UNIX Configuration Guide

V2.24

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Contents

1. INTRODUCTION

This UNIX Compatibility Guide allows Sony tape streamer products to be configured to work with workstations in popular open systems environments:

+SUN workstations and servers
+HP workstations and servers
+IBM workstations and servers
+Linux RedHat
+SGI workstations and servers
+Verifying your install is correct
+Hardware Dipswitch Settings
+Hardware Jumper Settings

The guide intends to be used in conjunction with and in addition to the hardware and software installation and operation instructions that accompany your tape drive and your workstation.

This guide covers the following devices (**Table1**):

Model	Format	Capacity (Uncompressed)	Inquiry String	Minimum Firmware Level
SDZ-100 SDZ-130	SAIT1	500GB	SDZ-100 SDZ-130	0100
SDX-1100V	AIT5	400GB	SDX-1100	0100
SDX-900V	AIT4	200GB	SDX-900V	0100
SDX-800V	AIT3Ex	150GB	SDX-800V	0101
SDX-700V	AIT3	100GB	SDX-700V	0100
SDX-700C	AIT3	100GB	SDX-700C	0101
SDX-550V	AIT2 Turbo	80GB	SDX-550V	0100
SDX-500V	AIT2	50GB	SDX-500V	0101
SDX-500C	AIT2	50GB	SDX-500C	0108
TSL-A500C	AIT2	200GB	TSL-A500C	L201
SDX-450V	AIT1 Turbo	40GB	SDX-450V	0100
SDX-400V	AIT1	35GB	SDX-400V	0101
SDX-400C	AIT1	35GB	SDX-400C	0700
SDX-300C	AIT1	35GB	SDX-300C	0300
SDX-250V	AIT-E Turbo	20GB	SDX-250V	0100
SDT-10000 SDT-11000	DDS4	20GB	SDT-10000 SDT-11000	0110
TSL-11000	DDS4	140GB	TSL-11000	L100
SDT-9000	DDS3	12GB	SDT-9000	0600
TSL-9000	DDS3	84GB	TSL-9000	L300
SDT-7000	DDS2	4GB	SDT-7000	0300

Note: Sony drive models that are not listed in this table do not have UNIX support (i.e. SDT-5000 and before)

UNIX Common Application Supported Matrix

http://sony.storagesupport.com/

Return to Contents.

2. Drive Dip Switch Settings

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
Sun Solaris 8, 9	SDZ-100/130	*Default	Need Current OS Patches
IBM AIX 5L 5.x	SDZ-100/130	Switch A: A1 ON Switch B: A2 ON	
HP UX 11.x	SDZ-100/130	Switch A: A1 ON Switch B: A2 ON	** No DC
SGI IRIX 6.5	SDZ-100/130	Switch A: A1 ON Switch B: A2 ON	Older IRIX and 5.3 might need current OS Patches
		*Default	Need to purchase APD module from SGI
Red Hat	SDZ-100/130	*Default	

* Default settings are as follows:

- Switch 'A' settings: 1-6, 8 off, and 7 on
- Switch 'B' settings: 1-8 off

** No DC means "Data Compression settings are NOT available with the Device File. You need to use the DIP switch settings on the device."

Note: To locate switches A and B, refer to the SDZ-100 Product Description Manual located at: http://sony.storagesupport.com.

AIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
Sun Solaris 8, 9	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-800V, SDX-900V, SDX-1100V	*Default	** Need to install the Recommended Patches
Sun Solaris 10	SDX-800V, SDX-900V, SDX-1100V	*Default	** Need to install the Recommended Patches
IBM AIX 5L 5.x	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-900V	*Default	
HP UX 9.x, 10.x, 11.x	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-900V	*Default	*** No DC
SGI IRIX 6.5	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-900V	*Default	Need to purchase APD module from SGI
	SDX-300C	DIP SW 1, 2: ON	

Linux RedHat	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-800V, SDX-900V, SDX-1100V	*Default	
SunOS	SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V, SDX-900V	*Default	

- SDX-300C, SDX-400C, SDX-500C, SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDX-250V, SDX-450V, SDX-550V and SDX-900V

* Default Switch Setting: 1-4, 6, 8 OFF/ 5, 7 ON

** The latest recommend patch Cluster + Device Driver patch according to HBA. Review the following SUN's web site and SUN's documentation.
   http://sunsolve.sun.com/pub-cgi/show.pl?target=patches/patch-access
HBA document
   http://www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/Adapters/index.html

*** No DC means "Data Compression settings are NOT available with the Device File. You need to use the DIP switch settings on the device."

- Switches 5 controls termination power- User needs to check how this switch should be set.

Data compression settings for Solaris
- If using "/dev/rmt/0", then disable the drive's data compression function.
- If using "/dev/rmt/0c" or "/dev/rmt/0u", then enable the drive's data compression function.

DDS

Unix Platform	Supported Sony Drives	DIP Switch Setting		Need Current OS Patches
Sun Solaris 8, 9	SDT-7000, 9000, 10000, 11000	1 & 3 Off	2 & 4 On	Need Current Patches
IBM AIX 5L 5.x	SDT-7000, 9000, 10000, 11000	1 & 3 On	2 & 4 Off	
HP UX 11.x	SDT-7000, 9000, 10000, 11000	1, 3, & 4 On	2 Off	
SGI IRIX 6.5	SDT-7000, 9000, 10000, 11000	1 & 2 On	3 & 4 off	Older IRIX and 5.3 might need current OS Patches

- For SDT-10000 and 11000, please leave the rest of the switches as default.

- Switches 5 controls terminator power- User needs to check how this switch should be set.

We have verified the following:

    +the drive can be recognized by the system
    +the user can perform simple tar and dd operations

We do not specifically check the following:

    +drive performance
    +host control over block-size changes
    +host control over hardware compression
    +compatibility w/ fancy GUI or 3rd party backup utilities

DRIVE FIRMWARE

These instructions apply only to Sony tape drives with firmware supporting UNIX operation (see **table1 on Page 3**). If there is any doubt that your Sony tape drive has UNIX firmware support, check the firmware level reported through the drive inquiry command. If your tape drive has a lower level of firmware than shown in this document and you experience problems using the drive in one of the supported environments, contact your reseller for a firmware upgrade or download latest firmware from <http://sony.storagesupport.com>.

UNIX CONFIGURATION SWITCH SETTINGS

Sony DDS tape drives were designed with a set of UNIX configuration switches on the bottom of the drive mechanism to accommodate various Unix Operating Systems. The factory settings may need to be changed to customize the drive for top performance and capacity with your workstation. Ensure also that your drive is configured correctly with regards to SCSI ID, termination, etc. (see DIP switch configuration or Hardware Jumpers). However, these Unix OS dependent switch settings have been eliminated in general for both the AIT and SAIT drives.

MEDIA USAGE

Sony recommends the use of Sony branded media on its drives. Sony media is specifically manufactured for full compatibility with its drives. Please see table1 above for drive and media compatibility. This is especially true for Sony AIT (8mm) and SAIT tape drives since the media is an Advanced Metal Evaporative (AME) type manufactured exclusively for Sony tape drives. Cartridges and media for these drives are not interchangeable with other tape products.

REGARDING AUTOLOADERS

Sony Autoloaders are compatible with various UNIX systems. However, full functionality may not always be available without third-party software**.**

In general the autoloader can be configured using the same method as a standalone drive. For example, on an SGI system change the required files using the correct loader inquiry string instead of the standalone drive inquiry string. "TSL-A300C" instead of "SDX-300C".

Autoloaders can be used with the various UNIX workstations via the following methods:

The TSL-9000 and TSL-11000 have a single-tape mode function, where only slot 8 of the magazine is loaded with a tape. In this mode the autoloader will behave as a standalone DAT drive, without any autoloader functionality.

The TSL-9000, TSL-11000, TSL-A300C and TSL-A500C have a Sequential Mode. By default, the autoloader enters this mode when the select button has been pressed and the selected tape is loaded successfully. In this mode the, the autoloader will load cartridges sequentially. Upon receiving a SCSI UNLOAD command to LUN 0 the cartridge will be automatically replaced in its slot in the magazine and the next highest cartridge is loaded. This continues for each UNLOAD command until there are no more cartridges. If the UNLOAD command is received for the last cartridge (#8) then the autoloader will simply place it back in the magazine and no further action is

taken. On some UNIX systems the **mt** command will allow you to send the UNLOAD command (see the man pages for your particular system and the product manual for your particular autoloader). For example, IRIX uses the **SCSIcontrol** command and SCO Openserver uses the **tape** command with the unload flag.

On Linux systems the MTX utility can be utilized w/ shell scripting to create automated backups on autoloaders. More info regarding MTX can be found here: http://mtx.sourceforge.net/

*Note: The TSL-7000 does not support UNIX systems.

Return to Contents.

3. Platform configuration

SUN SYSTEMS

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000 / TSL-11000	TSL-A400C/-A500C SDX-250V/300C/400C/400V450V/ 500C/500V/550V/700C/700V/800V* /900V*/1100V*
UltraSparc	Solaris			

Web reference: http://www.sun.com
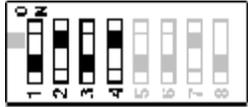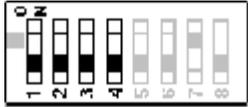
1 [for SunOS] – Mode Selects for non-buffer mode are accepted but ignored for performance reasons.

