GE Medical Systems

Technical Publications

Direction 2271344
Revision 8

RTIP For AW3.1 & 4.0 Service Manual

Operating Documentation

DAMAGE IN TRANSPORTATION

All packages should be closely examined at time of delivery. If damage is apparent, have notation **"damage in shipment"** written on **all** copies of the freight or express bill **before** delivery is accepted or "signed for" by a General Electric representative or a hospital receiving agent. Whether noted or concealed, damage **MUST** be reported to the carrier **immediately** upon discovery, or in any event, within **14** days after receipt, and the contents and containers held for inspection by the carrier. A transportation company will not pay a claim for damage if an inspection is not requested within this **14** day period.

Immediately complete a "Damage Loss Claim Form", available via MS Exchange Mail, after the damage is found.

MS Exchange Path:

Outlook/Public Folder/All Public Folders/Medical Systems/!Global Initiatives/Information Management/Forms/Common Forms/DAMAGE LOSS CLAIM FORM.

Send the completed form to the email address listed in the form.

For more information about the Transportation Claim Procedure, access the GE Medical Systems Intranet and enter the following URL address (case sensitive):

ftp://3.87.40.2/globepro/qualsys/Docs/190016MF.PDF

Rev. 11/15/2000

Direction 2128126 - Language Policy For Service Documentation, Rev 0

W A R N I N G

- **THIS SERVICE MANUAL IS AVAILABLE IN ENGLISH ONLY.**
- **IF A CUSTOMER'S SERVICE PROVIDER REQUIRES A LANGUAGE OTHER THAN ENGLISH, IT IS THE CUSTOMER'S RESPONSIBILITY TO PROVIDE TRANSLATION SERVICES.**
- **DO NOT ATTEMPT TO SERVICE THE EQUIPMENT UNLESS THIS SERVICE MANUAL HAS BEEN CONSULTED AND IS UNDERSTOOD.**
- **FAILURE TO HEED THIS WARNING MAY RESULT IN INJURY TO THE SERVICE PROVIDER, OPERATOR OR PATIENT FROM ELECTRIC SHOCK, MECHANICAL OR OTHER HAZARDS.**

AVERTISSEMENT

- **CE MANUEL DE MAINTENANCE N'EST DISPONIBLE QU'EN ANGLAIS.**
- **SI LE TECHNICIEN DU CLIENT A BESOIN DE CE MANUEL DANS UNE AUTRE LANGUE QUE L'ANGLAIS, C'EST AU CLIENT QU'IL INCOMBE DE LE FAIRE TRADUIRE.**
- **NE PAS TENTER D'INTERVENTION SUR LES ÉQUIPEMENTS TANT QUE LE MANUEL SERVICE N'A PAS ÉTÉ CONSULTÉ ET COMPRIS.**
- **LE NON–RESPECT DE CET AVERTISSEMENT PEUT ENTRAÎNER CHEZ LE TECHNICIEN, L'OPÉRATEUR OU LE PATIENT DES BLESSURES DUES À DES DANGERS ÉLECTRIQUES, MÉCANIQUES OU AUTRES.**

WARNUNG

- **DIESES KUNDENDIENST-HANDBUCH EXISTIERT NUR IN ENGLISCHER SPRACHE.**
- **FALLS EIN FREMDER KUNDENDIENST EINE ANDERE SPRACHE BENÖTIGT, IST ES AUFGABE DES KUNDEN FÜR EINE ENTSPRECHENDE ÜBERSETZUNG ZU SORGEN.**
- **VERSUCHEN SIE NICHT, DAS GERÄT ZU REPARIEREN, BEVOR DIESES KUNDENDIENST-HANDBUCH NICHT ZU RATE GEZOGEN UND VERSTANDEN WURDE.**
- **WIRD DIESE WARNUNG NICHT BEACHTET, SO KANN ES ZU VERLETZUNGEN DES KUNDENDIENSTTECHNIKERS, DES BEDIENERS ODER DES PATIENTEN DURCH ELEKTRISCHE SCHLÄGE, MECHANISCHE ODER SONSTIGE GEFAHREN KOMMEN.**

AVISO

- **ESTE MANUAL DE SERVICIO SÓLO EXISTE EN INGLÉS**
- **SI ALGÚN PROVEEDOR DE SERVICIOS AJENO A GEMS SOLICITA UN IDIOMA QUE NO SEA EL INGLÉS, ES RESPONSABILIDAD DEL CLIENTE OFRECER UN SERVICIO DE TRADUCCIÓN.**
- **NO SE DEBERÁ DAR SERVICIO TÉCNICO AL EQUIPO, SIN HABER CONSULTADO Y COMPRENDIDO ESTE MANUAL DE SERVICIO.**
- **LA NO OBSERVANCIA DEL PRESENTE AVISO PUEDE DAR LUGAR A QUE EL PROVEEDOR DE SERVICIOS, EL OPERADOR O EL PACIENTE SUFRAN LESIONES PROVOCADAS POR CAUSAS ELÉCTRICAS, MECÁNICAS O DE OTRA NATURALEZA.**

AVVERTENZA

- **IL PRESENTE MANUALE DI MANUTENZIONE È DISPONIBILE SOLTANTO IN INGLESE.**
- **SE UN ADDETTO ALLA MANUTENZIONE ESTERNO ALLA GEMS RICHIEDE IL MANUALE IN UNA LINGUA DIVERSA, IL CLIENTE È TENUTO A PROVVEDERE DIRETTAMENTE ALLA TRADUZIONE.**
- **SI PROCEDA ALLA MANUTENZIONE DELL'APPARECCHIATURA SOLO DOPO AVER CONSULTATO IL PRESENTE MANUALE ED AVERNE COMPRESO IL CONTENUTO.**
- **NON TENERE CONTO DELLA PRESENTE AVVERTENZA POTREBBE FAR COMPIERE OPERAZIONI DA CUI DERIVINO LESIONI ALL'ADDETTO ALLA MANUTENZIONE, ALL'UTILIZZATORE ED AL PAZIENTE PER FOLGORAZIONE ELETTRICA, PER URTI MECCANICI OD ALTRI RISCHI.**

警告

・このサービスマニュアルは英語版しかありません。

・GEMS以外でサービスを担当される業者が英語以外の言語を要求される場合、翻訳作業はその業者の責任で行うものとさせていただきます。

・このサービスマニュアルを熟読し、理解せずに装置のサービスを行わないでください。

・この警告に従わない場合、サービスを担当される方、操作員あるいは患者さんが、感電や機械的又はその他の危険により負傷する可能性があります。

注意:

- 本维修手册仅存有英文本。
- 非 GEMS 公司的维修员要求非英文本的维修手册时，客户需自行负责翻译。
- 未详细阅读和完全了解本手册之前，不得进行维修。
- 忽略本注意事项会对维修员，操作员或病人造成触电，机械伤害或其他伤害。

REVISION HISTORY

REV	DATE	PRIMARY REASON FOR CHANGE
0	May 12, 2000	Initial version for Release 8.4 M3 pre-production sites.
1	July 6, 2000	Changed RTIP external disk SCSI IDs to 11 & 12 (IDs 2 & 3 are reserved for AW options).
2	Oct. 10, 2000	Updated manual for 8.4 M4 version of RTIP software which is now supported on both AW3.1 and AW4.0 platforms. Added instructions for loading RTIP key using floppy or manual entry methods. Also added RTIP functional checks section.
3	Mar 28, 2001	Added section 1-2, Ultra 60 RTIP interconnect, Multipack Storage Disk replacement procedures, and replacement parts. Updated RTIP check scan Rx (shorter scan, fewer slices).
4	June 28, 2001	Changed Section 2 to include installation of 36GB external storage disk. Instructions for installing 18GB Multipack disk tower was removed from Section 2 and made Appendix A. Section 3-1 added a cd mount command and RTIP Software Installation script was changed to reflect the 36GB disk drive installation. Section 3-2 added a note to state that SGD Performance MOD must be installed for SGD or ACGD gradient cabinets. Section 7, table of parts changed to show the part numbers for the 68 pin SCSI cables.
5	Sept. 21, 2001	Correction to Section 3-1 cd mount command. Added sections A-2 and A-3.
6	Jan. 3, 2002	Updated for –4 version RTIP CD.
7	November 11, 2002	Updated Load From Cold instructions for current software builds (RTIP-7)
8…	March 14, 2003	Updated for latest software build (RTIP-8).

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
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Title Page	8						

* This revision/letter corresponds to the indicated document's revision control system.

TABLE OF CONTENTS

1- OVERVIEW

This document outlines the steps necessary to install the Neuro RTIP (Real Time Image Processing) option Catalog M1090SP on an Advantage Workstation (AW) for use with Signa CV/NV systems beginning with Signa Release 8.4 software.

1-1 Supplied Parts

Catalog M1090SP contains the following:

Item	Description	Part Number	Qty.
1.	RTIP for AW 3.1 and 4.0 CD-ROM	2271261-x **(Note 1)**	1
2.	Advantage Workstation Configuration Floppy	--	1
3.	SGD Performance MOD	2250664	1
4.	Rating Plate	46-302200P3	1
5.	Real-Time Image Processing for AW 3.1 & 4.0 Op Manual	2265527-148	1
6.	Errata for Real-Time Image Processing for AW 3.1 & 4.0	2270848-148	1

Note 1: BrainWave option M1033BM requires **–4** <u>or later</u> RTIP CD-ROM (has an additional file which records the text paradigm used by a BrainWave scan in the RTIP data header).

1-2 Known Install Issues

- Do not load AW software with the RTIP disk external storage turned ON or RTIP software install will fail (see Caution).

