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S O F T W A R E

NETVAULT

APM/plugin user's guide

for the
SAP R/3 Backint APM

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APM/Plugin User's Guide for the SAP R/3 Backint APM

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BakBone Software

SAP R/3 Backint APM

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SP.0.0 About the SAP R/3 Backint APM

The **SAP R/3 Backint Application Plugin Module (APM™)** for NetVault increases application availability by providing fast, online backup of SAP R/3 databases in Linux/UNIX and Windows-based environments. This APM supports such important features as hot backup, integration with SAP R/3 tools, parallel backup support and selectable backup operations. The following storage management facilities are available with NetVault's **SAP R/3 Backint APM**:

- **Hot Backup** - With the NetVault **SAP R/3 Backint APM** used in conjunction with SAP R/3 tools, user databases remain online and fully accessible during backup operations, minimizing downtime for users.
- **Seamless Integration into SAP R/3 tools** - The **SAP R/3 Backint APM** seamlessly integrates with existing SAP R/3 tools, allowing backups to be executed directly from SAP R/3.
- **Supports Raw Data Backup** - In UNIX environments, raw data, including device, buffered files or pipes can be backed up.
- **Command Line Interface** - Jobs can be submitted using a console or command line interface. Most of the extensive features provided by NetVault backup jobs are supported when using SAP R/3 Backint command line options and parameter files.
- **Parallel Backup Support** - Backups can be split into multiple jobs for parallel execution and load balancing.
- **Selectable Backup Operations** - With the **SAP R/3 Backint APM**, it is possible to backup only what is needed. Using a command line interface, administrators can specify individual files and directories; or backup an entire system.

SP.0.1 Target Audience

The majority of operations used with the **SAP R/3 Backint APM** require SAP R/3 Backint administrator skills including: initial configuration, backup and recovery operations.

SP.1.0 Installing the SAP R/3 Backint APM

The **SAP R/3 Backint APM** is installed from the NetVault **Client Management** window. To add the software, follow the installation instructions detailed in the following sections.

SP.1.1 Pre-Installation Requirements

Before installing the **SAP R/3 Backint APM**, make sure the following software is installed and configured:

- **NetVault Server/Client Software** - *At least* the Client version of the NetVault software must be installed on the machine hosting the SAP Backint R/3 database. See the following section, *Recommended Configuration* for an example of a suitable environment.
- **SAP R/3 Backint Software Installed** - This database software must be installed and properly configured on the machine serving as the SAP R/3 Backint server.
- **Client Added to the NetVault Server for Access** - If the machine housing the SAP R/3 Backint database that is to be backed up/restored is not the NetVault Server, this machine must be added to the NetVault Server as a NetVault Client. Please see the *NetVault Administrator's Guide* for details on adding a NetVault Client to the NetVault Server.
- **Homogeneous Tape Format Requirement** - This issue potentially affects those using the **SAP R/3 Backint APM** to backup Clients running varying operating systems (e.g., A UNIX-based NetVault Server with Windows-based NetVault Clients, a Windows-based Client backed up to a device attached to another NetVault Client that is running UNIX, etc.). By default, media contained in a drive controlled by a NetVault machine will be established with the tape format required by that machine's O/S (i.e., UNIX-based would be CPIO, while a Windows-based machine would be MTF). When using the **SAP R/3 Backint APM**, it is **mandatory** that the tape format of the target backup media “**match**” the prevalent tape format for each particular operating system. Specifically, a CPIO tape format must be used to perform an **SAP R/3 Backint APM** backup of a UNIX-based NetVault Client, and an MTF format tape must be used with a Windows-based Client. Please see the section that follows, *Establishing Proper Tape Format* for details on verifying and setting the proper tape format for use.

If the tape format of the media does not match the tape format of the operating system as described above, separate and distinct issues will occur depending on the version of the APM in use.

- ❖ **SAP Backint APM v2.x** - The backup of the target Client will report successful completion. However, when a restore is initiated, it will fail.
- ❖ **SAP Backint APM 3.x** - This version of the APM will fail at the time of backup, and report the failure.

SP.1.1.a Establishing Proper Tape Format

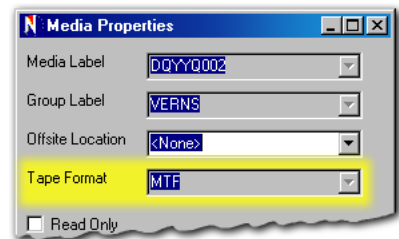
If a NetVault Client that is to serve as an **SAP R/3 Backint APM** backup/restore target is running an O/S that differs from the machine that is administering the backup device, the proper media format must be verified and established. The following sections illustrate the steps required to accomplish this.

Phase 1: Verifying the Tape Format in Use

To determine the tape format in use for an available piece of backup media follow the steps outlined below:

1. Determine the required media format for the target Client to be backed up:
 - **Client Running Linux/UNIX-based O/S** - CPIO tape format
 - **Client Running Windows-based O/S** - MTF tape format
2. Access the NetVault Server, launch the GUI and access to the **Media Management** window.
3. Locate the desired piece of media in the list displayed and right-click on it.
4. Select the **Properties** command from the pop-up menu that appears. The **Media Properties** dialog box will launch and reveal the **Tape Format** in use.
5. If a selected piece of media exists that matches the required format for the target NetVault Client (i.e., CPIO for Linux/UNIX-based Clients and MTF for Windows-based Clients), note its applicable **Media Label** information. This will be required when generating the backup job.

