
SilverStream eXtend Application Server
Installation Guide

Version 4.0

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SilverStream[®]

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About This Book

Purpose

This guide describes how to install the SilverStream eXtend Application Server and configure databases for use with the SilverStream server.

Audience

This guide is for users responsible for installing and configuring the SilverStream eXtend Application Server for both development and production environments.

Organization

This section provides a brief summary of each chapter.

| Chapter | Description |
|--|--|
| Chapter 1, “Introduction” | An overview of the SilverStream server and the SilverStream installation program |
| Chapter 2, “Installing the SilverStream Server on Windows” | How to install the SilverStream server on Windows platforms |
| Chapter 3, “Installing the SilverStream Server on UNIX” | How to install the SilverStream server on UNIX and Linux platforms |
| Chapter 4, “Installing Enterprise Data Connectors” | How to install and configure the SilverStream Enterprise Data Connectors (EDCs) |
| Chapter 5, “Configuring Cloudscape Databases” | How to set up IBM Cloudscape databases for use within the SilverStream environment |
| Chapter 6, “Configuring DB2 Databases” | How to set up IBM DB2 databases for use within the SilverStream environment |
| Chapter 7, “Configuring Informix Databases” | How to set up IBM Informix databases for use within the SilverStream environment |

| Chapter | Description |
|---|---|
| Chapter 8, “Configuring Microsoft Access Databases” | How to set up Microsoft Access databases for use within the SilverStream environment |
| Chapter 9, “Configuring Microsoft SQL Server Databases” | How to set up Microsoft SQL Server databases for use within the SilverStream environment |
| Chapter 10, “Configuring Oracle Databases” | How to set up Oracle databases for use within the SilverStream environment |
| Chapter 11, “Configuring Sybase Adaptive Server Anywhere Databases” | How to set up Sybase Adaptive Server Anywhere databases for use within the SilverStream environment |
| Chapter 12, “Configuring Sybase Adaptive Server Enterprise Databases” | How to set up Sybase Adaptive Server Enterprise databases for use within the SilverStream environment |
| Appendix A, “Creating ODBC Data Sources” | How to create ODBC data source entries on Windows |

1 Introduction

This chapter presents an overview of the SilverStream eXtend Application Server and the SilverStream server installation program. The SilverStream server installation program is self-documenting—that is, it includes documentation in the installation screens. There are some decisions you should make before installing the SilverStream server. This chapter helps you make those decisions.

The chapter includes the following sections:

- Application server configurations
- About the installation program
- Installation decisions
- Migrating to Version 4
- Contacting Technical Support



For the latest information on hardware and software requirements and supported databases, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

Application server configurations

The SilverStream server is both a development and deployment product. It is available in these configurations:

- **SilverStream Developer Edition (SDE)** is configured for use by a single developer writing J2EE/Web Service applications using SilverStream eXtend Workbench. It comes with two development databases, Adaptive Server Anywhere and Cloudscape. SDE is meant for development and testing, but does not support any but the smallest deployments (it is limited to 8 concurrent sessions).
- **SilverStream Classic Edition (SCE)** is equivalent to SDE, plus it includes a copy of the classic SilverStream Designer. This edition is for developers maintaining classic SilverStream applications (that is, applications consisting of SilverStream pages, forms, and business objects).

- **SilverStream Professional Edition (SPE)** targets deployments that need high performance and scalability but do not have a strict availability requirement and can tolerate occasional downtime. This edition is licensed per CPU with no limit on concurrent sessions. SPE does not support clustering and therefore does not tolerate machine failure. You can increase the scalability of your applications by adding more processors to the server machine.
- **SilverStream Enterprise Edition (SEE)** targets deployments that require both scalability and reliability. Like SPE, this edition is licensed by CPU. Unlike SPE, SEE supports clustering across multiple machines. Clustering provides high availability of applications by masking individual hardware and software failures.

About the installation program

The **Windows NT installation program** is a wizard-based InstallShield program that allows you to select and install the various components of the SilverStream server, tools, documentation, and sample applications. This program also provides an interface to the Fulcrum SearchServer and Sybase Adaptive Server Anywhere installation programs.

The **UNIX installation script** `install.sh` starts a PERL script to install and configure the SilverStream eXtend Application Server on UNIX and Linux.

The SilverStream server installation performs the following tasks:

- Copies files from the distribution CD to the specified directories.
- Asks which database you want to use for the SilverMaster (see “Choosing a database for SilverMaster” on page 3).
- Executes the SilverMasterInit program.

The SilverMasterInit program creates the SilverMaster database tables and uploads the SilverStream resources needed to support both the design-time and runtime environments into the SilverMaster database.

- In Windows, creates a SilverStream eXtend>AppServer program group with entries for the SilverStream server, SilverStream Management Console (SMC), SilverStream Help, Release Notes, and SilverStream Designer (Classic Edition only).
- Creates Windows registry keys (**HKEY_LOCAL_MACHINE\SOFTWARE\SilverStream Software Inc.\eXtend\AppServer**) (or creates a SilverStream proprietary registry on UNIX).
- Asks for a license key to be applied to the SilverStream server. The license key is uploaded and stored in the SilverMaster database.

Installation decisions

Before you install the SilverStream server, you should decide the following:

- Do you want to install the Fulcrum SearchServer engine?

The Fulcrum SearchServer engine allows you to use full-text search in applications.

NOTE The use of Fulcrum SearchServer with the SilverStream server is deprecated starting in Version 4. It will be removed in Version 5 of the application server.

To enable full text search (and other advanced searching techniques) in your applications, we recommend that you use the facilities provided by the Search subsystem in eXtend Director. See the Director documentation for details.

- Do you want to install Sybase Adaptive Server Anywhere?

The classic sample databases shipped with the SilverStream server are Sybase Adaptive Server Anywhere databases. You must have Sybase Adaptive Server Anywhere to access these databases (Adaptive Server Anywhere is provided with the Developer and Classic editions only).

- What kind of install do you want to perform?

You can install the full SilverStream product or just specified components.



For more information, see “Choosing the installation type” on page 4.

- Which database will you use for your SilverMaster?

The SilverStream server requires that one database be set up as the SilverMaster database.



For more information about SilverMaster, see the next section.

Choosing a database for SilverMaster

The SilverMaster database catalog is a database used by the SilverStream server. There is one SilverMaster catalog for each SilverStream server or SilverStream cluster. The SilverMaster keeps track of all of the application databases used by the SilverStream server and also holds the SilverStream system tables—for example, tables containing security group and user information.

Configurations of the SilverStream server meant for developers provide Sybase Adaptive Server Anywhere and IBM Cloudscape, though you can choose any supported DBMS.


The SilverStream server is capable of communicating with multiple database engines at once. For example, you can install your SilverMaster database on Cloudscape and have all of your application databases in another database, such as Oracle.

Preparing the database to be a SilverMaster

You need to create a database to use as your SilverMaster **before** installing the SilverStream server (unless you are using Cloudscape or the bundled version of Adaptive Server Anywhere as your SilverMaster, in which case the installation program can create a database for you).

The SilverStream server must connect to a database that is to be used as the SilverMaster and any other databases you want to access from the SilverStream server. The SilverStream server acts as a database client, so the server requires any database client software, ODBC driver, JDBC driver, and any configuration necessary for an application connecting to a particular database.

The steps for setting up a database differ for each database type. See the appropriate chapter in this guide for more information about setting up your database type.

 For more information about the SilverMaster database and setting it up, see the *Administrator's Guide* (especially the chapter on data source configuration).

Choosing the installation type

The SilverStream server installation program provides several types of installation that let you tailor the environment to your needs. Your choices include the following (not all choices are available with all editions):

| Choice | Description |
|---------------------|--|
| Server Only Install | <p>Installs all the necessary SilverStream software program files for the edition you are installing. This installation option is recommended for most users.</p> <p>For Classic Edition, this option includes all of the classic sample applications (if Sybase Adaptive Server Anywhere is found on your system). It creates any ODBC settings that are needed by the sample databases, but it does not add them to your server. You must add a sample database to your server before you can run the application.</p> <p>With Enterprise Edition, this option installs the SilverJRunner Installers on the server. These Installers allow your end users to download SilverJRunner (and SilverJ2EEClient) from a page that is running on the server. If you are installing Developer or Classic Edition and want to install the SilverJRunner Installers on the server, you need to choose Full or Custom Install.</p> |

| Choice | Description |
|---------------|--|
| Full Install | <p>Installs all the software for your edition.</p> <p>For Classic Edition it also adds all of the sample application databases to your server (if Sybase Adaptive Server Anywhere is found on your system). If you do this type of install, the SilverStream server starts all of the database engines for the sample application databases as part of the server startup. This option is provided for the convenience of users who want to explore all the SilverStream classic sample applications.</p> <p>For Classic Edition, choose this option (or a custom install) to install the EDC client-side components (DSO wizards) and third-party integrations (not currently available).</p> <p>This option installs the SilverJRunner Installers on the server with all editions.</p> |
| Designer Only | <p>Installs the SilverStream Designer, SilverJRunner, SilverJ2EEClient, SilverStream Management Console, deployment tools, and the online Help. Does not install the SilverStream server.</p> <p>Choose this option only if you will be developing classic applications against a SilverStream server located on another computer.</p> |
| SilverJRunner | <p>Installs SilverJRunner (which allows end users to run classic SilverStream Java forms and views) and SilverJ2EEClient (SilverStream's J2EE application client container).</p> <p>Note that end users can also download SilverJRunner and SilverJ2EEClient from a running SilverStream server (this is true with Developer or Classic edition servers only if the server was installed using Full or Custom Install).</p> |
| SMC/Deploy | <p>Installs the SilverStream Management Console, tools needed to deploy applications to a SilverStream server, and Core Help files. Does not install the SilverStream server.</p> <p>Choose this option if you only need to run the SMC or deploy to a SilverStream server (for example, if you are using SilverStream eXtend Workbench and need to deploy to a SilverStream server).</p> |

| Choice | Description |
|------------------|---|
| Cluster Managers | Installs the SilverStream Load Balancer, Dispatcher, and Cache Manager. This option is for server administrators who want to install the load balancing tools on a different computer than the SilverStream server. |
| Custom Install | Allows you to choose exactly which components are installed. For Classic Edition, choose this option (or a full install) to install the EDC client-side components (DSO wizards) and third-party integrations (not currently available). |

About the classic sample applications

SilverStream Classic Edition provides **classic SilverStream sample applications** (applications using SilverStream pages, forms, and business objects).



For details on these, see “Sample Applications” in the *Getting Started* book of the server's Classic Development Help.

Installing the SilverStream server and programs to run as a service or a daemon

When you are running high-availability servers in a multiuser environment, it often makes sense to run servers as a Windows service or as a UNIX daemon. Running the SilverStream server and the database server as a service or daemon on the same machine ensures that both services will restart automatically when the machine reboots. You can set the SilverStream server to run as a service or a daemon using the installation program. By default, the SilverStream server runs as a desktop program, not as a service or a daemon.

Running the SilverStream server as a service or a daemon allows you to:

- Avoid security risks caused by keeping the server program logged in on the computer running the server
- Automatically start the server whenever Windows or UNIX is started
- Start the server remotely with the Windows Service Manager or with a UNIX shell
- Pass startup parameters to the server
- Run the server with administrative account privileges while you run other programs using your local accounts
- Avoid tying the server to a specific user ID

SilverStream programs that can run as services or daemons

The following table lists the SilverStream programs that can also run as services or daemons.

| Program | Description | Runs as |
|---------------------|--|---------------------------------------|
| SilverStream server | Serves applications | By default, runs as a desktop program |
| Load Manager | Manages the activity of the servers in a cluster | Usually run as a desktop program |
| Dispatcher | Redirects requests to SilverStream servers | Usually run as a desktop program |
| Cache Manager | Keeps server caches for clusters in sync | Usually run as a desktop program |

NOTE By default, Sybase Adaptive Server Anywhere runs as desktop programs, though they can also be run as services. For more information, see Chapter 11, “Configuring Sybase Adaptive Server Anywhere Databases”.

Guidelines on setting the SilverStream server to run as a service or a daemon

You can configure the SilverStream server to run as a service or daemon when you initially install the server using the installation program. However, it’s often easier to install the SilverStream server as a desktop program, then test it before configuring it to run as a service or daemon. The following steps are recommended when installing the server as a service or daemon.

➤ To set up the SilverStream server to run as a service or daemon:

1. Install the SilverStream server as a program (not a service or a daemon) and create a SilverMaster database as described in Chapter 2, “Installing the SilverStream Server on Windows” or Chapter 3, “Installing the SilverStream Server on UNIX”.


2. After your SilverMaster database has been created or updated, configure your database server to start as an automatic service if it is running on the same machine.

NOTE The SilverStream server service requires the database to be running when the server starts. By default, the Sybase Adaptive Server Anywhere database is not installed as a service. For more information, see “Step 4: Run Sybase ASA as a service” on page 96.

3. If you haven’t already done so, set up any other services that you want to run with the SilverStream server, such as Fulcrum or SNMP.
4. Verify that the SilverStream server is running properly. For more information, see “Testing the install” on page 22 for Windows or “Testing the install” on page 42 for UNIX.
5. Run the SilverStream installation program a second time using one of the following procedures:
 - “Installing the SilverStream server as a service” on page 26.
 - “Setting the SilverStream server and cluster components to run as daemons” on page 38.

Because you already installed the server as a program in Step 1, no files are copied when you change the server to run as a service. You also will not need to run SilverMasterInit or create any properties files.

6. If you are using NT security in your application, you should change the NT Security settings on your machine using the NT User Manager.

 For more information on setting User Rights Policy for SilverStream, see the section on NT Security in the *Administrator’s Guide*. For more information about the operation and administration of services, see the Windows documentation.

Migrating to Version 4

To migrate from Version 3 to Version 4, choose **use an existing database for your SilverMaster**. For more information, see the Windows or UNIX installation chapter in this guide.



For complete information about migrating from a previous version of SilverStream, see the migration document in *Getting Started* of the server's Classic Development Help.

Contacting Technical Support

SilverStream provides extensive online product support at its Web site: www.silverstream.com.

In the Support section of the SilverStream Web site, you can learn about the Technical Support programs and how to contact Technical Support. You can also access FAQs, tips and tricks, known customer issues, patches, links to related information, and so on. You can also use this area to submit problems, questions, and enhancement requests.

To access the member area, you must provide a user ID and password, which you receive when you register your product. The installation program provides the opportunity to register the product after you complete the install.

If you contact SilverStream Technical Support for assistance, you will be asked to provide the information about your environment contained in the following checklist.

| Category | Description |
|------------------------------------|---|
| SilverStream server version | The build number is displayed at server startup and is displayed in the SilverStream Management Console (SMC) In Classic Edition, you can obtain the build number by right-clicking the microhelp line at the bottom of the Designer |
| Product type | The server edition you are using |
| Operating system | The platform for your server |
| Database platform for SilverMaster | The DBMS you are using for your SilverMaster |
| Database | Type or types of DBMSs you are using with the SilverStream server, including versions |

| Category | Description |
|------------------------------------|---|
| Database driver | The type and version of the database driver you are using |
| Browser | The version of Internet browser you are using |
| Java Virtual Machine version (JVM) | The version of your JVM is displayed when you start the SilverStream server |
| Proxy servers and firewalls | Whether you are using a proxy server or firewall in your system configuration |

In addition, be prepared to provide the following information about the problem you have:

- Does the problem occur in the development environment or at runtime?
- What was the specific action that caused the error?
- What exact error message did you see?
- Can the problem be recreated consistently?
- What are the exact steps to recreate the error? Please be prepared to provide an example.

2

Installing the SilverStream Server on Windows

This chapter describes the SilverStream eXtend Application Server installation program for Windows platforms. It contains these topics:

- System requirements and supported databases
- Installing the SilverStream server
- Testing the install
- Installing the runtime environment for external Java clients
- Installing on a non-networked computer
- Installing the SilverStream server as a service

System requirements and supported databases

See the *Release Notes* for the latest information on the following:

- Hardware and software needed to run the SilverStream products
- Supported databases

Installing the SilverStream server

NOTE For updated information about installing SilverStream, see the *Release Notes*.

Before you install the SilverStream server, make sure that you have created and configured a database to be used as your SilverMaster database (unless you will use IBM Cloudscape or Sybase Adaptive Server Anywhere as your SilverMaster; in this case, the installation program can create the SilverMaster database). See the appropriate chapter in this guide for information on setting up your database type. For general information on database setup for the SilverStream server, see the chapter on data source configuration in the *Administrator's Guide*. See the *Release Notes* for the database versions and drivers supported for your platform.

The installation wizard is self-documenting. You can use the documentation provided by the wizard to respond to the prompts. This section describes the parts of the installation that might require additional information not provided by the wizard.

➤ **To install the SilverStream server:**

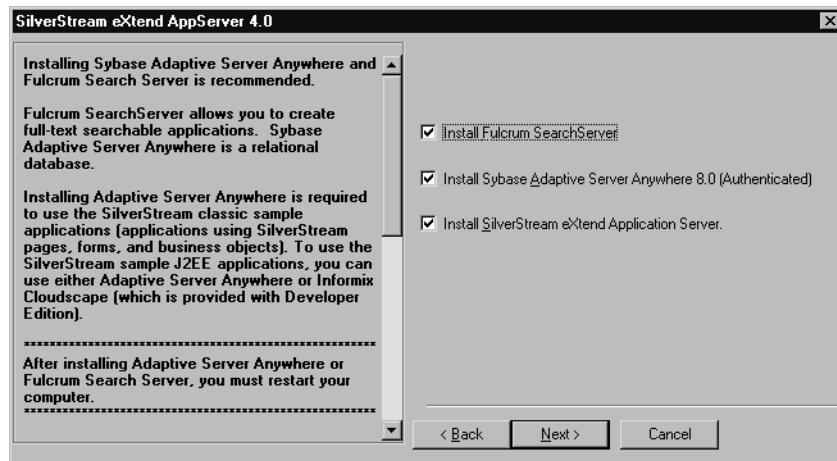
1. Exit all Windows programs, including Microsoft Outlook, before running the installation program. Otherwise, the installation program might not be able to proceed.
2. Insert the SilverStream server CD into the CD-ROM drive. The installation program automatically starts.

You first have the opportunity to view the *Release Notes* that are appropriate for your edition of the server. The *Release Notes* contain important information. Please take the time to read these notes carefully before continuing.

