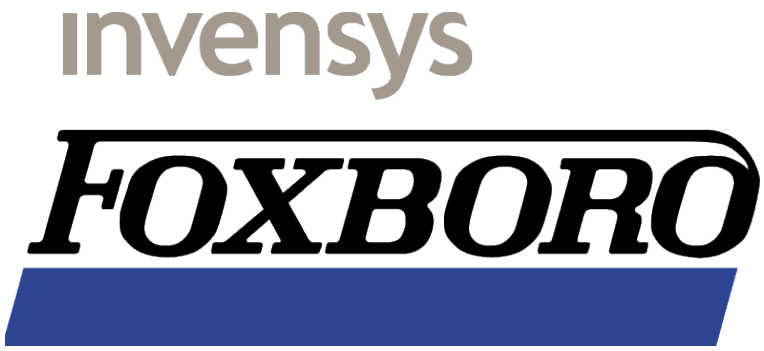

I/A 50 Series Backup and Restore

System maintenance basics

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Contents

1 Introduction

This procedure is for the 50 Series UNIX platform only! This family includes AW, AP, WP versions of the 50, 51A, 51B, 51C, 51D and 51E stations at the moment this manual was written. The recently introduced 51F and 51G platforms have a similar utility which is compatible with the procedure outlined in this documentation. The **backup** procedure described in this handout attempts to store all the information of the system hard disk or RAID unit onto a single tape. In case the amount of data exceeds the tape capacity, additional tapes are requested. The format used for the backup is the **ufsdump** format for the *data* partitions, and **dd** for the Informix and MetaDB or *raw* partitions. The backup created with **ufsdump** can be accessed/restored with either the **restore** script for a full restore or **ufsrestore** for a partial restore. To make the backup easy, a script was provided to do the job. The script is supplied on the standard installation or through a "Quick Fix", which contains some fixes and works faster due to enhanced tape drive settings. Backups tapes created with the "backup" script, will allow for individual file restores from the *data* partitions.

1.1 Basic requirements

Here you will find the basic requirements for a backup and restore on a 51 Series station.

- This procedure assumes I/A Series version 6.1 or higher with **QF 991274c or higher** installed.
- This procedure assumes a **backup** will be/has been created with the **backup** utility located in the `/usr/local` directory on the UNIX machine.(also found as part of **QF 991274c/QF 991274d**)
- A 4mm DAT tape drive (set to SCSI ID 5) is attached locally to the station to perform the back-up.
  For "normal" configurations the tape drive can be connected as the last device on the SCSI chain.
  For RAID configurations the RAID unit is ALWAYS the last device on the SCSI bus and as a result the tape drive MUST be installed between the AP/AW and the RAID unit!!!
- Some basic knowledge of UNIX (command line functions, some file management and system administration functions (like changing directories, moving-, copying files, some basic use of the vi editor, the "**mt**" and "**ufsrestore**" commands etc.) is very useful.
- This procedure overrules any previous versions which would rely on the **dump.51, restore.51** and the different **dmp0_8MM** and **dmp9_8MM** scripts.

1.2 Other Considerations

Some things are left to be desired and are NOT covered in this release of this document.

1. When the backup spans more than one tape, some care must be taken during restore. This was not yet tested.
2. The new backup & restore procedure allows for remote use of tape drives. I.e. a station (when in single user mode) can use a tape drive attached to another station. This backup will be performed using the node-bus connection.
3. It is possible to restore one partition only. This is not covered.
4. The *Informix* and *MetaDB* partitions are "raw" partitions. This means they are addressed directly from the programs needing information from them. (They do not contain a file

system). These partitions can only be restored using the "dd" command. Since this document deals with either a full backup/restore OR file restore the "dd" restore is not covered here. (The full restore procedure described here will take care of all partitions including the "raw" ones.

1.3 Disclaimer

Due to the inherently complex nature of computer software, Foxboro does not warrant that the software described in this document or this documentation is completely error free, will operate without interruption, is compatible with all equipment and software configurations, or will otherwise meet your needs. Accordingly, this documentation is provided *as-is*, and you assume all risks associated with its use. Foxboro makes no warranties expressed or implied, with respect to this document. In no event will Foxboro be liable for indirect, incidental or consequential damages, including, without limitation, loss of income, use, or information.

