



NETBACKUP FOR SYBASE

Sybase database backup and restore using Netbackup

Abstract

Simplified Step by Step Guide for Sybase Database Backup and Restore using Netbackup

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About Netbackup for Sybase

As a Market leader Netbackup Provides a heterogeneous backup solution for large scale data centers, This includes Sybase database support, which provides centralized backup and restore solution for all your Sybase database servers using the same storage used for all your other backups optimizing your backup storage usage, also providing transparent backup and restore for the Sybase database admin using his own tools Isql or DBIsql for both backup and restore.

Summary about this Guide

This Guide is written to simplify the backup and restore of Sybase database using Netbackup, Defining responsibilities of both the Backup administrator and the Sybase database administrator, Explaining at a low leveled details a complete scenario for backup and restore of Sybase database using Netbackup.

This guide is for those who administer Netbackup on an environment that contains one or more Sybase database servers, Or a Sybase database administrators who are riddled by the amount of Sybase servers on their environment that need to be backed up and secured.

Empowering People & Business with Technology

Note this Guide is prepared using Netbackup 7.7.1 on windows and Sybase database ASE 16 on Linux, it may be inappropriate for your environment if you are using different versions, so please review your version documentation to see if there is any new features or changes.

Responsibilities

Whenever it comes to responsibilities conflicts appears, and at this part of the document, I am going to clarify the scope of work based on the administrator role.

Netbackup Administrator

At this case the Netbackup administrator is responsible for planning the backup strategy with the Sybase database administrator, Providing the Netbackup Client Software with the proper version for the Sybase database environment, Installing and Configuring the Netbackup Client Software on Sybase database servers, Creating the Proper Backup Policies and Schedules according to the plan, Monitoring backup and restore jobs status, training the database administrator on how to restore a Sybase database in case of corruption or data loss and troubleshoot any problems related to the backup or restore jobs.

Sybase database Administrator

At this case the Sybase database administrator is responsible for providing Sybase database environment variables, Providing the proper backup schedules, retention periods and type of backup, Creating databases for restores and restoring databases.



Planning and Deploying the Solution

First thing first what version of Netbackup Client is compatible with your Sybase database version and OS, here comes the Sybase database administrator and provide the Netbackup administrator with the Sybase database version and OS level.

Second for sizing you will need to know the size of the Sybase databases that you need to backup and how long it will be retained at what frequency of backup, here comes the Sybase database administrator and provide the Netbackup administrator with the database sizes.

Third and before deployment of Netbackup Client Software we need to get both Sybase server name and Sybase home directory.

Fourth is deploying and configuring the Netbackup Client Software on the Sybase database server



Netbackup for Sybase

Sybase Database Version and OS level

The Sybase database administrator provides the Sybase database version by using one of those to methods.

Using the provided data the Netbackup Administrator will check “Netbackup Compatibility Matrix” and prepare the proper Netbackup Client Software version source.

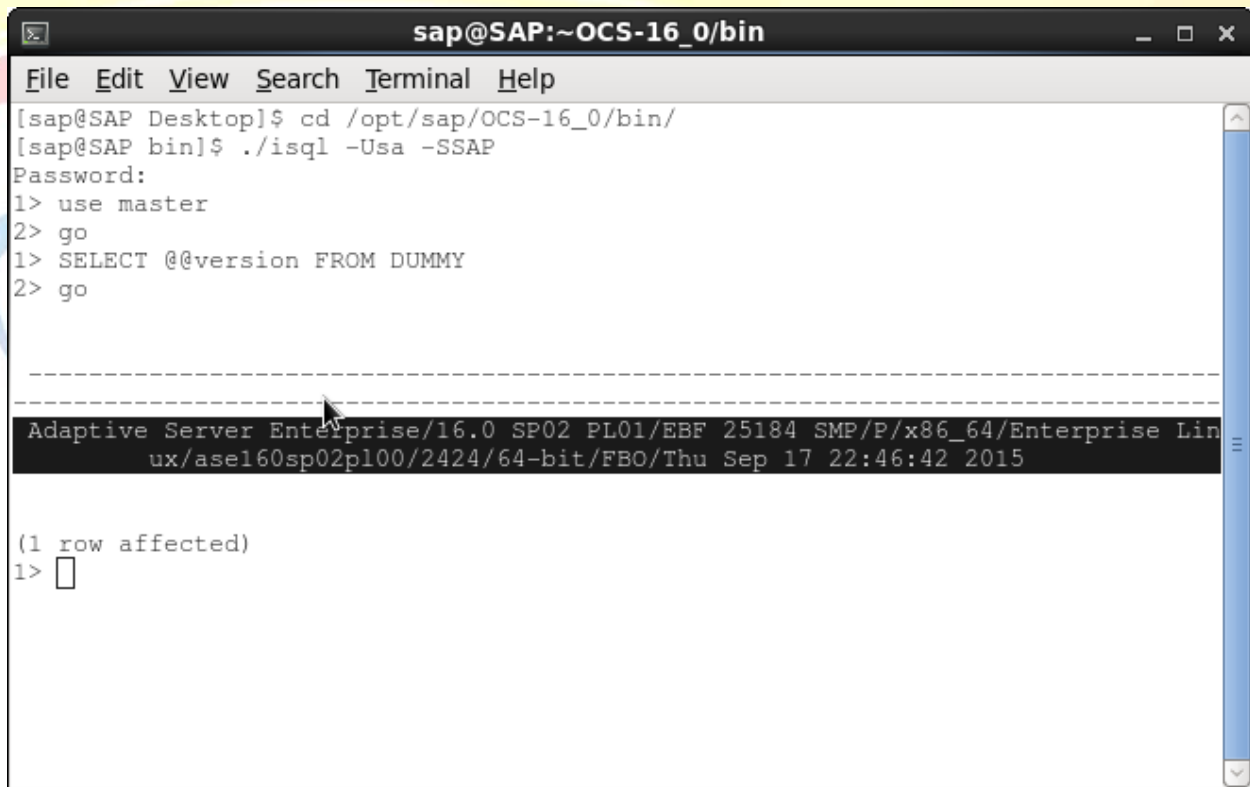
Get Sybase Database Version using Isql

From Terminal the Sybase Database Administrator will Change directory to /opt/sap/OCS-16_0/bin/ assuming that Sybase home is /opt/sap/

Then he will connect to the Sybase database server using ./isql -Usa -SSAP assuming that the Sybase database server name is SAP

After connecting and entering the password the following query should be used

```
use master
go
select @@version FROM DUMMY
go
```



```
sap@SAP:~/OCS-16_0/bin
File Edit View Search Terminal Help
[sap@SAP Desktop]$ cd /opt/sap/OCS-16_0/bin/
[sap@SAP bin]$ ./isql -Usa -SSAP
Password:
1> use master
2> go
1> SELECT @@version FROM DUMMY
2> go

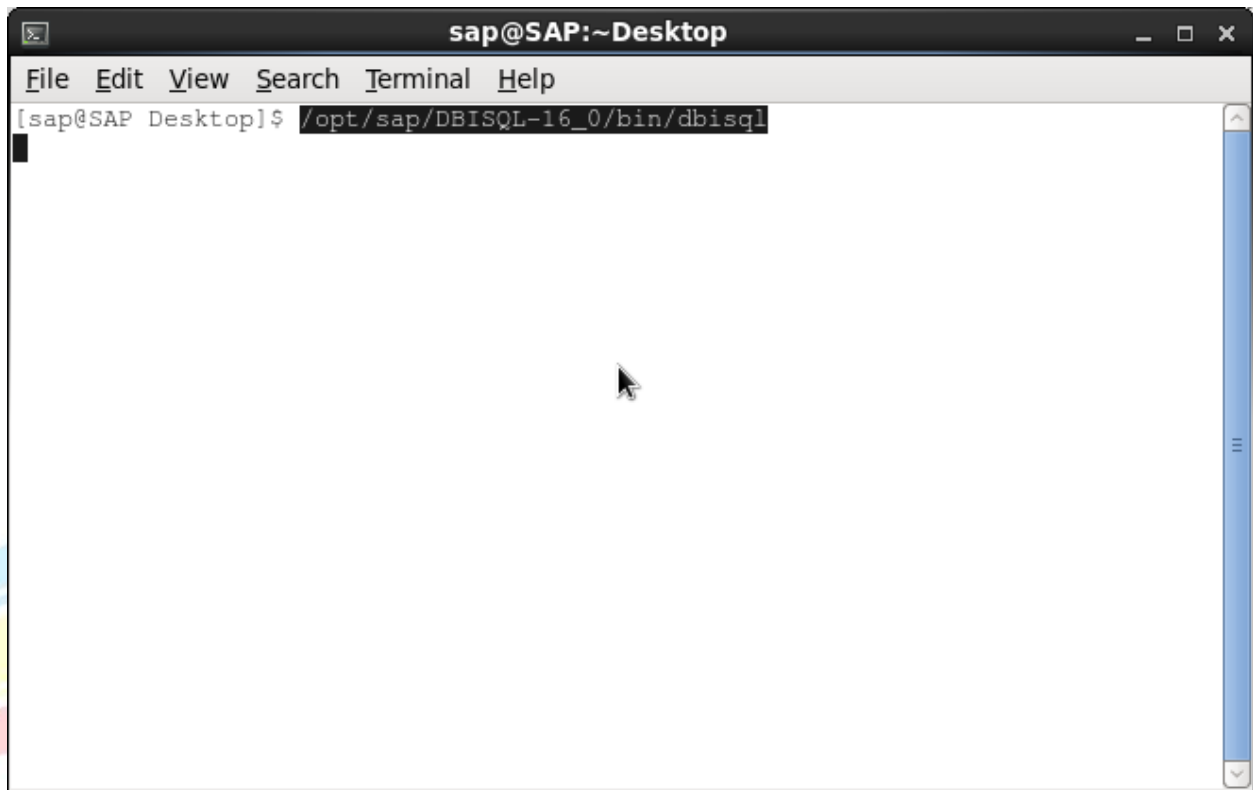
-----
Adaptive Server Enterprise/16.0 SP02 PL01/EBF 25184 SMP/P/x86_64/Enterprise Linux/ase160sp02pl00/2424/64-bit/FBO/Thu Sep 17 22:46:42 2015

(1 row affected)
1> 
```

Netbackup for Sybase

Get Sybase Database Version using DBIsql

From Terminal the Sybase Database Administrator will run `/opt/sap/DBISQL-16_0/bin/dbisql` assuming that Sybase home is `/opt/sap/`



```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ /opt/sap/DBISQL-16_0/bin/dbisql
```



Then enters the proper user name and password to connect to the Sybase database server

Connect

Connect to SAP Adaptive Server Enterprise
[Change database type](#)

Identify yourself to the server with user name and password.

User name:

Password:

Specify the server to connect to. Settings...

Select a server from the dropdown list, or enter host name and port number separated by ":" (for example, "SAP:5000".)

Server name: Find...

Host name: << Details

Port number: SSL

Optionally, specify character set and language to be used by this connection.

Character set:

Language:

Advanced >> Tools ▾ Connect Cancel Help



Netbackup for Sybase

After a successful login the following query will be used

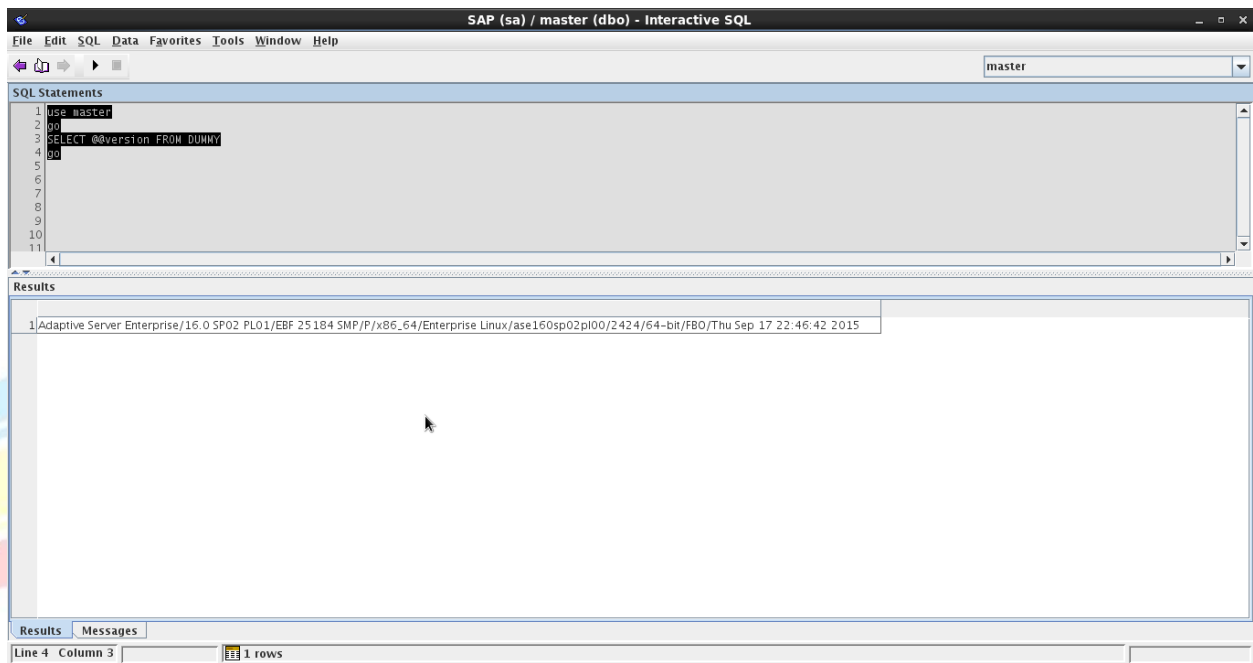
Use master

Go

Select @@version FROM DUMMY

Go

F5 key to execute



Netbackup for Sybase

Get OS Level

Using terminal the Sybase database administrator executes the following command

“uname -a”

A terminal window titled 'sap@SAP:~Desktop' is shown. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminal content shows the command '[sap@SAP Desktop]\$ uname -a' and its output: 'Linux SAP 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64 x86_64 x86_64 GNU/Linux'. The prompt '[sap@SAP Desktop]\$' is followed by a black cursor block.

```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ uname -a
Linux SAP 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013 x86_64 x86_6
4 x86_64 GNU/Linux
[sap@SAP Desktop]$
```



Sizing for Sybase Backup

As part of planning you need to know how large are the data going to be backed up and how long it will be retained at which frequency of backup.

At this part the Sybase database administrator will provide the Netbackup administrator with the required schedule of backup according to the business needs including both full database dump and transaction logs dump, also he will provide the required retention periods for every backup and the sizes of all databases to be backed up.

Also the Netbackup Administrator will have to calculate the required amount of storage using the data provided

Required Storage Size = DB size * (Number of Backups during the retention period)

Note from the following queries use the data_used and the log_used as your reference.

Get Sybase Database Size using Isql

From Terminal the Sybase Database Administrator will Change directory to /opt/sap/OCS-16_0/bin/ assuming that Sybase home is /opt/sap/

Then he will connect to the Sybase database server using ./isql -Usa -SSAP assuming that the Sybase database server name is SAP



After connecting and entering the password the following query should be used

```
use master

go

select db_name(d.dbid) as db_name,

ceiling(sum(case when u.segmap != 4 then u.size/1048576.*@@maxpagesize end )) as data_size,

ceiling(sum(case when u.segmap != 4 then size - curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end)/1048576.*@@maxpagesize) as

data_used,

ceiling(100 * (1 - 1.0 * sum(case when u.segmap != 4 then curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end) / sum(case when u.segmap

!= 4 then u.size end))) as data_used_pct,

ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end)) as log_size,

ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end) -

lct_admin("logsegment_freepages",d.dbid)/1048576.*@@maxpagesize) as log_used,

ceiling(100 * (1 - 1.0 * lct_admin("logsegment_freepages",d.dbid) / sum(case when u.segmap in (4, 7) then u.size end))) as log_used_pct

from master..sysdatabases d, master..sysusages u

where u.dbid = d.dbid and d.status != 256

group by d.dbid

order by db_name(d.dbid)

go
```



```
sap@SAP:~OCS-16_0/bin
File Edit View Search Terminal Help
[sap@SAP Desktop]$ cd /opt/sap/OCS-16_0/bin/
[sap@SAP bin]$ ./isql -Usa -SSAP
Password:
1> use master
2> go
3> select db_name(d.dbid) as db_name,
4> ceiling(sum(case when u.segmap != 4 then u.size/1048576.*@@maxpagesize end )) as data_size,
5> ceiling(sum(case when u.segmap != 4 then size - curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end)/1048576.*@@maxpagesize) as data_used,
6> ceiling(100 * (1 - 1.0 * sum(case when u.segmap != 4 then curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end) / sum(case when u.segmap != 4 then u.size end))) as data_used_pct,
7> ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end)) as log_size,
8> ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end) - lct_admin("logsegment_freepages",d.dbid)/1048576.*@@maxpagesize) as log_used,
9> ceiling(100 * (1 - 1.0 * lct_admin("logsegment_freepages",d.dbid) / sum(case when u.segmap in (4, 7) then u.size end))) as log_used_pct
10> from master..sysdatabases d, master..sysusages u
11> where u.dbid = d.dbid and d.status != 256
12> group by d.dbid
13> order by db_name(d.dbid)
14> go
db_name          data_size      data_used      data_used_pct  log_size      log_used      log_used_pct
-----
master
16              3              NULL          NULL
16              3              NULL          NULL
model
2              59            3              5.0847457627118644
2              59            3              5.0847457627118644
```

Netbackup for Sybase

Get Sybase Database Size using DBIsql

From Terminal the Sybase Database Administrator will run `/opt/sap/DBISQL-16_0/bin/dbisql` assuming that Sybase home is `/opt/sap/`



```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ /opt/sap/DBISQL-16_0/bin/dbisql
```



Then enters the proper user name and password to connect to the Sybase database server

Connect [X]

Connect to SAP Adaptive Server Enterprise
[Change database type](#)

Identify yourself to the server with user name and password.

User name:

Password:

Specify the server to connect to. [Settings...](#)

Select a server from the dropdown list, or enter host name and port number separated by ":" (for example, "SAP:5000".)

Server name: [Find...](#)

Host name: [<< Details](#)

Port number: SSL

Optionally, specify character set and language to be used by this connection.

Character set:

Language:

[Advanced >>](#) [Tools](#) [Connect](#) [Cancel](#) [Help](#)



After a successful login the following query will be used

```
use master

go

select db_name(d.dbid) as db_name,

ceiling(sum(case when u.segmap != 4 then u.size/1048576.*@@maxpagesize end )) as data_size,

ceiling(sum(case when u.segmap != 4 then size - curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end)/1048576.*@@maxpagesize) as

data_used,

ceiling(100 * (1 - 1.0 * sum(case when u.segmap != 4 then curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end) / sum(case when u.segmap

!= 4 then u.size end))) as data_used_pct,

ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end)) as log_size,

ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end) -

lct_admin("logsegment_freepages",d.dbid)/1048576.*@@maxpagesize) as log_used,

ceiling(100 * (1 - 1.0 * lct_admin("logsegment_freepages",d.dbid) / sum(case when u.segmap in (4, 7) then u.size end))) as log_used_pct

from master..sysdatabases d, master..sysusages u

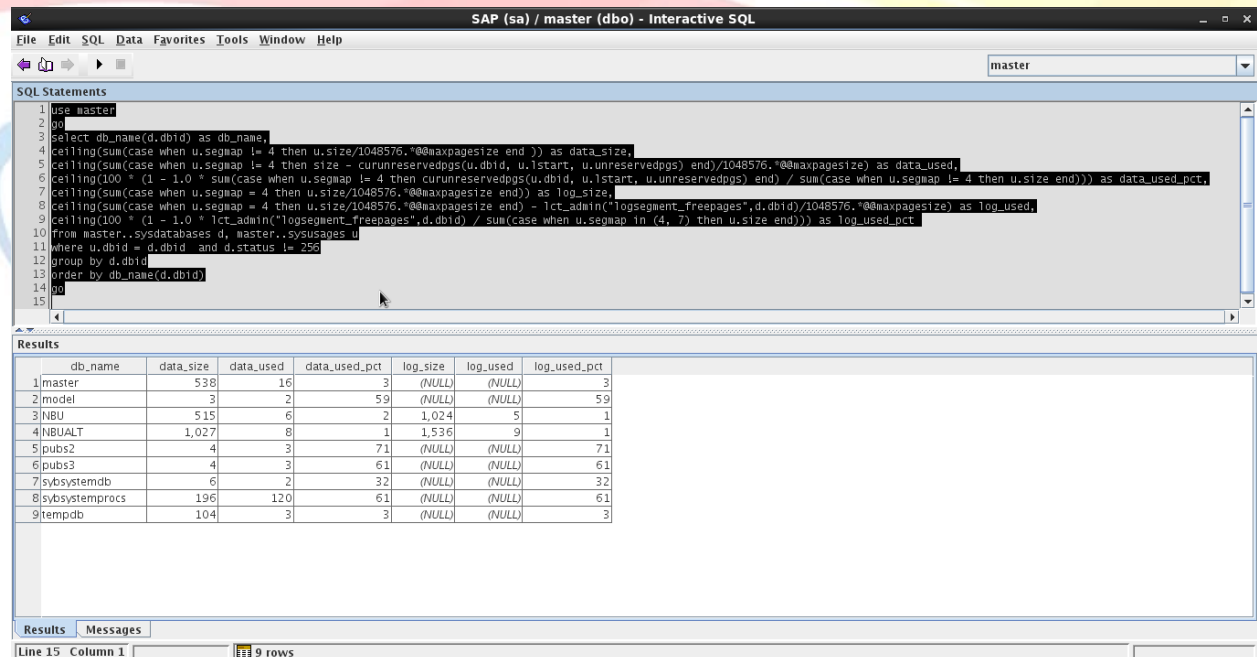
where u.dbid = d.dbid and d.status != 256

group by d.dbid

order by db_name(d.dbid)

go

F5 key to execute
```



The screenshot shows the SAP Interactive SQL interface. The SQL Statements window contains the following query:

```
1 use master
2 go
3 select db_name(d.dbid) as db_name,
4 ceiling(sum(case when u.segmap != 4 then u.size/1048576.*@@maxpagesize end )) as data_size,
5 ceiling(sum(case when u.segmap != 4 then size - curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end)/1048576.*@@maxpagesize) as data_used,
6 ceiling(100 * (1 - 1.0 * sum(case when u.segmap != 4 then curunreservedpgs(u.dbid, u.lstart, u.unreservedpgs) end) / sum(case when u.segmap
7 != 4 then u.size end))) as data_used_pct,
8 ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end)) as log_size,
9 ceiling(sum(case when u.segmap = 4 then u.size/1048576.*@@maxpagesize end) -
10 lct_admin("logsegment_freepages",d.dbid)/1048576.*@@maxpagesize) as log_used,
11 ceiling(100 * (1 - 1.0 * lct_admin("logsegment_freepages",d.dbid) / sum(case when u.segmap in (4, 7) then u.size end))) as log_used_pct
12 from master..sysdatabases d, master..sysusages u
13 where u.dbid = d.dbid and d.status != 256
14 group by d.dbid
15 order by db_name(d.dbid)
16 go
```

The Results window displays the following table:

| db_name | data_size | data_used | data_used_pct | log_size | log_used | log_used_pct |
|-------------------|-----------|-----------|---------------|----------|----------|--------------|
| 1 master | 538 | 16 | 3 | (NULL) | (NULL) | 3 |
| 2 model | 3 | 2 | 59 | (NULL) | (NULL) | 59 |
| 3 NBU | 515 | 6 | 2 | 1,024 | 5 | 1 |
| 4 NBUALT | 1,027 | 8 | 1 | 1,536 | 9 | 1 |
| 5 pubs2 | 4 | 3 | 71 | (NULL) | (NULL) | 71 |
| 6 pubs3 | 4 | 3 | 61 | (NULL) | (NULL) | 61 |
| 7 sybssystemdb | 6 | 2 | 32 | (NULL) | (NULL) | 32 |
| 8 sybssystemprocs | 196 | 120 | 61 | (NULL) | (NULL) | 61 |
| 9 tempdb | 104 | 3 | 3 | (NULL) | (NULL) | 3 |

The interface also shows a status bar at the bottom indicating "Line 15 Column 1" and "9 rows".

Netbackup for Sybase

Sybase Environment Variables

Netbackup Client Software requires Sybase server name and Sybase home directory to be able to backup and restore the databases on the Sybase database server.

