

Installation Guide

StarTeam®

Borland®
Excellence Endures™

Borland Software Corporation
100 Enterprise Way
Scotts Valley, California 95066-3249
www.borland.com

Borland Software Corporation may have patents and/or pending patent applications covering subject matter in this document. Please refer to the product CD or the About dialog box for the list of applicable patents. The furnishing of this document does not give you any license to these patents.

COPYRIGHT © 1995–2005 Borland Software Corporation. All rights reserved. All Borland brand and product names are trademarks or registered trademarks of Borland Software Corporation in the United States and other countries. All other marks are the property of their respective owners.

For third-party conditions and disclaimers, see the Release Notes on your product CD.

Printed in the U.S.A.

Contents

Chapter 1		
StarTeam Documentation Set	1	
StarTeam Online Documentation	2	
Contents of the StarTeam Installation CDs?	2	
Contacting Borland Support	4	
Documentation Conventions	4	
Chapter 2		
Installing StarTeam Server	7	
Understanding StarTeam Server Support of Unicode Character Sets	8	
Pre-installation Issues for a New Installation	8	
Pre-installation Issues for an Upgrade	9	
Changes to StarTeam Server Files	10	
Installing StarTeam Server	10	
Known Installation Issue	12	
Post-installation Tasks for a New Installation	12	
Post-installation Tasks for an Upgrade	13	
Evaluating StarTeam Server	13	
Licensing StarTeam Server	14	
Using StarTeam Licensing	14	
Using a License Server	15	
Understanding Licensing	15	
Using the StarDraw Sample Server Configuration	16	
Installing Other Server Components	17	
Installing StarTeamMPX	17	
Installing StarTeam Extensions	17	
Chapter 3		
Installing StarTeam Clients	19	
Before Installing a StarTeam Client	19	
Starting Users Off with the Same Personal Options	19	
Installing the StarTeam Windows Client	20	
Installing the StarTeam Cross-Platform Client	21	
Installing on Windows	21	
Installing on Linux or Solaris	23	
Installing on Macintosh OSX	23	
Installing on Other Platforms	23	
Installing Other StarTeam Clients	23	
Installing StarDisk	24	
Installing StarTeam Web Edition	24	
Installing StarTeam Integrations	24	
Chapter 4		
Using Microsoft SQL Server/MSDE Databases with StarTeam Server	25	
Terminology for Microsoft Databases	25	
Logging Onto Databases	26	
Understanding the Encoding Differences	26	
Using an MSDE Database: Overview	26	
Using a Microsoft SQL Server Database: Overview	27	
Connecting to Microsoft SQL Server 2000 Databases	27	
Creating and Starting a Server Configuration	27	
Guidelines for Data Files and Transaction Logs	32	
Running SQL Scripts for Microsoft Databases	33	
Creating a Database Manually: Overview	35	
Creating an ODBC System DSN for the StarTeam Database	36	
Creating a Server Configuration (for an Existing Database)	37	
Understanding Collation	41	
How Is the Default Collation Selected?	42	
Chapter 5		
Using Oracle Schema Users with StarTeam Server	43	
Terminology for Oracle Databases	43	
Logging Onto Schema Users	44	
Overview of Using an Oracle Schema User	44	
Verifying Connectivity Between Client and Server	44	
Using the Correct Oracle ODBC Drivers with StarTeam	45	
Downloading and Installing Oracle ODBC Drivers	46	
Patching the Oracle ODBC Driver for StarTeam Server	48	
Using NLS_LANG Correctly with StarTeam	48	
Defining NLS_LANG	48	
Database Character Set and StarTeam Server	49	
Creating and Starting a Server Configuration with an Oracle Schema User	50	
Guidelines for Data Files	55	
Running SQL Scripts for Oracle Schema Users	55	
Overview of Creating the Schema User Manually	58	
Dictionary-managed vs. Locally-managed Tablespace	58	
Creating ODBC DSNs for Oracle	59	
Creating a Server Configuration for an Oracle Schema User	60	
Chapter 6		
Using DB2 UDB Databases with StarTeam Server	65	
Logging On to Databases	65	
Using an IBM DB2 Database: Overview	65	
Creating an IBM DB2 Database for StarTeam Server	66	
Setting Up a User Account	67	
Reconfiguring an IBM DB2 Database	67	
Creating an ODBC Connection	68	
Creating a Server Configuration for an IBM DB2 Database	68	
Running SQL Scripts for IBM DB2 Databases	69	
SQL Scripts for Microsoft SQL Server and MSDE Databases	70	
Troubleshooting IBM DB2 Database	70	
Language String Not Found	71	
No Registered Owner	71	
Connection to IBM DB2 Database Changes Locale Setting	71	

Unable to Open an IBM DB2 Database	71	Export/Import Data Pump	98
Error Using Stored Procedure	72	Recommendations	98
Chapter 7		Backing Up DB2 Databases.	99
Upgrading Server Configurations	73	Logging	99
Upgrading from 2005 and 6.0	74	Circular Logging	99
Upgrading from 5.2 SP1	74	Archive Logging	99
Preparing to Upgrade a Server Configuration	74	Online Backup Procedures	100
Granting Oracle Privileges	75	Restore Procedures	101
Running the Upgrade Procedure	75		
Troubleshooting the Upgrade Process	76	Appendix C	
Before Starting an Upgraded Server Configuration	76	System Requirements	103
Starting an Upgraded Server Configuration	78	StarTeam Server System Requirements	103
Converting Native-I Archive Files	78	Supported Operating Systems	104
		StarTeam and MSDE on the Same Computer	104
		StarTeam Server on a Separate Computer	104
		Database Server System Requirements	105
Chapter 8		StarTeam Cross-Platform Client System Requirements	106
Understanding Data Locations	81	StarTeam Windows Client System Requirements	106
Using Native-I and/or Native-II Vaults	81		
Understanding Native-II Vaults	81	Appendix D	
Larger Size of File Revisions	82	Oracle 9i Database Tuning	107
More Locations to Store Archives	82	Recommended Initialization Parameters	107
Better Performance	82	Oracle Database Monitoring and Tuning	109
Add Operations	82	StarTeam Server and Tablespaces	109
Check-in Operations	83	Dictionary Managed Tablespaces	109
Check-out Operations	83	Locally Managed Tablespaces	109
More Flexible Backups	83	Automatic Segment Space Management (ASSM)	110
Increased Need for Storage Space	83		
Understanding 2005 and Later Repositories	84	Index	111
Log Files and Folders	84		
Attachments Folder	85		
Native-II Vault Folders	85		
Archive and Cache Structure	87		
Using Delta Storage	87		
Understanding Pre-2005 Repositories	88		
Native-I Vault Folders	88		
Converting Native-I Archive Files to Native-II	89		
StarDraw Folders	90		
Appendix A			
Installing and Configuring Supporting Software	91		
Entering Data in Time Fields Accurately in Windows	91		
Synchronizing Workstation Clocks	91		
Installing Adobe Acrobat Reader	92		
Installing the Java Runtime Environment	92		
Appendix B			
Backing Up Databases	93		
Backing Up SQL Server Databases	93		
Full Database Backup	94		
Differential Database Backup	94		
Transaction Log Backup	94		
File backups	95		
Recommendations	95		
Backing Up Oracle Databases	96		
Logical Backups (Export/Import)	96		
Offline/Cold Backups	96		
Online/Hot Backups	97		
RMAN Backups	97		

StarTeam Documentation Set

The StarTeam documentation set is your guide to using the StarTeam product suite. The documentation set consists of the following manuals. Depending upon which StarTeam products you purchased and installed, not all of the applications described in the manuals will be on your system.

- *StarTeam New Features Guide*

The *StarTeam New Features Guide* describes the new features in this release of the StarTeam product line.

- *StarTeam Installation Guide*

The *StarTeam Installation Guide* contains detailed instructions for installing the “core” StarTeam products, and lists the system requirements for each of those products.

- *StarTeam Getting Started Guide*

The *StarTeam Getting Started Guide* presents two tutorials on configuration management for StarTeam Server and StarTeam clients. The first tutorial is for administrators and it explains how to perform basic administrative functions in both the server and the client. The second tutorial is designed for users and it explains how to use basic features of the application.

- *StarTeam User’s Guide*

The *StarTeam User’s Guide* explains how to use the StarTeam Windows and Cross-Platform clients to track and manage changes to files, share files and comments with other team members, access previous versions of a file, and other configuration management functions. It also explains how to use other items, specifically, change requests, requirements, tasks, and topics.

- *StarTeam Administrator’s Guide*

The *StarTeam Administrator’s Guide* explains how to configure and maintain StarTeam Server, create and maintain StarTeam objects—such as projects and views, and manage user access. This manual also contains instructions on using StarTeam Server with existing PVCS and Visual SourceSafe file archives.

- *StarTeam Extensions User's Guide*

The *StarTeam Extensions User's Guide* explains how to design and manage StarTeam Extensions, such as alternate property editors (APEs). It also covers the StarTeam Workflow Designer and StarTeam Notification Agent.

- *StarTeamMPX Administrator's Guide*

The *StarTeamMPX Administrator's Guide* explains the basic operation and architecture of a StarTeamMPX system, and presents instructions on installing and configuring the StarTeamMPX components.

- *StarDisk User's Guide*

The *Star Disk User's Guide* explains how to install and use the StarDisk client application. StarDisk enhances Windows Explorer so you can use it as a simple client for a StarTeam Server. After you map a specific configuration of a StarTeam project view to a Windows virtual disk, you can perform basic version control operations on the files and folders within that view.

StarTeam Online Documentation

The StarTeam installation procedure installs online versions of the StarTeam manuals in the \Online Documentation folder of StarTeam Server or client application. The following table lists the StarTeam online manuals and their file names. The online manuals you receive will vary according to the StarTeam products you purchase.

File Name	StarTeam Manual
admin.pdf	<i>StarTeam Administrator's Guide</i>
adminMPX.pdf	<i>StarTeamMPX Administrator's Guide</i>
extensions.pdf	<i>StarTeam Extensions User's Guide</i>
install.pdf	<i>StarTeam Installation Guide</i>
newfeatures.pdf	<i>StarTeam New Features Guide</i>
stardisk.pdf	<i>StarDisk User's Guide</i> (StarTeam Windows client only)
start.pdf	<i>StarTeam Getting Started Guide</i>
user.pdf	<i>StarTeam User's Guide</i>

Important The online manuals are distributed in Adobe Acrobat (.PDF) format and require the Adobe Acrobat Reader, 4.0 or higher, in order to display them. The installation program for the Adobe Acrobat Reader is located in the \Docs folder of the StarTeam Installation CD. The reader is also available from the Adobe web site at: www.adobe.com.

Contents of the StarTeam Installation CDs?

The "core" StarTeam products are installed from two CDs. Disk 1 contains the following products:

- StarTeam Server
- StarTeamMPX Transmitters
- StarTeam Windows client

- StarTeam Cross-Platform client (for Windows platforms)
- StarDisk

Disk 2 contains the following products:

- StarTeam Cross-Platform client (for non-Windows platforms)
- StarTeam Extensions
- StarTeam SDK

Disk 1 contains the following folders:

Folder	Contents
\Client	The files needed to install the StarTeam Windows client.
\Docs	The StarTeam documentation set, provided in .PDF format so you can view it online or print it.
\MPX	The files needed to install the additional functionality of the StarTeamMPX. (You might not be licensed for this product.)
\Readme	The StarTeam readme files, which provide an overview of all the products.
\Server	The files needed to install StarTeam Server, which provides client/server access to StarTeam projects.
\StarDisk	The files needed to install StarDisk, which extends Windows Explorer to include version control. (You might not be licensed for this product but you can evaluate it.)
\StarTeam SDK	The files needed to install the StarTeam Runtime.
\StarTeamCPWin	The files needed to install the StarTeam Cross-Platform client on Windows.
\Utility	The files for some common controls, MSDE 2000, and ODBC, each in its own folder. You may need to use these separately. For example, suppose you install other software applications after the StarTeam installation and now you have ODBC drivers that don't work with StarTeam. You might need to reinstall drivers from the Utility folder.
\Utility\Patched Oracle ODBC Drivers	Patches to the Oracle ODBC drivers, for a StarTeam Server that uses an Oracle database.

Disk 2 contains the following folders:

Folder	Contents
\Docs	The StarTeam documentation set, provided in .PDF format so you can view it online or print it.
\Extras	Copies of Guiffy (a comparison and merge utility) and OpenMake (a build utility).
\NotificationAgent	The files needed to install the Notification Agent, which is part of StarTeam Extensions. (You might not be licensed for this product but you can evaluate it.)
\Readme	The StarTeam readme files, which provide an overview of all the products, including a list of new features.
\StarTeam SDK	The files needed to install the StarTeam Runtime.
\StarTeamCP	The files needed to install the StarTeam Cross-Platform client on non-Windows platforms.

Folder	Contents
\StarTeamDesigner	The files needed to install the Workflow Designer, which is part of StarTeam Extensions. (You might not be licensed for this product but you can evaluate it.)
\StarTeamExtensions	The files needed to install the StarTeam Extensions. (You might not be licensed for this product but you can evaluate it.)
\StarTeamSDK	The files needed to install the StarTeam SDK.

Contacting Borland Support

Borland Software Corporation is committed to providing world-class services in the area of consulting and technical support. We have over 15 years of experience in supporting developers and enterprise customers. Our qualified technical support engineers are prepared to handle your support needs on a case-by-case basis or in an ongoing partnership. Borland Software Corporation provides support worldwide, delivering timely, reliable service to ensure every customer's business success.

For more information about Borland support services, please see our web site at <http://support.borland.com>.

From the Web site, you can also access many newsgroups in which users exchange information, tips, and techniques. See <http://info.borland.com/newsgroups/> for the latest list of free product newsgroups. Also available on the Internet is the Borland Developer Network site at <http://community.borland.com>. This Borland Community provides access to product specific information, articles, code examples, and news.

When contacting support, be prepared to provide complete information about your environment, the version of the product you are using, and a detailed description of the problem.

For support on third-party tools or documentation, contact the vendor of the tool.

Documentation Conventions

The StarTeam documentation uses the following conventions.

Choose File > Exit	Indicates a menu selection followed by a submenu selection. The greater-than symbol (>) separates the commands to be selected from subsequent menus. For example, "Choose the File > Exit command" means to choose File from the menu bar and then choose Exit from the drop-down menu.
Fixed-Space Font	Text appearing in Courier font represents information that you need to enter and messages from the system.
<i>italics</i>	Syntax appearing in italics represents information that you replace with the names of your files, child folders, etc. Italics are also used for the names of dialogs and books, and for emphasis.
Bold	Syntax appearing in bold represents information that you must use exactly as shown (if you use it).
[]	Square brackets surround optional syntax.



A vertical bar separates mutually exclusive choices in syntax.

When this icon appears in the margin, it indicates that the section or procedure applies to only the StarTeam Cross-Platform client. (If a section or procedure applies to all clients, no icon appears in the margin.)



When this icon appears in the margin, it indicates that the section or procedure applies to only the StarTeam Windows client. (If a section or procedure applies to all clients, no icon appears in the margin.)

Note Identifies supplemental information.

Tip Identifies information on alternative procedures, or other helpful but nonessential information.

Important Identifies information that is essential to the completion of a task.

Caution Identifies actions that may result in loss of data, or procedures that must be followed to ensure that data is *not* lost.

Installing StarTeam Server

StarTeam Server is a powerful tool that supports distributed development teams and mobile team members. It supports data in all languages that can be encoded in UTF-8. You can access the data managed by StarTeam Server using a variety of clients, such as the StarTeam Windows and Cross-Platform clients.

Other clients use already familiar applications to access the server. For example, you can access the server from Microsoft Windows Explorer using StarDisk, and from standard web browsers using StarTeam Web Edition. If you use a StarTeam IDE integration, you can access StarTeam Server from IDE applications such as Microsoft Visual Studio .NET and platforms such as Eclipse.

Access to StarTeam Server can be local or remote—via the Internet, intranet, WAN, or a dial-up connection. Built-in encryption enables you to work securely over public networks such as the Internet. Normally, you install StarTeam Server on a computer accessible to all team members. You then install StarTeam clients on team members' workstations. To learn to use StarTeam Server, please refer to the *StarTeam Administrator's Guide*, the *StarTeam Getting Started Guide*, and the extensive online help.

This chapter explains how to install StarTeam Server. It also covers the preparations that should be made before the installation and the steps you need to take after the installation, particularly if you are upgrading from an earlier release of StarTeam Server.

- If you are evaluating the product for adoption or installing the product for first use on site, you should read [“Pre-installation Issues for a New Installation” on page 8](#) and then proceed directly to [“Installing StarTeam Server” on page 10](#).
- If you are upgrading from an earlier version of the product to a new release, you need to read all of this chapter. After the installation, you must upgrade each server configuration. In some cases, you may need to update Alternate Property Editors (APEs) and so on. See [“Upgrading Server Configurations” on page 73](#).

This chapter also explains where to find detailed information about installing StarTeamMPX and StarTeam Extensions.

- StarTeamMPX comes with StarTeam Enterprise Advantage. It is not available with StarTeam Enterprise or StarTeam Standard.

- StarTeam Extensions is also only available with StarTeam Enterprise Advantage. Some of the files for StarTeam Extensions must be checked into a special project that you create on every server configuration that uses StarTeam Extensions.

Understanding StarTeam Server Support of Unicode Character Sets

While StarTeam Server supports data in all languages that can be encoded in UTF-8, it uses only ASCII characters (0-127) as it expands keywords. Characters outside that range expand to "?". Keyword expansion and EOL conversion should work for all "ASCII-based" encodings, which includes UTF-8, Cp1252, and so on. It does not include the various UTF-16 encodings. StarTeam currently treats UTF-16 encodings as binary and does not attempt to perform either EOL or keyword expansion on them.

The internal names of custom fields must be ASCII, but the display names can be in non-English character sets.

Pre-installation Issues for a New Installation

Before you install StarTeam Server:

- 1 Make sure your computer system meets the minimum requirements for that product. See ["System Requirements" on page 103](#) for more information.
- 2 You must be a local administrator on the target computer to install StarTeam Server and other StarTeam products. Also, the local settings for the administrator account performing the install must be stored on the target computer. StarTeam Server and StarTeam clients will not operate correctly if the local settings are stored on a network drive.
- 3 Video settings on the computer on which you install StarTeam Server must be set to 256 colors or higher.
- 4 Unless you plan to only use MSDE, which is the default database for server configurations, you must install the database management system you plan to use with StarTeam Server. It is usual to install the database server on another computer. Make sure your computer system meets the minimum requirements for the database product. Refer to the documentation supplied with your database management system for more information.

Note There should be a dedicated connection between the computers running StarTeam Server and the database management system. For optimal performance, both computers should be on the same physical switch.

- 5 Install the database client on the same computer as StarTeam Server.
- 6 If you will be using MSDE, the default database for StarTeam, it is typically installed along with StarTeam Server on the same computer. If you install from the CD, you will have eight copies of MSDE. If you install from a downloaded version of StarTeam Server, you will have two copies. One is enough; the installation provides at least two because you may already have an application using MSDE on the computer on which StarTeam Server is installed. The database files have specific numbers from Microsoft Corporation and the database files with the same number cannot be used by both applications.

Although MSDE comes with StarTeam Server as the default database, Borland Software Corporation encourages you to use enterprise-level database management systems unless you have a small team and a relatively small amount of data.

You can manage MSDE with SQL Server tools or with the MSDE AdminTool. Be aware that the MSDE AdminTool is an unsupported tool from Microsoft Corporation.

MSDE AdminTool requires Microsoft Access 2000 Runtime and can be used for backing up and restoring MSDE databases.

You can either install Microsoft Access 2000 Runtime from the Office 2000 CD, or if you have a licensed copy of Microsoft Office 2000 Developer, you can download the Access 2000 Run-Time Minimum (Art2kmin.exe) from the Microsoft web site.

To install the MSDE AdminTool along with the server, you must do a custom installation of StarTeam Server.

- 7 Because StarTeam Server can be used with any UTF-8 characters set, the code pages settings for the databases can be very important. Information about this can be found in the chapter on creating a server configuration for your database type.
 - For Microsoft SQL Server and MSDE databases, see [“Understanding the Encoding Differences” on page 26](#).
 - For Oracle databases, see [“Database Character Set and StarTeam Server” on page 49](#).
 - For DB2 databases, see [“Using an IBM DB2 Database: Overview” on page 65](#) and [“Connection to IBM DB2 Database Changes Locale Setting” on page 71](#).

Pre-installation Issues for an Upgrade

You can upgrade directly to StarTeam Server 2005 Release 2 from StarTeam Server 6.0 and 2005.

However, there may be pre- and post-installation steps for you to perform. Do not uninstall your previous version of StarTeam Server until you are finished installing StarTeam Server 2005 Release 2 and are satisfied with its performance.

To get ready for an upgrade of your StarTeam Server:

- 1 Review the pre-installation issues for a new installation to determine whether any of them apply to you. See [“Pre-installation Issues for a New Installation” on page 8](#).
- 2 You cannot install StarTeam Server while server configurations are running. Do one of the following:
 - a To shut down a server configuration that is not running as a service:
 - 1 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server x > StarTeam Server. The *Server Administration* window appears.
 - 2 Select the server configuration and click Shut Down Server toolbar button. The Status icon changes from “Running” to “Stopping” to “Ready”.
 - b If your StarTeam server configurations run as Windows services, you must stop those services and change the StarTeam execution mode.
 - 1 Display the Windows Control Panel, by selecting Start > Settings > Control Panel.
 - 2 Double-click the Services icon. The *Services* dialog appears.
 - 3 Locate the StarTeam server configuration and click Stop.
 - 4 After the service stops, close the *Services* dialog and the Control Panel.
 - 5 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server x > StarTeam Server. The *Server Administration* window appears.
 - 6 Select the server configuration and click Remove Service. The Execution Mode column changes from “Service” to “Application”.

- 3 Back up your StarTeam repositories and other server files. See the documentation for your former version of StarTeam Server for information about what to back up.
- 4 If necessary, upgrade your database manager (RDBMS) to a version supported by the new version of StarTeam Server.
- 5 The new version of StarTeam Server must be installed on the same computer as the version of StarTeam Server that you are upgrading from.

Changes to StarTeam Server Files

The old starteam-server-configs.xml file is copied from the old StarTeam Server release's installation folder to the new release's installation folder.

Installing StarTeam Server

Before you install StarTeam Server, make sure you read [“Pre-installation Issues for a New Installation” on page 8](#). If you are upgrading from a previous release of StarTeam Server, make sure that you also read [“Pre-installation Issues for an Upgrade” on page 9](#).

The Setup program on the installation CD enables you to select the type of installation you want to perform. You can select from the following types of installations:

- **Typical**

Installs StarTeam Server with the most common options. Recommended for most users. Those options are Program Files, Sample Server Configuration, MSDE 2000, and the server's Online Documentation.

- **Compact**

Installs StarTeam Server with the minimum required options. Only the Program Files are installed. Use this if you will not be using MSDE as a database and do not want to install the StarDraw Sample server configuration.

- **Custom**

Enables you to choose the options you want to install. Recommended for advanced users.

Be sure to perform a custom installation if you want:

- To enable users to install the StarTeam client over the network from the computer on which StarTeam Server is installed.

The client setup files are not automatically part of the server installation. If you select the Client Setup check box, the disk image for StarTeam is installed in the Client Setup folder, a child folder of the StarTeam Server installation folder. Make sure that this folder is one that all team members can access.

- To avoid installing the StarDraw sample repository, for example, because it uses MSDE and you are not installing that database application either.

Clear the “Sample server configuration” check box if you do not want to install StarDraw.

Installing the StarDraw sample server configuration for 2005 Release 2 will not overwrite an existing StarDraw configuration. However, the StarDraw server configuration in the 2005 Release 2 starteam-server-configs.xml file will refer to the new StarDraw.

Other options that you can select (to install) or clear (to bypass) during a custom installation include:

- Program Files

If you use the custom installation to install something that was not installed during a previous installation of StarTeam Server, you may choose to clear this check box. For example, suppose that in a previous custom installation, you elected to bypass the installation of MSDE 2000. Now you want to add that database, but you do not want to reinstall all the server program files, so you clear the Program Files check box.

- Online Documentation

Normally, the documentation is installed along with the server. If you do not want the documentation on this computer, clear the Online Documentation check box.

- MSDE 2000

MSDE 2000 is a variant of Microsoft SQL 2000 offered by Microsoft at no charge, as long as you comply with their stipulations. It is installed as part of a typical installation because it is used as the default database.

If you use an enterprise-level database exclusively (Microsoft SQL or Oracle), you may not be interested in having those files added to the server's computer.

- MSDE AdminTool

Not installed as part of a typical installation, because MSDE AdminTool is an unsupported Microsoft tool and it requires Microsoft Access 2000 Runtime. You can either install Microsoft Access 2000 Runtime from the Office 2000 CD, or if you have a licensed copy of Microsoft Office 2000 Developer, you can download the Access 2000 Run-Time Minimum (Art2kmin.exe) from the Microsoft web site.

If you select this option, the installation program creates an MSDE AdminTool folder as a child of the StarTeam Server installation folder. It adds the files to that folder, making it possible for you to install the tool. After StarTeam Server is installed, you need to run the setup.exe file in the MSDE AdminTool folder to install MSDE AdminTool.

To install StarTeam Server:

- 1 Close all other Windows applications.
- 2 Insert the StarTeam Installation CD into your CD-ROM drive. The *Borland StarTeam CD Launcher* window should appear automatically.
- 3 If the installation menu does not appear automatically, display it by performing the following steps:
 - a From the Windows Start menu, select Start > Run.
 - b Enter:


```
x:\setup.exe
```

 where x: is the drive letter of your CD-ROM drive.
 - c Press Enter.
- 4 When the master setup dialog appears, click Install StarTeam Server.
- 5 Follow the installation instructions on the screen.
- 6 After you finish installing StarTeam Server, ensure that the permissions on the StarTeam Server installation folder and files are set correctly. The Windows account for the StarTeam administrator must have full permissions on the installation folder and files. Set the Windows permissions for all other StarTeam users in accordance with your company policy. See your network administrator if you need assistance.

If you use the default location, installing StarTeam Server places files in the following folders under your Program Files folder:

- Borland\StarTeam Server 2005 R2
This folder and its subfolders contains the executables, DLLs, and utilities used to run StarTeam Server. This folder also contains the StarTeam_Server_2005_R2_InstallLog.log file, which documents what happened during the installation process.
- Borland\StarTeam SDK 2005 R2
This folder contains the StarTeam SDK Runtime required for most clients to access StarTeam Server.

Known Installation Issue

The MSDE 2000 installation can fail due to insufficient registry privileges. The error is similar to the following:

```
InstallSQLAgentSecurity failed (computer_name,LocalSystem,203)
```

The resolution is to change the security of the HKLM\Software\Microsoft\Microsoft SQL Server key to "Full Control", and then reinstall MSDE. This can be changed using the Windows registry editor (regedt32).

Post-installation Tasks for a New Installation

If you have not installed StarTeam Server previously, you must perform the following tasks before team members can begin using StarTeam.

To start using StarTeam Server:

- 1 Create a server configuration.

