ${PWD}/$i \* @   \
  /var/opt/ignite/depots/Rel_B.11.00/my_patches
> done
```

**Note:** If you want to use swcopy for HP-UX 10.20 depots on a 11.x Ignite-UX server, you must additionally use the `-x layout_version=0.8` option.

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

```
# /usr/sbin/swlist -d @ /var/opt/ignite/depots/Rel_B.11.00/my_patches
```

5) 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 11.00 Patches" \
  /var/opt/ignite/depots/Rel_B.11.00/my_patches
```

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

```
# /usr/sbin/swlist -d @ /var/opt/ignite/depots/Rel_B.11.00/my_patches
```

To display the patches of this bundle, use

```
# /usr/sbin/swlist -l product \
  -d @ /var/opt/ignite/depots/Rel_B.11.00/my_patches
```

7) 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_8376` from the patch depot which was previously named `individual_patches` via the `-n` option.

```
# /usr/sbin/swremove -d individual_patches.PHKL_8376 \
  @  /var/opt/ignite/depots/Rel_B.11.00/my_patches
```

## Special Handling of Patch, ACE and HWE Installations

For issues regarding ...
- Avoiding Backup Patch Files
- Avoiding Problems With Superseded Patches
- Using Ignite-UX with Additional Core Enhancements (ACE) and Hardware Extensions (HWE)

...please see the Ignite-UX Admin Guide at
http://www.software.hp.com/products/IUX/docs.html

## Creating an Application Depot

**Example 1:** Copying an application from one of the application CDs.

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 B3691AA_TRY \
  @ /var/opt/ignite/depots/Rel_B.11.00/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.11.00/my_applications` will be copied.

```
# /usr/sbin/swcopy -s host1:/my_depots/depot1 \*  \
  @ /var/opt/ignite/depots/Rel_B.11.00/my_applications
```

***Note:*** If you want to use `swcopy` for HP-UX 10.20 depots on a 11.x Ignite-UX server, you must additionally use the `-x layout_version=0.8` option.

## 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 get 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.11.00
```

**Example 2:** Creating Config Files for all SD-UX depots located at `/my_depots/Rel_B.11.00`

```
# /usr/bin/cd /my_depots/Rel_B.11.00
# for i in *
> do
> /opt/ignite/bin/make_config -s ${PWD}/$i  \
  -c /var/opt/ignite/data/Rel_B.11.00/$i.cfg
> done
```

**Example 3:** Creating a Config File for one SD-UX Depot located on another system at `/my_depots/Rel_B.11.00/core`

```
# /opt/ignite/bin/make_config -s host1:/my_depots/Rel_B.11.00/core \
  -c /var/opt/ignite/data/Rel_B.11.00/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.11.00/my_patches \
  -c /var/opt/ignite/data/Rel_B.10.20/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.11.00/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.11.00/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.11.00/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.11.00/core.cfg` into the `/var/opt/ignite/INDEX` file for the cfg clause `"HP-UX B.11.00 Default"`.

```
# /opt/ignite/bin/manage_index -a -f \
  /var/opt/ignite/data/Rel_B.11.00/core.cfg -c "HP-UX B.11.00 Default"
```

**Example 2:** adding the required config files manually to the `/var/opt/ignite/INDEX` file for the cfg clause `"HP-UX B.11.00 Default"`.

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

        cfg "HP-UX B.11.00 Default" {
              description "This selection supplies a HP-UX B.11.00
        default installation"
              "/opt/ignite/data/Rel_B.11.00/config"
              "/opt/ignite/data/Rel_B.11.00/hw_patches_cfg"
              "/var/opt/ignite/data/Rel_B.11.00/core.cfg"
              "/var/opt/ignite/data/Rel_B.11.00/XSWGR1100.cfg"
              "/var/opt/ignite/data/Rel_B.11.00/individual_patches.cfg"
              "/var/opt/ignite/data/Rel_B.11.00/my_applications.cfg"
              "/var/opt/ignite/config.local"
        }
```

## Modifying/Adding Depots

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

## Example 1 - Creating SD-UX Depots for an HP-UX 11.00 Installation

1) Look up the device file for the CD-ROM 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 HP-UX 11.00 Core-OS CD, but do not mount it. Then create the Core Os depot.

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t1d0 -r B.11.00
```

or

```
# /opt/ignite/bin/make_depots -s /dev/dsk/c1t1d0 \
  -d /var/opt/ignite/depots/Rel_B.11.00/core
```

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

3) Insert the Support Plus CD and mount it at `/SD_CDROM`.

