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SONY SAIT/PetaSite/PetaBack

**High Performance Backup Solutions
for Network Appliance**

Rev 1.0

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Sony Corporation

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1. Benefit of SONY PetaSite/PetaBack Solutions

■ Very High Performance with NetApp Filer

- Sustaining maximum transfer rate of SAIT drive for both large and small files
- Enable to parallel multiple Backup JOB Operations
- Very short time to restore the specified file by Direct Access Restore technology

■ Higher reliability

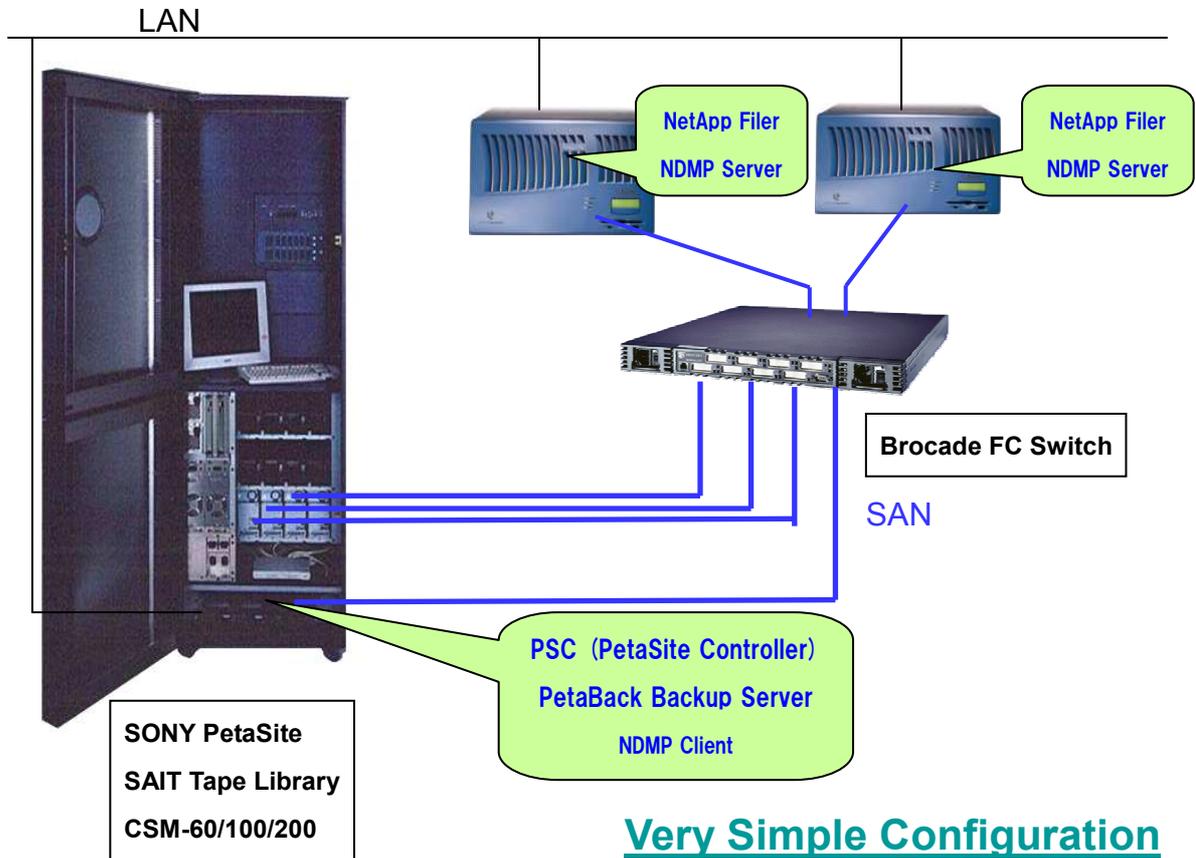
- Simple hardware configuration
 - Bundled Backup Server into PetaSite S-Series (CSM-60/100/200)
 - Very easy to setup due to pre-installed Original Backup Software (SONY PetaBack)
 - Backup Software License is optional
- Fixed Connectivity technology
 - Tested under severe conditions

■ Lower TCO

- Bundled Backup Server Unit into PetaSite S series
- Backup Software has NDMP client functionality as standard
- Reduce administrative cost due to easy installation and configuration

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2. System Configuration Example



PetaBack Backup Software
PetaSite S-AIT Library
S-AIT Drive

V6.52 or later
CSM-60/100/200 (PSC V4.00 or later)
V0200 or later

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Press any key to continue.

(2) Next window is displayed.

