

# *Teamcenter®*

## *Installation*

**Student Guide**  
**October 2007**  
**MT25350 – Version 2007**

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# *Introduction*

**Introductions**

**Facility overview**





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# Course overview

## Course Description

The Teamcenter® Installation course addresses the procedures for proper Teamcenter and Oracle installations. The course begins with a discussion of system and network requirements for a successful implementation of Teamcenter. Students will go through the steps of configuring an operating system as well as planning the physical database layout. Hands-on activities include the installation of Oracle and Teamcenter as well as the use of tools to monitor and maintain Oracle in a Teamcenter environment.

The class also covers many skills used to manage and troubleshoot the Teamcenter environment after installation.

## Course objectives

- To define the Teamcenter two-tier architecture, the four-tier architecture, and File Management System
- To define the pre-installation setup
- To define Relational Database Management System concepts and installation processes
- To understand the two methods for creating a Teamcenter database
- To have an operational Teamcenter database by creating a Teamcenter database
- To define the uses of Teamcenter Environment Manager (TEM)
- To install the corporate server
- To install a two-tier rich client
- To define the uses of the Web Application Manager
- To understand the components of the Teamcenter J2EE Web tier
- To create the components of the J2EE Web tier
- To understand components of the Teamcenter .NET Web tier
- To set up embedded visualization for the two-tier rich client
- To set up NX Manager for the two-tier rich client
- 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.
- A database server, listener, and database can be created.
- 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 the Teamcenter application include:

Course/Track	Application usage	Application administration	System administration
MT25150: <i>Using Teamcenter</i>	X	X	
MT25460: <i>Application and Data Model Administration</i>		X	

MT25350: <i>Installation</i>			<b>X</b>
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### Application usage

After completing this learning track, you will be familiar enough with the application to mentor others.

### Application administration

After completing this learning track, you will be able to configure the application to support your company's organization, processes, security, and data model.

### System administration

After completing this learning track, you will be able to install the application and configure the architecture in a production environment.

## 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 appendix.
	Student profile is provided in the appendix.
<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> .

## Introduction to Help

Throughout this class, you access Help topics to learn more about the product. The Help Library covers functionality from end-user tasks to customization instructions.

There are several ways to access help from Teamcenter.

- To access the Help Library, click the **Help** button or choose **Help** from the main menu.
- Press F1.
  - Current application help for the rich client. You cannot access application-specific help in the Thin Client.
  - Context-sensitive help for the Business Modeler IDE.
- Press F2.
  - Help library for the rich client.



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## Lesson

# *1 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 cPDM system 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.

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## Lesson

# 2 *Teamcenter architecture overview*

### Purpose

The purpose of this lesson is to present 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 *Getting started* topic of the [\*Installation on Windows Servers Guide\*](#)
- *Basic Concepts about Teamcenter installation* in the *Getting started* topic of the [\*Installation on UNIX and Linux Servers Guide\*](#)