Figure SP-1:
Viewing the
Tape Format
for a selected
piece of media



Important: If the total amount of data selected for a backup will require more than a single piece of media, it will be necessary to set up a **Media Group** containing enough media to accommodate the backup. Ignore the previous step and continue on to the next section, *Phase 2: Setting Up the Proper Media*.

6. If no media exists with the required O/S-specific formatting, it will be necessary to either use new media and establish the correct format, or blank, re-label and reset the format of existing media. If this is the case, continue on the *Phase 2: Setting Up the Proper Media*.

Phase 2: Setting Up the Proper Media

If no media matching the required format was found or a larger amount of media of a different format is required for a backup, it is recommended that a new Media Group be created. Once properly created, all that will be necessary is to set up a Target Set including this Media Group and call it out during the set up of a backup job. To create a **Media Group** containing the desired format of media, follow the steps below:

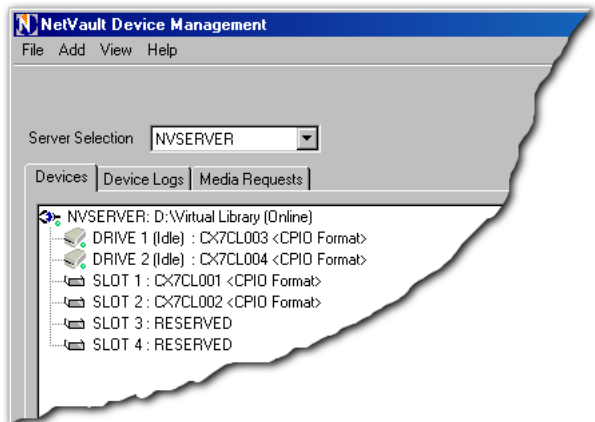
1. From the library device that is to serve as the target of the backup, ensure that media is available:

- **If Using New Media** - If new media is to be used, remove any existing media and replace it with the desired new media.
 - **If Re-using Media** - Ensure that any media that is to be re-used doesn't contain any necessary backup data. If it does, remove it and replace it with media that is either new or that can be safely re-used
2. From the NetVault Server with the GUI active, access the **Device Management** window. The various devices that have been previously added for use will be listed in the frame of the **Devices** tab.
 3. Locate the library that contains the media to be used and locate a desired piece of media to be included in the **Media Group**. Based on the type of media targeted, perform either of the following:
 - **Reusing Media** - Right-click on the desired piece of media and select the **Blank** command from the pop-up menu. When confronted with the confirmation dialog box, click on **OK** to continue. The media will be processed and will be labelled as "**BLANK**".
 - **Using New Media** - Continue on to **Step 4**.
 4. Right-click on the piece of media and select the **Properties** command from the pop-up menu.
 5. The **Media Properties** window will launch. Set the options available here as follows:
 - **Media Label** - Either a manual label can be manually input, or the drop-down menu button can be used to select other potential labels (e.g., the barcode assigned to the piece of media). It is recommended that the barcode value be selected.
 - **Group Label** - Manually input a name to establish a new group specific to this media. It is strongly recommended that the name contain the tape format of the media included in it (e.g., as shown in the image above, the Group Label name "**CPIO Format**" was used). This will allow for easy recognition of the group during the set up of backup jobs.
 - **Tape Format** - Using the drop-down list button, select the necessary tape format. The format selected should match the O/S on the machine that is to serve as an **SAP R/3 Backint APM** backup target (i.e., CPIO for Linux/UNIX-based Clients and MTF for Windows-based Clients).
 6. All other options in this window can be left at their default settings. Click on the **OK** button to apply these settings and close the window.



7. Back in the **Devices** tab, locate the next piece of media to be included in the group. Based on the type of media targeted, perform either of the following:
 - **Reusing Media** - Right-click on the desired piece of media and select the **Blank** command from the pop-up menu. When confronted with the confirmation dialog box, click on **OK** to continue. The media will be processed and will be labelled as "**BLANK**".
 - **Using New Media** - Continue on to **Step 8**.
8. Right-click on the piece of media and select the **Properties** command from the pop-up menu.
9. The **Media Properties** window will launch. Set the options available here as follows:
 - **Media Label** - Either manually input a label for the selected piece of media, or use the drop-down menu button to select other potential labels (e.g., the barcode assigned to the piece of media). It is recommended that the barcode value be selected.
 - **Group Label** - Use the drop-down list button to select the **Group Label** created in **Step 4** (as outlined on page 8).
 - **Tape Format** - Using the drop-down list button, select the **same tape format** selected for the previous piece of media (as outlined in **Step 4** on page 8).
10. All other options in this window can be left at their default settings. Click on the **OK** button to apply these settings and close the window.
11. Repeat Steps 7 - 10 for each additional piece of media that is to be included in the **Media Group**.