Hardware Discovery Utility 0.99.69

(C) 2001 Red Hat, Inc.

```
+-----| Hardware Removed |-----+
|
|   The following SCSI controller has been removed from
|   your system:
|
|           Symbios|53c895a
|
|   You can choose to:
|
|   1) Remove any existing configuration for the device.
|   2) Keep the existing configuration. You will not be
|   prompted again if the device seems to be missing.
|   3) Do nothing. The configuration will not be removed,
|   but if the device is found missing on subsequent
|   reboots, you will be prompted again.
|
|   +-----+ +-----+ +-----+
|   | Remove Configuration | | Keep Configuration | | Do Nothing |
|   +-----+ +-----+ +-----+
|
|
+-----+
```

<F2> Configure / Unconfigure All | <F3> Ignore / Keep All | <F4> Cancel

Select [Remove Configuration] to remove SCSI board and press [enter] key.

(3) Next window is displayed. Check the name of FC HBA.

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Hardware Discovery Utility 0.99.69

(C) 2001 Red Hat, Inc.

```
+-----| Hardware Added |-----+
|
| The following SCSI controller has been added to your system:
|       QLogic Corp. |QLA2312 Fibre Channel Adapter
|
| You can choose to:
|
| 1) Configure the device.
| 2) Ignore the device. No configuration will be added, but you
| will not be prompted if the device is detected on subsequent
| reboots.
| 3) Do nothing. No configuration will be added, and the device
| will show up as new if it is detected on subsequent reboots.
|
|           +-----+ +-----+ +-----+
|           | Configure | | Ignore | | Do Nothing |
|           +-----+ +-----+ +-----+
|
+-----+
```

<F2> Configure / Unconfigure All | <F3> Ignore / Keep All | <F4> Cancel

Select [Configure] to install a new FC HBA and press [enter] key.

(4) New device confirmation window will be displayed. Select [Configure] same as the above.

(5) After completion of booting, login to the system by root user.

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(6) Execute mkinitrd command to make a new system image file like below.

```
[root@petahost root]# mkinitrd -f /boot/initrd-`uname -r`.img `uname -r`
```

(7) Execute lilo command to renew the system image like below.

```
[root@petahost root]# lilo
```

```
Added linux *
```

```
Added linux-up
```

(8) Restart the system.

```
[root@petahost root]# sync
```

```
[root@petahost root]# sync
```

```
[root@petahost root]# reboot
```

3.2 Setup and connection with S-AIT drives

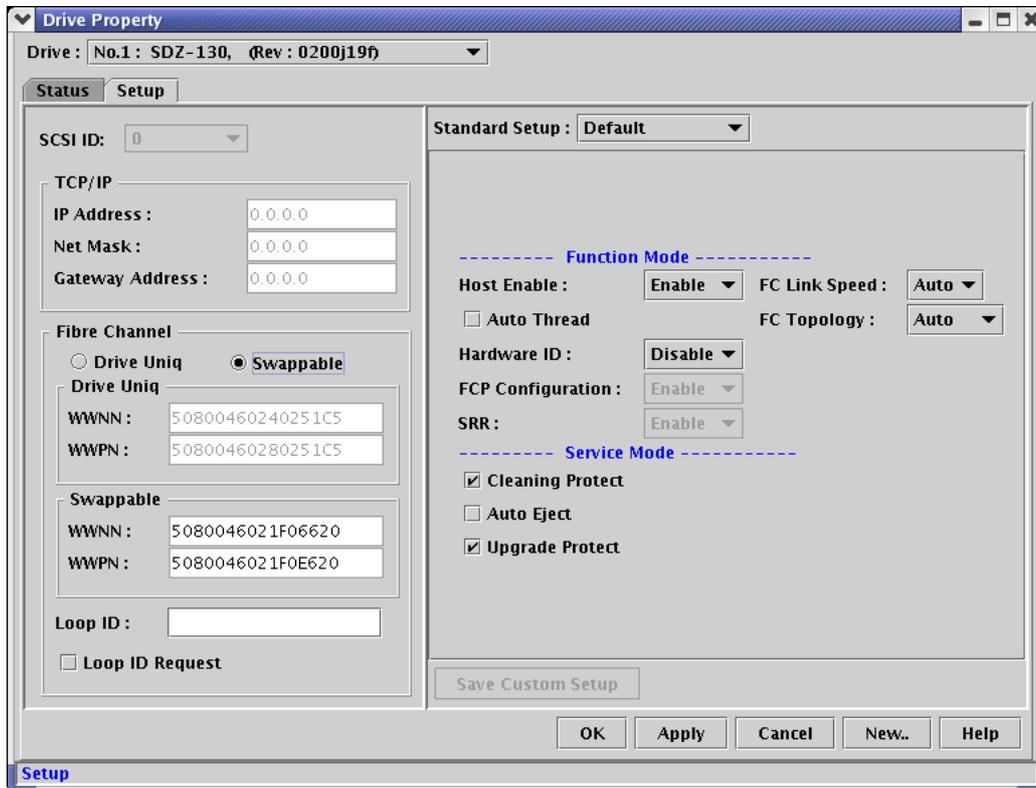
Turn SW-A no.1 and no.2 to ON for each drive's Dip Switch which is the bottom of S-AIT drive.

