



Cloning Guidelines for Ignite-UX

Cloning with
Ignite-UX

Who Am I ?

Name: Rob Pais

Occupation: HP Response Center Engineer
Mission Critical Product Competency Center

Contact information: 770 795-6130 - phone
robert_pais@hp.com - email
robpais - Instant Message

Cloning with Ignite-UX

Ignite-UX is a tool designed to manage system deployment, configuration and system recovery.

It's primary use for system recovery is to recover *the same* system that the image was created on.

Cloning with Ignite-UX

Ignite-UX does have the ability to create customized, bootable install media and “golden images” of clients.

This makes it a good resource for cloning the configuration of one system to another.

There are several guidelines to follow when attempting to clone systems.

Guideline #1

The source and target systems should use the same install kernels.

Cloning with Ignite-UX

Because systems have different I/O backplanes, they require different drivers and libraries.

Ignite-UX uses 3 install kernels to accommodate these hardware differences. They are:

- INSTALL
- VINSTALL
- WINSTALL

Cloning with
Ignite-UX

INSTALL

The INSTALL kernel is used for systems that are capable of running 32 bit **OR** 32/64 bit Operating Systems. Also systems that have HSC, GSC and NIO backplanes. Some examples would be the **K, D, R, T** class systems and **legacy** systems like the **E, F, G, H and I** classes.

Cloning with
Ignite-UX

VINSTALL

The VINSTALL kernel is used for **V class** systems only. The V class has a PCI, Convex crossbar, backplane that uses a different driver for the bus adapter than any other system.

Cloning with
Ignite-UX

WINSTALL

The WINSTALL kernel is used for systems that are capable of running **ONLY** 64 bit Operating Systems. Also, systems that have PCI backplanes except the V class. Some examples would be the **Superdome, RP, N, L** and **A** class systems.

Where are the kernels?

The kernels are located in `/opt/ignite/boot` on the server and in the LIF file on a tape or CD.

When a system boots from the Ignite server or from a tape, Ignite will check the hardware to determine which kernel to use.

Cloning with Ignite-UX

Listing the kernels on a recovery tape:

```
# copy_boot_tape -u /dev/rmt/0mn -b -d /var/tmp
```

```
# lifls -l /var/tmp/bootimage|grep -i install
```

INSTALL	-12290	1248	37504	0	02/07/22	10:07:07
INSTALLFS	-12290	38752	35840	0	02/07/22	10:07:13
VINSTALLFS	-12290	38752	35840	0	02/07/22	10:07:13
WINSTALLFS	-12290	38752	35840	0	02/07/22	10:07:13
VINSTALL	-12290	74592	43324	0	02/07/22	10:07:20
WINSTALL	-12290	117920	48068	0	02/07/22	10:07:28

Guideline #2

The source system must have the required Hardware Enablement patches needed to build a bootable kernel on the target.

Cloning with Ignite-UX

Even systems that use the same install kernel, could require different patch levels to support their hardware. The Hardware Enablement patch bundles add functionality for things like:

- Processors
- Processor speeds
- I/O adapters
- I/O devices

Cloning with Ignite-UX

Which Hardware Enablement patch bundle does my system need?

There is information about the HWE patches and required OS revision online at:

- <http://docs.hp.com/hpux/hw/index.html> → Hardware manuals
- <http://docs.hp.com/hpux/os/11.0/index.html> → Release Notes
- <http://docs.hp.com/hpux/os/11i/index.html> → Release Notes
- http://software.hp.com/SUPPORT_PLUS → Support Plus CD info

Call the HP Response Center if the information still cannot be found.

Cloning with Ignite-UX

Hardware Enablement Patch Bundle (HWEnable11i) updated for June 2002

- Added support for the faster processors of the following servers:

rp5430 (**model** string: 9000/800/L1500-8X)

rp5470 (**model** string: 9000/800/L3000-8X)

rp7410 (**model** string: 9000/800/rp7410)

rp8400 (**model** string: 9000/800/S16K-A)

- Added support for I/O adapters:

A6825A PCI 1000Base-T

A6847A PCI 1000Base-SX

- Added support for I/O devices:

A6491A SC Disk System DS2300 (Ultra160 SCSI Disk Enclosure)

A6255A FC Disk System DS2405 (FibreChannel Disk Enclosure)

Guideline #3

When using a tape to clone with, the tape device on the source and target must be compatible.

