

**Borland**<sup>®</sup>

THE OPEN ALM COMPANY

# **Borland StarTeam 2009**

**Installation Guide**

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# Introducing Borland StarTeam 2009 Installation Documentation

This chapter is an overview of Borland StarTeam product installation, and describes the installation instructions included in the Installation Guide.

## Included in this Installation Guide

This document provides installation instructions for these Borland StarTeam products:

- Borland StarTeam Server 2009 (for Windows and Linux)
- Borland StarTeam Cross-Platform Client 2009
- Borland StarTeam Web Server
- Borland StarTeamMPX (for Windows and Linux) including:
  - StarTeam Event and File Transmitters (installed with the StarTeam Server 2009 installation)
  - StarTeam Message Broker
  - StarTeam Cache Agent
- StarTeam Workflow Extensions including:
  - StarTeam Extensions
  - StarTeam Workflow Designer
  - StarTeam Notification Agent
- StarTeam Layout Designer

In addition, this manual covers:

- Database configuration for Microsoft SQL Server and Oracle.
- Upgrading server configurations.
- Supporting software installation and configuration.
- Data locations.

See the next section for a complete list of StarTeam products and how to access them.

## Accessing Borland StarTeam Products and Installation Instructions

The following sections provide a summary of Borland StarTeam products, where you can get them, and where you can find the installation instructions for them.

## Products Included with StarTeam Enterprise Licenses

The following table provides a summary of Borland StarTeam products, where you can get them, and where you can find their installation instructions.

Borland StarTeam 2009	Web Download	DVD Set for Windows	Consolidated Installation Guide (this manual)	Separate Installation Guide
StarTeam Server 2009 - Windows	Yes	Yes	Yes	
StarTeam Cross-Platform Client 2009 <sup>+</sup>	Yes	Yes	Yes	
StarTeam Web Client	Yes	Yes	Yes	
Borland LDAP Quickstart Manager	Yes	Yes		Yes
StarTeam Layout Designer		Yes	Yes	
StarTeam SDK (complete) <sup>*</sup>	Yes	Yes		
StarTeamMPX (Message Broker and Event Transmitter)	Yes	Yes	Yes	

<sup>+</sup>Multiple versions can be downloaded for various non-Windows platforms including a Universal Client.

<sup>\*</sup>StarTeam SDK runtime is installed with clients automatically; this entry refers to the full SDK used by developers to create additional applications that use the StarTeam Server.

## Products Included with StarTeam Enterprise Advantage Licenses

In addition to the products included with StarTeam Enterprise licenses, StarTeam Enterprise Advantage licenses also include the products listed in the table below. The following table provides a summary of Borland StarTeam products, where you can get them, and where you can find the installation instructions for them.

Borland StarTeam 2009	Web Download	DVD Set for Windows	Consolidated Installation Guide (this manual)	Separate Installation Guide
StarTeam Cache Agent	Yes	Yes	Yes	
StarTeam Workflow Extensions (StarTeam Extensions, StarTeam Workflow Designer, StarTeam Notification Agent)	Yes	Yes	Yes	
Borland Search	Controlled <sup>2</sup>			Yes
StarTeam Datamart <sup>*</sup>	Controlled <sup>2</sup>			Yes

<sup>\*</sup>Can be purchased separately and added to the Enterprise package.

<sup>2</sup>Purchase of Enterprise Advantage enables access to the controlled download page.

# StarTeam Integrations

The following table provides a list of the StarTeam Integrations, where you can get them, and where you can find the installation instructions.

Borland StarTeam 2009	Web Download	DVD Set for Windows	Consolidated Installation Guide (this manual)	Separate Installation Guide
StarTeam Visual Studio Integration	Yes			Yes
StarTeam Microsoft SCC Integration	Yes			Yes
StarTeam Microsoft Project Integration	Yes			Yes
StarTeam Edition for Eclipse	Yes			Yes
StarTeam Synchronizer for Mercury TestDirector for Quality Center	Controlled <sup>3</sup>			Yes
StarTeam Version-Control Add-in for Mercury TestDirector for Quality Center	Yes			Yes

<sup>3</sup>Requires a license purchase prior to download.

## Accessing StarTeam Products and What's New Information

The StarTeam products are available for download from:

[http://www.borland.com/downloads/download\\_starteam.html](http://www.borland.com/downloads/download_starteam.html)

You can find out what's new in StarTeam 2009 by going to **Getting Started > What's New** in StarTeam Help which is available after installation on the **Start > Programs > Borland StarTeam > StarTeam Server 2009 > Documentation** menu.

## StarTeam Replacement Installation DVDs

The primary installation method for the Borland StarTeam products is by downloading the installers at:

[http://www.borland.com/downloads/download\\_starteam.html](http://www.borland.com/downloads/download_starteam.html)

However, replacement Installation DVDs are available. If you are installing from DVD, you can install the products as indicated in [Accessing Borland StarTeam Products and Installation Instructions](#) on page 9. StarTeam's main installation menu offers these options:

Main Menu Option	Choose to...
Install Products	Display and select from the list of available products from this DVD set.
Browse Documentation	See the list of available StarTeam manuals in PDF format.
Browse Contents	See the contents of the StarTeam installation DVDs. For more information, see <a href="#">StarTeam Installation DVD Contents</a> on page 12.
Contact Us	Display Borland Corporation address, phone numbers, and links to the Borland corporate and support web sites.

# StarTeam Installation DVD Contents

The StarTeam DVD contains a launcher for installing the following products, depending on the license version you purchase:

## **DVD 1 - Windows Server 32 bit**

- LDAP
- Notification Agent
- Server
  - MPX Message Broker
  - MPX Cache Agent

## **DVD 2 - Windows Server 64 bit**

- LDAP (32 bit)
- Notification Agent (32 bit)
- Server
  - MPX Message Broker
  - MPX Cache Agent
- Web Server

## **DVD 3 - Linux Server 32 bit**

- LDAP (Windows)
- Notification Agent
- Server for Linux
  - MPX Message Broker
  - MPX Cache Agent

## **DVD 4 - Client (all available platforms)**

- Layout Designer
- SDK
- Cross Platform Client (VCM, FCM, BCO, STCMD)
- Extensions
- Workflow Designer

## **DVD 5 - StarTeam Search (Windows and Linux)**

## **DVD 6 - Datamart (Windows only)**

# Borland StarTeam Documentation

The Borland StarTeam documentation set is your guide to using the Borland StarTeam product suite. Borland StarTeam documentation is provided in two formats: HTML and Adobe PDF. All documentation in both formats is available from these locations:

- **Start > Programs > Borland StarTeam > StarTeam Cross-Platform Client 2009 > Documentation**
- **Start > Programs > Borland StarTeam > StarTeam Server 2009 > Documentation**

## HTML Documentation


The following documentation is provided in HTML format for StarTeam:


- **StarTeam Help:** Comprehensive online documentation for all user types. Explains using and administering StarTeam.
- **Readme:** Contains the latest information about your particular installation including system requirements, known issues and limitations.

## Adobe PDF Manuals

The following documentation is provided in Adobe PDF manuals for StarTeam:

- **Installing StarTeam:** The StarTeam Installation Guide (this manual) contains detailed instructions for installing and configuring the “core” StarTeam products.
- **Administering and Using StarTeam:** This manual is identical to the HTML version of StarTeam Help. This guide provides comprehensive documentation for both administrators and general users of StarTeam.
- **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:** Explains the basic operation and architecture of a StarTeamMPX system, and presents instructions on installing and configuring the StarTeamMPX components.

 **Note:** Depending upon which StarTeam products you purchased and installed, not all of the applications described in the manuals will be on your system.

 **Important:** All manuals distributed in Adobe Acrobat (.PDF) format require the Adobe Acrobat Reader, 7.0 or higher, to display them. The installation program for Adobe Acrobat Reader is available from the Adobe web site at: [www.adobe.com](http://www.adobe.com).

## Other Product Documentation

Documentation for optional products such as Borland LDAP Quickstart Manager and Borland Search can be found in the **Start > Programs > product\_name > Documentation** submenu.

## Borland Support

Borland Software Corporation is committed to providing world-class services in the areas of consulting and technical support. Borland has more than 20 years of experience in supporting developers and enterprise customers. Qualified technical support engineers are prepared to handle your support needs on a case-by-case basis or in an ongoing partnership. Borland provides worldwide support, delivering timely, reliable service to ensure every customer's business success.

For more information about Borland's support services, visit the following Borland Web sites:





- <http://support.borland.com> - Borland Answers, the Borland Technical Support Web site, where registered users can find product upgrades as well as previous versions of a Borland product.
- <http://techpubs.borland.com> - The Borland Technical Publications Web site, where you can view and download PDF files that describe the installation, configuration, administration, and use of Borland products.
- <http://support.borland.com/download.php> - The Borland Product Trials Web site, where registered users can download free product trials.

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

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

## Documentation Conventions

The following table lists the documentation conventions that this guide uses.

Convention	Object Indicated, Identified, or Represented
Choose <b>File</b> ► <b>Exit</b> to...	A menu selection that precedes a submenu selection. The arrow separates the commands to be selected from subsequent menus. For example, the phrase <i>Choose <b>File</b> ► <b>Exit</b></i> means to choose <b>File</b> from the menu bar and then to choose <b>Exit</b> from the resulting drop-down menu.
Fixed-space font	Code, file names, parameters, information that you need to type, and messages from the system.
<i>Italics</i>	Information that you replace with the names of your files, child folders, and so forth. Italics also emphasize words and identify the names of books.
<b>Bold</b>	UI controls and information that one must use exactly as shown.
[ ]	Optional syntax.
	Mutually exclusive choices.
 <b>Note:</b>	Supplemental information.
 <b>Tip:</b>	Information about alternative procedures or other helpful but nonessential information.
 <b>Important:</b>	Information that is essential to the completion of a task.
 <b>Caution:</b>	Actions that might result in a loss of data, or procedures that one must follow to avoid losing data.

# Installation Roadmap

Depending on your role, experience with StarTeam, and what products you are installing, use the appropriate section below as a guide for the installation process you need to follow.

## Roadmap for Upgrading

If you are an existing StarTeam user, please note that some products have special upgrade considerations and instructions:

- StarTeam Server
- StarTeamMPX, specifically StarTeam Cache Agent

For these products, go to the various chapters in this manual for each product to review upgrading instructions:

Upgraded Product	See...
StarTeam Server	<a href="#">Installing StarTeam Server on Windows</a> on page 17
StarTeam Cache Agent	<a href="#">Installing a Cache Agent</a> on page 57

## Roadmap for StarTeam Clients

For information about installing the StarTeam clients, see [Installing StarTeam Clients](#) on page 41.

## Roadmap for Borland StarTeam Server Administrators

If you are the administrator for Borland StarTeam or perhaps the IT Administrator, you install these StarTeam products on the systems indicated below:

Install this product	On this system...	See...
StarTeam Server	The computer to be used as the StarTeam Server; this computer must be accessible to all StarTeam clients.	<a href="#">Installing StarTeam Server on Windows</a> on page 17
StarTeam Workflow Designer and StarTeam Extensions	StarTeam administrator's workstation.	<a href="#">Installing StarTeam Workflow Extensions</a> on page 67
StarTeam Notification Agent	Usually on the same computer as the StarTeam Server.	<a href="#">Installing StarTeam Notification Agent</a> on page 72
StarTeamMPX Services (Message Broker)	On the StarTeam Server computer and possibly in each major geographic location, depending on how you use StarTeamMPX and StarTeam Cache Agent. You might install on a	<a href="#">Installing the Message Broker</a> on page 56

Install this product	On this system...	See...
	network-near computer instead of the StarTeam Server computer.	
StarTeamMPX Cache Agent	One Cache Agent per to serve as the root Cache Agent on the same computer as the StarTeam Server or on a computer network near to it. Also, one remote Cache Agent in each major geographic location, usually on the same computer as the remote Message Broker. Multiple instances can be run.	<a href="#">Installing a Cache Agent</a> on page 57
Borland LDAP Quickstart Manager	StarTeam administrator's workstation.	ST_LDAPInstall.pdf - available on the Borland Technical Publications Web site at: <a href="http://techpubs.borland.com/starteam/">http://techpubs.borland.com/starteam/</a>
StarTeam Layout Designer	StarTeam administrator's workstation.	<a href="#">Installing StarTeam Layout Designer</a> on page 65

You can download these Borland StarTeam products from the Borland web site at:

[http://www.borland.com/downloads/download\\_starteam.html](http://www.borland.com/downloads/download_starteam.html)

## StarTeam Integration Roadmap

StarTeam Integrations are downloaded from the Borland web site at:

[http://www.borland.com/downloads/download\\_starteam\\_integrations.html](http://www.borland.com/downloads/download_starteam_integrations.html)

After you download the installation executable, go to the appropriate manual and follow the installation instructions.



# Installing StarTeam Server on Windows

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 Requirements for a New Installation](#) on page 20
- 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. See [Upgrading to Borland StarTeam 2009](#) on page 21

## About 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. The primary client most often used is the StarTeam Cross-Platform Client which supports Windows, Solaris, and Linux operating systems.

Other clients use other means to access the server. For example, StarTeam Web Client can access the server through Internet Explorer. StarTeam integrations access StarTeam Server from their respective IDE applications such as Microsoft Visual Studio and platforms such as Eclipse.

Access to StarTeam Server can be local or remote—by way of 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, refer to the extensive online help.

## System Requirements for StarTeam Server

Borland recommends installing StarTeam Server on a dedicated application server, and installing the database on a separate server unless you are using Microsoft SQL Server 2005 Express 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 sections show the minimum and recommended hardware for the computer on which you deploy the StarTeam Server application and database. Although specific processor speeds are listed, you should always use the fastest available CPU to maximum performance.

## Supported Operating Systems

The following operating systems are supported for this release of StarTeam Server:

- Microsoft Windows Server 2003 SP2 (32-bit)
- Microsoft Windows Server 2003 R2 SP2 (32-bit)
- Microsoft Windows Server 2008 (64-bit)
- Red Hat Enterprise Linux 5 Server (32-bit)

 **Note:** You cannot install a 64-bit Windows StarTeam component on a 32-bit Windows system. The installer will return an error upon attempting to install the Java VM.

## Supported Databases

The following databases and ODBC drivers have been tested and are supported for StarTeam Server:

Supported Database	CPU	Version	ODBC Version
Microsoft SQL Server 2005 Express <sup>1</sup>	x86 (32-bit)	2005 (SP3)	SQL Native Client 2005 9.00.4035 (32-bit and 64-bit)
Microsoft SQL Server 2005	x86	2005 (SP3)	SQL Native Client 2005 9.00.4035 (32-bit and 64-bit)
Oracle 10R2	32-bit	10.02.00.04	10.02.00.04
Oracle 11g	32-bit	11.01.00.06	11.01.00.06
Oracle 10R2 Client	32-bit and 64-bit	10.02.00.04	10.2.0.4.0
Oracle 11g Client	32-bit and 64-bit	<ul style="list-style-type: none"> <li>• 11.01.00.06 (32-bit)</li> <li>• 11.01.00.06 Client patch 14 (64-bit)</li> </ul>	11.01.00.06

<sup>1</sup>You can install Microsoft SQL Server Express as part of the StarTeam Server installation.

Use the following default passwords in the installer:

- sa: StarTeam123
- StarDraw: StarDraw123

The other database products must be purchased from the appropriate vendor. For more information, see [Database Server System Requirements](#) on page 19

## StarTeam Server and SQL Express on the Same Computer

When SQL Server Express is used, the database typically resides on the same computer as the corresponding StarTeam Server application. The following hardware recommendations for a joint StarTeam Server/SQL Server Express 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.

The following table lists suggested system configuration requirements if you are using SQL Server Express and StarTeam Server on the same computer.

Number of Seats	Recommended Configuration
less than 50	32-bit dual core machine with 4GB of RAM
50 – 100	32-bit quad core machine with 4-8GB of RAM



**Note:** SQL Server Express is not recommended for configurations serving more than 100 registered users.

## StarTeam on a Separate Computer

The following hardware recommendations apply when the StarTeam Server application is executing on a different computer than the database server. They are based on the number of peak users (maximum concurrent users during peak periods)—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 Peak Users	Recommended Configuration
less than 100	32-bit, dual-core systems with 4GB of memory
100 - 200	32-bit, quad-core systems with 4-8GB of memory
more than 200	64-bit, quad-core systems with 8-16GB of memory

## Database Server System Requirements

The following recommendations apply to the database server when it is not on the same computer as the StarTeam Server. The number of peak users is the maximum number of concurrent users during peak usage periods.

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

Number of Peak Users	Hardware Configuration	Database Requirements
less than 100	Computer with a dual core processor and 4GB of RAM	Minimum: Microsoft SQL Server Express 2005 SP2  Recommended: <ul style="list-style-type: none"> <li>Oracle 10g R2 (10.2.0.4.0) and 11g (11.1.0.6.0)</li> <li>Microsoft SQL Server 2005 SP2</li> </ul>
100 - 200	Minimum: Computer with quad processors and 4 GB of RAM  Recommended: Minimum configuration plus RAID system	Minimum and recommended: <ul style="list-style-type: none"> <li>Oracle 10g R2 (10.2.0.4.0) and 11g (11.1.0.6.0)</li> <li>Microsoft SQL Server 2005 SP2</li> </ul>
more than 200	Minimum: Any high-performance Enterprise Server with quad processors and 4-8 GB of RAM  Recommended: Minimum configuration plus RAID system	Minimum and recommended: <ul style="list-style-type: none"> <li>Oracle 10g R2 (10.2.0.4.0) and 11g (11.1.0.6.0)</li> <li>Microsoft SQL Server 2005 SP2</li> </ul>

## Third-Party Software Requirements

StarTeam Server uses Sun Microsystems Java Virtual Machine 1.6.0\_13 which is automatically installed at C:\Program Files\Borland\Java\Sun1.6.0\_13.

The StarTeam Cross-Platform Client installer runs the Sun tzupdater program on the Sun JRE (1.6.0\_13) installed with this release. The tzupdater program changes the JRE to provide better DST (Daylight Savings Time) information for Eastern, Mountain, and Hawaiian time zones. It also deletes three JRE files from the lib/zi folder (if they are there): EST, HST, MST.

Adobe Acrobat Reader is needed to read the StarTeam manuals which delivered in Adobe's Portable Document Format (.pdf), and can be viewed with version 7.0 or later of Adobe's free Acrobat Reader. You can download the latest version of the Acrobat Reader from Adobe's web site at <http://www.adobe.com>.

## Large Memory Support

On 32-bit Windows systems, you can use 4GT RAM tuning to enable the StarTeam Server application to utilize 3 GBs of memory. To enable this feature, you must add the /3GB switch to the Boot.ini file. For information about setting this switch, see:

<http://msdn2.microsoft.com/en-us/library/aa366521.aspx>

On 32-bit Windows, you should also be aware of the maximum page file size, which can affect memory allocation when multiple applications are run on the same computer. See the article:

<http://support.microsoft.com/kb/237740>

You should also be aware of Page Table Entry (PTE) limitations when the /3GB switch is used. See:

<http://support.microsoft.com/default.aspx?scid=kb;EN-US;311901>

## 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. Keyword expansion and EOL conversion should work for all "ASCII-based" encodings, which include UTF-8, Cp1252, and so on. For the various UTF-16 encodings, StarTeam currently performs EOL conversion, but does not expand keywords.

