

HP 16700 Series Logic Analyser Page

Unlocking the HP-UX 10.20 system lurking inside.

As it comes after a fresh install from the Ignite CD, the system boots to run level 4, and `/etc/inittab` has been set up to invoke a script `/usr/sprockets/os/hplogicrc` which does some house-keeping stuff, uses `su` to switch to the `hplogicz` userid and then starts up X11 using a modified `sys.x11start` which activates a tailored `fvwm95` X windows session running the HP Logic Analyser Session Manager and the Logic Analyser application (`vp`).

This effectively locks you into running nothing much but the Logic Analyser application, though the `fvwm95` `Ctrl-Alt-Shift-F8` key combination will start an `xterm` session.

The administration panel of the HP Logic Analyser application also allows you to "Enable Security" and run different userids. This overwrites `/etc/passwd` completely and sets up all users that you add with their home directory under `/hplogic/home` and with a shell of `/usr/sprockets/bin/sessionWrapper`. The system startup is also changed with changes to `/etc/inittab` to start VUE with a customised configuration that invokes the session manager. If you had previously booted into single user mode to set a root password, this will be overwritten with one that you won't know.

Boot to single user mode and set a root password

As the system is booting, use the `Esc` key to interrupt the boot process, then issue the command `B0 PRI ISL`. When it asks you if you wish to interact with the boot process, respond with a "y" and press enter, then at the `ISL>` prompt, issue the command:

```
hpux -is
```

to get into single user mode.

Once you have a command prompt, you can use `passwd root` to change the root password.

Unlock X-Windows

If you've re-booted, you can use `Ctrl-Alt-Shift-F8` to open an `xterm` window, and issue `su -` to get a root shell.

If you have the HP distribution media, mount the CD at `/cdrom` (`mkdir /cdrom` first if it doesn't exist) and then you can extract the original `sys.x11start` file as follows:

```
cp -p /cdrom/X11/X11-RUN-CTRB/usr/contrib/lib/X11/sys.x11start /tmp/sys.x11start.gz
cd /tmp
gunzip sys.x11start.gz
cd /usr/contrib/lib/X11
mv sys.x11start sys.x11start-hplogic
mv /tmp/sys.x11start .
cp -p sys.x11start sys.x11start-hpux # Just in case as a back up.
```

If you don't have the media, that could be a problem, so here is the original file:

[sys.x11start](#)

Make sure you have replaced the modified `sys.x11start` with the original version **before** moving to the next step. If you need to ftp the file into the system, you will need to use the root password you set above.

Additionally delete or rename root's `/.x11start` file as it will cause VUE to crash when it tries to invoke `fvwm95`.

Adding users and setting a root password

Some experimentation with the Logic Analyser "System Administration Tools" stuff suggested to me that the easiest starting point for unlocking the system was to use the Security/User Accounts facility to add a user to the system with administration rights and to enable the so called secure mode which activates VUE and replaces the `/etc/passwd` file, over-writing the root password you set above. Once you've done this the system re-boots immediately.

As the system is booting, use the `Esc` key to interrupt the boot process, then issue the command `B0 PRI ISL`. When it asks you if you wish to interact with the boot process, respond with a "y" and press enter, then at the `ISL>` prompt, issue the command:

```
hpux -is
```

to get into single user mode.

Once you have a command prompt, you can use `passwd root` to change the root password to one that you like (you still need to do this even it though you already did so for the previous steps as the `passwd` file will have been over-written).

Then:

```
export TERM=2392
chmod 644 /etc/passwd
vi /etc/passwd
```

to change the shell for the user you added above to `/usr/bin/sh`. You may need to issue a `mount -a` to get all the file systems mounted for the following steps.

Replace `/etc/profile` with something more sensible

The installed `/etc/profile` had, to be kind, rather hacked about by the Logic Analyser team, for example: It didn't source `/etc/PATH` or `/etc/MANPATH`.

I replaced it with the original version supplied with the operating system which is to be found in `/usr/newconfig/etc`, with the only additional tailoring being to modify the default value for `TZ` to `GMT0BST`

I then added the paths which are needed for the Logic Analyser application to `/etc/PATH` and `/etc/MANPATH`.