CAUTION

If AW software needs to be reloaded for any reason, you must power OFF the RTIP External Storage Disk until the AW software load is completely finished and you are ready to install RTIP software. If you turn power ON to the RTIP disk before AW software install completes (the AW manual says to turn power on to all SCSI devices towards the end on the install), the RTIP software will <u>not</u> install as the AW software takes control of the RTIP disk.

1-3 Determining RTIP Software Version

To determine what version RTIP software is installed, open a command window on the AW and type: **cd ~/RTIP <Return>**, then **cat RevisionID <Return>**. The software release information will be displayed, as shown below.

```
AW RTIP Software Release: AW40VP_M4_0148.5        <- For -4 version CD
Image Created on: Fri Nov 30 11:54:42 CST 2001

AW RTIP Software Release: AW91_ME_0228.5          <- For -6 version CD
Image Created on: Fri Nov 30 11:54:42 CST 2001

AW RTIP Software Release: UNIV_RTIP_0245.5        <- For -7 version CD
Image Created on: Tue Nov 12 10:46:04 CST 2002
```

```
AW RTIP Software Release: UNIV_RTIP_0311.5        <- For -8 version CD
Image Created on:
```

2- HARDWARE INSTALLATION

2-1 AW/Signa Prerequisites

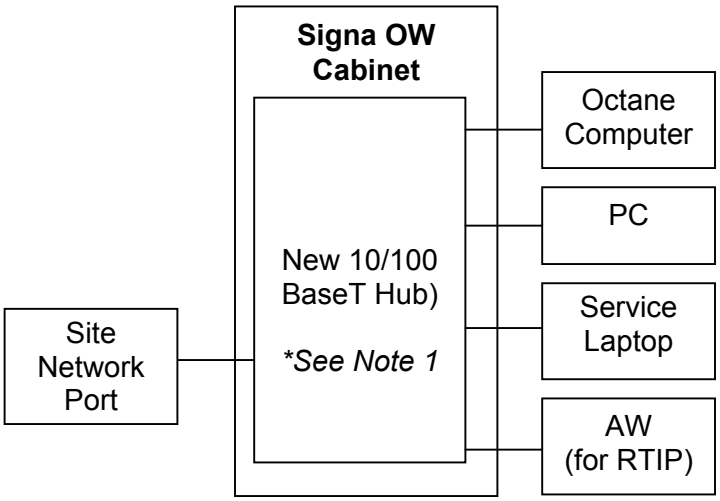
Note

This procedure covers the 36GB external Unipack Storage Disk (refer to Appendix A for the 18GB external multipack storage disk).

- AW 3.1 (Ultra 2) loaded with AW3.1_08 (or later) software *-or-* AW 4.0 (Ultra 60) loaded 4.0-05 software (or later)
- AW 3.1 (Ultra 2) has 36GB Unipack Storage Disk option for RTIP (M1031RC) *-or-* AW 4.0 (Ultra 60) has 36GB Unipack Storage Disk option for RTIP (M1031RC) and the second SCSI controller (PCI Board – M1031RD)
- AW networked to 100 BaseT Network Hub in Operator Workspace cabinet. Refer to Section 2-2, AW Connection to Signa.
- Signa host computer loaded with Signa Release 8.4 or later software.
- Signa Desktop must be running during RTIP software installation on the AW.

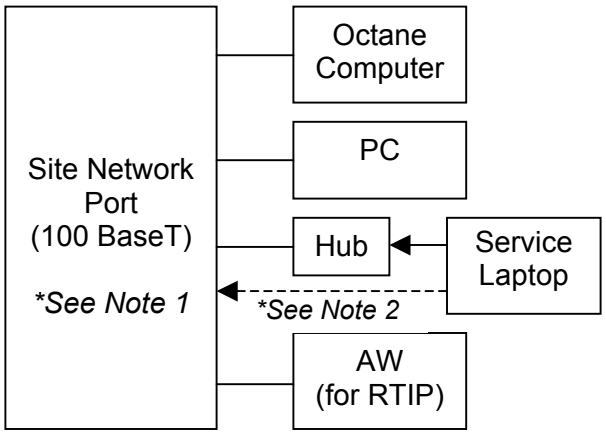
2-2 AW Connection to Signa

The AW that you will load RTIP on must be connected to Signa using the preferred method (see Illustration 2-1) or the alternate method (see Illustration 2-2).



Note 1: To ensure that the RTIP application runs correctly, no workstations except the AW used for RTIP can be connected to the 10/100BaseT Network Hub.

AW WITH RTIP CONNECTION - PREFERRED METHOD
ILLUSTRATION 2-1



Note 1: Site port must be minimum 100 BaseT switch/network device (not a router or repeater) that provides 100% of bandwidth at all times between the Octane computer and the AW used for RTIP applications.
Note 2: Optional path (used if hub cascading limits are reached).

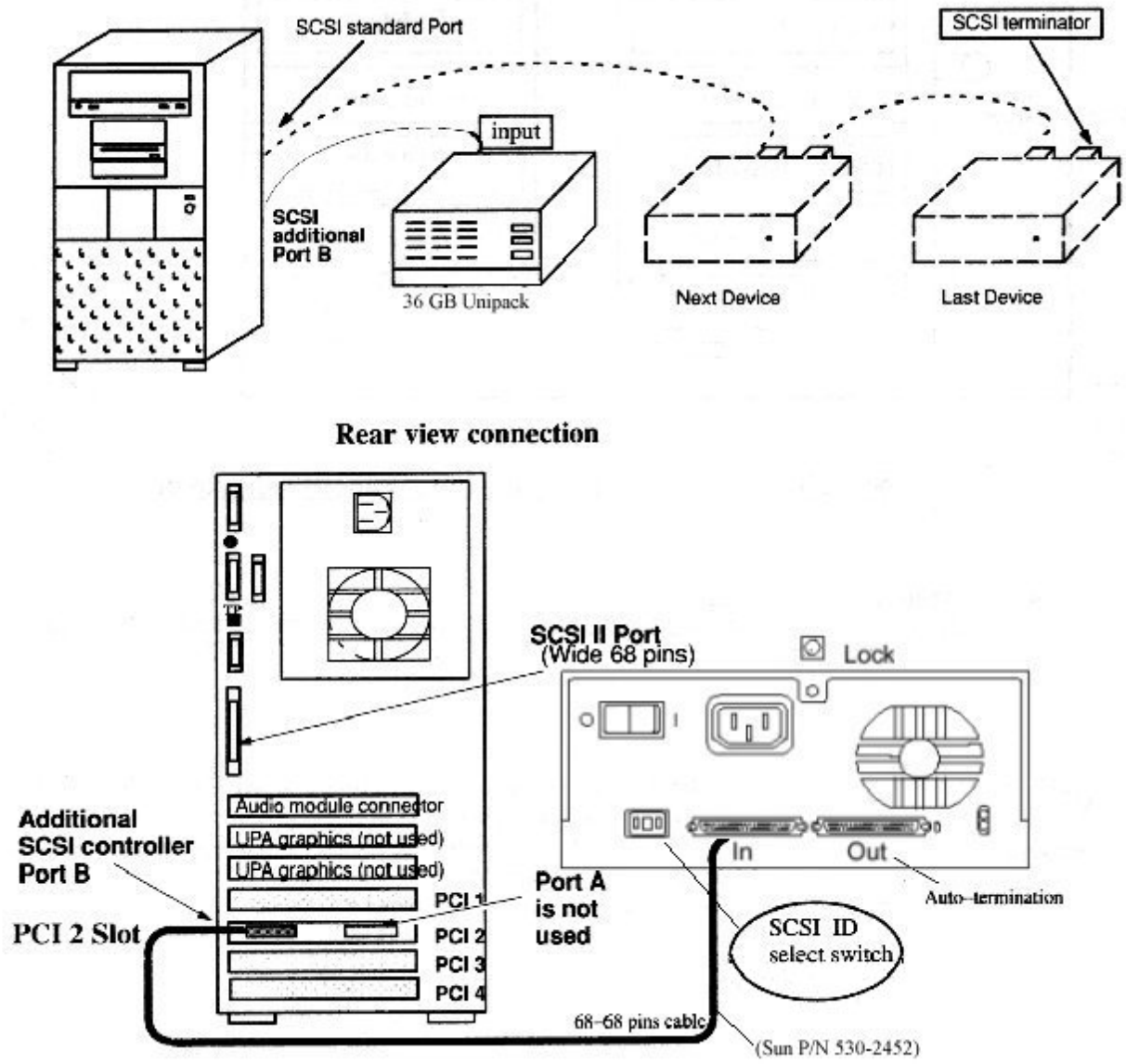
AW WITH RTIP CONNECTION - ALTERNATE METHOD
ILLUSTRATION 2-2

2-3 New 36GB External Disk Installation/Setup on an AW

2-3-1 For AW4.0 (Ultra 60)

The RTIP software requires a dedicated external disk drive. This section documents installation of the 36GB Unipack Storage Disk option (M1031RC) and the second SCSI controller (PCI Board – M1031RD) on the AW for RTIP software use.

1. **New AW:** The Ultra 60 AW requires an additional SCSI controller for RTIP. If RTIP is ordered with a new AW workstation, the second SCSI controller (PCI Board) should be already installed in PCI-2 slot. Connect the 36GB Unipack Storage disk for RTIP images to the PCI Board per Illustration 2-3.



RTIP CONNECTION - ULTRA 60
ILLUSTRATION 2-3

Existing AW: If RTIP is ordered for an existing AW, you must install the second SCSI controller (PCI Board) provided with Catalog M1031RD as follows:

a. Shut down the AW.

b. Turn OFF the power to the AW.

c. Install the PCI Board in **PCI 2** slot if using **-3** or later version RTIP CD-ROM. Install the PCI Board in **PCI 1** slot if using **-2** version RTIP CD-ROM. Refer to 2243431-100, Sun UltraSparc 60 Service Manual, Section 10.3.2 “Replacing a PCI card”. (The SCSI controller board is referred to as the “PCI card”.)

d. After installing the second SCSI controller board, connect the Unipack Storage Disk to it per Illustration 2-3.