Next the installation program displays the SilverStream license agreement. To install the SilverStream server, you must accept this agreement.

3. Choose **Yes** and continue with the installation.
4. Choose **Install software** and select **Next** to continue.

You come to a panel similar to the following.



NOTE You see the choice for Sybase Adaptive Server Anywhere only if you are installing Developer or Classic Edition; the authenticated version of Adaptive Server Anywhere is available only with these editions. If you want to use Adaptive Server Anywhere with a different SilverStream server edition, you need to purchase the full DBMS from Sybase.

5. Choose **Install SilverStream eXtend Application Server** and optionally **Install Fulcrum Search Server** and **Install Sybase Adaptive Server Anywhere (Authenticated)**.

- Install Fulcrum SearchServer if you want to create applications that are full-text searchable.

Fulcrum is installed into the SilverStream installation directory, so you cannot install Fulcrum without installing (or having previously installed) the SilverStream server.

- Install Sybase Adaptive Server Anywhere if you want to use that DBMS as your SilverMaster or application database, or if you want to run the classic SilverStream sample applications.

If you choose to install Adaptive Server Anywhere, the ASA installation program will launch. You can choose all the defaults. Once that installation is complete, you will return to the SilverStream installation program.

NOTE If you later uninstall ASA, then reinstall it without reinstalling the SilverStream server, in order to keep using the authenticated version of ASA you need to open the saopts.sql file in the ASA scripts directory and insert the following single line after the line `-- populate SYSOPTIONS:`

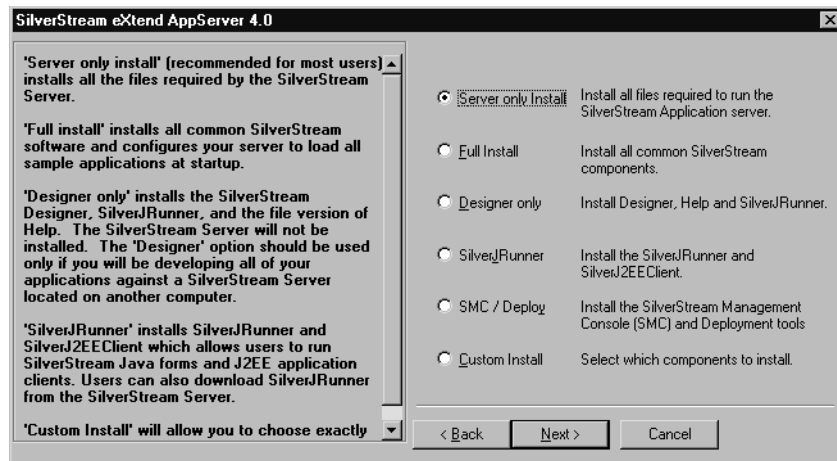
```
SET OPTION
```

```
PUBLIC. DATABASE_AUTHENTICATION='Company=SilverStream;Application=SilverStream;Signature=010fa55157edb8e14d818eb4fe3db41447146f1571g216413c09fe84418053690cca7bd8477f20fbf2a';
```

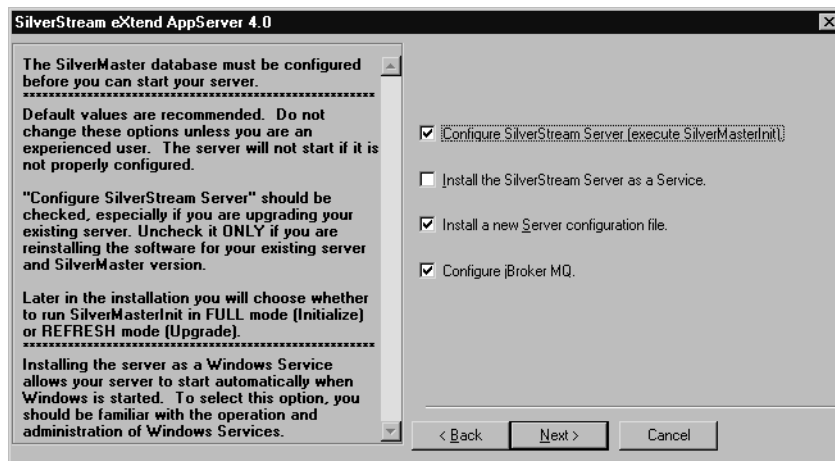
6. You come to a panel similar to the following (the choices listed depend on the edition of the SilverStream server you are installing). Choose the appropriate installation type and choose **Next**.




For information about when to choose each of these types, see “Choosing the installation type” on page 4.



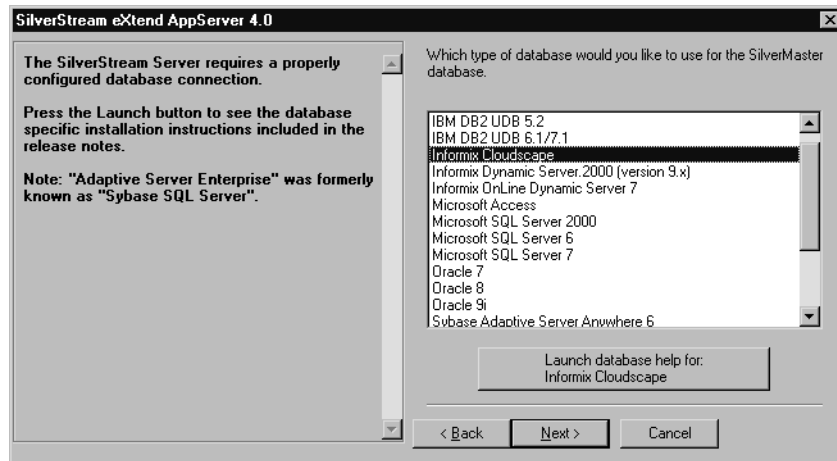
- Continue through the install until you come to a panel that prompts you to configure the SilverStream server. Most users should accept the default settings.



| Option | Description |
|--|--|
| Configure SilverStream Server (execute SilverMasterInit) | In nearly every situation, you should select this option. Select this option when installing the server the first time and also when upgrading from a previous version of the server (selecting this option will bring your existing SilverMaster up to the current version, which is required). The only time you would deselect this option is when you reinstalling the same version of the server and already have a functioning SilverMaster. |
| Install the SilverStream Server as a Service | If you select this option, see “Installing the SilverStream server as a service” on page 26 for more information. |


| Option | Description |
|---|--|
| Install a new Server configuration file | You see this option if you are installing this server version over an existing version. Select this option if you want to create a new httpd.props file; deselect the check box if you want to maintain your existing httpd.props file. |
| Configure jBroker MQ | <p>jBroker MQ is the JMS server that accompanies the SilverStream server.</p> <p>Selecting this option has two effects:</p> <ul style="list-style-type: none"> • The jBroker MQ installation program will be launched at the end of the SilverStream server installation, and you will be able to configure jBroker MQ (for example, you can specify the database to hold the persistent data) • The JMS server will be started automatically by the SilverStream server when it starts <p>If you deselect this option, jBroker MQ will be silently installed (it is required by the server), but you will not be able to configure it at that time and it will not be automatically started by the SilverStream server. You will need to configure it later in order to use it (for example, you will have to initialize its database).</p> <p> For details on this jBroker MQ configuration choice, see the chapter on running the server in the <i>Administrator's Guide</i>. For information about jBroker MQ, including how to initialize its database, see the jBroker MQ Help.</p> |

- When you encounter the prompt in the following panel, specify the database type of your SilverMaster database.

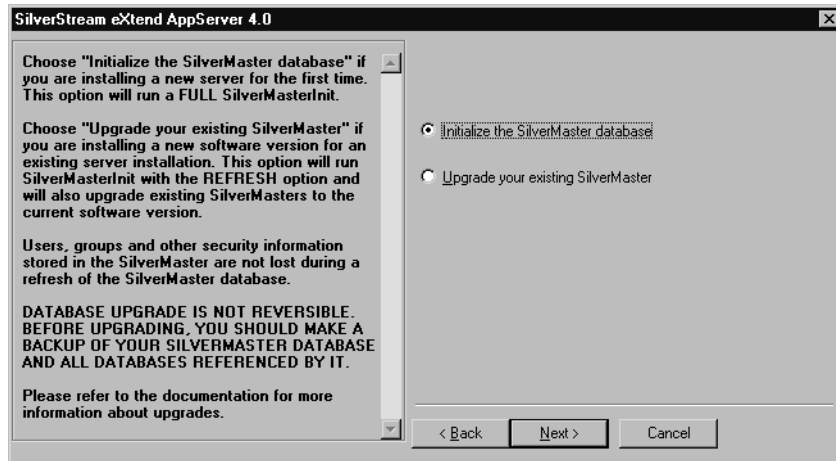


If you select Cloudscape or Sybase Adaptive Server Anywhere, you can specify in the next panel whether the SilverStream installation wizard will create a new database or use an existing database. If you are upgrading from a previous server version, you should choose to use your existing database.

For all other database types, you must use an existing database that you have already configured for use as a SilverMaster database. The configuration requirements are described in this guide in the database-specific chapters.

 For more information about configuring each of the database types, click the **Launch database help for *databaseName*** button for the selected database. The corresponding chapter of this guide is opened.

9. If you are using an existing SilverMaster, you see the following panel.



- If you choose **Initialize the SilverMaster database**, the install procedure upgrades the database to the current version and also removes any existing database tables, security settings, and user information. (It runs SilverMasterInit in its FULL mode.)
- If you choose **Upgrade your existing SilverMaster**, the install procedure upgrades the database to the current version but retains all of the database tables, security settings, and user information. (It runs SilverMasterInit in its REFRESH mode.)

CAUTION *Make sure that you have backed up your existing SilverMaster before initializing or upgrading it.*

Choose the appropriate radio button, then choose **Next**.

10. Enter information about your SilverMaster database (unless you are having the installation program create a Cloudscape or ASA database as your SilverMaster).

The following table describes the type of information you will be asked for.

| Database type | Required information |
|----------------------|---|
| Cloudscape | <ul style="list-style-type: none">• Name of the SilverMaster database• The user name and password that the SilverStream server will use when connected to the database• JDBC URL |
| DB2 | <ul style="list-style-type: none">• Alias name of the SilverMaster database• The user name and password that the SilverStream server will use when connected to the database |
| Informix | <ul style="list-style-type: none">• Name of the SilverMaster database• The user name and password that the SilverStream server will use when connected to the database• Server host name• Server name• JDBC port number |
| Microsoft Access | <ul style="list-style-type: none">• Database driver version• ODBC name of the SilverMaster database• The user name and password that the SilverStream server will use when connected to the database |
| Microsoft SQL Server | <ul style="list-style-type: none">• Database driver type (SQL Server 2000 only)• ODBC name of the SilverMaster database (if using ODBC)• The user name and password that the SilverStream server will use when connected to the database |

| Database type | Required information |
|-----------------------------------|--|
| Oracle | <ul style="list-style-type: none"> • Database driver type and whether to use synonym support (versions 8 and 9i only) • Alias name of the SilverMaster database • The user name and password that the SilverStream server will use when connected to the database |
| Sybase Adaptive Server Anywhere | <ul style="list-style-type: none"> • Database driver type • Name of the SilverMaster database • The user name and password that the SilverStream server will use when connected to the database • If using the jConnect driver: host name and JDBC port number |
| Sybase Adaptive Server Enterprise | <ul style="list-style-type: none"> • Database driver type • Name of the SilverMaster database • The user name and password that the SilverStream server will use when connected to the database • Host name • JDBC port number |
| Sybase SQL Anywhere | <ul style="list-style-type: none"> • ODBC name of the SilverMaster database • The user name and password that the SilverStream server will use when connected to the database |

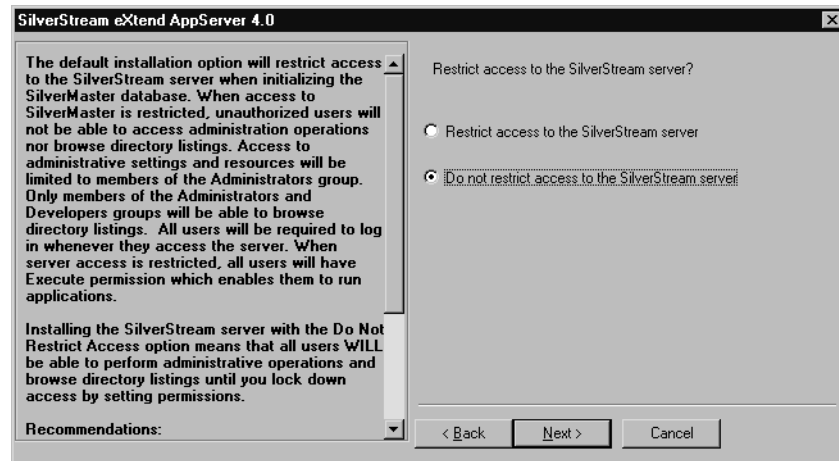
NOTE If you see a warning about AGCLASSPATH at this point, it is because you didn't add the database driver you are using to your AGCLASSPATH environment variable. For details on defining AGCLASSPATH, see the chapter on your DBMS in this guide and the chapter on data source configuration in the *Administrator's Guide*.

11. Choose the port that the server will listen on.




For more information, see the chapter on running the server in the *Administrator's Guide*.


12. If you are creating or initializing a SilverMaster database, you see a panel that concerns security.



Select **Restrict access to the SilverStream server** if you want to restrict initial access to the server as described on the panel (you can always change the security settings later).

 For more information, see the chapter on using security in the *Administrator's Guide*.

13. If you are creating a new SilverMaster or initializing an existing SilverMaster, you will then be asked to define a user name and password for the SilverStream user who will administer the server. The installation program will create a user with this name and password and assign this user Locksmith privileges. Your server's administrator will log in to the server using this account.

 For more information, see the chapter on setting up users and groups in the *Administrator's Guide*.

14. Continue with the installation following the prompts. After you specify the program folder to create, you see the following panel listing your selections.




15. Review your selections. If they are correct, choose **Next** to begin the installation. When the installation nears completion, you receive the message **Creating Resources. This will take a few minutes.** SilverStream builds the SilverMaster.
16. Once you are brought into License setup, enter your serial number and register the product.
17. If you chose to configure jBroker MQ, the jBroker MQ installation program launches. Go through the installation.
- 📖 For more information, see the jBroker MQ Help.
18. If you chose Custom Install to install an Enterprise Data Connector, the installation program prompts you to install the server components.
- 📖 For more information, see Chapter 4, “Installing Enterprise Data Connectors”.

Testing the install

To test your SilverStream server installation, start the SilverStream server and the SilverStream Management Console (SMC).

The SilverStream server and SMC are separate executables. You need to start each separately, unless you set up the server to run as a service.

 For complete information about starting and stopping the SilverStream server, see the chapter on running the server in the *Administrator's Guide*.

➤ To start the SilverStream server and SMC from the Start menu:

1. From the Start menu choose **Programs**, then choose the **SilverStream eXtend** program group.
2. Select **AppServerVersion>SilverStream Server**.

The SilverStream server must be running for you to connect the SMC to it. Your local machine is the default machine for running the server. It is called **localhost**. By default, the server listens to port 80 on the local machine.


3. Wait for this message:

```
SilverStream Server ... serving at: http://host_name:port ...
```

4. Go back to the SilverStream eXtend program group and select **SilverStream Management Console**.

You see a splash screen, then the SMC.

NOTE As part of your testing, it is also good idea to verify that any services that the SilverStream server depends on are running and set to start automatically when the system reboots.

 If you encounter a problem, see the troubleshooting chapter in the *Administrator's Guide*.

Installing the runtime environment for external Java clients

If you need to deploy an external Java client to a user machine, you can use the SilverStream server installation program to set up the runtime components required on that machine.

➤ **To set up the runtime environment on a user's machine:**

1. Start the SilverStream server installation program and specify **Custom Install**.
2. Select only **JRE with jBroker**.

This installs the required versions of:

- Java 2 Runtime Environment (JRE)
- Java HotSpot Performance Engine
- jBroker



For more information on deploying external Java clients, see the chapter on writing external Java clients in the *Programmer's Guide* of the server's Classic Development Help.

Installing on a non-networked computer

The SilverStream server is designed for serving applications over the Web. Whether your machine is networked or not, the SilverStream server needs access to the TCP/IP protocol to function properly. If your machine is networked, verify that TCP is configured to run the SilverStream server properly.

Verifying that TCP/IP is installed on your computer

This section describes how to verify that TCP/IP is installed on a computer running on Windows platforms.

Windows NT

➤ **To verify that TCP/IP is installed on Windows NT:**

1. Go to the Control Panel and select the **Network** icon.
2. Select the **Protocols** tab.

3. Select **TCP/IP Protocol** and click **Properties**.

If you do not see TCP/IP installed, you must install it. Check with your LAN administrator for the details of TCP/IP in your installation. If TCP/IP is not run at all on your LAN, see “Installing a TCP/IP connection under Windows NT” on page 24.

4. Once you have TCP/IP installed, from a DOS command prompt type **ping localhost**. You should see the replies from your machine indicating that TCP/IP is functioning properly to contact your local machine.

Windows 95/98

➤ To verify that TCP/IP is installed on Windows 95/98:

1. Go to the Control Panel and select the **Network** icon.
2. Select **TCP/IP Protocol** and click **Properties**.

If you do not see TCP/IP installed, you must install it. Check with your LAN administrator for the details of TCP/IP in your installation. If TCP/IP is not run at all on your LAN, see “Installing a TCP/IP connection under Windows 95/98” on page 25 and add the MS Loopback adapter.

3. Type **ping localhost** from a DOS command prompt and verify that replies come back indicating that TCP/IP is installed and able to communicate with your machine (localhost).

Installing a TCP/IP connection under Windows NT

➤ To install a TCP/IP connection under Microsoft Windows NT:

1. Go to the Control Panel and select the **Network** icon.
2. Click the **Adapters** tab.
3. Click **Add**.
4. Select the **MS Loopback Adapter** and click **OK**.
5. The value 802.3 appears in the Frame Type field. Click **OK**.
6. Install the necessary files from the NT Workstation CD or NT Server CD (depending on NT configuration).
7. Click the **Protocols** tab.
8. Click **Add**.
9. Select **TCP/IP Protocol**.