1.4 Related information

Apart from this information, have a look at some other sources. For a start, there is **the System Administration Guide for 50 Series Systems (Solaris 2.X)** Foxboro part number: B0193ND, rev F, appendix C. In this Guide you will find a very handy tool to create **ON-LINE system wide backups** for your system. This **OFHA** utility is also covered in a separate document which is NOT an official Foxboro document. This document deals with the setup of **OFHA** on a separate disk attached to the system. To obtain a copy of this document send, an e-mail message to : Ron.Deen**@Invensys.com**. Also have a look at the **man pages** for the `mt` and `ufsrestore` command.

1.5 Conventions

The conventions used in this document are listed below.

When you see this:	It means this:
[Filename] (BOLD)	Indented text. This typeface indicates a filename of which the contents are printed starting on the next line. This line is NOT part of the file contents.
`STATION# **some command<cr>**` `(courier normal)`	Text printed like this is ASCII text as it appears in a file or on screen. User data that has to be entered is printed in **bold**. Also used to display a pathname or filename in normal text. When used to indicate a command, type the bold printed command until <CR> which means: hit the ENTER key.
Use this data (ARIAL NORMAL)	This typeface is used to show a list of data to be entered in a location indicated in the text. Also used to describe a procedure.

When you see this:	It means this:
<Alt_F4>	Text displayed like this means: press the keys mentioned between brackets simultaneously. In this case press the "ALT" key on your keyboard together with the function-key "F4"

1.6 Revision history

Revision number:	Description:
Revision 0.1.	Initial release for Review only. Tested on AW51D with RAID1 and 12/24Gb tape drive.
Revision 0.2, June, 2000	Typo's (an awful lot of them too) + conventions.
Revision 1.0, July, 2000	Here it is. Give it a try...
Revision 1.1, July, 2000	Minor fixes.
Revision 1.1.1, January 10, 2001	Added info concerning the "no-rewind" and "rewind" devices. Some minor fixes.
Revision 1.1.2, April 2001	Added note for "other than default" tape devices. Added some examples and explanations in the text. Some other minor fixes.
Revision 1.2, January 2002	Changed Foxboro to Invensys on the cover and in e-mail address
Revision 1.3, March 2003	Update to new manual style. Mentioned the /etc/dumpdates file.
Revision 1.4, February 2004	Converted manual to OpenOffice.org format due to reliability issues with previous platform. Adopted the assumed Invensys Standard regarding documentation.
Revision 1.5, march 2004	Included updated QF information.
Revision 1.6, April 2005	New e-mail adress. Some other minor changes. Some inconsistencies fixed in the full restore part.

2 Getting started

Assuming that the requirements are fulfilled as stated in the beginning (page **5-Basic requirements**) of this document. We have a tape drive attached to the station to be backed up. Waiting with making your first backup until you see disk errors appear, is not a wise thing to do. Make an early start setting up your backup strategy.

2.1 Check the tape drive

One of the first things to do before performing any of the backup and restore tasks is to check if the hardware is functioning properly. The `mt` command can be used for that job. To check for the presence of the tape drive on the SCSI bus, type this command at the prompt:

```
AW511B# mt -f /dev/rmt/0cb status<cr>
```

The system can respond in several ways. Look for a message similar (not necessarily exactly the same) to the ones indicated below to diagnose the reply. The device can be `/dev/rmt/1cb` or `/dev/rmt/2cb` depending on the hardware setup. Generally, a tape drive internally connected will be `/dev/rmt/0cb`, when the drive is connected externally it becomes `/dev/rmt/1cb` and finally when the drive is attached to the additional SCSI interface, the drive is using `/dev/rmt/2cb` as the device. This response indicates a problem with either a missing software driver or a problem with the SCSI bus cabling:

```
AW511B# mt -f /dev/rmt/0cb status<cr>
/dev/rmt/0cb: No such file or directory
AW511B#
```

In the directory `/usr/local` you can find a script named `add_periphs`. Run this script to attempt to load the required drivers for the hardware on your system. (Not always a great success, but it does not harm, so it's worth a try). So, run the (**bold** printed) command:

```
AW511B# cd /usr/local<cr>
AW511B# add_periphs<cr>
drvconfig
devlinks
disks
tapes
ucblinks
end of add_periphs
AW511B#
```

After running `add_periphs` , you can run the `mt` command again to see if the tape drive is OK.

WARNING: For these next steps the system is assumed to be in single-user mode. Your system may require `/dev/rmt/1cb` or `/dev/rmt/2cb` as the tape-device.