Here are are my copies of [/etc/MANPATH](#) and [/etc/PATH](#) (after installing HP Instant Information - see Resources below).

Getting to see the VUE

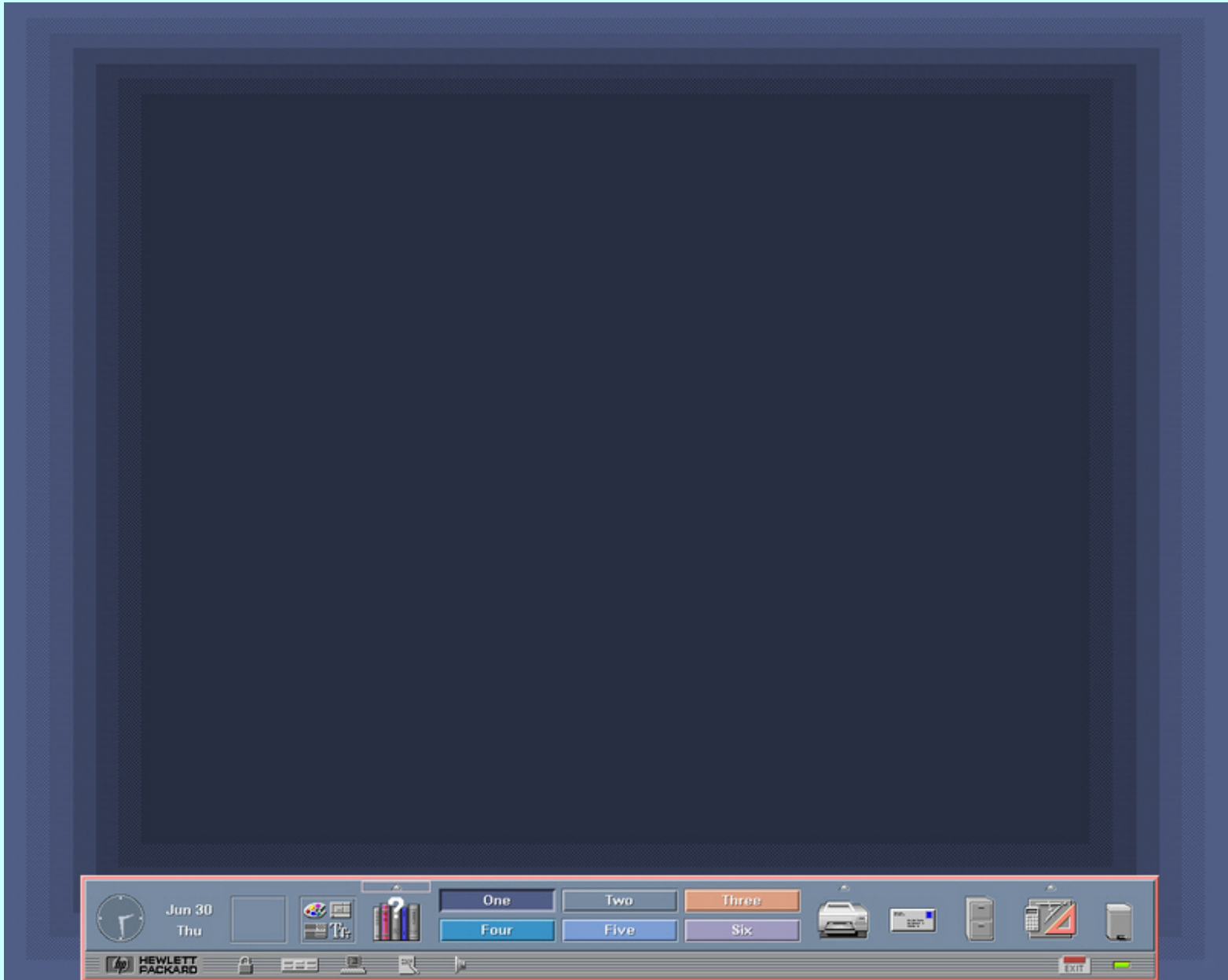
Change the file `/etc/vue/config/Xconfig` so that the part (near the top) that reads:

```
Vuelogin*resources: /etc/vue/config/Xresources-hplogic
Vuelogin*startup: /etc/vue/config/Xstartup
Vuelogin*session: /etc/vue/config/Xsession-hplogic
Vuelogin*reset: /etc/vue/config/Xreset
```

is changed to read:

```
Vuelogin*resources: /etc/vue/config/Xresources
Vuelogin*startup: /etc/vue/config/Xstartup
Vuelogin*session: /etc/vue/config/Xsession
Vuelogin*reset: /etc/vue/config/Xreset
```