10. Install the necessary files from the NT Workstation CD or NT Server CD (depending on NT configuration).
It will install the **hosts** file and **ping.exe** along with other support files.
11. Click the **Properties** button for the TCP/IP protocol.
12. Click the **DNS** tab and enter the Host Name (for example, SilverHost).
13. Select the **IP Address** tab.
14. Select the **MS Loopback Adapter** from the Adapter dropdown list.
15. Click on **Specify an IP Address**. Enter an IP Address (for example, 200.200.200.200).
16. Specify a Subnet Mask (for example, 255.255.255.0).
17. Reboot your computer.
18. Rename or copy the **hosts.sam** file to **hosts**, with no file extension. Using Notepad, edit the **hosts** file by adding an entry for the IP Address/Host Name that you defined previously (for example: 200.200.200.200 SilverHost).
19. To test this address, go to a DOS prompt and type: **ping SilverHost**. You should then see responses from the IP address that you defined. This will be the host name that the SilverStream server will use.

Installing a TCP/IP connection under Windows 95/98

➤ To install a TCP/IP connection under Microsoft Windows 95/98:

1. Go to the Control Panel and select the **Network** icon.
2. Select the **Configuration** tab.
3. Click **Add/Protocols**.
4. Select **Microsoft/TCPIP**.
5. Install the necessary files from the Win95/98 CD.
It will install the **lmhosts.sam** file and **ping.exe** along with other supporting files.
6. Go back into **Properties** for TCP/IP.
7. Select **DNS Configuration**. You must enable DNS and supply a Host Name (for example, SilverHost). You must specify an IP address (for example, 200.200.200.200). You must also specify a Subnet Mask (for example, 255.255.255.0).
8. Reboot your computer.
9. Rename or copy the **lmhosts.sam** file to **hosts**, with no file extension. Using Notepad, edit the **hosts** file by adding an entry for the IP Address/Host Name that you defined previously (for example, 200.200.200.200 SilverHost).

10. To test this address, go to a DOS prompt and type: **ping *SilverHost***. You should then see responses from the IP address that you defined. This will be the host name the SilverStream server will use.

Installing the SilverStream server as a service

When you are running high-availability servers in a multiuser environment, it often makes sense to run servers as Windows services. Running both the SilverStream server and the database server as services on the same machine ensures that both services will restart automatically when the machine reboots. If the databases that the SilverStream server connects to do not reside on the same machine as the SilverStream server, you should also set these databases to restart automatically on reboot.

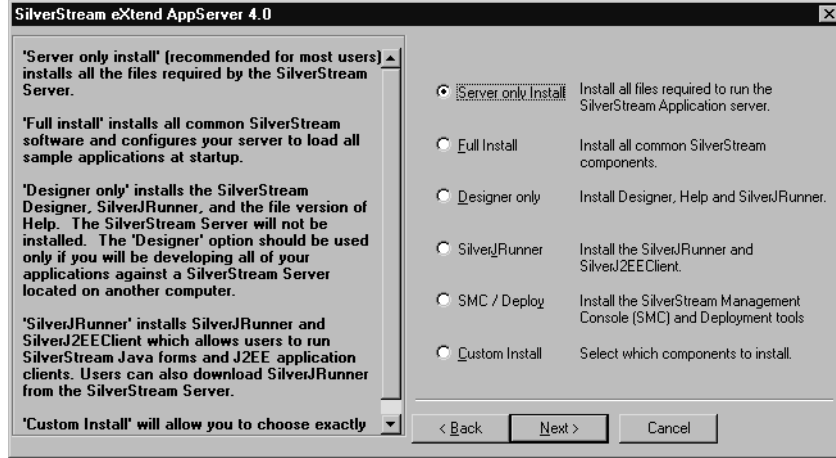
Before you install the SilverStream server as a service, review the recommendations in “Guidelines on setting the SilverStream server to run as a service or a daemon” on page 7. The following procedure assumes that you have already done the following:

- Installed the SilverStream server as a program (not as a service) and verified that the server starts properly and connects to the SilverMaster
- Configured your database server to run as a service

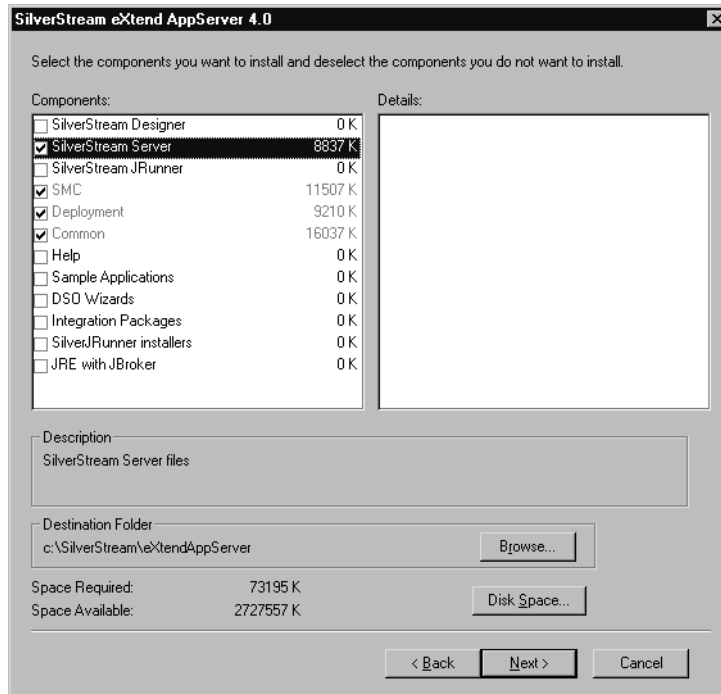
Using the installation program, proceed with the following steps.

➤ To set up the SilverStream server to run as a Windows service:

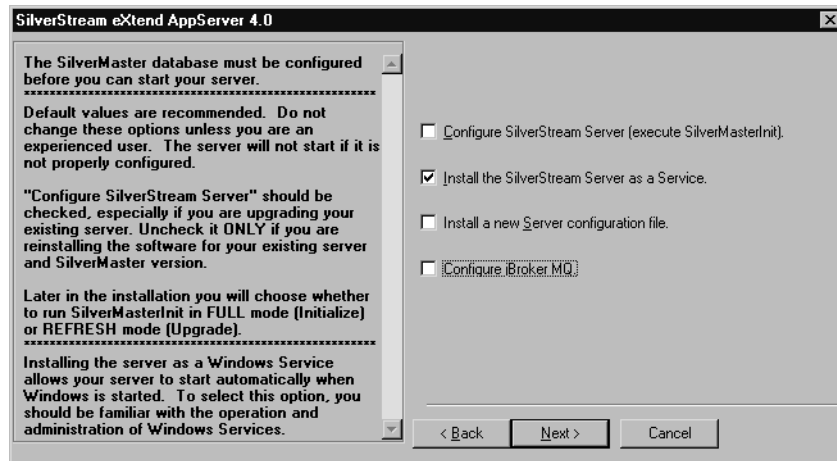
1. Insert the SilverStream server CD into the CD-ROM drive. The installation program automatically starts. For more information, see “Installing the SilverStream server” on page 11.
2. After the Setup Welcome and the license agreement screens, choose **Install Software** and choose **Next** to continue.
3. Select **Install SilverStream eXtend Application Server** and choose **Next** to continue.
4. You see a screen similar to the following. Choose **Custom Install** and choose **Next**.



- In the Components list box shown in the following screen, select the **SilverStream Server** check box and deselect all the others (note that SMC, Deployment, and Common are automatically selected when you select the server).



6. Choose **Next**.
7. When you come to the following screen, choose **Install the SilverStream Server as a Service** and deselect the other options.



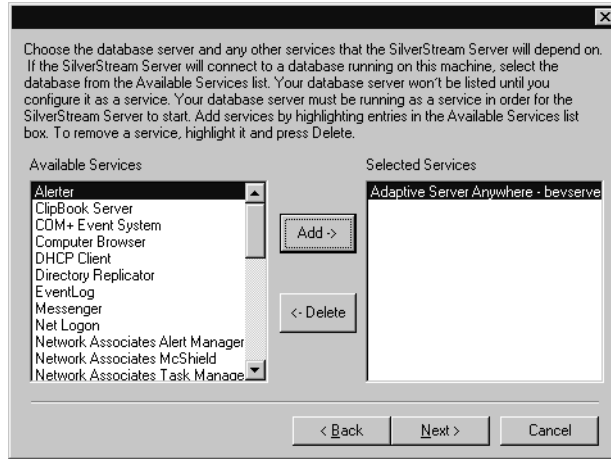
8. Choose **Next**.

The following step assumes that both the SilverStream server and your database server are on the same machine. If your database server runs on a different machine from the SilverStream server, make sure you can access it using an outside application before configuring it to run with the SilverStream service.

NOTE If you are using Sybase Adaptive Server Anywhere and running the SilverStream server as a service, you must configure the database as a service (since it must start before the SilverStream server). By default, these databases are not installed as a service and will not appear in the list of Available Services until configured (as described in “Step 4: Run Sybase ASA as a service” on page 96).

9. Choose which database server the SilverStream server will use and then choose **Next**.

If the SilverStream server will connect to a database server running on the same machine, select the database from the Available Services list. When run as a service, the SilverStream server requires that the database also run as a service.



10. Follow the remaining steps presented by the installation wizard until the SilverStream server installation is completed. Since you have already installed the SilverStream server, no files are copied.



For more information on finishing the installation, see “Installing the SilverStream server” on page 11.

11. When the installation program is complete, open the Services Control Panel. The SilverStream server will appear in the list of available services.
12. Set the SilverStream server to start automatically when the system reboots. By default, the service startup setting is initially set to Manual not Automatic.



For more information about the operation and administration of services, see the Windows documentation.

13. For any Sybase Adaptive Server Anywhere database that is configured to run as a service, verify that the ODBC Data Source entries match the service configuration (if you are connecting using ODBC).

Where to go next For information on maintaining the SilverStream service as well as setting up additional SilverStream services, see the section on maintaining SilverStream processes running as services in the chapter on running the server in the *Administrator’s Guide*.

3

Installing the SilverStream Server on UNIX

This chapter describes how to install the SilverStream eXtend Application Server on UNIX and Linux. It contains these topics:

- System requirements and supported databases
- Installing the SilverStream server
- Testing the install
- Accessing the SilverStream server
- Setting environment variables
- Troubleshooting

System requirements and supported databases

See the *Release Notes* for the latest information on the following:

- Hardware and software needed to run the SilverStream products
- Supported databases

Installing the SilverStream server

This section describes how to install the SilverStream server. It includes the following sections:

- Before you install
- Mounting the CD-ROM drive (AIX)
- Mounting the CD-ROM drive (HP-UX)
- Mounting the CD-ROM drive (Solaris)
- Running the install
- Setting the SilverStream server and cluster components to run as daemons
- Changing the user account and ports


Before you install

NOTE For any updated information about installing the SilverStream server, see the *Release Notes*.

Before you install the SilverStream server, make sure you have created and configured a database to be used as your SilverMaster database. See the appropriate chapter in this guide for information on setting up your database type. For general information on database setup for the SilverStream server, see the chapter on data source configuration in the *Administrator's Guide*. See the *Release Notes* for the database versions and drivers supported for your platform.

You must have Read or Execute rights for the installation directories; otherwise, you will receive an error message.

On UNIX, the SilverStream server listens on port number 8080 by default. If another process is occupying that port, the installation procedure lets you specify a different port. If you want to set the port numbers to values lower than 1024 (normally reserved for root on UNIX systems), you have to be identified as user **root**. After installing the SilverStream server, you can change the user name and ports used by the server.

 For more information, see “Changing the user account and ports” on page 41.

HP-UX note Java programs can heavily use threads and sockets. HP-UX's default setting for the `max_thread_proc` kernel parameter is too low for Java applications. You need to increase its value to at least 2048. If you don't, the VM might silently crash. For more information, go to the HP Web site (<http://www.hp.com>) and search for **max_thread_proc**.

Mounting the CD-ROM drive (AIX)

To install the SilverStream server, you must first mount the CD-ROM drive.

➤ To mount the CD-ROM drive:

1. Create the `/cdrom` directory to be used as the mount point. For example:

```
mkdir /cdrom
```

2. Mount the CD-ROM drive to the mount point.

```
mount -vcdarfs -r /dev/drive mount-point
```

where *drive* is the CD-ROM drive (typically `cd0`) as seen in the first columns of the `lsdev -Cc cdrom` command and *mount-point* is the full path to the directory you created to mount the CD-ROM drive.

A typical statement is:

```
mount -vcdarfs -r /dev/cd0 /cdrom
```

Mounting the CD-ROM drive (HP-UX)

To install the SilverStream server, you must first mount the CD-ROM drive.

➤ **To mount the CD-ROM drive:**

1. Create the /cdrom directory to be used as the mount point.

```
mkdir /cdrom
```

2. Start the pfs_mountd and pfsd daemons if they are not already running.

```
nohup /usr/sbin/pfs_mountd &  
nohup /usr/sbin/pfsd &
```

3. Mount the CD-ROM drive to the mount point.

```
/usr/sbin/pfs_mount -x unix -t rrip /dev/dsk/c1t2d0 /cdrom
```

where *c1t2d0* is the CD-ROM device.

Mounting the CD-ROM drive (Solaris)

The Solaris Volume Management software automatically mounts the CD-ROM to the /cdrom mount point.

Running the install

Once the CD-ROM drive is mounted, you can install the SilverStream server. You do not need to run the installation program with root privileges; you can install as any user.

➤ **To install the SilverStream server:**

1. Change the directory to the CD-ROM mount port.

```
cd /cdrom
```

2. Enter the following at the command prompt:

```
./install.sh
```

The installation script begins. It checks to see whether you have all required patches installed. If so, it continues; if not, it tells you what you need to do.

3. Press **Enter** to see the SilverStream license agreement.
4. Specify the directory where you want to install the software or press **Enter** to accept the default.
5. If prompted, press **Y** or **Enter** to create the directory.
6. Choose whether to install the sample applications.

7. Specify the DBMS you will use for your SilverMaster.

The information you need to provide depends on the database type you chose.

| Database type | Required information |
|---------------------------|---|
| Cloudscape | <ul style="list-style-type: none">• SilverMaster database name• Database user name• Database user password• JDBC URL |
| DB2 | <ul style="list-style-type: none">• Directory containing the DB2 client• SilverMaster database name• Database user name• Database user password |
| Informix | <ul style="list-style-type: none">• SilverMaster database name• Database user name• Database user password• Informix host name• Informix server name• Informix port number• Informix installation directory |
| Microsoft SQL Server 2000 | <ul style="list-style-type: none">• SilverMaster database name• Database user name• Database user password• SQL Server host name• SQL Server port number• Driver directory |

| Database type | Required information |
|---------------|--|
| Oracle | <ul style="list-style-type: none"> • Database driver type and whether to use Oracle synonym support (versions 8 and 9i only) • ORACLE_HOME directory • Oracle TNS name • SilverMaster database name • Database user name • Database user password <p>NOTE You can check the connection to the database from the machine you are running the installation on using sqlplus. For example:</p> <pre style="margin-left: 40px;">sqlplus username/password@databasealias</pre> |
| Sybase | <ul style="list-style-type: none"> • SilverMaster database name • Database user name • Database user password • Sybase host name • Sybase port number • Directory containing the jConnect classes or JAR file |

8. You are asked whether you want to upgrade a previous version of the SilverStream SilverMaster.
Select **Yes** to upgrade your previous SilverMaster to the current version.
9. If you are not upgrading an existing SilverMaster, you are asked whether the installation program should configure the SilverStream server—that is, initialize the SilverMaster database. Select **Yes**.

10. If you are initializing the SilverMaster, you are asked whether you want to **restrict access to the SilverStream server**.

If you accept the default (yes), unauthorized users will not be able to access administration operations or browse directory listings. Access to administrative settings and resources will be limited to members of the Administrators group. Only members of the Administrators and Developers groups will be able to browse directory listings. All users will be required to log in whenever they access the server. All users will have Execute permission, which enables them to run application operations.

Installing the SilverStream server without restricting access means that all users will be able to perform administrative operations and browse directory listings until you lock down access by setting permissions.

Our recommendation:

- If you are developing SilverStream applications in a development environment, you probably **do not want** to restrict access to the server
- If you are administering a production environment where applications are deployed for use on the Web, you probably **do want** to restrict access to the server



For more information, see the chapter on using security in the *Administrator's Guide*.

11. If you are initializing the SilverMaster, you are asked to define a user name and password for the SilverStream user who will administer the server. The installation program will create a user with this name and password and assign this user Locksmith privileges. Your server's administrator will log in to the server using this account.



For more information, see the chapter on setting up users and groups in the *Administrator's Guide*.

12. You are asked to specify the HTTP port. Enter the port number or press **Enter** to accept the default.

The SilverStream server defaults to port 8080 on UNIX. You need to specify the port number when you connect to the server from the SMC or when you specify URLs on that server. From the SMC, you specify the server as *hostname:portnumber*. For example:

```
myserver:8080
```


For application URLs on the server, you need to tell the browser what port number the server is using (for example, `http://myserver:8080/...`).

13. You are asked to specify the name service port number. This is the port that the SilverStream server starts the RMI name services on. Typically you can accept the default. Enter the name service port number or press **Enter** to accept the default.
14. You are asked whether you want to **configure jBroker MQ**.

jBroker MQ is the JMS server that accompanies the SilverStream server. Selecting **Yes** for this option has two effects:

- The graphical jBroker MQ installation program will be launched at the end of the SilverStream server installation, and you will be able to configure jBroker MQ (for example, you can specify the database to hold the persistent data)
- The JMS server will be started automatically by the SilverStream server when it starts

If you select **No** for this option, jBroker MQ will be silently installed (it is required by the server), but you will not be able to configure it at that time and it will not be automatically started by the SilverStream server. You will need to configure it later in order to use it (for example, you will have to initialize its database).

 For details on this jBroker MQ configuration choice, see the chapter on running the server in the *Administrator's Guide*. For information about jBroker MQ, including how to initialize its database, see the jBroker MQ Help.


15. Enter your license string and press **Enter**.

The installation program displays a screen that contains information about the changes the program will make, information about the SilverMaster and SilverStream server settings, and the license string.

16. If the information is correct, select **Yes** to start the installation.

The program creates or edits your `httpd.props` file and sets environment variables in **.agprofile**. A list of the install directories appears, along with the message that the program is creating resources. This portion of the installation program, which runs `SilverMasterInit`, may take some time.