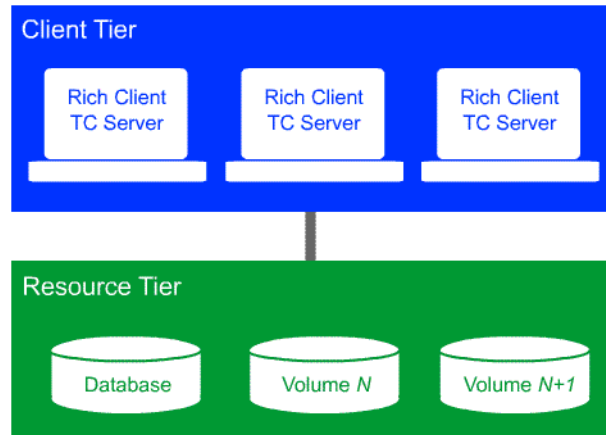
## **Teamcenter architectures**

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

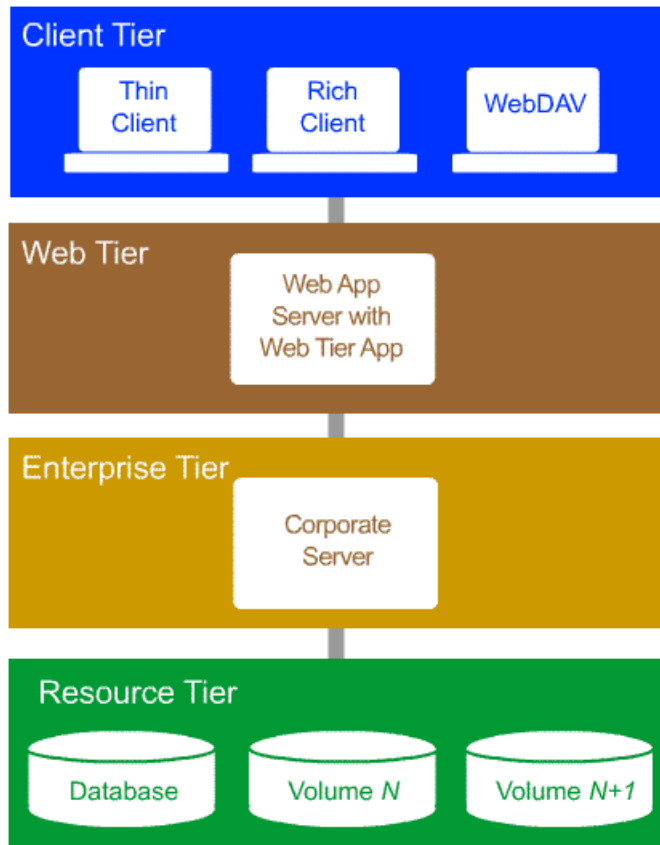


- The *client tier* contains:
  - Rich client
  - Teamcenter server and executables
  - Optional applications that integrate with the rich client such as NX®
- The *resource tier* stores persistent metadata and files managed by the environment.

It 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
- WebDAV client
- Additional applications such as Teamcenter for 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:

- 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 sits on the Teamcenter corporate server. It is composed of:

- Shared binary executables.
- Shared data directories and files.
- License server.
- A pool of server processes managed by a server manager (four-tier environments only).
- The *resource tier* stores persistent metadata and files managed by the environment.

The resource tier contains:

- Database server and database
- Volumes
- File servers

## Client options

Teamcenter provides three clients:

- 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.

- The *thin client* allows access to the system with standard commercial Web browsers, such as Microsoft Internet Explorer, Netscape, and Mozilla. 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 *WebDAV* client is an extension plugged into Microsoft Windows Explorer. The WebDAV client provides access to Teamcenter through Microsoft Word, Excel, PowerPoint, and Windows Explorer. Users unfamiliar with the rich client and thin client interfaces can perform document management of Teamcenter objects from these Microsoft Office applications without launching Teamcenter.

The WebDAV client is supported 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 file 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 Teamcenter Organization application to create volumes and perform other administrative functions. A TCFS server runs on each server hosting a volume.
- Manages file access for NX 4.0.0.25 and earlier and Teamcenter Visualization 5.0 or earlier when you use these products with Teamcenter.

### **FMS:**

- File transfer between volumes and clients for both the two-tier and the four-tier architectures
- File access for NX versions 4.0.2.2 and later and Teamcenter for 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 in order to improve file transfer performance

## Requirements

To install, configure, and run a Teamcenter environment, there are required hardware, software, and operating system accounts.

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/](http://support.ugs.com/online_library/certification/)

The required operating system accounts and privileges are discussed on the following page.



## Required operating system accounts and privileges

Two operating system accounts are required to install and administer Teamcenter and the relational database management system (for example, Oracle):

- Teamcenter operating system account  
Log on with this account name to install or upgrade Teamcenter or install patches.
- Database administrator operating system account  
Log on with this 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.

## **Activity**

- Activity: *Modify the HOSTS file*  
Operating system account to use: **administrator**
- Activity: *Create required operating system accounts*  
Operating system account to use: **administrator**

## **Review questions**

Answer these review questions. Pick all answers that apply.

1. Question: \_\_\_\_\_ tier stores persistent metadata and files managed by the environment.
  - A. Client
  - B. Enterprise
  - C. Resource
  - D. Web
2. The two-tier architecture is composed of what two tiers?
  - A. Client
  - B. Enterprise
  - C. Resource
  - D. Web
3. The thin client is available only in the \_\_\_\_\_ architecture.
  - A. Two-tier
  - B. Four-tier

**Answers to review questions**

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

A. Client

B. Enterprise

**Correct:** C. Resource

D. Web

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

**Correct:** A. Client

B. Enterprise

**Correct:** C. Resource

D. Web

3. The thin client is available only in the \_\_\_\_\_ architecture.

A. Two-tier

**Correct:** A. Four-tier

## **Summary**

Topics learned in this lesson:

1. Teamcenter two-tier architecture
2. Teamcenter four-tier architecture
3. Components of File Management System
4. Web site that lists the hardware and software requirements for Teamcenter
5. Operating system accounts required to install Teamcenter

Answer the review questions for this lesson.