Select Drive Window on PSC MMT (Monitoring & Maintenance Terminal).



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Select “swappable” for Fibre Cannel box if necessary and select “Default” on the right box. Click apply and wait for a minutes. All drives have to be configured.

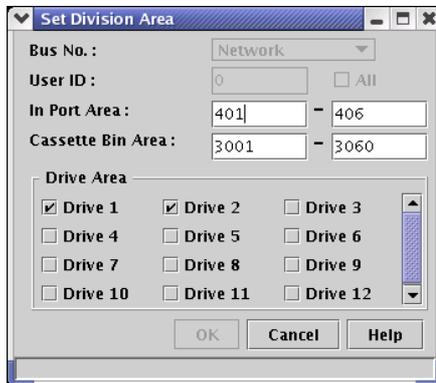
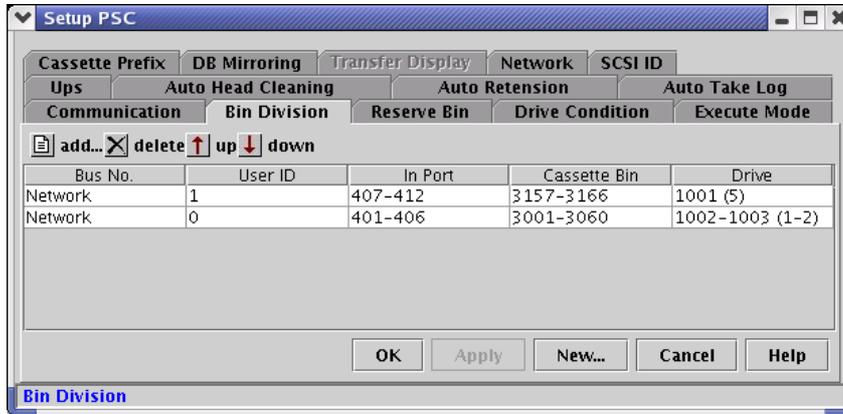


Select PSC Window on PSC MMT.

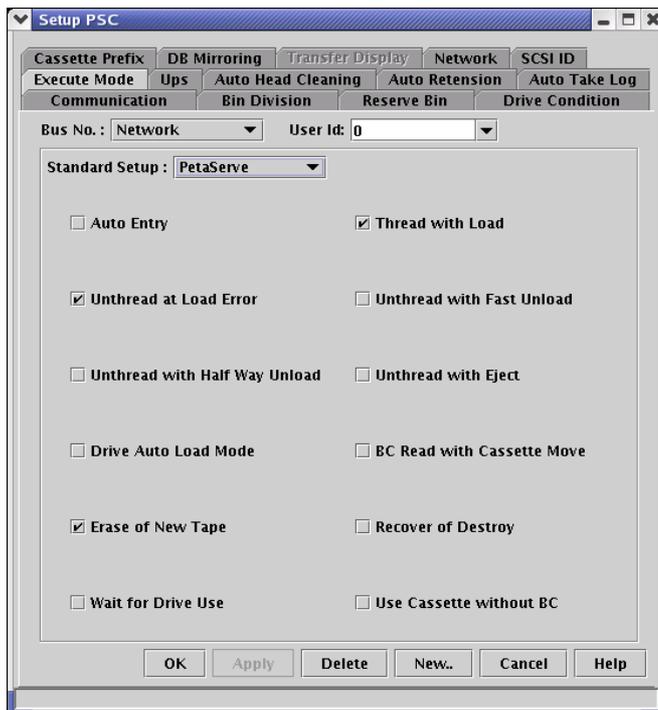


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Select “Bin Division” tab and add a new bin division for PetaBack. It requires “Bus No.” is “Network” and “User ID” is selectable (normally 0).



Select “Execute Mode” tab and change the default mode to “PetaServe” for the setup bin division with selecting “Bus No.” and “User id”.



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3.3 Connecting tape drives to PSC.

Connect FC cables to the drive then reboot CSM controller host machine. (If using FC Switch, execute zone setting on FC Switch before rebooting it.)

After rebooting completed, check a drive connection. /dev/nstX is a device name. nstX will be created in order of system recognition of devices. (The order of device number may be different depends on connecting condition.)

