
# Automating Sybase Backups from a Windows NT Server*

**November 22, 2000**

Because this topic is not covered by the current PMO funded SPS Helpdesk Agreement, this document has been provided to help you resolve this issue. If you still need assistance after reviewing this document, please contact a representative from your Customer Support Team.

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# Introduction

One of the most important tasks that a DBA must perform is backing up the databases on their Sybase Server. Performing regular backups will prevent the loss of data in the event of a media failure. The paper entitled "How to Backup Your PD$^2$ Databases" walks the user through creating dump devices and performing manual backups. But in order to guarantee that backups are being performed on a regular basis it is recommended that this process be automated. This paper will walk you through the procedure for setting up automated Sybase backups from a Windows NT Server.

Before you can successfully automate Sybase backups there are a few things to keep in mind.

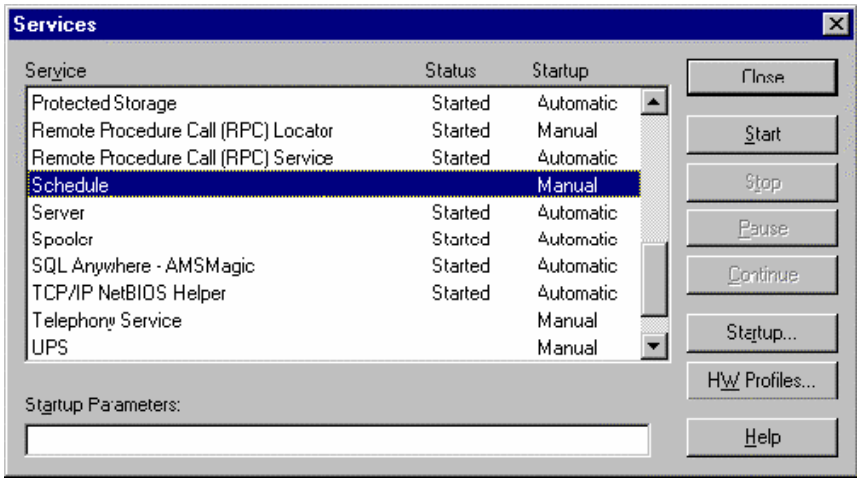
1. Make sure all of your dump devices have been created before automating backups.
2. Only perform automated backups from a PC that has Sybase tools loaded on it. This can be any one of the following Windows NT Servers:
   - SPS-I Interface Agent
   - PD$^2$ Application Server
   - Sybase Database Server
3. Make sure you use a PC that will not be turned off during the scheduled backup.
4. Try to maintain a week's worth of backups. In other words, do not overwrite the previous night's backup. This will protect your data in case current backup is invalid or contains corrupt data that was not in the previous night's backup. Ideally you should have at least one valid (i.e. tested) backup at all times.
5. Follow the suggested backup schedule. Below is AMS' recommendation for performing backups. The following information was taken from the "Sybase Server Maintenance Guide".

| Tasks | Daily | Weekly | Twice a Month |
|---|---|---|---|
| Backups | | | |
| Production | ✓ | | |
| Interface (IDB) | ✓ | | |
| Acquiline (ACQ) | ✓ | | |
| master | | ✓ | |
| sybsystemprocs | | | ✓ |
| sybsecurity | | | ✓ |
| model | | | ✓ |

**Note:** Please be aware that in the event of a severe database failure AMS is only responsible for bringing a site back to its most recent *successful* backup. Keep in mind that your database is only as secure as your data and transaction log backups. If you can not find them or they do not work, then they are useless in the event of a disaster. You may wish to consider storing some backups offsite in case of a fire or earthquake.

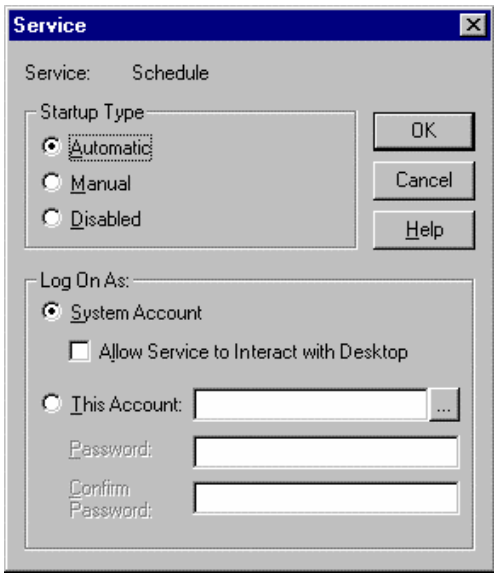
# 1. Step 1: Enable Scheduling

The first step to setting up automated backups is to enable scheduling on the NT Server. This can be done by opening the **Control Panel** and selecting the **Services** icon. When the Services window appears double click on Schedule.