2. Set the “SCSI Switch” (refer to Illustration 2-3) on the back of the 36GB Unipack Storage Disk to "**4**".
3. Connect the supplied power cable to the Unipack Storage Disk; see Illustration 2-3 for location.

4. Proceed to *Section 3, RTIP Software and Signa Option Key Installation*. Do not run the AW “install.hardware” script on the external RTIP 36GB Unipack Storage Disk. The RTIP installation scripts will configure it strictly for the RTIP application. (Refer to Caution below.)

CAUTION

Do not run the AW “install.hardware” script on the external Unipack Storage Disk used for RTIP. (i.e. Do not perform Job Card IST 004 documented in sm 2261307-100, AW 4.0 Ultra 60.) If you run the install.hardware SCSI device install script, the RTIP installation software will be unable to format/partition the external Unipack storage disk drive for RTIP use. (Note: The AW’s install.hardware script formats/partitions the external disk drive for AW’s use only.)

TABLE 2-1
RTIP INSTALL

HARDWARE	CONTROLLER NUMBER	TARGET NUMBER.
Ultra 60, 18GB	1 (PCI 1 slot, port B)	9 & 10
	4 (PCI slot, port B)	9 & 10
Ultra 60, 36GB	(Same as above)	4 (Note)
Ultra 2, 18GB disk	0	11 & 12
Ultra 2, 36GB disk	0	2, 3, 4, or 5 (Note)
Note: Value set by SCSI ID switch on disk drive.		

2-3-2 For AW3.1 (Ultra 2)

The RTIP software requires a dedicated external storage device (9GB or larger disk drives). This section documents installation of the 36GB Unipack Storage Disk option (M1031RC) on the AW3.1 for RTIP software use. The AW3.1 workstation can support two external storage devices (one for additional AW3.1 images; one for RTIP images).

1. Set the "SCSI Switch" on the back of the external Unipack Storage Disk according to Table 2-1. (Select an unused SCSI address)

TABLE 2-1
SCSI DEVICES ADDRESSING (36GB UNIPACK STORAGE DEVICE)

SCSI Device Description		Device Address
Internal System/image hard disk		0
Internal System/image hard disk		1
External CDR drive option		2
External Hard disk for CDR option	(OR)	3 or 4
External Dicom MOD (Maxoptics) option		3
External Genesis MOD (Pioneer) option		4
36 GB External Hard disk for RTIP	(OR)	2, 3, 4, or 5
DASM/LCAM Filming interface option		5
Internal CD-ROM Drive		6

= Dedicated Device Addresses

2. Connect the Unipack Storage Disk to the AW with the supplied SCSI cable (Sun P/N 530-2283). If there are two external disk drives, connect them to the AW as follows:

   The Ultra 2 only has a single SCSI Controller Board. Therefore, the only way to use **two** St□orage Disks options on the AW Ultra 2 (one configured for AW images, the other for RTIP images), is to daisy chain them (i.e. attach the new Unipack Storage Disk for RTIP to the "OUT" connector on the existing external disk for AW images.)

3. Connect the supplied power cable to the 36GB Unipack Storage Disk; see Illustration 2-3 for location.

4. Proceed to *Section 3, RTIP Software and Signa Option Key Installation*. Do **not** run the AW "install.hardware" script on the external RTIP Unipack Storage Disk. The RTIP installation scripts will configure it strictly for the RTIP application. (Refer to Caution below.)

CAUTION

Do not run the AW "install.hardware" script on the external Unipack Storage Disk used for RTIP. (i.e. Do not perform Job Card IST 004 documented in sm 2201394-100, AW [v3.1]) If you run the install.hardware SCSI device install script, the RTIP installation software will be unable to format/partition the external Unipack Storage Disk drive for RTIP use. (Note: The AW's install.hardware script formats/partitions the external disk drive for AW's use only.)

3- RTIP SOFTWARE AND SIGNA OPTION KEY INSTALLATION

3-1 Signa Worksheet for RTIP Installation

The values in Table 3-1 are needed for the RTIP software install. They can be found in the Signa Guided Install tool as follows:

1. On the Signa Service Desktop, select **[Install]**, then enter the password (default is **operator**). This brings up the Guided Install screen.

2. Click on **[Network Info]** tab. Record Signa Hostname and Signa Host IP Address values in Table 3-1.

3. Click on **[System Configure]** tab. Record Suite ID value in Table 3-1.

4. Exit the Guided Install by selecting **File -> Quit**.

TABLE 3-1
RTIP SITE CONFIGURATION WORKSHEET

ATTRIBUTE	VALUE	DESCRIPTION/EXAMPLE
Signa Hostname		Hostname of the Signa system. Example: lx-mr
Signa Host IP Address		Internet protocol address of the Signa system. Example: 3.24.87.127
TPS gateway IP address		Internet protocol address of the TPS gateway in the Signa system. Example: 216.33.27.1 *Note: TPS gateway IP is not required for Excite systems*
TPS IP address		Internet protocol address of the TPS in the Signa system. Example: 216.33.27.2. *Note: TPS IP is not required for Excite systems*
Suite ID		The name of the MR suite (typically an abbreviated form of the Signa hostname/location). Example: lxmr *NOTE: Suite ID is not required for the RTIP-7 release*
"Root" password		"operator" as shipped from GEMS; otherwise chosen by site

3-2 RTIP Software and Option Key Installation

The section provides the steps for installing the RTIP software and option key on the AW.

Note
All AW commands are case sensitive.

1. Make sure all external disks are connected and powered up. Also make sure Signa is completely up (i.e. the Signa desktop is displayed).

2. The first time after installing the RTIP external disk, perform the following for AW to recognize the external SCSI devices (otherwise skip this step and continue with step 3):

   a. Login to the AW as **root** (password is **operator**). If the AW already has user "sdc" logged in, first logout from sdc (to get to the login prompt), then log back in as user **root** (do not become root with "su" command).

   b. Once logged in as root, at the prompt type:
   sync <Return> followed by

   reboot -- -r <Return> (**reboot**<space><dash><dash><space><dash>**r**<Return>)

3. Login to the AW as **sdc** (default password is **adw3.1** (3.1 software) or **adw4.0** (4.0 software)).

4. Insert the "RTIP for AW 3.1 or 4.0" CD into the AW CD-ROM drive.

5. Once logged in as sdc:

   For AW4.0 software:
   a. Left-click on the **[Tools]** button.
   b. Click the **[Command Window]** button.
   c. Type **su** in the command window and enter the root password (default is **operator**).

   Note
   If the AW 4.0 software is in Volume Analysis mode, click the "**Study List**" button to make the "**Tools**" button appear.

   For AW3.1 software:
   a. Iconify the AW browser (click the left mouse button on the upper-right corner of the browser).
   b. Open a command window (using the root menu, brought up by clicking the right mouse button anywhere in the background, and selecting the "**Command Window**" option from the "service tools" menu).
   c. Type **su** in the command window and enter the root password (default is **operator**).

6. In the command window, type: **cd ~sdc/bin <Return>**, then **./cdromMount <Return>**

7. In the command window, type: **cd /cdrom/cdrom0 <Return>** (0=zero). If this command initially fails, try again, as volume management takes a few moments to recognize that a CD-ROM has been inserted.

8. Type **./install_rtip_software** and follow the prompts (note the leading "./"). The items typed in by the operator are shown in bold below:

```
b5-aw# ./install_rtip_software <Return>

           RTIP SOFTWARE INSTALLATION on the AW

  This script installs RTIP application software on the AW.
Continue to install RTIP software? ([y],n) y↵

  Please stand by...

  Searching for external hard disks...

      Controller 1, Target 9:  INSTALLED.
      Controller 1, Target 10: INSTALLED.
      Controller 1, Target 11: INSTALLED.
      Controller 1, Target 12: INSTALLED.

   ...done. Now searching for AW file systems...  done.

      Partitioning disk c1t11d0...
      Partitioning disk c1t12d0...
      Creating Solstice meta database...
         meta database initialized.
      Creating new filesystem as /export/RTIP...
         (this will take approx. 12 minutes)

         Filesystem created; checking...

      New filesystem mounted.
      Updating /etc/vfstab file...  done.

   Solstice configuration successful for d20.
   External disks for RTIP are ready.

  Successfully copied all user files/links into sdc home directory.


                  SIGNA SCANNER HOST IDENTIFICATION

  You will now be asked to enter information about the SIGNA Scanner
  host computer. Do not proceed unless you are sure of the SCANNER'S
  correct name and i.p. address.

  NOTE: The Signa scanner must be running (sdc logged in) and networked
        with the AW in order to continue with RTIP installation.

  Continue with entering SIGNA information? ([y]/n) y↵
```

One line for each external disk detected (controller and target numbers can vary)

This will not be displayed if a previous version of RTIP had been previously installed on the AW

```
      Enter SIGNA hostname: t6↵
      Enter SIGNA hostname again: t6↵

      Enter the SIGNA's ip address: 3.7.25.105↵
      Enter the SIGNA's ip address again: 3.7.25.105↵

Enter Signa user password (user 'sdc'): adw2.0↵

Validating, please stand by... OK.

   Site information successfully updated.

   The AW will now be rebooted.

   After the AW comes back up, log in as 'sdc', then become root.
   Move into the RTIP/INSTALL directory and run 'finish_install'.

   Rebooting in 10 seconds...
```

9. The AW will reboot if the installation is successful (if not, record any error messages displayed).

10. After the AW reboots, log in as **sdc** (default password is **adw3.1** (3.1 software) or **adw4.0** (4.0 software).

11. Once logged in as sdc:
    For AW4.0 software:
    a. Left-click on the **[Tools]** button.
    b. Click the **[Command Window]** button.
    c. Type **su** in the command window and enter the root password (default is **operator**).