Cloning with Ignite-UX

DDS

If the DDS tape device on the target system is unknown, a DDS1 device file can be made and used on the source system as follows:

```
# ioscan -fC tape # get the H/W Path
```

```
# mksf -H <H/W Path> -b DDS1 -n /dev/rmt/DDS1n
```

DDS1 format will ensure that the tape can be read on all DDS devices.

Cloning with Ignite-UX

DLT

If the DLT tape device on the target system is unknown, a DLT device file can be made and used on the source system as follows:

```
# ioscan -fC tape # get the H/W Path
```

```
# mksf -H <H/W Path> -b DLT62500_64 -n /dev/rmt/myDLTn
```

This format will ensure that the tape can be read on all DLT devices Supported on HP-UX. It is 20Gb, non-compressed DLT4000 format.

Cloning with Ignite-UX

Booting from DLT drives on HP-UX

DLT is attached to HP 9000 Enterprise servers via Fast-Wide Differential interface cards. DLT boot **WILL NOT** work when attached via single-ended SCSI. DLT boot **IS NOT supported** for systems that use NIO Fast-Wide Differential SCSI cards.

The matrix in the Ignite-UX [release notes, section 4.4](#) explains systems (by class) along with the bus types required for DLT to be recognized as a bootable media device.

Ignite-UX Cloning Utilities

Cloning Utilities

Ignite-UX offers two main options for replicating (cloning) systems.

The traditional Ignite-UX method makes use of **make_sys_image** to create an archive of the source system, followed by **manually modifying config** files to meet your needs. A much simpler (but less flexible approach) uses **make_net_recovery** or **make_tape_recovery**.

Cloning Utilities

make_sys_image

Using the traditional method of creating an archive with **make_sys_image** and then modifying Ignite-UX configuration files to reference the archive is very flexible, but somewhat time consuming. The end result gives you:

- Ability to install systems from network, tape, or CD-ROM from either an Ignite-UX server, or local clients.
- Ability to customize the process and tune it to accommodate many different situations.

make_sys_image (cont.)

- A "clean" system -- log files and most remnants specific to the source system are removed.
- A rebuilt kernel containing just the drivers needed by the target system's hardware.
- Ability to load additional software or patches on top of the system archive from an SD depot. This reduces the need to recreate the archive, and allows you to add support for new hardware that requires new patches, or drivers without making a new archive.

Cloning Utilities

make_sys_image (cont.)

/opt/ignite/data/scripts/make_sys_image:

LEVEL2_RESET='

/.profile

/etc/rc.config.d/hpetherconf

/etc/rc.config.d/hpfcgsc_lanconf

/etc/rc.config.d/hpfcmsconf

/etc/rc.config.d/netconf

/etc/rc.config.d/netdaemons

/etc/rc.config.d/namesvrs

/etc/rc.config.d/mailsvrs

/etc/rc.config.d/xfs

/etc/inittab

/etc/hosts

/etc/group

/etc/mail/sendmail.cw

/etc/netgroup

/etc/ntp.conf

/etc/vue/config

/var/adm/sw/security

Cloning Utilities

make_sys_image (cont.)

/opt/ignite/data/scripts/make_sys_image:

LEVEL2_NO_ARCHIVE='

/var/opt/ignite/local

/.sh*

/.rhosts

/configure3

/d_cfg_mnt_sb61

/dev/rmt/*

/dev/dsk/*

/dev/rdisk/*

/dev/floppy/*

/dev/rfloppy/*

/.sw/*

/etc/lvmtab

/etc/lvmconf

/etc/auto_parms.log

/etc/auto_master

/etc/auto.direct

Cloning Utilities

make_sys_image (cont.)

/opt/ignite/data/scripts/make_sys_image:

LEVEL2_NO_ARCHIVE='

/etc/auto.home

/etc/auto.update

/etc/dhcp*

/etc/exports

/etc/fstab

/etc/xtab

/etc/mnttab

/etc/ioctl.syscon

/etc/shutdownlog

/etc/ptydaemonlog

/etc/rc.log*

/etc/resolv.conf

/etc/vtdaemonlog

/etc/utmp

/etc/utmpx

/stand/build/*

Cloning Utilities

make_sys_image (cont.)