2 [for Solaris] – Mode Selects for non-buffer mode are accepted and will set non-buffer mode.

* For SDX-800V, SDX-900V and SDX1100V, Dip Switch 3 On for Library mode.

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
Sun Solaris 8, 9	SDZ-100/130	*Default	Need Current OS Patches

Default settings and location of switches A and B, refer to the 6 Hardware Jumper Settings and SDZ-100/130 Installation Manual.

Solaris 8, 9 & 10

Connection with Sun Solaris 8, 9 and 10

This connectivity documentation is described on Solaris 8 and Solaris 9. We recommend upgrading to these OS level for the connectivity of HBA, Fibre Channel switch and Application software.

Reconfiguration of Device Driver

SCSI tape (st) driver should be configured for AIT / S-AIT tape drives, or it will be configured as "unknown tape drive" and the following restrictions will be occurred;

• Block size larger than 64 KB cannot be achieved.

• Timeout of Rewind and Erase will be short for AIT/S-AIT..

St configuration procedure: .

Directory : /kernel/drv/st.conf : st driver configuration file

1. **Add the following entry to the tape-config-list for generating your configuration entries.**

   The tape-config-list specifies

   Each entry consists on three parts,

   > **Inquiry data : i.e. "SONY_ _ _ _SDX-1100" ("_ _ _ _" means four spaces)**

   > **Model Name : i.e. "AIT-5 drive" : Model name in the system..**

   > **Configuration Data entry : i.e. "ait-data", : name of the configuration parameters**

   Each part is marked off by comma and the list should be closed by semi-colon.

   Inquiry Data consists on Vendor ID and Product ID. Four spaces are required between Vendor ID (SONY) and Product ID (SDT-/SDX-/SDZ-/TSL-).

   The example of tape-config-list for SONY tape drives as followings,

tape-config-list =

```
"SONY    SDT-7000", "Sony DDS-2 4mm DAT", "SONY_DAT",
"SONY    SDT-9000", "Sony DDS-3 4mm DAT", " SONY_DAT ",
"SONY    TSL-9000", "Sony DDS-3 4mm DAT Autoloader", " SONY_DAT ",
"SONY    SDT-10000", "Sony DDS-4 4mm DAT", " SONY_DAT ",
"SONY    SDT-11000", "Sony DDS-4 4mm DAT", " SONY_DAT ",
"SONY    TSL-11000", "Sony DDS-4 4mm DAT Autoloader", "SONY_DAT",
"SONY    SDZ-100", "Sony Super-AIT1", "SONY_SAIT",
"SONY    SDZ-130", "Sony Super-AIT1", "SONY_SAIT",
"SONY    SDX-250V", "Sony AIT-E Turbo 8mm", "SONY_AIT",
"SONY    SDX-400V", "Sony AIT1 8mm", "SONY_AIT",
"SONY    SDX-450V", "Sony AIT1 Turbo 8mm", "SONY_AIT",
"SONY    SDX-500V", "Sony AIT2 8mm", "SONY_AIT",
"SONY    SDX-550V", "Sony AIT2 Turbo 8mm", "SONY_AIT",
"SONY    SDX-700C", "Sony AIT3 8mm", "SONY_AIT",
"SONY    SDX-700V", "Sony AIT3 8mm", "SONY_AIT",
"SONY    SDX-800V", "Sony AIT3EX 8mm", "SONY_AIT",
"SONY    SDX-900V", "Sony AIT4 8mm", "SONY_AIT",
"SONY    SDX-1100", "Sony AIT5 8mm", "SONY_AIT",        <--- Caution : Not '1100V', but '1100.'
"SONY    TSL-A500C", "Sony AIT2 8mm Autoloader", "SONY_AIT",
"SONY    SDX-500C", "Sony AIT2 8mm", "SONY_AIT",
"SONY    TSL-A400C", "Sony AIT1 8mm Autoloader", "SONY_AIT",
"SONY    SDX-400C", "Sony AIT1 8mm", "SONY_AIT";        <- Notice the semi-colon!
 /*---- (4 spaces are required between SONY and SDT-/SDX-/SDZ-/TSL-)*/
```

2. **Add Configuration Data entry.**

   Configuration Data Entry specify the configuration options of device driver.

   2.1 for Solaris 8, and Solaris 9 with version 1 st driver configuration.

   SONY_AIT = 1, 0x36, 0, 0x19639, 4, 0x00, 0x00, 0x00, 0x00, 0;

   SONY_SAIT = 1, 0x36, 0, 0x19639, 4, 0x00, 0x00, 0x00, 0x00, 0;

For SGL FlashNet with SDX-900V

tape-confist= SONY SDX-900V, "FlashNet SONY SDX-900V",

"SDX"; SDX = 1,0x33,0,0x2d639,1,0x00,0;

2.2 Solaris 9 with version 2 st driver configuration.

SONY_AIT = 2, 0x36, 0, 0x19639, 4, 0x00, 0x00, 0x00, 0x00, 0, 60, 900, 900, 1500, 1200, 1200, 18000;

SONY_SAIT = 2, 0x36, 0, 0x19639, 4, 0x00, 0x00, 0x00, 0x00, 0, 60, 900, 900, 1500, 1200, 1200, 18000;

3.   Reboot the system to read the new entry.

4. Check if the new entry in st.conf is effective.

   Insert the tape into the corresponding tape drive, load the tape, then display the status by using mt command. If the new entry is effective, the Model Name, second item of tape-config-list.

   (i.e. "AIT-5 drive" in the case of SDX-1100V) is displayed on the returned first line.

   If the Inquiry Name, "SONY   SDX-1100" is displayed instead, the entry has not been effective or configuration failed.

The following flags are added as the <options> configuration data in st.conf . Refer to "man st (7D)" for details.

Solaris st configuration notes:

The st.conf file entries have the following meaning (see man pages for st and the /kernel/drv/st.conf file for more details and examples):

[The following info is from the Solaris 2.6 man pages]
The st tape driver has a built-in configuration table for all Sun supported tape drives. In order to support the addition of third party tape devices or to override a built-in configuration, drive information can be supplied in st.conf as global properties that apply to each node, or as properties that are applicable to one node only. The st driver looks for the property called "tape-config-list". The value of this property is a list of triplets, where each triplet consists of three strings.

The formal syntax for the st.conf file is:
tape-config-list = <triplet> [, <triplet> *];

where each entry is:
<vendor_id + product_id>, <pretty print>, <data-property name>

each data-property is defined as:
<data-property name> = <version>, <type>, <bsize>, <options>,
  <number of densities>, <density> [, <density>*], <default-density>;

*Note that a semicolon (;) is used to terminate a prototype devinfo node specifications.   Individual elements listed within the specifications should not be separated by a semicolon. (Refer to

driver.conf(4) for more information.)

<vendor_id + product_id> is the string that is returned by the tape device on a SCSI inquiry command. This string may contain any character in the range 0x20-0x7e. Characters such as " " (double quote) or " ' " (single quote), which are not permitted in property value strings, are represented by their octal equivalent (for example, \042 and \047). Trailing spaces may be truncated.

<pretty print> is used to report the device on the console. This string may have zero length, in which case the will be used to report the device.

<data-property-name> is the name of the property which contains all the tape configuration values (such as, <type>, <bsize>, etc.) corresponding for the tape drive for the specified.

<version> is a version number and should be 1. In the future, higher version numbers may be used to allow for changes in the syntax of the value list.

<type> is a type field. Valid types are defined in **/usr/include/sys/mtio.h**. For third party tape configuration, the following generic types are recommended:

```
MT_ISDAT        0x34

MT_IS8MM        0x35

MT_ISOTHER      0x36
```

<bsize> is the preferred block size of the tape device. The value should be 0 for variable block size drives.

<options> is a bit pattern representing the drive options, as defined in **/usr/include/sys/SCSI/targets/stdef.h**. Valid flags for tape configuration are:

```
ST_VARIABLE              0x0001

ST_QIC                   0x0002

ST_REEL                  0x0004

ST_BSF                   0x0008

ST_BSR                   0x0010

ST_LONG_ERASE            0x0020

ST_AUTODEN_OVERRIDE      0x0040

ST_NOBUF                 0x0080

ST_KNOWS_EOD             0x0200

ST_UNLOADABLE            0x0400

ST_SOFT_ERROR_REPORTING  0x0800

ST_LONG_TIMEOUTS         0x1000

ST_BUFFERED_WRITES       0x4000
```

```
ST_NO_RECSIZE_LIMIT        0x8000

ST_MODE_SEL_COMP           0x10000

ST_NO_RESERVE_RELEASE      0x20000

ST_READ_IGNORE_ILI         0x40000

ST_READ_IGNORE_EOFS        0x80000

ST_SHORT_FILEMARKS         0x100000
```

<number of densities> is the number of densities specified. Each tape drive can support up to four densities. The value entered should therefore be between 1 and 4; if less than 4, the remaining densities will be assigned a value of 0x0.