If the tape drive still does not respond, a reboot, with the tape drive attached to the system, can resolve the problem. When process conditions allow for it shutdown the station. To shutdown type from a local terminal attached to the AP, login as "root" and type:

```
AW511B# shutdown -y -g0<cr>
```

It may even be necessary to reconfigure the kernel. For this the `boot -rs` must be entered at

the “ok” prompt. The get to the “ok” prompt:

```
AW511B# halt<cr>
syncing file systems... done
ok
```

Type `boot -rs` at this prompt. This will (`-r`) reconfigure the kernel for all hardware found, and (`s`) boot into single user mode. This next response looks a lot better (if no tape was loaded in the drive when the command was entered):

```
AW511B# mt -f /dev/rmt/0cb status<cr>
/dev/rmt/0cb: no tape loaded or drive offline
AW511B#
```

When a tape was loaded, this would be a good response:

```
AW511B# mt -f /dev/rmt/0cb status<cr>
Archive Python 4mm Helical Scan tape drive:
   sense key(0x6)= Unit Attention   residual= 0   retries= 0
   file no= 0   block no= 0
AW511B#
```

At this point we have a workable setup. So let’s continue.

3 Performing a full backup

The start of everything is the full backup. Otherwise there's nothing to restore from. To create a full backup of the system follow these steps. A full backup writes a file that contains information about the date, time and file systems that where backed up. This file is located in the stations `/etc` directory and the filename is: `dumpdates`.

Note:

A **full backup** requires the system to be in **single user mode**. NEVER run the full backup in multi user mode, the backup tape resulting from this action will be useless! For an AP backup, a VT100 compatible, terminal locally attached to serial port B, is required!!

Follow these steps for a full (Level 0) backup:

1. Exit all programs running on the station to be backup up. (Control Configurator, Historian configuration tools, VT100 terminals etc.)
2. When Process conditions allow for it: perform a shutdown of the system. This can be done from the appropriate menu environment. On a WP hosted by the station, Select **SftMnt** and then **Shutdown_AP** or from a local terminal attached to the AP, login as "root" and type: `shutdown -y -g0` at the prompt.
3. When the system is in single user mode, change directory to `/usr/local` and type the command **backup** to start the backup program.

At this point a dialog is started to define the backup:

```
AW511B# cd /usr/local<cr>
AW511B# backup<cr>
Enter the Station type: AP, AW or WP.
AP<cr>

Do you have an optional RAID data Partition:[y or n] n<cr>  Enter Y if you have a RAID 5
system with optional data partition only!!!

 Setting up Default Device parameters.

Tape Devices used are /dev/rmt/0cb and /dev/rmt/0cbn
HP DDS-3 4mm DATE Tape Drive

 Rewinding the tape !

Level 0 dump to /dev/rmt/0cb tape drive to AW511B
Press <CR> for dumping all partitions OR:
specify the partition to dump root, var, usr, opt, raid, informix, or mirroDB

<cr>

Please load 'file system dump' tape and press <CR>

<cr>
```

At this point the backup will start..... Check the system messages for possible errors that may occur. After completion of the backup it is recommended to make at least one additional backup tape. (The system is down anyway and it's well worth the wait...).

Label the tapes with the following information:

- The station's letterbug.
- The date of the backup!
- The I/A Software version (I/A version 4.3, 6.2, 6.2.1 etc)

- The backup software used (for instance `/usr/local/backup QF991274c`)
- The type and size of disk (SCSI, RAID1, RAID5, 1.05Gb, 4.3GB, 9Gb, 18Gb etc.)
- and the "**root**" password if it is not "**gnomes**" (This is important!!!)

Store the tape(s) in a safe place!!

The backup date and time of the file systems written to tape are recorded in a file `/etc/dumpdates` every time you create a backup. this file can be handy to determine the date of the last backup you made for one I/A 50 Series machine.

4 Performing a full restore

In case of a catastrophe, a full restore may be in order. A full restore is not a problem but there are a few things to take into consideration:

1. YOU HAVE TRIED ALL OTHER OPTIONS before you take this step! Contacting Foxboro Field Service or your TAC center would be one of the options you should consider.
2. The station to be restored MUST have been booted from CD-ROM that corresponds with the version I/A software you are running. (When you are running I/A version 6.2 then boot with the 6.2 CD-ROM).
3. The restore program must be available on diskette. (At this moment, a Foxboro Quick Fix number: **QF991274c** or later is a good choice. Contact your Foxboro representative, if you do not have it).
4. The backup tape must be error free. (This is why making more than one tape, is NOT a waste of money or time).