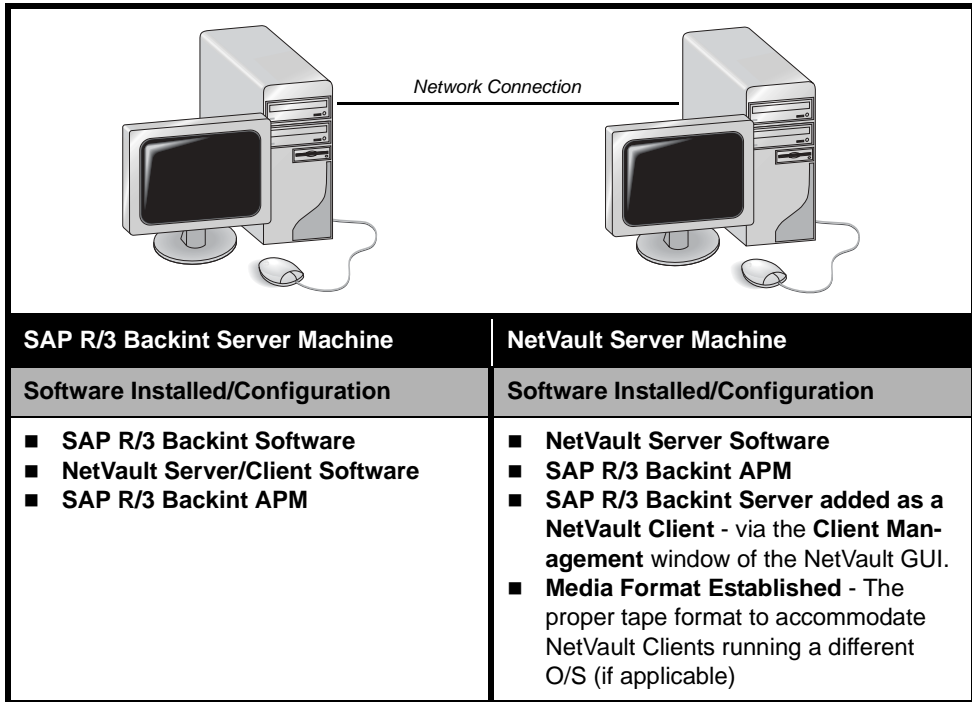
Figure SP-2:
A Virtual Library device on a Windows-based NetVault Server with its media format changed and successfully allocated into a media group



Important: If using a Standalone Drive as a target for backups, this same basic procedure can be followed to establish the proper tape format. However, it will only be necessary to follow **Steps 1 - 6**, and ignore any references made to "**Group Label**". Once complete, note the **Media Label** assigned to the media in use in the drive.

SP.1.1.b Recommended Configuration

While it is possible to set up a single machine as both the NetVault Server and the SAP R/3 Backint server (i.e., all software installation and configuration requirements are performed on a single machine), it is recommended that these two entities exist on **separate** machines. The table below displays an ideal set up for use with the **SAP R/3 Backint APM**, including the software and configuration requirements to establish this type of environment.



Important: Example images and procedures throughout this guide assume that this **two machine environment** is in place and all of the above configuration requirements have occurred (i.e., the NetVault Server and SAP R/3 Backint server are separate machines).

SP.1.2 Installation Procedure

Figure SP-1:
The desired Client accessed for APM installation in the Client Management window

1. From the NetVault Server, launch the GUI and access the **Client Management** window by clicking either of the **Client Management** buttons revealed in the command toolbar, or by selecting the **Client Management** command from the **Administration** pull-down menu.
2. In the **Clients** frame of the **Client Management** window, locate the NetVault Client housing the SAP R/3 Backint database and right-click on it.

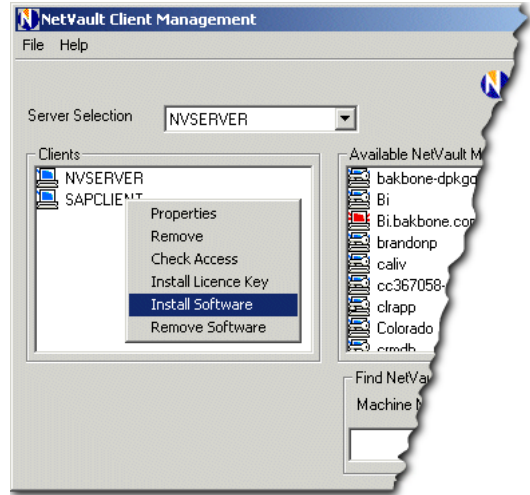
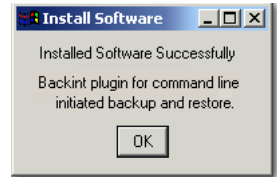


Figure SP-2:
The dialog box launched upon the successful installation of the APM

3. In the pop-up menu that appears, select the **Install Software** command.
4. Using the installation window that appears, navigate to the location of the **“.npk”** installation file (e.g., the NetVault APM Installation CD or the directory to which the file was downloaded). Click to select the file (e.g., **bkixxxx.npk**) and click on the **Open** button to begin the installation process.
5. When the installation has completed, a successful installation message will appear in the **Install Software** dialog box.



Important:

1. Based on the operating system in use, the directory path for this APM's installation file may vary, but the required file should be entitled **“bkixxxx.npk”** (where **“xxxx”** represents various software platforms and version numbers).
2. The **SAP R/3 Backint APM** must exist on the NetVault Server, regardless of configuration in use. Therefore, if using a single machine configuration, installation is complete. If using the recommended Client-Server configuration (i.e., the one outlined in the section *Recommended Configuration* on page 10), it is necessary to repeat the installation process, this time installing the plugin on the NetVault Server.
3. The APM installation file is dependent on the O/S in use. The same installation file can not be used for different O/Ss. Therefore, if using the recommended configuration *and* the NetVault Server and SAP R/3 Backint server are each running a **different** O/S, the proper installation files must be obtained and used (i.e., from the APM installation CD or from BakBone Software's web site).

SP.1.3 Removing the SAP R/3 Backint APM

1. Access the **Client Management** window as described in the section *Installation Procedure* on page 11.
2. In the Clients frame, right-click on the machine containing the APM to be removed and select the **Remove Software** command.

