

# DB2 Guidelines for DTS

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## **Introduction**

This document contains guidelines for setting up and maintaining a DB2 database for use as a DTS knowledgebase.

## **Installing DB2**

DTS requires DB2 version 9.7. The Workgroup version is sufficient for DTS knowledgebase needs. Follow the instructions from IBM on installing DB2. During the install make sure you configure DB2 to listen on TCP port 50000. This is the default TCP port setting for Windows, but not for Linux (50001). Be sure to change the TCP port to 50000 when installing DB2 on Linux. For this document the user “dts” is used as the DB2 Instance Owner User ID.

## Oracle Compatibility Setup

DTS requires DB2 to run in Oracle Compatibility mode. Before creating a new database, you need to perform the following steps to ensure Oracle compatibility.

1. Open a DB2 command window.
2. Start the DB2 database manager.

```
db2start
```

3. Set the DB2\_COMPATIBILITY\_VECTOR registry variable to the hexadecimal value that enables the compatibility features that you want to use. To take full advantage of these DB2 compatibility features, set the value to ORA. This is the recommended setting.

```
db2set DB2_COMPATIBILITY_VECTOR=ORA
```

4. Set the DB2\_DEFERRED\_PREPARE\_SEMANTICS registry variable to YES to enable deferred prepare support. If the DB2\_COMPATIBILITY\_VECTOR registry variable is set to ORA, and the DB2\_DEFERRED\_PREPARE\_SEMANTICS registry variable is not set, a default value of YES is used. However, it is recommended that the DB2\_DEFERRED\_PREPARE\_SEMANTICS registry variable be explicitly set to YES.

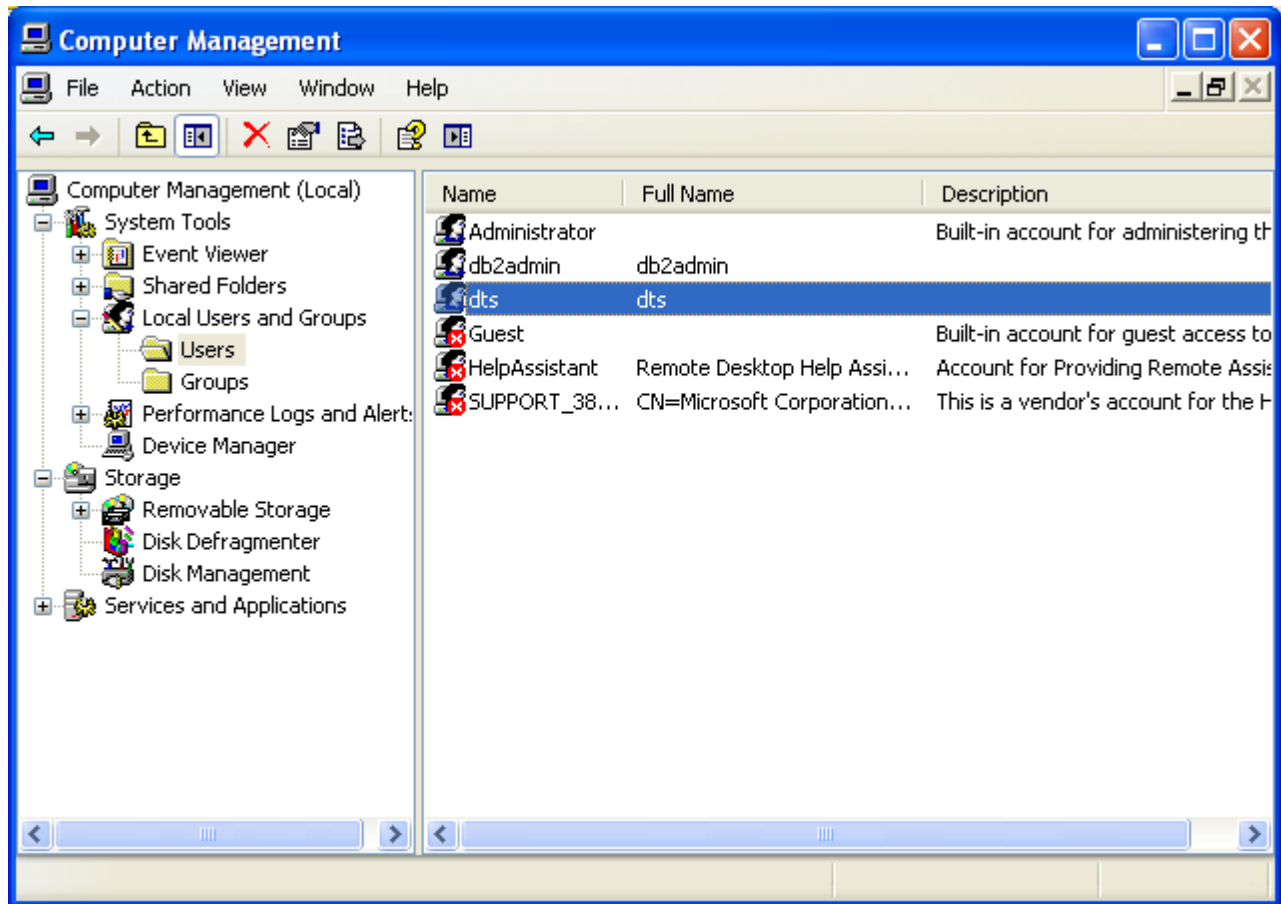
```
db2set DB2_DEFERRED_PREPARE_SEMANTICS=YES
```

