

Creating a bootable DVD from an Ignite (make_tape_recovery) tape

INTRODUCTION

First things first – I do not work for HP. HP has had absolutely nothing to do with the writing of this document. HP will not provide support if you have problems with the steps in this document.

This is a procedure I developed, based on much trial and error, which will allow you to take the information from an Ignite make_tape_recovery tape and create a bootable DVD. This DVD can then be used to recover a system. The DVD should work exactly like the make_tape_recovery tape. If you used the '-I' option, it will automatically boot to the Ignite menu. If you used the '-t' option, your custom title will be displayed.

This procedure is based on the steps outlined in the "Building an Installation DVD" section in chapter 8 of the *Ignite-UX Administrators Guide*. I recommend reading through this manual. If nothing else, read the "Building an Installation DVD" section before starting the procedure outlined here. The manual and steps I reference here are based on Ignite/UX C.6.2.241. I do not know if this will work with an earlier version of Ignite.

The Ignite-UX web site, with all software and documentation is:
<http://www.docs.hp.com/en/IUX/>

Cautions / Notes

Archive Size

In the *Ignite-UX Administrators Guide* they say that "Further, no file contained within the ISO image, including the archive created by make_sys_image in this step, can be greater than or equal to 2GB." HP refers to the make_sys_image archive, but in this document, this applies to the gzip archive we create in Step 1. Archives greater than 2GB do not work.

I have tried numerous things to get a gzip tar archive greater than 2GB to work. I have been unsuccessful so far.

If you create your archive and it is more than 2GB in size, you will need to go back and look at everything that is included on the make_tape_recovery tape. There really shouldn't be any non-OS file systems on the tape. If the archive is still too large, you may need to make use of the 'cleanup' utility to commit patches and delete some of the saved patches in the /var file system.

Now be aware that this limit applies only to the gzip tar archive we create. When you create the ISO image you combine the gzip tar archive and LIFIMAGE we create. So it is possible that the entire ISO image may be larger than 2 GB. This has not been a problem so far.

LIF Utilities

If you do create an ISO image that is larger than 2GB, you should be aware that the lif utilities (lifls, lifcp, etc.) **will not** work. Apparently, these utilities have problems with large files.

Once you create the DVD from the ISO file, it should boot without any problems.

Before You Start

Before you start, you need to make sure you have a file system created and mounted that is large enough for what we are doing. I would recommend a file system size of 10 GB. If you are going to try to create an image that will fill a 4.7 GB DVD, you will need at least double that amount of space ($4.7 \text{ GB} \times 2 = 9.4 \text{ GB}$). So 10 GB should be a good working area.

In my example, I will use the /var/ignite directory as my base directory. Other directories will be created under /var/ignite as we proceed.

In all of my examples, I will use /dev/rmt/0mn as the tape device. Be sure to substitute your appropriate tape device when needed.

The image I am creating here is from an HP-UX 11.11 system. I have used this procedure to create DVDs from make_tape_recovery tapes created on HP-UX versions 11.0, 11.11 and 11.23PI. If you are working on a different version of HP-UX, use the appropriate version numbers in the file names.

All of the machines I have tested this on are PA-RISC based machines. I am almost 100% certain that these steps will NOT work for Itanium systems. I don't have any Itanium systems available to me to test this with so consider this document to be PA-RISC compatible ONLY.

Now, on to the fun stuff!

Step 1 – Get the data off of the tape

Getting the data we need off of the tape is a 2-step process. We will first get the Boot LIF off the tape and then get the pax-archived data off.

We will first create a work directory under /var/ignite:

```
# cd /var/ignite
# mkdir work
```

Be sure your make_tape_recovery tape is in the tape drive and ready to go. I recommend setting the write-protect tab on the tape, just to be on the safe side.

To get the Boot LIF:

```
# cd /var/ignite/work
# mt -f /dev/rmt/0mn rew
# dd bs=8192k if=/dev/rmt/0mn of=B.11.11.lifimage
```

The 'bs=8192k' is very important here. If you use a different value, the LIF file we create could be invalid.