Figure SP-3:
The Remove Software window with Backint plugin... selected for removal

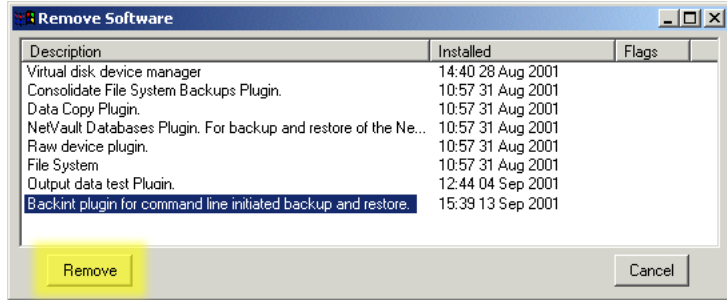
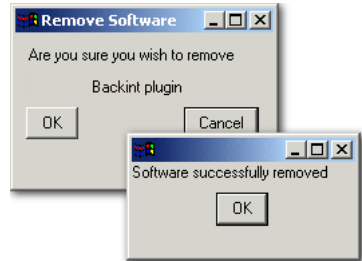


Figure SP-4:
The two dialog boxes issued during the removal process for this APM

3. Select the **“Backint plugin...”** item from the list and click the **Remove** button.
4. A dialog box will appear asking for confirmation of the remove command. Click on **OK** to proceed (or **Cancel** to abort). Clicking **OK** results in the removal of the software and a confirmation message will appear. Click **OK** to close this dialog box and return to the **Client Management** window.

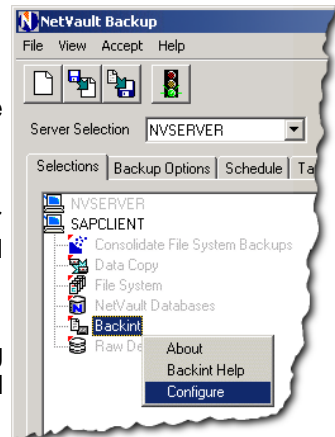


SP.2.0 Configuring the SAP R/3 Backint APM

Figure SP-5:
When the Configure command is selected from the pop-up menu, the Configure dialog box is made available

Before the APM can be used, certain configuration settings must be applied, including the name of the NetVault server that performs the backup. To access the **Configure** window to set these options, follow the procedure detailed below:

1. From the Netvault Server, access the GUI and launch the **Backup** window by clicking on either of the **Backup** buttons revealed in the command toolbar or by selecting the **Backup** command from the **Operations** pull-down menu.
2. In the Selections tab, locate the Client containing the installation of the **SAP R/3 Backint APM** and



double-click on it to open it (or right-click on it and select the **Open** command from the pop-up menu).

3. A list of APMs and plugins installed on the chose Client will be revealed. Right-click on the **SAP R/3 Backint APM** (i.e., the item entitled "**Backint**") and select the **Configure** command from the pop-up menu.

4. The **Configure** window will launch, displaying the following options:

- **Server Name** - Enter the name of the NetVault Server in this field. This is the **NetVault name** for the server with device control that will be used to process backups.
- **Job Start Timeout (secs)** - Specify the time, in seconds, NetVault will wait before abandoning its attempts to connect to the NetVault Server in this box. It is also possible to use the up and down arrows to adjust this value.
- **Backup Directory Contents** - By default, if a directory name is specified instead of a file, the directory contents will not be backed up. Select this checkbox if necessary to allow any files in that directory to be backed up.

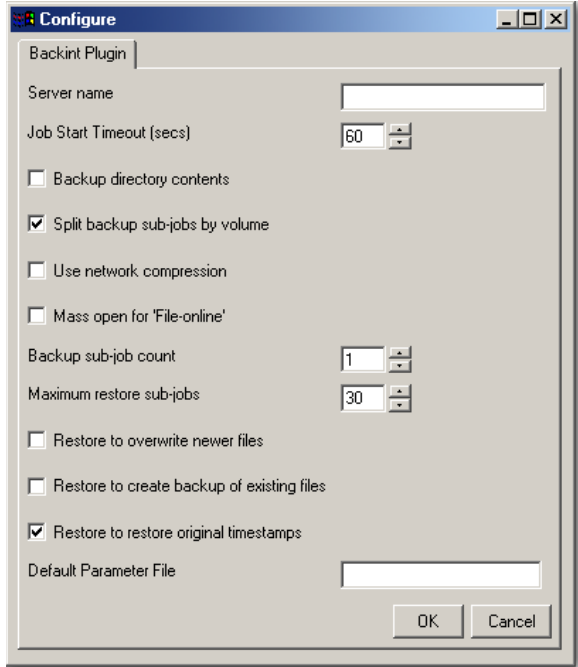


Figure SP-6:
The Configure window for the SAP R/3 Backint APM

Important: Regardless if this option is selected, subdirectories contained in the directory specified **will not** be backed up. In order to backup subdirectories, include the "-r" switch at the command line when initiating a backup.

- **Split Backup Sub-jobs by Volume** - With this option selected, jobs that are backing up files from more than one volume will be grouped together into sub-jobs pertaining to each specific volume. De-selecting this option will prevent this type of backup from occurring.
- **Use Network Compression** - Selecting this check box will compress data prior to transmitting it over a network. When this data reaches its destination, it will be de-compressed.

Important: With this option selected, backups may take a longer amount of time to complete as time is required to compress and decompress files.