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## Lesson

# 3 *Oracle server, listener, and database*

### Purpose

The purpose of this lesson is to provide 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:

- *Database server installation* topic of the [Installation on Windows Servers Guide](#)
- *Database server installation* topic of the [Installation on UNIX and Linux Servers Guide](#)

## Oracle overview

The resource tier of both the two-tier and the four-tier architectures is used to store 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>

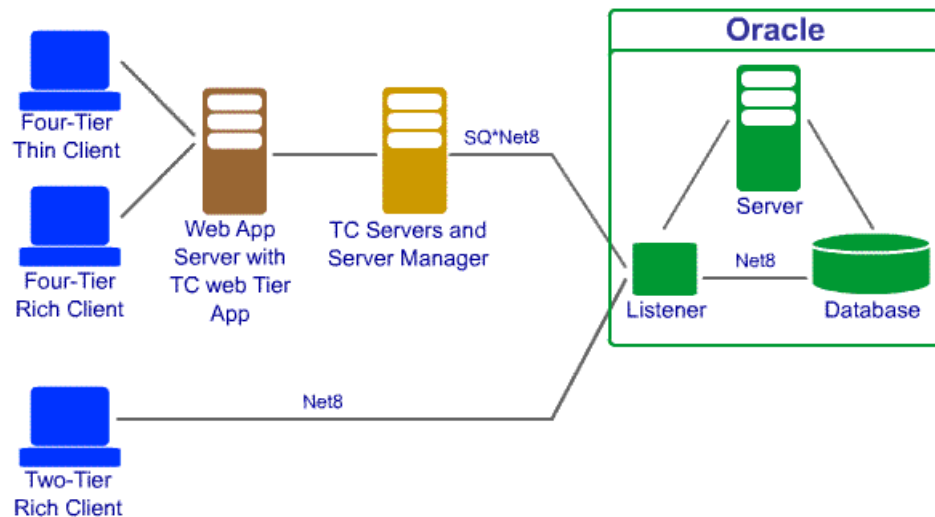
This course discusses setting up Oracle as a site's RDBMS.



## 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

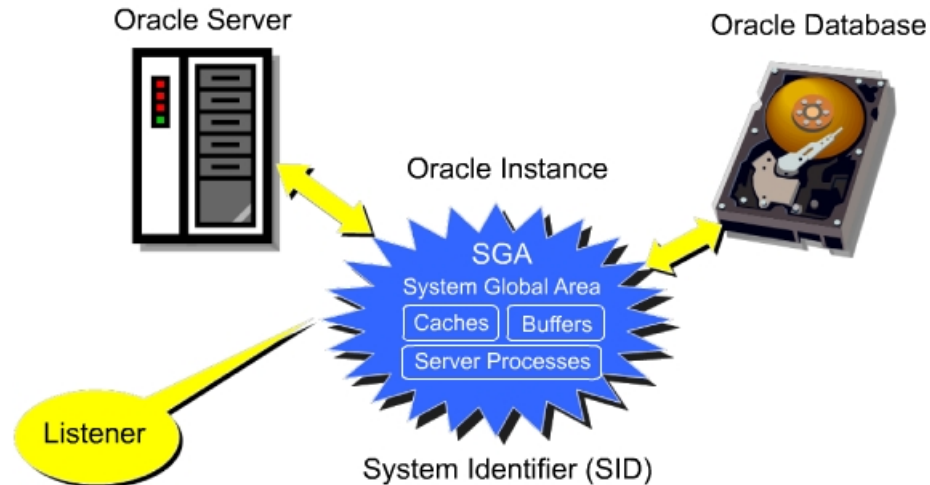
Teamcenter supports non-clustered database only. For non-clustered databases, each Oracle database is associated with an instance. When a database is started, Oracle allocates a memory area called the System Global Area and starts one or more Oracle processes. This combination of the System Global Area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