Get the Sybase Server name

Using terminal the Sybase database administrator executes the following command

```
printenv | grep -i hostname
```



```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ printenv | grep -i hostname
HOSTNAME=SAP
[sap@SAP Desktop]$
```

Netbackup for Sybase

Get the Sybase home directory

Using terminal the Sybase database administrator executes the following command

```
printenv | grep -i Sybase
```

And look for the value next to SYBASE=??????



```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ printenv | grep -i sybase
SYBASE_OCS=OCS-16_0
SYBASE=/opt/sap
SYBASE_JRE_RTDS=/opt/sap/shared/SAPJRE-7_1_027_64BIT
SYBASE_WS=WS-16_0
SYBASE_ASE=ASE-16_0
[sap@SAP Desktop]$
```



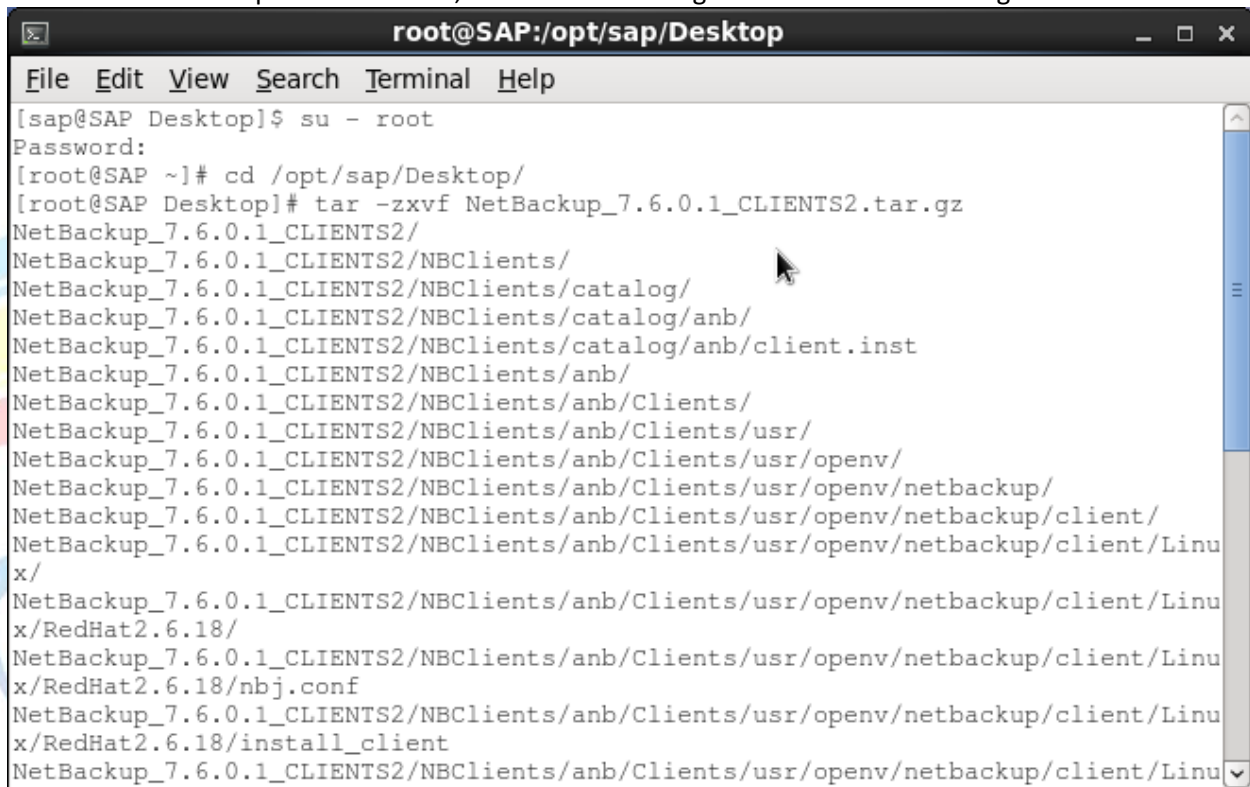
Netbackup Deployment and Configuration

At this part comes the Netbackup administrator and installs the Netbackup Client Software version compatible with the Sybase database version and OS level, then configures it and set it for Sybase instance/s.

Installing Netbackup Client

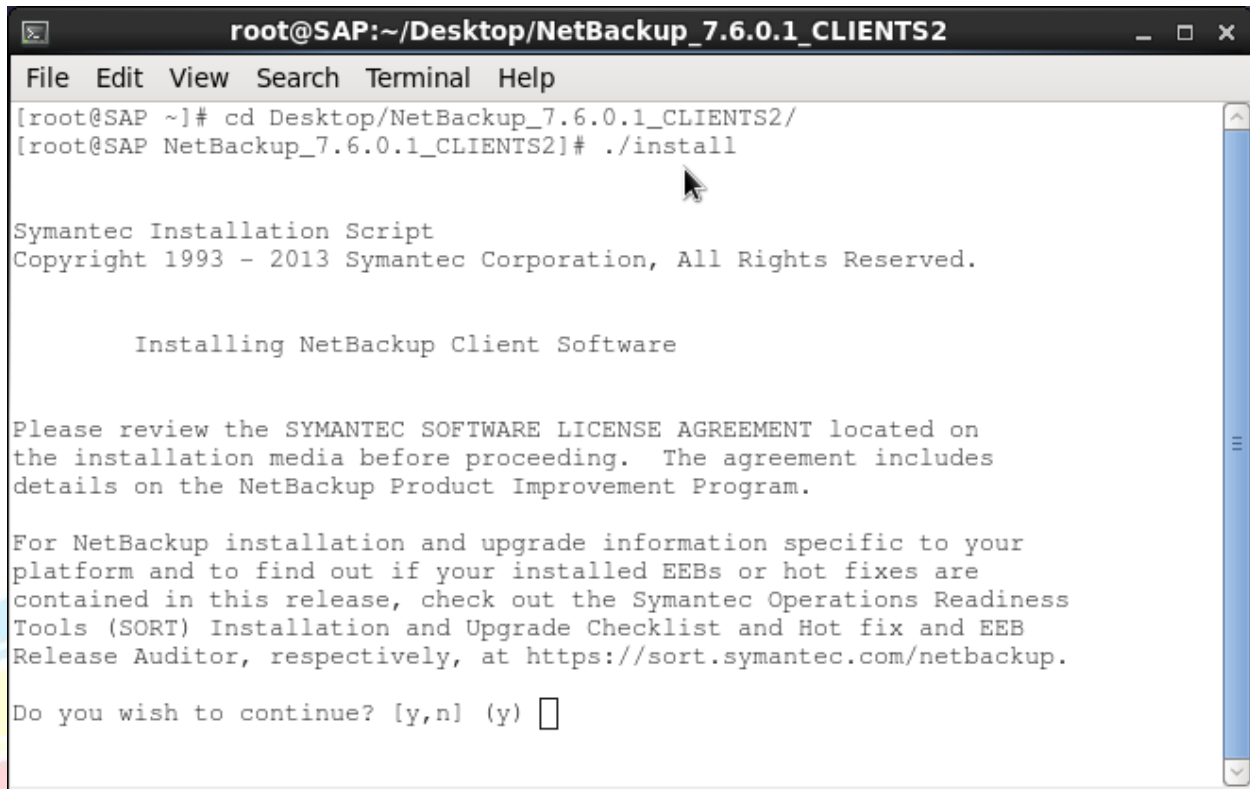
Using terminal the Netbackup administrator will use root user to extract the Netbackup client software and install it.

Run “su – root” and enter the root password to switch to the root user, then change directory to the location of Netbackup client software, then extract it using “tar –zxvf file-name.tar.gz”

A terminal window titled "root@SAP:/opt/sap/Desktop" showing the process of installing NetBackup client software. The user switches to root, changes to the directory /opt/sap/Desktop, and runs the command tar -zxvf NetBackup_7.6.0.1_CLIENTS2.tar.gz. The output lists the extracted files and directories.

```
root@SAP:/opt/sap/Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ su - root
Password:
[root@SAP ~]# cd /opt/sap/Desktop/
[root@SAP Desktop]# tar -zxvf NetBackup_7.6.0.1_CLIENTS2.tar.gz
NetBackup_7.6.0.1_CLIENTS2/
NetBackup_7.6.0.1_CLIENTS2/NBclients/
NetBackup_7.6.0.1_CLIENTS2/NBclients/catalog/
NetBackup_7.6.0.1_CLIENTS2/NBclients/catalog/anb/
NetBackup_7.6.0.1_CLIENTS2/NBclients/catalog/anb/client.inst
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/Linu
x/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/Linu
x/RedHat2.6.18/
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/Linu
x/RedHat2.6.18/nbj.conf
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/Linu
x/RedHat2.6.18/install_client
NetBackup_7.6.0.1_CLIENTS2/NBclients/anb/Clients/usr/opencv/netbackup/client/Linu
```

After the file is extracted change directory inside the directory extracted and run the “./install” to start the installation wizard, then input “Y” to continue with the installation wizard.



```
root@SAP:~/Desktop/NetBackup_7.6.0.1_CLIENTS2
File Edit View Search Terminal Help
[root@SAP ~]# cd Desktop/NetBackup_7.6.0.1_CLIENTS2/
[root@SAP NetBackup_7.6.0.1_CLIENTS2]# ./install

Symantec Installation Script
Copyright 1993 - 2013 Symantec Corporation, All Rights Reserved.

Installing NetBackup Client Software

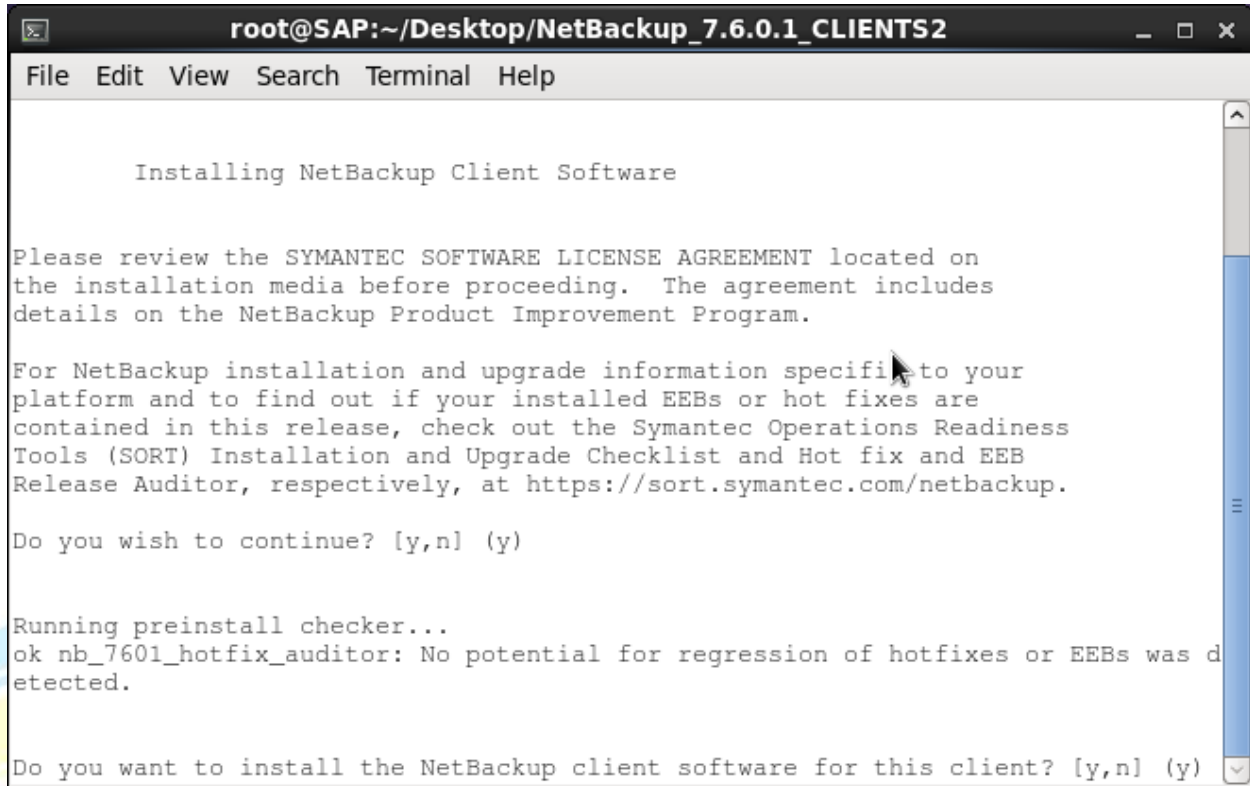
Please review the SYMANTEC SOFTWARE LICENSE AGREEMENT located on
the installation media before proceeding. The agreement includes
details on the NetBackup Product Improvement Program.

For NetBackup installation and upgrade information specific to your
platform and to find out if your installed EEBs or hot fixes are
contained in this release, check out the Symantec Operations Readiness
Tools (SORT) Installation and Upgrade Checklist and Hot fix and EEB
Release Auditor, respectively, at https://sort.symantec.com/netbackup.

Do you wish to continue? [y,n] (y) 
```



After the preinstall checker finishes input "Y" to continue with the installation wizard.



```
root@SAP:~/Desktop/NetBackup_7.6.0.1_CLIENTS2
File Edit View Search Terminal Help

Installing NetBackup Client Software

Please review the SYMANTEC SOFTWARE LICENSE AGREEMENT located on
the installation media before proceeding. The agreement includes
details on the NetBackup Product Improvement Program.

For NetBackup installation and upgrade information specific to your
platform and to find out if your installed EEBs or hot fixes are
contained in this release, check out the Symantec Operations Readiness
Tools (SORT) Installation and Upgrade Checklist and Hot fix and EEB
Release Auditor, respectively, at https://sort.symantec.com/netbackup.

Do you wish to continue? [y,n] (y)

Running preinstall checker...
ok nb_7601_hotfix_auditor: No potential for regression of hotfixes or EEBs was d
ected.

Do you want to install the NetBackup client software for this client? [y,n] (y)
```



Netbackup for Sybase

When the installation wizard prompts you for the Netbackup master server type in the name of your Netbackup master server and press enter.

```
root@SAP:~/Desktop/NetBackup_7.6.0.1_CLIENTS2
File Edit View Search Terminal Help
the installation media before proceeding. The agreement includes
details on the NetBackup Product Improvement Program.

For NetBackup installation and upgrade information specific to your
platform and to find out if your installed EEBs or hot fixes are
contained in this release, check out the Symantec Operations Readiness
Tools (SORT) Installation and Upgrade Checklist and Hot fix and EEB
Release Auditor, respectively, at https://sort.symantec.com/netbackup.

Do you wish to continue? [y,n] (y)

Running preinstall checker...
ok nb_7601_hotfix_auditor: No potential for regression of hotfixes or EEBs was d
ected.

Do you want to install the NetBackup client software for this client? [y,n] (y)

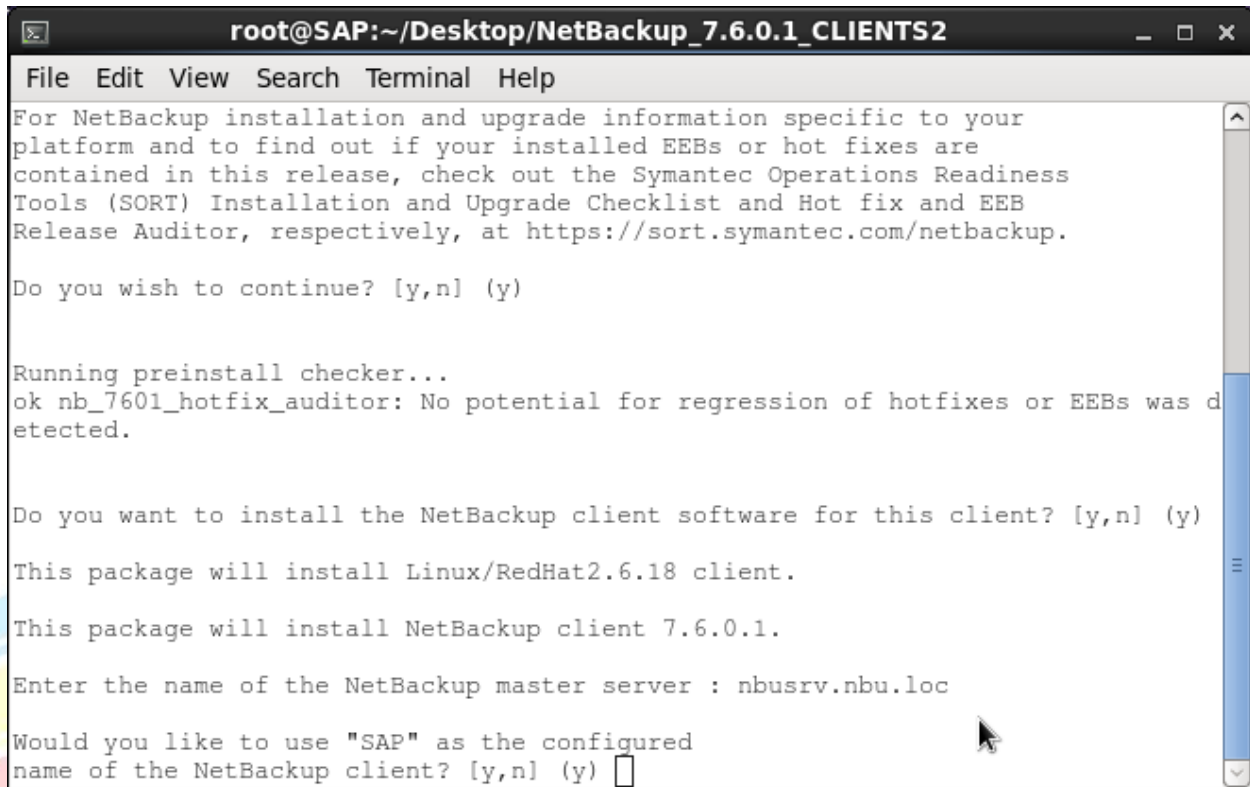
This package will install Linux/RedHat2.6.18 client.

This package will install NetBackup client 7.6.0.1.

Enter the name of the NetBackup master server : nbusrv.nbu.loc
```



When the installation wizard prompts you for the Netbackup client name make sure the name is correct and then input "Y" to continue with the installation.

A terminal window titled 'root@SAP:~/Desktop/NetBackup_7.6.0.1_CLIENTS2' with a menu bar (File, Edit, View, Search, Terminal, Help). The terminal displays the following text:

```
For NetBackup installation and upgrade information specific to your platform and to find out if your installed EEBs or hot fixes are contained in this release, check out the Symantec Operations Readiness Tools (SORT) Installation and Upgrade Checklist and Hot fix and EEB Release Auditor, respectively, at https://sort.symantec.com/netbackup.

Do you wish to continue? [y,n] (y)

Running preinstall checker...
ok nb_7601_hotfix_auditor: No potential for regression of hotfixes or EEBs was detected.

Do you want to install the NetBackup client software for this client? [y,n] (y)

This package will install Linux/RedHat2.6.18 client.

This package will install NetBackup client 7.6.0.1.

Enter the name of the NetBackup master server : nbusrv.nbu.loc

Would you like to use "SAP" as the configured name of the NetBackup client? [y,n] (y) 
```



After the installation ends review the installation progress and make sure there is no errors.

```
root@SAP:~/Desktop/NetBackup_7.6.0.1_CLIENTS2
File Edit View Search Terminal Help
Starting vnetd...
Starting bpcd...
Starting nbftclnt...
Starting nbdisco...
Starting mtstrmd...
Starting bmrbd...

Installation of Java LiveUpdate agent succeeded. Refer to file
/tmp/JLU-Log/JavaLiveUpdate-Install.log on SAP
for installation details.

Checking LiveUpdate registration for the following products: CLT
This may take a few minutes.

Product CLT is installed and will be registered.

Updating LiveUpdate registration now...this may take some time.

File /usr/opensv/tmp/install_trace.2593 contains a trace of this install.
That file can be deleted after you are sure the install was successful.
[root@SAP NetBackup_7.6.0.1_CLIENTS2]#
```



Netbackup for Sybase

Configuring Netbackup Client

At this part the Netbackup administrator will copy a library file to the Sybase database server, create the log directories and register the Sybase database instance.

In case you are using windows then copy the following file from the Netbackup master server

```
"C:\Program Files\Veritas\NetBackup\DbExt\sybase\libsybackup.dll"
```

To the windows based Sybase database Server into

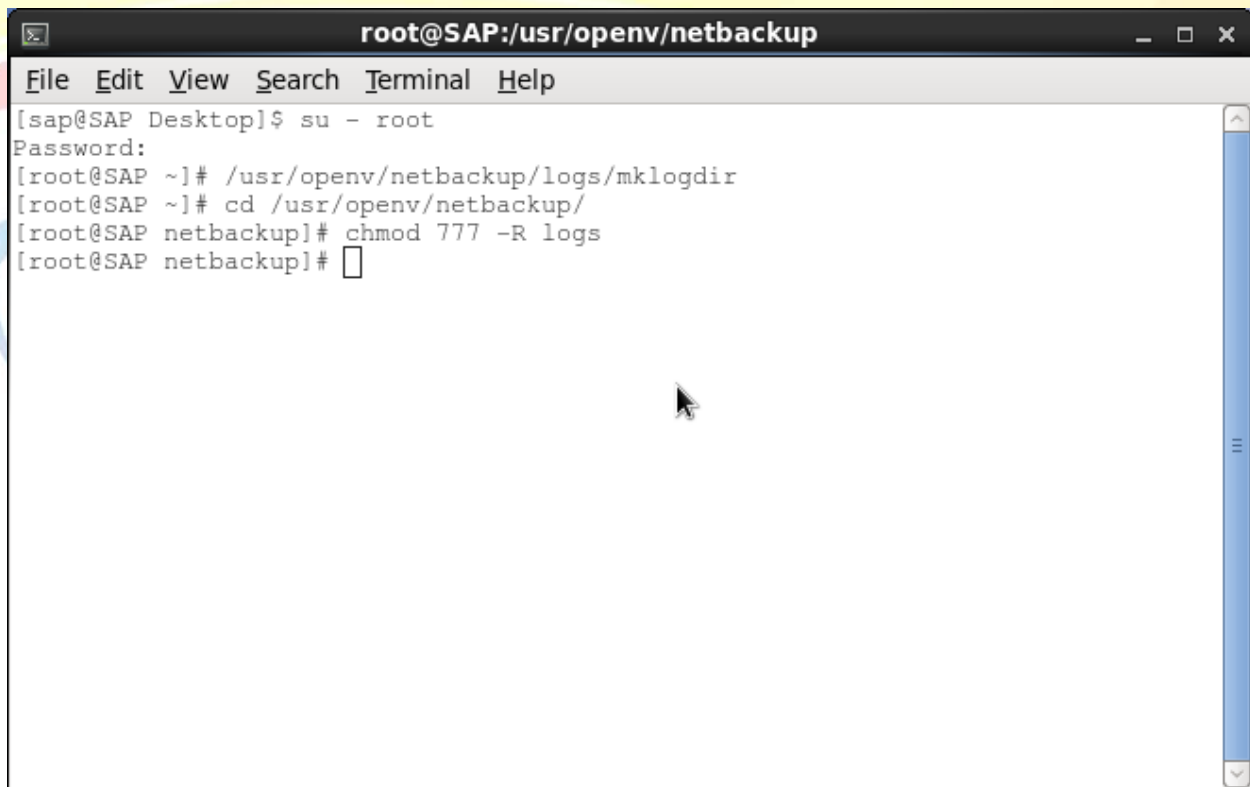
```
%SYBASE%\ASE-12_*\lib\
```

Assuming that you are using sybase ASE 12

Then create the log directories (log directories are mandatory for backup success)

Using terminal the Netbackup administrator will use root user to create the log directories

Run "su - root" and enter the root password to switch to the root user, then creates the log directories using "/usr/opensv/netbackup/logs/mklogdir" and change directory to the location of Netbackup client software installation directory using "cd /usr/opensv/netbackup/", and finally change the permissions of the logs directory using "chmod 777 -R logs"



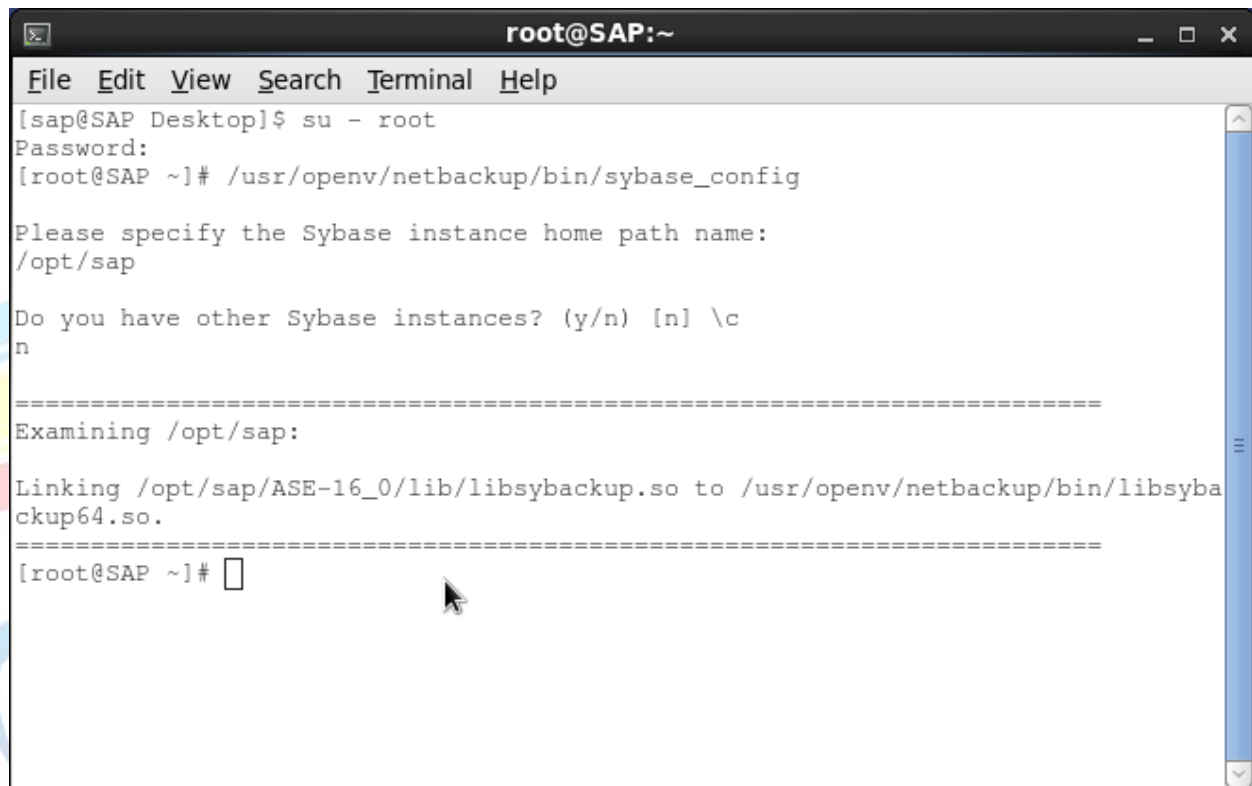
```
root@SAP:/usr/opensv/netbackup
File Edit View Search Terminal Help
[sap@SAP Desktop]$ su - root
Password:
[root@SAP ~]# /usr/opensv/netbackup/logs/mklogdir
[root@SAP ~]# cd /usr/opensv/netbackup/
[root@SAP netbackup]# chmod 777 -R logs
[root@SAP netbackup]#
```

Netbackup for Sybase

After creating the logs you will need to configure NetBackup Client for the Sybase database instance.