If you reboot now, you'll be presented with the VUE login screen and once you have logged in you should see:



Recover the original fvwm95 files

I'm not sure if the `system.fvwm95rc.vnc` files in `/opt/fvwm95/config` and `/opt/fvwm95/modules` are the original versions or not.

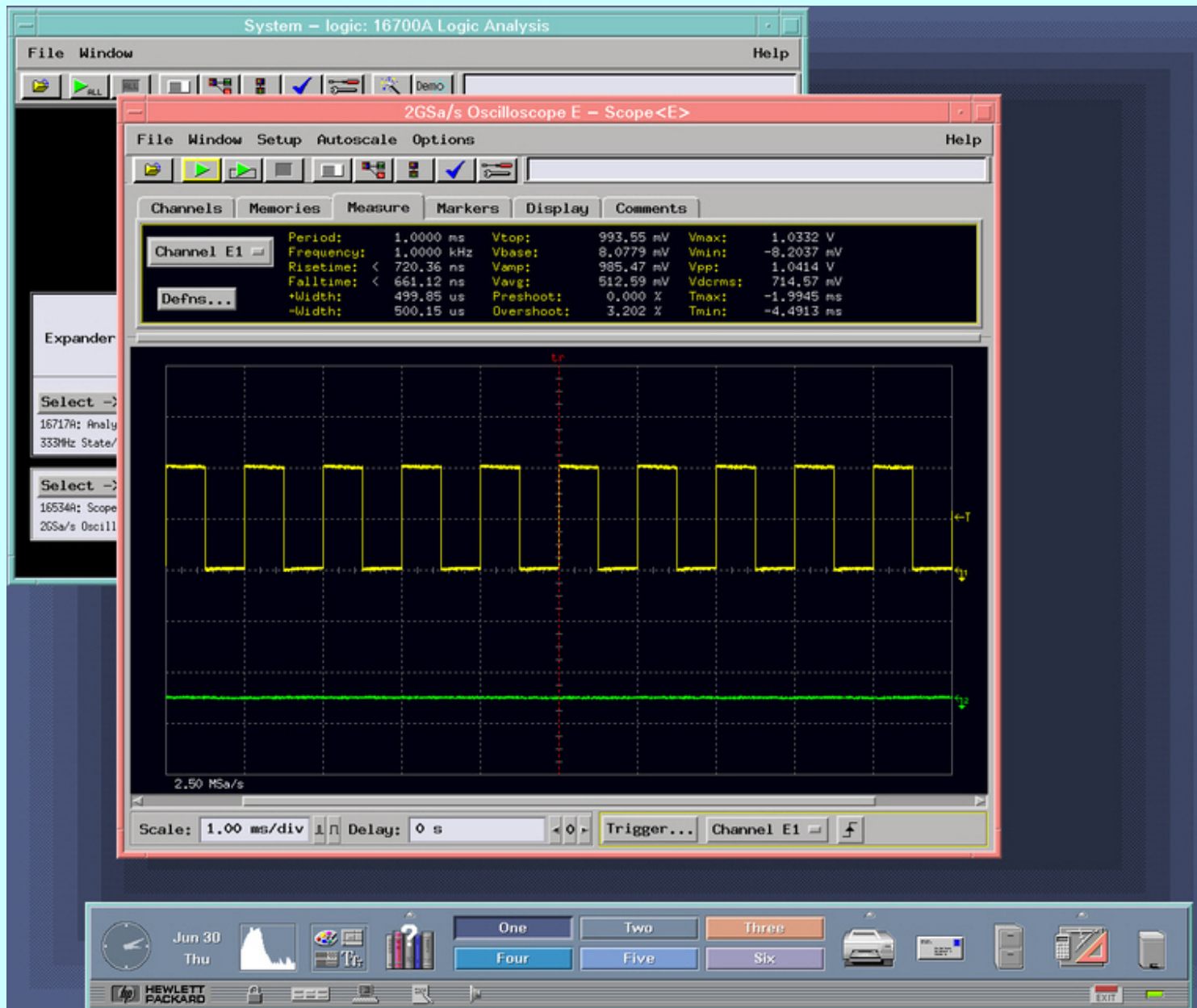
If you know, please let me know ...

