ArcGIS® 9

Installation Guide: ArcSDE® for IBM® DB2®

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Introduction

This installation guide includes information on installing ArcSDE® for DB2, setting up your database, and creating an ArcSDE service.

For guidelines on optimizing both your DB2 server and ArcSDE server configurations, see the topics in the Geodatabases and ArcSDE/Administering ArcSDE geodatabases section of the ArcGIS Server help prior to installing ArcSDE. These topics can be accessed by navigating to the help folder and double clicking index.htm. The help is also available from http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm.

Each ArcSDE media contains:

- An installation guide—The file you are reading now, which contains instructions for installation and setup on Windows® and UNIX® systems.
- Folders named after the database—Contain the installation files for that database
- documentation_server and documentation_sdk—These folders contain the ArcSDE Developer Help and the command references documentation for administration commands (SDEHELP.chm for Internet Explorer 5.0 and higher browsers and sdehelp.htm for all other browsers). The documentation is not installed with the UNIX setup program. If you are installing on UNIX and you want the documentation, you must copy it manually from these folders to disk. The Windows setup program will install the documentation.

The installation of ArcSDE for DB2 is a two step process. All steps are provided during the setup procedure.

1. Install ArcSDE for DB2.
2. Perform the postinstallation setup. After you define the SDE user environment, the postinstallation setup creates or upgrades the geodatabase repository, authorizes ArcSDE, and creates the ArcSDE service.

On Windows, the ArcSDE setup program will install the Microsoft Windows Installer if required, before continuing with the ArcSDE for DB2 install. After ArcSDE for DB2 is installed, you will have the option to start the postinstallation setup using the Post Installation wizard.

Installing ArcSDE on Windows

System requirements

For the latest in supported system environments, see http://support.esri.com, and navigate to Software > ArcSDE > System Requirements.

Your computer is required to meet these minimum system requirements to install ArcSDE for DB2.

Minimum system requirements

The following lists the minimum system requirements for ArcSDE for DB2.

Operating system

- Microsoft Windows Server 2003®
- Microsoft Windows 2000® service pack 3 or later

Free disk space

The server environment on Windows requires approximately 40 MB.

DB2 requirements

For the latest in supported DB2 environments, see http://support.esri.com, and navigate to Software > ArcSDE > System Requirements.

To obtain an authorization file

Each ArcSDE server machine requires an authorization file. Each new version of ArcSDE requires a new authorization file.

There are several ways to obtain an authorization file and register ArcSDE. You can visit https://service.esri.com to obtain an authorization file (by email, fax, phone, or mail) before installing ArcSDE. You can also obtain an authorization file and register ArcSDE using the Post Installation wizard after installing (this is the recommended method). See ArcSDE authorization for registration methods using the Post Installation wizard.

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Installation overview

The installation requires system administrator privileges on the server on which ArcSDE will be installed.

The installation procedure includes the following steps:

1. **Obtain an authorization file.**

   Each ArcSDE server machine requires an authorization file. See the topic To obtain an authorization file.

2. **Start the setup program.**

   Insert the ArcSDE media into the appropriate drive, browse to the setup.exe in the Windows folder, and follow the installation instructions on the screen to install the software. For detailed installation instructions, see the topic Installing the ArcSDE software.

3. **Complete the postinstallation setup.**

   It is recommended that you use the Post Installation wizard to complete the postinstallation setup. The postinstallation setup requires a valid database to be installed, set up, and available for connections. The Post Installation wizard will set up the geodatabase repository in the database, authorize ArcSDE, and create and start the ArcSDE service. The Post Installation wizard will automatically launch after installation is complete. Postinstallation setup must be completed to successfully create and use your geodatabase. For detailed instructions, see the topic Postinstallation overview.

Installing the ArcSDE software

Follow the steps below to install the ArcSDE software on Windows.

How to prepare to install the ArcSDE software

1. Obtain an authorization file for the machine on which you will be installing ArcSDE. This is not required to install the ArcSDE software but is required to complete the postinstallation setup. See the topic To obtain an authorization file.
2. Log in as a user with administrative privileges to the machine on which the software will be installed.
3. Close all applications on your computer.
4. Insert the ArcSDE media into the appropriate drive and follow the directions on How to install the ArcSDE software.

How to install ArcSDE

1. Navigate to the ArcSDEDB2 folder on the ArcSDE for Windows media and launch setup.exe to begin the installation. During the installation, you will be asked to read the license agreement and accept it or exit if you don't agree with the terms. The license agreement dialog contains a link to view the license agreement in another language.
2. To complete the software installation, follow the directions in the setup wizard.
3. After the ArcSDE software installation completes, the setup program will provide the opportunity to begin the postinstallation setup using the Post Installation wizard. Post Installation wizard will provide the options to set up the geodatabase repository in the database, authorize the software, and create and start the ArcSDE service. See the Postinstallation overview for more information.

Accessing ArcSDE documentation

The full set of ArcSDE documentation is available in the topics in the Geodatabases and ArcSDE/Administering ArcSDE geodatabases section of the ArcGIS Server help. These topics can be accessed by navigating to the help folder and double clicking index.htm. The help is also available from http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm.

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Postinstallation setup requirements

Once ArcSDE for DB2 is installed, you are provided with the option to start the Post Installation wizard. The Post Installation wizard will set up your ArcSDE database and ArcSDE service. However, before beginning the Post Installation wizard, you must manually create the SDE operating system user the DB2 database.

Follow these steps to manually create the SDE operating system user and set up the DB2 database:

1. **Create an operating system account with the user name SDE.**

   You must be logged in as a system adminitrator user to create the SDE user. You do not have to be logged on to your machine as the SDE user.

   Note: The following steps may be performed using the Script to create DB2 database.

2. **Create the DB2 sde database.**

   Before you can start the ArcSDE service, you must install and configure the database in which you will create your geodatabase. The documentation will refer to the ArcSDE database as sde, but you can use any name.

   This task can be performed using SQL or the Control Center.

   The following example uses SQL to create the database:

```
CREATE DATABASE sde USING CODESET

UTF-8 TERRITORY US COLLATE

USING SYSTEM USER TABLESPACE MANAGED BY DATABASE

USING (FILE 'd:\db2_data\sde.tbsp' 102400)
```

   Note: Adjust the container location and size to suit your installation.

   There is an example script provided in this guide to create the DB2 database and define instance and database configuration parameters. For this script, see Script to create DB2 database.

   DMS table spaces should be used for storing user data.

   If you are upgrading to ArcSDE 9.2 for DB2 and you are currently using DB2 UDB Ver 8.1, you will first be required to upgrade your DB2 database to DB2 UDB 8.2 FP11.

   If you are upgrading from an 8.3, 9.0, or 9.1 instance, you must first activate a database configuration parameter, ALT_COLLATE (Alternate Collating Sequence). Without setting up the ALT_COLLATE parameter, you are not authorized to create

a Unicode table in a nonUnicode database, and you will receive the following error message in your setup:

```
SQL0622N The clause "PARAMETER CCSID UNICODE" is invalid for this
database.
```

To set up the ALT_COLLATE, you can use the following command:

```
UPDATE DATABASE CONFIGURATION FOR <database> USING ALT_COLLATE
IDENTITY_16BIT
```

If you are creating a new geodatabase at 9.2, you can explicitly specify the code page UTF-8 in the CREATE DATABASE statement with the USING CODESET clause. The CREATE DATABASE statement with USING CODESET UTF-8 clause implies that the database can contain character data in either UTF-8 or UCS-2 encoding. For example

```
CREATE DATABASE <database> USING CODESET UTF-8 TERRITORY US
COLLATE
```

3. Configure the sde database and DB2 UDB instance

For the sde database, you must set the following parameters. Values provided here are the minimum required values for that parameter. You only need to set ALT_COLLATE IDENTITY_16BIT when using an existing database.

```
Application Heap size: 2048 (APPLHEAPSZ)

Application Control Heap size: 2048 (APP_CTL_HEAP_SZ)

Log primary (number): 10 (LOGPRIMARY)

Log file size: 1000 (LOGFILSIZ)

db2 connect to sde user (db2admin) using (password)

db2 update db cfg for mydb using ALT_COLLATE IDENTITY_16BIT

db2 update db cfg for mydb using APPLHEAPSZ 2048

db2 update db cfg for mydb using APP_CTL_HEAP_SZ 2048

db2 update db cfg for mydb using LOGPRIMARY 10

db2 update db cfg for mydb using LOGFILSIZ 1000
```

Without these changes, you will not be able to spatially enable the database or successfully complete the ArcSDE postinstallation setup.

4. You must grant dbadm on the database to the SDE user.

For example:

```
db2 connect to sde user (db2admin) using (password)
```

```
db2 grant dbadm on database to user sde
```

5. Spatially enable the sde database using Spatial Extender tools

As the dbadmin user, use the Control Center, right-click the sde database, choose the Spatial Extender option, and click Enable.

It is also possible to spatially enable the database from the command line. At the command line, you can execute the following command:

```
db2se enable_db dbname [-l userid] [-p password]
```

Notes

- ArcSDE 9.2 requires the use of a DB2 global temporary table (DECLARE GLOBAL TEMPORARY TABLE). As per DB2 documentation, to declare global temporary tables, either 'SYSADMIN or DBADM privileges' or 'USE privilege on a USER TEMPORARY table space' is required. A user temporary table space can be created using the DB2 Control Center or from the command line using the CREATE USER TEMPORARY TABLESPACE command.