**Note:** The Schedule service will not appear in the Services window if Task Scheduler is installed on Windows NT. Task Scheduler replaces the Schedule service. If this is the case, then you can proceed to Step 2.

When the Schedule Service window appears select "Automatic" as the Startup Type then click OK. This will automatically start the Schedule Service whenever the PC is rebooted.




When the Services window reappears select the **Start** button to start this service then click **Close**.

# 2. Step 2: Create the Batch File

Create a batch file called *pd2backup.bat* and place it in your c:\sybase\backups directory.

**Note:** The location of the batch file is arbitrary. So if you decide to place the batch file in a different location then use that location when it is referenced in these instructions.

In the batch file enter the following isql command:

```
isql –Usa –P<sa password> -S<Sybase Server Name>
-i"c:\sybase\backups\pd2backup.sql"
```

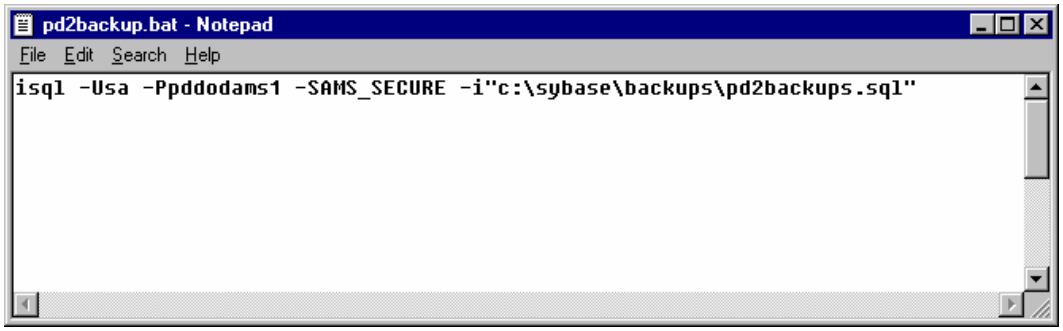
**<sa password>** = password for the sa account.
**<Sybase Server Name>** = the name of the server as it appears in the sql.ini file.

Example:

```
isql –Usa –Ppddodams1 –SAMS_SECURE
-i"c:\sybase\backups\pd2backup.sql"
```

**Note:** **DO NOT** enter any hard returns when typing this command in the batch file. It must be executed as one line.

**Note:** The quotation marks are necessary when using long file names.



# 3. Step 3: Create the SQL Input File

If you noticed in the previous step the isql command refers to a file named *pd2backup.sql*. This is the SQL file that contains all the backup commands. Follow the steps below to create this file.

Create a text file called *pd2backup.sql* and place it in your c:\sybase\backups directory.

In this batch file enter the following sql commands:

```
dump database <database_name> to <device_name>
go

dump tran <database_name> with no_log
go
```

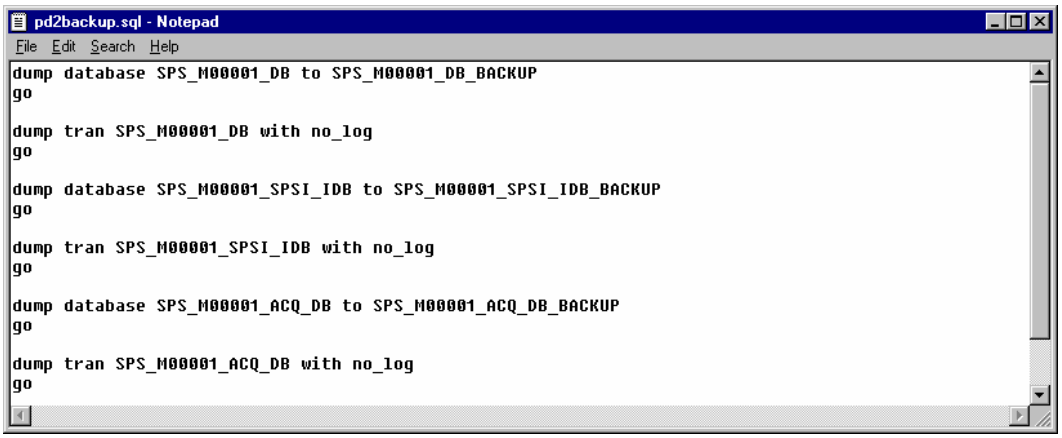
**<database_name>** = the name of the database that you are backing up.
**<device_name>** = the name of your dump device.