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

## Pre-installation Requirements for a New Installation

Before you install StarTeam Server:

1. Make sure your computer system meets the minimum requirements. For more information, see [System Requirements for StarTeam Server](#) on page 17.
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. You must set video settings on the computer on which you install StarTeam Server to 256 colors or higher.
4. Unless you plan to use only SQL Server Express, 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. See [Database Server System Requirements](#) on page 19 for more information about supported databases.



**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 SQL Server Express, the default database for StarTeam, it is typically installed along with StarTeam Server on the same computer. If you install from the DVD, you will have multiple copies of SQL Server Express. One is enough; the installation provides at least two because you may already have an application using SQL Server Express on the computer where 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 SQL Server Express comes with StarTeam Server as the default database, Borland 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 SQL Server Express with the SQL Server 2005 Management Studio Express that is included.

7. Because StarTeam Server can be used with any UTF-8 character set, the code page 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 SQL Server Express databases, see [Understanding the Encoding Differences](#) on page 75.
  - For Oracle databases, [Database Character Set and StarTeam Server](#) on page 92.

## Upgrading to Borland StarTeam 2009

If you have used previous releases of StarTeam Server, you must upgrade each of your server configurations after installing the new release. The upgrade process varies depending upon:

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

Your upgrade to StarTeam Server 2009 might require more steps than previous StarTeam Server upgrades. Be sure to allow time for those steps.

## Upgrading Your Current StarTeam Server Patch Level

To determine if a patch is required before you upgrade, contact Borland Technical Support at: <http://support.borland.com>.

# Preparing for an Upgrade

Before upgrading, you should do the following:

- Perform test upgrades.

Borland strongly recommends running test upgrades against copies of current production databases.

- Create an upgrade schedule.

Plan your server upgrade when it will inconvenience the smallest number of users. A server configuration cannot be running during some of the steps you take before and during the upgrade. You may want to plan the server upgrade 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. Depending on the size of your database and whether you must convert files before upgrading, you might need to schedule several downtimes, perhaps a series of consecutive weekends. For example, you might schedule one weekend for the conversions and one for vault verification. If you allow a few weekends for the upgrade process, be aware that you can continue to use your server configuration on the older release in production between the steps, but make backups before and after each of these steps to prevent loss of data.

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 client installed. Unless specifically stated, StarTeam clients for a given release work with that StarTeam Server release, one release back, and one release forward. When an older client works with a newer server, the client cannot access new features. For example, the older client does not have any new menu commands.

- 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 important steps in the upgrade process.

## Overview of the Upgrade Process

The following table provides an overview of the upgrade process. See the following sections for more information.

Old Release	New Release	Upgrade Procedure
2008 2008 Release 2	2009	<ol style="list-style-type: none"><li>1. Back up your StarTeam repositories and other server files.</li><li>2. Install StarTeam Server 2009.</li><li>3. If necessary, upgrade or migrate your database to a version supported by StarTeam Server 2009.</li><li>4. Follow the instructions for upgrading from StarTeam 2008/2008 R2 to StarTeam Server 2009.</li></ol>

## Requirements for an Upgrade

This section describes the steps that you follow to upgrade to Borland StarTeam Server 2009, elaborating on the table provided in [Overview of the Upgrade Process](#) on page 22 and providing references to related sections for more detailed information.

Before upgrading to Borland StarTeam 2009, you need to:

1. Review the pre-installation issues for a new installation to determine whether any of them apply to you. See [Pre-installation Requirements for a New Installation](#) on page 20.
2. You can upgrade to StarTeam Server 2009 only from StarTeam Server 2008 or 2008 Release 2. If you are on an earlier release, take the steps necessary to upgrade from that release to StarTeam Server 2008 or 2008 Release 2. See the appropriate installation guides for details. Be sure to also install the latest patches. You can find information about the latest patches at <http://support.borland.com>.
3. Back up your StarTeam repositories and other server files. See the documentation for the release of StarTeam Server that you currently have installed for information about what to back up.
4. You cannot install StarTeam Server while server configurations are running. Therefore, you must perform one of the following procedures.



**Note:** Be aware that these procedures use StarTeam Server 2009 as an example. Adjust the procedure to fit your server.

1. To shut down a server configuration that is not running as a Windows service:
  - a. Start the Server Administration tool, by selecting **Start > Programs > Borland StarTeam > StarTeam Server 2009 > StarTeam Server**. The Server Administration window opens.
  - b. Select the server configuration, and choose **Actions > Shut Down Server**. After you confirm that you want to shut down the server, the Status icon changes from “Running” to “Stopping” to “Ready”.
2. If your StarTeam Server configurations run as Windows services, you must stop those services and change the StarTeam execution mode:
  - a. Display the Windows Control Panel by selecting **Start > Settings > Control Panel > Administrative Tools > Services**. The **Services** window opens.
  - b. Locate the StarTeam Server configuration and click **Stop**.
  - c. After the service stops, close the Services dialog box and the Control Panel.
  - d. Stop the server configuration from being run as a service. For example, in StarTeam Server 2008, start the Server Administration tool by selecting **Start > Programs > Borland StarTeam > StarTeam Server 2008 > StarTeam Server**. The Server Administration window opens.
  - e. Select the server configuration, and choose **Actions > Set to Run as Service**. This menu command changes from checked to unchecked, indicating that the server configuration is no longer running as a service. The server configuration’s icon also changes.
5. Install StarTeam Server 2009 on the same computer as the version of StarTeam Server that you are upgrading from. For more information, see [Installing StarTeam Server](#) on page 26.
6. If necessary, upgrade or migrate your database manager (RDBMS) to a version supported by StarTeam Server 2009. For more information, see [Database Requirements for Upgrading](#) on page 23.
7. Upgrade your server configurations. For more information, see [Upgrading Server Configurations](#) on page 25.

## Database Requirements for Upgrading

If necessary, you must upgrade or migrate your database manager (RDBMS) to a version supported by the new version of StarTeam Server. For example, SQL Server 2000 is no longer supported. You must upgrade to SQL Server 2005 SP2 before upgrading to this release of StarTeam Server.

For more information about which databases are supported by StarTeam Server, see [System Requirements for StarTeam Server](#) on page 17.

## Upgrading from Microsoft SQL 2000 to SQL 2005 SP2

StarTeam Server 2009 does not support the Microsoft SQL 2000 Server. You must upgrade to Microsoft SQL Server 2005 SP2. The upgrade procedure is:

1. Restore the SQL 2000 database onto a SQL 2005 Server.
2. Upgrade the server configuration using StarTeam Server 2009.

## Upgrading from MSDE 2000 to SQL Server 2005 Express SP2

StarTeam Server 2009 does not support MSDE 2000. You can upgrade to Microsoft SQL Server 2005 Express SP2. The upgrade procedure is:

1. Backup the database from MSDE 2000.
2. Restore the MSDE database backup onto the SQL Server 2005 Express SP2.
3. Install StarTeam Server 2009.
4. Create a new ODBC DSN which points to the new database.
5. Copy over the existing server configuration.
6. Update the server configuration properties with the new database connection:
  1. In the Server Administration tool, select your configuration.
  2. Choose **Configuration Properties** from the **Server** menu.
  3. Go to the **Database Connection Information** page and update it with the new ODBC DSN created in step 4.
7. Upgrade the database using the StarTeam Server Administration tool:
  1. Select your configuration in the Server Administration tool.
  2. Choose **Upgrade** from the **Actions** menu, or if available, click **Upgrade Database** on the toolbar.
8. Start the server configuration.

## Upgrading from MSDE 2000 to Oracle 10g R2 or 11g

StarTeam Server 2009 does not support MSDE 2000. You can switch to a supported release of Oracle. The procedure is:

1. Migrate the MSDE database to Oracle 10.2.0.4.0 or 11.1.0.6.0.
2. Upgrade the server configurations using StarTeam Server 2009.

## 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
- Create any context
- Drop any context

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 on 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.


## Upgrading Server Configurations

After you install StarTeam Server 2009, every existing server configuration must be upgraded except for StarDraw. A new ready-for-2009 StarDraw should have been installed with the server.

To upgrade a server configuration and database:

1. From the Windows Start menu, select **Start ► Programs ► Borland StarTeam ► StarTeam Server 2009 ► StarTeam Server**. The Server Administration window opens.
2. Select the server configuration to be upgraded.  
Even if the status for the server configuration indicates “Ready”, the server configuration will not start successfully until you run the upgrade procedure.
3. Click the **Upgrade Database** toolbar button.

A series of dialog boxes 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. The upgrade process creates a log file in the server configuration's repository folder named DBUpgrade.locale.log where locale changes (for example, DBUpgrade.en-US.log).

 **Note:** The upgrade process requires one database connection to run. If the upgrade process 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.

## 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 Requirements for a New Installation](#) on page 20. If you are upgrading from a previous release of StarTeam Server, make sure that you also read [Upgrading Your Current StarTeam Server Patch Level](#) on page 21.

To install StarTeam Server:

1. Close all other Windows applications.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 1 DVD into your DVD drive. The Borland StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:

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

where x: is the drive letter of your DVD drive.

3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. Click **Install Products**.
4. Click **Server** and follow the installation instructions on the screen:
  1. For non-English versions, select a language from the drop-down list box, and then click **OK**.
  2. In the **Introduction** dialog box, read the information, and click **Next**.
  3. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept...**  
If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
  4. In the **Choose Install Set** dialog box:
    - a. Choose either **Typical**, **Compact**, or **Custom**.
      - **Typical** - Installs StarTeam Server with the most common options. Recommended for most users. Those options are Program Files, Sample Server Configuration, SQL Server Express, and the server's Online Documentation.
      - **Compact** - Installs StarTeam Server with the minimum required options. Only the Program Files and Online Help are installed. Use this if you will not be using SQL Server Express 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.
- Not install the StarDraw sample repository, for example, because it uses SQL Server Express and you are not installing that database application either.

b. For a Custom Install only, select (to install) or clear (to bypass) the available options:

- **StarTeam Server** - If you use the custom installation to install something that was not installed during a previous installation of StarTeam Server, you may choose to uncheck this check box. For example, suppose that in a previous custom installation, you elected to bypass the installation of SQL Server Express. To add that database without reinstalling all of the server program files, you would clear the StarTeam Server check box.
- **Client Setup** - The client setup files are not automatically part of the server installation. If you select the **Client Setup** check box, the StarTeam Cross-Platform Client installer 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.
- **SSE 2005** - SQL Server Express is a variant of Microsoft SQL 2005 offered by Microsoft at no charge, as long as you comply with their stipulations. SSE2005\_ST 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 might not be interested in having the SQL Server Express files added to the server's computer.
- **Sample server configuration** - Clear this check box if you do not want to install StarDraw. Installing the StarDraw sample server configuration for this release will not overwrite an existing StarDraw configuration. However, the StarDraw server configuration in the StarTeam 2009 `starteam-server-configs.xml` file will refer to the new StarDraw server configuration.
- **StarTeam Toolbar** - Installs the StarTeam Toolbar which remembers passwords so that logging on is easier.

c. Click **Next**.

5. In the **Choose Install Folder** dialog box, click **Choose** to browse for the location to be used as the installation folder. (The default location is C:\Program Files\Borland\StarTeam Server 2009.)
6. Use the **MPX Options** dialog box to make changes to the MPX profiles used by your server configurations.

If this is the first time that the StarTeamMPX Event and File Transmitters have been installed on this computer, the installer creates both Event Transmitter and File Transmitter template files using information from the MPX Options dialog box. These files are stored in a subfolder of the installation folder named EventServices.

The local host name and IP address are provided at the top of this dialog box for reference purposes.

By default, the Message Broker connection address uses your local computer's IP address.

- a. To specify a different Message Broker for Event Transmitter (and any clients that will use the default profile), change the proposed Message Broker connection address.

This address must use the format:


**tcp:host:port**

*host* is the host name or IP address on which the Message Broker operates

*port* is the TCP/IP port number (endpoint) with which the Message Broker accepts connections (5101 is the default).

- 👉 **Important:** When installing to a computer that has more than one NIC or multiple IP addresses, do not accept the default server address settings. You must manually enter the correct server IP address. When the installer detects multiple network addresses on the host computer, it sets

up default profiles that contain a server-address property whose syntax is invalid (because it contains multiple addresses).

 **Tip:** You can enter the connection information for more than one Message Broker. In the event that the Event Transmitter (or a client using the default profile) is unable to connect with the first Message Broker in the list, it will attempt to connect with the next Message Broker listed. Separate the address for each Message Broker with a comma (,). For example:  
tcp:HostA:5101,tcp:HostB:4999

**b.** Click Next.

See Chapter 4, “Managing the Transmitters” in the *StarTeamMPX Administrator’s Guide* for more information on creating and editing connection profiles.

7. In the **Choose Shortcut Folder** dialog box, use the default setting (that is, keep the **Other** option button set to C:\Documents and Settings\All Users\Start Menu\ Programs\Borland StarTeam\StarTeam Server 2009).
  8. In the **Pre-installation Summary** dialog box, review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the **Pre-installation Summary** dialog box, and click **Next**.
  9. If you already had SQL Server Express installed on your computer, enter the password, and click **Install**.
  10. In the **Install Complete** dialog box, click **Done**.
5. 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 2009  
This folder and its subfolders contains the executables, DLLs, and utilities used to run StarTeam Server. This folder also contains the StarTeam\_Server\_2009\_InstallLog.log file, which documents what happened during the installation process.
- Borland\StarTeam Server 2009\EventServices  
This folder contains the Event Transmitter and File Transmitter template files. It has a subfolder for each existing server configuration. Inside those subfolders are the MPXEventTransmitter.xml and FileTransmitter.xml files that will be used by the server configurations. In you have an Enterprise server, you may want to delete the FileTransmitterTemplate.xml and FileTransmitter.xml files. The file transmitter is part of Enterprise Advantage only.
- Borland\StarTeam SDK 11.0  
This folder contains the StarTeam SDK Runtime required for most clients to access StarTeam Server.

## Known Installation Issue

The SQL Server Express 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 HKEY\_LOCAL\_MACHINE\Software\Microsoft\Microsoft SQL Server key to “Full Control”, and then reinstall SQL Server Express. 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 using the StarTeam Server Administrator.

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

- [Using StarTeam with Microsoft SQL Server and SQL Server Express Databases](#) on page 74
- [Using StarTeam with Oracle Databases](#) on page 88

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 to start a server configuration.

2. Log on to that configuration using the StarTeam Server Administrator.

StarTeam Server comes with a free administrative user with the default name “Administrator” and the default password “Administrator”.

3. Configure the server using the StarTeam Server Administrator and, for some options, by editing the file `starteam-server-configs.xml`.

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

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

4. Create projects and views using the StarTeam Cross-Platform Client.
5. Add users and groups using the StarTeam Server Administrator.
6. Set the appropriate access rights for the server configuration, projects, and views using the StarTeam Server Administrator and the StarTeam Cross-Platform Client.
7. If desired, you can run the server configuration as a Microsoft Windows service using the StarTeam Server Administrator.

See the *Administering and Using StarTeam* 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:

- You must upgrade all existing StarTeam server configurations to use the latest release of StarTeam Server. For more information about upgrading server configurations and creating hives for the Native-II vault, see [Upgrading Server Configurations](#) on page 25.
- If you use StarTeamMPX, be sure to install the latest Message Broker and Cache Agents. For more information, see [Installing StarTeamMPX on Windows](#) on page 53.
- For more information about installation and upgrade instructions for StarTeam Workflow Extensions, see [Installing StarTeam Workflow Extensions](#) on page 67.

## 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 Sales for an extended evaluation key, or by contacting your Borland Account team if you have one.

Be sure to register the product or extend the evaluation period before it expires. Otherwise, when expired clients access a server configuration managed by StarTeam Server, no components (such as the file or change request component) are available. In the StarTeam Cross-Platform Client, 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 ► Borland StarTeam ► StarTeam Server 2009 ► StarTeam Server**. The Server Administration window opens.
2. Select **Help ► About** from the menu bar. The **About StarTeam Server** dialog box opens.
3. Select **License** in the left pane of the dialog box.
4. Click **Extend Evaluation**. The **Extend Evaluation** dialog box opens.
5. Enter the evaluation key, and click **OK**.
6. Close the **About StarTeam Server** dialog box.

## Licensing StarTeam Server

StarTeam Server can be run as an Enterprise or Enterprise Advantage server which have the following features:

- StarTeam Enterprise provides a basic feature set, including the StarTeam Server, the Cross-Platform and Web Clients, LDAP Quick Start Manager, StarTeamMPX (Event Transmitter and Message Broker), and SDK.
- StarTeam Enterprise Advantage has all the StarTeam Enterprise features plus the Requirement component, StarTeamMPX (File Transmitter and Cache Agent), and StarTeam Workflow Extensions which include alternate property editors (APEs) 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 the product license.

# Understanding Licensing

Licenses 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.

You can add 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.

 **Tip:** You can import user information from Active Directory or OpenLDAP and assign users to StarTeam license types or license server slips using Borland LDAP QuickStart Manager. Refer to the *Borland LDAP QuickStart Manager Administrator Guide* for more information. This guide is available on the Borland StarTeam installation DVD and on the Borland Technical Publications Web site at: <http://techpubs.borland.com/starteam/>.

If you have StarTeam named user licenses, you must assign them to specific users in the **User Manager** dialog box. Everyone else is assumed to have a StarTeam concurrent license. See the *Administering and Using StarTeam* guide for details.


If you have Borland licenses, users must be assigned to the correct slip in the **User Manager** dialog box, 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 StarTeam Licensing

StarTeam Server can be licensed in either of two ways:

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

 **Important:** BLS should be added to the windows firewall exceptions (on the BLS server machine) when BLS is started as a windows service. Otherwise StarTeam Server will be unable to connect to the BLS.

If StarTeam users attempt to access a server configuration that is managed by an unlicensed version of StarTeam Server, the tabs in the upper and lower panes of their StarTeam clients will not display.

Customers buy named Enterprise, concurrent Enterprise, named Enterprise Advantage, or concurrent Enterprise Advantage licenses for StarTeam Server. Any client can access any server as long as that server recognizes the user and has a license for that user. Customers usually choose just one method of licensing: StarTeam native licensing, Borland License Server licensing, or FLEXnet Publisher licensing, but combinations can be supported. Licensing is handled after the installation, either by setting up a licensing server and putting "slip" files in the StarTeam Server's \Licenses folder (a child of the server's installation folder) or by registering StarTeam native licenses using the StarTeam Server Administration tool.

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 (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 31

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.


You can add more named users 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.

 **Note:**

- 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 Enterprise after using an evaluation license which is for the Enterprise Advantage edition, the feature set changes. For example, if you created requirements during the evaluation and then license the server as anything other than Enterprise Advantage, the requirements tab disappears.