    For AW3.1 software:
    a. Iconify the AW browser (click the left mouse button on the upper-right corner of the browser).
    b. Open a command window (using the root menu, brought up by clicking the right mouse button anywhere in the background, and selecting the "**Command Window**" option from the "service tools" menu).
    c. Type **su** in the command window and enter the root password (default is **operator**).

12. As root in the command window, type: **cd /export/home/sdc/RTIP/INSTALL <Return>**

13. Now type **`./finish_install`** (note the leading "`./`" - see below).

    - Follow the prompts to complete the configuration

- You will need to install the license key for RTIP. The key is supplied on the Advantage Workstation Configuration floppy disk shipped with the AW or RTIP package, and is keyed to the hostid of the AW system (the 8-character hostid may be found by simply typing `hostid`). If you don't have a floppy disk containing a keyfile, refer to the option key sheet (config.txt) that is sent with this option.

```
b5-aw# ./finish_install <Return>

                RTIP SOFTWARE CONFIGURATION

The AW's RTIP software will now be configured to run with the Signa
scanner installed at this site.


This script may be run anytime the configuration of the AW needs to
be verified.

Note: The Signa scanner must be powered on, networked and operational
      (sdc logged in) in order for this script to succeed.

Continue with AW configuration for RTIP? [y],n) ↵(default response is'y')

PLEASE VERIFY THAT THE FOLLOWING INFORMATION IS CORRECT:

                Signa name:  t6
                AW    name:  t6-aw

If the Signa host name is wrong, you must abort now,
re-run 'update_site_info' and then re-run this script.
Select one of:

  p - proceed with AW RTIP software installation
  a - abort the RTIP installation now

[p]: p↵

Starting RTIP software configuration...

Application RTC declared
Application RTIP declared
Application RTC & RTIP declared
Application RTIP Image Import declared
Application RTIP Image Export declared
Application Iconify Browser declared
Application RTIP DB Stats declared


                AW KEYFILE INSTALLATION for RTIP

      If you do not have a keydisk (or the fMRI key string),
      You may enter 's' to skip key installation for now.

Your choices are:
```

```
        1 or i - Install RTIP keys from a floppy disk
        2 or m - Manually enter RTIP keystring
        3 or q - Skip keyfile installation (continue with RTIP installation)

   Enter number or letter of desired choice: m↵

   Enter RTIP keystring (10 to 15 characters),

<Return> to start over: 23479280173893↵

Enter the RTIP keystring again, <Return> to start over: 23479280173893↵

Installing AW RTIP key '23479280173893' onto system...

   License registered
   Unlimited license installed
    ...done.

   t6 is alive
```

Only this line confirms that the license installed successfully. **If you don't see this, you've entered the wrong license key.**

Host Name of Signa Scanner

If error message "`No valid keyfile found on floppy; please insert another.`**" is displayed, then floppy is erased or damaged.** The AW reads the option key from the config.txt file on the AW Configuration Floppy. If the floppy is erased or damaged, remove it from the drive. Manually enter the RTIP "fMRI" keystring using the "config.txt" paper provided with AW applications as follows:

```
No valid keyfile found on floppy; please insert another.

   Your choices are:

        1 or i - Install RTIP keys from a floppy disk
        2 or m - Manually enter RTIP keystring
        3 or s - Skip keyfile installation (continue with RTIP installation)

   Enter number or letter of desired choice: 2 <Return>

   Enter RTIP keystring (10 to 15 characters),
                    <Return> to start over: Enter "fMRI" keystring listed on paper
                                            sent with option. Example: 1655737498

   Enter RTIP keystring again, <Return> to start over: Enter "fMRI" keystring again.

   Installing AW RTIP key '1655737498' onto system...  (Example value shown.)
   License registered
   Unlimited license installed  <- Displayed if key installed successfully or
   Couldn't install license     <- Displayed if key did not successfully installed
    ...done.

(Complete the rest of the RTIP install procedure.)
```

If error message `"Couldn't install license".` **is displayed**, the **floppy or config.txt paper contains the wrong license file** for the AW you are installing RTIP on. The software installation

continues (it must, for technical reasons). In this case, if "Couldn't install license" is displayed, the script "install_keyfile" must then be run separately after 'finish_install' completes in order to install the correct license (either manually or with the correct floppy disk). Refer to Section 3-3, Installing Keyfile for "Couldn't Install License" Error.

13. **If the RTIP (fMRI) key installed OK**, the installation software continues as follows:

```
    Validating, please stand by...  done.

svat_hosts.cfg not found in /w/config on Signa host...

Installed correct svat_hosts.cfg onto the Signa.

This AW, 't6-aw', is correctly listed in the Signa's 'hosts' file
    with the ip address 3.7.24.33.

===> lais is running properly <===

===> Communication with signa host 't6' ESTABLISHED. <===

Network performance and reliability OK.
```

    If the AW reboot message is not displayed, type **exit <Return>** then **exit <Return>** to logout of the command window.

14. If the Signa reboot message was displayed, reboot Signa now.

15. The SGD Perfomance MOD must be installed on systems with SGD or ACGD gradient cabinets.
    Neuro Sites only: Install the supplied SGD Performance MOD (2250664) on Signa using the Guided Install tool, **Option** tab. (Select **[Install]** from the Service Desktop.)
    Cardiac Sites: This option is provided on the M1090CR (Cardiac All) MOD, so you do not need to install the SGD Performance MOD (2250664).

    IMPORTANT!
    A "Save Info" must be done after RTIP is installed so that Signa's exports file is saved with an entry for the image pool (which RTIP needs), and will therefore be restored properly the next time "Restore Info" is done.

16. Perform a SaveINFO on Signa using the Guided Install tool, **Save/Restore** tab. (Select **[Install]** from the Service Desktop.). This is required after loading RTIP software to save updated configuration files on Signa.

17. **If the RTIP option key installed successfully:** Continue with Section 4, RTIP Functional Checks.
    If the RTIP option key install was not successful: Continue with Section 3-3, Installing Keyfile for "Couldn't Install License" Error.

3-3 Installing Keyfile for "Couldn't Install License" Error.

If error message "`Couldn't install license`" was displayed during RTIP install, the floppy contained the wrong license file for the AW you were installing RTIP on. Once you obtain a valid RTIP key, you can use this procedure to install the RTIP key without performing an entire RTIP software install again.

1. Log in as **sdc** (default password is **adw3.1** (3.1 software) or **adw4.0** (4.0 software)).

2. Once logged in as sdc:
   For AW4.0 software:
   a. Click the **[Patient List]** button.
   b. Left-click on the **[Tools]** button.
   c. Click the **[Command Window]** button.
   d. Type **su** in the command window and enter the root password (default is **operator**).

   For AW3.1 software:
   a. Iconify the AW browser (click the left mouse button on the upper-right corner of the browser).
   b. Open a command window (using the root menu, brought up by clicking the right mouse button anywhere in the background, and selecting the "**Command Window**" option from the "service tools" menu).
   c. Type **su** in the command window and enter the root password (default is **operator**).

   Note
   If the AW 4.0 software is in Volume Analysis mode, click the "**Study List**" button to make the "**Tools**" button appear.

3. Type the following in the command window:

```
b5-aw# cd /export/home/sdc/RTIP/INSTALL <Return>
b5-aw# ./install_keyfile <Return>


            AW KEYFILE INSTALLATION/VALIDATION for RTIP

This program verifies, installs, backs up or generates the keyfile
required to run RTIP software on the AW.


Your choices are:

      1 or i - Install RTIP keys from a floppy disk
      2 or m - Manually enter RTIP keystring
      3 or q - Quit

Enter number or letter of desired choice:
```

If you have a valid AW configuration floppy, continue as follows:

```
Enter number or letter of desired choice: 1 <Return>

Insert keydisk floppy and press <enter>  ← Insert the supplied Advantage
                                           Workstation Configuration floppy,
                                           then press <Return>.
     checking floppy...

    Installing AW key 1655737498 onto system... (Example value shown)
   License registered
   Unlimited license installed ←Very Important - If not displayed, you have a bad
                                                 floppy disk or the wrong license!
    ...done.
```

If you do not have a valid AW configuration floppy, but have a valid RTIP keystring number, manually install the RTIP keystring as follows:

```
Enter number or letter of desired choice: 2 <Return>

   Enter RTIP keystring (10 to 15 characters),
                 <Return> to start over: Enter "fMRI" keystring listed on paper
                                         sent with option. Example: 5573749822

   Enter RTIP keystring again, <Return> to start over: Enter "fMRI" keystring
                                                       again.

   Installing AW RTIP key '5573749822' onto system...  (Example value shown.)
   License registered
   Unlimited license installed  <- Displayed if key installed successfully
   ...done.
```

3-4 AW Configuration Floppy Purpose

The AW Configuration Floppy's purpose is 2-fold: 1) For new applications, it contains a text file (config.txt) that includes the keys for the purchased AW applications. 2) When the AW “Configuration” -> “Floppy” option (AW3.1 software) or [Services] -> [Save Configuration] option (AW4.0 software) is run, it provides a location to save all AW site configuration information. (If the Configuration floppy is missing from shipment, any blank floppy will do).

A hardcopy printout of the config.txt option file is also provided with the package in case the floppy is broken. When options are saved to a configuration floppy, a .tar file on the floppy is created; the .tar file contains all option and site information. When the Configuration floppy is used for software reinstallation, the AW will look for the .tar file first. If it sees the .tar file, then the .txt file is bypassed.