Use mt command to check tape device connection. Following is an example.

```
[root@host123]# mt -f /dev/nst0 status
SCSI 2 tape drive:
File number=-1, block number=-1, partition=0.
Tape block size 0 bytes. Density code 0x0 (default).
Soft error count since last status=0
General status bits on (50000):
  DR_OPEN IM_REP_EN
```

To check physical location of tape devices, take following steps. (In pbk.config script, physical location and device name are mapped automatically. Following procedure is for your reference.)

Execute probescsi command to list up sg device names.

In the order of S-AIT name listed, S-AIT drives are mapped under /dev/nstX.

```
[root@host123]# /osm/bin/probescsi
Controller 0 device 0: /dev/sg0: Vendor: SONY Product: SDZ-130 Revision: 0200
Controller 0 device 1: /dev/sg1: Vendor: SONY Product: SDZ-130 Revision: 0200
```

In this example, /dev/nst0 is mapped on /dev/sg0. So check serial number for /dev/sg0.

```
[root@host123]# /osm/bin/juke -d /dev/sg0 dtfinq
Vendor:  SONY
Product: SDZ-130
```

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Revision: 0200

Seq_num: 01200151

In above example, seial number=01200151.

By using PSC Version information > Drive, compare with it to PSC's serial No.
(Listed on the bottom is the one to compare.)

3.4 Configuration of PetaBack software

See PetaBack User's guide for details. A script sample is below.

-----(script start)-----

```
# /osm/bin/pbk.config
```

```
PetaBack configuration started on host peta-s Wed Jun 23 15:13:29 JST 2004.
```

This script could configure the library administrated by PetaBack.

Configure a PetaBack library now ? [yes]:

You can register the license code from here.

If you do not need to register, quit this dialogue.

=====

License O:overwrite A:add L:list E:end (D:demo)

=====

Select (O/A/L/E/D) ? : d

Terms of Grant of Software License

Sony Corporation (to be called "Sony" below) shall grant under the terms
stated below trial use of the software (to be called "Software" below)
to the user who uses the demo license (to be called "User" below).

(11 contents here)

License file name (/osm/license/freslm.conf.demo) is correct ? [yes]:

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@LICENSE FZCST1 6.52 f 1100 1 04/06/23-04/09/21 0 G4xZOpTvqQqmU9NvYXFIA2gg 3fe57f9d
@LICENSE FZCLBL 6.52 f 1100 1 04/06/23-04/09/21 0 IXPEB7q1QAaXMyYQ84nI2UUt 3fe57f9d
@LICENSE FZCDB1 6.52 f 1100 1 04/06/23-04/09/21 0 VKPiEXVCNe9teNwwrCN1UifM 3fe57f9d
@LICENSE FZCMCDS5TB 6.52 f 1100 1 04/06/23-04/09/21 0 kqUqu8begdGSdju16oyoitAh 3fe57f9d
@LICENSE FZCPBK5 6.52 f 1100 5 04/06/23-04/09/21 0 SnAVFmCArT9vK0IQd0eWOqgB 3fe57f9d

Do you want to save this OK ? [yes]:

There is no database for PetaBack's mediator on this host.

Therefore this script create databases for mediator by db_VISTA,
and start lock manager and volume server...

/osm/sl.host file already exists (ok)

sld is already running (ok)

There is room for approximately 16936000 files in the chosen partition

Started PetaBack lock manager

Created database for volume server backup1_vs

Started volume server backup1_vs

Libraries can now be configured.

Enter yes to configure a library [yes]:

sld is already running (ok)

PetaBack lock manager is already running (ok)

Scanning hardware resources ...

The following libraries were found connected to your system:

- 1) Library: CSM/DMS Library (use PSCAPI)
- 2) Library: Manual Library

Which library would you like to configure (1 - 2): 1

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Enter the name of main PSC host: peta-s

Enter the userid(0-10)[0]:

Configuring library TL1 for backup1...

The CSM-libraris contains many drives.

Automatic drive configuration is available.

Do you set up the drive configuration automatically ? [yes]:

Summary of Library TL1 Configuration

Library: CSM-200

Target:

Controller:

Drive 1:

Device: /dev/nst0

Target: 0

Controller: 0

Drive 2:

Device: /dev/nst1

Target: 1

Controller: 0

Do you want to proceed to configure TL1 [yes]:

Add factory-fresh volumes to library TL1, now, for labeling.

Each volume added will be initialized and made available for PetaBack use.

Additional volumes may also be added at a later time using JGP.

Volume initialization will take some time:

2 minutes for each SAIT/AIT tape present

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2 minutes for each formatted DTFL tape present

4 minutes for each unformatted DTFL tape present

Press RETURN when ready to proceed:

CONFIRM: enter yes to start initialization of TL1: yes

Starting library server daemon. Volumes which are currently in the library will be checked, and initialized as needed. This may take a long time...

