

Teamcenter *Installation*

**Student Guide
December 2008
MT25350 – Teamcenter 8**

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Course overview

Teamcenter® Installation addresses the procedures for proper Teamcenter and database server (Oracle and Microsoft SQL Server) installations. The course begins with a discussion of system and network requirements for a successful implementation of Teamcenter. Students will learn how to configure an operating system as well as plan the physical database layout. Hands-on activities include the installation of a database server (either Oracle or Microsoft SQL Server) and Teamcenter.

The class also covers how to manage and troubleshoot the Teamcenter environment after installation.

Course objectives

The overall objective for this course is to install Teamcenter and its components.

- To define the Teamcenter two-tier architecture, the four-tier architecture, and File Management System
- To define Relational Database Management System concepts and installation processes
- To understand the two methods for creating a Teamcenter database
- To define the uses of Teamcenter Environment Manager (TEM)
- To install the corporate server and a two-tier rich client
- To define the four-tier architecture and its components; which includes the Web Application Manager, distribution server, J2EE Web tier, and .NET Web tier
- To define and install the Business Modeler IDE
- To set up embedded visualization and Teamcenter Integration for NX
- To administer databases, datasets, and volumes
- To understand Multi-Site Collaboration

Key benefits

Key benefits for completing the course objectives include:

- The system administrator can plan and install a site.
- The system administrator can create a database server, listener, and database.
- The system administrator can install the corporate server.
- The system administrator can install the two-tier rich client.
- The system administrator can create the components of the Teamcenter J2EE Web tier.
- Embedded visualization can be added to the two-tier rich client.

Prerequisites

- System administration experience
- Understanding of network planning
- General understanding of SQL databases
- General understanding of Teamcenter functionality

Audience

The audience for this course includes:

User profile	Job goal
Installer	Install, upgrade, migrate, and configure software
System administrator	Maintain servers and users
Database administrator	Maintain databases

Learning tracks

Learning tracks for Teamcenter are found on the Siemens PLM Software training Web site:

<http://training.ugs.com/tracks/index.shtml>

Training materials provided

Material	Description
<i>Student Guide</i>	Presentation slides. Yours to keep and make notes. Evaluation is provided both online and in the back of the <i>Student Guide</i> . Student profile is provided in the back of the <i>Student Guide</i> .
<i>Student Workbook</i>	Activities are provided online in electronic format and designed to appear on the left of the monitor. A CD of electronic activities is provided in the back of the <i>Student Guide</i> .

Accessing Teamcenter online help

The *Teamcenter Help Library* covers functionality from end-user tasks to customization instructions.

To access the *Teamcenter Help Library*:

- In the rich client, choose **Help® Help® Help Library** or press the F2 key.
- In the thin client, choose **Help® Web Collection** to access the thin client help, or choose **Help® General Collection** to access the full library.

To access help for the current application:

- In the rich client, choose **Help® Help® Current Application** or press the F1 key.

Note

You cannot access application-specific help in the thin client.

Lesson

1 *Introduction to Teamcenter*

Purpose

The purpose of this lesson is to introduce Teamcenter product data management concepts.

Objectives

After you complete this lesson, you should be able to:

- Describe the basic concepts of collaborative product data management.

Help topics

Additional information for this lesson can be found in:

- *[Getting Started with Teamcenter](#)*

What is collaborative product data management?

Teamcenter is a collaborative product data management (cPDM) system. cPDM is a tool that helps manage all the processes, applications, and information required to design, manufacture, and support a product throughout its life cycle.

The goal of a cPDM system is to provide a single, common interface for managing and accessing all data within an organization.

cPDM systems interface with enterprise resource planning (ERP) systems. With cPDM, ERP systems and the Web interface, you have all the ingredients for a true collaborative environment.

Benefits of cPDM

Benefits of using the Teamcenter include:

- Reduces duplicate data which reduces storage requirements.
- Simplifies finding data and distributing data to those who need it.
- Allows quick, lightweight viewing of models. This is especially useful for verification when reviewing changes.
- Provides revision control and assurance of latest data.
- Manages assemblies and relationships between parts.
- Easily builds and modifies bills of materials (BOMs).
- Maintains history of a product's development evolution.
- Establishes relationships between parts including requirements and specifications.
- Provides access control and vaulting to assure integrity of data.

Lesson

2 *Teamcenter architecture overview*

Purpose

This lesson presents an overview of the Teamcenter two-tier architecture, four-tier architecture, and File Management System.

Objectives

After you complete this lesson, you should be able to:

- Describe the components of the Teamcenter two-tier architecture.
- Describe the components of the Teamcenter four-tier architecture.
- Describe the components of File Management System.
- Access the Web site that lists the hardware and software requirements for Teamcenter.
- List the operating system accounts required to install Teamcenter.

Help topics

Additional information for this lesson can be found in:

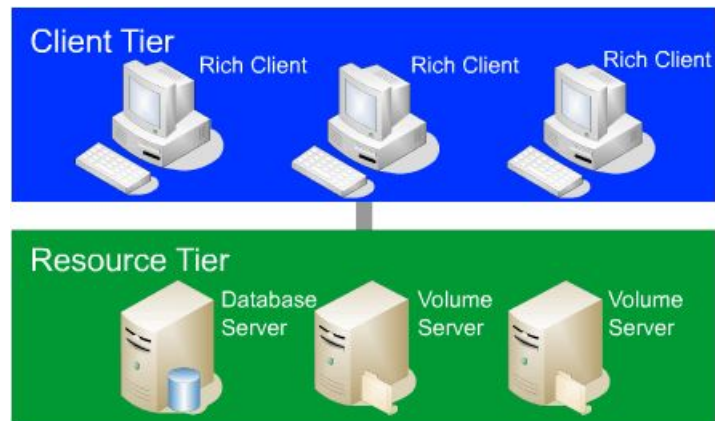
- *Basic concepts about Teamcenter installation* in the [*Installation on Windows Servers Guide*](#)
- *Basic concepts about Teamcenter installation* in the [*Installation on UNIX and Linux Servers Guide*](#)

Teamcenter architectures

There are two different architectures you can set up for your site's Teamcenter environment. You can set up one or both within a single environment.

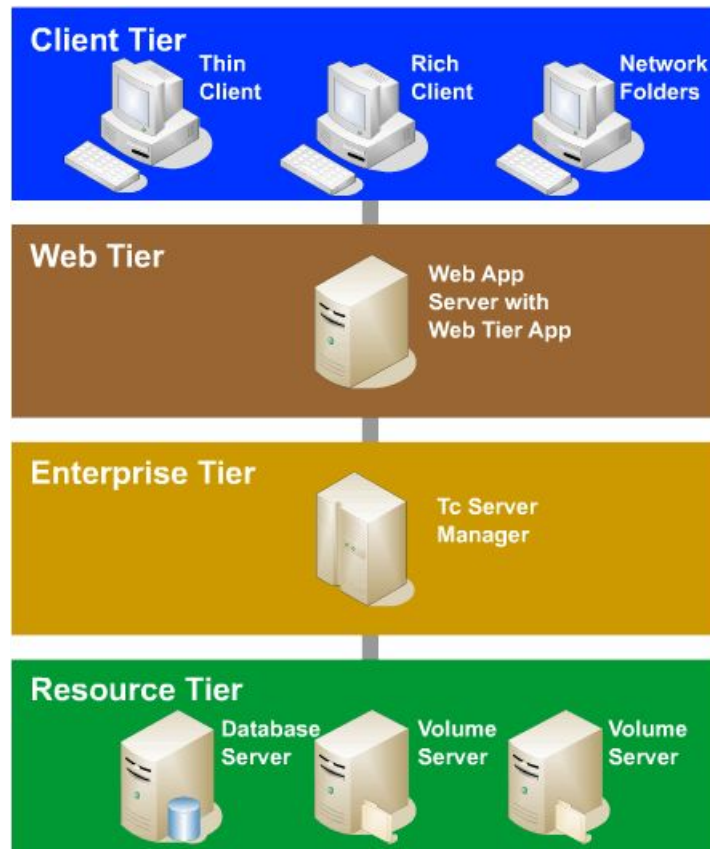
- Two-tier architecture
- Four-tier architecture

Two-tier architecture logical view



- The *client tier* contains:
 - Rich client.
 - Teamcenter server and executables.
 - Optional applications that integrate with the rich client such as NX®.
- The *resource tier* stores persistent metadata and files managed by the environment. The *resource tier* contains:
 - Database server and database.
 - Volumes.
 - File servers.

Four-tier architecture logical view



- The *client tier* hosts client applications, processes user interface input and output, and hosts secure file caches.

Available clients include:

- Thin client.
- Rich client.
- Teamcenter's Network Folders.
- Additional applications such as Teamcenter's lifecycle visualization.

- The *Web tier* handles client installs, processes logon requests, routes client requests to business logic, serves static content to clients, and handles communication between the client and enterprise tiers.

The Web tier application can be either:

- Java-based and served on a J2EE Web application server such as WebLogic.
- .NET-based and served on Microsoft IIS.

- The *enterprise tier* hosts business logic, applies security rules, retrieves data from and stores data in the database, and serves dynamic content to clients.

The enterprise tier is composed of:

- A pool of server processes managed by a server manager (four-tier architecture only).
 - Transient volumes.
- The *resource tier* stores persistent metadata and files managed by Teamcenter.

The resource tier contains:

- Database server and database.
- Standard volumes.
- File servers for shared configuration and binary executables.

Client options

Teamcenter provides clients suited to various uses and network configurations. These clients include:

- Rich client
- Thin client
- Specialized clients such as Teamcenter's Client for Microsoft Office and Network Folders

Rich client

The *rich client* is a platform-independent client implementation (Java application) for users who interact with Teamcenter frequently. It is extendable and able to run both Teamcenter and customer-written applications. Customers can also extend the standard user interface.

The rich client is supported in two-tier and four-tier architectural models. It is deployed on user workstations using:

- Teamcenter Environment Manager (in the two-tier and four-tier architecture)
- Over-the-Web Installer (in the four-tier architecture)

A Web browser is required if the four-tier rich client is installed using the Over-the-Web Installer and to display the online help. The following Web browsers are supported:

- Windows systems: Microsoft Internet Explorer and Mozilla Firefox
- UNIX and Linux systems: Mozilla Firefox

Thin client

The *thin client* provides access to Teamcenter through a standard commercial Web browser. The user interface provides a streamlined browser-based view of product information stored in a Teamcenter database.

The thin client is supported only in the four-tier architectural model.

The thin client is supported for the following Web browsers:

- Windows systems: Microsoft Internet Explorer and Mozilla Firefox
- UNIX and Linux systems: Mozilla Firefox
- Macintosh systems: Apple Safari

Network Folders

Teamcenter's Network Folders is an extension (plug-in) to Microsoft Windows Explorer. Network Folders provides access to Teamcenter through Windows Explorer. Users unfamiliar with the rich client and thin client interfaces can perform document management of Teamcenter objects from Windows Explorer without launching Teamcenter.

Network Folders is supported only on Microsoft Windows platforms and only in the four-tier architecture model.

File management

Files managed by Teamcenter are stored in *volumes*.

Users cannot directly access files in a volume; instead these files are accessed via a Teamcenter session.

File access requested by a client is managed by:

- Teamcenter File Services (TCFS)
- File Management System (FMS)

Volumes

Standard volume

A Teamcenter-controlled directory that stores files managed by Teamcenter. Users cannot directly access files in a volume; they must do so via a Teamcenter session. When a user creates a file from the rich client, the file is created in a volume.

At least one standard Teamcenter volume is required per database. You can optionally create multiple volumes for a database.

Transient volume

A Teamcenter-controlled directory that stores temporary data for transport of reports, PLM XML, and other nonvolume data between the Web tier and client tier in the four-tier architecture.

One transient volume is required per database.

For a deployment of the two-tier architecture, Teamcenter stores temporary data in a temporary directory on the rich client host.

FMS and TCFS

TCFS:

- Used by the Organization application to create volumes and perform other administrative functions. A TCFS server runs on each server hosting a volume.

FMS:

- File transfer between volumes and clients for both the two-tier and the four-tier architectures
- File access for NX and Lifecycle Visualization when you use these products with Teamcenter
- Transient data storage for transporting reports, PLM XML, and other non-volume data between the Web and client tiers in the four-tier architecture
- Data access for Multi-Site Collaboration
- File caching on both file servers and rich clients in order to improve file transfer performance

Hardware and software requirements

To install, configure, and run a Teamcenter environment, ensure that your site meets the hardware and software requirements.

A detailed list of hardware and software requirements is available from the Global Technical Access Center (GTAC) Web site:

http://support.ugs.com/online_library/certification/

Recommended operating system accounts and privileges

Siemens PLM Software recommends that you create two operating system accounts, one to install and administer Teamcenter and another to install and administer the relational database management system (Oracle or MS SQL Server):

- Teamcenter operating system account

Log on with this operating system account to install or upgrade Teamcenter or install patches.

- Database administrator operating system account

Log on with this operating system account to install and manage the relational database management system.

The account used to install Oracle is automatically added to the Windows **ORA_DBA** local group (**DBA** on UNIX), giving it **SYSDBA** privileges.

Both accounts:

- Must be members of the operating system's **Administrators** group.
- Should not be used for routine access to Teamcenter.
- Can have any name.
- Represent responsibilities, not people.

Activities

In the *Teamcenter architecture overview* section, do the following activities using the **administrator** account:

1. Modify the HOSTS file
2. Create required operating system accounts

Review questions

1. The _____ tier stores persistent metadata and files managed by the environment.

Select one answer.

- Client
- Enterprise
- Resource
- Web

2. The two-tier architecture is composed of what two tiers?

Select all that apply.

- Client
- Enterprise
- Resource
- Web

3. The thin client is available only in the _____ architecture.

Select one answer.

- Two-tier
- Four-tier

Summary

The following topics were taught in this lesson:

- Teamcenter two-tier architecture
- Teamcenter four-tier architecture
- Components of File Management System
- Web site that lists the hardware and software requirements for Teamcenter
- Recommended operating system accounts for installing and managing Teamcenter and the RDBMS

Lesson

3 *Oracle server, listener, and database*

Purpose

This lesson provides basic concepts about the Oracle server, listener, and database, how they work with Teamcenter, and how to create them.

Objectives

After you complete this lesson, you should be able to:

- Describe the Oracle architecture used to support Teamcenter.
- Describe and install the Oracle database server.
- Describe and install the Oracle listener.
- Describe and install the Oracle database.
- Start and stop Oracle processes.

Help topics

Additional information for this lesson can be found in:

- *Oracle installation and configuration* topic in the [*Installation on Windows Servers Guide*](#)
- *Oracle installation and configuration* topic in the [*Installation on UNIX and Linux Servers Guide*](#)

Oracle overview

The resource tier of both the two-tier and the four-tier architectures stores persistent metadata. This is accomplished using a relational database management system (RDBMS). An RDBMS stores metadata so that it can be retrieved and manipulated.

Teamcenter supports two RDBMSs:

- Oracle
- Microsoft SQL

For a list of supported RDBMS versions, refer to the GTAC Web site:

<http://support.ugs.com>

This lesson discusses setting up Oracle as a site's RDBMS.

Oracle architecture

The major components of an Oracle installation are:

- Server

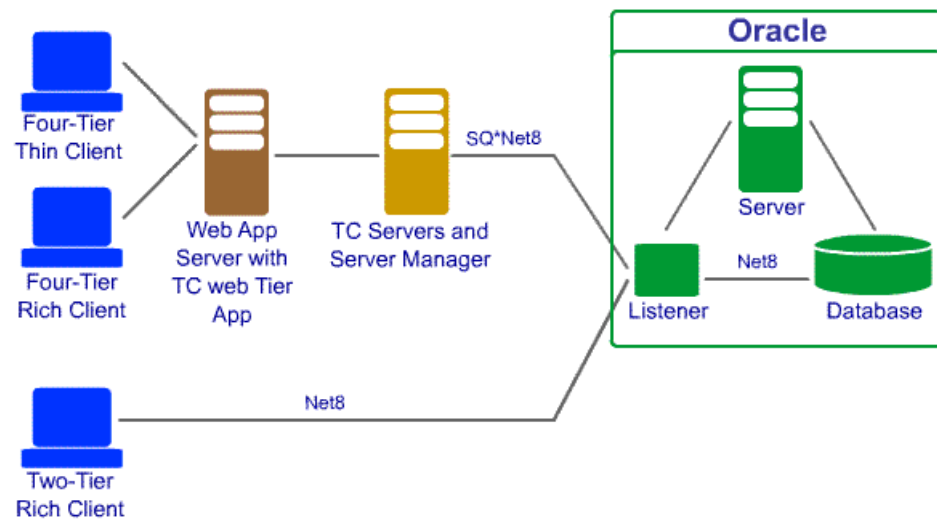
Provides application files, controls access to the database, and handles failure recovery.

- Database

Stores metadata.

- Listener

Listens for requests made of the database.



Oracle instance

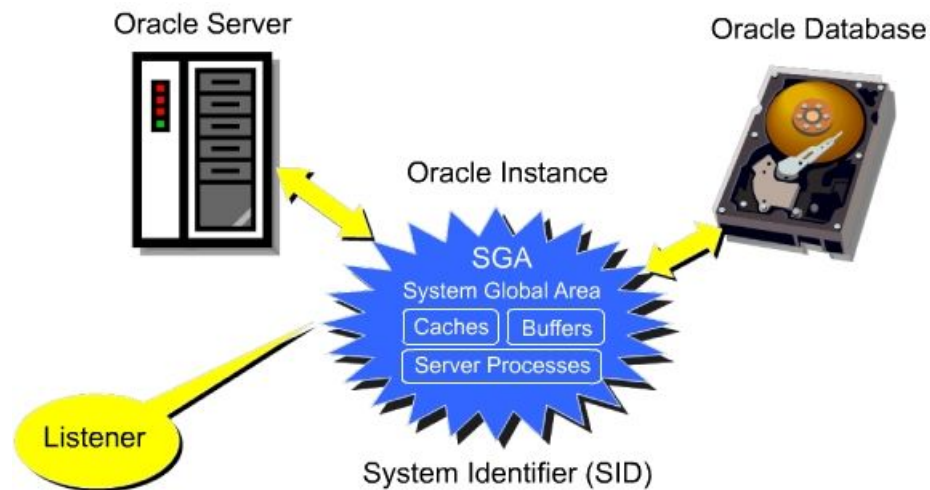
Teamcenter supports non clustered databases only. For non clustered databases, each Oracle database is associated with an instance. When a database is started, Oracle allocates a memory area called the System Global Area and starts one or more Oracle processes. This combination of the System Global Area and Oracle processes is called an instance. The memory and processes of an instance manage the data and serve the users.

- Oracle System Global Area

A group of shared memory structures that contain data and control information for an Oracle instance.

- System identifier (SID)

A unique name for an Oracle instance.



Oracle server

The Oracle server:

- Supports one or more databases.
- Provides application files.
- Controls access to the database.
- Handles failure recovery.
- Is installed using the Oracle Universal Installer (OUI).
- Should be installed using an operating system account set up primarily to perform DBA tasks.
- Can be installed on shared directories (however, the database cannot).

OUI

Oracle Universal Installer (OUI) is a Java-based graphical user interface (GUI) application that enables the installation of the Oracle server and related components from a DVD-ROM, multiple DVD-ROMs, or the Web. OUI performs component-based installations and enables different levels of integrated bundle, suite, and Web-based installations, as well as complex logic in a single package. The installation engine is easily portable across all Java-enabled platforms, and platform-specific issues can be encapsulated from the overall installation process.

DBA operating system account

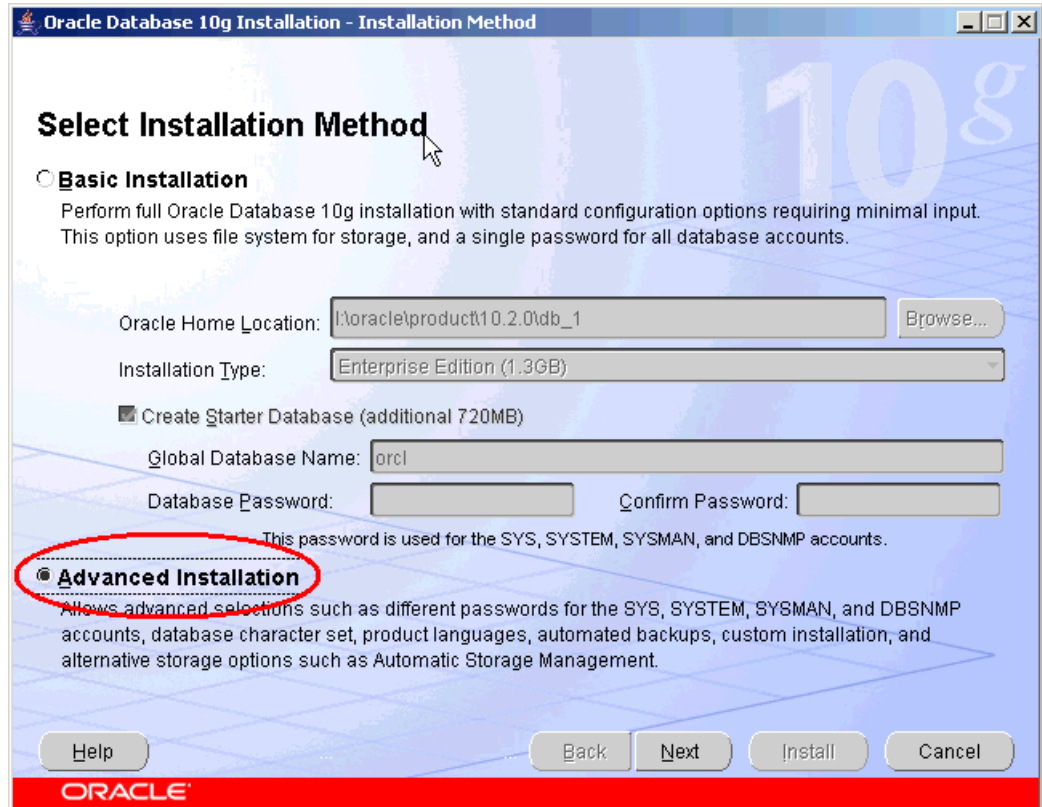
Ensure the operating system user account under which you install the Oracle database server has system administrator privileges. This account should be in the operating system's **Administrators** group. If so, when Oracle is installed, this account is automatically added to the Windows **ORA_DBA** local group, giving it **SYSDBA** privileges.

Install location

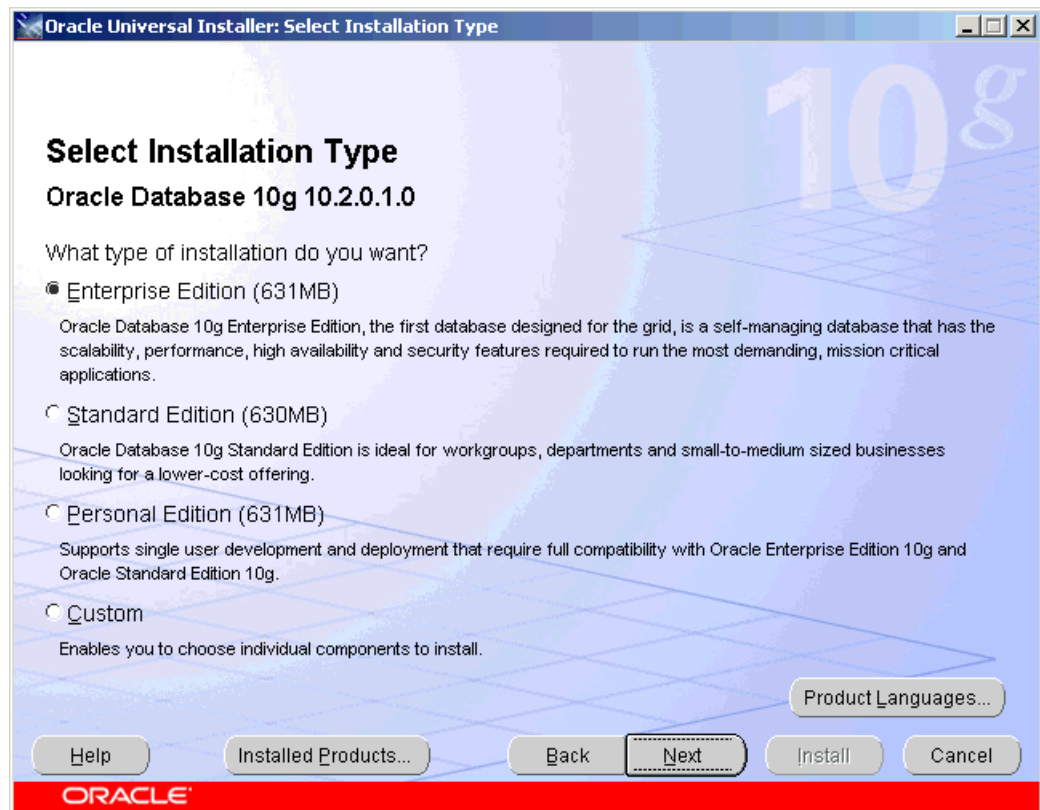
You can install the Oracle server and application files on shared directories. However, Oracle Corporation does not support database files on shared directories. To ensure data integrity, create database files on local disk drives.

Install an Oracle database server

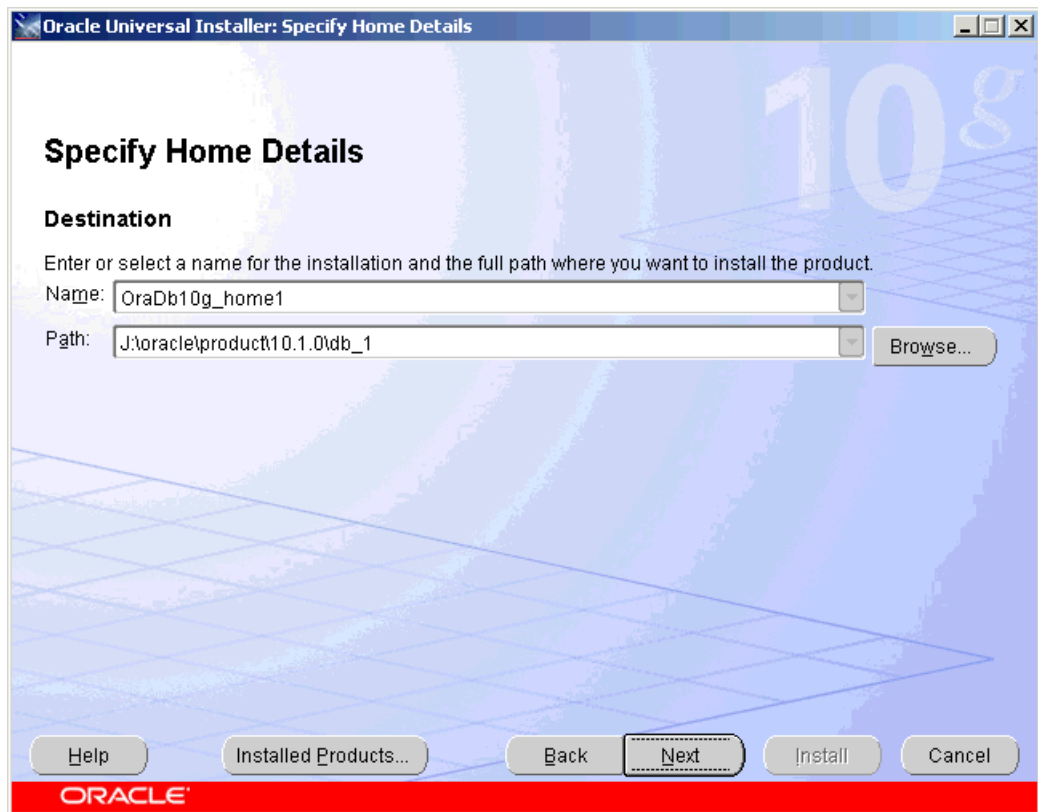
1. Insert the Oracle installation DVD-ROM.
2. In the **Select Installation Method** dialog box, select **Advanced Installation** and then click **Next**.



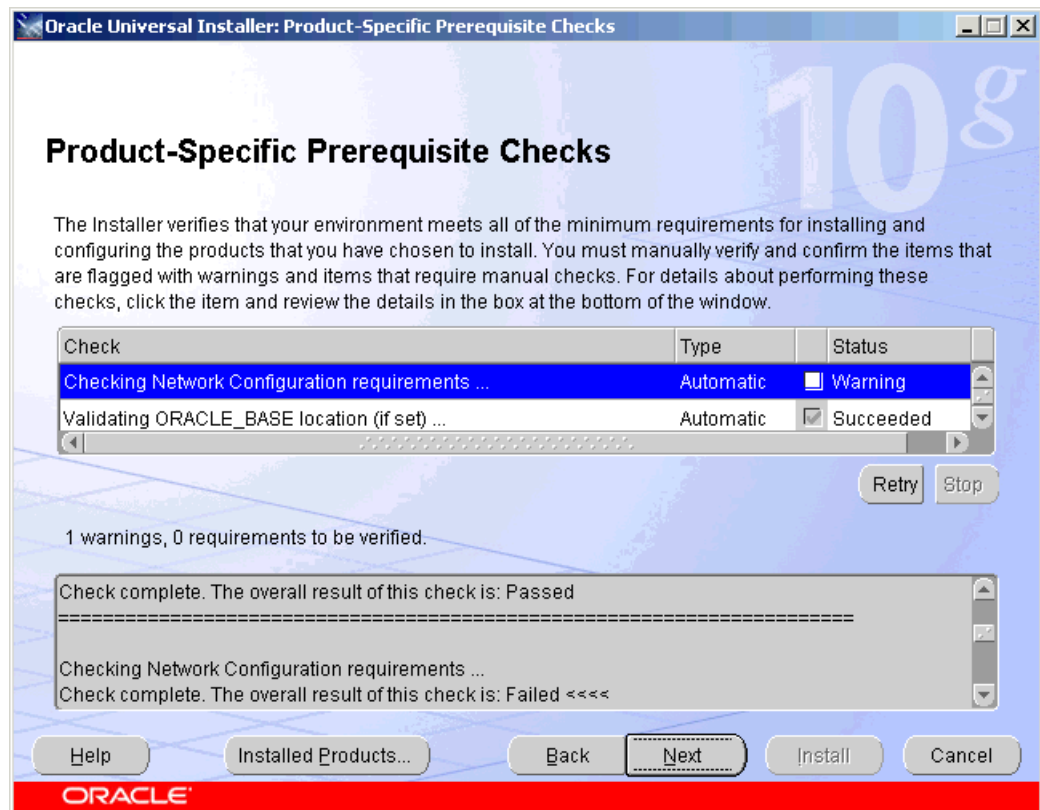
3. In the **Select Installation Type** dialog box, select **Enterprise Edition** and then click **Next**.



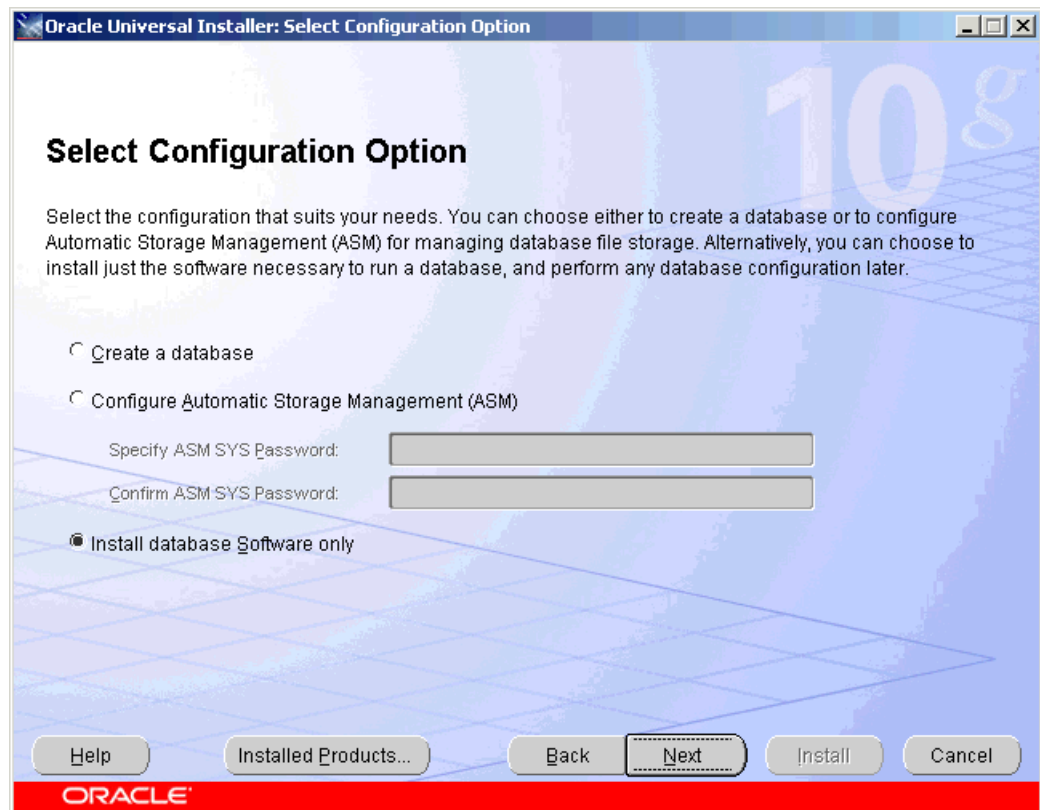
4. In the **Specify Home Details** dialog box, provide a name and the path in which to install the server.



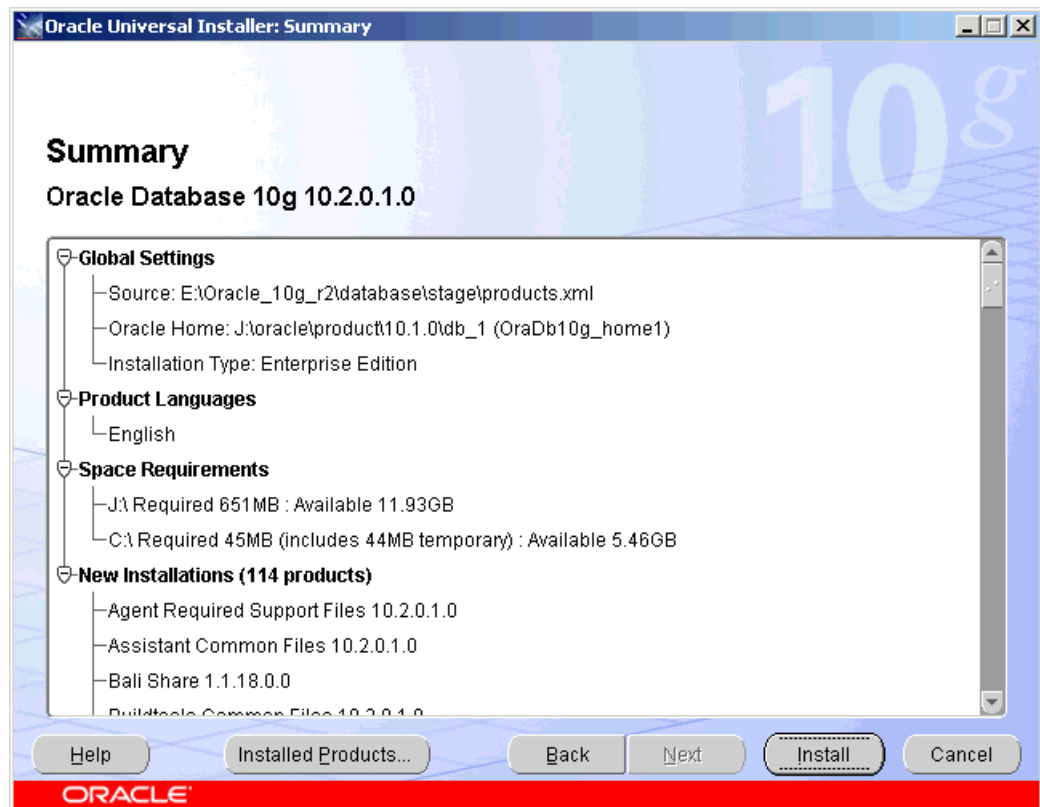
5. In the **Product-Specific Prerequisite Checks** dialog box, any requirements that are not met by the environment are listed. Review the list and make any necessary changes to the environment before proceeding.



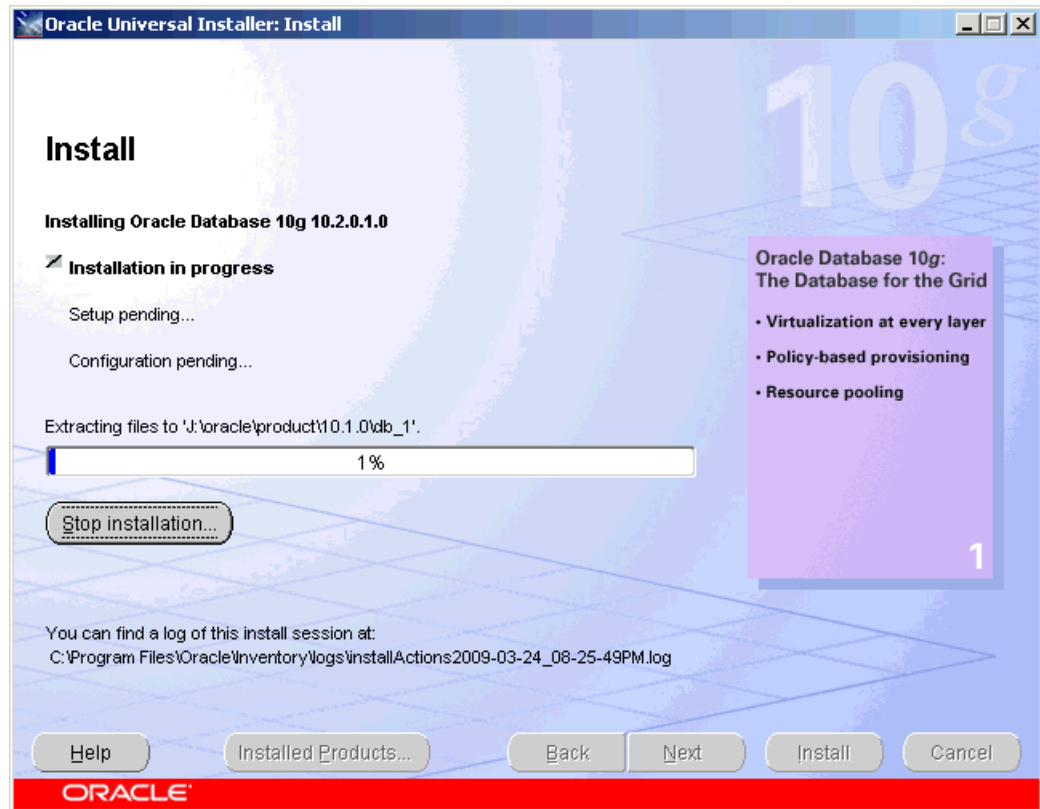
6. In the **Select Configuration Options** dialog box, select **Install database Software only** and then click **Next**.



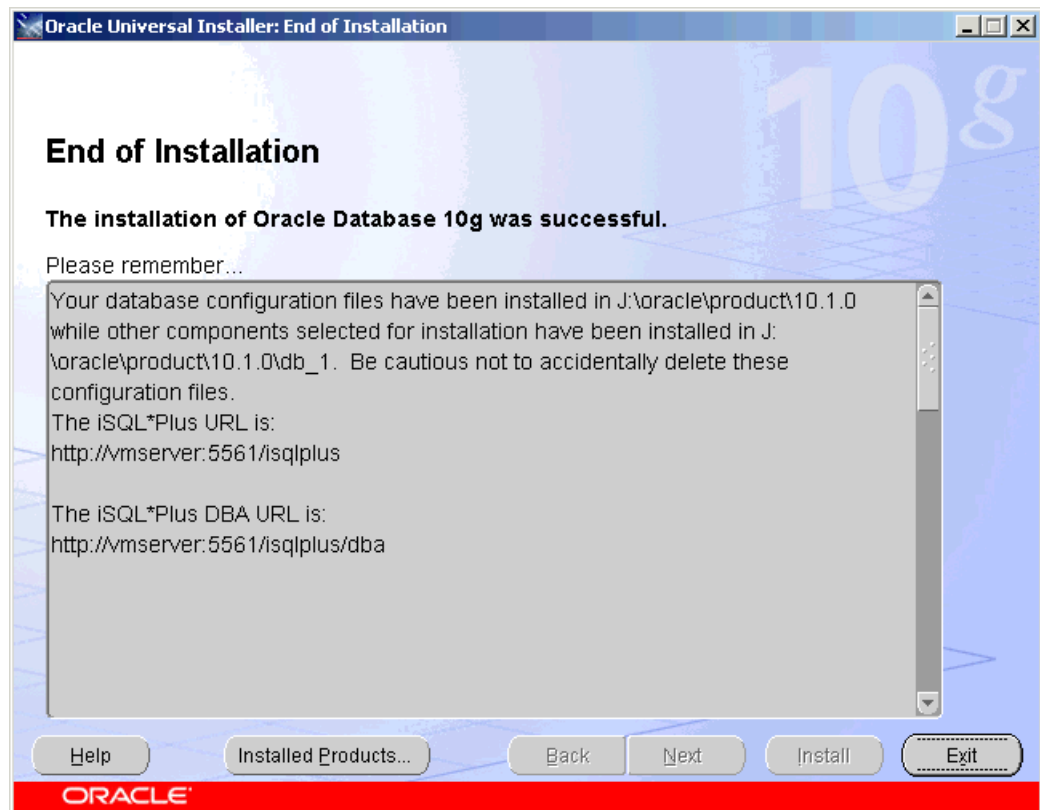
7. In the **Summary** dialog box, review your selections and then click **Install**.



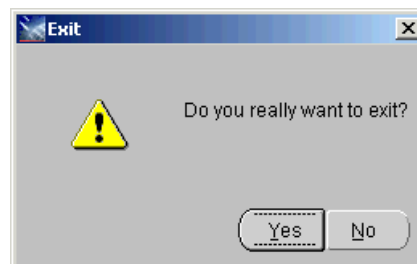
The **Install** dialog box reports the status of the installation.



8. After the installation completes the **End of Installation** dialog box is displayed. Click **Exit**.



9. In the **Exit** dialog box, click **Yes**.



Listener

The Oracle listener:

- Monitors remote connection requests made of the database.

These come from the rich client (in a two-tier environment) or the corporate server (in a four-tier environment).

Because a remote connection mechanism is used, it is necessary to run a listener even if the corporate server is run on the Oracle server.

- Uses SQL*Net8 to communicate with the database, corporate server, and two-tier rich client.
- Can monitor connection requests for one database or for multiple databases.

The default Teamcenter installation uses a single listener for all databases. However, several listeners may run on the same system, each monitoring a particular database.

Configure the listener

Use the Oracle Net Configuration Assistant to create and configure a listener.

When configuring the listener, you provide the host on which it runs and port number it uses. Record these values; they are needed when installing Teamcenter.

The default host value is the name of the node running the Oracle server.

The default value of the port number is **1521**.

The Oracle Net Configuration Assistant is installed when you install the Oracle server.

Information about the listener configuration is stored in the **listener.ora** file.

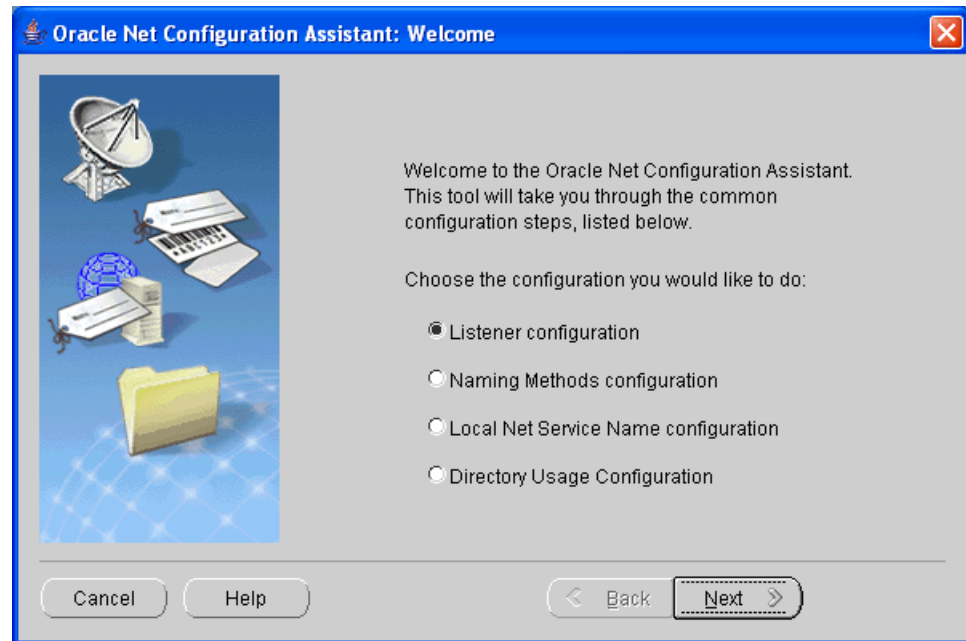
This file is located in:

`ORACLE_HOME\network\admin\listener.ora`

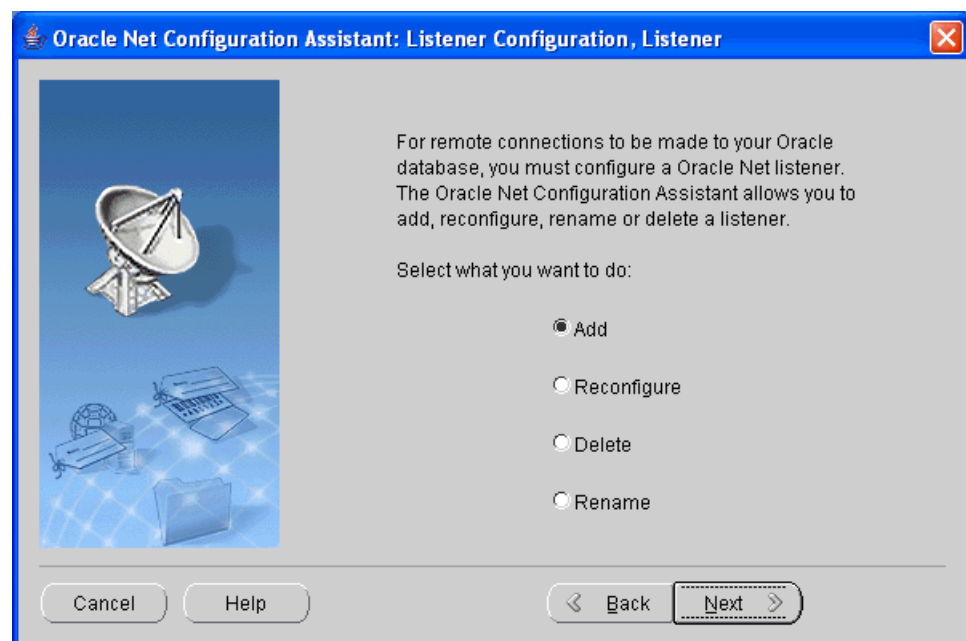
Creating a listener using the Oracle Net Configuration Assistant also creates a Windows service (Oracle TNSListener).

Create a listener

1. Start the Oracle **Net Configuration Assistant** by choosing **Start® All Programs® Oracle - OraDb10g_home1® Configuration and Migration Tools® Net Configuration Assistant**.
2. In the **Welcome** dialog box, select **Listener configuration** and click **Next**.



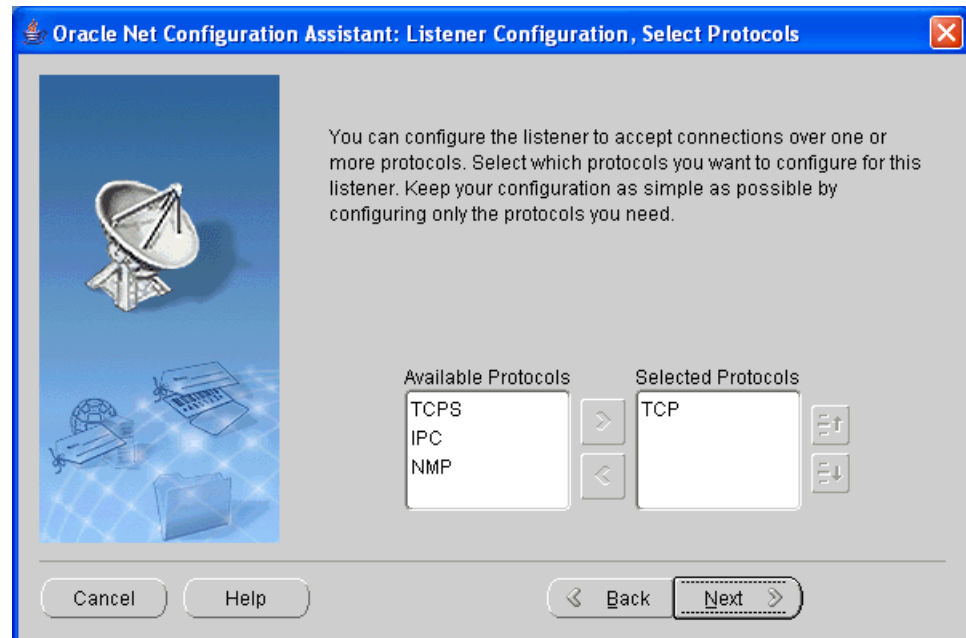
3. In the **Listener Configuration, Listener** dialog box, select **Add** and click **Next**.



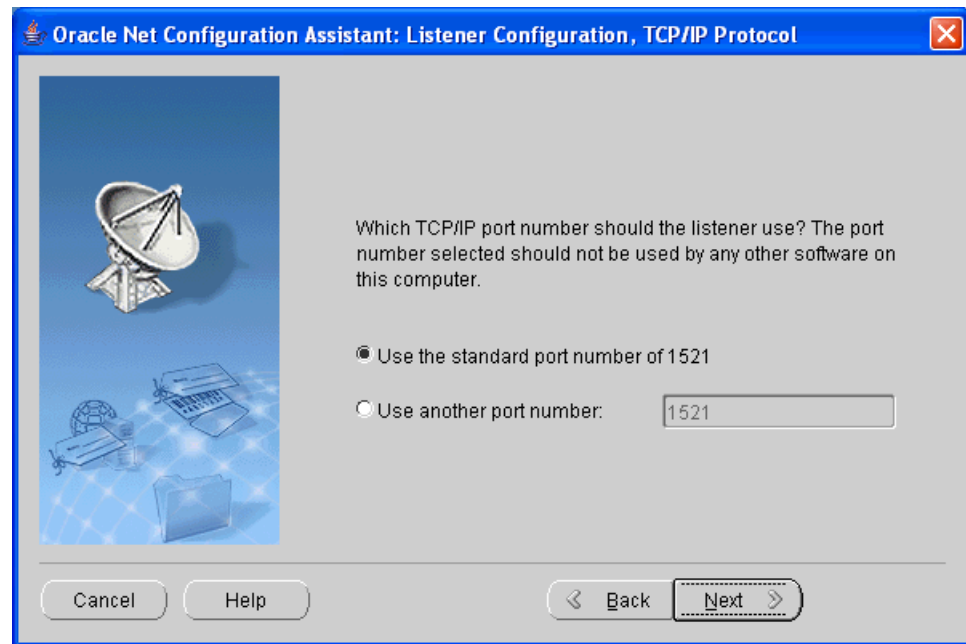
4. In the **Listener Configuration, Listener Name** dialog box, type the listener name in the **Listener name** box. The default is **LISTENER**. Record the value you use. Click **Next**.