<density> is a single-byte hexadecimal number. It can either be found in the drive specification manual or be obtained from the drive vendor.

<default density> has a value between 0 and (<number of densities> - 1).

The following files may be helpful in debugging:
    /kernel/drv/st.conf
        driver configuration file

    /usr/include/sys/mtio.h
        structures and definitions for mag tape io control commands

    /usr/include/sys/SCSI/targets/stdef.h
        definitions for SCSI tape drives

    /dev/rmt/[0- 127][l,m,h,u,c][b][n]
        where l,m,h,u,c specifies the density (low,
        medium, high, ultra/compressed), b the optional
        BSD behavior (see mtio(7I)), and n the optional
        no rewind behavior. For example, /dev/rmt/0lbn
        specifies unit 0, low density, BSD behavior, and
        no rewind

Note:

For Sony DDS, AIT, and SAIT tape drives c or u enable drive data compression. For example, /dev/rmt/0cn or /dev/rmt/0un specifies unit 0, drive data compression enabled, and no rewind.

   **Online manual**
        st, mt

st(7)

http://docs.sun.com/app/docs/doc/801-6680-07/6i11qdqv4?a=view

mt(1)

http://docs.sun.com/app/docs/doc/801-6680-01/6i11qc0h9?a=view

Return to Contents.

PC SYSTEMS (LINUX RedHat)

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000 / TSL-11000	TSL-A400C/-A500C SDX-250V/400C/400V 450V/500C/500V/550V 700C/700V/800V*/900V*/1100V*
X86PC	Linux			
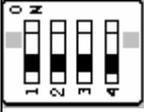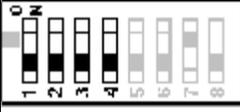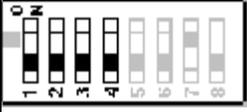
Sony tape devices will work correctly under most Intel x86 based UNIX workstations without any modifications.

* SDX-900V Dip Switch 3 On for Library mode.

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
LINUX RedHat	SDZ-100/130	*Default	

* Default settings and location of switches A and B, refer to the 6 Hardware Jumper Settings and the SDZ-100/130 Installation Manual.

Linux distributions:

Sony tape devices are compatible with various distributions of Linux, specifically we have verified the RedHat and SuSE distributions. You must have a supported SCSI adapter and SCSI support built into the kernel. The tape device may be accessed by referencing the SCSI tape driver /dev/st*or the SCSI generic driver /dev/sg*.

Kernel Re-configuration

Set SCSI id and record your settings.

1. Start your PC.

2. The hardware configuration program will launch, follow the prompts.

3. Log in as root.

4. Configure each module.
   insmod qlogicisp ↓ (QLA1040B)
   insmod aic7xxx ↓ (AHA-2944UW)

5. Configure ST driver.
   insmod st ↓

6. Check whether steps 4 and 5 made AIT/SAIT to be recognized with
   vi /var/log/dmesg ↓

7. Make a image file with
   mkinitrd Boot

8. Verify the returned status if the tape device is connected with
   mt -f /dev/st0 status ↓

HP SYSTEMS

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000 / TSL-11000	TSL-A400C/-A500C SDX-250V/400C/400V 450V/500C/500V/550V 700V/700C/900V*
Workstation Server	HP UX 9.x HP UX 10.x HP UX 11.x			

Web reference: http://www.hp.com
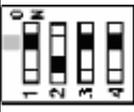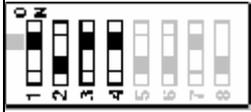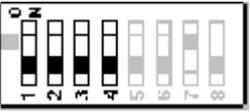
* SDX-900V Dip On for Library mode. Sony tape drives are not officially supported by HPUX so DC will be disabled.

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
HPUX 11.x	SDZ-100/130	*Default	** No DC

* Default settings and location of switches A and B, refer to refer to the 6 Hardware Jumper Settings and the SDZ-100/130 Installation Manual.

** No DC means "Data Compression settings are NOT available with the Device File. You need to use the DIP switch settings on the device."

Kernel Re-configuration

When connecting AIT/SAIT with GSC Fast/Wide, HSC Fast/Wide, or PCI Fast/Wide SCSI board, it is automatically recognized, so that setup is not required. However, in the case that stape device driver is not selected at the time of installing the OS, it is necessary to add stape driver by Kernel Config.

On the other hand, HP-PB SCSI board or EISA SCSI board cannot be used to connect AIT/SAIT because the device will not be recognized.

Creating Device Files

When connecting AIT/SAIT with GSC Fast/Wide, HSC Fast/Wide, or PCI Fast/Wide SCSI board, no setup is required since stape device driver is automatically selected and device files are created at the time of boot.

<How to Confirm the Connection>

After the device is connected with a cable, turn on the power of the device. After initialization is completed, perform reboot. Login as root. Using "*ioscan -fn -C tape*" command, you can confirm the device file name.

Device file name

/dev/rmt/X[n][b]

X: sequential number indicating the order of the recognized tape devices

n: + No Rewind

b: Berkeley mode (AT&T mode if [b] is omitted)

/dev/rmt/cXtYd0BEST[n][b]

X: sequential number of SCSI board

Y: SCSI ID

n: + No Rewind

b: Berkeley mode (AT&T mode if [b] is omitted)

< Difference between Berkeley mode and AT&T mode >

Use Berkeley mode normally.

When you close a device file which is opened on READ:

Berkeley mode: Reading position on the tape is fixed.

AT&T mode: Reading position on the tape automatically moves to right after the next FileMark position, that is, "Forward SpaceFileMark" is issued.


Changing Files

Setup for stape device driver is not required. At the time of booting, stape device driver performs negotiation and its setup automatically.

Note: Configuraiton using sam

1)   Log on as root.
2) Run SAM: $ /usr/bin/sam
3) Choose Peripheral Devices and activate [Open].
4) Choose Tape Drives and activate [Open]
5) From the "Actions" menu in the "Tape Device Manager" window, choose Add...
6) Within the "Add a Tape Drive" window, read the instructions, then active [OK].
7) SAM may detect that your HP-UX kernel lacks the drivers necessary to make use of the tape drive. If so, within the "Device Driver Check" window, read the messages and choose the appropriate action. If you choose, Build a new kernel and shutdown the system immediately, SAM will create the kernel you need and reboot your computer. The rebooted system will be able to use the tape drive.
8) If you had to shutdown your system in order to physically connect the tape drive, re-enter SAM and repeat step 3 through 6 above.
9) Choose the new tape drive.
10) From the "Actions" menu, choose Create Device Files.
11) Activate [OK] and exist SAM.

*Note: 800 Series systems will not recognize Sony tape devices if running HP-UX 10.x. However, they will recognize Sony devices if running HP-UX 11.x.

IBM SYSTEMS

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000/ TSL-11000	TSL-A400C/-A500C SDX-250V/300C/400C/400V 450V/500C/500V/550V 700V/700C/900V*
Workstation	AIX 5.2			

Web reference: http://www.ibm.com

* SDX-900V Dip Switch 3 On for Library mode.

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
AIX 5L 5.x	SDZ-100/130	* Default	

* Default settings and location of switches A and B, refer to refer to the 6 Hardware Jumper Settings and the SDZ-100/130 Installation Manual.

AIX 5L 5.x

< How to Confirm the Connection >

After the device is connected with a cable, turn on the power of the device. After initialization is completed, reboot the device, and then, login as root. You can check whether the tape drive is recognized by the "*lsdev*" command.

```
# lsdev -Csscsi

rmt0  Available  04-04-00-3,0  Other SCSI tape drive
```

Device name

/dev/rmtX.Y

X: serial number indicating the order of the recognized tape devices

Y: the number indicating a function switch

rmtX   : default

rmtX.1 : default + No rewind

Changing Files

Almost all of the default settings for ost (Other SCSI Tape) can be used without being changed. However, in the default settings, the data transfer rate is not fast enough and also the actual rewinding time takes longer; therefore, some changes are required to be made by "*smit*" command.

< How to Change the Setup >

1. Login as root and start up "*smit*" command.

2. Select menus as shown below to display the setup window.

> →Devices
>
> → Tape Drive
>
> → Edit / Show attributions of a Tape Device
>
> → scsi? (select the SCSI card to which GY is connected.)

3. Change values of "block size" and "timeout" which are set by default.

----- Setup window example -----

Tape Drive   rmt0

Tape Drive type   ost

Tape Drive interface   scsi

Description   Other SCSI Tape Drive

Status   Available

Location   04-04-00-3,0

Host adapter   scsi1

Connection address   3,0

Block size (0 = variable length)
                                    [0]

     change from [512] to [0] ↑

Use DEVICE BUFFERS during writing
                                    yes

Use EXTENDED file marks

                             yes

RESERVE/RELEASE support   no

Variable BLOCK SIZE support   [0]

DENSITY setting #1   [0]

DENSITY setting #2   [0]

delay time after a command is FAILED

[45]

Timeout for the READ/WRITE command

[600]
change from [144] to [600] ↑

Since the values of "Location", "Host adapter" and "Connection Address" vary according to the environment in which the SCSI card is installed, the list shown above is only an example. Transfer rate will be drastically slowed down if you set "block size" to any value other than "0."