  For example

  ```
  CREATE USER TEMPORARY TABLESPACE sdespace PAGESIZE 4 K
  MANAGED BY SYSTEM USING ('d:\db2_data\sdespace' )
  EXTENTSIZE 16 OVERHEAD 10.5 PREFETCHSIZE 16
  TRANSFERRATE 0.14 BUFFERPOOL "IBMDEFAULTBP";

  COMMENT ON TABLESPACE sdespace IS '';
  ```

  You must also grant the use of all table spaces to public. For example, using SQL:

  ```
  GRANT USE OF TABLESPACE regtbs TO PUBLIC WITH GRANT
  OPTION;
  ```

- To be able to clean out unneeded ArcSDE processes from the PROCESS_INFORMATION system table, the sde user must have authority to use the DB2 Snapshot API. This requires the sde user be added to an operating system group, and that group must be granted SYSMON authority.

  For example, if you define a group called sysmon, which contains the sde user, you can set the value of the SYSMON_GROUP instance parameter to the value sysmon using the following commands:

  ```
  UPDATE DBM CFG USING SYSMON_GROUP sysmon

  db2stop
  ```

```
db2start
```

Related concepts found in the help

You can get more information related to the SDE user and permissions in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

The ArcSDE administrative account

User permissions

SQL script to create DB2 database

Below is an example script to create a DB2 database. After database creation, you'll also need to spatially-enable the database. Replace variables such as database name, password names, and container names/paths.

```
FORCE APPLICATION ALL;

DB2STOP;

DB2START;

DROP DATABASE mydb;

FORCE APPLICATION ALL;

DB2STOP;

DB2START;

CREATE DATABASE mydb USING CODESET UTF-8 TERRITORY US COLLATE USING
SYSTEM USER TABLESPACE MANAGED BY DATABASE USING (FILE
'/db2_data/mydb/sdetbsp' 51200) EXTENTSIZE 16 PREFETCHSIZE 16
OVERHEAD 24.1 TRANSFERRATE 0.9;

CONNECT TO mydb user db2admin using <your password>;

CREATE REGULAR TABLESPACE regtbs PAGESIZE 4 K MANAGED BY DATABASE
USING ( FILE 'd:\db2_data\mydb\regtbs' 102400) EXTENTSIZE 32
OVERHEAD 24.1 PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE REGULAR TABLESPACE idxtbs PAGESIZE 4 K MANAGED BY DATABASE
USING ( FILE 'd:\db2_data\mydb\idxtbs' 51200) EXTENTSIZE 32 OVERHEAD
24.1 PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE LONG TABLESPACE lobtbs PAGESIZE 4 K MANAGED BY DATABASE USING
( FILE 'd:\db2_data\mydb\lobtbs' 51200) EXTENTSIZE 32 OVERHEAD 24.1
PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE USER TEMPORARY TABLESPACE sdespace PAGESIZE 4 K MANAGED BY
SYSTEM USING ('d:\db2_data\ sdespace' ) EXTENTSIZE 16 OVERHEAD 10.5
PREFETCHSIZE 16 TRANSFERRATE 0.14 BUFFERPOOL "IBMDEFAULTBP";

GRANT USE OF TABLESPACE regtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE idxtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE lobtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE sdespace TO PUBLIC WITH GRANT OPTION;
```

```
COMMENT ON TABLESPACE sdespace IS '';

GRANT DBADM ON DATABASE TO USER SDE;

UPDATE DATABASE CONFIGURATION FOR mydb USING APP_CTL_HEAP_SZ 2048;

UPDATE DATABASE CONFIGURATION FOR mydb USING APPLHEAPSZ 2048;

UPDATE DATABASE CONFIGURATION FOR mydb USING LOGFILSIZ 1000;

UPDATE DATABASE CONFIGURATION FOR mydb USING LOGPRIMARY 10;

FORCE APPLICATION ALL;

DB2STOP FORCE;

DB2START;
```

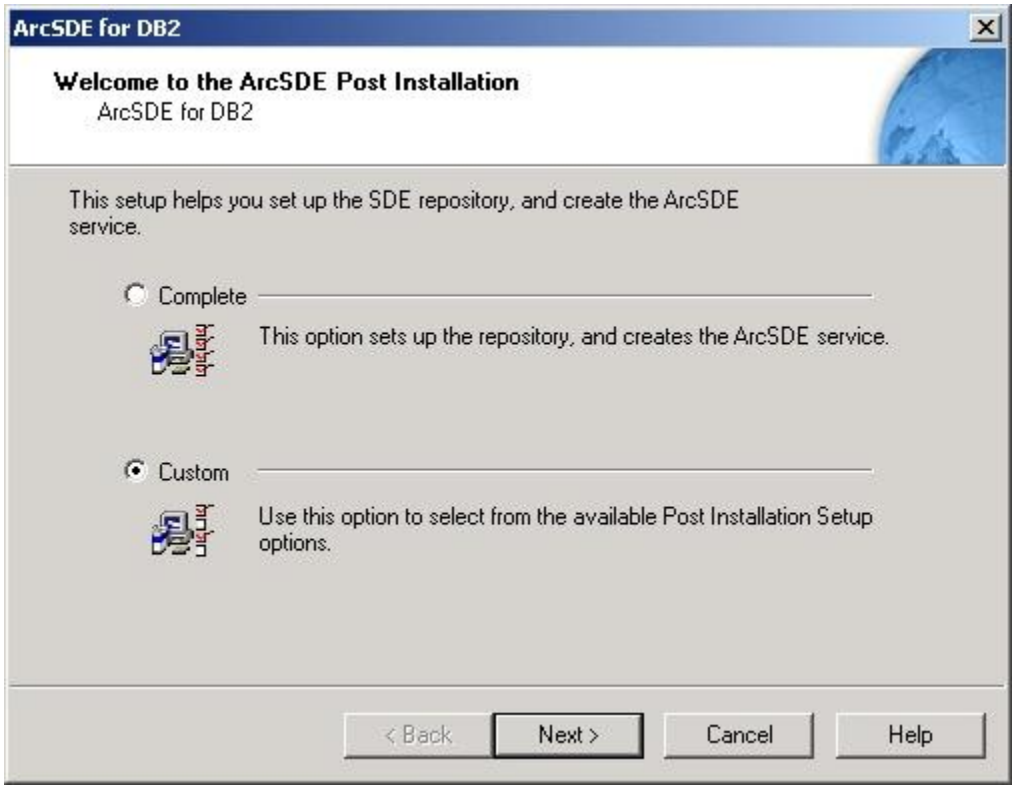
Postinstallation overview

Once ArcSDE for DB2 is installed, you must create the SDE user if you have not already done so, set up your SDE database, and create the ArcSDE service. Before beginning the postinstallation setup, you must manually set up the DB2 database and create the SDE operating system user. See Postinstallation setup requirements for details on creating the SDE user and DB2 database.

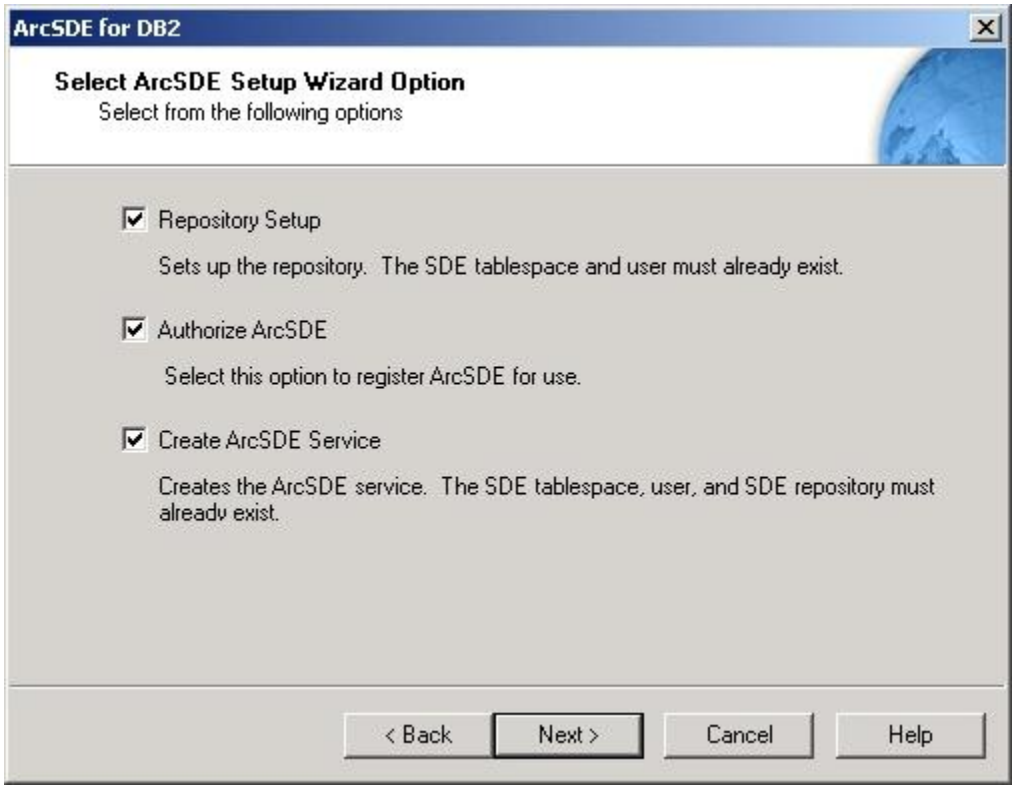
The Post Installation wizard provides an easy way to set up the geodatabase repository, authorize ArcSDE for use, and create the ArcSDE service. These steps can also be performed manually. The Post Installation wizard will guide you through the following options:

- **Setting up the ArcSDE repository**—This is a crucial step in the postinstallation setup. This option in the Post Installation wizard will allow you to define the ArcSDE configuration files to be used by ArcSDE in the database. If you modified a dbtune.sde, dbinit.sde, or giomgr.defs file and want to use one or all of those, you'll have a chance to include them here. Accept the defaults if you don't have any custom files to use. The ArcSDE system tables, geodatabase system tables, stored procedures, and locators are all created when setting up the geodatabase repository. If this step does not run successfully, your ArcSDE service will not start and you won't be able to make any connections to the geodatabase. This step can be performed manually with the sdesetup command. See To manually set up the SDE repository for details.
- **Authorizing ArcSDE**—Each ArcSDE server requires a unique authorization file. This postinstallation option authorizes your geodatabase repository using the authorization file. The ArcSDE service will not start and direct connections will be refused unless your repository has been configured using a valid authorization file. You can reconfigure your geodatabase repository with an updated authorization file by running through this option in the Post Installation wizard again at a later time or by using the sdesetup command with the update_key operation. (See the ArcSDE Command Reference for details.)
- **Creating the ArcSDE service**—Once ArcSDE has been authorized for use, the ArcSDE service can be created. If the information provided to create the ArcSDE service is complete, the Post Installation wizard will start the ArcSDE service for you.

Choose a Complete or a Custom postinstallation setup.



A Complete installation will guide you through all of the postinstallation options. Selecting a custom installation will allow you to choose from any of the available postinstallation options, as shown below.



The Custom installation is recommended for advanced users or users upgrading an existing ArcSDE database. See the topic, Upgrade information for details.

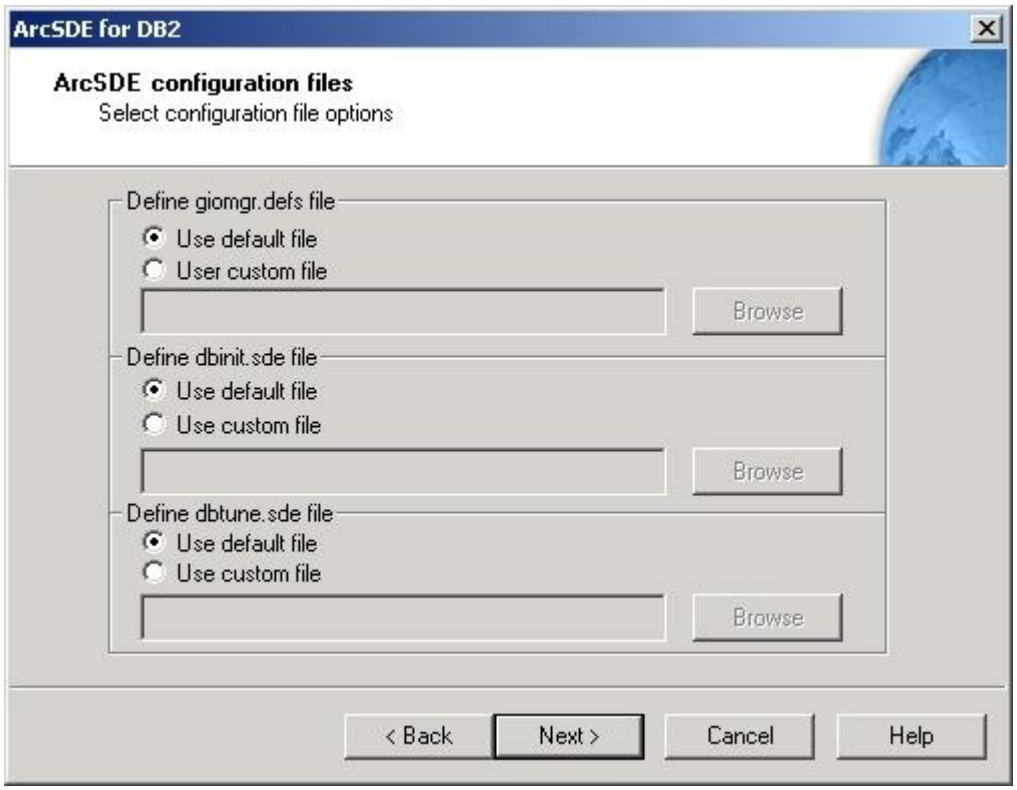
If you need to start the Post Installation wizard at a later time (for example, if you ran the first two options of the postinstallation setup, then wanted to come back later and run the third option to create and start the service), you can access the wizard from Start > Programs > ArcGIS > ArcSDE > ArcSDE for DB2 Post Installation.

Setting up the geodatabase repository

Once the SDE table space and user are created, you can set up the geodatabase repository.

1. **Specify which configuration files to use.**

   Options are provided to specify custom giomgr.defs, dbinit.sde, and/or dbtune.sde files.



Note: You should alter your dbtune.sde file to define the storage of your repository tables. However, if you do not have custom files, you may accept the default configuration files.

2. **Connect to DB2 and create the repository.**

   After the configuration files are defined, you can connect to DB2 to set up the geodatabase repository. Setting up the geodatabase repository is a crucial step in the postinstallation setup. The repository contains all the system information for administering the geodatabase. If you do not use the Post Installation wizard to complete this portion of the postinstallation setup, you must manually execute the %SDEHOME%\bin\sdesetup command at the DOS prompt.

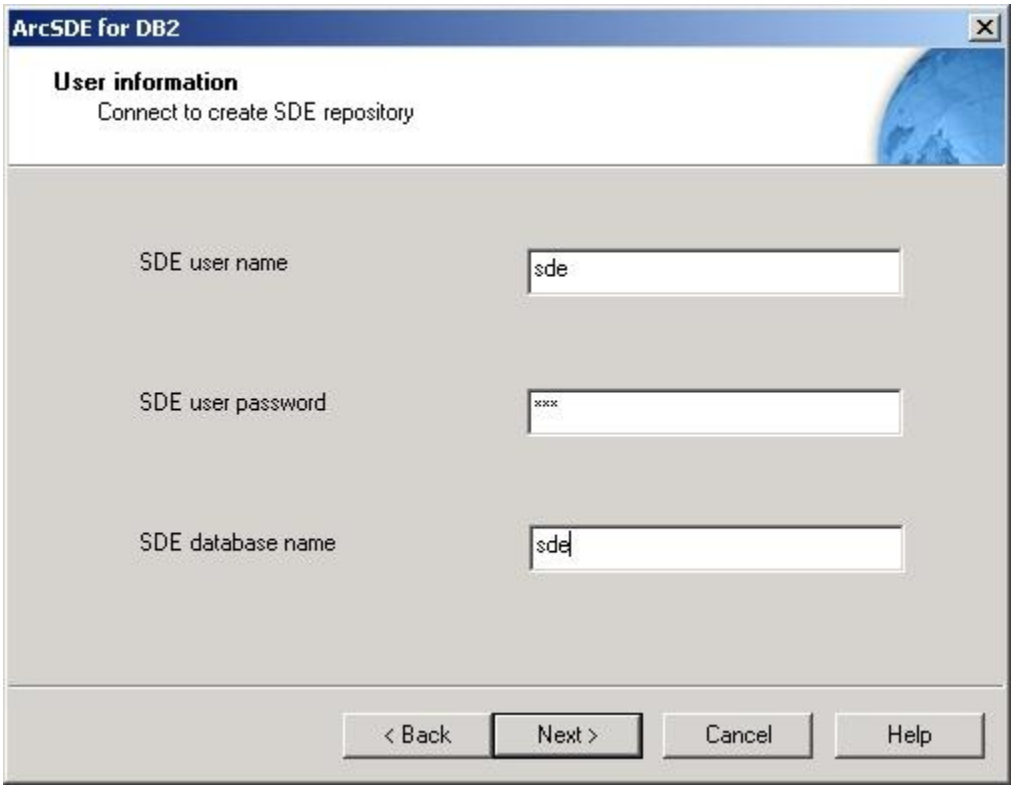
Refer to the sdesetup command in the Command Reference for specifics on what is occurring with this operation.

If you are upgrading ArcSDE The Post Installation wizard will not import a custom dbtune.sde file. In the Define dbtune.sde file section, as shown in the above dialog box, do not choose to use a custom dbtune.sde file when upgrading ArcSDE. If you want to use a custom dbtune.sde file, you must manually import the custom file using the sdedbtune -o import command. For more information on the sdedbtune command, see the ArcSDE command references help available from Start > Programs > ArcGIS > ArcSDE > Command References, on the ArcSDE media at \documentation_server\Admin_Cmd_Ref, or in %SDEHOME%\Documentation\Admin_Cmd_Ref.