5. Issue the db2stop command and the db2start command to stop and then restart the database manager.

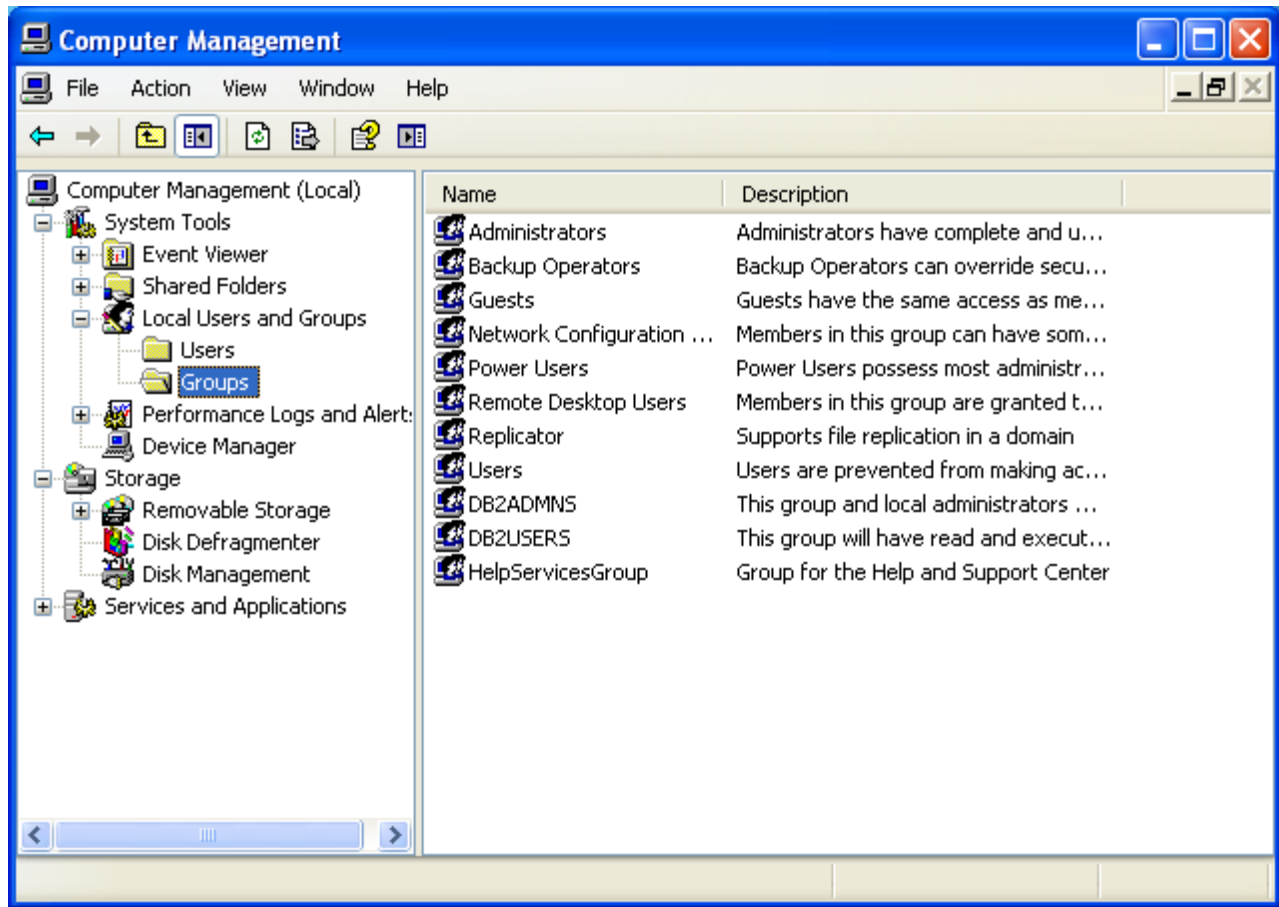
```
db2stop  
db2start
```

## Local User for DTS

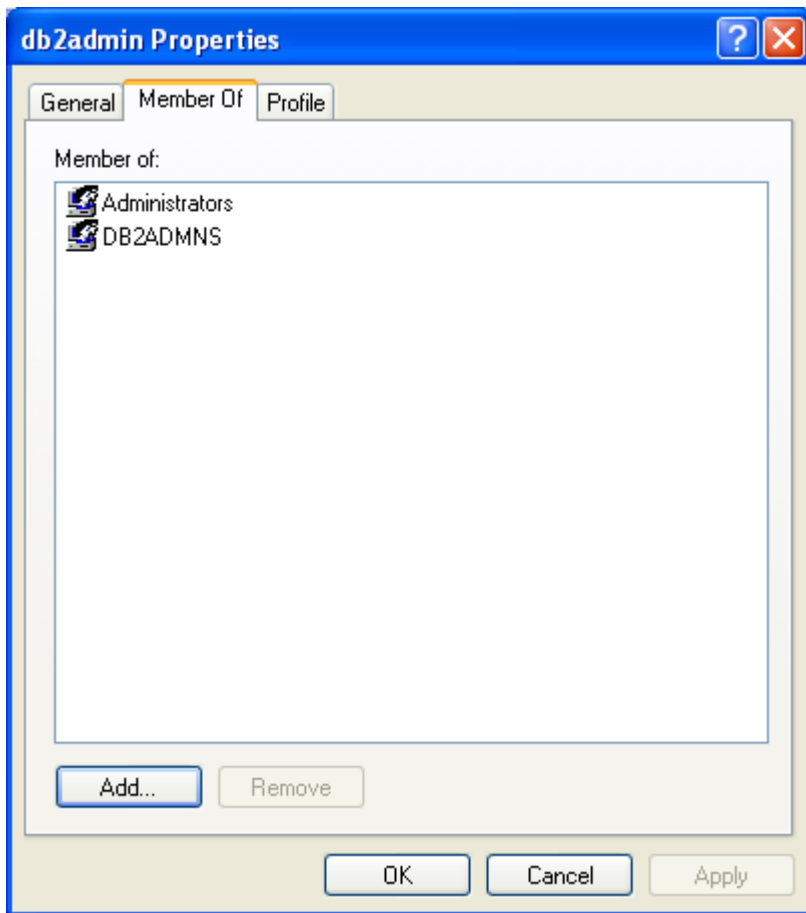
Before creating a database on DB2, make sure you have your corresponding Windows user accounts set up correctly. When you installed DB2, you probably set up the required user information that your DB2 instance will use to log on to your system. In this example the user account is “db2admin” for DAS User Id (set up during installation) and “dts” for Instance Owner User Id. Note, if you use “dts” as the Instance Owner User ID then this user will be the same user name used in apelonsserverprops.xml (and other XML config files used for your JDBC connections). You are limited to one DTS DB2 user for any given DTS DB2 database. This “dts” user name will also be used as the Schema name for the corresponding DTS DB2 database.