Is this needed anyway? The version of fvwm95 is listed as 6.0 by swlist but I can't match that to anything I can readily find online.

Running the Logic Analyser Application

The logic analyser Session Manager can be started from a terminal window by running `/usr/sprockets/bin/sessionMgr` which in turn will start the "vp" application with options set according to the sessionMgr settings. Or alternatively you can use the "CreateAction" tool in your "PersonalToolbox" to set up an "Action" in you personal Toolbox which will run

/usr/sprockets/bin/sessionMgr as an X window application. Here's a screen shot of the LA application running the 16534A oscilloscope window showing the output from my Tektronix CG551AP oscilloscope calibrator :



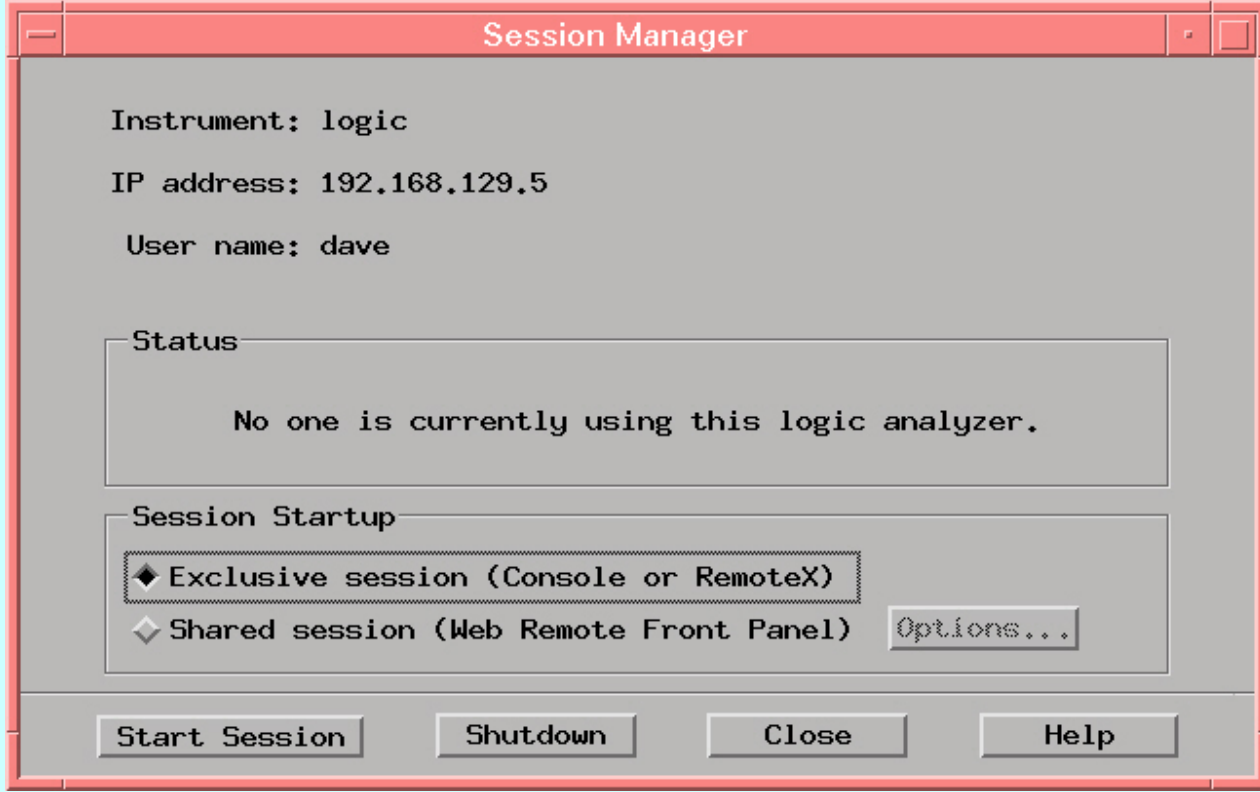
If the user's home directory is in the default location for users created by the System Administration Tools/UserAccounts screen (`/logic/home/<username>`), then the sessionMgr window will NOT display a Close button. However, moving the user's home directory to `/home/<username>` results in the SessionManager window offering a Close button as well as a Shutdown button.