To boot he system from CD-ROM, type "**`boot cdrom`**" at the "`ok`" prompt. When the system has finished the boot sequence, login as **root** (a password is not required). Now it is possible to load the contents of the backup/restore diskette (**QF991274c**). Insert the disk and type:

```
# cd /<cr>
# tar xvf /dev/rfd0c ./tmp/mt ./tmp/restore<cr>
# cd /tmp<cr>
# restore<cr>
```

The restore program is started, in the example below we had the following configuration:

- An AP51D with a RAID1 unit.
- A 12/24Gb DDS-3 DAT tape drive.
- NO mirrored disk drive.
- NO optional RAID data partition.
- NO Concatenated `/opt` partition.

Be smart and "translate" into your configuration!

Let's start the restore program (note: user responses are printed **bold**):

> **Note**:
> A tape must be inserted in the tapedrive prior to starting the restore procedure. The program will abort with an error message when no tape is present in the drive..

```
# restore<cr>

This script restores 50/51 series stations from level 0 dumps


Enter the Station type: AP, AW or WP.
AP<cr>

st5: Variable record length I/O

Tape Devices used are /dev/rmt/0cb and /dev/rmt/0cbn
HP DDS-3 4mm DATE Tape Drive


Were these dump tapes made using the dmp0_8MM utility? [y or n]:n<cr>
```

```
Setting up restore device parameters for Ultra

Please load Tape Containing File System Dump Level 0 tape and press <CR>

Insert the tape and then <cr>


Creating the / (root) file system

Restoring the root partition

...fsck information


Creating the /usr file system

Restoring the /usr partition

...fsck information


Were these dump tapes created with a concatenated /opt partition? [y or n ]:
(an /opt partition that extends for more than 1 hard drive?)

n<cr>

Creating the /opt file system

Restoring the /opt partition

...fsck information


Rewinding the tape

Positioning the tape

Restoring the Informix Raw Partition

3434 + 1 blocks in

3434 + 1 blocks out


Rewinding the tape

Positioning the tape

Restoring the Mirrored Disk Raw Database

85 + 1 blocks in

85 + 1 blocks out


Do you have Mirrorred System Harddisk? [y or n] n<cr>

Were these dump tapes created from a RAID drive configuration?
(Having an RAID data partition? [y or n]: n<cr>

Restore complete

Type reboot to return to multi-user mode
# reboot<cr>
```

After this procedure you have performed a full restore. Check the system messages for possible errors that may occur.

5 Partial restore / File restore

Sometimes due to a typing error, a bad command or a miss-interpretation of the expected results can hurt you really bad. In these cases a partial restore can be of great help. This section covers the procedure to recover individual files from the backup tape that was created earlier during the full backup procedure. A normal running system is assumed here. I.e. the station is booted in normal multi-user graphical environment. Note that in the examples the device[1] used is: `/dev/rmt/0cbn`. The **n** in this device is very important. This sets the device to the "no-rewind" mode. This is nice if want to read data from partitions other than the first one on the tape.

5.1 The UNIX commands

Well not ALL of the UNIX commands, but at least the ones required here: **mt** and **ufsrestore**.
The **mt** command (**m**agnetic **t**ape command, who says UNIX abbreviations do not make sense?) deals with the tape drive. It can be of use to gather status information or the maneuver across the tape. The **ufsrestore** command can be used to recover the individual files on the tape.
Both commands are used closely together. As mentioned the **mt** command can be used to move around on the tape and to obtain the status information. Let's make sure we are at the beginning of the tape:

```
AW511B# mt -f /dev/rmt/0cbn rewind<cr>
```

This will rewind the tape to the beginning. Since the first partition backed up was the "root" partition, we should be able to see the files belonging to "root" on the tape. For this we use the ufsrestore command with some options.(We use `ufsrestore -ivf`, the options are):

- `-i` Interactive. After reading in the directory information from the media, ufsrestore invokes an interactive interface that allows you to browse through the dump file's directory hierarchy and select individual files to be extracted.
- `-v` Verbose. ufsrestore displays the name and inode number of each file it restores, preceded by its file type.
- `-f` File. Use the device specified instead of the default device:`/dev/rmt/0`