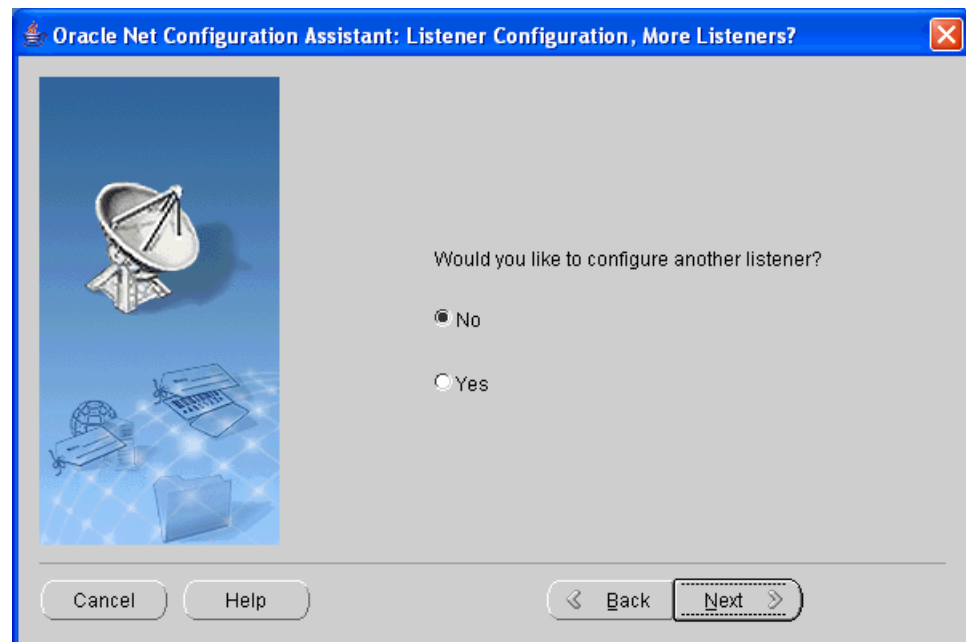
5. In the **Listener Configuration, Select Protocols** dialog box, select the **TCP** protocol. This is the default. Teamcenter uses only the **TCP** protocol to contact the listener. Click **Next**.



6. In the **Listener Configuration, TCP/IP Protocol** dialog box, provide the port number used by the listener. The default is **1521**. Record this value; it is needed when installing the corporate server. Click **Next**.



7. In the **Listener Configuration, More Listeners?** dialog box, you are prompted whether to configure another listener. Select **No**; only one listener is needed. Click **Next**.



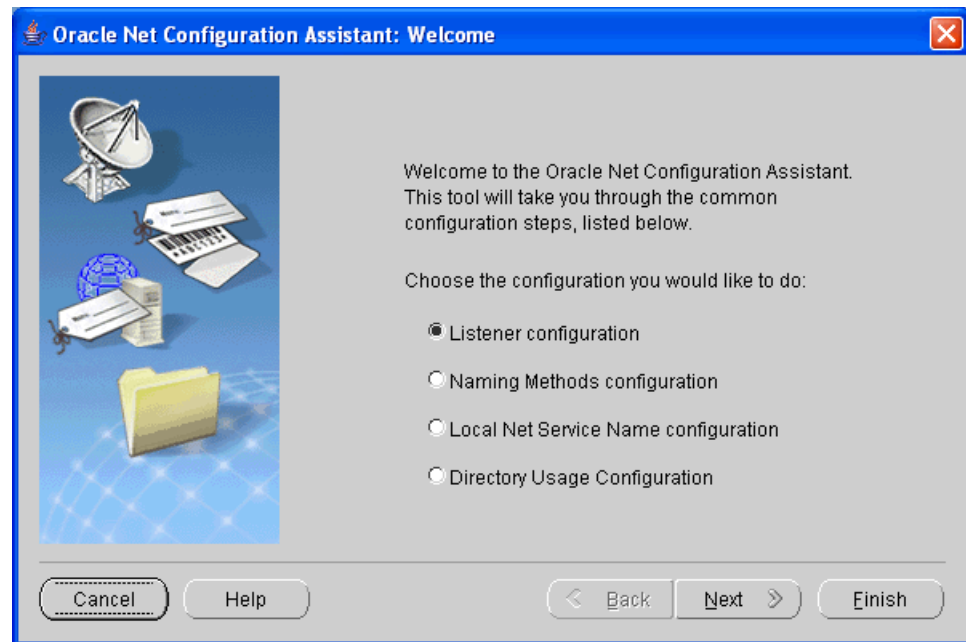
8. The **Listener Configuration Done** dialog box displays the **Listener configuration complete** message. Click **Next**.

Note

Do not click **Cancel**; you will lose your changes.



9. In the **Welcome** dialog box, click **Finish**.



The listener is installed as a Windows service. It is started and is set to start automatically when the system is booted.

Activities

In the *Oracle server, listener, and database* section, do the following activities using the **dba** account:

1. Create a database server
2. Create a listener
3. Start and stop the listener

Database

A database:

- Stores persistent metadata.
- Is used along with a database process.

This process must be running to access the database.

- Is uniquely identified (along with its database instance process) by an Oracle system identifier or SID.
- Is supported by an Oracle server.

The Oracle server process must be running to access the database.

- Supports a single Teamcenter site.

The relationship between a database and a site is one-to-one.

Oracle users

To support Teamcenter, the database must have the following Oracle user accounts:

- **system** user

Oracle Database Configuration Assistant (DBCA) creates the **system** user and you are prompted to provide a password. The password can be changed at a later date as required with the Oracle tools.

- **sys** user

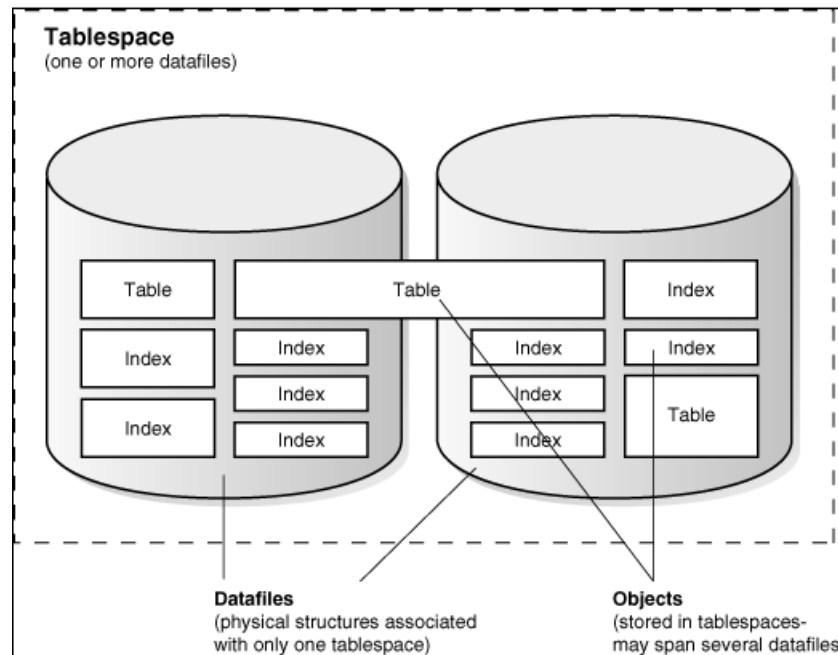
The DBCA creates the **sys** user and you are prompted to provide a password. The password can be changed at a later date as required with the Oracle tools.

- Database instance user (this user owns the Teamcenter data)

You create the database instance user:

- If you use the Teamcenter DBCA templates to create the database, the templates automatically create a database user named **infodba** with a password of **infodba**. If you prefer another user name or password, you can change it.
- If you use Teamcenter Environment Manager to create the database instance, you can provide any user name and password.

How the database stores data



Oracle stores data using the following:

- **Table**

A *table* is a logical structure used to store data. A table corresponds to a class of objects. A row in a table corresponds to a specific item. A column in a table corresponds to an attribute. A tablespace can have one or more tables and likely has many.

- **Datafile**

Each tablespace consists of one or more files called *datafiles*. These are the physical structures that store the data. A database can have one or more datafiles, but a datafile can belong to only one tablespace.

Oracle does not support Oracle database files on shared directories. To ensure data integrity, create database files on local disk drives.

- **Tablespace**

A *tablespace* is a logical structure used by Oracle to store data. A database can have one or more tablespaces. You can think of a tablespace as a logical container that groups both tables and datafiles.

Tables required by Teamcenter

The following tables are required by Teamcenter:

- **SYSTEM**
- **SYSAUX**
- **TEMP**
- **UNDOTBS**
- **IDATA**
- **INDX**
- **ILOG**

Tablespace	Description
SYSTEM	The SYSTEM tablespace is always created at database creation. Oracle uses it to manage the database. It contains the data dictionary, which is the central set of tables and views used as a read-only reference describing a particular database. It also contains various tables and views that contain administrative information about the database. These are all contained in the SYS schema and can only be accessed by SYS user or other administrative users with the required privilege.
SYSAUX	This is an auxiliary tablespace to the SYSTEM tablespace. Some components and products that, prior to Oracle database 10g, used the SYSTEM tablespace or their own tablespaces now use the SYSAUX tablespace. This reduces the load on the SYSTEM tablespace and reduces maintenance because there are fewer tablespaces to monitor and maintain. Every Oracle database 10g or later must have a SYSAUX tablespace.
TEMP	This is Oracle's <i>scratchpad</i> area. During large queries and sorts this tablespace is used heavily. Its size needs to be set proportional to the number of concurrent Teamcenter users and the amount of metadata.
UNDOTBS	This tablespace permits Oracle to maintain undo information. Its use expands with the amount of metadata. UNDOTBS is moderate, though typically heavier than that of SYSTEM .

Tablespace	Description
IDATA	This tablespace stores all of the Teamcenter metadata. It is the most actively accessed tablespace and receives the most growth.
INDX	The database administrator has the option of separating the indexes from the IDATA tablespace thus reducing the load created by IDATA .
ILOG	The Teamcenter logging functionality creates a separate tablespace to store Teamcenter logging's required tables and indexes.

Control files and redo files

Oracle requires two types of files in external structures:

- *Redo logs* buffer all incoming transactions.

These records are used by Oracle for failure recovery. The installation creates one set of three redo logs. The files are written to in a round-robin fashion, switching to the next file when a file is filled up. Consequently, there is little gained by separating the redo log files.

- *Control files* maintain a record of all an instance's physical elements.

These files are vital to Oracle; the Teamcenter installation creates three control files, each an identical copy. These files receive minimal I/O but must be separated to protect the database integrity.

Choosing how to create the database

Teamcenter requires an Oracle database to be configured with specific Oracle user accounts and tablespaces. To accomplish this, you can use either:

- Teamcenter-provided templates

Use the templates provided by Teamcenter to manually create a database in the Oracle Database Configuration Assistant (DBCA).

- Teamcenter Environment Manager

Create a multipurpose database manually using Oracle DBCA and then use Teamcenter Environment Manager to automatically configure the database with the Oracle user accounts and required tablespaces.

Using the templates to create a database

Use the templates provided by Teamcenter to manually create a database in the Oracle Database Configuration Assistant (DBCA).

The templates create a database instance that has the required Oracle user accounts and tablespaces. However, it creates a specific type of database instance, providing you with no options. For example, the database allows only one user per Oracle system identifier (SID).

This method is presented in more detail later in this lesson.

Using TEM to create a database

Create a multipurpose database manually using Oracle DBCA and then use Teamcenter Environment Manager to automatically configure the database with the Oracle user accounts and required tablespaces.

An advantage to creating a multipurpose database instance is that you can create multiple Teamcenter databases using a single Oracle SID, simplifying administration.

You should record the Oracle user/password associated with this SID and the absolute path to the tablespace directory on the database server host. This information is needed when running Teamcenter Environment Manager to configure the multipurpose database.

Create a database using the DBCA and TC templates

1. Log on to the operating system with an account with administrator privileges.
2. Copy all files in the Teamcenter templates folder to the Oracle templates folder.

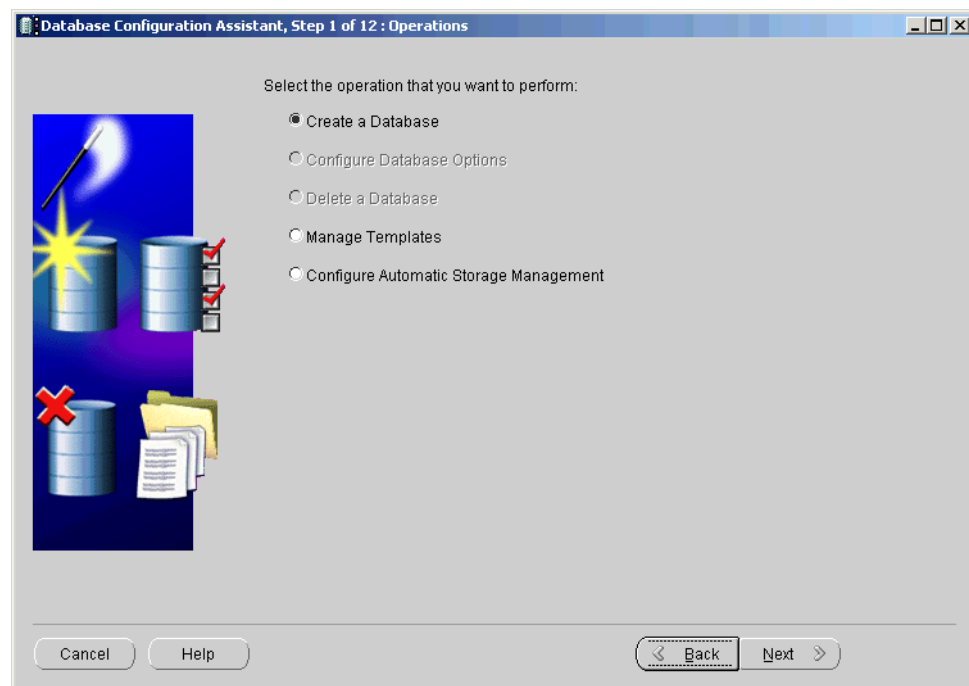
The Teamcenter templates folder is located on the installation DVD at:

`tc\db_scripts\oracle`

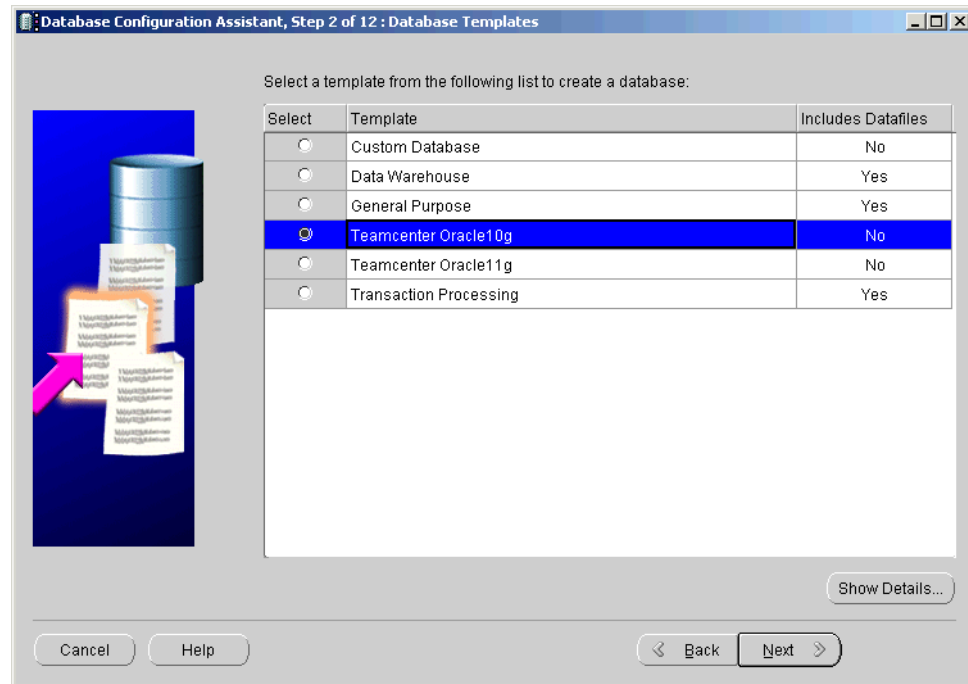
The Oracle templates folder is located at:

`ORACLE_HOME\assistants\dbca\templates`

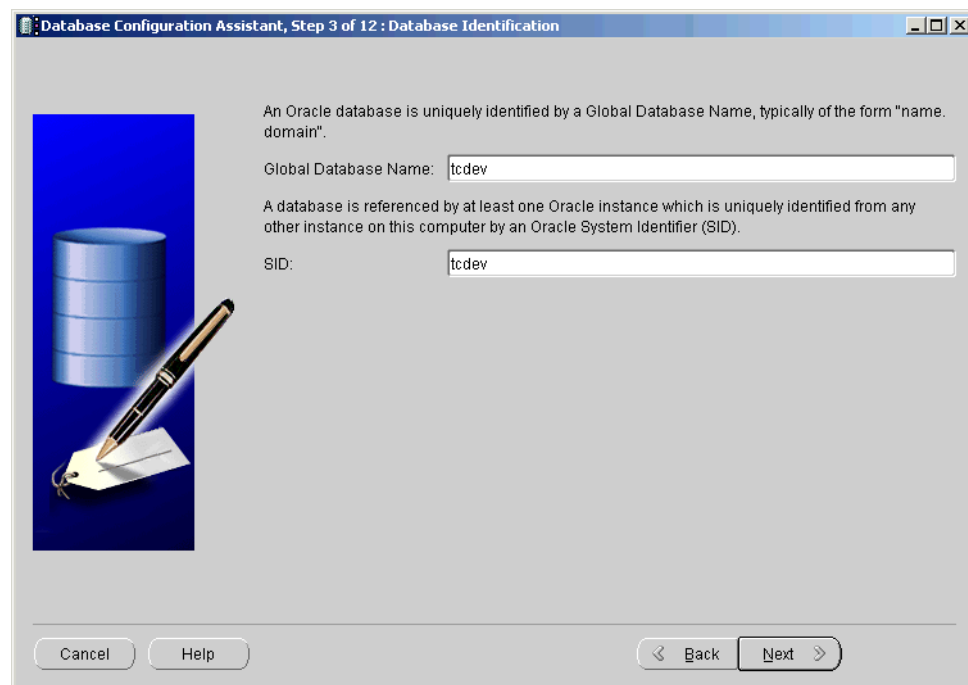
3. Choose **Start® All Programs® Oracle - OraDb10g_home® Configuration and Migration Tools® Database Configuration Assistant**.
4. In the **Welcome** dialog box, click **Next**.
5. In the **Operations** dialog box, select **Create a database** and click **Next**.



6. In the **Database Templates** dialog box, select **Teamcenter Oracle10g** or **Teamcenter Oracle11g** depending on the version of Oracle you installed. Click **Next**.

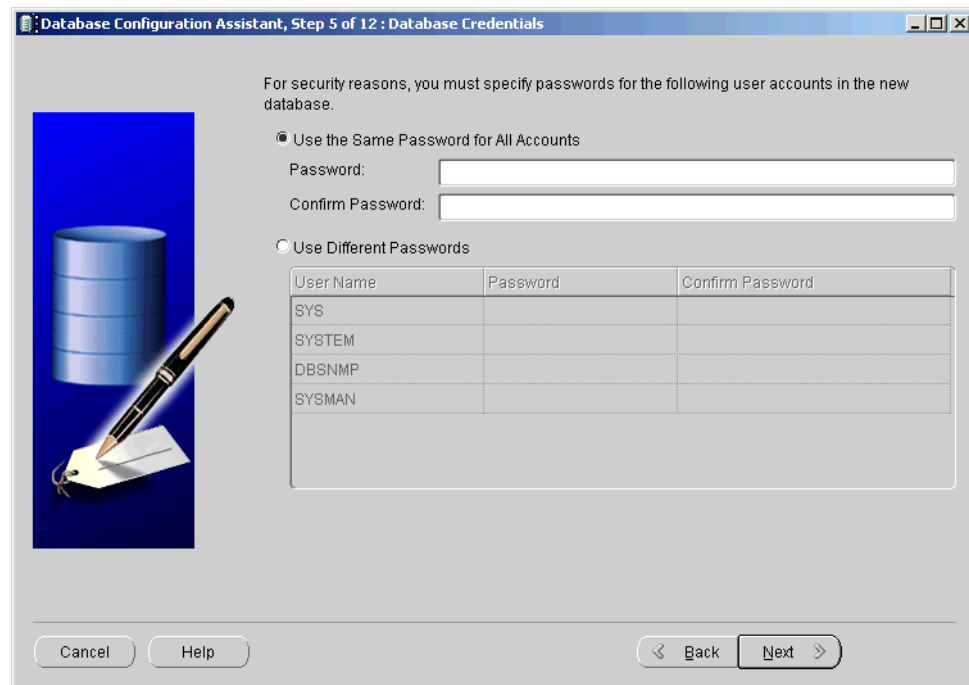


7. In the **Database Identification** dialog box, accept the defaults for the **Global Database Name** and **SID** and then click **Next**.



8. In the **Management Options** dialog box, accept the defaults and click **Next**.
9. In the **Database Credentials** dialog box, supply passwords for the Oracle users. You can define one password for all users or different passwords for each.

Record the passwords you define. You need the password for the **infodba** Oracle user to install Teamcenter.



Database Configuration Assistant, Step 5 of 12 : Database Credentials

For security reasons, you must specify passwords for the following user accounts in the new database.

☒ Use the Same Password for All Accounts

Password:

Confirm Password:

☐ Use Different Passwords

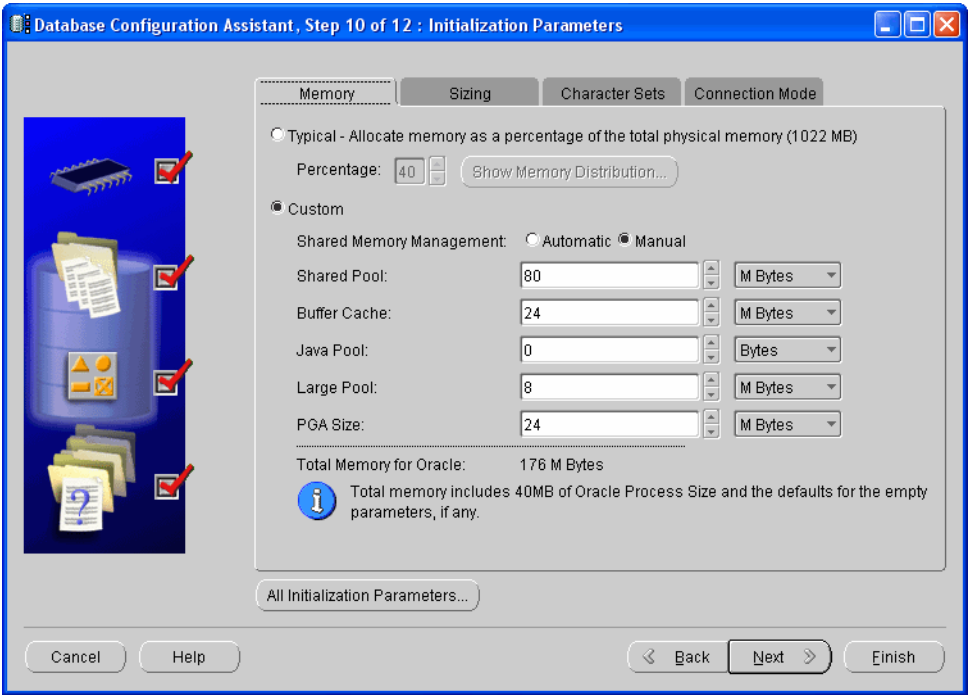
User Name	Password	Confirm Password
SYS		
SYSTEM		
DBSNMP		
SYSMAN		

Cancel Help Back Next

10. In the **Storage Options** dialog box, accept the default, which is to use the file system for database storage and click **Next**.
11. In the **Database File Location** dialog box, accept the default, which is to use the location defined in the template and click **Next**.
12. In the **Recovery Configuration** dialog box, accept the default recovery area and size and click **Next**.
13. In the **Database Content** dialog box, accept the defaults and click **Next**.
14. In the **Initialization Parameters** dialog box, accept the defaults.

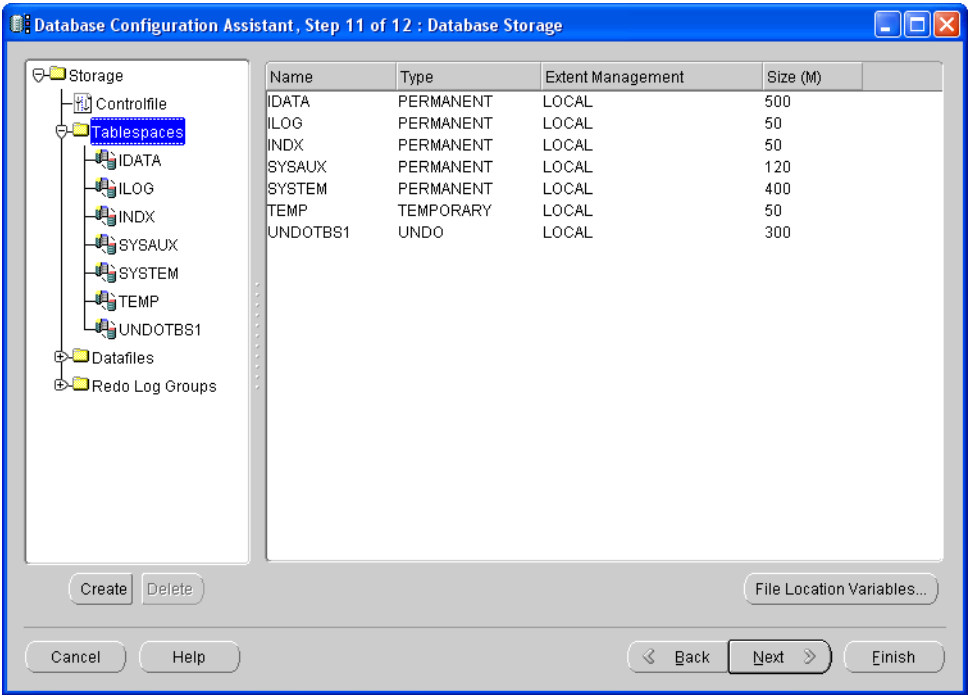
If you are not separating tablespaces to different locations or modifying the initial sizes of tablespaces, click **Finish** in the **Initialization Parameters** dialog box to begin creating the database.

If you are separating tablespaces or modifying their initial sizes, click **Next**.



15. In the **Database Storage** dialog box, define the path and initial size of each tablespace, control file, and redo log.

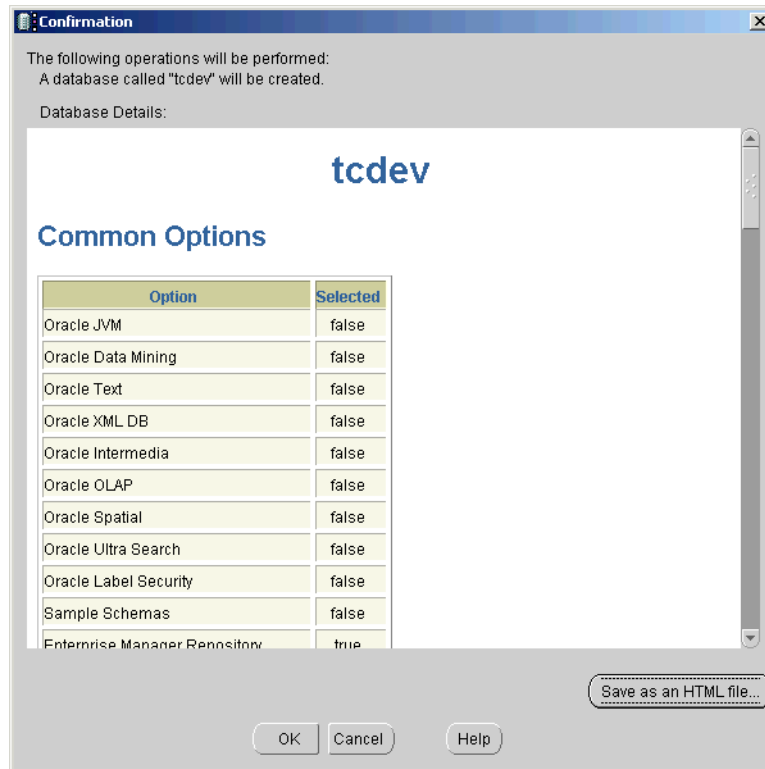
To do this, select the entity in the left-hand pane and type the desired values in the right-hand pane. Click **Next**.



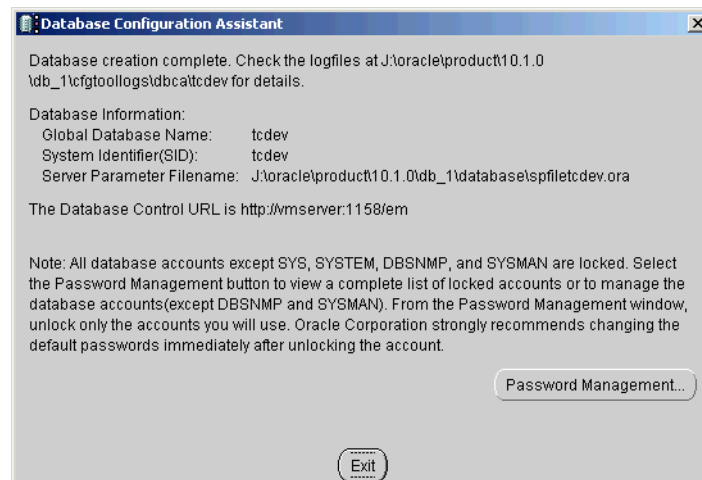
16. In the **Creation Options** dialog box, select **Create Database** and click **Finish**.

17. In the **Confirmation** dialog box, click **OK**.

The database creation process begins.



Once the database is created, the following dialog box appears.



18. After the database is created, check for possible errors in the installation log files. The log files are in the *ORACLE_HOME\admin\SID\create* directory.

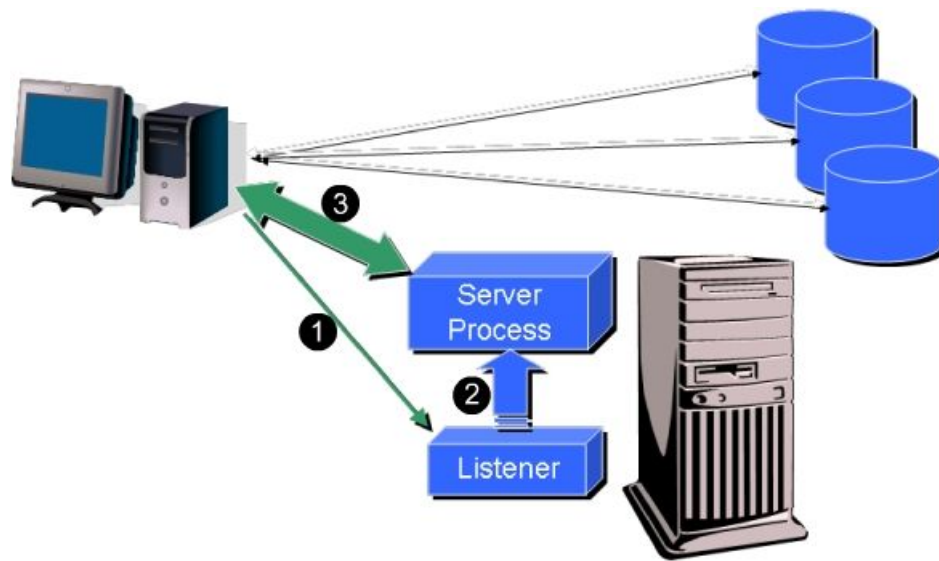
Note

Review the **customScripts.log** file carefully. This log file is the output from running the custom Teamcenter steps.

Accessing the database from a client

When a client needs to access a database:

1. The client contacts the Oracle listener process. (The default port is 1521.)
2. The listener starts a server process for the client.
3. The server process handles all service requests from the client.



Information needed to access the database from a client

To connect to a database, a client gets the information from the **tnsnames.ora** file. This information includes:

- Name of the Oracle server
- Service name
- Listener port number

tnsnames.ora

The **tnsnames.ora** file is located in *ORACLE_HOME\network\admin*.

An excerpt from a **tnsnames.ora** file follows:

```
prod =  
  (DESCRIPTION =  
    (ADDRESS_LIST =  
      (ADDRESS = (PROTOCOL = TCP) (HOST = harris01) (PORT = 1521))  
    )  
    (CONNECT_DATA =  
      (SERVICE_NAME = prod)  
    )  
  )
```

SERVICE_NAME = prod defines the service name to be **prod**.

HOST = harris01 defines the name of the Oracle server to be **harris01**.

PORT = 1521 defines the listener port to be **1521**.

Start and stop Oracle instances

To access a database, the following must be running:

- Server process (**OracleServiceSID**)

An Oracle server process must be running for each database.

- Listener

A single listener can support multiple databases.

Oracle Server processes (**OracleServiceSID**)

- Automatically starts at system boot.
- You can change the start up setting in **Services** pane.
- **OracleServiceSID** is required for the instance to start up at all. Without it, there is no means of communicating with or starting the database instance. If **OracleServiceSID** is set to manual, the Oracle server attempts to start the database at boot, but is unable to do so.

Database instance

- Starting a database instance process is referred to as initializing a database instance. The default is to initialize at boot.
- Start or stop an instance using:
 - Oracle Server Manager
 - SQL*PLUS **startup** and **shutdown** commands
- Never shut down a database instance by killing database processes from the Windows Task Manager. Oracle databases require orderly shutdowns to ensure that all necessary database transactions are completed. Failure to observe this may result in the corruption of the database. Manual termination of processes also prevents Oracle from releasing memory that is no longer needed and could cause the need for additional database recovery procedures at the next database startup.
- There is no method of starting up all database instances at the same time after the system has been started. The only way to start all database instances at once is to configure each database individually to start up automatically following a system boot.

SQL*Plus

*SQL*Plus* is a tool included with Oracle that can be used to:

- Confirm that a connection to the database can be made.
- Retrieve and manipulate data.
- Create database objects.
- Alter database parameters.
- Create new databases.

Connect to a database using nolog

To log on to SQL*Plus using **nolog**:

1. Open a **Command Prompt** window.
2. Type **sqlplus /nolog**.
3. Type **connect / as sysdba**.
4. SQL*Plus responds with:

Connected

At this point, you can start and stop the database.

Connect to a database using a connect descriptor

To log on to SQL*Plus using a connect descriptor:

1. Open a **Command Prompt** window.
2. Type **sqlplus** *db-user/password@Net-Service-name*
3. SQL*Plus responds with:

Connected

Connect descriptor

db-user/password@Net-Service-name is called a connect descriptor.

db-user is the name of the Oracle user associated with the database.

password is the password for the Oracle user associated with the database.

Net-Service-name has the same value as the SID, but it is not the SID or the service name.

Activities

In the *Oracle server, listener, and database* section, do the following activities using the **dba** account:

1. Create a database
2. Start and stop a database instance

Review questions

1. The Oracle _____ monitors remote connection requests made of the database.

Select one answer.

- Database server
- Listener
- Universal Installer

2. _____ is the protocol used for communication between the database server, the listener, and the database.

Select one answer.

- FTP
- HTTP
- IIOP
- SQL*Net8

3. You can create and configure an Oracle database for use with Teamcenter by first creating a general purpose database using the Oracle Database Configuration Assistant and then configuring that database using Teamcenter Environment Manager.

Select one answer.

- True
- False

4. A _____ is a logical structure used to store data.

Select one answer.

- Bin
- Data file
- Row
- Table

Summary

The following topics were taught in this lesson:

- The Oracle architecture used to support Teamcenter
- Oracle database server
- Oracle listener
- Oracle database
- Starting and stopping Oracle processes

Lesson

4 *MS SQL Server 2005 server and database*

Purpose

This lesson provides basic concepts about the MS SQL 2005 server and database, how they work with Teamcenter, and how to create them.

Objectives

After you complete this lesson, you should be able to:

- Describe how to install MS SQL 2005 Server.
- Describe how to manually configure an MS SQL 2005 Server database.
- Describe how to use TEM to configure an MS SQL 2005 Server database.

Help topics

Additional information for this lesson can be found in:

- The *Microsoft SQL Server installation and configuration* chapter in the [*Installation on Windows Servers Guide*](#)

MS SQL 2005 Server overview

The resource tier of both the two-tier and the four-tier architectures stores persistent metadata. This is accomplished using a relational database management system (RDBMS). An RDBMS stores metadata so that it can be retrieved and manipulated.

Teamcenter supports two RDBMSs:

- Oracle
- Microsoft SQL

For a list of supported RDBMS versions, refer to the GTAC Web site:

<http://support.ugs.com>

This lesson discusses setting up Microsoft SQL Server as a site's RDBMS.

MS SQL architecture

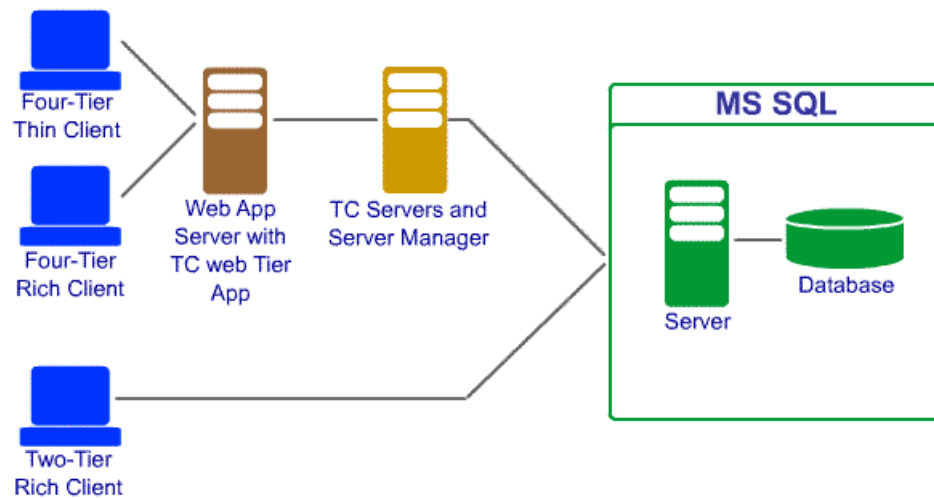
The major components of a Microsoft SQL Server installation are:

- Server

Provides application files, controls access to the database, and handles failure recovery.

- Database

Stores metadata.



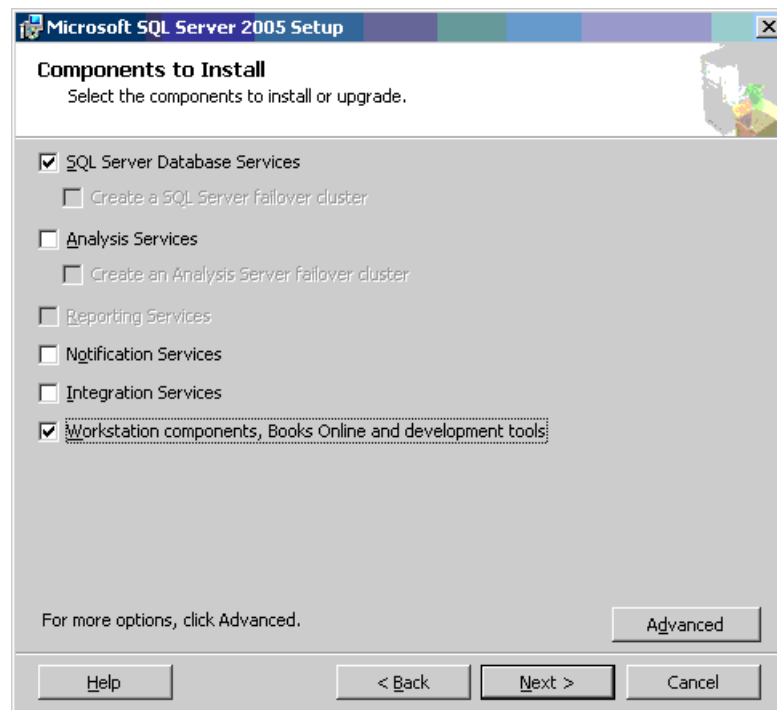
MS SQL installation overview

The overall process for installing an MS SQL server and database for use with Teamcenter is:

1. Install the MS SQL server.
2. Create an MS SQL database one of the following ways:
 - Automatically by using Teamcenter Environment Manager (TEM)
 - Manually by using SQL Server Management Studio

Install MS SQL Server

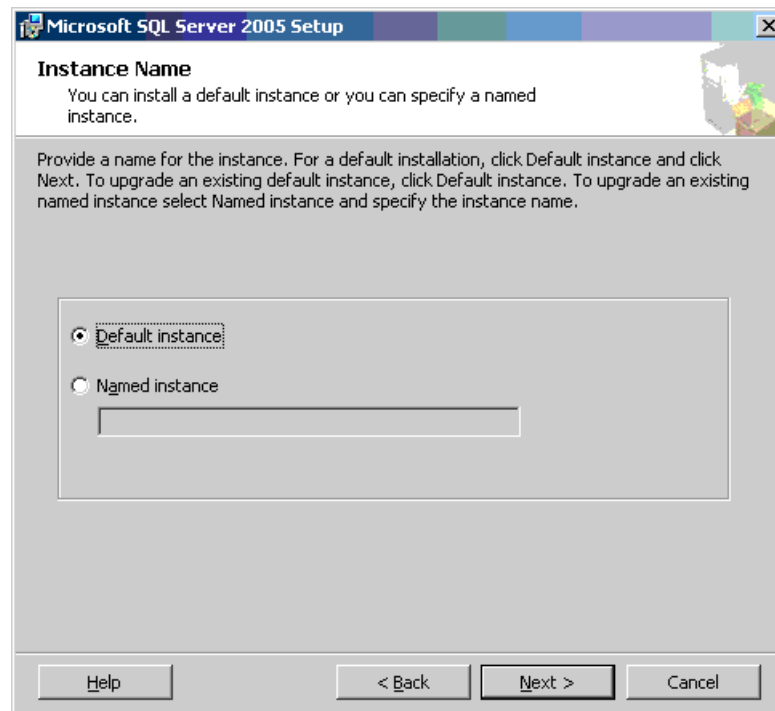
1. Log on to an account with system administrator privileges.
2. Launch the Microsoft SQL Server installation wizard and proceed through the dialog boxes regarding licensing, prerequisites, and registration information.
3. In the **Components to Install** dialog box, select the following components:
 - **SQL Server Database Services**
 - **Workstation components, Books Online and development tools**



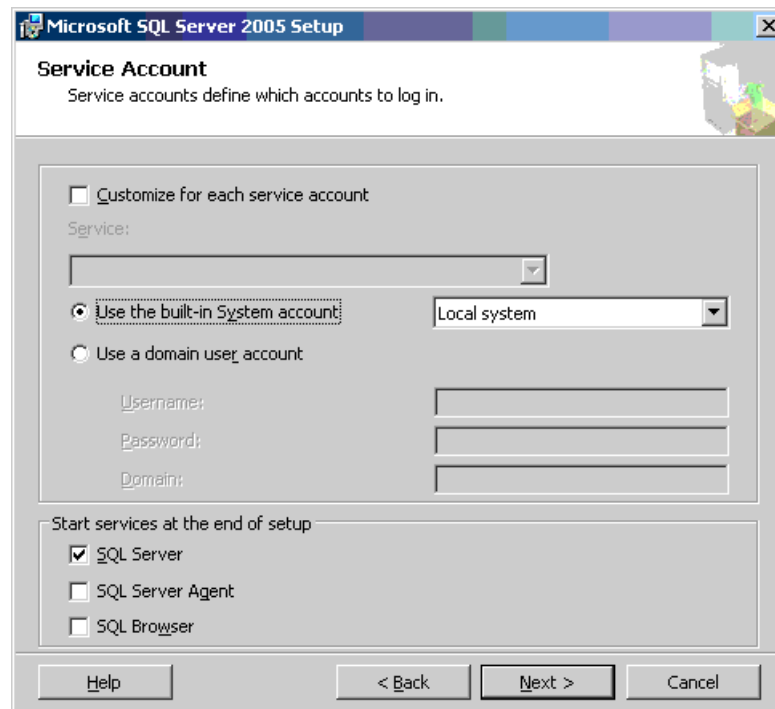
4. In the **Instance Name** dialog box, choose an instance type. Teamcenter supports both **Default Instance** and **Named Instance**.

Note

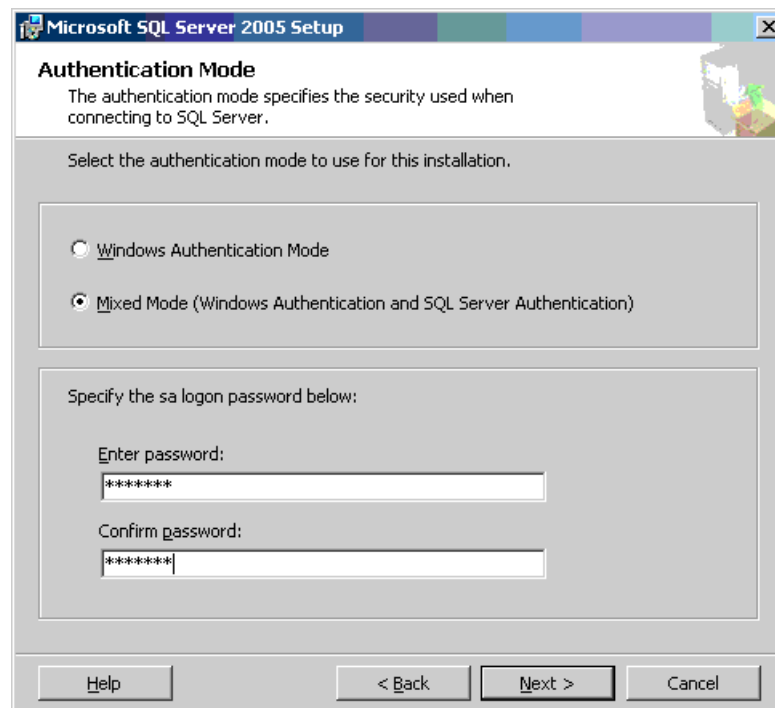
If you choose **Named Instance**, make sure you start the **SQL Browser** service before connecting to the database. If this service is not enabled, you can change these settings using the **SQL Server Configuration Manager** after installation is complete.



5. In the **Service Account** dialog box, enter the following settings:
- Make sure the **Customize for each service account** check box is cleared.
 - Choose **Use the built-in System account** and select **Local system** in the associated list.
 - Under **Start services at the end of setup**, select **SQL Server**.

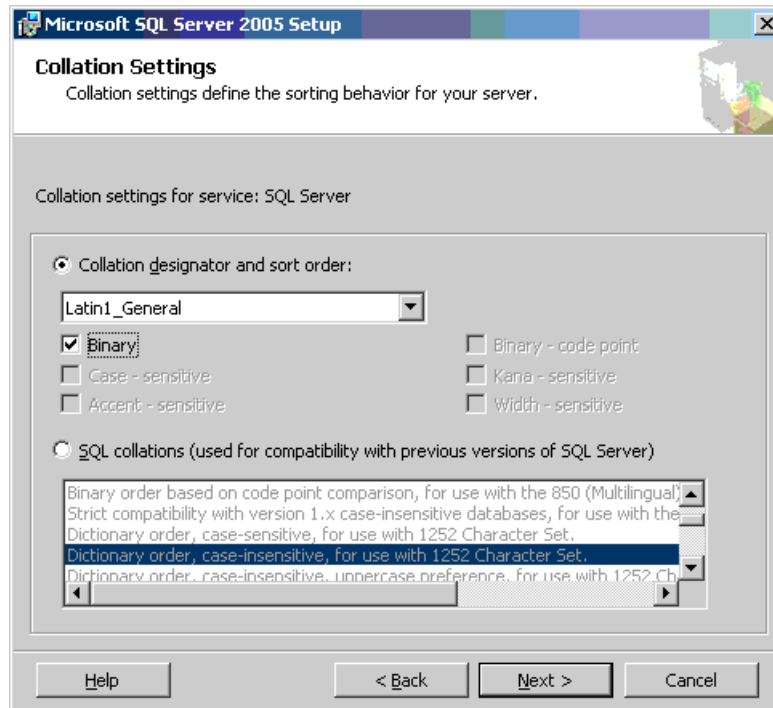


6. In the **Authentication Mode** dialog box, select **Mixed Mode** and define a password for the SQL Server sa logon account.

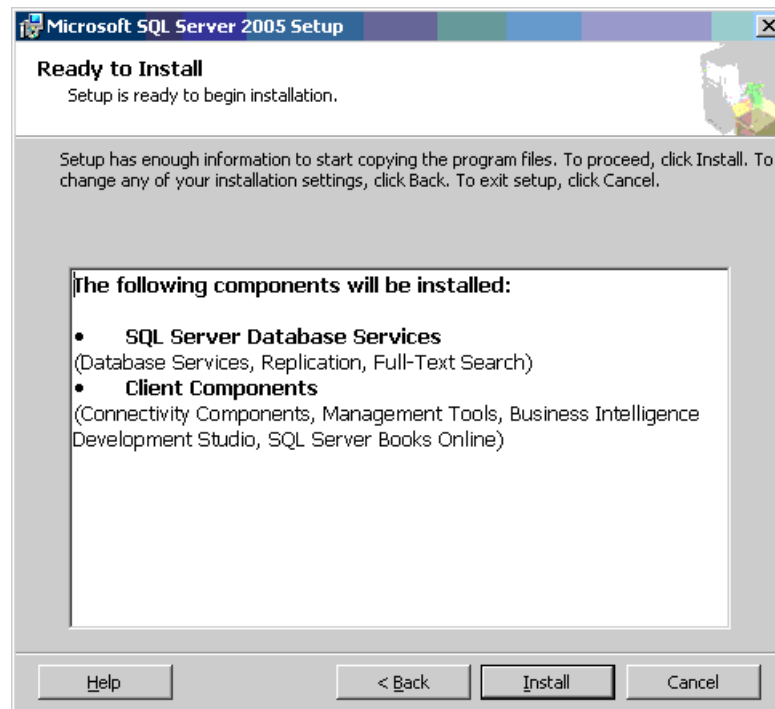


7. In the **Collation Settings** dialog box, enter the following settings:
- Select **Collation designator and sort order**.