You should also have two groups set up, DB2ADMNS and DB2USERS:

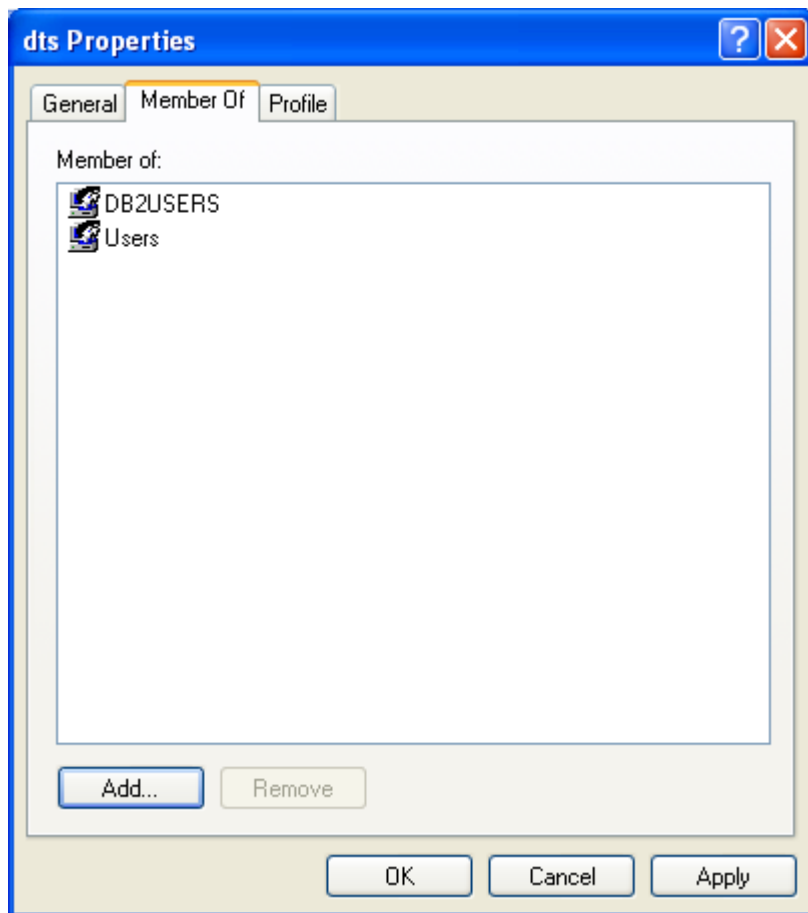


The “db2admin” user should be a member of DB2ADMINS group:





The “dts” user should be a member of DB2USERS group:



## DB2 Database for DTS

Launch DB2 Control Center and start Create Database Wizard that creates new database. The following screen is what you would see for the wizard for DB2 Enterprise Edition.

On Wizard Step #1, make sure you set default bufferpool and table space page size to 8K. You should also keep the database name and alias identical (e.g. “dts”).

**Create Database Wizard**

**Specify a name for your new database**

This wizard helps you create and tailor a new database. To create a basic database, type a new name, select a drive, and click Finish. If you want to tailor the database to your requirements, click Next to continue. [Task Overview.](#)

Database name: dts

Default path: C:\

Alias: dts

Comment:

Restrict access to system catalogs

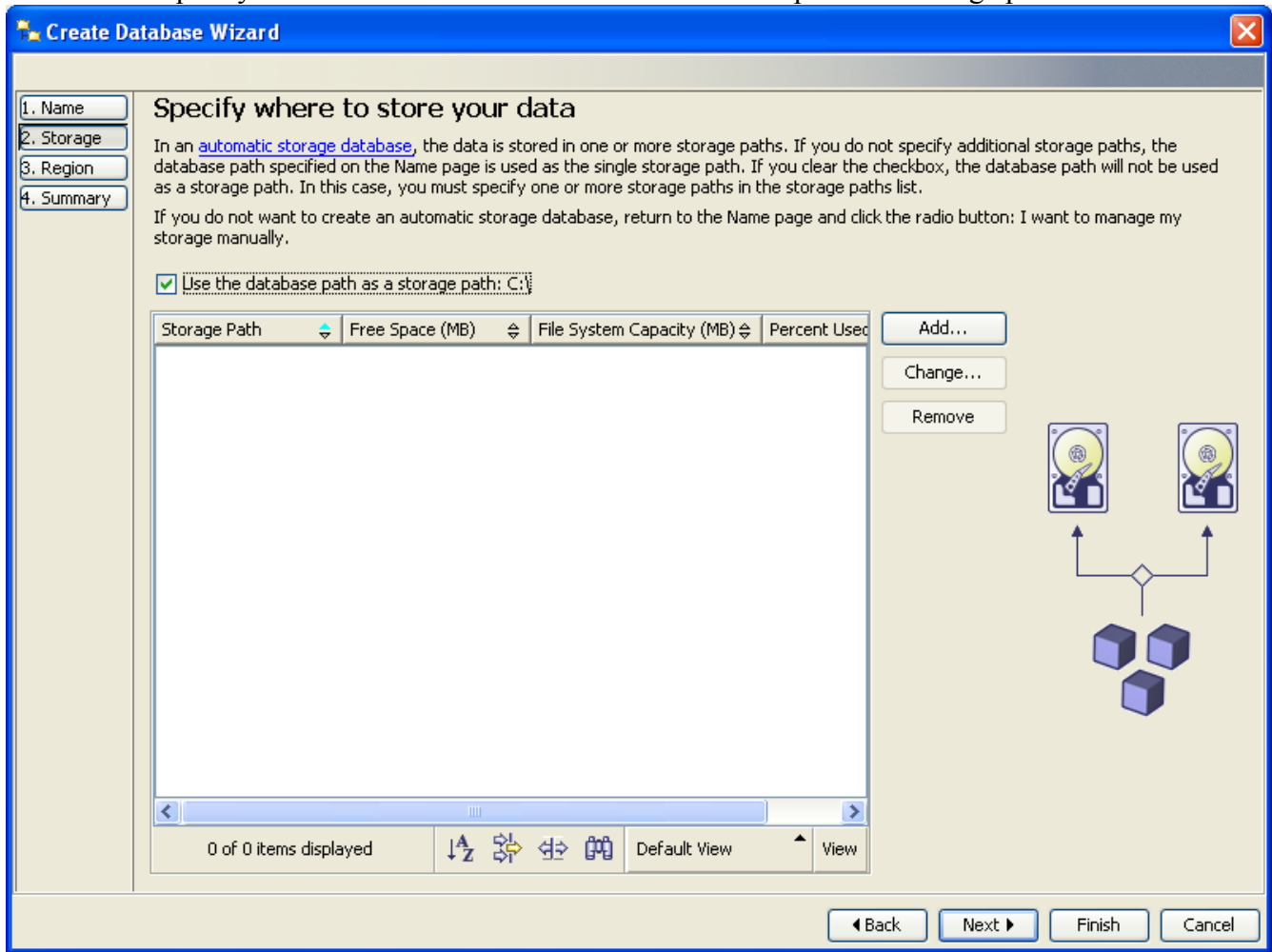
Let DB2 manage my storage (automatic storage)

I want to manage my storage manually

Default bufferpool and table space page size: 8 K

Next > Finish Cancel

On Wizard step #2 you can choose the default “Use the database path as a storage path” checkbox.



Next, ensure the codeset for Wizard Step #3 is set to UTF-8 and the Collating Sequence is set to System. Click FINISH button.

**Create Database Wizard**

1. Name  
2. Storage  
3. Region  
4. Summary

### Specify the locale for this database.

The locale (territory and code set) determines the set of characters your database uses. It also determines how different character strings are compared.