/opt/ignite/data/scripts/make_sys_image:

LEVEL2_NO_ARCHIVE='

/stand/vmunix*

/stand/*.prev

/tmp_mnt/*

/tmp

/var/adm/btmp

/var/adm/crash/*

/var/adm/inetd.sec

/var/adm/ptydaemonlog

/var/adm/rc.log

/var/adm/shutdownlog

/var/adm/vtdaemonlog

/var/adm/wtmp

/var/adm/cron/log

/var/adm/lp/*log

/var/adm/sw/sessions/*

/var/adm/sw/*log

Cloning Utilities

make_net_recovery and make_tape_recovery

The **make_tape_recovery** and **make_net_recovery** tools are designed to reproduce a system exactly the way it was at the time the snapshot was taken. These tools try to accommodate for cloning in various ways:

- You can change hostname/networking information.
- You can make changes to disks and file systems during the recovery.
- Detect hardware model changes and rebuild the kernel.

make_net_recovery and make_tape_recovery (cont).

Reproducing a system exactly as it was may be undesirable for the following reasons:

- Hardware instance numbers for devices that exist at the same paths between systems have the instance numbers preserved from the original system. This can cause non-contiguous assignments in instance numbers. Which is usually only a cosmetic problem.
- Many files that are specific to the system the recovery image was taken from, are preserved. This includes many log files, etc.
- When the kernel is rebuilt (in the "cloning" situation), drivers may be added as needed by the hardware, but unused drivers will not be removed.

Using make_net_recovery to clone

The recovery configurations and archives created by **make_net_recovery** are stored in a separate directory on the Ignite-UX server for each client. Using the configuration and archive created by **make_net_recovery** on one system to install a different system involves manually copying some configuration files, and allowing NFS access to the source system's archive. The basic steps are as follows:

Using make_net_recovery to clone (cont.)

- Use **make_net_recovery** to create a system recovery archive of the source system.
- Login to the Ignite-UX server.
- Create a directory for the target on the Ignite server by going to “Actions → Add new client for recovery”.
- Copy the CINDEX and config files from the source to the target.
- Give the target system NFS access to the archive.
- Boot the target from the Ignite server.
- Change the networking information in the “System” tab.

The complete steps are at

<http://www.software.hp.com/products/IUX/faq.html#clone>

Using make_tape_recovery

`make_tape_recovery` can be ran from the Ignite-UX server or locally on the source system. If `make_tape_recovery` is ran from the server, the archive is written to the local tape drive on the source system, not the server. Future enhancements of Ignite-UX will allow writing to a remote tape drive.

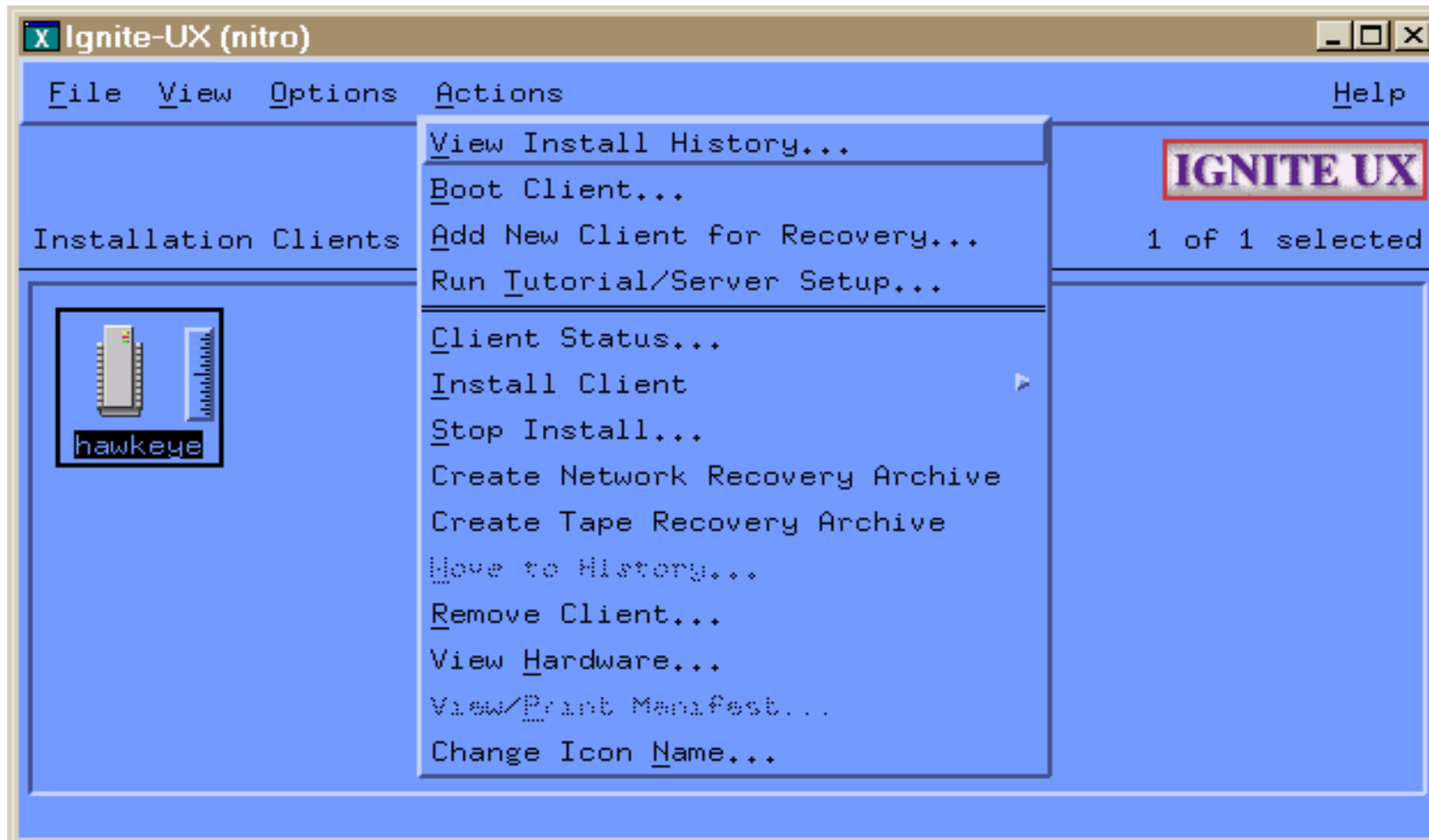
`make_tape_recovery` can be ran in interactive or non-interactive mode.