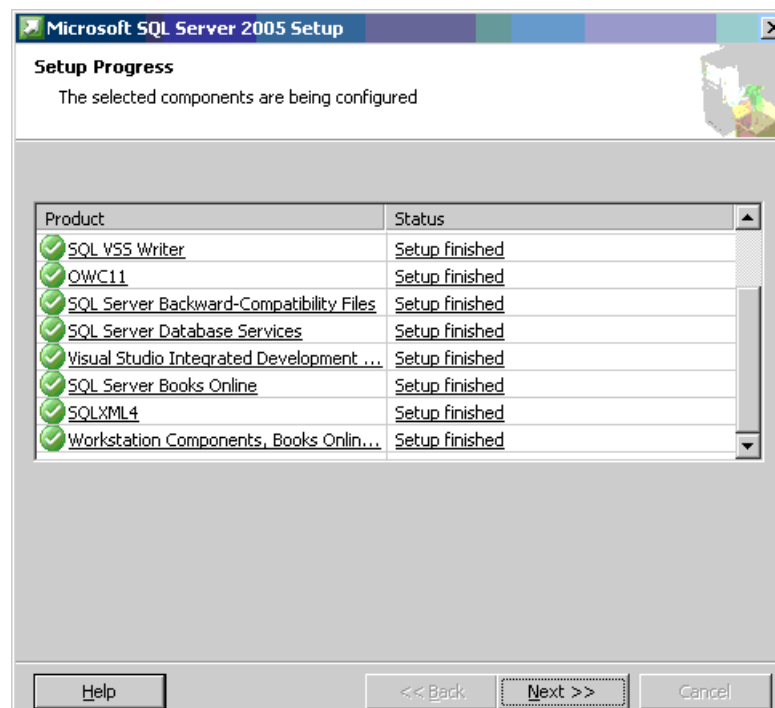
- Select **Latin1_General** from the list.
- Select **Binary**.



8. In the **Error and Usage Report Settings** dialog box, select the options you want to use. None of these are used by Teamcenter.
9. In the **Ready to Install** dialog box, review your selections and click **Install**.



10. The **Setup Progress** dialog box displays the status of the installation. When the **Status** box for each product being installed reads **Setup finished**, the installation is complete. Click **Next**.

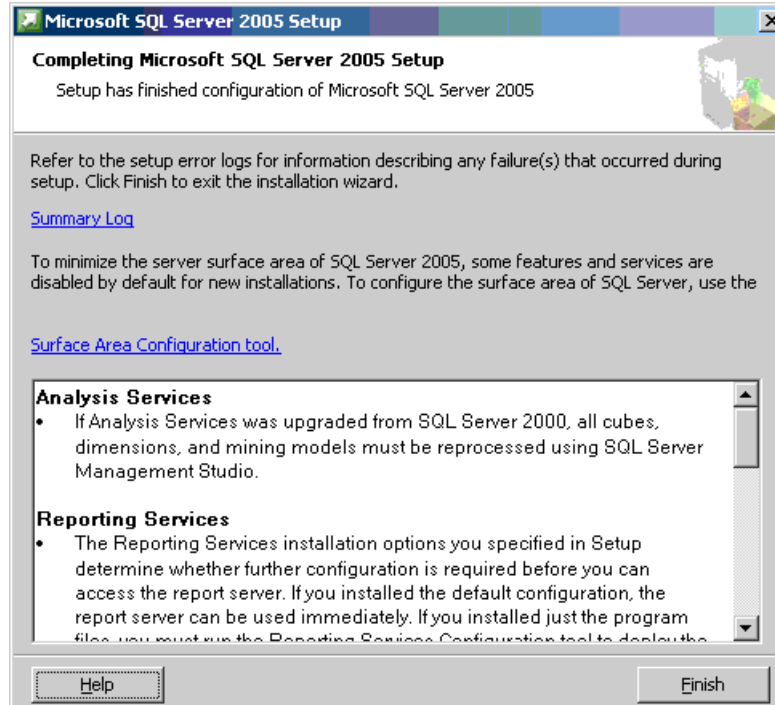


11. The **Completing Microsoft SQL Server 2005 Setup** dialog box provides:

- A link to a summary log for the installation

- A link to the Surface Area Configuration tool
- A list of installed components

Click **Finish**.



Install an MS SQL database using TEM

Teamcenter Environment Manager (TEM) can create and populate an SQL Server database when you install a Teamcenter corporate server.

In the **Database Engine Selection** panel, TEM prompts you for database information for the SQL Server database. To create a new database, enter new values. To connect to an existing database, enter values for the existing database.

For more information see the *Creating a corporate server* lesson.

Install an MS SQL database using SQL Server Management Studio

1. Make sure you have access to the Teamcenter software distribution image.
2. Launch Microsoft SQL Server Management Studio:
Start® All Programs® Microsoft SQL Server 2005® SQL Server Management Studio
3. In the **SQL Connect to Server** dialog box, log on using the system administrator (**sa**) logon name and password.
4. Choose **File® Open® File**.
5. Browse to the **tc\db_scripts\mssql\2005** directory in the Teamcenter software distribution image.
6. Select the **create_database.sql** file and click **Open**.
If SQL Server Management Studio prompts you to log on, enter the system administrator (**sa**) logon name and password.
7. If you want to customize how the Teamcenter database is created, edit the database template (**create_database.sql**).
8. Click **Execute** to begin creating the database.
9. When creation of the MS SQL database instance is complete, verify the newly created database. In the **Object Explorer** pane, under the MS SQL Server host name, expand the **Databases** tree. Verify the new database name is included in the list of databases.

Activity

In the *MS SQL Server 2005 server and database* section, do the following activities using the **dba** account:

1. Install MS SQL Server

Review questions

1. When installing the MS SQL 2005 Server for use with Teamcenter, you should select the following components: **SQL Server Database Services** and **Workstation components, Books Online and development tools**.

Select one answer.

- True
- False

2. You can create and configure an MS SQL database for use with Teamcenter automatically using _____ .

Select one answer.

- Database Configuration Assistant
- SQL Server Management Studio
- Teamcenter Environment Manager
- Universal Installer

3. If you use SQL Server Management Studio to create an MS SQL database for use with Teamcenter, execute the file, _____, which is found in the **tc\db_scripts\mssql\2005** directory in the Teamcenter 8 software distribution image.

Select one answer.

- **configure_database.sql**
- **connect_database.sql**
- **create_database.sql**
- **install_database.sql**

Summary

The following topics were taught in this lesson:

- How to install MS SQL 2005 Server
- How to manually configure an MS SQL 2005 Server database
- How to use TEM to configure an MS SQL 2005 Server database

Lesson

5 *Creating a corporate server*

Purpose

This lesson explains the function of the Teamcenter corporate server and how to install it.

Objectives

After you complete this lesson, you should be able to:

- Describe the function of the Common Licensing Server.
- Install the Common Licensing Server.
- Describe the function of the Teamcenter corporate server.
- Describe the components of a corporate server.
- Describe how FMS and TCFS manage files.
- Describe solutions and features.
- Describe the features available for a corporate server.
- Describe a Teamcenter configuration.
- Describe Teamcenter Environment Manager (TEM).
- Create a corporate server.
- Describe the function of the **tc_profilevars.bat** file.
- Describe the function of the **tnsnames.ora** file.

Help topics

Additional information for this lesson can be found in:

- *Teamcenter server installation* topic in the [Installation on Windows Servers Guide](#)

- *Teamcenter server installation* topic in the [*Installation on UNIX and Linux Servers Guide*](#)

Common Licensing Server

Before you install Teamcenter, you must install the Siemens PLM Software Common Licensing Server to distribute licenses to Teamcenter hosts.

Caution

The Siemens PLM Software Common License Server must be running, and two or more seats must be available on that license server during Teamcenter server installation. Otherwise, database creation fails because the **make_user** utility cannot create the required users in the database.

The documentation for the Common Licensing Server is found on the Teamcenter documentation distribution image in **additional_documentation**. The documents are:

- *Installing UGS Licensing for UNIX*
- *Installing UGS Licensing for Windows*
- *UGS Licensing User Guide*

Named user licensing

Teamcenter employs *named user licensing*, which ties each user in the system to an available license and ensures the total number of active authors and consumers in the system is always less than or equal to the number of author/consumer licenses purchased.

There are two levels of Teamcenter user licenses, corresponding to different roles within an organization:

- **Author** is a user that creates or modifies data for product and process information.
- **Consumer** is a user that views, approves, rejects, or comments on product and process information.

Licensing server installation overview

1. Obtain a Teamcenter 8 license file from Siemens PLM Software. Edit the license file so that it contains the host name of your license server host.
2. Install the licensing server from the Teamcenter distribution image.
3. Set the **UGS_LICENSE_SERVER** environment variable.

Edit the license file

1. Obtain a Teamcenter 8 license file from Siemens PLM Software. Save the license file in a directory accessible to the license server host.
2. Open the license file in a plain text editor and locate the following line in the file:

```
SERVER YourHostname ANY 28000
```

3. Replace **YourHostname** with the host name of the designated license server host. Update your Siemens PLM Software customer service representative with your license server host information.

Note

Record the host name and port for the license server. Teamcenter Environment Manager (TEM) prompts you for these values during Teamcenter server installation.

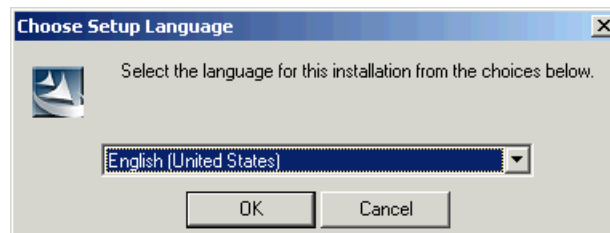
Siemens PLM Software recommends you do not change the license server port from its default value (28000) unless it is necessary to resolve a port conflict.

Port 28000 is registered for the Common Licensing Server with the Internet Assigned Numbers Authority (IANA). For more information, see <http://www.iana.org/assignments/port-numbers>.

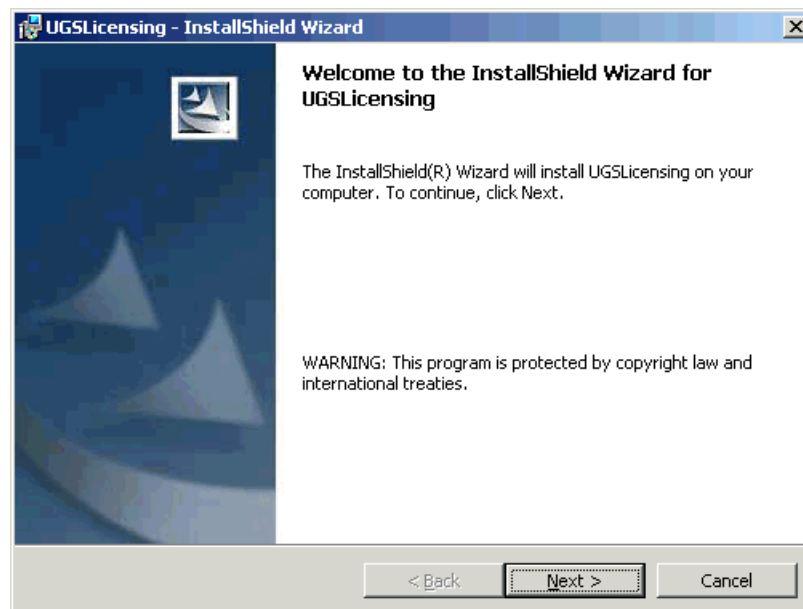
4. Save the changes to the license file.

Install the Common Licensing Server

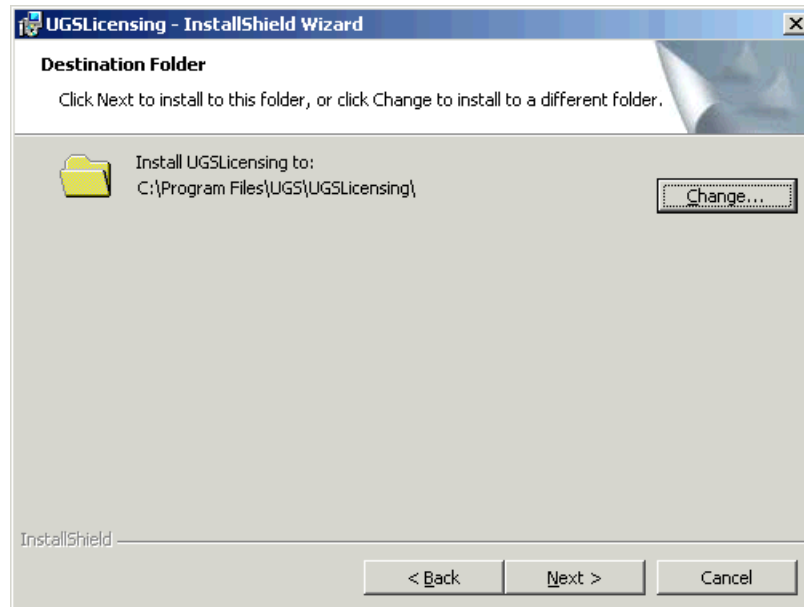
1. In the Teamcenter distribution image, navigate to **additional_applications\ugslicensing\ugslicensing** and double-click **setup.exe**.
2. In the **Choose Language Setup** dialog box, select the language to use during installation.



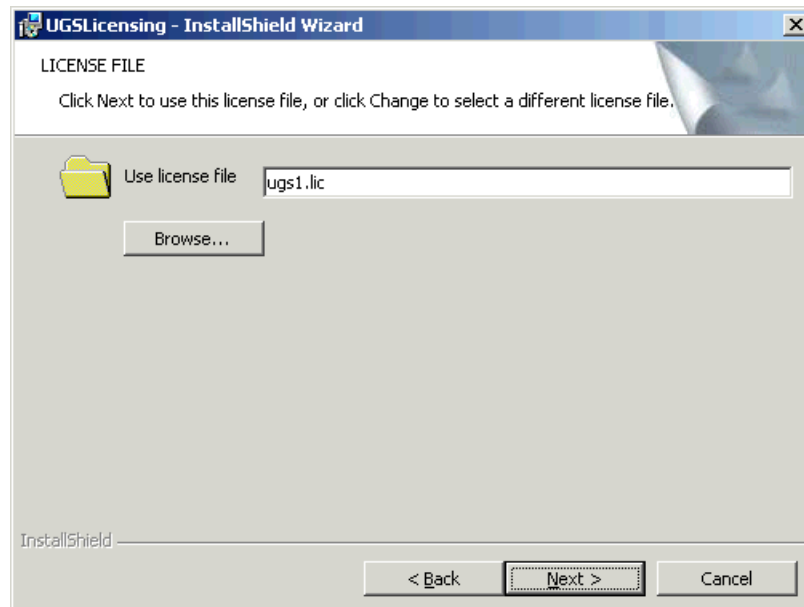
3. In the **Welcome** dialog box, click **Next**.



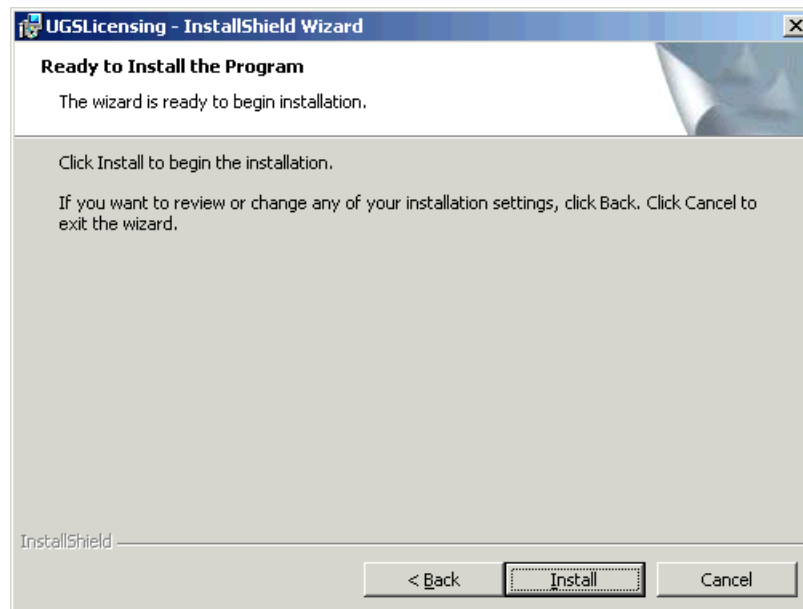
4. In the **Destination Folder** dialog box, select the location in which to install the Common Licensing Server. If you need to select a location other than the default, click **Change**. After selecting the location, click **Next**.



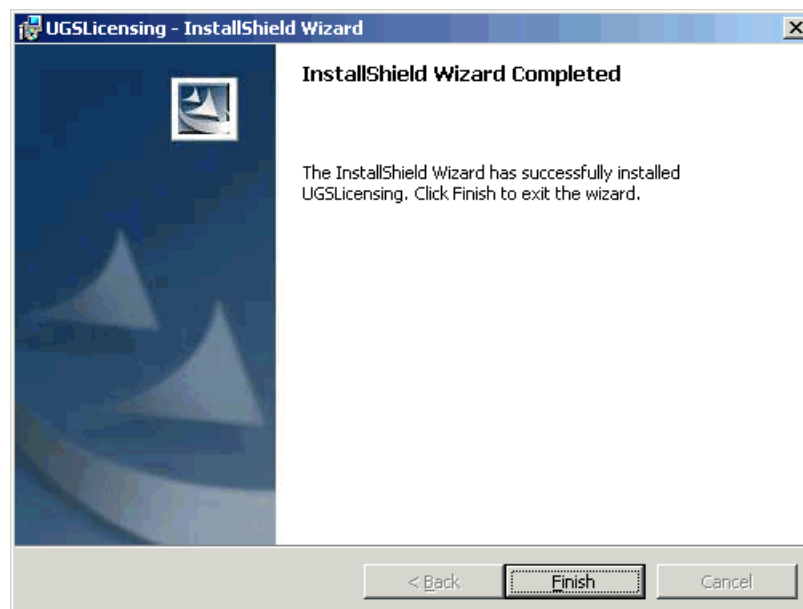
5. In the **LICENSE FILE** dialog box, select the license file by clicking **Browse** and navigating to the file. After selecting the file, click **Next**.



6. In the **Ready to Install the Program** dialog box, click **Install**.



7. In the **InstallShield Wizard Completed** dialog box, click **Finish**.



When the installation is complete, the license server installation program starts the license daemon (**ugslmd**).

Set UGS_LICENSE_SERVER

The licensing server is initialized by setting the **UGS_LICENSE_SERVER** environment variable as follows:

UGS_LICENSE_SERVER=port@host.

This is the configured port for the license daemon (**lmgrd**).

```
UGS_LICENSE_SERVER=28000@ahsun014
```

If you use multiple license servers for redundancy, separate the license server list using commas not colons or semicolons.

- Using commas assumes that all servers in the list contain the same complete license file. When the first server is down, it checks only the next server in the list.
- Using colons or semicolons assumes that you are using multiple independent servers. When the first server is down, it checks each following server in sequence, as each server is managing a separate list of licenses.

For example:

```
UGS_LICENSE_SERVER=28000@ahsun014,28000@osnsun3,28000@vpdmsgil
```

Managing the licensing server

The licensing server installation provides two utilities for managing the licensing server:

- **LMTOOLS** is a graphical interface license administration tool. To run this utility, choose **Start® All Programs® UGS Licensing® LMTOOLS**.
- **lmutil** is a command line license administration tool.

Some of the functions these tools perform include:

- Starting and stopping the license server
- Configuring the license server
- Getting system information such as hostids
- Getting server status

Corporate server

The corporate server is at the center of a Teamcenter site. It is the first Teamcenter configuration you install for both the two-tier architecture and the four-tier architecture. It is the first volume server.

It contains site-specific information (in *TC_DATA*) including, but not limited to:

- Data model
- Default Teamcenter preferences
- RDBMS connection information
- Dataset definitions

The corporate server contains:

- Teamcenter application root directory, *TC_ROOT*
- Teamcenter data directory, *TC_DATA*
- File Management System (TFS, TCFS, and at least one volume)

TC_ROOT and TC_DATA

When installing the corporate server, you are prompted for the destination location of two directories that are central to the Teamcenter environment: *TC_ROOT* and *TC_DATA*. These directories can be located on one machine or on multiple machines. Where they are located depends on hardware distribution and load balancing.

- *TC_ROOT* is the application root directory. It contains the Teamcenter binary executables and files.
- *TC_DATA* is the data directory. It contains the Teamcenter data model. There is one data model per Teamcenter site. Each data model is associated with one Oracle database user and instance.

Note

During installation, variables for *TC_ROOT* and *TC_DATA* are set in various scripts. Do not set either of these as operating system variables; it can cause undesired results.

File Management

Teamcenter uses two systems for file management:

- Teamcenter File Services (TCFS)
 - Used by the Organization application for creating volumes and administration

A TCFS daemon must be running on all network nodes that host volumes. The operating system user name used to start the TCFS daemon owns all new files created in Teamcenter.
- File Management System (FMS)
 - File transfer between volumes and clients for both the two-tier and the four-tier architectures
 - File access for NX and Lifecycle Visualization when you use these products with Teamcenter
 - Transient data storage for transporting reports, PLM XML, and other nonvolume data between the Web and client tiers in the four-tier architecture
 - Data access for Multi-Site Collaboration
 - File caching on both file servers and rich clients to improve file transfer performance

FMS file caching

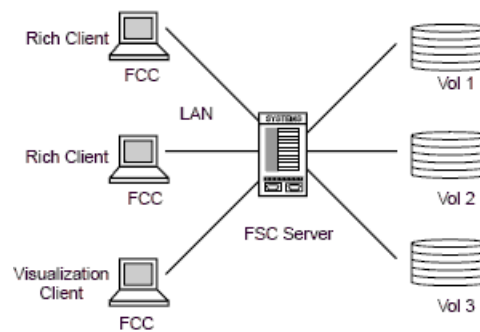
FMS provides file caching on both file servers and rich clients. Both of these components are required.

- **FMS server cache (FSC)**

Provides a server process and file caches for Teamcenter server.

- **FMS client cache (FCC)**

Provides a client process and file caches for rich clients.



FSC

You must install an FSC server on each host that contains a volume.

Note

Server manager requires a transient volume. Therefore, each machine running a server manager also needs an FSC server.

You can configure an FSC server to perform any combination of the following functions. One or more FSC servers can be created for a site. When using multiple FSC servers, they are linked by a master FSC server.

- Volume server
- Performance cache server
- Configuration server
- Transient server (four-tier architecture only)

Volume server

When running on a host where a volume is located or directly mounted, the FSC server acts as a volume server.

It checks all file access requests for a ticket that Teamcenter generates to authorize file access.

Performance cache server

When running on a host where a volume is not located or directly mounted, the FSC server acts as a performance cache server. It manages two segment caches, one for downloading files and one for uploading files.

It checks all file access requests for a ticket that Teamcenter generates to authorize file access.

Configuration server

As a configuration server, the FSC server provides FMS configuration information to the FMS client caches and other FSC servers.

Transient server (four-tier architecture only)

As a transient server, the FSC servers delivers PLM XML and other transient files to clients.

Configuring FSCs

FSC servers and caches are configured using hierarchical XML-based files. These files are created by Teamcenter Environment Manager (TEM) when the FSC servers are created. You can configure your FMS network by using TEM to modify these configuration values or by directly editing the XML files.

- FMS master configuration file

fmsmaster_fsc_id.xml

- FSC configuration file

fscfsc_id.xml

- FCC configuration file

FMS master configuration file

The FMS master configuration file (**fmsmaster_fsc_id.xml**) describes the FMS network and defines FSC groups. It is the highest file in the hierarchy and can define default values, such as the maximum sizes of the caches, for FSCs and FCCs.

Each installation of Teamcenter requires one FMS master configuration file. At least one FSC server reads this file and is called the master FSC. Other FSC servers in the network download FMS configuration information from the master FSC server.

If you install only one FSC server in a Teamcenter network, it is the master.

FSC configuration file

The FSC configuration file (**fscfsc_id.xml**) configures an individual FSC in a network. It specifies the address of the master FSC (for downloading FMS network information) and defines such values as the maximum sizes of the server segment file caches and the upload timeout value.

This file can either inherit values from the master file or override them. It can also define default values for FCCs.

FCC configuration file

The FCC configuration file defines values for the FCC on client hosts, such as the maximum sizes of the caches.

It can either inherit values from the FSC configuration file or override them.

FCC

The FCC process runs on a client host and performs the following functions:

- Uploads files to an FSC server.
- Requests files from an FSC server.
- Caches files on the client host.

The FCC process manages three file caches:

- A write cache containing whole files uploaded to a volume
- A read cache containing whole files downloaded from a volume
- A segment cache for Lifecycle Visualization

FCC installation

Rich client

The rich client requires an FCC. The FCC is automatically installed with each rich client.

When creating the distribution server instance (the rich client software to be installed on the client computer), you configure the location of the cache on the workstation and the maximum size of files downloaded from the volume or uploaded to the volume. Installing the rich client instance on a workstation simultaneously installs the FCC process and caches. No additional configuration steps are required.

Thin client

The thin client does not use the FCC.

However, if you install the FCC, Lifecycle Visualization and NX use it to upload and download files from the volume.

Advantages of FSC and FCC servers

FSC and FCC servers enables users to take advantage of FMS features:

- Improved file transfer performance
- File streaming
- Built-in caching infrastructure
- Deployment flexibility

Improved file transfer performance

FMS is a high-performance file transfer solution that gives client applications direct access to files over a high-performance network connection.

File streaming

Lifecycle Visualization uses proprietary file streaming technology to download appropriate portions of the JT files over the network as they are needed. FMS supports segment file transfer to keep network loads down and support this high-performance file streaming technology.

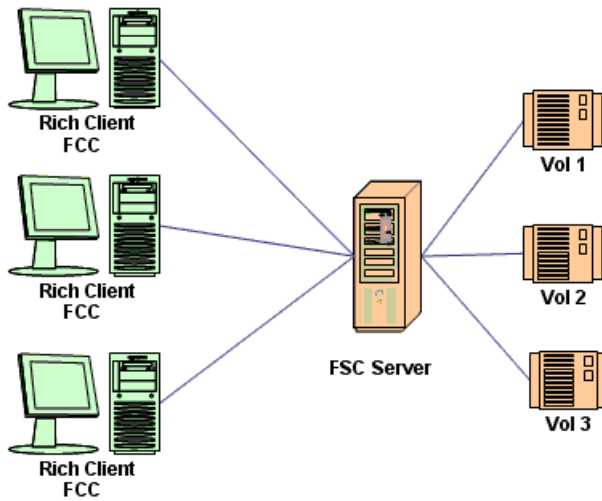
Built-in caching infrastructure

The FCC is dedicated to a specific user on the client. The FSC server can be shared by groups of users.

Deployment flexibility

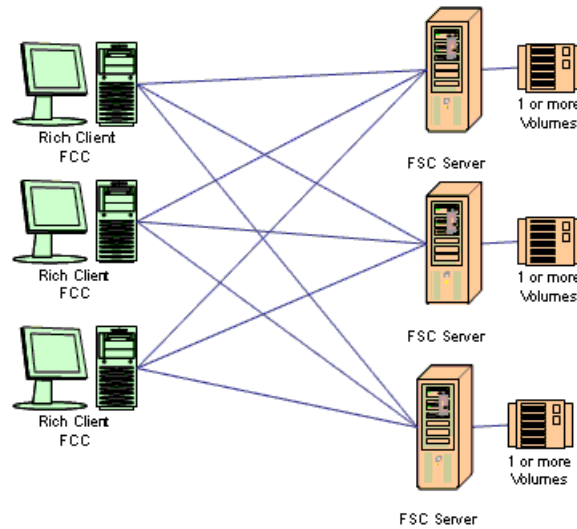
FMS components support a multitude of deployment configurations. This enables administrators to geographically locate volumes and shared FSC servers close to client workstations, providing the capability to tune the system for optimal file transfer performance.

FMS example: Single server



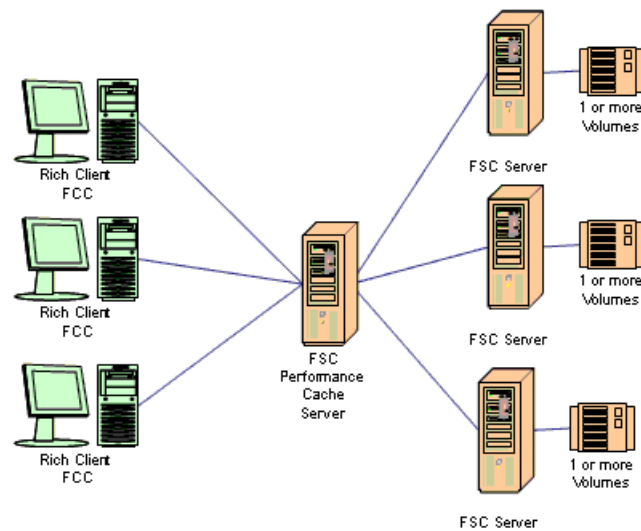
This example shows a single server. All clients connect to this server. The server manages all volumes.

FMS example: Multiple servers



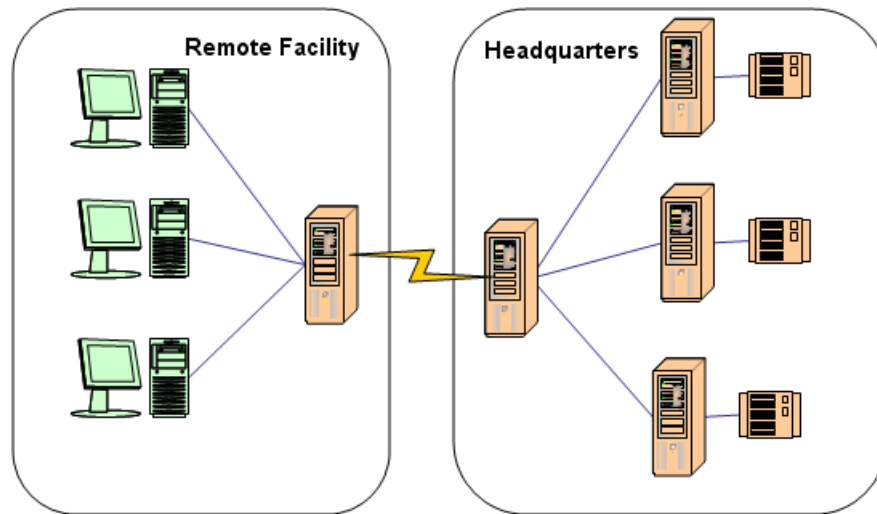
This example shows multiple servers. Each server serves just one volume. All clients can connect to all servers. To which server that a client connects depends on which volume the client needs to reach.

FMS example: Caching server



This example shows multiple file servers with a caching server. Each server serves only one volume. All clients connect to a caching server to obtain files. The caching server can connect to all volume servers. The server to which the caching server connects depends on which volume needs to be accessed.

FMS example: Remote caching over a WAN



This example shows a WAN with multiple file servers and a caching server. Each server serves just one volume. All clients connect to a caching server at their site to obtain files. The caching server on the client site connects to a caching server on the server site. The caching server on the server site can connect to all volume servers. The server to which the caching server connects depends on which volume needs to be accessed.

TCFS daemon

A TCFS daemon must be running on all network nodes that host volumes. The operating system user name used to start the TCFS daemon owns all new files created in Teamcenter.

Security levels and delivery mechanisms

TCFS is a multimode file management system and uses socket transfer to access files. Each mode (Mode-1, Mode-2, and Mode-3) provides a different level of file security and a different mechanism for delivering files to clients. Use the **Options** dialog box to set the **TC_Security_Level** site preference to the desired security mode: **1**, **2** or **3**.

Mode	Description
Mode-1	<p>Any file a user accesses is transferred to the user's workstation through a socket transfer by the TCFS daemon. After an encapsulated application is finished with the file, it is deleted from the workstation working directory. If changes are made and saved, the file is socket transferred back to the volume. Teamcenter then saves the changes to the database.</p> <p>Because files are never accessed directly from the volume, if a Teamcenter file must be purged, the file is deleted by the TCFS daemon.</p>
Mode-2	<p>File security is similar to Mode-1. The only difference is that users have complete access to all ITK functions and can therefore circumvent the intent of this mode through Teamcenter file (IMF) ITK functions.</p>
Warning	
<p>This mode is a developer level of security and should not be used as the default mode for an entire site.</p>	
Mode-3	<p>Any file a user accesses is first checked to see if it can be made available through NFS. If so, the TCFS daemon modifies the file permissions to 444 and the application reads it through NFS. When the application finishes reading the file, it changes the file permissions to 400. If it is proper to update the file in the volume, a new file is created. Permissions on this new file are set to 666 until the application completes writing the new file. The permissions are then set to 400.</p> <p>If the file is not accessible through NFS, the TCFS daemon transfers it to the user's workstation through a socket transfer.</p> <p>In this mode, all Teamcenter file purging is done through the TCFS daemon.</p>

File protection and ownership

The following table shows an example of file protections and ownerships on the Windows platform using Mode-1, Mode-2, or Mode-3.

Windows	Accessor	Read	Change
Volume	Everyone	(RX) (RX)	
	infodba		(RWXC) (RWXC)
Volume/group	Everyone	(RX) (RX)	
	infodba		(RWXC) (RWXC)
Volume/group/*.prt	infodba	Special access (R)	

Solutions

Teamcenter Environment Manager (TEM) is used to install the corporate server. During installation, TEM prompts you to select solutions to install. Each solution has a sets of associated features. You can select additional features or deselect features.

The available solutions are:

- **Corporate Server**
- **Dispatcher (Dispatcher Server)**
- **Rich Client 4–tier**
- **Log Manager Query Service**
- **EDA Standalone Client**
- **Multisite Collaboration Proxy Server**
- **Volume Server**
- **Global Services**
- **Business Modeler IDE**
- **Rich Client 2–tier**

- **Corporate Server**
Installs the corporate server and allows you to create and populate a database.
- **Dispatcher (Dispatcher Server)**
Functions as an independent computer server that translates files from one format to other formats. It consists of the scheduler, modules, and an optional Admin Client. The scheduler sends translation tasks to modules and they invoke one or more translators to perform translations.
- **Rich Client 4–tier**
Installs the four-tier rich client.
- **Log Manager Query Service**
Installs Log Manager Query Service that is used in context of Teamcenter components that can write logs using Log Manager writer.
- **EDA Standalone Client**
Installs the EDA stand-alone client and related integrations (Cadence, Markup, and Mentor).
- **Multisite Collaboration Proxy Server**
Creates a Multisite Proxy configuration where the system serves as a relay outside a firewall between internal and external sites.
- **Volume Server**
Installs the service that support a stand-alone volume server.
- **Global Services**
Installs the Global Services database, preferences, and dependent features.

- **Business Modeler IDE**
Installs the Business Modeler IDE development environment.
- **Rich Client 2-tier**
Installs the two-tier rich client.

Features

Commonly used features include:

- **Teamcenter Foundation**
- **FMS Server Cache**
- **Teamcenter File Services**
- **NX UG Integration**
- **J2EE Based Server Manager**
- **.NET Based Server Manager**
- **Multisite Collaboration ODS Service**
- **Multisite Collaboration IDSM Service**
- **Database Daemons**
- **Dispatch Server**
- **Full Text Search Engine**
- **OnLine Help**
- **Wire Harness Configuration**
- **Sample files**
- **Teamcenter Security Service**
- **Comprehensive Manufacturing Types**
- **QPL for Repeatable Digital Validation**

Component	Description
Teamcenter Foundation	<p>Installs the complete Teamcenter application root directory (<i>TC_ROOT</i>), including the Teamcenter server process (tcservice), and either creates a data directory for storing database-specific files or configures this installation to connect to an existing data directory.</p> <p>If you create a data directory, you also provide information about the database to use with this installation. If you specify a new database, Teamcenter Environment Manager populates the database and creates a volume.</p> <p>Installing Teamcenter Foundation is optional only when you install the following components: the Multi-Site Collaboration proxy servers, File Management System, Teamcenter File Services, online help, or sample files. When you install these components, Teamcenter Environment Manager creates an <i>TC_ROOT</i> directory, but populates it with only the subdirectories necessary for these components to run.</p>
FMS Server Cache	<p>Installs File Management System FSC server and file caches. You must install an FSC server on each host that runs a server manager and on each host that is to provide volume services.</p> <p>You can optionally choose to install the FSC as a configuration server or a performance cache server.</p> <p>When you also install TCFS, the operating system user running FMS must be the same operating system user running TCFS.</p>

Component	Description
Teamcenter File Server	<p>Installs the Teamcenter File Services (TCFS) service. You must install the TCFS service on each host that is to provide volume services, including hosts where you want to enable administrators to create a volume at a later date.</p> <p>TCFS enables administrators to create volumes using the Organization application and to perform other administrative functions. TCFS also supports file access for legacy NX and Lifecycle Visualization.</p> <p>When you also install FMS, the operating system user running TCFS must be the same operating system user running FMS.</p>
NX UG Integration	<p>Configures the database to support Teamcenter Integration for NX, the Teamcenter integration with NX.</p> <p>This configuration adds default data types and loads template NX data.</p>
J2EE Based Server Manager	<p>Installs the process that manages the pool of Teamcenter server processes. This option is applicable only when you are deploying a J2EE Web tier.</p> <p>For a smaller site, you can install the server manager and Teamcenter servers on the same host as the Web tier application. For deployment options for larger sites, you can install the server manager on a separate host.</p>
.NET Based Server Manager	<p>Installs the process that manages the pool of Teamcenter server processes. This option is applicable only when you are deploying a .NET Web tier.</p> <p>For a smaller site, you can install the server manager and Teamcenter servers on the same host as the Web tier application. For deployment options for larger sites, you can install the server manager on a separate host.</p>

Component	Description
Multisite Collaboration ODS and IDSM Services	<p>Installs the distributed services manager (IDSM) and object directory service (ODS) required to replicate data between multiple Teamcenter sites, enabling the exchange of data objects with other Teamcenter databases over a wide area network (WAN).</p> <p>If you are installing the IDSM and ODS in proxy mode, selecting the Teamcenter Foundation component is optional. If you are not installing in proxy mode, you must select Teamcenter Foundation for installation.</p>

Component	Description
Database Daemons	<p>Installs optional database support services:</p> <ul style="list-style-type: none">• Action Manager Service<p>Service that monitors the database for the creation of action objects and dispatches events that have a specific execution time and events the Subscription Manager daemon fails to process.</p><p>Installing the Action Manager service is required to enable the Subscription Monitor application.</p>• Subscription Manager Service<p>Service that monitors the database event queue for the creation of subscription event objects.</p><p>Installing the Subscription Manager service is required to enable the Subscription Monitor application.</p>• Task Manager Service<p>Service that checks user inboxes for tasks that have passed due dates, notifies the delegated recipients, and marks the task as late.</p><p>Installing the Task Manager Service is required to enable notification of late tasks.</p>• Tesselation Manager Service<p>Specifies that you want to install the service that tessellates UGMASTER and UGALTREP datasets to the JT (DirectModel) dataset and attaches the JT dataset back to the item revision and UGMASTER and UGALTREP dataset.</p><p>Installing the Tessellation Manager Service is required to create the tessellated representations in Repeatable Digital Validation (RDV) that enable users of the DesignContext application to quickly visualize components in context. The tessellated representations are created during the workflow release process, ensuring that JT files of the DirectModel datasets are updated as the NX files are released.</p>

Component	Description
Dispatcher Server	Installs the scheduler, module, and Admin Client for file translation.
Full Text Search Engine	<p>Installs Autonomy Dynamic Reasoning Engine (DRE), the default full-text search engine, and configures searching for the local database.</p> <p>Autonomy DRE enables users to retrieve objects from the Teamcenter database based on search criteria. It allows users to specify searches on metadata values, as well as full text retrieval searches on both metadata and common forms of text data.</p>
OnLine Help	<p>Installs the Online Help Library files on the local host:</p> <ul style="list-style-type: none"> • To be directly accessed by rich clients. • To be accessed by the optional administrative rich client installed on this server. <p>This component is optional. You can install the online help individually; you need not install any other components.</p>
Wire Harness Configuration	Installs Teamcenter schema support for wire harnesses.
Sample files	<p>Installs sample source code for customizing Teamcenter and generating reports.</p> <p>This component is optional. You can install the sample files individually; you need not install any other components.</p>

Component	Description
Teamcenter Security Service	<p>Configures Security Services for Teamcenter. These services eliminate prompts for login credentials when users switch Teamcenter products within a user session.</p> <p>Prerequisite:</p> <p>Installation and configuration of Security Services.</p> <p>For information about Security Services, see the <i>Security Services Installation / Customization</i> manual.</p> <p>Required information:</p> <ul style="list-style-type: none">• Application ID for this instance of Teamcenter in the Security Services application registry.• Complete URL of the Security Services Login Service Web application.• Complete URL of the Security Services Identity Service Web application.
Comprehensive Manufacturing Types	<p>Installs additional data types for Manufacturing Process Management.</p>
QPL for Repeatable Digital Validation	<p>Installs and configures QPL files used in conjunction with the DesignContext application.</p> <p>For QPL-based DesignContext, installing Repeatable Digital Validation (RDV) services is required. For Appearance-based DesignContext, installing RDV services is not required.</p> <p>Required information:</p> <ul style="list-style-type: none">• The path to the location of an installed NX application.• The type of search engine to use, either an NX-based engine or a JT-based engine.• Database configuration for use with Repeatable Digital Validation.

Configurations

A *configuration* is a set of one or more solutions and features that you choose to install. It is associated with one Teamcenter data directory. Each configuration has an associated unique ID that you define during installation. A single host can have one or more configurations installed on it.

Examples of configurations are the corporate server and the two-tier rich client.

A collection of configurations that share the same Teamcenter application root directory is a Teamcenter installation.

Teamcenter Environment Manager (TEM)

Teamcenter Environment Manager (TEM) is a wizard used to create new configurations or to modify existing ones. It controls the installation process, requesting information it requires to complete your installation or modification.

Install a new configuration

You use TEM to create new configurations. When starting TEM to install a new configuration, double-click **tem.bat** on the installation image DVD.

Modify an existing configuration

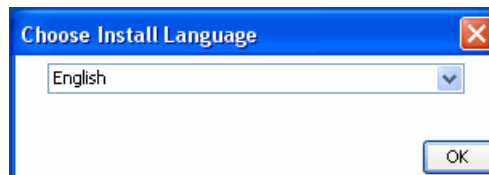
When a configuration is installed on a host, a TEM is created on that host. You use this TEM (not the TEM on the installation DVD) to modify the installed configuration.

When starting TEM to modify an existing configuration, use the Windows Start menu:

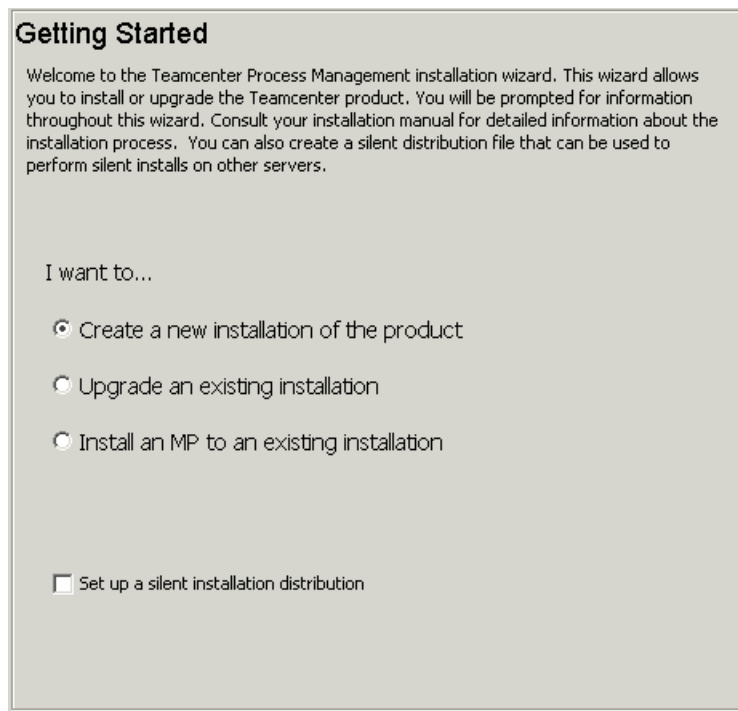
Start® All Programs® Teamcenter 8® Environment Manager

Create a corporate server

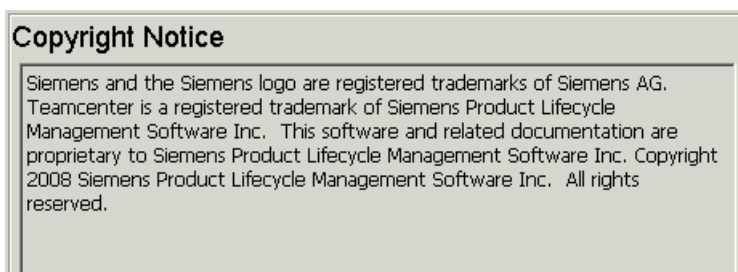
1. Start TEM by double-clicking **tem.bat** on the Teamcenter installation DVD.
2. In the **Choose Install Language** dialog box, select the language you want to use to install the corporate server and click **OK**.



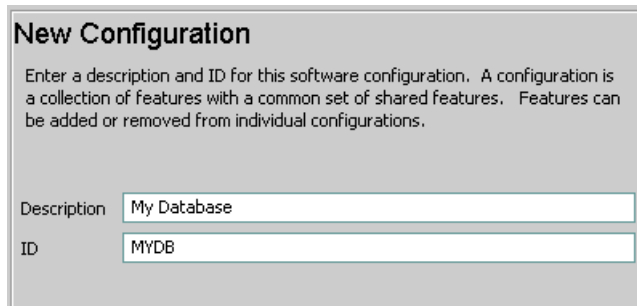
3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.



4. In the **Copyright Notice** dialog box, click **Next**.



5. In the **New Configuration** dialog box, type a description and a unique ID. Click **Next**.



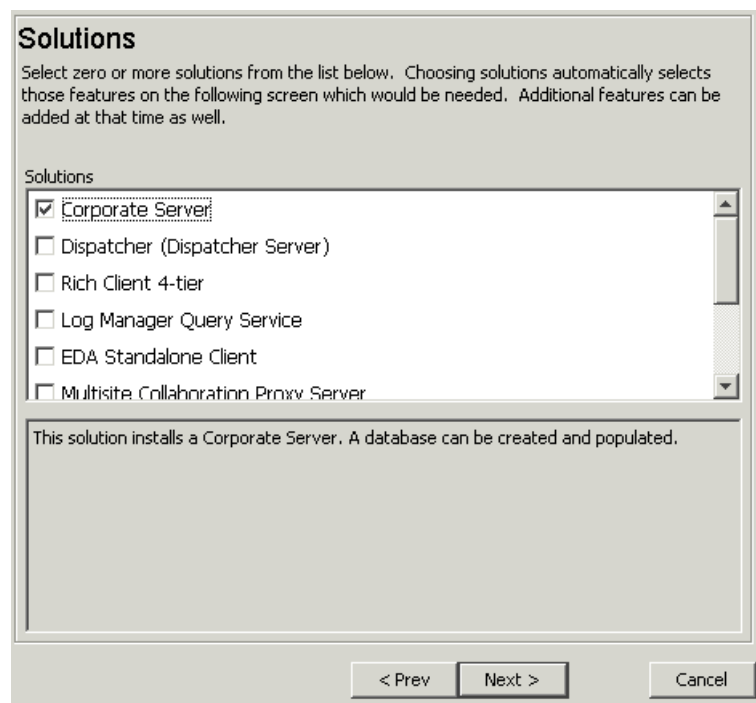
New Configuration

Enter a description and ID for this software configuration. A configuration is a collection of features with a common set of shared features. Features can be added or removed from individual configurations.

Description:

ID:

6. In the **Solutions** dialog box, select the solutions you want to install. To create a corporate server, select at a minimum the **Corporate Server** solution. After making your selection, click **Next**.



Solutions

Select zero or more solutions from the list below. Choosing solutions automatically selects those features on the following screen which would be needed. Additional features can be added at that time as well.

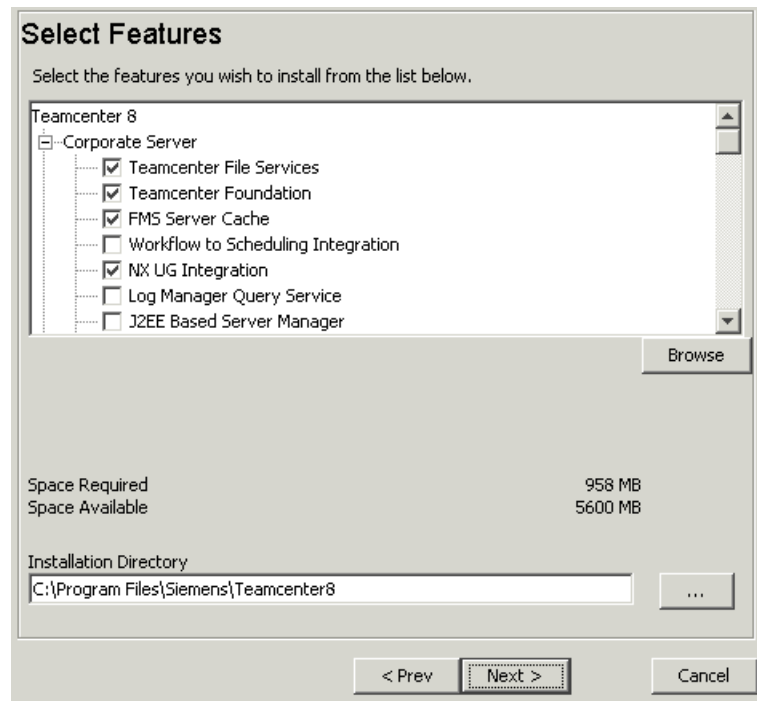
Solutions

- ☒ Corporate Server
- ☐ Dispatcher (Dispatcher Server)
- ☐ Rich Client 4-tier
- ☐ Log Manager Query Service
- ☐ EDA Standalone Client
- ☐ Multisite Collaboration Proxy Server

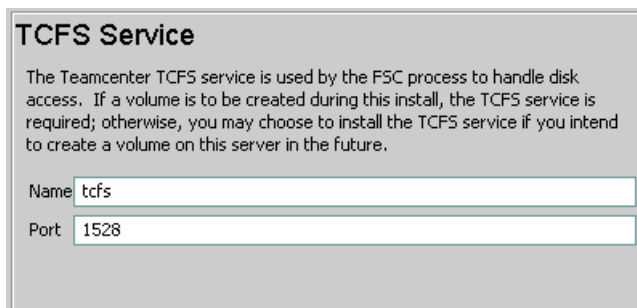
This solution installs a Corporate Server. A database can be created and populated.