**Database locale**

Country/Region: default  
Territory: US  
Code set: UTF-8

**Collating Sequence**

- System: Character strings are sorted according to the code set you specify above.
- Identity: Character strings are sorted according to their hexadecimal value.
- Identity\_16bit: Character strings are sorted using the Compatibility Encoding Scheme for UTF-16: 8-Bit specification (CESU-8)
- UCA400\_NO: Character strings are sorted using the Unicode Collation Algorithm 4.0.0, with normalization on.
- UCA400\_LTH: Character strings are sorted as per UCA400\_NO, but using the Royal Thai dictionary rules for the Thai characters.
- Compatibility: Character strings are sorted using the DB2 version 2 collating sequence.
- NLSChar: Character strings are sorted using System with additional rules for the specific codeset/territory.

Back Next Finish Cancel

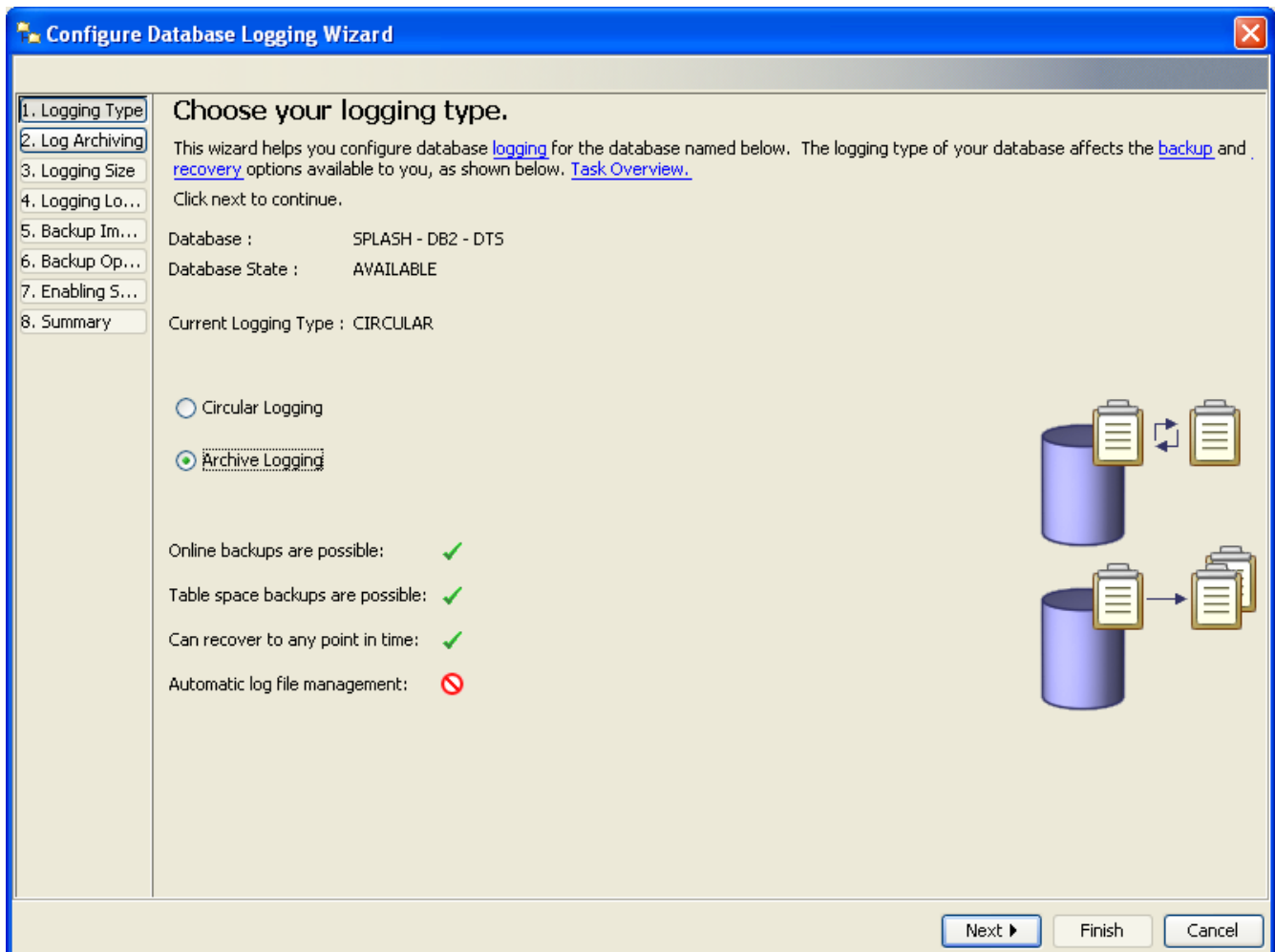
## Setting up DB2 Archive Logging for DTS Database

The default setup for DB2 is that log files are used in a circular manner. If you have 20 log files defined, DB2 cycles through the 20 logs and then re-uses log number 1 when log 20 becomes full. When a log file is reused, its previous contents are overwritten. Therefore, a log can be reused if the transactions it contains have already been committed or rolled back and externalized to the database disk. At the point where the maximum number of secondary logs is reached, if DB2 needs more log space to complete the transaction, a log full error occurs.

Log full error e.g.:

com.ibm.db2.jcc.am.SqlException: The transaction log for the database is full.. SQLCODE=-964, SQLSTATE=57011, DRIVER=4.7.85 This means there is not enough room in the logs to complete the transaction.

Log full is an undesirable condition, so we want to change the logging from Circular to Archive. You can do this from Control Center->All Databases->DTS (right click on DTS icon and select Configure Database Logging..). A Wizard popup appears. First choose Archive logging.



Next specify a location where you want to archive your logs. Use DB2 to automatically archive the log files.

**Configure Database Logging Wizard**

1. Logging Type  
2. Log Archiving  
3. Logging Size  
4. Logging Lo...  
5. Backup Im...  
6. Backup Op...  
7. Enabling S...  
8. Summary

### Choose how you would like to handle your archived logs.

Specify whether you would like to leave your archived logs in place, or use a user provided exit routine to archive the logs, or let DB2 archive your logs. If you choose to use a user provided exit routine to handle the log files, you MUST configure your system to implement the archiving. If you choose to allow DB2 to archive the log files, you must provide the primary location where your archived log files will be stored. Also provide a failure location that will be used if DB2 fails to access the primary location.