4- RTIP FUNCTIONAL CHECKS

4-1 Verifying Performance of New Applications

1. Log back into the AW as **sdc** (default password is **adw3.1** (3.1 software) or **adw4.0** (4.0 software). Verify that there are now five new menu options in the Browser's application menu called "RTC", "RTC & RTIP", "RTIP", "RTIP Image Import" and "RTIP Image Export".

2. After Signa software is up (if prompted to reboot Signa in Section 3-2), verify the new RTIP applications perform as expected. Do the following:

   a. Select "RTC" from the Browser's application menu. (For AW4.0, click on **[More Software]** for browser applications.)
      - Two windows should pop up. *If they do not, then there is a problem with the Ethernet connection between the AW and scanner. If this is the case try running the script 'update_signa' from the AW (refer to Section 5, Update_Signa).*
      - If you see the two RTC windows pop up, you know a connection has been established between the AW and the Scanner.
      - Quit RTC by double clicking in the upper-left corner of the larger window (of the two that popped up).
      - Click **[Shutdown]** to confirm quitting RTC.

   b. Select "RTIP Image Import".
      - If the Import application window comes up, then it is running properly. *If you get an error message box, then the IDS database manager failed to start. Read and follow the text in the error message box for possible solutions (mainly rebooting the AW).*
      - A "Notice" window appears over the Image Import window and prompts you to "Select level of selection for transfer". Click on **[Image]** to transfer the highlighted browser image from Signa to the AW.
      - A "Notice - Image transfer complete" window should be displayed. Click **[OK]**. This closes both windows (quits the application).

   c. Select "RTIP Image Export".
      - If the Export application window comes up, then it is running properly. *If you get an error message box, then the IDS database manager failed to start. Read and follow the text in the error message box for possible solutions (mainly rebooting the AW).*
      - Quit RTIP Image Export by double clicking in the upper-left corner of the window.

   d. Check that the network connection between the AW and the scanner is functioning properly and that it is capable of transferring data at the required rates as follows:
      - Open a Command Window (AW4.0: Select from Tools button. AW3.1: Iconify Browser; from Root menu, select "service tools" menu then "Command Window".)
      - In the command window, type:

      ```
      sdc@aw-b3: cd /export/home/sdc/RTIP/INSTALL <Return>
      sdc@aw-b3: check_net <Return>

         Network performance and reliability OK.   (Example value shown.)
      ```

(The host name shown as sdc@aw-b3 is an example value). 'check_net' will inform and advise if network performance is not adequate for RTIP operation (must be ≥ 800K bytes/second).

e. Finally, refer to Section 4-2 to verify proper RTIP operation utilizing both Signa and the AW software.

4-2 Performing an RTIP Scan

This procedure takes about 30 minutes. An RTIP scan is run to confirm correct installation of all RTIP software. There are four sections to execute: 4-2-1through 4-2-4. Follow the steps in the order in which they appear.

4-2-1 On the Signa Console (Part 1)

Purpose: Create High Res images to be used as the background in RTIP.

1. Click on **[New Pt]**.

2. Landmark on DQA-III or TLT Head phantom in Head Coil.

3. Enter the following:
   Patient ID: **geservice**
   Patient Name: **rtip test**
   Weight (lb.): **111**

4. Prescribe a High Res exam on Signa per Table 4-1.

TABLE 4-1
HIGH RESOLUTION SCAN PRESCRIPTION

PATIENT POSITION	SCAN TIMING	ACQUISITION TIMING	SCANNING RANGE
Patient Position: **Supine** Patient Entry: **Head First** Coil: **Head** Plane: **Axial** Mode: **2D** Pulse Seq: **Fast GRE**	TE: **Minimum** TR: **150** Flip Angle: **30** Bandwidth: **31.25**	Freq: **256** Phase: **192** Nex: **1** Phase FOV: **1**	FOV: **24** Slice Thickness: **5** Spacing: **1.5** S/I Start: **S20** S/I End: **I20** Slices: 8

5. Click on **[Save Series]**, **[Move to Scan]**, then **[Auto Prescan]**.

6. After prescan completes, click on **[Scan]** (30 second scan). Make a note of the exam & series number: ***Exam #:*** _____ ***Series #:*** _____

7. Choose the Image Management (browser) icon on the Signa console:
   a. Choose **[Network]** from the task bar on the top.
   b. Make sure the 'Selected remote host' menu item reads the name of the AW for RTIP.
   c. Select the high res series that was just scanned.
   d. Put the series on the AW database by clicking on **[Send Series]** from "Network" selections.

4-2-2 On the Advantage Workstation (Part 1)

Purpose: Transfer the High Res images from the AW database to the RTIP Image Database Server (IDS).

1. Once the images are transferred from Signa, select the series that was just transferred. The series gets highlighted.

2. From the AW browser menu, select the application **[RTIP Image Import]**. *(Note: The import will fail if you try to import the same "geservice" series or any of the images for the series a second time.)*

3. The application prompts the user with 'Select level of selection for transfer'. Click on **[Series]**. This transfers all images in that series from the AW database to IDS.

4-2-3 On the Signa Console (Part 2)

Purpose: Prescribe an EPI scan.

1. Copy/Paste the previous high res prescription, click **[View Edit]**, then make the following changes to perform an EPI scan per Table 4-2:

TABLE 4-2
EPI REALTIME SCAN PRESCRIPTION

PATIENT POSITION	SCAN TIMING	ACQUISITION TIMING	USER CV SCREEN (See Note)
Pulse Seq: **Gradient Echo EPI** PSD Name *(type in the following)*: **epi_gre_128**	TE: **40** TR: **1500** Flip Angle: **90** Bandwidth: **125**	Freq: **128** Phase: **128**	Initial State: 0 Baseline Duration: **10** Stimulation Duration: **10** Scan Duration: **35**
Note: The Baseline Duration value (10) or Stimulation Duration (10) value times the TR value (1500ms for this scan) = 15 seconds. So for this scan, a patient would normally receive a 15 second audio, video, or physical stimulus, followed by 15 seconds with no stimulus. This stimulus ON/OFF pattern repeats multiple times during the scan. The Scan Duration value determines the number of images for each slice. So for this scan, 35 images/slice x 8 slices = 280 total RTIP images. This does not include the initial Signa "template" images (8 High Res for this example).			

2. Click on **[Save Series]** then **[Prepare to Scan]**. ***IMPORTANT!!*** Do **not** start the scan from the **Signa** console!

4-2-4 On the Advantage Workstation (Part 2)

Purpose: Run RTIP.

1. From the AW Browser menu, select **[RTC & RTIP]**.

2. A "Notice: start realtime before connecting to it" window appears. Click **[acknowledge]**.

3. Five Realtime/RTIP windows appear:
   - "Realtime Signa" window
   - "Realtime Imaging Control" window
   - "Real Time Image Processor" (i.e. RTIP) window
   - "RTIP Display" window
   - "RTIP Display Controls" window

4. **AW4.0 Software:** Move the Console window to the open background if needed. This window will display the status of RTIP image collection.

   AW3.1 Software: Iconify the Browser, then double click on the icon **[Console]**. Move the window to the open background if needed. This window will display the status of RTIP image collection.

5. In the *Real Time Image Processor* window:
   a. Set Monitor **[Off]**.
   b. For Background:, click **[List/Select]** option then click **[Browser]**.

6. Select the following in the *IDBM Browser* window:
   a. Hospital: click **'MROR'**, Modality: click **'Genesis'**, System: click **'GEM**', Patient: click on the patient ID of the high res series that was just transferred from Signa. (Note: The patient ID will be **'geservice'**, but there may be more than one listed).
   b. Select the proper Exam, Series, and the first image of the high res series, then click **[Select]**. The image shows up in the *RTIP Display* window.

7. In the *Real Time Image Processor* window set Monitor: **ON**.

8. In the *RTIP Display Controls* window:
   a. Set Threshold a: **150 <Return>**
   b. Set Tile Wnd: **[On]**. The first four background images show up in the *Tile Window*.

9. Make sure nobody is using the Signa scanner. Continue on the AW as follows:
   a. In the *Realtime Imaging Control* window click, **[Prep]**.
   b. The system tries to acquire a 'New Template'. Confirm the popup by clicking on the **[New Template]** button.
   c. There is a series of messages displayed at the bottom of the *Realtime Imaging Control* window. The last message displayed is 'Prepped'.
   d. In the *Real Time Image Processor* window, the "Total Slices" will be 8.

10. In the *Realtime Imaging Control* window click **[Start Scan]**.

11. In the *Console* window during scan, you will see "`## OFF ##`" for 15 seconds followed by "`## ON! ##`" for 15 seconds. This cycle repeats until the scan ends.

    On the *Tile Window* images, random colored pixels will light up and change during the scan. You may have to reduce the "a" threshold value in the *RTIP Display Controls* window below 150 (try 100 or 50) if you don't see any random colored pixels after about 5 to 10 seconds. *(During an actual patient scan, the "a" threshold value would be higher (typically 300), so this "noise" would not be seen or would be averaged out.)*

12. At the end of the 0:58 minute scan, in the *Realtime Signa* window, the 'Images' field should read 288 (including the template images) while the 'Saved' field should read 280.

13. Once the scan is complete, shutdown the application by double clicking the top left corner of the *Real Time Image Processor* window then the *Realtime Signa* window.