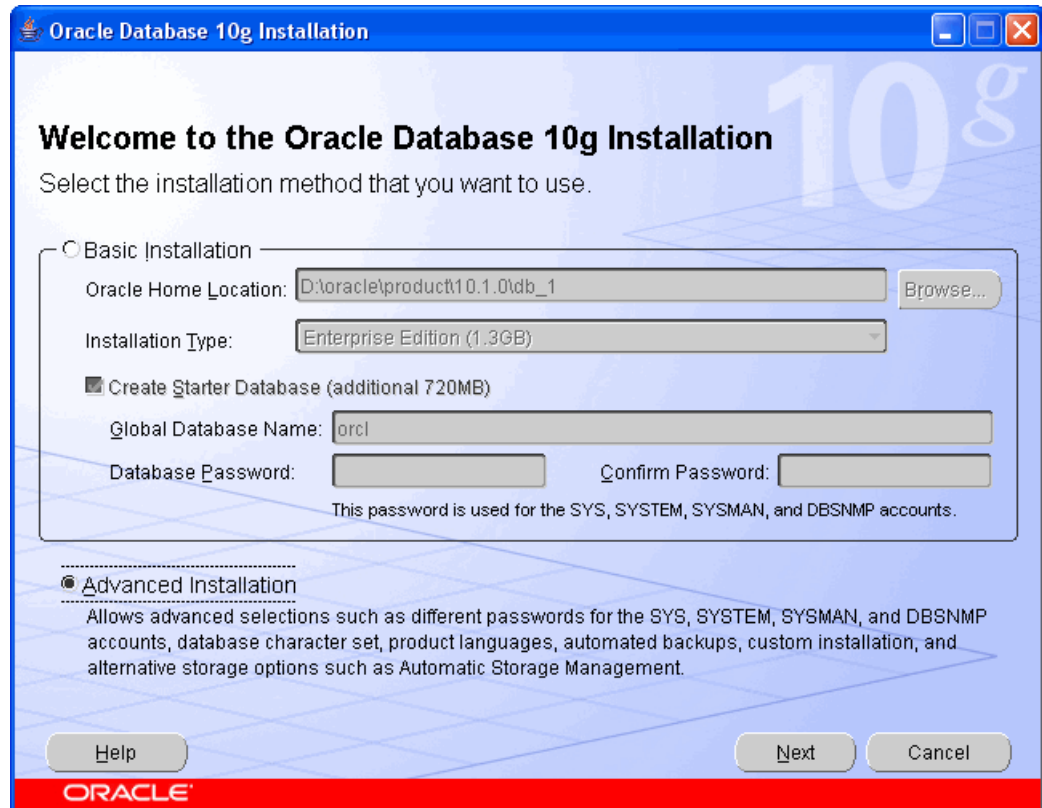
Ensure the operating system user account under which you install the Oracle database server has system administrator privileges. This account should be in the operating system's **Administrators** group. If so, when Oracle is installed, this account is automatically added to the Windows **ORA\_DBA**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

## Install location

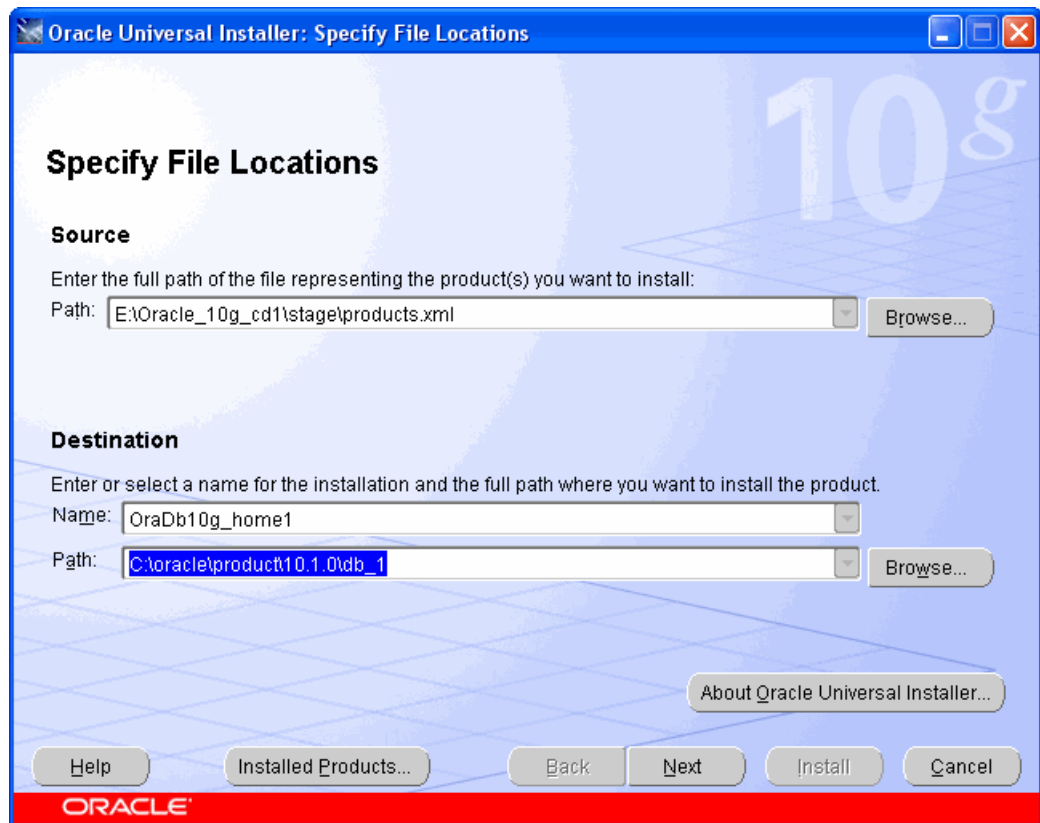
You can install the Oracle server and application files on shared directories. However, Oracle Corporation does not support database files on shared directories. To ensure data integrity, create database files on local disk drives.