So when we invoke `ufsrestore -ivf /dev/rmt/0cbn` we are looking at the contents of the tape in the drive and we get an interface of some kind so we can look around on the tape. Note that the device is: `/dev/rmt/0cbn`, so the device does not rewind after completion of the command. Let's see.....

```
AW511B# mt -f /dev/rmt/0cbn rewind<cr>
AW511B# ufsrestore -ivf /dev/rmt/0cbn<cr>
Verify volume and initialize maps
Media block size is 20
Dump   date: Thu Mar 11 17:58:15 1999
Dumped from: the epoch
Level 0 dump of / on AW5101:/dev/md/dsk/d0
Label: none
Extract directories from tape
Initialize symbol table.
ufsrestore >
```

[1] Note that the system can be using another tape device than the one indicated above.

Ufsrestore is now waiting for operator input. The tape's contents can be displayed like a hard disk and we can maneuver on the tape with `ls` and `cd` commands. The `ls` command will show the files in the current level of the tape (like `ls` in a standard UNIX shell does):

```
ufsrestore > ls<cr>
.:
    2 *./                  57  bin                5697  opt/
    2 *../                 52  cdrom/              6219  pcfs/
  512  .OWdefaults        400  config_IA         11438  platform/
  551  .Xauthority      11393  dev/              11435  proc/
  365  .Xdefaults        5740  devices/          17778  rem/
  394  .cshrc           17117  etc/                557  results
   61  .desksetdefaults 17137  export/           17131  sbin/
  395  .login            6218  f0/                 100  smat.exit
   59  .new             17777  f1/                 386  smatdump.dbg
  396  .profile           369  foxboro/             86  tar_cmd.out
   99  .rhosts            555  help                 45  tmp/
  366  .xmodmaprc          51  home/             17779  u0/
  103  .xsun.PCAT00:0    5737  kernel/             371  u1/
   60  .xsun.hw1197:0      58  lib                6221  u2/
17341  FSD/               556  list              17780  u3/
  105  NUL:              5696  lost+found/       11392  usr/
   54  TT_DB/            5739  mnt/              17088  var/
   87  _x                5746  net/              17138  vol/
  518  ast_exit           390  nohup.out         11442  xfn/

ufsrestore >
```

Let's assume that we want to restore the `/etc/inittab` file. To find the file we should go to the `/etc` directory on the tape. As we can see in the listing above, there is a `/etc/` directory, so let's go there:

```
ufsrestore > cd etc<cr>
```

Now let's see if the file exists here:

```
ufsrestore > ls inittab<cr>
17339  inittab
ufsrestore >
```

If we want to mark the file for restore we must "add" the file to the archive:

```
ufsrestore > add inittab<cr>
Warning: ./etc: File exists
ufsrestore >
```

The "error" message indicates that the file already exists on the file system on disk so it is just a warning is this case. When a file is added an asterisk is added before the filename so it looks like this:

```
ufsrestore > ls inittab<cr>
17339 *inittab
ufsrestore >
```

To actually start the restore we must "extract" the file(s) we have "added": (Enter "1" as the volume number to read from and enter "y" when prompted to set directory mode, owner and times):

```
ufsrestore > extract<cr>
```

```
Extract requested files
You have not read any volumes yet.
Unless you know which volume your file(s) are on you should start
with the last volume and work towards the first.
Specify next volume #:1<cr>
extract file ./etc/inittab
Add links
Set directory mode, owner, and times.
set owner/mode for '.'? [yn] y<cr>
```

After completion we have restored the `/etc/inittab` file.
Another example: We want to restore all environment files in `/opt/fox/env/*` from the backup tape. These files are in the `/opt` partition on disk. So we first go the location on disk where the files will be restored after which we position the tape to this same partition (for a list of the commands to get to the different partitions, have a look in **Finding the partitions on tape** on page **21**) and start the `ufsrestore` command. Note that the device is: `/dev/rmt/0cbn`, so the device does not rewind after completion of the command.

```
AW511B# cd /opt<cr>
AW511B# mt -f /dev/rmt/0cbn rewind<cr>
AW511B# mt -f /dev/rmt/0cbn fsf 3<cr>
AW511B# ufsrestore -ivf /dev/rmt/0cbn<cr>
Verify volume and initialize maps
Media block size is 20
Dump   date: Thu Mar 11 18:08:55 1999
Dumped from: the epoch
Level 0 dump of /opt on AW5101:/dev/md/dsk/d5
Label: none
Extract directories from tape
Initialize symbol table.
Ufsrestore >
```