Manual archive log file handling

Use a user exit routine to archive the log files

Use DB2 to automatically archive the log files

Primary archive log location

Media Type: File System

Primary archive log path: C:\DB2\log-archives

Failure archive log location

Media Type: File System

Failure archive log path:

Back Next Finish Cancel

Next, the following settings are recommended:

**Number of primary log files (LOGPRIMARY) = 13**

**Number of secondary log files (LOGSECOND) = 100**

**Log file size (4KB) (LOGFILSIZ) = 20000**

This works out to approximately 9 GB of space needed for the database log files.

**Configure Database Logging Wizard**

1. Logging Type  
2. Log Archiving  
3. Logging Size  
4. Logging Lo...  
5. Schedule  
6. Summary

### Choose the number and size of your log files.

Specify the number of database log files to allocate, and their sizes. Remember that primary log files are pre-allocated, while secondary log files are allocated as needed.

Increasing these values will increase the disk requirements for the logs. If you find that secondary log files are frequently being created, you may be able to improve system performance by increasing the log file size or by increasing the number of primary log files.

Total Disk Space needed for Log Directory: 9040000 KB

Number of Primary Log Files: 13

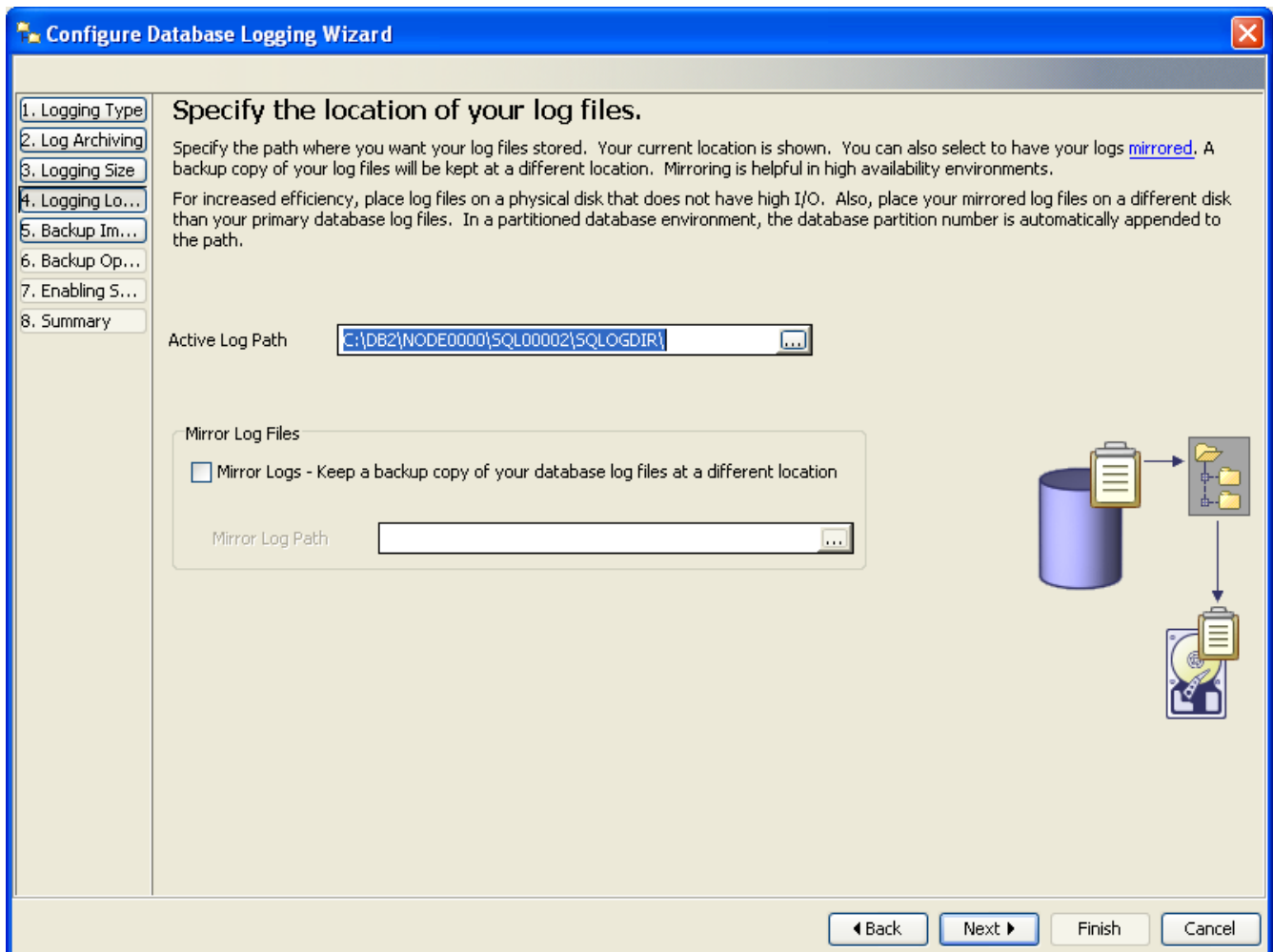
Number of Secondary Log Files: 100 (Default)