## Install an Oracle database server

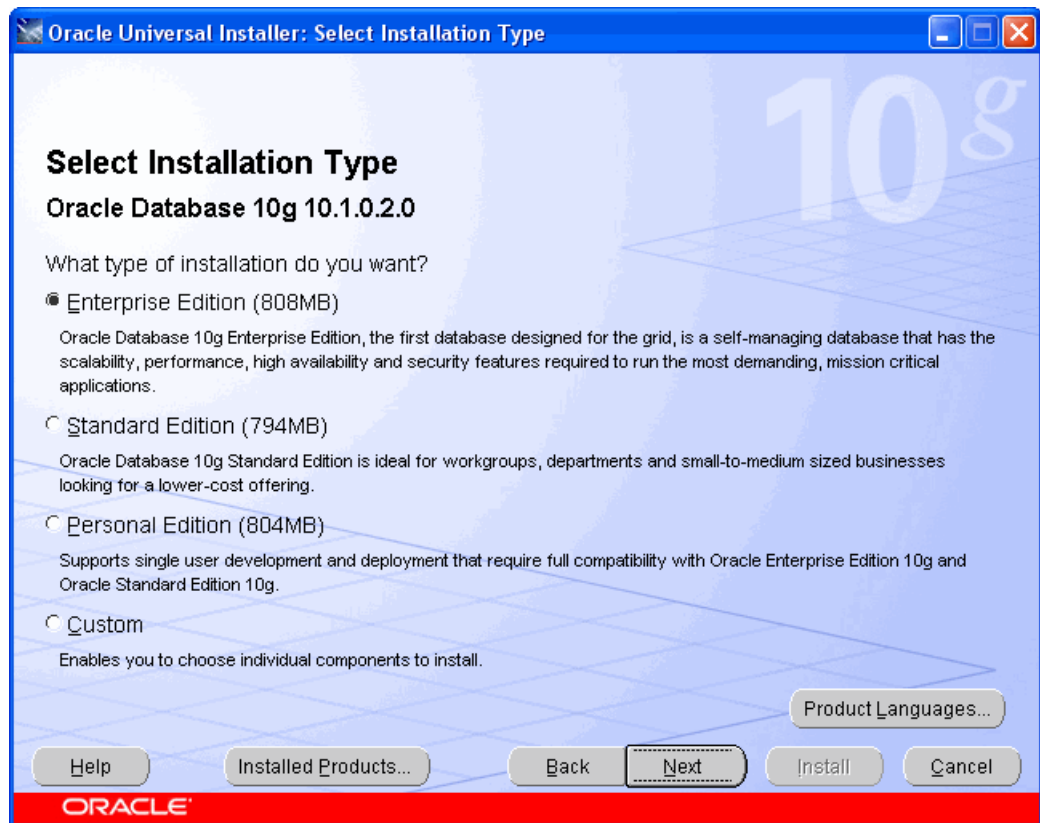
1. Insert the Oracle installation CD-ROM.
2. In the **Welcome to the Oracle Database 10g Installation** dialog box, select **Advanced Installation** and click **Next**.