Using make_tape_recovery (cont.)

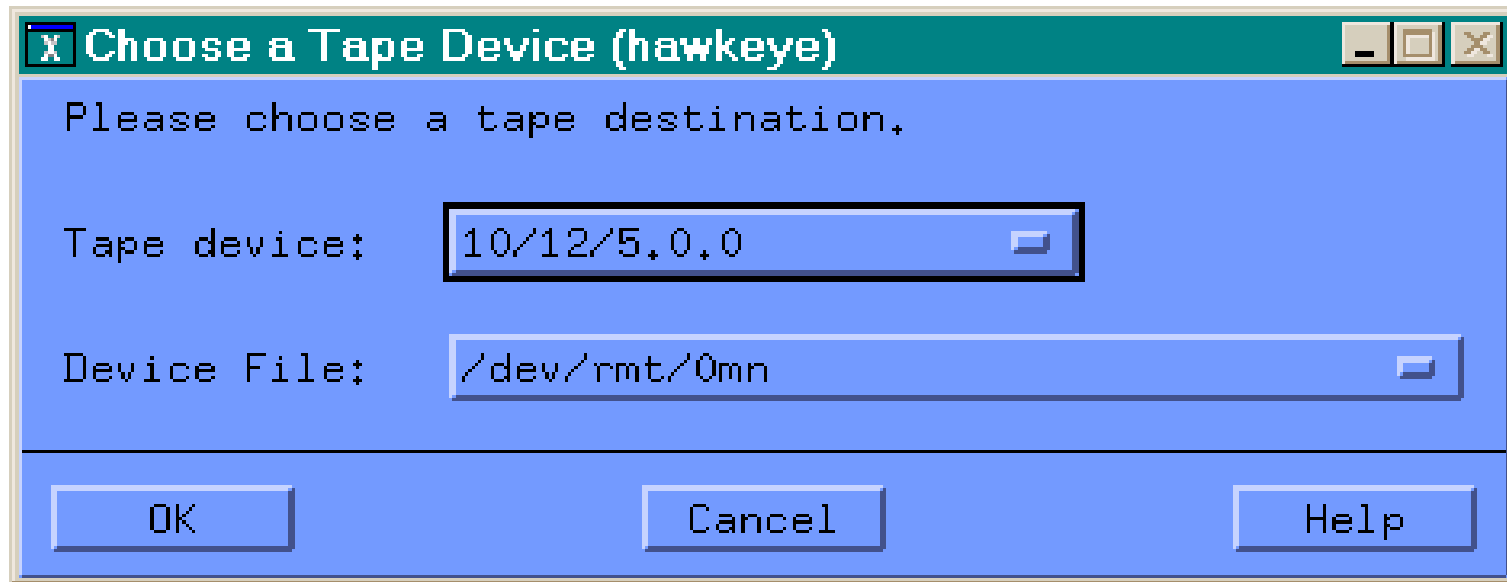
It is preferable to use the ignite GUI menu command on the Ignite-UX server when running an interactive `make_tape_recovery` session. Running it from ignite causes any additional server configuration of NFS mounts to be performed. It also provides a better progress report and an easier to use interface.