For details about creating a server configuration, see the chapter about your database type:

- ["Using Microsoft SQL Server/MSDE Databases with StarTeam Server" on page 25](#)
- ["Using Oracle Schema Users with StarTeam Server" on page 43](#)

When you create a server configuration, you set values for the configuration's *session* options, which are stored in the starteam-server-configs.xml file. Session options specify the core information that StarTeam Server requires in order to start a server configuration.

- 2 Log on to that configuration.

StarTeam Server comes with a user named "Administrator" who has the password "Administrator".

- 3 Configure the server.

After the server configuration is created, you can set configuration options, which are stored in the server configuration's database. Configuration options enable you to fine-tune server configuration performance and enable the use of several features, such as:

- E-mail and audit features
- Compression and encrypting of data that is transferred between the server and client workstations

- 4 Create projects and views.
- 5 Add users and groups.

- 6 Set the appropriate access rights for the server configuration, projects, and views.
 - 7 If desired, you can run the server configuration as a Microsoft Windows service.
- See the *StarTeam Administrator's Guide* for more information about steps 3 through 7.

Post-installation Tasks for an Upgrade

If you are upgrading from a previous release of StarTeam Server, be aware of the following:

- 1 All existing StarTeam server configurations must be upgraded for use with the latest release of StarTeam Server. See ["Upgrading Server Configurations" on page 73](#) for information about upgrading server configurations and creating hives for the Native-II vault.
- 2 If you use StarTeamMPX, be sure to install the latest StarTeam Transmitters, Message Broker, and/or StarTeam Multicast Services.
- 3 See the *StarTeamMPX Administrator's Guide* for details.
- 4 For installation and upgrade instructions for StarTeam Extensions, see the *StarTeam Extensions User's Guide*.

Evaluating StarTeam Server

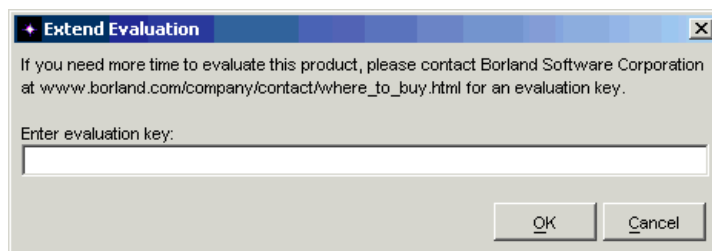
The first time you run StarTeam Server, an evaluation license is created for StarTeam Enterprise Advantage, which is the edition of StarTeam with the largest feature set.

Before the 30-day product review period expires, you can extend the evaluation period by contacting Borland Software Corporation at www.borland.com/company/contact/where_to_buy.html for an evaluation extender key.

Be sure to register the product or extend the evaluation period before it expires. Otherwise, when clients access a server configuration managed by StarTeam Server, no components (such as the file or change request component) are available. In the StarTeam Windows and Cross-Platform clients, the upper and lower panes have no tabs.

To extend the evaluation period for StarTeam Server:

- 1 After you obtain an extended evaluation key, select Start > Programs > StarTeam > StarTeam Server 2005 R2 > StarTeam Server. The *Server Administration* window appears.
- 2 Select Help > About from the menu bar. The *About StarTeam Server* dialog appears.
- 3 Select the License item in this dialog's left pane.
- 4 Click Extend Evaluation. The *Extend Evaluation* dialog appears.



- 5 Enter the evaluation key and click OK.
- 6 Close the *About StarTeam Server* dialog.

Licensing StarTeam Server

StarTeam Server can be licensed in either of two ways:

- StarTeam licensing, which is internal to the product
- Borland licensing available for use with license servers

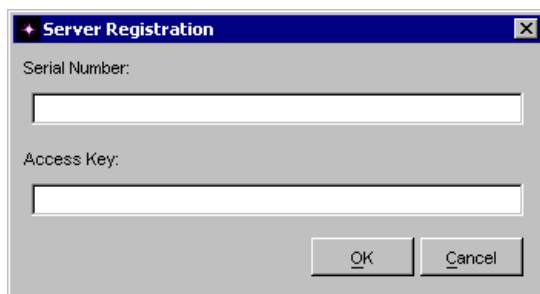
If StarTeam users attempt to access a server configuration that is managed by an unlicensed version of StarTeam Server, the upper and lower panes in their StarTeam clients will have no tabs.

Using StarTeam Licensing

Because StarTeam Server licenses are stackable, you can enter more than one license key so long as all the license keys are for the same edition (Standard, Enterprise, or Enterprise Advantage). Be sure to delete the evaluation license before entering the first new license. For more information about licensing, see [“Understanding Licensing” on page 15](#).

To license StarTeam Server from the Server Administration utility:

- 1 From the Windows Start menu, select Start > Programs > StarTeam > StarTeam Server 2005 R2 > StarTeam Server. The *Server Administration* utility appears.
- 2 From the Server Administration menu bar, Select Help > About.
- 3 The *About StarTeam Server* dialog appears.
- 4 Select the License node in this dialog's left pane.
- 5 If you have yet to enter a license, you must delete the evaluation key by selecting it from the dialog's right pane and clicking Delete.
- 6 Click Register. The *Server Registration* dialog appears.



- 7 Enter the correct numbers in the Serial Number and Access Key text boxes. Serial numbers are case-sensitive; access keys are not.
- 8 Click OK.
- 9 Close the *About StarTeam Server* dialog.

To license a version of StarTeam Server from the command prompt:

- At the command line, enter the following:

```
starteamserver -serial Number -access Key
```

Notes

The serial number is case-sensitive; the access key is not.

You cannot license StarTeam Server while any of its server configurations are running as a Windows service.

If you change the registered license while a StarTeam project is open on a user's workstation, the licensing takes effect for that user by closing and reopening the project window.

If you license a StarTeam Server as Standard or Enterprise after using an evaluation license, which is for the Enterprise Advantage edition, the feature set will change. For example, if you created requirements during the evaluation and license the server as anything other than Enterprise Advantage, the requirements tab will disappear.

Using a License Server

Starting with StarTeam 2005 Release 2, you can use Borland License Server or FLEXlm with StarTeam Server. This gives you a choice between using a license server and using the StarTeam licensing found in this and earlier releases.

An administrator performs the following steps:

- 1 Receives licensing information from Borland Software Corporation via email (a sales representative should put this in motion)
- 2 Installs the license server (the license server documentation explains how to do this)
- 3 Hosts the licenses sent by Borland Software Corporation (this involves accessing a Borland web site and downloading Borland license files called slips)
- 4 Places the slips in the /license folder, a subfolder of the StarTeam Server installation folder.
- 5 Configures the license server for users (this is covered in the license server documentation)
- 6 Uses the StarTeam Server Administration tool to:
 - a Change user names to network logon names.
 - b Assign users to specific licenses.

Notes

If you use a license server, users must use their network logon names as their StarTeam user names.

FLEXlm configuration files on Solaris are case sensitive.

When StarTeam Server starts up, it checks for slips and stores information about them in memory. It does not recognize new slips until the next restart.

When a user logs in from a StarTeam client application, StarTeam Server tells the client application what features are available to its user based on the license assigned to that user.

If the user is assigned a license from a slip, but that slip is no longer in the license folder, StarTeam Server displays an error message. If the user's license type is Unassigned, the user is not logged on and StarTeam Server returns an exception.

Understanding Licensing

StarTeam Server can be run as a Standard, Enterprise, or Enterprise Advantage server, each of which has a different set of features.

- Standard provides a basic feature set.
- Enterprise has all the Standard features plus the Task component, the ability to customize properties for any component, and the StarDisk client.
- Enterprise Advantage has all the Enterprise features plus the Requirement component, StarTeamMPX, and the alternate property editors that enable you to

create custom forms and design workflow rules to control how all the items in a component move from state to state.

Which server you have (or more explicitly, what features a client can access on that server) is determined by licenses.

Licenses also determine how many users can access StarTeam Server. Users can have either named user or concurrent licenses. A named user license can be used only by the user who has been assigned that license. For example, if you have 5 named user licenses and 25 concurrent licenses, the 5 users who receive the named user licenses are guaranteed access to the server. No one else can use their licenses.

A concurrent license can be used by any user who does not have a named user license. For example, users without named user licenses receive concurrent licenses on a first-come, first-served basis. After all the concurrent licenses are in use, users attempting to log on are notified that there are no more licenses available at this time. They can try again later.

When you first register your server, you enter one or two serial numbers: one for named user licenses and/or one for concurrent licenses. When using multiple serial numbers, they must all identify the same StarTeam edition. The Standard edition supports only named user licenses.

You can add more named user or concurrent licenses. StarTeam Server keeps track of the total number by summing the licenses supplied in each serial number or slip. This is referred to as *stackable* licensing.

You can add or import as many users as you choose, but access to the server is granted only to users with named user licenses or to users who receive concurrent licenses as they log on.

If you have StarTeam named user licenses, you must assign them to specific users in the *User Manager* dialog. Everyone else is assumed to have a StarTeam concurrent license. See the *StarTeam Administrator's Guide* for details.

If you have Borland licenses, users must be assigned to the correct slip in the *User Manager* dialog, regardless of their named or concurrent user status. An additional status, Unassigned, may be used instead of a slip.

The StarTeam Server Administrator is automatically assigned a named user license which cannot be removed. This is a "free" license that is *not* counted against the number of named user licenses you have available.

Using the StarDraw Sample Server Configuration

StarTeam provides a sample server configuration named StarDraw. It contains a Visual C++ sample application and related materials. It has sample files, change requests, topics, and tasks. You can read the *StarTeam Getting Started Guide* and use the sample repository to experiment with and learn more about StarTeam.

During the StarTeam Server installation procedure, the sample server configuration is installed as part of the Typical installation and can be installed as part of the Custom installation. The installation procedure:

- Copies the stardraw.mdf database into the StarTeam Server 2005 R2\Samples\StarDraw Repository\Database folder.
- Copies sample files into the StarTeam Server 2005 R2\Samples\StarDraw Repository\StarDraw\Archives folder and its subfolders.
- Creates an ODBC System DSN (Data Source Name) named StarDrawDB80.
- Adds the new StarDraw server configuration to the starteam-server-configs.xml file. If a previous StarDraw server configuration is defined in that file, its settings are updated for the new release's version of StarDraw.

Important

In the `starteam-server-configs.xml` file, the predefined value of `ServerGuid` for the StarDraw Repository is:

`be5ee3b0-c719-49c6-a1a1-f493764a03f5`

Do not change this value. The StarDraw server configuration will not start if you modify the `ServerGuid`.

Use the StarDraw server configuration *only* for experimentation and training—*never* for live data.

Installing Other Server Components

So far, this chapter has explained how to install the components that are available in every edition of StarTeam Server. The remaining topics explain where to find the installation instructions for StarTeamMPX and StarTeam Extensions, which are included with the Enterprise Advantage edition of StarTeam Server.

Installing StarTeamMPX

StarTeamMPX is installed and registered separately from StarTeam Server. Access the StarTeamMPX Setup program from the StarTeam Installation CD. You must install StarTeam Server before you can install StarTeamMPX. Using StarTeamMPX requires the installation the Event Transmitter, the File Transmitter (if you will be using Cache Agent), StarTeam Message Broker, and, perhaps, StarTeam Multicast Service.

StarTeamMPX does not have an evaluation period and must be licensed to be used. It comes with its own licensing mechanism, unrelated to the StarTeam user licensing explained “Using StarTeam Licensing” on page 14.

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

Installing StarTeam Extensions

Files from StarTeam Extensions need to be installed and then checked in to the StarFlow Extensions project in each server configuration that uses alternate property editors (APEs) and workflow.

For installation and upgrade instructions for StarTeam Extensions, see the *StarTeam Extensions User's Guide*.

Installing StarTeam Clients

This chapter explains how to install the StarTeam Windows and Cross-Platform clients. It also tells you where to find installation instructions for other StarTeam clients.

To learn to use the StarTeam Windows or Cross-Platform clients, please refer to the *StarTeam User's Guide*, *StarTeam Getting Started Guide* and the extensive online help.

Before Installing a StarTeam Client

Before you install a StarTeam product, make sure your computer system meets the minimum requirements for that product. See [“System Requirements” on page 103](#) for more information.

The StarTeam Windows and Cross-Platform 2005 and 2005 Release 2 clients can access both 2005 and 2005 Release 2 servers. This makes it easier to roll out your upgrades of the client after StarTeam Server 2005 Release 2 has been installed. However, the 2005 clients cannot take advantage of new features in the 2005 Release 2 server.

Important

You must be a local administrator on the target computer to install StarTeam products.

Starting Users Off with the Same Personal Options

The StarTeam installation program copies the `starteam-client-default-options.xml` (if it exists) to the `All Users\Application Data\Borland\StarTeam` folder on each client workstation. It will overwrite an existing file with that name in that location. This file will be used as a template for the new `starteam-client-options.xml` file as each user starts StarTeam Windows client for the first time.

This allows for the distribution of the initial `starteam-client-default-options.xml` file—although not from the StarTeam Installation CD.



To provide all users (of the StarTeam Windows client) with the same initial set of personal options:

- 1 Perform a custom installation of StarTeam Server while selecting the Client Setup check box, so that the disk image for StarTeam is installed in the Client Setup folder, a child folder of the StarTeam Server installation folder.
- 2 Make sure that this folder is one that all team members can access.
- 3 Install the StarTeam Windows client on only one computer.
- 4 Set the personal options. See the *StarTeam User's Guide* for details.
- 5 Notice that you now have a file named `starteam-client-options.xml` in the user profile folder.
 - On Windows NT, this is `C:\winnt\Profiles\user\Application Data\Borland\StarTeam\`.
 - On Windows 2000 and XP, this is `C:\Documents and Settings\user\Application Data\Borland\StarTeam\`.
- 6 Copy this file to the Client Setup folder.
- 7 Rename this file `starteam-client-default-options.xml`.
- 8 Tell users to install the StarTeam Windows client.

Installing the StarTeam Windows Client



Instead of installing from the StarTeam Installation CD as explained in the following procedure, you might be able to install StarTeam over the network using the Client Setup folder on the computer on which StarTeam Server has been installed. Ask your StarTeam administrator for details.

Important

Users must have administrative privileges on the computer on which StarTeam is being installed during the installation process.

To install the StarTeam Windows client:

- 1 Close all running Windows applications.
- 2 Insert the StarTeam Installation CD into your CD-ROM drive. The *Borland StarTeam CD Launcher* window should appear automatically.
- 3 If the installation menu doesn't appear automatically, display it as follows:
 - a From the Windows Start menu, select Start > Run.
 - b Enter:
`x:\setup.exe`
where x: is the drive letter of your CD-ROM drive.
 - c Click OK.
- 4 Click Install Products.
- 5 Click Borland StarTeam Clients.
- 6 Click Borland StarTeam Client.
- 7 Follow the installation instructions on the screen.
 - a From the *Introduction* dialog, read the information, and click Next.
 - b From the *License Agreement* dialog:
 - 1 Read the agreement.
 - 2 Select the "I accept..." option button.
 - 3 Click Next.

- c From the *User Information* dialog, enter your name and company name in the appropriate text boxes.
- d From the *Choose Install Set* dialog:
 - 1 Select the Typical, Compact, or Custom button.
 - Typical installs the StarTeam client, its user manuals, its online help, and the StarTeam Toolbar. The toolbar stores login information making it easier to log on. For details, see the *StarTeam User's Guide*.
 - Compact installs only the StarTeam client, its user manuals, and its online help.
 - Custom allows you to select what is installed. This is the only way to install the StarTeam Administration utility to use on a client workstation. When installed as part of the client, you can do only remote server administration.
 - 2 Click Next.
- e If you selected a Custom install set, select or clear the check boxes for the parts you do and do not want to install.
- f From the *Choose Install Folder* dialog, enter or browse for the location to be used as the installation folder. (The default location is C:\Program Files\Borland\StarTeam 2005 R2.)
- g From the *Choose Shortcut Folder* dialog, use the default setting (that is, keep the Other option button set to C:\Documents and Settings\All Users\Start Menu\Programs\StarTeam\StarTeam Client 2005 R2).
- h From the *Pre-installation Summary* dialog, do one of the following:
 - Review the settings and click Install.
 - Review the settings and click Previous one or more times so that you can reset some of them. Then return and click Install.
- i If you have also installed the StarTeam Cross-Platform client on this computer, you are asked if the StarTeam Windows client should be the client that opens when you use a StarTeam shortcut.
Select Yes if the StarTeam Windows client is your primary client.
- j From the *Install Complete* dialog, click Done.

The default installation folder is C:\Program Files\Borland\StarTeam 2005 R2\. The StarTeam_2005_R2_InstallLog.log file in your installation folder documents what happened during the installation process.

Installing the StarTeam Cross-Platform Client



You can install the StarTeam Cross-Platform client on Windows or other operating systems such as Macintosh OS X and UNIX systems.

Installing on Windows

To install the StarTeam Cross-Platform client on Windows:

- 1 Close all running Windows applications.
- 2 Insert the Installation CD into your CD-ROM drive. The *Borland StarTeam CD Launcher* window should appear automatically.
- 3 If the installation menu doesn't appear automatically, display it as follows:
 - a From the Windows Start menu, select Start > Run.

- b Enter:
 `x:\setup.exe`
 where x: is the drive letter of your CD-ROM drive.
- c Click OK.
- 4 Click Install Products.
- 5 Click Borland StarTeam Clients.
- 6 Click Borland StarTeam Cross-Platform Client.
- 7 Follow the installation instructions on the screen.
 - a From the opening dialog, select a language from the drop-down list box, and then click OK.
 - b From the *Introduction* dialog, read the information, and click Next.
 - c From the *License Agreement* dialog:
 - 1 Read the agreement.
 - 2 Select the "I accept..." option button.
 - 3 Click Next.
 - d From the *Choose Install Set* dialog:
 - 1 Select the Typical, Compact, or Custom button.
 - Typical installs the StarTeam client, its user manuals, its online help, and the StarTeam Toolbar. The toolbar stores logon information making it easier to log on. For details, see the *StarTeam User's Guide*.
 - Compact installs only the StarTeam client, its user manuals, and its online help.
 - Custom allows you to select what is installed. This is the only way to install the StarTeam Administration utility to use on a client workstation. When installed as part of the client, you can do only remote server administration.
 - 2 Click Next.
 - e If you selected a Custom install set, select or clear the check boxes for the parts you do and do not want to install.
 - f From the *Choose Install Folder* dialog, enter or browse for the location to be used as the installation folder. (The default location is C:\Program Files\Borland\StarTeam Cross-Platform Client 2005 R2.)
 - g From the *Choose Shortcut Folder* dialog, use the default setting (that is, keep the Other option button set to C:\Documents and Settings\All Users\Start Menu\Programs\StarTeam\StarTeam Cross-Platform Client 2005 R2).
 - h From the *Pre-installation Summary* dialog, do one of the following:
 - Review the settings and click Install.
 - Review the settings and click Previous one or more times so that you can reset some of them. Then return and click Install.
 - i If you have also installed the StarTeam Windows client on this computer, you are asked if the StarTeam Cross-Platform client should be the client that opens when you use a StarTeam shortcut.
 Select Yes if the StarTeam Cross-Platform client is your primary client.
 - j From the *Install Complete* dialog, click Done.

The StarTeam Cross-Platform client is installed in the specified folder, and the `StarTeam_Cross-Platform_Client_2005_R2_InstallLog.log` file in that folder documents what happened during the installation process.

Installing on Linux or Solaris

To install the StarTeam Cross-Platform client on Linux or Solaris:

- 1 If installing from the CD, please select the OS specific installation in the StarTeamCP folder on the second installation disk. If installing from a compressed package please decompress the install package.
- 2 Run the StarTeamCP.bin file to invoke the installer.
- 3 Follow the directions on your screen.
- 4 After installation, run the StarTeamCP executable located in the StarTeamCP/bin directory, or use the shortcut with the same name located in the directory selected during installation.

Installing on Macintosh OSX

Prior to installion, make sure that your Java VM is 1.5.x.

To install the StarTeam Cross-Platform client on Macintosh OSX:

- 1 Extract the OS-specific zip file.
This file is available for download from the Borland web site. It is also located in the StarTeamCP folder on the second installation CD. If double-clicking the file does not extract the contents, you may need to download and install an extraction utility, such as StuffIt Expander.
- 2 Run the resulting StarTeamCP.app to start the installation.
- 3 Follow the directions on your screen.
- 4 After installation, run StarTeamCP.app from the StarTeamCP/bin folder or start the application from the shortcut with the same name created in the location that you specified during installation.

Installing on Other Platforms

To install the StarTeam Cross-Platform client on other platforms, use the Universal installation:

- 1 Extract the universal *.tar.gz file to the desired location. This file is available for download from the Borland web site. It is also located in the StarTeamCP folder on the second installation CD.
- 2 Use the CD command to reach the installation's ./bin folder and run the setup script. This creates executable scripts in the same directory. Start StarTeamCP by running the "starteam" script.

Installing Other StarTeam Clients

The earlier portions of this chapter have explained how to install the full-featured StarTeam Windows and Cross-Platform clients. The remaining topics explain where to find installation instructions for other StarTeam clients.

Installing StarDisk

StarDisk is installed and registered separately. Access the StarDisk Setup program on the StarTeam Installation CD. For information about installing StarDisk, see the *StarDisk User's Guide*.

Installing StarTeam Web Edition

Web Edition Enterprise Advantage supports the StarTeam Extensions workflow engine. Installation instructions for StarTeam Web Edition are found in the *StarTeam Web Edition Installation and Administration Guide*.

Installing StarTeam Integrations

StarTeam integrations are not included on the StarTeam Installation CDs. Instead, they are posted for download on the Borland web site at:

<http://starteam.borland.com/starteamintegrations>

Using Microsoft SQL Server/MSDE Databases with StarTeam Server

This chapter explains how to create a new server configuration and Microsoft SQL Server/MSDE database for use with StarTeam Server. StarTeam Server stores everything except for file archives and server startup information in the database of your choice.

The Windows version of StarTeam Server can be used with the following Microsoft databases:

- Microsoft SQL Server 7 SP4.
- Microsoft SQL Server 2000 SP3, which includes Slammer virus protection.
- Microsoft SQL Server 2000 Desktop Engine (MSDE 2000) SP2 plus the Slammer Virus patch, which is installed for you by StarTeam Server.

MSDE is the StarTeam default database. We advise users to read the MSDE license agreement provided by Microsoft Corporation and to review the appropriate uses of MSDE at:

<http://www.microsoft.com/sql/msde/howtobuy/msdeuse.asp>

StarTeam Server completely automates the process of creating Microsoft SQL Server and MSDE databases for use with StarTeam server configurations. However, if you prefer, you can create your own database. See “[Creating a Database Manually: Overview](#)” on page 35 for additional information.

This chapter also provides an overview of the tuning and maintenance SQL scripts that are provided with StarTeam Server and explains how to use them. For detailed information on Microsoft SQL Server performance tuning, consult your Microsoft SQL Server documentation.

Terminology for Microsoft Databases

This chapter uses Microsoft terminology for the terms *instance* and *database*. When you install Microsoft SQL Server 2000 on a computer, you can install up to 16 instances of it. Each instance can manage a number of different databases. Each StarTeam server configuration uses its own database. When you install StarTeam

Server, you install several instances of MSDE 2000 (two come in the download package at the web site; eight are on the StarTeam installation CD). You can install up to 16, as with Microsoft SQL Server 2000, but StarTeam Server installs fewer instances, assuming you would never need them all.

Logging Onto Databases

It is *highly* recommended that you use a dedicated StarTeam user account to run or log onto the databases used with StarTeam server configurations. System administrator accounts usually have unlimited privileges. Any anomalies or errors that occur while you are logged in as the system administrator may result in unrecoverable damage to StarTeam databases and other databases managed by the same database server.

Understanding the Encoding Differences

StarTeam Server sends data encoded as UTF-8. Microsoft SQL Server and MSDE do not support UTF-8 at the database level. It supports nchar, nvarchar, and ntext to store fixed format Unicode data (UTF-16).

- UTF-8 is a variable length character set in which the characters can expand from one to six bytes depending on the language.
- UTF-16 is a fixed length encoding mechanism in which every character expands to two bytes. UTF-16 tends to use up more space than UTF-8 when applied to character sets in which one character always translates to one byte.

Because of the way StarTeam encodes data, non-English StarTeam data is human-readable from StarTeam clients, but *not* from Microsoft SQL Server and other tools, such as Enterprise Manager and MSDE AdminTool.

This is also why it is critical that the ODBC drivers used by the MSDE or Microsoft SQL Server databases do *no* translation of the data. When StarTeam Server creates a DSN to be used with a server configuration's database, it turns off the ODBC autotranslation feature. Similarly, if you create your own database, you must manually turn off the autotranslation feature. The SQL Server ODBC Data Source Test for the Microsoft ODBC driver will fail because this feature is turned off, but that is correct behavior for DSNs created for use with StarTeam server configurations.

Using an MSDE Database: Overview

If you will be using an MSDE database, you must complete the following tasks:

- 1 Install StarTeam Server. See [“Installing StarTeam Server” on page 10](#) for more information.

Note

Be aware that MSDE is not installed as part of a Compact installation.

- 2 Create and start a StarTeam server configuration. See [“Creating and Starting a Server Configuration” on page 27](#) for instructions.
- 3 Run the necessary tuning scripts on the database. See [“Running SQL Scripts for Microsoft Databases” on page 33](#) for instructions.

Using a Microsoft SQL Server Database: Overview

If you will be using a Microsoft SQL Server database, you must complete the following tasks:

- 1 Install Microsoft SQL Server.
- Important** When you install a Microsoft SQL Server database instance, it defaults to the collation for the locale set for the operating system. This locale setting should be used so long as it is correct for your team. Otherwise, when you automatically create a database from StarTeam Server, you cannot provide a database name, user name, or password in your language.
- 2 Install StarTeam Server. See [“Installing StarTeam Server” on page 10](#) for more information.
 - 3 Create and start a StarTeam server configuration.
 - If you want StarTeam to automatically create the database, see [“Creating and Starting a Server Configuration” on page 27](#).
 - Otherwise, see [“Creating a Database Manually: Overview” on page 35](#).
 - 4 Run the necessary tuning scripts on the database. See [“Running SQL Scripts for Microsoft Databases” on page 33](#) for instructions.
- Note** If you plan to use Microsoft SQL Server 2000, be sure to review [“Connecting to Microsoft SQL Server 2000 Databases” on page 27](#).

Connecting to Microsoft SQL Server 2000 Databases

StarTeam Server requires Microsoft SQL Server authentication to connect to Microsoft SQL Server databases, rather than the default Windows authentication. If you installed Microsoft SQL Server 2000 using the default settings for security and authentication, StarTeam Server will experience problems connecting to the database.

To connect to Microsoft SQL Server 2000 databases from StarTeam Server:

- 1 Start SQL Server Enterprise Manager, by selecting Start > Programs > Microsoft SQL 2000 > Enterprise Manager from the Windows taskbar.
- 2 Locate and select the SQL Server (not your SQL Server database).
- 3 Right-click the SQL Server database, and choose Properties from the context menu.
- 4 From the *SQL Server Properties* dialog, select the Security tab.
- 5 Select the SQL Server And Windows option button (instead of the Windows Only option button).
- 6 Click OK.