Provide your SDE user password and database name to connect to DB2 and create the geodatabase repository.

Enter the name of the database if it is not called sde. Part of this operation will create an entry in the %SDEHOME%\etc\dbinit.sde file such as this:

```
set SDE_DATABASE=sdesnow
```



Tip

- It is important that you enter the correct database name. This defines in what database the repository creation will occur. Each database you spatially enable must have its own repository. Cross-database access of spatial data is not supported. See Using multiple spatially enabled databases for additional

information.

To manually set up the geodatabase repository

If you do not use the Post Installation wizard to set up the geodatabase repository, you must manually execute the %SDEHOME%\bin\sdesetup command at the DOS prompt.

Refer to the sdesetup command in the ArcSDE Administration Command Reference (%SDEHOME%\Documentation\Admin_Cmd_Ref) for specifics on what is occurring with this operation.

Provide your SDE user password and database name to connect to DB2 as the SDE user and create the repository.

Related concepts found in the help

You can get more information related to setting up the repository in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

The dbtune file and the DBTUNE table

DBTUNE configuration keywords

DBTUNE configuration parameter name-configuration string pairs

The giomgr.defs file and the SERVER_CONFIG table

The dbinit.sde file

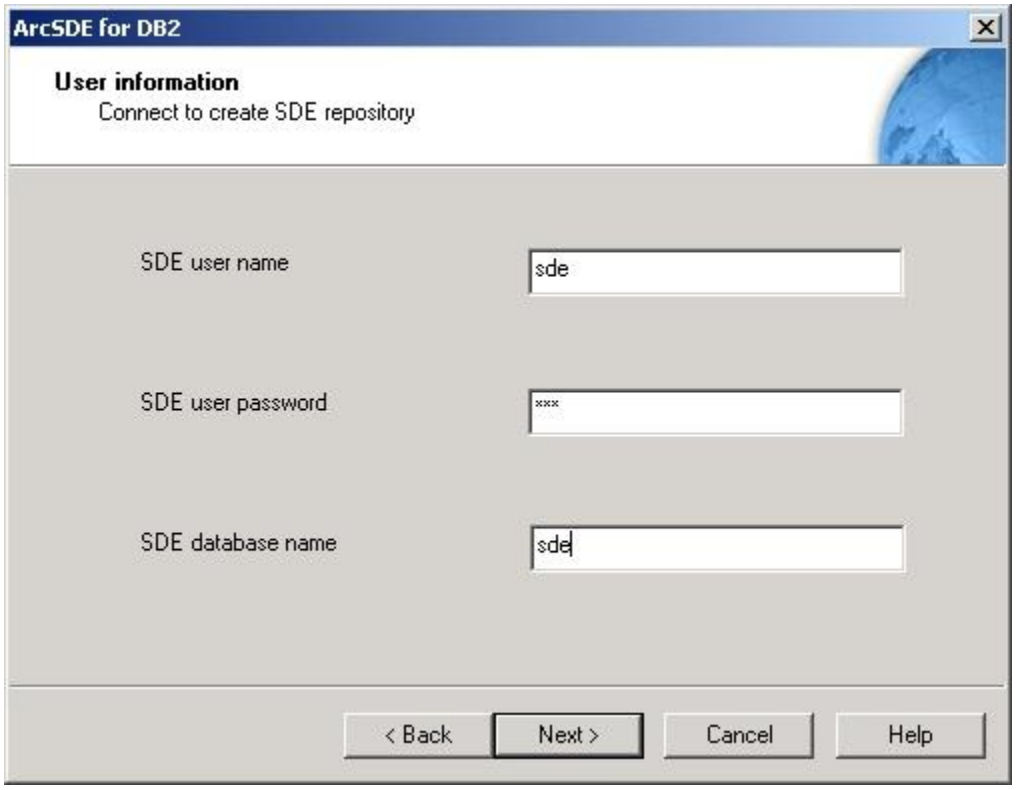
System tables of a geodatabase in DB2

ArcSDE authorization

Each ArcSDE server requires a unique authorization file. You can obtain an authorization file using the Post Installation wizard. If you have already obtained your authorization file, the authorization portion of the Post Installation wizard will configure your ArcSDE repository using your authorization file.

The ArcSDE service will not start unless your geodatabase repository has been configured using the valid authorization file.

To reconfigure the geodatabase repository with an updated authorization file, run through the authorization portion of the postinstallation setup again. To launch the Post Installation wizard at a later time, go to Start > Program Files > ArcGIS > ArcSDE > ArcSDE for DB2 Post Installation. If the software authorization option is not selected with the repository set up option, you will also be required to provide the following information to connect to the spatial database:



Provide your SDE user name, password, and database name to connect to DB2.

To successfully configure your geodatabase repository using your authorization file:

Choose your registration option

You can configure the geodatabase repository using two methods:

1. **I have installed my software and need to register it.**

   Select this option if you do not have an authorization file already. There are several methods to provide your registration information.

Select the registration method you would like to use. This is the method in which you will provide your registration information, including the registration number you received with the software. After providing your registration information, your authorization file will be sent to you.

Tip

- Register now using the Internet enables you to receive the authorization file immediately. It requires an Internet connection.

2. **I have received an authorization file from ESRI and am now ready to finish the registration process.**

Choose this option if you have already received your authorization file from ESRI Customer Service. If you choose this option, you can either browse to the

location of the file (if you received the file by email), or you can manually enter the authorization information.

If you choose the option to browse to an authorization file on disk, you are required to Choose or enter the location of your authorization file that you received from Customer Service.

If you choose the option to manually enter the authorization information, you are required to provide the following information: (This information can be obtained from the authorization file you received by mail, email, telephone, or fax.)

- Feature name
- Version number
- Time-out date
- Registration number
- Authorization code

To manually authorize ArcSDE

If you do not use the Post Installation wizard to authorize your software, you must manually authorize ArcSDE for use using the sdesetup command.

You can manually register ArcSDE with an authorization file in two ways:

- If you already have an authorization file, run the sdesetup command with either the install or upgrade operation and specify the location of the authorization file with the -l option. See To manually set up the ArcSDE repository.
- If you don't yet have an authorization file, you can run the sdesetup command with the install or upgrade operation **without** specifying the -l option. After you contact ESRI and receive your authorization file, you can run sdesetup again using the update_key operation and specifying the -l option.

The syntax for using the update_key operation with the sdesetup command is as follows:

```
sdesetup -o update_key -d
<ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
-l <key> [-u <DB_Admin_user>] [-p <DB_Admin_password>]
[-H <sde_directory>] [-D <database>] [-s datasource] [-i
<service>]
[-N] [-q]
```

Where <key> is the authorization key or the location of your authorization file

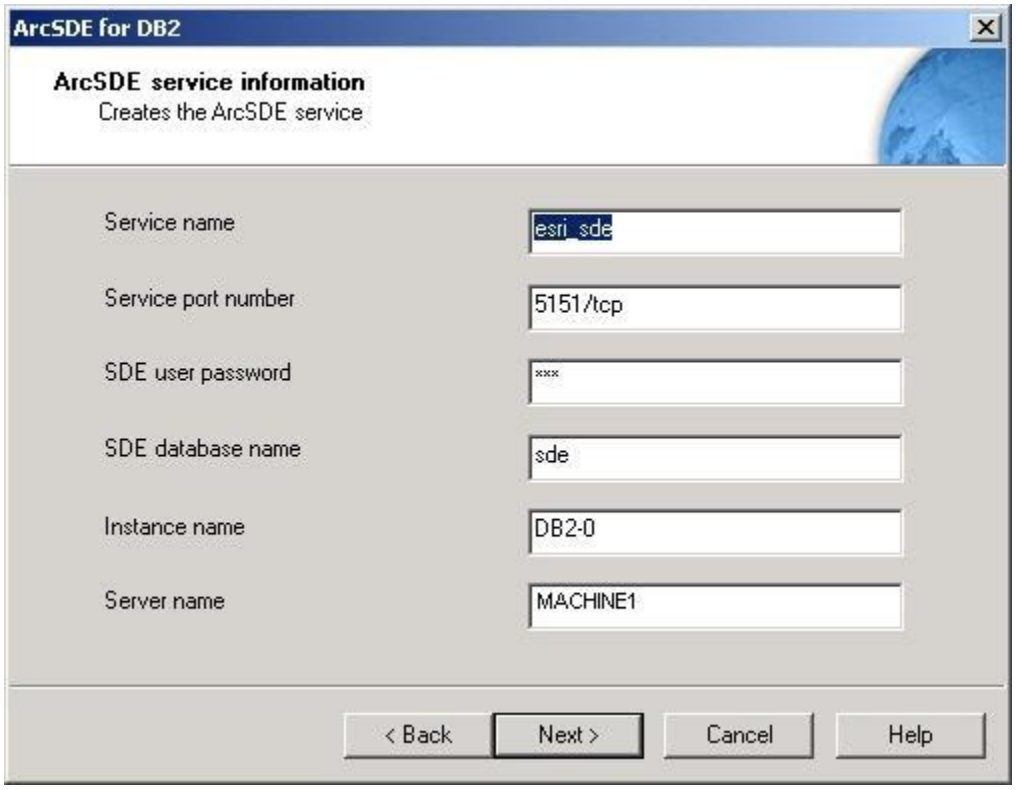
For example:

```
sdesetup -o update_key -d DB2 -l c:\license\keycode.txt -u sde
-p sde
```

Refer to the sdesetup command in the ArcSDE Administration Command Reference (%SDEHOME%\Documentation\Admin_Cmd_Ref) for specifics on what is occurring with this operation.