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

4) Create the General Release Patch depot:

```
# /opt/ignite/bin/make_depots -s /SD_CDROM/QPK1100 \
  -d /var/opt/ignite/depots/Rel_B.11.00/QPK1100
```

5) 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
```

6) Create config files for the depot at `/var/opt/ignite/data/Rel_B.11.00`.

```
# /opt/ignite/bin/make_config -r B.11.00
```

If you have not used the `/var/opt/ignite/data/Rel_B.11.00,` you must specify the config files individually:

```
# /opt/ignite/bin/make_config -v \
  -s host1:/var/opt/ignite/depots/Rel_B.11.00/core \
  -c /var/opt/ignite/data/Rel_B.11.00/core.cfg


# /opt/ignite/bin/make_config –v \
  -s host1:/var/opt/ignite/depots/Rel_B.11.00/QPK1100 \
  -c /var/opt/ignite/data/Rel_B.11.00/QPK1100.cfg
```

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

Copy the cfg section of `"HP-UX B.11.00 Default"` completely and rename the new section as you like, e.g. `"HP-UX B.11.00 my installation"` and use following scripts:

```
cfg "HP-UX B.11.00 Default" {
        description "HP-UX B.11.00 my installation"
        "/opt/ignite/data/Rel_B.11.00/config"
        "/opt/ignite/data/Rel_B.11.00/hw_patches_cfg"
        "/var/opt/ignite/data/Rel_B.11.00/core.cfg"
        "/var/opt/ignite/data/Rel_B.11.00/QPK1100.cfg"
```

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

8) Check the `INDEX` file with:

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

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

## Example 2 - Creating a CD-ROM SD-UX Depot

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

1) Look up the device file for the CD-ROM 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 CD and mount it at `/SD_CDROM`.

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

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

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

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_CDROM \
  -c /var/opt/ignite/data/Rel_B.11.00/core.cfg
```

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

Copy the cfg section of `"HP-UX B.11.00 Default"` completely and rename the new section as you like, for example `"HP-UX B.11.00 Custom"`.

Use following scripts:

```
cfg "HP-UX B.11.00 Default" {
        description "HP-UX B.11.00 my installation"
        "/opt/ignite/data/Rel_B.11.00/config"
        "/opt/ignite/data/Rel_B.11.00/hw_patches_cfg"
        "/var/opt/ignite/data/Rel_B.11.00/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

If the client system is running HP-UX 9.X or later, you can either use the bootsys(1M) command or perform a 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 9.X or later, the client has to be booted over the network. If the client is not in the same subnet as the Ignite-UX server, the client has to be booted from the boothelper. For more details on supported systems, please look up chapter *"Networking Issues"* in the Ignite-UX Release Notes at http://www.software.hp.com/products/IUX/docs.html.

Make sure that you have at least one booting IP available in the `/etc/opt/ignite/instl_boottab`, `/etc/bootptab` or via DHCP on the Ignite-UX server respectively the boot helper.
**Note:** The IP must be an unassigned IP!
If you do not have any unassigned IP's available and you 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 9.x or later.

5) Starting the Ignite-UX screen:

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

6) Booting the client using bootsys:

   If you have 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.

7) Starting the client installation:

   Right-click the client icon and choose `<INSTALL CLIENT> <New Install>`.

8) Configuring the client installation:

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

   Adjust any other parameters like selecting the boot disk, etc.

   For adding/removing Software to be installed, please go to the `<Software>` tab.

   At the `<System>` tab, you can adjust you system settings like 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 you have 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 up.

9) Starting the installation:

   Click on the the `< Go!>` button.

   You can look up the installation progress now via the log file.

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

**Note:** If you have already run an install session from the server, 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`.

You can now 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` : You can specify a configuration which is listed as a cfg section in the `/var/opt/ignite/INDEX` file. To find out which configuration is available, use:

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

## Booting the Client from the Network

**Note:** For booting older workstations please see the Ignite-UX Admin Guide at http://docs.hp.com/hpux/onlinedocs/B2355-90704/B2355-90704.html

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) If your network only has one Ignite-UX server available, enter:

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

   b) If you want to boot from a certain 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

   c) 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.

   d) 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.

3) Enter `n` when asked if you want to interact with IPL.

4) If the networking startup fails, press <Enter>
**Note:** This behavior is normal. Just enter the networking parameters now. The networking startup will always fails if you have not 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

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[]="0xfffff800"
```

3) Create the boot tape

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

4) Now you can boot from tape to contact the Ignite-UX server.