Creating and Starting a Server Configuration

The first time you start a new server configuration, StarTeam Server creates all the StarTeam tables in the database you specify. This section explains how to create a StarTeam server configuration and start it for the first time. It assumes that you want StarTeam Server to automatically create a Microsoft SQL Server or MSDE database. If that is not the case, see [“Creating a Database Manually: Overview” on page 35](#).

Microsoft SQL Server and MSDE database names should:

- Begin with a letter
- Contain letters and numbers only
- Not contain spaces
- Not be a SQL reserved word such as create, delete, if, then, else, or goto

The Server Administration database options may fail to run for databases with names that do not follow these guidelines.

To create a server configuration using a Microsoft SQL Server or MSDE database:

- 1 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server 2005 R2 > StarTeam Server. The *Server Administration* window appears.
- 2 From the Servers pane, select Local.
- 3 Select Server > New Configuration from the menu bar.

The *Enter New Configuration Data* dialog appears.

4 Enter new configuration data:

- a Enter the name of the configuration in the Configuration Name text box.

If you want the server configuration to have the same name as the database (a nice convention, especially if you have several server configurations), you must follow the naming conventions for Microsoft SQL Server and MSDE databases explained at the beginning of this section.

- b To fill the Repository Path text box, enter or browse for a location to be used to store log files and other information.

Once you fill the Repository Path text box, the dialog uses that path as the default location for a default hive.

- c Select Microsoft SQL Server/MSDE (the default) from the Database Type drop-down list box.
- d Select the Create New StarTeam Database And ODBC Data Source check box, so that StarTeam Server will automatically create the database and a DSN for it.
- e Create an initial hive for the Native-II vault by doing one of the following:

- Accept the default settings by leaving the Default option button selected and proceeding to step f.

If you use the default settings, StarTeam Server:

- Creates an initial hive named DefaultHive.
- Creates subfolders of the repository path named Archives and Cache to be used by DefaultHive.
- Stipulates that the maximum cache size is 20% of the space currently available on the drive on which the cache is located.
- Uses the default setting of 600 seconds (10 minutes) between cache cleanups.
- Uses the default setting of 95% for the storage threshold, the point at which this drive is considered full.
- Provide custom values by selecting the Custom option button and changing any of the hive settings.

- f Click Next. The *Create a SQL Server/MSDE Database* dialog appears.

Create a SQL Server/MSDE Database

Database administration information:

Host name: (local)\STARTEAM Browse...

Sys Admin (sa) password: Verify Connection

StarTeam schema information:

ODBC data source name: test1

New database name: test1

New database login name: test1

New database password:

Confirm database password:

Please select a server and enter the system administrator (sa) password in the "Database Administration Information" box. If you are connecting to MSDE installed with StarTeam Server, the initial password for the sysadmin(sa) account was either "starteam" or a blank password.

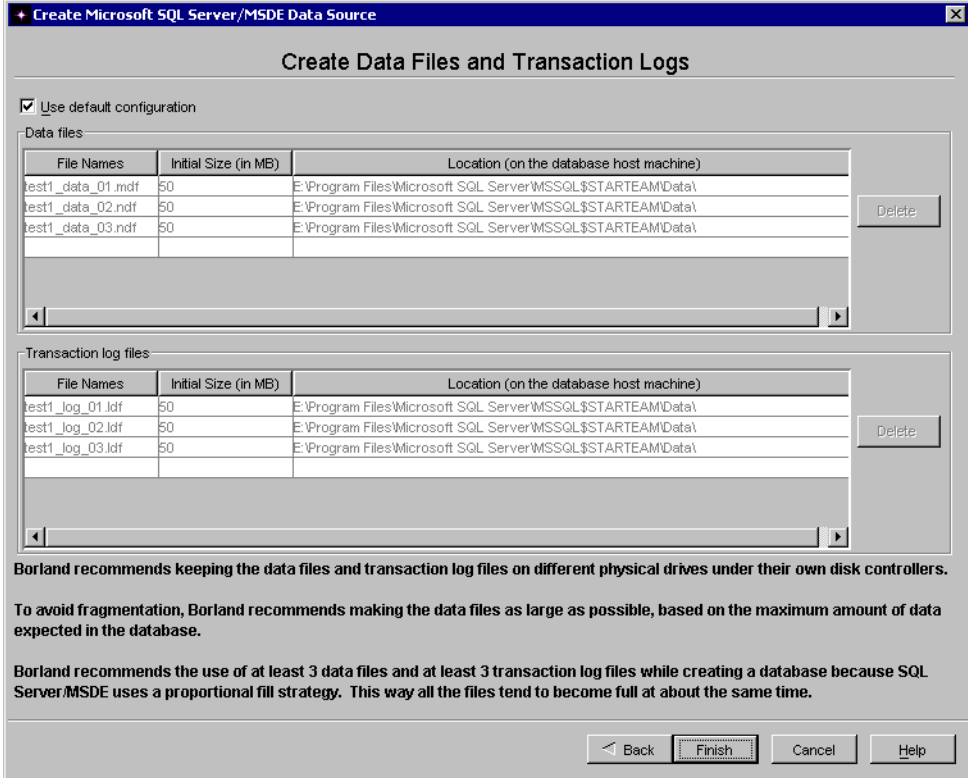
You can use Verify Connection button to test the connection to the server.

Enter the name of the data source you want created, the new database name and the new user name and password for the configuration in the "StarTeam Schema Information" box. This user will be the owner of the database.

Back Next Cancel Help

- 5 To complete this dialog:
- Do one of the following:
 - If you are creating an MSDE-based server configuration, the Host Name text box defaults to "(local)\STARTEAM" because the MSDE instance on the computer on which StarTeam Server is installed was given the name STARTEAM. Proceed to step b.
 - If this is a Microsoft SQL Server database, enter or browse for the names of the computer and the database on your network that should be used.
 - Enter the password for the system administrator in the Sys Admin (sa) Password text box.
If this is an MSDE instance, the initial default system administrator password is either "StarTeam" or blank.
 - If you are not sure of the values you have supplied, click Verify Connection to test the connection.
 - You probably want to use the same name for the database and the DSN, so leave the defaults in the ODBC Data Source Name and the New Database Name text boxes.
 - You may not want to use the name of the database as the user name for this database. If that is the case, enter the new database user name in the New Database Login Name text box.
 - Enter the database password for the new database in both the New Database Password and the Confirm Database Password text boxes.

- g Click Next. The *Create Data Files and Transaction Logs* dialog appears.



Create Data Files and Transaction Logs

☒ Use default configuration

Data files

File Names	Initial Size (in MB)	Location (on the database host machine)
test1_data_01.mdf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\
test1_data_02.ndf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\
test1_data_03.ndf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\

Transaction log files

File Names	Initial Size (in MB)	Location (on the database host machine)
test1_log_01.ldf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\
test1_log_02.ldf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\
test1_log_03.ldf	50	E:\Program Files\Microsoft SQL Server\MSSQL\$STARTEAM\Data\

Borland recommends keeping the data files and transaction log files on different physical drives under their own disk controllers.

To avoid fragmentation, Borland recommends making the data files as large as possible, based on the maximum amount of data expected in the database.

Borland recommends the use of at least 3 data files and at least 3 transaction log files while creating a database because SQL Server/MSDE uses a proportional fill strategy. This way all the files tend to become full at about the same time.

< Back Finish Cancel Help

- 6 To complete this dialog:
- If you have fewer than 15 users and expect to store 1GB or less data, the default settings are appropriate for your use.

If you are very familiar with Microsoft SQL Server and MSDE databases, you may choose to make some changes by first clearing the Use Default Configuration check box and then altering sizes and locations for data files and log files.

If you would like some guidelines, see [“Guidelines for Data Files and Transaction Logs” on page 32](#). To avoid fragmentation, make the data files as large as possible, based on the maximum amount of data expected in the database.

Use at least 3 data files and at least 3 transaction log files when creating a database, because Microsoft SQL Server and MSDE databases use a proportional fill strategy. This way all the files tend to become full at about the same time.

- Click Finish. A message requests:

Please make sure the required disk space (x MB total for both data files and transaction log files) is available on the database host machine.

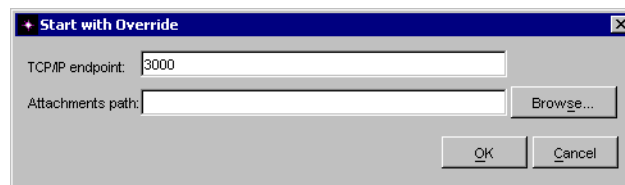
- 7 Click OK. After a “Please wait” message disappears, the *Server Administration* window displays, showing your new server configuration as a child of the Local node.

Note In addition to creating the server configuration and so on, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see the *StarTeam Administrator's Guide*. An appendix explains its options and how to set them from the command line—if necessary.

- 8 By default, all server configurations are set to use the TCP/IP endpoint (port) 49201. However, each server configuration on a given computer must have a unique endpoint so it is recommended that you edit the default endpoint.

To change the endpoint:

- a Select the server configuration.
- b Click the Start With Override toolbar button (or select Actions > Start with Override from the menu bar). The *Start with Override* dialog appears.



- c Enter the endpoint that you want to use in the TCP/IP Endpoint text box, and click OK.

Note You can also change the location where attachments are stored using this dialog, but you rarely need to do this.

- 9 After you have created and started a StarTeam server configuration, you must run the `starteam_sqlserver_tuning_script.sql` script on the server configuration's tablespace. See [“SQL Scripts for Microsoft SQL Server and MSDE Databases” on page 34](#) for more information about this script.
- 10 Be sure to configure your new server configuration (see the *StarTeam Administrator's Guide* and plan a backup schedule for it.

Guidelines for Data Files and Transaction Logs

Borland Software Corporation suggests the following guidelines for data files and transaction logs, based on the number of users. Your needs may be different from those shown in the table.

Table 4.1 Data File and Transaction Log Guidelines

Number of Users	Number of Data Files	Size of Each Data File	Number of Log Files	Size of Each Log File ¹
Up to 15	3	50 MB	3	50 MB
Between 15 and 50	3	300 MB	3	300 MB
Between 51 and 100	5	300 MB	5	300 MB
Between 101 and 300	7	500 MB	5	500 MB
>300	7	800 MB	6	500 MB

¹ The transaction log file sizes are relevant only if the Transaction log backup is performed very regularly.

Transaction log backups are essential. After a transaction is backed up, Microsoft SQL Server and MSDE databases automatically truncate the inactive portion of the

transaction log. This inactive portion contains completed transactions and so is no longer used during the recovery process. The basic advantage comes with the fact that Microsoft SQL Server reuses this truncated, inactive space in the transaction log instead of allowing the transaction log to continue to grow and use more space. This is a huge plus from a performance standpoint.

Allowing files to grow automatically can cause fragmentation of those files if a large number of files share the same disk. Therefore, it is recommended that files or file groups be created on as many different available local physical disks as possible. Place objects that compete heavily for space in different file groups.

Running SQL Scripts for Microsoft Databases

StarTeam Server comes with some SQL scripts written specifically for use with the Microsoft SQL Server and MSDE databases. These scripts help you maintain and tune StarTeam databases. You run some SQL scripts after installation, some on a weekly basis for database performance maintenance, and some scripts are run for you automatically by StarTeam Server.

The SQL scripts for Microsoft SQL Server and MSDE databases that you may run are located in the `Borland\StarTeam Server 2005 R2\DBScripts\Sqlserver_Scripts` folder.

Note

The `Sqlserver_Scripts` folder contains several subfolders: `Create_Stored_Procedures`, `Drop_Stored_Procedures`, `Install`, and `Preinstall`. The scripts in these subfolders are run by StarTeam Server as needed. *Never* execute any of them directly from an external database user interface, such as SQL Query Analyzer.

The following table lists the SQL scripts that you are most likely to need. Some should be run manually on a regular basis. The table recommends the frequency for running these scripts. You may adjust the frequency depending on the StarTeam usage at your facility. Run scripts at times when the server is least used, such as overnight or on weekends.

In addition to running these scripts, you should also run a Purge option from the Server Administration utility to remove deleted views from the database. Borland Software Corporation recommends purging the database after you have deleted one or more views from a StarTeam project. See the *StarTeam Administrator's Guide* for information on the Purge option.

Table 4.2 StarTeam Scripts for Microsoft SQL Server and MSDE

StarTeam Script Name	Run Frequency
<code>starteam_sqlserver_dbcc.sql</code>	Weekly
<code>starteam_sqlserver_dbcc_reindex.sql</code>	Twice a week (minimum)
<code>starteam_sqlserver_dbcc_showcontig.sql</code>	Twice a week (minimum)
<code>starteam_sqlserver_dropall.sql</code>	Only if necessary
<code>starteam_sqlserver_tuning_script.sql</code>	Once, after creating and starting a new server configuration

For instructions on running Microsoft SQL Server scripts, see [“To run a script for a Microsoft SQL Server or MSDE database:” on page 34](#). For a description of these scripts, see [“SQL Scripts for Microsoft SQL Server and MSDE Databases” on page 34](#).

Cautions

- Before running any of the StarTeam SQL scripts for a Microsoft SQL Server or MSDE database, ensure that the database compatibility mode is set to at least 70. For Microsoft SQL Server 2000-based configurations, set the database compatibility mode to 80.
- Be sure to backup your StarTeam database, as necessary, and verify these backups periodically. You should restore and test backups of your StarTeam

project data on a test system. Restoring and testing your backups helps to ensure that your data is being backed up correctly.

To run a script for a Microsoft SQL Server or MSDE database:

- 1 Open SQL Query Analyzer.
- 2 On the *Connect to SQL Server* dialog, log on to the SQL Server that contains the StarTeam database you want to access.
- 3 In the *Query* dialog, select the appropriate StarTeam database from the DB drop-down list box.
- 4 Open the tuning script, by choosing File > Open > *foldername\scriptname*.
- 5 Execute the script, by clicking the green arrow button on the toolbar or pressing F5.

SQL Scripts for Microsoft SQL Server and MSDE Databases

- `starteam_sqlserver_create_check_database.sql`
Run: automatically by StarTeam Server when appropriate.
- `starteam_sqlserver_create_convert_dotnot.sql`
Run: automatically by StarTeam Server when appropriate.
- `starteam_sqlserver_create_database.sql`
Run: automatically by StarTeam Server when creating a new server configuration.
This script creates a new Microsoft SQL Server database.
- `starteam_sqlserver_create_upgrade_23.sql`
Run: automatically by StarTeam Server when upgrading a server configuration.
- `starteam_sqlserver_dbcc.sql`
Run: weekly.
The `starteam_sqlserver_dbcc.sql` script rebuilds the database indexes and performs a consistency check on the database objects. This script builds the indexes and updates the statistics in the database distribution pages.
- `starteam_sqlserver_dbcc_reindex.sql`
Run: at least twice a week.
This script rebuilds all the indexes in the database. It is extremely important to run this script from time to time.
- `starteam_sqlserver_dbcc_showcontig.sql`
Run: at least twice a week.
This script gives information on database fragmentation.
- `starteam_sqlserver_dropall.sql`
Run: only if necessary.

Caution

Running the `starteam_sqlserver_dropall.sql` script will delete all StarTeam tables and the data they contain from the database. Use this script with *extreme* caution.

The `starteam_sqlserver_dropall.sql` script removes all StarTeam tables from the database. For example, if you migrate a StarTeam server configuration to another database, you might use `starteam_sqlserver_dropall.sql` to remove tables from the original database. Or if you mistakenly add the StarTeam tables to a tablespace other than the StarTeam tablespace, use this script to remove them.

- `starteam_sqlserver_get_dbinfo.sql`
Run: automatically by StarTeam Server when appropriate.
- `starteam_sqlserver_get_dbpath.sql`
Run: automatically by StarTeam Server when appropriate.

- `starteam_sqlserver_run_msde_backup.sql`
Run: after you customize this sample script for your specific environment, it can be run when needed.

This sample script illustrates how to make a backup copy of a MSDE database. Before you can run this script, you must customize it for your specific environment. (Be sure to lock or shut down StarTeam Server before backing up its database.)
- `starteam_sqlserver_update_statistics.sql`
Run: only if necessary.

This script updates the statistics about the distribution of key values in each index, which SQL Server uses to optimize query processing. You do not need to run this script if you have enabled automatic statistics (using `sp_autostats`), or if you are regularly rebuilding the indexes (by running the `starteam_sqlserver_dbcc.sql` or the `starteam_sqlserver_dbcc_reindex.sql` scripts).

Creating a Database Manually: Overview

Despite the fact that StarTeam Server has automated Microsoft SQL Server and MSDE database creation, you may prefer to create your own. This makes more sense for Microsoft SQL Server because there are good tools for database creation. If you decide to create your own MSDE database, remember that MSDE AdminTool can be installed as part of a custom installation of StarTeam Server. However, this tool is not supported by Microsoft.

It is very important that you use the directions in the following procedure. In particular, be sure to use the `Latin1_General_CI_AS` collation and make sure that you turn off the ODBC autotranslation feature when you create your DSN.

Microsoft SQL Server and MSDE database names should:

- Begin with a letter
- Contain letters and numbers only
- Contain no spaces
- Not be a SQL reserved word such as create, delete, if, then, else, or goto

The Server Administration database options may fail to run for databases with names that do not follow these guidelines.

To create your own Microsoft SQL Server or MSDE database:

- 1 Install Microsoft SQL Server or MSDE.

Note

If you plan to use Microsoft SQL Server 2000, be sure to review the section [“Connecting to Microsoft SQL Server 2000 Databases” on page 27](#).

- 2 Install StarTeam Server. See [“Installing StarTeam Server” on page 10](#) for more information.
- 3 Create a StarTeam database. Contact your database administrator about the specifics.

Be sure that:

- The database is owned by a StarTeam user.
- The default database for the StarTeam user is the StarTeam database.
- The database will fit the expected growth patterns for storing your StarTeam data. See [“Guidelines for Data Files and Transaction Logs” on page 32](#) for some assistance.
- The name of the database follows the conventions explained earlier in this section.

- Make sure that the database uses the correct collation. See [“Understanding Collation” on page 41](#) for more information about collations.
 - For Microsoft SQL Server and MSDE 2000, change the StarTeam database’s collation to Latin1_General_CI_AS and change the collation for the TEXT/varchar columns to Latin1_General_CI_AS.
 - For Microsoft SQL Server 7, change the StarTeam database’s collation to Latin1_General_CI_AS. Because this could require rebuilding your master database, you might consider upgrading your database to Microsoft SQL Server 2000.

Important

Notice that the Microsoft SQL Server instance must use the default collation for your locale. However, the specific database managed by that instance and used with a StarTeam server configuration must be set to specific collations.

- 4 Create an ODBC DSN for the StarTeam database. See [“Creating an ODBC System DSN for the StarTeam Database” on page 36](#) for instructions.
- 5 Create and start a StarTeam server configuration. See [“Creating a Server Configuration \(for an Existing Database\)” on page 37](#) for instructions.
- 6 Run the necessary tuning scripts on the database. See [“SQL Scripts for Microsoft SQL Server and MSDE Databases” on page 34](#) for instructions.

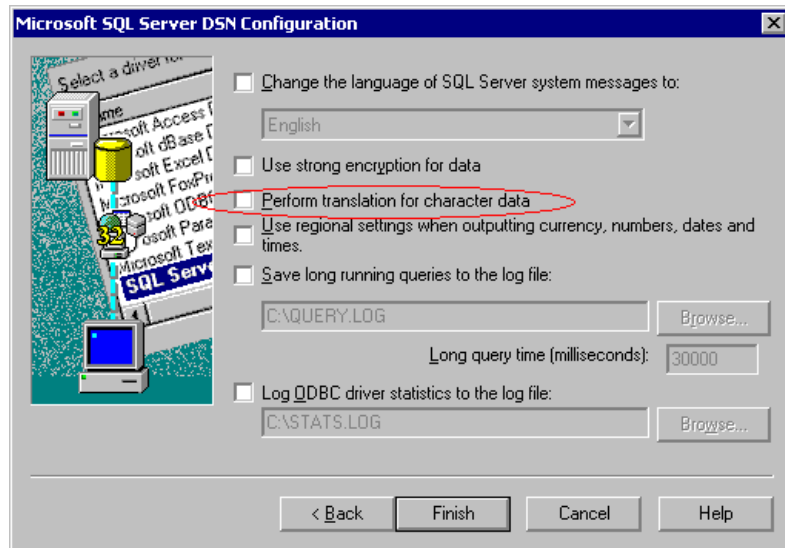
Creating an ODBC System DSN for the StarTeam Database

On the computer on which you installed StarTeam Server, create a System DSN for the new StarTeam database using a Microsoft ODBC driver.

To create an ODBC System DSN for the StarTeam database:

- 1 From the Windows Start menu, select Start > Settings > Control Panel. The *Control Panel* dialog appears.
- 2 Open the *ODBC Data Source Administrator* dialog by double-clicking first the Administrative Tools icon and then the Data Sources (ODBC) icon.
- 3 Select the System DSN tab and click Add.
- 4 Select the Microsoft ODBC driver, version 2000.85.1022.0, and click Finish. (The driver is named SQL Server ODBC Driver.) The *Create a New Data Source to SQL Server* dialog appears.
- 5 Enter StarTeam in the Name text box, enter a description, select the Microsoft SQL Server you created for StarTeam, and click Next.
- 6 Select SQL Server authentication, select “Connect to SQL Server to obtain settings...”, enter the StarTeam user Login ID and Password, and click Next.
- 7 Specify StarTeam as the default database. For example, if the computer’s name is Orion, you might select ORION\STARTEAM.
- 8 Depending on the operating system, either click Next three times or click Next once and click Finish, to display the page containing the “Perform translation for character data” check box.

- 9 Clear the “Perform translation for character data” check box. This turns off the ODBC autotranslation feature. Doing this is critical to the correct use of a StarTeam server configuration with a Microsoft SQL Server or MSDE database.



When cleared, no translation of extended characters in ANSI character strings is done when they are sent between the client application and the server. Windows help says that “If the client computer is using an ANSI code page (ACP) different from the SQL Server code page, extended characters in ANSI character strings may be misinterpreted. If the client computer is using the same code page for its ACP that SQL Server is using, the extended characters are interpreted correctly.” This is not an issue because StarTeam Server manages the data.

- 10 Review the other ODBC DSN settings and then click Test Data Source. With the exception of the “Perform translation for character data” check box, you can use the default settings.
- 11 Exit the dialogs by clicking OK or Finish.

Important

The SQL Server ODBC Data Source Test for the Microsoft ODBC driver will fail with the message:

“Perform translation for character data” should be checked.

For Microsoft SQL Server and MSDE databases used with StarTeam server configurations, this option should not be checked, so the message is actually an indication that the option is correctly set.

Creating a Server Configuration (for an Existing Database)

The first time you start a new server configuration, StarTeam Server creates all StarTeam tables in the database you specify. This section explains how to create a StarTeam Server configuration using a previously created Microsoft SQL Server or MSDE database.

To create a server configuration using an existing Microsoft SQL Server or MSDE database:

- 1 Start Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server 2005 R2> StarTeam Server. The *Server Administration* window appears.
- 2 From the Servers pane, select Local.
- 3 Select Server > New Configuration from the menu bar.

The *Enter New Configuration Data* dialog appears.

4 Enter new configuration data:

- a Enter the name of the configuration in the Configuration Name text box.

If you want the server configuration to have the same name as the database (which is a nice convention when you have several server configurations), you must follow the naming conventions for Microsoft SQL Server and MSDE databases, which should:

- Begin with a letter
- Contain letters and numbers only
- Contain no spaces
- Not be a SQL reserved word such as create, delete, if, then, else, or goto

- b To fill the Repository Path text box, enter or browse for a location to be used to store log files and other information.

Once you fill the Repository Path text box, the dialog uses that path as the default location for a default hive.

- c Select Microsoft SQL Server/MSDE (the default) from the Database Type drop-down list box.
- d Clear the Create New StarTeam Database And ODBC Data Source check box, so that StarTeam Server will *not* automatically create the database and a DSN for it.
- e Create an initial hive for the Native-II vault by doing one of the following:

- Go with the default settings by leaving the Default option button selected and proceeding to step f.

If you use the default settings, StarTeam Server:

- Creates an initial hive named DefaultHive
 - Creates subfolders of the repository path named Archives and Cache to be used by DefaultHive
 - Stipulates that the maximum cache size is 20% of the space currently available on the drive where the cache is located
 - Uses the default setting of 600 seconds (10 minutes) between cache cleanups
 - Uses the default setting of 95% for the storage threshold, the point at which this drive is considered full.
 - Provide custom values by selecting the Custom option button and changing any of the hive settings.

- f Click Next. The *Database Information* dialog appears.

StarTeam schema information

ODBC data source name: test

Database login name: testAdmin

Database password: *****

Verify Connection

Back Finish Cancel Help

- g Enter the DSN in the ODBC Data Source Name text box.
- h Enter the user name and password in the appropriate text boxes.
- i If you are not sure of the values supplied, click Verify Connection to test the connection.
- j Click Finish.

This action re-displays the *Server Administration* window, which shows your new server configuration as a child of the Local node.

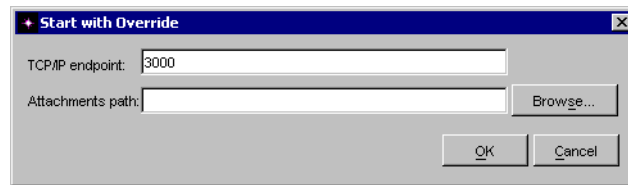
Note In addition to creating the server configuration, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see the *StarTeam Administrator's Guide*. An appendix explains its options and how to set them from the command line—if necessary.

- 5 By default, all server configurations are set to use the TCP/IP endpoint (port) 49201. However, each server configuration on a given computer must have a unique endpoint so it is recommended that you edit the default endpoint.

To change the endpoint:

- a Select the server configuration.

- b Click Start With Override. The *Start with Override* dialog appears.



- c Enter the endpoint that you want to use in the TCP/IP Endpoint text box, and click OK.

Note

You can also change the location in which attachments are stored using this dialog, but you rarely need to do this.

- 6 After you have created and started a StarTeam server configuration, you must run the `starteam_sqlserver_tuning_script.sql` script on the server configuration's tablespace. See [“SQL Scripts for Microsoft SQL Server and MSDE Databases” on page 34](#) for more information about this script.
- 7 Be sure to configure your new server configuration (for information, see the *StarTeam Administrator's Guide*) and plan a backup schedule for it.

Understanding Collation

The physical storage of character strings in Microsoft SQL Server 2000 (and MSDE 2000) databases is controlled by collations. A collation specifies the bit patterns that represent each character and the rules by which characters are sorted and compared.

Microsoft SQL Server 2000 supports objects that have different collations being stored in a single database. Separate Microsoft SQL Server 2000 collations can be specified down to the level of columns. Each column in a table can be assigned different collations. Earlier versions of Microsoft SQL Server support only one collation for each instance of Microsoft SQL Server. All databases and database objects created in an instance of Microsoft SQL Server 7.0 or earlier have the same collation.

In a computer, characters are represented by different patterns of bits being either ON or OFF. A program that uses one byte (eight bits) to store each character can represent up to 256 different characters. A program that uses two bytes (16 bits) can represent up to 65,536 characters.