17. If you chose to configure jBroker MQ, the graphical jBroker MQ installation program launches. Go through the installation.


 For more information, see the jBroker MQ help.

18. When the installation completes, you are asked if you want to start the SilverStream server.

19. If you choose **Yes**, the SilverStream server starts.

If you choose **No**, you can start the SilverStream server manually. See “Testing the install” on page 42.

If you want the server to start automatically when the machine boots, use the sample startup scripts that are installed on your system. The text preceding the final installation prompt tells you where to find the sample startup scripts.

 For more information about using the startup scripts, see “Setting the SilverStream server and cluster components to run as daemons” on page 38.

20. Unmount the CD-ROM device as needed.

Installing and using online help If you did not install the SilverStream server online help during your server installation, you can install it later: It is located on the CD in **docs.tar**; install it by cd'ing to your SilverStream server installation directory and executing the following:

```
tar xvf CDdrive/docs.tar
```

To start help, open **Start_Core_Help.html**, which is in the SilverStream Docs directory.

Setting the SilverStream server and cluster components to run as daemons

The installation program installs sample startup scripts that your system can run to automatically start the SilverStream server or cluster components as daemons at boot time.

Server and cluster sample startup scripts


The paths to the server and cluster component startup scripts for each supported UNIX platform are listed in the following table. See Step 4 of the following procedure for sample commands that install the server component for each platform.

| | Server path | Cluster path |
|----------------|---|---|
| AIX | <i>\$installdir/etc/rc.silverserver</i> | <i>\$installdir/etc/rc.silvercluster</i> |
| HP-UX | <i>\$installdir/sbin/init.d/silverserver</i> | <i>\$installdir/sbin/init.d/silvercluster</i> |
| | Server link: <i>\$installdir/sbin/rc3.d/S300silverserver</i> | Cluster link: <i>\$installdir/sbin/rc3.d/S300silvercluster</i> |
| Solaris | <i>\$installdir/etc/rc3.d/S90silverserver</i> | <i>\$installdir/etc/rc3.d/S91silvercluster</i> |

As shown in the preceding table, the HP-UX server and cluster component scripts use link files.

Using the server sample startup scripts

A system administrator with root privileges must copy the sample server and cluster scripts from the install directory into your operating system's boot directory.

 For more information, see “Setting up the SilverStream server to run as a daemon” next and “Setting up the SilverStream cluster to run as a daemon” on page 41.

Setting up the SilverStream server to run as a daemon

To have the server startup script run the next time your system reboots, a system administrator with root privileges must copy the script from the install directory into your operating system's boot directory as shown in Step 4 of the following procedure.

➤ To set up the SilverStream server to run as a UNIX daemon:

1. Before you install the SilverStream server as a daemon, review the recommendations in “Guidelines on setting the SilverStream server to run as a service or a daemon” on page 7.
The following procedure assumes that you have already run the installation program and created and configured a database to be used as your SilverMaster database.
2. Locate the sample startup scripts as listed in the preceding table.


3. Edit the server and cluster components startup scripts if needed.
4. Copy the sample script from your install directory into the boot directory for your platform. The script will run from that directory the next time the system reboots. For example, to copy the sample server script for Solaris from an install directory called **\$\$SILVERSTREAMROOT/etc/rc3.d** to a boot directory called **/etc/rc3.d**, you would type:

```
cp $$SILVERSTREAMROOT/etc/rc3.d/S90silverserver /etc/rc3.d
```

The following table shows platform-specific sample commands.


| Platform | Command |
|----------|--|
| AIX | Sample server copy command: <pre>cp \$\$SILVERSTREAMROOT/etc/rc.silverserver /etc/</pre> |
| HP-UX | Sample server copy and link commands: <pre>cp \$\$SILVERSTREAMROOT/sbin/init.d/silverserver /sbin/init.d ln -s /sbin/init.d/silverserver /sbin/rc3.d/S300silverserver</pre> <p>The HP-UX sample scripts use links that are similar to those used by HP-UX for their startup script environment. In the second command above, /sbin/rc3.d/S300silverserver is a link that points to /sbin/init.d/silverserver.</p> |
| Solaris | Sample server copy command: <pre>cp \$\$SILVERSTREAMROOT/etc/rc3.d/S90silverserver /etc/rc3.d</pre> |

 For more information, see the “Server and cluster sample startup scripts” on page 38.

5. Start the SMC (SilverStream Management Console).
 For more information, see the *Administrator's Guide*.
6. Use the Configuration/General panel to specify the user under whose account the server will be started at boot time. To provide security, set the **Username for server** property to your (or another user's) user account. By default, this property is set to root. You should change privileges from root to a different effective user ID. Once a root process changes its ownership to become a non-root process, it can't recover its former access privileges.


Setting up the SilverStream cluster to run as a daemon

You can use the sample scripts to start a cluster component as a daemon. By default, the scripts run with root privileges. If you want the cluster to start as a user other than root, see your system administrator, who can apply the setuid permission to the cluster component script files.

 For a list of startup scripts, see the table in “Using the server sample startup scripts” on page 39.

Changing the user account and ports

After installing the SilverStream server, you can change the user account that the server runs under. You can also change the ports used by the server. For example, you might want to use port 80 (the default port for the SilverStream server on Windows) as the runtime port. That requires **root** access, but maybe you want the server to run under a different user account. You could perform the following procedure.

 For more information about the runtime, design, and administration ports used by the SilverStream server, see the section on setting up separate ports in the chapter on running the server in the *Administrator's Guide*.

➤ To change the user account and ports:

1. Open the SMC (SilverStream Management Console).
2. Select **Configuration** options.
3. Select the **General** panel.
4. Set **Username for server** to the user name for the process.
5. Change the port numbers as appropriate.
6. Click **Update**.


 For more information about the SMC, see the *Administrator's Guide*.

Using a port lower than 1024 If you specified a port lower than 1024 (such as 80) but a user name other than **root**, you need to do the following:

- Log in as **root** and start SilverServer with the SilverServer shell script.
The server opens the specified port and switches the process UID to the user name you specified.

Testing the install

To test your installation, start the SilverStream server.

 For complete information about starting and stopping the SilverStream server, see the chapter on running the server in the *Administrator's Guide*.

➤ To start the SilverStream server:

1. Access the bin subdirectory (for example, /usr/local/silverstream/bin) in the directory where you installed SilverStream. Execute the following script:


```
./SilverServer &
```

2. Wait for this message:

```
SilverStream Server ... serving at: http://host_name:port ...
```

You must have Read or Execute rights for the installation directories; otherwise, you will receive an error message.

NOTE It is also a good idea to verify that any services that the SilverStream server depends on are running and set to start automatically when the system reboots.

 If you encounter a problem, see “Troubleshooting” on page 44.

Accessing the SilverStream server

You can access the SilverStream server running on UNIX from the SilverStream Management Console (SMC).

➤ To access a UNIX SilverStream server from the SMC:

1. Click the **Choose** icon from the toolbar or select **File>Choose Server**.

A dialog box appears prompting you to enter the name of the server.

2. Specify *hostname:portnumber* and click **OK**.

A new server icon appears in the left pane of the SMC. This icon displays the name of the server you specified.

Setting environment variables

SilverStream creates the environment file **.agprofile** in the SilverStream server installation directory during installation (since it is a “dot” file, you need to issue the **ls -a** command to see it). The SilverStream server sources this file automatically when starting.

The **.agprofile** file sets up a proper environment to launch the SilverStream server. It sets environment variables for the following:

- SilverStream root location (SILVERSTREAMROOT)
- Java JRE location (JRE_HOME)
- Database location (depends on your DBMS)
- Native libraries (LD_LIBRARY_PATH on Solaris and Linux, SHLIB_PATH on HP-UX, LIBPATH on AIX)
- Fulcrum SearchServer (FULCREATE, FULSEARCH, FULTEMP)
- Path needed by the SilverStream server (PATH)
- The SilverStream server class path (AGCLASSPATH)

Normally this file is only edited by SilverStream during installation. However, you might want to alter this file for the following reasons:

- To update the AGCLASSPATH environment variable to include third-party classes
- To update the AGCLASSPATH environment variable and the native search path (LD_LIBRARY_PATH, SHLIB_PATH, or LIBPATH) if you access multiple DBMS types (Oracle, Sybase, etc.) from the SilverStream server (by adding application databases or connection pools to your SilverMaster)

You must restart the server after changing AGCLASSPATH and before adding a database or connection pool.



For details on changing AGCLASSPATH for database driver support, see the chapter on data source configuration in the *Administrator's Guide*.

Troubleshooting

This section describes known problems and their workarounds.

Invalid license number

Error message

```
***Warning: License improperly installed: SilverStream Software;  
<licensenum>  
***Warning: No valid Licenses found defaulting to Single User  
License.  
SilverStream Server [Build Number: Number] serving at: http://servername:  
portnumber
```

Description

This message may occur if you run SilverMasterInit outside the installation.

You must reapply your license to the SilverMaster database. Go to your /cdrom/silverstream directory and run the following command:

```
./upldlic.sh your license number
```

X Windows connection errors

X Windows error message

```
Xlib: connection to "sunny:0.0" refused by server  
Xlib: Client is not authorized to connect to Server
```

Description

Messages like these can occur if you are installing on a remote machine. The following command or a suitable variation should be run from a remote machine:

```
xhost +  
xhost + machinename_of_installation
```

If after executing the xhost command, you get the following error:

```
/usr/openwin/bin/xhost: must be on local machine to add or remove hosts.
```

you must execute the command at the server console and not remotely.

X Windows error message

The following message may be caused by an incorrect DISPLAY variable:

```
Java exception occurred java.lang.InternalError: Can't connect
to X11 window server using '222.111.99.333:0.0' as the value
of the DISPLAY variable.
```

Description

Try changing the value of the DISPLAY environment variable to one of the following:

```
DISPLAY=:0.0
export DISPLAY
```

or

```
DISPLAY=machinename:0.0
export DISPLAY
```

Unable to create server socket

Error message

```
***Fatal Error, aborting com.sssw.srv.http.httpd: An unexpected exception
occurred      com.sssw.srv.daemon.ServerHandlerInitException: Unable to
create server socket on port 80, details: Permission denied at
com.sssw.srv.http.httpd.initializeServerSocket (httpd.java:1105) at
com.sssw.srv.http.httpd.initialize (httpd.java:2344) at
com.sssw.srv.http.httpd.mainBODY = (httpd.java:2437) at
com.sssw.srv.http.httpd.main (httpd.java:2446)
```

Description

You tried to start SilverServer on port 80 without root privileges.

Usually only the root user can start a server on port 80. Try logging on as root and starting SilverServer, or follow the procedure in “Changing the user account and ports” on page 41.

Corrupted SilverMaster

Error message

```
SilverStream Server loading properties from:
/opt/silverstream/Resources/httpd.props
*** Fatal Error, aborting
com.sssw.srv.http.httpd: An unexpected exception occurred
com.sssw.srv.daemon.ServerHandlerInitException: An exception
occurred while attempting to initialize the connection to
'SilverMaster':
Unable to find schema for database SilverMaster in AgInfo
table.
at com.sssw.srv.http.httpd.initializeProperties
(httpd.java:1356)
at com.sssw.srv.http.httpd.initialize(httpd.java:2287)
at com.sssw.srv.http.httpd.mainBODY(httpd.java:2437)
at com.sssw.srv.http.httpd.main(httpd.java:2446)
-----
Java exception occurred java.lang.RuntimeException:
An unexpected exception occurred
-----
```

Description

If after running SilverServer you see this error, the SilverMaster database has been corrupted and SilverMasterInit should be rerun.

Problems starting SilverServer

If you would like to start SilverServer without checking the SilverMaster resources, you can start the server using the `-nodbcheck` startup option:

```
./SilverServer -nodbcheck
```

Full-text search fails

Error message

```
Unable to save a table with a field that is marked "Full Text Searchable".
```


Description

Full-text search will fail if the directory in which the SilverStream server resides contains a hyphen (-) or a period (.).

Reinstall the SilverStream server into a directory that does not contain a hyphen or a period. (Renaming the installation directory is not sufficient, since environment variables are set during the installation.)

4

Installing Enterprise Data Connectors

This chapter describes how to install the Enterprise Data Connectors (EDCs) for Lotus Notes and SAP R/3.

It includes the following sections:

- About the installation software
- Installing EDCs for the Classic Edition
- Installing EDCs for the Enterprise Edition
- Configuring the environment for Lotus Notes

Before you begin You should read the SilverStream Enterprise Data Connectors *Release Notes* before installing the SilverStream software components.

The EDCs require that you install software from the target data source vendor Lotus Notes or SAP. The SAP R/3 software must be installed before you install the SilverStream eXtend Application Server, or the SilverStream install will not be successful.

About the installation software

EDCs include a SilverStream client component (for the design-time environment) and a SilverStream server component (for the design-time and runtime environments).

What's on the SilverStream Classic Edition (SCE) CD Both the client and server components are on the installation CD that is included with the Classic Edition. You install it using the Custom installation procedure described in “Installing EDCs for the Classic Edition” on page 50. The Classic Edition provides the software for development and testing only.

What's on the SilverStream Enterprise Edition (SEE) CD The Enterprise Edition provides the software necessary for deployment only. To deploy an EDC on an Enterprise Edition server, you must purchase the EDC separately and install it from the EDC installation CD. See “Installing EDCs for the Enterprise Edition” on page 51.

Installing EDCs for the Classic Edition

For development, the installation procedure installs both design-time and runtime software components.

➤ To install EDCs for development:

1. Insert the SilverStream Classic Edition CD into the CD-ROM drive. The installation program automatically starts.
You first have the opportunity to view the *Release Notes* for Classic Edition. The *Release Notes* contain important information. Please take the time to read these notes carefully before continuing.
Next the installation program displays the SilverStream license agreement. To install the EDCs for development, you must accept this agreement.
2. Choose **Yes** and continue with the installation.
3. Choose **Install Software** and select **Next**.
4. Choose **Install SilverStream eXtend Application Server**.
SilverStream prompts you to specify the type of installation.
5. Choose the **Custom Install** and select **Next**.
6. SilverStream prompts you to choose the components to install. Select **DSO Wizards**. SilverStream displays the wizards that are available in the Details list box.
7. Select the appropriate wizards from the list box.
8. You can optionally select other components in the components list box.
 - To install the EDC client and server components on the current machine, make sure that both the **SilverStream Designer** and **SilverStream Server** are selected.
 - To install only the EDC client components (the Designer Wizards), deselect **SilverStream Server** and select the **SilverStream Designer**. You will have to install the server components on another machine.
 - To install only the EDC server components, deselect the **SilverStream Designer** and select the **SilverStream Server**.
9. When you have selected the components you want, select **Next**.
10. Continue the installation process through to the end of the installation.
See the chapter on your database type for information about specific steps in the installation procedure. For example, if you are installing SilverStream and using Oracle as your SilverMaster database, see Chapter 10, “Configuring Oracle Databases”.

11. Once you have entered the license information and registered the product, you are asked if you want to install the EDC software on the server.
 - If you are installing both the client and the server components on the same machine, choose **Yes**
 - If you are installing only the client components, choose **No**
 - If you are installing only the server components, choose **Yes**
12. The installation program displays the SilverStream license agreement. To install the EDC's server components, you must accept this agreement. Choose **Yes**.
13. Specify the location where the components should be installed (or accept the default), and choose **Next**.

The installation procedure starts the SilverStream server and uploads the software. It notifies you when the installation is complete.

You must install the appropriate non-SilverStream software for the EDCs and configure the machines as necessary before you can begin using the EDCs.

Installing EDCs for the Enterprise Edition

For deployment, the installation procedure installs the runtime software components.

➤ To install EDCs for deployment:

1. Insert the SilverStream CD into the CD-ROM drive. The installation program automatically starts.

You first have the opportunity to view the *Release Notes*. The *Release Notes* contain important information. Please take the time to read these notes carefully before continuing.

Next the installation program displays the SilverStream license agreement. To install the EDC server components, you must accept this agreement.

2. Choose **Yes** and continue with the installation.
3. Enter the EDC product ID for the components that you want to install and choose **Next**.

The installation procedure starts the SilverStream server and uploads the software, then shuts the server down. It notifies you when the installation is complete.

You must install the appropriate non-SilverStream software for the EDCs and configure the machines as necessary before you can begin using the EDCs.

Configuring the environment for Lotus Notes

When configuring the workstation where the SilverStream server and Lotus Notes Workstation processes run, you must set up a Notes User ID to be used by the SilverStream server.

SilverStream accesses Notes via a single User ID. This User ID must have access to any of the Notes databases that must be available at design-time and runtime. See your Notes administrator to create and configure the User ID for the Lotus Notes Workstation.


If a password is required when the SilverStream server accesses Notes, it will display a login dialog on the machine running the SilverStream server, not at the client. For this reason you will probably want to set up the Notes client on the SilverStream server machine so that entry of a password is not required.

5

Configuring Cloudscape Databases

This chapter describes how to configure your IBM Cloudscape database for use as a SilverMaster or application database with the SilverStream eXtend Application Server. It includes these sections:

- Setting up SilverMaster databases
- Setting up application databases
- Locating Cloudscape databases
- Cloudscape users, schema, and SilverStream
- Managing access to Cloudscape databases

 For the latest information on supported database versions, see the SilverStream eXtend Application Server *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

Setting up SilverMaster databases

To use a Cloudscape database as the SilverMaster database, you need to:

1. Install the Cloudscape software.
2. Create a Cloudscape SilverMaster database.

The sections that follow explain these steps.

Step 1: Install the Cloudscape software

The SilverStream Developer Edition installation program installs the Cloudscape software by default. The installation program copies three JAR files into the SilverStream lib\Cloudscape subdirectory. The JAR files are:

| JAR name | Description |
|----------------|--|
| cloudscape.jar | Provides the Cloudscape JDBC driver |
| cloudutil.jar | Provides the Cloudscape tools |
| RmiJdbc.jar | Provides the Cloudscape RmiJdbc driver |

To use Cloudscape databases with the SilverStream Enterprise Edition, you must:

1. Install the Cloudscape software yourself (it's available from the Cloudscape Web site at www.cloudscape.com)
2. Do **one** of the following:
 - Copy these three Cloudscape JAR files to the SilverStream lib\Cloudscape subdirectory: `cloudscape.jar`, `cloututil.jar`, and `RmiJdbc.jar`
 - Specify the location of those three Cloudscape JAR files in the `AGCLASSPATH` environment variable (for information on editing `AGCLASSPATH`, see the chapter on data source configuration in the *Administrator's Guide*)

As with any SilverMaster or application database, you must be able to connect to the destination Cloudscape database from the machine that hosts the SilverStream eXtend Application Server.