## Itanium Network BOOT using dhcp

### 1. Overview

Itanium systems behave differently than PA-RISC systems when booting via the network for installation with Ignite-UX. This document compares network boot between Itanium and PA-RISC systems and describes how to configure systems to allow Itanium systems to be booted.

### 2. PA-RISC overview

For PA-RISC systems, there are two alternatives for setting up a boot server:

1) `instl_bootd(1M)`, the boot protocol server included with Ignite-UX
and
2) `bootpd(1M)` the standard HP-UX internet boot protocol server.

A brief overview of setup and support includes:

**`instl_bootd`**

The `instl_bootd` boot server is included with the Ignite-UX product. This server is selected when a client is booted with the "`install`" keyword, for example:

```
BCH> boot lan install
```

The instl_bootd server uses HP specific ports (1067 and 1068) to communicate between server and client. HP firmware code supports searching for multiple servers, e.g.

```
BCH> search lan install
```

The `instl_bootd` server is started from `inetd(1M)` using an entry in `/etc/inetd.conf` that is similar to the following:

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

The `instl_bootd` daemon can be configured from the ignite user interface on the Ignite server, or by editing the `/etc/opt/ignite/instl_boottab` file by hand. This file provides a list of IP addresses used for installing clients. Each address can be either reserved for a specific PA-RISC client (by MAC address) or made available to the first client that requests an address.

For more details, see `instl_bootd(1M)` or the Ignite-UX Administration Guide.

**`bootpd`**

The `bootpd` boot server is part of the Core HP-UX operating system. This server is selected when a client is booted without the "`install`" keyword, for example:

```
BCH> boot lan
```

The `bootpd` server is both a DHCP and BOOTP protocol server and communicates using standard internet protocols for those ports (67 and 68). HP firmware on PA-RISC servers supports searching for or selecting from multiple servers, for example:

```
BCH> search lan
```

The `bootpd` server is started from `inetd(1M)` using an entry in `/etc/inetd.conf` that is similar to the following:

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

The `bootpd` server is configured using one of two configuration files. The `/etc/dhcptab` file includes DHCP configuration options and `/etc/bootptab` includes BOOTP configuration options.

For more details, see `bootpd(1M)` or the Ignite-UX Admin Guide.

### 3. Itanium overview and differences with PA-RISC

Itanium systems use standard internet protocols and firmware. An Itanium system may boot several different operating systems including HP-UX, Windows, and Linux.

Itanium sytems implement the *Intel Preboot Execution Environment (PXE)* specification. They communicate using only standard DHCP/BOOTP protocols (ports 67 and 68). Therefore the Ignite `instl_bootd` server is not used with Itanium systems because it runs on ports 1067/1068, only the HP-UX bootpd daemon can be used.

In addition to using only standard bootpd server, several capabilities available for PA-RISC are not currently available for Itanium systems:

1) **Anonymous clients**
   Use of `/etc/bootptab` is recommended for Itanium systems. Entries in this file are distinguished by MAC address. A entry must be made for each client, therefore it is not possible to set up a server to respond to any Itanium client.

2) **Selecting server**
   Capability similar to "`boot lan.<IP address>`" is not included at the firmware level. When multiple servers respond to a client boot request, it is indeterminate which one is selected.

This has important implications for customers who might currently have bootp servers that respond to PXE requests, they might interfere with the correct operation of Ignite-UX.

### 4. Itanium server setup using bootptab

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

1) 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).

2) Make sure `/etc/inetd.conf` is set up to start both the bootpd and tftpd daemons:

```
tftp  dgram udp wait root /usr/lbin/tftpd  tftpd /opt/ignite
/var/opt/ignite
bootps dgram udp wait root /usr/lbin/bootpd bootpd
```

If `tftpd` is already active on the system you are using please read the `tftpd` man page for information on how to add extra directories to the `tftpd` daemon.

3) Get the inetd server to reread its configuration file after any change to `/etc/inetd.conf` (`inetd -c`).

The above works, but has a few disadvantages compared to an PA-RISC client:

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

- Configuration of boot information differs between Itanium and PA-RISC clients.

### 5. 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

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:

1) Check `inetd`

- Check `/etc/inetd.conf` to make certain "`bootps`" and "`tftp`" entries have been uncommented. Make certain the "`tftp`" line contains `/opt/ignite` and `/var/opt/ignite` paths on the tftp line.
- 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` to make certain `inetd` was restarted, and that no bad messages are found. Check for messages from "`bootpd`" and "`tftpd`"

2) Check `bootpd`

- Check the `/etc/bootptab` entry. Make certain the MAC address matches 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.
- 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).