< Prev Next > Cancel

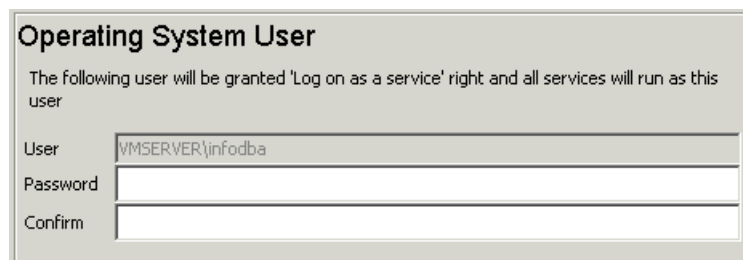
7. In the **Select Features** dialog box:
 - Select any additional features you want to install.
 - In the **Installation Directory** box, type the path for the *TC_ROOT* directory.
 - Click **Next**.



- In the **TCFS Service** dialog box, define the name and port of the TCFS service. The default name is **tcfs**; the default port is **1528**. A Windows service is created for the TCFS service. It is set to automatically start when the system is booted. Click **Next**.

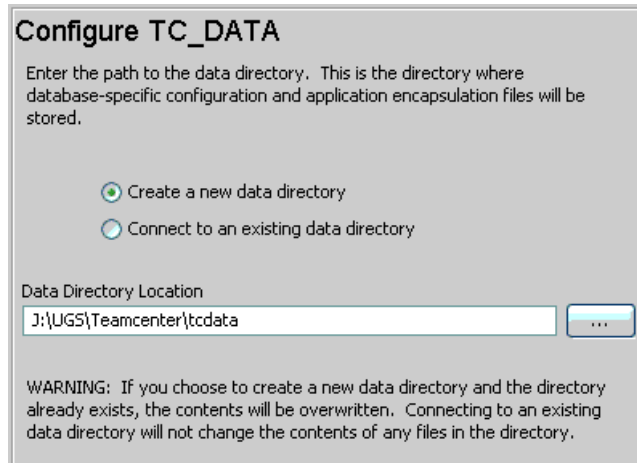


- In the **Operating System User** dialog box, type and confirm the password of the operating system account that you are using to install the corporate server, and then click **Next**.



- In the **Configure TC_DATA** dialog box:

- Select **Create a new data directory**.
- Type the location of the new data directory in the **Data Directory Location** box. A default location is provided.
- Click **Next**.



Configure TC_DATA

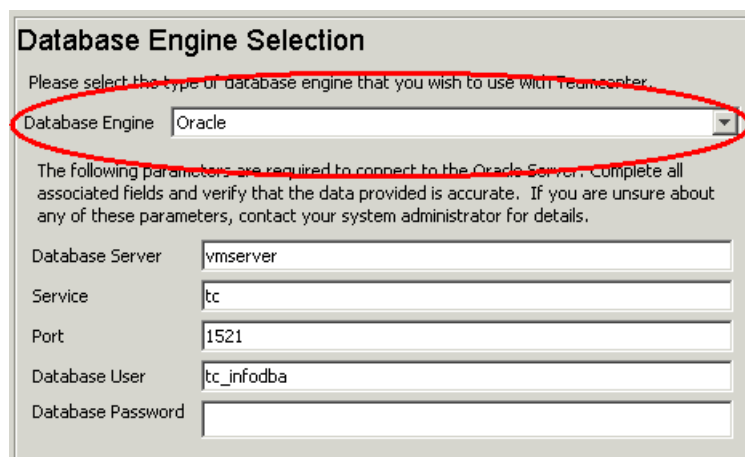
Enter the path to the data directory. This is the directory where database-specific configuration and application encapsulation files will be stored.

☒ Create a new data directory
☐ Connect to an existing data directory

Data Directory Location
 ...

WARNING: If you choose to create a new data directory and the directory already exists, the contents will be overwritten. Connecting to an existing data directory will not change the contents of any files in the directory.

11. In the **Database Engine Selection** dialog box, select the **Database Engine** box, either **Oracle** or **MS SQL Server**. You are presented with the boxes appropriate for the database data engine you selected.



Database Engine Selection

Please select the type of database engine that you wish to use with Teamcenter.

Database Engine

The following parameters are required to connect to the Oracle Server. Complete all associated fields and verify that the data provided is accurate. If you are unsure about any of these parameters, contact your system administrator for details.

Database Server
 Service
 Port
 Database User
 Database Password

12. If you chose **Oracle** in the **Database Engine** box, complete this step. If you chose **MS SQL Server 2005** in the **Database Engine** box, skip to step 13.

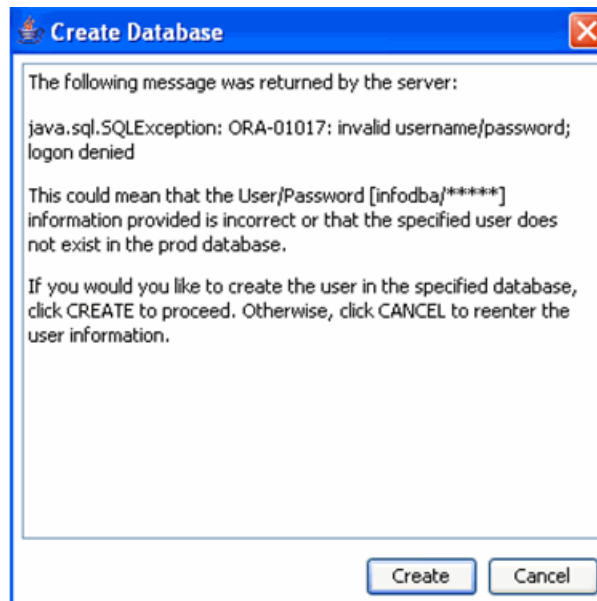
You can either connect to an existing database by entering the values for the existing database or create a new database by entering new values.

- In the **Database Server** box, type the name of the computer on which you installed the Oracle server.
- In the **Service** box, type the SID of the database instance you created.
- In the **Port** box, type the port number you assigned to the listener. The default is **1521**.
- In the **Database User** box, type the name of the database user that owns the database. The templates create a user called **infodba**. This is the Oracle user that was created when you created the database.
- In the **Database Password** box, type the database user's password.
- Click **Next**.

If you are connecting to an existing database, the **Volume Specification** dialog box appears. Skip to step 15 in this procedure. Otherwise, continue with this list

If you are creating a new database, the **Create Database** dialog box appears and you should proceed with the remainder of this step.

- Click **Create** in the **Create Database** dialog box.



13. If you chose **Oracle** in the **Database Engine** box, skip to step 14. If you chose **MS SQL Server 2005** in the **Database Engine** box, complete this step.

You can either connect to an existing database by entering the values for the existing database or create a new database by entering new values.

Database Engine Selection

Please select the type of database engine that you wish to use with Teamcenter.

Database Engine: MS SQL Server 2005

The following parameters are required to connect to the MS SQL Server. Please be sure to fill in all associated fields and that the data provided is accurate. If you are unsure about any of these parameters, contact your system administrator for details.

Database Server: gen-server

Choose one of the following methods to connect to the database server.

☐ Named Instance

☒ Port

1433

Login Name: infodba

Login Password: *****

Database Name: tc

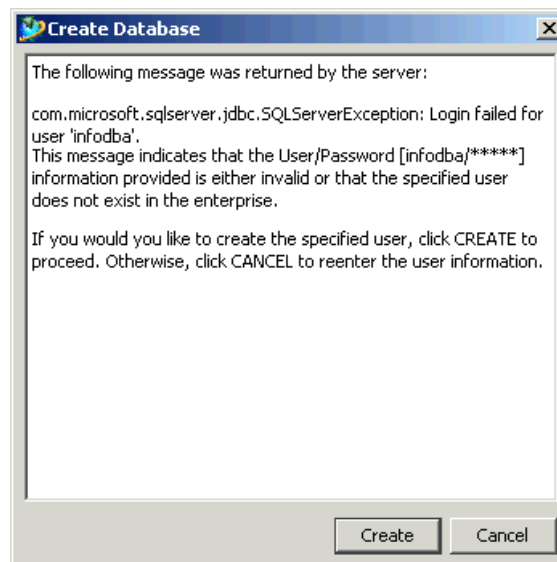
- In the **Database Server** box, type the name of the computer on which you installed MS SQL Server 2005.
- In the **Choose one of the following methods to connect to the database server** box, select:

- **Named Instance** and provide the instance name in the associated box if you chose named instance when creating the database server.
- **Port** and provide the port number in the associated field if you chose default instance when creating the database server.
- Provide the **Login Name** for the database user.
- Provide the **Password** for the database user.
- Provide the **Database Name**.
- Click **Next**.

If you are connecting to an existing database, the **Volume Specification** dialog box appears. Skip to step 15 in this procedure. Otherwise, continue with this list.

If you are creating a new database, the **Create Database** dialog box appears and you should proceed with the remainder of this step.

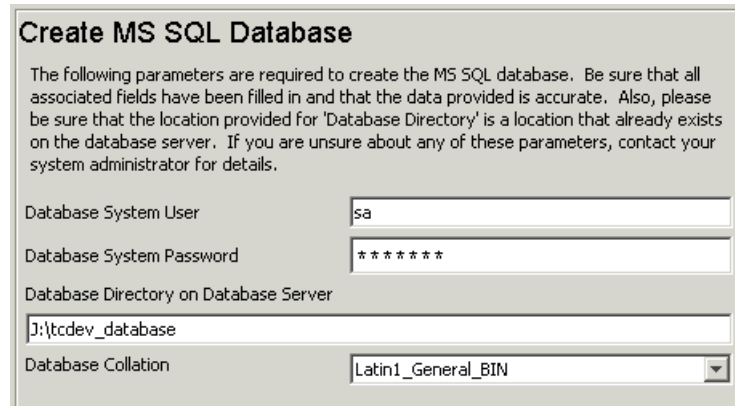
- Click **Create** in the **Create Database** dialog box.



14. Complete the **Create MS SQL Database** dialog box.

- In the **Database System User** box, provide the system user name. The default is **sa**.
- In the **Database System Password** box, provide the system user password.

- In the **Database Directory on Database Server** box, provide the path in which to create the database files. This path must already exist on the server host.
- Select the **Database Collation** type.
- Click **Next**.



Create MS SQL Database

The following parameters are required to create the MS SQL database. Be sure that all associated fields have been filled in and that the data provided is accurate. Also, please be sure that the location provided for 'Database Directory' is a location that already exists on the database server. If you are unsure about any of these parameters, contact your system administrator for details.

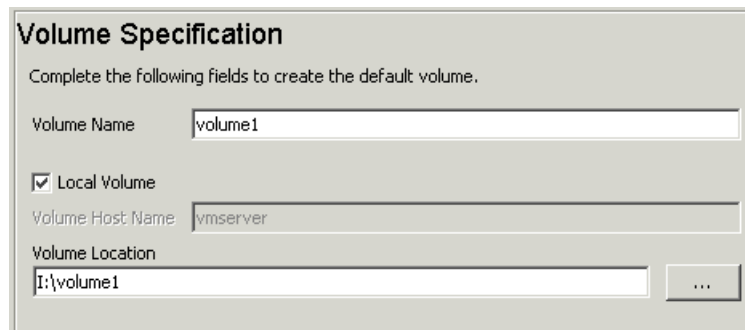
Database System User: sa

Database System Password: *****

Database Directory on Database Server: J:\tcdev_database

Database Collation: Latin1_General_BIN

15. In the **Volume Specification** dialog box, type the volume name and location. Click **Next**.



Volume Specification

Complete the following fields to create the default volume.

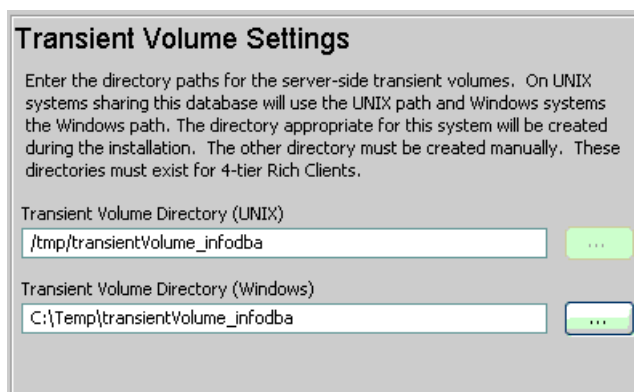
Volume Name: volume1

☒ Local Volume

Volume Host Name: vmserver

Volume Location: I:\volume1

16. In the **Transient Volume Settings** dialog box, type the location of the transient volume in the appropriate operating system box and click **Next**.



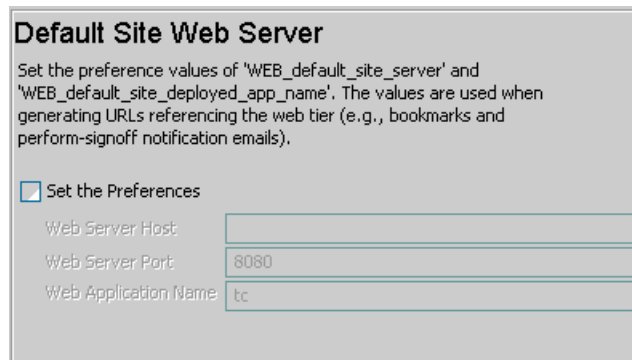
Transient Volume Settings

Enter the directory paths for the server-side transient volumes. On UNIX systems sharing this database will use the UNIX path and Windows systems the Windows path. The directory appropriate for this system will be created during the installation. The other directory must be created manually. These directories must exist for 4-tier Rich Clients.

Transient Volume Directory (UNIX): /tmp/transientVolume_infodba

Transient Volume Directory (Windows): C:\Temp\transientVolume_infodba

17. In the **Default Site Web Server** dialog box, select whether or not to define default values for a Web server. This is used in environments that employ the four-tier architecture. Click **Next** to proceed.



Default Site Web Server

Set the preference values of 'WEB_default_site_server' and 'WEB_default_site_deployed_app_name'. The values are used when generating URLs referencing the web tier (e.g., bookmarks and perform-signoff notification emails).

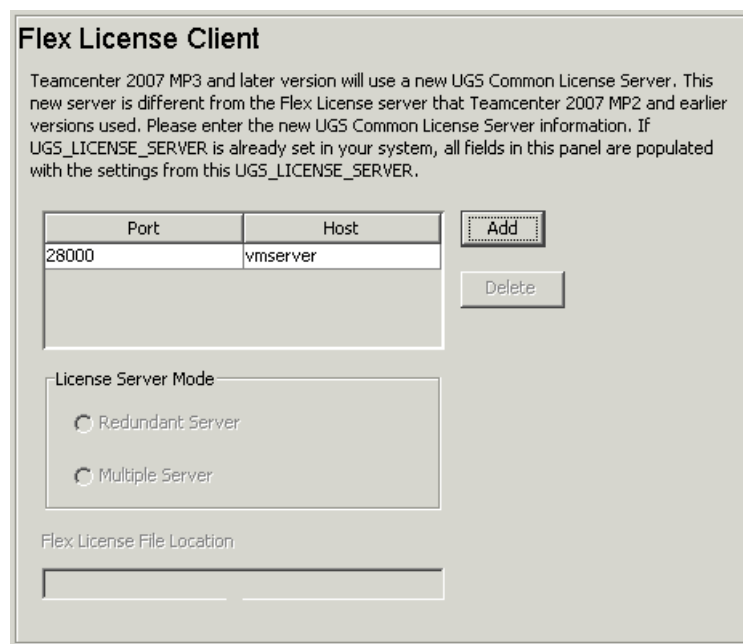
☐ Set the Preferences

Web Server Host:

Web Server Port:

Web Application Name:

18. In the **Flex License Client** dialog box, provide information on how the Common Licensing Server will be accessed.



Flex License Client

Teamcenter 2007 MP3 and later version will use a new UGS Common License Server. This new server is different from the Flex License server that Teamcenter 2007 MP2 and earlier versions used. Please enter the new UGS Common License Server information. If UGS_LICENSE_SERVER is already set in your system, all fields in this panel are populated with the settings from this UGS_LICENSE_SERVER.

Port	Host
28000	vmserver

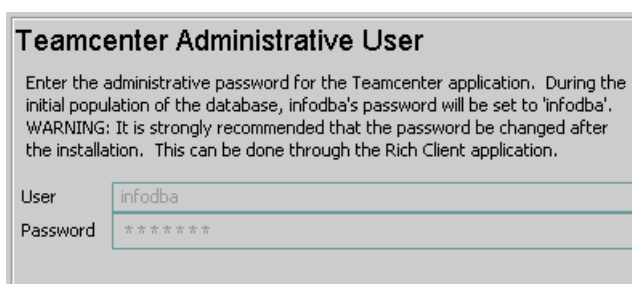
License Server Mode

☐ Redundant Server

☐ Multiple Server

Flex License File Location

19. In the **Teamcenter Administrative User** dialog box, the user name and password are populated but not editable. Click **Next**.



Teamcenter Administrative User

Enter the administrative password for the Teamcenter application. During the initial population of the database, infodba's password will be set to 'infodba'.
WARNING: It is strongly recommended that the password be changed after the installation. This can be done through the Rich Client application.

User:

Password:

20. In the **FSC Service** dialog box, you configure the FSC service ID along with read and write directory locations and sizes. Notice that **This FSC is an FMS master** is selected because this is the first FSC you create. Click **Next**.

FSC Service

The FSC service caches data from volumes for faster client access. An FSC service is required if a system will be hosting a volume. Additionally, you can configure the local FSC service to act as an FSC master, which holds information related to volume locations throughout the enterprise.

Server ID:

Read Cache Directory:

Read Cache Size (MB):

Write Cache Directory:

Write Cache Size (MB):

☒ FMS HTTP Proxy

HTTP Proxy Host:

HTTP Proxy Port:

☒ FMS HTTPS Proxy

HTTPS Proxy Host:

HTTPS Proxy Port:

☒ This FSC is an FMS master

☒ Add this FSC to the FMS bootstrap list

21. In the **FSC Service: Connections** dialog box, you define the ports on which the FSC service listens. It can listen on multiple port. Click **Next**.

FSC Service: Connections

An FSC service can listen on multiple ports. Define the ports on which this FSC service will listen.

Protocol	Port
http	4544

22. In the **FSC Service: FCC Defaults** dialog box, you define the directory location, maximum read and write cache sizes, maximum segment read cache size, and external sites accessible by a client. Click **Next**.

FSC Service: FCC Defaults

FCC clients inherit settings from the FSC service to which they connect. Enter the defaults that FCC clients connecting to this FSC service will use.

Windows Cache Directory: \$HOME\FCCCache

UNIX Cache Directory: /tmp/\$USER/FCCCache

Max. Full Read Cache Size (MB): 1000

Max. Full Write Cache Size (MB): 1000

Max. Segment Read Cache Size (MB): 3000

Client accessible external sites (optional).

Site ID: [dropdown] [Add Site] [Remove Site]

FSC assignment mode:

[clientmap] (default) This client will query the parent FSCs to determine FSC assignments.

[parentfsc] This client will override the FSC assignments and use the parent FSCs as assigned FSCs. DirectF...

Note: Assignment mode [parentfsc] should only be used when the parent FSCs can not determine proper assi...

FSC assignment mode: [clientmap]

Parent FSCs for this client accessible site

Protocol	Host	Port	Path	Priority	Transport
[Empty table body]					

[Add] [Remove]

< Prev [Next >] Cancel

23. In the **FSC Service: Additional Sites** dialog box, you can add additional sites. Click **Next**.

FSC Service: Additional Sites

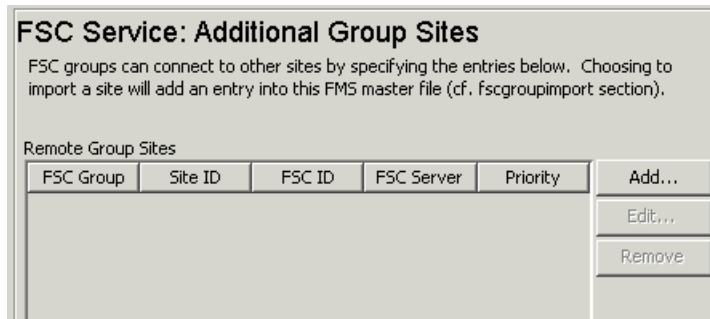
This FSC can connect to other sites by specifying the entries below. Click the SCAN button to check for sites already within this installation. Choosing to import a site will add an entry into this FMS master file (cf. multisiteimport section).

Remote Sites

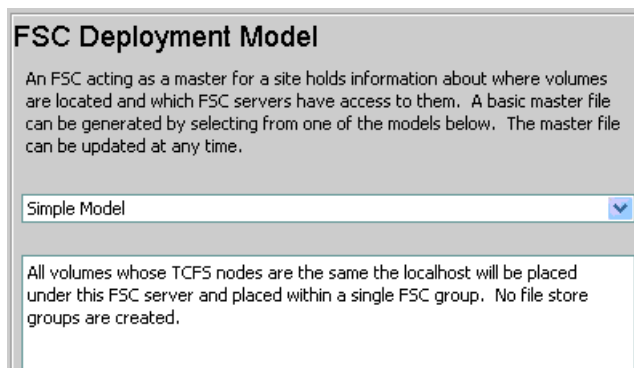
Site ID	FSC ID	FSC Server	Priority
[Empty table body]			

[Add...] [Edit...] [Remove] [Scan...]

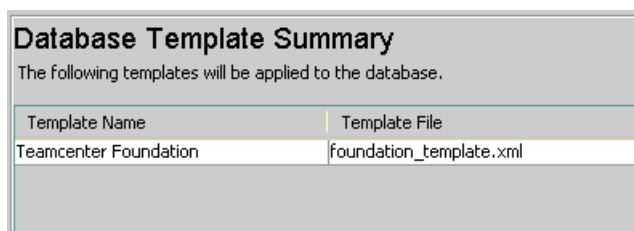
24. In the **FSC Service: Additional Group Sites** dialog box, you can define additional FSC groups.



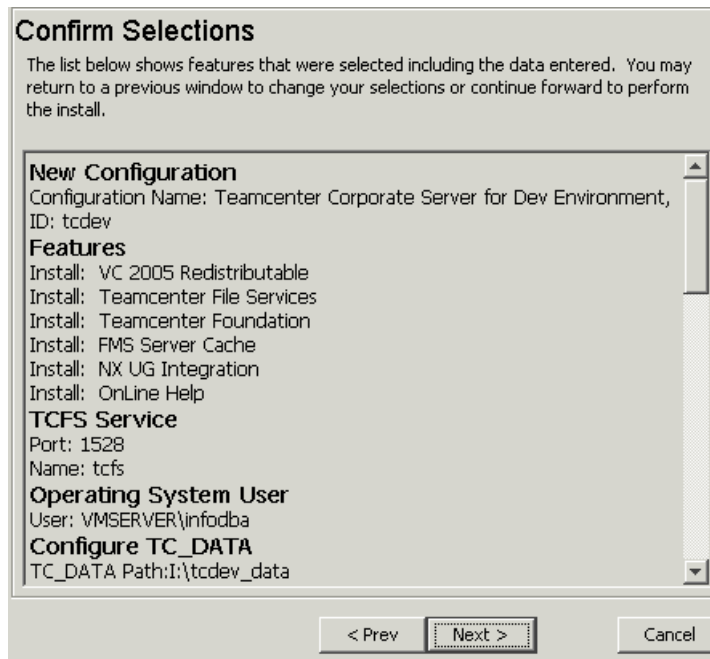
25. In the **FSC Deployment Model** dialog box, you select the FSC deployment model, either **Simple Model** or **Failover Model**. Click **Next**.



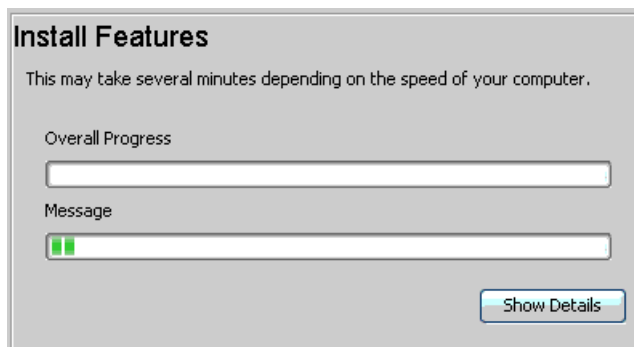
26. In the **Database Template Summary** dialog box, the templates that will be applied to the database are listed. Click **Next**.



27. In the **Confirm Selection** dialog box, you can scroll through the list of selections you made to ensure they are correct. If you need to modify any selection, click **Prev**. If your selections are correct, click **Next** to begin the installation.



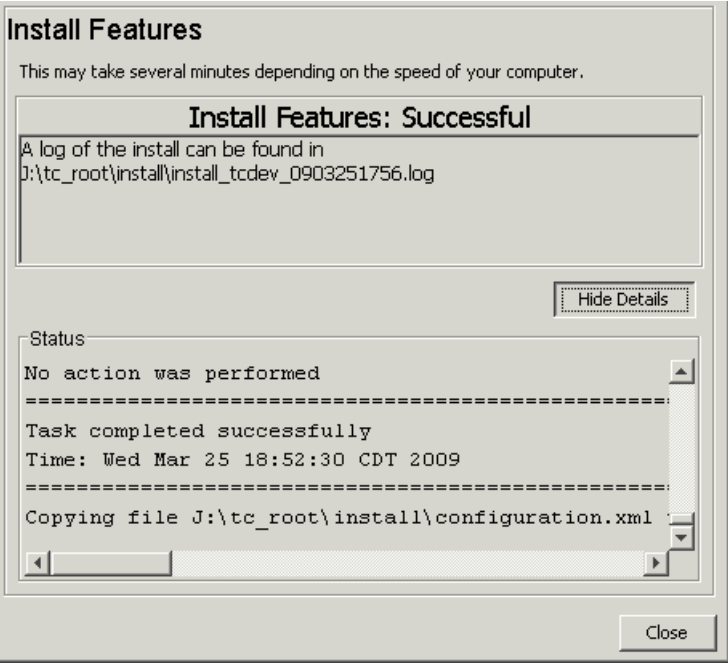
The **Install Features** dialog box displays the status of the installation. Click the **Show Details** button to display details of the installation process.



28. During the installation, you are prompted for the location of the **tchelp.jar** file. This file is located on the Teamcenter Publications DVD. Browse to and then select this file to continue the installation.

29. When the installation is complete, you see the **Install Features: Successful** message.

Click **Close** in the **Install Features** dialog box to close TEM.



Important TC_DATA files

The corporate server installation created the *TC_DATA* directory, which is shared by all of the Teamcenter clients. Several of the files in this directory are of particular interest and are described more thoroughly in the following topics.

- **tc_profilevars.bat**

This file is used to set environment variables used by Teamcenter.

- **tnsnames.ora**

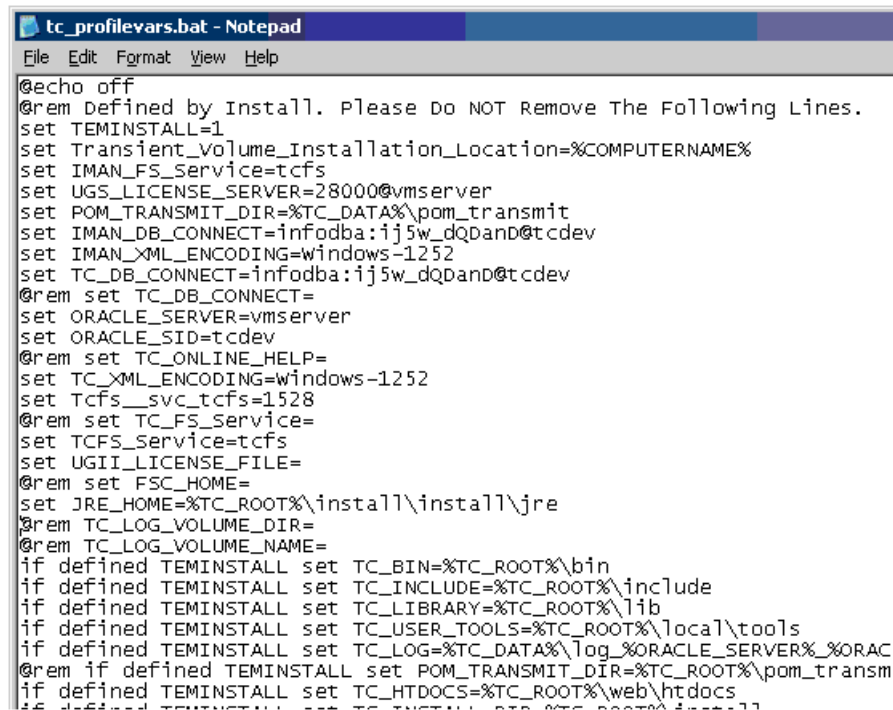
This file is used by Teamcenter to communicate with the Oracle server.

tc_profilevars.bat file

tc_profilevars.bat is a batch file that sets several environment variables used by Teamcenter.

It is located under *TC_DATA*.

A portion of the file follows:



```

@echo off
@rem Defined by Install. Please Do NOT Remove The Following Lines.
set TEMINSTALL=1
set Transient_Volume_Installation_Location=%COMPUTERNAME%
set IMAN_FS_Service=tcfs
set UGS_LICENSE_SERVER=28000@vmserver
set POM_TRANSMIT_DIR=%TC_DATA%\pom_transmit
set IMAN_DB_CONNECT=infodba:ij5w_dQDand@tcdev
set IMAN_XML_ENCODING=windows-1252
set TC_DB_CONNECT=infodba:ij5w_dQDand@tcdev
@rem set TC_DB_CONNECT=
set ORACLE_SERVER=vmserver
set ORACLE_SID=tcdev
@rem set TC_ONLINE_HELP=
set TC_XML_ENCODING=windows-1252
set Tcfs__svc_tcfs=1528
@rem set TC_FS_Service=
set TCFS_Service=tcfs
set UGII_LICENSE_FILE=
@rem set FSC_HOME=
set JRE_HOME=%TC_ROOT%\install\install\jre
@rem TC_LOG_VOLUME_DIR=
@rem TC_LOG_VOLUME_NAME=
if defined TEMINSTALL set TC_BIN=%TC_ROOT%\bin
if defined TEMINSTALL set TC_INCLUDE=%TC_ROOT%\include
if defined TEMINSTALL set TC_LIBRARY=%TC_ROOT%\lib
if defined TEMINSTALL set TC_USER_TOOLS=%TC_ROOT%\local\tools
if defined TEMINSTALL set TC_LOG=%TC_DATA%\log_%ORACLE_SERVER%_%ORAC
@rem if defined TEMINSTALL set POM_TRANSMIT_DIR=%TC_ROOT%\pom_transm
if defined TEMINSTALL set TC_HTDOCS=%TC_ROOT%\web\htdocs
if defined TEMINSTALL set TC_TEMPLATES=%TC_ROOT%\templates

```

Some variables set by the **tc_profilevars.bat** file follow:

- **TC_DB_CONNECT**

username:password@service_name

Contains the Oracle user and encrypted password used by Teamcenter to access the database along with the Oracle service name.

- **ORACLE_SERVER**

Specifies the host name of the Oracle server.

- **ORACLE_SID**

Specifies the SID of the instance.

- **TC_ONLINE_HELP**

Points to the file that launches the Online Help.

- **UGS_LICENSE_SERVER**

portnumber@servername

Points to the Common Licensing Server.

tnsnames.ora file

The **tnsnames.ora** file is a standard file used by Oracle clients. It provides information needed by Teamcenter to communicate with the Oracle server. It is located directly under **TC_DATA**.

A portion of the file follows:

```
#####
# FILENAME: tnsnames.ora
# DATE      : Wed Mar 25 18:16:12 CDT 2009
#####

tcdev =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP) (HOST = vmserver) (PORT = 1521))
    )
    (CONNECT_DATA = (SERVER = DEDICATED) (SERVICE_NAME = tcdev )
  )
}
```

Key contents of **tnsnames.ora** include:

tcdev=	Service name or alias
(PROTOCOL=TCP)	Required protocol
(Host=vmserver)	Host ID of Oracle server
(Port=1521)	TCP/IP port address
(SERVICE_NAME = tcdev)	Database service name

Activity

If you installed Oracle, perform the activities in the *Creating a corporate server — Oracle* section using the **infodba** account:

1. Install the licensing server
2. Create the corporate server

If you installed MS SQL Server, perform the activities in the *Creating a corporate server — MS SQL* section using the **infodba** account:

1. Install the licensing server
2. Create the corporate server

Review questions

1. _____ contains the Teamcenter binary executables and files.

Select one answer.

- *TC_BASE*
- *TC_DATA*
- *TC_HOME*
- *TC_ROOT*

2. _____ contains the Teamcenter data model.

Select one answer.

- *TC_BASE*
- *TC_DATA*
- *TC_HOME*
- *TC_ROOT*

3. A _____ server contains both the Teamcenter executables and the Teamcenter data model. This server must be installed first.

Select one answer.

- Application
- Corporate
- Data
- Volume

4. File Management System (FMS) handles file transfer between volumes and clients for both the two-tier and the four-tier architectures.

Select one answer.

- True
- False

Summary

The following topics were taught in this lesson:

- The function of the Common Licensing Server
- How to install the Common Licensing Server
- The function of the Teamcenter corporate server
- The components of a corporate server
- How FMS and TCFS manage files
- Definition of solutions and features
- The features available for a corporate server
- What a Teamcenter configuration is
- What Teamcenter Environment Manager (TEM) is
- How to create a corporate server
- The function of **tc_profilevars.bat**
- The function of **tnsnames.ora**

Lesson

6 *Two-tier rich client*

Purpose

This lesson describes the two-tier architecture, demonstrates how to install the two-tier rich client, and demonstrates how to start the two-tier rich client.

Objectives

After you complete this lesson, you should be able to:

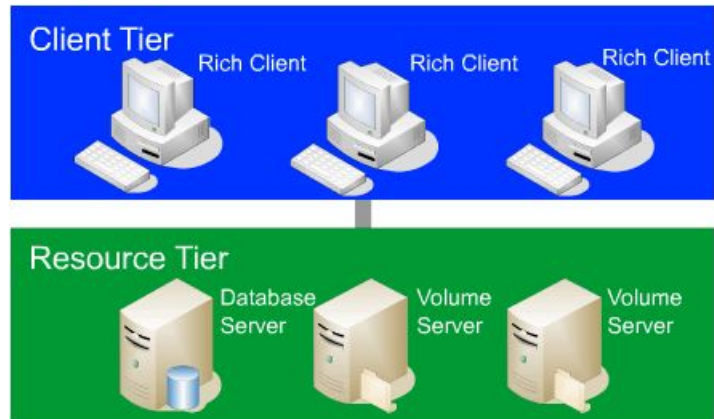
- Describe the two-tier architecture.
- Install the two-tier rich client.
- Start the two-tier rich client.

Help topics

Additional information for this lesson can be found in:

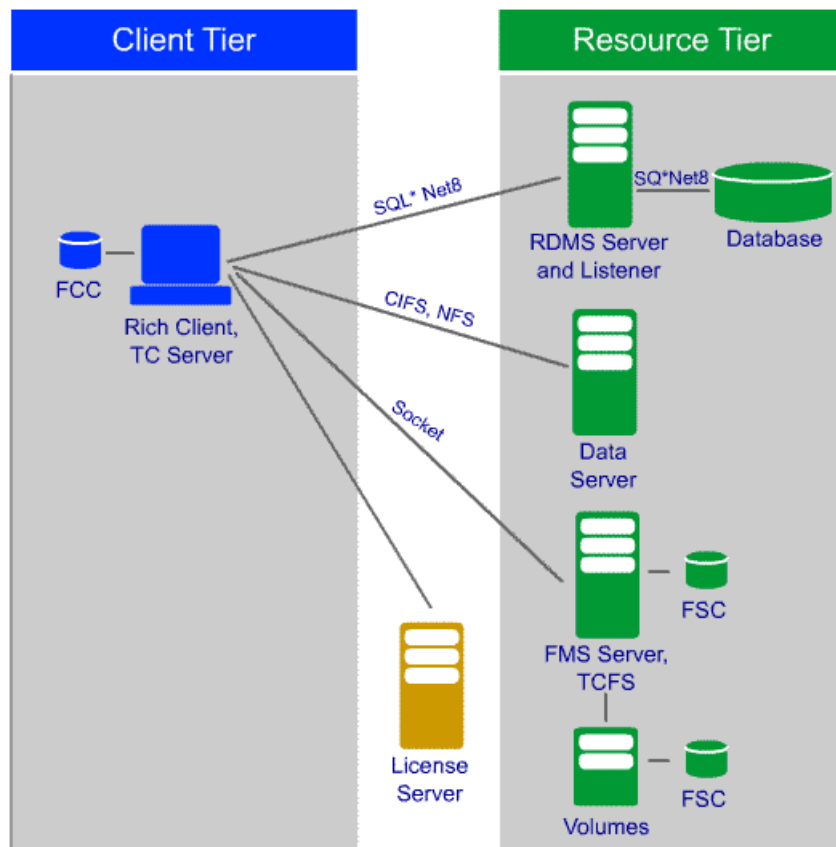
- *Installing the rich client* topic in the [Installation on Windows Clients Guide](#)
- *Installing the rich client* topic in the [Installation on UNIX, Linux, and Macintosh Clients Guide](#)

Two-tier architecture logical view



- The *client tier* contains:
 - Rich client.
 - Teamcenter server and executables.
 - Optional applications that integrate with the rich client such as NX®.
- The *resource tier* stores persistent metadata and files managed by the environment. The *resource tier* contains:
 - Database server and database.
 - Volumes.
 - File servers.

Two-tier architecture physical view



This graphic shows a possible physical layout of a two-tier environment.

- **Rich client**

Contains the rich client software, TC server, executables, and data files. It communicates directly with the other nodes in the environment.

- **License server**

Contacted at logon by the rich client.

- **RDBMS server, listener, and database**

The listener handles communication between the rich client and the database using SQL*Net8. The database stores the persistent metadata managed by the system.

- **FMS server and volumes**

The FMS server transfers files between rich clients and volumes via a secure socket. Any machine with an FMS server or a volume has an FMS server cache (FSC) to improve file transfer performance.

- **Data server**

Exports the Teamcenter data directory to the rich client. It communicates with the rich client using NFS and CIFS.

Features of the two-tier rich client solution

You use Teamcenter Environment Manager (TEM) to install the two-tier rich client by selecting the **Rich Client 2-tier** solution.

Some important features available with this solution include:

- **Teamcenter Rich Client 2-tier**

Only feature required on the client to run the two-tier rich client.

- **Teamcenter Visualization 8 (Stand-alone) for Rich Client**

Optional feature that provides integration with the stand-alone visualization product.

- **Teamcenter Visualization 8 (Embedded) for Rich Client**

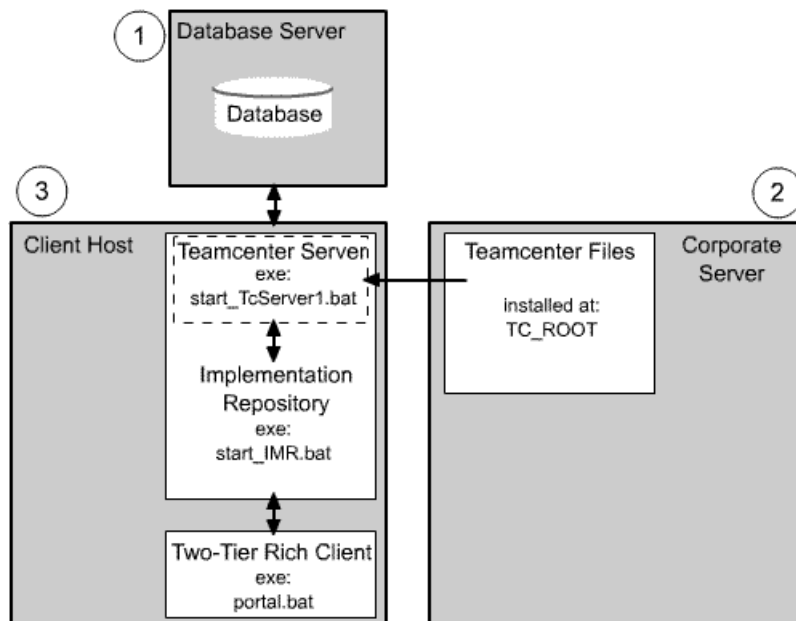
Optional feature that provides visualization capabilities and is embedded in the rich client interface.

- **NX Manager for Rich Client**

Optional feature providing integration between the rich client and NX.

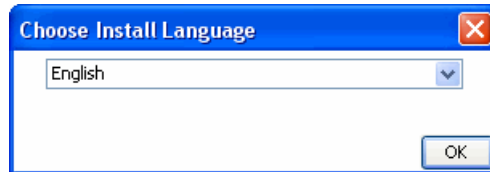
Two-tier architecture installation overview

1. Install the database and database server using Oracle or MS SQL Server tools.
2. Install Teamcenter executables and files, create and/or populate the database, and configure a volume using TEM.
3. Install the rich client on the client host using TEM.

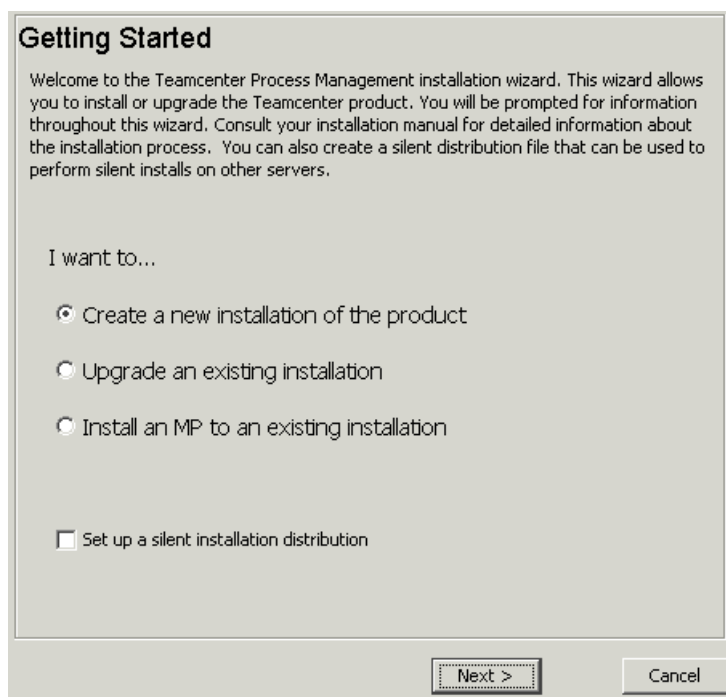


Install a two-tier rich client

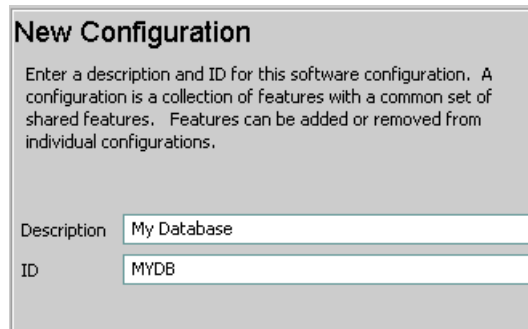
1. From the Teamcenter installation DVD, double-click **tem.bat**.
2. In the **Choose Install Language** dialog box, select the installation language and click **OK**.



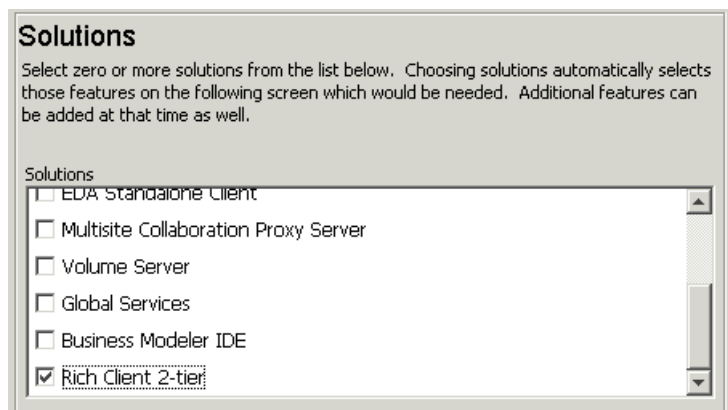
3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.



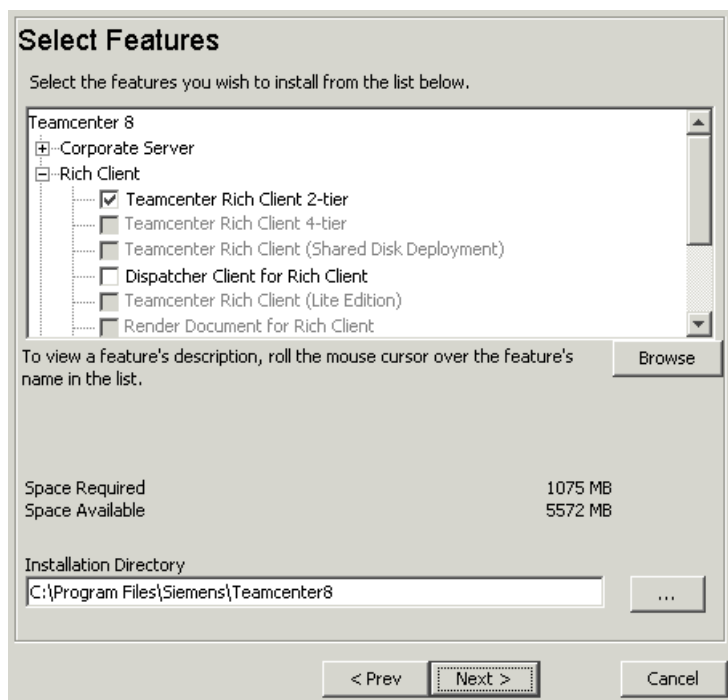
4. Observe the copyright notice and click **Next**.
5. In the **New Configuration** dialog box, type a description and a unique ID, and click **Next**.



6. In the **Solutions** dialog box, select the **Rich Client 2-tier** solution and click **Next**.



7. In the **Select Features** dialog box, select the features to install, provide the path of the installation directory, and then click **Next**.



8. In the **FCC Settings** dialog box, provide the setting used by the FCC. You must select a value for **FMS_HOME Setting**.

FCC Settings

Enter the settings for the FCC below. The FMS_HOME environment variable shown is from where the FCC client settings will be loaded. The variable will not be overwritten if it has been already set.

FMS_HOME Setting

☒ Existing value for FMS_HOME

☐ Proposed value for FMS_HOME

J:\two_tier_rich_client\fcc

☐ Merge values from existing FMS_HOME

☐ FMS HTTP Proxy

HTTP Proxy Host:

HTTP Proxy Port:

☐ FMS HTTPS Proxy

HTTPS Proxy Host:

HTTPS Proxy Port:

< Prev Next > Cancel

9. In the **FCC Parents** dialog box, provide information about the FCC's FSC parent. Click the **Add** button to add a parent. You must provide the protocol, the host name of the parent, and the port used to connect to the parent.

FCC Parents

Please enter this FCC's parent FSC's information. The FSC's will be used based on the defined priorities.

FSC assignment mode:

[clientmap] (default) This client will query the parent FSCs to determine FSC assignments.

[parentfsc] This client will override the FSC assignments and use the parent FSCs as assigned FSCs. DirectFSCRouting is automatically disabled.

Note: Assignment mode [parentfsc] should only be used when the parent FSCs can not determine proper assignments for the given client. Consult your system administrator before using this option.

FSC assignment mode: clientmap

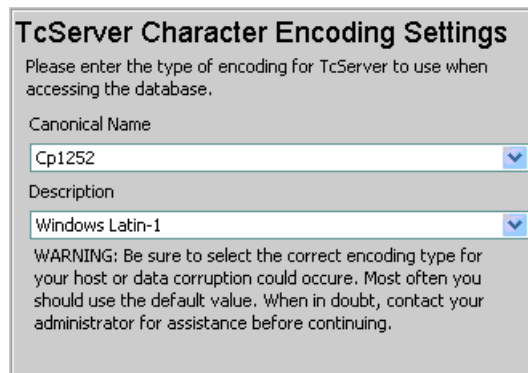
FCC Parents

Protocol	Host	Port	Path	Priority	Transport
http		4544		0	lan

Add Remove

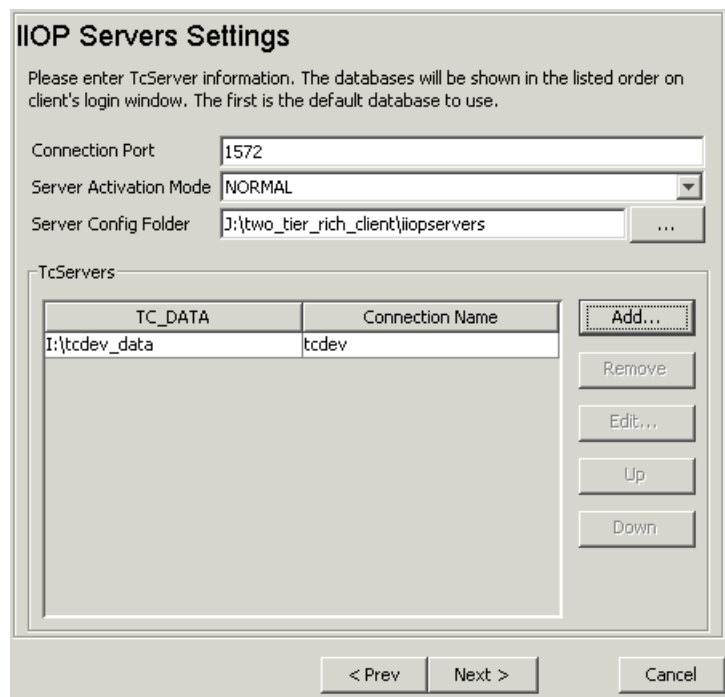
< Prev Next > Cancel

10. In the **TcServer Character Encoding Settings** dialog box, select the encoding used when the TcServer accesses the database, and then click **Next**.



11. In the **IIOp Server Settings** dialog box, define how the rich client connects to the database.

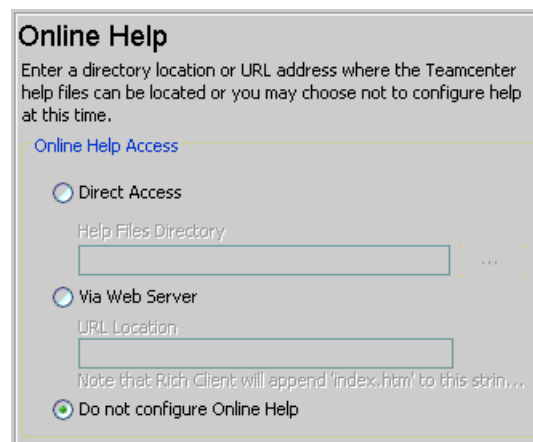
The **TcServers** list contains the databases to which this rich client can connect. There can be one or more entries in this list. Click **Add** to add an entry. The **TC_DATA** box is the path of the *TC_DATA* directory to use. The **Connection Name** box is the value the user selects in the rich client logon dialog box to connect to the database.