Step 2: Create a Cloudscape SilverMaster database

You can create a SilverMaster database using either of the following:

- The SilverStream installation program
- Cloudscape tools

The SilverStream installation program During the SilverStream installation process, you can specify that the install create a Cloudscape database for your SilverMaster. You should specify the user name **APP** and the password **password** when prompted.

Cloudscape tools You can use Cloudscape's tools to create the SilverMaster database. If the Cloudscape database that you use already contains users (not the APP user), then the database must also contain a schema of the same name.

 For more information, see "Cloudscape users, schema, and SilverStream" on page 57.

Setting up application databases

To set up a Cloudscape database as an application database, perform these tasks:

1. Create the Cloudscape database.
2. Add the Cloudscape database or connection pool to the SilverStream server.

The following sections describe these steps.

Step 1: Create a Cloudscape application database

You can create the Cloudscape database:

- Using the Cloudscape tools



For more information, see the Cloudscape documentation at www.cloudscape.com.

- When you add the database to the SilverStream server

In this case, you must specify the JDBC URL for the database. You can create the database at the same time that you add it by appending the string **;*create=true*** to the URL.

You can add a Cloudscape database using:

- The Add Database dialog from the SMC
- The AddDatabase command of the SilverCmd command-line tool



For more information on Cloudscape JDBC URLs, see “Locating Cloudscape databases” on page 56.

Using the Add Database dialog Provide these values:

- Database Name
- User name: **APP**
- Password: **password**

By default, Cloudscape databases are created with no security. Use the APP/password combination whenever connecting to an unsecured database.

- Database platform: **IBM Cloudscape**
- JDBC URL: ***jdbc:cloudscape:databasepath/databasename;create=true***

For example:

```
jdbc:cloudscape:c:/mydb/Testdb;create=true
```

Using SilverCmd AddDatabase You can invoke SilverCmd AddDatabase like this:

```
SilverCmd AddDatabase server[:port] -f file [options]
```

The following XML shows the contents of a file that you might specify using the -f parameter. This example creates and adds a database named EstoreDB and connects as the user APP.

```
<DatabaseOptions isObject="true">
  <MainDatabase isObject="true">
    <ConnectionOptions isObject="true">
      <DatabaseName type="String">EStoreDB</DatabaseName>
      <Username type="String">APP</Username>
      <Password type="String">password</Password>
      <LDSKey type="String">CloudscapeEmbeddedDriver</LDSKey>
```

```
<OtherDriver isObject="true">
  <JDBC_URLtype="String">jdbc:cloudscape:c:/mydb/Testdb;create=true
  </JDBC_URL>
</OtherDriver>
</ConnectionOptions>
</MainDatabase>
</DatabaseOptions>
```

Step 2: Add the Cloudscape database or connection pool to the SilverStream server

To add a Cloudscape database to the SilverStream server, follow the steps described in “Step 1: Create a Cloudscape application database” on page 55. You do not need the string **create=true** when you are adding an existing database. If the database already exists, the string is ignored.

Another way to access a Cloudscape database is to add a connection pool for it to the SilverStream server. For details on adding databases and connection pools, see the chapter on data source configuration in the *Administrator's Guide*.

Locating Cloudscape databases

Cloudscape JDBC URLs take this form:

```
jdbc:cloudscape:dbname
```


The *dbname* parameter can be a fully qualified pathname, a relative pathname, or a database name. The SilverStream server uses the **cloudscape.system.home** system property to locate databases (unless they are fully qualified). By default, the SilverStream server sets the system property **cloudscape.system.home** to the following directory:

```
SilverStreamInstallDir\db
```

If the SilverStream server is unable to locate the database using the system property, then SilverStream tries the current directory.

Cloudscape users, schema, and SilverStream

If the SilverStream server connects to the Cloudscape database as a specific user (not APP), then SilverStream requires that the database contain a schema of the same name. For example, if you want to connect to a database as the user DBADMIN, then the database must contain a schema also called DBADMIN.

 For more information on creating users and schemas, see the Cloudscape documentation at the Cloudscape Web site www.cloudscape.com.

Managing access to Cloudscape databases

The version of the Cloudscape database that ships with the SilverStream eXtend Application Server is designed to support a single database connection. If the SilverStream lib\Cloudscape directory exists, or the Cloudscape jars are found on your AGCLASSPATH, the Cloudscape database will automatically start in-process with the SilverStream server using the single allowed connection.

Making sure the Cloudscape database does not start automatically If you do not want it to start, you can remove or rename the Cloudscape directory without harm.

Running Cloudscape in a cluster server environment Cloudscape databases are not shareable between more than one process at a time and are not appropriate for a cluster server environment.

Connecting to Cloudscape from non-SilverStream tools When the SilverStream server has a database open, you must use a different JDBC driver and URL to connect to that database from a different source like a JDBC program or a Cloudscape tool. For example, you might want to run a JDBC program against that database.

To use Cloudscape's ij, you would normally do the following:

```
java COM.cloudscape.tools.ij
ij> connect 'jdbc:cloudscape:d:/MyDbs/MyDatabase';
```

But to connect while the SilverStream server is running, you would have to run it like this:

```
java -Dij.driver=COM.cloudscape.core.RmiJdbcDriver COM.cloudscape.tools.ij
ij> connect 'jdbc:cloudscape:rmi:d:/MyDbs/MyDatabase';
```

In CloudView, before connecting to the database click on the Connection tab, and change the prefix field to jdbc:cloudscape:rmi://localhost:1099/. This automatically changes the driver to COM.cloudscape.core.RmiJdbcDriver.

Allowing access to Cloudscape from external applications When the SilverStream eXtend Application Server has a connection to a Cloudscape database, other applications are only able to access the database through Cloudscape's remote RMI/JDBC bridge accessed via SilverStream's RMI/JDBC Listener. The SilverStream eXtend Application Server provides the following property, in the `httpds.props` file, to control the startup of the RMI/JDBC Listener:

```
http-server.com.sssw.db.cloudscape.cloudscapeDatabaseRMIDBCListener=  
[true|false]
```

The following table describes the property settings:

| Property Value | Description |
|-----------------|---|
| true | Setting this value to true causes the SilverStream eXtend Application Server to start the Cloudscape RMI/JDBC listener at server startup. Starting this listener makes it possible for other applications (such as SilverStream eXtend Workbench's EJB Wizard) to connect to the Cloudscape databases that the SilverStream eXtend Application Server is also connecting to (or holding connections to) using Cloudscape's remote RMI/JDBC bridge driver. |
| false (default) | Setting this value to false prevents the SilverStream eXtend Application Server from starting the Cloudscape RMI/JDBC listener at server startup. External applications, such as Workbench, will not be able to connect to any Cloudscape database to which the application server is connected. If you do not need external access to Cloudscape then leave this flag set to false. When the Cloudscape RMI/JDBC listener is enabled, the SilverStream eXtend Application Server is slower to shut down because it must do additional processing. When set to false, this flag prevents the slower than normal server shutdown. |

Running multiple SilverStream servers on a single host If you want to run multiple SilverStream servers on one computer and run Cloudscape, you need to specify a different Cloudscape RMI/JDBC port number for each server in its `httpd.props` file (the default is port 1099):


```
http-server.com.sssw.srv.cloudscape.RmiJdbcPort=number
```

Setting this line to a different port for each server avoids a port number conflict. For more information on setting other ports and properties for running multiple servers on a single host, see the *Administrator's Guide*.

6

Configuring DB2 Databases

This chapter describes how to configure your DB2 databases for use with the SilverStream eXtend Application Server as a SilverMaster or an application database.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter contains the following sections:

- Supported software versions
- Connecting to DB2 databases
- Troubleshooting

Supported software versions

This section details the connection and preinstallation setup recommendations by SilverStream Technical Support. Support of DB2 includes the following components:

- **DB2 database software** The SilverStream server supports DB2 Universal Database Version 5.2, Version 6.1, and Version 7.1. The DB2 database can reside on any platform that supports connection from the DB2 clients listed below; these platforms include but are not limited to AS/400, OS/390, NT, UNIX, and OS/2.

The database must be a version that supports TCP/IP. In general, the database must be a minimum of V4R2 to support TCP/IP. SilverStream has tested with V4R3, although version requirements may differ for DB2 depending on the platform. If your DB2 version is lower than V4R2, it may require extensive configuration to support Universal Database Client. AS/400 and OS/390 environments tend to require more configuration than NT, OS/2, or UNIX environments.

- **DB2 client software** The SilverStream server supports IBM Universal Database Client Version 5.2 and DB2 Connect Enterprise Edition versions 6.1 and 7. Users of DB2 5.0 can upgrade to Version 5.2 by applying FixPack FP6 9074. Users of DB2 7.1 can upgrade to 7.2 by applying FixPack 3.

If you are running software that does not meet the version requirements shown, you need to obtain the specified versions.

Connecting to DB2 databases

The SilverStream server connects to DB2 using a Type 2 JDBC driver written by IBM and included with their Universal Database client. This driver interfaces with the UDB client to establish database connectivity to the back-end DB2 server. SilverStream officially supports TCP/IP connectivity, but customers have successfully connected using APPC, IBM's native protocol.

Follow the steps outlined below to make a DB2 database available to the SilverStream server:

Step 1: Gather information about your DB2 environment

Step 2: Prepare DB2 for connection from Universal Database Client

Step 3: Install the database client

Step 4: Configure the DB2 client connection

Step 5: Modify the DB2CLI.INI file

Step 6: Set environment variables

Step 7: Use the database with the SilverStream server

DB2 can be used as the SilverMaster database and to store the SilverStream system tables required for application databases, with this exception: DB2 cannot be used as a SilverMaster (or store SilverStream system tables) when DB2 is running on AS/400 or System 390.

Note that the application database **cannot** exist in the same physical space as the SilverMaster database, because several of the required tables have identical names.

Step 1: Gather information about your DB2 environment

Gather the following information for your DB2 environment.

- Operating system (for example: OS/390, MVS)
- Operating system version
- DB2 version (if different from OS)
- Is your database set up for TCP/IP support?
- Server host name
- Database name
- TCP/IP port for the database
- Service name
- User ID/password with full read access

- Owner, schema, or library list that contains the desired tables and views

NOTE If your DB2 version is lower than V4R2, your database may require extensive configuration to support Universal Database Client.

Step 2: Prepare DB2 for connection from Universal Database Client

IBM has extensive documentation available on configuring the database and the client software to support connectivity from the Universal Database Client. You can find documentation in the Information Center that is installed with the Universal Database Client, or on IBM's Web site.

If you have an extremely large database schema, check for additional database configurations that can help reduce the time it takes to scan the schema in the DB2CLI.INI file. In addition, see the following IBM documents:

- Preparing MVS/ESA or OS/390 for DB2 Connect
- Preparing DB2 for AS/400 for DB2 Connect
- Connecting DB2 for MVS/ESA in a DRDA Network
- Connecting DB2 for OS/390 in a DRDA Network
- Connecting DB2 for AS/400 in a DRDA Network Using SNA
- Connecting DB2 for AS/400 in a DRDA Network Using TCP/IP

Step 3: Install the database client

The database client must be installed on the machine where the SilverStream server will reside.

Using Universal Database Client Version 5.2 (Enterprise Edition)

Windows NT Follow the instructions in the setup program. Do not confuse the Universal Database Client with the Client Application Enablers (CAE). Installing the CAE will not give you all the components you need. You must install the entire Enterprise Connect product.

Solaris Before you can begin the installation of the DB2 database client on Solaris, you must first alter several kernel configuration parameters to accommodate the install. In the /etc/system directory:

```
set msgsys:msginfo_msgmax=65535
set msgsys:msginfo_msgmnb=65536
set msgsys:msginfo_msgseg=8192
set msgsys:msginfo_msgssz=16
```

Install the database client from the CD. You must install and create a DB2 instance during this installation so you can reference the DB2 profile script for SilverStream to successfully use the DB2 JDBC driver.

Using DB2 Connect Version 6.1 (Enterprise Edition)

Windows NT Follow these instructions for running the setup program:

1. Choose the **DB2 Enterprise - Extended Edition** check box.
You can leave the default choice for the information about the server instance.
2. Select **Custom**.
3. Select the following items from the list:
 - Java Enablement
 - DB2 Connect Server Support
 - Client Configuration Assistant

UNIX Follow the same instructions as shown above for installing Version 5.2 in Solaris, except that you install DB2 Connect - Enterprise Edition Version 6.1.

HP-UX note: The following are recommended values for HP-UX kernel configuration parameters when installing DB2 6.1:

- msgseg: 8192
- msgmnb: 65535
- msgmax: 65535
- msgssz: 16

Using DB2 Connect Version 7 (Enterprise Edition)

Windows NT Follow the instructions in the setup program.

HP-UX and Solaris See the *IBM DB2 Connect Enterprise Edition for UNIX Quick Beginnings* guide on the IBM Web site for information on installing DB2 Connect and for setting HP-UX and Solaris kernel parameters.

Step 4: Configure the DB2 client connection

Windows NT The SilverStream server connects using DB2 client **aliases**. These aliases are configured using IBM's Client Configuration Assistant, which can be found in the DB2 for Windows NT program folder. In order to run the Client Configuration Assistant, your NT login must have administrator authority and the ID must be no longer than eight characters. You need to be the DB2 administrator or have administrator privileges to complete these steps.

➤ **To create a new DB2 client alias:**

NOTE You may have to contact your DB2 Administration staff to obtain some of the information required in these steps.

1. Open the DB2 Client Configuration Assistant from the DB2 for Windows NT program folder.
2. Click the **Add** button at the top right of the Client Configuration Assistant screen. Select **Next** to continue.
3. Choose to manually configure a connection to a DB2 database. Select **Next** to continue.
4. Choose the appropriate protocol (default is TCP/IP). Select **Next** to continue.
5. Choose the appropriate platform or LAN-based.
6. Configure the DB2 server host name, TCP port number, and service name (optional) that your DB2 server is operating on. Select **Next** to continue.
7. Enter the target database name. Select **Next** to continue.
8. Enter the alias name (you will use this name later to add the database to the SilverStream server). Select **Next** to continue.
9. (Optional) Register these settings as an ODBC data source. This step is not required but is recommended.
10. Finally, test the connection from inside the Client Configuration Assistant.



For information on installation, see *Most Common DB2 Connect Problems* on the IBM Web site.

Solaris In order to establish a connection to your DB2 database, enter the DB2 command-line processor and enter the following two commands.

```
catalog tcpip node tcpipnodealias remote servername server port#
```

where *tcpipnodealias* is the local alias for your DB2 server (usually the same as the *servername*), *servername* is the name of the DB2 server, and *port#* is the port on the database server that is set to receive TCP/IP calls.

```
catalog database databasename as aliasname at node tcpipnodealias
```

where *databasename* is the actual database name, *aliasname* is the local name of the database (which may be the same as the actual name), and *tcpipnodealias* is the name given in the first catalog statement.

To test the DB2 connection:

```
connect to aliasname user userid using password
```

 For information on installation, see *Most Common DB2 Connect Problems* on the IBM Web site.

Step 5: Modify the DB2CLI.INI file

IBM provides a client side .ini file for the purpose of tailoring the client connection to the database. Without modifications, the SilverStream server will attempt to add **all** DB2 tables and views into the SilverStream environment. Most applications need only a subset of the entire list. Addition of a DB2 database without modifications to the .ini file can take an extraordinarily long time. There are several things that can be done to reduce the time it takes for the SilverStream server to read the schema.

One option is to specify the subset of tables to make available to the SilverStream server when adding the database to the server. For more information, see the chapter on SilverCmd in the *Facilities Guide* of the server's Core Help or the section on adding a database in the chapter on data source configuration in the *Administrator's Guide* of the server's Core Help.

Alternatively, you can follow these steps to make changes to .ini file parameters from the Client Configuration Assistant:

1. View the properties for an alias and then choose to modify the ODBC settings.
2. Connect to the database, then choose **advanced**.

The specific settings found to help with SilverStream server installs are listed below. The full list can be reviewed in the Call Level Interface document from IBM.

Optionally, the DB2 client .ini file can be found in the sqllib directory, and can be read and altered using a text editor. Your initial alias entry (with the name you entered via the Client Configuration Assistant) should look like this:

```
[db2alias]
DBALIAS=db2alias
```

To limit the number of tables that SilverStream shows in the Designer, you can specify a particular **schema**. Schema here refers to the owner/user of the objects or library in the case of AS/400.

```
SCHEMALIST="userid", "userid2"
```

For extremely large datasets, use of SCHEMALIST may not be enough to reduce scanning time. To greatly reduce the total number of tables that SilverStream interrogates, you need to complete these steps:

1. Create views of all the system tables using an alternate owner (must be performed by DBA). Do not create these views under the same owner ID as the tables you wish to access for your application; create them under a unique owner.
2. Reference that owner of those views in the .ini file.

```
SYSSCHEMA="owner"
```

For example, you may create your views to see the objects of three different owners. This sample view syntax was used for DB2 on NT.

```
CREATE VIEW MYSCHEMA.SYSTABLES AS SELECT * FROM SYSIBM.SYSTABLES WHERE
CREATOR IN ('USER1', 'USER2', 'USER3')
```

After views were created for all of the required system tables under the same schema, the entry in the ini file would look like this:

```
SYSSCHEMA="MYSCHEMA"
```

The SilverStream server will then scan only those objects. If used in conjunction with SCHEMALIST, the server will scan the objects of the three owners but only add those belonging to the owners referenced in SCHEMALIST.

Important The preceding options are highly recommended to reduce installation and server start times.

Other configuration options

For MVS environments, you may have to set a variable for long data type compatibility. For a complete description of this setting, see the LONGDATACOMPAT section of the Call Level Interface document.

```
LONGDATACOMPAT=1
```

If you can't save records in DB2 after adding the database, you may have to set a transaction variable. The example listed below is for an AS/400 system and eliminates the need for table journaling. For a complete list of options, see the TXNISOLATION section of the Call Level Interface document.

```
TXNISOLATION=32
```

Step 6: Set environment variables

Windows NT Connecting the SilverStream server to DB2 requires that you add the DB2 libraries to your AGCLASSPATH environment variable. To do this, open Control Panel / System and select the Environment tab. Create a System environment variable called AGCLASSPATH and set its value to C:\sqllib\java\db2java.zip (assuming that you installed your DB2 client onto the C: drive in the default location); if you did not install the DB2 client onto the C: drive, set the AGCLASSPATH variable accordingly.