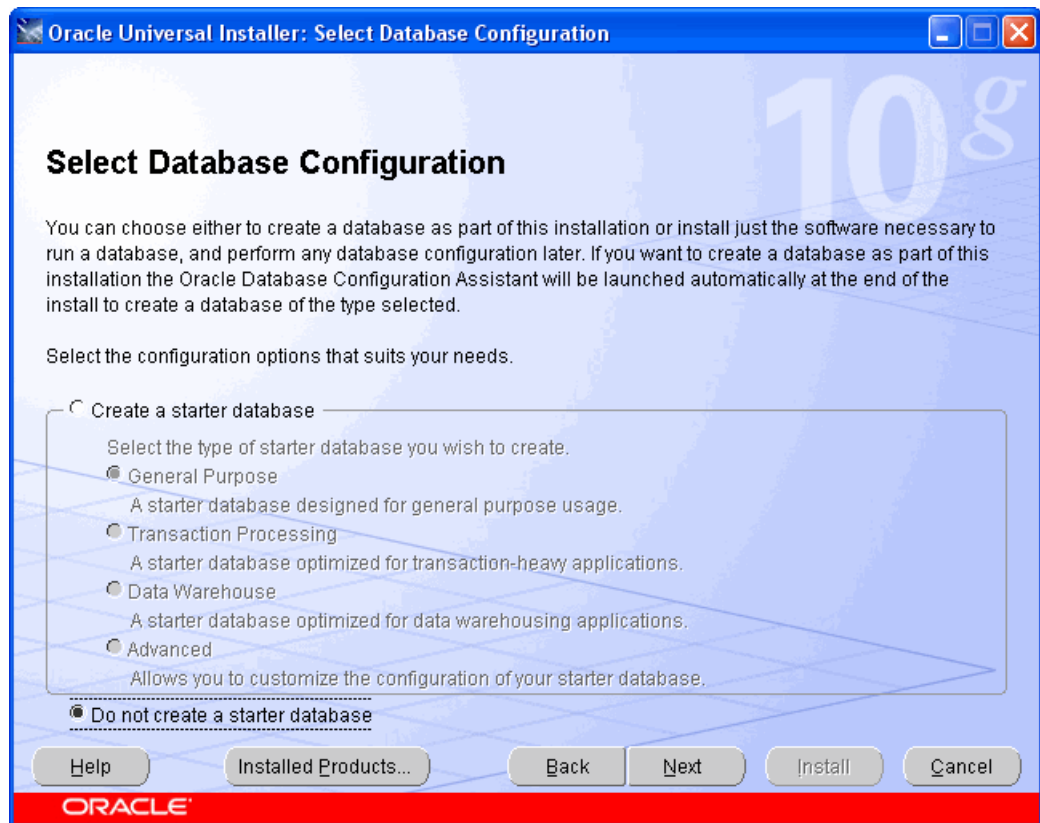
3. In the **Specific File Locations** dialog box, under **Destination**, in the **Name** box type a name for the installation, in the **Path** box type the location in which to install the server, and click **Next**.



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



5. In the **Select Database Configuration** dialog box, select **Do not create a starter database** and click **Install**.



Oracle Universal Installer displays the progress of each installation and relinking phase. If you are installing from the CD-ROM, Oracle Universal Installer prompts you to insert subsequent CD-ROMs when they are required.

## 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.

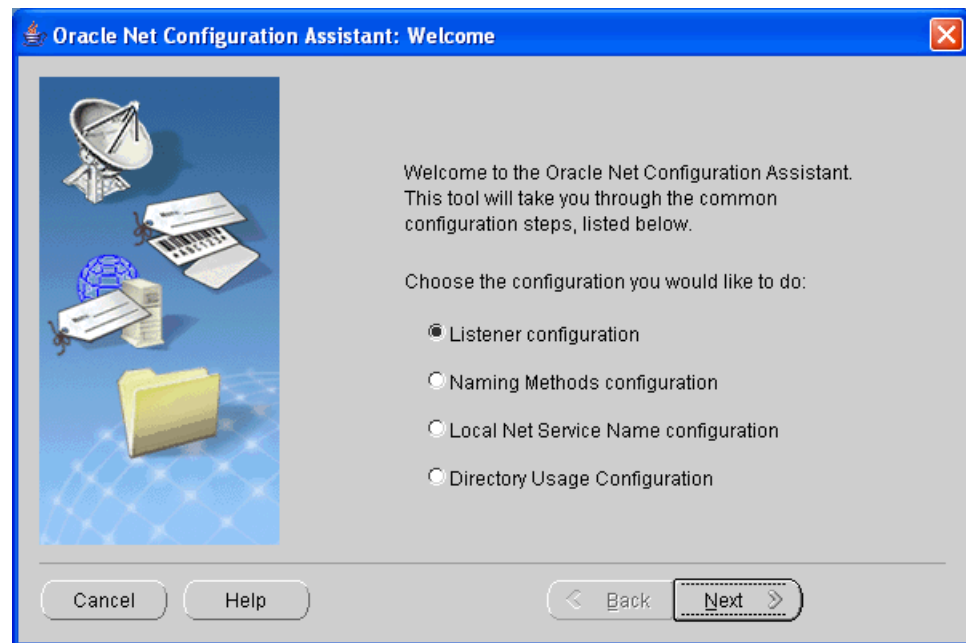
This file is located in:

`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

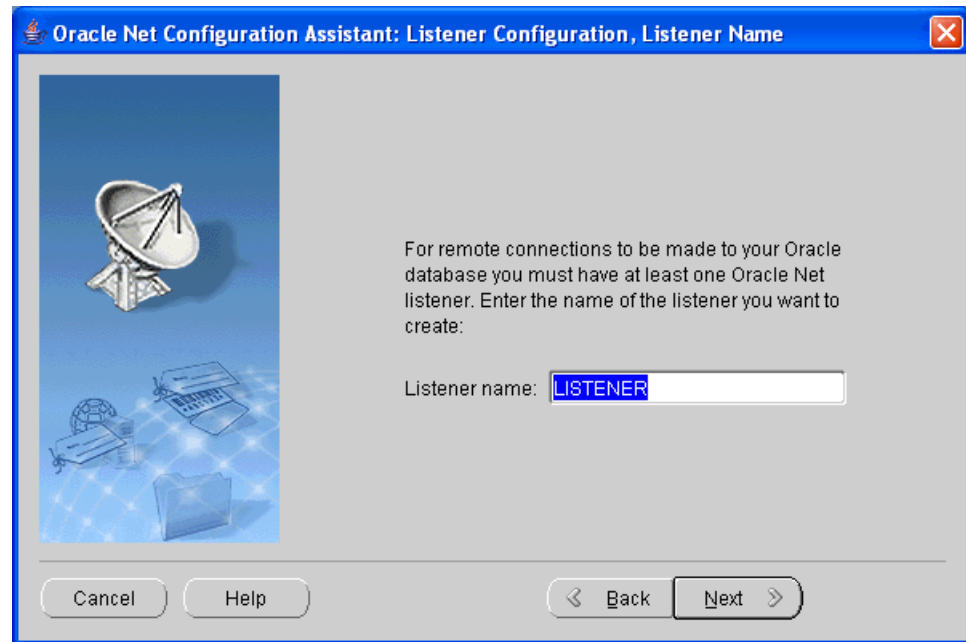
1. Start the Oracle **Net Configuration Assistant** by choosing **Start® All Programs® Oracle - OraDb10g\_home1® Configuration and Migration Tools® Net Configuration Assistant**.
2. In the **Welcome** dialog box, select **Listener configuration** and click **Next**.



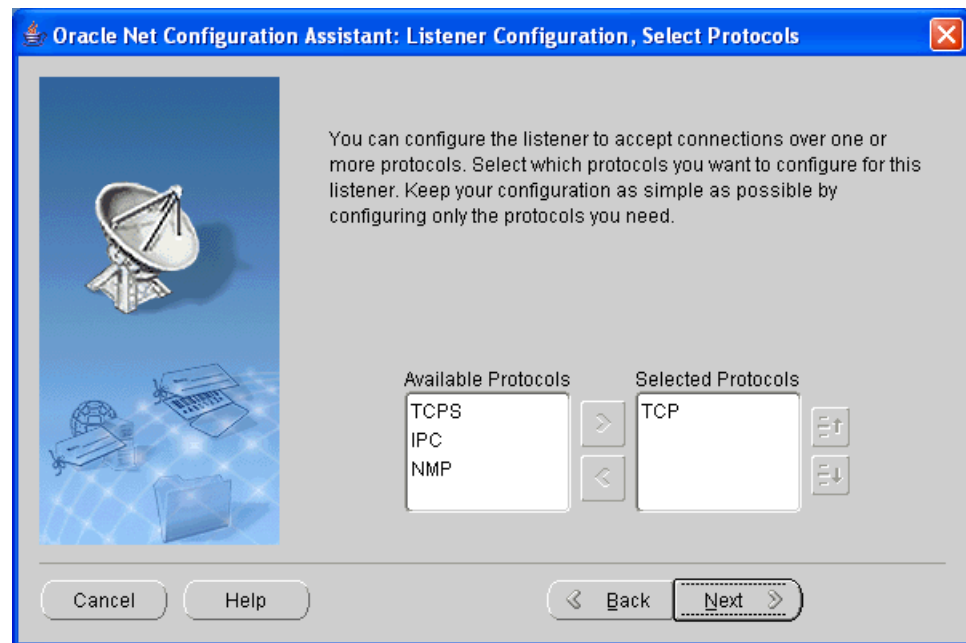
3. In the **Listener Configuration, Listener** dialog box, select **Add** and click **Next**.