Library server daemon started successfully.

0 volume(s) found in library TL1.

No volumes were imported into library TL1.

You will need to add volumes later - see the PetaBack User's Guide

Done configuring library TL1 .

Enter yes to configure another library [no]:

Configuration of the library used by PetaBack is completed!!

The script shows the name of the library that are firstly detected from the usable libraries as a candidate of the default.

If you wish to specify the other library except the one displayed, enter the name of it.

Enter the library name[TL1]:

PetaBack uses the library "TL1".

pbktrd started

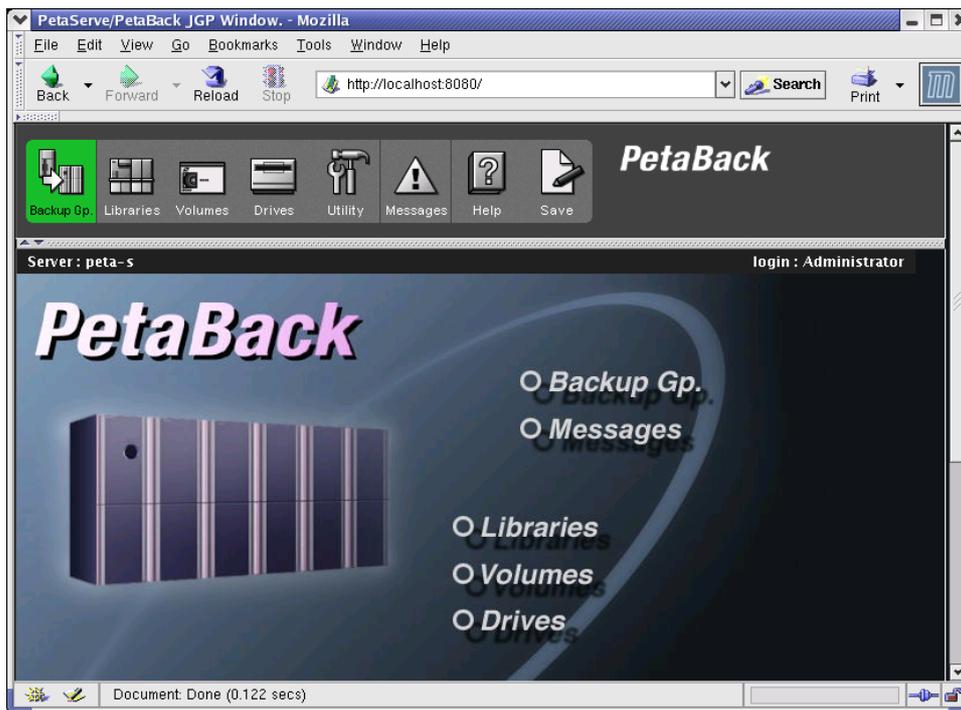
pbkndmpd started

----- (script end) -----

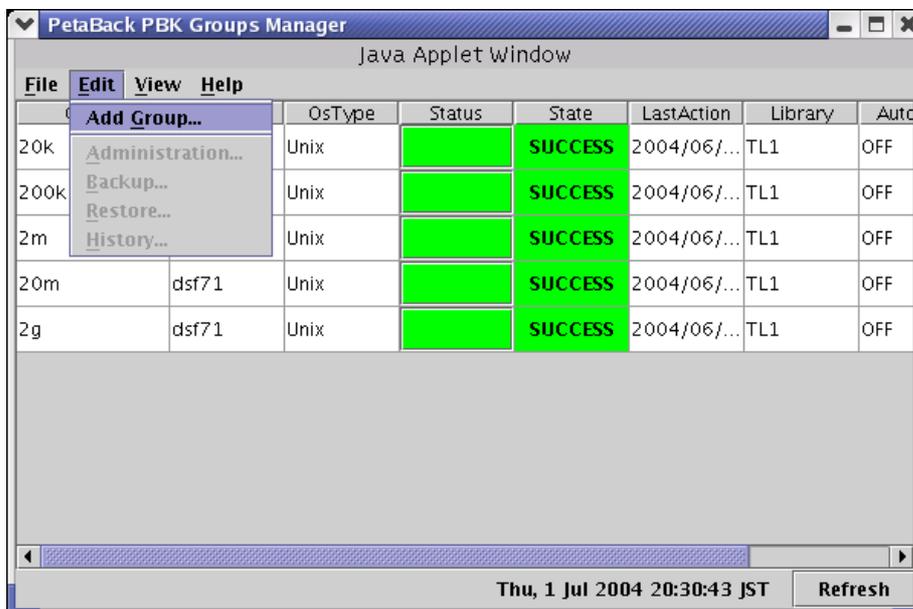
3.5 Making a backup group

Execute a PetaBack administration GUI (JGP).