This will run for a few minutes. Once it is finished, you can check the lifimage file with:

```
# lifls -l B.11.11.lifimage
```

You should get output similar to the following:

```
# lifls -l B.11.11.lifimage
volume ISL10 data size 1017176 directory size 3 05/09/20 13:13:32
filename      type      start      size      implement  created
=====
ISL            -12800    16         242        0          05/09/20 13:13:32
AUTO          -12289    264         1           0          05/09/20 13:13:32
INDEX         BIN       272         1           0          05/09/20 13:13:32
CONFIG        BIN       273         36          0          05/09/21 16:48:57
HPUX          -12928    320        1024        0          05/09/20 13:13:32
FWWKAR6       BIN      1344         1           0          05/09/20 13:13:33
FWWKAR7       BIN      1352         1           0          05/09/20 13:13:33
FWWKAR8       BIN      1360         1           0          05/09/20 13:13:33
INSTALL       -12290    1368       68148       0          05/09/20 13:13:56
INSTALLFS     -12290    69520      49152       0          05/09/20 13:14:12
VINSTALLFS    -12290    69520      49152       0          05/09/20 13:14:12
WINSTALLFS    -12290    69520      49152       0          05/09/20 13:14:12
VINSTALL      -12290   118672     73768       0          05/09/20 13:14:34
WINSTALL      -12290   192440     83853       0          05/09/20 13:15:00
INSTCMDS      BIN      276296     30019       0          05/09/20 13:15:06
RECCMDS       BIN      306320     988          0          05/09/20 13:15:06
SYSCMDS       BIN      307312     77845       0          05/09/20 13:15:36
SCRIPTS       BIN      385160     43           0          05/09/20 13:15:36
VERSION       BIN      385208     1            0          05/09/20 13:15:36
PAD           BIN      385216     256          0          05/09/20 13:15:36
```

Now we need to get the pax archived data off of the tape. This process will create a gzip'ed tar archive of the data.

Before we begin, we need to create an archives directory under our current /var/ignite/work directory.

```
# cd /var/ignite/work
# mkdir archives
```

Now, we get the data off of the tape:

```
# cd archives
# mt -f /dev/rmt/0mn rew
# mt -f /dev/rmt/0mn fsf 1
# dd bs=8192k if=/dev/rmt/0mn | gzip | dd of=B.11.11_archive.gz
```

Again, the 'bs=8192k' is important. This is the size I have found works best and generates a valid gzip'ed tar archive.

This will run for a while, possibly a LONG while. The length of time depends on how large your VG00 is on the machine you created the make_tape_recovery tape on and how fast your tape drive is.

Once it is done, you can check the archive with the following command:

```
# gzcat B.11.11_archive.gz | tar -tvf -
```

You should get a listing of all the files in the archive. If you don't want to see the full list, do a CTRL-C to break out.

If the archive created above is larger than 2GB (2,147,483,648 bytes), you will need to recreate your make_tape_recovery tape so the archive is smaller. See the "Archive Size" section above for a bit more information.

We are finished with the tape. If you like, you can eject the tape so that you won't accidentally overwrite it.

```
# mt -f /dev/rmt/0mn offl
```

Step 2 – Modify the B.11.11.lifimage file

In order for our DVD to boot and for Ignite to be able to use the gzip'ed tar archive we just created, we must modify a portion of the LIF in the B.11.11.lifimage file.

First, we copy out the CONFIG portion of the LIF file:

```
# cd /var/ignite/work
# lifcp B.11.11.lifimage:CONFIG B.11.11.cfg
```

Now we must edit the B.11.11.cfg file and modify a few lines. So bring the file up in 'vi'.

```
# vi B.11.11.cfg
```

The first thing you need to look at is the very first line of the file. It should be something like:

```
cfg "HP-UX System Recovery"=TRUE
```

I have seen instances where the line comes out like:

```
g "HP-UX System Recovery"=TRUE
```

If that is the case with your file, just add the 'cf' back to the beginning of the line (without the single quotes, of course).

The next line we need to modify is:

```
archive_type = tar
```

We need to make it:

```
archive_type = gzip tar
```

This tells Ignite that the image we just created is a gzip'ed tar file. If we don't do this, the DVD we create will be useless.