Single-byte code pages are definitions of the characters mapped to each of the 256 bit patterns possible in a byte. Code pages define bit patterns for uppercase and lowercase characters, digits, symbols, and special characters such as !, @, #, or %. Each European language, such as German or Spanish, has its own single-byte code page. Although the bit patterns used to represent the Latin alphabet characters A through Z are the same for all the code pages, the bit patterns used to represent accented characters (such as é and á) vary from one code page to the next. If data is exchanged between computers running different code pages, all character data must be converted from the code page of the sending computer to the code page of the receiving computer. If the source data has extended characters that are not defined in the code page of the receiving computer, data is lost. When a database serves clients from many different countries, it is difficult to pick a code page for the database that contains all the extended characters required by all the client computers. Also, a lot of processing time is spent doing the constant conversions from one code page to another.

Single-byte character sets are also inadequate to store all the characters used by many languages. For example, some Asian languages have thousands of characters, so they must use two bytes per character. Double-byte character sets have been defined for these languages. Still, each of these languages have their own code page,

and there are difficulties in transferring data from a computer running one double-byte code page to a computer running another.

For information about synchronizing collation settings with another Windows locale, see the following Microsoft site:

http://msdn.microsoft.com/library/default.asp?ur=/library/en-us/instsql/in_collation_6gfn.asp

How Is the Default Collation Selected?

If you upgrade a default instance of Microsoft SQL Server version 6.5 or SQL Server version 7.0 to SQL Server 2000, or if you install a default instance of Microsoft SQL Server 2000 that will be version switched with a default instance of Microsoft SQL Server version 6.5, SQL Server Setup carries forward the same collation used in the existing instance of Microsoft SQL Server version 6.5 or 7.0, including obsolete collations.

In all other cases, SQL Server Setup chooses the Windows collation that supports the Windows locale of the computer on which the instance of Microsoft SQL Server 2000 is being installed. If the computer is using the US English locale, the instance's default collation is Latin1_General_CI_AS.

Using Oracle Schema Users with StarTeam Server

This chapter explains how to create a new server configuration and Oracle schema user for use with StarTeam Server. StarTeam Server stores everything except for file archives and server startup information in the schema user.

When you create a server configuration, StarTeam Server can automatically create the tablespace, schema user, and DSN. You can create the tablespace and schema user manually, if you prefer.

Note All the tablespaces created using StarTeam Server automatically create locally-managed tablespaces. All tablespaces created by StarTeam Server use AUTOALLOCATE. For more information about tablespaces, see [“Dictionary-managed vs. Locally-managed Tablespaces” on page 58](#).

The Windows version of StarTeam Server can be used with the following Oracle databases:

- Oracle 9.0.1.3.0
- Oracle 9.2.0.1.0
- Oracle 10.1.0.3.0

These databases have been tested with StarTeam Server. Later patches have not been tested but may work as well as the tested versions.

You must install the Oracle ODBC driver for one of the above 9i versions. In addition, you must patch that driver after it has been installed.

This chapter also provides an overview of the tuning and maintenance SQL scripts that are provided with StarTeam Server and explains how to use them.

Terminology for Oracle Databases

When this chapter uses *database instance* and *schema user*, it uses Oracle terminology. Each database instance can manage a number of different schema users. Each StarTeam server configuration (such as the StarDraw sample) has its own schema user.

Elsewhere in the StarTeam manuals, you will find the terminology common to the other databases that StarTeam supports. For example, when you install Microsoft SQL Server on a computer, you can run several instances of it. Each instance can manage a number of different databases. Therefore, when you see the term “database” in other parts of these manuals, think “schema user”.

Logging Onto Schema Users

It is *highly* recommended that you use a dedicated StarTeam user account to run or log onto StarTeam schema users. System administrator accounts usually have unlimited privileges. Any anomalies or errors that occur while logged in as the system administrator may result in unrecoverable damage to the StarTeam schema users and other schema users managed by the same database.

Overview of Using an Oracle Schema User

If you will be using an Oracle schema user, you must complete the following tasks:

- 1 Install Oracle Server. Most customers install StarTeam Server and Oracle Server on separate computers.
- 2 Install Oracle Client on the computer on which you plan to install StarTeam Server.
- 3 Establish connectivity between Oracle Client and Oracle Server. See [“Verifying Connectivity Between Client and Server” on page 44](#) for instructions.
- 4 Install Oracle ODBC drivers. See [“Using the Correct Oracle ODBC Drivers with StarTeam” on page 45](#) for instructions.
- 5 Install Oracle Enterprise Manager.
- 6 Install StarTeam Server. See [“Installing StarTeam Server” on page 10](#) for more information.
- 7 Make sure that the NLS_LANG setting for Oracle Client and the character set specified for Oracle Server are correct. See [“Using NLS_LANG Correctly with StarTeam” on page 48](#) and [“Database Character Set and StarTeam Server” on page 49](#) for more details.
- 8 Create a StarTeam server configuration. See [“Creating and Starting a Server Configuration with an Oracle Schema User” on page 50](#) (about automatically created schema users) and [“Overview of Creating the Schema User Manually” on page 58](#).
- 9 Run the necessary tuning scripts on the schema user. See [“Running SQL Scripts for Oracle Schema Users” on page 55](#) for instructions.

Verifying Connectivity Between Client and Server

If Oracle Client and Oracle Server are located on different computers (as recommended), verify that Oracle Client can connect with the Oracle database instance. This ensures that a StarTeam server configuration can access the Oracle schema user.

To verify the connection between Oracle Client and Oracle Server:

- 1 Using Oracle Client on the StarTeam Server computer, set up Oracle connectivity.
- 2 Use Net Configuration Assistant to establish the connectivity between the computers on which Oracle Client and Server are installed.
- 3 Test the database connectivity through SQL*Plus or SQL*Worksheet.

Using the Correct Oracle ODBC Drivers with StarTeam

The Oracle ODBC drivers enable applications that implement the Microsoft Open Database Connectivity (ODBC) API to read from and write to Oracle database instances. Post-5.3 releases of StarTeam Server use Oracle ODBC drivers for retrieval and storage of metadata.

The Oracle ODBC drivers require Oracle Net APIs to communicate to the Oracle Server. The default Oracle Client installation includes the necessary NET libraries.

The Oracle ODBC driver distribution kit consists of dynamic link libraries, a Windows help file, a copy of the license, and a product description.

To use an ODBC-enabled application, the following software is required in addition to the Oracle ODBC Driver:

- Oracle Net
- Network transport on the client

Both of these components are installed during the installation of Oracle Client.

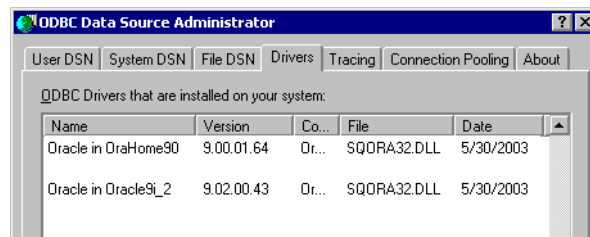
For each supported release of the Oracle client, the following table shows which base version of the Oracle ODBC driver is needed and which patched version is required by StarTeam Server.

Client Release	Supported Base Driver Versions	Supported Patched Driver Versions
9.2 release	9.2.0.4.0	9.2.0.4.3 (or 9.02.00.43)
9.1 release	9.0.1.6.0	9.0.1.6.4 (or 9.00.01.64)

To ensure that you have the correct ODBC driver:

- 1 Check the driver version for your release (for example, you can use ODBC > Drivers > Version).
- 2 If you have the wrong version, download and install the correct one. See [“Downloading and Installing Oracle ODBC Drivers” on page 46](#).
- 3 After you have the correct ODBC driver, copy the correct patched version of the file named sqora32.dll from the StarTeam CD or downloaded Utilities package to the bin folder of your Oracle home. See [“Patching the Oracle ODBC Driver for StarTeam Server” on page 48](#) for details.

The following figure shows data about all the ODBC patched drivers. You need the information for only one of them.



Downloading and Installing Oracle ODBC Drivers

Use the following URL to download a supported Oracle ODBC drivers:

<http://otn.oracle.com/software/tech/windows/odbc/content.html>

You use the Oracle Universal Installer to install ODBC drivers. The supported Oracle ODBC driver version that you install depends on your requirements and company policies.

Make sure that the first three digits of the Oracle Client version match the first three digits of the ODBC driver. For example, you cannot use an Oracle 9i Release 2 client (9.02.00) with an Oracle 9i Release 1 ODBC driver (9.00.01.64).

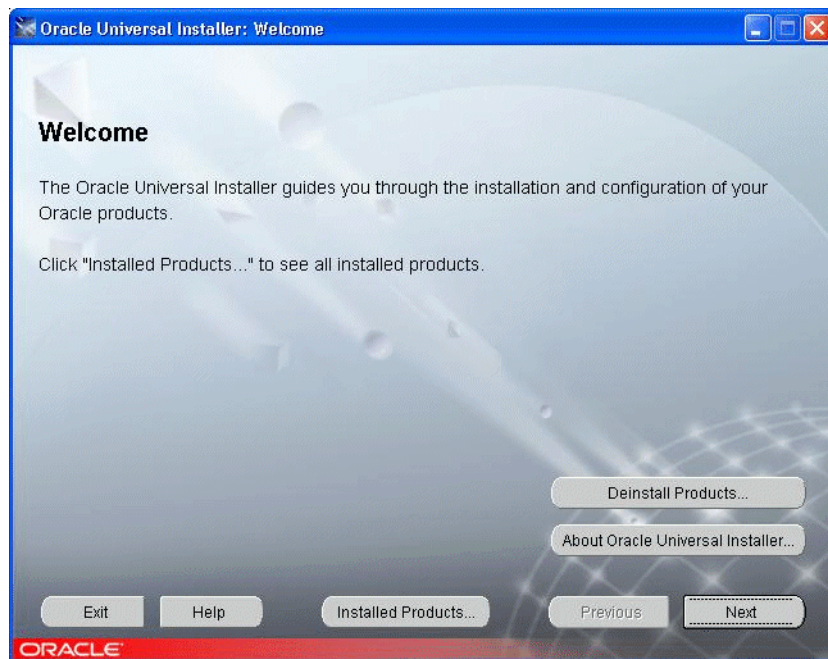
Caution If you have multiple Oracle homes on the StarTeam Server computer, make sure the Oracle ODBC drivers are installed in the matching Oracle home. For example, when installing 9.2.0.4 drivers, make sure you select the Oracle 9i Release 2 home. Failure to do so will corrupt your installation.

After you start the self-extracting archive file (ORA9204.EXE, ORA8178b.EXE, or ORA9016.EXE, depending on the version of your Oracle client), it creates an installable directory structure on your local hard drive. Run the Oracle Universal Installer from your local drive.

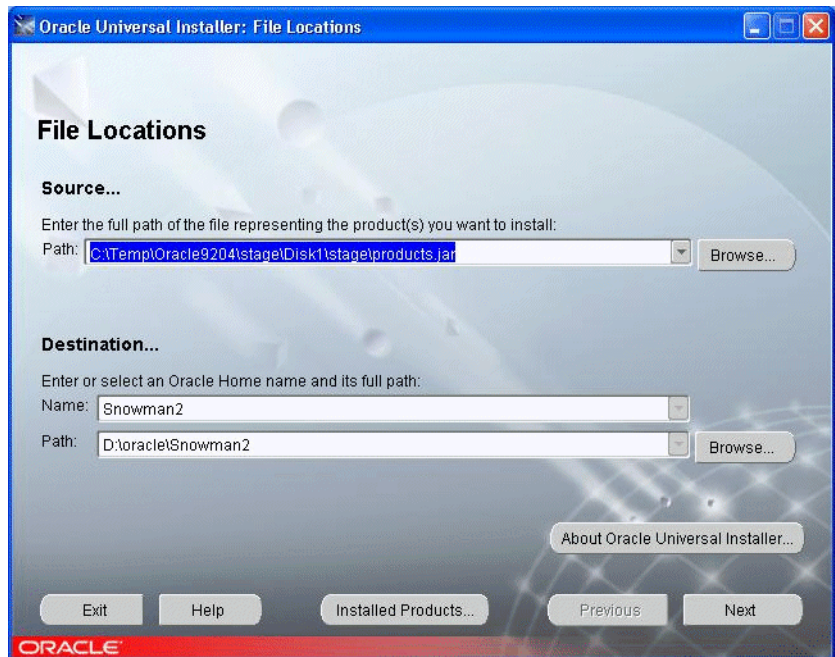
To install the Oracle ODBC drivers:

- 1 From the Windows Start menu, choose Programs > Oracle Installation Products > Oracle Universal Installer.

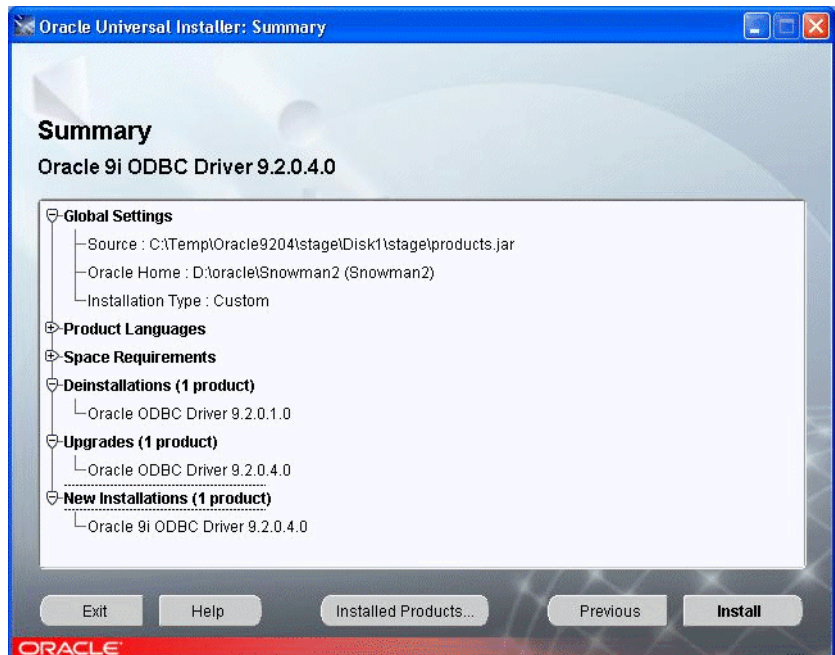
The Welcome page of the *Oracle Universal Installer* displays.



- 2 Click Next. The File Locations page displays.



- 3 Click the Browse button for the Source path, and choose the products.jar file from the folders that were created when you expanded the self-extracting archive file.
In this illustration, the ORA9204.EXE file was extracted to the C:\temp\Oracle9204\ folder.
- 4 Click Next. The Summary page displays.



- 5 Click Install to complete the installation.
- 6 If a message dialog is displayed warning you that some of the dependencies of this product are not found in the staging area, click Yes to continue.

Patching the Oracle ODBC Driver for StarTeam Server

When you have verified that you have the correct base version of the ODBC driver for your Oracle client, you must copy an updated version which contains certain patches just for StarTeam. StarTeam Server does not run unless you have the correct patched driver.

The patched driver must be copied from the StarTeam installation CD to the correct location after the correct base version of the driver has been installed.

Please verify that you have installed the correct driver and then copy sqora32.dll into the bin folder of your Oracle home. The correct version of sqora32.dll (and some readme information) is located on the StarTeam installation CD in a subfolder of the folder named \Utility\Patched Oracle ODBC Drivers\. The subfolders (one per driver version) are named 9.2.0.43, 9.0.1.64. If you have an Oracle 10g database, you should use 9.2.0.43.

After copying the patched driver, please check its version number as explained in [“Using the Correct Oracle ODBC Drivers with StarTeam” on page 45](#) to be sure that you have copied the correct patched driver.

Using NLS_LANG Correctly with StarTeam

StarTeam Server converts data that is stored in the database to UTF-8 format. Your database character set should be defined such that it will not conflict with this nor with other StarTeam Server requirements. See [“Defining NLS_LANG” on page 48](#) for more specific information.

NLS_LANG represents the Oracle Client character set. The Oracle Client character set is defined by the third part of the NLS_LANG parameter.

After setting NLS_LANG correctly, Oracle Client correctly translates any symbols to the character code values of the database character set when storing data into the database or retrieving data from the database.

NLS_LANG is specified in the following format.

```
NLS_LANG = language_territory.characterset
```

where:

language

specifies the language used for Oracle messages, day names, and month names.

territory

specifies the monetary and numeric formats, territory, and conventions for calculating week and day numbers.

characterset

controls the character set used by Oracle Client. (Normally it matches your Windows code page.)

Defining NLS_LANG

The ODBC installation supports multiple Oracle homes. Each ODBC driver is uniquely identified by the name of the Oracle home in which it is installed. Applications using Oracle ODBC drivers use the value of NLS_LANG for making decisions related to character set conversion. The character set portion of the NLS_LANG setting must be AMERICAN_AMERICA.WE8MSWIN1252. If your StarTeam database was previously Oracle 8i, then you use AMERICAN_AMERICA.WE8ISO8859P1.

The ODBC driver installation uses the value of the Windows code page (ACP) and defines the value of NLS_LANG in the registry. The value of NLS_LANG should be verified for accuracy. Be sure to check for the NLS_LANG environment variable because it will override the registry setting. You may choose to delete the variable. See [“As an environment variable”](#) below.

You can define NLS_LANG for the Oracle Client in any of the following ways:

- In the Registry (Windows only)

Oracle Client and Server support the concept of multiple Oracle homes. What this means is that you can have multiple sets of Oracle binaries on the same computer. When you have multiple Oracle homes on the same computer, you have multiple registry entries for each home. NLS_LANG should be defined for each home.

To change the NLS_LANG setting using the Windows Registry Editor:

- 1 From the Windows Start menu, select Start > Run.
- 2 The *Run* dialog appears.
- 3 Enter regedit, and click OK.
- 4 Edit the following registry entry: HKLM\SOFTWARE\ORACLE\homeID
where *homeID* is the unique number identifying the Oracle home.

- As an environment variable

Although the Registry is the primary repository for environment settings, it is not the only place where environment parameters can be set. You can set the NLS_LANG as a System or User Environment Variable in the System properties.

Caution If NLS_LANG is defined as an environment variable, it will be used for *all* Oracle homes. This option should be used with caution, especially for cases where there are multiple Oracle homes on the computer and some Oracle homes have different NLS_LANG settings. It may be best to delete it.

To create/modify this variable's setting for Windows:

- 1 Right-click the My Computer icon on your desktop, and choose Properties from the context menu.
- 2 Select the Advanced tab.
- 3 Click Environment Variables.
- 4 The *Environment Variables* dialog appears.
- 5 Select NLS_LANG and define the appropriate value.

To create/modify this setting for UNIX, define the value of NLS_LANG in the .profile or .cshrc file. Contact your UNIX Admin to learn how to set environment variables.

Note If NLS_LANG is not defined, it defaults to AMERICAN_AMERICA.US7ASCII.

Database Character Set and StarTeam Server

StarTeam Server stores UTF-8 data in Oracle schema users. StarTeam Server does not use the Oracle conversion mechanism. It performs the conversion to UTF-8 itself.

Caution Because StarTeam Server does the conversion, it is very important to prevent Oracle Client from also converting the data. A double conversion will result in garbage.

Oracle software does the conversion only when the Oracle Client's character set (specified by NLS_LANG) does not match the database instance's character set. Therefore, it is very important that the client and server's settings match. StarTeam

Server configurations require that Oracle database instances use the WE8MSWIN1252 character set. If your StarTeam database was previously Oracle 8i, then Oracle database instances use the WE8ISO8859P1 character set.

The Server Administration utility does not allow you to create a new StarTeam server configuration unless the underlying database instance's character set is the correct character set. As StarTeam Server starts, it also ensures that the database character set matches the characters set portion of NLS_LANG.

Due to the numeric setting differences between different languages and territories, StarTeam Server also does not start unless AMERICAN_AMERICA (the US numeric setting) is the setting for the language_territory portion of NLS_LANG. Failure to do so causes exceptions for StarTeam Server. This does not mean that numbers and so on will be displayed incorrectly. For example, in Germany and other countries, a decimal point is represented as a comma. German numbers will still display correctly.

Creating and Starting a Server Configuration with an Oracle Schema User

The first time you start a new server configuration, StarTeam Server creates all the StarTeam tables in the database you specify. This section explains how to create a StarTeam Server configuration and start it for the first time. It assumes that you want StarTeam Server to automatically create the Oracle tablespace and a schema user named StarTeam. If that is not the case, see [“Overview of Creating the Schema User Manually” on page 58](#).

Before you begin, you need to know the Oracle database's net service name (the Oracle net service name that is stored in either C:\ORACLE_HOME\network\admin\tnsnames.ora or \$ORACLE_HOME/network/admin/tnsnames.ora, depending on your operating system), and the system password.

To create a server configuration with an Oracle schema user:

- 1 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server 2005 R2> StarTeam Server.

The *Server Administration* window appears.

- 2 From the Servers pane, select Local.
- 3 Select Server > New Configuration from the menu bar.

The *Enter New Configuration Data* dialog appears.

Create a New Configuration

Enter New Configuration Data

General

Configuration Name:

Repository path:

Database type:

☒ Create new StarTeam database and ODBC data source

Initial Hive Settings

☒ Default

☐ Custom

Name:

Archive path:

Cache path:

Maximum cache size: (MB)

Cache cleanup interval: (seconds)

Storage limit threshold: (%)

4 Enter new configuration data:

- a Enter the name of the configuration in the Configuration Name text box.
- b To fill the Repository Path text box, enter or browse for a location to be used to store log files and other information.

After you enter information in the Repository Path text box, the dialog uses that path as the default location for a default hive.

- c Select Oracle from the Database Type drop-down list box.
- d Select the Create New StarTeam Database And ODBC Data Source check box, so that StarTeam Server will automatically create the tablespace, schema user, and a DSN for schema user.
- e Create an initial hive for the Native-II vault by doing one of the following:
 - Go with the default settings by leaving the Default option button selected and proceeding to step f.
 - If you use the default settings, StarTeam Server:
 - Creates an initial hive named DefaultHive
 - Creates subfolders of the repository path named Archives and Cache to be used by DefaultHive
 - Stipulates that the maximum cache size is 20% of the space currently available on the drive where the cache is located
 - Uses the default setting of 600 seconds (10 minutes) between cache cleanups
 - Uses the default setting of 95% for the storage threshold, the point at which this drive is considered full.
 - Provide custom values by selecting the Custom option button and changing any of the hive settings.
- f Click Next.

The *Create an Oracle Schema User* dialog appears.

Create an Oracle Schema User

Database administration information:

TNS service name: ORA9I2

System password: *****

Verify Connection

StarTeam schema information:

New ODBC data source name: MyConfiguration

New schema user name: MyConfiguration

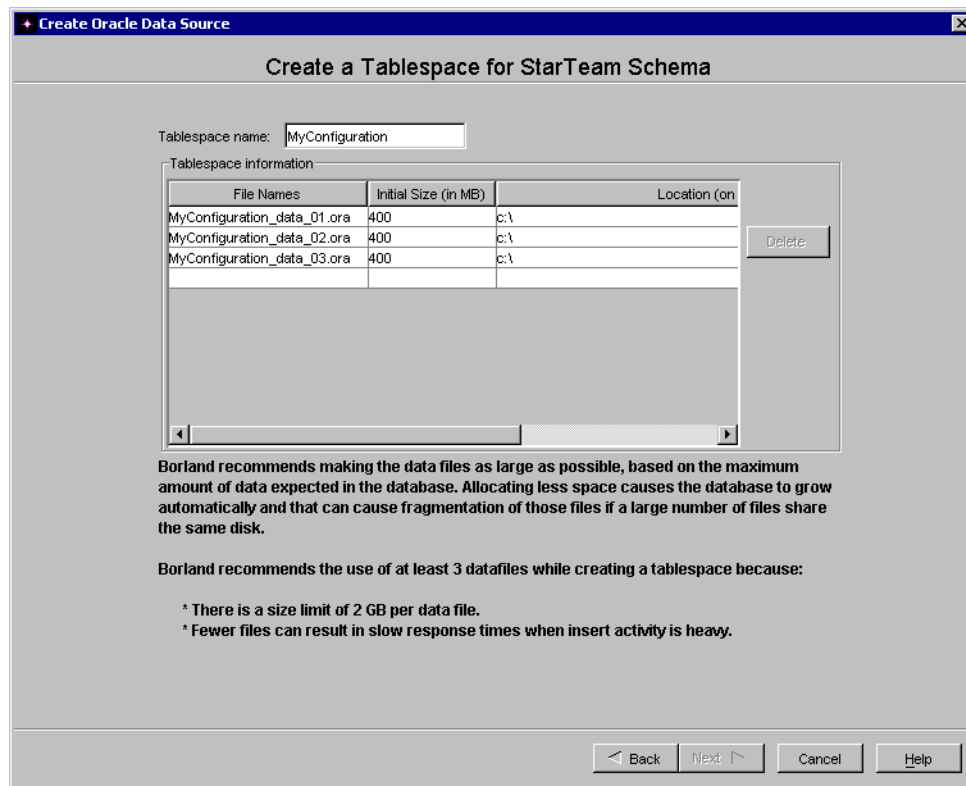
New schema password: *****

Confirm schema password: *****

Back Next Cancel Help

- 5 To complete this dialog:
 - a Enter the Oracle net service name in the TNS Service Name text box.
 - b Enter the database system password in the System Password text box.
 - c Click Verify Connection to make sure that you can properly connect to the database.
 - d To keep the name of the server configuration, the DSN, and the schema user the same, both the New ODBC Data Source Name and the New Schema User Name text boxes default to the name you provided earlier for the server configuration.
Change these if you prefer different names.
 - e Enter and confirm a password for the schema user name.
 - f Click Next.

The *Create a Tablespace for StarTeam Schema* dialog appears.



6 To complete this dialog:

- a The tablespace name defaults to the name of your server configuration, but you can change that.

- b If you have fewer than 15 users and expect to store 1 GB or less of data, the default settings are appropriate for your use.

If you are very familiar with Oracle schema users, you may choose to alter the names, sizes, and locations of the data files.

If you would like some guidelines, see [“Guidelines for Data Files” on page 55](#).

To avoid fragmentation, make the data files as large as possible, based on the maximum amount of data expected in the database.

Use at least three data files when creating a tablespace because:

- There is a size limit of 2 GB per data file
- Fewer files can result in slow response times when insert activity is heavy

7 Click Finish.

The *Server Administration* window re-displays, showing your new server configuration as a child of the Local node.

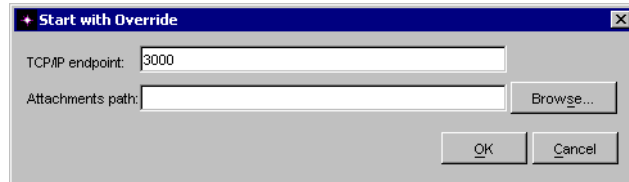
Note

In addition to creating the server configuration and so on, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see the *StarTeam Administrator's Guide*. An appendix explains its options and how to set them from the command line—if necessary.

- 8 By default, all server configurations are set to use the TCP/IP endpoint (port) 49201. However, each server configuration on a given computer must have a unique endpoint so it is recommended that you edit the default endpoint.