To license StarTeam Server from the Server Administration tool (native licensing):

1. From the Windows Start menu, select **Start > Programs > Borland StarTeam > StarTeam Server 2009 > StarTeam Server**. The Server Administration tool opens.
2. On the Server Administration menu bar, Select **Help > About**. The **About StarTeam Server** dialog box opens.
3. Select the License node in left pane of the dialog box.
4. If you have yet to enter a license, you must delete the evaluation key by selecting it from the right pane of the dialog box and clicking **Delete**.
5. Click **Register**. The **Server Registration** dialog box opens.
6. Enter the correct numbers in the **Serial Number** and **Access Key** text boxes. Serial numbers are case sensitive; access keys are not.
7. Click **OK**.
8. Close the **About StarTeam Server** dialog box.

 **Tip:** To license a version of StarTeam Server at the command prompt, enter the following:

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

## Using a License Server

You can use Borland License Server or FLEXnet Publisher with StarTeam Server. This gives you a choice between using a license server and using the StarTeam licensing found in this and earlier releases.

 **Note:**


- If you use a license server, users must use their network logon names as their StarTeam user names.
- A single license server can handle licenses for multiple StarTeam releases and for multiple product releases.
- FLEXnet Publisher configuration files on Linux 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 license type for that user is Unassigned, the user is not logged on and StarTeam Server returns an exception.

The administrator does the following to configure the license server:

1. Receives licensing information from Borland through email.

 **Tip:** If you need this information, contact your sales representative.

2. Installs the license server.

 **Note:** Refer to the documentation that is available with the license server.

3. Hosts the licenses sent by Borland. This involves accessing a Borland web site and downloading Borland license files (slip files).
4. Saves the slip files in the /License folder, a subfolder of the StarTeam Server installation folder.
5. Configures the license server for users. For more information, refer to the documentation that is available with the license server.
6. Uses the StarTeam Server Administration tool to:
  1. Change user names to network logon names.
  2. Assign users to specific licenses.

## 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 use the StarDraw 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 installer creates the Sample by performing the following actions:

- Copies the stardraw.mdf database into the StarTeam Server 2009\Samples\StarDraw\_SSE2005\Database folder.
- Copies sample files into the StarTeam Server 2009\Samples\StarDraw\_SSE2005\StarDraw\Archives folder and its subfolders.
- Creates an ODBC System DSN (Data Source Name) named StarDrawDB110.
- 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.

## Uninstalling StarTeam Server on Windows

StarTeam Server uses InstallAnywhere for installing and uninstalling. If you encounter one of the following Java VM errors when uninstalling this product on a Windows system (such as 2003 or XP Pro), you may need to install JRE 1.6.0\_13 or earlier from the Sun website.

Uninstall errors:

- *Can't launch executable. Could not find a suitable Java Virtual machine on your system.*
- *Windows error 3 occurred while loading the Java VM.*

# Installing StarTeam Server on Linux

This chapter explains how to install StarTeam Server on Linux.

## Migration Strategies


This section outlines the migration strategies to move StarTeam Server from Windows to Linux. Due to the complexity of the product, Borland recommends that you run the migration in a test environment and that you develop a backup strategy to deal with any unexpected errors.

The outline provides an experienced StarTeam administrator with the information needed to plan and run a StarTeam server migration from Windows to Linux.

To perform a migration, both servers, the source Windows server and the destination Linux server must not be in production use. From a hardware perspective, the Linux server must be configured to support the production environment. Both servers must be connected and configured so that files can be copied from the Windows server to the Linux server.

## Migrating from StarTeam 2008 Server for Windows to StarTeam 2009 Server for Linux

The StarTeam 2008 and 2008 R2 Servers for Windows support both Oracle and Microsoft SQL Server relational database management systems (RDBMS's), while StarTeam 2009 Server for Linux supports only Oracle. For more details about supported database platforms, see [System Requirements and Prerequisites](#) on page 36.

 **Important:** The following steps assume that the original Windows StarTeam configuration you are migrating uses an Oracle database. If you are migrating a StarTeam 2008/2008R2 for Windows configuration that uses SQL Server, you must first migrate it to Oracle using the steps specified in the *Migrating Server Configurations to Other Databases* topic of the StarTeam 2008/2008 R2 Server for Windows Help. After you successfully migrate your StarTeam Server for Windows configuration to an Oracle database, you can proceed with the following Windows to Linux migration steps.

To migrate from Windows to Linux:

1. Back up the current Oracle database (schema used for storing StarTeam 2008/2008 R2 Server for Windows metadata).  
Save this backup copy; do **not** recycle it.
2. Install StarTeam 2009 Server for Linux on the Linux machine.
3. Copy the configuration file and hive index files from Windows to the StarTeam 2009 Server for Linux installation folder.
4. Copy the vault, including the attachments, from the Windows server to the Linux Server.
5. Install the Oracle client on the Linux machine.  
Verify that the supported Oracle client versions for this release are installed.
6. Create a StarTeam user account on the Linux machine.
7. Establish Oracle connectivity between the Linux machine and the Oracle database currently used for storing StarTeam metadata.

8. Verify the database connectivity using SQL\*Plus.
9. Open the Server Tools, and choose **Help > About > License** to verify that the Server is licensed correctly.
10. Select the configuration, and choose **Server > Configuration** from the menu.
11. On the **General** tab, set the correct log file path.
12. Select the **Database Connection Information** tab, and click **Verify Connection** to verify the database connectivity.
13. Choose **Tools > Administration > Hive Manager** from Server Administration to update the hives. If there are multiple hives, ensure that all of them are set correctly.
14. Choose **Help > About > Info** from Server Administration to verify that the destination build number is greater than or equal to the source build on Windows. If the destination build number is greater than the source build number, choose **Actions > Upgrade**.  
  
This step upgrades the source database to the destination's build. Upgrade is **not** required when the source and destination builds are identical.
15. Verify that the upgrade log that gets created in the log file path directory is error free.
16. Back up the current Oracle database.  
Save this backup copy; do **not** recycle it.
17. Verify the upgrade process by starting the server with an Override and browsing to the **Attachments path** to reset the Attachments directory.  
Verify that the attachments from Windows are copied over to the Attachments directory.
18. Verify that the server log that gets created in the log file path directory is clean.



## Assumed Knowledge

Before installing and configuring StarTeam Server and StarTeamMPX Server components for Linux, the StarTeam administrator must be familiar with the following concepts and procedures:

- Creating and modifying relational databases
- Working with the features of their operating system, such as creating files, running executables, and managing access rights
- Basic configuration management concepts

For more information about installing StarTeamMPX on Linux, see [Installing StarTeamMPX on Linux](#) on page 62.

## System Requirements and Prerequisites

- Red Hat Enterprise Linux 5
  -  **Note:** Advanced platform storage, virtualization, and high availability features (Red Hat Global File System & Cluster Suite) are not supported.
- Oracle Client 10g Release 2 (10.02.00.04) for Linux x86
  -  **Note:** The Oracle database does not have to reside on the same machine as the StarTeam Server.
- JRE or JDK (Version 1.6.0\_13 or above)

# Pre-Installation Setup

This section provides information about pre-installation setup considerations for running StarTeam Server on Linux.

## Environment Variables

Prior to installing StarTeam Server or StarTeam Server components, set the following environment variables:

- `JAVA_HOME` environment variable to point to JRE or JDK 1.6.0\_13 or above
- `NLS_LANG=AMERICAN_AMERICA.WE8MSWIN1252`
- `ORACLE_HOME` to point to Oracle home directory
- `PATH=$ORACLE_HOME/bin:$JAVA_HOME/bin:$PATH:`

## Permissions


Run the following command as root to make the StarTeam Server user account a member of the Oracle group used to install the Oracle client:

```
/usr/sbin/usermod -a -G oinstall starteam_user_name
```

where `oinstall` is the default Oracle group name and `starteam_user_name` is the StarTeam Server user account.

# Installing StarTeam Server on Linux

1. Close all other applications.
2. Navigate to the directory that contains the downloaded files.
3. Run the binary file using the command `./server.bin`.

 **Note:** When installing or uninstalling on a non-Windows platform, specify the installed Java VM to use as a parameter when running the installer. This step is necessary because Java VMs for non-Windows operating systems are not bundled with the installers. If you experience any difficulties running the `./server.bin` command, add the parameter `LAX_VM` and specify the path to your VM. For example:  
`./server.bin LAX_VM /usr/java/latest/jre/bin/java.`

4. In the **StarTeam Server** splash screen, select the appropriate language and click **OK**.
5. In the **Introduction** dialog box, read the information and click **Next**.
6. If the `ORACLE_HOME` variable is not set in your environment, the *Get Oracle Path* dialog box will appear. Browse to or type the path to the Oracle client installation and click **Next**.
7. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the license agreement, click **I accept...**  
If you do not accept the license agreement, you cannot install the product.
  - c) Click **Next**.
8. In the **Choose Install Set** dialog box, select **Typical**, **Compact**, or **Custom**.

- **Typical** -- Installs StarTeam Server with the StarDraw sample server configuration and the StarTeam online documentation in PDF format.
  - **Compact** -- Installs StarTeam Server with the minimum required options. Select this option if you 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.
9. Click **Next**.
  10. For a custom installation only, the **Choose Install Set** dialog box will appear. Select (to install) or clear (to bypass) the check boxes for the available options.
    - **StarTeam Server** -- 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.
    - **Sample server configuration** -- Clear this check box if you do not want to install the StarDraw sample server configuration.
  11. Click **Next**.
  12. In the **Choose Install Folder** dialog box, click **Choose...** to browse to the installation folder (the default location is `/home/starteam/starteamserver2009`).
  13. Click **Next**.
  14. Review the information in the **Pre-Installation Summary** dialog box and click **Install**.
  15. In the **Install Complete** dialog box, click **Done** to quit the installer.

## Server Administration

Use the Server Administration application to configure and manage each StarTeam Server.

To start the Server Administration application, use the `./serveradmin.sh` command from the installation directory. The shell script sets up the shared library path `LD_LIBRARY_PATH` before starting the Server Administration application.

## SELinux

If SELinux is enabled in your system, you might receive a message like the following one when you start either the StarTeam Server or the Cache Agent, or when you invoke the `starteamserver` command line:

```
/root/starteamserver2008/libzlib.so: cannot restore segment prot after reloc: Permission denied
```

To avoid this problem, set the **SELinux Enforcement** mechanism to **permissive**.

If this approach is not an option for your organization, run the command `chcon -t textrel_shlib_t *.so` from each of the following directories:

- The StarTeam Server installation directory.
- `$ORACLE_HOME/lib`.
- `jrexx/lib/i386/client`, where `jrexx` is the java runtime environment (jre) used by the starteam server installation. If the server installation was performed by a root user, `jrexx` is installed in the directory `/opt/Borland/`. If the server installation was performed by a standard user, `jrexx` is installed in the home directory of the user.
- The StarTeam Cache Agent installation directory.

# StarDraw

Borland provides the sample database StarDraw with StarTeam Server. The StarTeam Server installation procedure:

- Creates the Samples directory and subdirectories under the installation directory and copies the sample repository files into them.
- Copies the Oracle export file `stardraw.dat` into the `install_dir/starteamserver2009/Samples/StarDraw_Repository/Database` directory.

## Restoring the StarDraw Database Backup File

To restore the StarDraw database backup file on the Oracle database machine:

1. If you have not already done so, create the following on the Oracle database machine:
  - A database instance that will host the StarDraw database. StarDraw can share the database instance with other databases.
  - A tablespace named `stardraw` on this instance. Following is a sample create tablespace command:  

```
Create tablespace stardraw datafile 'c:\stardraw.dbf' size 400m autoextend on next 10k maxsize 32767m extent management local
```
2. If StarTeam 2009 Server for Linux is on a different machine than your Oracle database, copy the file `stardraw.dat` to the database machine. Using SQLplus, create an Oracle virtual directory that points to the location of `stardraw.dat`. For example:

Windows	<ul style="list-style-type: none"><li>• <code>SQL&gt; create or replace directory test_dir as 'C:\stardraw_dir';</code></li><li>• <code>SQL&gt; grant read,write on directory test_dir to public;</code></li></ul> where <code>stardraw_dir</code> is the folder that contains the file <code>stardraw.dat</code> .
Unix	<ul style="list-style-type: none"><li>• <code>SQL&gt; create or replace directory test_dir as 'install_dir/starteamserver2009/Samples/StarDraw_Repository/Database';</code></li><li>• <code>SQL&gt; grant read,write on directory test_dir to public;</code></li></ul>

3. Run the following command (logged in as your Oracle user if your Oracle database is on Linux):

```
impdp system/password directory=test_dir dumpfile=stardraw.dat logfile=stardraw.log
```

where `password` is the password for the "system" Oracle schema user, and `test_dir` is the Oracle virtual directory created in step 2.

## Using the StarDraw Server Configuration

To use the StarDraw server configuration:

1. Give all StarTeam Server users read-write access privileges to the `Samples` directory and its subdirectories.
2. Start the Server Administration application.
3. Select the StarDraw configuration and choose **Server > Configuration Properties...**  
The StarDraw Properties dialog box appears.
4. In the **TNS service name** text box on the **Database Connection Information** tab, type the Oracle database instance name that hosts the StarDraw sample database.
5. Click **Verify Connection...** to verify the database connection.
6. Click **OK**.
7. In the Servers tree view in the left pane, select the StarDraw configuration and choose **Actions > Start with Override...** Browse to the **Attachments path**.  
The StarDraw server configuration starts.



**Note:** It may take the StarTeam Server several minutes to perform the startup tasks the first time a server configuration starts.



# Installing StarTeam Clients

This chapter explains how to install the StarTeam Cross-Platform Client on Windows and other platforms.

To learn to use the StarTeam Cross-Platform Client, refer to the PDF document *Administering and Using StarTeam* or the online help link to **StarTeam Help**, both of which are available from the **StarTeam Cross-Platform Client 2009 > Documentation** submenu.

## About the StarTeam Clients


StarTeam 2009 provides these client types:

Client	Provided for...
StarTeam Cross-Platform Client	Microsoft Windows Solaris Linux Other platforms This chapter describes how to install the StarTeam Cross-Platform Client on all of these systems.
StarTeam Web Client	All systems with Internet access.

## System Requirements for the StarTeam Cross-Platform Client

The StarTeam Cross-Platform Client can be installed on Microsoft Windows systems and any system that supports Sun Microsystems Java Virtual Machine 1.6.0\_13. The Cross-Platform Client has been tested on the following systems:

System Area	Requirement
Platforms (32-bit)	Windows XP Professional SP3 Windows Vista SP1 Solaris Sparc 10 Red Hat Enterprise Linux (WS) 5.1
Processor	32-bit dual core
RAM	2 GB minimum
Hard disk space	200 MB to install the application


System Area	Requirement
	 <b>Note:</b> Sufficient disk space is required for your working files. The amount will vary depending on your use of the product.
Display	SVGA, high color mode, 1024x768 Recommended resolution: 1280x1024 or more

## Before Installing a StarTeam Client

Before you install the StarTeam Cross-Platform Client, make sure your computer system meets the minimum requirements. For more information, see [System Requirements for the StarTeam Cross-Platform Client](#) on page 41

StarTeam 2009 supports compatibility between clients and servers which are either one release ahead or behind one another. This support is provided for your convenience in implementing your upgrades to the latest release. Some functionality may only be available in the latest release. You will achieve best performance by upgrading your clients and servers to the same release.

While some flexibility in client-server release combinations is allowed, StarTeam servers do not support connections from clients using an SDK older than StarTeam SDK 2006. This supported connection release will change in subsequent releases.

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

## Setting up Default Personal Options

The StarTeam installation program copies the `starteam-client-default-options.xml` (if it exists) to the `user_home\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 the StarTeam Cross-Platform 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 DVD.

To provide all users of the StarTeam Cross-Platform 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 Cross-Platform Client on only one computer.
4. Set the personal options. See the *Administering and Using StarTeam* manual for details.
5. Notice that you now have a file named `starteam-client-options.xml` in the user profile folder. On Windows XP, this is in the `C:\Documents and Settings\user\Application Data\Borland\StarTeam` folder.
6. Copy this file to the Client Setup folder.

7. Rename this file `starteam-client-default-options.xml`.
8. Instruct users to install the StarTeam Cross-Platform Client.

## Installing the StarTeam Cross-Platform Client

You can install the StarTeam Cross-Platform Client on Windows or other operating systems such as Solaris and Linux systems.

### Installing on Windows

To install the StarTeam Cross-Platform Client on Windows:

1. Close all running Windows applications.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 4 DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:  

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

where x: is the drive letter of your DVD drive.
3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. On the StarTeam 2009 main menu, click **Install Products**.
4. Click **Cross-Platform Client** and follow the installation instructions on the screen.
  1. For non-English versions, select a language from the drop-down list box, and then click **OK**.
  2. In the **Introduction** dialog box, read the information, and click **Next**.
  3. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept....** If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
  4. In the **Choose Install Set** dialog box:
    - a. 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 *Administering and Using StarTeam* manual.
  - **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 tool to use on a client workstation. When installed as part of the client, you can do only remote server administration. Click **Next**.
5. If you selected a Custom install set, select or clear the check boxes for the parts you do and do not want to install. The custom options are:
    - Application
    - StarTeam Toolbar
    - Server Administration
  6. In the **Choose Install Folder** dialog box, click **Choose** to browse for the location to be used as the installation folder. The default location is `C:\Program Files\Borland\StarTeam Cross-Platform Client 2009`.
  7. In the **Choose Shortcut Folder** dialog box, use the default setting (that is, keep the **Other** option button set to `C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeam Cross-Platform Client 2009`).
  8. In the **Pre-installation Summary** dialog box, do one of the following:
    - Review the settings and click **Install**.
    - Review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the **Pre-installation Summary** dialog box and click **Install**.
  9. In the **Install Complete** dialog box, click **Done**.

The StarTeam Cross-Platform Client is installed in the specified folder, and the `StarTeam_Cross-Platform_Client_2009_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 DVD, please select the OS specific installation. If installing from a compressed package please decompress the install package.
2. Run the `StarTeamCP.bin` file with the parameter `LAX_VM` to invoke the installer. For example,
 

```
./StarTeamCP.bin LAX_VM /LAX_VM /usr/java/latest/jre/bin/java.
```

  - 👉 **Important:** You must specify which VM to use when you installing on non-Windows operating systems since the installers are Java based, and are not bundled with a VM. This also applies to StarTeam Server, EventTransmitter, MPX and Cache Agent (for example, `server.bin`, `ca.bin`, `mpxserver.bin`, and `mpxservices.bin`).
3. Follow the directions on your screen.
4. After installation, run the `StarTeamCP` executable located in the `user_home_directory\StarTeam CP_2009` folder, or use the shortcut with the same name located in the directory selected 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.
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.

## Automating Client Installations

A silent install allows you to do multiple client installations at one time. You can run the client installer in a "silent" mode from the command line by adding the -i parameter to the command. Alternatively, you can point to a text file called Installer.properties which includes the directive INSTALLER\_UI=silent.

The Installer.properties file can also specify parameters to pass to the installer, such as the destination client installation directory, the root directory for the SDK installation, which components to install, and whether or not a restart is needed.