With `ls` and `cd` we can go to the correct location on tape:

```
ufsrestore > ls<cr>
.:
     2 *./              73  custom/       404416  informix/
     2 *../         171036  customer/         72  install.log
541157  DB_SYNC/    535454  db_recovery/    5696  lost+found/
 28505  SAVEALLs/   239384  disp/         524076  mdw/
 11392  SUNWits/     22859  doc/          512727  menus/
108224  SUNWtcx/    330368  fox/          113920  share/
489882  backup/     518336  foxind/       455732  tmp/
290531  cex/        387359  gms/          267844  tools/
353226  crash/       17090  ia/           472768  windu/

ufsrestore >
```

The files to be restored are in `/opt/fox/env` so we must move to `fox/env` (remember that the tape is displaying `/opt`).

```
ufsrestore > cd fox/env<cr>
ufsrestore > ls<cr>
./fox/env:
 34272  ./             34357  Onshore.acl     34364  Usage
330368  ../            34358  Onshore.dbr     34380  about_ia
 34273  Initial.acl    34359  Onshore.env    330449  env.tar
 34350  Initial.dbr    34360  Onshore.mbr     34365  file.mnu
 34351  Initial.env    34371  Operator.dbr    34366  help.mnu
 34352  Initial.mbr    34372  Operator.env    34367  report.mnu
 34353  Offshore.acl   34373  Operator.mbr    34368  setpasswords
 34354  Offshore.dbr   34361  Softw_Eng.dbr   34369  trends.mnu
 34355  Offshore.env   34362  Softw_Eng.env   34370  view.mnu
 34356  Offshore.mbr   34363  Softw_Eng.mbr
```

```
ufsrestore >
```

We want all the files in here, so we must “add” them. Since we want all the files found here we enter the wild card character which is the “*” so it is:

```
ufsrestore > add *<cr>
Warning: ./fox: File exists
Make node ./fox/env
ufsrestore >
```

…and check if the selection meets our selection criteria, note that the selected files have an asterisk preceding the file name indicating these are going to be restored:

```
ufsrestore > ls<cr>
./fox/env:
 34272 *./              34357 *Onshore.acl     34364 *Usage
330368 *../             34358 *Onshore.dbr     34380 *about_ia
 34273 *Initial.acl     34359 *Onshore.env    330449 *env.tar
 34350 *Initial.dbr     34360 *Onshore.mbr     34365 *file.mnu
 34351 *Initial.env     34371 *Operator.dbr    34366 *help.mnu
 34352 *Initial.mbr     34372 *Operator.env    34367 *report.mnu
 34353 *Offshore.acl    34373 *Operator.mbr    34368 *setpasswords
 34354 *Offshore.dbr    34361 *Softw_Eng.dbr   34369 *trends.mnu
 34355 *Offshore.env    34362 *Softw_Eng.env   34370 *view.mnu
 34356 *Offshore.mbr    34363 *Softw_Eng.mbr

ufsrestore >
```

Subsequently the restore can proceed which is achieved through the “extract” command:

```
ufsrestore > extract<cr>
Extract requested files
You have not read any volumes yet.
Unless you know which volume your file(s) are on you should start
with the last volume and work towards the first.
Specify next volume #:1<cr>
extract file ./fox/env/Initial.acl
extract file ./fox/env/Initial.dbr
extract file ./fox/env/Initial.env
extract file ./fox/env/Initial.mbr
extract file ./fox/env/Offshore.acl
extract file ./fox/env/Offshore.dbr
extract file ./fox/env/Offshore.env
extract file ./fox/env/Offshore.mbr
extract file ./fox/env/Onshore.acl
extract file ./fox/env/Onshore.dbr
extract file ./fox/env/Onshore.env
extract file ./fox/env/Onshore.mbr
extract file ./fox/env/Softw_Eng.dbr
extract file ./fox/env/Softw_Eng.env
extract file ./fox/env/Softw_Eng.mbr
extract file ./fox/env/Usage
extract file ./fox/env/file.mnu
extract file ./fox/env/help.mnu
extract file ./fox/env/report.mnu
extract file ./fox/env/setpasswords
extract file ./fox/env/trends.mnu
extract file ./fox/env/view.mnu
extract file ./fox/env/Operator.dbr
extract file ./fox/env/Operator.env
extract file ./fox/env/Operator.mbr
extract file ./fox/env/about_ia
extract file ./fox/env/env.tar
Add links
Set directory mode, owner, and times.
set owner/mode for '.'? [yn] y<cr>
Directories already exist, set modes anyway? [yn] y<cr>
ufsrestore >
```