Using terminal the NetBackup administrator will use root user to execute the following command

Run “su – root” and enter the root password to switch to the root user, then execute “/usr/opensv/netbackup/bin/sybase_config”, And when it prompts you for the Sybase instance home path input “/opt/sap” assuming that Sybase home is /opt/sap/ then if you have any more instances input “Y” and input the home directory for every instance and when there is no more instances input “N” and you are done configuring Netbackup for Sybase database backup.



```
root@SAP:~  
File Edit View Search Terminal Help  
[sap@SAP Desktop]$ su - root  
Password:  
[root@SAP ~]# /usr/opensv/netbackup/bin/sybase_config  
  
Please specify the Sybase instance home path name:  
/opt/sap  
  
Do you have other Sybase instances? (y/n) [n] \c  
n  
  
=====
```

Examining /opt/sap:

```
Linking /opt/sap/ASE-16_0/lib/libsybackup.so to /usr/opensv/netbackup/bin/libsyba  
ckup64.so.  
=====
```

```
[root@SAP ~]#
```

Backup Sybase database

The process of backup is simple and consists of two steps, creating backup scripts, then creating backup policies.

Creating Backup Scripts

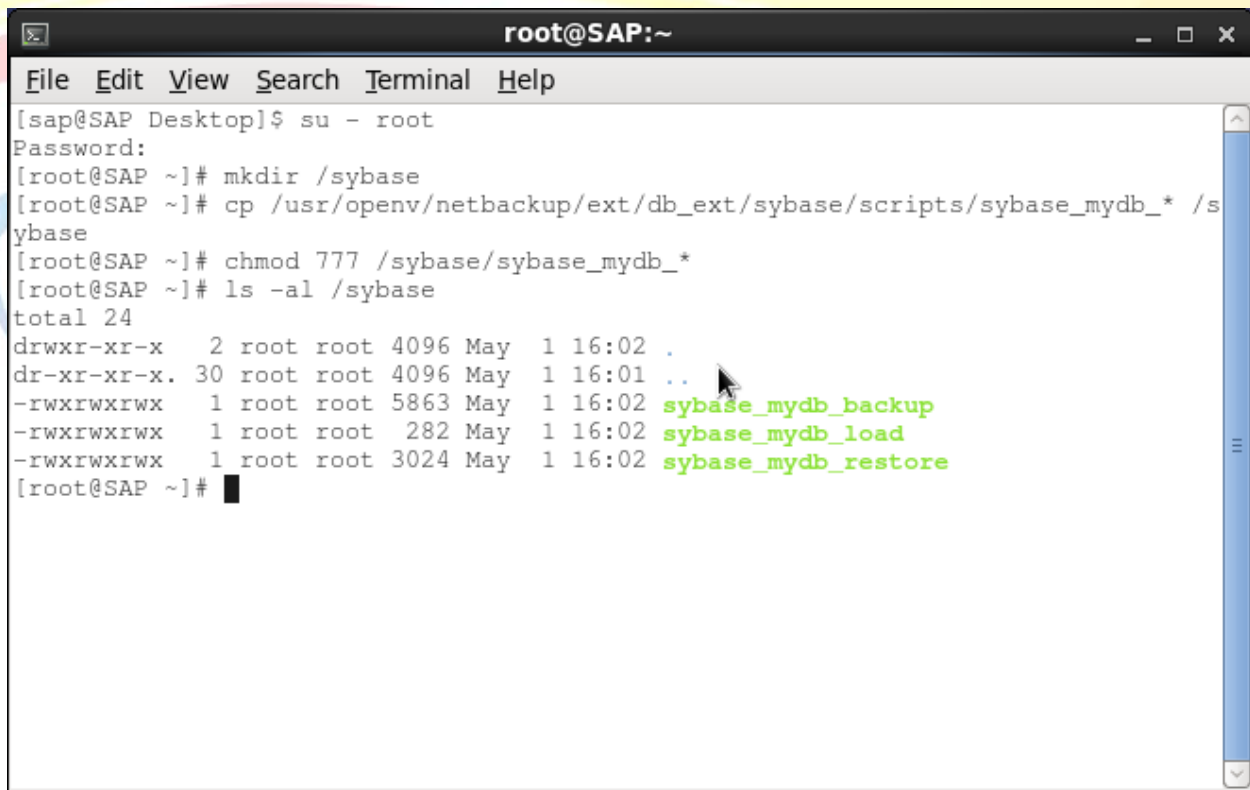
Creating a script may sound difficult but it is not really creating a script, you will just copy a template script for every database and edit it to suite your plan.

Coping the scripts

At this step the Netbackup administrator will use the root user to create a directory to store the backup scripts, copy them to it, and finally change their permissions to be executable.

Run “su – root” and enter the root password to switch to the root user, then creates the scripts directory running “mkdir /sybase”, then copies the scripts running “cp /usr/opensv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_* /sybase”, and finally change the permissions of the copied scripts running “chmod 777 /sybase/sybase_mydb_*”.

Note according to the security policy you may be using 775 to prevent normal users from executing the scripts.



```
root@SAP:~  
File Edit View Search Terminal Help  
[sap@SAP Desktop]$ su - root  
Password:  
[root@SAP ~]# mkdir /sybase  
[root@SAP ~]# cp /usr/opensv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_* /sybase  
[root@SAP ~]# chmod 777 /sybase/sybase_mydb_*  
[root@SAP ~]# ls -al /sybase  
total 24  
drwxr-xr-x  2 root root 4096 May  1 16:02 .  
dr-xr-xr-x  30 root root 4096 May  1 16:01 ..  
-rwxrwxrwx  1 root root 5863 May  1 16:02 sybase_mydb_backup  
-rwxrwxrwx  1 root root 282 May  1 16:02 sybase_mydb_load  
-rwxrwxrwx  1 root root 3024 May  1 16:02 sybase_mydb_restore  
[root@SAP ~]#
```

Netbackup for Sybase

Editing Backup Script

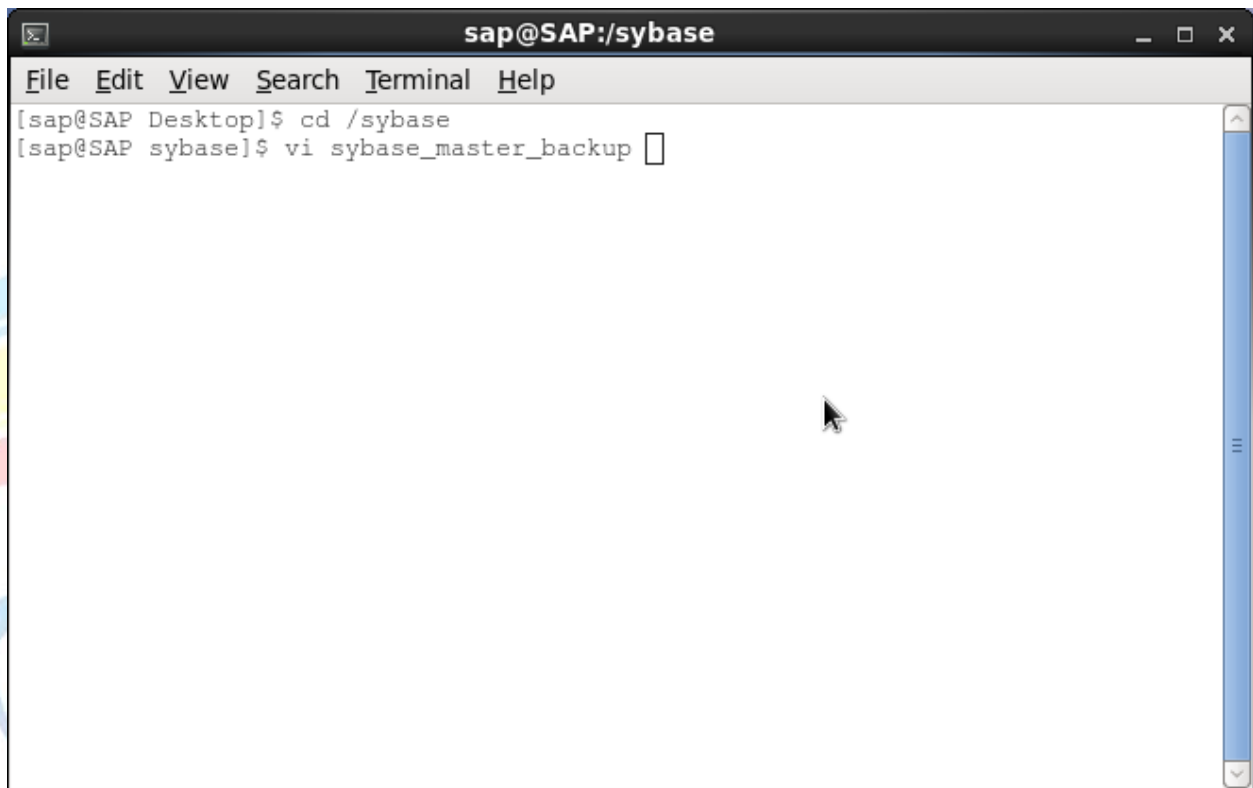
First you will have to copy a backup script for every database renaming it to a proper name to help you knowing the purpose of the file.

Example. Sybase_”database name”_”Operation (Backup/ restore/ load)”

Use “vi “file name”” to edit any backup file

In this example I will be editing the backup script for master database

Using terminal the Netbackup administrator will change directory to the scripts directory running “cd /sybase” then edit the file using vi tool running “vi sybase_master_backup”

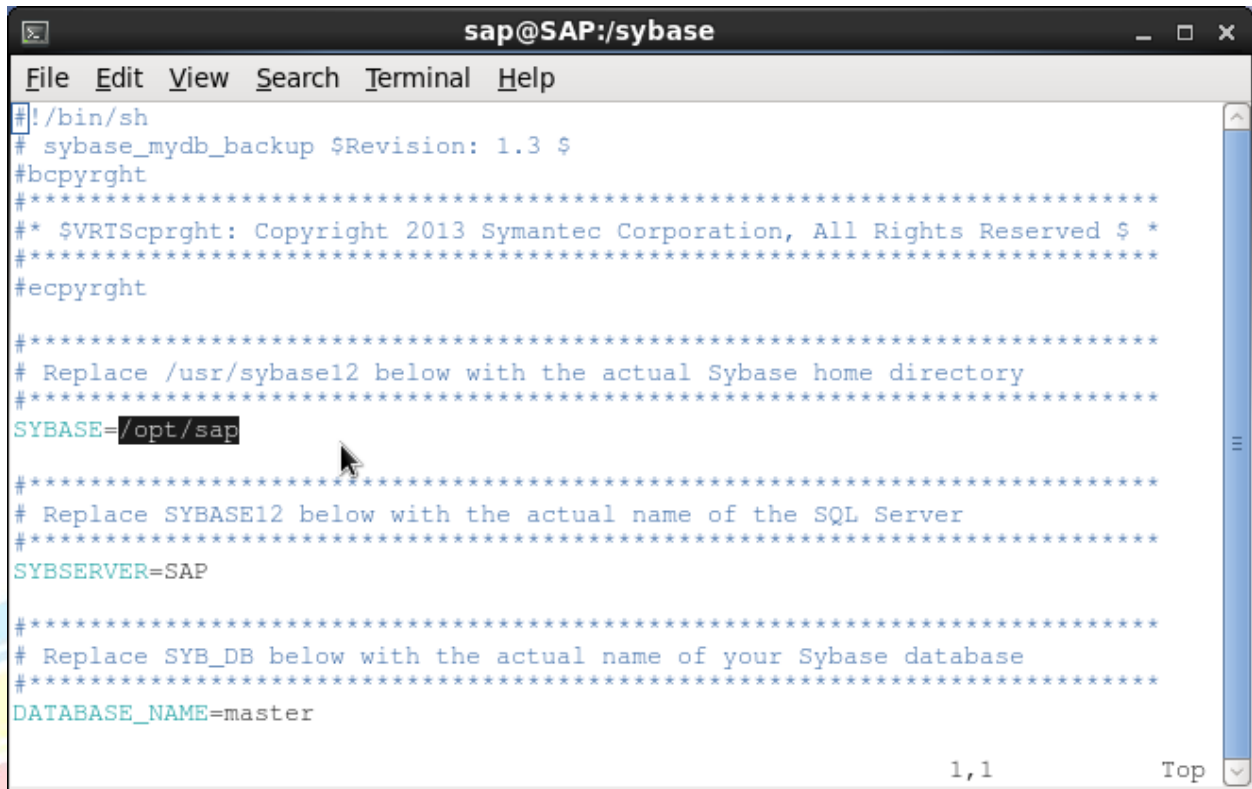
A terminal window titled 'sap@SAP:/sybase' is shown. The window has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The terminal output shows the following commands and their results:

```
[sap@SAP Desktop]$ cd /sybase
[sap@SAP sybase]$ vi sybase_master_backup
```

The cursor is positioned at the end of the second command line. The background of the terminal window is white, and the text is in a monospaced font. The window title bar is dark gray with standard window control buttons (minimize, maximize, close) on the right side.

Netbackup for Sybase

Then the backup administrator will edit the Sybase database instance home directory in the script using insert mode by clicking “i” and when done editing presses escape key.

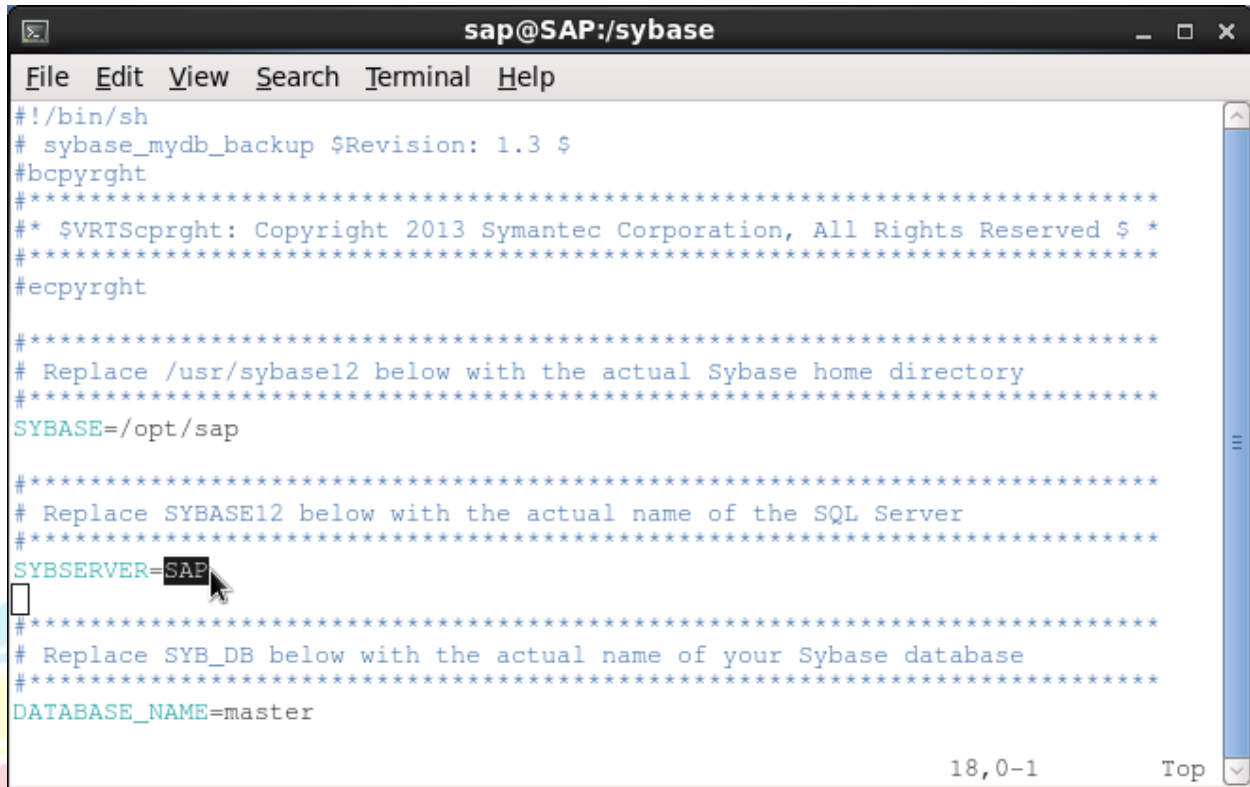


```
sap@SAP:/sybase
File Edit View Search Terminal Help
#!/bin/sh
# sybase_mydb_backup $Revision: 1.3 $
#bcpyright
#*****
#* $VRTScprght: Copyright 2013 Symantec Corporation, All Rights Reserved $ *
#*****
#ecpyrgh
#*****
# Replace /usr/sybase12 below with the actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with the actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Replace SYB_DB below with the actual name of your Sybase database
#*****
DATABASE_NAME=master
1,1 Top
```



Netbackup for Sybase

Then the backup administrator will edit the Sybase database server name in the script using insert mode by clicking “i” and when done editing presses escape key.

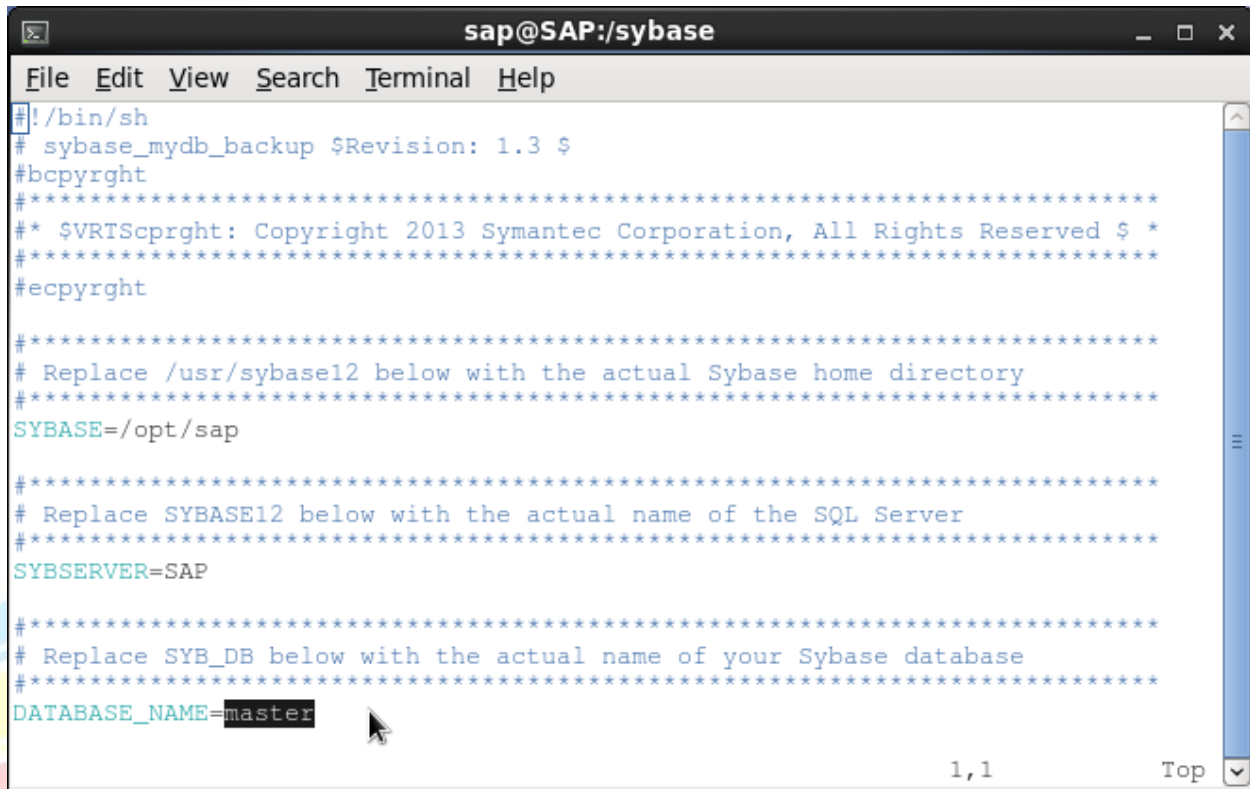


```
sap@SAP:/sybase
File Edit View Search Terminal Help
#!/bin/sh
# sybase_mydb_backup $Revision: 1.3 $
#bcpyrght
#*****
#* $VRTScprght: Copyright 2013 Symantec Corporation, All Rights Reserved $ *
#*****
#ecpyrght
#*****
# Replace /usr/sybase12 below with the actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with the actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Replace SYB_DB below with the actual name of your Sybase database
#*****
DATABASE_NAME=master
18,0-1 Top
```



Netbackup for Sybase

Then the backup administrator will edit the Sybase database name in the script using insert mode by clicking “i” and when done editing presses escape key.



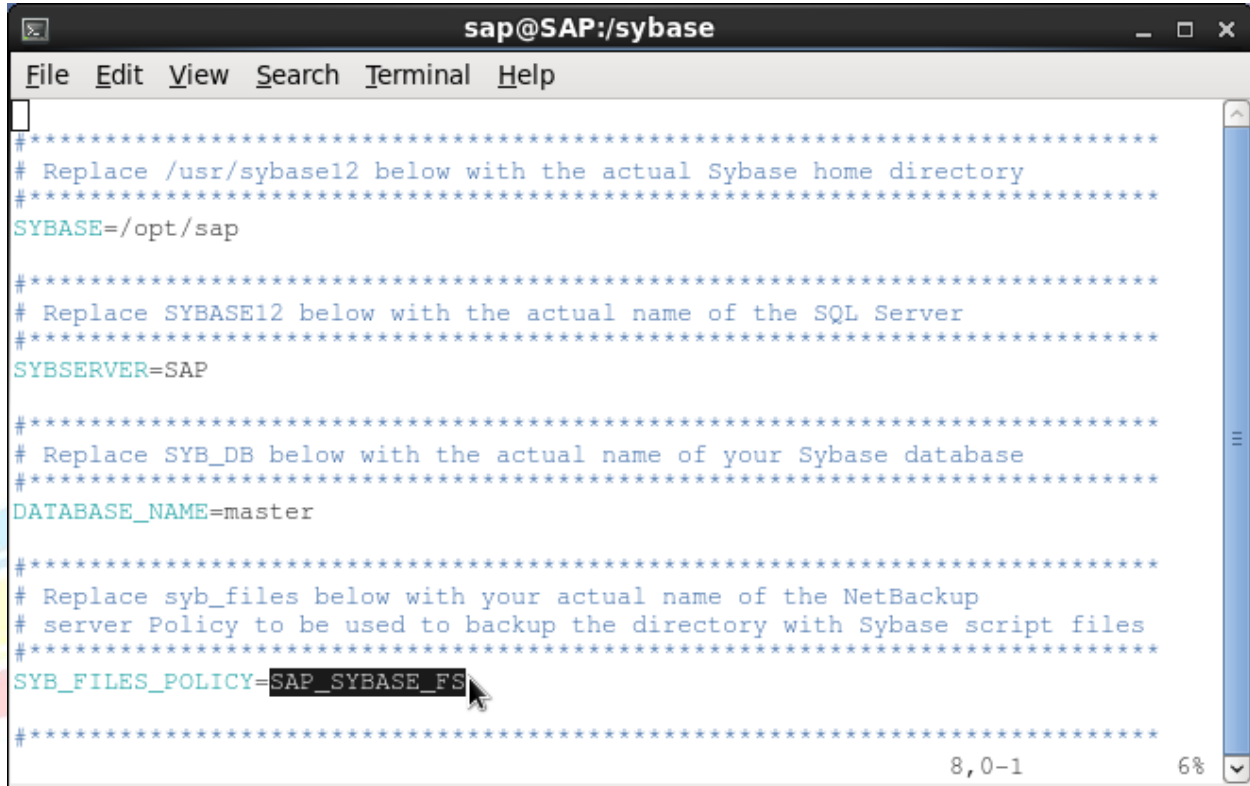
```
sap@SAP:/sybase
File Edit View Search Terminal Help
#!/bin/sh
# sybase_mydb_backup $Revision: 1.3 $
#bcpyrght
#*****
#* $VRTScprght: Copyright 2013 Symantec Corporation, All Rights Reserved $ *
#*****
#ecpyrght
#*****
# Replace /usr/sybase12 below with the actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with the actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Replace SYB_DB below with the actual name of your Sybase database
#*****
DATABASE_NAME=master
1,1 Top
```



Netbackup for Sybase

Then the backup administrator will edit the Sybase configuration files backup policy in the script using insert mode by clicking “i” and when done editing presses escape key.