## Performing a Silent Install


 **Note:** It is important to install the StarTeam client using a user that is an administrator on the computer.

You can run the client installer in a "silent" mode using one of the following commands:

1. `starteamcp.exe -i silent`  
Use default values for the destination directory, installation type, and so on.
2. `starteamcp.exe -f (path to installer.properties)`  
Uses customized parameters specified in the installer.properties file.


Or

`starteamcp.exe`

 **Note:** If the file installer.properties is placed in the same directory as the installer, the file must include at least one line that is `INSTALLER_UI=silent`.

The following table provides other possible silent installation options.

Identifier	Description
<code>USER_INSTALL_DIR=c:\\Program Files\\Borland\\ StarTeam Cross-Platform 2009</code>	Client installation path.
<code>ST_SDKROOT=c:\\Program Files\\Borland</code> <code>RESTART_NEEDED=NO</code>	SDK installation path. Turn off reboot upon installation.
<code>USER_REQUESTED_RESTART=NO</code> <code>CHOSEN_INSTALL_SET=Compact</code>	Turn off reboot upon installation. Compact leaves off the Toolbar and Admin component

 **Important:** Double backslashes are required in path specifications.

## Additional Customizations

StarTeam Server list and personal option files may be included with the silent installations.

These files are located in the local settings of the currently logged on user (for example, `C:\Documents and Settings\user_ID\Application Data\Borland\StarTeam`). Once these files contain the desired values (use a StarTeam Client to add the servers and set the personal options), copy these files to the same location as the `Installer.properties` file. Rename these files as shown in the table below.

Original File Name	Description	Installation File Name
<code>starteamservers.xml</code>	StarTeam Servers at a site	<code>server</code>
<code>starteam-client-options.xml</code>	StarTeam personal options	<code>starteam-client-default-options.xml</code>

The `starteam-client-default-options.xml` file will be copied to the User local home settings (for example, `C:\Documents and Settings\user_home\Application Data\Borland\StarTeam`). If the `starteam-client-default-options.xml` file is included, the installation will overwrite this file if it already exists. This file will be used as a template for future new instances of the `starteam-client-options.xml` file in the user specific local settings. Existing instances of `starteam-client-options.xml` will not be affected.

The server file will be copied to the installation user's local settings if the `starteamservers.xml` does not already exist. The `starteam-server.xml` file will not be overwritten. This will only affect the server settings of the user who was currently logged on to the computer when the installation occurred.

## Uninstalling the Client on Windows

The StarTeam Cross-Platform Client uses InstallAnywhere for installing and uninstalling. If you encounter one of the following Java VM errors when uninstalling this product on a Windows system (such as 2003 or XP Pro), you may need to install JRE 1.6.0\_13 or earlier from the Sun website.

Uninstall errors:

- "Can't launch executable. Could not find a suitable Java Virtual machine on your system."
- "Windows error 3 occurred while loading the Java VM."

## Installing StarTeam Integrations

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

[http://www.borland.com/downloads/download\\_starteam\\_integrations.html](http://www.borland.com/downloads/download_starteam_integrations.html)

# Installing and Configuring the StarTeam Web Server


The StarTeam Web Server provides Web Client access to one or more StarTeam servers through supported browsers.

This chapter explains how to install the StarTeam Web Server and specify the StarTeam servers, item types, projects, and views that will be available to Web Client users.

## System Requirements

The following table shows the system requirements for the StarTeam Web Server and the StarTeam Web Client.

System Area	Requirement
Web Server Platform	Microsoft Windows Server 2008 (64-bit)
Web Client Browser	<ul style="list-style-type: none"><li>• Microsoft Internet Explorer 7</li><li>• Firefox 3</li></ul>
Processor	64-bit quad core
RAM	8 GB minimum
Hard disk space	200 MB to install the application

 **Note:** You cannot install a 64-bit Windows StarTeam component on a 32-bit Windows system. The installer will return an error upon attempting to install the Java VM.

## Performance and Scalability

A maximum of 200 active concurrent Web Client users can be supported on one instance of the Web Server. If no more than 200 users are actively performing operations in the Web Client, the number of concurrent users may be higher. To support more than 200 active concurrent users, put them on another instance of the Web Server.

An instance of the Web Server can provide access to thirty or more StarTeam views. The number of views supported is impacted by the size of the views and the amount of memory provided to the process. To increase the amount of memory made available to the Web Server, see [Changing the Memory Allocated to the Web Server](#) on page 51.

# Installing the StarTeam Web Server

The OS user must have local administrative privileges to install and run the StarTeam 2009 Web Server on Windows Server 2008.

1. Close all running Windows applications.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 2 DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:  

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

where x: is the drive letter of your DVD drive.
3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. On the StarTeam 2009 main menu, click **Install Products**.
4. Click **Web Client**.
5. For non-English versions, select a language from the drop-down list box, and then click **OK**.
6. In the **Introduction** dialog box, read the information, and click **Next**.
7. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the license agreement, click **I accept...**  
If you do not accept the license agreement, you cannot install the product.
  - c) Click **Next**.
8. In the **Choose Install Folder** dialog box, click **Choose...** to browse to the desired location for the installation folder.  
The default Installation location is `C:\Program Files\Borland\StarTeam 2009 Web Server`. The following options are provided.
  - To change the default location, click **Choose...**
  - To restore the default location, click **Restore Default Folder**.Click **Next** to continue.
9. In the **Choose Shortcut Folder** dialog box, specify where you would like to create product icons. The default location is `C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Borland StarTeam\StarTeam 2009 Web Server`.  
Click **Next**.
10. In the **Pre-installation Summary** dialog box, review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the **Pre-installation Summary** dialog box and click **Next**.
11. In the **Install Complete** dialog box, click **Done**.



## Logging on to the StarTeam Web Server

1. From the Windows Start Menu, choose **Borland StarTeam ► StarTeam 2009 Web Server ► Start Web Server**.  
The Tomcat Console opens and starts the Web Server.
2. Open a supported browser and enter the following URL in the address bar:  
`http://<server>:<port>/BorlandStarTeam/BorlandStarTeamAdmin.jsp`.  
The Web Server logon page opens.
3. When logging on for the first time, type **Administrator** in both the **User name** and **Password** fields.
4. Click **OK**.  
The Administrator Panel page opens.

## Changing the Web Server Administrator User Name and Password


1. In the Administration Panel, type the new user name in the **User name** text box.
2. Type the new password in the **Password** text box and again in the **Confirm Password** text box.
3. Click **Save**.

## Adding a StarTeam Server to the Web Server

The StarTeam 2009 Web Server can only connect to a StarTeam 2009 Server that supports MPX, and MPX must be running.

Perform the following steps to add a StarTeam Server to the **Available Servers** folder tree and specify the Server's item types, projects, and views that will be available to Web Client users.

1. Type a unique, easy-to-remember description in the **Description** text box. It is not case-sensitive and can contain colons (:).

 **Note:** This description is the name used in the Web Client.

2. Type the Server's computer name or IP address in the **Address** text box.
3. Type the endpoint (TCP/IP port number) associated with the protocol in the **Port** text box.
4. Type your Server **User name** and **Password** in the appropriate text boxes.


**Note:** The specified user must have administrative rights on the StarTeam Server.

5. Click **Add Server to Selected Servers**.

The StarTeam Server will be added to the **Available Servers** folder tree with its check box checked by default, as only checked entries can be made available to Web Client users.

**Note:** Web Server Administrators can make a StarTeam Server unavailable to Web Client users by unchecking its check box.

6. Under the Server's **Available Types**, check the item types to be made available to Web Client Users.

7. Under the Server's **Available Projects**, check the StarTeam projects to be made available to Web Client Users.
8. Under each project's **Available Views**, check the views to be made available to Web Client Users.
  -  **Tip:** The number of available views will affect the amount of memory needed for the Web Server process. If the Web Server is running out of memory, set the `disable_sdk_sessions` value to true in the file `<Install Directory>/apache-tomcat-5.5.27/webapps/BorlandStarTeam/config/server.xml`. This will enable the Web Server to start without loading the available views, and you can then decrease the configuration size.
9. Click **Save**, click **OK** on the confirmation dialog box, then restart the Web Server.

## Removing a StarTeam Server from the Web Server

1. In the **Available Servers** folder tree, highlight the Server you want to remove.
2. Click **Remove Selected Server**.
3. Click **Save**.
4. Click **OK** on the confirmation dialog box, then restart the Web Server.

## Accessing the StarTeam Web Client

To access the StarTeam Web Client, open a supported browser and enter the following URL in the address bar: `http://<server>:<port>/BorlandStarTeam/BorlandStarTeam.jsp`.

The Web Client Start page opens.

## Setting Up the Web Server as a Windows Service

The following parameters can be changed in the file `StarTeamService.bat` before creating the Windows Service.

- `--JvmMx` - The maximum memory provided to the Web Server. The value should be specified in MB; the default value is 4096.
- `--Startup` - Determines if the Windows Service will start up automatically when the OS starts up, or manually. The default value is auto and can be changed to manual.

To set up the StarTeam Web Server as an automatic Windows Service, run `<Install Directory>/apache-tomcat-5.5.27/bin/StarTeamService.bat`.

To remove the StarTeam Web Server as a Windows Service, run `<Install Directory>/apache-tomcat-5.5.27/bin/service.bat remove`.

## Enabling SSL Using a Valid Certificate

You must have a valid certificate available in order to enable SSL.

1. Edit the `<Install Directory>/apache-tomcat-5.5.27/conf/server.xml` file in the follow ways.

- Comment out the following xml block to disable the standard http access.

```
<Connector port="8080" maxHttpHeaderSize="8192"
  maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
  enableLookups="false" redirectPort="8443" acceptCount="100"
  connectionTimeout="20000" disableUploadTimeout="true" />
```

- Uncomment the following xml block to enable https access and add the attributes.

```
<Connector port="8443" maxHttpHeaderSize="8192"
  maxThreads="150" minSpareThreads="25" maxSpareThreads="75"
  enableLookups="false" disableUploadTimeout="true"
  acceptCount="100" scheme="https" secure="true"
  keystoreFile="<path to certificate>" and keystorePass="<password>"

  clientAuth="false" sslProtocol="TLS" />
```

2. Start the Web Server and direct users to `https://<hostname>:8443/BorlandStarTeam`.

## Changing the Session Timeout Value

The Session Timeout value is used to determine when a user's Web Client session becomes invalid due to inactivity. When a session times out, the user must be reauthenticated in order to continue to use the session.

To change the default Session Timeout, the Administrator should perform the following steps.

1. Navigate to the file `BorlandStarTeam.xml` in the directory `<Install Directory>/apache-tomcat-5.5.27/conf/Catalina/localhost`.
2. Change the `maxInactiveInterval` attribute. This value is read in seconds and defaults to 1800 seconds (30 minutes).

## Changing the Memory Allocated to the Web Server

The amount of memory the Web Server can consume while running directly affects the amount of StarTeam views that can be supported on the Web Server. To increase the memory provided to the Web Server in order to support larger StarTeam configurations, the Administrator should perform the following steps before starting the Web Server.

1. Navigate to the file `setenv.bat` in the directory `<Install Directory>/apache-tomcat-5.5.27/bin`.
2. Increase the `JAVA_OPTS=-Xmx` value.

## Setting the Log Output Level


The logging level that the Web Server uses when updating the log files in the directory `apache-tomcat-5.5.27/logs` is specified in the file

apache-tomcat-5.5.27/shared/classes/logging.properties. The following levels can be set in the file.

- OFF
- SEVERE
- WARNING
- INFO (default)
- CONFIG
- FINE
- FINER
- FINEST
- ALL

## Running Apache Tomcat Native

The Web Server does not ship with the library `tcnative-1.dll` for running Apache Tomcat Native. Testing of the Web Server on the supported platform did not show any benefit to running the Web Server with native enabled. If you wish to run the Web Server with native enabled, the 64-bit library `tcnative-1.dll` can be downloaded from the Apache Software Foundation Web site at <http://tomcat.apache.org/>. Place the file in the directory `<Install Directory>/apache-tomcat-5.5.27/shared/lib`, and restart the Web Server to pick up the change.


 **Note:** When downloading the file `tcnative-1.dll`, please be sure to download the version of the file that matches your 64-bit architecture (AMD64 or Intel IA64) and Internet Protocol (IPv4 or IPv6).

## Specifying Web Client Embedded Item Details

The records in the Web Client Item Table display a subset of the item property values defined by the selected filter. Embedded item details can be used to reveal item properties not shown in the Item Table.

The default embedded item details for each item type are as follows.


- **Task** - Task Name, Notes
- **Requirement** - Name, Description
- **CR** - Synopsis, Description, Fix
- **File** - Description
- **Topic** - Title, Description

 **Note:** Administrators can also create custom html details templates and place them in the directory `<Install Directory>/apache-tomcat-5.5.27/shared/BorlandStarTeam/config`. If a custom html details template is found for the current view and type, that template will be used to render the embedded details. The html details template format supported by the Web Client is the same format supported by the StarTeam Cross-Platform Client. Refer to the *StarTeam Cross-Platform Client Help* for more information.

# Installing StarTeamMPX on Windows

This chapter provides a brief overview of StarTeamMPX and explains how to install each of the StarTeamMPX components on supported Windows systems. StarTeamMPX Event Transmitter and Message Broker are included with the StarTeam Enterprise package. You must license the StarTeam Enterprise Advantage package to use StarTeamMPX File Transmitter and Cache Agent.

The *StarTeamMPX Administrator's Guide* provides comprehensive information about StarTeamMPX including its architecture, configuration, and usage.

 **Note:** If you are reading these instructions in a non-English language, note that this product and what appears on the screen during installation are not translated into non-English languages.

## About StarTeamMPX

StarTeamMPX is a framework for publish/subscribe messaging that improves the performance of the clients and extends the scalability of server configurations. It contains both common and application-specific components that together provide advanced messaging capabilities.

With StarTeamMPX, changes to the server configuration's repository are broadcast in an encrypted format to StarTeam clients and StarTeam Cache Agents through a publish/subscribe channel. For example, the StarTeam Event Transmitter broadcasts encrypted messages about changes to objects, such as change requests, and the StarTeam File Transmitter broadcasts archive files.

Caching modules automatically capture events that a client subscribes to. This reduces the client's need to send refresh requests to the server and improves client response times for the user.

StarTeam Cache Agents can be installed and configured to cache files in a network-near location to speed up check-out operations. They reduce the distance that the data travels at the time of the client check-out operation. While StarTeam Cache Agents are StarTeamMPX clients that rely on messages and files transmitted by the Event Transmitter and File Transmitter, they also serve other StarTeamMPX clients as they check out files. The File Transmitter and StarTeam Cache Agent are available with StarTeam Enterprise Advantage licensing packages only.

## StarTeamMPX Components

Most of StarTeamMPX components described below are installed separately. The transmitters are included in the StarTeam Server installation.

- **StarTeamMPX Transmitters** - There are two types of transmitters: an Event Transmitter and a File Transmitter.
- **Event Transmitter** - The Event Transmitter receives events of interest to StarTeam clients. The Event Transmitter formats the event information it receives into XML messages, encrypts them, and publishes them to a Message Broker. Messages are assigned topics so that they can be distributed to clients interested in the accompanying content (project/view, item type, event type, etc.). The Event Transmitter

is installed on the same computer as StarTeam Server. It must have the same build number as the server.

- **File Transmitter** - The File Transmitter broadcasts file contents and cache objects to one or more Remote Cache Agents by way of a Message Broker. Like the Event Transmitter, the File Transmitter is installed on the same computer as StarTeam Server and have the same build number as the server.
- **StarTeamMPX Message Broker** - The Message Broker is a publish/subscribe messaging engine that broadcasts messages to subscriber components on a topic basis. It is a stand-alone process that can run on a separate computer to off load network processing overhead in high-volume environments. The Message Broker broadcasts messages to each of its recipients using TCP/IP messaging.

The Message Broker receives encrypted XML messages from the Event Transmitter or encrypted files from the File Transmitter, and forwards them to the appropriate clients. Information is sent from a Message Broker directly to clients that have subscribed to that Message Broker by way of a TCP/IP connection profile.

- **StarTeamMPX Cache Agent** - Cache Agent adds persistent file caching. Each MPX-enabled server configuration can have one Root Cache Agent. One or more Remote Cache Agents can be distributed throughout the enterprise.

A Root Cache Agent operates directly on the server configuration's vault and cache. A Root Cache Agent handles requests forwarded from Remote Cache Agents for missing files and provides "catch-up" assistance for Remote Caches after network or process outages.

Cache Agent-aware StarTeam clients can fetch files from any available Cache Agent. By using "network-near" Cache Agents, clients can improve file check-out performance and reduce their demands on the StarTeam Server. This frees server resources for additional tasks and users.


## System Requirements for StarTeamMPX

StarTeam Server must be installed prior to installing StarTeamMPX. StarTeamMPX transmitters have the same system requirements as the StarTeam Server because they are part of that component.

### Supported Operating Systems

The following operating systems are supported for the Message Broker and Cache Agent components with this release of StarTeamMPX:

- Microsoft Windows Server 2003 SP2 (32-bit)
- Microsoft Windows Server 2003 R2 SP2 (32-bit)
- Microsoft Windows Server 2008 (64-bit)
- Red Hat Enterprise Linux 5 Server (32-bit)

 **Note:** You cannot install a 64-bit Windows StarTeam component on a 32-bit Windows system. The installer will return an error upon attempting to install the Java VM.

### Hardware Recommendations

Number of Peak Users	Recommended Configuration
less than 100	32-bit, dual-core systems with 4GB of memory
100 - 200	32-bit, quad-core systems with 4-8GB of memory

Number of Peak Users	Recommended Configuration
more than 200	64-bit, quad-core systems with 8-16GB of memory

For the Message Broker, the number of peak users is typically lower than the number of peak users connected to the StarTeam server since multiple Message Brokers are used in medium-to-large deployments. The number of peak users connected to a Cache Agent is significantly lower because Cache Agents are only used in short bursts. As a result, less hardware resources are typically required to support the Message Broker and Cache Agent compared to the StarTeam Server. Moreover, for a given geographic location, the Message Broker and Cache Agent are typically deployed on the same machine.


## StarTeamMPX Configurations

Where you install StarTeamMPX components depends on your user distribution, networks, and purposes.

See the *StarTeamMPX Administrator's Guide* which is available on the **Borland StarTeam ► StarTeam Server 2009 ► Documentation** menu for more information about configuring StarTeamMPX.


## Installing StarTeamMPX Overview

StarTeamMPX Message Broker and Cache Agent are installed separately from StarTeam Server. Installation instructions for each of these products is included in the following sections.

 **Important:** You must specify which VM to use when you install StarTeamMPX Message Broker and Cache Agent on non-Windows operating systems since the installers are Java based, and are not bundled with a VM.

For example: `./mpxserver.bin LAX_VM /usr/java/latest/jre/bin/java`

StarTeamMPX Event and File Transmitters are automatically installed with the StarTeam Server in case you will use them at some point in time. The next section discusses generating transmitter XML files.