For interactive go to “Actions → Create Tape Recovery Archive”

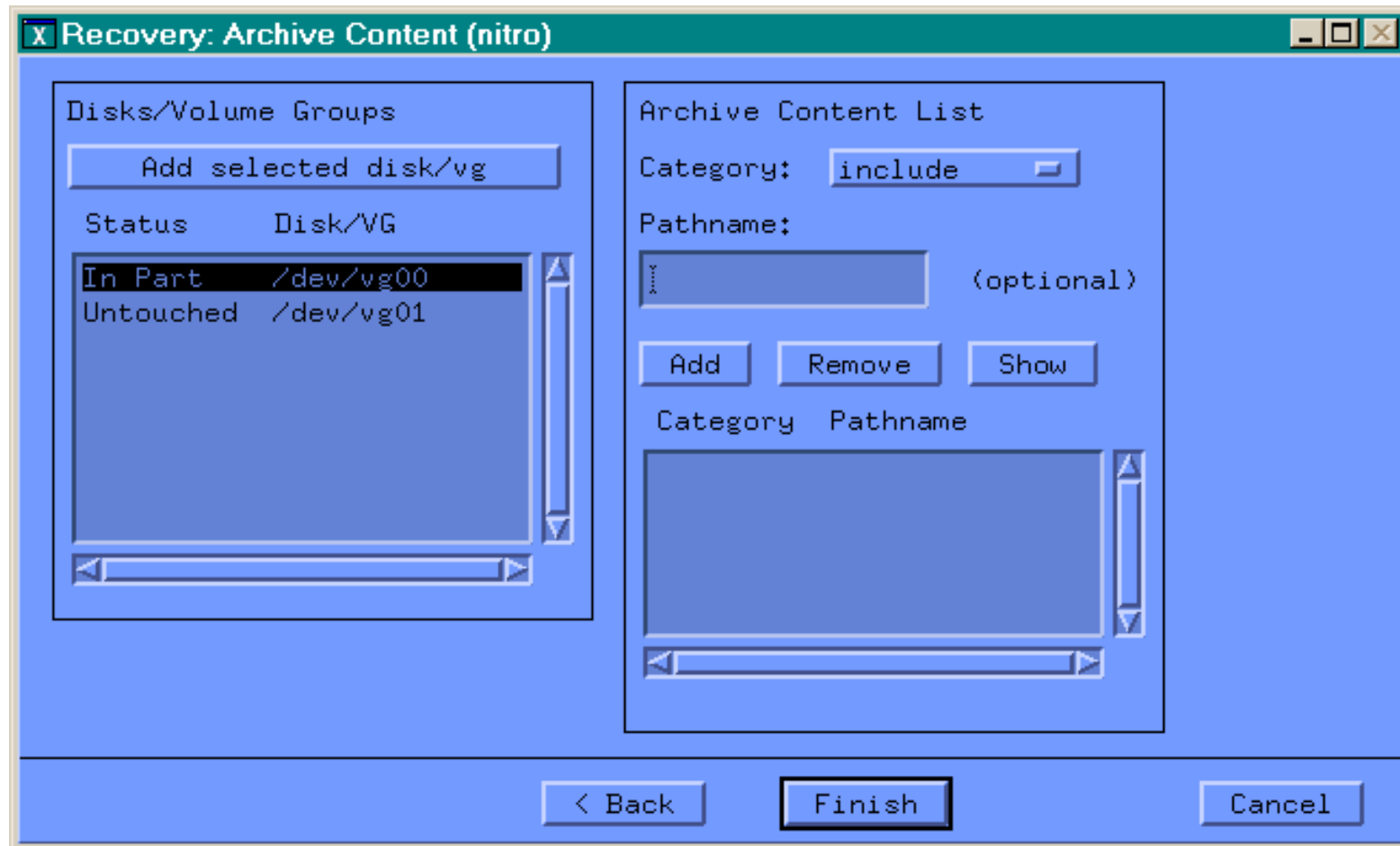
Cloning Utilities



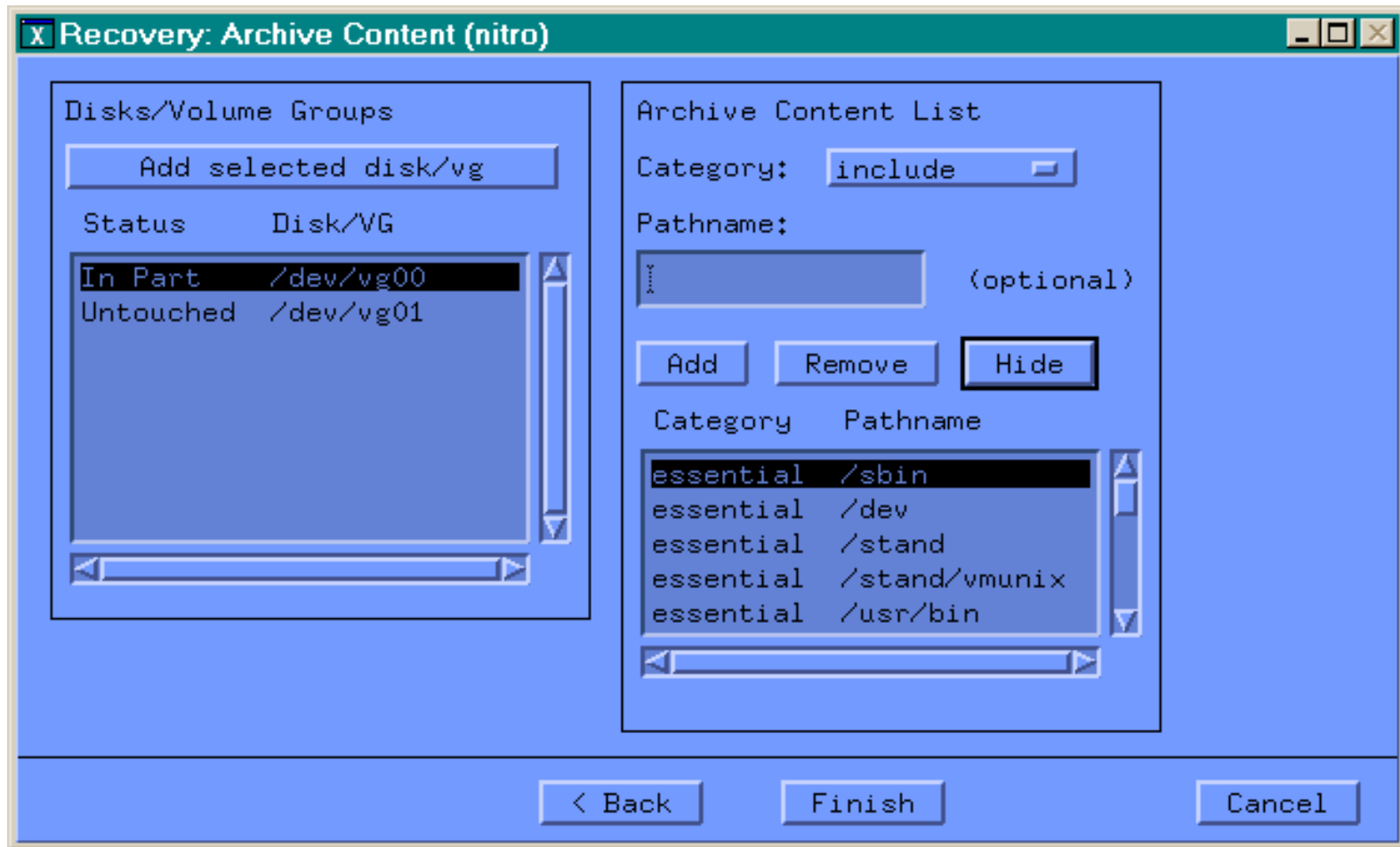
**Cloning
Utilities**



Cloning Utilities



Cloning Utilities



Cloning Utilities

Using make_tape_recovery (cont.)

Non-interactive commands:

```
# make_tape_recovery
```

Or

```
# make_tape_recovery -A
```

Or

```
# make_tape_recovery -x inc_entire=vg00 # this command  
is the same as make_recovery -A
```

Using make_recovery

The `make_recovery` command will be replaced by `make_tape_recovery` in future releases, but is still currently available. `Make_tape_recovery` can do exactly the same things as `make_recovery`.

`Make_recovery` has no User Interface and will ONLY archive `vg00`. To get the entire contents of `vg00` type:

```
# make_recovery -A
```