To change the endpoint:

- a Select the server configuration.
- b Click the Start With Override toolbar button (or select Actions > Start with Override from the menu bar). The *Start with Override* dialog appears.



- c Enter the endpoint that you want to use in the TCP/IP Endpoint text box.

Note

You can also change the location in which attachments are stored by using this dialog, but you rarely need to do this.

- 9 Be sure to configure your new server configuration (see the *StarTeam Administrator's Guide*) and plan a backup schedule for it.

Guidelines for Data Files

Borland Software Corporation suggests the following guidelines for the number of data files and their sizes, based on the number of users. Your needs may be different than those shown in the table.

Table 5.1 Data File Guidelines for Oracle Schema users

Number of Users	Number of Data Files	Size of Each Data File
Up to 15	3	50 MB
Between 15 and 50	3	300 MB
Between 51 and 100	5	300 MB
Between 101 and 300	7	500 MB
>300	7	800 MB

Running SQL Scripts for Oracle Schema Users

StarTeam Server comes with some SQL scripts written specifically for use with Oracle schema users. These scripts help you maintain and tune a StarTeam database. You run some SQL scripts after installation, some on a weekly basis for database performance maintenance, and some scripts are run for you automatically by StarTeam Server.

The SQL scripts for Oracle schema users that you may run are located in the Borland\StarTeam Server 2005 R2\DBScripts\Oracle_Scripts folder.

Note

The Oracle_Scripts folder contains several subfolders: Create_Stored_Procedures, Drop_Stored_Procedures, Install, and Preinstall. The scripts in these subfolders are run by StarTeam Server as needed. *Never* execute any of them directly from an external database user interface, such as SQL*Plus or SQL *Worksheet.

The following table lists the SQL scripts that you should run manually and recommends the frequency for running these scripts. You may adjust the frequency depending on

the StarTeam usage at your facility. Run script at times when the server is least used, such as overnight or on weekends.

In addition to running these scripts, you should also run the Purge option from the Server Administration utility to remove deleted views from the schema user. Borland Software Corporation recommends purging the schema user after you have deleted one or more views from a StarTeam project. See the *StarTeam Administrator's Guide* for more information on the Purge option.

Table 5.2 StarTeam SQL Scripts for Oracle Databases

StarTeam Script Name	Run Frequency
starteam_oracle_compute_stats.sql	Run weekly
starteam_oracle_database_analyze.sql	Run weekly
starteam_oracle_dropall.sql	Run only if necessary
starteam_oracle_compute_stats.sql	Run weekly
starteam_oracle_performance_indic.sql	Run as needed
starteam_oracle_rebuild_indexes.sql	Run weekly

For a description of these scripts, see [“StarTeam SQL Scripts for Oracle Schema Users” on page 56](#). For instructions on running Oracle scripts in SQL*Plus, see [“To run a SQL script for Oracle schema users:”](#) below.

Caution Be sure to backup your StarTeam schema user, as necessary, and verify these backups periodically. You should restore and test backups of your StarTeam project data on a test system. Restoring and testing your backups helps to ensure that your data is being backed up correctly.

To run a SQL script for Oracle schema users:

- 1 Go to the command prompt.
- 2 Change directories to the directory containing the StarTeam SQL scripts for Oracle schema users.
- 3 At the command prompt, enter the following:

```
sqlplus username/password @servicename
```

where
username is the StarTeam Oracle Schema User Name
password is the StarTeam Oracle Schema Password
servicename is the Net Service Name created using Oracle Net 8 Easy Config
- 4 Execute the script. For example, to execute the starteam_oracle_database_analyze.sql script, enter

```
@starteam_oracle_database_analyze.sql
```

and press Enter.

StarTeam SQL Scripts for Oracle Schema Users

- starteam_oracle_compute_stats.sql
Run: weekly

The starteam_oracle_compute_stats.sql script updates the statistics in the database distribution page for all tables in the database. This data enables the query optimizer to choose the right index for a given query.
- starteam_oracle_create_check_database.sql
Run: automatically by StarTeam Server when appropriate
- starteam_oracle_create_check_privileges.sql
Run: automatically by StarTeam Server when appropriate
- starteam_oracle_create_convert_dotnot.sql
Run: automatically by StarTeam Server when appropriate

- `starteam_oracle_create_database.sql`
Run: automatically by StarTeam Server when creating a new configuration
This script creates a new Oracle schema user.
- `starteam_oracle_create_fix_custom_fields.sql`
Run: automatically by StarTeam Server when appropriate
- `starteam_oracle_create_upgrade_22.sql`
Run: automatically by StarTeam Server when upgrading a server configuration
- `starteam_oracle_create_upgrade_23.sql`
Run: automatically by StarTeam Server when upgrading a server configuration
- `starteam_oracle_create_upgrade_23_solaris.sql`
Run: automatically by StarTeam Server when upgrading a server configuration
- `starteam_oracle_create_upgrade_26.sql`
Run: automatically by StarTeam Server when upgrading a server configuration
- `starteam_oracle_database_analyze.sql`
Run: weekly
The `starteam_oracle_database_analyze.sql` script detects database corruptions, such as bad blocks or bad structures in the database. Run this script once a week to gather database information and help track problems.
This script requires you to connect as the `sysdba` user, not the user-created schema user.
- `starteam_oracle_dropall.sql`
Run: only if necessary

Caution Running the `starteam_oracle_dropall.sql` script will delete all StarTeam tables and the data they contain from the database. Use this script with *extreme* caution.
The `starteam_oracle_dropall.sql` script removes all StarTeam tables from the database. For example, if you migrate a StarTeam server configuration to another database, you might use `starteam_oracle_dropall.sql` to remove tables from the original database. Or if you mistakenly add the StarTeam tables to a tablespace other than the StarTeam tablespace, use the `starteam_oracle_dropall.sql` script to remove them. This script can be executed from either `Sql*Plus` or `SQL*Worksheet`.
- `starteam_oracle_get_dbinfo.sql`
Run: automatically by StarTeam Server when appropriate
- `starteam_oracle_performance_indic.sql`
Run: as needed
This script enables you to get information about buffer hit ratio, data dictionary hit ratio, library cache miss ratio, library cache hit ratio, rollback segment information, and hit ratio for all the users.
- `starteam_oracle_rebuild_indexes.sql`
Run: weekly
The `starteam_oracle_rebuild_indexes.sql` script rebuilds the database indexes and configures the storage parameters for the index tablespace. The script assumes that the indexes are located in a tablespace named `INDX`. If your index tablespace uses a different name, edit `starteam_oracle_rebuild_indexes.sql` to reflect the correct tablespace name. If you do not have a dedicated tablespace for indexes, run `starteam_oracle_rebuild_only.sql` instead. Run the `starteam_oracle_rebuild_indexes.sql` script weekly to enhance database data retrieval.

Overview of Creating the Schema User Manually

This section explains how to manually create an Oracle tablespace and schema user for StarTeam Server. It also provides an overview of the tuning and maintenance SQL scripts that are provided with StarTeam Server, and explains how to use them. For detailed information on Oracle performance tuning, consult your Oracle documentation. See also [“Dictionary-managed vs. Locally-managed Tablespaces” on page 58](#) for information about settings to use when creating a schema user.

To configure an Oracle database instance:

- 1 Complete the procedures described in “Overview of Using an Oracle Schema User” on page 44.
- 2 Create a StarTeam tablespace. See [“Dictionary-managed vs. Locally-managed Tablespaces” on page 58](#).
- 3 Create a StarTeam schema user.
- 4 To ensure that StarTeam Server can create labels and perform other operations successfully, make sure that the schema user has the following Oracle privileges. They must be explicitly defined rather than relegated to roles. See [“Granting Oracle Privileges” on page 75](#) for more information.
 - create procedure
 - create sequence
 - create session
 - create table
 - create trigger
 - create type
 - create view
 - unlimited tablespace
- 5 Create an ODBC DSN for the StarTeam schema user.
How to create an ODBC DSN for the StarTeam schema user is explained in [“Creating ODBC DSNs for Oracle” on page 59](#).
- 6 Create the server configuration. See [“Creating a Server Configuration for an Oracle Schema User” on page 60](#).
- 7 Run the necessary tuning scripts on the database. See [“Running SQL Scripts for Oracle Schema Users” on page 55](#) for instructions.

Dictionary-managed vs. Locally-managed Tablespaces

All the Oracle schema users created using StarTeam Server automatically create locally-managed tablespaces. Borland Software Corporation strongly recommends the use of locally-managed tablespaces for customers who create their own StarTeam schema user and StarTeam tablespace.

The advantages of locally-managed tablespaces are:

- Reduced fragmentation
- Controlled updates to data dictionary tables
- System-controlled extent size
- Automatic tracking of adjacent free space (which eliminates the need to coalesce free extents)
- Reduced contention of data dictionary objects

- No recursive space management (which can typically occur in dictionary managed tablespaces)

Dictionary-managed tablespaces are managed using a data dictionary. In these types of tablespaces, the extent allocation is done manually. The creator has to specify the size of the initial extent, next extent, and pctincrease. The dictionary-managed tablespaces require constant attention by a database administrator with regard to coalescing and fragmentation.

Locally-managed tablespaces manage their own extents by maintaining a bitmap in each data file. The bitmap helps to keep track of free or used block status. Every bit in the bitmap maps to a block. Any changes to extents triggers changes to data blocks to reflect the new status. None of these changes update tables in the Oracle data dictionary.

Dictionary-managed tablespaces perform multiple updates generating rollback information.

Locally-managed tablespaces reduce the contention on data dictionary tables. Coalescing is not required with locally-managed tablespaces because they automatically track adjacent free space.

A locally-managed tablespace can have either uniform extent sizes (UNIFORM), or variable extent sizes that are determined automatically by the system (AUTOALLOCATE). The decision about which of the two to use is made during tablespace creation. For system-managed extents, the database engine determines the optimal size of the extents. For UNIFORM extents, it is possible to specify the size of an extent. All tablespaces created by StarTeam Server use AUTOALLOCATE.

Creating ODBC DSNs for Oracle

StarTeam Server uses ODBC drivers to access Oracle schema users.

To create an ODBC DSN for an Oracle schema user:

- 1 From the Windows Start menu, select Start > Settings > Control Panel. The *Control Panel* dialog appears.
- 2 Open the *ODBC Data Source Administrator* dialog by double-clicking first the Administrative Tools icon and then the Data Sources (ODBC) icon.
- 3 Select the System DSN tab and click Add.
- 4 Select the correct Oracle driver and click Finish.

The *Oracle ODBC Driver Configuration* dialog appears.

- 5 Enter the DSN in the Data Source Name text box.
If you have only one StarTeam server configuration, use the database's Oracle net service name as the DSN. If you have more than one server configuration, have the DSNs match the name of the server configuration.
- 6 Enter a description in the Description text box.
- 7 Select the Oracle net service name from the TNS Service Name text box.
- 8 Enter the user name in the User ID text box.
- 9 Click Test Connection to check that you can connect to this database.
- 10 Borland Software Corporation recommends that you do *not* change any other settings.
- 11 Click OK.

Creating a Server Configuration for an Oracle Schema User

The first time you start a new server configuration, StarTeam Server creates all the StarTeam tables in the database you specify. This section explains how to create a StarTeam Server configuration and start it for the first time.

Before you begin, you need to know:

- The Oracle database's net service name (TNS name that is stored in either C:\ORACLE_HOME\network\admin\tnsnames.ora or \$ORACLE_HOME/network/admin/tnsnames.ora, depending on your operating system)
- The system password
- The ODBC DSN
- The logon name and password for the schema user

To create a server configuration:

- 1 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server 2005 R2> StarTeam Server.
The *Server Administration* window appears.
- 2 From the Servers pane, select Local.

3 Select Server > New Configuration from the menu bar.

The *Enter New Configuration Data* dialog appears.

Enter New Configuration Data

General

Configuration Name:

Repository path:

Database type:

☐ Create new StarTeam database and ODBC data source

Initial Hive Settings

☒ Default

☐ Custom

Name:

Archive path:

Cache path:

Maximum cache size: (MB)

Cache cleanup interval: (seconds)

Storage limit threshold: (%)

4 Enter new configuration data:

- a Enter the name of the configuration in the Configuration Name text box.
- b To fill the Repository Path text box, enter or browse for a location to be used to store log files and other information.

After you enter information in the Repository Path text box, the dialog uses that path as the default location for a default hive.

- c Select Oracle from the Database Type drop-down list box.
- d Clear the Create New StarTeam Database And ODBC Data Source check box so that StarTeam Server will not automatically create the tablespace, schema user, and a DSN for schema user.
- e Create an initial hive for the Native-II vault by doing one of the following:
 - Go with the default settings by leaving the Default option button selected and proceeding to step f.
 - If you use the default settings, StarTeam Server:
 - Creates an initial hive named DefaultHive
 - Creates subfolders of the repository path named Archives and Cache to be used by DefaultHive
 - Stipulates that the maximum cache size is 20% of the space currently available on the drive where the cache is located
 - Uses the default setting of 600 seconds (10 minutes) between cache cleanups
 - Uses the default setting of 95% for the storage threshold, the point at which this drive is considered full.
 - Provide custom values by selecting the Custom option button and changing any of the hive settings.

- f Click Next. The *Database Information* dialog appears.

- 5 To complete this dialog:
 - a Enter the ODBC DSN in the ODBC Data Source Name text box.
 - b Enter the login name and password for the schema user in the appropriate text boxes.
 - c Click Verify Connection to be sure that you can successfully access the schema user.
- 6 Click Finish.

This action re-displays the *Server Administration* window, which shows your new server configuration as a child of the Local node.

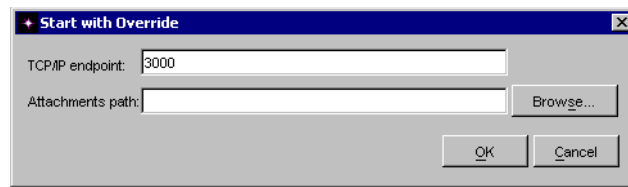
Note In addition to creating the server configuration and so on, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see the *StarTeam Administrator's Guide*. An appendix explains its options and how to set them from the command line—if necessary.

- 7 By default, all server configurations are set to use the TCP/IP endpoint (port) 49201. However, each server configuration on a given computer must have a unique endpoint so it is recommended that you edit the default endpoint.

To change the endpoint:

- a Select the server configuration.

- b Click Start With Override. The *Start with Override* dialog appears.



- c Enter the endpoint that you want to use in the TCP/IP Endpoint text box.

Note You can also change the location where attachments are stored using this dialog, but you rarely need to do this.

- 8 If you are using dictionary-managed tablespaces (not recommended; see [“Dictionary-managed vs. Locally-managed Tablespaces” on page 58](#)), you must run the `starteam_oracle_nextextents.sql` script on the tablespace after you have created and started the StarTeam server configuration. See [“StarTeam SQL Scripts for Oracle Schema Users” on page 56](#) for more information about this script.
- 9 Be sure to configure your new server configuration (see the *StarTeam Administrator's Guide* and plan a backup schedule for it.

Using DB2 UDB Databases with StarTeam Server

This chapter explains how to create a new server configuration and an IBM DB2 database instance for use with StarTeam Server. StarTeam Server stores everything except for file archives and server startup information in the database of your choice.

The Windows version of StarTeam Server can be used with IBM DB2 Universal Database (UDB) 8.1.9 or IBM DB2 UDB 8.2.2. Essentially, these two releases are the same.

Logging On to Databases

It is highly recommended that you do not use a database system administrator account to run or log on to a StarTeam database. System administrator accounts usually have unlimited privileges. Any anomalies or errors that occur while logged in as the system administrator may result in unrecoverable damage to the StarTeam database and other databases managed by the same database server.

Using an IBM DB2 Database: Overview

The following procedure gives instructions for installing and setting up an IBM DB2 database on a Windows platform.

Caution Make sure that the same code page is used on the computers where the IBM DB2 server and the StarTeam Server reside. Borland Software Corporation recommends setting the code page to 1252 (US ASCII).

Check or change the registry setting for code pages (HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Nls\CodePage\ACP) as necessary.

If you change the registry setting, you must reboot the computer.

To install and configure an IBM DB2 database:

- 1 Install the IBM DB2 server. Refer to your IBM DB2 documentation for details about installing the database and configuring the kernel parameters for different types of Windows and UNIX operating systems.

Important

Make sure that you install the Application Development Client during the IBM DB2 server installation, so that stored procedures are available.

- 2 Create an IBM DB2 database. See “Creating an IBM DB2 Database for StarTeam Server” on page 66.
- 3 Create a user account for the StarTeam database. See “Setting Up a User Account” on page 67.
- 4 Reconfigure the IBM DB2 database. See “Reconfiguring an IBM DB2 Database” on page 67.
- 5 Install the IBM DB2 client on the StarTeam Server computer. See your IBM DB2 documentation for directions.
- 6 Create an ODBC System DSN for the IBM DB2 database on the computer running StarTeam Server. See “Creating an ODBC Connection” on page 68.
- 7 Create the StarTeam server configuration. See “Creating a Server Configuration for an IBM DB2 Database” on page 68.
- 8 Run maintenance scripts as appropriate. See “Running SQL Scripts for IBM DB2 Databases” on page 69.

Creating an IBM DB2 Database for StarTeam Server

The following procedure explains how to create an IBM DB2 database for StarTeam Server. This can be done manually only. Because IBM DB2 database software offers only limited support for stored procedures, StarTeam Server cannot automate the process of database creation.

You must use a user name that is part of the DB2 administrator's group.

To create an IBM DB2 database for StarTeam Server:

- 1 From the Windows Start menu, select Start > Programs > IBM DB2 > Command Line Tools > Command Window.

- 2 Type the command:

```
db2
```

to go to the command-line processor for IBM DB2.

- 3 Create the database using the following command.

Replace the paths and names in italics with the correct paths and names for your database system.

```
create database starteam on 'c:' using codeset ibm-1252 territory us collate
using system pagesize 32768
```

Caution

If you are not a member of the DB2 administrator's group, you receive the error:

```
SQL1092N user name does not have the authority to perform the requested
command where user name is the current OS user.
```

- 4 Use the following substeps to create user temporary tablespaces. The temporary tablespaces are required for running stored procedures successfully.
 - a From the Windows Start menu, select Start > Programs > IBM DB2 > Command Line Tools > Command Editor.
 - b Type the following statements and follow it with Ctrl+Enter.

Replace the paths and names in italics with the correct paths and names for your database system.

```
createuser temporarytablespace TS_USER_TEMP pagesize 32k managed by system
using ('C:\db2_data\user_temp') bufferpool IBMDEFAULTBP
```

- 5 Close the Command Editor.
- 6 Change settings for the new database and its log.
 - a 2 From the Windows Start menu, select Start > Programs > IBM DB2 > General Administration Tools > Control Center. (You can run Control Center from either the computer running the IBM DB2 server, or the computer running the IBM DB2 client.)
 - b 2 In the left pane of the *Control Center Window*, right-click the newly created database, and choose Configure from the context menu.
 - c Under Performance, change the settings for the parameters as shown in the following table.

Parameter Name	New Value	Parameter Description
applheapsz	10000	Application heap size
app_ctl_heap_sz	10000	Application control heap size

- 1 Select the parameter from the Parameter column.
- 2 Click its value in the Value column.
- 3 Click the ellipsis (...) button to display the *Change Database Configuration Parameter* dialog.
- 4 Type in or select a new value from the dialog.
- 5 Click OK.

The new value appears in the Pending column.

- d Under Logs, change the settings for the parameters as shown in the following table.

Parameter Name	New Value	Parameter Description
logfilsiz	3000	Log file size
logprimary	10	Number of primary log files
logsecond	10	Number of secondary log files

- 7 Click OK.
- 8 You must back up the database before you proceed.

Setting Up a User Account

Have your system administrator create a user account for you in Windows to be used with IBM DB2 databases. This enables you to use a different user than the database administrator, which is more secure than using the database administrator.

IBM DB2 database instances will see and use that user account (for example, STARTEAM).

Reconfiguring an IBM DB2 Database

The database must be reconfigured to work properly with StarTeam Server.

To reconfigure IBM DB2 configuration parameters:

- Go to the IBM DB2 installation directory (usually c:\Program Files\SQLLIB) and make the following changes to the db2cli.ini file. Add the following lines to the beginning of the file.

```
[COMMON]
QUERYTIMEOUTINTERVAL=0
LOBCACHESIZE=2000000
```

Important

You should have two db2cli.ini files: one on the computer where the IBM DB2 client (agent) is running (the same computer that runs your StarTeam Server), and one on the computer where the IBM DB2 server is running. You need to make the above changes to both .ini files.

Creating an ODBC Connection

Use the Client Configuration Assistant to create an ODBC connection.

To create an ODBC connection:

- 1 From the Windows Start menu, select Start > Programs > IBM DB2 > Set-up Tools > Configuration Assistant.

The *Configuration Assistant* dialog appears.

- 2 Right-click the database name and select Change Database from the context menu.

The *Change Database Wizard* dialog appears.

- 3 Select Data Source from the left pane.
- 4 Select the "Register this database for ODBC" option button.

Keep the defaults. This needs to be a system DSN without optimization, and it is easiest to use the database name as the Data Source Name (DSN). Whatever DSN you use, you will need to remember it for later.

- 5 Click Finish.
- 6 Click Close.

Creating a Server Configuration for an IBM DB2 Database

Before you create a server configuration, you need to know the following information when you create the server configuration:

- The ODBC DSN for the database.
- The user ID and password that the server configuration will use to access the database.

To create a server configuration for an IBM DB2 database:

- 1 Start the Server Administration utility, by selecting Start > Programs > StarTeam > StarTeam Server 2005 R2> StarTeam Server.

The *Server Administration* window appears.

- 2 From the Servers pane, select Local.
- 3 Select Server > New Configuration from the menu bar.

The *Enter New Configuration Data* dialog box appears.

- 4 Enter new configuration data:
 - a Type the name of the configuration in the Configuration Name text box.
 - b To fill the Repository Path text box, type or browse for a location to be used to store the database files, StarTeam file archives, and other information that you need to back up regularly for this configuration.
 - c Select DB2 from the Database Type drop-down list box.

The Create New StarTeam Database And ODBC Data Source check box is disabled, because StarTeam Server cannot automatically create the database and a DSN.

d Click Next.

The *Database Information* dialog appears.

e Type the DSN in the ODBC Data Source Name text box.

f Type the user name and password in the appropriate text boxes.

g If you are not sure of the values supplied, click Verify Connection.

h Click Finish.

You return to the *Server Administration* window where you can see your new server configuration.

Note In addition to creating the server configuration, StarTeam Server adds information about the new server configuration to your starteam-server-configs.xml file. For more information about this file, see the StarTeam Administrator's Guide. An appendix explains its options and how to set them from the command line—if necessary.

5 By default, all server configurations are set to use the TCP/IP endpoint (port) 49201. However, the endpoint must be unique for each server configuration, and the StarDraw sample is already set up to use it. You will probably want to change the endpoint, especially if you have more than one server configuration.

To change the endpoint:

a Select the server configuration.

b Click the Start With Override toolbar button (or select Actions > Start with Override from the menu bar). The *Start with Override* dialog appears.

c Type the endpoint that you want to use in the TCP/IP Endpoint text box.

Note You can also change the location in which attachments are stored by using this dialog, but you rarely need to do this.

6 Be sure to configure your new server configuration (see the *StarTeam Administrator's Guide*) and plan a backup schedule for it.

Running SQL Scripts for IBM DB2 Databases

StarTeam Server comes with some SQL scripts written specifically for maintaining IBM DB2 databases.

The SQL scripts for IBM DB2 databases are located in the Borland\StarTeam Server x.x\DBScripts\DB2_Scripts folder (or one of its subfolders).

The following table lists the SQL scripts that you are most likely to need. Some should be run manually on a regular basis. The table recommends the frequency for running these scripts. You may adjust the frequency depending on the StarTeam usage at your facility. Run scripts at times when the server is least used, such as overnight or on weekends.

Table 6.1 StarTeam SQL Scripts for IBM DB2 Databases

StarTeam Script Name	Run Frequency
starteam_db2_dropall.sql	only if necessary
starteam_db2_reorgchk.sql	Weekly
Starteam_db2_reorg.sql	Weekly

Note The DB2_Scripts folder contains several subfolders: Create_Stored_Procedures, Drop_Stored_Procedures, Install, and Preinstall. The scripts in these subfolders are run by StarTeam Server as needed. Never execute any of them directly from an external database user interface, such as the DB2 Command Center.

To maintain your database:

- 1 From the Windows Start menu, select Start > Programs > IBM DB2 > Command Center.

The Command Center window opens.

- 2 Run the following statement (substituting your database name and the Windows user name):

```
connect to databaseName user logonName
```

- 3 Select the Script tab.
- 4 Choose Script > Import from the menu bar.

The *Import* dialog appears.

- 5 Select the File System option button.
- 6 Select the SQL script to be run.

For example, to run starteam_db2_reorgchk.sql, you might select C:\Program Files\Borland\StarTeam Server x.x\DBScripts\DB2_Scripts\starteam_db2_reorgchk.sql.

- 7 Edit the script if name of database, user ID, and prefix for tables differs in your database.
- 8 Press Ctrl+Enter.

SQL Scripts for Microsoft SQL Server and MSDE Databases

- starteam_db2_dropall.sql

Run the starteam_db2_dropall.sql script only if necessary. This script removes all StarTeam tables from the database. For example, if you migrate a StarTeam server configuration to another database, you might use starteam_db2_dropall.sql to remove tables from the original database. Or if you mistakenly add the StarTeam tables to a tablespace other than the StarTeam tablespace, use the starteam_db2_dropall.sql script to remove them.

Caution Running the starteam_db2_dropall.sql script will delete all StarTeam tables and the data they contain from the database. Use this script with extreme caution.

- starteam_db2_reorg.sql

Run the starteam_db2_reorg.sql script weekly and after upgrades and migrations. This script reorganizes starteam tables by reconstructing the rows to eliminate fragmented data. It also rebuilds index data and creates unfragmented and contiguous pages.

- starteam_db2_reorgchk.sql

Run the starteam_db2_reorgchk.sql script weekly and after upgrades and migrations. This script updates the distribution pages of all starteam table indexes.

Troubleshooting IBM DB2 Database

This section lists some common problems you may encounter using IBM DB2 databases and the solutions to those problems.

Language String Not Found

The “language string not found” error can occur during upgrades and migrations. When debugged, the FetchRow error is as follows:

```
[IBM][CLI Driver][DB2/NT] SQL0973N Not enough storage is available in the
"APP_CTL_HEAP" heap to process the statement. SQLSTATE=57011 while loading
CTSTR with CLOB column.
```

The solution is to:

- 1 From the Windows Start menu, select Start > Programs > IBM DB2 > Control Center.
The Control Center window opens.
- 2 Right-click the database, and choose Configure from the context menu.
- 3 Select the Performance tab.
- 4 Change the settings for both Application heap size (applheapsz) and Application control heap size (app_ctl_heap_sz) to 10000.
- 5 Restart the database so that these settings can take effect.