 **Note:** The Event Transmitter is included with the standard Enterprise license. You must have a StarTeam Enterprise Advantage license to use the File Transmitter.

Access the StarTeamMPX Setup program for Message Broker and Cache Agent from the StarTeam Installation DVD. You must install StarTeam Server before you can install StarTeamMPX.

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

## Generating Transmitter XML Files

When the transmitters are installed as part of a StarTeam Server installation, the transmitter template files (MPXEventTransmitterTemplate.xml and MPXFileTransmitterTemplate.xml) are installed in the EventServices folder, a subfolder of the server's installation folder.

When existing configurations are in place at the time of the installation, a configuration-specific set of transmitter XML files is created automatically for each existing configuration. The configuration-specific XML files (MPXEventTransmitter.xml and MPXFileTransmitter.xml) are created by copying the XML template files to a configuration-specific subfolder of the EventServices folder. For example, the StarDraw sample server configuration's existence results in a subfolder of the EventServices folder named StarDraw.


When a new configuration is defined, a set of configuration-specific XML files may be generated automatically depending on how the configuration is created:

- If you create a new configuration by using the Server Administration tool, a configuration-specific `MPXEventTransmitter.xml` and `FileTransmitter.xml` will be created automatically. The utility does this by copying the current XML template files to the appropriate configuration-specific subfolder of the `EventServices` folder and removing “Template” from their names.
- If you create a new configuration by using StarTeam Server’s command-line interface, no configuration-specific XML files are created. If you want the new configuration to be MPX-enabled, you need to create the configuration-specific subfolder of the `EventServices` folder. The configuration subfolder’s name must be the same as the configuration name. Then manually copy the XML template files to the appropriate configuration-specific subfolder of the `EventServices` folder and remove “Template” from their names. Edit the new XML files as needed.

See the section “Understanding Connection Profiles” in the *StarTeamMPX Administrator’s Guide* for more information on configuration-specific and XML template files.

## Installing the Message Broker

The Message Broker can be installed on the same computer where the StarTeam Server is installed, or it can be installed on a different computer. At least one Message Broker must be installed in your environment to provide messaging services for an MPX-enabled StarTeam Server. As described in *Understanding Clouds* in the *StarTeamMPX Administrator’s Guide*, you may want to install more than one Message Broker to meet your needs.

 **Note:** Note that the Setup program assumes the Message Broker will use the default port number 5101. If you want to use a different endpoint, edit the file `STMessageBroker68.ini` after the setup program completes. For more information, see *Changing the Endpoint of a Message Broker* in the *StarTeamMPX Administrator’s Guide*.

To install the Message Broker on Windows:

1. On the computer where you wish to install the Message Broker, log on as the administrator or as a user with administrative privileges.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 1 (32 bit) or 2 (64 bit) DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:
 

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

 where x: is the drive letter of your DVD drive.
3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. In the **Introduction** dialog box, read the information, and click **Next**.
4. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the License Agreement, select **I accept...**  
If you do not accept the license agreement, you cannot install the product.
  - c) Click **Next**.
5. In the Service Start Options dialog box, select the appropriate radio button to specify whether you want to install the Message Broker as an automatic or a manual service, and click **Next**.



6. In the **Choose Install Folder** dialog box, click **Choose...** to browse to the desired location for the installation folder.

The default Installation location is `C:\Program Files\Borland\Message Broker 6.8`. The following options are provided.

- To change the default location, click **Choose...**
- To restore the default location, click **Restore Default Folder**.

Click **Next** to continue.

7. In the **Choose Shortcut Folder** dialog box, specify where you would like to create product icons. The default location is `C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeamMPX Message Broker 6.8`.

Click **Next**.

8. In the **Pre-installation Summary** dialog box, review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the **Pre-installation Summary** dialog box and click **Next**.

9. In the **Install Complete** dialog box, click **Done**.

10. Follow the instructions on the screen.

Because the Message Broker is installed as a service, you can choose whether to install it as an automatic or manual service.

## Upgrading the Message Broker

Multiple releases of Message Broker can run on the same machine if each uses its own port. You cannot start both the 6.7 and 6.8 Message Brokers at the same time if they are on the same machine and listening on the same port. Doing so causes a race condition, and the second one to start will fail.

If you installed a Message Broker from the StarTeam 2006 or 2008 release, you have Message Broker 6.7. The Message Broker that ships with StarTeam versions 2008 Release 2 or 2009 is Message Broker 6.8. All Message Broker versions are interoperable; consequently, you can upgrade them one at a time.

To upgrade to Message Broker 6.8, we recommend the following procedure:

1. Install Message Broker 6.8 on the same machine as Message Broker 6.7, letting the installer set it up as an auto-start service.
2. If you have customized the file `STMessageBroker67.ini`, copy it to the Message Broker 6.8 installation folder with the new name (`STMessageBroker68.ini`) so that you can reuse that file with Message Broker 6.8.
3. Stop Message Broker 6.7, and set the corresponding service (StarTeam Message Broker 6.7) to **Manual** so it does not automatically start again.
4. Start Message Broker 6.8.
5. Determine that everything is working as expected, and then uninstall Message Broker 6.7.

## Installing a Cache Agent


The following sections cover upgrade issues, pre-installation issues, and explain how to install a Cache Agent.

You need to install Cache Agent only once on any computer that will use one or more Cache Agents. You run as many instances of Cache Agent as you need, each with a different and appropriate XML file.

The default XML file for a Root Cache Agent is `RootCAConfig.xml`. The default XML file for a Remote Cache Agent is `RemoteCAConfig.xml`. As you install Cache Agent, you also set up an initial Cache Agent configuration file, so you must select either a Root or Remote Cache Agent during the installation. This does not stop you from creating another configuration file for the same or a different type of Cache Agent later on that same computer.

## Upgrading a StarTeam Cache Agent

The StarTeam Cache Agent (Cache Agent) can be installed on a machine with a previous release.

 **Note:** The goal is to transition StarTeam server configurations from the older to the newer release.

The Cache Agent can be run as either an application or a service. You can run multiple Cache Agent instances on the same machine, but each needs its own configuration file.

By default, the installation creates a manual Cache Agent service for your convenience. If the installation detects that a Cache Agent service already exists (for example, from a previous release), the installation notifies you about that fact and does not set up a service.

- If at least one Cache Agent service already exists (for example, `HKEY_LOCAL_MACHINE\SYSTEM\ControlSet001\Services\CacheAgentService` already exists), a new Cache Agent service is *not* created. Instead, the installer displays a warning message that an older Cache Agent service was detected and a new Cache Agent service is not created. The warning advises you to:
  - If the existing Cache Agent service is no longer needed, uninstall the previous Cache Agent release or use the previous release to run "CacheAgentService -unregister" from a console window to unregister the existing Cache Agent. Note that this is optional—the older release can remain, including the services created for it.
  - Create an appropriate configuration file for each Cache Agent service desired for the release just installed. You can reuse configuration files from the previous release of Cache Agent by copying them to the new location. You might need to rename them for use with multiple Cache Agent instances.
  - Using the release just installed, run "CacheAgentService - register" from a console window for each Cache Agent service desired. Note that the "-name" parameter is used to define a unique service name for each new service created.
- If an older Cache Agent is installed but a Cache Agent service is not currently registered, the installer creates a new service just as if the previous release was not there.
- If an older Cache Agent is installed, you are not asked whether you are installing a root or remote cache agent and are not asked for any configuration information. The sample files (`SampleRemoteCacheAgentConfig.xml` and `SampleRootCacheAgentConfig.xml`) are installed (as always), but neither the `RootCAConfig.xml` nor the `RemoteCAConfig.xml` file is created.

See the *StarTeamMPX Administrator's Guide* available on the **Borland StarTeam ► StarTeam Server 2009 ► Documentation** menu for more information about configuring Cache Agents.

## Before Installing a StarTeam Cache Agent

When installing a Cache Agent that will be used as a root Cache Agent, StarTeam Server must be installed first. After you have installed StarTeam Server, you can install the other components in any order.

The following is a recommendation for installing StarTeamMPX components:

1. Install StarTeam Server. The Event and File Transmitters are installed automatically with StarTeam Server.
2. Install the StarTeam Message Broker. You can run multiple instances of the Message Broker.

3. Install the Root Cache Agent. You need to install it only once per machine, even when that machine has more than one server configuration. You run multiple instances to support multiple StarTeam Server configurations. Each server configuration must have its own root cache agent instance.
4. Install the Remote Cache Agent. This is the same installer as the Root Cache Agent. You typically install and run a single Message Broker on remote machines.

The Remote Cache Agents can use the same Message Broker as the Root Cache Agent, but multiple Message Brokers are suggested for distributed teams, especially over distances. In practice, Remote Cache Agents usually use remote Message Brokers.

Before you start a Root Cache Agent:

1. Start each server configuration that you will use with Cache Agent. Doing this causes the File Transmitter to generate or upgrade a CacheJournal.dat file for each configuration.
2. (Optional) Modify the `MaxJournalAge` parameter's value in the `FileTransmitter.xml` file to represent the maximum number of days for which records will be kept within the Journal file. The pre-configured value is 180 days. Note that the Journal file is "trimmed" of expired records (those whose age exceeds the `MaxJournalAge` value) only when the Server application is started for the associated configuration.

## Installing a Cache Agent

Whether a Cache Agent operates as a Root Cache Agent or a Remote Cache Agent is determined solely by its configuration. The installation of the Cache Agent is similar in both cases except for consideration of the computer on which to install it:

- The Root Cache Agent requires access to the vault for the server configuration that it services. Consequently, it can be installed on the same computer as the StarTeam Server. Alternatively, if it can be installed on a separate computer to prevent the Root Cache Agent from competing for CPU or network I/O with the corresponding server configuration. However, this requires it to access the vault files and the CacheJournal.dat file by way of a shared network drive, so use this option only when a high-speed network is in place.
- Remote Cache Agents should be installed in each geographic location that can benefit from improved file check-out performance. One approach is to install a Cache Agent in each network environment that local users can access over a highspeed LAN. (For example: Install two Remote Cache Agents at headquarters, one each for engineering and QA, a third Remote Cache Agent at the Chicago office, and a fourth at the London office.) Another beneficial use of the Cache Agent is to install an instance on a computer dedicated to a check-out intensive application such as a build utility. There is no limit on the number of Cache Agents that can be installed throughout an enterprise. However, keep in mind that each Cache Agent requires access to a Message Broker. For more information about clouds, see "Understanding Clouds" in the *StarTeamMPX Administrator's Guide*.

To install a Root Cache Agent or Remote Cache Agent:

1. On the computer where you wish to install the Cache Agent, log on as the administrator or as a user with administrative privileges.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 1 (32 bit) or 2 (64 bit) DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:

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

where x: is the drive letter of your DVD drive.

3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. Click **Install Products**.
4. Click **Cache Agent**. This selection lets you install either the Root Cache Agent or a Remote Cache Agent.
5. Follow the installation instructions on the screen:
  1. For non-English versions, select a language from the drop-down list box, and then click **OK**.
  2. In the Introduction dialog box, read the information, and then click **Next**.
  3. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept....** If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
6. Choose an installation folder. The default installation path is `C:\Program Files\Borland\StarTeamMPX Cache Agent 2009`.
7. Choose a Root Cache Agent or Remote Cache Agent installation.
8. For a Root Cache Agent installation, you are prompted to enter:

**Message Broker Address:** Enter the host name or address of the Message Broker that the Root Cache Agent will use to communicate with other Cache Agents and clients. This value can optionally include the protocol prefix (tcp:) and port number suffix (:1234). The port number must be provided if the Message Broker is not using the default port of 5101. For example: `tcp:MBServer1:5123`

**StarTeam Server Cache folder:** Click **Choose** to browse to the folder path that contains the vault cache of the server configuration that the Cache Agent will serve. This path must be relative to the computer on which the Root Cache Agent is being installed.
9. For a Remote Cache Agent installation, you are prompted to enter:

**Message Broker Address:** Enter the host name or IP address of the Message Broker that the Remote Cache Agent will use to receive file content messages and to communicate with other Cache Agents and clients. A Remote Cache Agent should be configured to use a Message Broker and the tcp: address.

This option is described in more detail in “Configuring a Remote Cache Agent” in the in the *StarTeamMPX Administrator’s Guide*.
10. In the Choose Shortcut Folder dialog box, use the default setting (that is, keep the **Other** option button set to `C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeamMPX Cache Agent 2009`).
11. In the Pre-installation Summary dialog box, review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the Preinstallation Summary dialog box and click **Install**.
12. In the Install Complete dialog box, click **Done**.

## After Installing Cache Agent

Depending upon your environment, you may have to perform additional steps to use the Cache Agent:

For any Cache Agent:

- The Cache Agent installer installs both CacheAgentService.exe and CacheAgentApp.exe so you can run Cache Agent as either a service or a console application.
- CacheAgentService is configured as a “Manual” start service. You may want to change the start type to “Auto” so that the Cache Agent will start automatically thereafter. To change the start type to “Auto”, use the Control Panel Services interface or unregister and re-register the service. See “Running Cache Agent on Windows” in the *StarTeamMPX Administrator’s Guide* for more information.

If you installed a Root Cache Agent:

- The default configuration file for a Root Cache Agent is RootCAConfig.xml. It may need to some modification. See “Configuring a Root Cache Agent” in the *StarTeamMPX Administrator’s Guide*.

If you installed a Remote Cache Agent:


- The default configuration file for a Remote Cache Agent is RemoteCAConfig.xml. It needs some modification for your environment. It is configured with a sample configuration file that “tiers” the Cache Agent to the Root Cache Agent for the StarDraw sample configuration (even if it does not actually exist). See “Configuring a Remote Cache Agent in the *StarTeamMPX Administrator’s Guide*.”

## Uninstalling MPX Components

Each time you install a StarTeamMPX component, an Uninstall program shortcut is created for that component. The Uninstall programs enable you to remove the Message Broker and/or Cache Agents from your computer. Your StarTeam Server installation, server configurations, and repositories are unaffected.

The uninstall program for the server leaves the transmitter template files and each configuration's transmitter XML files intact. A subsequent installation will not overwrite these files.

The StarTeamMPX Services Uninstall programs leave the STMessageBroker68.ini file intact. If you later reinstall these services, this file will not be replaced by the new installation.

 **Note:** StarTeamMPX uses InstallAnywhere for installation and uninstallation. If you encounter one of the following Java VM errors when uninstalling this product on a Windows system (such as 2003 or XP Pro), you may need to install JRE 1.6.0\_13 or earlier from the Sun website.

Uninstall errors:


- "Can't launch executable. Could not find a suitable Java Virtual machine on your system."
- "Windows error 3 occurred while loading the Java VM."


# Installing StarTeamMPX on Linux

This chapter explains how to install StarTeamMPX on Linux. For a brief overview about StarTeamMPX, see [Installing StarTeamMPX on Windows](#) on page 53.

## Installing StarTeam Message Broker on Linux

1. Close all other applications.
2. Navigate to the directory that contains the downloaded files.
3. Run the binary file using the command `./mpxservices.bin`.

 **Note:** When installing or uninstalling on a non-Windows platform, specify the installed Java VM to use as a parameter when running the installer. This step is necessary because Java VMs for non-Windows operating systems are not bundled with the installers. If you experience any difficulties when running the command `./mpxservices.bin`, add the parameter `LAX_VM` and specify the path to your VM. For example: `./mpxservices.bin LAX_VM /usr/java/latest/jre/bin/java`.

 **Note:** If the OpenSSL toolkit (`openssl097a-0.9.7a-9.i386.rpm`) and the Compatibility standard C++ libraries (`compat-libstdc++-33-3.2.3-61.i386.rpm`) are not installed, the StarTeamMPX Services installer will prompt you to install them before continuing with the installation of StarTeam Message Broker.

4. In the **Introduction** dialog box, read the information and click **Next**.
5. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the license agreement, click **I accept...**  
If you do not accept the license agreement, you cannot install the product.
  - c) Click **Next**.
6. In the **Choose Install Folder** dialog box, browse to or type the path to the installation folder (the default location is `/opt/messagebroker68`).
7. Click **Next**.
8. In the **Choose Link Folder** dialog box, specify whether to create links in your home folder, to create them in another location, or to not create them at all.
9. Click **Next**.
10. Review the information in the **Pre-Installation Summary** dialog box and click **Install**.
11. In the **Install Complete** dialog box, click **Done** to quit the installer.

# Installing a StarTeamMPX Root or Remote Cache Agent on Linux

1. Close all other applications.
2. Navigate to the directory that contains the downloaded files.
3. Run the binary file using the command `./ca.bin`.



**Note:** When installing or uninstalling on a non-Windows platform, specify the installed Java VM to use as a parameter when running the installer. This step is necessary because Java VMs for non-Windows operating systems are not bundled with the installers. If you experience any difficulties when running the command `./ca.bin`, add the parameter `LAX_VM` and specify the path to your VM. For example:  
`./ca.bin LAX_VM /usr/java/latest/jre/bin/java.`

4. In the **Introduction** dialog box, read the information and click **Next**.
5. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the license agreement, click **I accept...**  
If you do not accept the license agreement, you cannot install the product.
  - c) Click **Next**.
6. In the *Choose Install Folder* dialog box, browse to or type the path to the installation folder (the default location is `/home/starteam/cacheagent2009`).
7. Click **Next**.
8. In the **Choose Cache Agent Type** dialog box, select the Cache Agent type you wish to install and click **Next**:
  - **Root Cache Agent** -- Each StarTeam configuration can have one Root Cache Agent. You can install it on the same machine as StarTeam Server or on a separate machine that has access to the configuration's vault cache folder.
  - **Remote Cache Agent** -- You can install any number of Remote Cache Agents throughout your organization. Typically, one Remote Cache Agent must be installed in each geographic region. Each Remote Cache Agent is usually chained or tiered to one or more Root Cache Agents.
9. If the Cache Agent type is *Root*, use the **Get Root Cache Agent Settings** dialog box to perform the following steps:
  1. Specify the address of the Message Broker to be used.
  2. Browse to or type the path to the repository of the StarTeam server configuration. The default location is `/home/starteam/starteamserver2009/Samples/StarDraw_Repository/`.
  3. Click **Next**.If the Cache Agent type is *Remote*, use the **Get Remote Cache Agent Settings** dialog box to perform the following steps:
  1. Specify the address of the Message Broker to be used.
  2. Specify the StarTeam server configuration GUID.
  3. Click **Next**.
10. In the **Choose Link Folder** dialog box, specify whether to create links in your home folder, to create them in another location, or to not create them at all.

**11.** Click **Next**.

**12.** Review the information in the **Pre-Installation Summary** dialog box and click **Install**.

**13.** In the **Install Complete** dialog box, click **Done** to quit the installer.

In order to start the Cache Agent, set the environment variable `LD_LIBRARY_PATH` to point to the lib folder of the Oracle home directory.



# Installing StarTeam Layout Designer

This section explains how to install the StarTeam Layout Designer.

To learn to use the StarTeam Layout Designer, refer to the PDF document *Administering and Using StarTeam* or the online help link to StarTeam Help, both of which are available from the **StarTeam Cross-Platform Client 2009 ► Documentation** sub-menu.