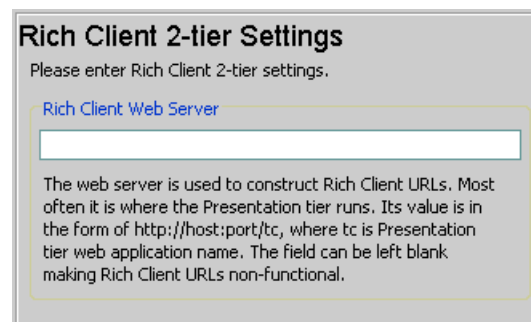
12. In the **Rich ClientSettings** dialog box, define the run-time temporary folder and the rich client Web server if needed. Click **Next**.



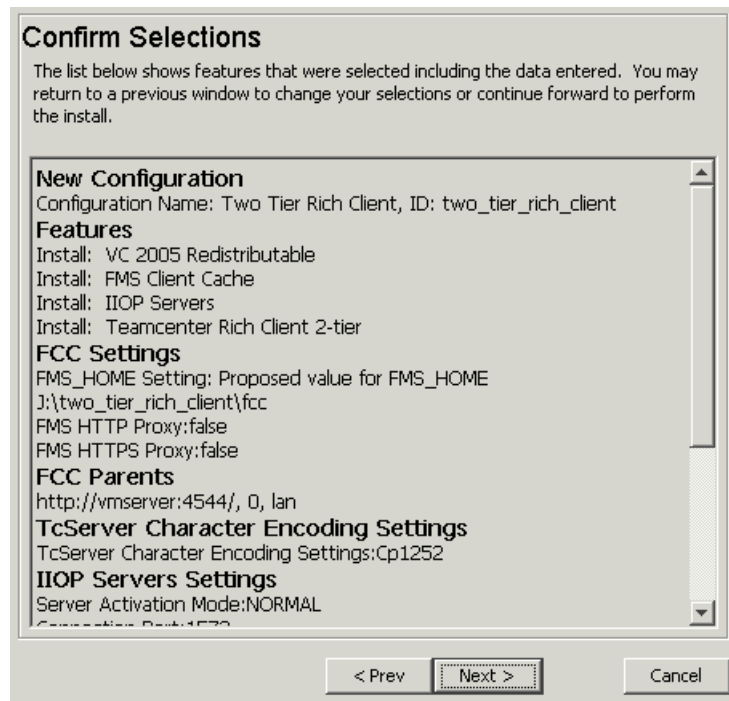
13. In the **Online Help** dialog box, select how the rich client accesses the online help and then click **Next**.



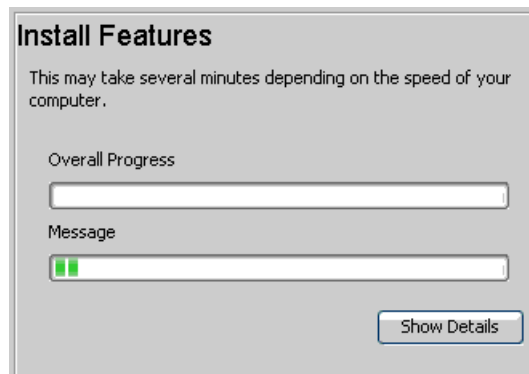
14. In the **Rich Client 2-tier Settings** dialog box, enter the URL that points to the Web tier. This value is required only if the two-tier rich client must contact the Web tier.



15. In the **Confirm Selections** dialog box, review your selections. To change any selections, click **Prev** and make the necessary changes. If your selections are correct, click **Next** to begin the installation.

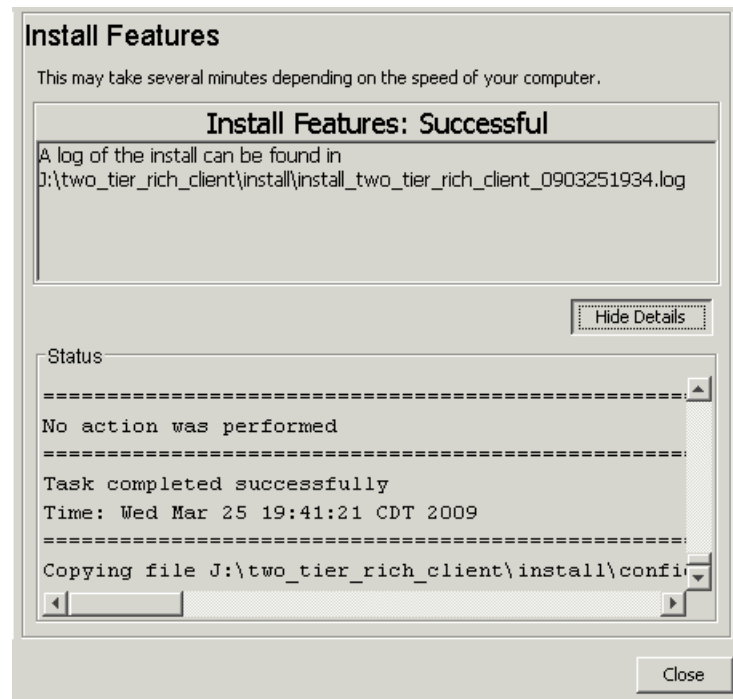


16. The **Install Features** dialog box displays the status of the installation.



17. When the installation is complete, the **Install Features** dialog box displays the **Install Features: Successful** message.

Click **Close** in the **Install Features** dialog box.



Run the two-tier rich client

1. Start the two-tier rich client in one of the following ways:
 - Double-click the **Teamcenter 8** desktop icon that was created during installation.
 - Choose **Start® All Programs® Teamcenter 8® Teamcenter 8**.
 - Open **Windows Explorer**, navigate to *two-tier-root\portal*, and double-click **portal.bat**.

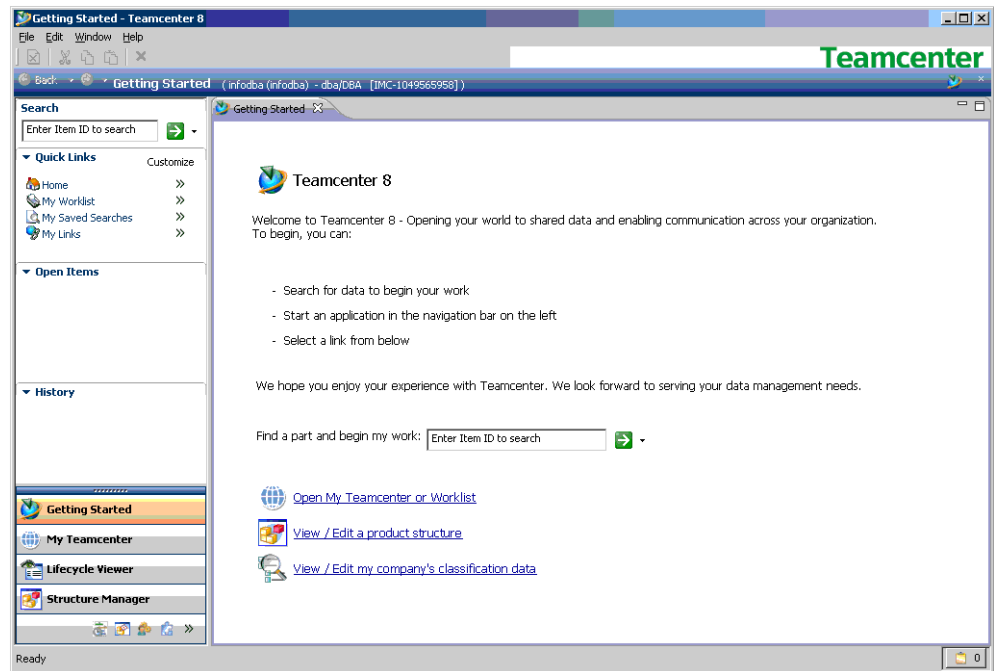
This file is the target of the desktop icon and **Start** menu command.

The Teamcenter login dialog box opens.

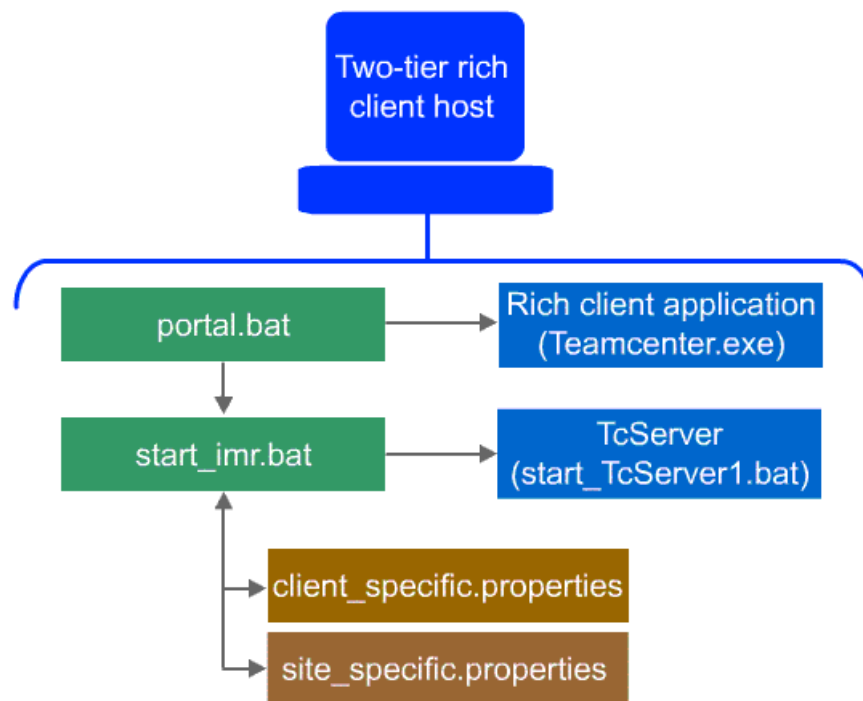
2. In the Teamcenter login dialog box, type a user name, password, group (optional), role (optional), select a database, and click **Login**.

The image shows a login dialog box titled "Siemens PLM Software". Inside the dialog, there is a "Login" section with several input fields: "User ID:" containing "infodba", "Password:" with masked characters "••••••", "Group:" (empty), "Role:" (empty), and "Server:" with a dropdown menu showing "tcdev". There are red asterisks to the right of the User ID and Password fields. At the bottom of the dialog are three buttons: "Clear", "Login", and "Cancel".

3. You are logged on to the two-tier rich client.



Files used to start and configure the two-tier rich client



The following files are used to start and configure the two-tier rich client. They can be modified as needed.

- *two-tier-root\portal\portal.bat*

This file is used to launch the two-tier rich client. It is the target of the desktop icon, **Teamcenter 8**, created during the installation.

It starts two files: **Teamcenter.exe** and **start_imr.bat**.

- *two-tier-root\portal\Teamcenter.exe*

This is the executable for the two-tier rich client application.

- *two-tier-root\liopservers\start_imr.bat*

This file is run in the **TAO IMR** window. It gets configuration information from **client_specific.properties** and **site_specific.properties**.

The **start_imr.bat** file runs the **start_TcServer1.bat** file.

- *two-tier-root\liopservers\start_TcServer1.bat*

This file starts the TcServer.

- *two-tier-root\portal\templates\client_specific.properties*

This file contains the server descriptions of the different databases that are displayed in the rich client logon dialog box.

- *two-tier-root*\portal\templates\site_specific.properties

This file is an additional properties file that can be used to modify the two-tier rich client properties.

two-tier-root is the root directory of the two-tier rich client installation.

Activities

In the *Two-tier rich client* section, do the following activities using the **infodba** account:

1. Create a two-tier rich client
2. Start the two-tier rich client
3. Create a dataset

Review questions

1. In the two-tier architecture, the client tier contains the Teamcenter server and executables.

Select one answer.

- True
- False

2. The correct order in which a two-tier environment must be set up is: first install the resource tier (for example, Oracle), then install the rich client on the client host, and finally install the corporate server.

Select one answer.

- True
- False

3. The two-tier rich client is installed using _____ .

Select one answer.

- Configuration Assistant
- OUI
- Over-the-Web Installer
- TEM

Summary

The following topics were taught in this lesson:

- Two-tier architecture concepts
- How to install the two-tier rich client
- How to start the two-tier rich client

Lesson

7 *Four-tier architecture*

Purpose

This lesson describes the components of the four-tier architecture and how they are installed.

Objectives

After you complete this lesson, you should be able to:

- Describe the components of the four-tier architecture.
- Explain the four-tier architecture installation.
- Describe and install both the J2EE server manager and the .NET server manager.
- Describe and install the Web Application Manager.
- Describe and install the J2EE Web tier.
- Describe and install the .NET Web tier.
- Describe and install the distribution server.
- Describe and install the distribution server instance.
- Discuss how to manage distribution servers and distribution server instances.
- Install and run a four-tier client.
- Install a four-tier rich client using TEM.

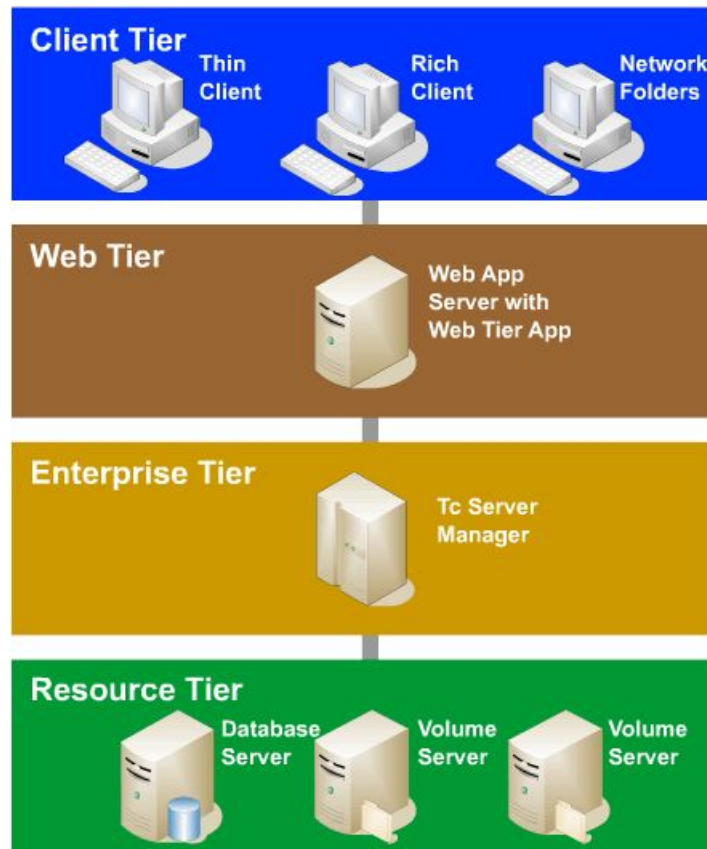
Help topics

Additional information for this lesson can be found in:

- *Web tier installation* topic in the [Installation on Windows Servers Guide](#)
- *Web tier installation* topic in the [Installation on UNIX and Linux Servers Guide](#)

- *Installing the server manager* topic in the [Installation on Windows Servers Guide](#)
- *Installing the server manager* topic in the [Installation on UNIX and Linux Servers Guide](#)
- *Basic deployment* topic in the [Web Application Deployment Guide](#)
- *Install a four-tier rich client* topic in the [Installation on Windows Clients Guide](#)
- *Install a four-tier rich client* topic in the [Installation on UNIX, Linux, and Macintosh Clients Guide](#)

Four-tier architecture logical view



- The *client tier* hosts client applications, processes user interface input and output, and hosts secure file caches.

Available clients include:

- Thin client.
- Rich client.
- Teamcenter's Network Folders.
- Additional applications such as Teamcenter's lifecycle visualization.
- The *Web tier* handles client installs, processes logon requests, routes client requests to business logic, serves static content to clients, and handles communication between the client and enterprise tiers.

The Web tier application can be either:

- Java-based and served on a J2EE Web application server such as WebLogic.
- .NET-based and served on Microsoft IIS.

- The *enterprise tier* hosts business logic, applies security rules, retrieves data from and stores data in the database, and serves dynamic content to clients.

The enterprise tier is composed of:

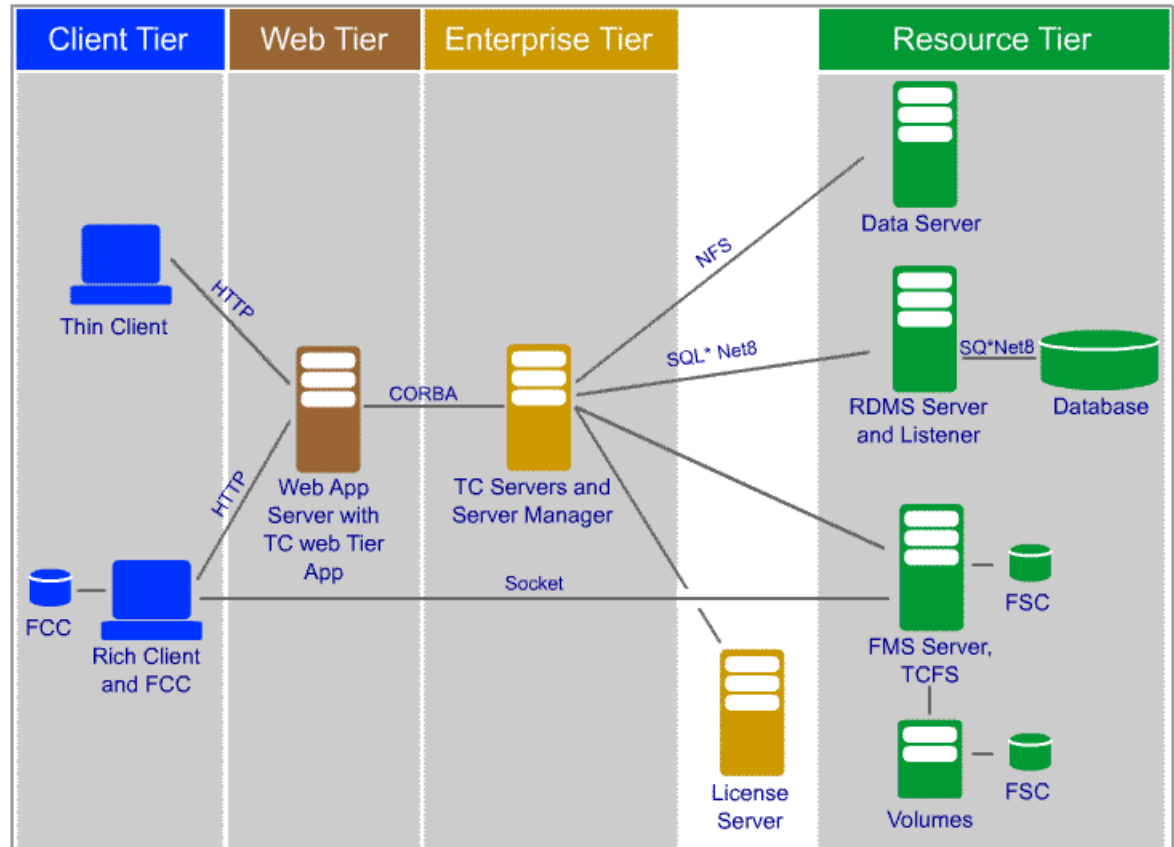
- A pool of server processes managed by a server manager (four-tier architecture only).
 - Transient volumes.
- The *resource tier* stores persistent metadata and files managed by Teamcenter.

The resource tier contains:

- Database server and database.
- Standard volumes.
- File servers for shared configuration and binary executables.

Four-tier architecture physical view

This figure shows a possible physical layout of a four-tier architecture. Included are the elements of File Management System and the protocols used to communicate between the different machines in the environment.



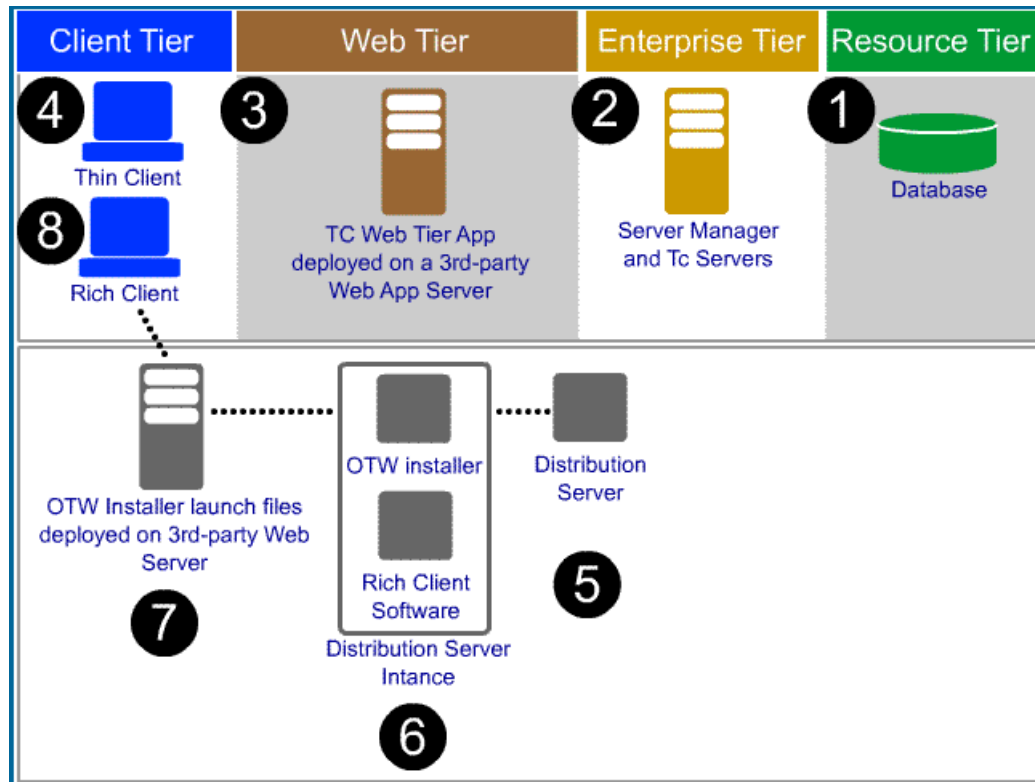
Four-tier architecture deployment options

You can design deployments that host the Web tier, resource tier, and enterprise tiers on the same computer or on separate computers:

- Smaller sites can run the pool of servers and the server manager on the same host as the Web tier.
- Larger sites can distribute the pool of server processes across multiple hosts and optionally include an HTTP server to serve static files or multiple HTTP servers to support load balancing.

For a multihost configuration, the server pool consists of multiple subpools, one or more for each host. Each subpool is managed by one server manager process. The Web tier balances the load across the server pools.

Four-tier architecture installation overview



1. Install the resource tier using third-party database server software, either Oracle or MS SQL Server.
2. Install the enterprise tier using TEM, being sure to choose a server manager feature, either the **J2EE Server Manager** or the **.NET Server Manager**.

TEM installs the pool of Teamcenter servers and the server manager, creates and or populates the database, and configures a volume.

3. Generate the Teamcenter Web Tier application. This can be either J2EE based or .NET based:
 - The J2EE-based Teamcenter Web Application tier is an enterprise archive (EAR) file that is created using the Web Application Manager. The EAR file is deployed on a third-party Web application server such as WebLogic.

You must use the J2EE Server Manager with a J2EE-based Teamcenter Web Application tier.

- The .NET-based Teamcenter Web Application tier is created using TEM and is deployed on Microsoft Internet Information Services (IIS) by TEM during creation.

You must use the .NET Server Manager with a .NET-based Teamcenter Web Application tier.

4. The thin client functionality is installed as part of the Web tier for access by clients. Users access the Web tier application to run the thin client.
5. Using the Web Application Manager, create a distribution server. Only one distribution server is needed to manage multiple distribution server instances.
6. Using the Web Application manager, create a distribution server instance. A distribution server instance contains the Over-the-Web installer and the rich client software that is to be installed.

Create one distribution server instance for each four-tier rich client configuration that is needed at your site.

7. Deploy the files that launch the Over-the-Web installer on an HTTP Web server such as Apache.
8. Download and install the four-tier rich client:
 - The client machine accesses the Over-the-Web installer launch files.
 - The Over-the-Web installer contacts the distribution server for the location of the rich client software to install.
 - The Over-the-Web installer installs the rich client software on the client machine.
9. Optionally, install the four-tier rich client using TEM.

If the four-tier rich client is installed using TEM, the distribution server and distribution server instance are not used.

Install the Web and client tiers in the four-tier architecture

1. Install the Web Application Manager.

This is used to create the J2EE Web tier application, the distribution server, and the distribution server instance.

2. Create a Web tier application and deploy it on a Web application server.

This supplies the thin client functionality and is used by the thin client and the four-tier rich client to access the enterprise tier.

You can create and deploy a J2EE-based or a .NET-based Web tier application:

- You create a J2EE-based Web tier application using the Web Application Manager.

You must use a J2EE-based server manager (created using TEM) with this.

A J2EE-based Web tier application is deployed on a J2EE Web application server.

- You create a .NET-based Web tier application using TEM.

You must use a .NET server manager (created using TEM).

A .NET-based Web tier application is deployed on a Microsoft IIS.

Once the Web tier application is deployed, users can log on to the thin client by accessing a URL in a Web browser.

3. Create a distribution server using the Web Application Manager.

The distribution server is used during the installation of the four-tier rich client. It manages the connection between the client machine, the rich client distribution instances and the Over-the-Web Installer. One distribution server can handle multiple distribution server instances.

4. Create a distribution server instance.

A distribution server instance contains the rich client softer that is to be installed on the client machine along with the Over-the-Web Installer. The Over-the-Web Installer handles the installation of the rich client software.

5. Deploy the files that launch the distribution server instance's Over-the-Web Installer on an HTTP server.

6. Download and install the rich client on the client machine by accessing the URL of the Over-the-Web Installer's launch files. The Over-the-Web Installer installs the rich client on the client machine with minimal interaction from the users.

7. Optionally, install the four-tier rich client using TEM.

If the four-tier rich client is installed using TEM, the distribution server and distribution server instance are not used.

Server manager

In a four-tier environment, a server manager must be installed.

The server manager is a process that manages a pool of Teamcenter server processes. The server manager starts and times out a configurable number of server processes to communicate with the Teamcenter database. A server assigner process assigns available server processes to user sessions. The server manager communicates with the Web tier application using either TCP or multicast protocol.

The server manager is installed using TEM. There are two server manager features:

- **J2EE Based Server Manager** is used with the J2EE Web tier.

The J2EE-based server manager must be started manually.

- **.NET Based Server Manager** is used with the .NET Web tier.

The .NET-based server manager is installed as a Window service and is configured to start automatically when the host is booted.

Server pool

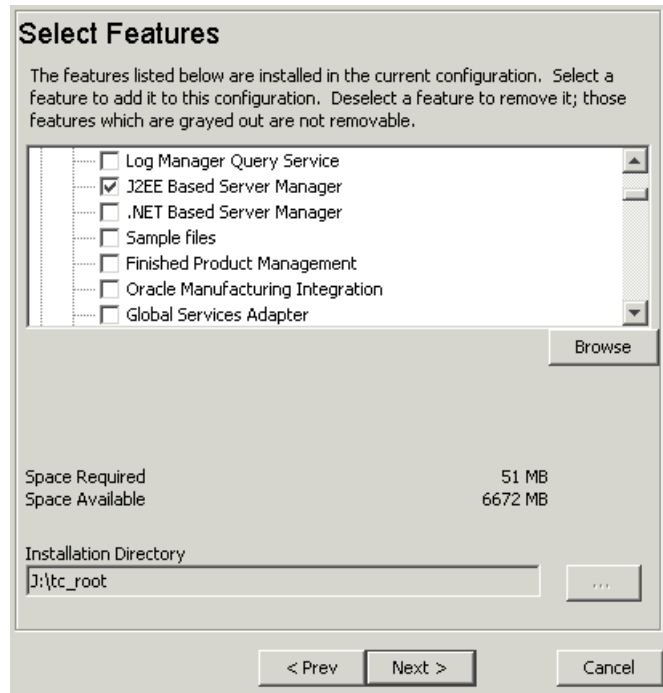
The server pool is a pool of Teamcenter server processes running in the enterprise tier. A small deployment may have only one pool of server processes. For larger deployments, the pool of server processes is distributed as subpools across multiple hosts, with a server manager for each subpool. Server pools are applicable for deployments of the Teamcenter four-tier architecture only.

Installing the J2EE server manager

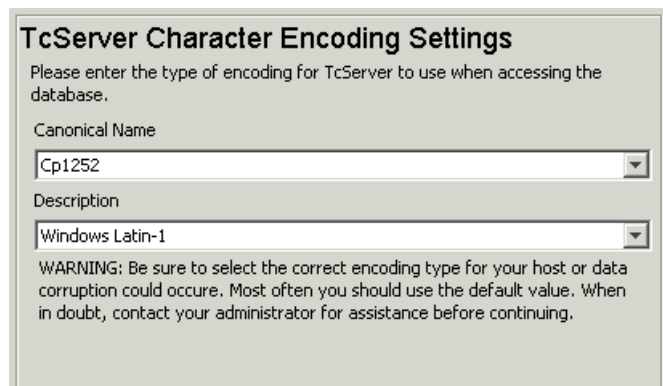
1. Launch TEM.

You can add the J2EE server manager as part of a new or an existing configuration. Proceed to the **Select Features** panel.

2. In the **Select Features** dialog box, under **Teamcenter Corporate Server**, select **J2EE Based Server Manager**.



3. In the **Teamcenter Administrative User** dialog box, provide the password for the Teamcenter administrative user.
4. In the **TcServer Character Encoding Settings** dialog box, select the type of encoding that the TcServer uses to access the database.



5. In the **Server Manager for J2EE** dialog box, provide configuration information. To add a host to the **TreeCache Peers** list, click **Add**.

Server Manager for J2EE

The Server Manager process controls the Teamcenter servers by starting and timing out servers. It informs a Server Assigner of its actions so that the Assigner can assign available servers to user sessions.

Configuration

Pool ID: PoolA

TreeCache Cluster Name: Cluster

JMX HTTP Adaptor Port: 8082

Server Host: vmserver

☐ Multicast Mode

TreeCache Cluster Port: 45566

☒ TCP Mode

Local Service Port: 17800

Connection Timeout: 30000

Host	Port
vmserver	17810

Add Delete

< Prev Next > Cancel

6. In the **Server Manager for J2EE Performance Tuning** dialog box, set values for the servers managed by the server manager.

Server Manager for J2EE Performance Tuning

You can fine tune your Server Manager for J2EE performance here.

Performance Tuning

Max Servers in Sub-Pool: 30

Min Warm Servers: 1

Server Target: 0700 3, 1700 2

Logins per Minute: 0

☐ Check CPU Load

CPU Load Limit: 80

CPU Interval: 10

7. In the **Confirm Selection** dialog box, you can scroll through the list of selections you made to ensure they are correct. Click **Next** to begin installing.
8. When the installation is complete, the **Install Features: Successful** message appears. Click **Close**.

Starting the J2EE server manager

Running the J2EE-based server manager as a service is not supported; therefore, you must start it manually by double-clicking the file:

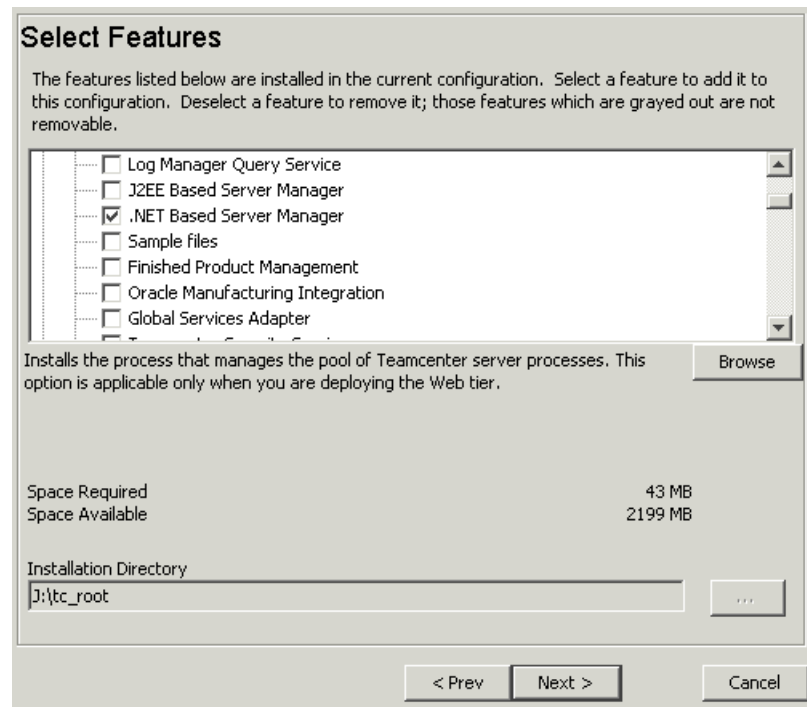
TC_ROOT\pool_manager\mgrstartconfiguration-ID.bat

Installing the .NET server manager

1. Launch TEM.

You can add the .NET Server Manager as part of a new or an existing configuration. Proceed to the **Select Features** panel.

2. In the **Select Features** panel, under **Teamcenter Web Tier**, select **.NET Server Manager**.



3. In the **Operating System User** dialog box, provide the password for the account that installs and maintains Teamcenter.
4. In the **.NET Server Manager** dialog box, provide configuration values for the server manager.

.NET Server Manager

The Server Manager process controls the Teamcenter servers by starting and timing out servers. It informs a Server Assigner of its actions so that the Assigner can assign available servers to user sessions.

Configuration

Pool ID	TcPoolA
Pool Port	8085
<input type="checkbox"/> Specify Server Host	
Server Host Name	
<input type="checkbox"/> Critical System Events Notification	
Administrator Email	
SMTP Host	

5. In the **Server Manager Performance Tuning** dialog box, provide configuration parameters to fine-tune the Server Manager.

Server Manager Performance Tuning

Please change the configuration parameters below to fine tune Server Manager performance.

Performance Tuning

Max Servers	30
Min Warm Servers	1
Target Servers	0700 3, 1700 2
Logins per Minute	0
Query Time Out	0
Soft Time Out Stateless	1200
Soft Time Out Read	28800
Soft Time Out Edit	28800
Hard Time Out Stateless	28800
Hard Time Out Read	28800
Hard Time Out Edit	28800

6. In the **TcServer Character Encoding Settings** dialog box, select the type of encoding that TcServer uses to access the database.

TcServer Character Encoding Settings

Please enter the type of encoding for TcServer to use when accessing the database.

Canonical Name

Cp1252

Description

Windows Latin-1

WARNING: Be sure to select the correct encoding type for your host or data corruption could occur. Most often you should use the default value. When in doubt, contact your administrator for assistance before continuing.

7. In the **Confirm Selections** dialog box, click **Next** to begin installing.
8. When the installation is complete, the **Install Features** dialog box displays the **Install Features: Successful** message. Click **Close**.

The installation creates and starts a Windows service called **Teamcenter Server Manager (SID)**.

Starting the .NET server manager

The .NET-based server manager is installed as a Windows service and is started automatically when the installation is complete. It is configured to start automatically when Windows starts.

If you do *not* want the server manager to start automatically, change its startup type to **Manual**. Then you can start the .NET-based server manager manually as follows:

1. Open a command prompt with Teamcenter environment settings by choose **All Programs® Teamcenter 8® service-name_configuration-ID Command Prompt**.

Replace *service-name* and *configuration-ID* with the Teamcenter service name and configuration ID you entered during installation.

2. Change to the *TC_ROOT\net_servermanager* directory.
3. Type the following command to start the server manager:

```
netmgrstart.bat pool-id
```

Replace *pool-id* with the server pool ID you entered when you installed the .NET-based server manager.

Web Application Manager

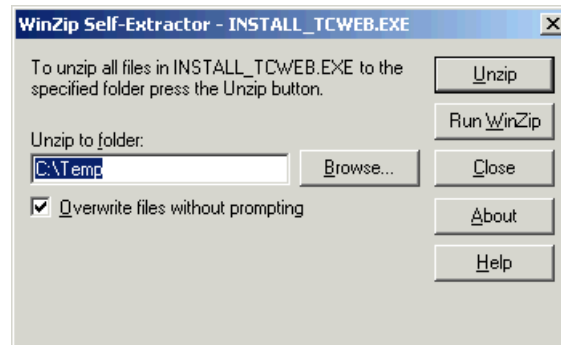
The Web Application Manager is used to create:

- Web tier application
- Rich client distribution server
- Rich client distribution instance (which includes the rich client software and the Over-the-Web Installer)

Install the Web Application Manager

1. From the Teamcenter installation DVD, navigate to the **Web_tier** directory.
2. Double-click **INSTALL_TCWEB.EXE**.

The **WinZip Self-Extractor** dialog box appears.

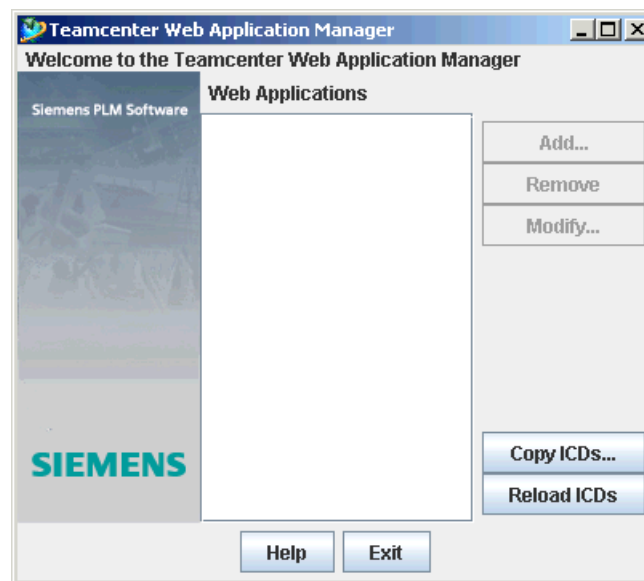


3. In the **Unzip To Folder** box, type the location to which the Web Application Manager is to be installed.
4. Click **Unzip**.
The files in the zip file are extracted to the location you selected.
5. Click **Close**.

Start the Web Application Manager

1. Open a **Windows Explorer** and navigate to the directory in which you unzipped **INSTALL_TCWEB.EXE**.
2. Double-click **insweb.bat**.

The Web Application Manager interface is displayed. From here you can add, remove, and modify Web applications.



J2EE Web tier

The J2EE Web tier application is:

- Used to provide thin client functionality.
- Contacted by the rich client for access to Enterprise JavaBeans, JDBC connections, JMS messaging, and other services.
- Deployed on a Web application server such as WebLogic.
- Accessed via a Web browser to run the thin client.
- Built using the Web Application Manager.
- Packaged as an EAR file.

Teamcenter Web Tier application

The first Web tier application you build is the Teamcenter Web Tier application. This application provides essential thin client functionality and rich client support.

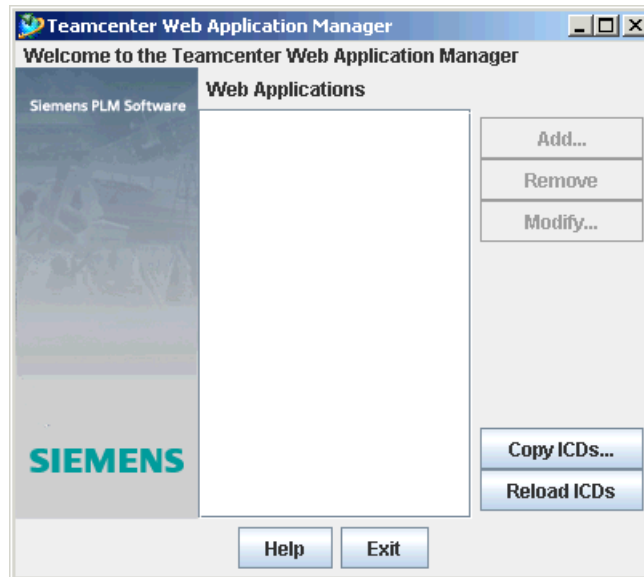
The solutions that comprise the Teamcenter Web Tier application are:

- **Teamcenter - Server Adapter**
- **Teamcenter - Web Tier Infrastructure**
- **Teamcenter - Web Tier Core Applications**

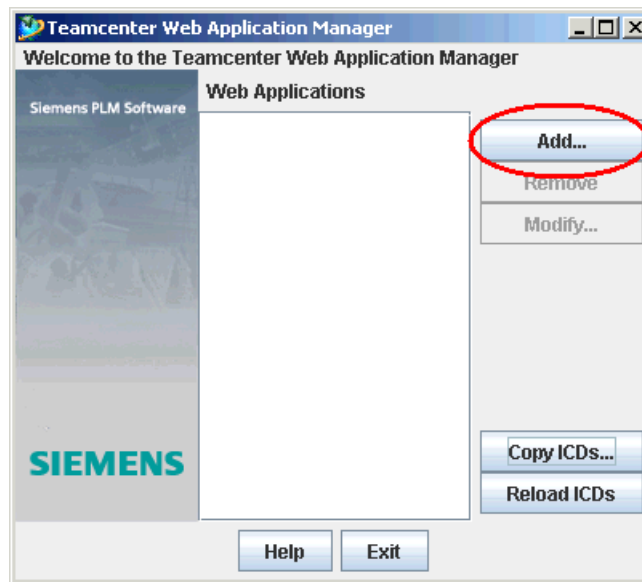
After you build the Teamcenter Web Tier application, you can build additional thin client solutions, including custom solutions, according to your needs.

Create a Teamcenter Tier Web application

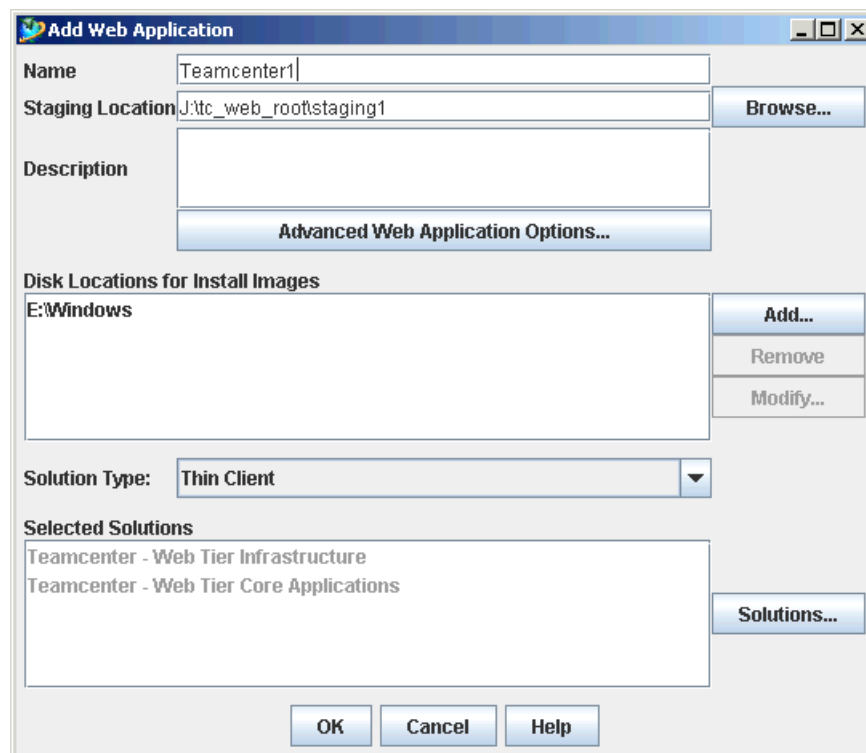
1. Start the Web Application Manager by double-clicking **insweb.bat**.



2. Copy ICD files used to create a Web tier application.
 - a. Click **Copy ICDs**.
 - b. Navigate to the **Web_tier** directory on the Teamcenter installation DVD.
 - c. Select **Web_tier**.
 - d. After the files are copied, the **Progress** dialog box appears and displays the **Click OK to Continue** message.
3. Begin creating a Web tier application by clicking **Add** on the Web Application Manager.



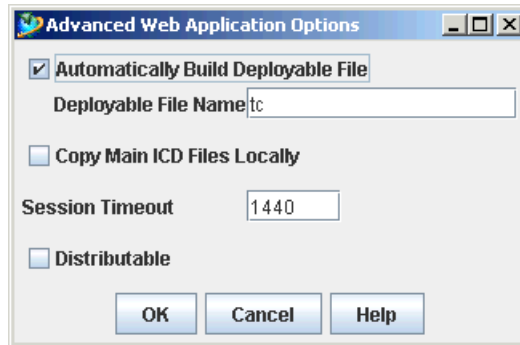
4. In the **Add Web Application** dialog box, define the Web application.



- In the **Name** box, type a unique name for the Web tier application.
- In the **Staging Location** box, type the location in which to create the Web tier application.
- In the **Description** box, type a useful description.

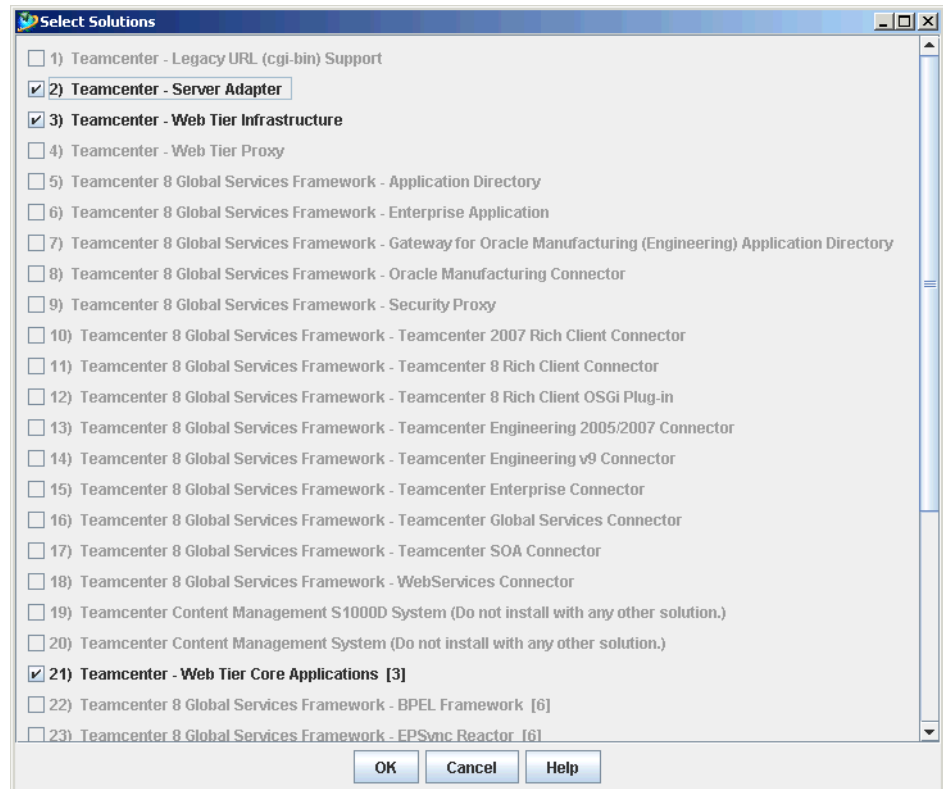
- d. Click **Advance Web Applications Options** to open the **Advance Web Applications Options** dialog box. From here you can define the deployable name of the Web tier application. This is the name of the EAR file that is generated and is the value used in the URL to run the thin client. The default value is **tc**.

After completing the dialog box, click **OK**.



- e. In the **Disk Locations for Install Images** section, provide the location of the install images. If you need to add paths in the list, click **Add**. If you need to modify a path in the list, select the path in the list and click **Modify**.
- f. Note that the **Solution Type** box has a value of **Thin Client** and that it is currently the only choice. This is because you have only copied ICD files for the thin client. Later topics show how to copy the ICD files required for the distribution server and the distribution server instance.
- g. In the **Selected Solutions** section, click **Solutions**. The **Select Solutions** dialog box appears. Note that **Teamcenter - Web Tier Infrastructure** and **Teamcenter - Core Applications** are preselected.

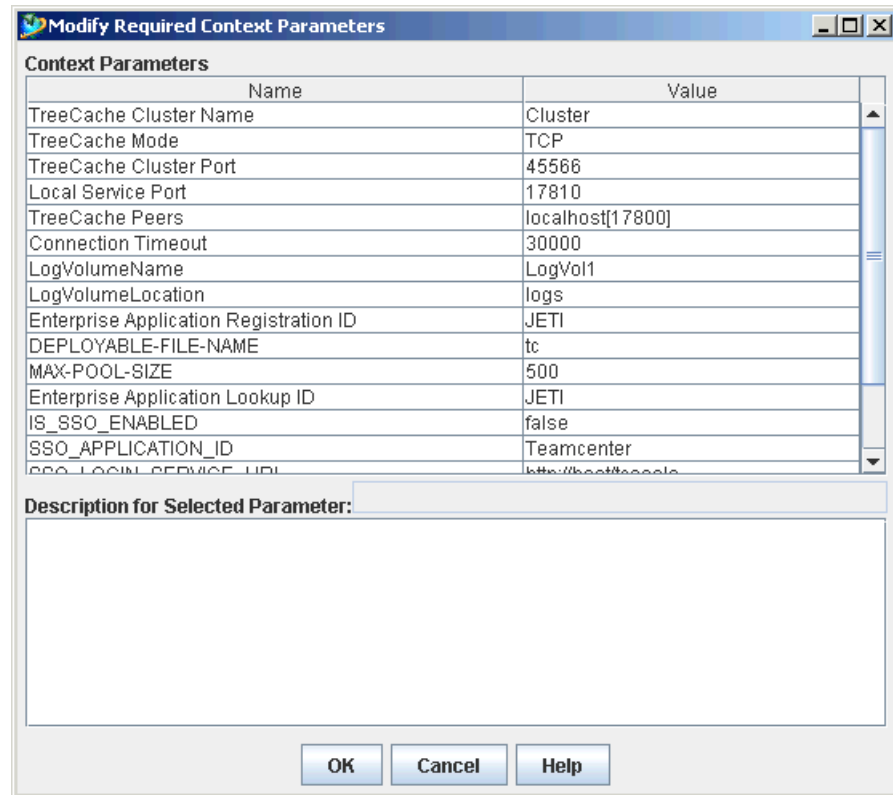
In addition to the preselected solutions, the **Teamcenter - Server Adapter** solution is required to create the Web tier application. Select **Teamcenter - Server Adapter** and click **OK**.



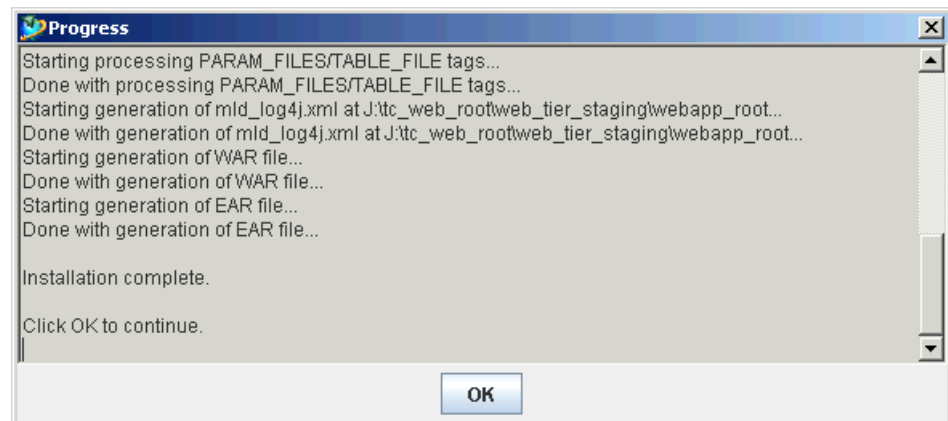
5. In the **Modify Context Parameters** dialog box, set the required parameters.