SGI SYSTEMS

The Sony SDT-9000 and SDX-300C are command-line compatible with Irix 6.x using the configuration switch settings for SGI workstations. For device file control and tape access from the Irix desktop, **the Kernel needs to be modified or the correct patch must be loaded**. However, not all functionality is available under all versions of Irix.

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000 / TSL-11000	TSL-A400C/-A500C SDX-250V/400C/400V 450V/500C/500V/550V 700V/700C/900V*
Indy Irix 5.3 Indigo Irix 6.2 O2 Irix 6.3 (limited)* Octane 6.4 IRIX 6.5	IRIX 6.x IRIX 6.4 IRIX 6.5			
Hardware	Operating system	SDT-7000	SDT-10000 SDT-11000 / TSL-11000	
Indy Irix 5.3 Indigo Irix 6.2 02 Irix 6.3 (limited)* Octane 6.4 IRIX 6.5	IRIX 6.5			
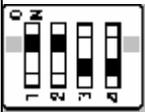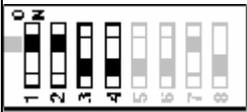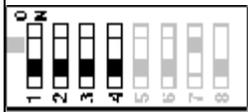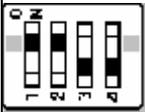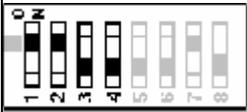
* SDX-900V Dip Switch 3 On for Library mode.

SAIT

Unix Platform	Supported Sony Drives	Dip Switch Setting	Need Current OS Patches
SGI IRIX 6.5	SDZ-100/130	*Default	Older IRIX and 5.3 might need current OS Patches
		*Default	Need to purchase APD module from SGI.

* Default settings and location of switches A and B, refer to refer to the 6 Hardware Jumper Settings and the SDZ-100/130 Installation Manual:

Web reference: http://www.sgi.com

*under 6.3 SDX-300C drive compression cannot be controlled via the device types, it is always enabled. However compression can always be enabled/disabled via drive hardware settings.

Set the configuration switches as shown above. Make sure that the current SGI recommended patch sets are installed. See SGI support website for current releases, you will need a support contract for access to most of the patches.

As of 9/21/98 these are the patches needed:

IRIX Version	Patch#	Description
IRIX 6.2	2861	+6.2 Tape Driver rollup
IRIX 6.3	2838	+6.3 Tape driver fixes
IRIX 6.4	3301 2998 3305	+SCSI rollup +6.4 Tape driver fixes +HINV rollup

To start looking for the latest available SGI patches look here:
http://www.sgi.com/support/patch_intro.html
A searchable patches database is available here:
http://support.sgi.com/surfzone/patches
*You'll need to register to access this area.

2. For **IRIX 6.2, and 6.3** you must do two things:

+add the following entry to /**dev/MAKEDEV.d/TPS_base**

search for the following entry:

```
        *Drive?type:*DAT*|*Drive?type:*8mm?8200*)
            set s nrs ns "" nrns nr sv nrsv nsv v nrnsv nrv ;
            for add in 0 1 2 2 3 3 4 5 6 6 7 7 ; do
                mdev=`expr $minor + $add`;
                mknod ${prf}$1 c ${C_TPS} $mdev;
                case "$stat" {
                *Device:*Python*01931*) # DDS2 drive with compression
                        mdev=`expr $mdev + 8`;
                        mknod ${prf}$1c c ${C_TPS} $mdev;
                        ;;
                }
                shift;
            done ;;
```

add the (**blue**) entry so that the entire entry looks like this:

```
        *Drive?type:*DAT*|*Drive?type:*8mm?8200*)
            set s nrs ns "" nrns nr sv nrsv nsv v nrnsv nrv ;
            for add in 0 1 2 2 3 3 4 5 6 6 7 7 ; do
                mdev=`expr $minor + $add`;
                mknod ${prf}$1 c ${C_TPS} $mdev;
                case "$stat" {
                *Device:*Python*01931*) # DDS2 drive with compression
                        mdev=`expr $mdev + 8`;
                        mknod ${prf}$1c c ${C_TPS} $mdev;
                        ;;
                *Device:*SDT-9000*)
                        mdev=`expr $mdev + 8`;
                        mknod ${prf}$1c c ${C_TPS} $mdev;
                        ;;

                }
                shift;
            done ;;
```

*

+add the following entry to /**var/sysgen/master.d/SCSI**

```
{
 DATTAPE,TPDAT,4,8,"SONY","SDT-9000",0,0,{0,0,0,0},
 MTCAN_BSF|MTCAN_BSR|MTCAN_APPEND|MTCAN_SETMK|MTCAN_PART|
 MTCAN_PREV|MTCAN_SYNC|MTCAN_SPEOD|MTCAN_CHKRDY|
 MTCAN_VAR|MTCAN_SETSZ|MTCAN_SILI|MTCAN_SEEK|
 MTCAN_CHTYPEANY|MTCAN_SETDEN,
 60,4*60,4*60,6*60,512,512*512
},
```

3. After modifying the **SCSI** file use **autoconfig** to rebuild the kernel. (see the autoconfig man page)

For **IRIX 6.4** support fo SDT-9000 you must get at least the following patches from SGI. (It is always a good idea to search the SGI website for the latest available patches, see patch table above):

  #2837 SCSI rollup
  #2863 Tape driver updates
  #2871 HINV rollup

After loading the required patches you may need to follow the IRIX 6.5 procedure above to modify the kernel. If the /**dev**/**MAKEDEV.d**/**TPS_base** and the /**var**/**sysgen**/**master.d**/**SCSI** files already contain the appropriate entries you will just need to run **autoconfig**.

For **IRIX 6.5** support for SDT-9000 no kernel modifications
are necessary.

SGI specific notes:

1. Kernel must be rebuilt with Sony drive configuration information or correct patch must be loaded for drive to appear on desktop. *SGI is always releasing patches, for the latest patches please check SGI support website.

MTCAN notes for /**var**/**sysgen**/**master.d**/**SCSI** file:
These device file names can be interpreted as follows:

      Device Name   Function
      nr   No rewind on close
      v   Device supports variable block sizes
      ns   Device does not byte-swap
      s   Device does byte-swap
      stat   Allows the device to be used when one of
              the other device files specifying the same
              physical device is already opened

The MTCAN values have the following functions:

      MTCAN value   Capability Enabled
      APPEND   Append to existing tape data
      BSF   Backspace file
      BSR   Backspace record
      CHKRDY   Determine if tape cartridge is present
      CHTYPEANY   Change density and/or fixed to variable at
             points other than beginning of tape
      PART   Multiple Partitions
      PREV   Prevent media removal
      SEEK   Seek to a particular block
      SETMK   Setmarks
      SETSZ   Fixed Block Size can be set
      SILI   Suppress illegal length indicators
      SPEOD   Space to end of data
      SYNC   Synchronous Mode SCSI
      VAR   Variable block sizes

The constants have the following functions:

Constant	Description
40	Transfer time-out in "inverse ticks"
4*60	Minimum time-out in seconds for any command
4*60	Space command time-out in seconds
5*60	Time-out in seconds for long operations (such as rewinds)
512	Default block size in bytes for fixed block size mode
64*512	Recommended blocking factor in bytes for the upper limit of read/write commands

Compaq Tru64 Unix (v5.0x)

Sony tape devices will run on Tru64 Unix without any kernel modifications as generic devices. However for explicit support you can do the following:

1) log in as root
2) **cd /etc**
3) make a backup copy of the DDR database source file **cp ddr.dbase ddr.dbase_orig**
4) edit the DDR database source file: **vi ddr.dbase**
5) locate the SCSIDEVICE entry for whichever tape device you wish to add. For example, search for "SDX-300C" or "SDX-500C" for AIT products or "SDT-9000" or "SDT-11000" for DDS products .

Make a copy of this entire entry. Change **"COMPAQ"** to **"SONY"**. Save your changes and exit vi.

```
Compile the DDR database: #ddr_config –c ddr.dbase
```

Return to Contents.

4. EMULATION MODE*

Hardware		1)
SDT5000 emulation[*1]	SDT-10000, SDT-11000, TSL-11000	
SDX-300C emulation[*2]	SDX-500C, TSL-A500C, & SDX-700C	
SDX-400C emulation[*3]	SDX-250V, SDX-400V, SDX-450V	
SDX-500C emulation[*4]	SDX-500V, SDX-550V	
SDX-700C emulation[*5/]	SDX-700V SWB Setting SW1 Reserved OFF SW2 Reserved OFF SW3 Reserved OFF SW4 Reserved OFF SW5 Reserved OFF SW6 SDX-700C Emulation Mode OFF SW7 Reserved OFF SW8 Reserved OFF Figure 3-1: DIP switch SDZ-100/130 (Dip 6 On)	
SDX-700C emulation[*5]	SDX-900V	

1) The firmware offers the ability to set the tape drive to report the inquiry string of the Sony SDT5000 DDS2 drive. This feature enables the Sony AIT drive to be addressed by applications that don't recognize the SDX-300C inquiry string. Using this mode does not change the performance or capacity of the drive.