Size of Each Log File (4K Pages): 20000

Use infinite logging

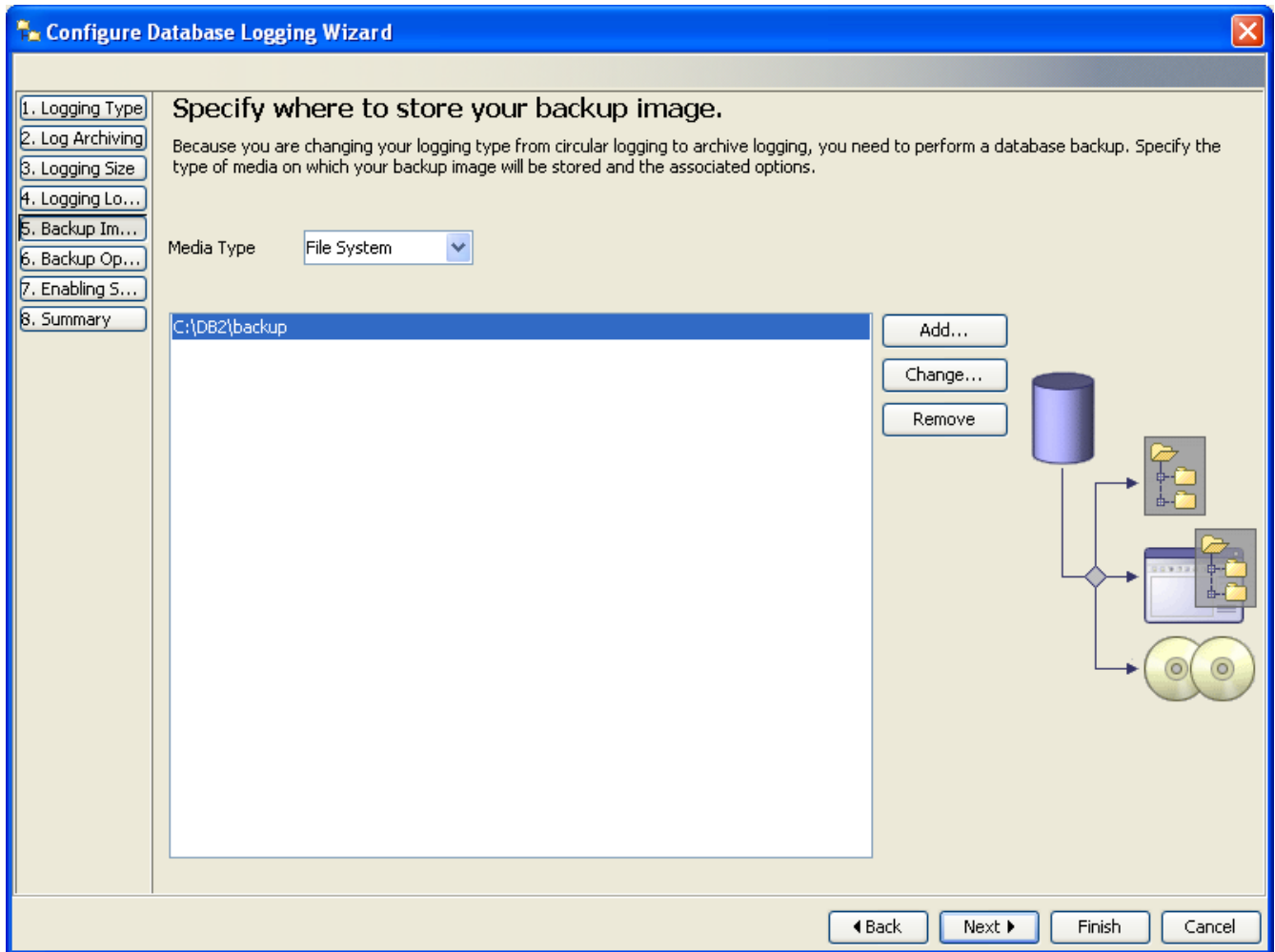
< Back   Next >   Finish   Cancel

Next, specify the location of your log files.

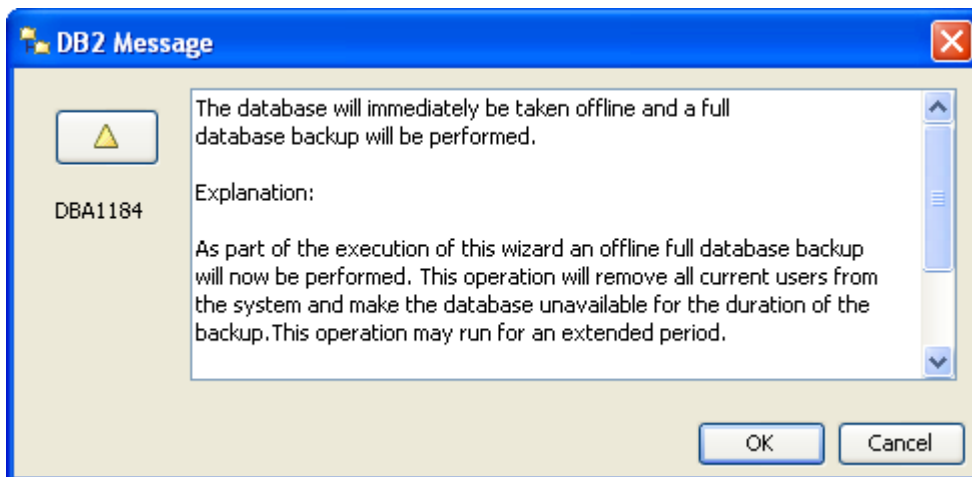




Next, specify your backup location on your disk. If you haven't created a backup folder do so now.



Click Finish and you will see this alert. Click OK.



## DB2 Tablespace for DTS

The default user tablespace in DB2 is USERSPACE1. You may optionally create your own tablespace for the DTS DB2 database. You can do this from Control Center->All Databases->DTS->Table Spaces (right click on Table Spaces icon to create). Name the Table Space DTS.

**Create Table Space Wizard**

1. Name  
2. Type  
3. Buffer Pool  
4. Read/Write  
5. Drive Speed  
6. Recovery  
7. Summary

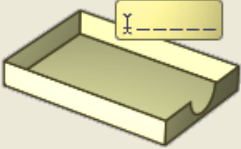
### Specify a name for your new table space.

This wizard helps you create a table space. Each page helps you to define a different aspect of the table space. On this page, type a name that describes the data that you plan to store. You can also add comments to better describe your new table space. You will be able to change the name and comments after your table space has been created, if required. [Task Overview](#).

Table space name:

Comment:

Let DB2 manage my storage (automatic storage)  
 I want to manage my storage manually



Next ► Finish Cancel

Make sure you also make the table space Large.

**Create Table Space Wizard** ✖

1. Name  
2. Type  
3. Buffer Pool  
4. Read/Write  
5. Drive Speed  
6. Summary

### Specify the type of table space you want to create.


There are four types of table spaces, each designed to store different kinds of data. Select the type of table space that you want to create. You will not be able to change the type after your table space has been created.

Regular  
Select Regular for indexes and any kind of data except temporary tables.

Large  
Select Large to store data from large or LOB table columns (long text, audio, video or images). Indexes can be stored here as well.

System temporary  
Select System temporary to give the database manager space for sorts, joins and other operations.

User temporary  
Select User temporary to give user applications space for declared temporary tables.



◀ Back   Next ▶   Finish   Cancel

It's recommended the extent and prefetch sizes are set to at least between 50 MB and 500 MB. Click Finish.

**Create Table Space Wizard**

**Specify the extent and prefetch sizes for this table space.**

The extent size affects how efficiently your data is stored. The prefetch size affects how quickly data can be read from the table space. You can change the prefetch size later, but not the extent size.

**Determining recommended settings**

What will be the average size of a table in this table space?

Less than 50 MB

Between 50 MB and 500 MB

Between 500 MB and 5 GB

Greater than 5 GB

How many containers in this table space are on separate physical drives (not logical partitions of the same drive)?