No Registered Owner

If the StarTeam Server configuration fails to start and you see the following error in the log:

```
No registered owner for a given object
```

be aware that this is caused by internal error:

```
[IBM][CLI Driver][DB2/NT] SQL0429N The maximum number of concurrent LOB
locators has been exceeded. SQLSTATE=54028
```

The solution is to:

- Edit the db2cli.ini file in the IBM DB2 installation directory (usually c:\Program Files\SQLLIB) to include the following lines to the Common section:

```
LOBCACHESIZE=2000000
```

Connection to IBM DB2 Database Changes Locale Setting

During the installations of the IBM DB2 client and server, you select the country, code page, and regional settings, such as code page, country language (for monetary, date, and numeric formatting), and time zone. When a new connection to a database is made, the database manager uses the current settings.

There is no solution after the fact, so make sure they are set correctly prior to making the connection.

Unable to Open an IBM DB2 Database

Never put an equals sign (=) on a comment line in the db2cli.ini file. This will stop any of the IBM DB2 products from opening.

Error Using Stored Procedure

When the server executes the stored procedure named `load_viewmembers`, you may receive the following error:

```
[IBM][CLI Driver][DB2/NT] SQL0286N A default table space could not be found
with a page size of at least "4096" that authorization ID "DB2ADMIN" is
authorized to use.  SQLSTATE=42727
```

The solution is to:

- Create a user tablespace and system temp tablespace with `PageSize 32k` and assign it to the bufferpool created for this database.

Upgrading Server Configurations

If you have used previous releases of StarTeam Server, you must upgrade each of your server configurations after installing the new release.

The Upgrade Database toolbar button in the Server Administration utility enables you to upgrade a server configuration (and the database it uses) from previous releases of StarTeam Server. However, there are a few anomalies to watch out for.

The upgrade process might vary depending upon:

- Which database you are using
- Which previous release of StarTeam Server you are using

The following set of tables provide an overview of the upgrade process, but they are not a substitute for reading the rest of this chapter.

Table 7.1 Overview of Upgrade Instructions: MSDE, Oracle, or Microsoft SQL Server Database

Old Release	New Release	Upgrade Procedure
5.4, 5.3 SP1	2005 and 2005 R2	<p>Install 2005 build 133 or later.</p> <p>If your server configuration uses an Oracle schema user, you must explicitly define at least the "create type" database privilege as part of the upgrade to 2005. That was not covered in the 6.0 installation guide. It was in the release notes.</p> <p>See "Granting Oracle Privileges" on page 75 for details about this and other privileges that your schema user may also lack.</p> <p>Select the server configuration in Server Tools and click Upgrade.</p> <p>Install 2005 R2.</p> <p>Select the server configuration in Server Administration and click the Upgrade Database toolbar button.</p>
2005, 6.0	2005 R2	<p>Install 2005 R2.</p> <p>Select the server configuration in Server Administration and click the Upgrade Database toolbar button.</p>

Table 7.2 Overview of Upgrade Instructions: DB2 UDB Database

Old Release	Characters	New Release	Upgrade Procedure
5.2 SP1	Any characters	N/A	Install 2005 R2. Select the server configuration in Server Administration and click the Upgrade Database toolbar button.

Upgrading from 2005 and 6.0

StarTeam Server 2005 Release 2 can upgrade 2005 and 6.0 server configurations. If you are upgrading from a release earlier than StarTeam Server 6.0, you must first upgrade to StarTeam 6.0 or 2005, depending on the release you currently have.

Starting with 2005, StarTeam Server introduced the Native-IL vault, a new system for storing archive files. If you are upgrading from 6.0, make sure that you read [“Before Starting an Upgraded Server Configuration” on page 76](#) before you start a server configuration.

If your server configuration uses an Oracle schema user:

- If the schema user was not created automatically by StarTeam Server, see [“Granting Oracle Privileges” on page 75](#) for details about privileges that your schema user may lack and that must be explicitly defined.
- If the schema user is an Oracle 8.1.7 schema user, you must upgrade your Oracle database to an appropriate version of 9i or 10g. Oracle 8.1.7 is no longer supported.

Upgrading from 5.2 SP1

If you are using IBM DB2 as your StarTeam database, you can upgrade from StarTeam Server 5.2 to StarTeam Server 2005 Release 2. This is because StarTeam Server release 5.2 was the last release of StarTeam that supported IBM DB2. No interim choices were available to you.

If your StarTeam Server 5.2 uses a database other than IBM DB2, you must upgrade to StarTeam Server 6.0.079 and then to StarTeam Server 2005 Release 2. You cannot upgrade to StarTeam Server 2005 Release 2 directly. See the *StarTeam Installation Guide* that comes with StarTeam 6.0 for details.

Preparing to Upgrade a Server Configuration

Before performing an upgrade, you should do the following:

- Create an upgrade schedule

Plan your server upgrade when it will inconvenience the smallest number of users. A server configuration cannot be running while it is being upgraded. You may want to plan this at the end of the workday or perhaps on a weekend. If you have a large repository or a slow system, the upgrade process could be time-consuming.

Advise your team ahead of time that you plan to make this transition during a specified period of time, and advise them when they will need to have the latest version of a StarTeam (or StarDisk) client installed. Unless specifically stated, StarTeam clients for a given release work with that StarTeam Server release, one release back, and one release forward.

- Backup the server configuration

Make certain you have current, verified backups of the files and folders for the server configuration (database files, archive files, and so on) prior to starting the upgrade.

Granting Oracle Privileges

If your server configuration uses an Oracle schema user that was not created automatically by StarTeam Server, you should check it for all the privileges listed below. These privileges ensure that StarTeam Server can create labels and perform other operations successfully and should be explicitly defined rather than relegated to a role.

- Create procedure
- Create sequence
- Create session
- Create table
- Create trigger
- Create type
- Create view
- Unlimited tablespace

The following procedure explains how to explicitly define Oracle privileges, using the “create type” privilege as an example.

To explicitly define the “create type” privilege:

- 1 Log in to the database as system user.
- 2 Execute the following SQL statement:

```
grant create type to schema_user
```

where *schema_user* is the name of the Oracle schema user.

Running the Upgrade Procedure

As you transition from StarTeam Server 2005 or 6.0, every existing server configuration must be upgraded except for StarDraw. A new ready-for-2005-Release-2 StarDraw should have been installed along with the server.

To upgrade a server configuration and database:

- 1 From the Windows Start menu, select Start > Programs > StarTeam > StarTeam Server 2005 R2 > StarTeam Server. The *Server Administration* utility appears.
- 2 Select the server configuration to be upgraded.

Even if the status for the server configuration says “Ready”, the server configuration will not start successfully until you run the upgrade procedure.

- 3 Click the Upgrade Database toolbar button.

A series of dialogs may open and close. At the completion of the process, a message indicates a successful upgrade operation. If an error occurs, a message displays the error information.

Troubleshooting the Upgrade Process

Failed to Acquire Database Connection

Upgrade requires one database connection in order to run. If Upgrade is unable to acquire a connection, it will fail.

- Check the database connection information on the StarTeam Server computer.
- Ensure that the database is running.

Before Starting an Upgraded Server Configuration

Starting with StarTeam Server 2005, the Native-II vault supplements and eventually replaces the Native-I vault (previously referred to only as the vault). You may need to create one or more hives for each upgraded server configuration before you start that server configuration.

Each hive is a computer location for storing archive files and a cache. A hive is similar to the Native-I vault, which also is a location for storing archive files and a cache. However, the Native-II vault can have any number of hives. The Native-I vault has only one archive path and only one cache path.

Until you convert all the existing Native-I archive files to Native-II archive files, both vaults are in use and increasing in size. New revisions of any file that is already under StarTeam control are stored in the Native-I vault until that file's archive file is converted to the Native-II format. All new files that are added to StarTeam control are stored in Native-II archive files.

If you do not create a hive before starting a server configuration, StarTeam Server automatically creates one for you, placing a folder named DefaultHive in the server configuration's repository (*repository_path*\DefaultHive). DefaultHive has subfolders named Archives and Cache.

The initial, and probably current, location for the Native-I vault is also a subfolder of the repository path. That means that both the Native-I and Native-II archive files may be stored on the same drive. For similar reasons, their caches may also be located on the same drive.

Borland engineering recommends that you create at least one hive before starting an upgraded server configuration. Then you control the location of the configuration's initial hive. Creating that hive on a new drive or volume with a large amount of free space can ensure that the server configuration has no immediate space problems during the conversion process and as both vaults continue to grow.

Starting out with two hives may be an even better idea if your files tend to be very large or if you add files in large numbers. Depending on the amount of space your archive files take and the hive's size constraints, it may be a good idea to place a hive's archive and cache paths on different drives or volumes.

To create a hive:

- 1 From the Windows Start menu, select Start > Programs > StarTeam > StarTeam Server 2005 R2 > StarTeam Server. The *Server Administration* window appears.
- 2 Select the upgraded server configuration.
- 3 Select Tools > Administration > Hive Manager from the menu bar. The *Hive Manager* dialog appears in the *Server Administration* window's right pane.

- 4 Click New. The *New Hive* dialog appears.

At the top of the dialog is the path to the hive-index.xml file that stores hive properties.

- 5 Enter a name for the hive in the Name text box.
- 6 Enter or browse for the path to the location that will store archive files in the Archive Path text box.
- 7 Enter or browse for the path to the location for the hive's cache in the Cache Path text box.

As you enter the drive letter for the cache path, the Maximum Cache Size text box will default to a number of megabytes that represents 20% of the free space currently available on that drive.

- 8 Change the maximum cache size if the default is not appropriate.
- 9 Change the Cache Cleanup Interval if the default of 10 minutes (600 seconds) does not meet your needs.
- 10 Enter a percentage in the Storage Limit Threshold text box if the default (95%) is not a good choice for this hive.

The percentage indicates how full the drive can become before the server stops adding archive files to the hive. For example, by default, when 95% of the drive's space has been used, StarTeam Server stops adding file revisions to this hive—even if the Allow New Archives check box is selected. However, unless you clear the Allow New Archives check box, StarTeam Server continually checks this hive for space as it rotates from one hive to the next. If the space drops below 95% later, the server resumes its use of this hive.

You can use 100%, but allowing the drive to become that full it is a poor choice.

- 11 The Allow New Archives check box is selected by default. Keep it selected.

There are very few reasons why you would create a hive and not want to use it immediately.

In fact, if you later review the only active hive's properties from the *Hive Properties* dialog, this check box is disabled.

- 12 Only if you are using Cache Agent do you need to fill the Root Cache Agent Archive Path text box. See the *StarTeamMPX Administrator's Guide* for details.
- 13 Click OK.

Starting an Upgraded Server Configuration

From the Server Administration utility, when you start a server configuration that contains any Native-I archive files, StarTeam Server displays a reminder dialog encouraging you turn on the background conversion process, allowing you to stop the server configuration before it starts to avoid the automatic creation of DefaultHive, and so on.

If you find this annoying, the bottom of the dialog has a check box labeled “Stop showing this message for this server configuration.”

Converting Native-I Archive Files

You do not have to convert existing archive files from Native-I to Native-II in order to use StarTeam Server 2005 Release 2. However, if you have very large files or want the performance improvements, you will want to start converting them.

You can convert Native-I archive files to Native-II archive files by:

- Running the conversion process as a background operation.
 - The Server Administration utility has a toolbar button that toggles between “Start Conversion” and “Stop Conversion”. It is enabled for any server configurations that contain one or more Native-I archive files.

Note

StarTeam Server sends e-mail notification to members of the System Manager group after the vault conversion completes. By default, no users are included in the System Manager group, so please add some users to the group before the conversion process completes.

- A sample SDK application named ConvertVault comes with StarTeam Server. ConvertVault is a command-line application that is written in Java and stored in the StarTeam Server installation folder. It can start or stop the background vault conversion process. It accepts command-line parameters that allow you to specify the server address, user name and password, and so on. This application is intended to provide an example of what can be accomplished using the StarTeam SDK.

Borland Software Corporation does not guarantee the operability of this application and does not provide technical support for it. Borland Software Corporation is not responsible for data loss or damage caused by the use of this sample application.

To learn more about how to use this application, enter the following at the command prompt while in the StarTeam Server's installation folder.

```
ConvertVault -?
```

Because most Windows operating systems provide a scheduling application, you can schedule ConvertVault to start the conversion process when the server is least heavily used, such as overnight or on a weekend and stop it again when appropriate.

As a precaution, do a complete backup before starting the background conversion process.

Never schedule the conversion process to run during a backup.

- Selecting one or more files from the upper pane of the StarTeam Windows or Cross-Platform clients and then selecting File > Advanced > Convert Archives.

The archives for the selected files that are currently stored in Native-I archive files will be converted to Native-II archive files.

You must have the “Modify system configuration” access right in order to convert archive files.

Note

The *Convert Archive* dialog has been repurposed. In previous releases, it was used to change the compression and storage types for the selected files' archives. Now all compression is the same type and used based on its value in reducing the size of the archive file. Because all file revisions are now stored in entirety, there is no need to choose between delta and full storage anymore. Delta storage is still used to optimize working files that are sent over slow connections. See [“Using Delta Storage” on page 87](#).

Understanding Data Locations

As part of creating a new server configuration, StarTeam Server creates a number of folders for storing log files, attachments, archive files, and so on. Depending on your server configuration's history, you may have files and folders for both the Native-I and Native-II vaults or just those for the Native-II vault. This chapter explains the location and purposes of both vaults' files and folders. It also explains the differences between the Native-I and Native-II vaults.

Using Native-I and/or Native-II Vaults

All server configurations created using StarTeam Server 2005 or later releases use only Native-II vaults to store archive files. Server configurations created using pre-2005 releases have what is now referred to as Native-I vaults. As part of starting a server configuration created prior to 2005, some folders needed for Native-II vaults may be automatically created. You can control what folders are created by adding one or more hives to the server configuration prior to starting it, rather than using the default locations. See [“Before Starting an Upgraded Server Configuration” on page 76](#) for more information.

After you upgrade a pre-2005 server configuration and start it, the server configuration uses the Native-II vault for all new files put under StarTeam control. It continues to use the old Native-I vault for existing StarTeam files, until those files are converted either manually or as part of a background conversion process.

Eventually, StarTeam Server will support only Native-II vaults.

Regardless of the type of vault, you should *never* delete or modify repository files other than through StarTeam Server.

Understanding Native-II Vaults

The Native-II vault, introduced with StarTeam Server 2005, improves StarTeam performance and allows much larger files to be stored than in earlier releases. If a server configuration has only Native-II archive files, backups can be done without shutting down the server. The old vault is now referred to as the Native-I vault.

The main differences are explained in the following sections.

Larger Size of File Revisions

A Native-I vault stores all the revisions for the same file in the same archive file with a maximum archive file size of 4 GB. While delta storage and compression can reduce the size of the archive file, it continues to grow with additional revisions.

A Native-II vault stores each revision of a file in a separate archive file, allowing each revision to have a much larger size than before. Compression is used for files that compress well (10% or better), but delta storage of archives has been eliminated. This can eventually lead to greater needs for storage space, but speeds up revision retrieval.

More Locations to Store Archives

A Native-I vault has only one Vault folder, a subfolder of the repository path. The Vault folder has one Archive and one Cache folder. Initially the Archive and Cache folders are subfolders of the Vault folder but later, using the `starteamserver` command or the Server Administration utility, you can change these folders if and when appropriate. For example, if the disk becomes full, you must change one of both of these folders to create space for additional files and revisions. An accompanying move of the files stored in these folders from the old location to the new location would be critical to server operation.

A Native-II vault has several hives, each of which has its own archives and cache. If one hive fills up, you can simply add another without having to change any data locations or move any archive files. Companies with large files or large numbers of files can start off with more than one hive in the first place. They can even put the archives and cache on different drives or volumes. When a server configuration has more than one hive, the server adds files to each of them in turn before reusing the first hive's archive path.

Each hive has a hierarchy of folders for storing archive files instead of a single Archive folder. See [“Native-I Vault Folders” on page 88](#), [“Native-II Vault Folders” on page 85](#), and [“Archive and Cache Structure” on page 87](#) for details.

Better Performance

The performance for file operations is much faster with the Native-II vault. The sections below explain what is happening during add, check-in, and check-out operations.

Add Operations

To add a new file to a Native-I vault, the server creates a new archive file. If compression has been specified for this file, it is applied. File properties are set.

To add a file to the Native-II vault, StarTeam Server stores the revision in a temporary folder, computes the MD5 value of its contents, and checks how well it compresses. If the compression is 10% or greater, the server moves the compressed version to the hive's archive and its uncompressed version to the hive's cache. If the revision doesn't compress well, the uncompressed version is moved to the hive's archive.

The MD5 value is converted to a hex string and is used as the archive file's name. The .gz extension is used if the file archive is compressed. If an archive file already exists with that name, no new archive file is created—although the StarTeam file's properties are set to identify the hive in which the revision is stored, the use of compression, and the archive file's name.

Check-in Operations

To check in a file revision to a Native-I vault, the server first makes a copy of the archive file (in case something goes wrong), then it adds the new revision or new forward delta to the archive file and deletes the copy.

To check in a file revision to a Native-II vault, StarTeam Server stores the revision in a temporary folder in the next hive in the hive rotation. Then the server computes the MD5 value of its contents. If an archive file with the correct name already exists in the hive, no new archive file is created, although the file revision's properties are updated. Otherwise a new file archive is created. Notice that no two files that are identical in content are ever stored in a given hive.

If the StarTeam file was initially identified as one that compresses well, the file revision is compressed and placed in the hive's archive with a .gz extension. Its uncompressed version is moved to the hive's cache. Otherwise the uncompressed version is moved to the hive's archive.

Check-out Operations

To check out a file revision from a Native-I vault, StarTeam Server first checks the cache. If the file is there, it is sent to the client. If the file is not in the cache, it must be retrieved from the archive file and sent. The retrieval of a particular revision requires the server to locate that revision within the archive file and recreate it as a separate file. This may require the application of several deltas.

To check out a file revision from a Native-II vault, StarTeam Server checks the revision's hive ID and archive file name. Then the server retrieves the file revision from the specified hive's cache or archive. For pre-2005 clients, it checks the cache first because the uncompressed version must be sent. For 2005 and later clients, it sends the archive file directly. These clients know how to decompress the archive file when necessary.

More Flexible Backups

If a server configuration has only Native-II archive files, backups can be done while the server configuration is in use. If a server configuration has both Native-I and Native-II archive files, this is not the case.

For server configurations created prior to StarTeam 2005, you must convert all the Native-I archive files prior to the back up or back up both the Native-I and Native-II archive files.

Caution The conversion process must not be running during a backup operation. Be sure that you have not scheduled ConvertVault (a sample application that comes with the StarTeam SDK) or a similar program to run during your backup operation.

You know that Native-I archive files have been fully converted when the `staream-server-configs.xml` option named `VaultConversionMode` is set to `-1`. Server configurations created with StarTeam Server 2005 or later releases have a `CreatedByBuild` option, an indication that there were never any Native-I archive files for this server configuration.

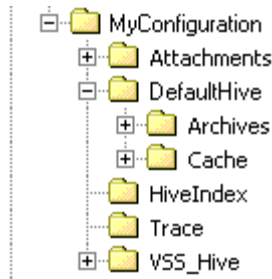
Increased Need for Storage Space

Most Native-II vaults need more storage space. In conversion tests, converted Native-I vaults required less space because identical files checked into multiple folders and views were not stored as many times. Because their archive files have the same contents, the same MD5 values, and, therefore, the same archive names, they are stored only once in a given hive.

However, because you are storing each file revision in its entirety (even though the archive file may be compressed), the Native-II vault eventually takes more space. The good news is that, because of the use of hives, the space can be spread over many drives or volumes. This flexibility in using storage space becomes a greater benefit over time as hives become full.

Understanding 2005 and Later Repositories

The following figure shows the server configuration whose repository path starts with a drive letter (not shown in figure) and ends with the folder name “MyConfiguration”.



The server configuration’s name may also be “MyConfiguration”.

The repository path is a general location for initial storage of a variety of objects, most of which can be moved to new locations later, independent of one another.

Log Files and Folders

The repository path folder, such as the MyConfiguration folder in the above figure, becomes the home of the following related objects. These objects existed in both pre-2005 releases as well as 2005 and later releases.

- The server log files

A new server log file is created each time you start the server configuration. See the *StarTeam Administrator’s Guide* for more details about server logs.

- Any .dmp files created when you use server diagnostics to create .dmp files for errors and unexpected conditions encountered by the server.

Usually, you have no .dmp files or trace files, discussed below as the contents the Trace subfolder, unless a Borland technical support representative is working with you on a problem. See the *StarTeam Administrator’s Guide* for more details about server diagnostics.

- The following subfolders:

- Logs

The repository acquires a Logs folder if one or more projects in the server configuration are wrapped around Visual SourceSafe (VSS) or PVCS archives and you choose to convert the VSS or PVCS archives to StarTeam archive files.

Logs has one subfolder, Files_Logs. This subfolder stores the log files that are generated during the conversion process.

See the *StarTeam Administrator’s Guide* for more details about interoperating with VSS and PVCS.

- Trace

The Trace subfolder stores the files that are created when and if you use server diagnostics to trace server commands. See the *StarTeam Administrator's Guide* for more details about server diagnostics.

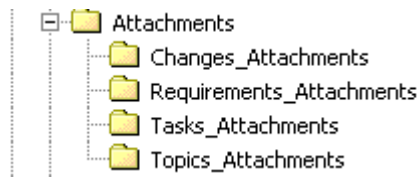
These objects do not have to remain in the repository path. You can change the path to all of the above by changing the Log Path using the Server Administration utility. See the *StarTeam Administrator's Guide* for more information.

These folders do *not* have to be included in a backup.

Attachments Folder

The repository path, such as the MyConfiguration folder in the above figure, is also the parent of the Attachments folder. The folders discussed in this section existed in both pre-2005 releases as well as 2005 and later releases.

The Attachments folder has subfolders that store the files attached to specific types of items. For example, the Change_Attachments folder contains files attached to change requests.



You can change the path to the Attachments folder independently by changing the Attachments Path on the General tab of the *Server Configuration* dialog. This folder does not have to remain a subfolder the repository path.

These folders *must* be included in a backup.

Native-II Vault Folders

For server configurations, whether newly created in or upgraded to StarTeam Server 2005 or a later release, the repository path is also the initial home of several folders used by the Native-II Vault to store archive files and information about them:

- HiveIndex

If you have started a 2005 or later server configuration, it has at least one hive. The HiveIndex folder stores the hive-index.xml file, which contains the properties for each hive used by the server configuration.

You can change the path to the HiveIndex folder by changing the repository path in the starteam-server-configs.xml file. You would make this change only when necessary, for example, because of a drive failure.

The HiveIndex folder *must* be included in a backup.

- VSS_Hive or PVCS_Hive

StarTeam Server automatically creates VSS_Hive and/or PVCS_Hive folders as subfolders of the repository path if it locates a VSS or PVCS installation on the computer on which StarTeam Server is also installed.



The subfolders have the following purposes:

- Archives

This folder is not used.

- Cache

This folder stores file revisions that have already been retrieved from the VSS or PVCS archives. If a particular file revision already exists in the cache, it can be sent to the client faster.

- VSS_Working or PVCS_Working

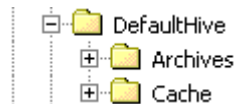
This is used for temporary storage as VSS and PVCS files are being checked in to the appropriate VSS or PVCS locations.

You can change the path VSS_Hive and PVCS_Hive archive and cache folders using Hive Manager. These folders do not have to remain in the repository path.

The VSS_Hive and PVCS_Hive folders do *not* have to be included in a backup, but the actual VSS and PVCS archives should be.

- DefaultHive

If you accepted all the defaults when you created the server configuration or if you started an upgraded server configuration without first creating a hive, StarTeam Server automatically creates the folder DefaultHive. It is a subfolder of the repository path and is created when you start the server configuration for the first time.



Whether the initial hive is called DefaultHive or not, you will have at least one hive for each server configuration. You may have several hives. Each hive has an archive and cache path. An easy, but not mandatory, naming convention is the one illustrated in the above figure. The name of the hive becomes the name of a folder with two subfolders: Archives and Cache. However, you can place these paths anywhere. They do not need to be on the same drive or volume.

The subfolders have the following purposes:

- Archives

This folder stores file revisions in archive files, which may be compressed.

- Cache

This folder stores uncompressed versions of archive files. It has two subfolders Temp and Deltas. Temp is used for files that are being added to StarTeam and for new file revisions that are being checked in. See [“Add Operations” on page 82](#) and [“Check-in Operations” on page 83](#). Deltas stores the differences between working files and tip revisions when a user asks that transmissions over slow connections be optimized. See [“Using Delta Storage” on page 87](#).

You can use the Hive Manager to change an individual hive's archive path and/or cache path. Such changes should be done only when that hive must be moved. For example, you might move a hive as a result of a drive failure. You would also need to copy the contents of the hive's archive path to the new location.

The archive path for any hive other than VSS_Hive and PVCS_Hive *must* be included in a backup. A hive's cache path does *not* need to be included.

Archive and Cache Structure

Every hive's archive path and cache path has the same structure. This structure is similar to that used by StarTeam clients to store file status records.

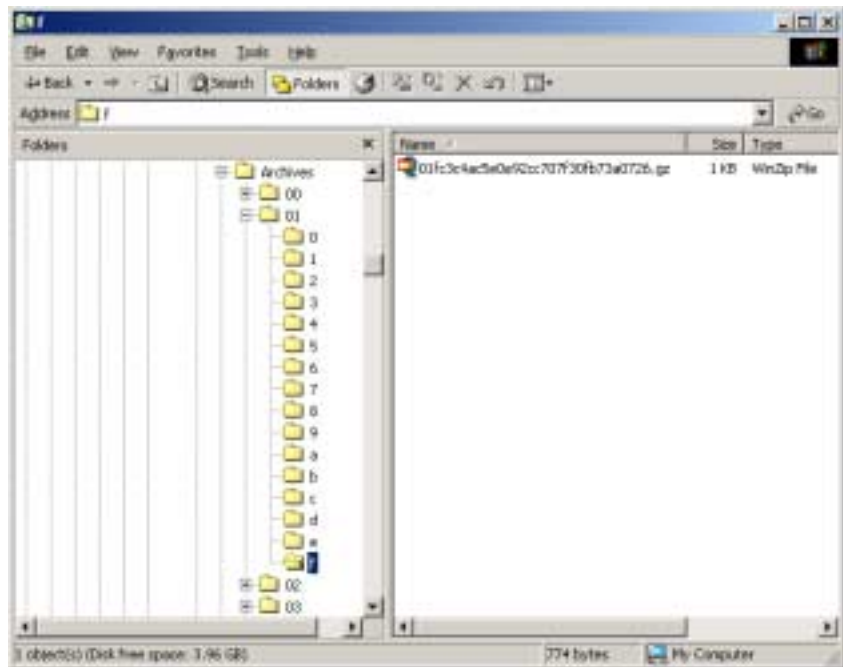
The files located in the archive and cache are organized into subfolders. This makes browsing and managing the files easier. The name of the subfolders in which a file revision is stored is based on the initial characters in the archive file's name.