## About StarTeam Layout Designer


The StarTeam Layout Designer provides the ability to customize forms within the application. Custom forms can be used to show custom properties, hide default properties that are not of interest to your organization, or rearrange the interface to more closely meet your organization's requirements.

For example, you can design a Change Request Properties dialog box that has custom fields on its first (or perhaps only) tab. You usually install StarTeam Layout Designer on the workstations of administrators who will design custom property editors.

Property editors designed with Layout Designer are usually used only with StarTeam Enterprise because they cannot be used with the custom workflow rules created with StarTeam Workflow Designer which is provided with StarTeam Enterprise Advantage.

## System Requirements for the StarTeam Layout Designer: Overview

The StarTeam Layout Designer can be installed on Microsoft Windows systems that support Sun Microsystems Java Virtual Machine 1.6.0\_13. The system requirements are listed below:

System Area	Requirement
Platforms (32-bit)	Windows XP Professional SP3 Windows Vista SP1 Red Hat Enterprise Linux Desktop (WS) 5.1
Processor	32-bit dual core
RAM	2 GB minimum
Hard disk space	200 MB to install the application  <b>Note:</b> Sufficient disk space is required for your working files. The amount will vary depending on your use of the product.
Display	SVGA, high color mode, 1024x768

## Installing StarTeam Layout Designer

To install the StarTeam Layout Designer on Windows:

1. On the computer where you wish to install the StarTeam Layout Designer, log on as the administrator or as a user with administrative privileges.
2. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 4 DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:  

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

where x: is the drive letter of your DVD drive.
3. Press **Enter**. The StarTeam 2009 installation main menu opens.
3. Click **Install Products**.
4. Click **Administrative Tools**.
5. Click **StarTeam Layout Designer**.
6. Follow the installation instructions on the screen:
  1. For non-English versions, select a language from the drop-down list box, and then click **OK**.
  2. In the Introduction dialog box, read the information, and then click **Next**.
  3. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept....** If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
  4. Choose an installation folder. The default installation path is C:\Program Files\Borland\StarTeam Layout Designer.
  5. In the **Choose Shortcut Folder** dialog box, use the default setting (that is, keep the **Other** option button set to C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeam Layout Designer).
  6. In the Pre-installation Summary dialog box, review the settings. If you want to make changes, click **Previous** one or more times so that you can change the installation options. Then return to the Pre-installation Summary dialog box and click **Install**.
  7. In the Install Complete dialog box, click **Done**.


The StarTeam Layout Designer is installed in the specified folder.

# Installing StarTeam Workflow Extensions

This chapter explains how to install the following StarTeam Workflow Extensions components:

- StarTeam Extensions
- StarTeam Workflow Designer
- Borland StarTeam Notification Agent

See the *StarTeam Extensions User's Guide* for complete information about how to configure and use these Workflow Extensions.

 **Note:** If you are reading these instructions in a non-English language, note that this product and what appears on the screen during installation are not translated into non-English languages.

## About StarTeam Workflow Extensions

Workflow is a comprehensive term to explain a process by which members of an organization complete complex tasks. Whether your organization uses formalized or ad hoc workflows, there is a process or pattern by which work is accomplished. StarTeam Workflow Extensions automates workflows by providing automatic notification of responsibility, by presenting only appropriate options at each step in the process, and by assuring that items are acted upon in a timely manner.

The StarTeam Workflow Extensions are a collection of .jar and other files that are updated more frequently than the regularly scheduled application releases. However, customizing the application to meet your workflow needs requires other features, some of which are installed as part of the Server and Client applications, and others that come with the product but must be installed separately at locations that meet your needs.

The products, tools, and features StarTeam Workflow Extensions provides to set up and maintain workflow processes are described in the following sections.

## About StarTeam Extensions

**StarTeam Extensions** includes:

- Alternate Property Editors (APEs) and the Java beans that make them easy to create. APEs, which are forms written in a standard programming language such as Java, replace the standard properties dialog boxes that come with each component of the application.
- A workflow engine that reads the appropriate .Workflow.xml file and populates the APEs.
- A toolbar that can be used with the Cross-Platform Client to start applications that add new features to the application.
- Various other utilities and libraries written in Java.

StarTeam Extensions files are released with the Application Server as part of each new release or service pack. There are also interim releases of StarTeam Extensions. In either case, you separately install the runtime files, documentation, and samples.

The default installation folder is `C:\Program Files\Borland\StarFlow Extensions`, but Borland recommends copying these files to a different folder for each server configuration that runs on the same Server.

For example, you might use `C:\config_name\StarFlow Extensions`. In this way, you can ensure that each configuration's StarFlow Extensions project has different working folders.

Even if you currently run only one server configuration, it is wise to plan ahead. This also ensures that, when you upgrade or reinstall for some other reason, you are unlikely to overwrite any StarTeam Extensions files that you are using.

See the section, "Using StarTeam Extensions" in the *StarTeamMPX Administrator's Guide*.

## About StarTeam Workflow Designer

Workflow Designer outputs .xml files that formalize the steps in a workflow, specifies who will be notified about each step and about exceptions, and so on. Each file is named `item_type.Workflow.xml` and can be used for an entire project or individual views within that project. The StarTeam Extensions workflow engine and Notification Agent read from these files.

You must use Workflow Designer to develop custom workflows. The resulting `.Workflow.xml` file can be deployed in StarTeam installations as long as the most recent version of StarTeam Extensions is also installed. Workflows written using the releases of the Workflow Designer prior to version 5.2 (which were tightly coupled to Microsoft Outlook) must be re-saved using the new Workflow Designer only if you plan to use Notification Agent or if you want to make changes to the workflow.

Workflow Designer can be installed separately on any workstation that has a Cross-Platform Client.

With the help of Borland consultants, it can be installed on the customer toolbar that can be used with the Cross-Platform Client.

## About StarTeam Notification Agent

StarTeam Notification Agent monitors server configurations to determine who needs to be notified about work to be performed and about exceptions that occur in the workflow process.

It must be installed and set up separately. It is usually installed on the computer that runs the Server, but it can be installed anywhere. When StarTeam Notification Agent is not on the same computer as the StarTeam Server, the two computers' clocks must be synchronized. The StarTeam Notification Agent's time cannot be ahead of StarTeam Server's time.

## System Requirements for StarTeam Workflow Extensions

StarTeam Extensions and StarTeam Workflow Designer have the same system requirements as the StarTeam Cross-Platform Client. For more information, see [System Requirements for the StarTeam Cross-Platform Client](#) on page 41.

StarTeam Notification Agent has the same system requirements as StarTeam Server. For more information, see [System Requirements for StarTeam Server](#) on page 17.

It is good practice to install StarTeam Server 2009 prior to installing StarTeam Notification Agent.

## StarTeam Extensions Installation Strategies

StarTeam Extensions can be installed in segments. You can install the runtime files, documentation, and samples where they are most needed or easiest to work with.

The default installation folder is `C:\Program Files\Borland\StarFlow Extensions`, but Borland recommends copying the runtime files to a different folder for each server configuration. For example, you might use `C:\config_name\StarFlow Extensions`. In this way, you can ensure that each configuration's StarFlow Extensions project has different working folders.


After installing Extensions Runtime:

- Copy the StarFlow Extensions folder and its subfolders (Client, Projects, and Utilities) to a unique location for each server configuration.
- Use the StarFlow Extensions folder (in its new location) to create a project named StarFlow Extensions in each server configuration.
- Add the files in these folders to the StarFlow Extensions project—except for the `extensions.pdf`, `install_en.pdf`, and the `readme_en.html` files in the StarFlow Extensions folder.

If you are already using StarTeam Extensions, check in these files as new revisions of existing files and add any new files.

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 workflows. If the StarTeam server configuration does not already have a StarFlow Extensions project, you need to add one and all users need to have read access to the files in it. Administrators can have read/write access.

Even if you currently run only one server configuration, it is wise to plan ahead. This also ensures that, when you upgrade or reinstall for some other reason, you are unlikely to overwrite any files in the StarFlow Extensions project that you have modified on your workstation and have not checked in.

 **Caution:** If you are using the default installation folder for any server configuration's StarFlow Extensions project, Borland recommends that you check in everything you need that is not current prior to reinstalling or upgrading StarTeam Extension files.

## Installing StarTeam Extensions

The menu mentioned in the following installation procedure is for Windows installations. For non-Windows platforms, use the files `Extensions-2009-LINUX.tar.gz` or `Extensions-2009-Universal.tar.gz` on the DVD.

To install the StarTeam Extensions:

1. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 4 DVD into your DVD drive.

The StarTeam Launcher window should appear automatically. If the installation menu does not appear automatically from inserting the DVD, perform the following steps:

- a) From the Windows Start menu, select **Start ► Run**
- b) At the command prompt, type: `x:\setup.exe`, where `x:` is the drive letter of your DVD drive.
- c) Press **Enter**.

The StarTeam 2009 installation main menu opens.

2. Click **StarTeam Extensions**.
3. In the **Introduction** dialog box, read the information, and click **Next**.
4. In the **License Agreement** dialog box:
  - a) Read the agreement.
  - b) If you agree with the license agreement, click **I accept...**

If you do not accept the license agreement, you cannot install the product.

c) Click **Next**.

5. In the **Choose Install Folder** dialog box, click **Choose...** to browse to the desired location for the installation folder.

The default Installation location is `C:\Program Files\Borland\StarFlow Extensions`. The following options are provided.

- To change the default location, click **Choose...**
- To restore the default location, click **Restore Default Folder**.

Click **Next** to continue.

6. In the **Choose Install Set** dialog box, uncheck or leave checked the following options:

- **Runtime** - Installs the files that are critical to each server configuration that uses workflow, APE forms, and/or custom tools. The Runtime should be installed on the same computer as the Server.

The Runtime consists of the StarFlow Extensions folder and two subfolders:

- The Client folder contains the files that are normally installed with one or more of the clients as well as with StarTeam Extensions. These files have changed very little since initially released. However, if a user is having problems with an APE, give that user the latest files from the Client folder in the StarFlow Extensions project. It may solve the problem.

`starteam-extensions.jar` provides the Locator functionality (the retrieving of workflow and APE files) in conjunction with `Locator.exe`. The `starteamextensions.jar` file is installed with both the Cross-Platform Client and the Visual Studio integration. The Locator files are installed only with the Visual Studio integration.

- The Projects folder contains a variety of `.jar`, `.xml`, and `.dll` files used by StarTeam Extensions.

Although the Runtime includes the custom toolbar that can be used with the Cross-Platform Client, if you will be writing applications for the toolbar or adding buttons to the toolbar, you should seek assistance from Borland consultants.

- **Samples** - Adds the Samples subfolder to the StarFlow Extensions folder.

The Samples can be installed on any computer for your convenience. You do not need to copy these to each server configuration's StarFlow Extensions folder, nor do you need to check them in.

If you decide to use some of the sample APE forms, as they are or after some modification, you would copy the `item_type.Workflow.xml`, `name.propertyeditor.xml`, and `name.jar` files to a server configuration's StarFlow Extensions\Projects folder or an appropriate subfolder of the Projects folder. Then you would check these files in to the StarFlow Extensions project.

If you decide to use some of the sample tools, as they are or after some modification, you must also copy the `name.tool.xml` and the `name.jar` files to the Projects folder. See the *StarTeam Extensions User's Guide* for more information.

- **API Documentation** - Adds the Documentation subfolder to the StarFlow Extensions folder.

The Documentation can be installed on any computer for your convenience. You do not need to copy this folder to each server configuration's StarFlow Extensions folder, nor do you need to check its files in. These online documents (`.html` files) explain the APIs for the APEs and the custom toolbar.

This folder does not include the readme file or the *StarTeam Extensions User's Guide*. They are installed in the StarFlow Extensions folder.

Click **Next**.

7. In the **Choose Shortcut Folder** dialog box, specify where you would like to create product icons. The default location is `C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeam Extensions`. Click **Next**.
8. In the **Pre-installation Summary** dialog box, review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the **Pre-installation Summary** dialog box and click **Install**.
9. In the **Install Complete** dialog box, click **Done**.

## Installing StarTeam Workflow Designer

You must use Workflow Designer to develop custom workflows. Workflow Designer outputs .xml files that formalize the steps in a workflow, specifies who will be notified about each step and about exceptions, and so on. Each file is named `item_type.Workflow.xml` and can be used for an entire project or individual views within that project. The StarTeam Extensions workflow engine and Notification Agent read from these files.

Workflow Designer can be installed separately on any workstation. With the help of Professional Services, it can be added to the custom toolbar that can be used with the Cross-Platform Client.

To install StarTeam Workflow Designer:

1. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 4 DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:

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

where x: is the drive letter of your DVD drive.

3. Press **Enter**. The StarTeam 2009 installation main menu opens.
2. Click **Install Products**.
3. Click **Administrative Tools**.
4. Select **StarTeam Workflow Designer** and follow the directions on the screen.
  1. In the Introduction dialog box, read the information, and click **Next**.
  2. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept....** If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
  3. In the Choose Install Folder dialog box, click **Choose** to browse for the location to be used as the installation folder. The default is `C:\Program Files\Borland\StarTeam Workflow Designer`.
  4. In the Choose Shortcut Folder dialog box, use the default setting (that is, keep the **Other** option button set to `C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeam Workflow Designer`).
  5. In the Pre-installation Summary dialog box, do one of the following:

- Review the settings and click **Install**.
  - Review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the Pre-installation Summary dialog box and click **Install**.
6. When you see the Install Complete screen, read the message to be sure that the installation was successful, then click **Done**.

## Installing StarTeam Notification Agent

Notification Agent monitors server configurations to determine who needs to be notified about work to be performed and about exceptions that occur in the workflow process.

You must install and configure Notification Agent separately. It is usually installed on the computer that runs the Windows version of the StarTeam Server, but can be installed anywhere. When Notification Agent is not on the same computer as the Server, the two computers clocks must be synchronized. Notification Agent's time cannot be ahead of the Server's time. When both are installed on the same computer and run as services, Notification Agent must be run as a dependent service and be shut down first. See "Running Notification Agent as a Service" in the *StarTeam Workflow Extensions User's Guide* for more information.

To install the StarTeam Notification Agent:

1. Run the downloaded installer, or if using replacement DVDs, insert the StarTeam 2009 Installation Disk 3 DVD into your DVD drive. The StarTeam Launcher window should appear automatically.

If the installation menu does not appear automatically from inserting the DVD, display it by performing the following steps:

1. From the Windows Start menu, select **Start ► Run**
2. At the command prompt, type:

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

where x: is the drive letter of your DVD drive.

3. Press **Enter**. The StarTeam 2009 installation main menu opens.
2. Click **Install Products**.
3. Click **Administrative Tools**.
4. Select **StarTeam Notification Agent** and follow the directions on the screen.
  1. In the Introduction dialog box, read the information, and click **Next**.
  2. In the **License Agreement** dialog box:
    - a. Read the agreement.
    - b. If you agree with the license agreement, click **I accept...** If you do not accept the license agreement, you cannot install the product.
    - c. Click **Next**.
  3. In the Choose Install Folder dialog box, click **Choose** to browse for the location to be used as the installation folder. The default is C:\Program Files\Borland\StarTeam Notification Agent.
  4. In the Choose Shortcut Folder dialog box, use the default setting (that is, keep the **Other** option button set to C:\Documents and Settings\All Users\Start Menu\Programs\Borland StarTeam\StarTeam Notification Agent).
  5. In the Pre-installation Summary dialog box, do one of the following:



- Review the settings and click **Install**.
  - Review the settings and click **Previous** one or more times if you want to change the installation options. Then return to the Pre-installation Summary dialog box and click **Install**.
6. When you see the Install Complete screen, read the message to be sure that the installation was successful, then click **Done**.

# Using StarTeam with Microsoft SQL Server and SQL Server Express Databases

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

You can use the Windows version of StarTeam Server with the following Microsoft databases:

- Microsoft SQL Server 2005 Express (SSE 2005), installed for you by StarTeam Server 2009.
- Microsoft SQL Server 2005 R2

Microsoft SQL Server 2005 Express is the StarTeam default database. We advise users to read the SQL Server Express license agreement provided by Microsoft Corporation.

StarTeam Server completely automates the process of creating SQL Server and SQL Server Express 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 83 for more 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 2005 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 perform a typical installation of StarTeam Server, you install one instance of SQL Server Express. More instances come in the download package at the web site and are included on the StarTeam installation DVD because SQL Server Express instances are numbered. This is because you may already have SQL Server Express on the computer, and StarTeam must use a different number than any instance that you already have.

## 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 SQL Server Express do not support UTF-8 at the database level. They support `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 SQL Server Express.

This is also why it is critical that the ODBC drivers used by the Microsoft SQL Server and SQL Server Express 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.

## Overview of Using a Microsoft SQL Server Database

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. For more information, see [Installing StarTeam Server](#) on page 26.

### 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 76.
- Otherwise, see [Creating a Database Manually: Overview](#) on page 83.

If you plan to use Microsoft SQL Server 2005, see [Connecting to Microsoft SQL Server 2005 Databases](#) on page 76 for more information.

⚠️ **Caution:** After you have started using StarTeam with Microsoft SQL Server:

- Never modify the database contents other than through a StarTeam client or Server Administration tool. **Direct database manipulation is unsupported.**
- Never modify vault files other than through a StarTeam client or a Server Administration tool.

# Connecting to Microsoft SQL Server 2005 Databases

StarTeam Server requires Microsoft SQL Server authentication to connect to Microsoft SQL Server databases, rather than the default Windows authentication. If you install Microsoft SQL Server 2005 using the default settings for security and authentication, StarTeam Server will experience problems connecting to the database.

To specify the security to use when connecting to Microsoft SQL Server:

1. Start the Microsoft SQL Server Installation Wizard.
2. Go to the Authentication Mode page of the wizard.
3. Select **Mixed Mode** (Windows Authentication and SQL Server And Windows option button (instead of the Windows Only option).
4. Type and retype the password to use.
5. Click **Next** to complete the rest of the wizard.

## Creating and Starting a Server Configuration

The first time you start a new server configuration, StarTeam Server creates all of 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 SQL Server Express database. If that is not the case, see [Creating a Database Manually: Overview](#) on page 83.

Microsoft SQL Server and SQL Server Express 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 SQL Server Express database:

1. Start the Server Administration tool. Select **Start > Programs > Borland StarTeam > StarTeam Server 2009 > StarTeam Server**. The Server Administration tool opens.
2. Choose **Server > New Configuration**. The New Configuration dialog box opens.
3. Enter the new configuration data:
  1. Type 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 SQL Server Express databases explained at the beginning of this section.
  2. Type or click **Browse** to specify the **Repository Path** location to be used to store log files and other information. If the repository path that you enter does not exist, the application creates it for you. The **Repository Path** is also the location for the default hive.
  3. Select **Microsoft SQL Server/SSE** (the default) from the **Database Type** drop-down list box.
  4. Check the option to **Create new StarTeam database and ODBC data source**, so that StarTeam Server automatically creates the database and the associated database DSN.