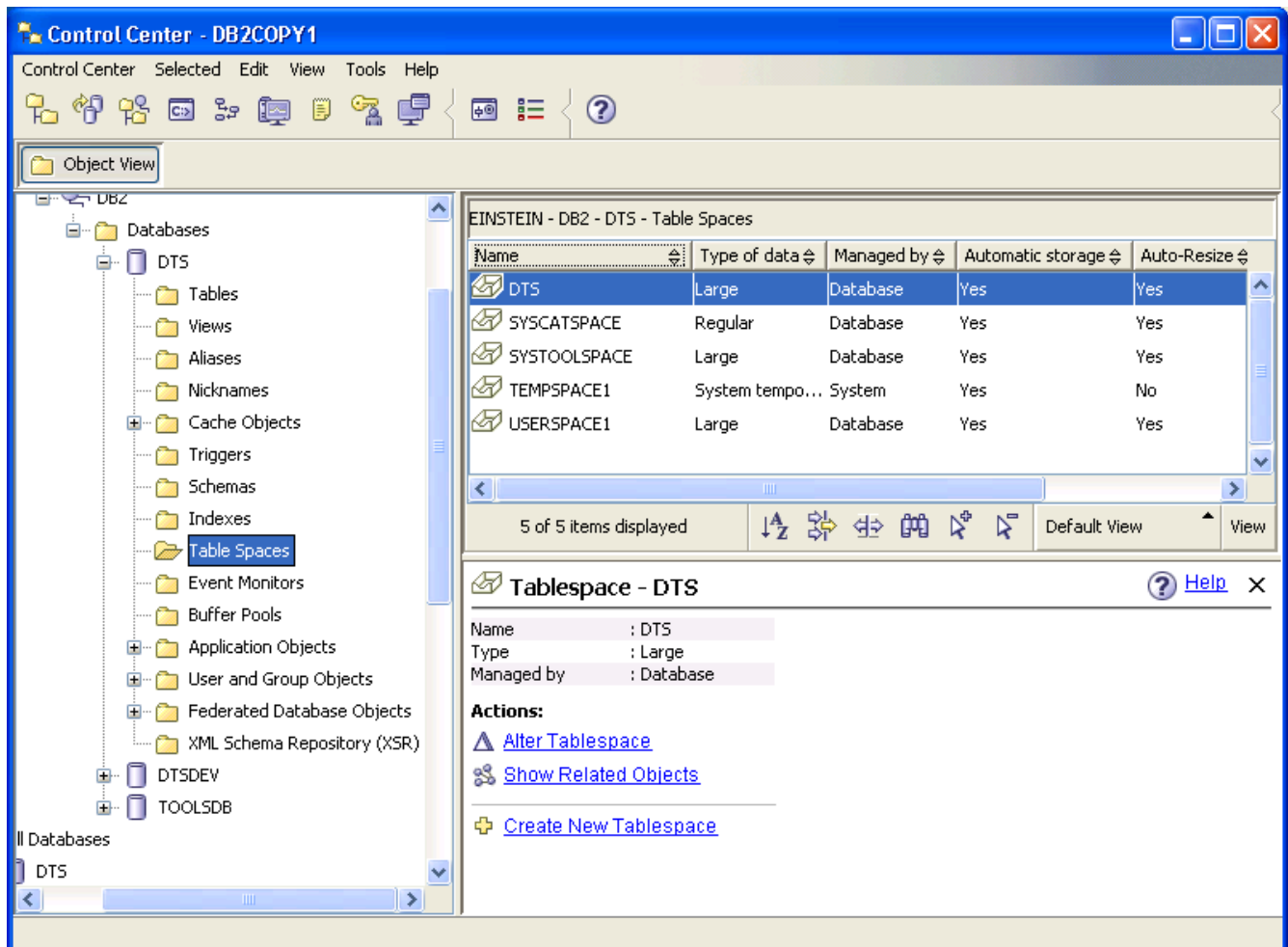
1

**Recommended settings**

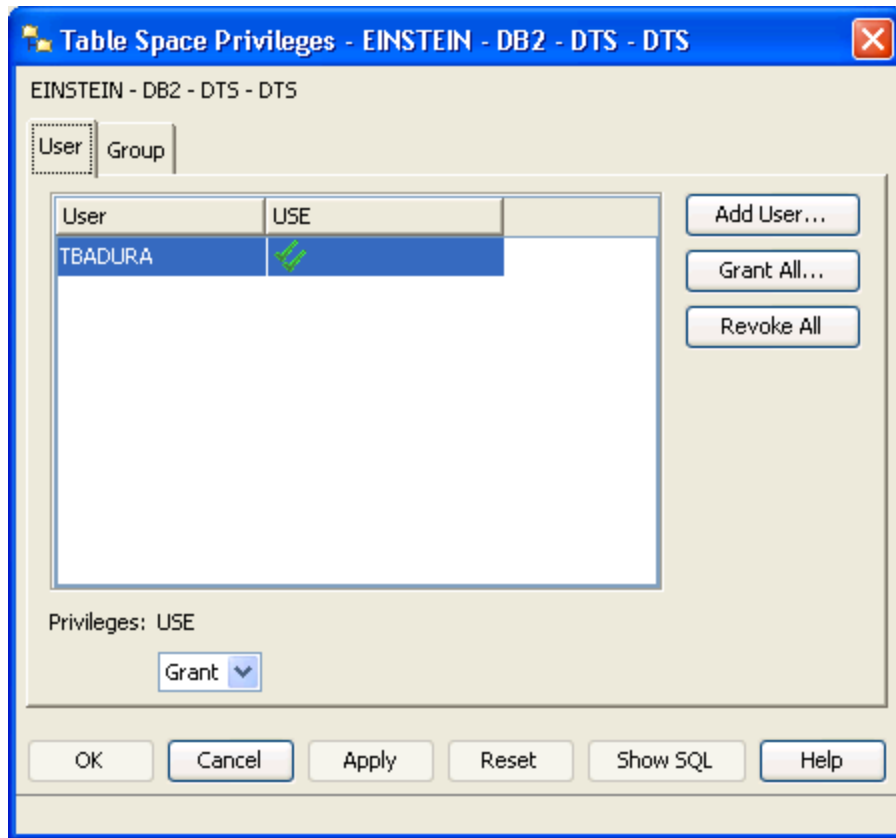
Extent size: 16 8 KB pages      Prefetch size: 16 8 KB pages