For example, suppose a file revision's contents has an MD5 value of "01fc3c4ac5e0e92cc707f30fb73a0726". Assuming the user specified an archive path of "C:\DefaultHive\Archives" the archives path for this revision would be one of the following, depending on whether or not the archive file was compressed:

C:\DefaultHive\Archives\01\f\01fc3c4ac5e0e92cc707f30fb73a0726

C:\DefaultHive\Archives\01\f\01fc3c4ac5e0e92cc707f30fb73a0726.gz

The figure below shows the path from an Archives folder to an archive file.



The archive path for each hive (for example C:\DefaultHive\Archives) *must* be included in a backup.

See the *StarTeam Administrator's Guide* for more information.

Using Delta Storage

Over the years, StarTeam Server has had two uses for delta storage.

Pre-2005 releases could store text files in an archive file as the first revision and a set of forward deltas. This use of delta storage disappears, starting with StarTeam Server 2005.

Pre-2005 releases also used deltas to optimize for slow connections. To use this feature, users set the personal option named “Optimize for slow connections.” Then when a user checks out a new revision of a file that is already in his or her working folder, the server recognizes the working file’s revision number and sends only the difference between that revision and the revision that is being checked out. StarTeam Server 2005 and later releases continue this practice, but they store each deltas for later use in the Deltas folder, a subfolder of each hive’s cache path. The file containing the delta is given a name that combines the names of the two archive files used to generate the data. For example, if the client’s revision on disk has an MD5 value of:

```
7f46c2bb9602fe972d952f4988ab85cd
```

and the requested revision has an MD5 value of:

```
7f46c2bb9602fe972d952f4982ab35aa
```

then the server generates a delta between these two revisions and name it:

```
7f46c2bb9602fe972d952f4988ab85cd.7f46c2bb9602fe972d952f4982ab35aa
```

For more information about the “Optimize for slow connections” option, see the *StarTeam User’s Guide*.

Understanding Pre-2005 Repositories

Some data locations are the same, regardless of the StarTeam Server release used to create the server configuration.

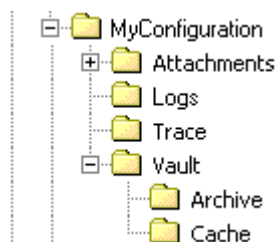
All locations for log files, .dmp files, and trace files are the same in both 2005 and 6.0 releases of StarTeam Server. Before the 6.0 release, StarTeam Server did not have .dmp and trace files, but the server log file was a child of the repository path. See [“Log Files and Folders” on page 84](#) for details about these files and folders.

The Attachments folder and its subfolders are the same as they have been in the past. See [“Attachments Folder” on page 85](#) for details.

The pre-2005 releases and 2005 and later releases have different vault folders, and those folders have new subfolders. The Native-I Vault folders are described in the next section.

Native-I Vault Folders

Pre-2005 StarTeam server configurations use what is now referred to as the Native-I vault.



Releases of StarTeam Server before 2005 automatically create the following the repository path subfolders:

- Vault

The Vault folder has two subfolders: Archive and Cache.

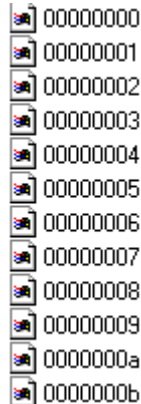
It is usual to include the entire vault in a backup, but only the Archive folder *must* be included.

■ Archive

The revisions of the files placed under StarTeam version control are stored in the Archive folder. Only those projects that interoperate with VSS or PVCS. VSS and PVCS have their own archive files.

StarTeam Server uses a proprietary system to store and manage archive files in the Archive folder. Each archive file contains all the revisions of a file, regardless of whether the revisions are stored in entirety or as forward deltas.

The figure below illustrates how Native-I archive files appear in the Archive folder. Each is named sequentially using an 8-character hex string. The first archive file is named 00000000. The Archive folder has no subfolders.



From StarTeam, you can compress archives to save disk space or decompress them to speed disk access.

■ Cache

The Cache folder stores both the most recently checked-in and the most recently checked-out file revisions. As part of the check-out process, the cache is checked for a revision because copying files from the cache is faster than retrieving and decompressing files from the archive.

Initially the Archive folder and Cache folder are subfolders of the Vault folder, which, in turn, is a subfolder of the repository path. You may need to change these locations. For example, a disk drive may need to be replaced or the disk drive may not be large enough to contain all the vault files. Or, you may have moved the Archive and Cache folders to separate drives to reduce network contention.

You can change the locations with the `starteamserver` command or the *Server Configuration* dialog (available from StarTeam or the Server Administration utility). If you change the Archive path, you *must* also move its contents to the new location.

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

Converting Native-I Archive Files to Native-II

All server configurations created with StarTeam Server 2005 or later use only the Native-II vault. All server configurations that you upgrade to 2005 or a later release from a pre-2005 release will have both Native-I and Native-II vaults.

Eventually, you will want to convert all your Native-I archive files to Native-II. The conversion can be done as a background process or you can convert selected StarTeam files using the StarTeam Windows or Cross-Platform client.

When you convert a Native-I archive file to Native-II, you can ask that the Native-I archive file be deleted. If it is not deleted, it is moved to a new subfolder of the Archive

folder named ConvertedArchives. Not deleting the files is the default, and the safest, way to perform the conversion.

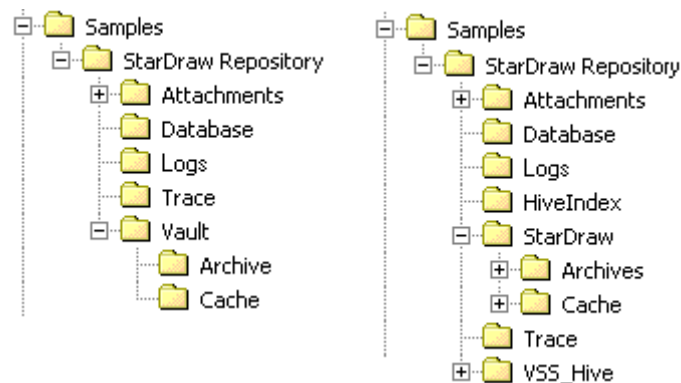
Until the Native-I vault is fully converted you will see a Native-I Vault tab when you select Server Configuration from the Server Administration utility. After the conversion, this tab disappears.

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

Caution Do not run the conversion process during a backup operation.

StarDraw Folders

The following figures allow you to compare the folders for the StarDraw sample server configuration in StarTeam Server 6.0 with those of the StarTeam Server 2005 or later.



The only folder that the StarDraw sample server configuration includes that other server configurations do not have is the Database folder. The sample server configuration MSDE database files are stored in this folder.



Installing and Configuring Supporting Software

Entering Data in Time Fields Accurately in Windows

Times entered in any time format other than in military (24-hour) time are understood by Microsoft Windows as times between midnight and noon. This can affect your application queries, the times you set for server access by users, etc. Therefore, setting your workstation to military time avoids time problems.

To set your workstation for military (24-hour) time:

- 1 Open the Control Panel, by selecting Start > Settings > Control Panel.
- 2 From the Control Panel window, select Regional Settings.
- 3 From the *Regional Settings Properties* dialog, select the Time tab.
- 4 From the Time Style list box, select either H:mm:ss or HH:mm:ss, depending on whether you want 9 in the morning to be represented as 9:00 or 09:00.

Synchronizing Workstation Clocks

The computers that run application clients and the Server must have their dates and times synchronized. Many features of the application depend on calculations involving times and dates. In particular, labels, configurations, and promotion states are all governed by time and date calculations.

Important

If the client and server are not kept synchronized, a number of operations (such as checkout, file status displays, or label creation) might fail or produce inaccurate results.

Therefore, you should use whatever service your network server supports for synchronizing all workstation clocks. For example, Windows network users can execute the following command to synchronize their workstation time with the computer on which the Server is installed:

```
net time \\server_name /set /yes
```

In this example, you would replace `server_name` with the machine name or IP address of the network computer running the Server.

Installing Adobe Acrobat Reader

The primary documentation for the application product line is delivered in Adobe's Portable Document Format (.pdf), and can be viewed with version 4.0 or later of Adobe's free Acrobat Reader. You can download the latest version of the Acrobat Reader from Adobe's web site, but for your convenience version 6.0 is included on the Installation CDs.

To install Adobe Acrobat Reader 6.0:

- 1 Insert the Installation CD into your CD-ROM drive. The *Borland StarTeam CD Launcher* window should appear automatically.
- 2 Click Install Products.
- 3 On the resulting page, click Adobe Acrobat Reader.
- 4 Follow the on-screen instructions to complete the Acrobat Reader installation.

When installed, the Acrobat Reader is associated with .pdf files, enabling you to access the electronic copies of the application user guides.

Installing the Java Runtime Environment

The application client and server installation programs automatically install a Sun Microsystems Java Virtual Machine on your computer if the required version is not already installed there.

Java requires a minimum of 256 colors to start any AWT or Swing-based graphical user interface. When you try to start the Server from the Windows Start menu on a computer with too few colors, you see a DOS box blink on the screen then go away.

Backing Up Databases

This chapter outlines the backup options available to DBAs and makes recommendations for backing up the databases used by the server configurations. Be aware that these are just recommendations. Any finalized disaster recovery plan must be created by your organization in consultation with its IT infrastructure staff.

An application backup consists of backing up both the database and the application archive files. Starting with StarTeam Server 2005, you have a choice between online and offline backups. If all of your archive files are in Native-II format, you can back up a server configuration online—without shutting it down or locking it. If you have a pre-2005 StarTeam Server release, you must convert older archives from Native-I to Native-II format prior to performing an online backup. Regardless of the Server release, you must also set up your database for an online backup.

Backing Up SQL Server Databases

For server configuration online backups, it is essential to take full database and transaction log backups.

SQL Server 2000 supports the following types of backups:

- Full database backup

A full database backup contains the full copy of the database as it was at the time when the backup was initiated. Full backups provide a snapshot of the database. Most of the recovery options require a full backup to be available.

- Differential backup

A differential database backup records only the data that has changed since the last full database backup. Scheduling frequent differential backups is a good idea because the backups are smaller and they complete quickly. A differential backup without a prior full backup is useless.

- Transaction log backup

A transaction log backup includes all the transactions since the last transaction log backup. Transaction log backups enable recovery up to the last committed transaction.

- A file or file group backup

A file or file group backup consists of backing up individual data files (or the files in the file group). The files in a database can be backed up and restored individually.

The entire database can be recreated from a database backup in one step by restoring the database. The restore process overwrites the existing database or creates the database if it does not exist. The restored database will match the state of the database at the time the backup completed, minus any uncommitted transactions. Uncommitted transactions are rolled back when the database is recovered.

Based on the resource requirements, the DBA can also choose the recovery model for the database. The recovery model balances logging overhead against the criticality of fully recovering the data.

The recovery models supported by SQL Server 2000 are:

- Full

The data is critical and must be recoverable to the point of failure. All data modifications are logged. All SQL Server 2000 recovery options are available.

- Bulk-logged

Certain bulk operations, such as bulk copy operations, `SELECT INTO`, and text processing, can be replayed if necessary, so these operations are not fully logged. You can recover only to the end the last database or log backup.

- Simple

All data modifications made since the last backup are not available. This type of recovery scenario has the lowest logging overhead, but cannot recover past the end of the last backup.

Recovering to a point-in-time (for example, a time before unwanted data was entered) requires either full or bulk-logged recovery models.

Full Database Backup

A full database backup creates a duplicate of the data that is in the database. This is a single operation, usually scheduled at regular intervals. Full database backups are self-contained. Full backups provide a snapshot of the database. Most of the recovery options require a full backup to be present.

Borland Software Corporation strongly recommends the use of full backups.

Differential Database Backup

A differential database backup records only the data that has changed since the last database backup. Frequent differential backups are recommended to reduce backup times. Making frequent backups decreases the risk of losing data.

Differential backups restore the data that they contain to the database. Differential backups cannot be used to recover the database to a point in time.

The availability of a differential backup minimizes the time it takes to roll forward transaction log backups when restoring a database.

Transaction Log Backup

The transaction log is a serial record of all the transactions that have been performed against the database since the transaction log was last backed up. With transaction log backups, you can recover the database to a specific point in time or to the point of failure.

When restoring a transaction log backup, SQL Server rolls forward all the changes recorded in the transaction log. When SQL Server reaches the end of the transaction log, it has re-created the exact state of the database at the time of the backup operation.

If the database is recovered, SQL Server then rolls back all transactions that were incomplete when the backup operation started. Transaction log backups generally use fewer resources than database backups. As a result, you can create them more frequently than database backups. Frequent backups decrease the risk of losing data. For high volume Online Transaction Processing (OLTP) environments, it is desirable to create transaction log backups more frequently.

Transaction log backups can only be used with Full and bulk-logged recovery models.

The transaction log cannot be backed up during a full database backup or a differential database backup. However, the transaction log can be backed up while a file backup is running.

Never backup a transaction log before a database backup is created because the transaction log contains the changes made to the database after the last backup was created.

Never truncate the transaction log manually because it breaks the backup chain. If a transaction log has been truncated, take a full database backup to start a new backup chain.

File backups

A file or file group backup consists of the backing up of individual data files (or the files in the file group). A file-based recovery model increases the speed of recovery by allowing you to restore only the damaged files without restoring the rest of the database. For example, suppose a database is comprised of several files located physically on different disks and one disk fails. Only the file on the failed disk needs to be restored and rebuilt using the transaction log backup.

File backup and restore operations must be used in conjunction with transaction log backups. For this reason, file backups can only be used with the full recovery and bulk-logged recovery models.

Recommendations

Borland Software Corporation recommends that you:

- Use the full recovery model
- Perform a full database backup once every day. For full database sizes greater than 3 GB, it is OK to perform full backups on alternate days. If you perform full backups on alternate days, Borland Software Corporation strongly recommends that you create daily differential backups.
- Create daily transaction log backups after the completion of the full or differential backup.

In addition to this, schedule a transaction log backup every 4 hours.

Never truncate a transaction log manually.

- In case of a disaster, create a backup of the currently active transaction log.

If active transaction log backup is not available (for example, because a media failure for the drive hosting the transaction logs and drive is not being mirrored), the database cannot be recovered past the last available transaction log backup. This would hamper a point-in-time recovery beyond the last available transaction log backup.

- Label the backup tapes correctly.
- Keep backup copies in offsite locations.

Backing Up Oracle Databases

An online or hot backup is a backup performed while the database is online and available for read/write operations. Except for Oracle exports, you can only perform online backups when running in ARCHIVELOG mode. An offline or cold backup is a backup performed while the database is offline and unavailable to its users.

Typically an Oracle DBA uses one or more of the following options to back up an Oracle database.

- **Export/Import**
Exports are “logical” database backups that extract logical definitions and data from the database to a file.
Export backups are cross-platform and can be easily moved from one operating system to the other.
- **Cold or Offline Backups**
These backups require shutting down the database instance and copying all the data, log, and control files.
- **Hot or Online Backups**
These backups are taken when the database is available and running in ARCHIVELOG mode. To perform a backup of this type, the tablespaces need to be in backup mode and all the data files associated with the tablespace must be backed up. It is essential to backup the control files and archived redo log files.
- **RMAN Backups**
While the database is offline or online, DBAs can use the RMAN utility to back up the database.
- **Export/Import data pump**
Export pump and import pump are new for Oracle 10g. Expdp and Impdp are cross-platform and can be easily moved from one OS to the other.

Logical Backups (Export/Import)

Oracle exports are “logical” database backups (not physical) as they extract data and logical definitions from the database into a file. Other backup strategies normally back up the physical data files. One of the advantages of exports is that you can selectively re-import tables. However, you cannot roll forward from a restored export file. To completely restore a database from an export file, you almost need to recreate the entire database. Logical backups takes a snapshot of the database schema as it was at a particular time.

Offline/Cold Backups

A backup performed when the database is shut down is known as an offline or cold backup. You must copy the data files, control file and online redo log files using an OS copy utility. This is a considered a complete backup of the database. Any changes made after this backup are unrecoverable if the database is running in NOARCHIVELOG mode. All transactions are recorded in online redo log files whether the database is archiving or not. When redo logs are archived (ARCHIVELOG mode),

ORACLE allows you to apply these transactions after restoring files that were damaged (assuming that an active redo log file was not among the files damaged).

Whenever the schema of the database is changed, such as when you add a new data file, rename a file, or create or drop a tablespace is created, you must shut down the database and copy at least the control file and the newly added data file. A complete backup of the database is preferred.

Before performing a cold backup, it is essential to get a list of all the Oracle files that need to be backed up. Running the following queries will provide a list of all the files.

```
select name from sys.v_$datafile;
select member from sys.v_$logfile;
select name from sys.v_$controlfile;
```

Shut down the database from SQL*Plus or Server Manager. Back up all the files to secondary storage (for example, tapes). Ensure that you back up all data files, all control files, and all log files. When completed, restart your database.

Note If your database is in ARCHIVELOG mode, you can still use archived log files to roll forward from an offline backup. If you cannot take your database down for an offline backup at a convenient time, switch your database into ARCHIVELOG mode and perform an online backups.

Online/Hot Backups

A backup performed when the database instance is running is known as online or hot backup. Online backups are very important at customer sites where a database instance must operate 24-hours per day and offline backups are not feasible. During the duration of an online backup, the database remains available for both reading and updating. For this kind of backup, the database must be in ARCHIVELOG mode. Only data files and current control file need to be backed up. Unlike offline backups, the unit of a online backup is a tablespace, and any or all tablespaces can be backed up whenever needed. Different data files can be backed up at different times.

To perform an online backup, you switch the tablespace into “backup mode” before copying the files as shown in the following example.

```
ALTER TABLESPACE xyz BEGIN BACKUP;
! cp xyfFile1 /backupDir/
ALTER TABLESPACE xyz END BACKUP;
```

It is better to backup individual tablespaces than to put all tablespaces in backup mode at the same time. Backing them up separately incurs less overhead. After completing the tablespace backups, it is important to back up the control files as shown in the following example.

```
ALTER SYSTEM SWITCH LOGFILE;  -- Force log switch to update control file
headers
ALTER DATABASE BACKUP CONTROLFILE TO '<directory name>/control.dbf';
```

The frequency of online backups is inversely proportional to the time taken for recovery in case of a media failure. The older your backup, the more redo log files need to be applied, and the recovery times increases. Backup strategies should be tested before being used to protect a production database.

Borland Software Corporation strongly recommends that you run online backups at times when the database is least accessed, during non-peak hours. Oracle writes complete database blocks instead of the normal deltas to redo log files while in backup mode. This leads to excessive database archiving and even database freezes.

RMAN Backups

Recovery Manager (RMAN) is an Oracle tool that lets the DBA back up and recover Oracle databases. RMAN lets you perform full backups (with the database online or

offline), incremental backups on the block level, and backups of online redo logs and control files.

The SYSDBA privilege is required to run RMAN on a database. The other benefits of RMAN backups are that you can:

- Keep track of all backup and recovery operations performed against the database.
- Manage centralized backup & recovery procedures for the enterprise.
- Identify corrupt blocks.
- Back up only those blocks that actually contain data. This can lead to significant savings in backup space requirements.
- Have support for incremental backups.

Incremental backups back up only those blocks that have changed since a previous backup. This helps with the disk space usage and reduces the backup times significantly.

Oracle 10g has introduced a new feature called “block change tracking”. This feature provides significant improvement for incremental backups. Contact your DBA about how to implement this feature.

The following examples of RMAN backup and restore are extremely simplistic and are included on to illustrate basic concepts. By default, Oracle uses the database control files to store information about backups. Normally, you will prefer to set up an RMAN catalog database to store RMAN metadata. Read the *Oracle Backup and Recovery Guide* before implementing any RMAN backups.

```
rman target sys/*** nocatalog
run {
    allocate channel t1 type disk;
    backup
        format '/app/oracle/db_backup/%d_t%t_s%s_p%p'
        ( database );
    release channel t1;
}
```

Example RMAN restore:

```
rman target sys/*** nocatalog
run {
    allocate channel t1 type disk;
    restore tablespace users;
    recover tablespace users;
    release channel t1;
}
```

Export/Import Data Pump

Oracle introduced the export/import data pump in the 10g release. The import pump is twenty times faster than the conventional import utility. Export/Import data pump utilities are “logical” database backups (not physical) as they extract data and logical definitions from the database into a file. Export/Import data pump utilities do not fit into 24/7 model because they do not offer roll-forward capabilities. Export data pump provides a snapshot of the database schema as it was at a particular time.

Recommendations

Borland Software Company strongly recommends the use of RMAN backups if your enterprise wants to run a StarTeam instance in a 24/7 environment. RMAN has evolved over the last few years and Oracle Corporation continues to add features that make disaster recovery easier, more reliable, and faster.

Backing Up DB2 Databases

Borland Software Corporation recommends the use of:

- archive logging
- online compressed backups which include logs
- using transaction logs

The next few sections explain why.

Logging

All industry-standard databases have logs associated with them. These logs record database changes. If a database needs to be restored to a point beyond the last full, offline backup, logs are required to roll the data forward to the point of failure.

IBM DB2 supports two types of logging: circular and archive. Each provides a different level of recovery solution.

Archive logging is recommended for database backups because it allows the IBM DB2 server (and, therefore, the StarTeam Server) to be running all the time. It provides the capability to recover up to the last committed transaction.

Circular Logging

Circular logging is the default behavior for a new database.

With this type of logging, only full, offline backups of the database are allowed. As the name suggests, circular logging uses a “ring” of online logs to provide recovery from transaction failures and system crashes. The logs are used and retained only to the point of ensuring the integrity of current transactions. You can only recover to the time of the backup, and all changes made after that are lost. Circular logging does not allow you to roll a database forward through transactions performed after the last full backup operation. All changes occurring since the last backup operation are lost.

The database must be offline (inaccessible to users) when a full backup is taken. From a StarTeam Server standpoint, that means that the server must be shut down. This causes serious issues for customers who need the StarTeam Server to be up and running on a 24-hour basis. The backup process disconnects all the connected database users and makes the database unavailable during the duration of the backup.

Archive Logging

Archive logging is not the default behavior for a new database. It is used specifically for rollforward recovery. The archived log files can be used to recover changes made after the backup was taken.

IBM DB2 uses active logs for crash recovery. Archived logs are logs that were active logs but are no longer required for crash recovery. Rollforward recovery can use both archived logs and active logs to rebuild a database either to the end of the logs, or to a specific point in time.

Note LOGRETAIN and USEREXIT parameters are becoming outdated. These parameters are available in IBM DB2 UDB versions 8.1.9 and 8.2.2, but will be mapped to LOGARCHMETH1 under the covers.

Important Changing the logging mode triggers a full offline backup.

To change the database logging from circular to archive:

- 1 Log on to the Control Center and connect to the database.

- 2 Right-click the database and select Configure Database Logging from the context menu.
- 3 Change Current Logging from Circular to Archive.
- 4 Click the Next button
- 5 In the *Log Archiving* dialog:
 - a Choose the “Use DB2 to automatically archive the log files” option.
 - b Select the Primary archive log location and the Failover archive log location.
Using different physical hard drives for the Primary and Failover locations is strongly recommended. For performance reasons, using the file system as a media type is also recommended.
 - c Click Next.
- 6 Choose the number of primary log files, secondary log files and the size of the log file (in K pages).
Having 100 primary and secondary log files and using a size of 3000 for the log file is recommended. (The size of each log file will be approximately 12MB).
- 7 Click NEXT.
- 8 Specify the location of the active archive log files.
Mirrored archive logs help with disaster recovery. The decision to use Mirrored logs should be made after consulting with the DBA group.
- 9 Click NEXT.
- 10 Specify the backup options and complete a database backup.
Borland Software Corporation recommends the use of compressed backups.

Online Backup Procedures

An online backup can be scheduled using IBM DB2 Control Center or can be invoked using an CRON job or a scheduled task. In IBM DB2 UDB Version 8.1.9 and 8.2.2, the backup image can include all the transaction logs which are required to complete the recovery. This simplifies the backup procedure quite a bit since IBM DB2 automatically determines which log files are needed to make a recovery.

This means that, if you need to ship backup images to a disaster recovery site, you do not have to send the log files separately or package them together yourself. Further, you do not have to decide which log files are required to guarantee the consistency of an online backup. This provides some protection against the deletion of log files required for successful recovery.

To use this feature, specify the INCLUDE LOGS option during the backup process. When you specify this option, the backup utility truncates the currently active log file and copies the necessary set of log extents into the backup image.

DB2 provides a backup compression technique which significantly reduces the size of the database backup image. This reduces the number of disks (and tapes) needed for backups.

To restore the log files from a backup image, you may need to use the LOGTARGET option of the RESTORE DATABASE command and specify a fully qualified path that exists on the IBM DB2 server. When you do so, the restore database utility will write the log files from the image to the target path. If a log file with the same name already exists in the target path, the restore operation fails and returns an error. If the LOGTARGET option is not specified, no log files are restored from the backup image.

Restore Procedures

IBM DB2 allows you to restore databases that have been backed up using the DB2 BACKUP command. The restore operation requires an exclusive database connection. This is because the restore utility prevents other applications from accessing the database until the restore operation completes successfully. However, a tablespace restore operation can be done online.

Availability of transaction logs is the single biggest factor for point in time recovery.

For example, suppose an online backup (including the logs) was taken at 1:15AM and the database crashed at 9:00AM.

Scenario I

Transaction logs are **not** available beyond the time of the backup.

Restore the database **with** the LOGTARGET option and rollforward the database to the end of logs. The database is available for use but the changes done to the database between 1:15 and 9:00AM are lost.

Scenario II

Transaction logs are available beyond the time of the backup.

Restore the database **without** the LOGTARGET option. Copy all the transaction logs to the local log directory, and rollforward the database to the end of the logs. The database will be rolled forward to the time of the crash.

To restore a backup image, it is important to specify the LOGTARGET parameter. The LOGTARGET option copies the transaction logs to the specified directory. If the LOGTARGET option is specified and the backup image does not include any log files, an error is returned before an attempt is made to restore any tablespace data. The restore operation will also fail if an invalid or read-only path is specified.

Restoring from an online backup is not complete restoration. You cannot connect to a database which has been restored from an online backup until the rollforward has been completed. The backup has to be rolled forward to either a point in time or to the end of the logs. The transaction logs included in the backup image recover up to the point of the backup only. This is because they include only the logs as of that time. To recover up to the point of failure, you should have a backup plan for transaction logs.

System Requirements

This appendix lists the minimum and recommended system requirements for the “core” StarTeam products, including StarTeam Server, the database server, the StarTeam Cross-Platform client, and the StarTeam Windows client.

The system requirements (and installation instructions) for other StarTeam products appear in the following documents:

- *StarTeam Extensions User's Guide*
- *StarTeamMPX Guide*
- *StarDisk User's Guide*
- *StarTeam Web Edition Installation and Administration Guide*
- User's guide for each StarTeam Integration with a third-party application (such as Visual Studio .NET, PowerBuilder, and many Microsoft SCC-compliant development environments)

StarTeam Server System Requirements

Borland Software Corporation recommends installing StarTeam Server on a dedicated application server, and installing the database on a separate server unless you are using MSDE as your database.

Note There should be a dedicated connection between the computers running StarTeam Server and the database management system. For optimal performance, both machines should be on the same physical switch.