Example:

```
dump database SPS_M00001_DB to SPS_M00001_DB_BACKUP
go

dump tran SPS_M00001_DB with no_log
go
```

If you are backing up more than one database on a nightly basis then add the commands to dump the other databases to the SQL file. You do not need to create a separate SQL file for each database.

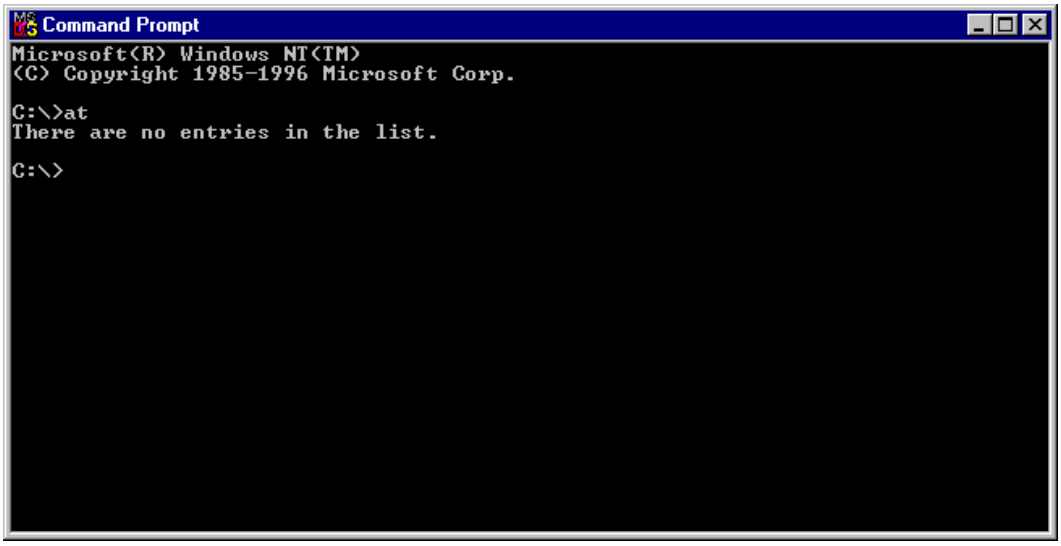


# 4. Step 4: Scheduling the Batch File

There are two ways to schedule the batch file that you created in Step2. Feel free to use either method to schedule your backup.

## 4.1 Using the "AT" Command

Open an MS-DOS window. Enter the "**at**" command at the DOS prompt. This will allow you to view a list of currently scheduled jobs.




Enter the following command at the DOS prompt to schedule the batch file.

```
at <time> /every:<M,T,W,Th,F,S,Su>
"c:\sybase\backups\pd2backup.bat"
```

**<time>** = the time that the backup should start based on a 24hr clock.
**<M,T,W,Th,F,S,Su>** = the day(s) of the week the backup will run.

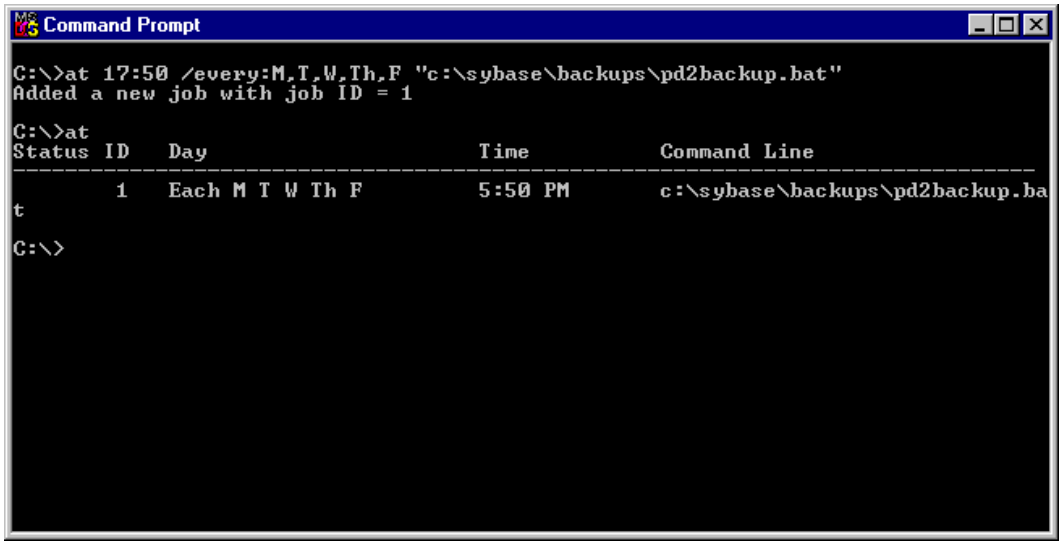
Example:

```
at 17:30  /every:M,T,W,Th,F
"c:\sybase\backups\pd2backup.bat"
```