The last line we need to modify is:

```
archive_path = "1"
```

You will see 2 lines that start with "archive_path" in this file. **It is only the 2nd line that we need to change.**

This line needs to be:

```
archive_path= "archives/B.11.11_archive.gz"
```

We are now done with this file, so save it and quit out of vi.

NOTE: If you have a system with lots of disks attached, you may get a "Line too long" error when attempting to open the B.11.11.cfg file with vi. If that is the case, you can accomplish the same thing with the following sed statements:

```
# sed 's/ tar/ gzip tar/' B.11.11.cfg > B.11.11.cfg1
# sed 's/"1"/"archives/B.11.11_archive.gz"/' B.11.11.cfg1 > B.11.11.cfg
# rm -f B.11.11.cfg1
```

Next, we need to copy the modified B.11.11.cfg file back into the B.11.11.lifimage file. But first, we need to rename the current CONFIG file within the B.11.11.lifimage file:

```
# lifrename B.11.11.lifimage:CONFIG CONFIG1
```

Then, copy the modified B.11.11.cfg back into B.11.11.lifimage:

```
# lifcp -r B.11.11.cfg B.11.11.lifimage:CONFIG
```

We are done with this, so now we can proceed to the next step.

Step 3 – Creating a ISO file

The next step, using mkisofs to create an ISO file, is taken directly from step 11 of the **Building an Installation DVD** section of **Chapter 8 – Creating Your Own Installation Media** in the *Ignite-UX Administrators Guide*. I have just modified the file paths to correspond to my requirements.

This is for PA-RISC based systems ONLY. I do not have an Itanium system to test this with, so I don't know how to make it work. There is a section in the above referenced manual for Itanium systems.

```
# cd /var/ignite/work
# /opt/ignite/lbin/mkisofs -D -R -U -max-iso9660-filenames \
    -eltorito-alt-boot -no-emul-boot -b B.11.11.lifimage \
    -o /var/ignite/B.11.11.iso /var/ignite/work
```

This will run for a few minutes, possibly less if you have a fast box with fast disks attached.

Next we need to run the `instl_combine` Ignite command to make sure the DVD will function correctly.

This is taken directly from step 12 of the **Building an Installation DVD** section of **Chapter 8 – Creating Your Own Installation Media** in the *Ignite-UX Administrators Guide*. I have just modified the file path to correspond to my requirements.

```
# /opt/ignite/lbin/instl_combine -C /var/ignite/B.11.11.iso
```

If you want to verify that the image is bootable you can do:

```
# lifls -l /var/ignite/B.11.11.iso
```

You should get output similar to what we got in Step 1 above.

We now have an ISO file that can be burned to a blank DVD.

In step 14 of the **Building an Installation DVD** section of **Chapter 8 – Creating Your Own Installation Media** in the *Ignite-UX Administrators Guide* there are instructions

on how to do this via the growisofs command, if you have a DVD+RW drive on your HP-UX system.

I have used the Roxio Easy CD Creator program to burn the DVDs without any problem. Just be sure to select the "Record CD from CD Image..." option. I am using version 5, so even though I am creating a DVD, it still says CD in the menu selection. If you have a more recent version, this may be different.

I have been using DVD+R media on an HP DVD+RW drive on my HP laptop. I do not know if DVD-RW drives and media will work or not. Unfortunately, I do not have the means to test that configuration.

Once you have created your DVD, use it like any other installation media. Put it in the DVD drive and boot from it. It should come up as if you were using the original make_tape_recovery tape.

Good luck.

APPENDIX

Creating a bootable DVD from an Ignite tape created on an HP-UX 10.20 system

I have used the procedure outlined in this document to create a bootable DVD from an Ignite `make_tape_recovery` tape that was created on an HP-UX 10.20 system.

The procedure is essentially the same. One caveat is that you must take the tape created on the HP-UX 10.20 system to an HP-UX 11.X system so that you can utilize the tools included with Ignite/UX C.6.2.241.

The only other difference in the procedure is that you must use an additional option when running the `instl_combine` command.

The command syntax you would use when creating the HP-UX 10.20 DVD is:

```
# /opt/ignite/lbin/instl_combine \  
-F /var/ignite/work/B.10.20.lifimage -C /var/ignite/B.10.20.iso
```