To set a context parameter, double-click the **Value** box for the given parameter and type the new value. To view a description of any context parameter, click the parameter name in the **Modify Required Context Parameters** dialog box.

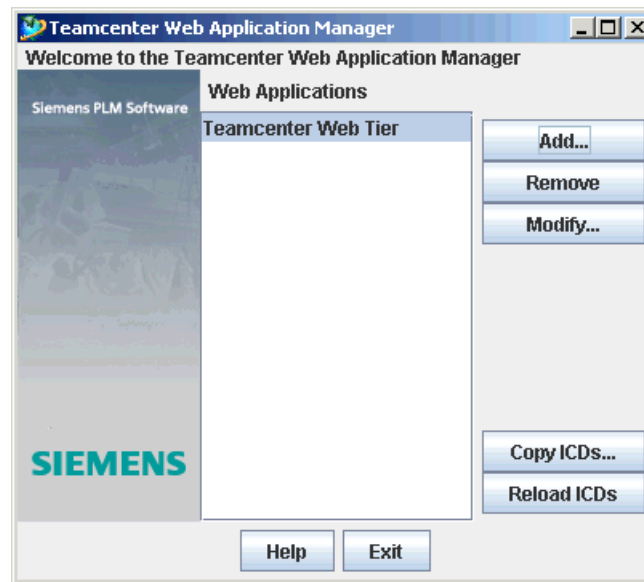
After setting required context parameters, click **OK**.



- The **Progress** dialog box appears and displays the status of the installation. When the installation is complete, it displays the **Click OK to continue** message.



The Web application you created is now in the **Web Application** list of the Web Application Manager.



Deploy a Web application

You deploy a Web application on a Web application server such as WebLogic. Supported Web application servers include:

- JBoss
- WebSphere
- WebLogic
- OracleAS
- Sun Java Systems Application Server

For a full list of supported Web application servers and versions, refer to GTAC:

<http://support.ugs.com>

For details about installing and configuring a specific Web application server, see that product's documentation.

For details about deploying a Teamcenter Web application on a specific Web application server, see the *Web Application Deployment Guide*.

.NET Web tier

The Teamcenter .NET Web tier:

- Is an alternative to the Teamcenter J2EE Web tier for Microsoft Windows networks.
- Uses Microsoft IIS to serve the Web tier application.
- Is installed using TEM.

During installation of the .NET Web tier, TEM verifies that you have the required versions of

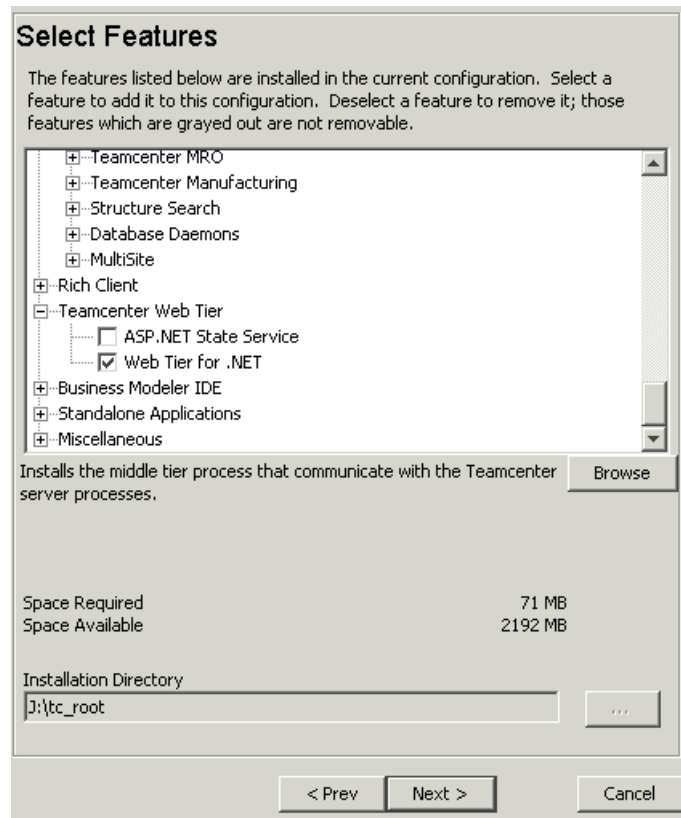
- Microsoft Internet Information Services (IIS)
 - Microsoft .NET Framework
- Requires that you also use the .NET server manager which is installed using the TEM.

Installing .NET Web tier

1. Launch TEM.

You can add the .NET Web tier as part of a new or an existing configuration. Proceed to the **Select Features** panel.

2. In the **Select Features** panel, under **Teamcenter Web Tier**, select **Web Tier for .NET**.



3. Complete the **.NET Web Tier** panel.

The following parameters are required:

- **Web Tier Language**

Specifies the same locale that is specified for Teamcenter server. The default is **English**.

- **Session Time Out**

Specifies the Web session time out in minutes. The default value is **20**.

- **Response Compression Threshold**

Specifies the threshold in number of bytes beyond which the Web server should compress responses sent back to the client. the default is **500**.

- **Server Manager Peers**

Specifies server manager peer hosts for the .NET Web tier. Enter one or more hosts using the **Add** button and entering host and port numbers for each.

.NET Web Tier
Installs .NET Web Tier for 4-tier Teamcenter deployment.

Configuration

Web Tier Language: English

Session Time Out: 20

Response Compression Threshold: 500

Client Cache Time Out: 28800

☐ SSO Is Enabled

SSO Application ID:

SSO Login Service URL:

☐ Critical System Events Notification

Administrator Email:

SMTP Host:

☐ Cluster Deployment

State Server Host:

State Server Port:

Server Manager Peers

Host	Port

Add

Delete

< Prev Next > Cancel

4. In the **.NET Web Tier Client Integration** panel, enter the necessary values to configure the .NET Web tier client integrations.
5. Complete the **Internet Information Services (IIS) Settings** panel.

The following parameters are required:

- **Use Existing Web Site**

Selection this to use an existing Web site. Then select the Web site you want to use from the list. The IIS virtual directory for .NET Web tier deployment is created in the selected Web site, and the application is hosted on that Web site.

- **Create New Web Site**

Select this to create a new Web site and then type a name, port, and root path for the new Web site.

- **Use Existing Application Pool**

Specifies whether to use an existing application pool from the list provided.

- **Virtual Directory Name**

Specifies the IIS virtual directory name for Teamcenter .NET Web tier deployment. The default value is **tc**. Web URLs for Teamcenter four-tier deployments are based on this value. For example, if you specify the default value as **tc**, the URLs are of the form:

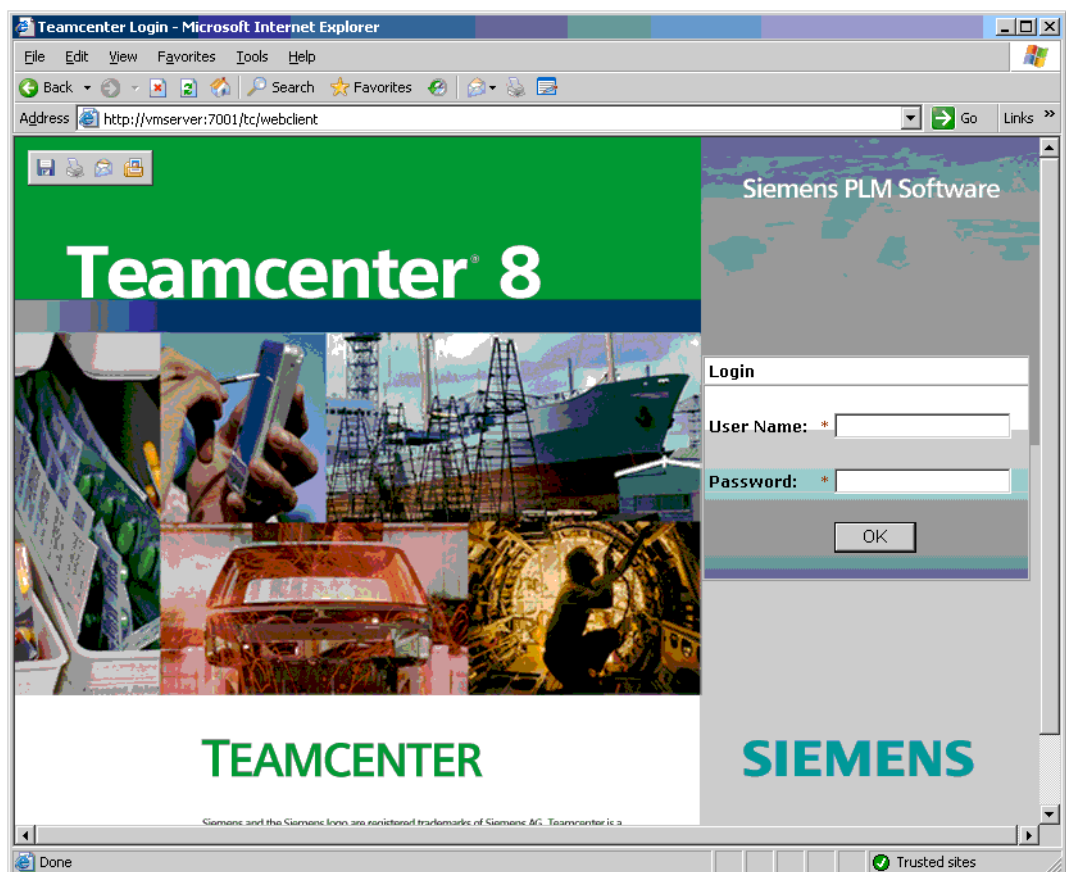
`http://host:port/tc`

6. On the **Confirm Selections** panel, click **Next** to begin installing
7. When the installation is complete, the **Install Features** dialog box displays the **Install Features: Successful** message. Click **Close**.

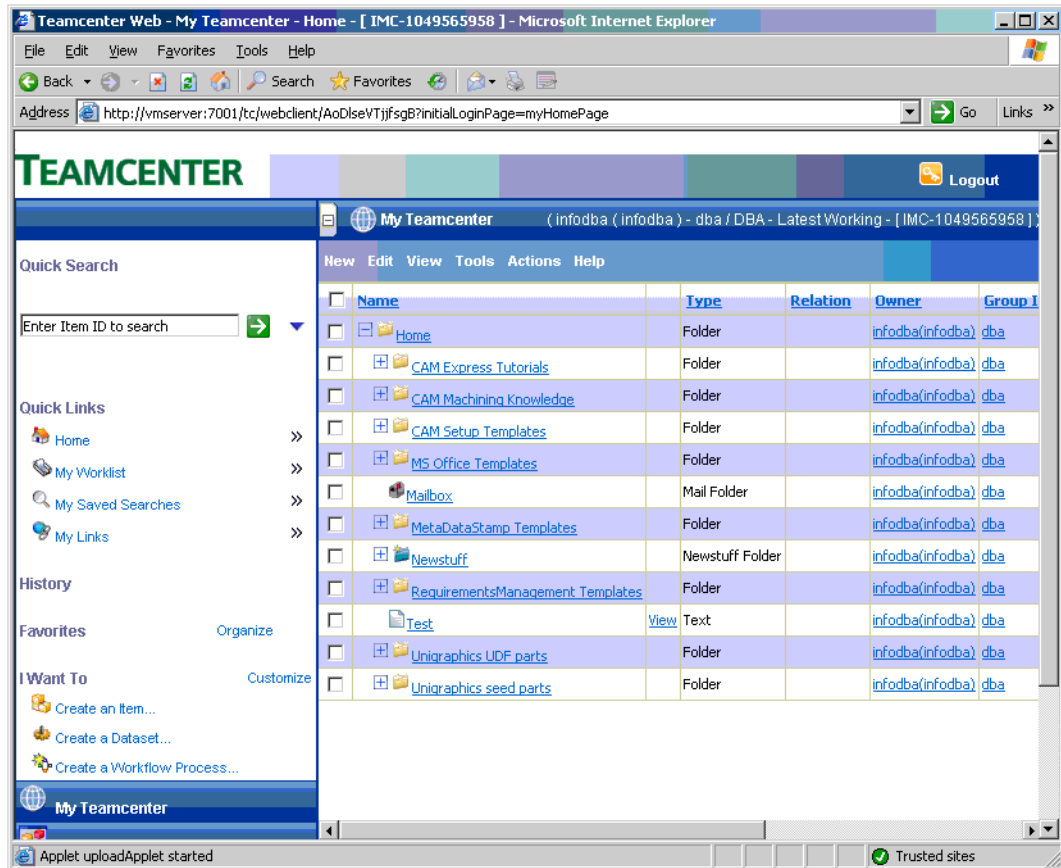
Launch the thin client

1. Start Microsoft Explorer.
2. In the **Address** box, type **http://host-name:port/ear-file-name/webclient**
host-name is the name of the computer hosting your network's web tier.
port is the port used by the third-party Web application server.
ear-file-name is the name of the EAR file.

The thin client logon window appears.



3. Type values for **Username** and **Password** and click **OK**.
4. A security warning dialog box may appear. If so, click **Yes**.



You are now logged on to the thin client.

Activities

In the *Four-tier architecture* section, do the following activities using the **infodba** account:

1. Install the J2EE server manager
2. Start the J2EE server manager
3. Install the Web Application Manager
4. Create the Web tier application
5. Install the WebLogic Web application server
6. Deploy a Web tier application on WebLogic
7. Log on to the thin client

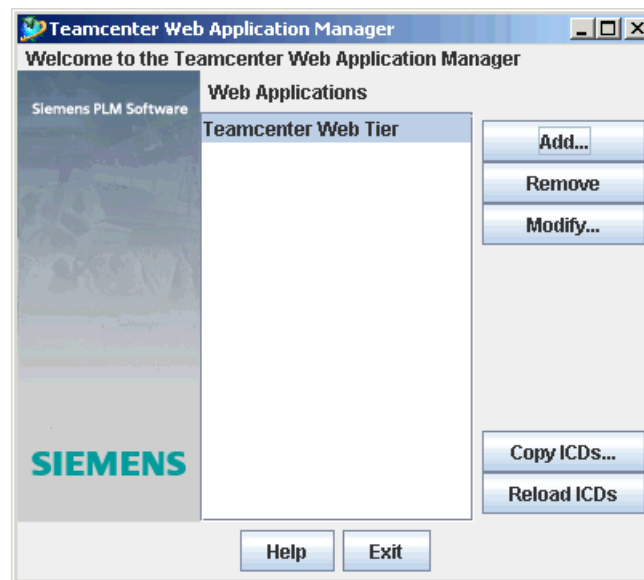
Distribution server

The distribution server:

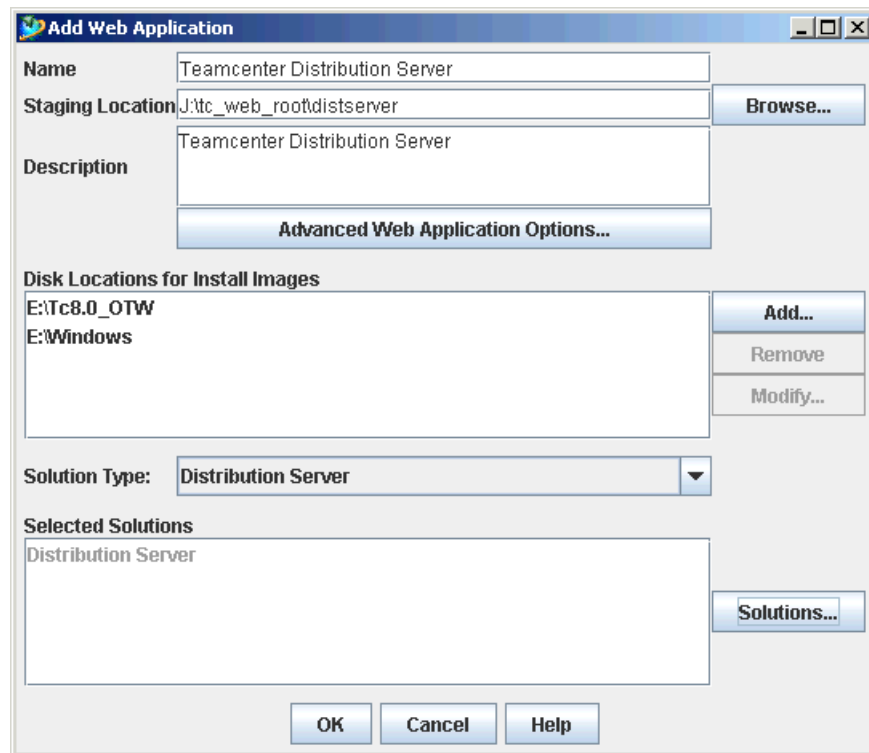
- Manages the connection between a distribution server instance and the Over-the-Web Installer. The Over-the-Web Installer contacts the distribution server for the rich client files to download to the client machine.
- Can manage multiple distribution server instances.
- Is created using the Web Application Manager.

Create a distribution server

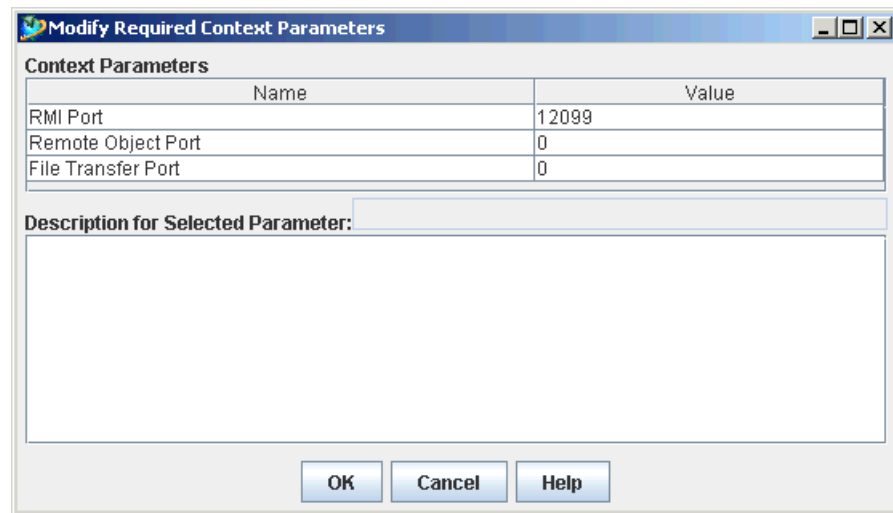
1. Start the Web Application Manager.



2. Copy the ICD files needed to create the distribution server and the distribution server instance by clicking **Copy ICDs** and selecting the **icd** directory on the Over-the-Web installation DVD. After the files are copied, click **OK**.
3. Begin creating the distribution server by clicking **Add**.
4. Fill in the **Add Web Application** dialog box.



- a. In the **Name** box, type a unique name.
 - b. In the **Staging Location** box, type the location in which to build the distribution server.
 - c. In the **Description** box, type a meaning description of the distribution server.
 - d. In the **Disk Locations** section, click **Add** and add the path to the Over-the-Web installation DVD.
 - e. In the **Solution Type** list, select **Distribution Server**.
 - f. When you select **Distribution Server** as the **Solution Type**, the only available solution is **Distribution Server**.
 - g. Click **OK** in the **Add Web Application** dialog box.
5. If needed, modify the required context parameters by clicking in the **Value** box of a parameter and typing the correct value. Click **OK**. The **Progress** dialog box displays the status of the installation.



6. When the installation is complete, click **OK** in the **Progress** dialog box.

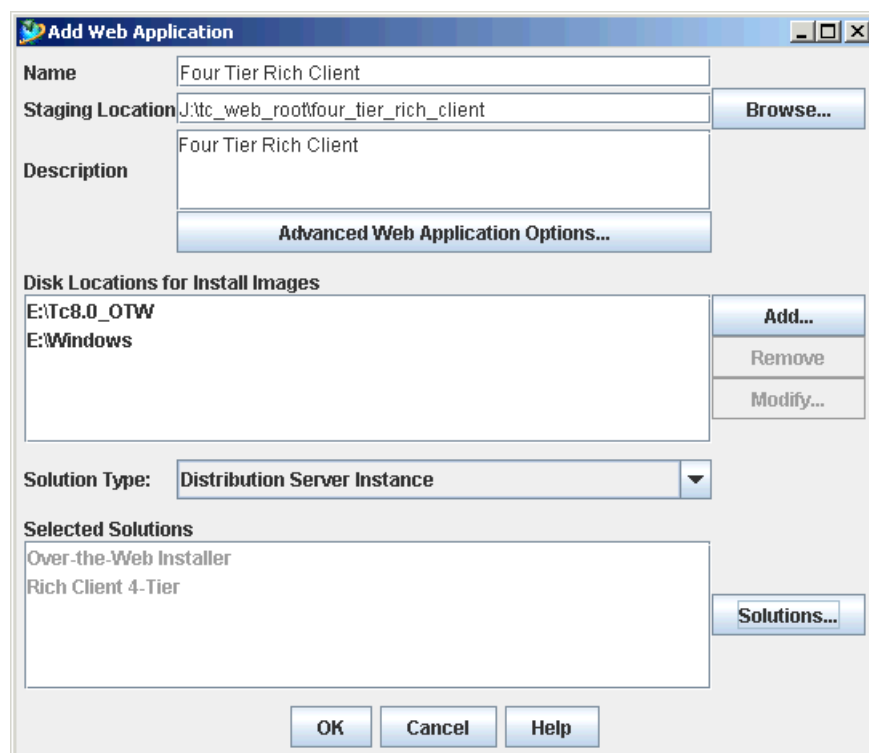
Distribution server instance

A distribution instance:

- Contains:
 - Over-the-Web Installer
The Over-the-Web Installer copies the rich client software to the client machine.
 - Rich client software that is to be installed on the client machine
- Is created using the Web Application Manager.
- Must be created for each unique four-tier rich client configuration needed at your site.

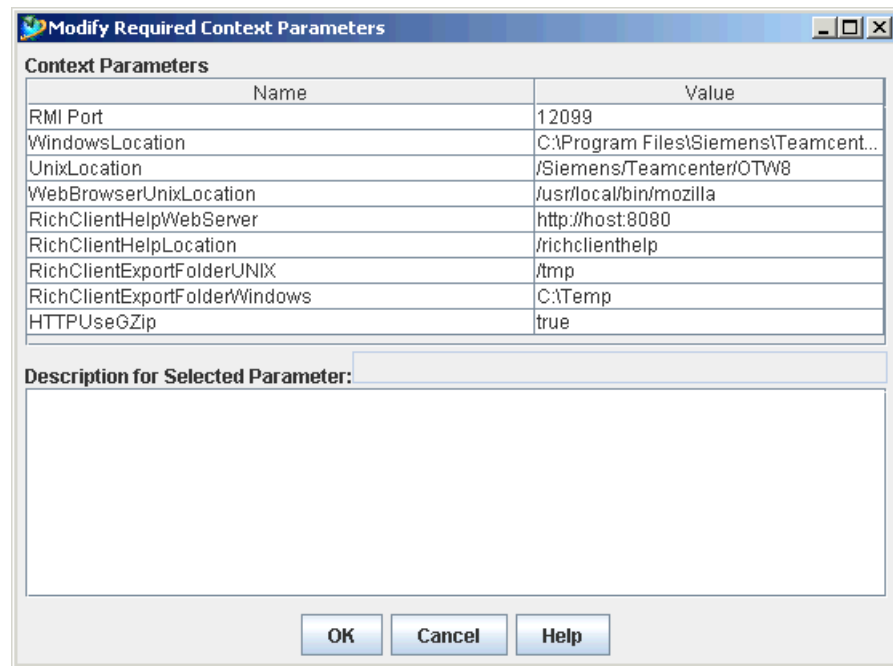
Create a distribution server instance

1. Start the Web Application Manager.
2. If you have not yet copied the necessary ICD files, do so by clicking **Copy ICDs** and selecting the **icd** folder on the Over-the-Web installation DVD.
3. Begin creating the distribution server instance by clicking **Add**.
4. Fill in the **Add Web Application** dialog box.
 - a. In the **Name** box, type a unique name.
 - b. In the **Staging Location** box, type the location in which to build the distribution server instance.
 - c. In the **Disk Locations** section, click **Add** and add the path to the Over-the-Web installation DVD.
 - d. In the **Solution Type** list, select **Distribution Server Instance**.
 - e. Click **Solutions** and add solutions if needed. When you select **Distribution Server Instance** as the **Solution Type**, the following two solutions are preselected: **Over-the-Web Installer** and **Rich Client 4-Tier**. These two are sufficient to create a distribution server instance.
 - f. Click **OK** in the **Add Web Application** dialog box.



5. Modify the required context parameters and click **OK**.

WindowsLocation and **Unix Location** are the locations on Windows and UNIX, respectively, where the rich client software will be installed.



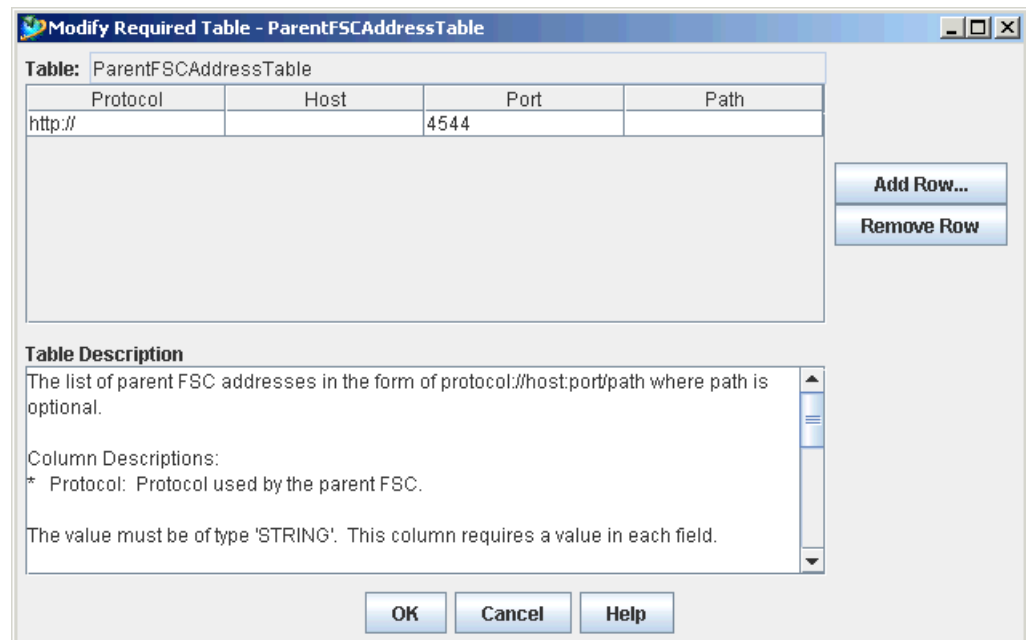
Name	Value
RMI Port	12099
WindowsLocation	C:\Program Files\Siemens\Teamcent...
UnixLocation	/Siemens/Teamcenter/OTW8
WebBrowserUnixLocation	/usr/local/bin/mozilla
RichClientHelpWebServer	http://host:8080
RichClientHelpLocation	/richclienthelp
RichClientExportFolderUNIX	/tmp
RichClientExportFolderWindows	C:\Temp
HTTPUseGZip	true

Description for Selected Parameter:

OK Cancel Help

6. Provide values for the **ParentFSCAddressTable** and click **OK**.

You must enter a value for the **Host** column.



Protocol	Host	Port	Path
http://		4544	

Add Row...
Remove Row

Table Description
The list of parent FSC addresses in the form of protocol://host:port/path where path is optional.

Column Descriptions:
* Protocol: Protocol used by the parent FSC.

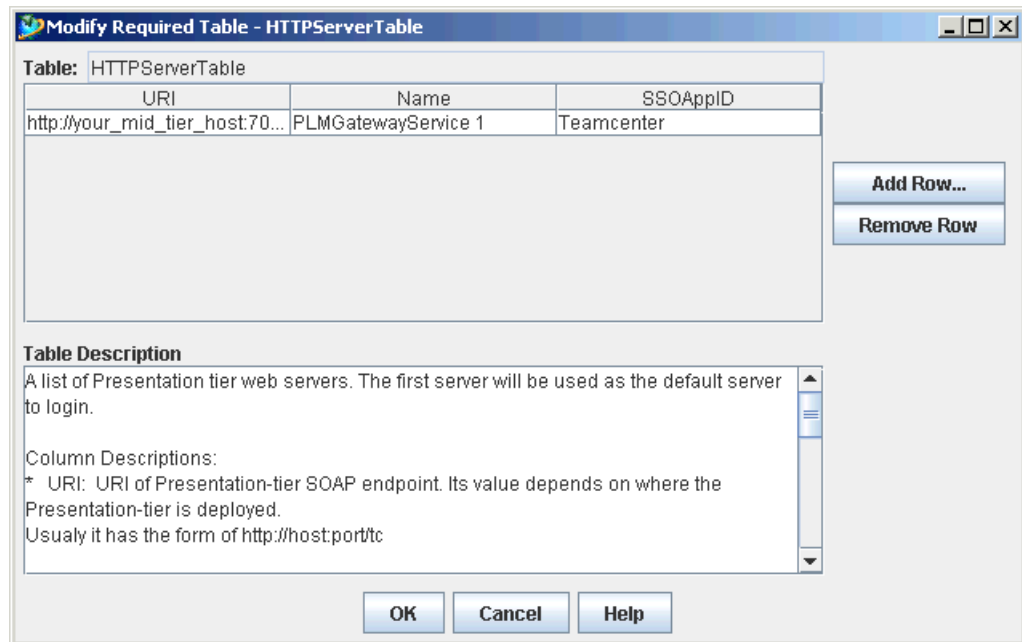
The value must be of type 'STRING'. This column requires a value in each field.

OK Cancel Help

7. Provide values for the **HTTPServerTable** and click **OK**.

In the **URI** column, enter the host and port of the Web application server that servers your Teamcenter Web Tier application.

The value in the **Name** column appears in the **Server** list of the four-tier rich client logon window.



8. When the installation is complete, click **OK** in the **Progress** dialog box.

Deploy a distribution instance

You deploy a distribution instance by deploying the Web files that launch the distribution instance's Over-the-Web Installer on a Web server. Supported Web servers include:

- Apache HTTP server
- Apache Tomcat
- Sun ONE
- IBM WebSphere
- Microsoft IIS

For a full list of supported Web servers and versions, refer to GTAC:

<http://support.ugs.com/>

For details about installing and configuring a specific Web server, see that product's documentation.

For details about deploying a Teamcenter distribution instance on a specific Web server, see the *Installation on Windows Servers Guide* or the *Installation on UNIX and Linux Servers Guide*.

Managing distribution servers and instances

After a distribution server and distribution server instances are installed and configured, you can:

- Change the distribution server contents.
- Add components to a distribution server instance.
- Patch components in a distribution server instance.

Note

To allow automatic updating of a rich client when users start a Teamcenter session, do not change the name of the distribution instance.

Start the distribution server

1. Navigate to the distribution server staging location.
2. Ensure that the Java Runtime Environment (JRE) 1.5 **bin** folder is at the beginning of the Windows **PATH** system environment variable.
3. Browse to the **webapp_root** subdirectory and double-click the **start_rmi.bat** program file.

This starts the Java remote method invocation (RMI) registry.

4. In the **webapp_root** subdirectory, double-click the **start_server.bat** program file.

This opens a **Command Prompt** window that runs the distribution server.

When this distribution server is successfully started, the **Command Prompt** window displays the **Distribution Server Started** message.

Stop the distribution server

- Stop the distribution server on a local machine:

Stop a distribution server from a local computer by closing the distribution server **Command Prompt** window. The distribution server stops, and cleanup progress is reported.

- Stop the distribution server on a remote machine

To stop a distribution server from a remote computer, you must have file access to the **stop_server.bat** and **dist_server.jar** files in the **webapp_root** subdirectory of the distribution server staging location.

To stop the distribution server remotely, type the following command:

```
stop_server host-name:port-number
```

host-name is the name of the computer running the distribution server. *port-number* is the RMI port.

Modify the distribution instance

1. Start the Web Application Manager.
2. In the **Web Application** list, select the distribution instance to modify and click **Modify**.

The **Modify Web Application** dialog box appears.

3. Click **Modify Disk Locations** to open the **Modify Disk Locations** dialog box so that you can add, modify, or remove disk locations of installation files.

For example, if you intend to add Lifecycle Visualization to the four-tier rich client, type the paths to the Lifecycle Visualization installation images for each operating system.

4. Click **Add Solutions** to open the **Add Solution** dialog box. From here you can selection additional solutions to add to the four-tier rich client.

If the solution you are adding has required parameters, the Web Application Manager displays the necessary dialog boxes.

5. When installation is complete, click **OK** to close the **Progress** dialog box.

The Web Application Manager displays the **Modify Web Application** dialog box.

6. If the solution you added has optional parameters you want to modify, click **Modify Context Parameters**.

The **Modify Context Parameters** dialog box appears. Type the values for the optional parameters and click **OK**.

The Web Application Manager displays the **Modify Web Application** dialog box.

Note

If you change a context parameter, the Over-the-Web Installer cannot automatically update the rich client installation on user workstations. Users must uninstall the rich client and reinstall it from this instance.

For example, if you add the Teamcenter Visualization solution, and modify the **PVisLicenseLevel** context parameter, users must uninstall and reinstall the rich client.

7. Exit the Web Application Manager.
8. If you changed a context parameter value, notify users that they must uninstall the rich client and reinstall from the same instance.

Four-tier rich client installation

To install the four-tier rich client, users access a Web site that launches the Over-the-Web Installer and installs the rich client.

To enable users to install the four-tier rich client over the Web, publish the following information:

- URL of the Web page that launches the Over-the-Web Installer
- The location on user workstation in which the rich client will be installed
Users must have write permissions for this location.
- For four-tier rich client instances that include support for Lifecycle Visualization or NX, the location in which users must install those products

Users must have administrative permissions for this location.

Enable users to install the four-tier rich client

For users to be able to install the four-tier rich client, the administrator must ensure that the following are running:

- Distribution server (**start_server.bat**)
- RMI registry (**start_rmi.bat**)

Install the four-tier rich client using the Over-the-Web installer

1. Open a Web browser and type the following in the address box:

`http://host-name/distribution-instance-deployment/otw.html`

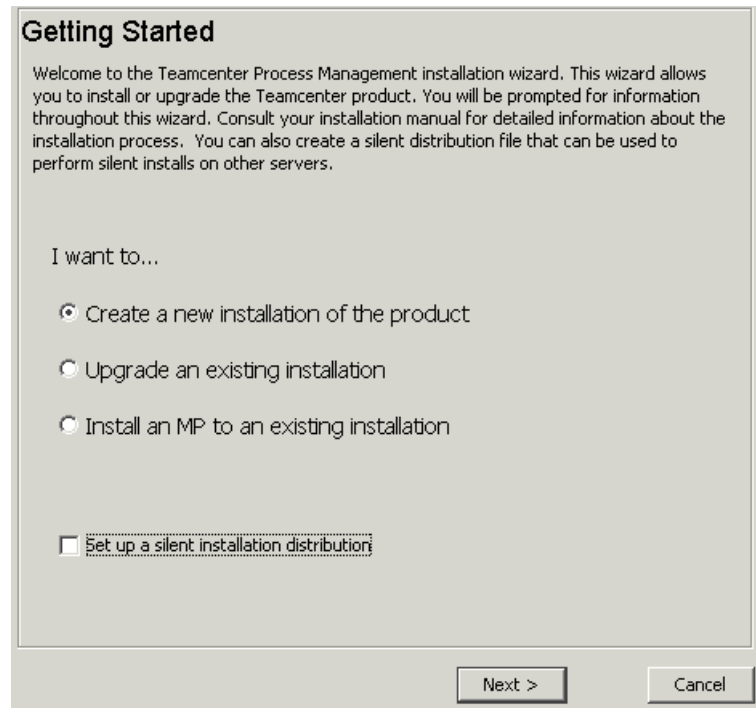
host-name is the name of the machine running the Web server that serves the Over-the-Web launch page, and *distribution-instance-deployment* is the directory in the Web server that contains the launch page.

A Web page opens and displays a message saying that the Teamcenter rich client is being installed.

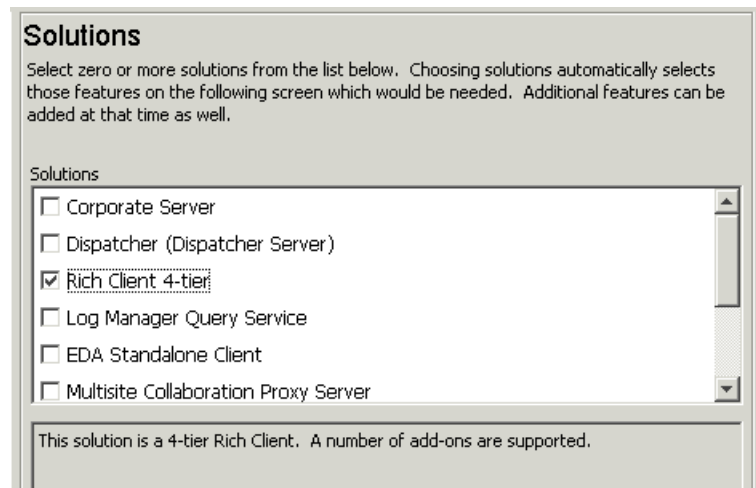
2. You receive a message stating that the installer is setting some environment variables at the user level and you need to reboot the machine for them to take effect. Click **OK**.
3. You receive a message that says the installation is complete and listing the installed solutions. Click **OK**.
4. The Web page displays a message saying that the installation is complete and you can close the browser. Close the browser.

Install the four-tier rich client using TEM

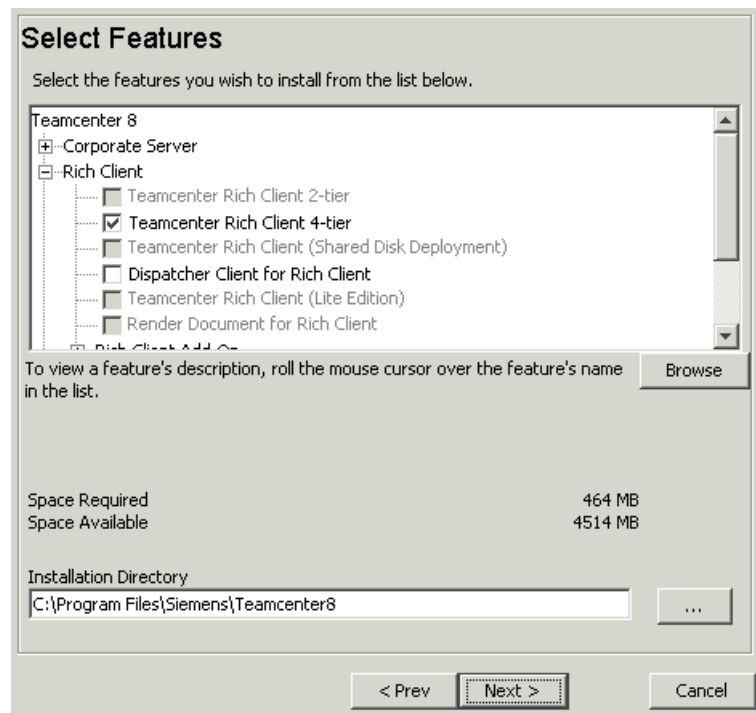
1. Start TEM by double-clicking **tem.bat** on the Teamcenter installation DVD.
2. In the **Choose Install Language** dialog box, select the language you want to use to install the corporate server and click **OK**.
3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.



4. In the **Copyright Notice** dialog box, click **Next**.
5. In the **New Configuration** dialog box, type a value for the **Description** box and a unique value for the **ID** box. Click **Next**.
6. Select the **Rich Client 4-tier** solution and click **Next**.



7. In the **Select Features** dialog box, select any additional features that are needed. In the **Installation Directory** box, type the location in which the rich client software is to be installed. Click **Next**.



8. Define the FCC settings.

FCC Settings

Enter the settings for the FCC below. The FMS_HOME environment variable shown is from where the FCC client settings will be loaded. The variable will not be overwritten if it has been already set.

FMS_HOME Setting

☐ Existing value for FMS_HOME

J:\TWO_TI~1\fcc

☐ Proposed value for FMS_HOME

J:\four_tier_rich_client\fcc

☐ Merge values from existing FMS_HOME

☐ FMS HTTP Proxy

HTTP Proxy Host:

HTTP Proxy Port:

☐ FMS HTTPS Proxy

HTTPS Proxy Host:

HTTPS Proxy Port:

< Prev Next > Cancel

9. Define FCC parent settings.

FCC Parents

Please enter this FCC's parent FSC's information. The FSC's will be used based on the defined priorities.

FSC assignment mode:

[clientmap] (default) This client will query the parent FSCs to determine FSC assignments.

[parentfsc] This client will override the FSC assignments and use the parent FSCs as assigned FSCs. DirectFSCRouting is automatically disabled.

Note: Assignment mode [parentfsc] should only be used when the parent FSCs can not determine proper assignments for the given client. Consult your system administrator before using this option.

FSC assignment mode:

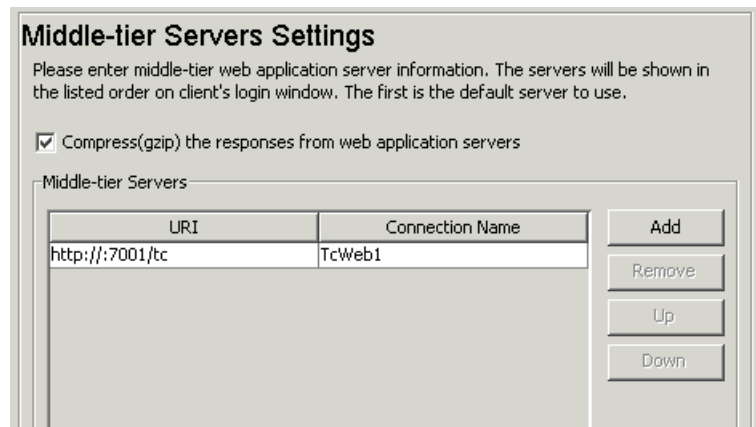
FCC Parents

Protocol	Host	Port	Path	Priority	Transport
http		4544		0	lan

Add Remove

< Prev Next > Cancel

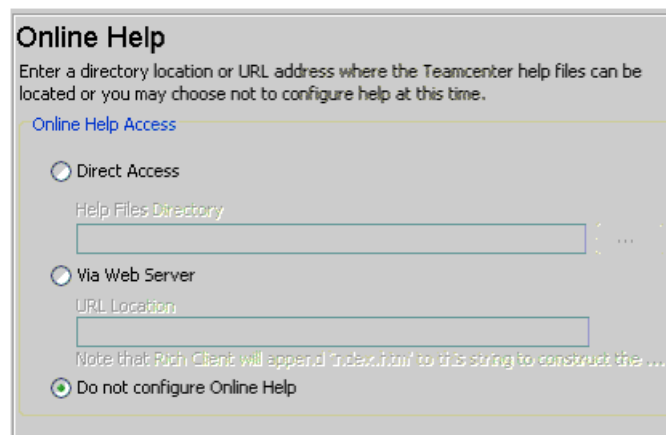
10. Define the URI and connection name that the rich client uses to connect to the Web tier application. You can define connections to more than one Web tier application.



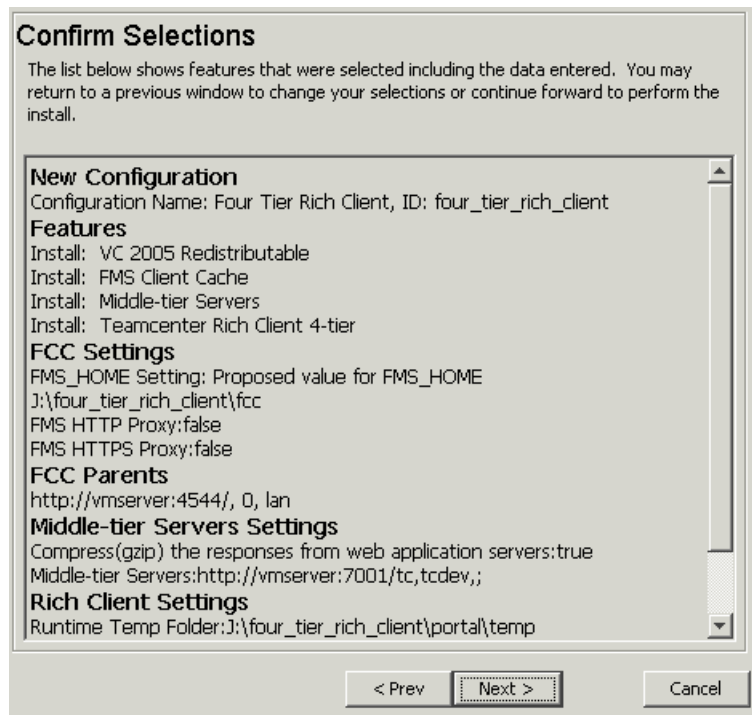
11. Define the location of the run-time temporary folder for the rich client.



12. Define how the rich client accesses online help.



13. Review your selections and click **Next** to begin the installation.



14. When the **Install Features** dialog box displays the **Install Features: Successful** message, click **Close**.

Enable users to run the four-tier rich client

For users to be able to run the four-tier rich client, the administrator must ensure that the following are running:

- RMI registry (**start_rmi.bat**)

This is only required if the client is to check for updates.

This must be started before starting the distribution server.

- Distribution server

This is only required if the client is to check for updates.

- Server manager (J2EE or .NET)

- Database instance service

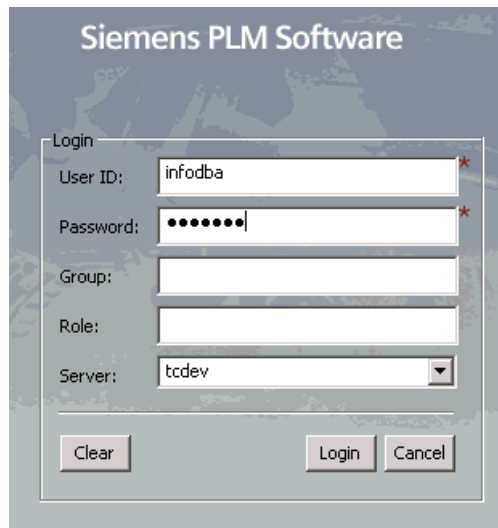
- Listener service

- FSC service

- TCFS service

Run the four-tier rich client

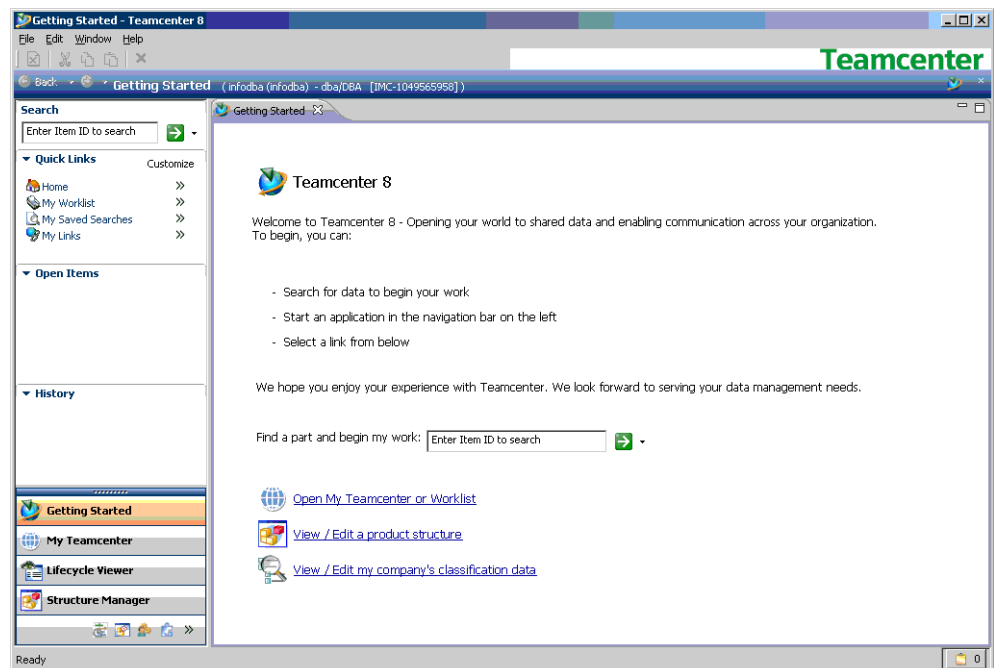
1. Start the four-tier rich client by double-clicking the **Teamcenter 8 Rich Client 4-Tier** desktop icon.
2. In the **Teamcenter Login** dialog box, type a user name, password, group (optional), role (optional), select a database, and click **Login**.



The image shows the 'Siemens PLM Software' login dialog box. It has a title bar with 'Siemens PLM Software' and a background image of a globe. The dialog box contains the following fields and buttons:

- Login** section:
- User ID:** Text box with 'infodba' entered.
- Password:** Password box with masked characters.
- Group:** Empty text box.
- Role:** Empty text box.
- Server:** Dropdown menu with 'tcdev' selected.
- Buttons:** 'Clear', 'Login', and 'Cancel' at the bottom.

3. You are logged on to the two-tier rich client.



Activities

In the *Four-tier architecture* section, do the following activities using the **infodba** account:

1. Create a distribution server
2. Create a distribution server instance
3. Install an Apache HTTP server
4. Download and install the four-tier rich client
5. Start services and servers required for installing and logging into the four-tier rich client
6. Start the four-tier rich client

Review questions

1. The four-tier architecture composed of the resource tier, the enterprise tier, the Web tier, and the client tier.

Select one answer.

- True
- False

2. The _____ starts and times out a configurable number of server processes to communicate with the Teamcenter database. It must be installed in a four-tier environment.

Select one answer.

- Application server
- Rich client
- Server manager
- Tool agent

3. _____ is used to create Web tier applications, distribution servers, and distribution server instances.

Select one answer.

- Application Manager
- Teamcenter Enterprise Manager
- Universal Installer
- Web Application Manager

4. The _____ contains the thin client functionality and is contacted by the four-tier rich client to access the enterprise tier.

Select one answer.

- Distribution server instance
- Over-the-Web installer
- Server manager
- Web tier application

5. The _____ contains the Over-the-Web Installer and the rich client software to be installed on the client.

Select one answer.

- Distribution server instance
- Web Application Manager
- Server manager
- Web tier application

6. _____ is used to create the .NET Web tier.

Select one answer.

