

## NAME

make\_tape\_recovery – tape based system recovery archive creation

## SYNOPSIS

```
/opt/ignite/bin/make_tape_recovery [ -s Ignite-UX_server ]
  [ -a tape_drive] [ -A] [ -b] [ -B boot_destination_file]
  [ -D tape_volume_name]
  [ -d tag_string] [ -f content_file] [ -i|-ib] [ -I] [ -l LLA]
  [ -n number_cfg_directories] [ -p] [ -P slwle] [ -m tar|cpio|pax] [ -r]
  [ -t tape_title_string] [ -u] [ -v] [ -x content-options] [XToolkit_Options] [ -?]
```

## DESCRIPTION

**make\_tape\_recovery** creates a system recovery archive and stores the archive on a local tape. **make\_tape\_recovery** is capable of creating system recovery tapes for all tape devices supported by HP-UX systems. On PA-RISC systems the command has the ability to span multiple tapes. On Integrity systems all content must fit on one tape. If multiple tapes are needed to create an entire recovery archive, the **make\_tape\_recovery** command must be invoked from a terminal. This is caused by the pax command failing to prompt for a tape change when invoked from the ignite GUI. The archive created by **make\_tape\_recovery** is specific to the system for which it was created and its identity includes host-name, IP address, networking information, etc. In the event of a root disk failure, the recovery archive may be installed via tape to restore the system.

The contents of the system recovery archive will always include all files and directories which are considered essential for bringing up a functional system. This "essential list" is predefined by **make\_tape\_recovery**. By running **make\_tape\_recovery** in interactive mode, the directories and files which make up the "essential list" may be displayed. In addition to the essential list, data may be included in the archive on a disk/volume group, file, or directory basis. Nonessential files and directories may also be excluded.

## Options

**make\_tape\_recovery** recognizes the following options:

**-s** *Ignite-UX\_server*

Specifies the hostname of the *Ignite-UX server*. The configuration files, defaults and contents files for the client system will be written to the *Ignite-UX server* in **/var/opt/ignite/clients/0xLLA/recovery**. The **make\_tape\_recovery** tool will NFS mount the per-client directory to access this information.

**-a** *tape\_drive*

Specifies the tape drive device file that will be used for archiving by **make\_tape\_recovery**. The default is legacy device **/dev/rmt/0mn** unless the **/var/opt/ignite/recovery/default** file exists on the system. The tape device file must be a no-rewind mode device special file. On HP-UX 11i v3, when legacy mode devices are disabled, you can specify the agile device name using the **-a** option.

**-A** Based on the files that are specified for inclusion, this option determines which disk(s) and/or volume group(s) contain those specified files, and includes all files from those disk(s) and/or volume group(s) in the archive.

**-b** When used in combination with the **-i** option, causes **make\_tape\_recovery** to run in the background after the interactive user interface (UI) completes.

**-B** *boot\_destination\_file*

Specifies the temporary location where the **LIF** volume will be assembled before it is written to tape. The default file is **/var/tmp/uxinstlf.recovery** for HP9000 systems and **/var/tmp/HPUXIUXLIF** for HP Integrity systems. At least 500 MB is required in **/var/tmp** directory where the **LIF** volume will be assembled. The **LIF** volume and other temporary files required by *make\_medialif*(1M) or *make\_ipf\_tape*(1M) will be assembled in the directory specified and then removed after the recovery process

completes.

**-D** *tape\_volume\_name*

Specifies the name of the ANSI tape volume. This option is only for IPF tape. By default, Ignite-UX recovery tool uses the first 6 characters of string **HP "month" "day"** as tape volume name.

**-d** *tag\_string*

One line *tag\_string* for the system recovery archive. If the *tag\_string* includes spaces, it must be enclosed in quotation marks. The *tag\_string* will be displayed when choosing the archive as a configuration from the Ignite-UX interactive user interface. The default *tag\_string* is **Recovery Archive**. The *tag\_string* is specified in the **INDEX** file as the value for the **cfg** keyword, and must not exceed 80 characters.