2) The SDX-500C and SDX-700C firmware offers the ability to set the tape drive to report the inquiry string of the Sony SDX-300C AIT1 drive. This feature enables the Sony AIT2 and AIT3 drive to be addressed by

applications that don't recognize the SDX-500C or SDX-700C inquiry string. <u>Using this mode does not change the performance or capacity of the drive.</u>

3) The SDX-250V, SDX-400V and SDX-450V drives offer the ability to set the drives to report the inquiry string of the Sony SDX-400C AIT1 drive. This feature enables the drive to be addressed by applications that don't recognize the inquiry string of SDX-250V, SDX-400V and SDX-450V. <u>Using this mode does not change the performance or capacity of the drive.</u>

4) The SDX-500V and SDX-550V drives offer the ability to set the drives to report the inquiry string of the Sony SDX-500C AIT2 drive. This feature enables the drive to be addressed by applications that don't recognize the inquiry string of SDX-500V and SDX-550V. <u>Using this mode does not change the performance or capacity of the drive.</u>

5) The SDX-700V and SDX-900V drives offer the ability to set the drives to report the inquiry string of the Sony SDX-700C AIT3 drive. This feature enables the drive to be addressed by applications that don't recognize the inquiry string of SDX-700V and SDX-900V. <u>Using this mode does not change the performance or capacity of the drive.</u>

6) The SDZ-100 SAIT drive offers the ability to set the SAIT tape drive to report the inquiry string of the Sony SDX-700C AIT3 drive. Dip switch 6 must be On for emulation mode. This feature enables the Sony SAIT drive to be addressed by applications that don't recognize the SDZ-100 inquiry string. <u>Using this mode does not change the performance or capacity of the drive.</u>

VERIFYING INSTALLATION

If you are having trouble with your installation, verify the following items first:
+ Correct and valid SCSI bus
> +no ID conflicts
> +proper termination
> +proper SCSI signal type, for example single-ended to single-ended, etc
+ Device is powered on.
+ The new device is recognized by the system hardware (host controller, system console, etc).
+ The new device is recognized by the operating system and knows how to communicate with the device via proper kernel configuration and device files.
+ If you are using a 3rd part backup application, make sure that the new device is supported.

As part of the installation process, you will have installed the appropriate device driver for your UNIX system, and created device files to communicate with the tape drive.

In outline, the procedure is as follows:

1. Write test data to a tape using **tar**.
2. Read the test data from the tape using **tar**.
3. Compare the data read from the tape with the original data on disk using **cmp**.

<u>*Return to Contents.*</u>

5. UNIX SWITCH LOCATIONS
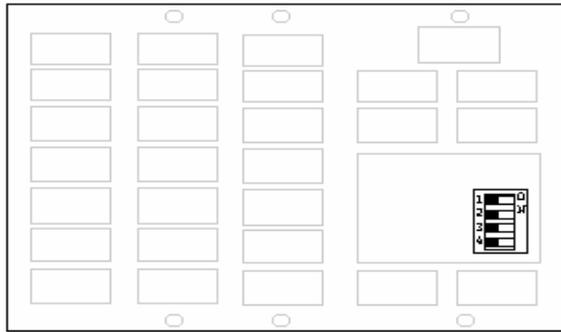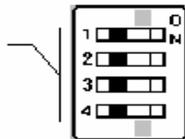
	DDS Series: **SDT-7000** **SDT-9000 / TSL-9000** **SDT-10000 (bank of 8 switches)** **SDT-11000 (bank of 8 switches)** **TSL-11000 (bank of 8 switches)** ***Refer to AIT series for remaining switch configurations.**
	AIT Series: **TSL-A400C/-A500C** **SDX-250V/400C/400V** **450V/500C/500V/550V** **700V/700C/900V** **for Rev A SDX-300C / TSL-A300C Hardware:** **5) Reserved (OFF)** **6) Reserved (OFF)** **7) Compression enable(ON)** **8) Parity enable (ON)** **for Rev B SDX-300C / TSL-A300C and above Hardware:** **5) Term Power enable** **6) Terminator enable** **7) Host Compression Control 1** **8) Host Compression Control 2** **for SDX-500C/TSL-A500C Hardware:** **5) Term Power enable** **6) Reserved (OFF)** **7) Host Compression Control 1** **8) Host Compression Control 2** **SDX-900V** **for SDX-xxxx** **SDX-250V, SDX-450V, SDX-550V** **for SDX-xxxx**
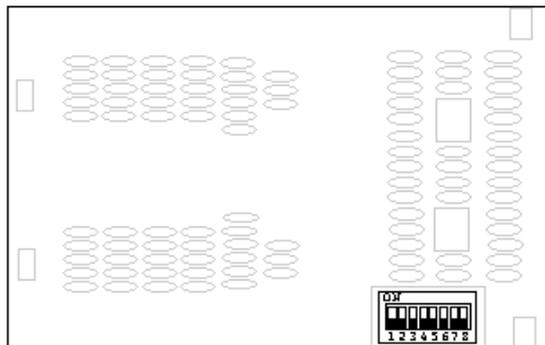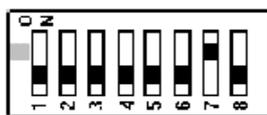
6. HARDWARE JUMPER SETTINGS

SDT-7000 / SDT-9000 / TSL-9000 JUMPERS 1 2 3 4 5 6 7 8 SCSI & POWER CONNECTOR	1 – ID2 2 – ID1 3 – ID0 4 – Data Compression Disable 5 – Parity Disable 6 – Reserved 7 – Termination Enable 8 – Term PWR
SDT-10000 / SDT-11000 / TSL-11000 1 2 3 4 5 6 SCSI & Power Connector	1 - Parity Enable 2 - Reserved 3 - ID3 4 - ID2 5 - ID1 6 - ID0
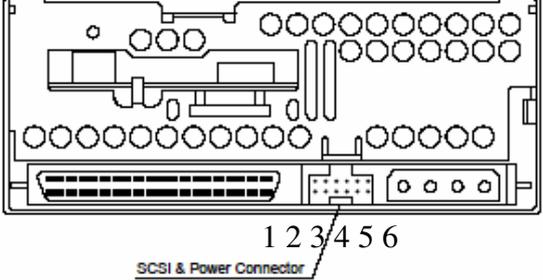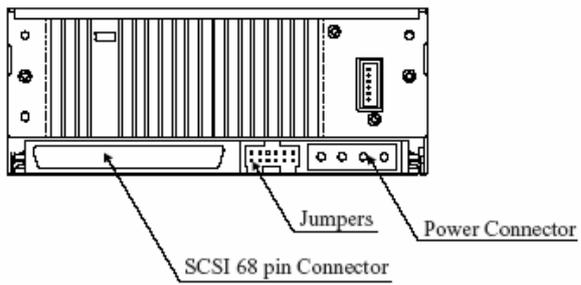
SDX-250V, SDX-400V, SDX-450V, SDX-500V Jumpers Power Connector SCSI 68 pin Connector	**1 - Parity Disable** **2 – Reserved** **3 - ID3** **4 - ID2** **5 - ID1** **6 - ID0**
SDX-550V, SDX-700V, SDX-900V Jumpers Power Connector SCSI 68 pin Connector	**1 - Parity Disable** **2 – Reserved** **3 - ID3** **4 - ID2** **5 - ID1** **6 - ID0**
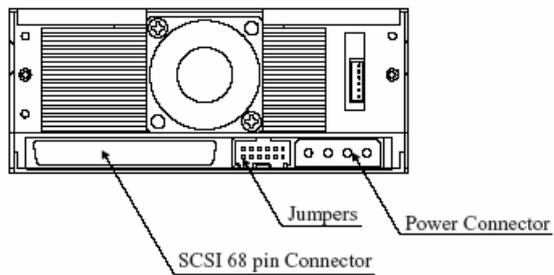
SDX-250V, SDX-400V, SDX-450V, SDX-500V, SDX-550V, SDX-700V, SDX-900V

Dip switch
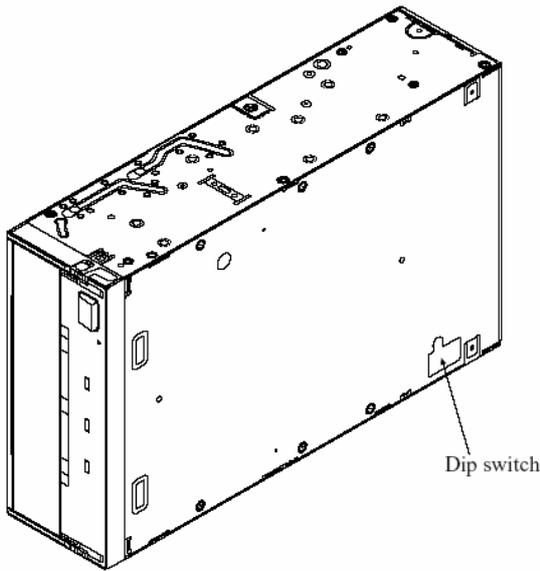
SCSI ID Number Jumper

The SCSI ID number of the SDX-700V is selected by the SCSI ID number jumpers. The figure below shows the jumper configuration for each of the possible SCSI IDs.