- Application Manager
- Teamcenter Enterprise Manager
- Universal Installer
- Web Application Manager

Summary

The following topics were taught in this lesson:

- Components of the four-tier architecture
- Four-tier architecture installation process
- Description and installation of the Web Application Manager
- Description and installation of the J2EE Web tier
- Description and installation of the .NET Web tier
- Description and installation of the distribution server
- Description and installation of the distribution server instance
- Managing distribution servers and distribution server instances
- Installing and running a four-tier client

Lesson

8 *Installing the Business Modeler IDE*

Purpose

This lesson demonstrates how to install the Business Modeler IDE.

Objectives

After you complete this lesson, you should be able to:

- Define the Business Modeler IDE.
- Describe how to install the Business Modeler IDE as a stand-alone application.
- Describe how to install the Business Modeler IDE in an existing Eclipse environment.
- Describe how to start IMR.
- Describe how to start the Business Modeler IDE.

Help topics

Additional information for this lesson can be found in:

- *Installing the Business Modeler IDE* topic in the [Installation on Windows Servers Guide](#)
- *Installing the Business Modeler IDE* topic in the [Installation on UNIX and Linux Servers Guide](#)
- *Getting started with the Business Modeler IDE* topic in the [Business Modeler IDE Guide](#)

What is the Business Modeler IDE

The Business Modeler IDE (Integrated Development Environment) is a tool for customizing the data model of your Teamcenter installation. Use the IDE to create business objects, classes, attributes, lists of values (LOVs), and rules.

The Business Modeler IDE is built on top of the Eclipse platform. Eclipse is a generic platform for tool development that is extended via its plug-in and extension point technology.

You can install the Business Modeler IDE two ways:

- As a stand-alone application

This method installs the Eclipse platform.

- As part of an existing Eclipse environment

Prerequisites

The following are required on the machine that runs the Business Modeler IDE:

- Java Runtime Environment JRE 1.6 (6.0) if installed stand-alone or Java SDK 1.6 (6.0) if installed as part of an existing Eclipse environment
- Java Development Kit 1.5 (5.0) for creating services
- One GB of RAM
- Eclipse 3.3

This is required only if you install the Business Modeler IDE into an existing Eclipse installation.

- Administrator rights

Users of the Business Modeler IDE must be members of the database administrators (**dba**) group on the Teamcenter server. Use the Organization application in the Teamcenter rich client to add a user to the **dba** group.

Installing the Business Modeler IDE as a stand-alone application

1. Launch TEM.

The Business Modeler IDE can be installed as a new configuration or as part of an existing configuration.

2. Proceed to the **Solutions** panel, select **Business Modeler IDE**, and then click **Next**.
3. In the **Select Features** dialog box, select the Business Modeler IDE features that you want to install.

The following features are required:

- **Client**

Installs the IDE as a client on your machine.

- **Business Modeler Templates**

Installs templates for different Teamcenter solutions. These templates are only used within the Business Modeler IDE to extend the Teamcenter data model.

The following features are optional:

- **Mapping Designer**

Installs the Mapping Designer data model mapping tool into the Business Modeler IDE.

- **Digital Dashboard**

Installs the Digital Dashboard application into the Business Modeler IDE. The Digital Dashboard is used by system administrators to examine log files.

- **2 Tier Teamcenter Server Connection**

Automatically creates a server connection profile for deployment of data model changes to a test server. Select this option if you want to connect to a test server in a two-tier environment over a network using IIOP protocol.

- **4Tier Teamcenter Server Connection**

Automatically creates a server connection profile for deployment of data model changes to a test server. Select this option if you want to connect to a test server in a four-tier environment using HTTP protocol.

If you are installing the Business Modeler IDE as part of a new installation, provide the installation location in the **Installation Directory** box. If it is being installed as part of an existing installation, this box is populated and is not editable.

Click **Next**.

4. Perform the following steps in the **Business Modeler IDE Templates** panel:
 - a. Select the templates to install. Templates contain the data model for Teamcenter solutions.

Select the same templates that were installed on the server so that you can see the same data model definitions in the Business Modeler IDE that were installed on the server. At a minimum, select the **Teamcenter Foundation** check box. The Foundation template contains the data model used for core Teamcenter functions. All customer templates must extend the Foundation template.
 - b. If you have any templates of your own to install or a template from a third party, click the **Browse** button, browse to the directory where the templates are located and select them. This lists the selected templates in the **Business Modeler IDE Templates** panel. You must select the check box next to each of these templates to install them.
 - c. Click **Next**.
5. In the **Java Development Kit** dialog box, click the **Browse** button to locate the JDK installed on your system. The kit is used for creating services. For Teamcenter 8, use Java Development Kit 1.5 (5.0). Click **Next**.
6. If you selected the **2 Tier Teamcenter Server Configuration** option, perform the following steps in the **IIOP Servers Settings** panel:
 - a. In the **Connection Port** box, type the server port number. The default is **1572**.
 - b. Click the arrow in the **Server Activation Mode** box to select the mode to use when connecting to the server. **NORMAL** is the default.

To allow multiple concurrent user sessions to the two-tier rich client, select **PER_CLIENT**.
 - c. Click the ellipse button to the right of the **Server Config Folder** box to select the folder where you want this configuration saved. The default is **TC_ROOT\iopservers**.

- d. Click the **Edit** button to the right of the **TcServers** box to change the server connection profile settings, or click the **Add** button to add another server to connect to.
 - e. Click **Next**.
7. If you selected the **4 Tier Teamcenter Server Configuration** option, perform the following steps in the **Middle-tier Servers Settings** panel:
 - a. Leave the **Compress (gzip) the responses from the Web application servers** check box selected if you want faster connection performance from the server.
 - b. Click the **Add** button to the right of the **Multi-tier Servers** table if you want to add another server to connect to.
 - c. Click **Next**.
8. In the **Confirm Selections** dialog box, review your selections and click **Next** to install.
9. When the installation is complete, click **Close**.
10. After TEM finishes, you can view the installed Business Modeler IDE files in the *TC_ROOT\bmide* directory.

Install the Business Modeler IDE to an existing Eclipse environment

If you already have Eclipse installed, you can install the Business Modeler IDE into your Eclipse environment. Install the Business Modeler IDE to an Eclipse environment if you want to install additional plug-ins to aid in your configuration work.

For more information about Eclipse, see the following URL:

<http://www.eclipse.org>

1. Ensure you have an Eclipse 3.3 (Europa) package installed. To download Eclipse, see the following URL:

<http://www.eclipse.org/downloads/packages/release/europa/winter>

You can install the Business Modeler IDE to any Eclipse 3.3 package.

2. In the Teamcenter software distribution image, browse to the following directory:

`additional_applications\bmide_plugins`

3. Extract the **bmide_plugins.zip** file to your Eclipse directory (*ECLIPSE_HOME*). This archive contains the Business Modeler IDE plug-ins.
4. Extract the following archive files to your Eclipse directory. These archive contain plug-ins needed by the Business Modeler IDE.

Note

Install these *only* if your Eclipse environment does not already have the plug-ins.

- **cdt-master-4.0.3.zip**

Contains the C/C++ Development Toolkit (CDT) plug-ins. CDT provides the capability to work with projects that use C or C++ as a programming language.

- **dtp-sdk_1.5.zip**

Contains the Data Tools Platform (DTP) plug-ins. DTP provides a number of tools for working with data sources.

- **eclipse-JDT-SDK-3.3.zip**

Contains the Java Development Tools (JDT) plug-ins. JDT provides tools for implementing a Java IDE.

- **emf-sdo-xsd-SDK-2.3.0.zip**

Contains the Eclipse Modeling Framework (EMF) plug-ins. EMF is a modeling framework and code generation facility for building tools and other applications based on a structured data model.

- **GEF-SDK-3.3.zip**

Contains the Graphical Editing Framework (GEF) plug-ins. GEF allows developers to take an existing application model and create a graphical editor.

- **wtp-sdk-R-2.0.zip**

Contains the Web Tools Platform (WTP) plug-ins. WTP helps you develop Web and Java EE applications.

5. If you need language support, extract the appropriate language pack to your Eclipse directory:

- **NLpack1-GEF-SDK-3.2.zip**

Contains the GEF language pack for German, Spanish, French, Italian, Japanese, Korean, Portuguese (Brazil), Traditional Chinese, and Simplified Chinese.

- **NLpack2-GEF-SDK-3.2.zip**

Contains the GEF language pack for Czech, Hungarian, Polish, and Russian.

- **NLpack2a-GEF-SDK-3.2.zip**

Contains the GEF language pack for Danish, Dutch, Finnish, Greek, Norwegian, Portuguese, Swedish, and Turkish.

- **NLpackBidi-GEF-SDK-3.2.zip**

Contains the GEF language pack for Arabic and Hebrew.

6. After unzipping the plug-ins, verify their installation at *ECLIPSE_HOME*.
7. Install the Business Modeler IDE development templates using Teamcenter Environment Manager (TEM).

In the **Select Features** window, choose **Business Modeler IDE**→**Business Modeler Templates** (do not choose **Client**).

The templates are installed under the **Installation Directory** location in a subdirectory.

Note

Make sure that you select the same templates that are on the server.

Start the IMR

ImR starts the client-server communication. It must be running in order to deploy your extensions. If you installed the **2 Tier Teamcenter Server Configuration** feature or the **4 Tier Teamcenter Server Configuration** feature, the IMR is automatically started when you deploy extensions. If either of these is installed, you must start IMR manually by double-clicking:

```
TC_ROOT\portal\server_configs\start_imr.bat
```

You can start the IMR at any time, even after starting the BMIDE.

TAO (the ACE ORB) is CORBA-compliant ORB that gives C++ mapping. TOA is freeware that can be used instead of ORBIX.

Start the Business Modeler IDE

- Start the stand-alone application:

On Windows systems, launch from the Teamcenter menu. For example, click the **Start** button and choose the **All Programs**→**Teamcenter 8**→**Business Modeler IDE** menu commands. This runs the **BusinessModelerIDE.bat** file.

- Start from an Eclipse environment:

Navigate to the directory where Eclipse is installed and execute **Eclipse.exe**.

Optionally, increase the memory for Eclipse by executing the following command instead of **Eclipse.exe**.

```
Eclipse.exe -vmargs -Xmx512m
```

Activities

In the *Installing the Business Modeler IDE* section, do the following activities using the **infodba** account:

1. Install the Business Modeler IDE as a stand-alone application
2. Start the Business Modeler IDE as a stand-alone application

Review questions

1. The Business Modeler IDE is built on top of Eclipse, which is a generic platform for tool development that is extended using its plug-in and extension point technology.

Select one answer.

- True
- False

2. The Business Modeler IDE can be installed as a stand-alone application using _____ .

Select one answer.

- A hammer
- Teamcenter Environment Manager
- Universal Installer
- Web Application Manager

3. The following features are required when installing the Business Modeler IDE as a stand-alone application:

Select all that apply.

- Business Modeler Templates
- Client
- Digital Dashboard
- Mapping Designer

4. Select the **2 Tier Teamcenter Server Connection** or the **4 Tier Teamcenter Server Connection** options to automatically create a server connection profile for deployment of data model changes to a test server.

Select one answer.

- True
- False

Summary

The following topics were taught in this lesson:

- Definition of the Business Modeler IDE
- How to install the Business Modeler IDE as a stand-alone application
- How to install the Business Modeler IDE to an existing Eclipse environment

Lesson

9 *Administer the in-production system*

Purpose

This lesson describes some of the tasks involved in administering the in-production system.

Objectives

After you complete this lesson, you should be able to:

- Test the database connection.
- Output the Teamcenter version stored in the database.
- Lock and unlock the database.
- Encrypt the database password.
- Regenerate the POM schema file.
- Regenerate the POM schema transmit file.
- List users logged on to the database.
- Repair and clean up corrupt datasets.
- Clear database locks.
- Create a volume using the Organization application.
- Purge corrupt datasets.
- View volume details.

Help topics

Additional information for this lesson can be found in:

- *Defining volumes* topic in the [Organization Guide](#)

- *Utilities Reference*

install utility

The **install** utility performs a variety of Teamcenter and database system administration functions including:

- Determine if the user can connect to the database using the current **TC_DB_CONNECT** string.
- Change the database password for the Teamcenter database user.
- Return the current version of the Teamcenter database.
- Return the POM schema file header information.
- Regenerate the POM schema file.
- Generate a POM transmit schema file.

Note

Many of the **install** utility command line switches are only used during the installation or upgrade of Teamcenter by the setup program. These switches can corrupt your database. You should only use an **install** utility switch if you know what it does and that it is safe to use.

A full list of command line switches for the **install** utility is available in the *Utilities Reference*. Do not use a command line switch if its description contains “Siemens PLM Software use only”.

install -ayt

The **install -ayt** command tests if the user can connect to the database specified by the *TC_DB_CONNECT* variable.

If the test is successful, the command returns the message **Site is already installed**. By default, no log file is generated if the command is successful. To generate a log file, set the *TC_KEEP_SYSTEM_LOG* variable to *TRUE*. The log file will be written to the location specified by the *TC_TMP_DIR* variable and will be named **install-aytnnnnnnnn.syslog**. Both the *TC_KEEP_SYSTEM_LOG* and the *TC_TMP_DIR* variables can be set in the **tc_profilevars.bat** file.

If the test is not successful, the command returns the message **(check_db) Failed to connect** and a log file is generated regardless of the value of *TC_KEEP_SYSTEM_LOG*.

To run the **install -ayt** command:

1. Open a Teamcenter command prompt by choosing **Start ® All Programs ® Teamcenter 8 ® Command Prompt**.
2. Type **install -ayt**.

install -ask_version

The **install -ask_version** command returns the current version of Teamcenter stored in the database.

To run the command:

1. Open a Teamcenter command prompt by choosing **Start ® All Programs ® Teamcenter 8 ® Command Prompt**.
2. Type **install -ask_version**.

install -lock_db

The **install -lock_db** locks the site against further log ins. Users can only log in if they specify the **dba** group during log in. Users currently logged in are not kicked off the system.

The lock remains in place until unlocked with the **install -unlock_db** command.

To lock the site:

1. Open a Teamcenter command prompt by choosing **Start ® All Programs ® Teamcenter 8 ® Command Prompt**.
2. Type **install -lock_db -u=infodba -p=infodba -g=dba**.

To unlock the site:

1. Open a Teamcenter command prompt by choosing **Start ® All Programs ® Teamcenter 8 ® Command Prompt**.
2. Type **install -unlock_db -u=infodba -p=infodba -g=dba**.

install -encrypt

The **install -encrypt** command reads the *TC_DB_CONNECT* variable and outputs that connect string with the password encrypted.

To change the password that Teamcenter uses to connect to the database:

1. Open a Teamcenter command prompt by choosing **Start ® All Programs ® Teamcenter 8 ® Command Prompt**.

2. In the Teamcenter command prompt, set the password by typing:

set TC_DB_CONNECT=infodba:password@SID

password is the value of the new password and *SID* is the database system identifier.

3. Type:

install -encrypt

The output of this command is in then form:

infodba:encrypted-password@SID

4. Open **tc_profilevars.bat** and edit the **TC_DB_CONNECT** string with the new encrypted password output by the **install -encrypt** command.
5. Save and close the **tc_profilevars.bat** file.

POM schema file

The Persistent Object Manager (POM) schema file contains information about all of the classes and types defined in a Teamcenter database. If a new class or type is added after installation of Teamcenter, the POM schema file can be regenerated manually. This file is crucial to the operation of Teamcenter. If it is missing, out-of-date, or corrupted, you cannot log on to the database or continue a Teamcenter session.

The POM schema file is referenced using the **POM_SCHEMA** environment variable. By default, the file is located in the **TC_DATA** directory.

Use the **install** utility to regenerate the POM schema file. To do this, the user must have permission at the operating system level to create the file in the appropriate directory.

Regenerate the POM schema file

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
install -regen_schema_file infodba password dba
```

password is the password for the **infodba** user.

If the file is successfully generated, you see the following output:

```
Install terminated successfully
```

POM schema transmit file

The Persistent Object Manager (POM) transmit schema file enables the recovery of data archived under an earlier version of Teamcenter by keeping track of changes in types and classes between those versions.

The POM transmit schema is very closely related to the POM schema file. If the POM schema file is regenerated, the POM transmit schema must also be regenerated in order to stay synchronized with the latest database updates. You cannot use the object import/export, archive/restore, or object backup/recover functions if the correct POM transmit schema is missing or out-of-date.

The POM transmit schema file is referenced using the **POM_TRANSMIT_DIR** environment variable. Its default location is **TC_DATA\pom_transmit**.

Managing the POM schema transmit file

All Teamcenter sites should share the POM schema transmit file to allow seamless sharing of data between them. When an object is imported from another database, Teamcenter checks to make sure that the system has access to the POM schema transmit file that represented the schema in that database. This directory may be shared via NFS in a heterogeneous operating system environment.

Regenerate the POM schema transmit file

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
install -gen_xmit_file infodba password dba
```

password is the password for the **infodba** user.

If the file is successfully generated, you see the following output:

```
Install terminated successfully
```

list_users utility

The **list_users** utility is used to create a list of users currently logged on to Teamcenter and which node they are using. This information is useful if database maintenance is necessary and all users currently logged on must be notified.

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
list_users -u=username -p=password -g=group
```

Datasets

A dataset is identified as corrupted if any of the following problems are found:

- The dataset has no reference to a file managed by Teamcenter.
- The dataset has a reference to a Teamcenter managed file, but the corresponding operating system file does not exist and the dataset is not archived.
- The dataset is an orphan (that is, the dataset refers to the anchor, but the anchor does not go to dataset).
- The anchor refers to datasets that do not exist.
- The anchor size is zero.

Repairing and cleaning up corrupt datasets

The **dataset_cleanup** utility cleans up corrupted datasets and repairs dataset revision anchors in the database. This utility can be considered a companion to the **purge_volumes** utility performing, essentially, the opposite task.

A dataset object is reattached to a revision anchor if it is an orphan but is referenced by some other objects.

A dataset object is deleted if it meets the following criteria:

- The dataset is an orphan and is not referenced.
- The dataset is not archived and the associated operating system file does not exist.

Dataset revision anchors are repaired as follows:

- If the anchor refers to nonexistent datasets, the references are removed from the anchor.
- If the anchor size is zero, the anchor is deleted.

Run `dataset_cleanup` to report corrupt datasets

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
dataset_cleanup  
-u=user -p=password -g=group -rf=output_report_file_name  
-b=start_anchor -e=end_anchor
```

Where:

user: Teamcenter users ID, optional

password: user's password, optional

group: user's group, optional

-rf is the output report file name.

-b is the anchor to start at, default is 1.

-e is the anchor to end at, default is last.

Run `dataset_cleanup` to purge corrupt datasets

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
dataset_cleanup  
-u=user -p=password -g=group -if=input_report_file_name  
-of=output_report_file_name -a
```

Where:

user: Teamcenter users ID, optional

password: user's password, optional

group: user's group, optional

-if is the input report file name.

-of is the output report file name.

-a: is used to remove empty revision anchors.

clearlocks utility

The **clearlocks** utility can be used to:

- Clear database locks held by improperly terminated Teamcenter processes.
- View a listing of users currently connected to a Teamcenter database.

Commonly used command line arguments for **clearlocks** include:

- **verbose**

Displays a summary of processes and states:

- **dead** processes are those cleared by **clearlocks**.
- **alive** processes are those not cleared by **clearlocks**.
- **unknown** processes are all other processes.

- **one_pass**

Executes the utility once and stops. This is the default if no other arguments are supplied.

- **retry *time***

Continuously executes the utility. *time* specifies the time in seconds before the next execution.

- **node_names**

Creates a report of all network nodes that are logged on to the database.

- **assert_dead *nodename***

Clears all process locks, dead or alive originating from *nodename*.

- **assert_all_dead**

Clears all process locks, dead or alive.

- **h**

Displays help for this utility.

Activities

In the *Administer the in-production system* section, do the following activities using the **infodba** account:

1. Regenerate the POM schema file
2. Regenerate the POM schema transmit file

Standard volumes

A standard volume:

- Is a Teamcenter-controlled directory that stores files managed by Teamcenter.
- Is not directly accessible by users and can only be accessed via a Teamcenter session.
- Is the location in which a file is created when a user creates a file from the rich client.

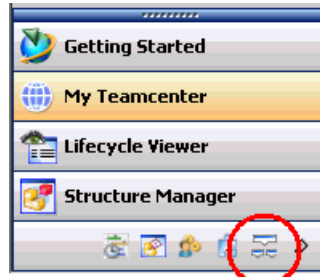
Creating standard volumes:

- At least one standard volume is required per database. You define and create this first standard volume in TEM while installing the corporate server.
- You can create additional standard volumes for a database by:
 1. Using the rich client Organization application to create the standard volume.
 2. Click the **Reload** button to reload the FMS master configuration file so that the changes can take effect.

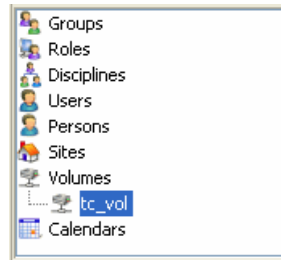
Reloading initiates a live propagation of the configuration. Services are not reload or restart in any way.

Create a volume using the rich client Organization application

1. Start and log on to the rich client.
2. Open the **Organization** application by clicking **Organization** in the navigation pane.



3. In the Organization application, click-double **Volumes** in the lower section to expand a list of existing volumes.



4. Select **Volumes** in the list or select a particle volume to open the volume dialog box.

If you select **Volumes**, the dialog box is not populated. You can provide the information for a new volume and click **Create** to create a new volume.

If you select a particular volume, the information for this volume populates the dialog box. You can perform any of the following:

- Create a new volume by editing the information and click **Create**.
- Modify the selected volume by editing the information and clicking **Modify**.
- Delete the selected volume by clicking **Delete**.

You define:

- a. **Volume Name** specifies the volume's name.
- b. **Node Name** specifies the machine hosting the volume.

- c. **Machine Type** specifies where the machine hosting the volumes is Windows or UNIX.
- d. **UNIX Path Name** specifies the path to the volume. It is a good practice to specify a path that ends with the volume's name.
- e. **Windows Path Name** specifies the path to the volume. It is a good practice to specify a path that ends with the volume name.
- f. **ID Type** can be set to **FSC**, **Filestore Group**, or **Load Balancer**.
- g. **ID** is the FSC server ID.

This value is defined using TEM in the **Server ID** box in the **FSC Service** dialog box. If you did not record that value, you can find it by clicking the **Display** button. It is the value of the **id** attribute in the **fsc** tag.

- h. **Statistics** provides used and available space on the disk containing the volume.
- i. **Accessors** specifies the groups and users that have access to the volume.

The screenshot shows the 'dba_vol' configuration window. It contains the following fields and controls:

- Volume Name:** std_vol
- Node Name:** vmserver
- Machine Type:** Radio buttons for Unix and Windows (Windows is selected).
- UNIX Path Name:** (Empty)
- Windows Path Name:** J:\tc_volumes\std_vol
- FSC Path Name:** (Empty)
- ID Type:** Radio buttons for FSC, Filestore Group, and Load Balancer (FSC is selected).
- ID:** FSC_vmserver_infodba
- FMS Configuration:** Buttons for Reload, Report, and Display.
- Statistics:**
 - Size: 12284 Mb
 - Used: 7996 Mb
 - % Full: 65%
- Mirrored:** (Empty)
- Accessors:** A list box containing 'dba' and 'Engineering'.
- Buttons:** 'Revoke' and 'Grant' buttons are next to the Accessors list.
- Bottom Bar:** Buttons for 'Create' (circled in red), 'Modify', 'Delete', and 'Clear'.

5. After entering all necessary information, click **Create**.

The volume is created and is added to the FMS master configuration file.

6. Click the **Reload** button so that the changes to the FMS master can take effect.

The screenshot shows the 'std_vol' configuration window. The 'Volume Name' is 'std_vol' and the 'Node Name' is 'vmserver'. The 'Machine Type' is set to 'Windows'. The 'Windows Path Name' is 'J:\tc_volumes\std_vol'. The 'FSC Path Name' is empty. The 'ID Type' is 'FSC' and the 'ID' is 'FSC_vmserver_infodba'. Under 'FMS Configuration', the 'Reload' button is circled in red. The 'Statistics' section shows 'Size: 12284 Mb', 'Used: 7996 Mb', and '% Full: 65%'. The 'Accessors' list contains 'dba' and 'Engineering'. The 'Mirrored' section is empty. The 'Revoked' and 'Grant' buttons are visible. The bottom of the window has 'Create', 'Modify', 'Delete', and 'Clear' buttons.

Purge volumes

A Teamcenter user can delete a Teamcenter object but may not have sufficient privilege to delete the physical file associated with the object. While such orphaned files are not harmful, they consume disk space and can accumulate over a period of time.

The **purge_volumes** utility deletes files related to deleted Teamcenter objects.

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
purge_volumes -u=user -p=password -g=group -f -s=sleepTime
```

Where:

user: Teamcenter user ID

password: user's password

group: user's group

-f: forces delete without prompting.

-s: is for looping.

- Without **-s** the utility runs once and terminates.
- With **-s** the utility loops, waiting between runs for *sleepTime* seconds.

Viewing volume details and delete unreferenced files

Use the **review_volumes** utility to:

- Generate a report file formatted in plain text (ASCII) that can be manually edited describing volume usage by various groups and users, as well as reporting any unreferenced operating system files, missing operating system files, and unreferenced files
- Clean up (delete) unreferenced files.

This can be done at the time a report file is generated or at a later time using a previously generated report file as an input.

Deleted files can be saved and compressed in an archive file.

Running review_volumes

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window type:

```
review_volumes -u=user -p=password -g=group  
-v=volume -rf=file -if=file -of=file -zf=file
```

Example:

```
review_volumes -u=infodba -p=infodba -g=dba -rf=review
```

Where:

user: Teamcenter user ID

password: user's password

group: user's group

volume: Teamcenter volume

file: file name

-rf: report file name (required)

-if: input report file name

-of: output file name

-zf: archive file name

Volume information in XML for third-party backup systems

The **backup_xmlinfo** utility outputs volume information in XML format. Third-party backup systems require this information for 24x7 hot backup of volumes and databases.

backup_xmlinfo creates two output files in the directory from which the utility is executed:

- **backup.xml**
- **backup.dtd**

Sample output follows:

```
<?xml version="1.0" standalone="yes" ?>
<!-- Backup Info : XML File -->
<!DOCTYPE backupInfo SYSTEM "backup.dtd">
<backupInfo>
  <volumeinfo>
    <VolumeName>tokra_vol</VolumeName>
    <VolumeUid>036440ca0b1c558e9f42</VolumeUid>
    <NodeName>ustrwlsun002</NodeName>
    <UnixPath>/netap/tceapps/TCe/TCevols/tokra_vol</UnixPath>
  </volumeinfo>
  <volumeinfo>
    <VolumeName>satishl_vol</VolumeName>
    <VolumeUid>037840d6b8ac558e9f42</VolumeUid>
    <NodeName>uslvw1097a011</NodeName>
    <WntPath>c:\satishl_vol</WntPath>
  </volumeinfo>
</backupInfo>
```

Run backup_xmlinfo

1. Choose **Start® All Programs® Teamcenter 8® ID_ID Command Prompt** to open a **Command Prompt** window and source environment variables.
2. In the **Command Prompt** window, type:

```
backup_xmlinfo -u=user -p=password -g=group
```

Where:

user: Teamcenter users ID, optional

password: user's password, optional

group: user's group, optional

Activities

In the *Administer the in-production system* section, do the following activities using the **infodba** account:

1. Create a volume using the Organization rich client application

Review questions

1. You can create additional volumes using the Organization application.

Select one answer.

- True
- False

2. After creating a volume, it is not necessary to reload the FMS master configuration.

Select one answer.

- True
- False

3. One way that a dataset is identified as corrupted is that the dataset has no reference to a file managed by Teamcenter.

Select one answer.

- True
- False

4. The _____ utility is used to generate the encrypted Oracle password for the Teamcenter database user.

Select one answer.

- **clearlocks**
- **install**
- **list_users**
- **purge_password**

Summary

The following topics were taught in this lesson:

- Create a volume using the rich client Organization application
- Purge volumes
- View volume details
- Delete unreferenced files
- View volume paths
- Generate a report of corrupt datasets
- Purge corrupt datasets

Lesson

10 Embedded visualization and Teamcenter Integration for NX

Purpose

This lesson demonstrates how to add embedded visualization and Teamcenter Integration for NX to two-tier and four-tier rich clients.

Objectives

After you complete this lesson, you should be able to:

- Install Lifecycle Visualization.
- Add the **Teamcenter Visualization 8 (Embedded) for Rich Client** feature to a two-tier rich client using TEM.
- Add the **Teamcenter Visualization 8 (Embedded) for Rich Client 4–Tier** solution to a four-tier rich client using the Web Application Manager.
- Install NX.
- Add the **NX Manager for Rich Client** feature to a two-tier rich client using TEM.
- Add the **NX Manager for Rich Client 4–Tier** solution to a four-tier rich client using the Web Application Manager.
- Install the NX templates.
- Display the **NX** icon in the rich client.

Help topics

Additional information for this lesson can be found in:

- [*Installation on Windows Clients Guide*](#)
- [*Installation on UNIX, Linux, and Macintosh Clients Guide*](#)

Embedded visualization

Teamcenter has a viewer that can be added to the rich client to provide enterprise-wide product visualization capabilities and is embedded in the rich client interface.

To incorporate the viewer into a two-tier rich client, you must:

- Install the Lifecycle Visualization application on the client machine.
- Add the **Teamcenter Visualization 8 (Embedded) for Rich Client** feature to the two-tier rich client configuration using TEM.

Install Lifecycle Visualization

1. Navigate to **DISK1\scripts** on the Lifecycle Visualization distribution image.
2. Double-click **SEVInstall.bat**.

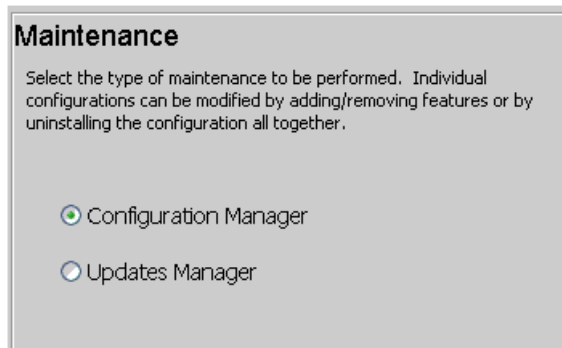
The installation begins. When the installation is complete, the progress window closes.

The Lifecycle Visualization application is installed on your machine at **C:\Program Files\Siemens\Teamcenter8\Visualization**.

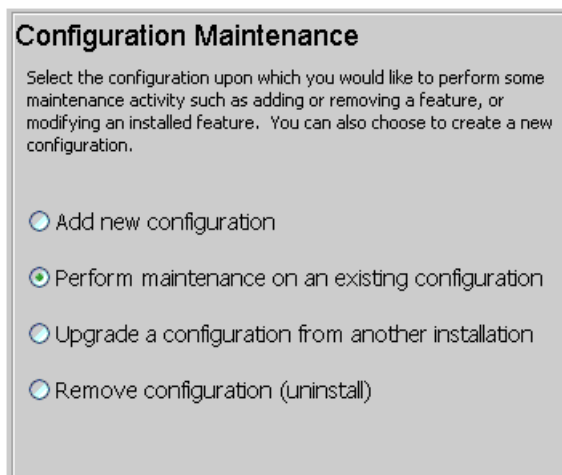
Add embedded visualization to a two-tier rich client

To add the **Teamcenter Visualization 8 (Embedded) for Rich Client** feature to a two-tier rich client configuration:

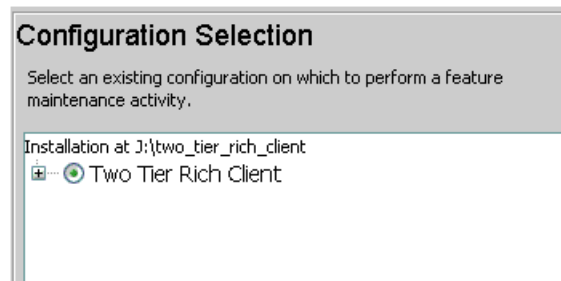
1. Start the TEM associated with the two-tier rich client configuration to which you want to add the **Teamcenter Visualization 8 (Embedded) for Rich Client** feature.
2. In the **Maintenance** dialog box, select **Configuration Maintenance** and click **Next**.



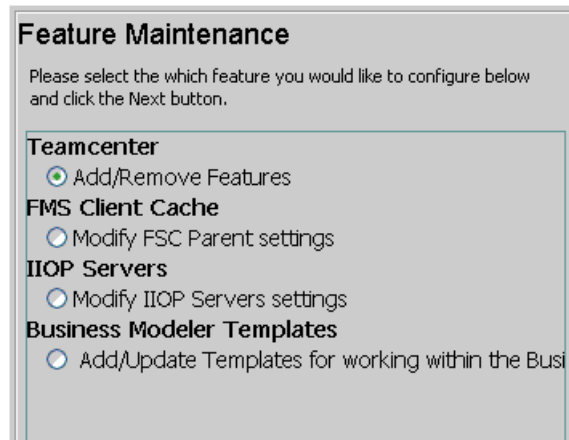
3. In the **Configuration Maintenance** dialog box, select **Perform Maintenance on an existing configuration** and click **Next**.



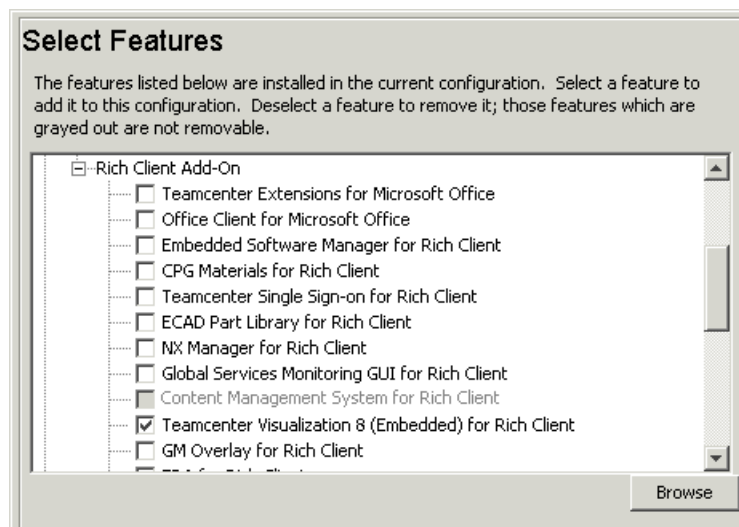
4. In the **Configuration Selection** dialog box, select the configuration to which you want to add embedded visualization and click **Next**.



5. In the **Feature Maintenance** dialog box, select **Add/Remove Features** and click **Next**.

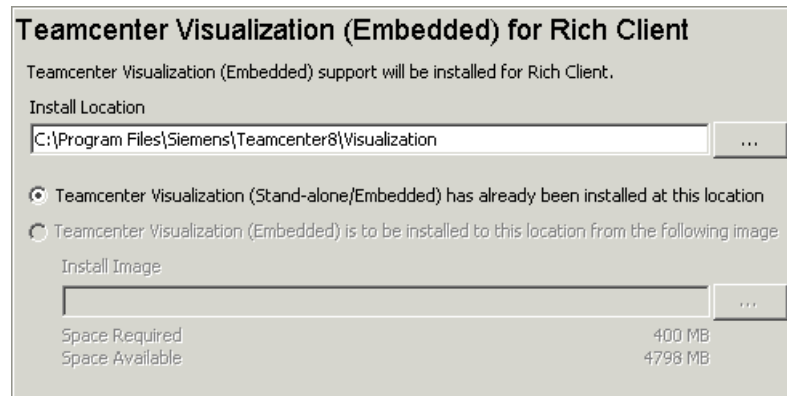


6. In the **Select Features** dialog box, select **Teamcenter Visualization 8 (Embedded)** for Rich Client and click **Next**.



7. In the **Teamcenter Visualization (Embedded) for Rich Client** dialog box:
 - Select **Teamcenter Visualization (Stand-Alone/Embedded)** has **already been installed this location** if the application has already been installed. Provide the path to the installation.

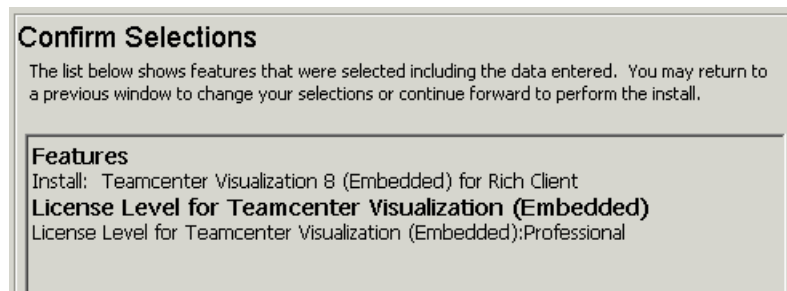
- Select **Teamcenter Visualization (Embedded)** is to be installed from the following image if the application has not been installed. Provide the path to the install image and to the destination location. If you select this option, TEM installs the Teamcenter Visualization application automatically.



8. In the **License Level for Teamcenter Visualization (Embedded)** dialog box, select the license level and click **Next**.



9. in the **Confirm Selections** dialog box, review your selections and click **Next**.

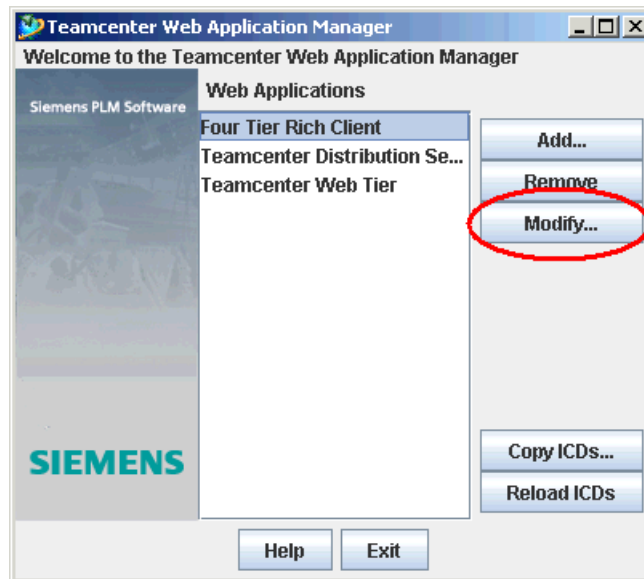


10. When the installation is complete, the **Install Features: Successful** message appears. Click **Close** in the **Install Features** dialog box.

The **Teamcenter Visualization 8 (Embedded) for Rich Client** feature is added to the two-tier rich client configuration.

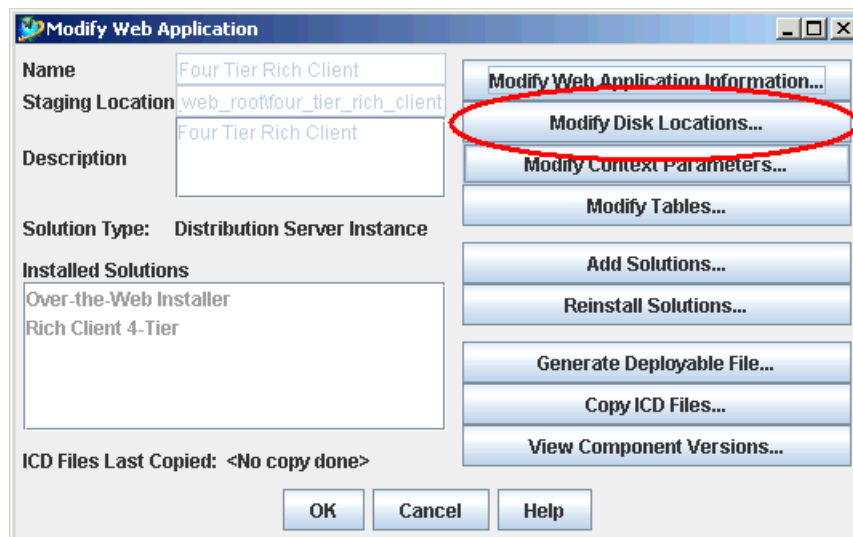
Add embedded visualization to a four-tier rich client

1. Start the Web Application Manager by double-clicking `web-root\insweb.bat`.
2. In the **Web Applications** list in the Web Application Manager, select the distribution server instance to which **Teamcenter Visualization 8 (Embedded) for Rich Client 4-Tier** is to be added and click **Modify**.

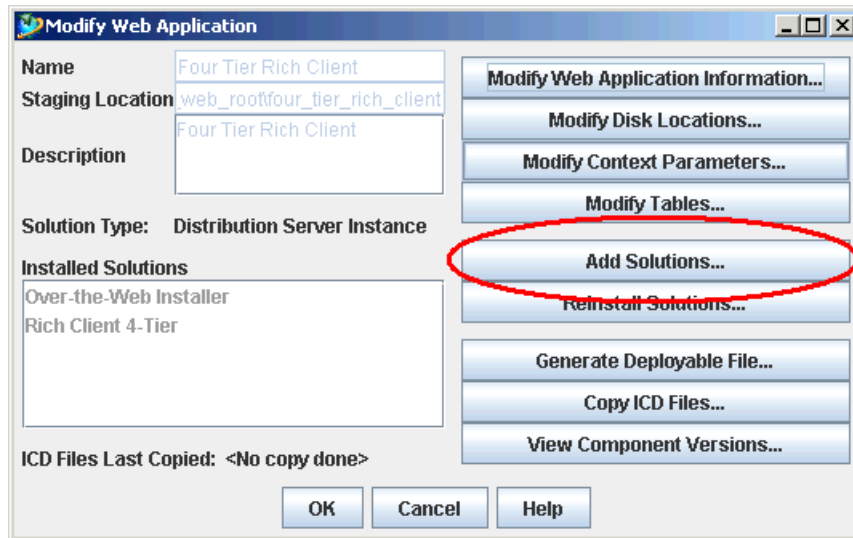


3. If the Lifecycle Visualization application is to be installed using the Over-the-Web installer, you must add the path to the Lifecycle Visualization installation ZIP files for *all* supported platforms.

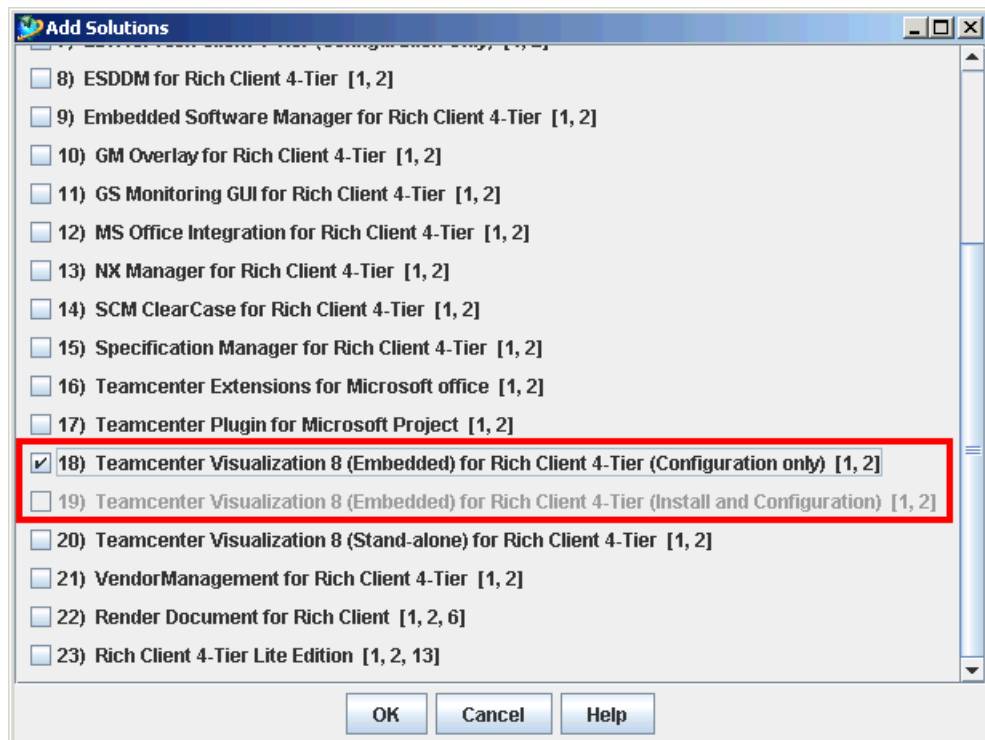
Click **Modify Disk Locations** to add the path to these files.



4. In the **Modify Web Applications** dialog box, click **Add Solutions**.



5. In the **Add Solutions** dialog box, select one of the following and then click **OK**.
 - Select **Teamcenter Visualization 8 (Embedded) for Rich Client 4–tier (Configuration only)** if the embedded visualization application is already installed on the client.
 - Select **Teamcenter Visualization 8 (Embedded) for Rich Client 4–tier (Configuration only)** if the embedded visualization application is to be installed on the client by the Over-the-Web Installer.



6. In the **Modify Context Parameters** dialog box, provide the necessary information and click **OK**.

- **TcVisWindowsLocation**

This is the location on the client in which the embedded viewer was installed. This is used only if the **Teamcenter Visualization 8 (Embedded) for Rich Client 4-tier (Configuration only)** solution is selected.

- **TcVisUnixLocation**

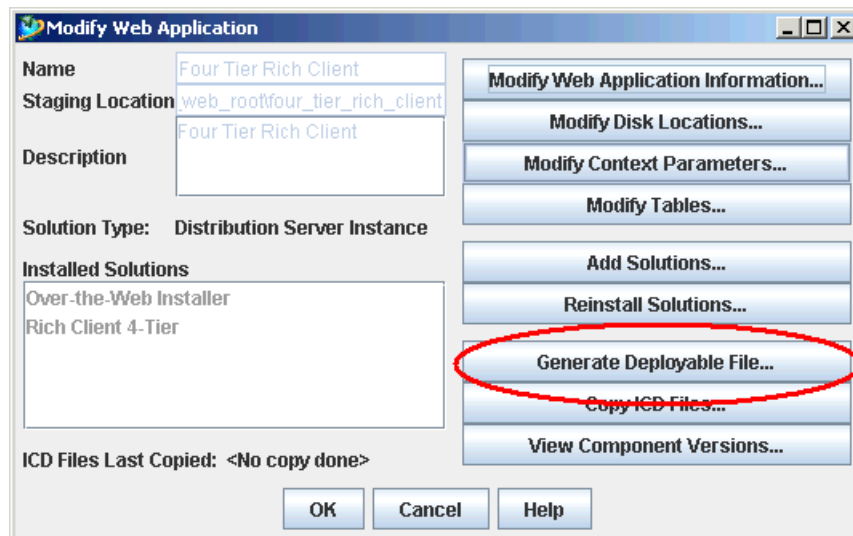
This is the location on the client in which the embedded viewer was installed. This is used only if the **Teamcenter Visualization 8 (Embedded) for Rich Client 4-tier (Configuration only)** solution is selected.

- **EmbVisLicenseLevel**

This is used to set the license level for the embedded viewer. Options are **Base, Standard, Professional, Mockup**.

7. Click **OK** in the **Progress** dialog box.

8. Click **Generate Deployable File**.



9. In the **Generate Deployable File** dialog box, click **OK**.

10. In the **Progress** dialog box, click **OK**.

11. Click **OK** in the **Modify Web Application** dialog box.

12. Click **Exit** in the Web Application Manager.

The distribution server instance is updated.

13. The distribution server instance is updated. Rich clients that were installed prior to this modification will be updated the next time they log on as long as the following are running:

- RMI Registry (**start_rmi.bat**)
- Distribution server (**start_server.bat**)

Activities

In the *Embedded visualization and Teamcenter Integration for NX* section, do the following activities using the **infodba** account:

1. Install the embedded viewer
2. Add the embedded visualization to a two-tier rich client
3. Add the embedded visualization to a four-tier rich client

Teamcenter Integration for NX

Using Teamcenter Integration for NX, you can manage NX files from Teamcenter. You can create and open parts.

To set up Teamcenter Integration for NX, you must:

- Install the **NX UG Integration** feature on the corporate server.
- Install NX on the client machine.
- For two-tier clients, add the **NX Manager for Rich Client** feature to the two-tier rich client configuration using TEM.

For four-tier clients, add the **NX Manager for Rich Client 4–Tier** solution to the distribution server instance using the Web Application Manager.

- Install the NX templates on the client machine.

You can configure the rich client to display an **NX** icon that launches NX. The benefit of launching NX in this manner is that it is started independent of a selected dataset.

NX 6 uses the Common Licensing Server.

Install NX 6.0.3

To install NX 6.0.3 on a client machine:

1. Start the installation program by double-clicking **Launch.exe** from the NX 6.0.0 installation image.
2. Click **Install NX**.
3. In the **Choose Setup Language** dialog box, select the installation language and click **OK**.
4. In the **Welcome** dialog box, click **Next**.
5. Select **Typical** and click **Next**.
The **Destination Folder** dialog box appears.
6. If you want to change the destination directory, click **Change**.
Click **Next**.
The **License Server** dialog box appears.
7. Type **28000@hostname** where *hostname* is the name of the computer on which the license server that supports NX 5 was installed.
Click **Next**.
The **NX Language Selection** dialog box appears.
8. Select the language in which you wish to run NX and click **Next**.
The **Ready to Install the Program** dialog box appears.
9. Review the settings and then click **Install**.
NX installs.
10. When the installation is completed, click **Finish**.
11. Click **Exit** to install the install wizard.
12. Double-click **run_ugsupdate.exe** in the NX 6.0.3 update image.
13. In the **Security Warning** dialog box, click **Run**.
A **Command Prompt** window opens to execute the update.
14. When the update is complete, the **Command Prompt** window displays the message **Press any key to continue**. Press any key.

The NX application is installed on the client machine.

NX 6 templates

Templates are used to begin model and drawing construction. The templates are available in the **File New** dialog box. They function as a basis for creating/developing/modeling an item. The templates are grouped by tabs.

The templates are specific to the type of item you want to create. When you create an item using a template, the associated application for the template is opened. For example, if you use a drawing template, the Drafting application is opened, or if you create an assembly, the **Add Component** dialog box is displayed.

The templates are located in the **UGII_BASE_DIR\ugii\templates** directory.

Install NX 6 templates

After Teamcenter and NX are installed, you can install the NX templates.

1. Choose **Start® All Programs® Teamcenter**
8® config_id_config_id Command Prompt.

The value of *config_id* is the value of **ID** you provided when creating the Teamcenter configuration in TEM.