14. Remove RTIP test images from both Signa (Hi-Res scan) and the AW (Hi-Res and Real-time scans). To remove all RTIP real-time test scans on the AW, perform the following:

    a. From the AW Browser applications, click **[RTIP Image Export]**.
    b. For List Sys, select **GEM**
    c. For List Pat, select **geservice**. If more than one geservice patient is listed, click on List Stu to verify you have the one with the correct exam number selected.
    d. Click **[Delete]**.
    e. A confirmation box is displayed: "`Delete the database structure under /GEM/geservice/<exam #>`". Click **[Confirm]** to remove the RTIP test images.

5- UPDATE_SIGNA – FOR TROUBLESHOOTING AND SIGNA SOFTWARE RE-LOAD

In case of difficulty with RTIP, run the script "update_signa" (located in directory */export/home/sdc/RTIP/INSTALL*) before calling for help. The update_signa script will verify and update the AW's configuration as necessary for proper communication with Signa. If problems occur, update_signa will display helpful messages about what is wrong and recommend possible corrective action.

Note

The "update_signa" script **must** be re-run anytime Signa software is reloaded. RTIP will not be functional following a Signa software reload until "update_signa" is run from the AW.

Procedure

To run "update_signa" on the AW after reloading Signa, do the following:

1. On the AW, log in as **sdc** (default password is **adw3.1** (3.1 software) or **adw4.0** (4.0 software).

2. Once logged in as sdc:

   For AW4.0 software:
   a. Left-click on the **[Tools]** button.
   b. Click the **[Command Window]** button.
   c. Type **su** in the command window and enter the root password (default is **operator**).

   For AW3.1 software:
   a. Iconify the AW's browser (click the left mouse button on the upper-right corner of the browser).
   b. Open a command window (using the root menu, brought up by clicking the right mouse button anywhere in the background, and selecting the "**Command Window**" option from the "service tools" menu).
   c. Type **su** in the command window and enter the root password (default is **operator**).

   Note

   If the AW 4.0 software is in Volume Analysis mode, click the "**Study List**" button to make the "**Tools**" button appear.

3. Type: **cd /export/home/sdc/RTIP/INSTALL <Return>**

4. Type: **`./update_signa`** (note the leading "`./`" - see below) and follow the prompts to complete the update as follows:

```
b5-aw# ./update_signa <Return>

   b5 is alive      (Example value 'b5' for Signa hostname shown)

Enter Signa root password: ← Enter site's Signa root password (default is operator).

      Validating, please stand by...  done.
```

```
svat_hosts.cfg not found in /w/config on Signa host...

   Installed correct svat_hosts.cfg onto the Signa.

   This AW, 't6-aw', is correctly listed in the Signa's 'hosts' file
       with the ip address 3.7.24.33.

   ===> lais is running properly <===

   Network performance and reliability OK.
```

If the network communication is bad, you may see a message like the following:

```
     12 network packets have been dropped.
     Possible network cabling problem.

 Remedy the problem and rerun 'check_comms".
 Remedy the problem and rerun 'update_signa".
```

Troubleshoot and fix the network problem then use the 'check_comms' script to run the network communication check by typing: **./check_comms <Return>**. If the network performance is now good, then rerun the 'update_signa' script.

```
Enabling the rtt init file...

Enter Signa root password:
```

← **Enter site's Signa root password** (default is **operator**)

```
      Validating, please stand by...  done.

   ...complete!
```