Previous paragraph deleted on 8 August 2011, as it was not correct.

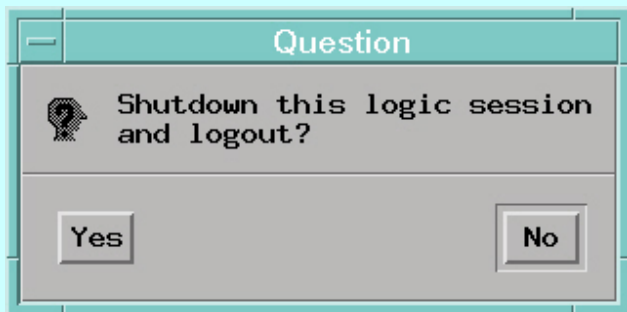
The SYSCMDS_OPTIONS environment variable and Session Manager behaviour

When logged in locally using VUE

If SYSCMDS_OPTIONS=s is set in the environment (via `/etc/profile` or command or other means), then the Logic Analyser application is automatically started when the session manager is started (e.g. by using `SessionMgr &` from an hpterm window), and the session manager window displays a close button:



When you press this button, a "Question" window pops up asking:



Pressing the Yes button merely closes the Session Manager as we are not running it as our shell using "sessionWrapper" and the modified `sys.x11start`

Pressing the Shutdown button raises a Powerdown/Restart/Cancel dialog. Pressing Powerdown will issue a `reboot -h`, while pressing Restart will issue a `reboot -r`.

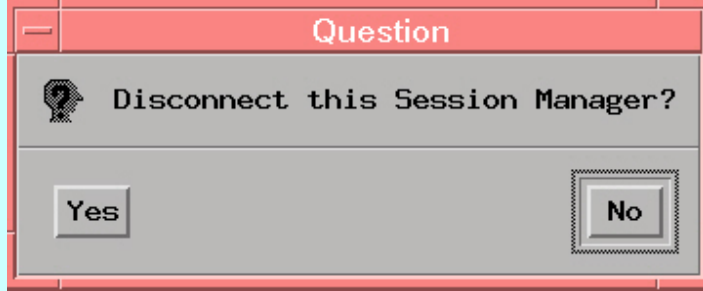
If `SYSCMDS_OPTIONS` is not set, the Logic Analyser application is not automatically started, and no "Close" button is displayed. However, pressing the "Shutdown" button in this case raises the Powerdown/Restart/Cancel dialog as before, but pressing Powerdown or Restart seems simply to close the session manager without issuing a reboot command.

When logged in remotely using VUE

Setting the environment variable `SYSCMDS_OPTIONS=s` does not auto-start the LA application, but the Close button is displayed on the session manager window.

Shutdown/Powerdown or Shutdown/Restart or both seem to shutdown or reboot as expected (using the `reboot` command).

NOT Setting the environment variable resulted in the same behaviour as when locally connected *except* the Close button IS displayed. Shutdown/Powerdown or Shutdown/Restart just close the session manager, as does the Close button and the confirmation dialog for closing the application is a little different:



Attempting to close the Session Manager by using Alt-F4 does not work.

Configuring VUE to automatically start the Session Manager

to be done - is it worth doing?

Doom

You can run Doom (the game) by running `/usr/local/doom/doomlaunch`

Resources:

HP_UX 10.* HP Instant Information June 2000 CD: Online Documentation for HP-UX 10.*. Don't bother trying to install this on a modern Windows system. Make sure you read the `/uxinstal/readme` file!