SCSI	ID3	ID2	ID1	ID0
0	:	:	:	:
1	:	:	:	|
2	:	:	|	:
3	:	:	|	|
4	:	|	:	:
5	:	|	:	|
6	:	|	|	:
7	:	|	|	|
8	|	:	:	:
9	|	:	:	|
10	|	:	|	:
11	|	:	|	|
12	|	|	:	:
13	|	|	:	|
14	|	|	|	:
15	|	|	|	|

: = OPEN   Jumper not installed
| = CLOSED   Jumper installed

Parity Disable
No Connection
ID3
ID2
ID1
ID0
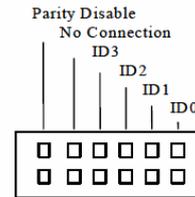
Figure 3-3: Jumper positions

Parity Disable Jumper

Parity check function can be disabled by Jumper. Parity check is disabled while left end jumper is installed. Parity generate function is always enabled.

Parity	Setting
Disable	|
Enable	:

: = OPEN   Jumper not installed
| = CLOSED   Jumper installed

Data compression can be selected by DIP switch.

DC Control-1	DC Control-2	Definition
OFF	OFF	Compression disabled at power-on. The host is allowed to control compression.
OFF	ON	Compression disabled at power-on. The host is not allowed to control compression.
ON	OFF	Compression enabled at power-on. The host is allowed to control compression.
ON	ON	Compression enabled at power-on. The host is not allowed to control compression.

Data Compression Switches

SDZ-100

Setting the SCSI ID (SDZ-100 only)

Parity check function can be disabled by Jumper. Parity check is disabled while jumper is installed. Parity generate function is always enabled.
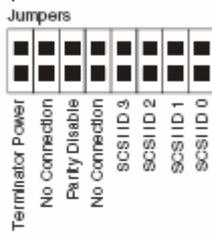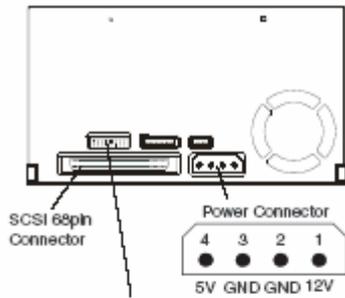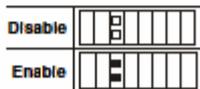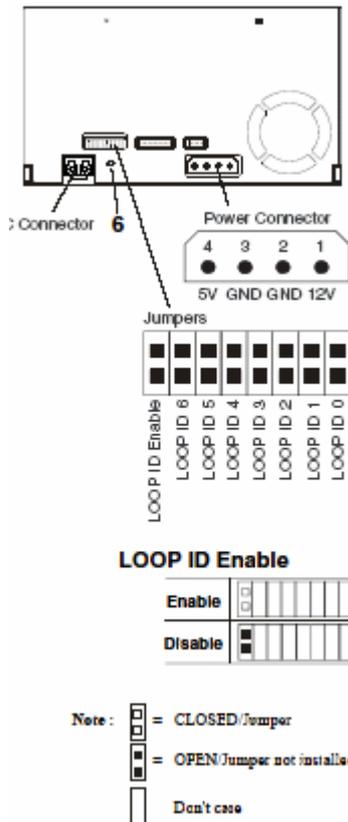
SDZ-130

Setting the LOOP ID (SDZ-130 only)

This jumper is functional when the topology is arbitrated loop. When this jumper is enabled, it gains AL_PA by LIHA (Loop Initialization Hard Assigned).
AL_PA is gained from loop ID. Refer to the table Arbitrated Loop Physical Addresses (AL_PA) and Loop IDs as the conversion rule. (See Appendix.)
When this jumper is disabled, requiring AL_PA by LIHA is not executed, and AL_PA is gained from LISA (Loop Initialization Soft Assigned).

Return to Contents.

7 DIP Switch

SDX-250V, SDX-450V, SDX-550V

1 Drive Mode-1 (OFF)
2 Drive Mode-2 (OFF)
3 Drive Mode-3 (OFF)
4 Drive Mode-4 (OFF)
5 Terminator Power (ON)
6 Periodic Cleaning Req (ON)
7 DC Control-1 (ON)
8 DC Control-2 (OFF)
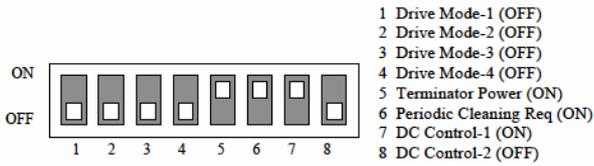
: DIP Switch Positions

Drive Mode

DIP SW	1	2	3	4	MODE
	OFF	OFF	OFF	OFF	Normal
	ON	OFF	OFF	OFF	DR Mode

Periodic Cleaning Request

DIP SW 6	Definition
OFF	Disable Periodic Cleaning Request
ON	Enable Periodic Cleaning Request

SDX-700V
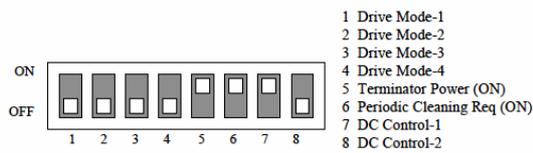
1 Drive Mode-1
2 Drive Mode-2
3 Drive Mode-3
4 Drive Mode-4
5 Terminator Power (ON)
6 Periodic Cleaning Req (ON)
7 DC Control-1
8 DC Control-2

DIP Switch positions

Drive Mode

DIP SW	1	2	3	4	MODE
	OFF	OFF	OFF	OFF	Normal
	ON	OFF	OFF	OFF	DR MODE
	ON	ON	ON	ON	SDX-700C Emulation Mode

Periodic Cleaning Request (Refer to 4.6.1.2)

DIP SW 6	Definition
OFF	Disable Periodic Cleaning Request
ON	Enable Periodic Cleaning Request

SDX-900V

1 DR (Desaster Recovery) Mode
2 Emulation Mode
3 AIT Library Interface Mode
4 Reserved
5 Terminator Power (ON)
6 Periodic Cleaning Req (ON)
7 DC Control-1
8 DC Control-2
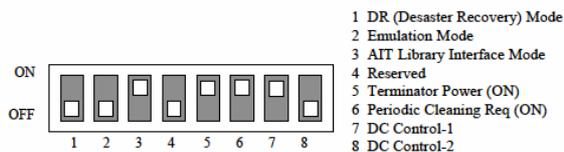
: DIP Switch positions

: Drive Mode

DIP SW	1	2	3	4	MODE
	OFF	OFF	ON	OFF	Normal
	ON	OFF	OFF	OFF	DR Mode
	OFF	ON	OFF	OFF	SDX-700C Emulation Mode
	OFF	OFF	ON	OFF	Library Mode

: Periodic Cleaning Request (Refer to 4.6.1.2)

DIP SW 6	Definition
OFF	Disable Periodic Cleaning Request
ON	Enable Periodic Cleaning Request

SDZ-100/SDZ-130

By setting the DIP switches at the bottom of the drive, you can change the settings of the drive. The default settings of the DIP switches is as follows.

SWA (SDZ-100)

SW		
SW1	Custom-1	OFF
SW2	Block Size	ON
SW3	Custom-3	OFF
SW4	Custom-4	OFF
SW5	Reserved	OFF
SW6	Reserved	OFF
SW7	DC Control-1	ON
SW8	DC Control-2	OFF

SWA (SDZ-130)

SW		
SW1	UA Control	ON
SW2	Block Size	ON
SW3	Custom-3	OFF
SW4	Custom-4	OFF
SW5	Reserved	OFF
SW6	Reserved	OFF
SW7	DC Control-1	ON
SW8	DC Control-2	OFF

SWB (common)

SW		
SW1	Reserved	OFF
SW2	Reserved	OFF
SW3	Reserved	OFF
SW4	Reserved	OFF
SW5	Reserved	OFF
SW6	Reserved	OFF
SW7	Reserved	OFF
SW8	Reserved	OFF

SW7, 8 (SWA)

DC Control-1	DC Control-2	Definition
OFF	OFF	Compression disabled. The host can control compression.
OFF	ON	Compression disabled. The host cannot control compression.
ON	OFF	Compression enabled. The host can control compression.
ON	ON	Compression enabled. The host cannot control compression.

SW2 (SWA)

Block size	Definition
OFF	Default is 512 byte block size fix mode.
ON	Default is variable mode.

SW1 (SWA) (SDZ-130 only)

UA control	Definition
OFF	Enable to report UnitAttention (UA) sense.
ON	Disable to report UnitAttention (UA) sense under AIX/IRIX environment.