5. Create an initial hive for the Native-II vault by doing one of the following:

- Accept the default settings by leaving the **Default** option selected and proceeding to step 6.

With the default settings, StarTeam Server:

- Creates an initial hive named **DefaultHive**.
- Creates subfolders on the repository path named **Archives** and **Cache** to be used by the 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.

- Specify custom values by selecting the **Custom** option and changing any of the hive settings.

6. Click **Next** to create the SQL/SSE database.

4. Enter the server and database information:

1. Do one of the following:

- If you are creating a server configuration on SSE, the **Host Name** text box defaults to **(local)\SSE2005\_ST** because the SSE instance on the computer on which StarTeam Server is installed was given the name **STARTEAM**. Proceed to step b.
- If you are creating a server configuration on Microsoft SQL Server, type or click **Browse** to specify the names of the computer and the database on your network that should be used.

2. Enter the password for the system administrator in the **Sys Admin (sa) Password** text box.

If this is an SSE instance, the initial default system administrator password is **StarTeam123**.

3. Click **Verify Connection** to test the connection. If the test connection fails, review and change your settings.

4. In the in the **StarTeam Schema Information** text box, type the name of the data source that you want to create, the new database name, and the new user name for the configuration. This user is the owner of the database.

5. Type the database password for the new database in the **New Database Password** and **Confirm Database Password** text boxes.

6. Click **Next**.

5. Enter the information for creating the data files and transaction logs, and click **Finish**.



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

The default settings are appropriate for your use if you have fewer than 15 users and expect to store 1GB or less data.


If you are very familiar with Microsoft SQL Server and SQL Server Express 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.

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

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

For more information, see [Guidelines for Data Files and Transaction Logs](#) on page 78.


The Server Administration tool displays 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 *Administering and Using StarTeam* guide.

6. 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:

1. Select the server configuration.
2. Click the **Start With Override** toolbar button (or select **Actions > Start with Override** from the main menu). The Start with Override dialog box opens.
3. 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 box, but you rarely need to do this.

7. Be sure to configure your new server configuration (see the *Administering and Using StarTeam* guide for more information) and plan a backup schedule for it.

## Guidelines for Data Files and Transaction Logs

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

Number of Users	Number of Data Files	Size of Each Data File	Number of Log Files	Size of Each Log File <sup>1</sup>
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

<sup>1</sup>The transaction log file sizes are relevant only if the Transaction log backup is performed frequently.


Transaction log backups are essential. After a transaction is backed up, Microsoft SQL Server and SQL Server Express databases automatically truncate the inactive portion of the transaction log. This inactive portion contains completed transactions and 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 SQL Server Express 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 SQL Server Express databases that you may run are located in the `Borland\StarTeam Server 2009\DBScripts\Sqlserver_Scripts` folder.

 **Note:** The `Sqlserver_Scripts` folder contains several subfolders: `Create_Stored_Procedures`, `Drop_Stored_Procedures`, `Install`, `Preinstall`, and `DW` (for Data Warehouse). 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 Editor.

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 tool to remove deleted views from the database. Borland recommends purging the database after you have deleted one or more views from a StarTeam project. See the *Administering and Using StarTeam* guide for information on the Purge option.

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

 **Caution:**


- Before running any of the StarTeam SQL scripts for a Microsoft SQL Server or SQL Server Express database, ensure that the database compatibility mode is set correctly. For Microsoft SQL Server 2005-based configurations, set the database compatibility mode to 90.
- 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 SQL Server Express database:

1. Install SQL Server Management Studio or SQL Server Management Studio Express from Microsoft.
2. Choose **Start > Microsoft SQL Server [or Microsoft SQL Server Express] > SQL Server Manager Studio [or SQL Server Manager Studio Express]**.
3. Design a new query or open an existing one in SQL Server Manager Studio.
4. Choose **Query > Connection > Connect** to connect to the server that contains the StarTeam database you want to access.
5. Select the appropriate StarTeam database.

6. Open the tuning script, by choosing **File ► Open ► foldername\scriptname**.
7. Execute the script, by clicking the **Execute** button on the toolbar or by pressing **F5**.

## SQL Scripts for Microsoft SQL Server and SSE Databases

- `starteam_sqlserver_create_check_database.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_34.sql`  
Run: automatically by StarTeam Server when upgrading a server configuration.
- `starteam_sqlserver_create_upgrade_36.sql`  
Run: automatically by StarTeam Server when upgrading a server configuration.
- `starteam_sqlserver_create_upgrade_55.sql`  
Run: automatically by StarTeam Server when upgrading a server configuration.
- `starteam_sqlserver_create_upgrade_58.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. You can run this script when needed.

This sample script illustrates how to make a backup copy of a SQL Server Express 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).

## Microsoft SQL Server Security

SQL Server 2005 uses a standard security model that involves the following entities and concepts:

- **Securable** - Represents a resource or target object that requires securing, such as a database view.
- **Principal** - Represents a user who requests access to a resource.
- **Permission** - Access type that is associated with a securable. Permissions can be granted to or revoked from principals. For example, `Update` is a permission that is associated with a table (securable) named `R`. If `Update` on `R` is granted to a user (principal) named `U`, then `U` receives `Update` access on `R`.

Further, SQL Server 2005 supports the following security principals at different levels:

- **Windows-level principals** - Control access to SQL Server instances for Windows Local Login and Windows Network Domain Login.
- **SQL Server-level principals** - Control access to SQL Server instances for SQL Server Login.
- **Database-level principals** - Control access to database instances for database users.

To access a SQL Server instance, use a Windows user name or a SQL Server user name that was previously created in that server instance. After you log on, the user name represents you as your security principal at the server level.

If you try to use a specific database in the server, SQL Server searches the appropriate database for any previous user who has been mapped to your user name. If SQL Server locates such a user, the corresponding user name represents you as your security principal at the server level.

## Orphaned Users

When a database user for a corresponding SQL Server Login is undefined or incorrectly defined, SQL Server does not allow the user to log on to that instance. Such a user is said to be an orphaned user of the database on that server instance. A database user can become orphaned if the corresponding SQL Server user name is dropped. Most likely, a database user becomes orphaned after a database is restored or attached to a

different instance of SQL Server. Orphaning can occur if the database user is mapped to a SID that is not present in the new server instance.

Use SQL Server Management Studio or any other tool that executes SQL statements to address all orphaned users before you start or upgrade the StarTeam Server configuration.

## Addressing Orphaned Users

Use SQL Server Management Studio or any other tool that executes SQL statements to address all orphaned users before you start or upgrade the StarTeam Server configuration. Use either the system administrator user name (sa) or windows authentication (under an administrative user account) to connect to the database and change the database context for the SQL console to the StarTeam database.

From the SQL console, enter the following command to display the user names of all orphaned users:

1. From the SQL console, enter the following command to display the user names of all orphaned users:  
`sp_change_users_login 'REPORT'`
2. If the database owner (dbo) is returned as an orphaned user, enter the following commands:
  - a) `sp_addlogin <UserName>, <Password>`  
where <UserName> is the appropriate user name and <Password> is the appropriate password for the StarTeam Server. If you do not specify a password, the default password is blank.
  - b) `go`
  - c) `sp_changedbowner <UserName>`  
where <UserName> is the appropriate user name for the StarTeam Server.
  - d) `go`
3. For all other users who are returned as orphans, enter the following commands:
  - a) `sp_addlogin <UserName>, <Password>`  
where <UserName> is the appropriate user name and <Password> is the appropriate password for the StarTeam Server. If you do not specify a password, the default password is blank.
  - b) `go`
  - c) `EXEC sp_change_users_login 'Update_One', '<UserName>', '<UserName>'`  
where <UserName> is the appropriate user name for the StarTeam Server.
  - d) `go`
4. Copy the contents of the file  
`\Dbscripts\SQLServer_Scripts\starteam_sqlserver_set-owner-to-dbo.sql` and paste them to the SQL Server Query Window.  
The directory `\Dbscripts` typically resides in StarTeam Server Installation directory.
5. Run the pasted SQL commands against the StarTeam database.
6. Execute the script by running the following command as the system administrator (sa):  
`exec change_db_ownership <UserName>`  
where <UserName> is the appropriate user name for the StarTeam Server
7. Use SQL Enterprise Manager (or SQL Server Management Studio for SQL Server 2005 ) and delete the user `starteam` from the database.
8. Run the following command:  
`sp_changedbowner starteam`
9. Log on as user `starteam`.  
You must provide a password.
10. Run the following command:

```
select * from s0
```

11. Verify that at least one row is returned.

You must address every orphaned user. An easy way to address an orphaned user is to drop the user after dropping database objects owned by that user in the restored database.

For more information, refer to the *Troubleshooting Orphaned Users* section in the SQL Server 2005 documentation.

## Creating a Database Manually: Overview

Despite the fact that StarTeam Server has automated Microsoft SQL Server and SQL Server Express 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.

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 SQL Server Express 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 your own Microsoft SQL Server or SQL Server Express database:

1. Install Microsoft SQL Server or SQL Server Express.

 **Note:** If you plan to use Microsoft SQL Server 2005, be sure to review the section [Connecting to Microsoft SQL Server 2005 Databases](#) on page 76.

2. Install StarTeam Server. See [Installing StarTeam Server](#) on page 26 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 78 for more information.
- The name of the database follows the conventions explained earlier in this section.
- To create or upgrade the StarTeam database, the SQL Server instance must have one of the following collations.
  - Latin1\_General\_CI\_AS
  - Latin1\_General\_CI\_AI
  - SQL\_Latin1\_General\_CP1\_CI\_AS

On a Japanese double-byte operating system, where the default collation for the SQL Server 2005 installation is not supported by StarTeam, you must use a named instance with one of the supported collations.

 **Note:**

The multi-instance feature of Microsoft SQL Server 2005 supports the use of multiple instances in different locales on the same database server.


4. Create an ODBC DSN for the StarTeam database. See [Creating an ODBC System DSN for the StarTeam Database](#) on page 84 for instructions.
5. Create and start a StarTeam server configuration. See [Creating a Server Configuration \(for an Existing Database\)](#) on page 85 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 box opens.
2. Open the ODBC Data Source Administrator dialog box by double-clicking first the **Administrative Tools** icon and then the **Data Sources (ODBC)** icon.
3. Select the **System DSN** tab and, then click **Add**.
4. Select the Microsoft ODBC driver, **SQL Native Client, version 2005.90.4035.00** or newer, and click **Finish**. The SQL Server dialog box opens.
5. Type **StarTeam** in the **Name** text box, enter a description, select the Microsoft SQL Server you created for StarTeam, and click **Next**.
6. Select **With SQL Server authentication using a login ID and password entered by the user**.
7. Check **Connect to SQL Server to obtain default settings...**, and enter the StarTeam user Login ID and Password, and click **Next**.
8. Specify StarTeam as the default database. For example, if the computer's name is Orion, you might select ORION\STARTEAM.
9. Depending on the operating system, either click **Next** three times, or click **Next** once and then click **Finish**, to display the page containing the **Perform translation for character data** check box.
10. Uncheck **Perform translation for character data**. 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 SQL Server Express database.  
When this option is unchecked, 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.
11. 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.
12. Exit the wizard 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 SQL Server Express 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 SQL Server Express database.

Microsoft SQL Server and SQL Server Express 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

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

1. Start the Server Administration tool. Select **Start > Programs > Borland StarTeam > StarTeam Server 2009 > StarTeam Server**. The Server Administration tool opens.
2. Choose **Server > New Configuration**. The New Configuration dialog box opens.
3. Enter the new configuration data:

1. Type 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 SQL Server Express databases explained at the beginning of this section.

2. Type or click **Browse** to specify the **Repository Path** location to be used to store log files and other information. If the repository path that you enter does not exist, the application creates it for you. The **Repository Path** is also the location for the default hive.
3. Select **Microsoft SQL Server/SSE** (the default) from the **Database Type** drop-down list box.
4. Uncheck the option to **Create new StarTeam database and ODBC data source**, so that that StarTeam will not automatically create the database and a DSN for it.
5. Create an initial hive for the Native-II vault by doing one of the following:


- Accept the default settings by leaving the **Default** option selected and proceeding to step 6.

With the default settings, StarTeam Server:

- Creates an initial hive named **DefaultHive**.
- Creates subfolders on the repository path named **Archives** and **Cache** to be used by the 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.
  - Specify custom values by selecting the **Custom** option and changing any of the hive settings.
6. Click **Next**, and then enter the Data Source Name, user name, and password in the appropriate text boxes.
    -  **Note:** If you are connecting to SSE installed with StarTeam Server, the initial password for the sysadmin(sa) account was "StarTeam123".
  7. If you are not sure of the values supplied, click **Verify Connection** to test the connection.
  8. Click **Finish**.


This action re-displays the Server Administration tool, 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 *Administering and Using StarTeam* guide.

4. 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:

1. Select the server configuration.
2. Click the **Start With Override** toolbar button (or select **Actions > Start with Override** from the main menu). The Start with Override dialog box opens.
3. 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 box, but you rarely need to do this.

5. Be sure to configure your new server configuration (for information, see the *Administering and Using StarTeam guide*) and plan a backup schedule for it.

## Understanding Collation

The physical storage of character strings in Microsoft SQL Server 2005 and Microsoft SQL Server 2005 Express 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 2005 supports objects that have different collations being stored in a single database. Separate Microsoft SQL Server 2005 collations can be specified down to the level of columns. Each column in a table can be assigned different collations.

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://msdn2.microsoft.com/en-us/library/aa176553.aspx>

## How Is the Default Collation Selected?

If you upgrade a default instance of Microsoft SQL Server version 7.0 or Server 2000 to SQL Server 2005, or if you install a default instance of Microsoft SQL Server 2005 that will be the version switched with a default instance of Microsoft SQL Server version 6.5 or 7.0, 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 2005 is being installed. If the computer is using the US English locale, the instance's default collation is Latin1\_General\_CI\_AS.

 **Important:** On a Japanese double-byte operating system, where the default collation for the SQL Server 2005 installation is not supported by StarTeam, you must use a named instance with one of the following supported collations.

- Latin1\_General\_CI\_AS
- Latin1\_General\_CI\_AI
- SQL\_Latin1\_General\_CP1\_CI\_AS

The multi-instance feature of Microsoft SQL Server 2005 supports the use of multiple instances in different locales on the same database server.

# Using StarTeam with Oracle Databases

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.


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.

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

## Note:

All of the tablespaces created using StarTeam Server automatically create locally-managed tablespaces. All tablespaces created by StarTeam Server use AUTOALLOCATE.

StarTeam 2009 supports the Oracle 10.2.0.4.0 driver for use with the Oracle 10g R2 database, or the Oracle 11.01.00.06 driver for use with the Oracle 11g database, on the StarTeam Server. Oracle databases are supported on both 32- and 64-bit operating systems.

 **Important:** You need to install the 10.2.0.4.0 or the 11.01.00.06 driver when you upgrade to StarTeam 2009.

## 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 2005 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. [Verifying Connectivity Between Client and Server](#) on page 89
4. Install Oracle ODBC drivers. [Using Oracle ODBC Drivers](#) on page 89
5. Install Oracle Enterprise Manager.
6. Install StarTeam Server. For more information, see [Installing StarTeam Server](#) on page 26
7. Make sure that the NLS\_LANG setting for Oracle Client and the character set specified for Oracle Server are correct. For more information, see [Using NLS\\_LANG Correctly](#) on page 90 and [Database Character Set and StarTeam Server](#) on page 92
8. Create a StarTeam server configuration. For more information, see [Creating and Starting a Server Configuration with an Oracle Schema User](#) on page 93 (about automatically created schema users) and [Overview of Creating the Oracle Schema User Manually](#) on page 97



**Caution:**

After you have started using StarTeam with Oracle, remember:

- Never modify the database contents other than through a StarTeam client or Server Administration tool. **Direct database manipulation is unsupported.**
- Never modify vault files other than through a StarTeam client or a Server Administration tool.

## 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 Oracle ODBC Drivers

The StarTeam server requires the 10.2 client release, with the 10.2.0.4.0 ODBC driver.

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 with 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.

## Verifying Oracle ODBC Drivers

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. For more information, see [Downloading and Installing Oracle ODBC Drivers](#) on page 90.


## Downloading and Installing Oracle ODBC Drivers

Use the following URL to download supported Oracle ODBC driver:

<http://www.oracle.com/technology/software/tech/windows/odbc>

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 10g Release 2 client (10.02.00) with an Oracle 10g Release 1 ODBC driver (10.00.00).

 **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 the 10.2.0.4.0 driver, make sure you select the Oracle 10 Release 2 home. Failure to do so will corrupt your installation.

After you start the self-extracting archive file for your Oracle client version, 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. Follow the directions on the screen to complete the installation.
3. If a message dialog box is displayed warning you that some of the dependencies of this product are not found in the staging area, click **Yes** to continue.

## Using NLS\_LANG Correctly

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. For more information, see [Defining NLS\\_LANG in the Windows Registry](#) on page 92.

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.)

## Overview of 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. For more information, see [Defining the NLS\\_LANG as an Environment Variable](#) on page 92.

You can define NLS\_LANG for the Oracle Client in either of the following ways:

- In the Registry (Windows only)

For more information, see [Defining NLS\\_LANG in the Windows Registry](#) on page 92.

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.

- As an environment variable


For more information, see [Defining the NLS\\_LANG as an Environment Variable](#) on page 92.

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.


## Defining NLS\_LANG in the Windows Registry

 **Note:** If NLS\_LANG is not defined, it defaults to AMERICAN\_AMERICA.US7ASCII.

To change the NLS\_LANG setting using the Windows Registry Editor:

1. From the Windows Start menu, choose **Start ► Run**. The **Run** dialog box opens.
2. Type `regedit`, and then click **OK**.
3. Edit the following registry entry: `HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\homeID` where *homeID* is the unique name identifying the Oracle home.

## Defining the NLS\_LANG as an Environment Variable

 **Note:** If NLS\_LANG is not defined, it defaults to AMERICAN\_AMERICA.US7ASCII.


To create or modify the NLS\_LANG environment variable's setting on Windows:

1. Right-click the **My Computer** icon on your desktop, and then choose **Properties** from the context menu.
2. Select the **Advanced** tab.
3. Click **Environment Variables**. The Environment Variables dialog box opens.
4. Select NLS\_LANG and define an appropriate value.

To create or 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.

## 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 tool 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 Oracle Schema User Manually](#) on page 97.

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 tool. Select **Start > Programs > Borland StarTeam > StarTeam Server 2009 > StarTeam Server**. The Server Administration tool opens.
2. Choose **Server > New Configuration**. The New Configuration dialog box opens.
3. Enter the new configuration data:
  1. Type the name of the configuration in the **Configuration Name** text box.
  2. Type or click **Browse** to specify the **Repository Path** location to be used to store log files and other information. If the repository path that you enter does not exist, the application creates it for you. The **Repository Path** is also the location for the default hive.
  3. Select **Oracle** from the **Database Type** drop-down list box.
  4. Check the option to **Create new StarTeam database and ODBC data source**, so that StarTeam Server automatically creates the tablespace, schema user, and a DSN for the schema user.
  5. Create an initial hive for the Native-IL vault by doing one of the following:
    - Accept the default settings by leaving the **Default** option selected and proceeding to step 6.