The following tables show the minimum and recommended hardware for the computer on which you deploy the StarTeam Server process and database. Although specific processor speeds are listed, you should always use the fastest available CPU to maximum performance.

In addition to the following system requirements, StarTeam Server uses:

- Sun Microsystems Java Virtual Machine 1.5.0_03, which is automatically installed
- Microsoft Data Access Components (MDAC) 2.8, which the StarTeam Server installation program can install for you

On Microsoft Windows, StarTeam supports foreign archives running under PVCS 6.8 or Visual SourceSafe 6.0a. Those applications may require additional hardware or software.

Supported Operating Systems

The following operating systems are supported for StarTeam Server:

- Microsoft Windows 2000 with Service Pack 4
- Microsoft Windows 2003 Server (32-bit version)

StarTeam and MSDE on the Same Computer

When MSDE is used, the database typically resides on the same computer as the corresponding StarTeam Server process. The following hardware recommendations for a joint StarTeam Server/MSDE computer are based on the number of seats (registered users)—although your situation might vary depending on the size of your StarTeam projects and the number of projects managed by the server configuration.

Table 8.1

Number of Seats	Minimal Configuration	Recommended Configuration
< 50	Computer with a 1.3 GHz Pentium® 4 processor and 1.5 GB of RAM	Computer with dual 1.3+ GHz Pentium 4 processors and 2 GB of RAM
50 – 100	Computer with dual 2.26+ GHz Pentium Xeon™ processors and 2.5 GB of RAM	Same as minimal configuration

MSDE is **not** recommended for configurations serving more than 100 registered users.

StarTeam Server on a Separate Computer

The following hardware recommendations apply when the StarTeam Server process is executing on a different computer than the database server. They are based on the number of seats (registered users)—although your situation might vary depending on the size of your StarTeam projects and the number of projects managed by the server configuration.

Number of Seats	Minimal Configuration	Recommended Configuration
< 50	Computer with a 1.3 GHz Pentium 4 processor and 512 MB of RAM	Computer with dual 1.3+ GHz Pentium 4 processors and 1 GB of RAM
50 – 100	Computer with dual 1.3 GHz Pentium 4 processors and 1 GB of RAM	Computer with dual 1.3+ GHz Pentium 4 processors and 2 GB of RAM
100 – 200	Computer with dual 2.26 GHz Pentium Xeon 4 processors and 1.5 GB of RAM	Computer with dual or quad 2.26 GHz Pentium Xeon 4 processors and 2.5 GB of RAM
> 200	Any high-performance Enterprise Server with quad 2.26+ GHz processors and 4.0 GB of RAM	Minimal configuration plus RAID system

Database Server System Requirements

The following recommendations apply to the database server when it is not shared with the StarTeam Server process. The number of seats is equivalent to the number of registered users.

SQL Server and MSDE databases have been tested only as 32-bit databases. Oracle databases have been tested as 32- and 64-bit.

Number of Seats	Hardware Configuration	Database Requirements
< 50	Computer with a 1.3 GHz Pentium 4 processor and 1 GB of RAM	Minimum: MSDE 2000 SP2 with Slammer virus patch Recommended: <ul style="list-style-type: none"> ■ Oracle 9.0.1.3.0 ■ Oracle 9.2.0.1.0 ■ Oracle 10.1.0.3.0 ■ Microsoft SQL Server 7 SP4 or 2000 SP3 ■ IBM DB2 UDB 8.1 FixPak 9 (8.1.9) ■ IBM DB2 UDB 8.2 FixPak 2 (8.2.2)
50 – 100	Computer with dual 1.3 GHz Pentium 4 processors and 2 GB of RAM	Minimum: MSDE 2000 SP2 with Slammer virus patch Recommended: <ul style="list-style-type: none"> ■ Oracle 9.0.1.3.0 ■ Oracle 9.2.0.1.0 ■ Oracle 10.1.0.3.0 ■ Microsoft SQL Server 7 SP4 or 2000 SP3 ■ IBM DB2 UDB 8.1 FixPak 9 (8.1.9) ■ IBM DB2 UDB 8.2 FixPak 2 (8.2.2)
100 – 200	Minimum: Computer with dual or quad 2.26 GHz Pentium Xeon 4 processors and 2-3 GB of RAM Recommended: Minimum configuration plus RAID system	Minimum and recommended: <ul style="list-style-type: none"> ■ Oracle 9.0.1.3.0 ■ Oracle 9.2.0.1.0 ■ Oracle 10.1.0.3.0 ■ Microsoft SQL Server 7 SP4 or 2000 SP3 ■ IBM DB2 UDB 8.1 FixPak 9 (8.1.9) ■ IBM DB2 UDB 8.2 FixPak 2 (8.2.2)
> 200	Minimum: Any high-performance Enterprise Server with quad 2.26+ GHz processors and 4.0 GB of RAM Recommended: Minimum configuration plus RAID system	Minimum and recommended: <ul style="list-style-type: none"> ■ Oracle 9.0.1.3.0 ■ Oracle 9.2.0.1.0 ■ Oracle 10.1.0.3.0 ■ Microsoft SQL Server 7 SP4 or 2000 SP3 ■ IBM DB2 UDB 8.1 FixPak 9 (8.1.9) ■ IBM DB2 UDB 8.2 FixPak 2 (8.2.2)

StarTeam Cross-Platform Client System Requirements

The StarTeam Cross-Platform client can be installed on any system that supports Sun Microsystems Java Virtual Machine 1.5.0_03. The system requirements vary depending upon the operating system.

- When installed on a Windows system, the StarTeam Cross-Platform client has the same system requirements as the StarTeam Windows client. It has been tested with Windows NT 4.0 SP6a, 2000 SP4, and XP SP1.
- When installed on a Linux system, the StarTeam Cross-Platform client has the same hardware requirements as the StarTeam Windows client. It has been tested with RedHat Linux versions 7.3, 8.0, and 9.0.
- When installed on a Solaris system, the StarTeam Cross-Platform client should work on most relatively current hardware. It has been tested with Solaris 7, 8, and 9.
- When installed on a Macintosh system, the StarTeam Cross-Platform client requires version 10.4 of Macintosh OSX and a download of Java Virtual Machine 1.5 for the Macintosh.

StarTeam Windows Client System Requirements

In addition to the following system requirements, the StarTeam Windows client uses Sun Microsystems Java Virtual Machine 1.5.0_03, which it installs.

Operating System	Hardware Configuration
One of the following:	Computer with:
■ Microsoft Windows NT 4.0, Workstation or Server, with Service Pack 6a	■ Intel 500 MHz Pentium III processor
■ Microsoft Windows 2000 with Service Pack 4	■ Minimum RAM: 128 MB
■ Microsoft Windows XP Service Pack 1	■ Recommended RAM: 256 MB
	■ Recommended RAM for large projects (with 20,000 or more items): 512 MB
	■ 200 MB of available disk space for application and installation

Oracle 9i Database Tuning

This appendix provides the basic information needed to create an Oracle schema user for StarTeam Server. Borland Software Corporation recommends using the Administration utility to create schema users, but if you prefer to create your own, you need to follow the guidelines provided below.

Recommended Initialization Parameters

The following two tables recommend Oracle parameter settings for use with StarTeam databases.

Table 8.2 Common Database Configuration Parameters

Parameter	Recommended Value
Compatible	9.2.0
Cursor_sharing	Force
Log_checkpoint_interval	Greater than the redo log size
Log_checkpoint_timeout	0
Workarea_size_policy	auto
Db_block_size	16284 (16k)
Db_file_multi_block_read_count	16
Optimizer_mode	choose
Timed_statistics	true
Open_cursors	255
Undo_management	AUTO
Undo_tablespace	<Name of the undo tablespace>
Undo_retention	28800
Processes	250
Statistics_level	typical

Table 8.3 Database Parameters Based on the Total Memory

Total Memory	Recommended Settings
1 GB	SGA_MAX_SIZE = 500M
	DB_CACHE_SIZE = 250M (See note below.)
	SHARED_POOL_SIZE = 150M
	JAVA_POOL_SIZE = 60M
	LARGE_POOL_SIZE = 25M
	LOG_BUFFER = 524288
2 GB	PGA_AGGREGATE_TARGET = 160M
	GA_MAX_SIZE = 1G
	DB_CACHE_SIZE = 600M (See note below.)
	SHARED_POOL_SIZE = 200M
	JAVA_POOL_SIZE = 60M
	LARGE_POOL_SIZE = 25M
4 GB	LOG_BUFFER = 1048576
	PGA_AGGREGATE_TARGET = 320M
	SGA_MAX_SIZE = 2G
	DB_CACHE_SIZE = 1G (See note below.)
	SHARED_POOL_SIZE = 200M
	JAVA_POOL_SIZE = 60M
	LARGE_POOL_SIZE = 25M
	LOG_BUFFER = 1048576
	PGA_AGGREGATE_TARGET = 640M

Note on DB_CACHE_SIZE

DB_CACHE_SIZE specifies the size of the DEFAULT buffer pool for buffers with the primary block size (the block size defined by the DB_BLOCK_SIZE parameter). The value must be at least the size of one granule (smaller values are automatically rounded up to the granule size). A value of zero is illegal because zero is the size of the DEFAULT pool for the standard block size, which is the block size for the SYSTEM tablespace. If the blocksize of the starteam tablespace is not the same as the DB_BLOCK_SIZE parameter, then this parameter has no relevance for the starteam tablespace. For such cases, DB_nK_CACHE_SIZE parameter has to be defined where n is the BLOCK SIZE for the starteam tablespace. Schema users created using the Administration utility do not specify the BLOCK SIZE parameter for the starteam tablespace and, therefore, uses the DB_CACHE_SIZE parameter.

Many application rely heavily on custom fields, and custom fields extend the row length of the database table. Be aware that this may cause row chaining. Chaining occurs when the row is too large to fit into one data block when it is first inserted. In this case, Oracle stores the data for the row in a chain of data blocks (one or more) reserved for that segment. Row chaining most often occurs with large rows, such as rows that contain a column of datatype LONG, LONG RAW, LOB, etc. Row chaining in these cases is unavoidable. When a row is chained or migrated, performance associated with this row decreases because Oracle must scan more than one data block to retrieve the information for that row.

Oracle Database Monitoring and Tuning

Oracle9i Release 2 introduces a comprehensive set of advisories including Shared Pool Sizing Advisor, SQL Execution Memory (PGA) Memory Advisor and Recovery Cost Estimator. V\$STATISTICS_LEVEL lists the status of the statistics or advisories controlled by the STATISTICS_LEVEL initialization parameter. Each row of V\$STATISTICS_LEVEL represents one of these statistics or advisories. The most efficient way to tune your Oracle database is to start with the recommended database settings and monitor the instance using the advisories. In addition to that, Borland Software Corporation recommends the use of statspack to monitor database performance and identify bottlenecks. A detailed description of statspack is beyond the scope of this document. Please refer to your Oracle 9i release 2 performance tuning guide for more information.

StarTeam Server and Tablespaces

All the schema users created using the Administration utility use locally managed tablespaces. Borland Software Corporation strongly recommends the use of locally managed tablespaces for customers who would like to create their own starteam schema user and starteam tablespace.

Currently, tablespaces created using the Administration utility do not use ASSM. ASSM is a very promising new feature but it has been prone to errors in the earlier releases of 9i release2. Subsequent releases of the Administration utility may create schema users with ASSM tablespaces, but only after Borland Software Corporation determines that the Server works well with ASSM tablespaces.

Dictionary Managed Tablespaces

Dictionary managed tablespaces are managed using the data dictionary. In these types of tablespaces, the extent allocation is done manually when the creator has to specify the size of the initial extent, next extent and pctincrease. Dictionary managed tablespaces require constant DBA attention with regard to coalescing and fragmentation.

Locally Managed Tablespaces

Locally managed tablespaces manage their own extents by maintaining a bitmap in each data file. The bitmap helps to keep track of free or used block status. Every bit in the bitmap maps to a block. Any changes to extents triggers changes to data blocks to reflect the new status. Any of these changes do not update tables in Oracle's data dictionary.

Dictionary managed tablespaces perform multiple updates generating rollback information. Locally managed tablespaces reduce the contention on data dictionary tables.

Coalescing is not required with locally managed tablespaces since they automatically track adjacent free space. A locally managed tablespace can either have uniform extent sizes (UNIFORM) or variable extent sizes that are determined automatically by the system (AUTOALLOCATE). This decision has to be made during the tablespace creation.

For system managed extents, the database engine arrives at the optimal size of the extents. For UNIFORM extents, it is possible to specify the size of extent.

The following list summarizes the advantages of locally managed tablespaces:

- Reduced fragmentation
- Controlled updates to data dictionary tables
- Extent size is controlled by the system
- Automatically tracks adjacent free space eliminating the need to coalesce free extents
- Reduces contention of data dictionary objects
- Avoids recursive space management which can typically occur in dictionary managed tablespaces.

Automatic Segment Space Management (ASSM)

Oracle introduced the concept of automatic segment space management in 9i. This feature allows Oracle to use bitmaps to manage the free space within segments. The bitmap describes the status of each data block within a segment with respect to the amount of space in the block available for inserting rows. The current status of the space available in a data block is reflected in the bitmap allowing for Oracle to manage free space automatically with ASSM.

ASSM tablespaces automate freelist management and remove the ability to specify PCTUSED, FREELISTS, and FREELIST GROUPS storage parameters for individual tables and indexes created in ASSM tablespaces. The values for parameters PCTUSED and FREELISTS are ignored and Oracle automatically manages the space for these tables and indexes inside the tablespace using bitmaps. PCTFREE can still be specified and it is used with ASSM.

Index

Symbols

96, 97
.dmp files, for a server configuration 84

Numerics

24-hour time, using 91

A

Adobe Acrobat Reader, installing 92
archive files
 converting 78
 locations 82
 performance of operations 82
 sizes 82
Archive folder, for a pre-2005 server configuration 89
archive logging
 IBM DB2 99
archive structure
 Native-II Vault 87
Attachments folder, for a server configuration 85

B

backing up
 IBM DB2 99
 Oracle 96
 server configurations while they are in use 83
 SQL Server 93
backup recommendations
 Oracle 98
 SQL Server 95
bold convention 4
brackets convention 4

C

Cache folder, for a pre-2005 server configuration 89
cache structure
 Native-II Vault 87
CD contents 2
character sets
 defining for Oracle 49
circular logging
 IBM DB2 99
clocks, synchronizing 91
cold backups
 Oracle 96
collation of characters in MSDE/Microsoft SQL Server
 databases 41
concurrent licenses 16
configuring server configurations 12
connecting to Microsoft SQL Server 2000
 databases 27
connectivity with Oracle 44
conventions
 bold 4
 brackets 4
 fixed-space type 4
 italics 4
 menu selections 4

 unique feature of StarTeam Cross-Platform client 5
 unique feature of StarTeam Windows client 5
 vertical bars 5
converting
 Native-I archive files 78
 Native-I to Native-II archive files 89
creating 66
creating a new IBM DB2 database instance 66
creating server configurations
 for existing MSDE/Microsoft SQL Server
 databases 37
 for manually created Oracle schema user 60
 for new IBM DB2 databases 68
 with new MSDE/Microsoft SQL Server
 databases 27
 with new Oracle schema user 50
Custom installation of StarTeam Server 10

D

data
 locations for a pre-2005 server configuration 88
data files, guidelines for
 Microsoft databases 32
 Oracle databases 55
data locations for a server configuration 84
database configurations
 IBM DB2 67
database server, system requirements 105
databases
 collation in MSDE/Microsoft SQL Server 41
 creating an ODBC DSN for IBM DB2 68
 creating an ODBC DSN for Oracle 59
 creating an ODBC DSN for SQL Server or MDSE 36
 logging on to 26, 44, 65
 manually creating for MSDE/Microsoft SQL
 Server 35
 Microsoft SQL Server 25
 Microsoft terminology 25
 MSDE 25
 Oracle 43
 Oracle terminology 43
DB2
 See IBM DB2.
DefaultHive 86
developer support 4
dictionary-managed tablespaces in Oracle 58
differential database backups
 SQL Server 94
dmp files, for a server configuration 84
documentation set 1
 viewing with Adobe Acrobat Reader 92
drivers, Oracle ODBC 45
DSN
 creating 36, 59, 68

E

encoding differences between StarTeam Server and
 Microsoft databases 26
EOL conversion, issue with non-ASCII characters 8
evaluation license
 for StarTeam Server 13

- evaluation period, extending
 - for StarTeam Server 13
- export/import data pump
 - Oracle 98
- exporting
 - Oracle 96

F

- file backups
 - SQL Server 95
- fixed licenses 16
- fixed-space type convention 4
- floating licenses 16
- full database backups
 - SQL Server 94

G

- guidelines for
 - Microsoft database data files and transaction logs 32
 - Oracle data files 55

H

- HiveIndex 85
- hives
 - DefaultHive 86
- hot backups
 - Oracle 97

I

- IBM DB2
 - backing up 99
 - creating a new instance 66
 - creating an ODBC DSN 68
 - logging 99
 - online backup procedures 100
 - reconfiguring a database instance for StarTeam 67
 - restore procedures 101
 - setting up a user account 67
- IBM DB2 databases
 - creating an ODBC DSN 68
 - known issues 70
 - overview of using 65
 - SQL scripts for 69
 - troubleshooting 70
- import/export data pump
 - Oracle 98
- importing
 - Oracle 96
- initial settings of personal options, standardizing for all users 19
- installation CD contents 2
- installing
 - Adobe Acrobat Reader 92
 - MSDE AdminTool 11
 - StarDisk 24
 - StarTeam clients 19
 - StarTeam Cross-Platform client 21
 - StarTeam Extensions 17
 - StarTeam integrations 24
 - StarTeam Server 7, 10
 - StarTeam Windows client 20

- StarTeamMPX 17
- Web Edition 24
- integrations, installing 24
- italics convention 4

K

- keyword expansion, issue with non-ASCII characters 8
- known issues with StarTeam Server installation 12

L

- licensing of server features 15
- licensing of users 16
- Linux
 - installing StarTeam Cross-Platform client 23
- locally-managed tablespaces in Oracle 58
- log files, for a server configuration 84
- logging
 - IBM DB2 99
- logical backups
 - Oracle 96

M

- Macintosh OSX
 - installing StarTeam Cross-Platform client 23
- manuals
 - in StarTeam documentation set 1
 - viewing with Adobe Acrobat Reader 92
- menu selections convention 4
- Microsoft SQL Server 2000 databases, connecting to 27
- Microsoft SQL Server databases
 - collation of characters 41
 - creating a server configuration 27, 37
 - creating database manually for StarTeam Server 35
 - overview of using 27
 - SQL scripts for 33
 - supported versions 25
 - using with StarTeam Server 25
- military time, using 91
- MSDE AdminTool, installing 11
- MSDE databases
 - collation of characters 41
 - creating a server configuration 27, 37
 - creating an ODBC DSN 36
 - creating database manually for StarTeam Server 35
 - overview of using 26
 - SQL scripts for 33
 - supported versions 25
 - using with StarTeam Server 25

N

- named user licenses 16
- Native-I Vault
 - archive file locations 82
 - archive file sizes 82
 - converting archive files 89
 - converting archives to Native-II 78
 - folders 88
 - performance 82
- Native-II Vault
 - archive file locations 82
 - archive file sizes 82
 - archive structure 87

- cache structure 87
- performance 82
- Native-II Vault folders 85
- NLS_LANG
 - defining for Oracle Client 48
 - understanding 48
- non-ASCII characters
 - issues with keyword expansion and EOL conversion 8

O

- ODBC
 - creating a system DSN for IBM DB2 68
 - creating a system DSN for Oracle databases 59
 - creating a system DSN for SQL Server or MSDE 36
- ODBC drivers
 - downloading for Oracle 46
 - installing for Oracle 46
 - patching for Oracle 48
 - using correct version for Oracle 45
- offline backups
 - Oracle 96
- online backups
 - Oracle 97
- Oracle
 - backing up 96
 - backup recommendations 98
 - cold backups 96
 - export/import data pump 98
 - import 96
 - logical backups 96
 - offline backups 96
 - online backups 97
 - Recovery Manager backups 97
 - RMAN backups 97
- Oracle databases
 - character sets 49
 - creating a server configuration 50, 60
 - creating an ODBC DSN 59
 - creating schema user manually for StarTeam Server 58
 - defining NLS_LANG 48
 - dictionary-managed vs. locally-managed tablespaces 58
 - guidelines for data files 55
 - overview of using 44
 - SQL scripts for 55
 - supported versions 43
 - using with StarTeam Server 43
 - verifying connectivity 44
- Oracle ODBC drivers
 - defining NLS_LANG 48
 - downloading 46
 - installing 46
 - patching 48
 - supported versions 45
 - using correct version 45
- overview of
 - manually creating a MSDE/Microsoft SQL Server database 35
 - manually creating an Oracle schema user 58
 - tasks after creating a server configuration 12
 - using IBM DB2 database 65
 - using Microsoft SQL Server database 27

- using MSDE database 26
- using Oracle database 44

P

- personal options, standardizing for all users 19
- product support 4
- PVCS_Hive 86
- PVCS_Working 86

R

- Recovery Manager backups
 - Oracle 97
- registering
 - StarTeam Server 14
- reminder dialog 78
- RMAN backups
 - Oracle 97
- running SQL scripts for
 - IBM DB2 databases 69
 - MSDE/Microsoft SQL Server databases 33
 - Oracle databases 55

S

- sample server configuration (StarDraw) 16
- schema user, manually creating for Oracle 58
- scripts for
 - IBM DB2 databases 69
 - MSDE/Microsoft SQL Server databases 33
 - Oracle databases 55
- Server
 - changes to server files 10
 - synchronizing workstation clocks 91
- server configurations
 - backing up 83
 - creating for existing MSDE/Microsoft SQL Server databases 37
 - creating for manually created Oracle schema user 60
 - creating for new IBM DB2 databases 68
 - creating with new MSDE/Microsoft SQL Server databases 27
 - creating with new Oracle schema user 50
 - data locations 84
 - pre-2005 data locations 88
 - preparing to upgrade 74
 - StarDraw sample 16
 - stop running as a Windows service 9
 - tasks after creating 12
 - troubleshooting upgrades 76
 - upgrading 73, 75
- sizes
 - archive files 82
- Solaris
 - installing StarTeam Cross-Platform client 23
- SQL scripts for
 - IBM DB2 databases 69
 - MSDE/Microsoft SQL Server databases 33
 - Oracle databases 55
- SQL Server
 - backing up 93
 - backup recommendations 95
 - differential database backups 94
 - file backups 95

- full database backups 94
- transaction log backups 94
- SQL Server databases
 - creating an ODBC DSN 36
- SQL Server, *See* Microsoft SQL Server or MSDE.
- square brackets convention 4
- stackable licensing of users 16
- starbaseserver command, registering server with 14
- StarDisk, installing 24
- StarDraw sample server configuration 16
 - folders 90
- StarTeam
 - contents of installation CDs 2
 - documentation set 1
 - See also* StarTeam Cross-Platform client, StarTeam Server, and StarTeam Windows client.
- StarTeam clients
 - installing 19
 - See also* StarTeam Cross-Platform client and StarTeam Windows client.
- StarTeam Cross-Platform client
 - icon indicating unique features 5
 - installing 21
 - installing on other Linux 23
 - installing on other Macintosh OSX 23
 - installing on other other platforms 23
 - installing on other Solaris 23
 - system requirements 106
 - Universal installation 23
- StarTeam Extensions, installing 17
- StarTeam integrations, installing 24
- StarTeam Server
 - connecting to Microsoft SQL Server 2000 databases 27
 - Custom installation 10
 - data locations for a pre-2005 server configuration 88
 - data locations for a server configuration 84
 - encoding differences with Microsoft databases 26
 - evaluation license 13
 - extending evaluation period 13
 - installing 7, 10
 - issues before new installation 8
 - issues before upgrading versions 9
 - known issues with installation 12
 - licensing of features 15
 - manually creating a MSDE/Microsoft SQL Server database 35
 - manually creating an Oracle schema user 58
 - registering 14
 - system requirements 103
 - tasks after new installation 12
 - tasks after upgrading versions 13
 - Typical installation 10
 - user licenses 16
- StarTeam server configurations, *See* server configurations.
- StarTeam Windows client
 - icon indicating unique features 5
 - installing 20
 - system requirements 106
- starteam_db2_dropall.sql 70
- starteam_db2_reorg.sql 70
- starteam_db2_reorgchk.sql 70
- starteam_oracle_compute_stats.sql 56
- starteam_oracle_create_check_database.sql 56
- starteam_oracle_create_check_privileges.sql 56
- starteam_oracle_create_convert_dotnot.sql 56
- starteam_oracle_create_database.sql 57
- starteam_oracle_create_fix_custom_fields.sql 57
- starteam_oracle_create_upgrade_22.sql 57
- starteam_oracle_create_upgrade_23.sql 57
- starteam_oracle_create_upgrade_26.sql 57
- starteam_oracle_database_analyze.sql 57
- starteam_oracle_dropall.sql 57
- starteam_oracle_get_dbinfo.sql 57
- starteam_oracle_performance_indic.sql 57
- starteam_oracle_rebuild_indexes.sql 57
- starteam_sqlserver_create_check_database.sql 34
- starteam_sqlserver_create_convert_dotnot.sql 34
- starteam_sqlserver_create_database.sql 34
- starteam_sqlserver_create_install_purge_temp_tables.sql 35
- starteam_sqlserver_create_upgrade_23.sql 34
- starteam_sqlserver_dbcc.sql 34
- starteam_sqlserver_dbcc_reindex.sql 34
- starteam_sqlserver_dbcc_showcontig.sql 34
- starteam_sqlserver_dropall.sql 34
- starteam_sqlserver_get_dbinfo.sql 34
- starteam_sqlserver_get_dbpath.sql 34
- starteam_sqlserver_run_msde_backup.sql 35
- starteam-client-default-options.xml file 19
- StarTeamDefault.ini file 19
- StarTeamMPX, installing 17
- support 4
- synchronizing workstation clocks 91
- syntax conventions
 - mutually-exclusive choices 5
 - options 4
 - variables 4
- system requirements for 103
 - database server 105
 - other StarTeam products 103
 - StarTeam Cross-Platform client 106
 - StarTeam Server 103
 - StarTeam Windows client 106

T

Table 4.2

StarTeam Scripts for Microsoft SQL Server and MSDE 33

tablespaces in Oracle, dictionary-managed vs. locally-managed 58

technical support 4

terminology

for Microsoft databases 25

for Oracle databases 43

time fields, setting 91

trace files, for a server configuration 84

transaction log backups

SQL Server 94

transaction logs, for Microsoft databases 32

troubleshooting

installation of StarTeam Server 12

server configuration upgrades 76

Typical installation of StarTeam Server 10

U

Universal

- installing StarTeam Cross-Platform client 23
- upgrading server configurations 73, 75
 - from StarTeam 5.1 or 5.2 74
 - preparations for 74
 - troubleshooting 76
- upgrading StarTeam Server 9
- user accounts
 - IBM DB2 67

V

- Vault folder, for a pre-2005 server configuration 88
- verifying connectivity with Oracle 44
- vertical bars convention 5
- viewing manuals, requires Adobe Acrobat Reader 92
- VSS_Hive 86
- VSS_Working 86

W

- Web Edition, installing 24