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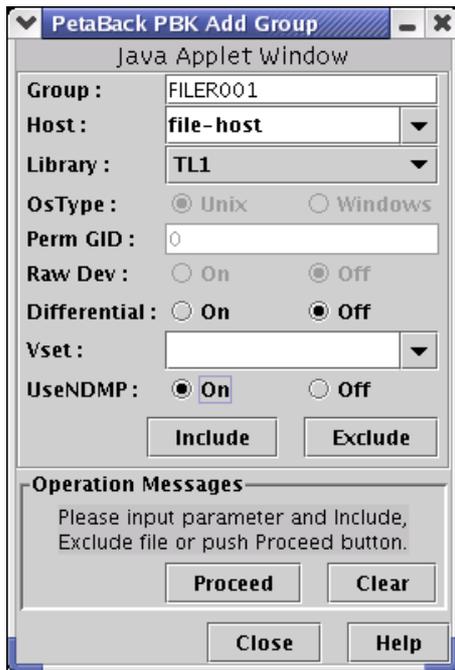


Open the PetaBack PBK Groups Manager. In order to add a new backup group, select "Add Group".

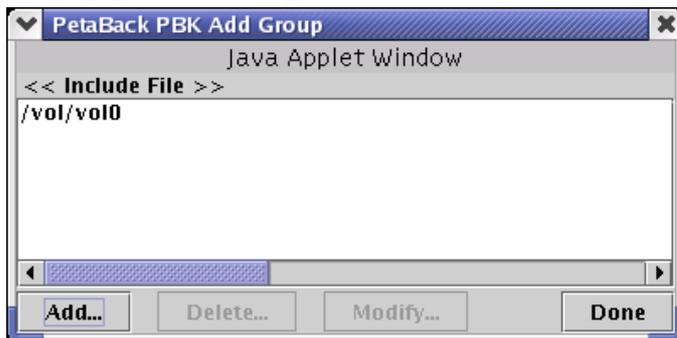


Fill the name of "Group" and backup "Host" of NetApp filer. To use NDMP, check "UseNDMP" to ON.

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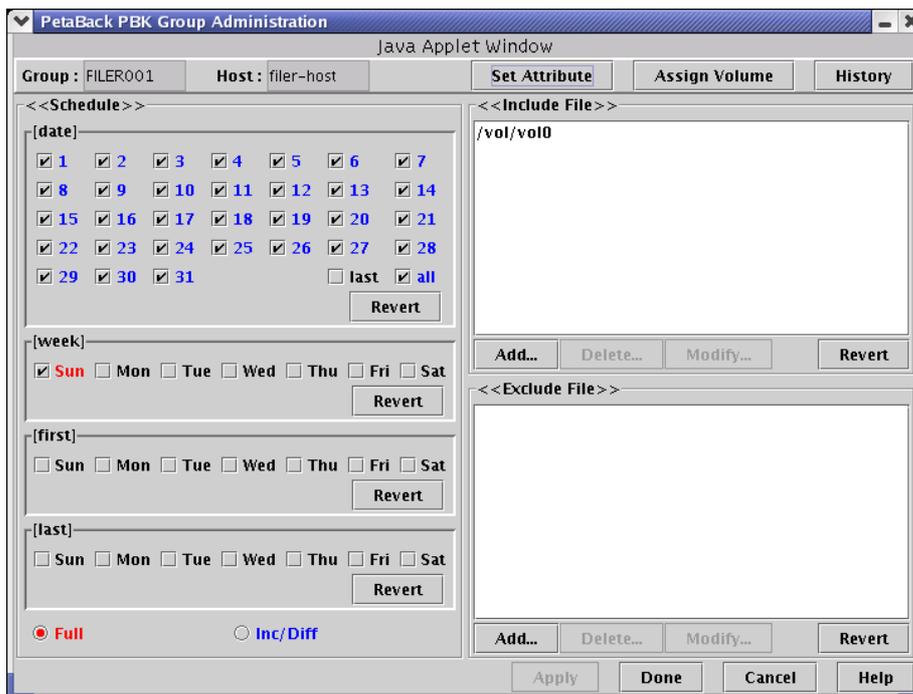
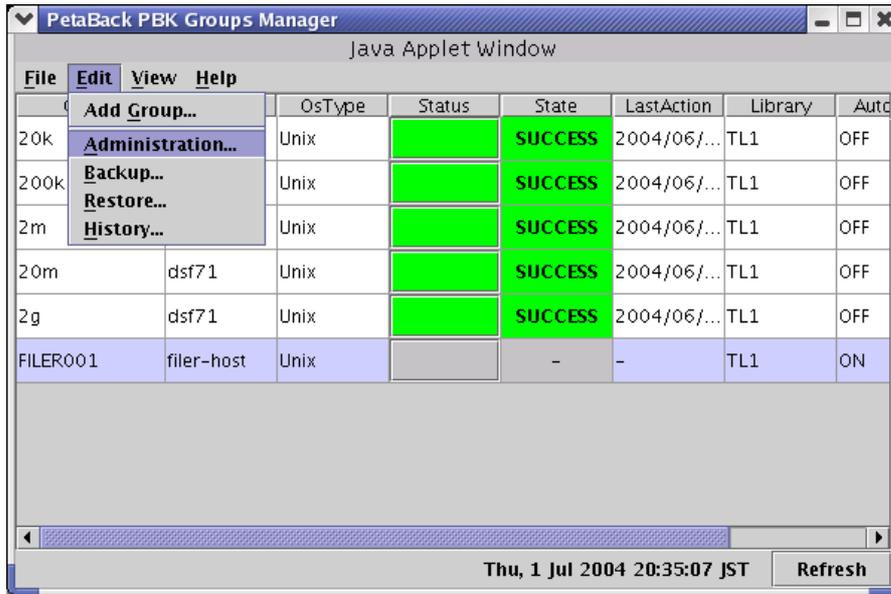