**Note:** **DO NOT** enter any hard returns when typing this command at the DOS prompt. It must be executed as one line.

**Note:** The quotation marks are necessary when using long file names.

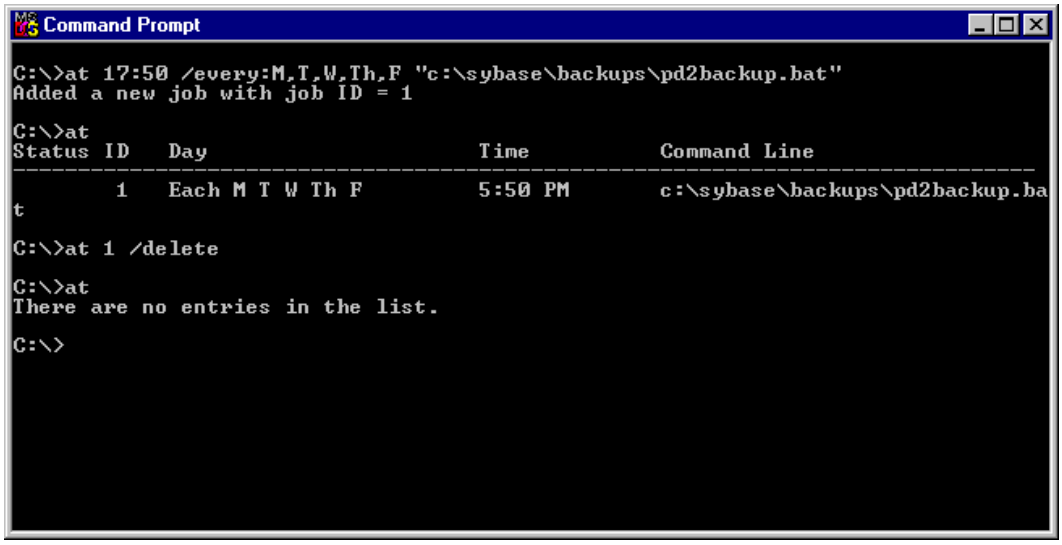
After scheduling the job enter the "**at**" command at the DOS prompt to verify the task has been entered correctly.




If you need to delete the job because it was entered incorrectly or is no longer needed then enter the following command at the DOS prompt.

```
at <id> /delete
```

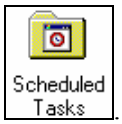
**<id>** = the id number of the job that needs to be unscheduled.



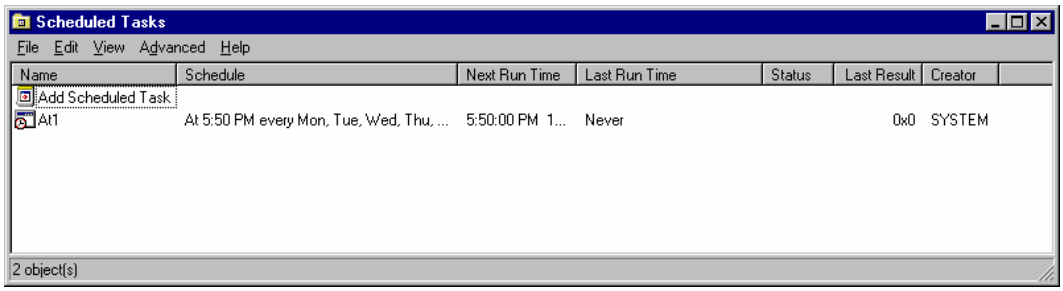

**Note:** There is no log associated with the "**at**" command. Therefore, you must check the Sybase backup.log file on a regular basis to verify that backups are completed successfully.