Exit the ufsrestore command (q) and check for the presence of the files on the disk…

```
AW511B# cd /opt/fox/env<cr>
AW511B# ls<cr>
Initial.acl    Offshore.env   Operator.dbr   Usage          setpasswords
Initial.dbr    Offshore.mbr   Operator.env   about_ia       trends.mnu
Initial.env    Onshore.acl    Operator.mbr   env.tar        view.mnu
Initial.mbr    Onshore.dbr    Softw_Eng.dbr  file.mnu
Offshore.acl   Onshore.env    Softw_Eng.env  help.mnu
Offshore.dbr   Onshore.mbr    Softw_Eng.mbr  report.mnu
AW511B#
```

That is all really…

6 Finding the partitions on tape

All partitions are sequentially recorded on the backup tape. The **ufsbackup** command in combination with the device that is used will create a separate "file" for each partition.

6.1 Go to "partition/file" with the `mt` command.

The **mt** command can be used to go directly to a particular partion or "file" on the backup tape. This is done via the option `fsf`. (`fsf` means **f**ile **s**kip **f**orward). An example would be: **`mt –f /dev/rmt/2cb fsf 3`**, which would take you to the fourth file on tape (i.e. You decide to skip the first three.

6.2 Go to "partition/file" with the `ufsrestore` command.

An alternative way to find you way on the tape can be to use the built-in parameters from the `ufsrestore` command.
When you enter `ufsrestore -ivf /dev/rmt/0cbn 2`, the command will take you to the 2nd file on the tape.

6.3 Tape files found on AP's and AW's

Assuming you tape is positioned at the beginning: On a Foxboro AW/AP the partitions can be found with the following commands:
With the `mt` command:

```
mt -f /dev/rmt/0cbn rewind for the / or "root" partition.
mt -f /dev/rmt/0cbn fsf 1 for the /var partition.
mt -f /dev/rmt/0cbn fsf 2 for the /usr partition.
mt -f /dev/rmt/0cbn fsf 3 for the /opt partition.
```

With the `ufsrestore` command it would be like this:

```
ufsrestore -ivf /dev/rmt/0cbn 1 for the / or "root" partition.
ufsrestore -ivf /dev/rmt/0cbn 2 for the /var partition.
ufsrestore -ivf /dev/rmt/0cbn 3 for the /usr partition.
ufsrestore -ivf /dev/rmt/0cbn 4 for the /opt partition.
```

When restoring files from a partition always make your working directory the same as the partition you are attempting to restore. So if you are restoring files from `/opt/fox/bin/tools` make `/opt` the current (working) directory before starting **ufsrestore**.

6.4 WP's

Similar to the AP and AW setup, on a Foxboro WP the partitions can be found with the following commands:
First with mt:

```
mt -f /dev/rmt/0cbn rewind for the / or "root" partition.
mt -f /dev/rmt/0cbn fsf 1 for the /usr partition.
mt -f /dev/rmt/0cbn fsf 2 for the /opt partition.
```

And with ufsrestore:

```
ufsrestore /dev/rmt/0cbn 1 for the / or "root" partition.
ufsrestore /dev/rmt/0cbn 2 for the /usr partition.
ufsrestore /dev/rmt/0cbn 3 for the /opt partition.
```

When restoring files from a partition always make your working directory the same as the partition you are attempting to restore. So if you are restoring files from `/opt/fox/bin/tools` make `/opt` the current (working) directory before starting **ufsrestore**.