Backup path can be specified with "Include" button. Then "Proceed" to make the group.



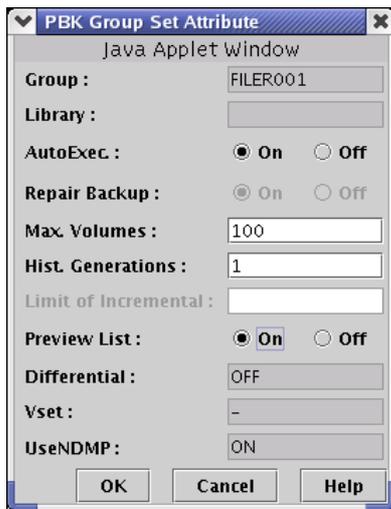
When collecting a list of backup files, an additional setting is needed. Select "Administration" on PBK Groups Manager.

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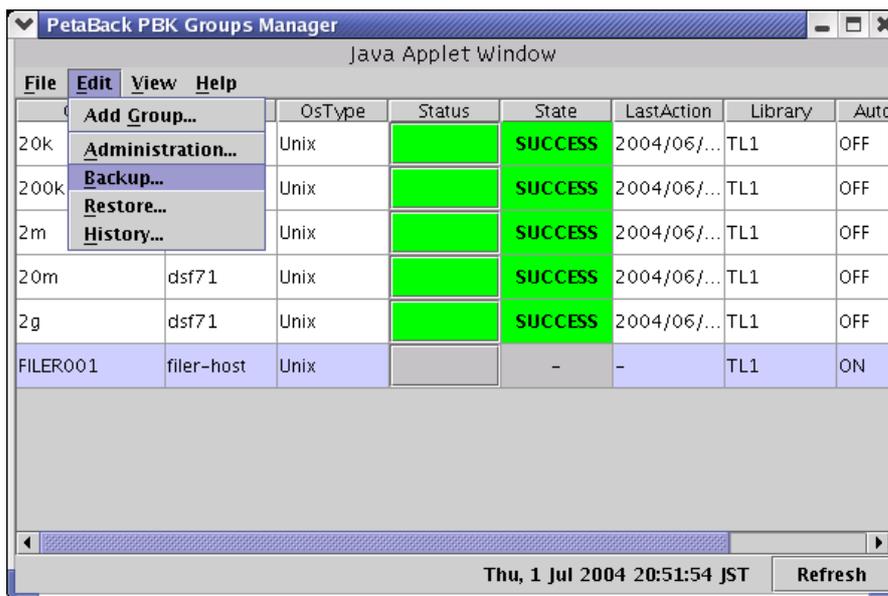
Select "Set Attribute" and check "Preview List" to ON.

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3.6 Do Backup

Select a group and "Backup".



Select "Full" of "Inc/Diff" and "OK".