**-f** *content\_file*

Location of the file which identifies keywords to specify inclusions and exclusions for the archive. The default is **/var/opt/ignite/recovery/archive\_content** on the local system if the **-s** option is not used. However, if the **-s** option is given, the default is **/var/opt/ignite/clients/0xLLA/recovery/archive\_content**. This default file is located on the Ignite-UX server and accessed by the client through an NFS mount. The absolute path name to the **archive\_content** file must be supplied as an argument to the **-f** option. This option may be useful when there is a desire to manage multiple files which specify the content of the archive. The **-f** option is not allowed when using the **-x** or **-A** options to specify the contents of the archive. (See the **Including and Excluding From Archive** section for file format.)

**-i**

Causes **make\_tape\_recovery** to run interactively to allow selection of files and directories that are to be included in the recovery archive. The options **-x**, **-A** and **-f** are not allowed with **-i**. 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** ensures that any server configuration of NFS mounts is already done. It also provides a better progress report and an easier to use interface.

**-I**

Causes the system recovery process to be interactive when booting from the tape. By default, when the systems boots from the recovery tape, it will allow ten (10) seconds to interrupt the automatic recovery process in order to make modifications interactively. When the **-I** option is specified, booting from the tape will always present the interactive menus. This option is useful when making configuration changes during the recovery, and may also help prevent an accidental system recovery from a recovery tape.

**-l** *LLA*

The LLA (link-level address) of the system being archived. Used to create the per-client directory on the Ignite-UX server.

**-n** *number\_cfg\_directories*

Specifies the number of configuration and log file directories to be saved on the system or server. The default is two (2). If *number\_cfg\_directories* is two and there are already two configuration file directories present when a third is being created, **make\_tape\_recovery** will remove the oldest directory after successfully creating the newest directory.

**-p**

Previews the processing that would take place without actually creating the tape. This is a way of verifying the directory **/var/opt/ignite/recovery/latest** (which is linked to the latest archive directory of the form **/var/opt/ignite/recovery/date.time**) on the local (client) system. To access this directory on a specified Ignite-UX server, the directory is located at **/var/opt/ignite/clients/0xLLA/recovery/date.time**. The directory contains the files **archive\_cfg**, **control\_cfg**, and **system\_cfg** that were created

with the configuration information desired. It also contains the file **flist** that lists the files that make up the archive. It is best not to modify this file. However, it may be edited to exclude some files/directories from the archive by deleting the entire line, if desired. Only files or directories that are known to be user created should be deleted. The files that end in **\_cfg** contain configuration information that may be changed. For example, converting from HFS to VxFS. No further checks are done by **make\_tape\_recovery**. The creation of the System Recovery Tape may then be resumed using the **-r** option.

**-P** *slwle*

When a disk or volume group is partially included in the system recovery archive, generate an ERROR (e), WARNING (w), or SUPPRESS (s) any warning messages that would normally be generated when partial inclusions occur. The default is **w**, causing WARNING messages to be produced when partial inclusions of disks and/or volume groups are detected. When **e** is specified, an error message will be displayed to both stdout and to the log file, and execution of **make\_tape\_recovery** will stop once the error message is displayed.

**-m** *tar|cpio|pax*

Specify in which format (**tar**, **pax**, or **cpio**) the files/directories image on the tape will be stored. **tar**, **pax**, or **cpio** may be specified. If this option is not specified, **tar** is the default format.

**-r**

Resumes creation of the System Recovery Tape after the **-p** option was used to create the **/var/opt/ignite/recovery/latest** directory, and its **\*\_cfg** files have possibly been edited. If the **-A** and **-r** options are both used, the **-A** option will be ignored, since the file list, **flist**, and other configuration files, **\*\_cfg**, have been created and possibly modified.

**-u**

Updates the Ignite-UX software from the Ignite server specified by the **-s** option. This is done only when the version of software on the server is newer than the client. The software update uses the depot on the server in the location: **/var/opt/ignite/depots/recovery\_cmds**. If this depot does not exist, you may use the **/opt/ignite/lbin/pkg\_rec\_depot** command to create it. When the **-u** option causes the software to be updated, it then automatically restarts the command with the same options.

**-t** *tape\_title\_string*

Specifies a custom message that will be displayed to the user during a recovery from the tape. This may be useful in identifying the tape. The default title that will be written to the tape is of the form: "Recovery tape created from system: *hostname* on *date*". This message is only displayed when booting directly from tape. If using a 2-step boot from DVD/CD, then the **-d** option can be used to change the description shown in the user interface.

**-v**

Display verbose progress messages while creating the system recovery archive. Includes information such as which volume groups/disks will be included in the system recovery archive.