## 4.2 Using the Task Scheduler

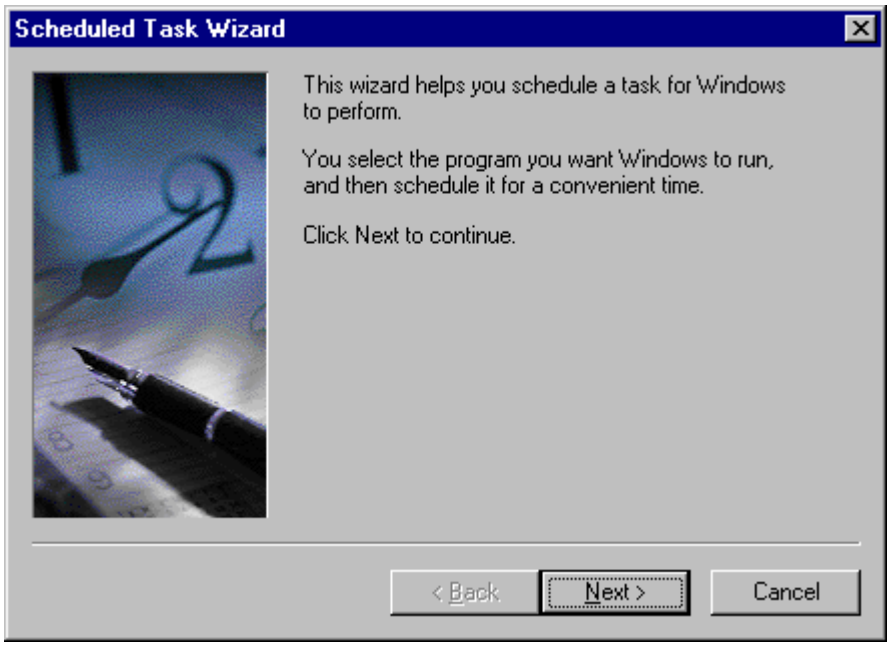
Double click on the “My Computer” icon on your desktop 

. Then double click on the “Scheduled Tasks” icon 

. When the Scheduled Tasks window appears notice that any jobs that were scheduled using the “**at**” command will appear on this list.

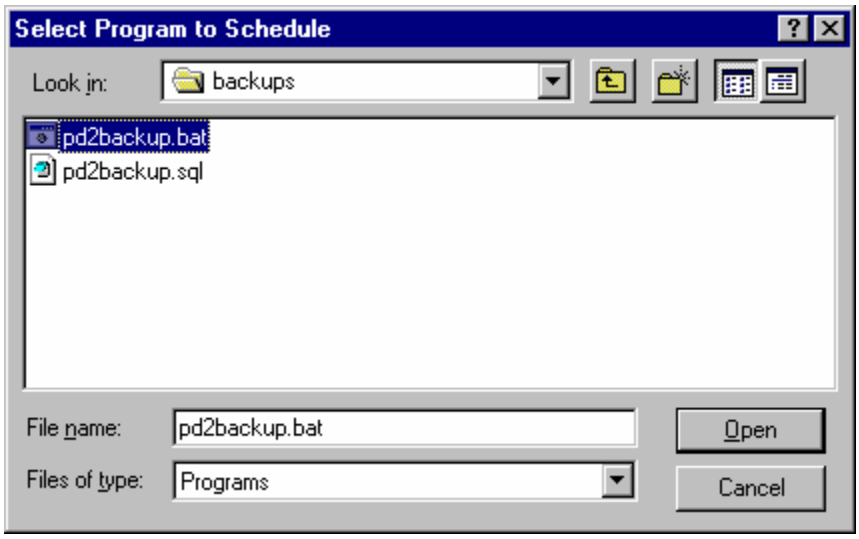



To schedule a task, start by clicking on the “Add Scheduled Task” icon. The Scheduled Task Wizard appears. Click on the “Next” button.