- **Mass Open for “File-online”** - Select this option in order to open all files for backup simultaneously. Add the “-t” switch at the command line to the command “file_online”.
- **Backup Sub-job Count** - This value determines the maximum number of sub-jobs that any given job can have. NetVault will size the sub-jobs equally. For instance, if the data being backed up is 5 Gbytes and the Backup sub-job count is 10, each sub-job would be approximately 500 Mbytes.

Important: This option functions only if the **Split backup sub-jobs by volume** option is **de-selected**.

- **Maximum Restore Sub-jobs** - Use this option to specify the maximum number of sub-jobs (usually running off separate media) that a *restore job* is allowed to use. If set to one (1), a backup spanning multiple pieces of media can only be restored from each item of media in turn.
- **Restore to Overwrite Newer Files** - Select this checkbox if it is necessary to overwrite any existing *newer* files.

Important: If this option is not selected and older files exist in the backup data, when they attempt to restore over newer ones, errors will be noted in the NetVault Logs and the restore may fail.

- **Restore to Create Backup of Existing Files** - Select this checkbox to create a backup of an existing file with a different extension prior to the file being restored.

Important: By default, a restore does not create a backup of existing files before overwriting them. Therefore, without this item selected existing files will be overwritten.

- **Restore to Restore Original Timestamps** - With this option selected, timestamp information on restored data will be reset to what it was at the point in time it was actually backed up.
- **Default Parameter File** - Enter the path to the desired SAP Backint R/3 parameter file that will be used as a point of reference for the input of commands from a terminal session (i.e., for backup and restore operations).

Important:

1. For further information on the use of parameter files with SAP R/3 Backint, please see the relevant SAP R/3 Backint documentation regarding Command Line functions.
2. If a Backint command is issued from a terminal prompt using the “-p <par_file>” argument, the parameter file specified as the “<par_file>” will be used *instead* of the file input in the **Default Parameter File** field.

SP.3.0 Using the SAP R/3 Backint APM

The following sections offer a brief description of the use of the **SAP R/3 Backint APM** to perform backups and restores of an SAP R/3 Backint database.

SP.3.1 Backing Up Data

To perform a backup of data using this APM, perform the following steps:

1. Start the **SAP R/3 Backint APM** by running the binary file entitled, “**backint**” on *each* machine that the APM is installed. This file is located in the following directory (where “...” represent the path to the installation of NetVault).

.../netvault/bin/backint

Important: If necessary, review the relevant O/S-related documentation for details on running a binary file.

2. Actual backup of **SAP R/3 Backint** database information is not performed using the NetVault GUI. This operation is controlled through commands issued from a terminal session prompt. Either one of the following two methods can be used to perform a backup:
 - **Issue Individual Commands from a Terminal Session** - This methodology allows for the most control, as individual commands are issued for each step of the backup process. This type of backup is used to perform immediate, “on-the-spot” backups of specified data.
 - **Generate a Script File** - A script file can be generated containing all of the desired commands for a complete backup procedure. This script file can then be run as required. This form of backup is ideal for scheduling backups to occur at a later time or for multiple backups that require the same series of commands.

Important:

1. Complete details on the terminal session commands available for use with the **SAP R/3 Backint APM** can be found in the section *Issuing SAP R/3 Backint Commands* on page 20 of this guide.

2. Instructions on the generation of a script file for use in an SAP R/3 Backint database backup are not offered in this user's guide. Generated script backups are recommended only for those with experience in generating scripts in the environment in place.

3. Once a backup job has been initiated from the terminal session prompt, the GUI on the NetVault Server can still be used to monitor the job in regards to its progress and job log entries (i.e., via the **Job Management** and **NetVault Logs** windows, respectively -- for complete details on the use of these windows in the NetVault GUI, please see the *NetVault Administrator's Guide*).

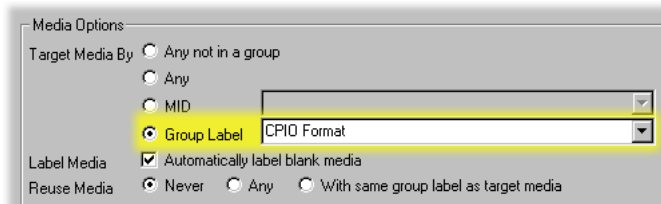
SP.3.1.a Backing Up SAP R3 Backint APM Data from a Different O/S

As noted in earlier sections of this guide, if a target Client is running an O/S different than what is running on the machine administering the target backup device, the tape format to be used must match what is supported for the Client system's O/S (i.e., CPIO for Linux/UNIX-based Clients and MTF for Windows-based Clients). Prior to conducting a backup, please follow the procedures outlined in the section, *Establishing Proper Tape Format* on page 6.

Since backups are conducted via commands issued from a terminal session prompt, it is necessary to create a Target Set that will call out the Media Group created and save it on the NetVault Server. This Target Set's name is then included with the proper command during input. The steps below illustrate the process required to create this Target Set.

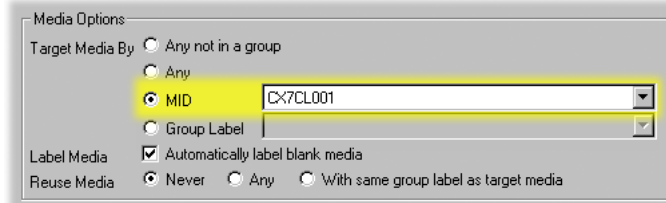
1. From the NetVault Server, launch the **Backup** window by clicking on either of the available button in the command toolbar, or by selecting the **Backup** command from the **Operations** pull-down menu.
2. With the **Backup** window loaded, select the **Target** tab.
3. In the **Media Options** frame of this tab, select the following, based on the media to be used:
 - **Group Label Radial Button** - If a **Group Label** was established during the process outlined in the section, *Establishing Proper Tape Format* on page 6. Follow this by using the option's associated drop-down list to select this created **Group Label**.