7 QF991274D info

This is the text file accompanying QF991274D.

```
Title: Quick fix for CAR #991274D
Date: 06/16/03
QF#: QF991274D
Supersedes: QF991274C


1. ATTACHMENTS

   Quick Fix for CAR 991274C
   Backup and Restore
   V4.3, 6.1, 6.1.1
   Disk 1 of 1


2. PROBLEMS ADDRESSED

991274C:
The tape "backup" script was changed to allow a larger blocking
factor from 20 to 96 this results in less block gaps and thus fits
more data on a tape.

1002396:
If the restore was of greater than one tape the /var and the Informix partition
would not restore and had to be manually restored.

New utilities have been developed to perform backup and restore functions
on Solaris stations. The new utilities are backup, restore, and mirror_backup.

Functionally the scripts operate in the same fashions as the dmp and restore
scripts. They use the same ufsdump, ufsrestore and dd facilities used
previously by the dmp0_8MM and restore_8MM scripts.  The new utilities are
compatible for use with existing 4MM DAT tape drives or AIT tape drives.
They can also be used to restore a system that was backed up to multiple
4MM DAT tapes using the older dmp0_8MM and wpdmp0_8MM scripts.

The new backup script utilities reside in the "/usr/local" directory.

If using the restore scripts, once booted from CD-ROM cd / and
tar xvf /dev/fd0c ./tmp. This will put the restore in the
/tmp directory which is the only writeable directory once booted from
the boot CD-ROM.

The backup and restore utilities ask the user to specify the station type
that is being backed up, or restored. In the case of APs and AWs the user
is also asked to specify if there is an optional data file system that is
available on systems with RAID. In the backup and restore utilities this
is called the RAID partition, this is only found on RAID5 systems that have
implemented the use of this partition.

The backup utility is used to:
Generate a complete backup of all file systems and data partitions of a
Solaris station. Optionally generate a backup of a single file system or
data partition.

The restore utility is used to:
Restore all file systems and data partitions of a Solaris station,
except RAID optional data file system that gets restored from single
user using raid_restore. This utility has been corrected to handle the
restore of more than one tape generated from the backup script.

The mirror_backup utility is used to:
Generate a complete backup of all file systems and data partitions
of a Solaris station with mirrored drives. This utility takes the
mirrored SCSI bus off-line and generates a tape backup very similar
to that made using the backup utility. When the backup is complete
the mirrored SCSI bus is put on-line back into mirrored operation.
```

```
HH1020 describes in detail the use of this utility.


3. INSTALLATION:
NOTE: On D boxes please do the following:

#cd /etc/opt/SUNWmd
#cp mddb.cf.sun4u mddb.cf

Contents of Diskette:

Sum          utility                        date
61259 2      /tmp/find_tape               Nov 19 1999
31899 26     /tmp/restore                 Jun 10 2003
56294 17     /usr/local/backup            Mar 15 2000
60907 2      /usr/local/enable_ia         Dec 15 1999
61259 2      /usr/local/find_tape         Nov 19 1999
45877 20     /usr/local/mirror_backup     Jun 10 2003


Backup utilities installation:

Tar the backup utility into the /usr/local directory.

1. Boot into single user mode.

Insert the disk Type:

cd /
tar xvf /dev/rfd0 ./usr/local

The files that get put into /usr/local are backup, enable_ia,
find_tape, and mirror_backup. Usage of backup is described in
detail in the System administrator guide for Solaris stations.
(B0193ND rev. K or better)

Restore utilities installation:

The utility must be tarred into the /tmp directory once booted
from CD-ROM.

1. boot from the day0 boot CD-ROM of your version I/A software.
2. Insert the disk Type:

cd /
tar xvf /dev/fd0c ./tmp

The files that get put into /tmp are find_tape and restore.
3. Type:
cd /tmp
restore

This script restores 50/51 series stations from level 0 dumps.

This script will prompt you for the following information:
Enter the station type: AP, AW or WP.

If AW or AP the script will prompt you for the following information:
Do you with to restore the RAW-Mirrored Database that are on this tape [y/n]
If you are changing the size of this drive answer[y]
If you are restoring to the same drive answer[n]
If you are restoring a tape made from mirror_backup answer [n]

Where these dump tapes created with a concatenated /opt partition an
/opt partition that extends for more than 1 hard drive? [y or n]

Do you have Mirrored System Hard Drives? [y or n]

Where these dump tapes created from a RAID drive configuration having
a RAID data partition? [y or n]
```

```
Where these dump tapes made using the dmp0_8MM utility? [y or n]

If N was selected will prompt you for the following information:
Did backup produce multiple tapes?

Please load Tape Containing File System Dump Level 0 tape and press <CR>


When the scripts complete will have addition information or just the message:
Restore complete type reboot to return to multi-user mode.
```