The configuration files backup policy is a user backup policy used to backup the Sybase configuration files after a successful database full dump.

A terminal window titled 'sap@SAP:/sybase' showing a configuration script. The script contains several commented-out lines with instructions to replace variables with actual values. The current line being edited is 'SYB_FILES_POLICY=SAP_SYBASE_FS'. The terminal has a menu bar with 'File', 'Edit', 'View', 'Search', 'Terminal', and 'Help'. The status bar at the bottom right shows '8,0-1' and '6%'.

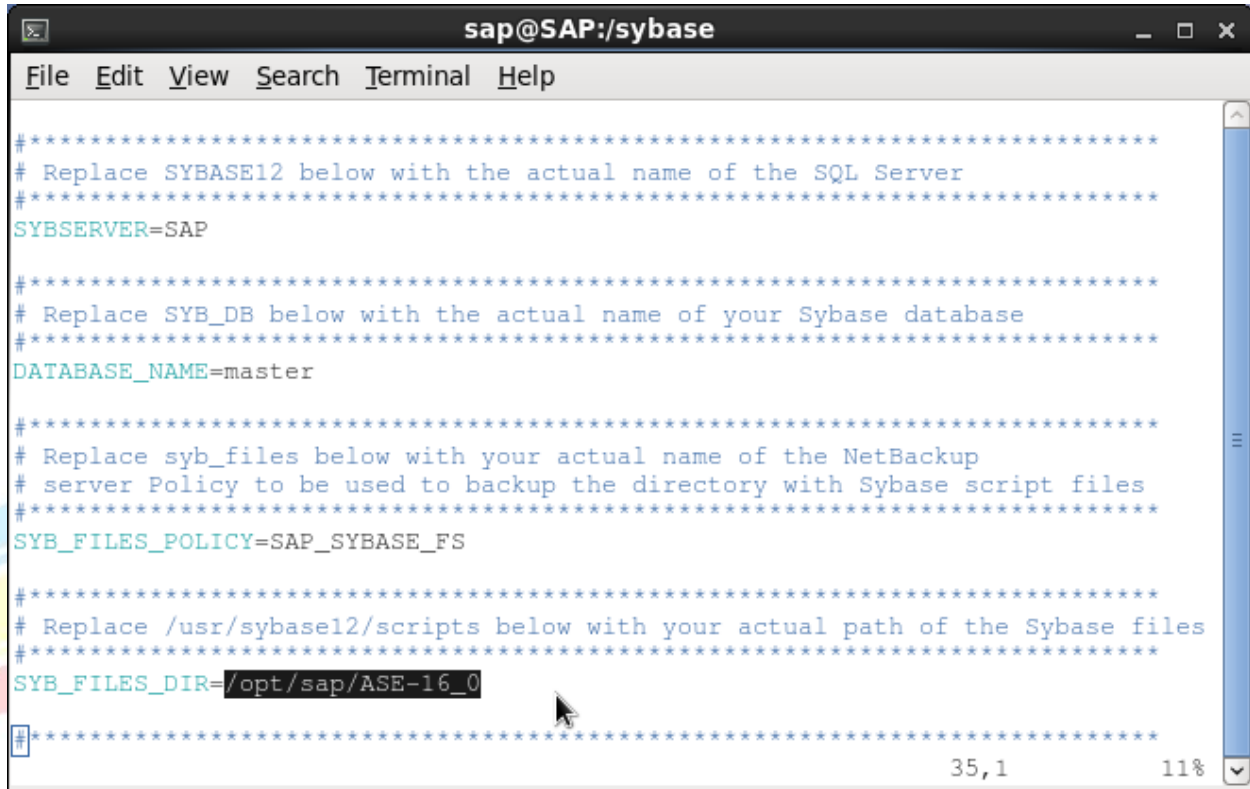
```
sap@SAP:/sybase
File Edit View Search Terminal Help
#*****
# Replace /usr/sybase12 below with the actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with the actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Replace SYB_DB below with the actual name of your Sybase database
#*****
DATABASE_NAME=master
#*****
# Replace syb_files below with your actual name of the NetBackup
# server Policy to be used to backup the directory with Sybase script files
#*****
SYB_FILES_POLICY=SAP_SYBASE_FS
#*****
8,0-1 6%
```



Netbackup for Sybase

Then the backup administrator will edit the Sybase configuration files location in the script using insert mode by clicking “i” and when done editing presses escape key.

The configuration files location is where you find “(Server Name).cfg” file which in this case “/opt/sap/ASE-16_0” assuming that “/opt/sap” is the home directory.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
#*****
# Replace SYBASE12 below with the actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Replace SYB_DB below with the actual name of your Sybase database
#*****
DATABASE_NAME=master
#*****
# Replace syb_files below with your actual name of the NetBackup
# server Policy to be used to backup the directory with Sybase script files
#*****
SYB_FILES_POLICY=SAP_SYBASE_FS
#*****
# Replace /usr/sybase12/scripts below with your actual path of the Sybase files
#*****
SYB_FILES_DIR=/opt/sap/ASE-16_0
#*****
35,1 11%
```

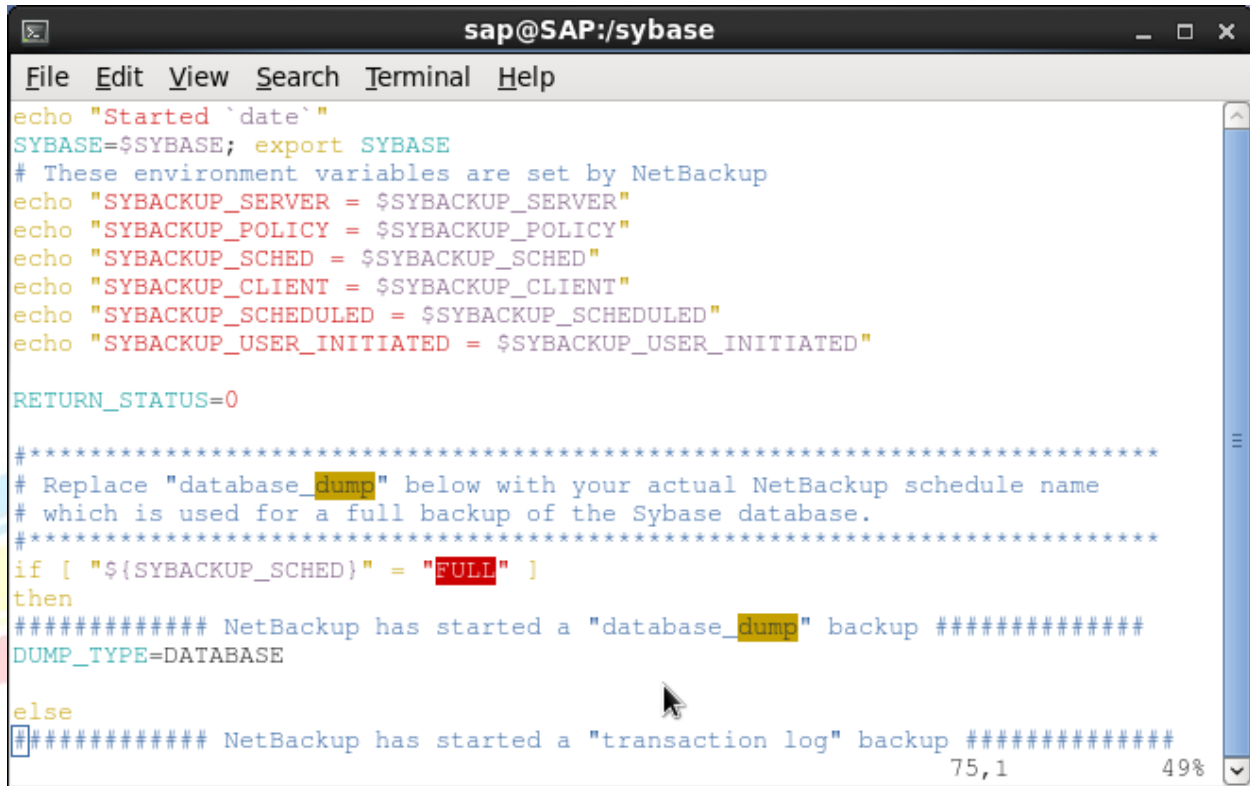


Netbackup for Sybase

Then the backup administrator will edit the Sybase automatic database dump schedule name in the script using insert mode by clicking “i” and when done editing presses escape key.

In this case my Sybase automatic database dump schedule name was “FULL” marked in red.

Note any other automatic schedule name will run a transaction log backup.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
echo "Started `date`"
SYBASE=$SYBASE; export SYBASE
# These environment variables are set by NetBackup
echo "SYBACKUP_SERVER = $SYBACKUP_SERVER"
echo "SYBACKUP_POLICY = $SYBACKUP_POLICY"
echo "SYBACKUP_SCHED = $SYBACKUP_SCHED"
echo "SYBACKUP_CLIENT = $SYBACKUP_CLIENT"
echo "SYBACKUP_SCHEDULED = $SYBACKUP_SCHEDULED"
echo "SYBACKUP_USER_INITIATED = $SYBACKUP_USER_INITIATED"

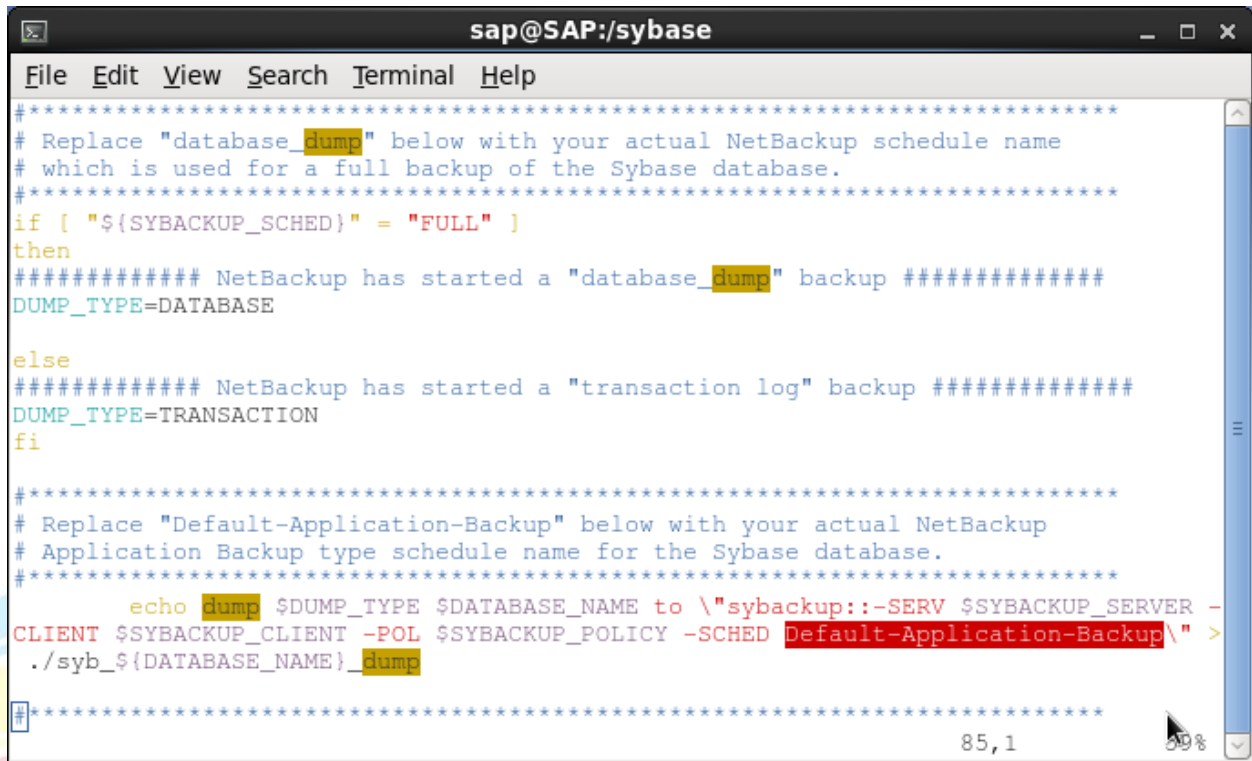
RETURN_STATUS=0

#*****
# Replace "database_dump" below with your actual NetBackup schedule name
# which is used for a full backup of the Sybase database.
#*****
if [ "${SYBACKUP_SCHED}" = "FULL" ]
then
##### NetBackup has started a "database_dump" backup #####
DUMP_TYPE=DATABASE
else
##### NetBackup has started a "transaction log" backup #####
75,1 49%
```



Netbackup for Sybase

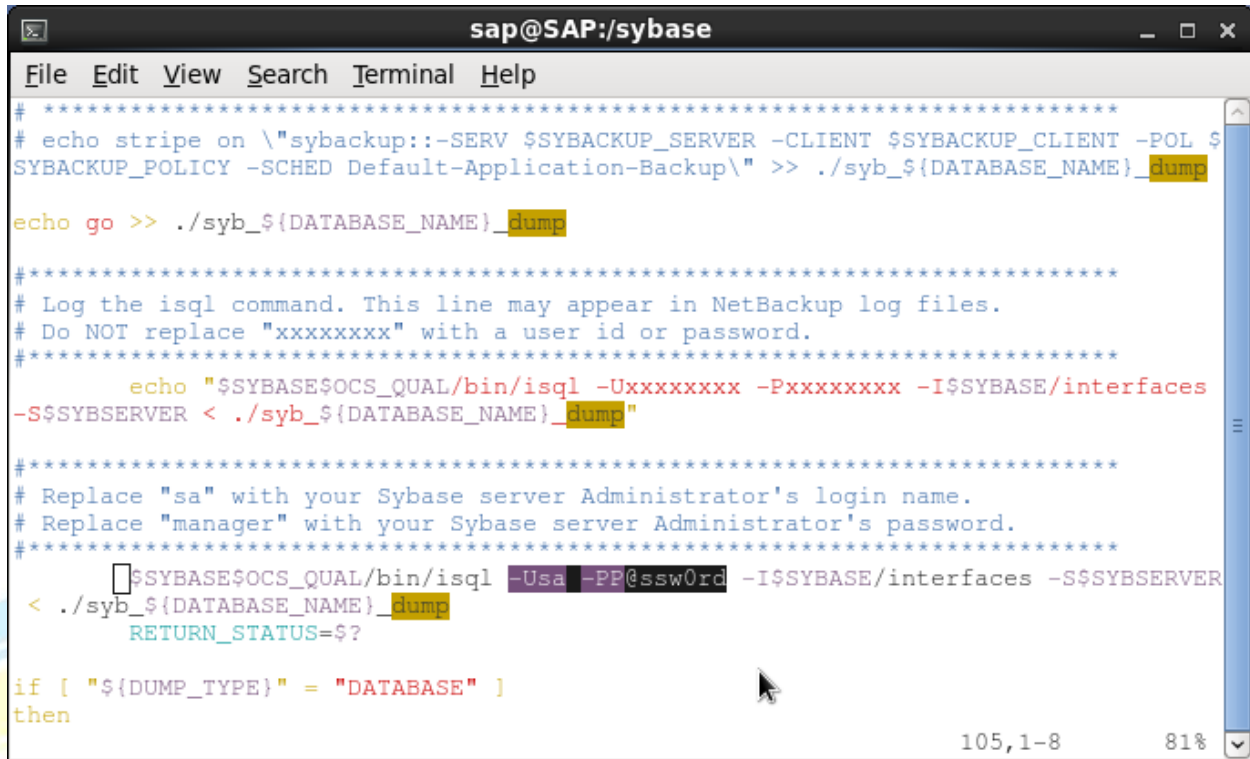
Then the backup administrator will edit the Sybase application backup schedule name in the script using insert mode by clicking "i" and when done editing presses escape key.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
#*****
# Replace "database_dump" below with your actual NetBackup schedule name
# which is used for a full backup of the Sybase database.
#*****
if [ "${SYBACKUP_SCHED}" = "FULL" ]
then
##### NetBackup has started a "database_dump" backup #####
DUMP_TYPE=DATABASE
else
##### NetBackup has started a "transaction log" backup #####
DUMP_TYPE=TRANSACTION
fi
#*****
# Replace "Default-Application-Backup" below with your actual NetBackup
# Application Backup type schedule name for the Sybase database.
#*****
    echo dump $DUMP_TYPE $DATABASE_NAME to \"sybackup::-SERV $$SYBACKUP_SERVER -
CLIENT $$SYBACKUP_CLIENT -POL $$SYBACKUP_POLICY -SCHED Default-Application-Backup\" >
./syb_${DATABASE_NAME}_dump
#*****
85,1 59%
```



Then the backup administrator will edit the Sybase user name and password used for backup in the script using insert mode by clicking “i” and when done editing presses escape key.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
# *****
# echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $
SYBACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_${DATABASE_NAME}_dump
echo go >> ./syb_${DATABASE_NAME}_dump
# *****
# Log the isql command. This line may appear in NetBackup log files.
# Do NOT replace "xxxxxxx" with a user id or password.
# *****
echo "$SYBASE$OCS_QUAL/bin/isql -Uxxxxxxx -Pxxxxxxx -I$SYBASE/interfaces
-S$SYBSERVER < ./syb_${DATABASE_NAME}_dump"
# *****
# Replace "sa" with your Sybase server Administrator's login name.
# Replace "manager" with your Sybase server Administrator's password.
# *****
$SYBASE$OCS_QUAL/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER
< ./syb_${DATABASE_NAME}_dump
RETURN_STATUS=?
if [ "${DUMP_TYPE}" = "DATABASE" ]
then
105,1-8 81%
```



Netbackup for Sybase

Then the backup administrator will edit the Sybase stripe configuration in the script using insert mode by clicking “” and when done editing presses escape key.

→ Remove the hash preceding the this line

```
# echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SYBACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
```

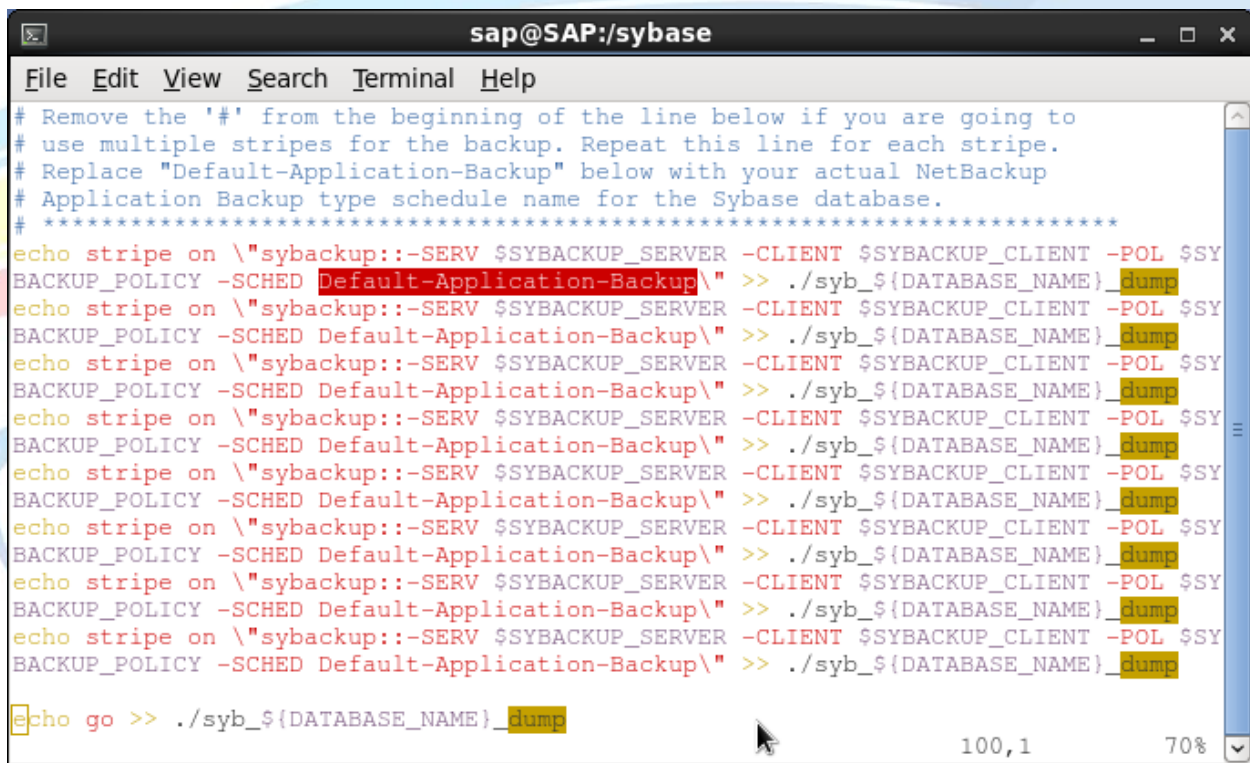
→ Replace "Default-Application-Backup" with the Application Backup Schedule name used for database backup

→ Copy the line as many times as the No. of Streams you want to use

Notes

Do not use too many streams it may affect the performance of SAP Server (use 8 Streams for Example).

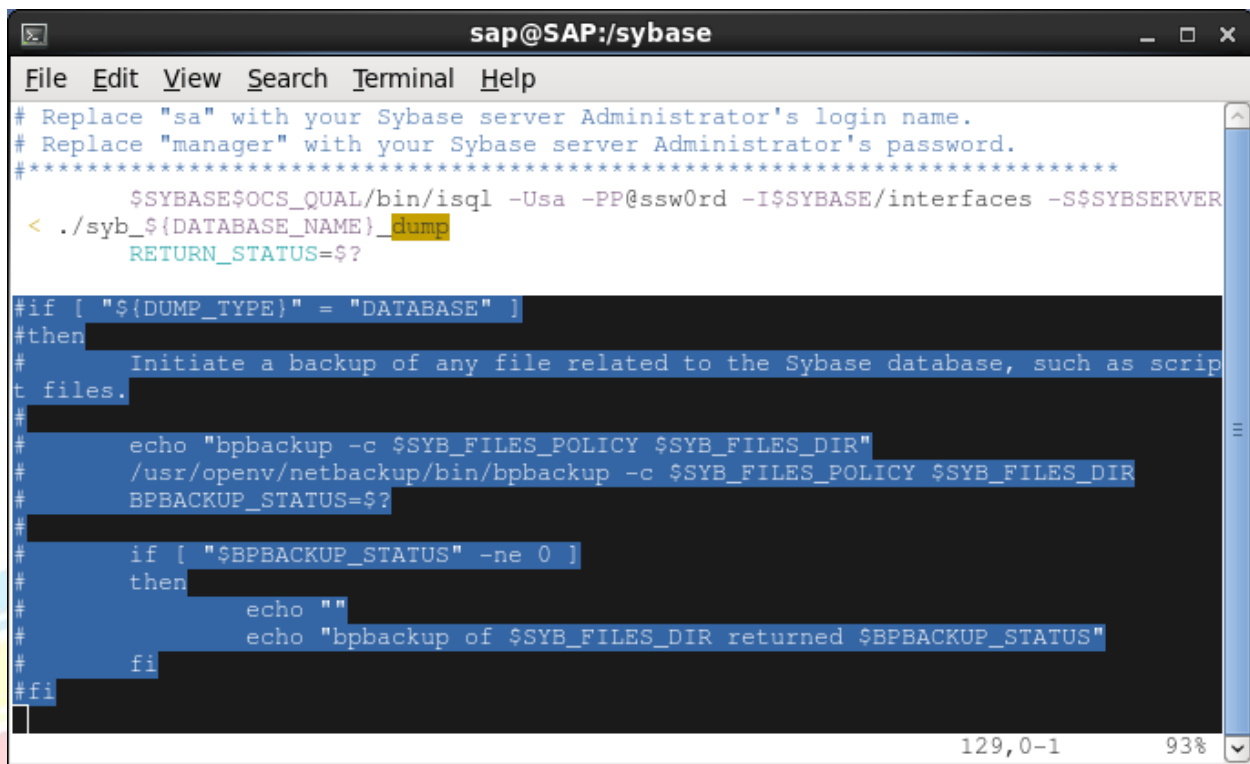
You will have to use the same No. of streams on restore.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
# Remove the '#' from the beginning of the line below if you are going to
# use multiple stripes for the backup. Repeat this line for each stripe.
# Replace "Default-Application-Backup" below with your actual NetBackup
# Application Backup type schedule name for the Sybase database.
# *****
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -CLIENT $SYBACKUP_CLIENT -POL $SY
BACKUP_POLICY -SCHED Default-Application-Backup\" >> ./syb_$(DATABASE_NAME)_dump
echo go >> ./syb_$(DATABASE_NAME)_dump
100,1 70%
```

Netbackup for Sybase

The marked if statement below is for the backup of Sybase configuration file after a successful database dump, just hash it as below in every database backup script except for the master database, as you do not want to backup the same configuration files as many times as the number of databases you have.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
# Replace "sa" with your Sybase server Administrator's login name.
# Replace "manager" with your Sybase server Administrator's password.
#*****
$SYBASE$OCS_QUAL/bin/isql -Usa -PP@ssw0rd -I$SYBASE/interfaces -S$SYBSERVER
< ./syb_${DATABASE_NAME}_dump
RETURN_STATUS=?

#if [ "${DUMP_TYPE}" = "DATABASE" ]
#then
# Initiate a backup of any file related to the Sybase database, such as script
# files.
#
# echo "bpbbackup -c $SYB_FILES_POLICY $SYB_FILES_DIR"
# /usr/openv/netbackup/bin/bpbbackup -c $SYB_FILES_POLICY $SYB_FILES_DIR
# BPBACKUP_STATUS=?
#
# if [ "$BPBACKUP_STATUS" -ne 0 ]
# then
#     echo ""
#     echo "bpbbackup of $SYB_FILES_DIR returned $BPBACKUP_STATUS"
# fi
#fi
```

After the editing is done you will press escape key to exit insert mode then input “:wq” and press enter to write changes and exit vi editing tool.