By default, this sets up the JDBC 1.0 driver. In DB2 7.x, you can use the JDBC 2.0 driver by running this script: sqllib\java12\usejdbc2 (for details, click here).

UNIX DB2 requires that you add the DB2 JDBC driver's native libraries and Java classes to your Java classpath and system library path. To do this, you may reference the DB2 instance (created previously) directly in the SilverStream environment file .agprofile (which is stored in the SilverStream server installation directory). Edit .agprofile by adding the following line:

```
. /export/home/db2inst1/sqllib/db2profile
```

By default, this sets up the JDBC 1.0 driver. In DB2 7.x, you can use the JDBC 2.0 driver by adding the following lines to your .agprofile file (for details, click here):

```
. /home/db2inst1/sqllib/db2profile  
. /home/db2inst1/sqllib/java12/usejdbc2
```

 For more information on editing AGCLASSPATH and .agprofile, see the chapter on data source configuration in the *Administrator's Guide*.

Step 7: Use the database with the SilverStream server

Now you're ready to access the DB2 database from the SilverStream server. This enables you to do any of the following, as appropriate:

- Install the SilverStream server and point to that database as the **SilverMaster** (as described in Chapter 2, "Installing the SilverStream Server on Windows" and Chapter 3, "Installing the SilverStream Server on UNIX")
- Add that database to the SilverStream server for use as an **application database**
- Add a **connection pool** to the SilverStream server for accessing that database



For more information, see the chapter on data source configuration in the *Administrator's Guide*.

SilverStream Designer notes The SilverStream Designer (Classic Edition only) will list DB2 tables and views. DB2 alias objects cannot be seen from the Designer. SilverStream data source business objects can be written to access these objects.

The SilverStream Designer does not support creating tables or foreign keys for DB2 on MVS. Tables and foreign keys must be created outside SilverStream and then synchronized with the SilverStream server.

Troubleshooting

SQL0551N "user does not have the privilege to perform operation GRANT" If you receive this message from the DB2 client while connecting to DB2 6.1, you may have to bind the DB2 utility programs to the database. You must apply the procedure to each database you are using with the SilverStream server. Here is the binding procedure:

1. Log in as your DB2 instance user, such as db2inst1, change to the bnd subdirectory of the instance, and start the DB2 utility.

```
db2inst1@mymachine> cd sqllib/bnd
db2inst1@mymachine> db2
```

2. Connect to your database as the DB2 administrator:

```
db2 => connect to mydatabase user db2admin using db2admin
```

You will see the following info:

```
Database Connection Information
Database server          = DB2/NT 6.1.0
SQL authorization ID    = DB2ADMIN
Local database alias    = MYDATABASE
```

3. Run the first bind command:

```
db2 => bind @db2ubind.lst blocking all grant public
```


4. Run the second bind command:

```
db2 => bind @db2cli.lst blocking all grant public
```

7

Configuring Informix Databases

This chapter describes how to configure your IBM Informix database for use with the SilverStream eXtend Application Server as either a SilverMaster or application database.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter includes these sections:

- Connecting to Informix databases
- Troubleshooting

Connecting to Informix databases

The SilverStream server is able to access Informix databases through the Informix Type 4 JDBC driver (see the *Release Notes* for the supported version). See the Informix Web site (www.informix.com) for details.

Follow the steps listed below to make an Informix database available to the SilverStream server:

Step 1: Install the JDBC driver

Step 2: Create the Informix database and dbspaces

Step 3: Create the Informix user account

Step 4: Add the driver path to AGCLASSPATH

Step 5: Use the database with the SilverStream server

The sections that follow explain these steps.

Step 1: Install the JDBC driver

You must be able to connect to the destination Informix server from the workstation that will host the SilverStream server, so first install the Informix JDBC driver on that machine.

Step 2: Create the Informix database and dbspaces

Before you can install the SilverStream server, you must create the actual Informix database and the underlying dbspaces. You will need to connect to Informix as a user who is a member of the Informix-Admin group. You can create these objects using either Informix Enterprise Command Center (IECC) or a command-line utility such as DBACCESS.


NOTE When creating an Informix database for use with the SilverStream server, make sure you **turn logging on** for that database.

Step 3: Create the Informix user account

You need to create an Informix user account that can be used to connect to the SilverStream server. This user account must be a member of the Informix-Admin group. See your Informix documentation for more information. The password for this account **cannot** be null.

Step 4: Add the driver path to AGCLASSPATH

The location of the Informix JDBC driver (for example, `c:\informixdriver\lib\ifxjdbc.jar`) must be specified in the AGCLASSPATH variable. For Windows, AGCLASSPATH is a system environment variable. For UNIX, you'll find it in the `.agprofile` file.

 For details, see the chapter on data source configuration in the *Administrator's Guide*.

Step 5: Use the database with the SilverStream server

Now you're ready to access the Informix database from the SilverStream server. This enables you to do any of the following, as appropriate:

- Install the SilverStream server and point to that database as the **SilverMaster** (as described in Chapter 2, "Installing the SilverStream Server on Windows" and Chapter 3, "Installing the SilverStream Server on UNIX")
- Add that database to the SilverStream server for use as an **application database**
- Add a **connection pool** to the SilverStream server for accessing that database



For more information, see the chapter on data source configuration in the *Administrator's Guide*.

Troubleshooting

This section may help you if you run into trouble using Informix and the SilverStream server.

Determining driver version To determine which version of the Informix JDBC driver you are using, type the following at the command line:

```
java -cp pathToDriver\lib\ifxjdbc.jar com.informix.jdbc.Version
```

Logical log full You encounter the Informix Server error event Logical Log Full. The SilverStream server may not allow you to save data or may not start properly when this problem occurs. (You can view this event in the Informix IECC utility's event list.)

To resolve this problem, back up the logical log or enable Informix's Continuous Log backup.



For more information about resolving this log file problem, see the *Informix Enterprise Command Center User Guide (IECC)* and the *Informix Administrator's Guide*.

Memory capacity You encounter the Informix Server error event Memory Capacity during SilverMasterInit or while the SilverStream server is running. (You can view this event in the Informix IECC utility's event list.)

To resolve this problem, increase the BUFFERS parameter in the ONCONFIG file in the Informix /etc directory. See the ONCONFIG environment variable to find this location.




For more information about the ONCONFIG file and the BUFFERS parameter, see the *Administrator's Guide for Informix Dynamic Server*.

8


Configuring Microsoft Access Databases

This chapter describes how to configure your Microsoft Access database for use as a SilverMaster or application database with the SilverStream eXtend Application Server.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.


Setting up Microsoft Access databases

The SilverStream server connects to Microsoft Access using the Microsoft Access ODBC driver. This driver is installed with Microsoft Access or Microsoft Office software.

 For more information about the driver, see the Microsoft Web site.

➤ **To configure a Microsoft Access database for use with the SilverStream server:**

1. Install the Microsoft Access driver onto the machine where the SilverStream server resides.
2. Create the Microsoft Access database.
3. Install the SilverStream server.

 For information, see Chapter 2, "Installing the SilverStream Server on Windows".

The sections that follow explain these steps.

Step 1: Install the Microsoft Access ODBC driver

You must have the Microsoft Access ODBC driver software installed on the machine where the SilverStream server will be. You must be able to connect to the destination Microsoft Access from the workstation that hosts the SilverStream server.

Step 2: Create a Microsoft Access database

Before you can install the SilverStream server, you must create the Microsoft Access database.

➤ **To create the Microsoft Access database:**


1. Install the Microsoft Access driver on the machine where the SilverStream server will be.
2. Create the Microsoft Access database using the Microsoft Access GUI tools:
 1. Start Access.
 2. Create the new database using the blank database template.
3. Create the ODBC data source for the newly created database.

Your Microsoft Access database is now ready to be used as a SilverMaster or as a SilverStream application database.

9

Configuring Microsoft SQL Server Databases

This chapter describes how to use Microsoft SQL Server databases with the SilverStream eXtend Application Server. It includes information about using Microsoft SQL Server as a SilverMaster database or as an application database.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter includes these sections:

- Basic setup for Microsoft SQL Server databases
- Setting up JDBC access
- Setting up ODBC access
- Using the database with the SilverStream server

Basic setup for Microsoft SQL Server databases

You'll perform the following setup steps whether your SilverStream server will access a Microsoft SQL Server database via JDBC or ODBC:

1. Create the database and configure SQL Server.
2. Create a database login to be used by the SilverStream server.

Create the database and configure SQL Server

Before you can install SilverStream, you must first create the actual SQL Server database (and underlying database devices). You can create these objects using either ISQL or a graphical tool such as SQL Enterprise Manager.

This section describes how to use SQL Enterprise Manager to create the objects. You need to connect to SQL Server using SA or an account with SA privileges in order to create these objects.

➤ **To create a Version 6.5 database:**

1. From SQL Enterprise Manager, connect to the destination SQL Server.
2. Right-click the database devices folder and select **New Device**.

3. Create a Database Device called **SilverMasterData** and specify a size of 30 MB.
4. Create another 30 MB device called **SilverMasterLog**.
5. Right-click the Databases folder and select **New Database**.
6. Create a database called **SilverMaster** using the devices you created (SilverMasterData for the data and SilverMasterLog for the transaction log).

If you are not going to back up this database regularly, enable the Truncate Log on Checkpoint option: right-click the database and select **Edit**. This option is found on the Options tab.

7. For SQL Server 6.5, you must verify the size of the TEMPDB database by right-clicking on the TEMPDB database and selecting **Edit**.

The size of the database is shown on the Database tab. If the size of your TEMPDB database is less than 50 MB, extend it by increasing the size of your MASTER device and choosing **Expand the database** (this option is found on the same tab as the Data Size value).

8. You must verify that you have an appropriate amount of memory allocated to SQL Server. This can be done through SQL Enterprise Manager:
 - From SQL Enterprise Manager, right-click the server name and select **Configure**.
 - From the Configuration tab, select **Memory**. This value is in 2K pages (thus, the value shown times 2 equals the number of kilobytes of memory allocated to SQL Server). SilverStream recommends the following formula: (system memory in megabytes / 2) * 512 = number of 2K pages to allocate to SQL Server. You must be logged in to SQL Server as SA or equivalent. SQL Server must be restarted to apply this change.

NOTE If you overallocate memory, SQL Server will not start.

➤ To create a Version 7 database:

1. From SQL Server Enterprise Manager, right-click **databases** and select **New Database** and give the new database a name, such as SilverMaster.
2. In File Properties, either allow for unrestricted file growth or allow at least 30 MB for the database.
3. Select the **Transaction Log** tab and allow unrestricted file growth or allow at least 30 MB for the log file.
4. Click **OK** to create the database.
5. Select the TEMPDB and then right-click and select **Properties**. Verify that the unrestricted file growth is selected or that there is at least 50 MB allotted for it.
6. Verify that you have the appropriate amount of memory allocated to SQL Server. This can be done through the SQL Enterprise Manager.
7. Highlight the SQL Server, then right-click and select **Properties**.

8. On the SQL Server properties dialog, select the memory tab.
9. Either verify that **Dynamically configure SQL Server memory** is selected or, if you are using a fixed amount of memory for SQL Server, subtract 64 MB from the total physical RAM in the machine and allocate this amount to the SQL Server (if the machine is only running SQL Server). If other server applications are also running on the machine (SilverStream, MS Exchange, and so on), you must also subtract the amount of memory needed for those applications.

Create the SilverUser login

Create a login called **SilverUserLogin**.

Note the following:

- The login cannot have a null password.
- Set the default database for this login to the SilverMaster database you just created. If you do not, you receive error messages during the SilverStream Server Startup stating **The database schema for SilverMaster is out of sync**.
- For SQL Server 6.5, you must alias this account to DBO for the SilverMaster database. For SQL Server 7, create a login using a SQL Server authentication mode and enable the db_owner role for the desired database on the Database Access tab.
- The SilverUserLogin must have the following permissions: Create Table, Create View, Create SP, Create Default, Create Rule, Backup DB, and Backup Log.

Setting up JDBC access

The SilverStream server can connect to Microsoft SQL Server using the JDBC driver supplied by Microsoft.

Install the JDBC driver

You must have the Microsoft SQL Server JDBC driver installed on the PC where the SilverStream server will be. It must be able to connect to the destination SQL Server database.

Add the driver path to AGCLASSPATH

The location of the Microsoft SQL Server JDBC driver (JAR files msbase.jar, mssqlserver.jar, and msutil.jar) must be specified in the AGCLASSPATH variable. For Windows, AGCLASSPATH is a system environment variable. For UNIX, you'll find it in the .agprofile file.



For details, see the chapter on data source configuration in the *Administrator's Guide*.

Setting up ODBC access

The SilverStream server can connect to Microsoft SQL Server using the ODBC driver supplied by Microsoft as part of the SQL Server client. There are different versions of this ODBC driver.

Install the Microsoft SQL Server client

You must have the Microsoft SQL Server client software installed on the PC where the SilverStream server will be. Your client must be configured to connect to the destination SQL Server database.

Create the ODBC System DSN entry

➤ **To create the ODBC System DSN for a Version 6.5 database:**

1. Configure an ODBC System DSN entry for the SilverMaster or application database.
2. Add an entry using **SQL Server** as the driver type.
3. Enter the appropriate server name for the target SQL Server.
4. Enter the destination database in the **Default Database** field.
5. Click the **Options** button and deselect the **Create temporary stored procedures for prepared SQL statements and drop the stored procedures** check box for use with the SilverStream server.

If you do not deselect this option, the SilverStream server will not function properly with the database.

➤ **To create the ODBC System DSN for a Version 7 database:**


1. Add an entry using **SQL Server** as the driver type.
2. Enter the server name for the target SQL Server.

3. Enter the SQL Server user authentication information for the SilverUserLogin and click **Next**.
4. Select the proper default database name.
5. Deselect **Use ANSI quoted identifiers**.
6. Deselect **Use ANSI nulls, paddings, and warnings** and click **Next**.
7. Accept the proper language and region settings, then click **Finish**.

Using the database with the SilverStream server


Now you're ready to access the Microsoft SQL Server database from the SilverStream server. This enables you to do any of the following, as appropriate:

- Install the SilverStream server and point to that database as the **SilverMaster** (as described in Chapter 2, "Installing the SilverStream Server on Windows" and Chapter 3, "Installing the SilverStream Server on UNIX")
- Add that database to the SilverStream server for use as an **application database**
- Add a **connection pool** to the SilverStream server for accessing that database

 For more information, see the chapter on data source configuration in the *Administrator's Guide*.

10 Configuring Oracle Databases

This chapter describes how to configure your Oracle database for use with the SilverStream eXtend Application Server as a SilverMaster or as an application database.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter includes these sections:

- Basic setup for Oracle databases
- Setting up an Oracle driver
- Using the database with the SilverStream server
- Using synonyms
- Troubleshooting

Basic setup for Oracle databases

You'll perform the following setup steps no matter which driver your SilverStream server will use to access an Oracle database:

1. Create an Oracle tablespace for use with SilverMaster.
2. Create an Oracle user for the SilverStream server.

Create an Oracle tablespace for use with SilverMaster

Creating a new Oracle tablespace for use with SilverMaster ensures optimal performance and ease of installation. To create one, run SQL Plus and connect to Oracle as System or SYSDBA.

For example, this statement creates a tablespace with an initial size of 30 MB.

```
CREATE TABLESPACE SilverTablespace  
DATAFILE 'c:\databases\silvertablespace.dbf' SIZE 30M;
```

You can issue this statement from a SQL Plus prompt. If you choose to use an existing tablespace, make sure there is enough space available.

Create an Oracle user for the SilverStream server

To connect the SilverStream server to Oracle, create a new Oracle user for exclusive use by SilverStream. This user will own the SilverMaster tables.


Issue the following statements using the SQL Plus utility. These statements create the user and set the user's privileges.

```
CREATE USER smuser IDENTIFIED BY password
DEFAULT TABLESPACE SilverTablespace
QUOTA UNLIMITED ON SilverTablespace;
GRANT CONNECT, RESOURCE to smuser;
REVOKE UNLIMITED TABLESPACE from smuser;
```

Setting up an Oracle driver

The SilverStream server connects to Oracle databases using one of the following drivers:

- Oracle Thin JDBC Driver
- Oracle OCI Driver
- A Type 2 JDBC driver written by and provided by SilverStream (this driver interfaces with the Oracle SQL Net Client to achieve connectivity to the Oracle Server)

 See the SilverStream *Release Notes* for which versions of Oracle databases you can use with which drivers.

Using the Oracle Thin JDBC Driver


The SilverStream server can connect to Oracle databases using the thin JDBC driver supplied by Oracle.

Install the driver

You must have the Oracle Thin JDBC Driver installed on the PC where the SilverStream server will be. It must be able to connect to the destination Oracle database.

Add the driver path to AGCLASSPATH

The location of the Oracle Thin JDBC Driver (for example, *DriverPath/classes12.zip* and *DriverPath/nls_charset12.zip*) must be specified in the AGCLASSPATH variable. For Windows, AGCLASSPATH is a system environment variable. For UNIX, you'll find it in the .agprofile file.

 For details, see the chapter on data source configuration in the *Administrator's Guide*.

Using the Oracle OCI Driver


The SilverStream server can connect to Oracle 9i databases using the OCI driver supplied by Oracle.

Install the driver

You must have the Oracle OCI Driver installed on the PC where the SilverStream server will be. It must be able to connect to the destination Oracle database.

Add the driver path to AGCLASSPATH

The location of the Oracle OCI Driver (for example, *DriverPath/classes12.zip* and *DriverPath/nls_charset12.zip*) must be specified in the AGCLASSPATH variable. For Windows, AGCLASSPATH is a system environment variable. For UNIX, you'll find it in the .agprofile file.

 For details, see the chapter on data source configuration in the *Administrator's Guide*.

Using the SilverStream driver

The SilverStream server can connect to Oracle databases using the Type 2 JDBC driver supplied by SilverStream. Setup involves these steps:

1. Install the Oracle SQL Net client onto the machine where the SilverStream server resides.
2. Create a SQL Net Alias for use by the SilverStream server.