**-x include=file|directory**

Includes the *file* or *directory* in the recovery archive, but does not cross any mount points. Note, file names may NOT end with a space.

**-x inc\_cross=file|directory**

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. This option is for crossing local file system mounts only; not remote file system mounts. Note, file names may NOT end with a space.

**-x inc\_entire=***disk|vg\_name*

Includes all file systems contained on the specified disk or volume group. Use a block device file (e.g., "/dev/dsk/c0t5d0") when specifying a whole-disk (non-volume manager) file system. Use the volume group name (such as **vg00**) when you want all file systems that are part of that LVM volume group to be included in the archive.

**-x exclude=***file|directory*

Excludes the *file* or *directory* from the archive. When a directory is specified, no files beneath that directory will be stored in the archive. If the excluded directory is an unmounted file system shown in the **/etc/fstab** file, a WARNING ("Filesystem xxx is not mounted. It will be ignored.") message will be displayed.

Note, file names may NOT end with a space.

**XToolkit-Options**

The **make\_tape\_recovery** command supports a subset of the standard X *Toolkit* options to control the appearance of the GUI when the **-i** option is specified. The supported options are: **-bg**, **-background**, **-fg**, **-foreground**, **-display**, **-name**, **-xrm**, and **-synchronous**. See the X(1) manual entry for a definition of these options.

**-?** Displays the help screen.**Including and Excluding From Archive**

The contents of the archive may be controlled from the contents file (see **-f**). The full path for the contents file is **/var/opt/ignite/clients/0xLLA/recovery/archive\_content** on the Ignite-UX Server. This file consists of keyword identifiers which specify the inclusion of files, directories, or entire disks and volume groups. The keyword identifiers also instruct **make\_tape\_recovery** whether to follow mount points when creating the system recovery archive. The contents file has the following keyword identifiers:

**include** *filename | directory*

Includes the specified *filename* or *directory* and all subdirectories and associated files. Mount points are not crossed and symbolic links are not followed. Note, file names may NOT end with a space.

**inc\_cross** *filename | directory*

Include the specified *filename* or *directory* and all subdirectories and files contained underneath subdirectories. Local mount points are crossed but symbolic links are not followed. Note, file names may NOT end with a space.

**inc\_entire** *volume group | disk*

Include the entire specified *volume group* (e.g., "vg00") or *disk* (block device - e.g., "/dev/dsk/c0t5d0"). Do not specify a disk if it is part of a volume group.

**inc\_all\_affected**

Is equivalent to using **-A** option. Based on the files that are specified for inclusion, this option determines which disk(s) and/or volume group(s) contain those specified files, and includes all files from those disk(s) and/or volume group(s) in the archive.

**exclude** *filename | directory*

Exclude the specified *filename* or *directory* and all subdirectories and files contained under the subdirectories. Note, file names may NOT end with a space.

**make\_tape\_recovery** reads the contents file to generate the list of files that will be used to create the system recovery archive. The contents file may be modified by hand or by running **make\_tape\_recovery** in interactive mode. When modifying the contents file, keep the following points in mind:

- No essential file or directory may be excluded. Exclusions of essential files or directories will be ignored.

- Exclusions take precedence over inclusions. Anything that is both included and excluded will be excluded from the archive.
- The ordering of inclusions and exclusions within the defaults file is not significant.
- File names may NOT end with a space.
- The files and directories under NFS or LOFS mounts will not be archived.

### Using Settings From Previous Archive Creation

The defaults file stores input specified by interacting with the **make\_tape\_recovery** GUI. Options are preserved until the next archive is generated by interacting with the GUI. Command-line options will override settings in the defaults file. The full path for the defaults file is **/var/opt/ignite/clients/0xLLA/recovery/defaults** on the Ignite-UX server (if the **-s** server option is used). This directory is accessed via NFS from the client. If a server is not used, the full path for the defaults file is **/var/opt/ignite/recovery/defaults**.

```
##### defaults file #####
RECOVERY_TYPE=tape
RECOVERY_LOCATION=hostname:/var/opt/ignite/recovery/archives/client_name
TAPE_DESTINATION=/dev/rmt/0mn
RECOVERY_DESCRIPTION="Recovery Archive"
SAVE_NUM_ARCHIVES=2
ARCHIVE_TYPE=tar
```

### Saving the LIF Area

The LIF area of a disk will be archived and restored if it is different from the default LIF area. This means if either the auto-boot line in the **AUTO** LIF file is not "hpux" or the LIF files in addition to **ISL**, **HPUX**, **LABEL**, and **AUTO** are present, then the LIF files will be copied to **/usr/lib/ignite\_bootlif**. These LIF files will be restored to the LIF area unless a LIF file with the same name already exists or the **AUTO** file contains something other than **hpux**.