Figure SP-7:
Using the Group Label Media Option and selecting the Group Label created earlier for this process



- MID Radial Button** - If a piece of media existed in the target device that met the tape format requirement or if using a standalone tape device. Follow this by using this field's associated drop down list to select the required piece of media based on its **Media Label** (as noted).

Figure SP-8:
Using the MID Media Option and selecting the proper piece of media that was noted earlier

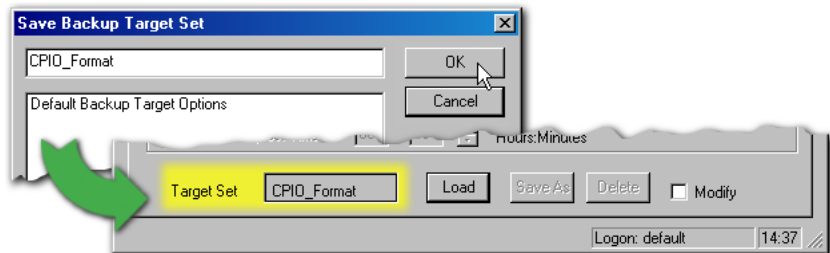


- With the proper **Media Options** set, click on the **Save As** button located at the bottom of the **Target** tab.
- The **Save Backup Target Set** window will be revealed. In the **first** field of this window, input a desired name for this Set and click on the **OK** button.

Important: Ensure that the name used is in a format that will be supported for input from a terminal session prompt on the O/S in use (e.g., use underscores “_” in place of spaces and ensure the name is not too long). It is also strongly recommended that a significant name be used that will be easy to remember.

- The name input will appear in the **Target Set** field and the set has now been successfully created and saved. Make note of this Set name for later use.

Figure SP-9:
With the Target Set properly created and saved, its name will appear in the Target Set field at the bottom of the Target tab



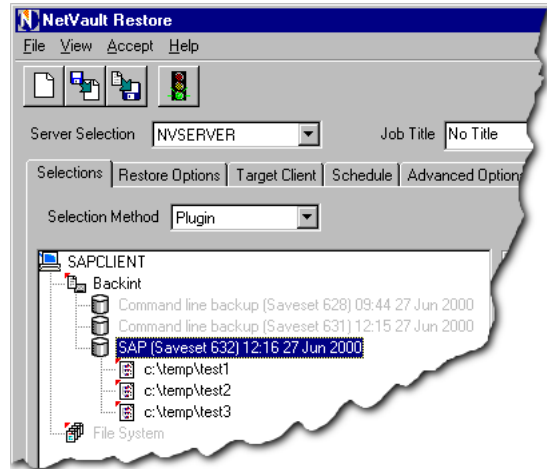
SP.3.2 Restoring Data

In the same manner as a backup, restore operations are controlled through the use of commands issued from a terminal session prompt. Please review the section *Backing Up Data* on page 15 for details on the steps required.

SP.3.2.a Viewing Backed Up Data in the NetVault GUI

Figure SP-10: A backup saveset of SAP R/3 Backint data opened in the Selections tab of the Restore window in order to browse its contents. Note how it is not possible to select items for a restore, only browse the backup

In difference to the **Backup** window, the **Restore** window of the NetVault GUI can be used in the restore process. While it is not possible to use the GUI to actually select items and launch a restore job, it *can* be used to browse and examine what was included in a backup. This allows for easier administration of completed backups that are held both online and offline. To accomplish this follow the steps below:



1. Launch the GUI on the NetVault Server and access the **Restore** window by clicking on either of the **Restore** buttons in the command toolbar (or by selecting the **Restore** command from the **Operations** pull-down menu).
2. In the **Selections** tab, a list of NetVault Clients will be revealed that have successfully completed backup jobs. Locate the NetVault Client that was the target of the desired SAP R/3 Backint data backup and double-click on it to open it (or right-click on it and select **Open** from the pop-up menu).
3. A list of APM/plugins used to complete successful backups of this Client will be revealed. Double-click on the **SAP R/3 Backint APM** item (i.e., the one entitled "**Backint**").
4. A list of backup savesets created with the **SAP R/3 Backint APM** will appear. Locate the one pertaining to the desired backup job and double-click on it to open it and reveal its backed up contents.
5. From this level of the tree, the database files included in the backup can be noted for use in the restore process from the terminal session prompt.

SP.3.2.b Restoring to a Different Target Machine

The **SAP R/3 Backint APM** makes it possible to restore backed up data to a different NetVault Client (i.e., another SAP R/3 Backint machine). To accomplish, follow the procedures outlined below:

Pre-Requisites

The following pre-requisites must be met before attempting to perform a restore relocation of this type:

- **NetVault ver. 7.1.x and the SAP Backint R/3 APM ver. 3.1 (or Later) Installed - *At least*** these versions of software must be installed on the SAP R/3 Backint Server and the intended relocation client.

Important: This functionality is only supported for backups performed with version 3.1 (or later) of the **SAP R/3 Backint APM**.