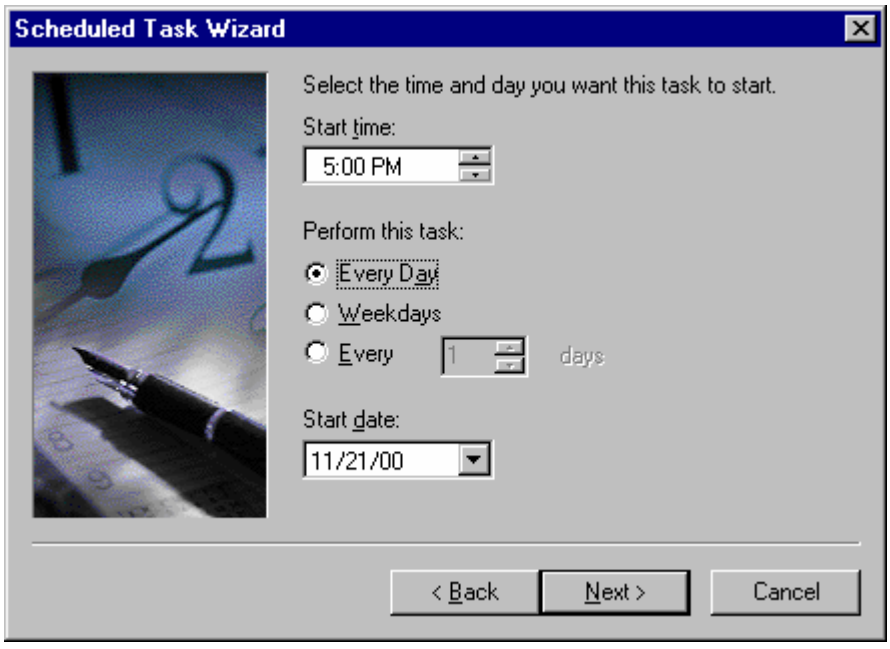

On the next screen you will be prompted to select an application to schedule. Click on the “Browse” button.


Locate the pd2backup.bat file and click Open.




On the next screen enter a name for this task and indicate how often it will run. Then click on the “Next” button.

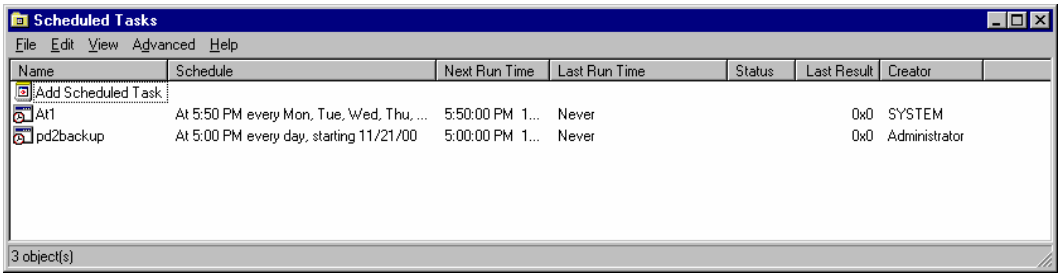

On the next screen enter the start time, the frequency and the start date for this task. Then click on the Next button.




On the next screen enter the password of the user id that will be associated with this task.


On the next window select the "Finish" button.


The new Task should now appear in the schedule task window.




You can modify a scheduled task at anytime by right clicking on it and selecting "properties" from the pop-up menu.

At this point your backups have been automated. Be sure to check the Sybase backup.log on a regular basis to verify that the backups are completed successfully.

# 5. Verifying Database Backups

Automating backups eliminates the need for anyone to manually execute the backup process. However the DBA is still responsible for verifying that the backup has been successfully completed.

There are several reasons why a backup may fail to successfully complete. Below is a list of some of the common problems that cause backups to fail.

- The hard drive where the dump devices are located has run out of space
- The dump device has exceeded its 2.0GB limit (Unix Only)
- The sa password that is used to automate the backup has changed

Regardless of what causes the backup to fail, it is important to identify a failed backup before it is too late.

The following sections list methods that can be used to verify that a backup is successful. These checks can be used separately. But to be absolutely certain that a backup is successful AMS recommends using all four of these methods to verify your backup. These methods are as follows:

1. Check the date/time stamp of the dump files
2. Check the backup log for errors
3. Use the *load database ... with headeronly* command
4. Load the backup to a test database

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**Note:** This paper only covers verifying disk dump files. It ***does not*** discuss verifying tape or file system backups. This is because AMS recommends that sites backup each of their databases to a disk dump file ***first*** before copying the dump file to an external tape or disk drive.