Note

The following message to reboot Signa is displayed only if a software reload was just performed on Signa.

```
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                               *
*                              --------------                                   *
*                            ----   NOTE   ----                                 *
*                              --------------                                   *
*                                                                               *
*     THE SIGNA HOST COMPUTER MUST BE REBOOTED BEFORE RTIP CAN BE USED          *
*                                                                               *
*                                                                               *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

5. If the above message is displayed, reboot the Signa Host Computer. Otherwise you are done with the 'update_signa' script and can close the Command window.

6. Perform Section 4, RTIP Functional Checks, to verify proper RTIP operation.

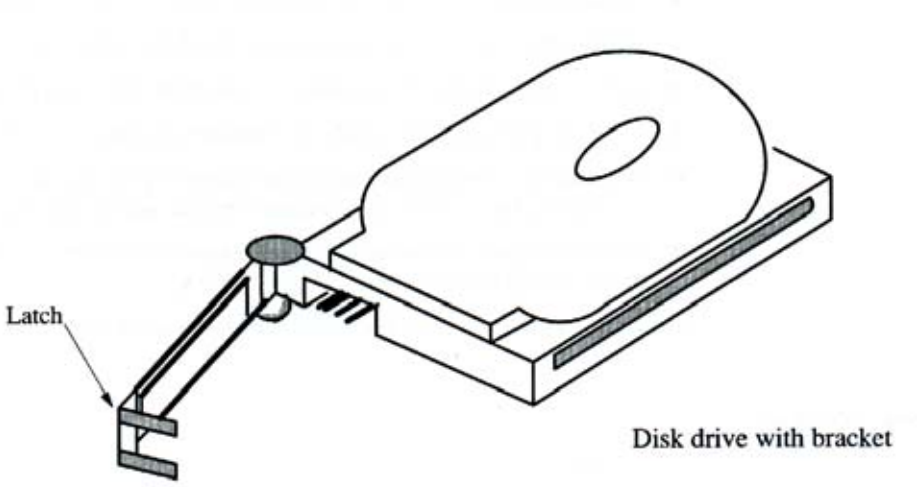
6- REPLACEMENT PROCEDURES - SPARC MULTIPACK STORAGE

This section covers replacement procedures for the Sparc Multipack Storage Disk option tower that consists of two 9GB disk drives.

6-1 Sparc Multipack Storage Hard Disk Drive Replacement

Note

The replacement Sparc Multipack Storage disk must have brackets similar to the ones already in the unit. (See Illustration 6-1)



MULTIPACK STORAGE DISK DRIVE BRACKET
ILLUSTRATION 6-1

6-1-1 Removing the Old Disk

1. Shutdown and turn OFF workstation. Turn OFF Storage pack and other SCCI peripherals.

2. Unlock and remove the left side cover.

3. Attach a wrist strap to your wrist and to the chassis unit.

Note

Be sure the power cord to the Multipack unit is still connected to the wall plug to ensure a ground.

4. Unlatch the drive bracket handle (on the right) to release it.

5. Pull the bracket handle out; swing it open 180 degrees until it pushes against the chassis.

6. Continue pushing the handle onto the chassis, applying mild pressure until the drive pops out from the connector.

7. Slide the drive out.

6-1-2 Inserting the New Disk

1. With the bracket extended 90 degrees, insert the disk drive into the drive bay, aligning the connector on the drive with the connector on the backplane.

2. Gently push the drive until it snaps to the connector.

3. Swing the drive bracket handle closed until it latches.

4. Replace the left side cover.

5. Turn ON power to the Storage pack, then to the workstation.

6. Reinstall RTIP software option per Section 3, RTIP Software Installation.

6-2 Power Supply Replacement

1. Shutdown and turn OFF workstation. Turn OFF Storage pack and other SCCI peripherals.

2. Disconnect the SCSI cable and the power cord from the Storage pack.

3. Remove the 3 screws and the lock block that holds the back cover.

4. Remove the 2 Phillips head screws that attach the power supply to the unit.

5. Carefully pull the power supply out from the unit using the pull strap.

6. Align the new power supply so that the connector plug lines up with the connector on the backplane, then insert it until its edges are flush against the edge of the chassis.

7. Insert and tighten the 2 screws to secure the power supply, then replace the back cover and insert and tighten the 3 screws plus lock block.

8. Connect the SCSI cable and power cord to the enclosure.

9. Turn ON power to the Storage pack, then to the workstation.

7- REPLACEMENT PARTS - EXTERNAL DISK DRIVE FOR RTIP

IMPORTANT! – For GEMS-E Only: All defective Sun parts (even non-repairable parts) must be returned through the usual defective parts process. In the other case, extra costs will be charged to the regions.

IMPORTANT! – For GEMS-AM Only: During the warranty period, FE should contact Sun at 1-800-USA-4SUN (1-800-872-4786), with the part number of the item needed and the serial number of the system. Refer to the Sun web page: sun.com/service/phonetree and select option 1 (hardware/software/parts installation and support).

ITEM	PART NUMBER	FRU	DESCRIPTION	QTY
			18GB MULTIPACK STORAGE DISKS OPTION	
1	2244839	1	SCSI Cable 68/68 Pins P/N: 530-2283, Long 0.8M (Ultra 2 only; see Ultra 60 cable part number below)	1
2	2161098	1	Sun Multipack Power Supply (SUN P/N: 300-1283)	1
3	2221101	1	Sun Multipack 6-Slot Backplane (SUN P/N: 501-4747)	1
4	2246900	1	9.1 GB 10000 RPM Hard Disk Drive (SUN P/N: 540-3881)	2
			36GB UNIPACK STORAGE DISK OPTION	
1	2301787	1	36GB Unipack Storage Disk	1
1	2244839	1	SCSI Cable 68/68 Pins P/N: 530-2283, Long 0.8M (Ultra 2 only; see Ultra 60 cable part number below)	1
			ULTRA 60 – (ADDITIONAL RTIP OPTION FRUS)	
1	2273236	1	USCSI 2 Chnl Additional Controller (SUN P/N: 375-0005)	1
1	2273237	1	SCSI Cable VHDCI 68/SCSI3 68 pins (Sun P/N: 530-2452) (Long 0.8m	1

APPENDIX A - 18GB EXTERNAL DISK TOWER

A-1 18GB External Disk Tower Installation/Setup on an AW

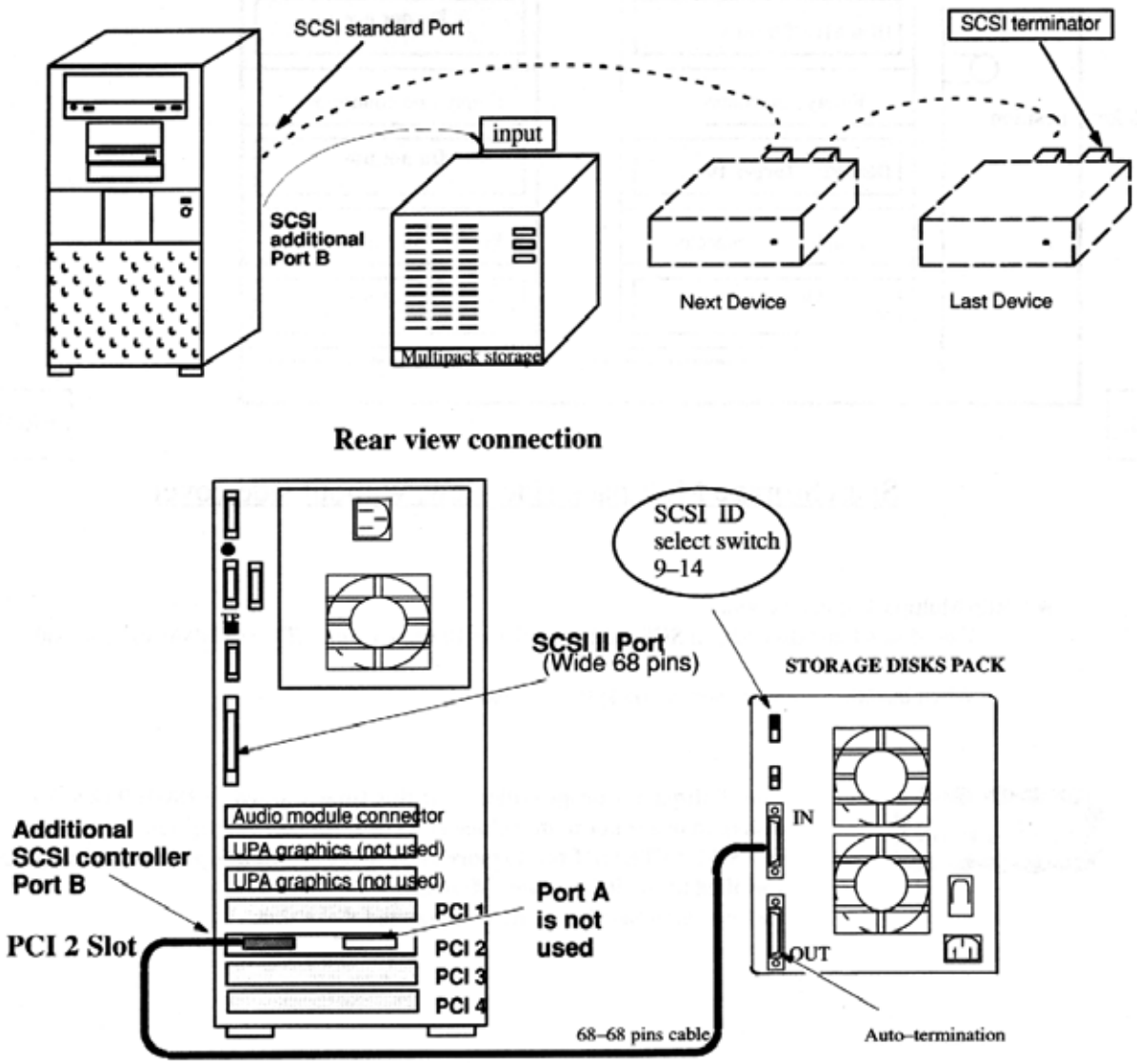
A-1-1 For AW4.0 (Ultra 60)

The RTIP software requires a dedicated external disk tower. This section documents installation of the 18GB Multi-pack Storage Disks option (M1031RC) and the second SCSI controller (PCI Board – M1031RD) on the AW for RTIP software use. The Multi-pack Storage Disks option presently uses two 9GB hard disk drives.

1. **New AW:** The Ultra 60 AW requires an additional SCSI controller for RTIP. If RTIP is ordered with a new AW workstation, the second SCSI controller (PCI Board) should be already installed in PCI-2 slot. Connect the Multipack Storage external disk tower for RTIP images to the PCI Board per Illustration 2-3.

Note

The 2271261-**2** version RTIP for AW3.1 & 4.0 CD-ROM will not install on an AW4.0 Ultra 60 with the PCI Board (2nd SCSI board) installed in PCI 2 slot (controller ports c3 & c4). The -**2** RTIP software will only install with the PCI Board in PCI 1 slot (controller c1 or c2). If installing RTIP for AW3.1 & 4.0 using the -**2** version CD-ROM on an AW4.0, move the PCI Board from PCI 2 slot to **PCI 1** slot. If you receive the updated **-3** or later version RTIP CD-ROM this problem is fixed, so the PCI Board should be installed in slot PCI 2.



RTIP CONNECTION - ULTRA 60
ILLUSTRATION 2-3

Existing AW: If RTIP is ordered for an existing AW, you must install the second SCSI controller (PCI Board) provided with Catalog M1031RD as follows:

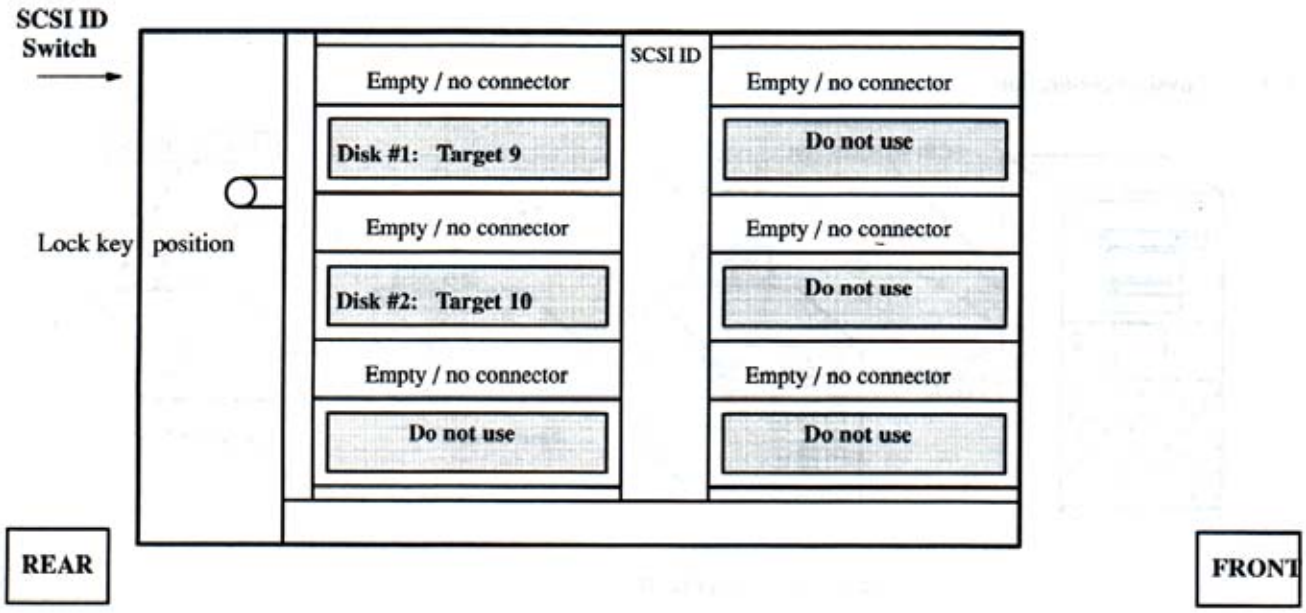
a. Shut down the AW.

b. Turn OFF the power to the AW.

c. Install the PCI Board in **PCI 2** slot if using **-3** version RTIP CD-ROM. Install the PCI Board in **PCI 1** slot if using **-2** version RTIP CD-ROM. Refer to 2243431-100, Sun UltraSparc 60 Service Manual, Section 10.3.2 “Replacing a PCI card”. (The SCSI controller board is referred to as the “PCI card”.)

d. After installing the second SCSI controller board, connect the Multipack Storage Disks tower to it per Illustration 2-3.

2. Verify the "SCSI Switch" on the back of the tower is set to the "**9-14**" (up position). (The disk drives remain in SCSI slots labeled 1 and 2. With the "SCSI switch" in the "9-14" position, the disk SCSI IDs are set to 9 and 10.) See Illustration 2-4.



18GB MULTIPACK STORAGE DISKS TOWER (SIDE VIEW) –
REQUIRED DRIVE LOCATIONS FOR RTIP WITH ULTRA 60
ILLUSTRATION 2-4

3. Connect the supplied power cable to the Multipack Storage Disks tower.

4. Proceed to Section 3, RTIP Software Load. Do not run the AW "install.hardware" script on the external RTIP Multipack Storage Disks. The RTIP installation scripts will configure it strictly for the RTIP application. (Refer to Caution below.)

CAUTION

Do not run the AW "install.hardware" script on the external Multipack Storage Disks used for RTIP. (i.e. Do not perform Job Card IST 004 documented in sm 2261307-100, AW 4.0 Ultra 60.) If you run the install.hardware SCSI device install script, the RTIP installation software will be unable to format/partition the external disk drives for RTIP use. (Note: The AW's install.hardware script formats/partitions the external disk drives for AW's use only.)

A-1-2 For AW3.1 (Ultra 2)

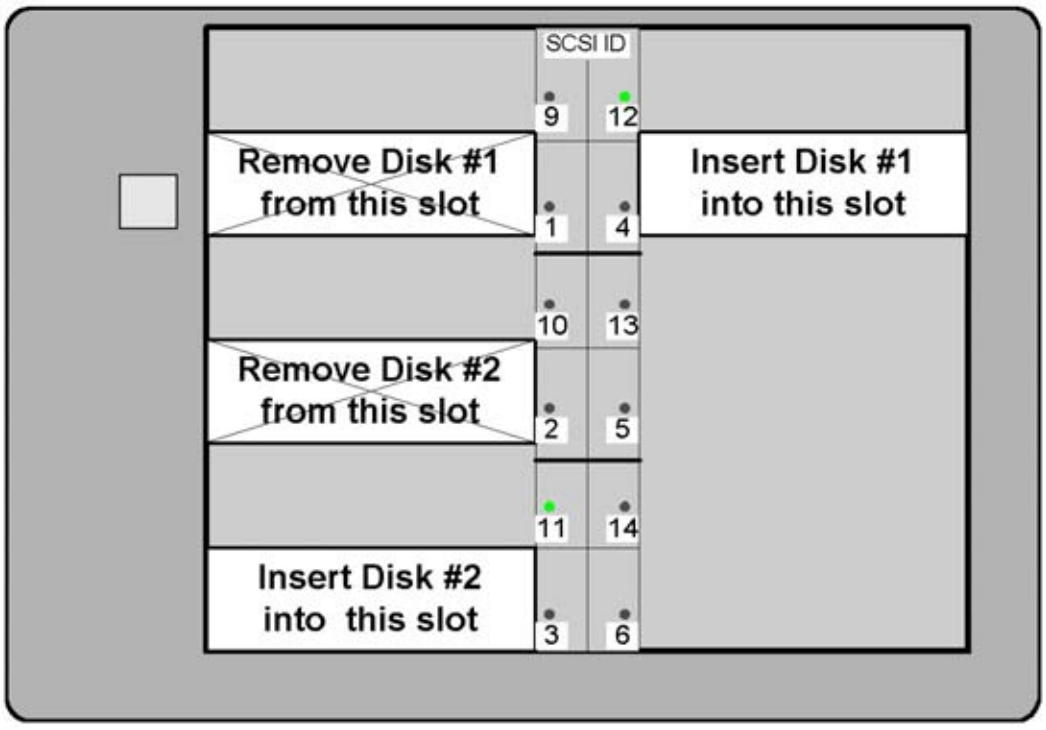
The RTIP software requires a dedicated external disk tower (9GB or larger drives). This section documents installation of the 18GB Multipack Storage Disks option (M1031RC) on the AW3.1 for RTIP software use. The AW3.1 workstation can support two external disk towers (one for additional AW3.1 images; one for RTIP images). The external disk tower used by AW3.1 requires SCSI IDs 9 & 10. Therefore, the SCSI ID's for the RTIP disk tower drives must be changed to IDs 11 & 12 to avoid SCSI errors if a second disk tower is already present or is added at a later date.

1. Unlock and remove the 18GB Multipack Storage Disk tower side cover.

2. Using appropriate static precautions, remove the upper disk drive from SCSI ID 9/1 slot and install it in the SCSI ID 12/4 slot (see Illustration 2-3). Remove the middle disk drive from SCSI ID 10/2 slot and install it in the SCSI ID 11/3 slot (see Illustration 2-3).

Note

The first number for each slot is the high SCSI ID for that slot, i.e., the ID when the SCSI ID switch on the rear panel is set to "**9-14**". The second number is the low SCSI ID, i.e., the ID when the SCSI ID switch is set to "**1-6**". (For example, slot 9/1 is the slot having 9 as the upper ID number and 1 as the lower ID number.) *The switch must be set to "**9-14**" for RTIP*.



18GB MULTIPACK STORAGE DISKS TOWER (SIDE VIEW) – REQUIRED DRIVE LOCATIONS FOR RTIP WITH ULTRA 2
ILLUSTRATION 2-3

3. Re-install the Multipack Storage Disks tower side cover.

4. Verify the "SCSI Switch" on the back of the tower is set to the "**9-14**" (up position).

5. Connect the Multipack Storage Disks to the AW with the supplied SCSI cable. If there are two external disk drives, connect them to the AW as follows:

   The Ultra 2 only has a single SCSI Controller Board. Therefore, the only way to use **two** Multipack Storage Disks options on the AW Ultra 2 (one configured for AW images, the other for RTIP images), is to daisy chain them (i.e. attach the new tower for RTIP to the "OUT" connector on the existing tower for AW images.)

6. Connect the supplied power cable to the Multipack Storage Disks tower.

7. Proceed to Section 3, RTIP Software Load. Do **not** run the AW "install.hardware" script on the external RTIP Multipack Storage Disks. The RTIP installation scripts will configure it strictly for the RTIP application. (Refer to Caution below.)

CAUTION

Do not run the AW "install.hardware" script on the external Multipack Storage Disks used for RTIP. (i.e. Do not perform Job Card IST 004 documented in sm 2201394-100, AW [v3.1]) If you run the install.hardware SCSI device install script, the RTIP installation software will be unable to format/partition the external disk drives for RTIP use. (Note: The AW's install.hardware script formats/partitions the external disk drives for AW's use only.) If an external disk tower is added for AW use, then run the "install.hardware" script only on the AW disk tower drives, not the RTIP drives (i.e. for archive option size, select 2, not 4).

A-2 18GB External Disk Tower Removal From an AW

Note

The AW3.1 or AW4.0 will not boot up if the RTIP external disk tower is removed. This procedure removes the RTIP tower from the AW3.1 or AW4.0 system, such that the rest of the AW functions continue to run. This procedure is required if the customer decides to remove RTIP from the AW or move RTIP and the external disk tower to a different AW.

This procedure will save hours of reload time. Existing RTIP data on the external disk tower should not be lost. However, you may want to archive all AW and RTIP data the customer cares just in case anything goes wrong. As long as all the data is saved, the worst-case result will be a reload of the AW application and options.

1. Iconify the AW browser.

2. Close any open console windows.

3. Open a new command window.

4. Login as root.
   su – root <Return>
   `Password:` ***<root password>*** **<Return>** (default is **operator**).

5. Run the following unix commands to kill the RTIP database process and eliminate the mount to RTIP filesystem.

   ps -aef | grep ids <Return> (You should see an output like the following.)