- **Partition Structure and/or Directory Layout Duplicated** - The partition structure established as the SAP R/3 Backint specification on the original backup target must be duplicated on the new intended target. In the event that data is to be restored to a different directory structure than the original target, this can be specified using the “-i <in_file>” argument.
- **Intended Target Client Added as a NetVault Client** - The new target machine must be added to the NetVault Server as a NetVault Client. For complete details on adding a machine as a NetVault Client, please see the *NetVault Administrator's Guide*.

Procedure

Since all backup and restore operations are controlled from a terminal session prompt, the actual relocation procedure is performed by including the “**Target client <target client name>**” argument in a restore request's syntax. For example, if a restore of data was to be relocated from an original backup of a NetVault Client entitled “**SAP_Client_1**” to the NetVault Client “**SAP_Client_2**”, the following syntax would need to be included along with the other restore commands in the “-p” command:

Target client SAP_Client_2

Important: As briefly noted above, additional syntax is required along with the “-p” command in order to successfully initiate a restore request. Please see the section *Issuing SAP R/3 Backint Commands* on page 20 for details on these additional required commands.

SP.4.0 Issuing SAP R/3 Backint Commands

This section offers brief instructions on how to issue basic **SAP R/3 Backint APM** commands from a terminal prompt to perform backup and restore operations as well as tables which provide details on the various commands available for use. The steps that follow are used to issue commands:

1. Based on the operation to be performed (backup vs. restore), ensure that any pre-requisites illustrated in the appropriate section of this guide have been followed (i.e., *Backing Up Data* on page 15 or *Restoring Data* on page 18).
2. From the NetVault Server, initiate a terminal session.
3. All commands used to initiate SAP R/3 Backint backup/restore operations are prefaced with the command “**backint**”.
4. Follow this with the appropriate commands, based on the desired operation. Include the function, any desired parameters, the input, output and job title. All available commands are outlined in the tables of the following sections.
5. With all desired values input, press the **Enter** key to start the job.

Important: A limited help system can be accessed from the terminal prompt by navigating to the “...netvault/bin” directory and issuing either of the following two commands:

- **backint -?**
- **backint --help**

Figure SP-11:
An example of the help system for the SAP R/3 Backint APM offered from a terminal session prompt

```
usage: backint -u <user_id> [-f <function>] [-t <type>]
        [-p <par_file>] [-i <in_file>] [-o <out_file>]
        [-T <job_title>] [-c] [-r]
-u <user_id>          User id attached to backup
-f <function>         One of 'backup' 'restore' or 'inquire'
-t <type>             One of 'file' or 'file_online'
-p <par_file>         See below for permitted parameter file contents
-i <in_file>          List of files to be backed up/restored/inquired
-o <out_file>         Results of command
-T <job_title>       Job title
-c                   Unattended mode
-r                   Recurse directories

Parameter file contents
Option      Value      Default
title      = <job_title>  Command for backup/restore
```

SP.4.0.a Command Table

The following table outlines the use of the commands available from the command line prompt for use with the **SAP R/3 Backint APM**.

Command	Description	Default/No entry
-u <user_id>	Backup utility user. A user id may be attached to a backup by using this option with the backup operation. When using this option with inquire or restore operations only the contents of backups made with an identical user id (or no user id) may be listed or restored.	No user id

Command	Description	Default/No entry
-t <type>	Backup type (file, file_online) Backint requests permission to start each file, and informs SAP when each file is completed. This enable SAP to switch the tablespace into BEGIN/END BACKUP mode only when the backup of the related files actually takes place. file: No such interactive mode occurs between NetVault and SAP. file_online: Used for online backups only.	file
-f <function>	Type or operation (backup, restore, inquire). backup: The backup function defines a backup request including all the files specified in a list. Backint will indicate which files have, or have not, been backed up successfully. restore: The restore function is used to request that a list of files, specified in a list, are restored. Backint will indicate which files have or have not been successfully restored. inquire: The inquire function is used to provide information on what files exist on backup, and in which savesets they are located.	backup
-p <par_file>	Name of parameter file containing parameters that determine the backup procedure. A full description of the available options in the parameter file is given in the Parameter File table on page 22.	Default parameter file (if specified in the Default Parameter File field of the Configure window for this APM -- See the section <i>Configuring the SAP R/3 Backint APM</i> on page 12 for more information on configuring this APM)
-i <in_file>	Pathname of the file that defines the objects of the function (backup, restore or inquire). If this parameter is not set then data is read from the standard input.	STDIN
-o <out_file>	Pathname of the file where backint will write the result of the function (backup, restore, inquire). If this parameter is not set, the messages are written to standard output.	STDOUT
-T <title>	The job title given to the NetVault backup or restore job.	Command line backup/restore
-r	Recurse directories	FALSE
-c	Unattended mode (no interaction possible).	Attended mode

SP.4.0.b | Parameter Table

The following table describes options that may be utilized from the command line in conjunction with an SAP R/3 Backint parameter file. These options are used with the “-p” argument placed in the command syntax, and can be used in either of the following ways:

- **With the -p <par_file> command (where “<par_file>” represents a desired Parameter file name)** - In this case a Parameter file other than the default can be used.
- **With the -p command alone (without naming a Parameter file)** - In this case the Default Parameter file named in the **Configure** window will be used.

The table that follows contains the available options, valid entries and default values used.

Important: The equal sign (“=”) is the only valid separator to be used with values in a parameter file (e.g., “-p client = Client1”). This applies to both the manual input of the “-p” command from a terminal session and in a pre-created Parameter File (i.e., one called out via the “-p <parameter file name>” command or the one created and established as the default, via the **Default Parameter File** field of the **Configure** window).