Creating the ArcSDE service

This option in the Post Installation wizard allows you to create an ArcSDE service. You must provide a unique TCP/IP port number and service name, the SDE user password that you used for your SDE user, the SDE database name, instance name, and server name. The server name is required to determine the server to which you will be connecting; by default, your machine name is provided. All fields are required.



This postinstallation option will add an entry to the services file of your server machine (usually, this is c:\WINNT\system32\drivers\etc\services). If you need to modify your service later, you can use the sdeservice command at the DOS prompt or run through this option in the Post Installation wizard again. Information on the sdeservice command can be found in the ArcSDE Administration Command Reference (%SDEHOME%\Documentation\Admin_Cmd_Ref).

To manually create the ArcSDE service

If you don't use the Post Installation wizard to create or modify your ArcSDE service, you can use the sdeservice command at the DOS prompt to manually create or modify it. Information on the sdeservice command can be found in the ArcSDE Administration Command Reference (%SDEHOME%\Documentation\Admin_Cmd_Ref).

Related concepts found in the help

You can get more information related to the ArcSDE service in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

An overview of ArcSDE geodatabase connections

Starting an ArcSDE service

Stopping an ArcSDE service

Pausing and resuming an ArcSDE service

Accessing an ArcSDE service through a firewall

Troubleshooting the ArcSDE service

Multiple installs on the same machine

It is possible to install more than one ArcSDE service for different DBMSs on the same machine. However, some ESRI products share the same administrator commands (for example, sdeservice and sdemon); therefore, to successfully run more than one ArcSDE service on the same machine, you must do the following:

1. Before running the postinstallation setup, make sure the ArcSDE installation that you want to administer is the ESRI product listed first in your System PATH.
2. Make sure the SDEHOME variable in your PATH is set to your current ArcSDE installation location.

Steps 1 and 2 above apply whenever administrator commands for ESRI products are run. If you do not change your System PATH, the administrator commands for the wrong product may be run.

3. Run the ArcSDE postinstallation setup for the chosen DBMS.
4. You can now manage the multiple ArcSDE services/installations by switching back and forth between ArcSDE environments through the System Control Panel or by using the ArcSDE administrative commands with the -H option set to the appropriate SDEHOME location.

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The next steps

After you finish the postinstallation setup, you're ready to add other users, set up client connections, and add data to your geodatabase. The following is a list of help topics to assist you in these tasks. Topics can be found in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the titles.

TASK	RELATED TOPICS
Geodatabase users	Adding users to an ArcSDE geodatabase User permissions Grouping users by access needs
Client connections	An overview of ArcSDE geodatabase connections Setting up clients for a direct connection Creating spatial database connections
Adding data	An overview of adding datasets to the geodatabase The DB2 Spatial Extender geometry type

Upgrade information

IMPORTANT information for users upgrading:

- **Direct upgrades are only supported from ArcSDE 8.3, 9.0 and ArcSDE 9.1. Upgrading directly from ArcSDE 8.2.x, 8.0.x, or 3.x is not supported.** Moving from any of these unsupported released versions of ArcSDE to the current ArcSDE release will require the server to first be upgraded to either ArcSDE 8.3, 9.0, or 9.1 and then upgraded to ArcSDE 9.2. It is also possible to export all your data using the sdeexport command and then import it into ArcSDE 9.2 or use ArcCatalog to export and import the data..
- **Other upgrade processes are supported. See below for more information.**
- **Upgrades from Beta or Prerelease are NOT supported.**

It is recommended that you create a backup of your existing ArcSDE database before upgrading. Contact your database administrator (DBA) for correct protocol.

There is no automated upgrade process to ArcSDE 9.2 for:

- An existing SDE 3.0.2 for DB2 UDB server
- A DataJoiner implementation using the Spatial Extender

In both cases, you will have to re-create your database. You can use the sdeexport tool that came with your SDE 3.x or DataJoiner implementation to create an sdeexport file of your layers. After installation of ArcSDE 9.2 for DB2 and creation of a new spatially enabled database, you can then use the 9.2 sdeimport tool to import your old sdeexport files. Another option is to use the ArcCatalog application (part of ArcGIS Desktop 9.2) to export your geodatabase (the 3.x one) to the ArcGIS 9.2 geodatabase. You may also use a backup of your database by restoring and migrating the database to a newer version of DB2, and then upgrading ArcSDE. Contact your DBA for correct protocol.

Before installing the latest version of ArcSDE, you must uninstall your previous version of ArcSDE. The setup wizard will prompt you to remove your existing installation if you do not uninstall before starting the latest version of ArcSDE setup program.

When upgrading from a supported release of ArcSDE, there are two recommended upgrade paths:

- Upgrading without keeping the existing service for transition purposes
- Upgrading while keeping the existing service for transition purposes

Upgrading without keeping the existing service

As a precaution, it is strongly recommended that you create a back up of your database, including all previous geodatabase system tables and layer data, before upgrading your ArcSDE installation.

Upgrading without keeping the older service, includes steps that are similar to a new installation and have the same prerequisites.

1. Follow the instructions in the topic, Installing ArcSDE on your computer to install the software. If you have not done so already, you will need to uninstall any earlier versions of ArcSDE. The ArcSDE setup program will prompt you to uninstall earlier versions of ArcSDE and to delete any ArcSDE services associated with the earlier version.
2. Complete the postinstallation setup by following the steps in the topic ArcSDE postinstallation overview.

If you do not use the Post Installation wizard to perform these steps, they must be completed manually using:

- The sdesetup command with the upgrade operation to the geodatabase repository in the database
- The sdeservice command to create the ArcSDE service
- The sdemon command or Windows services to start the ArcSDE service

Upgrading while keeping the existing service

Upgrading ArcSDE while keeping the existing service for transition purposes is a more involved upgrade scenario. Follow these steps to maintain both a previous version of the ArcSDE service and this new version of the ArcSDE service on the same machine:

1. Before installing this version of ArcSDE, shut down the previous version of the ArcSDE service and remove it by executing the sdeservice -o delete command. See the ArcSDE Command Reference for more information on the sdeservice command. Go to Start > Programs > ArcGIS > ArcSDE > Command Reference.
2. It is important to make a copy of the previous version of SDEHOME before proceeding with installing the new version of ArcSDE. You will have to copy back this SDEHOME after installing the new version of ArcSDE.
3. Install the new version of ArcSDE. The installation wizard will remove your previous installation (SDEHOME and contents) without affecting the DB2 database on which it was running. Do **not** run the ArcSDE Post Installation wizard; you will have to manually perform the postinstallation steps.
4. The new version of the ArcSDE service and the previous version of the ArcSDE service cannot use the same DB2 database. Create a new DB2 database. Edit the dbinit.sde file located in %SDEHOME%\etc to set your database name. Follow the steps in the Postinstallation requirements topic to prepare your database.
5. Open a DOS prompt and change directories to the %SDEHOME%\bin folder of the new ArcSDE installation. As the SDE database user, run the sdesetup command with the install operation. Make sure you connect using the correct database name for the database. You cannot point two instances of ArcSDE to the same database.
6. Copy the previous version of %SDEHOME% that you copied in step 2 back to its original location. From the previous version of the %SDEHOME%\bin directory, run the sdeservice -o create command to re-create the previous version of the ArcSDE service.
7. Before starting both ArcSDE services, make sure your services are correct by checking the SDE_DATABASE entry in %SDEHOME%\etc\dbinit.sde.

   For example, for the previous version of ArcSDE:

   ```
   % cd C:\Program Files\arcsde\db2exe\etc

   % type dbinit.sde

   SDE_DATABASE=sdeold
   ```

   For the new version of ArcSDE:

```
% cd C:\arcgis\ArcSDE\db2exe\etc

% type dbinit.sde

SDE_DATABASE=sdenew
```

Note that in this example, each service has its own SDEHOME. If you put %SDEHOME%\bin in your path, remember that the system- or user-level environment variable can contain only one path for SDEHOME. Also note that each service has its own SDE_DATABASE value. In the example, the previous version of the ArcSDE service points to sdeold, while the new ArcSDE service points to the sdenew database.

8. Start one or both instances.

Note: You must have the appropriate licensing to perform this upgrade. You can run both instances to test your data under the new ArcSDE configuration. You can move data from the previous versions of the ArcSDE instance by copying and pasting with ArcCatalog or exporting/importing with sdeexport/sdeimport, sde2shp/shp2sde, etc.

Uninstalling ArcSDE

To uninstall ArcSDE:

1. Before uninstalling ArcSDE, make a copy of any custom files (such as a custom dbtune.sde file) you want to keep for future use.
2. From the Start button, open the Control Panel. Double-click the Add/Remove Programs icon.
3. Select ArcSDE for DB2 from the program list, and click the Remove button.

Installling ArcSDE on UNIX

System requirements

For the latest in supported system environments, see http://support.esri.com, and navigate to Software > ArcSDE > System Requirements.

Your computer is required to meet these minimum system requirements to install ArcSDE for DB2.