### Format of PA-RISC Recovery Tape

A PA-RISC Recovery Tape has two tape files.

The first tape file holds a LIF (Logical Interchange Format) volume. This LIF volume holds HP-UX boot and Ignite-UX install environment content.

filename	description
ISL	Initial System Loader
AUTO	Autoexecute default boot loader command
INDEX	Ignite INDEX file (references other config files)
CONFIG	Ignite system-specific config file
HPUX	HP-UX boot loader
FWWKAR6	Special firmware functionality for specific systems
FWWKAR7	Special firmware functionality for specific systems
FWWKAR8	Special firmware functionality for specific systems
WINSTALL	Install kernel
WINSTALLFS	Install file system image
INSTCMDS	Archive of commands needed for initial install
SYSCMDS	Archive of commands needed for final install
RECCMDS	Archive of commands needed for expert recovery
SCRIPTS	Scripts used during install post_load
VERSION	Ignite-UX version used to create tape
PAD	Additional data to create full tape block

The second tape file holds the recovery archive. The archive format depends on the options used to create the Recovery Tape.

### Format of Integrity Recovery Tape

An Integrity Recovery Tape is formatted using ANSI standard tape labels as defined by ANSI Standard X 3.27. An Integrity Recovery Tape also conforms to the boot tape format specified in the Unified Extensible Firmware Interface (UEFI) 2.0 standard.

The ANSI standard label format requires tape files which hold label records. These label tape files must appear before and after each tape file which holds the content needed to support boot and recovery. Thus, each file needed for boot and recovery becomes three files on tape. The first of these three files holds the file label which includes the file name, block size, and other format details. The first file label on tape also holds the tape volume label. The second of the three files holds the actual boot or recovery content. The third of these three files holds the end of file label which includes information in the file label as well as file length. The last file label on tape also holds the end of volume label.

HDR	tape file		ANSI	description
	DATA	EOF	filename	
1	2	3	EFIBOOTHPUX	UEFI 2.0 boot tape descriptor block
4	5	6	BOOTLOADER	HP-UX boot loader (hpux.efi)
7	8	9	FPWSAEFI	Floating point simulation
10	11	12	AUTO	Autoexecute default boot loader command
13	14	15	IINSTALL	Install kernel
16	17	18	IINSTALLFS	Install file system image
19	20	21	HPUXIUXLIF	LIF volume of install environment content
22	23	(24)	ARCHIVE	Recovery archive

Note that Integrity Recovery tapes may not have a label file at the end of the tape which should hold ARCHIVE end of file and end of volume label records. This file is not present due to the method used to write Recovery Tape archives. A future Ignite-UX release may write this label file.

The LIF volume tape file (HPUXIUXLIF) on an Integrity Recovery Tape includes additional Ignite-UX install environment content.

filename	description
INDEX	Ignite INDEX file (references other config files)
CONFIG	Ignite system-specific config file
IINSTALL	Install kernel
IINSTALLFS	Install file system image
INSTCMDIA	Archive of commands needed for initial install
SYSCMDSIA	Archive of commands needed for final install
RECCMDSIA	Archive of commands needed for expert recovery
SCRIPTS	Scripts used during install post_load
VERSION	Ignite-UX version used to create tape
PAD	Additional data to create full tape block

### Using the Recovery Tape to Boot a System

To recover a failed system disk or volume group, you would:

- Insert the System Recovery Tape into the tape drive,
- boot the system,
- interrupt the boot sequence to redirect it to the tape drive,
- choose no interaction with ISL, and
- allow the install process to complete automatically.

### Using the Recovery Tape to Clone a System

When creating a recovery tape for the purpose of cloning one system to another, it is best to run **make\_tape\_recovery** using the **-i** option. This will allow interaction with the installation and allow any changes necessary (such as changing which disks to use, hostname, archive format, and IP address). If the **-i** option is not used to create the tape, ten (10) seconds will be given to stop the

automatic installation. The procedure below describes this situation.