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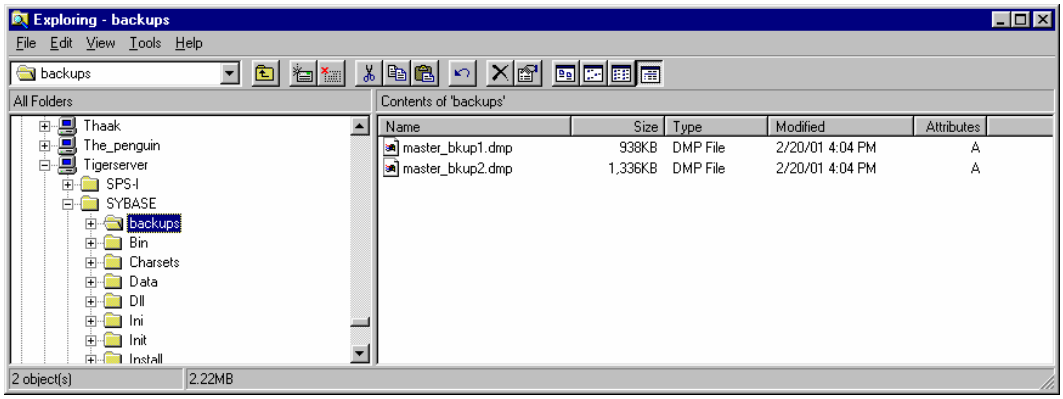
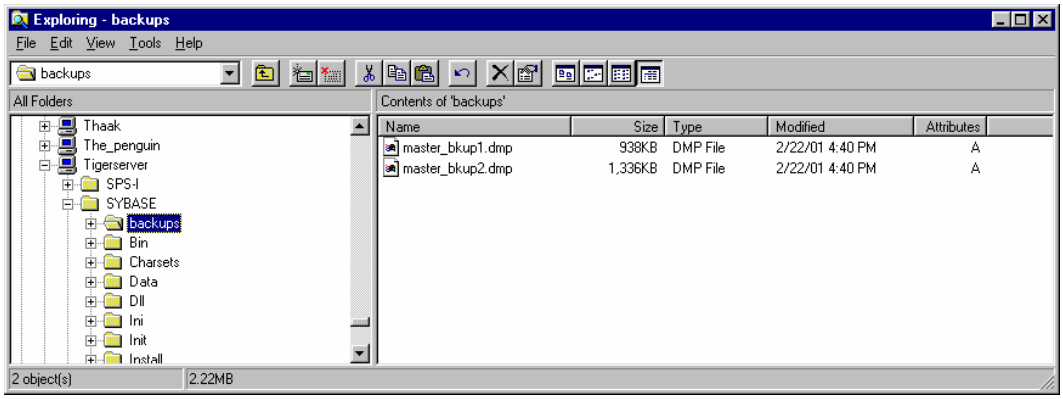
## 5.1 Check the Date/Time Stamp of the Dump Files

One of the easiest ways to verify that the backup is successful is to check the date time stamp of the dump file. Locate the dump files on your server and note the current date and time.




Once you have located the dump files, perform a backup. If the backup is successful the date and time stamp of the dump file will indicate the time the backup was performed.




## 5.2 Check the Backup Log for Errors

In addition to checking the data/time stamp of the dump files, you should also check the backup log to see if the backup is complete for the date on the dump file. The backup log (filename: backup.log) is usually located on the Sybase Server in the c:\sybase\install directory for NT servers or in the $SYBASE/install directory on Unix servers. Any time the system performs a backup or restore the information is captured in the backup log. The initiation, progress and completion of the backup and restore commands can be viewed in the backup log.

When a backup is successful a message appears in the log indicating that the dump is complete (See Figure Below).

```
Feb 22 16:40:16 2001: Backup Server: 6.28.1.1: Dumpfile name
'master010530EA6F ' section number 0001 mounted on disk file
'c:\sybase\backups\master_bkup1.dmp'
Feb 22 16:40:17 2001: Backup Server: 6.28.1.1: Dumpfile name
'master010530EA6F ' section number 0001 mounted on disk file
'c:\sybase\backups\master_bkup2.dmp'
Feb 22 16:40:20 2001: Backup Server: 4.58.1.1: Database master: 2030
kilobytes DUMPed.
Feb 22 16:40:20 2001: Backup Server: 4.58.1.1: Database master: 2242
kilobytes DUMPed.
Feb 22 16:40:23 2001: Backup Server: 3.43.1.1: Dump phase number 1 completed.
Feb 22 16:40:23 2001: Backup Server: 3.43.1.1: Dump phase number 2 completed.
Feb 22 16:40:23 2001: Backup Server: 3.43.1.1: Dump phase number 3 completed.
Feb 22 16:40:23 2001: Backup Server: 4.58.1.1: Database master: 2254
kilobytes DUMPed.
Feb 22 16:40:23 2001: Backup Server: 3.42.1.1: DUMP is complete (database
master).
```

If this message does not appear for every database that was backed up, then the backup was not successful. The backup log usually prints an error message when a backup fails to complete. Most error messages contain a number and a brief description of the problem. You may call the Help Desk to get a detailed explanation of the error or you can look it up in the technical reference manual section of Sybase's website http://sybooks.sybase.com/srg1100e.html. Search the "Troubleshooting and Error Message Guide" for the error number or phrase that appears in the backup log.

## 5.3 Use the *load database … with headeronly* command

Even if the dump file is up to date ***and*** the backup log shows that a backup is complete, you can still encounter problems when attempting to load the database from backup. One way to test the successfulness of loading a database without actually loading it is to run the load database command with the *headeronly* option.