Minimum system requirements

PLATFORM	OPERATING SYSTEM	COMPILER
Sun™ Solaris2™	SunOS 5.9 (Solaris 9) 64-bit	Sun Studio 8 C and C++ 5.5 2003/03/12
Red Hat Linux	Red Hat Linux AS/ES 4	gcc version 3.2.3 20030502 (Red Hat Linux 3.2.3-24)
IBM®	AIX Rev 5.2 64-bit	IBM VisualAge C and C++ version 6.0.0.5
HP®	HP-UX B.11.11 64bit®	HP ANSI C++ B3910B A.03.31

Higher releases may, and usually do, work. Lower versions of releases are not supported.

Note: For any given operating system, if the DBMS is not supported on that version of the operating system, ArcSDE is not supported either.

Disk space

Installation of the ArcSDE server software will require approximately this amount of disk space:

Server Environment	Disk space
SUN	125 MB approx.

HP	105 MB approx.
IBM	160 MB approx.
LINUX	102 MB approx.

Fortran Run-Time Environment

ESRI distributes IBM version 6.1.0.0 Fortran Run-Time Environment (RTE) libraries with ArcSDE. An additional Fortran RTE is not required. A Fortran RTE that is already installed on a machine will be used by the system and for all other applications other than ArcSDE.

Older versions of ArcSDE use their own Fortran RTE's, located in $SDEHOME/lib, and work fine on AIX. However, you must have a LIBPATH variable set to $SDEHOME/lib:/usr/lib:/lib with the appropriate $SDEHOME to work correctly.

IBM file sets required

The following file sets (or higher) are required for IBM:

- xlC.aix50.rte 6.0.0.0
- xlC.msg.en_US.rte 6.0.0.0
- xlC.rte 6.0.0.0

Files sets may be downloaded from the following link: http://www-1.ibm.com/support/docview.wss?rs=32&context=SSEP5D&uid=swg24005921&loc=en_US&cs=utf-8&lang=en+en

DB2 requirements

For the latest in supported DB2 environments, see http://support.esri.com, and navigate to Software > ArcSDE > System Requirements.

Preinstallation requirements

The installation of ArcSDE for DB2 on UNIX systems requires:

1. A UNIX system account named sde that will own the SDEHOME files
2. An sde database that has been spatially enabled
3. An authorization file to authorize ArcSDE. See ArcSDE authorization.

Creating the sde operating system account on UNIX

To install the latest version of ArcSDE for DB2, you must create an ArcSDE administrator account on your UNIX server. The ArcSDE administrator account must be named sde. The ArcSDE administrator must own all ArcSDE system files and directories. Keep the password in strict confidence to maintain system security. Only those users who must administer the ArcSDE system should have access to the ArcSDE administrator login. This user will also be utilized to administer the ArcSDE database within DB2. To create the ArcSDE administrator login, use the system administration procedures outlined by the host operating system. Following is a sample UNIX configuration for the ArcSDE administrator account named sde.

Note: This ArcSDE administrator account does not have to be a UNIX system administrator account.

Login name:	sde
User Id:	<Any unused user id>
Group Id:	<Any group id>
Home Directory:	<home directory for user sde>
Default Shell:	/bin/sh or /bin/csh or /bin/ksh

Add the following to the sde user's .login or .profile file, depending on which UNIX shell it will use. By adding the lines below, all ArcSDE administration and utility software programs can be located without specifying absolute paths. Application programs will also be able to find the necessary program files located within the ArcSDE installation directory.

There are several environment variables you should set. For the Bourne shell, add variable definitions to the .profile file. Syntax is:

```
export <VARIABLE>
```

For the C shell, add variable definitions to the .cshrc file (or the SDEHOME/etc/dbinit.sde file). Syntax is:

```
setenv <VARIABLE> <variable_value>
```

The list of variables you should set are as follows:

```
SDEHOME <location of ArcSDE installation>

PATH $PATH:$SDEHOME/bin:

LD_LIBRARY_PATH  $SDEHOME/lib:/usr/lib:/lib: (All platforms except HP and IBM)

SHLIB_PATH $SDEHOME/lib:/usr/lib:/lib: (for HP only)

LIBPATH $SDEHOME/lib:/usr/lib:/lib: (for IBM only)
```

If you are using C shell, you can also source the db2chrsc to set up a default database environment for C shell users. The db2cshrc can be found in the $DB2HOME/sqllib directory.

Note: When the ArcSDE service is started, the giomgr process reads the variable settings in the $SDEHOME/etc/dbinit.sde file. These variable settings override the variables set by .cshrc or .profile files. The role of the dbinit.sde file is further explained in the ArcGIS Server and Desktop help topic "The dbinit.sde file".

Creating the DB2 sde database

Before you can start the ArcSDE service, you must install and configure the ArcSDE database. The documentation will refer to the ArcSDE database as sde, but you can use any name.

The UNIX installation of ArcSDE does not provide any interface for creating the sde database; therefore, the task must be performed using SQL or the Control Center.

There is an example script provided in this guide to create the DB2 database and define instance and database configuration parameters. For this script, see SQL script to create DB2 database.

DMS table spaces should be used for storing user data.

Tip

- Each spatially-enabled database is self contained. That is, there is no cross-database access of spatial data. Once connected to a database, you can only access spatial data in that database. If data from another spatially-enabled database is also needed, you will need a second connection to that database.

Configuring the sde database and DB2 UDB instance

For the sde database, you must set the following parameters. Values provided here are the minimum required values for that parameter. You only need to set ALT_COLLATE IDENTITY_16BIT when using an existing database.

```
Application HEAP size: 2048 (APPLHEAPSZ)

Application Control HEAP size: 2048(APPL_CTL_HEAP_SZ)
```

```
Log primary (number): 10 (LOGPRIMARY)

Log file size: 1000 (LOGFILSIZ)

Updating these files via SQL:

db2 connect to sde

db2 update db cfg for sde using ALT_COLLATE IDENTITY_16BIT

db2 update db cfg for sde using APPLHEAPSZ 2048

db2 update db cfg for sde using APP_CTL_HEAP_SZ 2048

db2 update db cfg for sde using LOGPRIMARY 10

db2 update db cfg for sde using LOGFILSIZ 1000
```

Without these changes, you will not be able to spatially enable the database.

Note: You must grant dbadm to the sde user.

For example:

```
db2 connect to sde user <db2admin account> using <db2admin password>

db2 grant dbadm on database to user sde
```

All of these database creation and configuration parameters are in the SQL script to create a DB2 database.

Spatially enable the sde database using Spatial Extender tools

As the db2admin user, use the Control Center, right-click the sde database, choose the Spatial Extender option, then click Enable.

It is also possible to spatially enable the database from the command line. At the command line, you can use the following command:

```
db2se enable_db dbname [-l userid] [-p password]
```

Notes

- ArcSDE 9.2 requires the use of a DB2 global temporary table (DECLARE GLOBAL TEMPORARY TABLE). As per DB2 documentation, to declare global temporary tables either 'SYSADMIN or DBADM privileges' or 'USE privilege on a USER TEMPORARY table space' is required. A user temporary table space can be created using the DB2 Control Center or from the command line using the CREATE USER TEMPORARY TABLESPACE command.

  For example:

  ```
  CREATE USER TEMPORARY TABLESPACE sdespace PAGESIZE 4 K
  MANAGED BY SYSTEM USING ('d:\db2_data\sdespace' )
  ```

```
EXTENTSIZE 16 OVERHEAD 10.5 PREFETCHSIZE 16
TRANSFERRATE 0.14 BUFFERPOOL "IBMDEFAULTBP";

COMMENT ON TABLESPACE sdespace IS '';
```

You must also grant the use of all table spaces to public. For example, using SQL:

```
GRANT USE OF TABLESPACE regtbs TO PUBLIC WITH GRANT
OPTION;
```

- To be able to clean out unneeded ArcSDE processes from the PROCESS_INFORMATION system table, the sde user must have authority to use the DB2 Snapshot API. This requires the sde user be added to an operating system group, and that group must be granted SYSMON authority.