When cloning systems, it is very important to change the networking information to avoid IP-address conflicts between the original system and the new system. You must interact with the installation to make these changes.

- Insert the System Recovery Tape into the tape drive,
- boot the system, and
- interrupt the boot sequence to redirect it to the tape drive.
- Cancel the non-interactive installation by pressing 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 installa-
tion:
```

- The "Ignite-UX Welcome" screen will be presented.

Select the option:

```
[ Install HP-UX ]
```

Then select the option:

```
[ ] Advanced Installation
```

- Make any desired changes to the file systems, hostname, IP address, time zone, root user password, DNS server, and gateway information.
- Select **[ GO ]** to proceed with the installation.

Using a recovery tape to clone systems will only work if the two systems are capable of running the same software configuration. This means that the source system must contain a version of HP-UX with all necessary patches and driver software required by the clone system.

If the two systems are different hardware models, a new kernel will automatically be built to suit the new hardware. If the two systems are the same model, the clone will by default use the kernel from the original system.

You may force a kernel to be built by using the "Additional" dialog in the GUI to set the "*Cloning to different HW?*" selector to *TRUE*.

### Extracting Files from a PA-RISC Recovery Tape

After the PA-RISC System Recovery Tape has been created, a single file or files may be extracted from tape by seeking to the tape position where the archive is located. The **mt** command may be used to seek to the appropriate location, and **pax** or **tar** may be used to extract files from the archive.

To extract a single file from a PA-RISC recovery archive:

```
mt -t /dev/rmt/0mn rew
mt -t /dev/rmt/0mn fsf 1
tar -xvf /dev/rmt/0m filename
```

A rewind mode device special file may be used in this case to simplify repeated attempts to list and extract archive content. Extracting files from tape may take a long time, especially when archives are large.

### Extracting Files from an Integrity Recovery Tape

After the Integrity System Recovery Tape has been created, a single file or files may be extracted from tape by use of the **ansitape** command. The **ansitape** command may be used to find the appropriate tape file and read archive file content. Standard output from this command may be redirected to the **pax** or **tar** command to read archive content and extract files.

To extract a single file from an Integrity recovery archive:

```
/opt/ignite/sbin/ansitape -xf mt=/dev/rmt/0m archive |.C " tar -xvf -" filename
```

Extraction of archive content will not start until the **ansitape** command locates the archive file on tape. The **ansitape** command requires use of the **f** option to request standard output to process archive files and other files 2 GiB or larger. A rewind mode device special file may be used in this case to simplify repeated attempts to list and extract archive content. Extracting files from tape may take a long time, especially when archives are large.

It is possible to extract a single file from an Integrity recovery archive without using the **ansitape** command:

```
mt -t /dev/rmt/0mn rew
mt -t /dev/rmt/0mn fsf 22
tar -xvf /dev/rmt/0m filename
```

However, use of the **ansitape** command is recommended in case the format of Integrity recovery tapes changes in the future.

### International Code Set Support

Ignite-UX uses a variety of system commands to accomplish its functionality. Because the output of many of these commands is parsed, Ignite-UX ensures that the POSIX locale is normally used by modifying environment variables. Help text and some command output not parsed by Ignite-UX will be left in the user's specified locale.

### RETURN VALUE

**make\_tape\_recovery** returns the following values:

- 0** No warnings or failures occurred; the execution completed successfully.
- 1** A failure occurred.
- 2** A warning occurred.

### EXAMPLES

There are two lines for all but the first **make\_tape\_recovery** examples given. For each of these examples, the first line assumes that the **make\_tape\_recovery** command is being executed on a stand-alone system, thus not needing the **-s** *server* option. The second line assumes the use of a server.

Create a system recovery tape by interacting with the Ignite-UX GUI from the Ignite-UX server:

```
export DISPLAY=hostname:0
ignite
```

Create a system recovery tape on the stand-alone system using the standard defaults or from the client, using settings from the last invocation of the Ignite-UX GUI:

```
make_tape_recovery
make_tape_recovery -s myserver
```

Create a system recovery tape with all the files/directories on the disk(s)/volume group(s) containing the files specified by the default essentials file list **/opt/ignite/recovery/mnr\_essentials** or the user-defined version of this file, that replaces this file, **/var/opt/ignite/recovery/mnr\_essentials**:

```
make_tape_recovery -A
make_tape_recovery -s myserver -A
```

Create a system recovery tape that includes files from all file systems in the **vg00** volume group:

```
make_tape_recovery -x inc_entire=vg00
make_tape_recovery -s myserver -x inc_entire=vg00
```

Create a system recovery tape that includes all of the **vg00** and **vg01** volume groups, but that excludes the **/depots** directory:

```

make_tape_recovery -x inc_entire=vg00 -x inc_entire=vg01
-x exclude=/depots
make_tape_recovery -s myserver -x inc_entire=vg00 -x inc_entire=vg01
-x exclude=/depots

```

Preview the creation of the System Recovery Tape:

```
make_tape_recovery -p
```

Create a System Recovery Tape that contains the entire root volume group which will run interactively when used and contains a custom tape title:

```
make_tape_recovery -x inc_entire=vg00 \
-I -t "Pre-upgrade recovery tape"
```

Use the `-u` option to have the Ignite-UX software automatically updated when needed from the Ignite server:

```
make_tape_recovery -s myserver -a /dev/rmt/lmn -A -u
```

This example assumes that the `/var/opt/ignite/depots/recovery_cmds` software depot has been created on the Ignite server. This depot is created by running the `ignite` GUI at least once to make a recovery tape of a system or by running `pkg_rec_depot` (see also `pkg_rec_depot(1M)`). Once created, this depot will automatically be updated each time Ignite-UX is updated on the server, assuming this is not a stand-alone recovery tape creation session:

## WARNINGS

### General Backup/Recover Not Recommended

The `make_tape_recovery` toolset is intended only to create or recover a recovery archive. The recovery archive will include the operating system and a reasonable amount of user data. It is *NOT* intended to be a general purpose backup and restoration tool, and should not be used for that objective.

### Creating and Restoring from a Minimal-Recovery Archive

Creating a minimal-recovery archive means creating a recovery archive that contains just enough information to bring a system back up into a minimal-operating state. This allows you to then restore all additional information from a backup created with a general backup/restore utility.

When restoring from a minimal-recovery archive, the boot process will often contain errors due to the missing content. These errors are corrected once the regular system backup is restored and the system is rebooted.

Once the system has been rebooted, you may see the following note:

```
NOTE: The "/opt/upgrade/bin/tlinstall" command was not part of the
system that was installed. It was not possible to run it in
order to correctly set the permissions of the "transition"
symlinks. You may consider running:
"/opt/upgrade/bin/tlinstall -vf" after the system is
completely restored.
```

If software has not yet been installed using SD, the `tlinstall` command may need to be executed at this time as described above.

### Standards May Impose Limits on What May Be Archived

The `pax` command is used to create and recover recovery archives. There maybe limitations in the `pax` command that impose limits on what can or cannot be placed into a recovery archive. Some examples of this are:

- ustar format archives may contain raw uids and gids up to 2097152. Because the text user and group name are stored, it may be possible to recover uids and gids larger than 2097152.

- cpio format archives are strictly limited to uids and gids up to 262144.
- ustar format archives cannot contain a file name pointed to by a link that is more than 100 bytes long (required by POSIX.1).
- pax format archives can contain files that are larger than 8 GB, ustar and cpio can not.

### Disks Will be Reformatted

If any file from a disk or volume group is included in the recovery archive, that disk (or all disks in the volume group) will be reformatted during the recovery, and only the files included will be recovered. Any files that were not included in the archive, will have to be restored from normal backups.

Disks and volume groups that did not have any files included in the archive are not reformatted during a recovery and are reimported and remounted at the end of the recovery.

### Logical Volume Physical Extent Allocation Not Preserved

The **make\_tape\_recovery** tool captures enough information from the system so that during a recovery it may reconstruct all visible aspects of the prior LVM configuration. This includes logical volume and volume group names, attributes, and even minor number values. The tool also ensures that the new logical volumes reside on the same disks within the volume group as they did before.

**make\_tape\_recovery** does not, however, ensure that logical volumes are extended in the same exact order as they were originally. This means 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). An example effect of this is that swap/dump volumes will reside on the root disk ahead of some other volumes even though that may not have been the original layout.

### Logical Volume Distributed Allocation Policy Not Preserved

If logical volumes that are part of the volume groups being archived were configured using the distributed allocation policy (also known as "extent based stripes"), those volumes will be re-created during a recovery with this policy turned off.

### VxVM Disk Groups

The root-disk groups managed by VERITAS Volume Manager (VxVM) may be included in the Ignite-UX archive since the B.3.8 release. However, prior to B.3.8 release, the VxVM disk groups cannot be included in the Ignite-UX archive. If they are included, **make\_tape\_recovery** will error. Those disk groups will be left undisturbed and reintegrated into the system after the recovery is complete.

### LVM Disk Mirrors Not Restored

The **make\_tape\_recovery** tool will create a recovery backup 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 may be manually remirrored after the system is up. Using the **config.local** file in the clients directory, you may specify the LVM commands to restore mirrored disks to be executed automatically after the system has been restored. For more details, see the [/opt/ignite/share/doc/diskmirror.pdf](#) white paper.

### File System Volume Size May Be Modified

The file system volume size(s) in the recovery archive may be modified when the archive is installed. By default, Ignite-UX will ensure 10% free space for each volume and modify the file system volume size accordingly.

If you do not want Ignite-UX to modify the file system volume size(s) automatically, add:

```
init_hp_ignore_sw_impact=1
```

to the **/var/opt/ignite/recovery/latest/system\_cfg** file.

**Warning:** Setting **\_hp\_ignite\_sw\_impact** to 1 may cause recoveries to fail if any file system sizes are reduced below the minimum required.

Note that changes to the system\_cfg file must be done after a preview has been created (-p). After making

the above changes, resume the creation of the network recovery archive (-r).

### File Names with Non-Printable Characters

Although permissible within HP-UX, it is inadvisable to use characters that do not have a printable graphic on the hardware you commonly use, or that are likely to confuse your terminal. Filenames with these characters cause a warning message to be displayed by **make\_tape\_recovery**. In addition, files that contain these non-printable characters are not included in the archive.

### Running Commands in Single User Mode

HP recommends that the **make\_tape\_recovery** and **make\_net\_recovery** commands be run in default mode of multi-user (run level 3 or 4 depending on how the system is configured). However, HP does support execution of **make\_tape\_recovery** in single-user mode using the supported method documented in Ignite-UX FAQs. (See Section 11, Network/Tape Recovery, Question 23.) A copy of the Ignite-UX FAQs is installed with Ignite-UX in **/opt/ignite/share/doc/FAQ**, and the latest version of the Ignite-UX FAQ may be obtained by sending an email to **iux\_faq@hpfcfn.fc.hp.com**. HP does not recommend running **make\_net\_recovery** in single-user mode.

### Non-Responding NFS Servers

The **make\_tape\_recovery** and **make\_net\_recovery** tools can handle non-responding automounted file systems accessed via indirect maps or the -hosts map without hanging. However, the tools will hang if there are automounted file systems accessed via direct maps or directly mounted NFS file systems.

### Unmounted File Systems in /etc/fstab file

If unmounted file system in **/etc/fstab** is detected, a WARNING message will be displayed and the **make\_tape\_recovery** and **make\_net\_recovery** will complete with return code 2.

### Data Recovery from Raw Logical Volumes

Only file system data is included in recovery archives created by **make\_tape\_recovery**. Data included in raw logical volumes (like those that contain database data) is not included in recovery archives, and must be backed up as part of the overall backup strategy of a system.

### Auto Port Aggregate (APA) Cloning Limitation

If a system has an auto port aggregate (APA) configured, Ignite-UX does not support cloning using that recovery archive. It is only supported to recover the archive to the system on which it was created. This assumes that the lan interfaces are still configured for APA, on the switch they are connected to, in exactly the same way as when the archive was created.

## DEPENDENCIES

The Ignite-UX GUI must be run from the Ignite-UX Server, see *ignite(5)*. **make\_tape\_recovery** depends on several other Ignite-UX tools. When running the Ignite-UX server GUI, Ignite-UX checks whether the client system that **make\_tape\_recovery** runs on has the same versions of Ignite-UX tools.

If running **make\_tape\_recovery** from the command line without ever interacting with the Ignite-UX GUI, commands will need to be installed using *swinstall(1M)* from the Ignite-UX server to the client system on which **make\_tape\_recovery** will be run.

**make\_tape\_recovery** requires the following filesets of the **Ignite-UX** product be installed on the system:

```
Ignite-UX.RECOVERY
Ignite-UX.BOOT-KERNEL
Ignite-UX.FILE-SRV-release
Ignite-UX.MGMT-TOOLS
```

## AUTHOR

**Ignite-UX** and **make\_tape\_recovery** were developed by the Hewlett-Packard Company.

**DIAGNOSTICS**

All major steps within network recovery are logged on the server and displayed via the Ignite-UX Server GUI.

**FILES****make\_tape\_recovery**

always stores the archive on the local tape but may store its configuration, log, and status files either locally or on an Ignite-UX server specified by the **-s** *server option*. If **make\_tape\_recovery** stores its configuration files locally, the directory **/var/opt/ignite/recovery** is used to store the following files. If **make\_tape\_recovery** uses the server to store the files, the **/var/opt/ignite/clients/0xLLA/recovery** directory will be used. The following list is the configuration directory and files as found on the server. To have a full list of configuration, log, and status files on the local system, substitute the local directory for the server directory.

**/opt/ignite/recovery/mnr\_essentials**

Lists the files and directories that are considered essential and are always included in the archive if they exist on the system.

**/var/opt/ignite/recovery/mnr\_essentials**

Lists the files and directories that are essential, but acts as the user modifiable version so that the original `mnr_essentials` file may be maintained. When this file exists, its content is checked before the file **/opt/ignite/recovery/mnr\_essentials**.

**/var/opt/ignite/clients/0xLLA/recovery**

The per-clients recovery directory. It holds the client's recovery configuration, log, and status files as described below.

**/var/opt/ignite/clients/0xLLA/recovery/archive\_content**

Supplies files and directories to be included or excluded. Using the **-x** command line arguments will cause this file to be ignored.

**/var/opt/ignite/clients/0xLLA/recovery/latest**

A symlink to the *date,time* directory containing the newest set of recovery files as described below.

**/var/opt/ignite/clients/0xLLA/recovery/date,time**

Directory containing files pertaining to the **make\_tape\_recovery** command that was run with the **-s** option at the date and time indicated in the directory name. An example path looks like:

**/var/opt/ignite/clients/0x080009123456/2000-12-20,13:50**

**/var/opt/ignite/clients/0xLLA/recovery/date,time/system\_cfg**

Configuration file which describes the file system and networking configuration of the system (generated by the *save\_config(1M)* command).

**/var/opt/ignite/clients/0xLLA/recovery/date,time/archive\_cfg**

Configuration file which supplies the location and access method to the archive containing the files to be restored.

**/var/opt/ignite/clients/0xLLA/recovery/date,time/control\_cfg**

Configuration file which supplies control parameters and the command scripts to import volume groups that will be preserved and not created during the recovery.

**/var/opt/ignite/clients/0xLLA/recovery/date,time/flist**

"File" list file which supplies the list of files that are to be archived. This is a plain text file, but should not be modified. Each line is in a special format that, if altered, could cause problems with the archive process.

**/var/opt/ignite/clients/0xLLA/recovery/config.local**

or **/var/opt/ignite/recovery/config.local** An optional configuration file that the user may create to add configuration information to be used during the recovery of the client. For

example, you may want to add to this file to a **post\_config\_cmd** to remirror disks that the recovery process unmirrored. See the document **/opt/ignite/share/doc/diskmirror.pdf** for an example. Once this file is created, **make\_tape\_recovery** will automatically add it to any new configurations that it adds to the **LIF** area.

**/var/opt/ignite/clients/0xLLA/recovery/date,time/recovery.log**

Default log file location for **make\_tape\_recovery**.

**/var/opt/ignite/clients/0xLLA/recovery/date,time/manifest**

Software and hardware manifest information installed and configured for the system at the time the archive was created. See *print\_manifest(1M)*.

**/var/opt/ignite/clients/0xLLA/recovery/defaults**

Supplies the default options to **make\_tape\_recovery**. Created when run interactively using the **-i** option or by using the **ignite** GUI.

**/var/opt/ignite/clients/0xLLA/recovery/client\_status**

File used to communicate the status of the **make\_tape\_recovery** command back to the **ignite** GUI running on the Ignite-UX server. This file is created only when the **-s** option is used.

#### SEE ALSO

*make\_boot\_tape(1M)*, *make\_medialif(1M)*, *make\_net\_recovery(1M)*, *manage\_index(1M)*, *pkg\_rec\_depot(1M)*, *print\_manifest(1M)*, *save\_config(1M)*, *swinstall(1M)*, *instl\_adm(4)*, *ignite(5)*.