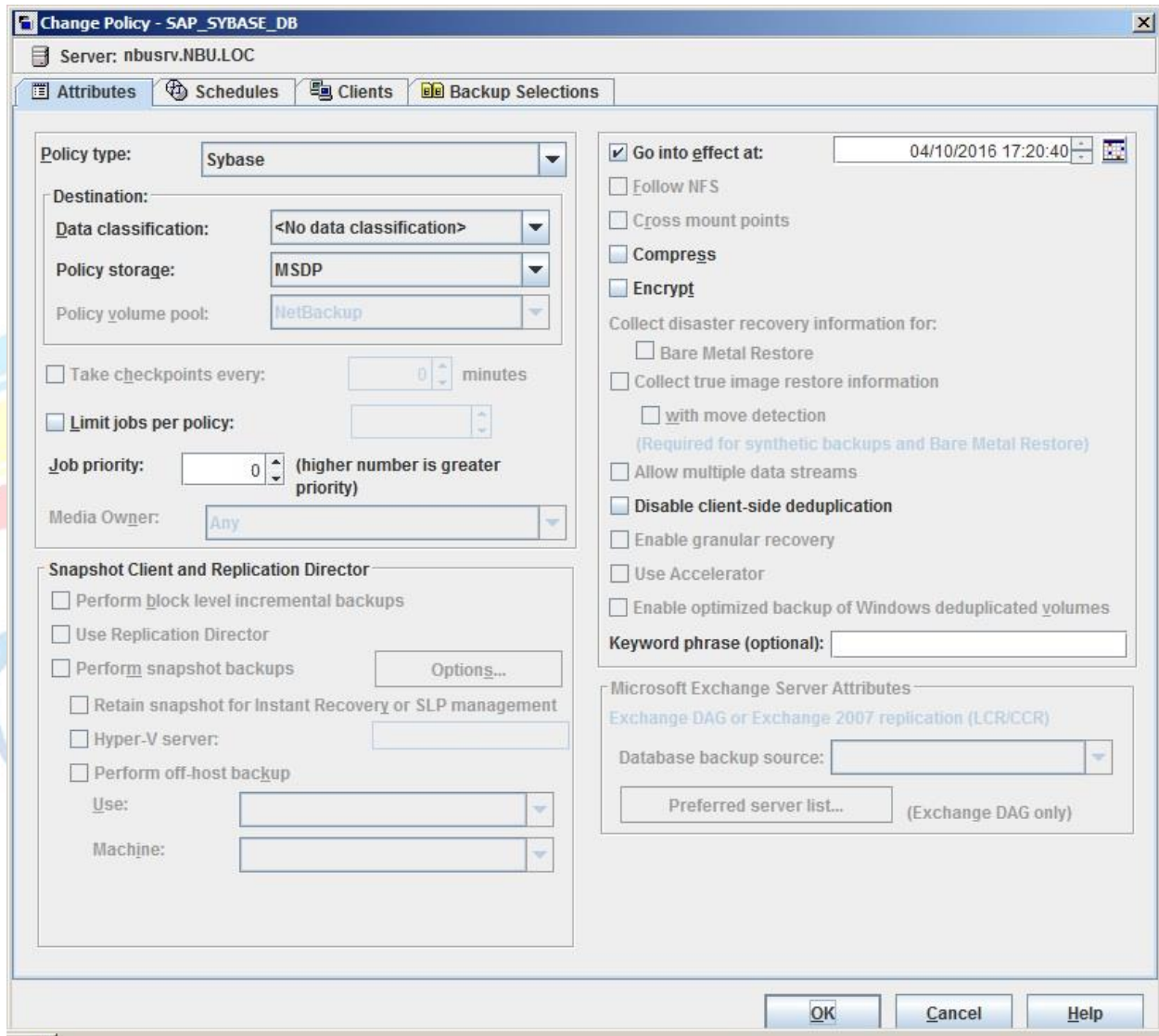


Creating Backup Policies

Here comes the part that a lot of administrators love the GUI, the Netbackup administrator will create two policies, and that is the unique part about Sybase database backup, the first Policy is for the databases that will be backed up, and the second policy is for the configuration files backup.

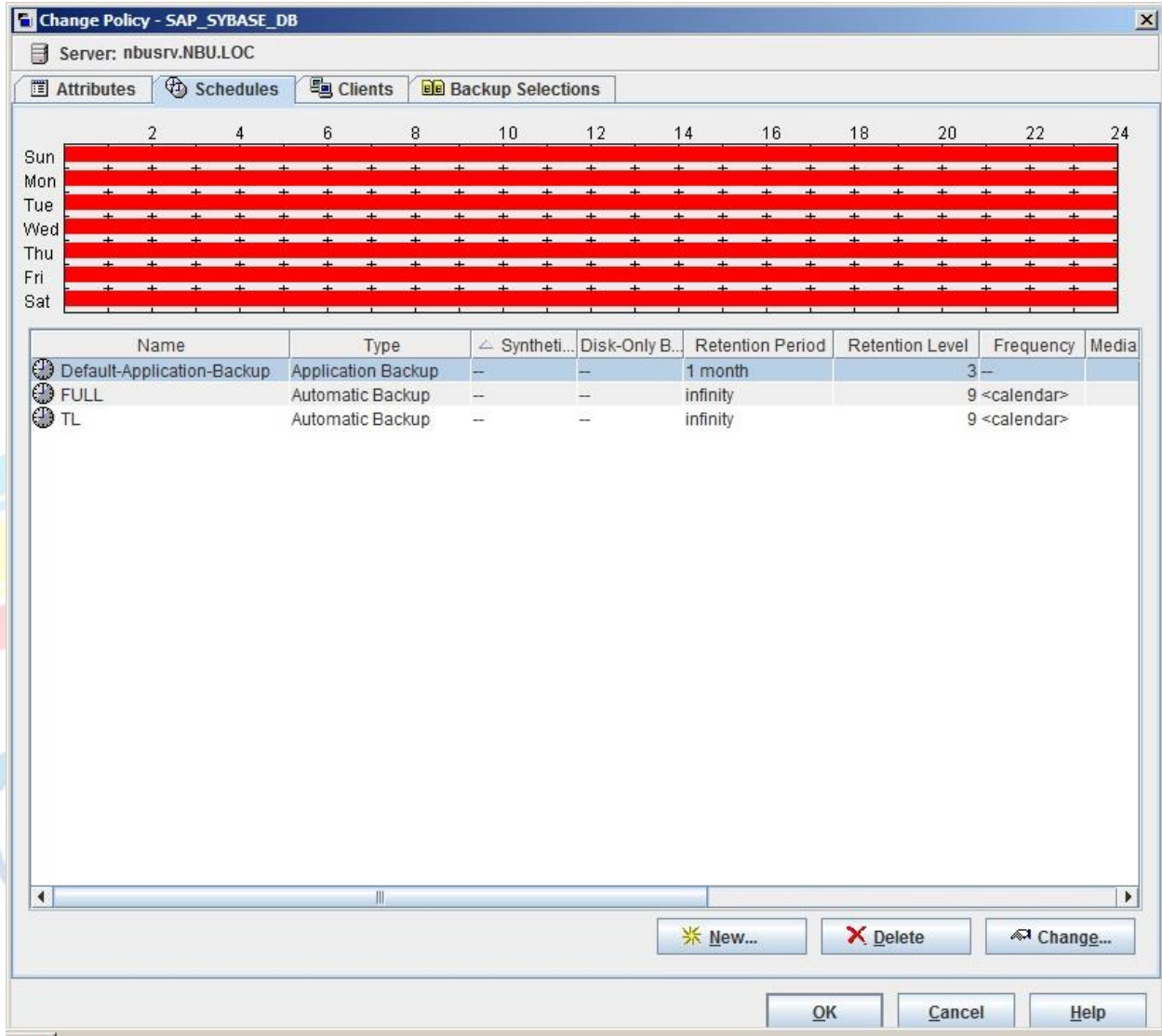
Database Backup Policy

A normal policy with the policy type set to “Sybase”

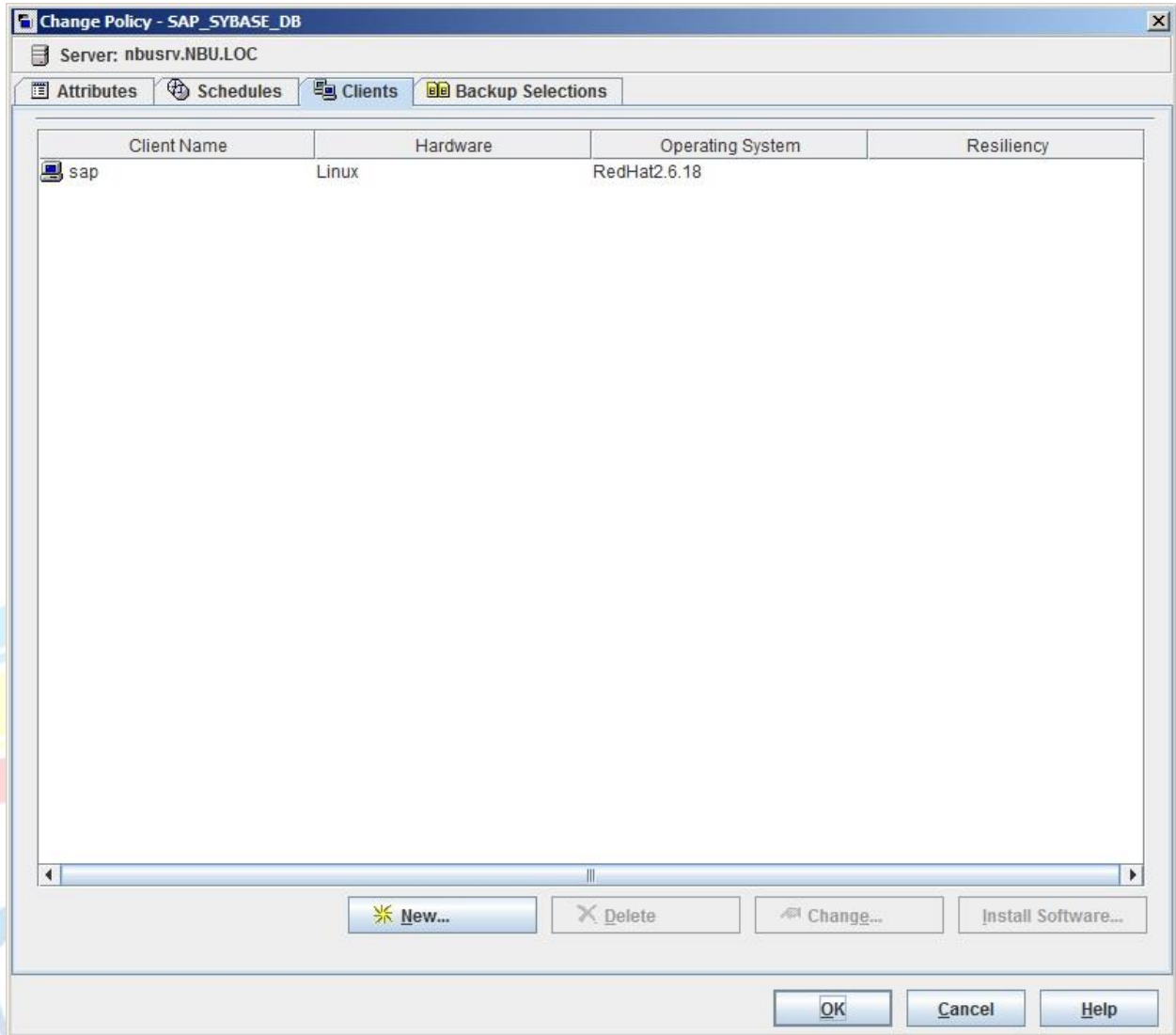


Netbackup for Sybase

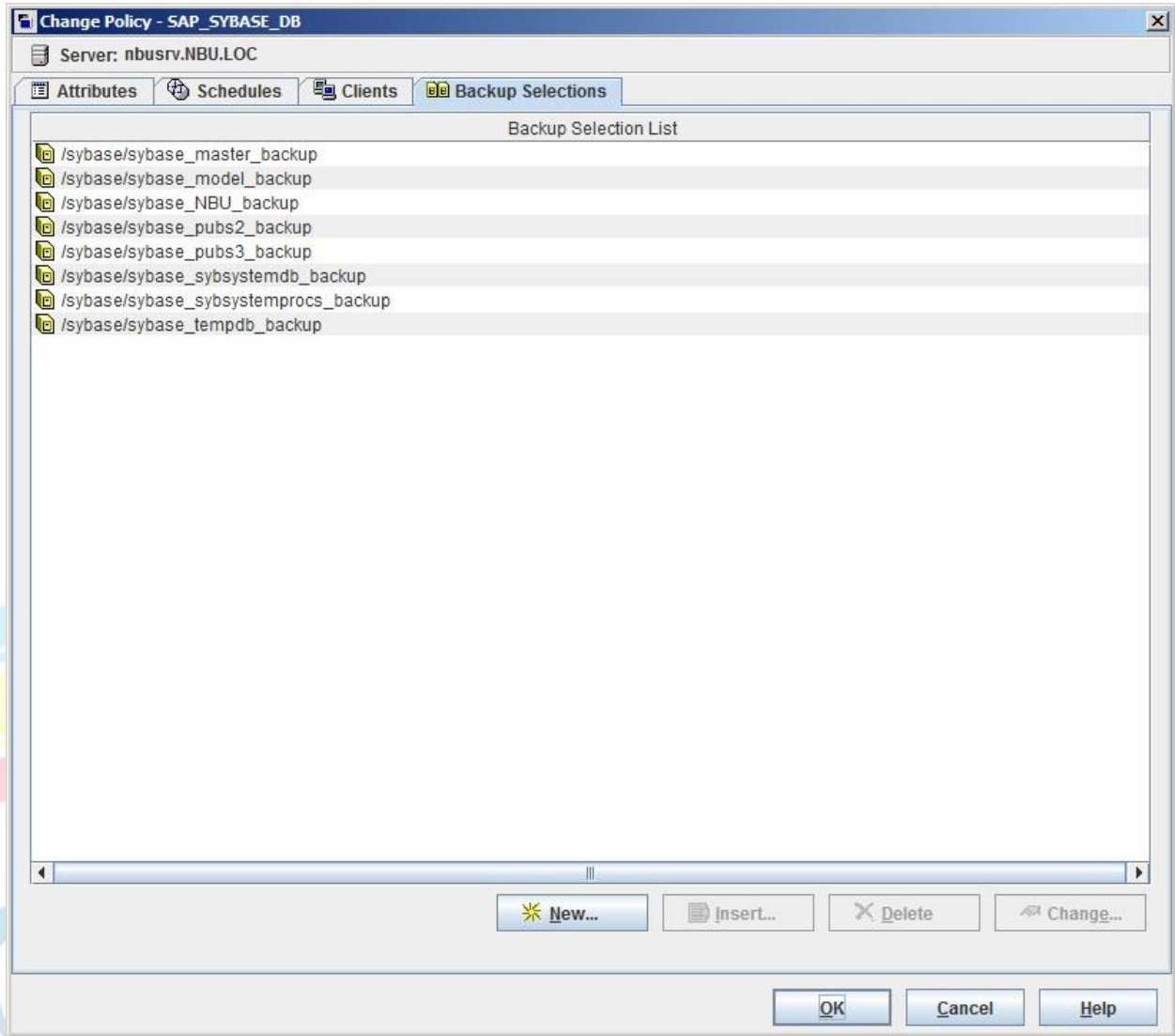
With three schedules, the first is “Application Backup” schedule created by default named “Default-Application-Backup” and the retention in this backup is the applied retention, the second is “Automatic Backup” schedule named “FULL” as in the backup script and it is for database dump, the third is also “Automatic Backup” schedule named “TL” or any other name except for “FULL” that we used in the backup script and it is for transaction log dump.



With the Sybase server name as client in the client selection.

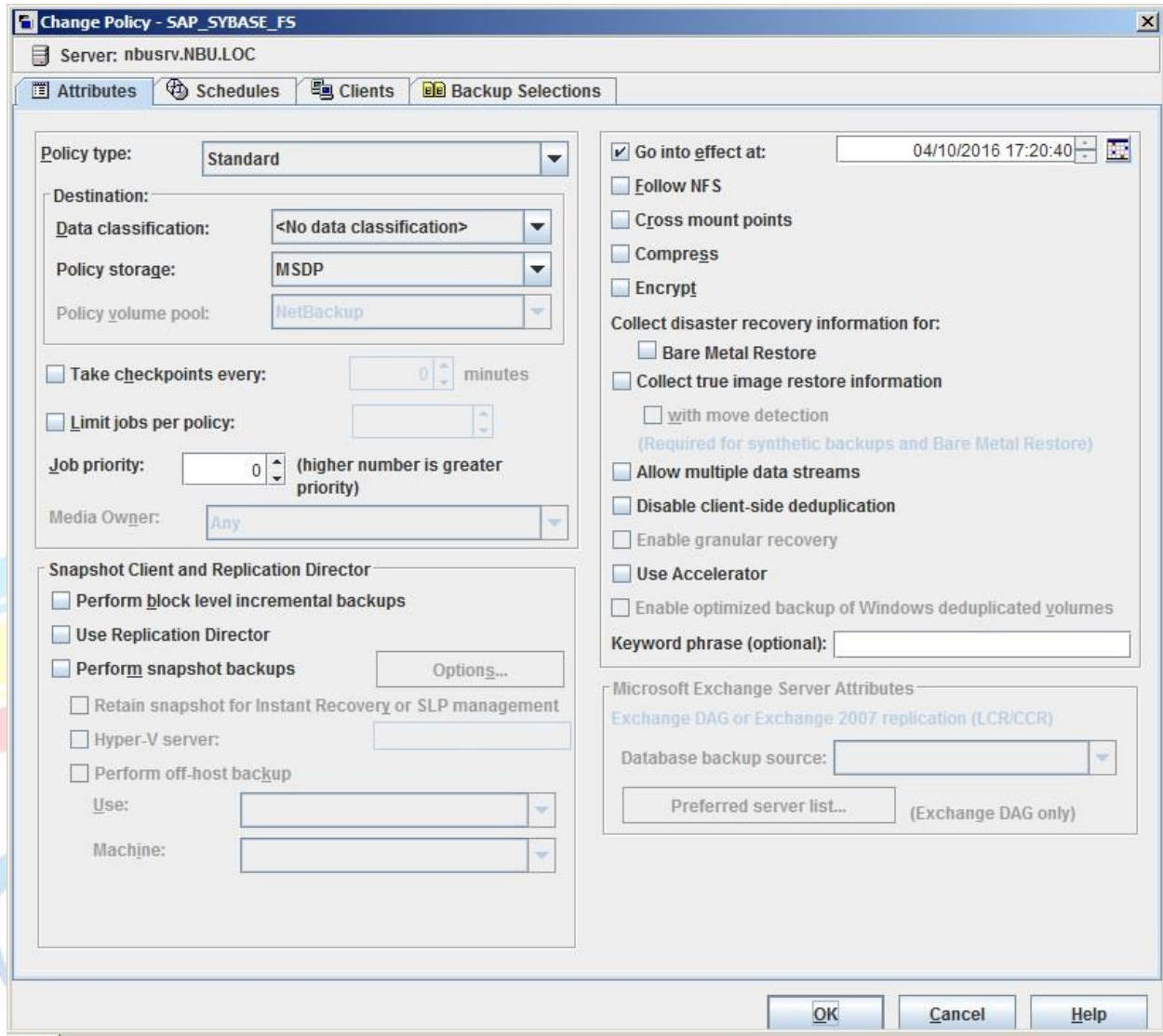


With the backup scripts you created as backup selection.



Configuration files Backup Policy

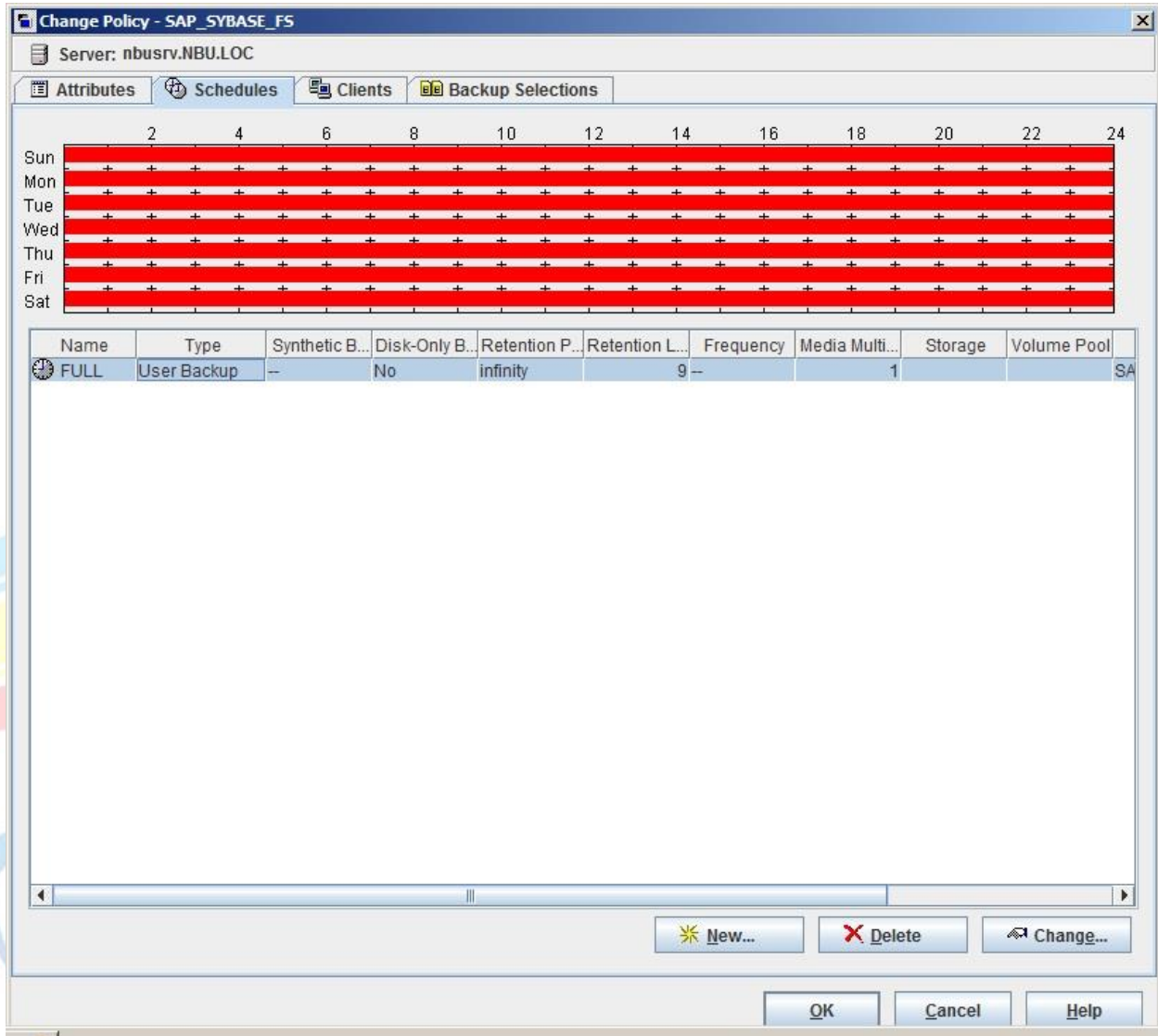
A normal policy with the policy type set to "standard"



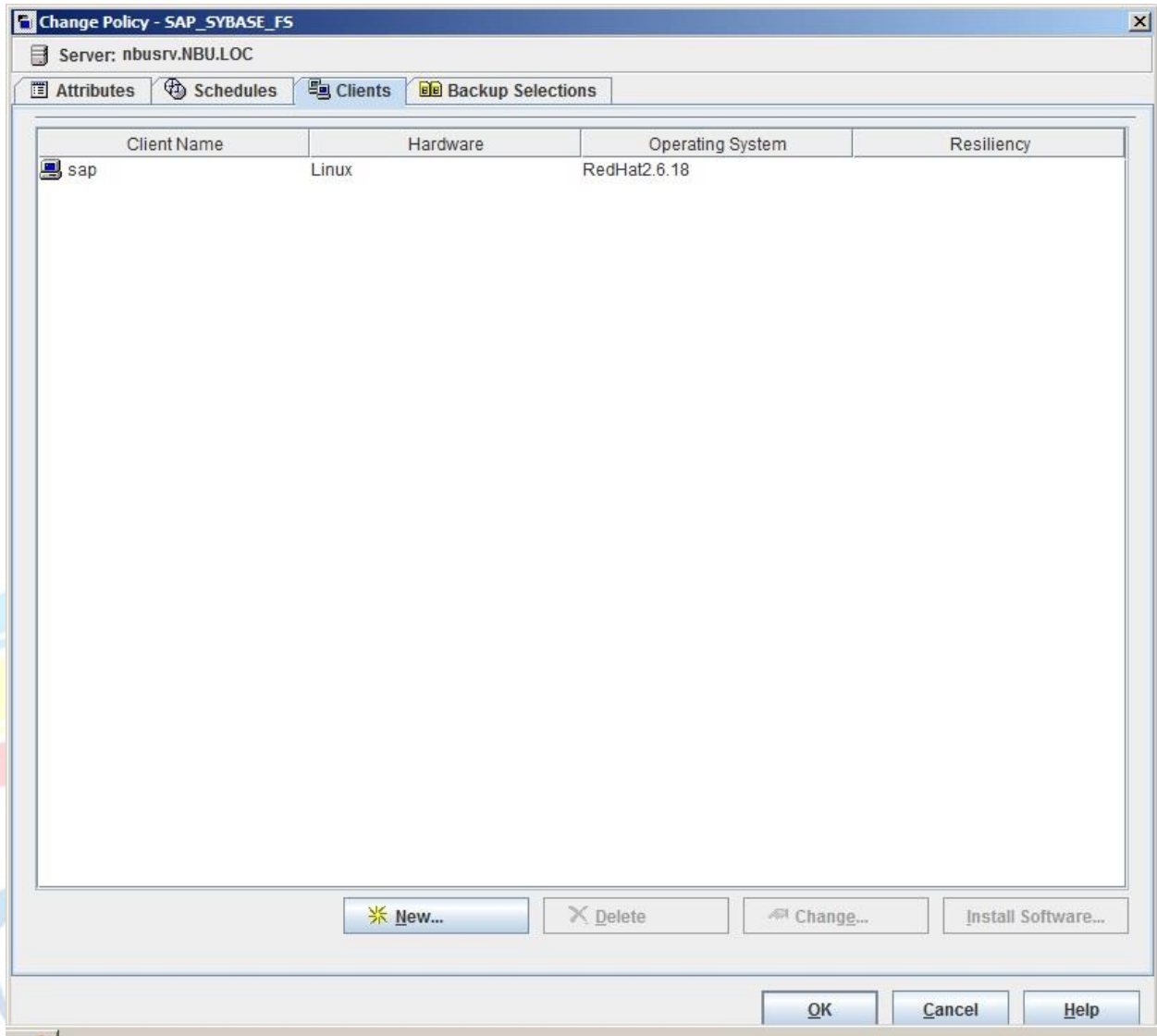
Netbackup for Sybase

With a “User Backup” schedule named “Full” or any name you want.