  For example, if you define a group called sysmon, which contains the sde user, you can set the value of the SYSMON_GROUP instance parameter to the value sysmon using the following commands:

  ```
  UPDATE DBM CFG USING SYSMON_GROUP sysmon

  db2stop

  db2start
  ```

SQL script to create DB2 database

Below is an example script to create a DB2 database. After database creation, you'll also need to spatially enable the database. Replace variables such as database name, password names, and container names/paths.

```
db2 -tvf <script.clp>

FORCE APPLICATION ALL;

DB2STOP;

DB2START;

DROP DATABASE sde;

FORCE APPLICATION ALL;

DB2STOP;

DB2START;
```

```
CREATE DATABASE sde USING CODESET UTF-8 TERRITORY US COLLATE USING
SYSTEM USER TABLESPACE MANAGED BY DATABASE USING (FILE
'/db2_data/sde/sdetbsp' 51200) EXTENTSIZE 16 PREFETCHSIZE 16
OVERHEAD 24.1 TRANSFERRATE 0.9;

CONNECT TO sde user db2admin using <your password>;

CREATE REGULAR TABLESPACE regtbs PAGESIZE 4 K

MANAGED BY DATABASE USING ( FILE '/db2_data/sde/regtbs' 125000)

EXTENTSIZE 32 OVERHEAD 24.1 PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE REGULAR TABLESPACE idxtbs PAGESIZE 4 K

MANAGED BY DATABASE USING ( FILE '/db2_data/sde/idxtbs' 51200)

EXTENTSIZE 32 OVERHEAD 24.1 PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE LONG TABLESPACE lobtbs PAGESIZE 4 K

MANAGED BY DATABASE USING ( FILE '/db2_data/sde/lobtbs' 51200)

EXTENTSIZE 32 OVERHEAD 24.1 PREFETCHSIZE 32 TRANSFERRATE 0.9;

CREATE USER TEMPORARY TABLESPACE sdespace PAGESIZE 4 K MANAGED BY
SYSTEM USING ('/db2_data/sde/sdespace' ) EXTENTSIZE 16 OVERHEAD 10.5
PREFETCHSIZE 16 TRANSFERRATE 0.14 BUFFERPOOL "IBMDEFAULTBP";

GRANT USE OF TABLESPACE regtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE idxtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE lobtbs TO PUBLIC WITH GRANT OPTION;

GRANT USE OF TABLESPACE sdespace TO PUBLIC WITH GRANT OPTION;

GRANT DBADM ON DATABASE TO USER SDE;

UPDATE DATABASE CONFIGURATION FOR sde USING APP_CTL_HEAP_SZ 2048;

UPDATE DATABASE CONFIGURATION FOR sde USING APPLHEAPSZ 2048;

UPDATE DATABASE CONFIGURATION FOR sde USING LOGFILSIZ 1000;

UPDATE DATABASE CONFIGURATION FOR sde USING LOGPRIMARY 10;

FORCE APPLICATION ALL;

DB2STOP FORCE;

DB2START;
```

Related concepts found in the help

You can get more information related to the SDE user and permissions in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

The ArcSDE administrative account

User permissions

Installing the ArcSDE software

Make sure the ArcSDE administrator account, which was created during the preinstallation stage of the setup, is used to install the ArcSDE software and has write permissions to the installation directory.

Place the ArcSDE media into the appropriate drive and mount the drive.

The usage for the install command is:

```
install <-help | -load | -remove | -verify >
```

To read more about the installation procedure, type:

```
./install -help
```

To start the ArcSDE software installation, change directories into the appropriate database directory.

```
% cd /cdrom/db2
```

Then, to start the ArcSDE software installation, type the install command at the operating system prompt.

```
% ./install -load
```

This will start the command-driven dialog for the ArcSDE software installation procedure. Default selections are noted in brackets,[ ]. To obtain a list of options or online help, type '?' at any prompt. You can quit the installation procedure at any time by typing 'quit' or 'q'. To return to a previous question, type the caret, '^'.

Before continuing with the installation, you will be asked to read the license agreement and accept it, or exit if you don't agree with the terms. The default is set to "no" and you have to type "yes" to proceed with the installation. The license agreement can be found under the License folder at the root level of each CD or on the DVD under each platform's install folder (ArcSDE/<platform>/License). It also be viewed in a different language at http://www.esri.com/licenseagreement/. Please read the license agreement file appropriate for your locale.

```
ESRI is willing to license the software to you only if you accept
and agree to the enclosed license agreement. If you have read and
agree with the terms in the enclosed license agreement, type 'yes'
to continue the installation process, if not press <return> or type
'no' to exit installation process. [no]
```

Once the installation is complete, please continue with the postinstallation setup.

Note for AIX users only:

If you are installing on AIX, it is recommended that you run slibclean before installing or upgrading ArcSDE to clear inactive libraries from memory. If you are upgrading see the Upgrading ArcSDE topic. To run slibclean (as root user):

```
/usr/sbin/slibclean
```

(optional) To list the libraries, as the root user, type:

```
/usr/sbin/genkld
```

For more information on the slibclean or the genkld commands, refer to your AIX system administrator documentation.

ArcSDE postinstallation setup on UNIX

After your software is installed and before you attempt to start the ArcSDE service, you must complete the postinstallation setup.

To successfully complete the postinstallation setup:

1. **Set symbolic links in your <db2 instance home>/sqllib/function and <db2 instance home>/sqllib/function/unfenced directories.**

To set the stored procedure symbolic links, do the following:

Change directories to your DB2 instance home /sqllib/function directory. As the root user, issue the following command:

```
ln -s $SDEHOME/lib/sdesrvfn
```

Change directories to your DB2 instance home /sqllib/function/unfenced directory. As the root user, issue the following command:

```
ln -s $SDEHOME/lib/sdesrvsp
```

Note: If ArcSDE is not installed on the same machine as the database, the sdesrvfn and sdesrvsp libraries need to be specifically copied to these directories on the database server. The libraries need to be for the operating system of the machine that the database is installed on. For example, If ArcSDE is installed on Linux but DB2 is installed on Solaris, the sdesrvfn and sdesrvsp libraries need to be copied from an ArcSDE for Solaris installation to the DB2 directories.

2. **Modify files in $SDEHOME/etc and /etc/services.**

Once your software is installed, you will need to modify one or more files:

- **/etc/services**—The services file in the etc directory is a system file to which you'll need to add a line to define the TCP/IP port number and name to use for your ArcSDE service. To change the services file requires root access. Add a line similar to this one:

```
esri_sde      5151/tcp     # ArcSDE service on pinetree
```

Users connecting to your service can use the number 5151 as the service name. If they prefer to use the name esri_sde, they'll need to add this same line to their system services file.

- **$SDEHOME/etc/services.sde**—Add the same line to this file that you added to the /etc/services file. For more, see "The services.sde file" in the ArcGIS Server or Desktop help. (You can access the ArcGIS

Server help from the help directory in the ArcSDE install location. Use the index.htm file to launch the help system.)

- **$SDEHOME/etc/dbtune.sde**—The dbtune file populates the DBTUNE geodatabase system table with keywords, parameters, and values that control the physical storage of tables in the database. For DB2 databases, it is important that you edit this file prior to running the sdesetup command to designate which table spaces the database should use to store certain system tables. For more information, see the ArcGIS Server and Desktop help topic "The dbtune file and the DBTUNE table".
- Other configuration files in the $SDEHOME/etc directory you may want to edit include:

  dbinit.sde—You can set environment variables in this file that the service will use each time it starts. The syntax for setting these environment variables is as follows:

  ```
  set <variablename>=<value>
  ```

  You can set an environment variable called SDE_DATABASE in this file, which will designate the name of the database to which the service will connect. For example:

  ```
  set SDE_DATABASE=mydb
  ```

  Each spatially-enabled database is self contained. That is, there is no cross-database access of spatial data; once connected to a database, you can only access spatial data in that database. If data from another spatially-enabled database is also needed, you will need a second connection to that database. Each spatially-enabled database will have its own set of ArcSDE and geodatabase system tables and stored procedures. See Using multiple spatially enabled databases for information on how to support multiple ArcSDE services for multiple spatially-enabled databases.

  See the ArcGIS Server and Desktop help topic "The dbinit.sde file" for more information on variables you can set in this file.

  giomgr.defs—This file populates the SERVER_CONFIG geodatabase system table with parameters that define how ArcSDE will utilize memory. The default parameters are sufficient for most applications. Edit with care.

  For more information on this file, see the ArcGIS Server and Desktop help topic "The giomgr.defs file and the SERVER_CONFIG system table". For a list of the parameters found in this file, see "ArcSDE initialization parameters".

3. **Run $SDEHOME/bin/sdesetup.**

See Permission Changes for a list of privileges required for the sde user to run sdesetup.

The sdesetup command will do the following:

- Create all the ArcSDE and geodatabase system tables in the DBMS.
- Create ArcSDE stored procedures.
- Populate the LOCATORS and METADATA system tables with data from $SDEHOME/geocode/templates.

The sdesetup command must execute successfully to properly create your geodatabase and for ArcSDE to function correctly.

The usage for the sdesetup command is as follows:

```
-?

-h

-o install -d <ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
           [-H <sde_directory>] [-u <DB_Admin_user>] [-p
<DB_Admin_password>]
           [-D <database>] [-s datasource] [-i <service>]
           [-N] [-l <key>] [-q]

-o list    -d <ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
           [-H <sde_directory>] [-u <DB_Admin_user>] [-p
<DB_Admin_password>]
           [-D <database>] [-s datasource] [-i <service>]
[-q]

-o upgrade -d <ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
           [-H <sde_directory>] [-u <DB_Admin_user>] [-p
<DB_Admin_password>]
           [-D <database>] [-s datasource] [-i <service>]
           [-N] [-l <key>] [-q]

-o update_key -d
<ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
              -l <key> [-u <DB_Admin_user>] [-p
<DB_Admin_password>]
              [-H <sde_directory>] [-D <database>] [-s
datasource] [-i <service>]
              [-N] [-q]

Operations:

  upgrade       Upgrade geodatabase system tables and
  procedures

  list          List installed ArcSDE release

  install       Create geodatabase system tables and
  procedures
```

```
  update_key    Add or update ArcSDE authorization key
  information



Options:

  -d      Underlying RDBMS used to store the geodatabase

  -D      Database name

  -h/-?   Prints syntax and all possible operations and
  options for the command

  -i      ArcSDE service name (default: esri_sde) or direct
  connect information

  -l      ArcSDE authorization key or location to
  authorization file

  -N      No verification prompt given

  -o      Operation (see list above)

  -p      DBMS DBA user password

  -q      Quiet

  -s      Datasource name

  -u      DBMS DBA user name
```

Use the install operation for new installations. Use the upgrade operation for supported upgrades of ArcSDE. To see what version of ArcSDE you have, use the list operation. The command generates a status for each stage of the setup.