Install Oracle SQL Net Client

If Version 2.3.4.0.0 of the Oracle SQL Net Client is not installed on the SilverStream server machine, install it now before you continue. If you do not have this version of SQL Net, obtain it from Oracle Corporation. Using the Oracle CD, follow the steps to install the client for an application user.

If you already have the client installed, you can run Oracle Installer (from the Oracle for Windows NT Program Folder) to determine the version of SQL Net that is installed.

Create an Oracle SQL Net Alias

In order to connect to the Oracle server, you must have a valid Oracle SQL Net Alias that references the target Oracle server.

➤ To create an Oracle SQL Net Alias:

1. Run SQL Net Easy Configuration from the Oracle for Windows NT Program Group.
NOTE On UNIX, run **net8wiz.sh** from the \$ORACLE_HOME/bin/ directory.
2. Choose **Add a New Database Alias**.
3. Enter the name of the alias (you specified this name during the SilverStream server installation).
A suggested name for this alias is **SilverMasterORCL**.
4. Choose **TCP/IP** as the protocol and select **OK** to continue.
5. Enter the TCP/IP Host Name for the Oracle Server and enter the correct Instance name.
6. Choose **OK** to continue.
7. Choose **Yes** to create the new alias. At this point you can exit the SQL Net Easy Configuration utility.
8. Test the newly created SQL Net Alias by using SQL Plus to connect to the Oracle database server.

Using the database with the SilverStream server

Now you're ready to access the Oracle database from the SilverStream server. This enables you to do any of the following, as appropriate:

- Install the SilverStream server and point to that database as the **SilverMaster** (as described in Chapter 2, "Installing the SilverStream Server on Windows" and Chapter 3, "Installing the SilverStream Server on UNIX")
- Add that database to the SilverStream server for use as an **application database**
- Add a **connection pool** to the SilverStream server for accessing that database



For more information, see the chapter on data source configuration in the *Administrator's Guide*.

Creating a SilverStream application database on Oracle

Adding an Oracle database to SilverStream equates to adding an Oracle user. Adding a database does two things:

- Adds all the tables and views that the database user has access to (application tables)
- Creates SilverStream system tables to store metadata

Before adding Oracle databases

Storing system tables separately

If you want to store the SilverStream system tables in a separate database account, create an additional database user as described above and, if using the SilverStream driver, create a new Oracle SQL Net Alias. SilverStream system tables may also be stored in any other databases supported by SilverStream.

Using a different character set


You can tell the SilverStream Oracle 8 driver to use a different character set than what is specified in the Oracle instance. You would do this when the character set encoding of the data is different than the character set specified by the Oracle instance. For more information on this topic, go to the Members Support area on <http://www.silverstream.com>. A document on the subject can be found in the knowledgebase under White Papers, Oracle.

Adding a database

Specifying the database if using the SilverStream or OCI driver

When adding an Oracle database to SilverStream, you are asked for the name of the database. If you are using the SilverStream or OCI driver, the database name refers to the Oracle SQLNet Alias or TNSNAMES.ORA entry. The SQLNet Alias points to a specific Oracle Database Instance on a specific server. Typically you have **one** per Oracle database.

The SilverStream server requires a unique database name. This means that the SilverStream server requires you to create a unique SQLNet Alias for each Oracle database user you add. So if you have SilverMaster, application tables, and the SilverStream system tables stored in three different Oracle database users, you need three unique SQLNet Aliases—one for each user. Each SQLNet Alias points to the same Oracle database.

 Optionally, if you do not want to configure multiple SQLNet Aliases, see “Using one SQLNet Alias” on page 87.

Oracle 8i notes

Using databases containing periods in their names When using Oracle 8i, you cannot use a database name that contains a period. You can successfully add a database with a period in the name, but later interactions between the SilverStream server and the database will result in NullPointerException errors and other unwanted behavior.

If you are using the SilverStream driver, the tnsnames.ora entry is of the form *myalias.domain.com*. On Windows, it is sufficient to specify only *myalias* for the database name when adding a database to the SilverStream server and the connection to the database will be successful. But on most UNIX platforms this truncated specification will not succeed in a match for the entry in tnsnames.ora. When you add the database to the SilverStream server it will result in the error **TNS names entry not found**.

Verifying your connection The SilverStream server’s database connection behavior is consistent with that of SQLPlus. The best way to troubleshoot your connection to Oracle 8i is to first verify the connection through SQLPlus. Be sure to connect only to *myalias* as that is what is needed for the SilverStream server.

For example, try to connect using **sqlplus** *login/password@myalias* rather than **sqlplus** *login/password@myalias.domain.com*.

If your connection to *myalias* does not succeed using SQLPlus, then you may need to edit the tnsnames.ora entry and remove the domain.com from the entry.

Using one SQLNet Alias

This is an optional advanced feature if you are using the SilverStream or OCI driver. By default, the Add Database process assumes you are adding an Oracle database with a separate SQLNet Alias (TNS NAME) for each Oracle database user that you use in the SilverStream environment.

The steps that follow are for experienced users. They document how you can install using a single SQLNet Alias.

➤ To install using a single SQLNet Alias:

1. When adding a new database to the SilverStream server, do not enter the SQLNet Alias (TNS NAME) in the database name box; enter any name you want.
2. Now enter the user name and password as before and select **Oracle 7** or **Oracle 8** as the database platform.
3. Choose **User-specified JDBC driver** for the driver set.
4. Click **Next**.

You can now enter the JDBC connection string.

5. For the JDBC URL, enter:

```
jdbc:ssw:oracle:TNSNAME
```

replacing *TNSNAME* with the TNS NAME in your TNSNAMES.ORA file.

You can now connect as many databases as you like using the same TNS NAME. Make sure you store the system tables separately.

What to avoid You can reduce the chance of encountering problems if you follow these rules:

- Do not put anything else in the same Oracle database user as your SilverMaster.
- Do not put multiple system tables in the same Oracle database user. These would conflict with each other. When adding multiple databases to the SilverStream server, you should keep their system tables separate.

Terminology differences Different databases use different terminology. The SilverStream terminology might be confusing for Oracle users. For example, SilverStream **database** means **Oracle database user**. SilverStream uses the word **databases**, but on Oracle these map to **Oracle database users**. The following table describes other differences.

| SilverStream term | Oracle term |
|-----------------------|--|
| SilverMaster database | Oracle database user that owns the SilverMaster tables |
| Add a database | Add a specific user in an Oracle database |

Using synonyms

The SilverStream server provides support for Oracle 8 and later synonyms for tables and views.

NOTE With Oracle, you can also define synonyms for other kinds of objects, including object tables, object views, and stored procedures. The SilverStream server supports synonyms only for tables and views.

Specifying the driver In order to enable synonym support, you need to specify one of the following driver sets when adding the Oracle database to the SilverStream server:

- **Thin Oracle JDBC driver with synonym/mixed case support**—Oracle’s thin JDBC driver with synonym support
- **OCI Oracle JDBC driver with synonym/mixed case support**—Oracle’s OCI driver with synonym support
- **SilverStream JDBC driver with synonym/mixed case support**—SilverStream’s Oracle 8 driver with synonym support

Once you have chosen one of these driver sets for an Oracle database, synonyms defined for tables and views are displayed in the SilverStream Designer’s list of tables (Classic Edition only), as long as you have access to the synonyms, as described next.

Types of synonyms Synonyms can be either private or public. A **public synonym** is owned by the special user group PUBLIC; every user of a database can access it.

A **private synonym** is in the schema of a specific user, who has control over its availability to others (see Oracle’s *Oracle 8 Concepts* manual). Individual users can see only the public synonyms and their own private synonyms.

How synonyms behave A synonym that displays in the table list behaves exactly like its underlying table or view—because support for synonyms is built into the JDBC method calls, which access the underlying tables and views to retrieve the required information.

The following JDBC implementation methods have synonym support built in: `getTables`, `getTableTypes`, `getTablePrivileges`, `getColumnPrivileges`, `getPrimaryKeys`, `getImportedKeys`, `getExportedKeys`, `getCrossReference`, and `getIndexInfo`.

Enabling and disabling synonym support There is a property called `includeSynonyms` in the `platforms.dbl` file in the `SilverStreamInstallDir/Resources` directory that specifies whether a driver supports synonyms. The property is in the `PROPERTIES` section for the driver.

```
DRIVER
/Name ...
/JdbcDriver ...
/DriverSet ...
...

PROPERTIES
/includeSynonyms      "true"
```

If you want to use one of these drivers but want synonym support disabled, set the `includeSynonyms` property to **false**. Similarly, if you have written your own Oracle driver and have implemented synonym support, to enable the support you need to set the `includeSynonyms` property to **true** in the `PROPERTIES` section for your driver.

Troubleshooting

This section describes the most common errors and workarounds if available.

ORA-01019 “unable to allocate memory in the user side” If you receive this message while running with a Net8 Oracle Client, free up available memory on the machine where the SilverStream server is installed.

ORA-01460 “unimplemented or unreasonable conversion requested” If you receive this message when `SilverMasterInit` is creating an Oracle SilverMaster or when you are attempting to add an Oracle database to your SilverStream server, you must upgrade to at least Version 8.0.4 of the Oracle client software. This problem occurs on versions before 8.0.4.

ORA-01631, 00000, “max # extents (%s) reached in table %s.%s” This message is caused when a table tried to extend past maxextents. To solve this problem, check your INITIAL, NEXT, and PCTINCREASE parameters on the DEFAULT TABLESPACE for the SilverMaster user. You must get your DBA to increase them. For example:

```
SELECT DEFAULT_TABLESPACE
FROM dba_users
WHERE username = 'MYUSER';
SELECT *
FROM dba_tablespaces
WHERE tablespace_name = 'MYTABLESPACE';
ALTER TABLESPACE MYTABLESPACE
DEFAULT STORAGE (INITIAL 10K, NEXT 10K, PCTINCREASE 50);
```

ORA-01950, 00000, “no privileges on tablespace %s” This message is caused when a user does not have privileges to allocate an extent in the specified tablespace. To solve this problem, grant QUOTA to the user on the mentioned database. For example:

```
ALTER USER MYUSER
QUOTA UNLIMITED ON MYTABLESPACE;
```


TNS-12154 "TNS: could not resolve service name" If you receive this message, you must verify that you have correctly created the SQL Net Alias as described in “Create an Oracle SQL Net Alias” on page 84.

Tablespaces for Oracle databases The installation will use the default tablespace of the user name/password specified for your SilverMaster database. You can usually set the default tablespace with the following SQL statement:

```
ALTER USER username DEFAULT TABLESPACE mytablespace ;
```

Adding large numbers of tables If you are planning to connect SilverStream to a large Oracle tablespace, open the SilverStream Management Console (SMC) and change the value of the timeout for server requests to 30,000 seconds.

You must modify this value before attempting to add any large Oracle application. Once the application has been added successfully, reset the value back to the default value (3,000). The SilverStream server must be restarted for these changes to be applied.

 For more information, see the section on setting performance parameters in the *Administrator's Guide*.

Using different database types with the same SilverStream server If you install with a non-Oracle SilverMaster and want to add an Oracle database, you need to have \$ORACLE_HOME set and have \$ORACLE_HOME/lib in your SHLIB_PATH (for HP-UX), LD_LIBRARY_PATH (for Solaris and Linux), or LIBPATH (for AIX).

Adding an Oracle 8i database on Solaris On Solaris, if you are not using an Oracle 8i database as your SilverMaster but are using Oracle 8i client software and want to add an Oracle 8i database to your server, you must copy a library file in the \$SILVERSTREAM/bin directory. By default, the installed Oracle driver library file is appropriate for Oracle 8.

The following procedure will allow you to use the Oracle 8i library file instead:

1. Back up the libagora8_jni.so file:

```
# cd $SILVERSTREAM/bin
# cp libagora8_jni.so libagora8_jni.so.orig
```

2. Copy the Oracle 8i driver library file:

```
# cp libagora8_jni.so.8i libagora8_jni.so
```

Connecting to Oracle from HP-UX or AIX If you are using the SilverStream driver, in order to connect to an Oracle database from HP-UX or AIX, you must have at least the following Oracle components installed on the HP-UX or AIX machine:

- Net8
- Net8 External Naming Adapters
- Net8 Protocol Adapters
- Oracle Intelligent Agent
- PL/SQL
- SQL*Plus

In addition, during the Oracle installation process you will be asked if you want to relink Oracle product executables. You must answer **yes**. By default, the relinking will not occur.


If the Oracle installation is not sufficient for the SilverStream server, you will get the following error during SilverMasterInit:

```
/usr/lib/dld.sl: Unresolved symbol: opinit (code) from
/home/username/silverstream/bin/libagora_jni.sl
```

If you encounter this error or another type of connection error, verify that you have installed the Oracle components listed above and can connect to your database using SQL*Plus.

11 Configuring Sybase Adaptive Server Anywhere Databases

This chapter describes how to configure your Sybase Adaptive Server Anywhere (ASA) database for use with the SilverStream eXtend Application Server as either a SilverMaster database or an application database.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter includes these sections:

- Overview of Sybase ASA support
- Setting up a Sybase ASA database
- Using ASA 6 and ASA 8 on the same machine


Overview of Sybase ASA support

SilverStream eXtend Application Server Classic and Developer editions include a special **authenticated** edition of Sybase ASA Version 8. Because this edition is authenticated, it can be used only with the SilverStream server.

This authenticated edition of Sybase ASA allows users who do not already use Sybase ASA to install it at the same time they install the SilverStream server. This software is supplied in part because the classic SilverStream sample applications are stored in Sybase ASA databases. If you already have Sybase ASA installed, you do not need to install this authenticated version.

You can use Sybase ASA as your SilverMaster and as your application databases. You can use the authenticated version provided with the SilverStream server or the full version purchased from Sybase.

For upgraders Earlier versions of the SilverStream server included authenticated editions of earlier Sybase ASA versions. SilverStream server support for versions 5 and 6 of ASA has been deprecated in Version 4. Using these earlier versions of ASA with Version 4 of the server should work, but we recommend that you upgrade these databases to the currently supported versions by using the Sybase Central Upgrade Database utility.

 For more information, see the Sybase Central online help.

Setting up a Sybase ASA database

This section describes how to set up Sybase ASA databases to use with the SilverStream server.

You can install the authenticated version of Sybase ASA from the SilverStream server installation program, which launches the Sybase SQL Anywhere Studio installation program. You can follow the Sybase wizard and choose all the defaults to install ASA for use with the SilverStream server.

Setup choices The SilverStream server connects to Sybase ASA using either **ODBC** or **jConnect** (Sybase's JDBC driver). The Sybase ODBC driver and jConnect are included as part of the Sybase ASA installation.

- **To use Sybase ASA for your SilverMaster**, all you need to do is install Sybase ASA before installing the SilverStream server.

When you install the SilverStream server (as described in Chapter 2, "Installing the SilverStream Server on Windows"), specify that you want to use Sybase ASA as your SilverMaster. The SilverStream installation program will create and configure the SilverMaster database for you (if you ask it to). It will create and use an ODBC connection.

- **To use Sybase ASA for an application database**, you need to set up the database yourself as described in the next section. When you add the database to the SilverStream server, you specify whether you want to use ODBC or jConnect.

This also applies if you want to access a Sybase ASA database by adding a **connection pool** to the SilverStream server.

 For more information on setting up SilverMaster, application databases, and connection pools, see the chapter on data source configuration in the *Administrator's Guide*.

Using jConnect Although you can connect to an ASA database using either ODBC or jConnect, the SilverStream ODBC-JDBC bridge is deprecated in Version 4; so we recommend that you use jConnect.


The jConnect driver is included with ASA. When you install ASA using the Sybase wizard, the driver is installed in the Sybase Shared directory. To use jConnect, you need to do this one-time setup:

- **Set AGCLASSPATH** (environment variable for the server's classpath) on the machine where your SilverStream server is running to include the path to the jConnect 5.5 driver:

```
AGCLASSPATH=SybaseInstallDir\Shared\jConnect-5_5\classes\jconn2.jar
```


For example, if you installed ASA in the default location, you would specify this in AGCLASSPATH:

```
AGCLASSPATH=c:\Program Files\Sybase\Shared\jConnect-5_5\classes\jconn2.jar
```

 For more information on listing JDBC driver JARs via AGCLASSPATH, see the chapter on data source configuration in the *Administrator's Guide*.

Setting up application databases To set up a Sybase ASA database as an application database, do the following:


1. Create a database.
2. Create a user account to be used by the SilverStream server.
3. If you are using ODBC for the database connection, create an ODBC System DSN entry for the database.
4. Configure Sybase ASA to run as a service.
5. Make the database available to the SilverStream server.

The following sections describe these steps.

Step 1: Create a database

If you want to use an ASA database as your SilverMaster, you can have the server installation program create a database when you install the server (or you can point the installation program to an existing ASA database). If you want to use an ASA database as an application database, you create it before adding it to the server.

Use Sybase Central to create the database.

 For more information, see the Sybase Central online help.

Step 2: Create user accounts


Sybase ASA provides a default user **dba** with the password **sql**. You can use this user name and password pair for your SilverMaster database or any other Sybase ASA database.

However, we strongly recommend that you set up separate accounts for your SilverMaster and for each application database; this way you can easily tell which applications are hitting your database when and how often, and you can more easily troubleshoot performance problems. Make sure this account has at least Resource and Connect privileges.

 For more information about setting up user accounts, see the Sybase Central online help.


Step 3: (Optional) Create the ODBC System DSN entry

If you will be connecting to the database using ODBC, you need to create an ODBC entry for the database.

 For more information, see Appendix A, “Creating ODBC Data Sources”.

Step 4: Run Sybase ASA as a service

We recommend that you run your Sybase ASA databases as a service to make database use and maintenance easier. This is especially true with jConnect since it does not have the autostart capability of ODBC.

 For information about running Sybase ASA as a service, see the Sybase ASA online help. (In that help, select *ASA Database Administration Guide*. Go to “Running the server outside the current session” in Chapter 1.)