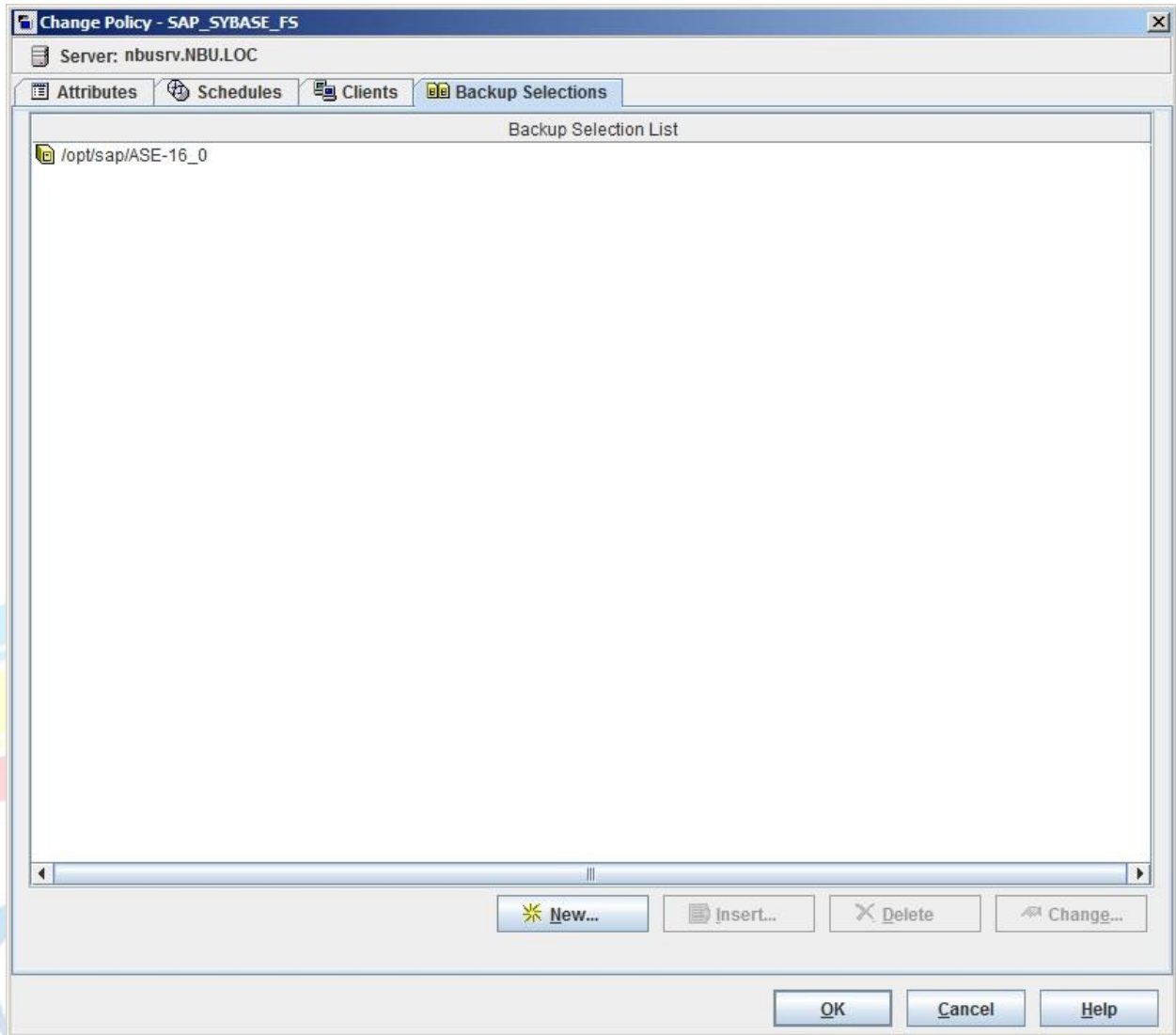
Note this schedule is called by the backup script after a successful database dump only.



With the Sybase server name as client in the client selection.



With “/opt/sap/ASE-16_0” as the backup selection assuming that “/opt/sap” is the Sybase home.



Restore Sybase Database

Here comes the important part where some administrators may panic, we have a corrupted database, or he deleted the database not me situation.

But no worries, the restore is not that hard you will just have to be prepared.

First list available backups and prepare a template restore and load scripts and learn how to use them.

Second In situation of database does not exist, create a new empty one with the proper size.

Third start your restore and monitor its progress.

Listing Backups and Creating Scripts

At this part you will list the available backups, edit the restore script, and edit the load script.

After this step you will be ready to execute the restore, but if you do not have a database to restore to you will have to create a new one for the restore process.



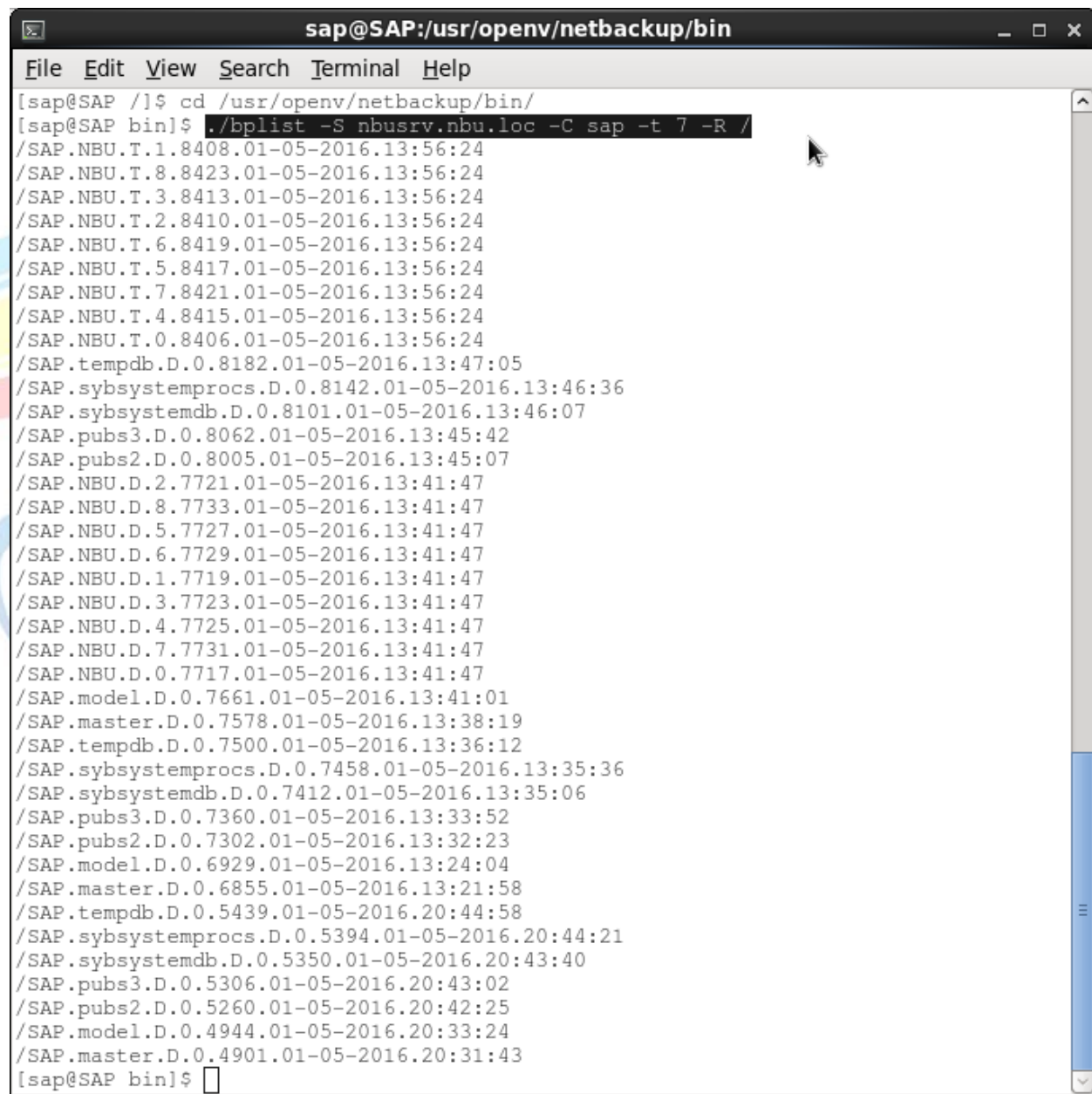
Netbackup for Sybase

Listing available backups

This part is not hard you will just have to use bplist to list your available backups.

Using terminal the Sybase database administrator will change directory to “/usr/opensv/netbackup/bin”, then executes “./bplist -S nbusrv.nbu.loc -C sap -t 7 -R /”, this will list all the available Sybase database backups, Below is explanation for the command and the output

```
bplist -S nbusrv.nbu.loc -C SAP -t 7 -R/  
"Backup Server Name" "Sybase Backed up Server Name" "Policy Type Sybase (7)"  
/ SAP . NBU . T . 3 . 11011 . 15-04-2016.14:17:29  
/"Server Name" . "Database Name" . "Data Dump (D) or Transaction Dump (T)" . "Strip No." . "Backup ID" . "Backup Date &Time"
```



```
sap@SAP:/usr/opensv/netbackup/bin  
File Edit View Search Terminal Help  
[sap@SAP /]$ cd /usr/opensv/netbackup/bin/  
[sap@SAP bin]$ ./bplist -S nbusrv.nbu.loc -C sap -t 7 -R /  
/SAP.NBU.T.1.8408.01-05-2016.13:56:24  
/SAP.NBU.T.8.8423.01-05-2016.13:56:24  
/SAP.NBU.T.3.8413.01-05-2016.13:56:24  
/SAP.NBU.T.2.8410.01-05-2016.13:56:24  
/SAP.NBU.T.6.8419.01-05-2016.13:56:24  
/SAP.NBU.T.5.8417.01-05-2016.13:56:24  
/SAP.NBU.T.7.8421.01-05-2016.13:56:24  
/SAP.NBU.T.4.8415.01-05-2016.13:56:24  
/SAP.NBU.T.0.8406.01-05-2016.13:56:24  
/SAP.tempdb.D.0.8182.01-05-2016.13:47:05  
/SAP.sybsystemprocs.D.0.8142.01-05-2016.13:46:36  
/SAP.sybsystemdb.D.0.8101.01-05-2016.13:46:07  
/SAP.pubs3.D.0.8062.01-05-2016.13:45:42  
/SAP.pubs2.D.0.8005.01-05-2016.13:45:07  
/SAP.NBU.D.2.7721.01-05-2016.13:41:47  
/SAP.NBU.D.8.7733.01-05-2016.13:41:47  
/SAP.NBU.D.5.7727.01-05-2016.13:41:47  
/SAP.NBU.D.6.7729.01-05-2016.13:41:47  
/SAP.NBU.D.1.7719.01-05-2016.13:41:47  
/SAP.NBU.D.3.7723.01-05-2016.13:41:47  
/SAP.NBU.D.4.7725.01-05-2016.13:41:47  
/SAP.NBU.D.7.7731.01-05-2016.13:41:47  
/SAP.NBU.D.0.7717.01-05-2016.13:41:47  
/SAP.model.D.0.7661.01-05-2016.13:41:01  
/SAP.master.D.0.7578.01-05-2016.13:38:19  
/SAP.tempdb.D.0.7500.01-05-2016.13:36:12  
/SAP.sybsystemprocs.D.0.7458.01-05-2016.13:35:36  
/SAP.sybsystemdb.D.0.7412.01-05-2016.13:35:06  
/SAP.pubs3.D.0.7360.01-05-2016.13:33:52  
/SAP.pubs2.D.0.7302.01-05-2016.13:32:23  
/SAP.model.D.0.6929.01-05-2016.13:24:04  
/SAP.master.D.0.6855.01-05-2016.13:21:58  
/SAP.tempdb.D.0.5439.01-05-2016.20:44:58  
/SAP.sybsystemprocs.D.0.5394.01-05-2016.20:44:21  
/SAP.sybsystemdb.D.0.5350.01-05-2016.20:43:40  
/SAP.pubs3.D.0.5306.01-05-2016.20:43:02  
/SAP.pubs2.D.0.5260.01-05-2016.20:42:25  
/SAP.model.D.0.4944.01-05-2016.20:33:24  
/SAP.master.D.0.4901.01-05-2016.20:31:43  
[sap@SAP bin]$
```


Netbackup for Sybase

Editing the restore script

The Sybase database administrator will create the restore script by editing the script copied before.

Using terminal the Sybase database administrator will change directory to “/sybase” running “cd /sybase” then edit the restore script using vi editing tool running “vi sybase_mydb_restore”.

In the vi editing tool he will use the insert mode by pressing “i” key to edit the sybase home directory then pressing escape key to exit the editing mode.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
#!/bin/sh
# sybase_mydb_restore $Revision: 1.2 $
#bcpyrght
#*****
#* $VRTScprght: Copyright 2013 Symantec Corporation, All Rights Reserved $ *
#*****
#ecpyrght
#*****
# Replace /usr/sybase12 below with your actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with your actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Determine the SYBASE_ASE and SYBASE_OCS env variables for Sybase 12.x
#*****
OCS_QUAL=
if [ -f "${SYBASE}"/SYBASE.csh ] ; then
"sybase_mydb_restore_org" 72L, 2976C                               13,0-1                               Top
```

Netbackup for Sybase

The Sybase database administrator will use the insert mode by pressing “i” key to edit the Sybase Server name then pressing escape key to exit the editing mode.

A terminal window titled 'sap@SAP:/sybase' showing the execution of a Sybase restore script. The script includes comments for replacing paths and server names, and sets environment variables SYBASE and SYBSERVER. The SYBSERVER variable is currently set to 'SAP'. The terminal also shows the start of a conditional block for setting OCS_QUAL based on the presence of a file in the SYBASE directory.

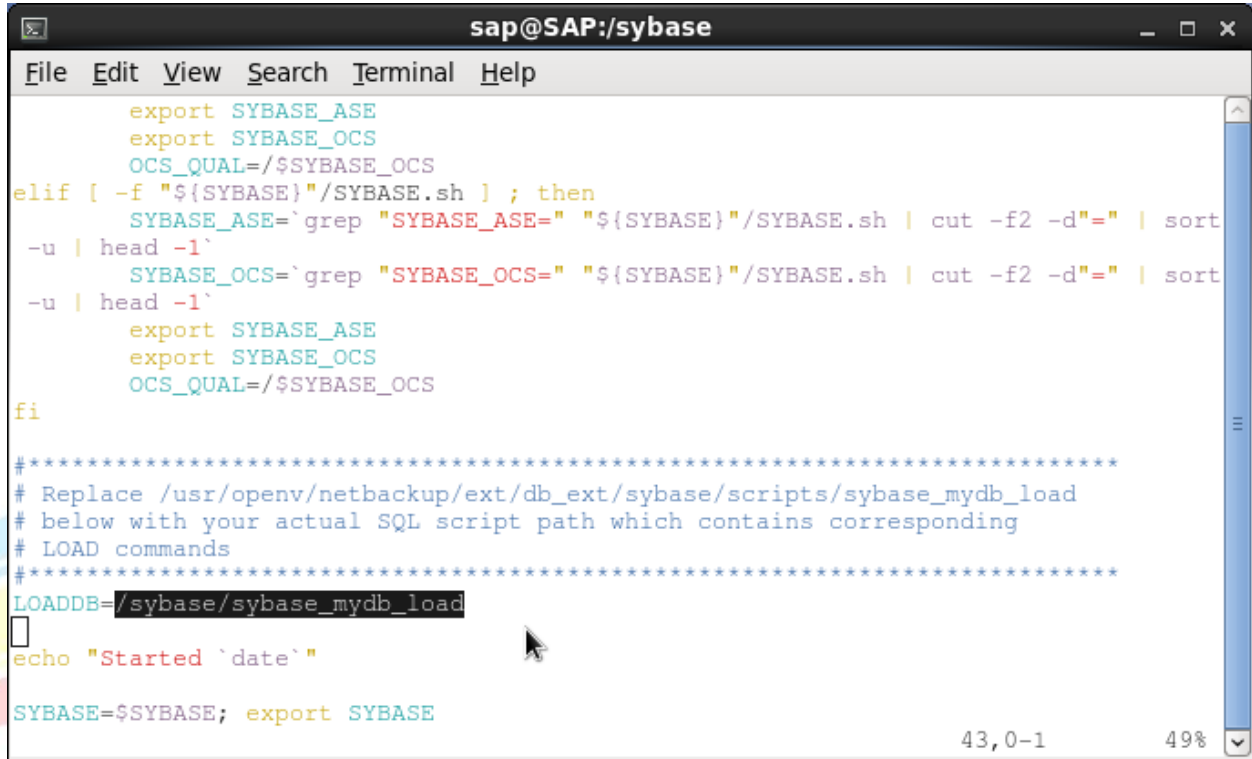
```
sap@SAP:/sybase
File Edit View Search Terminal Help
#!/bin/sh
# sybase_mydb_restore $Revision: 1.2 $
#bcpyrght
#*****
#* $VRTScprght: Copyright 2013 Symantec Corporation, All Rights Reserved $ *
#*****
#ecpyrght
#*****
# Replace /usr/sybase12 below with your actual Sybase home directory
#*****
SYBASE=/opt/sap
#*****
# Replace SYBASE12 below with your actual name of the SQL Server
#*****
SYBSERVER=SAP
#*****
# Determine the SYBASE_ASE and SYBASE_OCS env variables for Sybase 12.x
#*****
OCS_QUAL=
if [ -f "${SYBASE}"/SYBASE.csh ] ; then
"sybase_mydb_restore_org" 72L, 2976C 18,0-1 Top
```



Netbackup for Sybase

The Sybase database administrator will use the insert mode by pressing “i” key to edit the loaddb script location then pressing escape key to exit the editing mode.

Note that the load database is already copied to “/sybase” in a previous step.

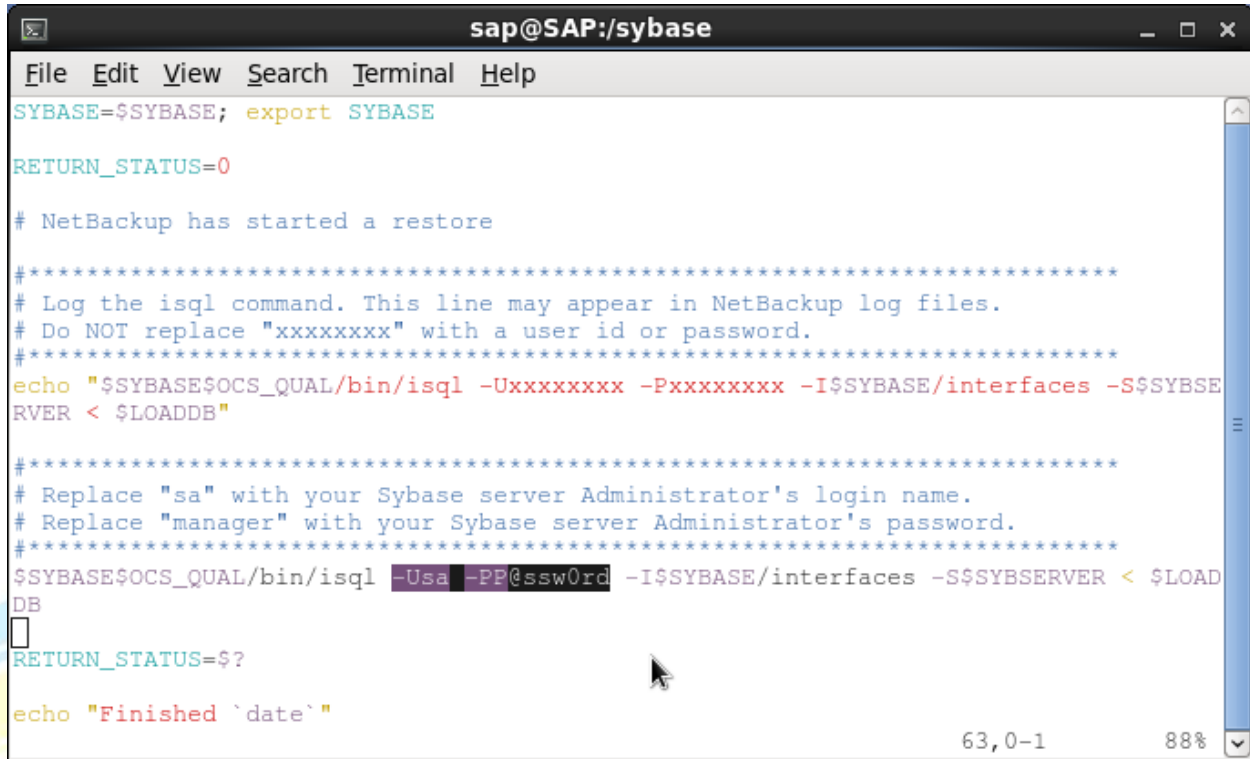


```
sap@SAP:/sybase
File Edit View Search Terminal Help
export SYBASE_ASE
export SYBASE_OCS
OCS_QUAL=/${SYBASE_OCS}
elif [ -f "${SYBASE}"/SYBASE.sh ] ; then
  SYBASE_ASE=`grep "SYBASE_ASE=" "${SYBASE}"/SYBASE.sh | cut -f2 -d"=" | sort
-u | head -1`
  SYBASE_OCS=`grep "SYBASE_OCS=" "${SYBASE}"/SYBASE.sh | cut -f2 -d"=" | sort
-u | head -1`
  export SYBASE_ASE
  export SYBASE_OCS
  OCS_QUAL=/${SYBASE_OCS}
fi
#*****
# Replace /usr/opencv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_load
# below with your actual SQL script path which contains corresponding
# LOAD commands
#*****
LOADDB=/sybase/sybase_mydb_load
echo "Started `date`"
SYBASE=${SYBASE}; export SYBASE
```



Netbackup for Sybase

The Sybase database administrator will use the insert mode by pressing “i” key to edit the user name and password used for restore then pressing escape key to exit the editing mode.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
SYBASE=$SYBASE; export SYBASE
RETURN_STATUS=0
# NetBackup has started a restore
#*****
# Log the isql command. This line may appear in NetBackup log files.
# Do NOT replace "xxxxxxx" with a user id or password.
#*****
echo "$SYBASE$OCS_QUAL/bin/isql -Uxxxxxxx -Pxxxxxxx -I$SYBASE/interfaces -S$SYBSE
RVER < $LOADDB"
#*****
# Replace "sa" with your Sybase server Administrator's login name.
# Replace "manager" with your Sybase server Administrator's password.
#*****
$SYBASE$OCS_QUAL/bin/isql -Usa -PP@ssw0rd -I$SYBASE/interfaces -S$SYBSE
RVER < $LOADDB
RETURN_STATUS=?
echo "Finished `date`"
```

After the editing is done you will press escape key to exit insert mode then input “:wq” and press enter to write changes and exit vi editing tool.