3) 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
```

**6. Itanium server setup to allow anonymous clients using dhcp**

This procedure has only been tested using bootp/dhcp environment provided with HP-UX, for other dhcp products you must consult the product documentation for information on how to setup a similar environment. HP does not provide support for 3rd party dhcp products.

Set up the bootp server to use a DHCP pool group to set up for anonymous clients.

1) Add an entry similar to the following entry in `/etc/dhcptab`:

```
DHCP_POOL_GROUP:\
    ba:\
    subnet-mask=255.255.248.0:\
    addr-pool-start-address=15.1.51.252:\
    addr-pool-last-address=15.1.51.252:\
    bf=/opt/ignite/boot/nbp.efi
```

The following is a brief explaination 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 |

2) Restart the `bootpd` server to pick up the changes.

This allowed the HP `bootpd` server to serve anonymous Itanium clients and perform a network boot. This does work however a potential issue/drawback with this approach is that `bootpd` will respond to any client that requests an IP address. This can cause other problems:

- The bootfile offered might not work for certain types of clients. PA-RISC clients, would also try to boot off this bootfile (unless there is some method to restrict the pool group).
- IP addresses may be given out to other devices beyond boot clients. For example, printers or other network devices.

The `bootpd` server has another mechanism that looks like it might almost help by restricting the types of clients that receive a BOOTP response, a dhcp device pool group. In particular, a DHCP device pool group will respond only to clients with a particular class-id and Itanium

clients all send the following class-id information:

```
class-id="PXEClient:Arch:xxxxx:UNDI:yyyzzz"
```

Unfortunately, this mechanism will not work with the current `bootpd` daemon. Here is why the device pool groups will not work at present:

The class-id is used both to restrict the types of clients that bootpd will respond, and is also sent along with the response. Having a class-id with "PXEClient" in the response causes the Itanium client to believe it is communicating with a PXE aware server. It doesn't quite get enough information along, so it sends to port 4011 (normally used by a proxy DHCP server in a PXE conversation). Communication then stops.

The above appears in KMINE as the customer viewable document KBNL00000383.

## Performing a non-interactive Ignite-UX Installation

**Note:** the client will be installed without any user interaction.

1) First you have to adjust the 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) Now edit this `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 net.

3) It is recommended to make further settings, because during the installation, you now cannot adjust any parameters like system name and IP address.
   **Note:** Do not forget to take them out of the configuration after performing the installation of the client. Additionally make sure that in the `/etc/opt/ignite/instl_boottab`, only the entry for the client to be installed is available. Also make sure that nobody else uses the Ignite-UX server while you have set these parameters!

   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 you have done 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 ok, edit the boot image

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

5) Before starting the non-interactive installation, you should have checked the used config files (for the Golden Image, SD-UX depots, etc.) before in interactive mode to see if they are working.

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.10.20 -s 1.2.3.4
```

`-f`: You also can 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. It also has to be exported via NFS.

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

You may check the image contents with:
# gzcat <hostname>.gz | pax –v | grep <file_name>

5) Copy the config files and edited them correspondingly. If you have used the `–s local` option you will have to copy the files from the Ignite-UX server, if Ignite-UX is not installed on the local system.

   For HP-UX 10.x copy `/opt/ignite/data/examples/core.cfg` to `/var/opt/ignite/data/Rel_B.10.20/core_700_archive.cfg`

   For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to `/var/opt/ignite/data/Rel_B.11.00/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.11.00"
   ```

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

   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"
   ```

   Get 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.11.00/<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
   ...
   ```

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

   ```
   cfg "HP-UX B.11.00 archive" {
           description "HP-UX B.11.00 archive"
           "/opt/ignite/data/Rel_B.11.00/config"
           "/var/opt/ignite/data/Rel_B.11.00/core_archive.cfg"
           "/var/opt/ignite/config.local"
   }
   ```

7) Check the `INDEX` file with:

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

8) 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.11.00 –ro,anon=2

# /usr/sbin/exportfs –av
```

9) 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) Then copy the config files and edited them correspondingly:

   For HP-UX 10.x copy `/opt/ignite/data/examples/core.cfg` to `/var/opt/ignite/data/Rel_B.10.20/golden_image_cd.cfg`

   For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to `/var/opt/ignite/data/Rel_B.11.00/golden_image_cd.cfg`

   Change following in the section `sw_source`:

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

   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"
```

   Get 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.11.00/<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
…
```

6) 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
```

8) Then create the boot (LIF) header for the tape. For example, create a LIF image based on /var/opt/ignite/data/Rel_B.11.00/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.11.00/config\
  -f /var/opt/ignite/data/Rel_B.11.00/core_archive.cfg\
  -l /var/opt/ignite/data/Rel_B.11.00/uxinstlf_tape
```