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4. Hardware and Software Information

4.1 Equipment Examples

Item	30TB		50TB		100TB		
	Model	QTY	Model	QTY	Model	QTY	
Library&two Drives	SONY CSM-60BF	1	SONY CSM-100BF	1	SONY CSM-200BF	1	pre requisite
Backup Software	SONY FZC-BKPS	1	SONY FZC-BKPM	1	SONY FZC-BKPL	1	pre requisite
FC HBA	HP FCA-2214	1	HP FCA-2214	1	HP FCA-2214	1	pre requisite
FC Switch with SFP	Brocade SilkWorm 3200/3800/12000	1	Brocade SilkWorm 3200/3800/12000	1	Brocade SilkWorm 3200/3800/12000	1	pre requisite
	SFP for SWL	3	SFP for SWL	3	SFP for SWL	3	pre requisite
Monitor	SONY SDM-X52	1	SONY SDM-X52	1	SONY SDM-X52	1	pre requisite
Mouse	HP 170299-B22	1	HP 170299-B22	1	HP 170299-B22	1	pre requisite
Keyborad	HP 296435-B35	1	HP 296435-B35	1	HP 296435-B35	1	pre requisite
FC Cable for CSM	Dual LC MultiMode Duplex Type Short Wave optical cable	3	Dual LC MultiMode Duplex Type Short Wave optical cable	3	Dual LC MultiMode Duplex Type Short Wave optical cable	3	pre requisite
Ethernet Cable for Backup Server	Category5 Enhanced	1	Category5 Enhanced	1	Category5 Enhanced	1	pre requisite
Cleaning Cartridge	SONY SAIT1-CL	2	SONY SAIT1-CL	2	SONY SAIT1-CL	2	pre requisite
SAIT Media	SONY SAIT1-500	any	SONY SAIT1-500	any	SONY SAIT1-500	any	pre requisite
Power Supply Cable		5		5		5	pre requisite

4.2 PetaBack Software Information

Main Features

Function	Benefits
High-speed data transfer	This can maximize tape device's data transfer capability, e.g., at 30 MB/s (non-compressed) using Sony S-AIT tape device. Of course, substantial transfer rate can be increased by adding a number of tape drives to the library.
AFR (Advanced File Restore)	AFR is a kind of DLM functionality that is aiming to provide efficient management of the generation of each backup file on simple GUI operation. Restoration operation is possible also for an end user. NDMP Direct Access Restore is available.

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Remote host's backup and restoration	Multiple hosts for backup connected to network can be administered by a single backup system, with which each host no longer needs its own tape drive or library so to lower the total system cost.
Differential backup and incremental backup	Backup type can be selected according to user's purpose, resulting in shorter backup time and shorter restoration time.
Automatic backup using library	An automatic backup system without human intervention.
No limit of file size for backup (Up to the OS limitation)	Operator can concentrate on his/her job with no need to be aware of the file size during backup.
No limit of path name length of file (Up to the OS limitation)	No need to be aware of path name length of file during backup.
Java-based GUI	Allows remote system administration through a Web browser.
Command-line operations	Script and batch file can be created to back up and restore according to user's environment in combination use of UNIX shell and NT command prompt.
Generation administration of execution history	The period from the latest full backup to the next full backup is referred to as one generation. You can designate a generation to restore a specific file.
Administration of multiple libraries	Libraries can be used respectively by users
Reports of automatic backup results by E-mail	Backup results can be known immediately.
High-speed recovery to the latest backed-up disk status	Quickly recovers to the latest backed-up status before loss in the event that an important file is lost.
High-speed recovery when PetaBack system file is crashed	Quickly recovers to a proper operating environment in the event of a disk crash.
Restores to a host other than the backup host	Backed-up data can be retrieved from other hosts even in the event that the backed-up host is crashed

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Multi-volume function	Backup can be occurred without user being aware of the tape length.
Backup and restoration in parallel	This can shorten the whole time required for backup and restoration.
A highly free scheduling setting	Setting of backup scheduling can be customized according to user's operating environment.
Immediate backup	User can explicitly implement manual backup immediately in an emergency.
A wide range of platforms supported	This enables PetaBack software to be easily introduced into the existing environments.
External management of backup volumes	Volumes can be picked out from tape library for external management, which can also be used in other PetaBack systems.
Information on backup files shown at a list form	Files shown at a list form can be designated from GUI or command lines to restore.
LAN-free backup in a SAN environment	High-speed data transfer can be carried out for remote host backup and restoration, because LAN is not used during data transfer.
Backup system using a stand-alone drive	This can economically construct a small PetaBack system only with use of a stand-alone drive without using library.
Easy-to-install and easy-to-setup	Dialogue style installation and setup tools allow users to easily construct their environments by just following the messages.
Support for Japanese file names	Files with Japanese file names can be backed up and restored and those with Japanese file names can appear on GUIs

Heterogeneous Backup Client on SAN Environments

- Data ONTAP 6.5 or later (NDMP V3)
- Solaris 2.6 / 7 / 8 / 9
- Red Hat Linux 7.1/7.2/7.3, AS2.1*/3.0*
- AIX 4.3.3 / 5.1 / 5.2*
- Windows NT / 2000 / XP / 2003*
- HP-UX 11.00
- IRIX 6.5.18/6.5.21
- Tru64 5.1A

(* : Next version)