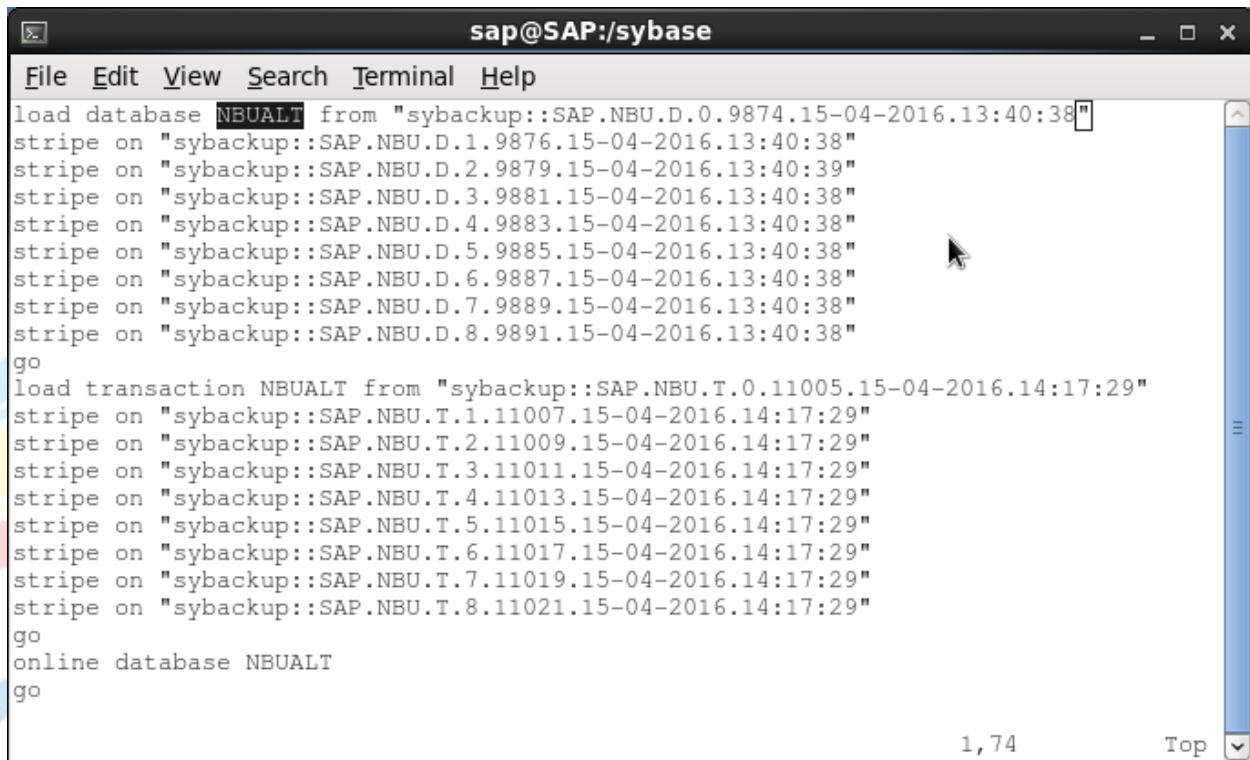
Netbackup for Sybase

Editing the load script

After listing the available backups the Sybase database administrator would have chosen the proper backup IDs for restore, and at this step he will insert them into the load script to be loaded.

Using terminal the Sybase database administrator will change directory to “/sybase” running “cd /sybase” then edit the load script using vi editing tool running “vi sybase_mydb_load”.

In the vi editing tool he will use the insert mode by pressing “i” key to edit the destination database for full database dump restore then pressing escape key to exit the editing mode.



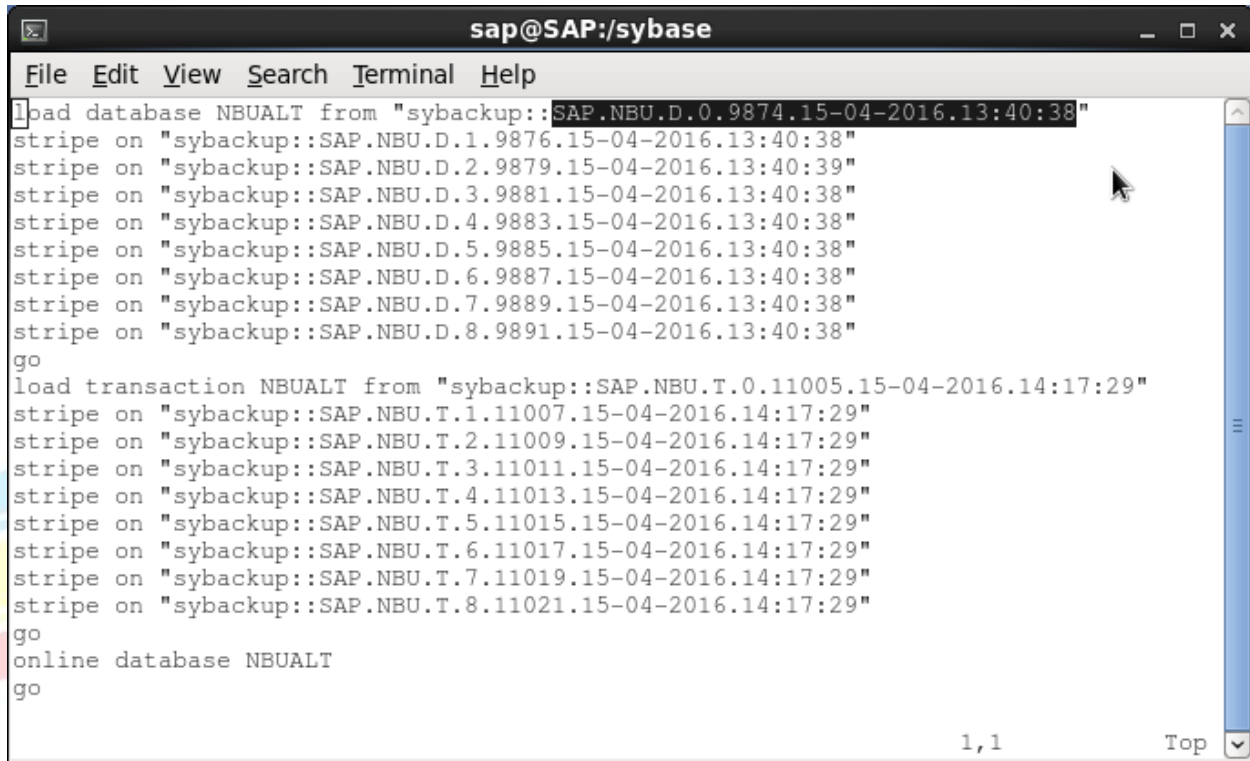
```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```

Netbackup for Sybase

In the vi editing tool he will use the insert mode by pressing “i” key to edit the database dump backup ID for restore then pressing escape key to exit the editing mode.

Note in case you did not use stripes in backup you will only need that line without the “stripe on” lines.

The database dump will always have stripe ID “0”.

A screenshot of a terminal window titled 'sap@SAP:/sybase'. The window shows a series of commands for loading and restoring a Sybase database. The first command is 'load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"', which is highlighted. This is followed by eight 'stripe on' lines for stripes 1 through 8. Then, a 'go' command is entered. The next command is 'load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"', followed by eight 'stripe on' lines for stripes 1 through 8. Another 'go' command is entered, followed by 'online database NBUALT' and a final 'go' command. The terminal shows the cursor at the end of the last 'go' command. The status bar at the bottom right of the terminal shows '1,1' and 'Top'.

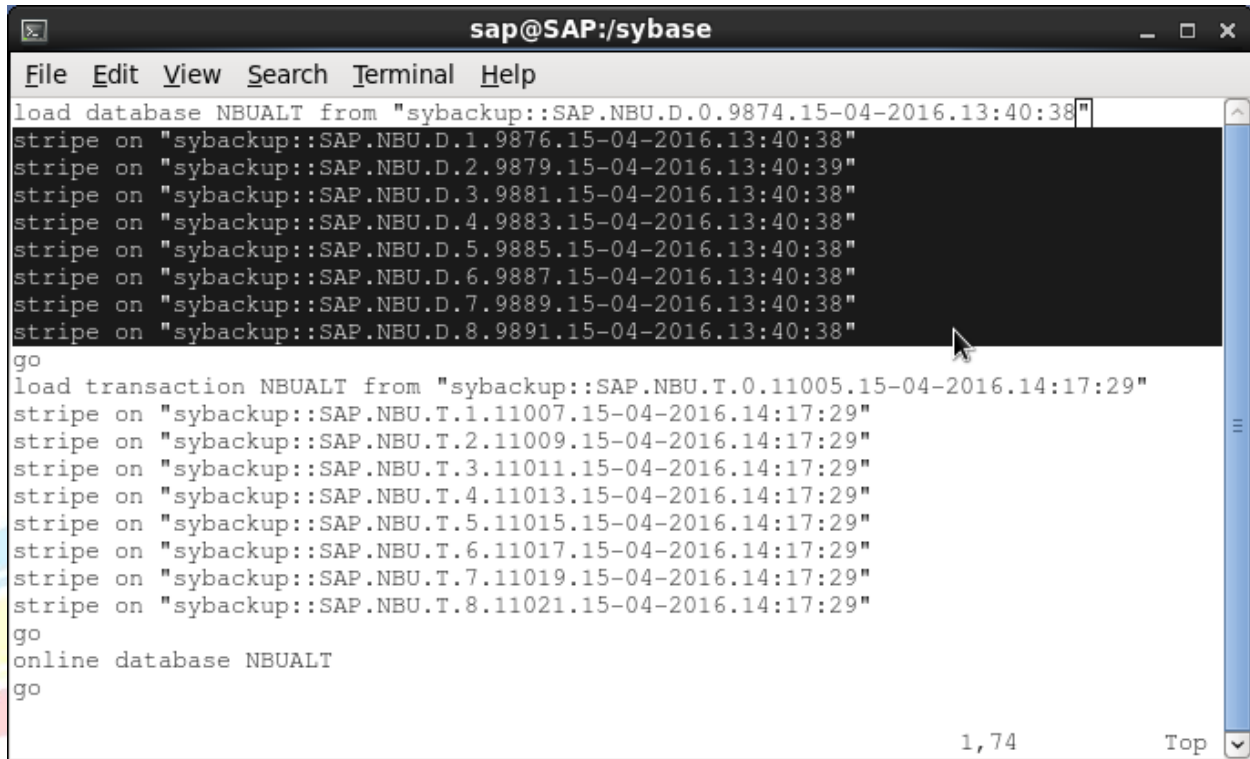
```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,1 Top
```



Netbackup for Sybase

In the vi editing tool he will use the insert mode by pressing "i" key to edit the Stripe on lines according to the backup set available then pressing escape key to exit the editing mode.

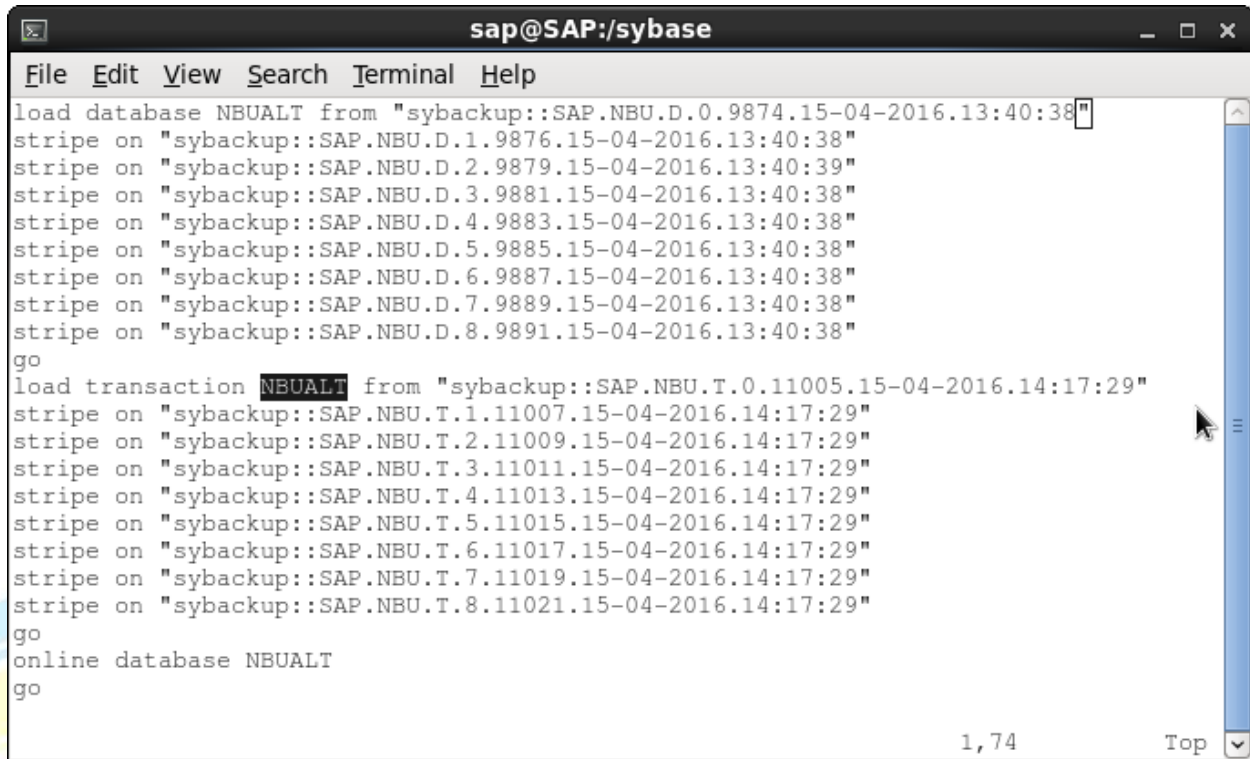
Note in this case backup stripes are 8 starting 1 to 8 with the database dump backup ID stripe number 0.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```



In the vi editing tool he will use the insert mode by pressing “i” key to edit the destination database for transaction log restore then pressing escape key to exit the editing mode.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```

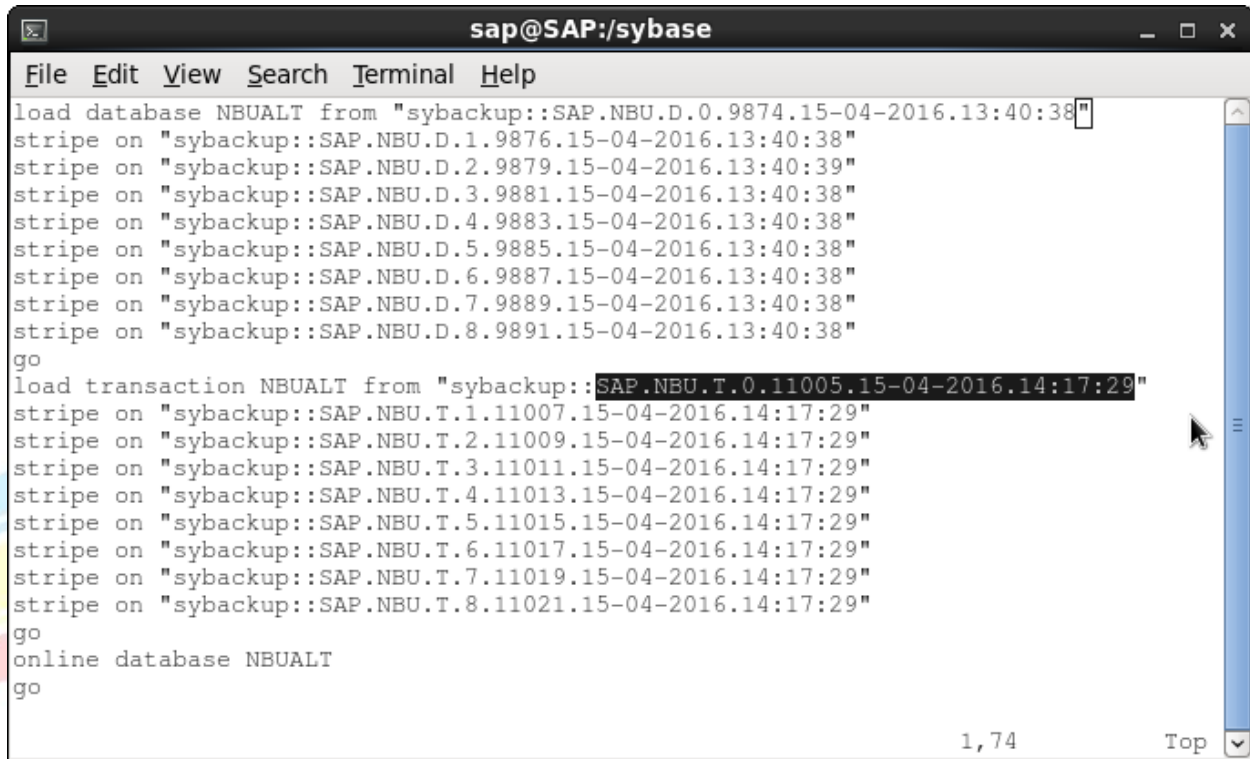


Netbackup for Sybase

In the vi editing tool he will use the insert mode by pressing “i” key to edit the database transaction log backup ID for restore then pressing escape key to exit the editing mode.

Note in case you did not use stripes in backup you will only need that line without the “stripe on” lines.

The database transaction log dump will always have stripe ID “0”.



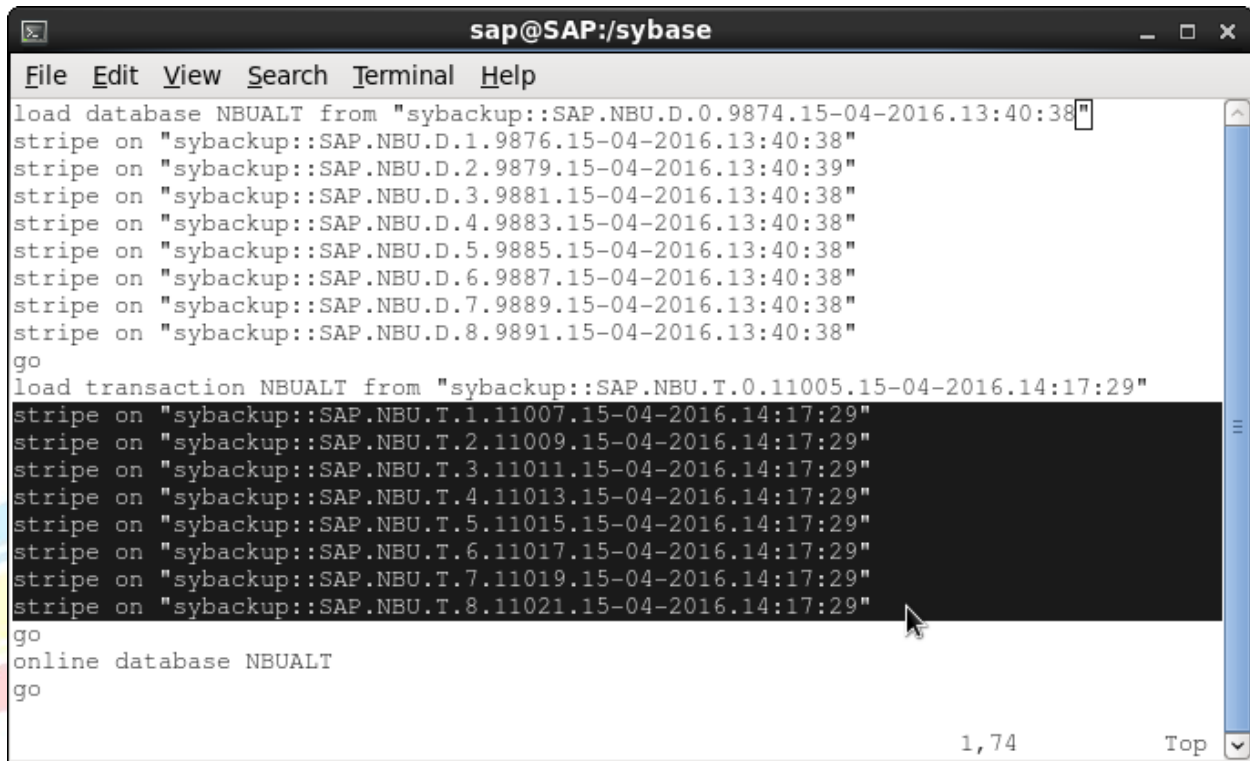
```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```



Netbackup for Sybase

In the vi editing tool he will use the insert mode by pressing "i" key to edit the Stripe on lines according to the backup set available then pressing escape key to exit the editing mode.

Note in this case backup stripes are 8 starting 1 to 8 with the database transaction log dump backup ID stripe number 0.

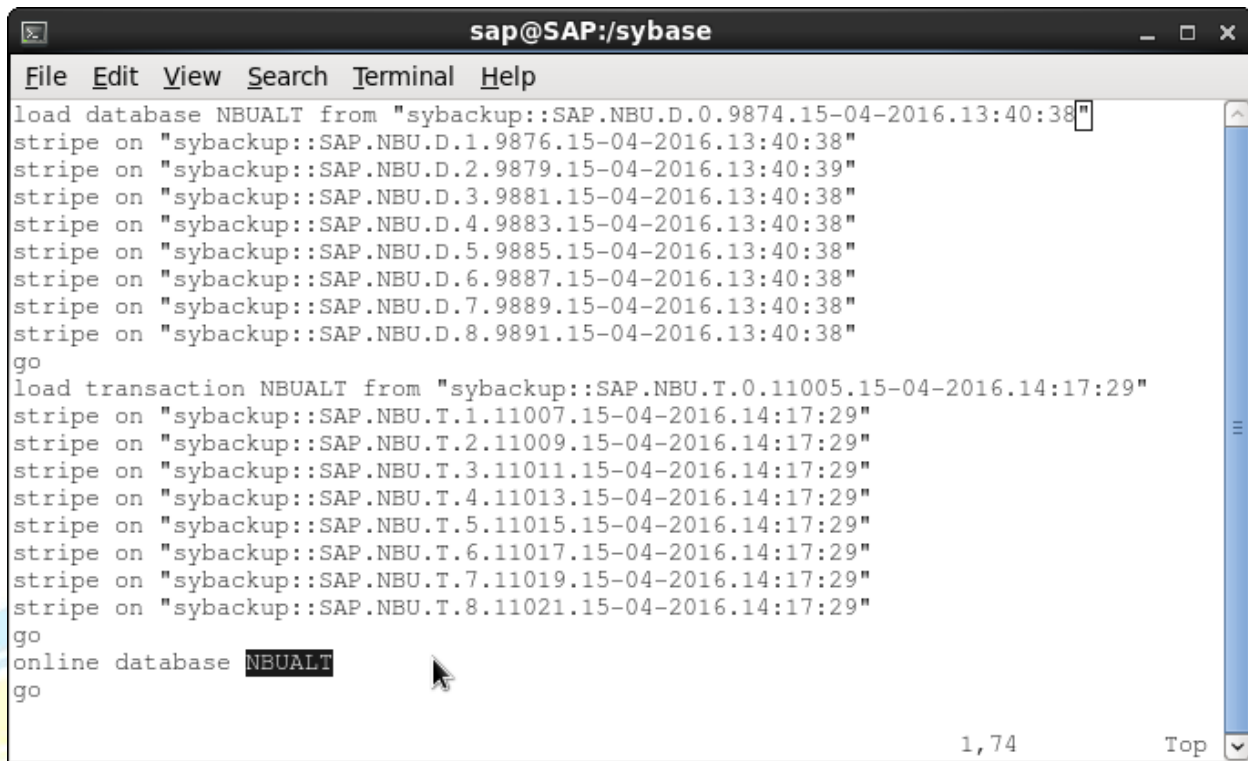


```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```



Netbackup for Sybase

In the vi editing tool he will use the insert mode by pressing “i” key to edit the database name to be online then pressing escape key to exit the editing mode.