Option	Value to be Input	Default
Advanced options set	<Advanced options set name>	n/a
auto label media	true false	TRUE
backup by volume	true false	TRUE
backup directories	true false	FALSE
backup job count	<Sort count>	1
Backup Life	<# days weeks years>	n/a
Backup target set	<Backup target set name> IMPORTANT: The target set created in the process described in <i>Backing Up SAP R3 Backint APM Data from a Different O/S</i> on page 16 would need to be input for this variable if backing up data from a Client running a different O/S than the machine controlling the target backup device. Please also see the section, <i>Establishing Proper Tape Format</i> on page 6 for more information.	n/a
client	<NetVault Client name>	<Local machine>
device	<device name> [,<device name>[,...]]	n/a
dont reuse media	true false	FALSE

Option	Value to be Input	Default
Duplicate	true false	FALSE
Duplicate schedule set	<set name of a schedule set to be used>	Immediate
Duplicate target set	<set name of a target set to be used>	Any Device
file online mass open	true false	FALSE
first on media	true false	FALSE
Group label	<Tape group name>	n/a
max restore jobs	<Sub-job count>	1
MID	<Tape label>	n/a
Migrate	true false	FALSE
Migration Life	<# days weeks years>	n/a
minimum space on media	<space in Mbytes>	n/a
Network compression	true false	FALSE
Post script	<Name of script file>	n/a
Post script args	<User arguments for post-script>	n/a
Pre script	<Name of script file>	n/a
Pre script args	<User arguments for pre-script>	n/a
recurse directories	true false	FALSE
Restore backup	true false	FALSE
Restore overwrite	true false	FALSE
Restore timestamps	true false	TRUE
reuse media	never any by_group	Never
Target client	<Name of Target NetVault Client>	<Local Client>
title	<job title>	Command Line
verify	true false	FALSE

Important:

1. It is only necessary to input the “-p” argument once in the command syntax. It can then be followed by as many of the commands revealed in the previous table as desired.
2. For those entries showing a default entry, it is not necessary to input a value if the default is the desired outcome. However, any option that shows “n/a” as its default entry must have a value input for it, otherwise the option will be ignored.

3. Default values revealed in the above table can be overridden through the creation of a parameter file and this file can be referenced in the **Default Parameter File** field located in this APM's **Configure** window (i.e., version 1.4 and later of the **SAP R/3 Backint APM ONLY**). Please see the section, *Configuring the SAP R/3 Backint APM* on page 12 for details on the use of the **Configure** window.
4. In addition to the above note, a Backint command can be issued which includes the “-p <parameter file name>” argument. In this case, a parameter file named as the “<parameter file name>” variable will be used instead, and the default values set within this file will apply (i.e., rather than a Parameter File named in the **Default Parameter File** field of the **Configure** window for this APM).

SP.4.0.c Input Table

The “Input” variable used along with the Backint command (i.e., whether in a file specified by the “-i <in_file>” option, or using standard input) is dependent on the desired function (i.e., “**backup**”, “**restore**” or “**inquire**”) and is described in the following table:

Function	Input Format
backup	Full pathnames of files to be backed up. One file per line.
inquire	<p><SSID> [<file>]</p> <p><SSID> is either the saveset id containing the file, or “#NULL” if all savesets are to be searched.</p> <p><file> is the full pathname of the file to list. If omitted, the complete contents of the specified saveset will be output.</p>
restore	<p><SSID> <file> [<relocate>]</p> <p><SSID> is the save set id containing the file to be restored. This will have been output by backint at the time the backup was made. It may also be determined using the ‘inquire’ function (see below), or using the NetVault GUI restore screen to list the backint backups. If <SSID> is #NULL, the most recent <file> from the latest saveset is restored</p> <p><file> is the full pathname of the file to be restored.</p> <p><relocate> If present, the name of the directory to write the file to. This may be used if the original location is no longer available or active.</p>

SP.4.0.d | Output Table

In the same manner as the “Input” variable, the “Output” variable input along with the Backint command (i.e., specified by the “-o <out_file>” option or to standard output if not supplied) is dependent on the desired function (i.e., “**backup**”, “**restore**”, or “**inquire**”) and is described in the following table:

Function	Output Format
backup	<p><result> <SSID> <filename></p> <p>There will be one line of the above format for each file specified in the input list.</p> <ul style="list-style-type: none"> ■ <result> will be “#SAVED” if the file was successfully written to the backup, or “#ERROR” if the file could not be written. The NetVault Logs window can be used to determine the reason for the failure. ■ <SSID> is the saveset id the file was written to. If the result was <ERROR> none will be given. ■ <filename> is the filename, as specified in the input list.
restore	<p><result> <SSID> <filename></p> <p>There will be one line of the above format for each file specified in the input list.</p> <ul style="list-style-type: none"> ■ <result> - will be “#RESTORED” if the file was successfully restored, or “#ERROR” if the file could not be restored. The NetVault Logs window can be used to determine the reason for failure. ■ <SSID> is the saveset id the file was written to. If the result was “<ERROR>” none will be given. ■ <filename> is the filename, as specified in the input list.
inquire	<p><result> <SSID> <filename></p> <p>There will be <i>at least</i> one line of the above format for each line of the input list.</p> <ul style="list-style-type: none"> ■ <result> will be “#BACKUP” for each file on backup matching the requested criteria, or “#NOTFOUND” if no matches were found. ■ <SSID> is the saveset id the file was written to. If the result was “<ERROR>” none will be given. ■ <filename> is the filename, as specified in the input list.