8. S-AIT/PetaSite Environment

Sun Microsystems Solaris

OS: Sun Microsystems Solaris 8, 9

SCSI HBA: Sun Microsystems X6758A (PCI Dual Channel LVD SCSI HBA)

But you need a patch from Sun Microsystems to use this card. "Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter version 1", Latest "Solaris Recommended Patch Cluster", "QUS Driver Patch (Solaris 9) #112706-XX" or "QUS Driver Patch (Solaris 8) #112697-XX"

FC HBA: Emulex LP8000 for Sun Solaris SCSI/IP v4.02d v4.10g

Emulex LP9002 for Sun Solaris v5.01e

QLogic QLA2310

QLogic QLA2342

Sun Microsystems X6767A (PCI 2Gb FC HBA/QLA2212F)

Sun Microsystems X6727A (PCI 1Gb FC HBA/QLA2310F)

Config File: st.conf

"SONY   SDZ-100", "SONY SAIT 1/2 inch", "SONY_SAIT",

"SONY   SDZ-130", "SONY SAIT 1/2 inch", "SONY_SAIT";

SONY_SAIT = 1,0x36,0,0x19659,4,0x00,0x00,0x00,0x00,0;

MT_ISOTHER   0x36

* ST_VARIABLE		0x0001
ST_QIC		0x0002
ST_REEL		0x0004
* ST_BSF		0x0008
* ST_BSR		0x0010
* ST_LONG_ERASE		0x0020
(*) ST_AUTODEN_OVERRIDE		0x0040
ST_NOBUF		0x0080
* ST_KNOWS_EOD		0x0200
* ST_UNLOADABLE		0x0400
ST_SOFT_ERROR_REPORTING		0x0800
* ST_LONG_TIMEOUTS		0x1000

(*)ST_BUFFERED_WRITES	0x4000
* ST_NO_RECSIZE_LIMIT	0x8000
* ST_MODE_SEL_COMP	0x10000
ST_NO_RESERVE_RELEASE	0x20000
ST_READ_IGNORE_ILI	0x40000
ST_READ_IGNORE_EOFS	0x80000
ST_SHORT_FILEMARKS	0x100000

SGI IRIX

OS   SGI IRIX 6.5.19m, 6.5.21m & APD2.7

Minimum SAIT Drive Firmware is version 0200

SCSI HBA

FC HBA   SGI PCI-FC-1P(QLA2200) IRIX native

QLogic QLA2340 IRIX native (need IRIX 6.5.18m or later)

TPSC Config File

In the IRIX environment when testing the SAIT1drive without APD2.7, the following entry must be added to the "/var/sysgen/master.d/scsi" file. (similar to st.conf)

{ SONYAIT, TP8MM_AIT, 4, 7, "SONY", "SDZ-130" /*SAIT*/, 0, 0, {0},

        MTCAN_BSF | MTCAN_BSR | MTCAN_APPEND | MTCAN_SETMK |

        MTCAN_PREV | MTCAN_SYNC | MTCAN_SPEOD | MTCAN_CHKRDY |

        MTCAN_VAR | MTCAN_SETSZ | MTCANT_IMM | MTCAN_SILI |

        MTCAN_SEEK | MTCAN_CHTYPEANY | MTCAN_COMPRESS,

        40, 10*60, 10*60, 15*60, 10*3600, 512, 512*512,

        tpsc_default_dens_count, tpsc_default_hwg_dens_names,

        tpsc_default_alias_dens_names,

        {0}, 0, 0, 0,

        0, (u_char *)0 },

Changes from the AIT-3 entry:

1. Removed MTSCAN_PART because we do not support multiple partitions.

2. Increased the timeout values for SAIT1.

        tp_mintimeo 4 -> 10 minutes

tp_spacetimeo: 4 -> 10 minutes

tp_rewtimeo: 5 -> 15 minutes

tp_maxtimeo: 3 -> 10 hours

APD Config File

Install APD2.7 Package

Install APD License for SDZ-130 and SDZ-100

Rename /etc/config/ts.config.N to ts.config

Rename /var/sysgen/master.d/scsi.N to scsi

After reboot, find out this line by hinv command

Fabric Tape: node <WWPN> port <PORTID> on SCSI controller N : Async Personality Device

HP HP-UX

OS   HP HP-UX 11.0i

Minimum SAIT Drive Firmware is v1.01

SCSI HBA

FC HBA   A5158A (PCI 1Gb FC Tachyon LT) HP-UX 11.0 native

Emulex LP9002 for HP-UX 11 SCSI v4.11.08

Config File

PetaApp Linux

OS   PetaApp Linux v2.00

Minimum SAIT Drive Firmware is v1.00

SCSI HBA   Adaptec AHA39320 (PCI-X Dual Ultra320 LVD/SE SCSI) RedHat8 native

Adaptec AHA39160 (PCI-X Dual Ultra160 LVD/SE SCSI) RedHat8 native

FC HBA   HP FCA2214 (QLA2340) for PetaApp Linux device driver

Config File

RedHat Linux

OS   RedHat RedHat Linux8.0

Minimum SAIT Drive Firmware is v1.00

SCSI HBA

FC HBA   QLogic QLA2200F qla2x00-v6.04.00

                HP FCA2214 (QLA2340) for PetaApp Linux device driver

OS   RedHat RedHat Linux9.0

                Minimum SAIT Drive Firmware is v1.00

SCSI HBA

FC HBA   QLogic QLA2200F   qla2x00-v6.06.00

                HP FCA2214 (QLA2340) qla2x00-v6.06.00

IBM AIX

OS   IBM AIX AIX 5L 5.1, 4.3.3

                Minimum SAIT Drive Firmware is v1.01

SCSI HBA

FC HBA   FC6238 (PCI 2Gb FC HBA/Emulex LP9002) for AIX SCSI/IP v4.4.20.3

                FC6227/FC6228 (PCI 1Gb FC HBA/Emulex LP8000) for AIX SCSI v3.9.19

SAIT DIP Switch

                Default

Config File

SMIT   Write Device Buffer : YES

                Block Size: 0

                Expande FileMark: YES

                Unit Reserve/Release: YES

                Read/Write Timeout: 300 sec

Microsoft Windows

OS   Microsoft Windows 2000, XP

                Minimum SAIT Drive Firmware is v1.00

SCSI HBA   Adaptec AHA29320 (PCI-X Ultra320 LVD/SE SCSI)

                Adaptec AHA39320 (PCI-X Dual Ultra320 LVD/SE SCSI)

                Adaptec AHA39160 (PCI-X Dual Ultra160 LVD/SE SCSI)

FC HBA   QLogic QLA2200F

QLogic QLA2310

QLogic QLA2340

FC Switch Information

Product Name			Firmware	Topology
Brocade SilkWorm	3200	2G	3.0.2d	Loop / PtoP ; both OK
	3800			
	12000			
	2200	1G	2.4.1c, v2.6.0f	Loop / PtoP ; both OK
	2400			
	2800			
McData	ES-4500		05.02.00 13	Loop / PtoP ; both OK

PSC

Basic Setup for Third party Application.

Executed Mode   "Drive Auto Load Mode" Only 'ON', other all 'OFF'

Drive Setup   "Auto Thread", "Auto Eject" are 'ON'

                "Protect *" are "OFF"

Return to Contents.

Appendix A: Configuration information for Old OS.

<u>Solaris 2.3</u>

To configure Solaris 2.3 to use the SDT-7000, SDT-9000, TSL-9000, SDT-10000, SDT-11000, TSL-11000, SDX-500C, TSL-A500C and SDX-700C add the following (**blue**)lines to the **/kernel/drv/st.conf** file and reboot the system using the **boot -r** option:

```
tape-config-list =
"SONY    SDT-7000", "Sony DDS-2 4mm DAT", "SONY_TAPE",
"SONY    SDT-9000", "Sony DDS-3 4mm DAT", "SONY_TAPE",
"SONY    TSL-9000", "Sony DDS-3 4mm DAT Autoloader", "SONY_TAPE",
"SONY    SDT-10000", "Sony DDS-4 4mm DAT", "SONY_TAPE",
"SONY    SDT-11000", "Sony DDS-4 4mm DAT", "SONY_TAPE",
"SONY    TSL-11000", "Sony DDS-4 4mm DAT Autoloader", "SONY_TAPE",
"SONY    SDX-400V", "Sony AIT1 8mm", "SONY_TAPE",
"SONY    SDX-500V", "Sony AIT2 8mm", "SONY_TAPE",
"SONY    SDX-700V", "Sony AIT3 8mm", "SONY_TAPE",
"SONY    SDX-700C", "Sony AIT3 8mm", "SONY_TAPE",
"SONY    TSL-A500C", "Sony AIT2 8mm Autoloader", "SONY_TAPE",
"SONY    SDX-500C", "Sony AIT2 8mm", "SONY_TAPE",
"SONY    TSL-A400C", "Sony AIT1 8mm Autoloader", "SONY_TAPE",
"SONY    SDX-400C", "Sony AIT1 8mm", "SONY_TAPE";<- notice the semi-
colon!
    /*---- (4 spaces between    SONY and SDX)*/

SONY_TAPE = 1, 0x34, 1024, 0x1639, 4, 0x13, 0x8c, 0x8c, 0x8c,3;
```

Please note that the tape-config-list can be limited to support only the device needed. For example, to support only the SDX-300C the following is all that is required:

```
tape-config-list =
"SONY    SDX-400C", "Sony AIT1 8mm", "SONY_TAPE"; <- notice the semi-
colon!
    /*---- (4 spaces between SONY and SDX)*/

SONY_TAPE = 1, 0x34, 1024, 0x1639, 4, 0x13, 0x8c, 0x8c, 0x8c,3;
```

Now, reboot the system using the **boot -r** option. The -r option will force the system to check for any new devices and will update the /dev device file directory.