More information on the sdesetup command can be obtained from the ArcSDE Administration Command Reference ($SDEHOME/documentation/Admin_Cmd_Ref).

To authorize the software, use the -l <key> during an install or upgrade. To authorize ArcSDE later, use the update_key operation. For additional information, see ArcSDE authorization.

Related concepts found in the help

You can get more information related to setting up the repository in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

The dbtune file and the DBTUNE table

DBTUNE configuration keywords

ArcSDE authorization

Each ArcSDE server machine requires an authorization file. Each new version of ArcSDE requires a new authorization file.

To authorize ArcSDE for use, you must obtain an authorization file from ESRI Customer Service (.ecp file). For more information on obtaining an authorization file, see https://service.esri.com.

You can register ArcSDE with an authorization file in two ways:

- If you already have an authorization file, run the sdesetup command with either the install or upgrade operation and specify the location of the authorization file with the -l option. See ArcSDE postinstallation setup.
- If you don't yet have an authorization file, you can run the sdesetup command with the install or upgrade operation **without** specifying the -l option. After you contact ESRI and receive your authorization file, you can run sdesetup again using the update_key operation and specifying the -l option.

The syntax for the using the update_key operation with the sdesetup command is as follows:

```
sdesetup -o update_key -d
<ORACLE9I|ORACLE10G|SQLSERVER|DB2|INFORMIX>
-l <key> [-u <DB_Admin_user>] [-p <DB_Admin_password>]
[-H <sde_directory>] [-D <database>] [-s datasource] [-i
<service>]
[-N] [-q]
```

Where <key> is the authorization key or the location of your authorization file

For example:

```
sdesetup -o update_key -d DB2 -l /machine/keycode.txt -u sde -
p sde
```

More information on the sdesetup command can be obtained from the ArcSDE Administration Command Reference ($SDEHOME/documentation/Admin_Cmd_Ref).

Starting the ArcSDE service on UNIX

An ArcSDE service must be created and started. Start the ArcSDE service by logging in as the ArcSDE administrator and using the sdemon command.

```
$ sdemon -o start -p <DB_Admin_password>
```

Once the service is accepting connections, it is ready for use.

If you encounter problems starting the service, consult the topic "Troubleshooting the ArcSDE service" in the ArcGIS help.

For more information on the sdemon command, see the ArcSDE Administration Command Reference ($SDEHOME/documentation/Admin_Cmd_Ref).

Related concepts found in the help

You can get more information related to the ArcSDE service in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the following titles:

An overview of ArcSDE geodatabase connections

Stopping an ArcSDE service

Pausing and resuming an ArcSDE service

Accessing an ArcSDE service through a firewall

Troubleshooting the ArcSDE service

ArcGIS Installation Guide

The next steps

After you finish the postinstallation setup, you're ready to add other users, set up client connections, and add data to your geodatabase. The following is a list of help topics to assist you in these tasks. Topics can be found in the ArcGIS Desktop online help (http://webhelp.esri.com/arcgisdesktop/9.2) or the help system installed with ArcGIS Server or ArcGIS Desktop. Use the links below to open the online topics, or open the help and search for the titles.

TASK	RELATED TOPICS
Geodatabase users	Adding users to an ArcSDE geodatabase User permissions Grouping users by access needs
Client connections	An overview of ArcSDE geodatabase connections Setting up clients for a direct connection Creating spatial database connections
Adding data	An overview of adding datasets to the geodatabase The DB2 Spatial Extender geometry type

Upgrading ArcSDE

IMPORTANT information for users upgrading:

- **Direct upgrades are only supported from ArcSDE 8.3, 9.0, and ArcSDE 9.1. Upgrading directly from ArcSDE 8.2.x, 8.0.x, or 3.x is not supported.** Moving from any of these unsupported released versions of ArcSDE to the current ArcSDE release will require the server to first be upgraded to either ArcSDE 8.3, 9.0, or 9.1 and then upgraded to ArcSDE 9.2. It is also possible to export all your data using the sdeexport command and then import it into ArcSDE 9.2. Or you could move your data using ArcCatalog.
- **Upgrades from Beta or Prerelease are NOT supported.**

It is recommended that you create a backup your existing ArcSDE database before upgrading. Contact your database administrator (DBA) for correct protocol.

How to upgrade ArcSDE

There is no automated upgrade process for:

- An existing SDE 3.0.2 for DB2 UDB server
- A DataJoiner implementation using the Spatial Extender

In both cases, you will have to re-create your database. You can use the sdeexport tool that came with your SDE 3.x or DataJoiner implementation to create an sdeexport file of your layers. After installation of ArcSDE 9.2 for DB2 and creation of a new spatially enabled database, you can then use the 9.2 sdeimport tool to import your sdeexport files. Another option is to use the ArcGIS ArcCatalog application (part of ArcGIS 9.2) to export a 3.x geodatabase and import it into a 9.2 geodatabase. You may also use a backup of your database by restoring and migrating the database to a newer version of DB2, and then upgrading ArcSDE. Contact your DBA for correct protocol.

Upgrading an existing service

It is a good idea to create a backup of your database before you do any work that could affect it. If upgrading a UNIX service, you will need to do the following:

1. Install the software to a new location. Save the old SDEHOME in case you need it. You may want to copy configuration files (such as dbtune.sde, dbinit.sde, giomgr.defs) from the old SDEHOME/etc directory into the new SDEHOME/etc directory.
2. If necessary, modify configuration files.
3. Run the $SDEHOME/bin/sdesetup command with the upgrade operation to upgrade the geodatabase system tables and install updated stored procedures and locators. Read Preinstallation requirements before running this command.

Note for AIX users only:

If you are installing on AIX, it is recommended that you run slibclean before installing or upgrading ArcSDE to clear inactive libraries from memory. If you are upgrading, stop your current ArcSDE service before running slibclean (as root user):

1. Stop your current ArcSDE service

   ```
   % sdemon -o shutdown
   ```

2. Run slibclean as the root user

   ```
   # /usr/sbin/slibclean
   ```

3. (optional) To list the libraries, as root user, type:

   ```
   # /usr/sbin/genkld
   ```

For more information on the slibclean or the genkld commands, refer to your AIX system administrator documentation.

Using multiple spatially-enabled databases

Cross database access of spatial data is not supported with DB2. If you need to have multiple spatially-enabled databases from the same DB2 UDB instance on the same server machine, you will need to do the following after you have successfully defined and set up your first ArcSDE service. This also assumes you have built the second spatially-enabled database as you did the first one. Each spatially-enabled database will have it's own SDEHOME as well as its own set of ArcSDE and geodatabase system tables (created with sdesetup).

1. Copy the entire SDEHOME directory of the initial install to a new location. This second SDEHOME will be used for your second spatially-enabled database.

   ```
   % cp -r $SDEHOME <second SDEHOME location>
   ```

2. In the second SDEHOME, edit $SDEHOME/etc/dbinit.sde. Define the variable SDE_DATABASE to be the name of your second database:

   ```
   set SDE_DATABASE = mydb_2
   ```

3. Modify the /etc/services file to add a unique ArcSDE service name and number for the new ArcSDE service/installation.

4. Modify the second $SDEHOME/etc/services.sde file, adding the new unique ArcSDE service name and number to match that which was added to the /etc/services file.

5. Perform the geodatabase repository setup for the new ArcSDE service/installation by using the command:

   ```
   C:$SDEHOME%/bin/sdesetup -o install -d DB2 -H
   /secondSDEHOME/sdeexe -p ********
   ```

   Note: Make sure the SDEHOME variable is set correctly for this ArcSDE service/installation or manually define the location for SDEHOME.

6. The ArcSDE service for your second database should now start.

If you use the same sde operating system account to manage both SDEHOME directories and services, you can define cases in your .cshrc (or profile) to define against which database your actions occur. You can also use the -i (service name) variable when you run administration commands.

```
# @(#)cshrc 1.11 89/11/29 SMI

if ($?DBMS == 0) then

setenv

DBMS sde92_mydb
```

```
endif

switch ($DBMS)

case "sde92_mydb"

set prompt = "sde92_mydb on `/usr/ucb/hostname`"

setenv SDEHOME /bombay1/sdedb2/sdeexe92

breaksw

case "sde92_mydb_2"

set prompt = "sde92_mydb_2 on `/usr/ucb/hostname`"

setenv SDEHOME /bombay2/sdedb2/sdeexe92
```

In this example, you can set the variable DBMS to either sde92_mydb or sde92_mydb_2 to define the SDEHOME and database for the sde account to use.

Uninstalling ArcSDE

Uninstalling an existing version of ArcSDE consists of the following:

1. Stopping the service

   ```
   sdemon -o shutdown
   ```

2. Using an operating system command to remove the software

   ```
   rm -r $SDEHOME
   ```

   You may also want to remove the service entry from the /etc/services file.

These two steps stop the service and remove the software from disk. The geodatabase system tables, stored procedures, and user data are still in your database.