9) The next step would be to write the LIF header and the Golden Image onto tape. Therefore, you have to 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.11.00/uxinstlf_tape \
  of=/dev/rmt/c0t3d0DDS1n obs=2k
# /usr/bin/dd if=/var/opt/ignite/archives/Rel_B.11.00/<hostname>.gz \
  of=/dev/rmt/c0t3d0DDS1n obs=10k
# /usr/bin/mt -t /dev/rmt/c0t3d0DDS1n rew
```

10) Now you have created a bootable tape. If you install 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 you were used to.

## Creating a Bootable Golden System Image CD-ROM

**!!! 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) Then copy the config files and edited them correspondingly:

For HP-UX 10.x copy `/opt/ignite/data/examples/core.cfg` to `/var/opt/ignite/data/Rel_B.10.20/golden_image_cd.cfg`

For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to `/var/opt/ignite/data/Rel_B.11.00/golden_image_cd.cfg`

Change following in the section `sw_source`:

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

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"
```

Get 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.11.00/<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
...
```

6) 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
```

7) Then copy the config files and edited them correspondingly:

For HP-UX 10.x copy `/opt/ignite/data/examples/core.cfg` to `/var/opt/ignite/data/Rel_B.10.20/golden_image_cd.cfg`

For HP-UX 11.x copy `/opt/ignite/data/examples/core11.cfg` to `/var/opt/ignite/data/Rel_B.11.00/golden_image_cd.cfg`

Change following in the section `sw_source`:

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

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"
```

Get 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.11.00/<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) Now create the Boot (LIF) Header for the CD-ROM . For example, create a LIF image based on `/var/opt/ignite/data/Rel_B.11.00/golden_image_cd.cfg`. The LIF image will be named `uxinstlf_cd`. For further information please see the manpage of `make_medialif`.

```
# /opt/ignite/bin/make_medialif \
  -f /opt/ignite/data/Rel_B.11.00/config \
  -f /var/opt/ignite/data/Rel_B.11.00/golden_image_cd.cfg \
  -l /tmp/uxinstlf_cd
```

9) 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
```

10) Now copy the Golden Image into a `dd` file:

```
# /usr/bin/dd if=/dev/vg00/goldenimage of=/tmp/bootcd_hfs bs=1024k
```

11) Now the LIF Image has to be put in front of the Golden Image file:

```
# /opt/ignite/lbin/instl_combine -F /tmp/uxinstlf_cd \
  -C /tmp/bootcd_hfs
```

12) Now you can burn the Image onto CD-ROM. For this, you can use an CD Writer Utility "CDRecord" at ftp://ftp.fokus.gmd.de/pub/unix/cdrecord

```
# cdrecord -v speed=2 dev=1,5,0 /tmp/bootcd_hfs
```

The `dev` syntax depends on the bus, target, LUN – you can look up the values with:

```
# cdrecord –scanbus
```

If you want to test everything before while having the laser burner turned off, you have to call up `cdrecord` with:

```
# cdrecord -dummy -v speed=2 dev=1,5,0 /tmp/bootcd_hfs
```

13) The Golden Image CD should now be ready – install from it as it being a Cold Installation Medium – just boot from CD.

**Copying a bootable CD-ROM using UNIX**

1) To copy a CD-ROM, you can use for example the CD Writer Utility "CDRecord" at ftp://ftp.fokus.gmd.de/pub/unix/cdrecord.

Insert the original CD-ROM into the drive

```
# cdrecord -toc -dev=1,3,0
  first: 1 last 1
  track: 1 lba: 0 ( 0) 00:02:00 adr: 1 control: 4 mode: 1
  track:lout lba: 306565 ( 1226260) 68:09:40 adr: 1 control: 4 mode: -1
```

2) Then eventually insert the CD into a faster drive.

```
# /usr/bin/dd if=/dev/SD_CDROM of=/image/cdimage.raw bs=2k count=306564
```

**Note:** one number less! When doing the `dd` there shouldn't be any IO/Error. But there would be an error if you would state `306565`.

Insert the blanc disk omitting eject

```
# cdrecord -vv -eject -speed=2 -dev=1,3,0 /image/cdimage.raw
```

## Additional information

**Ignite-UX Administration Guide**
http://docs.hp.com/hpux/onlinedocs/B2355-90704/B2355-90704.html

**Ignite-UX and vPars**
If you like to use Ignite-Ux with HP-UX Virtual Partitions (vPars) refer to vPars chapter.