The difference between configuring Solaris 2.3 and Solaris 2.4 or later is that the block size specified for the third parameter of SONY_TAPE is different. For Solaris 2.3 that parameter is 1024 and for Solaris 2.4 and later the parameter is zero (0). A block size of zero (0) indicates variable block mode. Solaris 2.3 must have this value set to something other than zero (0). In this case it should be set to 1024.

SunOS 4.1.x

To configure SunOS 4.1.x to explicitly use the SDT-7000, SDT-9000, TSL-9000, SDT-10000, SDT-11000, TSL-11000, TSL-A300C, SDX-500C and SDX-700C the **stdef.h** and **st_conf.c** files in directory **/usr/sys/SCSI/targets** must be modified and the kernel rebuilt.

1. Modify the **stdef.h** file by adding a define statement for the Sony drive as follows:

> **#define ST_TYPE_SONY**

Add this line after the last ST_TYPE_ define statement in the file and use the next incremental hexadecimal value. Depending on the release and device support included in the system the value used may be different. For example:

If the last entry is,

> #define ST_TYPE_METRUM 0x2d

Add the following define for Sony:

> **#define ST_TYPE_SONY 0x2e**

2. Modify the **st_conf.c** file by adding the following line at the end of the device definition list:

> for the DDS drives:

```
/* Sony Helical scan device support  */
{
"Sony Helical Scan",4,"SONY",ST_TYPE_SONY,10240,
 (ST_VARIABLE|ST_BSF|ST_BSR|ST_LONG_ERASE|ST_KNOWS_EOD),
       5000,5000,
       {0x13,0x13,0x8C,0x8C},
        {0,0,0,0}
}
```

for AIT drives:

```
/* SONY AIT 8mm drive */
{
"Sony 8mm Helical Scan",15,"SONY    SDX-400C",
ST_TYPE_EXB8500, 1024,(ST_VARIABLE |ST_BSF |ST_BSR
|ST_LONG_ERASE |ST_KNOWS_EOD),
5000, 5000,
{0x13,0x8c,0x8C,0x8C},{0,0,0,0}
},

note: "SONY    SDX-300C" contains 4 spaces.
            ----
```

3. Rebuild the Kernel to include the new device definition by using the config command. Please refer to the config and st man pages for more information.

PC SYSTEMS (Intel x86)

Hardware	Operating System	SDT-7000 SDT-9000 TSL-9000	SDT-10000 SDT-11000 / TSL-11000	SDX-400C / TSL-A400C SDX-500C / TSL-A500C SDX-700C SDX-400V SDX-500V SDX-700V
Intel x86 PC systems	Linux Solaris x86 SCO			
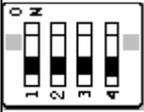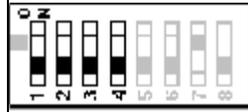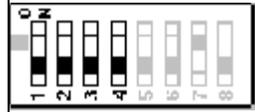
Sony tape devices will work correctly under most Intel x86 based UNIX workstations without any modifications.

Linux distributions:

Sony tape devices are compatible with various distributions of Linux, specifically we have verified the RedHat and SuSE distributions. You must have a supported SCSI adapter and SCSI support built into the kernel. The tape device may be accessed by referencing the SCSI tape driver /dev/st*or the SCSI generic driver /dev/sg*.

In most cases the drive should work correctly, however for install and kernel configuration see the Linux SCSI programming How-to available here：
http://www.ibiblio.org/mdw/HOWTO/SCSI-Programming-HOWTO.html

For more information on SCSI in Linux kernel 2.4:
http://www.ibiblio.org/mdw/HOWTO/SCSI-2.4-HOWTO/index.html

SCO:

OpenServer 5.x.x:

Sony tape devices are certified for SCO Openserver Release 5 v5.05.   Please look here for info:
http://www.sco.com

Search under support for the section entitled: Adding tape drives. After reboot the drive may be referenced by /dev/rmt/*tape1, where:

ctape1 - non-retensioning rewinding device
ntape1 - non-retensioning non-rewinding device
rtape1 - retensioning rewinding device
nrtape1 - retensioning non-rewinding device
utape1 - unload on close device

At this point, the standard unix utilities can be used: backup, restore, cpio, tar, volcopy, ufsdump, and ufs restore Or emergency_disk and emergency_rec commands can be used to create bootable diskettes and tape(s) to restore the system.

UnixWare 7
Sony tape devices are certified for SCO UnixWare 7 v7.x.   Please look here for info:

http://www.sco.com

Also Computer Associates ArcServeIT 6.6 supports some of the tape products.

Sun Microsystems:

Solaris 7 x86:
http://access1.sun.com/drivers/hcl/7/oct98/files/c0111.htm

*The SDT-5000, SDT-5200, SDT-7000, and SDT-9000 SDX-300C, SDX-400C, SDX-500C and SDX-700C, SDX-400V, SDX-500V, SDX-700V, SDZ-100 will work on the above platforms in Sony default mode.

Return to Contents.

Revision History:

+2.24 02/05/07 Added SDX-800V and SDX-1100V.
          Added Solaris 10.
          Removed past update related indications.
+2.23 01/18/06 Refer to "*(Updated v2.23)*."
+2.22 03/03/05 Refer to "*(Updated v2.22)*."
+2.21 01/29/05 Added SDX-250V/450V/550V/900V SDZ-100 to Platform Configuration section.
          Removed 'How to create device files in compressed mode' from Platform Configuration / HP Systems section.
          Removed duplicate SDZ-100 from st.conf tape-config-list and added SDZ-130 to Platform Configuration / Sun Systems.
+2.20 12/21/04 Added SDZ-130 to Table 1 on Page 3.
          Removed the media info from Table 1 on Page 3.
          Added AIT4 (SDX-900V), AIT Turbo drives (SDX-250V, SDX-450V, SDX-550V) to AIT Table on Page 5
+2.19 10/29/04 Added AIT4 (SDX-900V), AIT Turbo drives (SDX-250V, SDX-450V, SDX-550V) and S-AIT/Peta site environment info
+2.18 5/21/04 Added SDX-400V, SDX-500V and SDX-700V support
+2.17 12/04/03 [dky] Completed SAIT support entries and modified Unix Common Application matrix.
+2.16 07/09/03 Added SAIT1 support entries for Sun Solaris
+2.15 10/28/02 spelling corrections. Added SDX-700C to default switch settings sentence. Corrected tape config list for AIT & DDS in Sun Solaris
+2.14 12/14/01 updated Linux SCSI Programming How-To link. Added Linux kernel 2.4 SCSI How-To link.
+2.13 11/28/01 added AIT3 (SDX-700C).
+2.12 07/25/01 added AIT and DDS reference guide. Add Unix common application support matrix
+2.11 05/17/01 changed jumpers setting to default on all AIT drives, and updated all the firmware revision. Add SDX-400C configuration to the guide.
+2.10 08/31/00 added info about TSL-A500C and clarified some other loader details, added HP-UX 11.x.
+2.09 08/16/00 added info about Linux autoloader control using mtx (updated link to sourceforge), added info about Compaq Tru64 Unix, added embedded clickable hyperlinks, updated SCO data under PC-based section, and cleaned up some formatting.
+2.08 02/28/00 added SDT-11000 and TSL-11000 notes.
+2.07 09/30/99 modified info for st.conf file under Solaris for better performance, added more info on HP 800 series systems, added AIT2 density code for Digital UNIX, modified colors so doc is more fax friendly, added note about lack of SDT5000 support, added SCO unixware devices, fixed SDX dipswitch graphics to reflect default settings, added AIT2 170m media length, removed other IBM setting (combined in firmware), clarified differences between Sun settings, changed table colors for better faxing.
+2.06 05/10/99 added more TSL info, added all Sony drives to Sun tape_config, removed references to SDT-5000 emulation mode for AIT2, added SDX-300C emulation mode for AIT2.
+2.05 04/15/99 added info on SDX-500C (AIT2) and SDT-10000 (DDS4), removed references to TSL-7000, new format, better jumper/dipswitch graphics, pdf format.
+2.04 01/04/99 added more detail for Digital Unix 3.x., Rev.B AIT dipswitch settings were incorrect for Termination and Term Power.
+2.03 11/09/98 added more detail for PC-based UNIX systems.
+2.02 11/06/98 clarified Irix 6.4 details.
+2.01 11/04/98 changed AIX 4.x details and Sun Ultra series hardware using Symbios 8c375 SCSI chips.
+2.0 10/14/98 Official Release
+1.x 10/01/98 First draft.