```
sap@SAP:/sybase
File Edit View Search Terminal Help
load database NBUALT from "sybackup::SAP.NBU.D.0.9874.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.1.9876.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.2.9879.15-04-2016.13:40:39"
stripe on "sybackup::SAP.NBU.D.3.9881.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.4.9883.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.5.9885.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.6.9887.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.7.9889.15-04-2016.13:40:38"
stripe on "sybackup::SAP.NBU.D.8.9891.15-04-2016.13:40:38"
go
load transaction NBUALT from "sybackup::SAP.NBU.T.0.11005.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.1.11007.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.2.11009.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.3.11011.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.4.11013.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.5.11015.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.6.11017.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.7.11019.15-04-2016.14:17:29"
stripe on "sybackup::SAP.NBU.T.8.11021.15-04-2016.14:17:29"
go
online database NBUALT
go
1,74 Top
```

After the editing is done you will press escape key to exit insert mode then input “:wq” and press enter to write changes and exit vi editing tool.



Creating a database for restore

The Sybase database administrator will create a proper database for restore if the original database is missing or to be retained for further investigation, being proper is to have enough space to accommodate the data and the logs being restored.

Creating Database using Isql

The Sybase database administrator will initialize a file for data and if the database uses log he will also initialize another file for logs.

From Terminal the Sybase Database Administrator will Change directory to `/opt/sap/OCS-16_0/bin/` assuming that Sybase home is `/opt/sap/`

Then he will connect to the Sybase database server using `./isql -Usa -SSAP` assuming that the Sybase database server name is SAP



After connecting and entering the password a similar query should be used

```
use master
```

```
go
```

```
disk init
```

```
name = "database data file logical name (dtadev)",
```

```
physname = "database data file physical path ending (file.dat)",
```

```
size = #####
```

```
go
```

→ If the original database log is separate also create log device

```
disk init
```

```
name = "database log file logical name(logdev)",
```

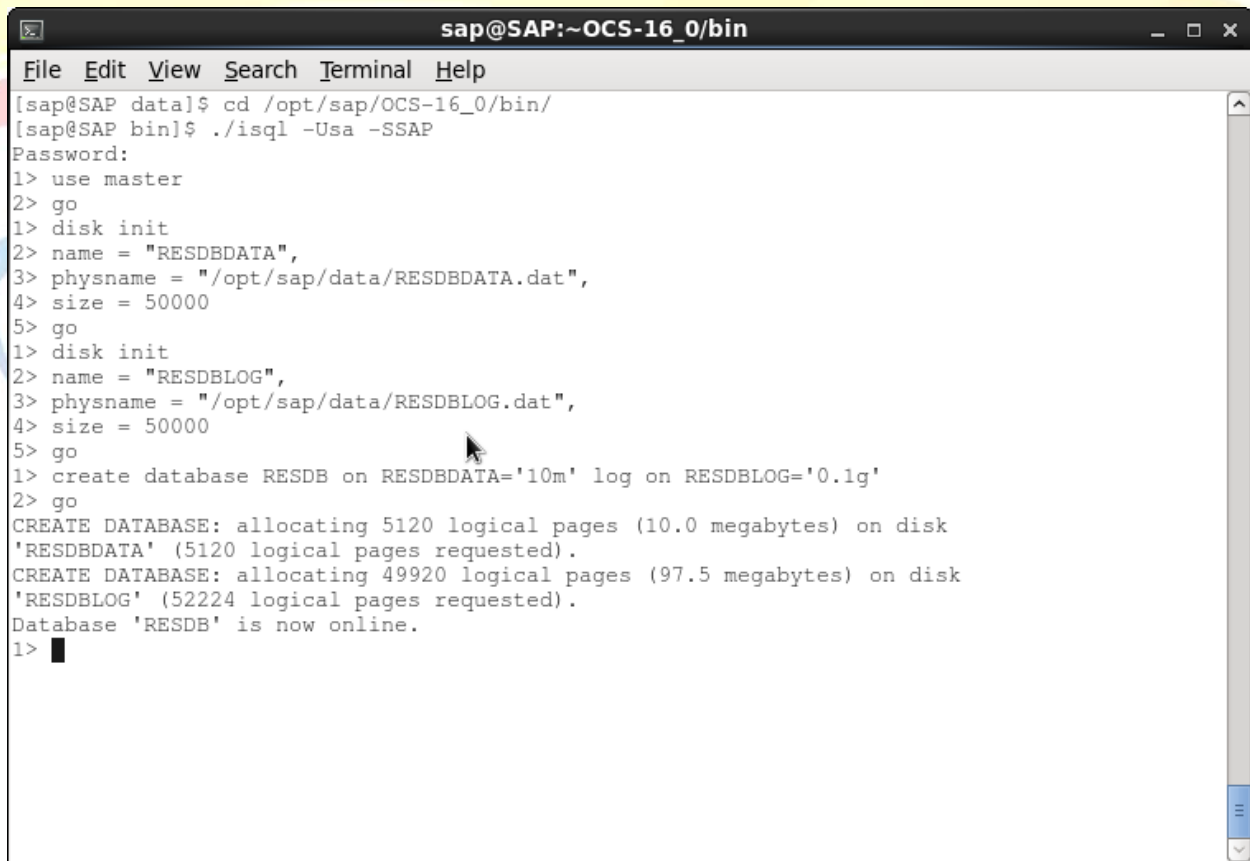
```
physname = "database log file physical path ending (file.dat)",
```

```
size = #####
```

```
go
```

→ Create the data base pointing at the devices that you created

```
create database "database name without quotes" on datadev='###m' log on logdev='###.##g'
```

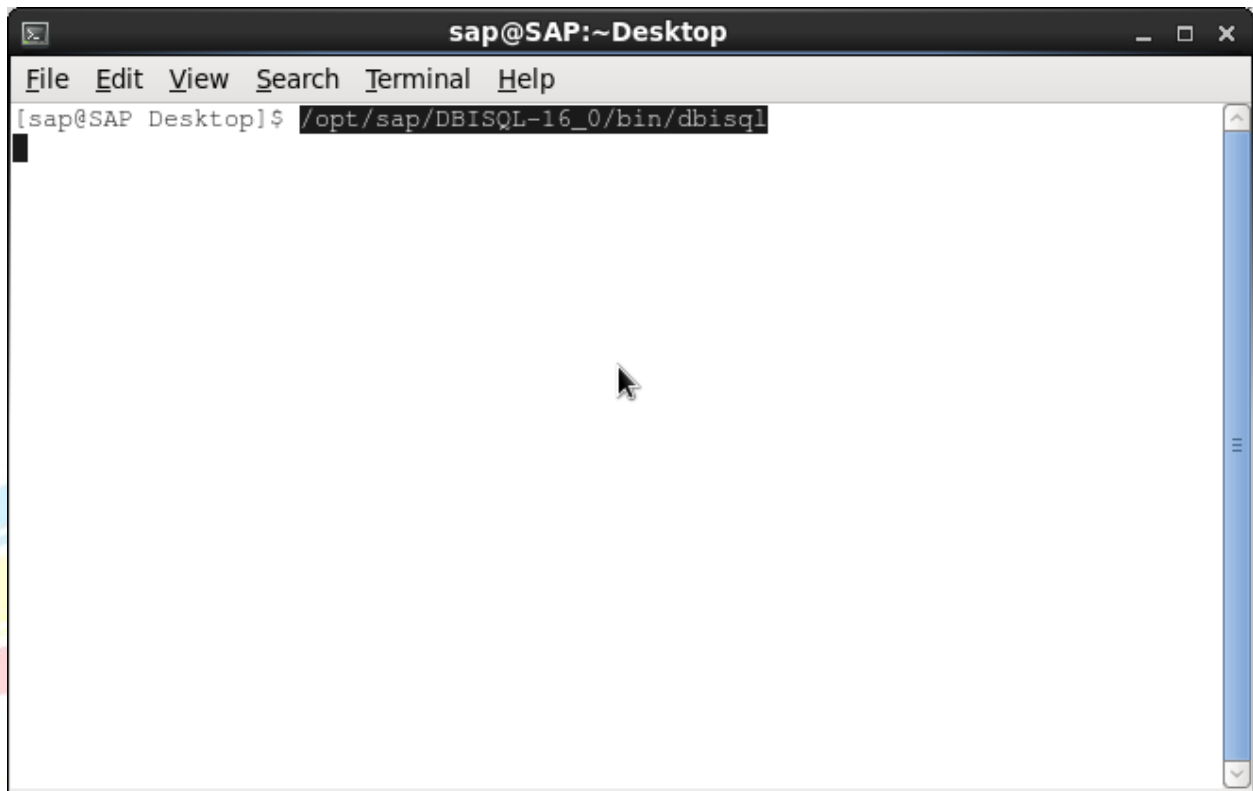


```
sap@SAP:~OCS-16_0/bin
File Edit View Search Terminal Help
[sap@SAP data]$ cd /opt/sap/OCS-16_0/bin/
[sap@SAP bin]$ ./isql -Usa -SSAP
Password:
1> use master
2> go
1> disk init
2> name = "RESDBDATA",
3> physname = "/opt/sap/data/RESDBDATA.dat",
4> size = 50000
5> go
1> disk init
2> name = "RESDBLOG",
3> physname = "/opt/sap/data/RESDBLOG.dat",
4> size = 50000
5> go
1> create database RESDB on RESDBDATA='10m' log on RESDBLOG='0.1g'
2> go
CREATE DATABASE: allocating 5120 logical pages (10.0 megabytes) on disk
'RESDBDATA' (5120 logical pages requested).
CREATE DATABASE: allocating 49920 logical pages (97.5 megabytes) on disk
'RESDBLOG' (52224 logical pages requested).
Database 'RESDB' is now online.
1> █
```

Netbackup for Sybase

Creating Database using DBIsql

From Terminal the Sybase Database Administrator will run `/opt/sap/DBISQL-16_0/bin/dbisql` assuming that Sybase home is `/opt/sap/`



```
sap@SAP:~Desktop
File Edit View Search Terminal Help
[sap@SAP Desktop]$ /opt/sap/DBISQL-16_0/bin/dbisql
```



Then enters the proper user name and password to connect to the Sybase database server

Connect [X]

Connect to SAP Adaptive Server Enterprise
[Change database type](#)

Identify yourself to the server with user name and password.

User name:

Password:

Specify the server to connect to. Settings...

Select a server from the dropdown list, or enter host name and port number separated by ":" (for example, "SAP:5000").

Server name: Find...

Host name: << Details

Port number: SSL

Optionally, specify character set and language to be used by this connection.

Character set:

Language:

Advanced >> Tools ▾ Connect Cancel Help



After a successful login a similar query will be used

```
use master
```

```
go
```

```
disk init
```

```
name = "database data file logical name (dtadev)",
```

```
physname = "database data file physical path ending (file.dat)",
```

```
size = #####
```

```
go
```

→ If the original database log is separate also create log device

```
disk init
```

```
name = "database log file logical name(logdev)",
```

```
physname = "database log file physical path ending (file.dat)",
```

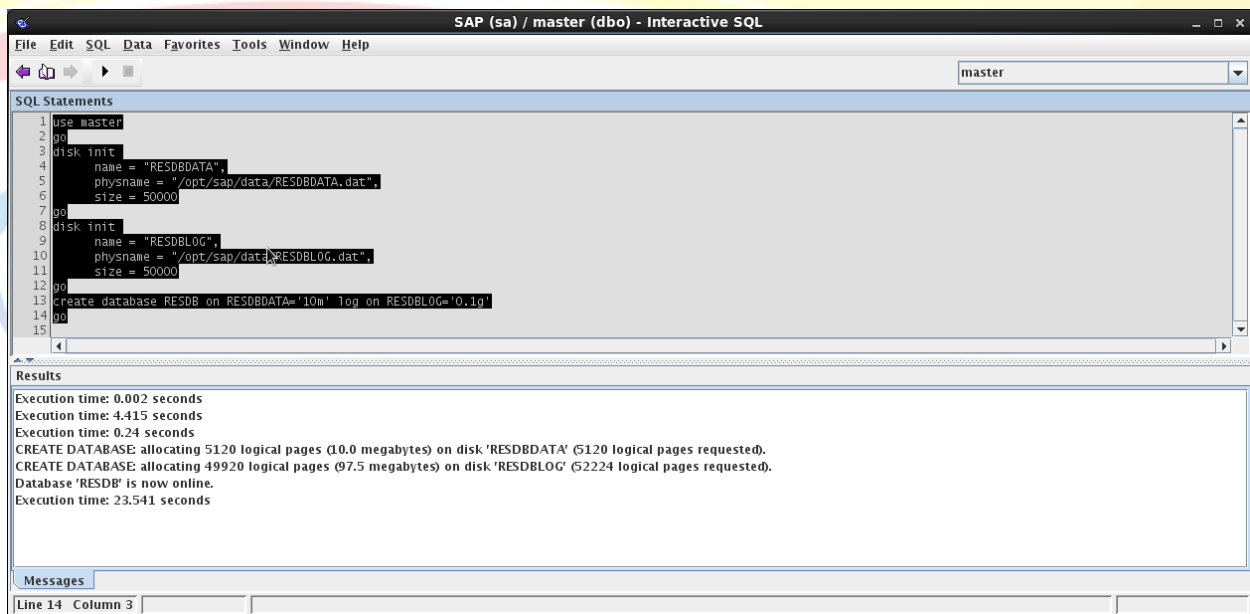
```
size = #####
```

```
go
```

→ Create the data base pointing at the devices that you created

```
create database "database name without quotes" on datadev='###m' log on logdev='###.##g'
```

F5 key to execute



The screenshot shows a window titled "SAP (sa) / master (dbo) - Interactive SQL". The "SQL Statements" pane contains the following code:

```
1 use master
2 go
3 disk init
4 name = "RESDBDATA",
5 physname = "/opt/sap/data/RESDBDATA.dat",
6 size = 50000
7 go
8 disk init
9 name = "RESDBLOG",
10 physname = "/opt/sap/data/RESDBLOG.dat",
11 size = 50000
12 go
13 create database RESDB on RESDBDATA='10m' log on RESDBLOG='0.1g'
14 go
15
```

The "Results" pane shows the following output:

```
Execution time: 0.002 seconds
Execution time: 4.415 seconds
Execution time: 0.24 seconds
CREATE DATABASE allocating 5120 logical pages (10.0 megabytes) on disk 'RESDBDATA' (5120 logical pages requested).
CREATE DATABASE allocating 49920 logical pages (97.5 megabytes) on disk 'RESDBLOG' (52224 logical pages requested).
Database 'RESDB' is now online.
Execution time: 23.541 seconds
```

The "Messages" pane at the bottom shows "Line 14 Column 3".

Initiating the Restore and Monitoring

Now you can sit back and take your breath, all what you have to do is to initiate the restore and monitor the progress.

Initiating the Restore

Using terminal the Sybase database administrator executes the restore script after changing directory to “/sybase” by running “cd /sybase” then “./sybase_mydb_restore”.

```
File Edit View Search Terminal Help
[sap@SAP sybase]$ ./sybase_mydb_restore
Started Sun May 1 11:16:37 EET 2016
/opt/sap/OCS-16_0/bin/isql -Uxxxxxxx -Pxxxxxxx /opt/sap/interfaces -SSAP < /sybase/sybase_mydb_load
Backup Server session id is: 59. Use this value when executing the
'sp_volchanged' system stored procedure after fulfilling any volume change
request from the Backup Server.
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.0.4003.01-05-2016.10:42:52::000'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.1.4005.01-05-2016.10:42:52::001'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.2.4007.01-05-2016.10:42:52::002'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.3.4009.01-05-2016.10:42:52::003'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.4.4011.01-05-2016.10:42:52::004'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.5.4013.01-05-2016.10:42:52::005'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.6.4015.01-05-2016.10:42:52::006'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.7.4017.01-05-2016.10:42:52::007'
Backup Server: 4.132.1.1: Attempting to open byte stream device:
'sybackup::SAP.NBU.D.8.4019.01-05-2016.10:42:52::008'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.8.4019.01-05-2016.10:42:52::008'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.7.4017.01-05-2016.10:42:52::007'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.4.4011.01-05-2016.10:42:52::004'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.2.4007.01-05-2016.10:42:52::002'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.1.4005.01-05-2016.10:42:52::001'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.3.4009.01-05-2016.10:42:52::003'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.6.4015.01-05-2016.10:42:52::006'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.0.4003.01-05-2016.10:42:52::000'
Backup Server: 6.28.1.1: Dumpfile name 'NBU16122096AC' section number 1
mounted on byte stream 'sybackup::SAP.NBU.D.5.4013.01-05-2016.10:42:52::005'
Backup Server: 4.188.1.1: Database NBUALT: 28196 kilobytes (1%) LOADED.
Backup Server: 4.188.1.1: Database NBUALT: 71206 kilobytes (2%) LOADED.
```



Netbackup for Sybase

Monitoring the restore using terminal

In the same terminal window you will have the progress printed to your screen and a successful restore should end like marked below.

```
sap@SAP:/sybase
File Edit View Search Terminal Help
successful (SAP.NBU.T.6.4541.01-05-2016.10:49:15).
Backup Server: 6.28.1.1: Dumpfile name 'NBU161220982B' section number 1
mounted on byte stream 'sybackup::SAP.NBU.T.1.4531.01-05-2016.10:49:15::001'
Backup Server: 6.28.1.1: Dumpfile name 'NBU161220982B' section number 1
mounted on byte stream 'sybackup::SAP.NBU.T.2.4533.01-05-2016.10:49:15::002'
Backup Server: 4.125.1.1: Archive API information for
device='sybackup::SAP.NBU.T.8.4545.01-05-2016.10:49:15:008': Vendor application
name='Veritas NetBackup for SYBASE, Library version=760000, Message=Restore is
successful (SAP.NBU.T.8.4545.01-05-2016.10:49:15).
Backup Server: 4.125.1.1: Archive API information for
device='sybackup::SAP.NBU.T.4.4537.01-05-2016.10:49:15:004': Vendor application
name='Veritas NetBackup for SYBASE, Library version=760000, Message=Restore is
successful (SAP.NBU.T.4.4537.01-05-2016.10:49:15).
Backup Server: 4.125.1.1: Archive API information for
device='sybackup::SAP.NBU.T.1.4531.01-05-2016.10:49:15:001': Vendor application
name='Veritas NetBackup for SYBASE, Library version=760000, Message=Restore is
successful (SAP.NBU.T.1.4531.01-05-2016.10:49:15).
Backup Server: 4.125.1.1: Archive API information for
device='sybackup::SAP.NBU.T.2.4533.01-05-2016.10:49:15:002': Vendor application
name='Veritas NetBackup for SYBASE, Library version=760000, Message=Restore is
successful (SAP.NBU.T.2.4533.01-05-2016.10:49:15).
Backup Server: 3.42.1.1: LOAD is complete (database NBUALT).
Started estimating recovery log boundaries for database 'NBUALT'.
Database 'NBUALT', checkpoint=(2983, 26), first=(2983, 26), last=(2983, 26).
Completed estimating recovery log boundaries for database 'NBUALT'.
Started ANALYSIS pass for database 'NBUALT'.
Completed ANALYSIS pass for database 'NBUALT'.
Started full REDO pass for database 'NBUALT'. The total number of log records to
process is 1.
Completed REDO pass for database 'NBUALT'.
Use the ONLINE DATABASE command to bring this database online; ASE will not
bring it online automatically.
Started estimating recovery log boundaries for database 'NBUALT'.
Database 'NBUALT', checkpoint=(2983, 26), first=(2983, 26), last=(2983, 26).
Completed estimating recovery log boundaries for database 'NBUALT'.
Started ANALYSIS pass for database 'NBUALT'.
Completed ANALYSIS pass for database 'NBUALT'.
Recovery of database 'NBUALT' will undo incomplete nested top actions.
Checking external objects.
Database 'NBUALT' is now online.
Finished Sun May 1 11:22:27 EST 2016
exit 0

[sap@SAP sybase]$
```

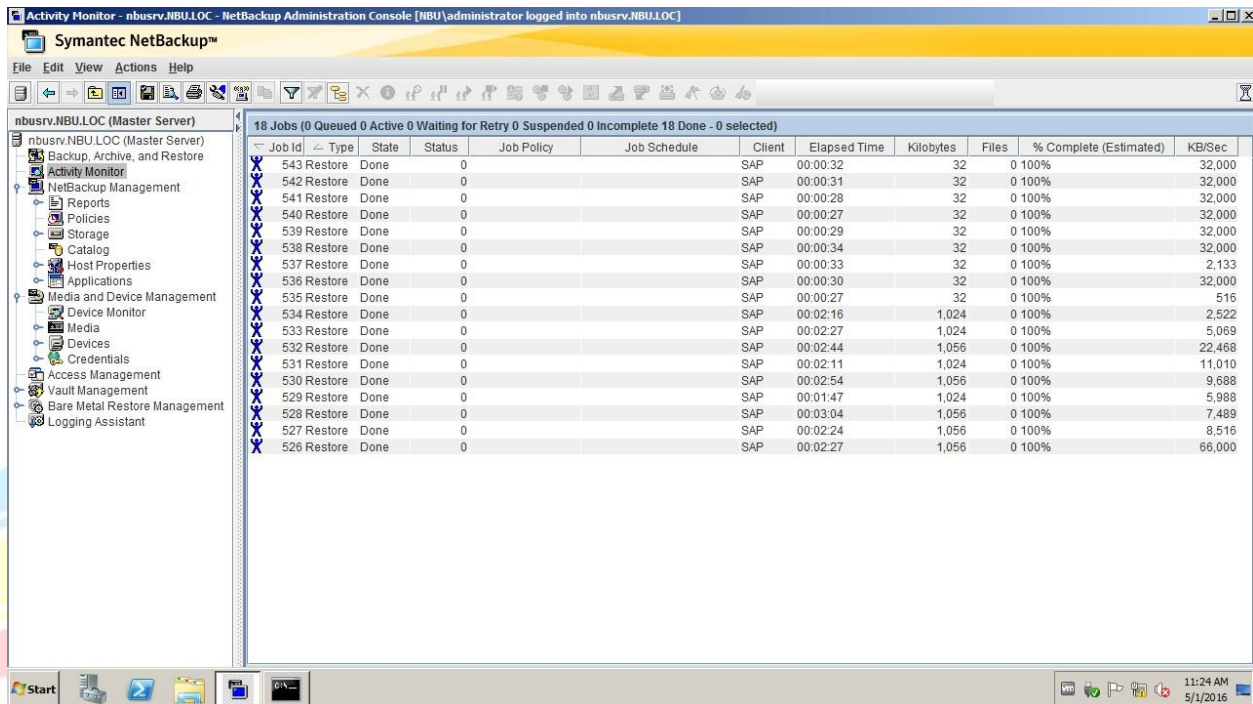


Netbackup for Sybase

Monitoring the restore using NBU GUI

The Netbackup administrator can also monitor the restore through the activity monitor on his Netbackup management console.

A successful restore will look like below.



The screenshot displays the Symantec NetBackup Activity Monitor interface. The title bar reads "Activity Monitor - nbusrv.NBU.LOC - NetBackup Administration Console [NBU]administrator logged into nbusrv.NBU.LOC". The main window shows a tree view on the left with "Activity Monitor" selected. The main pane displays a table of 18 jobs, all of which are in a "Done" state with a status of 0. The table columns include Job ID, Type, State, Status, Job Policy, Job Schedule, Client, Elapsed Time, Kilobytes, Files, % Complete (Estimated), and KB/Sec. The jobs listed are SAP restores for various clients, all completed at 100%.

| Job ID | Type | State | Status | Job Policy | Job Schedule | Client | Elapsed Time | Kilobytes | Files | % Complete (Estimated) | KB/Sec |
|--------|---------|-------|--------|------------|--------------|--------|--------------|-----------|-------|------------------------|--------|
| 543 | Restore | Done | 0 | | | SAP | 00:00:32 | 32 | 0 | 100% | 32,000 |
| 542 | Restore | Done | 0 | | | SAP | 00:00:31 | 32 | 0 | 100% | 32,000 |
| 541 | Restore | Done | 0 | | | SAP | 00:00:28 | 32 | 0 | 100% | 32,000 |
| 540 | Restore | Done | 0 | | | SAP | 00:00:27 | 32 | 0 | 100% | 32,000 |
| 539 | Restore | Done | 0 | | | SAP | 00:00:29 | 32 | 0 | 100% | 32,000 |
| 538 | Restore | Done | 0 | | | SAP | 00:00:34 | 32 | 0 | 100% | 32,000 |
| 537 | Restore | Done | 0 | | | SAP | 00:00:33 | 32 | 0 | 100% | 2,133 |
| 536 | Restore | Done | 0 | | | SAP | 00:00:30 | 32 | 0 | 100% | 32,000 |
| 535 | Restore | Done | 0 | | | SAP | 00:00:27 | 32 | 0 | 100% | 516 |
| 534 | Restore | Done | 0 | | | SAP | 00:02:16 | 1,024 | 0 | 100% | 2,522 |
| 533 | Restore | Done | 0 | | | SAP | 00:02:27 | 1,024 | 0 | 100% | 5,069 |
| 532 | Restore | Done | 0 | | | SAP | 00:02:44 | 1,056 | 0 | 100% | 22,468 |
| 531 | Restore | Done | 0 | | | SAP | 00:02:11 | 1,024 | 0 | 100% | 11,010 |
| 530 | Restore | Done | 0 | | | SAP | 00:02:54 | 1,056 | 0 | 100% | 9,688 |
| 529 | Restore | Done | 0 | | | SAP | 00:01:47 | 1,024 | 0 | 100% | 5,988 |
| 528 | Restore | Done | 0 | | | SAP | 00:03:04 | 1,056 | 0 | 100% | 7,489 |
| 527 | Restore | Done | 0 | | | SAP | 00:02:24 | 1,056 | 0 | 100% | 8,516 |
| 526 | Restore | Done | 0 | | | SAP | 00:02:27 | 1,056 | 0 | 100% | 66,000 |



Troubleshooting

This is the funny part that I love, I know that some of you disagree with me, but this is the part you get to know how Netbackup works in the background and become an expert.

Whenever you have backup or restore issues “/usr/opensv/netbackup/logs/bphdb” log directory is your friend

Also for backup progress you may use “/usr/opensv/netbackup/logs/sybackup” log directory.

The “NetBackup77_AdminGuide_Sybase.pdf” contains a trouble shooting chapter that is really helpful.