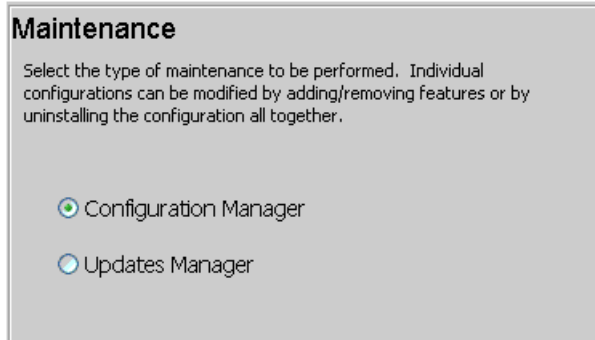
2. In the **Command Prompt** window, enter the following command:

```
%UGII_BASE_DIR%\ugii\templates\sample\tcin_template_setup.bat  
-u=infodba -p=infodba
```

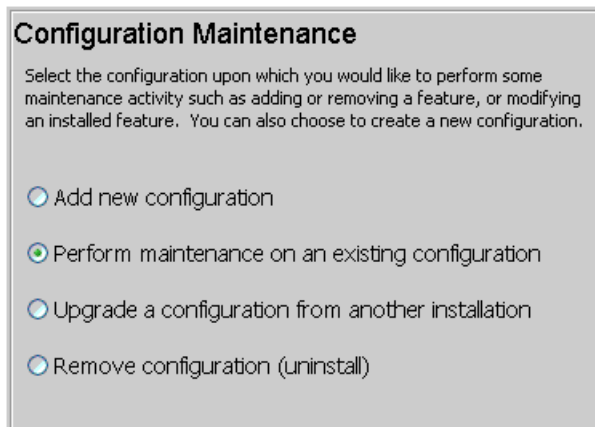
When the program is finished, close the **Command Prompt** window.

Add NX Manager for Rich Client feature to a two-tier rich client

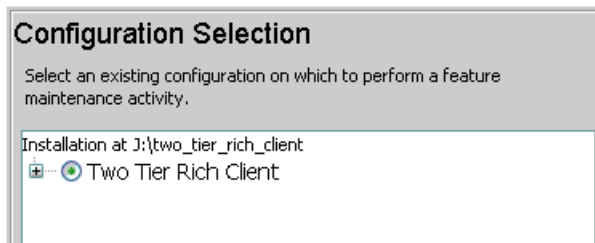
1. Start TEM for the two-tier rich client to which you want to add the **NX Manager for Rich Client** feature.
2. Select **Configuration Manager** and click **Next**.



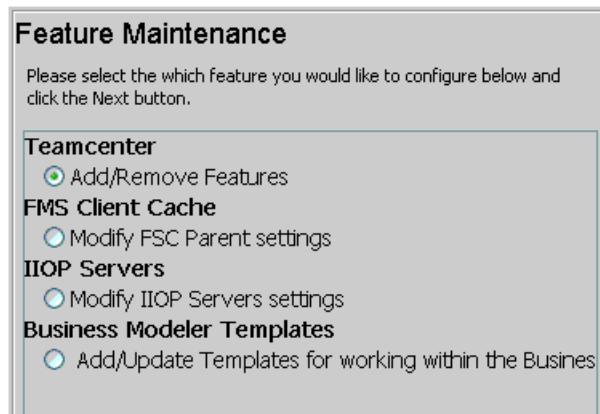
3. In the **Configuration Maintenance** dialog box, select **Perform maintenance on an existing configuration** and click **Next**.



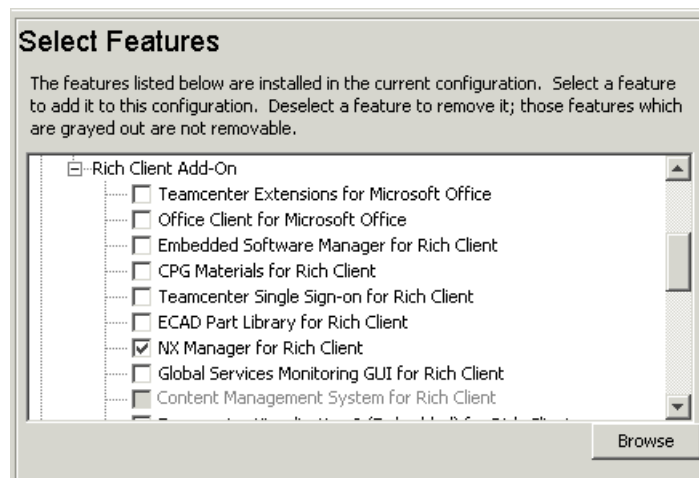
4. In the **Configuration Selection** dialog box, select the configuration to which the feature is to be added and click **Next**.



5. In the **Feature Maintenance** dialog box, select **Add/Remove Features** and click **Next**.



- In the **Select Features** dialog box, select **NX Manager for Rich Client** and click **Next**.



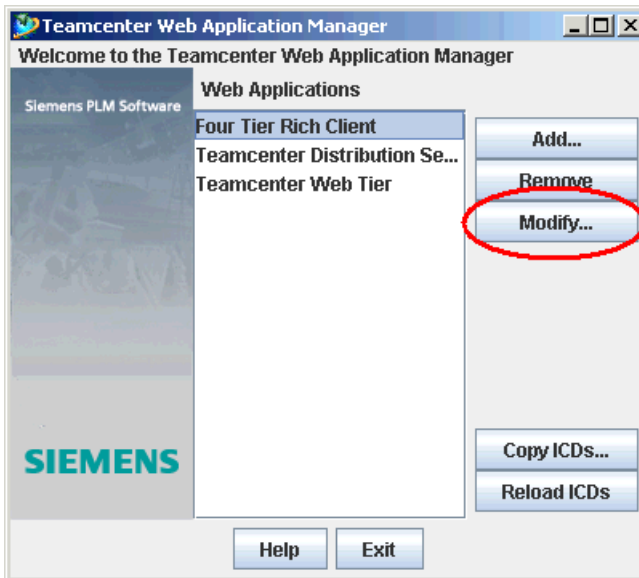
- In the **NX Manager for Rich Client** dialog box, provide the path to the NX installation and click **Next**.



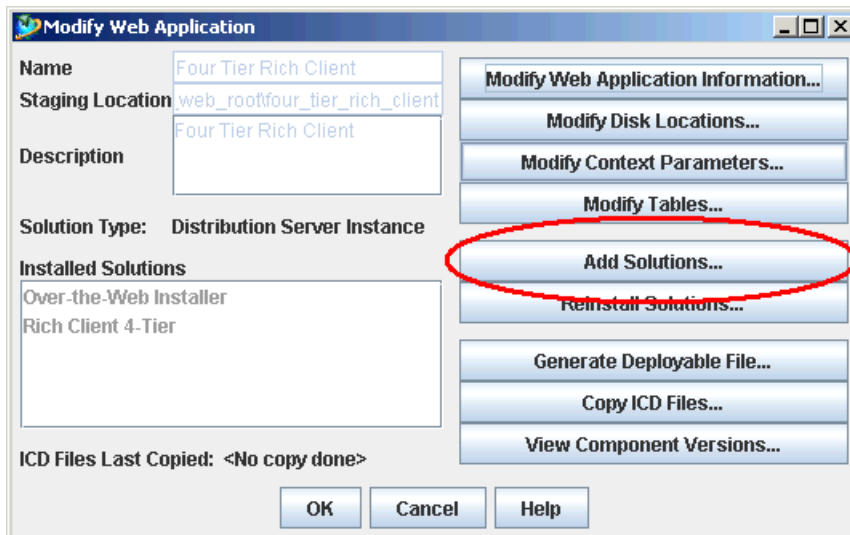
- In the **Confirm Selection** dialog box, confirm your selections and begin the installation and click **Next**.
- When the installation is complete, the **Install Features: Complete** message appears. Click **Close**.

Add NX Manager for Rich Client 4-Tier to a four-tier rich client

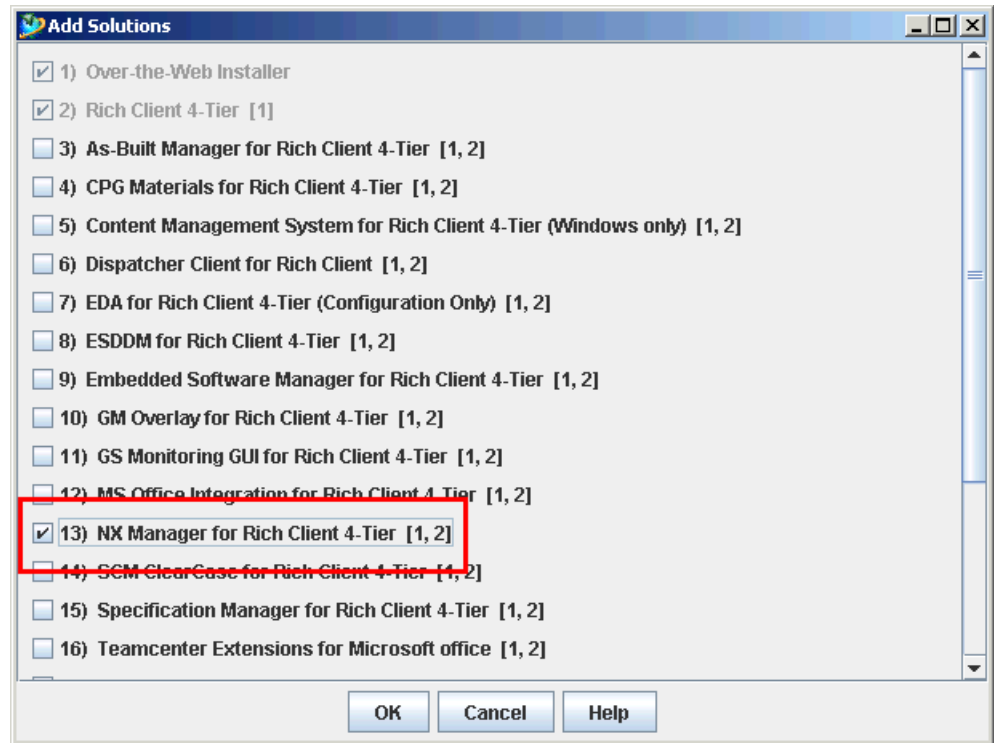
1. Start the Web Application Manager by double-clicking `web-root\insweb.bat`.
2. In the **Web Applications** list in the Web Application Manager, select the distribution server instance to which **NX Manager for Rich Client** is to be added and click **Modify**.



3. In the **Modify Web Applications** dialog box, click **Add Solutions**.



4. In the **Add Solutions** dialog box, select **NX Manager for Rich Client 4-Tier**.



5. In the **Modify Context Parameters** dialog box, provide the necessary information and click **OK**.

- **NXWindowsLocation**

The location on Windows clients in which NX is installed.

- **NXUnixLocation**

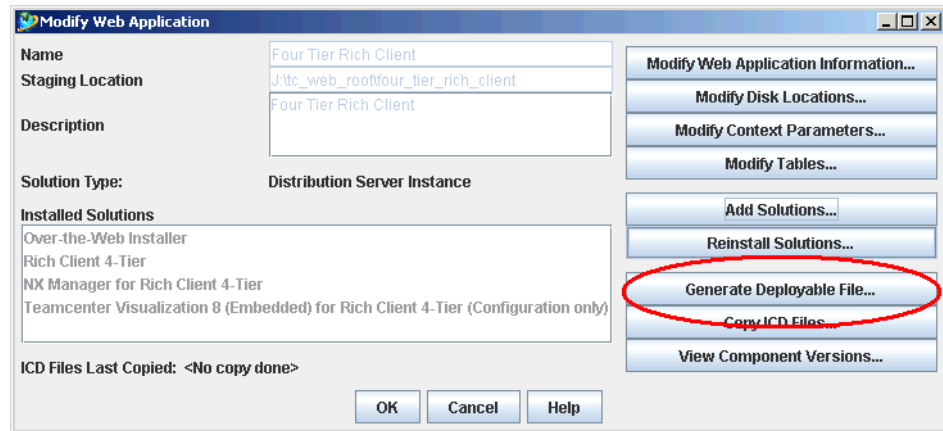
The location on UNIX clients in which NX is installed.

- **NXVersion**

The version of NX that is installed on the client.

6. Click **OK** in the **Progress** dialog box.

7. Click **Generate Deployable File**.



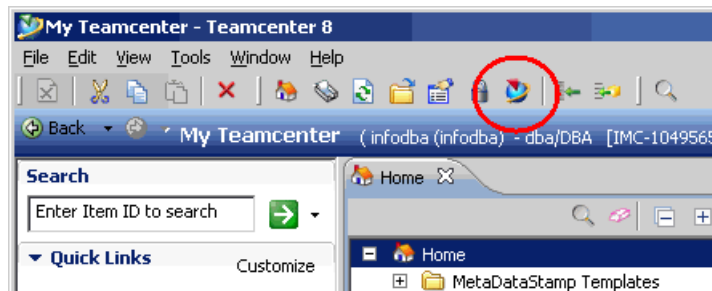
8. In the **Generate Deployable File** dialog box, click **OK**.
9. In the **Progress** dialog box, click **OK**.
10. Click **OK** in the **Modify Web Application** dialog box.
11. Click **Exit** in the Web Application Manager.
The distribution server instance is updated.
12. The distribution server instance is updated. Rich clients that were installed prior to this modification will be updated the next time they log on as long as the following are running:
 - RMI Registry (**start_rmi.bat**)
 - Distribution server (**start_server.bat**)

Configure a rich client to display the NX button

To configure a rich client to display the **NX** button, which can be used to start Teamcenter Integration for NX:

1. Start and log on to a rich client that has the **NX Manager for Rich Client** feature.
2. Choose **Edit® Options** to open the **Options** dialog box.
3. In the left-hand pane, select **NX**.
4. In the right-hand pane, select **Yes** next to **Show “Open in NX” command**.
5. In the **Options** dialog box, choose **OK**.

The **NX** button appears in the Teamcenter tool bar.



Activities

In the *Embedded visualization and Teamcenter Integration for NX* section, do the following activities using the **infodba** account:

1. Install NX
2. Install NX templates
3. Add the **NX Manager for Rich Client** feature to a two-tier rich client
4. Add the **NX Manager for Rich Client 4–Tier** feature to a four-tier rich client
5. Display the NX icon in the rich client
6. Run Teamcenter Integration for NX

Review questions

1. Teamcenter has a viewer that can be added to the rich client to provide enterprise-wide product visualization capabilities and is embedded in the rich client interface.

Select one answer.

- True
- False

2. NX 6 uses the Teamcenter Common Licensing Server.

Select one answer.

- True
- False

3. You install NX 6 templates using _____ .

Select one answer.

- **tcin_template_setup.bat**
- NX 6
- Teamcenter Environment Manager
- Web Application Manager

Summary

The following topics were taught in this lesson:

- Install the embedded visualization application
- Add the embedded visualization feature to a two-tier and the four-tier rich client
- Install NX
- Add the **NX Manager for Rich Client** feature to a two-tier and a four-tier rich client
- Display the **NX** button in the rich client

Lesson

11 *Creating additional sites*

Purpose

The purpose of this lesson is to illustrate how to create an additional Teamcenter site.

Objectives

After you complete this lesson, you should be able to:

- Describe the overall process of creating an additional Teamcenter site.
- Remove an existing TCFS service.
- Configure FMS to include the initial and the additional sites.
- Configure the two-tier rich client to point to both sites.

Help topics

Additional information for this lesson can be found in:

- *Additional configuration and maintenance* topic in the [*Installation on Windows Servers Guide*](#)
- *Add, remove, and modify database* topic in the [*Installation on Windows Clients Guide*](#)
- *Additional configuration and maintenance* topic in the [*Installation on UNIX and Linux Servers Guide*](#)
- *Add, remove, and modify database* topic in the [*Installation on UNIX, Linux, and Macintosh Clients Guide*](#)

Additional sites

Companies often create multiple Teamcenter databases (sites), for example, a company may have an in-production database, a testing database, and a training database.

To create an additional site, you must:

- Create an additional database with a unique SID for the new site.
- Remove the existing TCFS service.

The existing TCFS service only works with any existing configurations and not with the new configuration. When you create the new corporate server configuration, a new TCFS service that works with the existing as well as the new configuration is created.

- Create a new corporate server configuration for the new site.
- Configure the FMS service.

You use TEM to update the FMS master so that the FMS service functions for the existing site as well as the new sites.

- Modify any rich clients that need to access the site.

Creating an additional database is identical to creating the initial database, so it will not be covered again in this lesson.

Creating an additional corporate server is identical to creating the initial corporate server in the *Oracle server, listener, and database* lesson.

Remove the existing TCFS

1. In a **Command Prompt** window, type **sc stop tcfs**.
2. In a **Command Prompt** window, type **sc delete tcfs**.
3. Remove the TCFS reference from the **services** file by deleting the line:

```
tcfs 1528/tcp
```

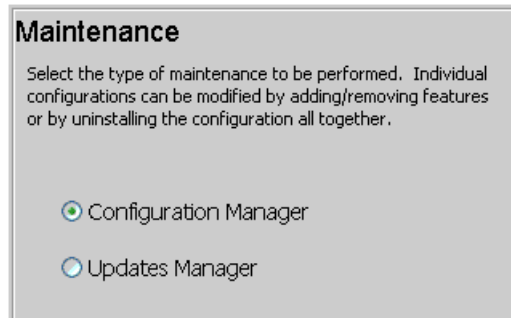
Configure the FMS service

1. Start TEM for the corporate server.
2. Select **Perform maintenance on an existing configuration** and click **Next**.
3. Select the initial corporate server configuration and click **Next**.
4. In the **Feature Maintenance** dialog box, click **Modify FMS Master Imports**.
5. The installer verifies that an FSC is installed and is configured as a master. Click **Next**.
6. In the **FSC Service Additional Sites** dialog box, click **Scan**.
7. In the **Scan** dialog box, verify that there is an FSC entry for the additional corporate server and click **OK**.
8. In the **FSC Service: Additional Sites** dialog box and click **Next**.
9. A **Status Message** dialog box appears informing you that the FMS service must be restarted for changes to take affect. Click **Close**.
10. Click **Next** in the **Confirmation** dialog box to begin the installation.
11. When the installation is complete, the **Install Features: Success** messages appears. Click **Close**.
12. Restart the FSC services for the initial and the additional corporate server.

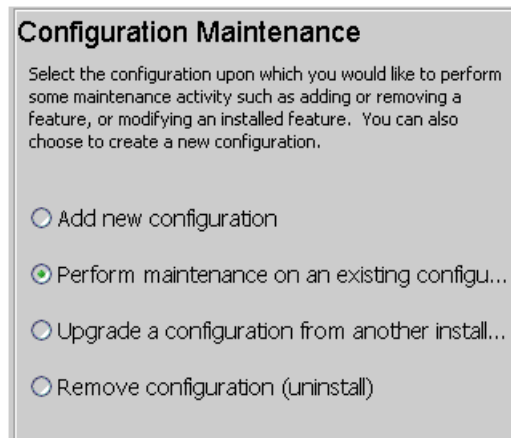
Modify the two-tier rich client configuration

To modify an existing two-tier rich client to point to multiple databases:

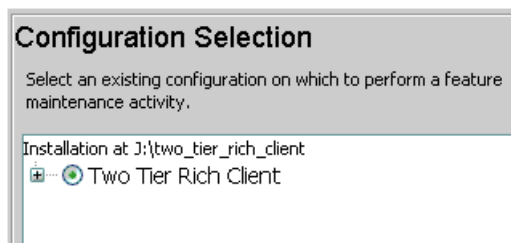
1. Start the TEM for the two-tier rich client.
2. In the **Maintenance** dialog box, select **Configuration Manager** and click **Next**.



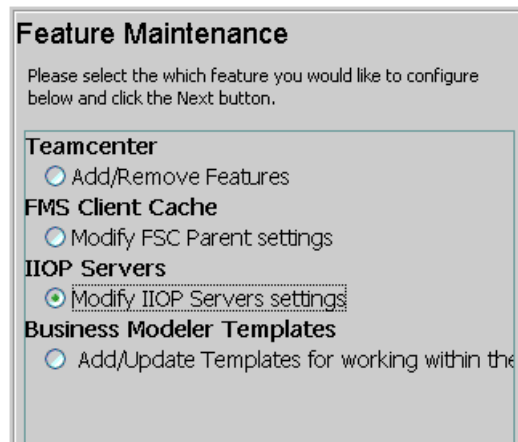
3. In the **Configuration Maintenance** dialog box, select **Perform maintenance on an existing configuration** and click **Next**.



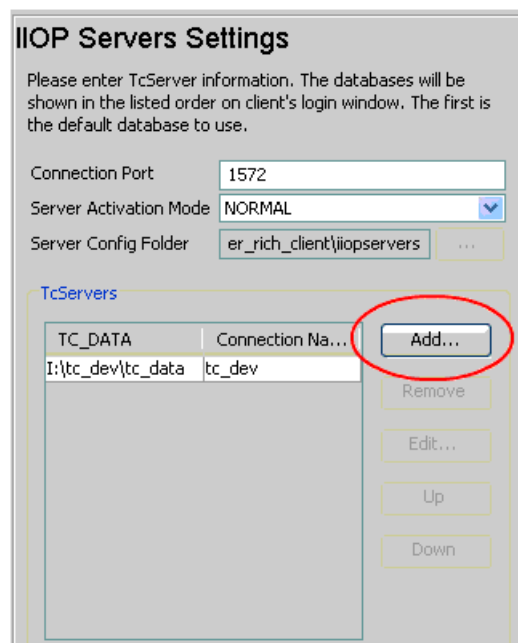
4. In the **Configuration Selection** dialog box, select the configuration you want to modify and click **Next**.



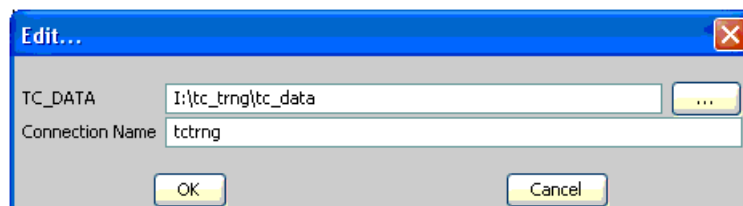
5. In the **Feature Maintenance** dialog box, select **Modify IIOP Server Settings** and click **Next**.



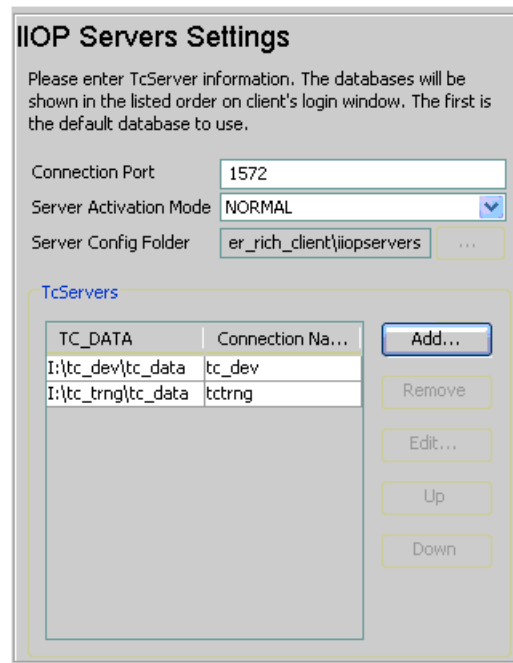
6. In the **IIOP Server Settings** dialog box, click **Add**.



7. In the **TC_DATA** box of the **Edit** dialog box, type the path to the *TC_DATA* directory of the additional database. In the **Connection Name** box, type the ID of the new corporate server. Click **OK** in the **Edit** dialog box.



8. Click **Next** in the **IIOP Server Settings** dialog box.



IIOP Servers Settings

Please enter TcServer information. The databases will be shown in the listed order on client's login window. The first is the default database to use.

Connection Port: 1572

Server Activation Mode: NORMAL

Server Config Folder: er_rich_client\iiopservers

TcServers

TC_DATA	Connection Na...
I:\tc_dev\tc_data	tc_dev
I:\tc_trng\tc_data	tctrng

Buttons: Add..., Remove, Edit..., Up, Down

9. In the **Confirm Selections** dialog box, click **Next**.
10. When the **Install Features: Successful** message appears, the installation is complete. Click **Close**.

Activities

If you installed Oracle, perform the following activities:

In the *Create an additional site — Oracle* section, do the following activities using the **dba** account:

1. Create an additional database
2. Remove the existing TCFS
3. Add an additional corporate server
4. Configure the FMS service
5. Modify the two-tier rich client to point to both databases
6. Test the modified rich client

If you installed MS SQL, perform the following activities:

In the *Create an additional site — MS SQL* section, do the following activities using the **dba** account:

1. Remove the existing TCFS
2. Add an additional corporate server
3. Configure the FMS service
4. Modify the two-tier rich client to point to both databases
5. Test the modified rich client

Review questions

1. You can add additional database connection to a two-tier rich client by _____ in the Teamcenter Environment Manager.

Select one answer.

- Adding a database logon
- Adding a server connection feature
- Modifying the FSC parent connections
- Modifying the IIOP server settings to add a TcServer connection

Summary

The following topics were taught in this lesson:

- Describe the overall process of creating an additional Teamcenter site
- Remove an existing TCFS service
- Configure FMS to include the initial and the additional sites
- Confirm the two-tier rich client to point to both sites

Lesson

12 Understanding Multi-Site Collaboration

Purpose

The purpose of this lesson is to introduce you to Multi-Site Collaboration concepts.

Objectives

After you complete this lesson, you should be able to:

- Discuss the benefits of the Multi-Site Collaboration solution.
- Defines sites, facilities, and the Multi-Site Collaboration network.
- Discuss how Multi-Site Collaboration using data replication.
- Discuss what synchronization is.
- Discuss the purpose of publishing and unpublishing objects.
- Discuss object ownership.

Help topics

Additional information for this lesson can be found in:

- [*Multi-Site Collaboration Guide*](#)

What is Multi-Site Collaboration

The Multi-Site Collaboration solution provides semiautomated, real-time data sharing across an entire enterprise.

Historical overview

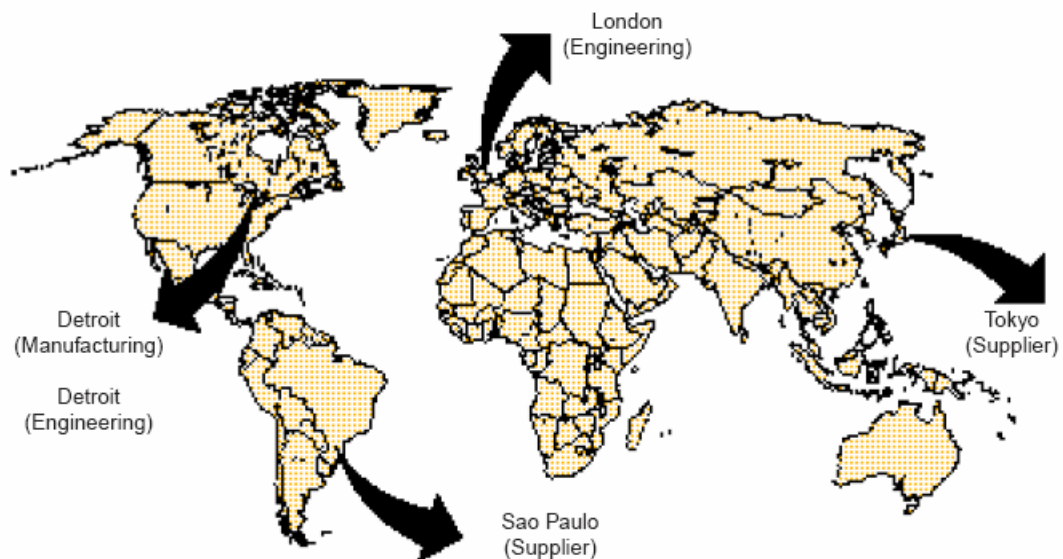
During product development, the engineering sites in Detroit and London occasionally share small amounts of data with one another and with their suppliers in São Paulo and Tokyo. This is accomplished by manually exporting product information as objects, transferring these objects using File Transfer Protocol (FTP) or removable media (DAT) to the desired site, and manually importing them into the databases.

After product development completes, engineering data is manually exported and transferred to the Detroit manufacturing site and imported into that database.

Although this solution can work acceptably on a limited basis, it requires too much touch labor and too many ad hoc arrangements to be viable for routinely sharing large amounts of product information across this enterprise.

To clearly understand the issues involved with sharing product information across an entire enterprise, consider how the XYZ Widget Corporation may share data without the benefit of Multi-Site Collaboration.

The following graphic shows that the XYZ Widget Corporation has engineering sites in Detroit and London, a manufacturing site in Detroit, and suppliers in Tokyo and São Paulo. Each of these sites currently stores their product information in separate databases.



Multi-Site Collaboration solution

The Multi-Site Collaboration solution provides semiautomated, real-time data sharing across the entire enterprise. It automates many of the operations that had to be performed manually in our first example.

Practical example

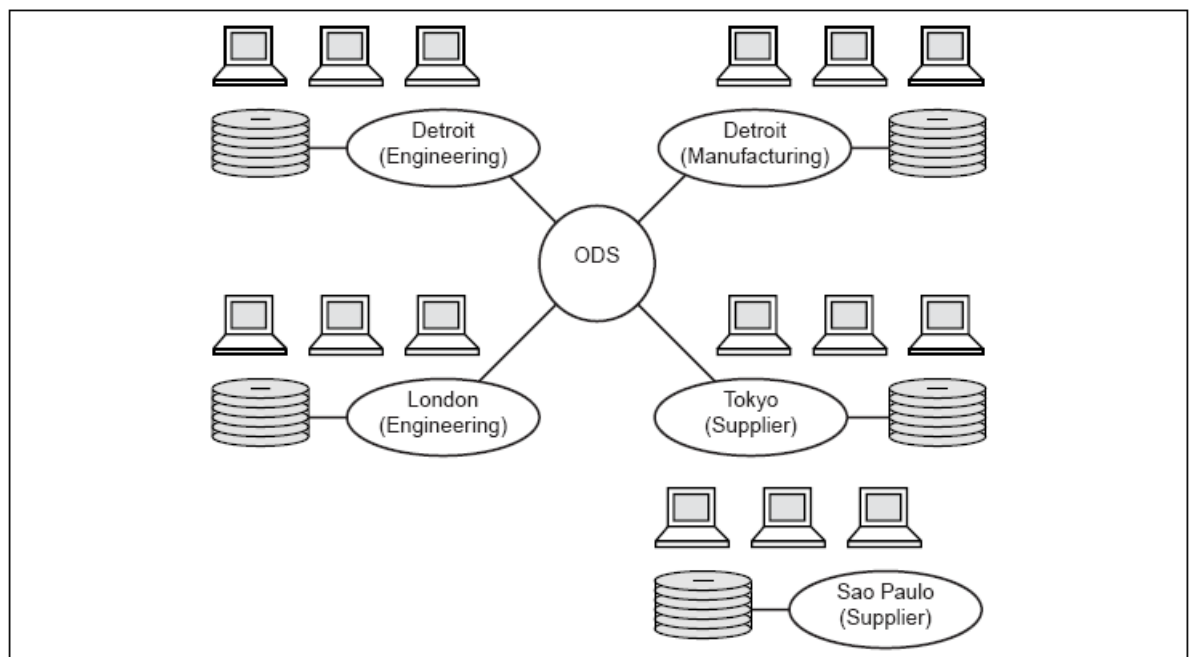
Consider how the enterprise in our first example could implement a Multi-Site Collaboration network. XYZ Widgets decided to link both the Detroit sites with the London and Tokyo sites using a high-speed wide area network (WAN). They also decided that the supplier in São Paulo would not be sharing enough product information with the other sites to justify a WAN connection.

Unconnected sites

The São Paulo site is not connected to the other sites via a local or wide area network (LAN or WAN). Data sharing with São Paulo must be accomplished via manual export, transfer, and import as described in our first example. However, because the XYZ Widget Corporation has implemented a Multi-Site Collaboration network, some tracking of objects in the São Paulo database must be performed for the benefit of the other sites.

ODS site

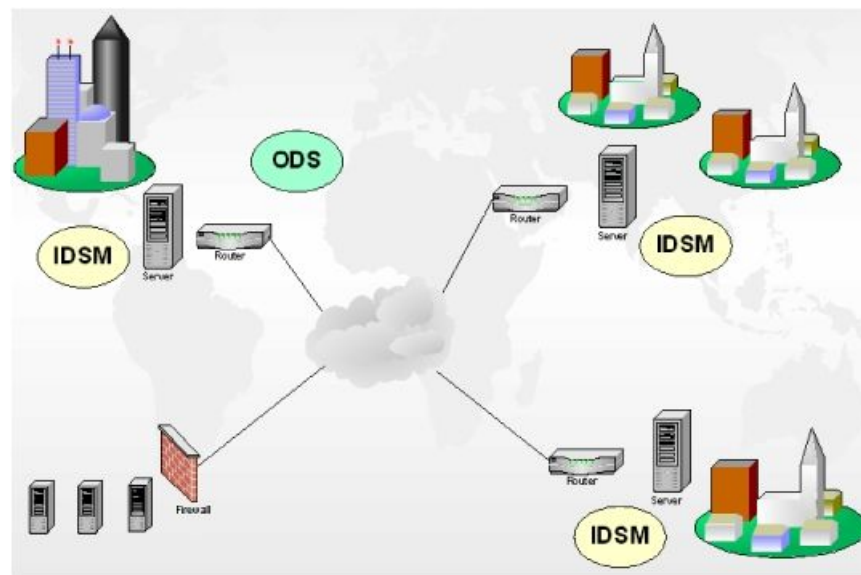
The Multi-Site Collaboration solution uses a special site called an Object Directory Services (ODS) site. The ODS site maintains a record of each object in the entire Multi-Site Collaboration network. The ODS does not store the objects, but rather maintains a record that is similar to a library card; it tells you which site is currently storing it and some basic information about it (enough information so you can decide if it is the object you are looking for).



ODS and IDSM

Multi-Site Collaboration uses:

- *Object Directory Services* (ODS) is an object locator. It maintains a record of each object in the entire Multi-Site Collaboration network. The ODS does not store the objects, but rather maintains a record that is similar to a library card. It tells you where you can find an object, that is, which site is currently storing it, and some basic information about it; enough information so you can decide if it is the object you are looking for.
- *Integrated Distributed Services Manager* (IDSM) is an object transporter. It provides the mechanism used to export an object from the owning site, transmit it over the network, and import it into the destination site.



Sites, facilities, and the Multi-Site Collaboration network

Three very common terms have very specific meanings in Multi-Site Collaboration:

- *Site* is a Teamcenter database.
- *Facility* is a location such as a manufacturing plant.
- *Network* is a federation of sites.

Site

Comprises a single database that includes all users accessing that database and any additional non-Teamcenter resources such as hardware, networking capabilities, and third-party software applications (tools) required to implement Teamcenter at that site. For this discussion, think of each site as a single database and its users.

Facility

Physical location (for example, manufacturing plant, design center, and so forth) in your enterprise. It is extremely important not to confuse sites and facilities. Sites are databases; facilities are buildings. One facility can comprise multiple sites.

Network

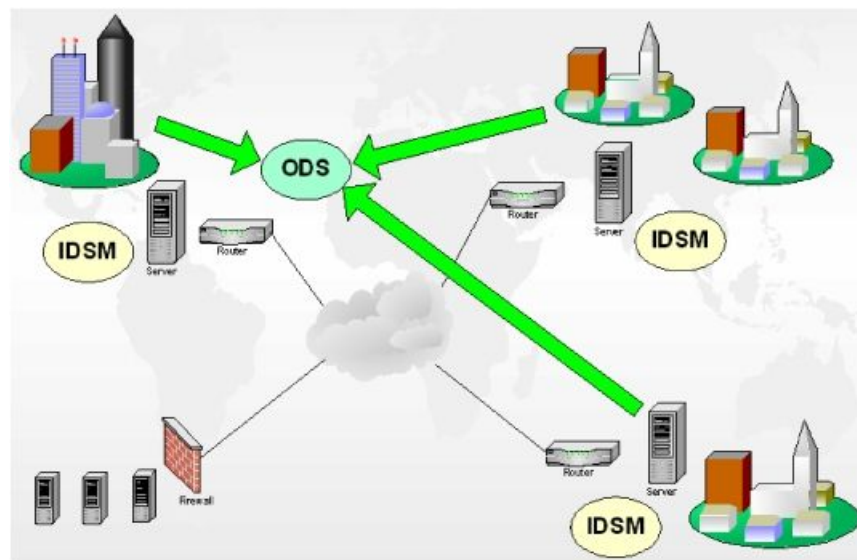
For independent sites within the same enterprise to share data, Multi-Site Collaboration implements an environment that can best be described as a federation of sites. Each site is truly independent, yet is able to operate and share data within a larger entity called the Multi-Site Collaboration network. Multi-Site Collaboration intentionally imposes as few restrictions and limitations on autonomous site activity as possible.

Publishing and unpublishing objects

Participating sites in a distributed network must have a reliable way of controlling which data they want to share with the rest of the network. With Multi-Site Collaboration, you can publish and unpublish objects either singly or in a batch.

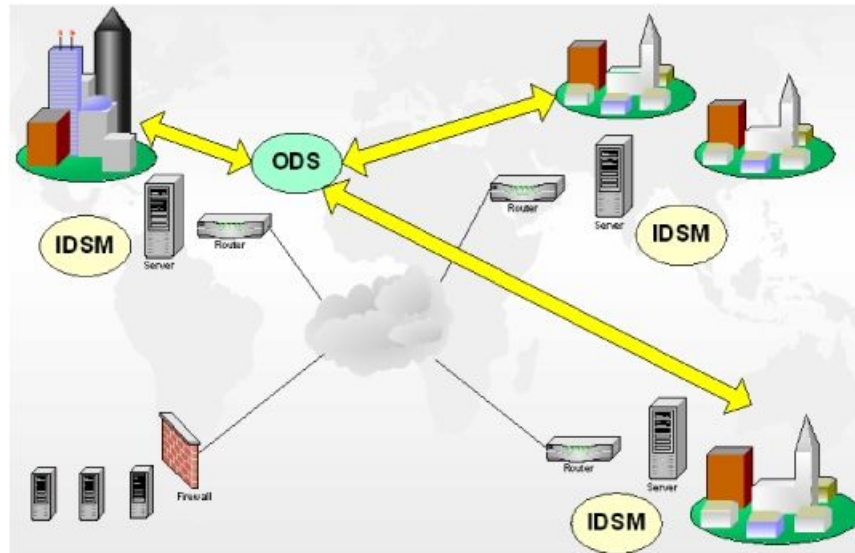
When you publish an object, a publication record is created in the ODS.

- Publishing
Makes objects available to other sites.
- Unpublishing
Makes objects available only to the owning site.
- **data_share** utility
Used to publish and unpublish objects.



Remote query

When a user a remote query to search for published objects, a scan of the publication records (ODS) is performed to find the records that match the search criteria. References to remote data objects are retrieved.



Data replication issues

- Data integrity

As an object is replicated to various sites, how do you determine which object is the latest version of an object? This is especially true if users are allowed to modify replicated objects.

- Security

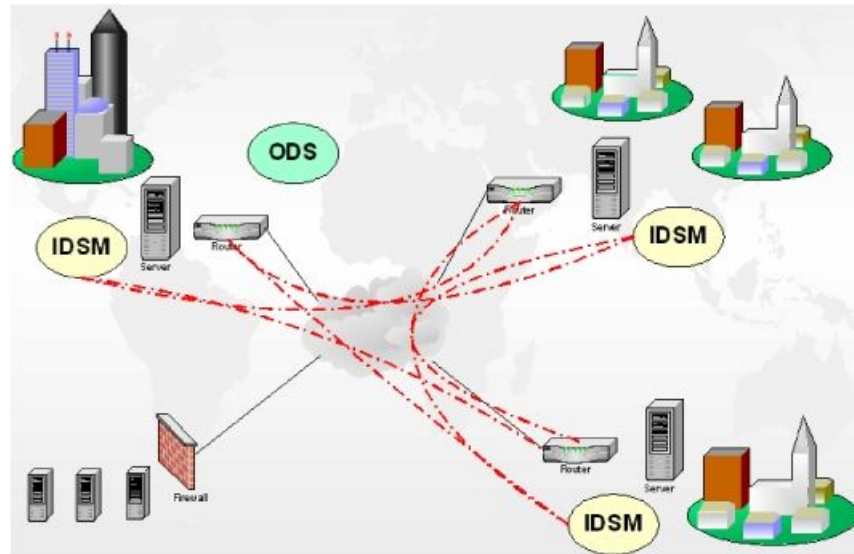
Without proper security controls, replicated product information could fall into the hands of people not authorized to have it.

- Auditing and tracking

A replication-based system must provide some method of tracking all replicas of an object not only for audit purposes, but also for ensuring that all replicas are updated when the original is modified.

Data replication

Replicas of remote objects are created locally.



Replication rules to support data integrity

Multi-Site Collaboration uses import and export functions to replicate data. The following rules apply:

- Only the master object can be replicated.
- Only the master object can be modified.
- When you export an object, you must specify which sites are authorized to import it.

This ensures that no unauthorized replicas are made and stores tracking information with the master object.

- When transferring ownership to another site, only one site can be specified.

This ensures that there is only one master object in the network.

- After it is replicated, a master object cannot be deleted until all replicas are deleted.

This ensures network-wide referential integrity.

Object ownership and protection

In addition to the familiar concepts of owning user and owning group, Multi-Site Collaboration uses the concept of site ownership. The owning site is the site where the master object of an object resides. It is the only site where the object can be modified. It is the only site where you can obtain a replicated copy of the master object.

The owning site is a property of any object, and the owning site can be found using the **Properties** dialog box.

Synchronization

A replication-based solution must ensure that replicas are kept up-to-date when the master object is modified. Multi-Site Collaboration addresses this by maintaining export records and providing synchronization facilities:

- Export records
- **data_sync** utility
- **sync_on_demand** utility
- Automatic synchronization

Export records

When an object is exported, export records are created for each target site specified. Each export record contains the site ID of each target site and the date of the last export to that site. Export records are always associated (and stored) with the master object. For items, a special item export record is also created to record the import/export options used so that these same options can be used to synchronize the item.

data_sync utility

When the master object is modified, replicas can be updated by a system administrator through this utility. The process of keeping replicated data up-to-date is called synchronization. Optionally, synchronization may be limited to visualization data that is directly or indirectly related to datasets.

For additional information, see the *Utilities Reference*.

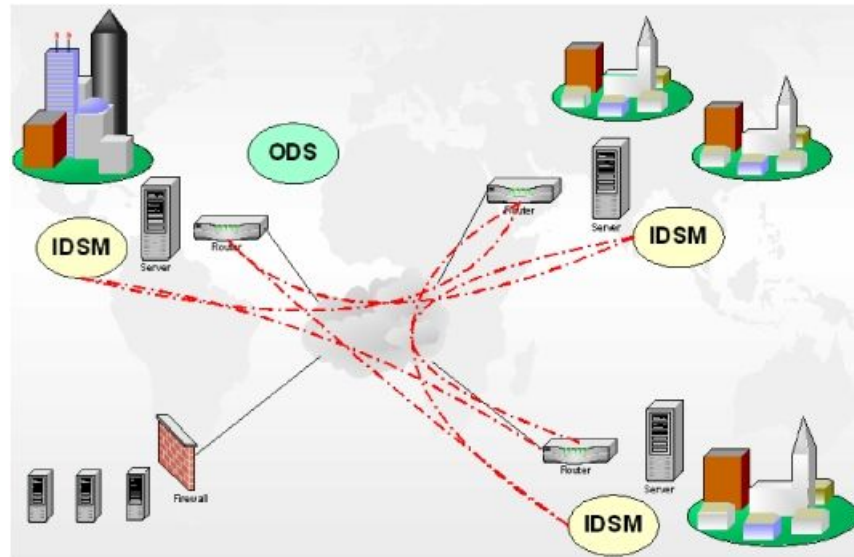
sync_on_demand utility

The end user may update replicated objects as they require using this utility. A component, assembly, or object can be selected for a synchronization report that allows users to determine if synchronization is required and to select the specific components to be synchronized.

For additional information, see the *Utilities Reference*.

Automatic synchronization

The end user who replicates an object may specify that the replica be synchronized automatically when the master object is modified. The replica is then synchronized automatically using the Multi-Site Collaboration automatic synchronization functionality.



Version interoperability

When a Multi-Site Collaboration site is upgraded to a new version, it is not necessary to upgrade all other sites in the Multi-Site Collaboration network at the same time. When a new major version is released, it is interoperable with all sites running earlier versions as long as the difference in major version numbers is not more than 2.

Although interoperability is guaranteed, there can be some limitations. For example, transfer of ownership of certain types of objects from a higher release version to a lower one may not be allowed. In most cases, new features introduced in a new release are not available when communicating with a remote site running an earlier version. The version of the server dictates what the client can do.

Review questions

1. The Multi-Site Collaboration solution provides semiautomated, real-time data sharing across an entire enterprise.

Select one answer.

- True
- False

2. Object Directory Services (ODS) is an object _____ .

Select one answer.

- Locator
- Transporter

3. Publishing an object makes it available only to the owning site

Select one answer.

- True
- False

Summary

The following topics were taught in this lesson:

- The benefits of the Multi-Site Collaboration solution
- Sites, facilities, and the Multi-Site Collaboration network
- Multi-Site Collaboration using data replication
- Synchronization
- The purpose of publishing and unpublishing objects
- Object ownership

Lesson

13 Course summary

During this course, you met the course objectives by accomplishing the following:

- You planned and installed a site.
- You successfully installed Teamcenter.
- You identified the RDBMS components needed by Teamcenter.
- You installed a database server and LISTENER.
- You created a Teamcenter database.
- You used TEM to install components of the Teamcenter Environment.
- You used TEM to install the corporate server.
- You set up a Teamcenter environment.
- You used TEM to install the two-tier rich client.
- You used the Web Application Manager to create the components of the Teamcenter J2EE Web tier.
- You used Web tier application, the Rich Client Distribution Server, and the Rich Client Distribution Server Instance to successfully set up the J2EE Web tier.
- You used the Web Application Manager to implemented the four-tier architecture.
- You set up the .NET Web tier.
- You set up embedded visualization.
- You set up a NX CAD integration.
- You administered the in-production system.
- You learned about Multi-Site Collaboration.

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Reference tear-out pages

These reference tear-out pages are provided for your convenience.

Course agenda

Day 1	Morning	
	Introduction	
	Course overview	
	Lesson 1	What is collaborative product data management
	Lesson 2	Teamcenter architecture overview
	Lesson 3	Oracle server, listener, and database
	Afternoon	
	Lesson 3 (continued)	Oracle server, listener, and database (continued)
	Lesson 4	MS SQL Server 2005 server and database
Day 2	Morning	
	Lesson 5	Corporate server
	Lesson 6	Two-tier rich client
	Afternoon	
	Lesson 7	Four-tier architecture
Day 3	Morning	
	Lesson 8	Installing the Business Modeler IDE
	Lesson 9	Administer the in-production system
	Afternoon	
	Lesson 10	Embedded visualization and Teamcenter Integration for NX
Day 4	Morning	
	Lesson 11	Creating additional sites
	Afternoon	
	Lesson 12	Multi-Site Collaboration
	Lesson 13	Course Summary

Classroom data sheet

Style note to writers: Edit the following table to add or remove rows so the table includes only the data items pertinent to the course. Retain the introductory sentence preceding the table.

This table is provided so students can record their classroom setup, as described by the instructor. Optionally, instructors may hand out a preprinted data sheet.

Data item	Data value	Domain
OS user ID OS password		Local computer
Teamcenter user ID Teamcenter password		
Training folder directory		
TC_DATA		
TC_ROOT		
TC_VOLS		
TEMPLATES_DIR		
PROJECTS_DIR		
CORP_SERVER_CONFIG		
TEMPLATES		

Student profile

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STUDENT PROFILE

To stay in tune with our customers, we ask for some background information. This information will be kept confidential and will not be shared with anyone outside of Education Services.

Please print:

Your name _____ U.S. citizen ☐ Yes ☐ No

Course title/Dates _____ / _____ through _____

Hotel/motel(s) while training _____ Planned departure time after class _____

Employer _____ Location _____

Supervisor/manager _____ (Emergency) Phone _____

Your job title/responsibilities _____ / _____

Industry: ☐ Auto ☐ Aero ☐ Consumer products ☐ Machining ☐ Tooling ☐ Medical ☐ Other

Types of products/parts/data that you work with _____

Platform (operating system) _____

Reason for training _____

Please verify/add to this list of training for NX, I-deas, Imageware, Teamcenter, Tecnomatix or Dimensional Mgmt./Visualization.
Medium means Instructor-lead (IL), Online (OL), or Self-paced (SP)

Software	From whom	When	Course name	Medium

Other CAD/CAM/CAE /PDM software you have used _____

Please check (✓) your ability/knowledge level in the following areas:

<u>Subject</u>	<u>None</u>	<u>Novice</u>	<u>Intermediate</u>	<u>Advanced</u>
CAD modeling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD assemblies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAD drafting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAM	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
CAE	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PDM – usage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PDM – system management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PDM – customization	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank you for your participation. We hope your training experience will be an outstanding one.

Course evaluation



PLM Software
Evaluation – Delivery

Course name: _____ Course #: _____

Course dates: _____ through _____

Please share your opinion in all of the following sections with a check in the appropriate box:

Instructor: ☒

If there were two instructors, please evaluate the 2nd instructor with X's.

Instructor: ☒

	STRONGLY DISAGREE	DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	AGREE	STRONGLY AGREE
1. ...clearly explained the course objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. ...was knowledgeable about the subject.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. ...answered my questions appropriately.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. ... encouraged questions in class.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. ...was well spoken and a good communicator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. ...was well prepared to deliver the course.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. ...made good use of the training time.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. ...conducted themselves professionally.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. ...used examples relevant to the course and audience.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. ...provided enough time to complete the exercises.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. ...used review and summary to emphasize important information.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. ...did all they could to help the class meet the course objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments on overall impression of instructor(s):

Overall impression of instructor(s).....Poor ☐ ☐ ☐ ☐ ☐ ☐ Excellent

Suggestions for improvement of course delivery: _____

What you liked best about the course delivery: _____

Class logistics:

1. The training facilities were comfortable, clean, and provided a good learning environment.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The computer equipment was reliable.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The software performed properly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The overhead projection unit was clear and working properly.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The registration and confirmation process was efficient.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Hotels: (We try to leverage this information to better accommodate our customers.)

1. Name of the hotel _____ Best hotel I've stayed at.. ☐ ☐ ☐ ☐ ☐ ☐

2. Was this hotel recommended during your registration process?.....☐ YES ☐ NO

3. Problem? (brief description) _____

SEE BACK

PLM Software
Evaluation - Courseware



Course name: _____ **Course #:** _____

Course dates: _____ **through** _____

Please share your opinion for all of the following sections with a check in the appropriate box:

Material:

	STRONGLY DISAGREE	DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	AGREE	STRONGLY AGREE
1. The training material supported the course and lesson objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The training material contained all topics needed to complete the projects.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The training material provided clear and descriptive directions.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The training material was easy to read and understand.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The course flowed in a logical and meaningful manner.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. How appropriate was the length of the course relative to the material?..... <input type="checkbox"/> Too short <input type="checkbox"/> Too long <input type="checkbox"/> Just right						

Comments on course and material: _____

Overall impression of course.....Poor ☐ ☐ ☐ ☐ ☐ ☐ Excellent

Student:

1. I met the prerequisites for the class (I had the skills I needed).....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. My objectives were consistent with the course objectives.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I will be able to use the skills I have learned on my job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. My expectations for this course were met.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I am confident that with practice I will become proficient.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Name (optional): _____ Location/room _____

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(Your name is required at the bottom of this form)

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