With the default settings, StarTeam Server:

      - Creates an initial hive named **DefaultHive**.
      - Creates subfolders on the repository path named **Archives** and **Cache** to be used by the 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.
    - Specify custom values by selecting the **Custom** option and changing any of the hive settings.
6. Click **Next**. The **Create an Oracle Schema User** page of the wizard opens.
7. Type the Oracle net service name in the **TNS service name** text box.
8. Enter the database system password in the **System password** text box.
9. Click **Verify Connection** to make sure that you can properly connect to the database.
10. To keep the name of the server configuration, the DSN, and the schema user the same, both the **New ODBC data source** and the **New schema user name** text boxes default to the name you provided earlier for the server configuration. Change these names if you prefer to use different values.

11. Enter and confirm a password for the schema user name.
12. Click **Next**. The **Create a Tablespace for StarTeam Schema** page of the wizard opens.
13. The tablespace name defaults to the name of your server configuration. Change this name if you prefer to use a different value.
14. 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. For more information, see [Guidelines for Data Files](#) on page 94.


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.

15. 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, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see *StarTeam Help* or the *Administering and Using StarTeam* manual which are both accessible from the **Borland StarTeam > StarTeam Cross-Platform Client 2009 > Documentation** submenu. These documents explain the file options and how to set them from the command line.

4. 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:

1. Select the server configuration.
2. Click the **Start With Override** toolbar button (or select **Actions > Start with Override** from the main menu). The Start with Override dialog box opens.
3. 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 box, but you rarely need to do this.

5. Be sure to configure your new server configuration (see the *Administering and Using StarTeam* guide for more information) and plan a backup schedule for it.

## Guidelines for Data Files

Borland 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 below.


Number of Users	Number of Data Files	Size of Each Data File
Up to 15	3	50 MB

Number of Users	Number of Data Files	Size of Each Data File
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 the Oracle schema users. 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 Oracle schema users that you may run are located in the `Borland\StarTeam Server 2009\DBScripts\Oracle_Scripts` folder.


 **Note:** The `Oracle_Scripts` folder contains several subfolders: `Create_Stored_Procedures`, `Drop_Stored_Procedures`, `Install`, `Preinstall`, and `DW` (for Data Warehouse). The scripts in these subfolders are run by StarTeam Server as needed. **NEVER** execute any of them directly an external database user interface, such as SQL\*Plus or SQL \*Worksheet.

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 tool to remove deleted views from the schema user. Borland recommends purging the schema user after you have deleted one or more views from a StarTeam project. See the *Administering and Using StarTeam* guide for information on the Purge option.

StarTeam Script Name	Run Frequency
<code>starteam_oracle_compute_stats.sql</code>	Weekly
<code>starteam_oracle_dropall.sql</code>	Only if necessary
<code>starteam_oracle_rebuild_indexes.sql</code>	Weekly

For a description of these scripts, see [StarTeam SQL Scripts for Oracle Schema Users](#) on page 96.

 **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, type:

```
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_compute_stats.sql` script, type `@starteam_oracle_compute_stats.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_database.sql`

Run: automatically by StarTeam Server when creating a new server 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_33.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_34.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_35_catalog.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_35_data.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_36.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_55.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_create_upgrade_58.sql`

Run: automatically by StarTeam Server when upgrading a server configuration.

- `starteam_oracle_database_analyze.sql`



Run: weekly.

- starteam\_oracle\_create\_fix\_dup\_login\_names.sql

Run: automatically by StarTeam Server when upgrading a server configuration.

- starteam\_oracle\_extract\_ddl.sql


Run: automatically by StarTeam Server when upgrading a server configuration.

- n starteam\_oracle\_fix\_long\_raw.sql

Run: automatically by StarTeam Server when upgrading a server configuration.

- 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\_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. Run the starteam\_oracle\_rebuild\_indexes.sql script weekly to enhance database data retrieval.

## Overview of Creating the Oracle 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.

To configure an Oracle database instance:

1. Complete the procedures described in [Overview of Using an Oracle Schema User](#) on page 88.
2. Create a StarTeam tablespace.
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. For more information, see [Granting Oracle Privileges](#) on page 24.
  - create procedure
  - create sequence


- create session
  - create table
  - create trigger
  - create type
  - create view
  - unlimited tablespace
  - create any context
  - drop any context
5. Create an ODBC DSN for the StarTeam schema user. For more information, see [Creating ODBC System DSNs for Oracle](#) on page 98.
  6. Create the server configuration. For more information, see [Creating a Server Configuration for an Oracle Schema User](#) on page 98.

## Creating ODBC System 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 box opens.
2. Open the **ODBC Data Source Administrator** dialog box by double-clicking first the **Administrative Tools** icon and then the **Data Sources (ODBC)** icon.
3. Select the **System DSN** tab and then click **Add**.
4. Select the correct Oracle driver and then click **Finish**. The **Oracle ODBC Driver Configuration** dialog box opens.
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 each 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. Type the user name in the **User ID** text box.
9. Click **Test Connection** to verify that you can connect to this database.

 **Important:** It is recommended that you do not change any other settings.

10. 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 tool. Select **Start ► Programs ► Borland StarTeam ► StarTeam Server 2009 ► StarTeam Server**. The Server Administration tool opens.
2. Choose **Server ► New Configuration**. The New Configuration dialog box opens.
3. Enter the new configuration data:
  1. Type the name of the configuration in the **Configuration Name** text box.
  2. Type or click **Browse** to specify the **Repository Path** location to be used to store log files and other information. If the repository path that you enter does not exist, the application creates it for you. The **Repository Path** is also the location for the default hive.
  3. Select **Oracle** from the **Database Type** drop-down list box.
  4. Clear the option to **Create new StarTeam database and ODBC data source**, so that StarTeam Server does not automatically create the tablespace, schema user, and a DSN for the schema user.
  5. Create an initial hive for the Native-II vault by doing one of the following:
    - Accept the default settings by leaving the **Default** option selected and proceeding to step 6.  
With the default settings, StarTeam Server:
      - Creates an initial hive named **DefaultHive**.
      - Creates subfolders on the repository path named **Archives** and **Cache** to be used by the 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.
    - Specify custom values by selecting the **Custom** option and changing any of the hive settings.
6. Click **Next**. The **Database Information** page of the wizard opens.
7. Enter the ODBC DSN in the **ODBC data source name** text box.
8. Enter the login name and password for the schema user in the appropriate text boxes.
9. Click **Verify Connection** to be sure that you can successfully access the schema user.
10. Click **Finish**.

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



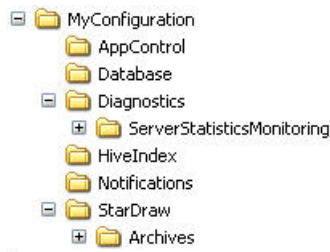
**Note:** In addition to creating the server configuration, StarTeam Server adds information about the new server configuration to your `starteam-server-configs.xml` file. For more information about this file, see *StarTeam Help* or the *Administering and Using StarTeam* manual which are both accessible from the **Borland StarTeam ► StarTeam Cross-Platform Client 2009 ► Documentation** submenu. These documents explain the file options and how to set them from the command line.

# 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. This section explains the location and purpose of the files and folders that make up the StarTeam vaults and repositories.

## Understanding 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*.



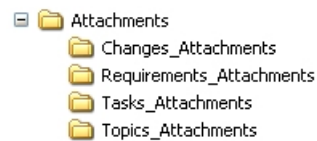
The name of the server configuration may also be *MyConfiguration*.

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.

## Attachments Folder

The repository path, such as the *MyConfiguration* folder in the previous figure, is also the parent of the Attachments folder.

The Attachments folder has subfolders that store the files attached to specific types of items. For example, the *Changes\_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 box. This folder does not have to remain a subfolder of the repository path.

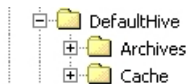
These folders must be included in a backup.

# 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:

- **Default Hive**

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 DefaultHive 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. Deltas stores the differences between working files and tip revisions when a user asks that transmissions over slow connections be optimized.

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 must be included in a backup. A hive's cache path does not need to be included. For more information, see [Archive and Cache Path Structure](#) on page 102.

- **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. For more information, see [Archive and Cache Path Structure](#) on page 102.

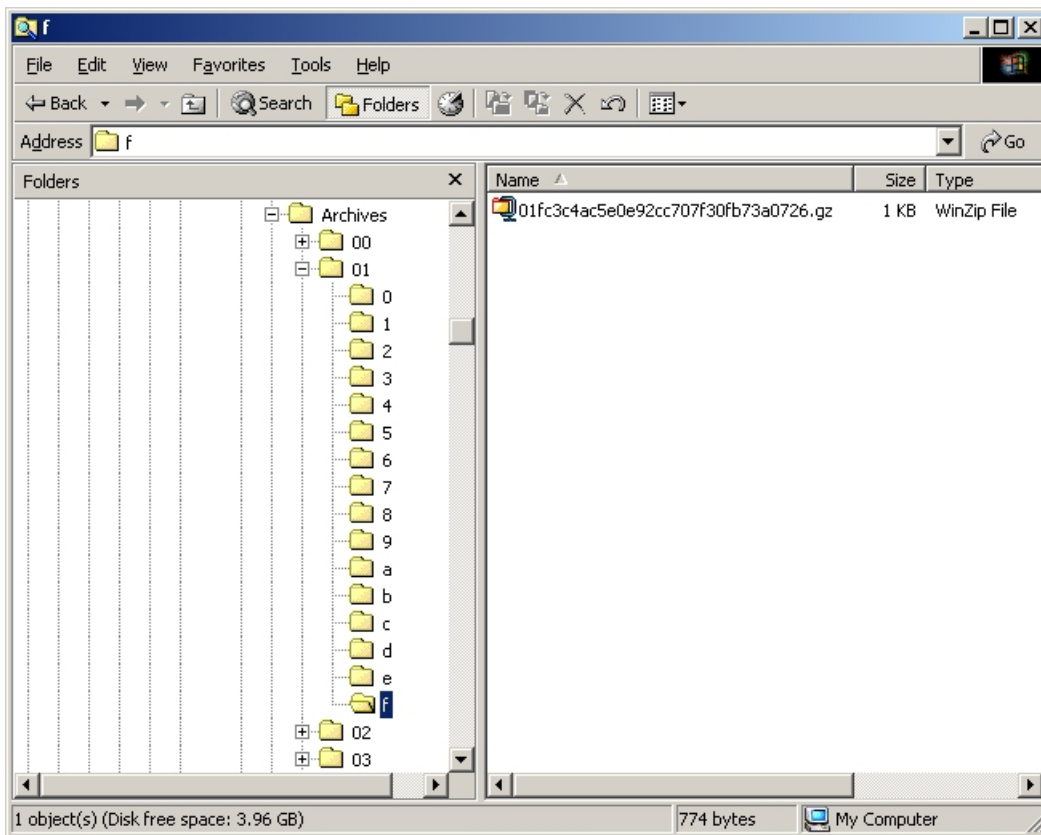
# Archive and Cache Path Structure

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 StarTeam Help or the *Administering and Using StarTeam* guide for more information.

## Log Files and Folders

The repository path folder becomes the home of the following related objects.

- The server log files

A new server log file is created each time you start the server configuration. See the *Administering and Using StarTeam* 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 unless a Borland technical support representative is working with you on a problem. See the *Administering and Using StarTeam* guide for more details about server diagnostics.

- The Notifications folder

When a server configuration starts for the first time, the contents of the Notifications folder in the installation directory are copied to the repository for the server configuration in a corresponding Notifications folder.

- The Trace folder

The Trace folder stores the files that are created when and if you use server diagnostics to trace server commands. See the *Administering and Using StarTeam* 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 tool. See the *Administering and Using StarTeam* guide for more information.

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


# Installing and Configuring Supporting Software

This appendix provides information about software that you use in conjunction with StarTeam:

- Synchronizing workstation clocks
- Adobe Acrobat Reader
- Java runtime environment

## 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.

## Adobe Acrobat Reader

The primary documentation for the StarTeam product line is delivered in Adobe's Portable Document Format (.pdf), and can be viewed with version 7.0 or later of Adobe's free Acrobat Reader. You can download the latest version of the Acrobat Reader from Adobe's web site at <http://www.adobe.com>.

## 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.

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.

The StarTeam Cross-Platform Client installer runs the Sun tzupdater program on the Sun JRE (1.6.0\_13) installed with this release. The tzupdater program changes the JRE in order to provide better DST (Daylight



Savings Time) information for Eastern, Mountain, and Hawaiian time zones. It also deletes three JRE files from the `lib/zi` folder (if they are there): EST, HST, MST.

# 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 2005 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 2005 are:

- Full

The data is critical and must be recoverable to the point of failure. All data modifications are logged. All SQL Server 2005 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 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 Backups

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 bulklogged recovery models.

## Recommendations

Borland 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 okay to perform full backups on alternate days. If you perform full backups on alternate days, Borland 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.

- Recovery Manager (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 crossplatform 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, 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 files 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 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 could lock up the database.

## 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 and 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 training”. 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 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.

# Oracle Database Tuning

This section provides the basic information needed to create an Oracle schema for StarTeam Server. Borland recommends using the Administration tool to create the schema, but if you prefer to create your own, follow the guidelines provided in this section.

## Recommended Initialization Parameters

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

Parameter	Recommended Value
Compatible	<ul style="list-style-type: none"> <li>10gR2: 10.2.0</li> <li>11g: 11.1.0.0.0</li> </ul>
Cursor_sharing	<ul style="list-style-type: none"> <li>10gR2: Force</li> <li>11g: Force</li> </ul>
Log_checkpoint_interval	Greater than the redo log size
Log_checkpoint_timeout	0
Workarea_size_policy	Auto
Db_block_size	16384 (16k)
Db_file_multi_block_read_count	16
Optimizer_mode	first_rows
Timed_statistics	True
Open_cursors	400
Undo_management	Auto
Undo_tablespace	(Name of the undo tablespace)
Undo_retention	28800
Processes	250
Statistics_level	Typical

**Table 1: Common Database Configuration Parameters**

Total Memory	Recommended 10gR2 Settings	Recommended 11g Settings
1 GB	SGA_TARGET = (Total Physical Memory * 80%) * 60%  We assume that 20% of the total memory will be used by the OS.	MEMORY_TARGET = Total Physical Memory * 75%  We assume that 20% of the total memory will be used by the OS and that the Oracle instance is running on a



Total Memory	Recommended 10gR2 Settings	Recommended 11g Settings
	<p>Statistics level should be TYPICAL or ALL.</p> <p>LOG_BUFFER = 524288</p> <p>PGA_AGGREGATE_TARGET = (Total Physical Memory * 80%) * 30%</p> <p>30% of the non-OS available memory. This is the starting value. This may need to be adjusted upwards.</p>	<p>dedicated machine. Statistics level should be TYPICAL or ALL.</p> <p>LOG_BUFFER = 524288</p>
2 GB	<p>SGA_TARGET = (Total Physical Memory * 80%) * 60%</p> <p>We assume that 20% of the total memory will be used by the OS. Statistics level should be TYPICAL or ALL.</p> <p>LOG_BUFFER = 1048576</p> <p>PGA_AGGREGATE_TARGET = (Total Physical Memory * 80%) * 30%</p> <p>We assume that 20% of the total memory will be used by the OS. This is the starting value. This may need to be adjusted upwards.</p>	<p>MEMORY_TARGET = Total Physical Memory * 75%</p> <p>We assume that 20% of the total memory will be used by the OS and that the Oracle instance is running on a dedicated machine. Statistics level should be TYPICAL or ALL.</p> <p>*LOG_BUFFER = 1048576</p>
4 GB	<p>SGA_TARGET = (Total Physical Memory * 80%) * 60%</p> <p>We assume that 20% of the total memory will be used by the OS. Statistics level should be TYPICAL or ALL.</p> <p>LOG_BUFFER = 1048576</p> <p>PGA_AGGREGATE_TARGET = (Total Physical Memory * 80%) * 30%</p> <p>We assume that 20% of the total memory will be used by the OS. This is the starting value. This may need to be adjusted upwards.</p>	<p>MEMORY_TARGET = Total Physical Memory * 75%</p> <p>We assume that 20% of the total memory will be used by the OS and that the Oracle instance is running on a dedicated machine. Statistics level should be TYPICAL or ALL.</p> <p>LOG_BUFFER = 1048576</p>

**Table 2: Database parameters based on total memory**

## Oracle Database Monitoring and Tuning

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 recommends the use of Automatic Workload Repository (AWR) to collect performance statistics, including wait events used to identify performance problems. A detailed description of AWR is beyond the scope of this document. Please refer to your Oracle 10g performance tuning guide for more information.

## Oracle 10gR2 Databases

This section provides information about tuning Oracle 10g databases.

### Automatic Shared Memory Management

Oracle 10g introduced Automatic Shared Memory Management (ASMM) of individual SGA components like shared pool, java pool, large pool and db cache. You do not need to estimate when setting the size of SGA components. In fact, there is no need to set any parameters defining SGA size.

All you have to do is to set a new parameter called `SGA_TARGET`. The parameter `SGA_TARGET` takes a value which indicates the maximum size of SGA required for your instance.

Consider that you set `SGA_TARGET` to say 800MB. This indicates that maximum size to which SGA can grow is 800MB. All the SGA components like shared pool, buffer cache, large pool, java pool will be allocated from this 800M maximum SGA. Oracle will automatically calculate the initial size of these components and resizes it as per the requirement without any manual intervention.

You do not have to explicitly define values for shared pool, buffer cache, large pool and java pool if you set `SGA_TARGET`. The `SGA_TARGET` will be limited by the `SGA_MAX_SIZE` value. The `SGA_MAX_SIZE` cannot be modified dynamically. If `SGA_MAX_SIZE` is not set, both the parameters have the same value and it will be not possible to increase the size of `SGA_TARGET` dynamically.

### Automatic Segment Space Management

The Automatic Segment Space Management (ASSM) 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 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 is used with ASSM.

## Oracle 11g Databases

This section provides information about tuning Oracle 11g databases.

### Automatic Memory Management (AMM)

Beginning with version 11g, the Oracle database can automatically manage the SGA memory and the instance PGA memory. You only need to designate the total memory size to be used by the instance, and the Oracle database will dynamically exchange memory between the SGA and the instance PGA as needed to meet processing demands. This capability is referred to as automatic memory management. With this memory management method, the database also dynamically tunes the sizes of the individual SGA components and the sizes of the individual PGAs.

AMM is implemented using `Memory_Target` and `Memory_max_target` parameters. Use of `MEMORY_MAX_TARGET` is optional. When `MEMORY_MAX_TARGET` is not set, Oracle automatically sets `MEMORY_MAX_TARGET` to the value of `MEMORY_TARGET`.

To switch to AMM, define the value of `MEMORY_TARGET` in the spfile. It is important to ensure that the values of `SGA_TARGET` and `PGA_AGGREGATE_TARGET` are set to 0. Customers upgrading to 11g instance must set the value of `SGA_TARGET` and `PGA_AGGREGATE_TARGET` to 0.

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