```
sdc    338     1 0 14:04:12        1:06 /export/home/sdc/RTIP/bin/idsmgr
                                        /export/RTIP/idbm/database
root  1124  1108 0 12:13:19 ps/7   0:00 grep ids
```

   Note the resulting RTIP ids process number in the 2nd column (338 for this example).

   kill -9 <*RTIP ids process #*> <Return> (For this example you'd type: **kill –9 338 <Return>**.)
   cd / <Return>
   umount /export/RTIP <Return>

6. Type in the following unix commands to remove knowledge of the RTIP SCSI disks from the AW.

   cat /etc/opt/SUNWmd/md.cf <Return> (Note the reported disk ids on the "d20" line. They should be something like "c1t9d0s3" and "c1t10d0s3" for AW3.1; the disk ids will be different for an AW4.0.)

   cd /usr/opt/SUNWmd/sbin <Return>
   ./metadb -d <*RTIP_disk1*> <Return> (for example: **./metadb -d c1t9d0s3 <Return>**)
   ./metadb -d <*RTIP_disk2*> <Return> (for example: **./metadb -d c1t10d0s3 <Return>**)
   ./metaclear /dev/md/dsk/d20 <Return> (You should see a message like "d20: Concat/Stripe is cleared".)

7. Make a copy of the "vfstab" file. (For backup purposes in case a problem occurs.)
   cd /etc <Return>
   cp -p vfstab vfstab.orig <Return>

8. Edit the vfstab file using "*vi*" and delete the line with the "d20" entry. (**Important!** Do not just comment out this line or the restore procedure won't work later on.)

   a. Type: **vi vfstab <Return>**
   b. Using the up/down arrow keys (or <k> <j> keys) on the keyboard, move the cursor to the "/dev/md/dsk/d20" line (it should be the last full text line).
   c. With the cursor on the "d20" line, type: **dd** (deletes the entire line the cursor is on).
   d. Hold **<Shift>** and press **<Z> <Z>** (i.e. two upper case Z's) to save the changes and exit the *vi* editor.
   Note: To exit the editor without saving changes at any time type: **:q!**

9. Exit the command window, and restore the AW browser. Execute system "shutdown" though the standard service interface (Tools icon on AW3.1; Security icon on AW4.0).

10. At the "OK" prompt, power off the RTIP disk tower and disconnect the SCSI cable at the back of the AW computer chassis.

11. Type "boot" at the OK prompt to reboot the system. The system should boot to the normal login prompt.

12. It may be necessary after logging in as "sdc" to manually restart the AW browser the first time (right mouse button, pull down menu "restart browser").

Everything else but RTC/RTIP should work (ignore the fact that the RTC/RTIP options continue to show in the user interface; they will not work if selected).

A-3 18GB External Disk Tower Re-Install on AW at Later Date

This procedure explains how to add the RTIP disk tower back to the original AW3.1 or AW4.0 at a later date if it was previously removed per Section A-2. Make sure you have the “RTIP For AW3.1 & 4.0” software CDROM before you start.

1. Iconify the AW browser.

2. Close any open console windows.

3. Reconnect the RTIP disk tower to the AW, then turn RTIP disk tower power ON.

4. Open a new command window on the AW.

5. Login as root.

6. Place the “RTIP For AW3.1 & 4.0” CD-ROM in the AW drive.

7. Execute the following unix commands to restore the AW’s knowledge of the disk tower.

   cd /cdrom/cdrom0 <Return>
   ./install_disk /export/RTIP <Return>
   cd ~sdc <Return>
   eject cdrom <Return>

8. Reboot the AW. The RTC/RTIP functions should now be active again and the data on the RTIP disk tower should be accessible.