The *load database… with headeronly* command allows a user to see what messages will appear prior to restoring a database without actually restoring it. The dump header indicates whether the file contains a database or transaction log dump, the database ID, the file name, the date the dump was made, the character set, sort order, page count, and next object ID. If errors appear in the dump header then there may be problems with dump file or the load command itself. The messages that appear as a result of executing this command notify the user as to whether the restore command will be successful or unsuccessful. It does not necessarily indicate that the backup was unsuccessful.

Connect to the server as ‘sa’ using SQL Advantage. Execute the following SQL command.

```
load database <db_name> from <device_name>
with headeronly
go
```

**<db_name>** = the name of the database that will be restored.
**<device_name>** = name of the dump device that will be used to restore the database.

Example

```
load database master from master_backup
with headeronly
go
```

The output will look similar to the following. The messages that are highlighted in the following output indicate the type of information that is received when the *load database…with headeronly* command is executed without errors.

```
Server Message:  Number  3216, Severity  10
Line 1:
Backup Server session id is:  21.  Use this value when executing the
'sp_volchanged' system stored procedure after fulfilling any volume change
request from the Backup Server.
Server Message:  Number  602801, Severity  1
Server 'TIGERSERVER_BS', Procedure 'bs_read_header', Line 0:
Backup Server: 6.28.1.1: Dumpfile name 'master010530EA6F ' section number 0001
mounted on disk file 'c:\sybase\backups\master_bkup1.dmp'
Server Message:  Number  602801, Severity  1
Server 'TIGERSERVER_BS', Procedure 'bs_read_header', Line 0:
Backup Server: 6.28.1.1: Dumpfile name 'master010530EA6F ' section number 0001
mounted on disk file 'c:\sybase\backups\master_bkup2.dmp'
Server Message:  Number  3124, Severity  10
Line 1:
This is a database dump of database ID 1, name 'master', from Feb 22 2001
4:40PM.  SQL Server version: SQL Server/11.0.3.3/P/PC Intel/Windows NT 3.5/SWR
7926 Rollup/OPT/Mon Jun 1 1998 23:06:50.62.  Backup Server version: Backup
Server/11.0.3.3/P/PC Intel/Windows NT 3.5/SWR 7926 Rollup/OPT/ Mon Jun 1 1998
23:48:29.18 .
Server Message:  Number  3125, Severity  10
Line 1:
Database contains 2560 pages; checkpoint RID=(Rid pageid = 0x69c; row num =
0x4); next object ID=1520008446; sort order ID=50, status=0; charset ID=3.
Server Message:  Number  3136, Severity  10
Line 1:
Database log version=2; database upgrade version=1.
```

The messages highlighted in the following output indicate the errors that appear if the database was backed up using multiple devices (i.e. striped) and the load command does not list all of the striped devices.

```
Server Message:  Number  3216, Severity  10
Line 1:
Backup Server session id is:  19.  Use this value when executing the
'sp_volchanged' system stored procedure after fulfilling any volume change
request from the Backup Server.
Server Message:  Number  602801, Severity  1
Server 'TIGERSERVER_BS', Procedure 'bs_read_header', Line 0:
Backup Server: 6.28.1.1: Dumpfile name 'master010530EA6F ' section number 0001
mounted on disk file 'c:\sybase\backups\master_bkup1.dmp'
Server Message:  Number  405402, Severity  2
Server 'TIGERSERVER_BS', Procedure 'bs read header', Line 0:
Backup Server: 4.54.2.1: The load command specifies too few devices of type
'disk file':  expected 2, got 1.
Server Message:  Number  603202, Severity  2
Server 'TIGERSERVER_BS', Procedure 'bs read header', Line 0:
Backup Server: 6.32.2.3: c:\sybase\backups\master_bkup1.dmp: volume not valid
or not requested (server: , session id: 19.)
Server Message:  Number  101402, Severity  2
Server 'TIGERSERVER_BS', Procedure 'bs_read_header', Line 0:
Backup Server: 1.14.2.4: Unrecoverable I/O or volume error.  This DUMP or LOAD
session must exit.
Server Message:  Number  8009, Severity  16
Line 1:
Error encountered by Backup Server.  Please refer to Backup Server messages for
details.
```

## 5.4 Load the Database to a Test Database

The previous sections discussed methods that can be used to verify that your database has been successfully backed up and can be successfully restored. However the only way to be absolutely certain that the database backup was successful is to restore it into a test database and log into it using $PD^2$ to check that the information is complete and up to date. Detailed instructions on how to create a test database can be found in the paper entitled “How to Create a Test Database”.