[50726-10388.iso](#)

Using Ignite_UX for backup

Install Ignite-UX from your HP_UX 10.20 media CDs or if you don't have the HP_UX 10.20 CDs, you can download the depot file from here:

[Ignite_UX Depot file](#)

Once you've done that you can use SAM to modify the kernel to add SCSI tape support. Assuming a realistically sized tape drive (capacity above about 10GB), you can create a bootable tape backup using the command:

```
make_recovery -A
```

To restore the archive is just a matter of booting from the backup tape device, and waiting for about 30 minutes. The catch is that your logic analyser probably doesn't work any more, because restoring the backup has probably allocated the "starship" device (which is the logic analyser instrument backplane on the PCI bus) to a different device "slot" than the one it occupied previously. To fix this, su to root, and run the command:

```
/usr/local/bin/mkstarship
```

which will re-create the `/dev/starship` device file with the correct major and minor node numbers. For interest here is the source:

```
$ cat /usr/local/bin/mkstarship
echo "Scanning hardware for device starship"
DEVICEPRESENT=`/sbin/ioscan -fd starship | awk 'BEGIN {printf "CHECK:"} /starship CLAIMED/ {printf "OK"}`

if [ $DEVICEPRESENT = "CHECK:OK" ]
then
```

```

rm -f /dev/starship
MAJORNUMBER=`/usr/sbin/lstdev -hd starship | awk '{print $1}'`
echo "Making device file /dev/starship using major number $MAJORNUMBER"
/sbin/mknod /dev/starship c $MAJORNUMBER 0
chmod 666 /dev/starship
else
echo "Error: Device starship not present"
fi
$

```

An alternative approach to unlocking the system

This section is almost entirely based on emails received from Luis Cupido for whose help I am indebted.

Assuming you have just installed the system from the Ignite CD, the file /etc/inittab looks like:

```

init:4:initdefault:
ioin::sysinit:/sbin/ioinitrc >/dev/console 2>&1
tape::sysinit:/sbin/mtinit > /dev/console 2>&1
muxi::sysinit:/sbin/dasetup /dev/console 2>&1 # mux init
stty::sysinit:/sbin/stty 9600 clocal icanon echo opost onlcr ixon icrnl ignpar </dev/systty
sprc::bootwait:/usr/sprockets/os/bootrc < /dev/console > /dev/console 2>&1 # hp logic startup
brc1::bootwait:/sbin/bcheckrc /dev/console 2>&1 # fsck, etc.
link::wait:/sbin/sh -c "/sbin/rm -f /dev/syscon; \
/sbin/ln /dev/systty /dev/syscon" >/dev/console 2>&1
sqnc::wait:/sbin/rc /dev/console 2>&1 # system init
clrc::wait:/usr/sprockets/os/cleanuprc /dev/console 2>&1
vp :4:respawn:/usr/sprockets/os/hplogicrc < /dev/console > /dev/console # sprockets startup
#The cons command was removed 03/23/00 by D'Arcy Truluck because it is not needed. The user
#doesn't log in from the console. Also, it was causing an error message because
#vp owns /dev/console, and the /dev/tty console can only belong to one process
#at a time, thus, the getty command is not able to access the console, so it dies,
#and gets respawned continuously....
#cons:123456:respawn:/usr/sbin/getty console console # system console
#vue :4:respawn:/usr/vue/bin/vuerc # VUE invocation

```

1. Boot to single user mode as above, and set a root password.
2. Create a home directory for root (probably /root). Move root profile files (.profile etc.).
3. export TERM=2392 and use vi to change /etc/passwd file to reflect root's new home directory
4. Add any users you wish to
5. Change inittab above to change the hplogicrc invocation from respawn to wait
6.
 - a. Uncomment the console access line that follows, or if you should prefer:
 - b. Uncomment the vue startup line, and also apply the Xconfig changes (above)
7. Edit /usr/sprockets/os/hplogicrc to uncomment the lines at the start that ask about HP-UX access, and also the fi at the end

You can now reboot, and you'll have a prompt for five seconds asking if you want HP-UX access.

If you don't reply and allow the system to start in the normal way to the fvwm95 session running the logic analyser stuff, you can press Ctrl-Alt-Shift-F8 to get an xterm, and as you have set a root password, you can also su to root.