< Back    Next >    Finish    Cancel

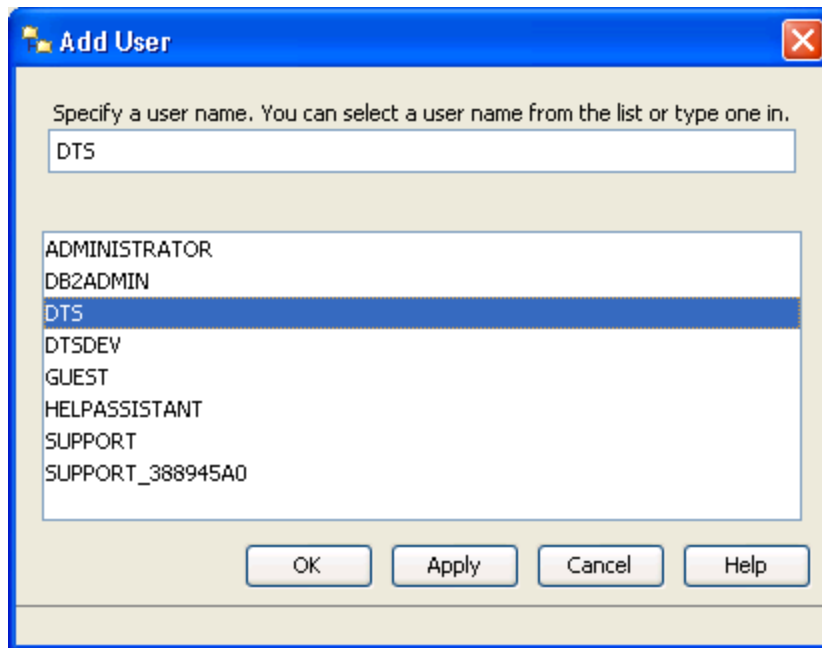
Once your tablespace is created verify that it is present in the Table Spaces list.



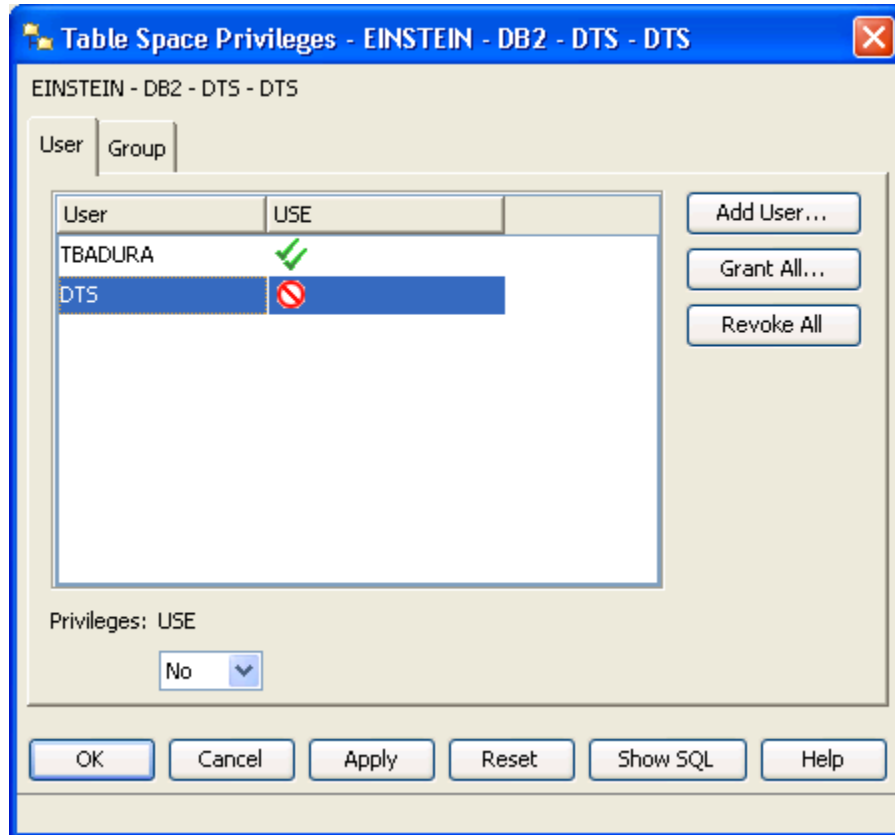
One final step. Right click on DTS in the list of tablespaces to get the following popup to appear. If you see DTS under USER and green checkboxes under USE, you are done. If not, as shown in the screenshot below, proceed to the next step.



Click the Add User button to add “DTS” as a User. Select “DTS” and click OK.

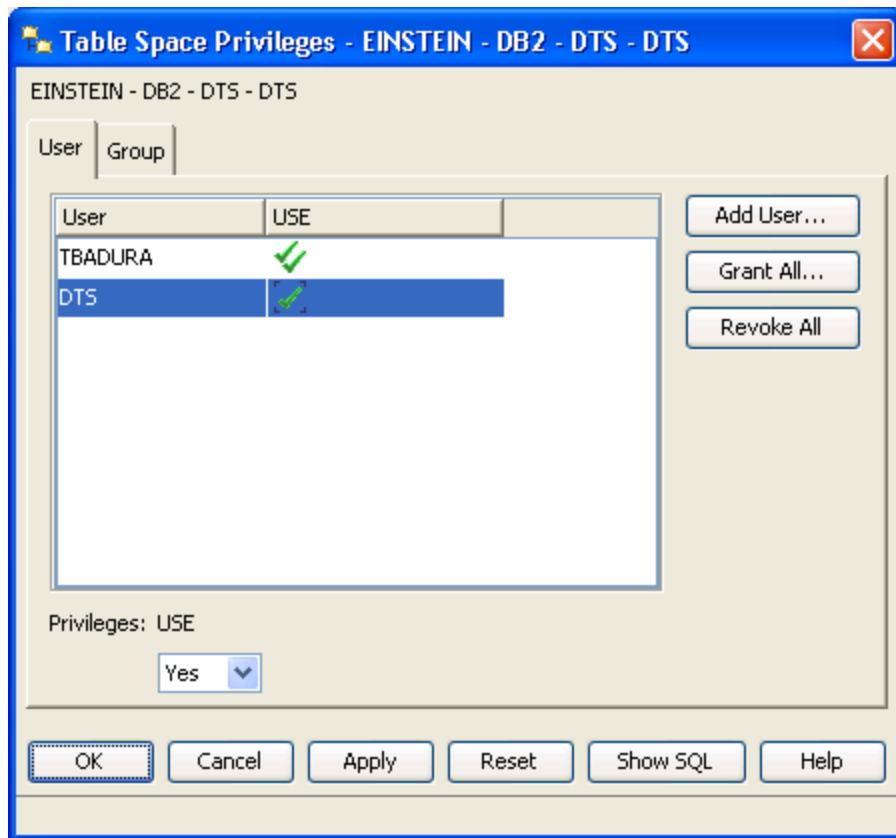


If “DTS” users privileges are set to No, then you have to change them to Yes or GRANT.



Click Apply button to save your change. One checkbox is for USE, two checkboxes is for GRANT.





Click OK to close window. Your custom tablespace is done. DB2 is now configured for DTS.