Step 5: Make the database available to the server

If you’re using an ASA database as your SilverMaster, you either have the server installation program create a new database, or you point the installation program to an existing database. If you’re using an ASA database as an application database, you can make the database available by **adding it to the server**:


1. If you are connecting with jConnect, make sure the database is running. If it is not running as a service, you can start it using Sybase Central.
2. Using the SMC, add the database to the server.
 - If using ODBC, specify the name of the ODBC profile and the user name and password. The server will start the database if necessary.
 - If using jConnect, specify the name of the database, the user name and password, and the JDBC URL for the database, which has the following format:

```
jdbc:sybase:Tds:hostname:port?SERVICENAME=dbname
```

For example, if your database is named MyDB and you are running it locally at the default ASA port of 2638, your JDBC URL would be:

```
jdbc:sybase:Tds:localhost:2638?SERVICENAME=MyDB
```

Instead of adding a database to the server, you can make a database available to the server by **defining a JDBC connection pool** for it.

 For more information on adding databases to the server and defining connection pools, see the chapter on data source configuration in the *Administrator’s Guide*.

Using ASA 6 and ASA 8 on the same machine

It's possible to have both Sybase ASA Version 6 and Version 8 installed on a machine. The typical scenario is that you already have ASA 6 and are adding ASA 8 to begin upgrading your databases.

To avoid conflicts between the two versions, you should follow these steps when setting them up:

1. When installing ASA 6 or 8, make sure you start from the SilverStream server's installation program.

Choose **Install software**, then **Install Sybase Adaptive Server Anywhere...** This ensures that your installation of ASA 6 or 8 is authenticated.

2. Install the two versions of ASA (including the **Shared** directory and the **Sybase Central** directory) on separate directory paths.
3. Once you've installed ASA 6 then ASA 8, check your system's **Path** environment variable. Make sure the ASA 8 directories are listed after those for ASA 6.
4. Run **Sybase Central 4.1** from the ASA 8 program group. Confirm that you can create a database and open it.
5. Run **Sybase Central 3.2** from the ASA 6 program group.

You'll probably see that there are no Plug-ins available. To add the ASA 6 Plug-in back, open the Plug-ins dialog (**Tools>Plug-ins**). Then click the **Change** button and check the **Adaptive Server Anywhere** option. This should re-register the proper Plug-in for ASA 6 (so you can use Sybase Central 3.2 to create and inspect ASA 6 databases).


Running as a service If you're going to run your ASA 6 and 8 databases as a service, make sure you specify the following during the service setup:

- The **database name**, useful for jConnect access (since the database won't autostart).
- The **tcpip port** parameter, needed to specify a different port for ASA 6 and 8 so they won't both try to use port 2638. For instance, you might set ASA 8 to port 22222.

12 Configuring Sybase Adaptive Server Enterprise Databases

This chapter describes how to use Sybase Adaptive Server Enterprise databases with the SilverStream eXtend Application Server. It includes information about using Adaptive Server Enterprise as a SilverMaster database or as an application database.

NOTE Sybase Adaptive Server Enterprise was formerly known as Sybase SQL Server.

 For the latest information on supported database versions, see the *Release Notes*. In Windows, you can access the *Release Notes* from the SilverStream eXtend program group or from the server's Core Help.

This chapter includes these sections:

- Setting up Sybase Adaptive Server Enterprise databases
- Troubleshooting

Setting up Sybase Adaptive Server Enterprise databases

This section describes how to create a SilverMaster database using Sybase Adaptive Server Enterprise. You must install the Sybase client onto the machine where the SilverStream server resides. Once you have done that, the remaining steps include:

1. Install the Sybase jConnect classes and stored procedures.
2. Configure the Sybase server.
3. Create database devices and the actual SilverMaster database as a Sybase database.
4. Create a database login to be used by the SilverStream server.
5. Use the database with the SilverStream server.

Step 1: Install Sybase jConnect

You must install and configure the jConnect driver on the machine where you will be installing the SilverStream server. This driver must be configured before you install the SilverStream server.

NOTE SilverStream recommends that you use jConnect 5.x.

➤ **To install Sybase jConnect:**

1. Install the jConnect driver.



For more information about Sybase jConnect, see <http://www.sybase.com/products>.

2. Make sure the location of the jConnect driver is specified in the AGCLASSPATH variable on your SilverStream server machine. For Windows, AGCLASSPATH is a system environment variable. For UNIX, you'll find it in the .agprofile file.

If you are using jConnect 4:

```
AGCLASSPATH=installDir\jConnect-version\classes
```

If you are using jConnect 5:

```
AGCLASSPATH=installDir\jConnect-version\classes\jconn2.jar
```



For more information on listing JDBC driver files via AGCLASSPATH, see the chapter on data source configuration in the *Administrator's Guide*.

NOTE You do not need to configure the CLASSPATH or JDBC_HOME variables mentioned in the Sybase installation notes if you are using the driver exclusively with the SilverStream server.

3. Install the jConnect stored procedures onto the Sybase server.



For more information, see Sybase's *jConnect for JDBC Installation Guide* or <http://www.sybase.com/products>.

Step 2: Configure the Sybase server

You must configure the Sybase server to support the SilverStream server. These configuration changes involve sizing your Sybase TEMPDB database appropriately and configuring the correct amount of Sybase procedure cache to support the jConnect stored procedures.

➤ **To configure the Sybase server:**

1. From Sybase Central, connect to the destination Sybase server and select **Databases**.
You need to connect to the Sybase server as SA or an equivalent.
2. Right-click the **TEMPDB** database and select **Properties**.
3. From the Usage tab, check the **Total Allocated value**.

If the TEMPDB Total Allocated value is less than 30 MB:

- Create a new 30 MB database device (from within the Database Devices folder) called **TempExtend**.

- When this process completes, right-click the **TEMPDB** database (from within the Databases folder).
 - From the **Devices** tab, add the new TempExtend device as a DATA device.
4. Right-click the Sybase server and select **Configure**.
 5. Scroll down until you see the value **Total Memory**.
The value for total memory is in 2K pages, so the numeric value shown times 2 equals the amount of memory (in kilobytes) currently allocated to Sybase. Take note of this value and then find the value **Procedure Cache Percent**. This value should be the percentage equivalent to 13 MB of memory.
To find this value, divide 13,000 by the Total Memory amount (in kilobytes). This will give you the percentage that you should enter in the Procedure Cache Percent value.
For example, the default amount of memory allocated to Sybase Adaptive Server Enterprise 11.5 is 9000 pages (equivalent to 18,000 kilobytes). If you divide 13,000 by 18,000, the value for Procedure Cache Percent equals .72 or 72%. Enter 72 as the new value for the Procedure Cache Percent.
 6. Restart the Sybase server for the change to take effect.

Step 3: Create the SilverMaster database in Sybase

Before you can install the SilverStream server, you must first create the actual Sybase database (and its underlying database devices). You can create these objects using either ISQL or a graphical tool such as Sybase Central. The following procedure describes how to use Sybase Central to create the objects.

➤ To create the SilverMaster database:

1. Connect to Sybase using SA or an account with SA equivalence.
2. From Sybase Central, connect to the destination Sybase server and select **Database Devices**.
3. Create a new 30 MB database device called **SilverMasterData**.
4. When this process completes, create another new 30 MB device called **SilverMasterLog**.
5. From the Databases folder in Sybase Central, create a new database called **silvermaster** (this is case sensitive).
6. Create the database using the two devices that you created above using all 30 MBs of each respective device for data and for log.
7. Once the database has been created, right-click the database and select **Properties**.
8. From the Options tab, select **Truncate Log on Checkpoint**.

Step 4: Create the Sybase login for the SilverStream server

Once the jConnect driver is installed and the SilverMaster database has been created, you must create a Sybase login for use by the SilverStream server.

➤ To create the Sybase login:

1. From Sybase Central, connect to Sybase using SA or an account with SA equivalence.
2. From the Login folder, add a new Login (for example, you could call it **smuser**). You must assign this account a password of at least six characters.
3. Set the default database for this login to **silvermaster** and complete the login creation process.
4. From the Databases folder, right-click the **silvermaster** database and select **Properties**.
5. Click the **Change** button to change the owner of the database from SA to the **smuser** login.


You also need to define logins for each application database you will use. The user must have a minimum of SELECT permission against all of the tables in the desired Sybase database (you will need UPDATE and DELETE permissions if your SilverStream application supports these data manipulation operations).

This user account must also have CREATE TABLE permission if you are going to store SilverStream system tables in the application database (this is the default behavior for application databases that you add to the server).

Step 5: Use the database with the SilverStream server

Now you're ready to access the Sybase Adaptive Server Enterprise database from the SilverStream server. This enables you to do any of the following, as appropriate:

- Install the SilverStream server and point to that database as the **SilverMaster** (as described in Chapter 2, "Installing the SilverStream Server on Windows" and Chapter 3, "Installing the SilverStream Server on UNIX")
- Add a database to the SilverStream server for use as an **application database**
- Add a **connection pool** to the SilverStream server for accessing a database

 For more information, see the chapter on data source configuration in the *Administrator's Guide*.

Troubleshooting

Sybase Adaptive Server Enterprise troubleshooting

This section describes the known problems and workarounds for Sybase Adaptive Server Enterprise databases with the SilverStream eXtend Application Server.

JZ0C0 errors You may receive error messages from jConnect with an error code of JZ0C0 and the error message **Connection already closed**. If you receive this error, verify that you are running Sybase server Version 11.0.3.2. If your Sybase version is not 11.0.3.2, obtain the updates through Sybase technical support.

If you cannot update your Sybase server version, separate your SilverStream system tables from the Sybase database to work around the problem.

Logins, users, and permissions The easiest way to avoid potential problems with logins, users, and permissions is to use **sa**. If problems occur while adding a database, SilverStream Technical Support may ask you to try adding the database as **sa** to determine if the problem is with logins, users, or permissions.

However, in many environments it is not practical to obtain the **sa** password. The following SQL examples show you how to create a login and user with the correct permissions for the SilverStream server.

- **Login** The login defines access to an Adaptive Server Enterprise database, as well as the default database and password. Use this SQL script to create a login called **SilverUser**:

```
USE master
go
EXEC sp_addlogin SilverUser', 'PASSWORD', 'mydatabase',
'us_english', "SilverUser"
go
```

- **User** A user defines a set of permissions for a particular database and is associated with a login. Use this SQL script to create a user called **SilverUser**:

```
EXEC sp_adduser 'SilverUser', 'SilverUser', 'public'
go
GRANT CREATE TABLE TO SilverUser
go
```

Primary keys and foreign keys The primary and foreign key of older databases (from Sybase System 10 and earlier) may still be defined using system stored procedures named **sp_primarykey** and **sp_foreignkey**. Sybase no longer recommends creating primary and foreign keys in this manner. In fact, their newer products, including jConnect, do not recognize primary and foreign keys created in this manner. You can determine if your database uses these stored procedures by examining the DDL used to create your database.

Primary keys This is what the DDL will look like with an older-style primary key:

```
CREATE TABLE dbo.U_LBX_ADVICE
(
  advice_key smallint NOT NULL,
  <PAYMENT_KEY file_key smallint NOT NULL,
  batch_key smallint NOT NULL,
  line_no varchar(20) NULL,
  item_paid_id varchar(20) NULL,
  item_paid_amount money NULL
)
go
EXEC sp_primarykey 'dbo.U_LBX_ADVICE',
  advice_key,payment_key,file_key,batch_key
```

The newer Sybase Adaptive Server Enterprise format for creating primary keys is part of the CREATE TABLE syntax:

```
create table U_LBX_ADVICE
(
  advice_key smallint not null,
  payment_key smallint not null,
  file_key smallint not null,
  batch_key smallint not null,
  line_no varchar(20) null,
  item_paid_id varchar(20) null,
  item_paid_amount money null,
  constraint PK_U_LBX_ADVICE primary key
  (advice_key, payment_key, file_key, batch_key)
)
```

If your table already exists and you cannot recreate the table with the CREATE TABLE statement, then use ALTER TABLE as shown below:

```
ALTER TABLE dbo.U_LBX_ADVICE ADD CONSTRAINT newprimarykey PRIMARY KEY
NONCLUSTERED (advice_key,payment_key,file_key,batch_key)
```

Foreign keys Foreign keys define the relationship between tables. The problem with foreign keys is very similar to the one with primary keys described above: Sybase's jConnect does not recognize foreign keys created in the older System 10 format using `sp_foreignkey`. This is the older style DDL that would be used to create foreign keys:

```
exec sp_foreignkey dbo.U_LBX_ADVICE, dbo.U_LBX_BATCH,  
file_key,  
batch_key
```

The syntax for adding a similarly defined foreign key is:

```
ALTER TABLE dbo.U_LBX_ADVICE ADD CONSTRAINT myforeignkey FOREIGN KEY  
(file_key,batch_key)  
REFERENCES sqlfinar1.dbo.U_LBX_BATCH (file_key,batch_key)  
go
```

You can use the Sybase PowerDesigner tool to update the DDL that creates a database to the newer format. To use this tool, follow these guidelines after backing up your database:

1. From PowerDesigner's menu, choose **File/Reverse Engineering**.
2. Enter either the file containing your database's DDL or the name of an ODBC driver to connect directly to your database.
3. Choose **Database/Generate Database** to create a new DDL which will define primary and foreign keys with the correct syntax.
4. As with any tool, double-check and test the new syntax for any possible omissions.

jConnect troubleshooting

If the jConnect stored procedures are not properly installed and the problem is not detected, then you can have problems adding a database.

One way Do this to verify that jConnect is properly installed:

- Open a DOS window and verify that your **AGCLASSPATH** environment variable points to your **jConnect\classes** directory.

Another way Another way to determine if jConnect is successfully installed is to try to run the sample jConnect applications (make sure you have installed the samples: check that a `classes\sample` directory exists). Type the following lines at a DOS prompt.

- If you are using jConnect 4, type the following:

```
set CLASSPATH=installDir\jConnect-version\classes

java sample.SybSample Validate -U sa -P password -S
jdbc:sybase:Tds:servername:port
```

- If you are using jConnect 5, type the following:

```
set CLASSPATH=installDir\jConnect-version\classes\jconn2.jar

java sample2.SybSample Validate -U sa -P password -S
jdbc:sybase:Tds:servername:port
```

These commands will start an application that can launch a variety of sample jConnect applications by clicking **File/Open Sample**.

A

Creating ODBC Data Sources

Certain databases must be set up as ODBC data sources. The following example shows you how to set up an ODBC data source in Windows for a Sybase Adaptive Server Anywhere database.

NOTE When you install the SilverStream eXtend Application Server, ODBC data sources are defined for you automatically for the SilverMaster (if needed) and the classic sample applications.

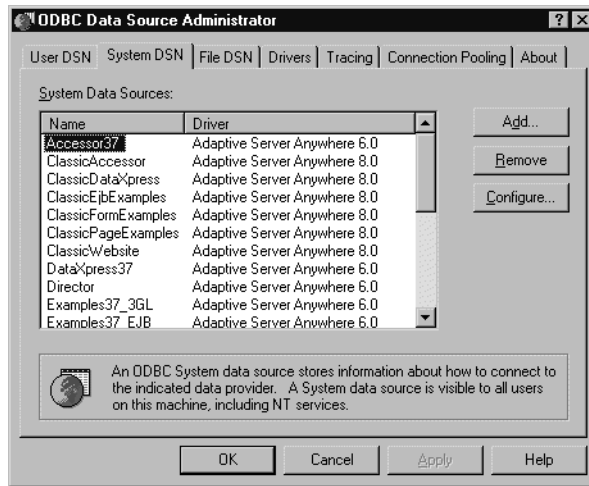
Creating an ODBC data source

➤ **To create an ODBC data source:**

1. Choose **Settings** from the Start menu.
2. Select **Control Panel**.
3. Select the **Data Sources (ODBC)** icon:

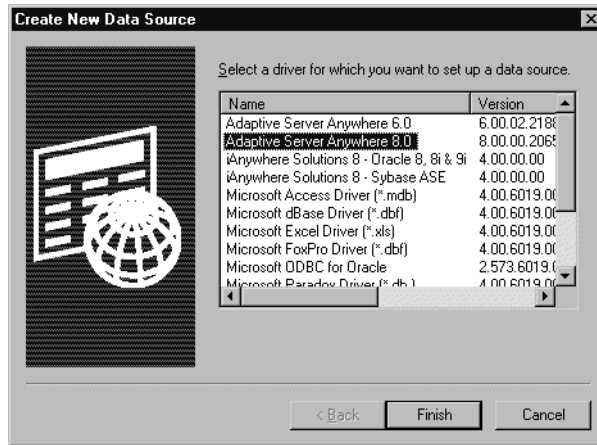


4. Set up a System DSN so that everyone on the system can have access. Only the machine running the SilverStream server requires the database client software. Use the **System DSN** tab as shown in the following screen.

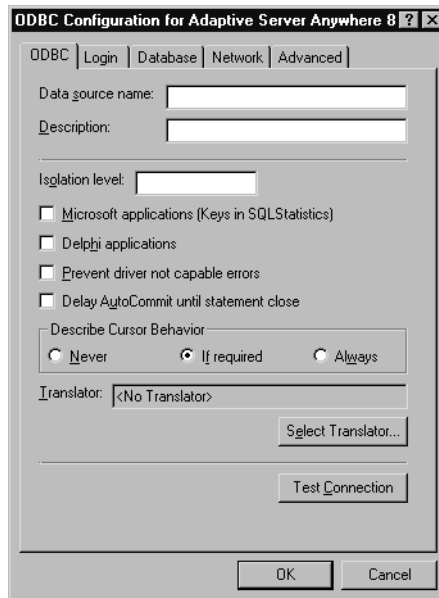


5. Choose **Add**.

The Create New Data Source window displays.



6. Choose the appropriate driver. The rest of this example uses Sybase Adaptive Server Anywhere.
7. Choose **Finish**. A configuration form appears:



8. On the ODBC tab, name the data source and optionally provide a description.

9. On the Database tab, enter the following information:

NOTE If you are setting up Adaptive Server Anywhere databases from a network server, you should follow the instructions provided by the network server.

- **Server name:** If you want the database to use its own engine, specify the server name as the same as the data source name. If you want one engine to service more than one database, specify the name of an engine that is used by other databases.
- **Start line:** Specify the engine for Adaptive Server Anywhere (default for Version 8: C:\Program Files\Sybase\SQL Anywhere 8\win32\dbeng8.exe).
- **Database name:** The name of the database (not including the file extension).
- **Database file:** The path and file name of the database. You can click **Browse** to browse for the database file.

NOTE The default user name and password for an Adaptive Server Anywhere database are **dba** and **sql**. You can specify this information in the Login tab, or you can specify it when you add the database to the SilverStream server.

10. Click **OK**.

If you need help, look at the ODBC settings for the classic sample applications you installed with the SilverStream server.

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