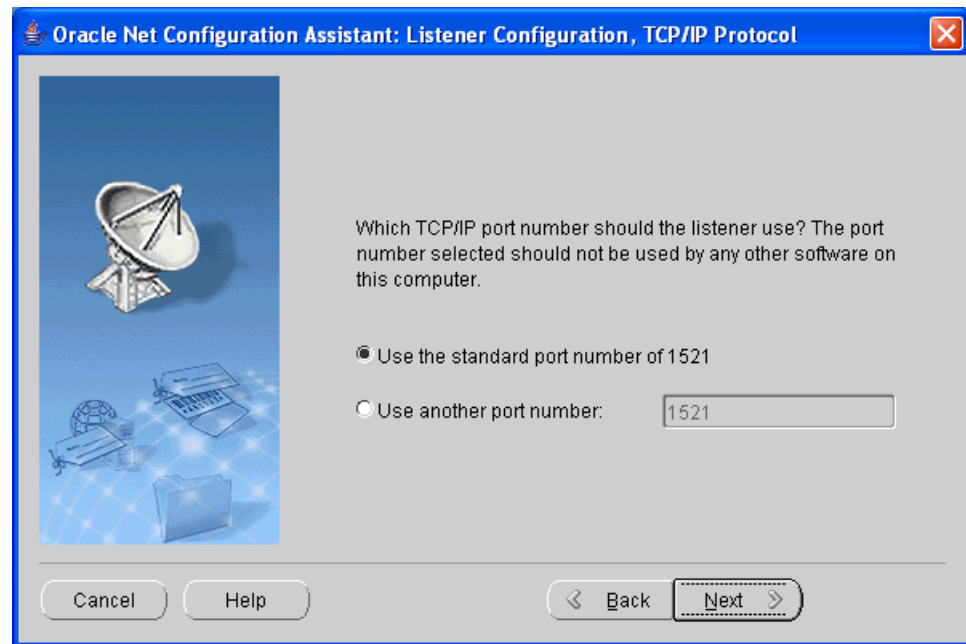
4. In the **Listener Configuration, Listener Name** dialog box, type the listener name in the **Listener name** box. The default is **LISTENER**. Record the value you use. Click **Next**.



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**.



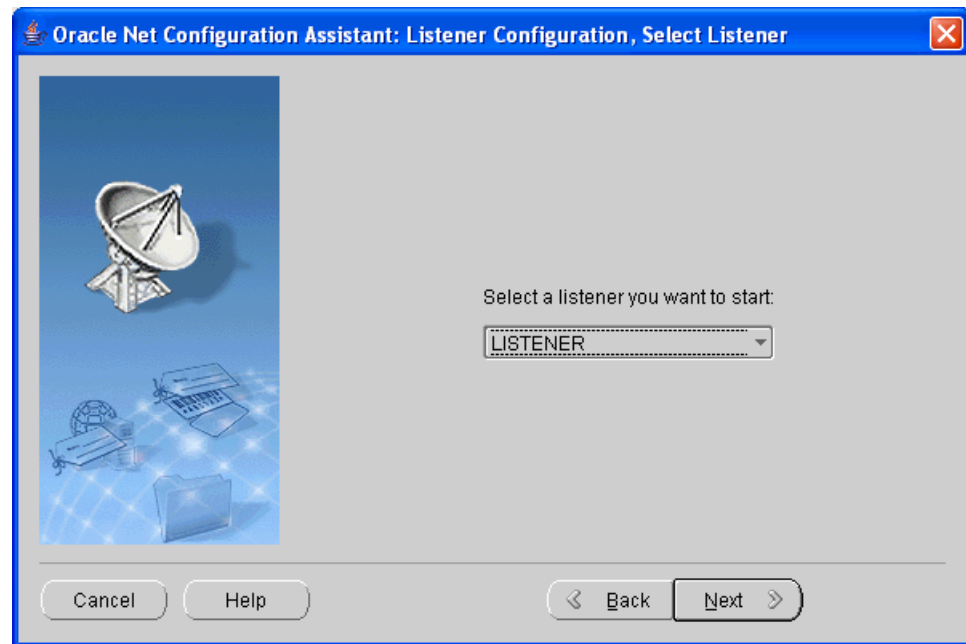
6. Provide the port number used by the listener. The default is **1521**. Record this value; it is needed when installing the corporate server. Click **Next**.



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. In the **Listener Configuration, Select Listener** dialog box, you select the listener you want to start. The listener you just created is selected by default. Starting the listener from this dialog box also installs it as a Windows service. Click **Next**.



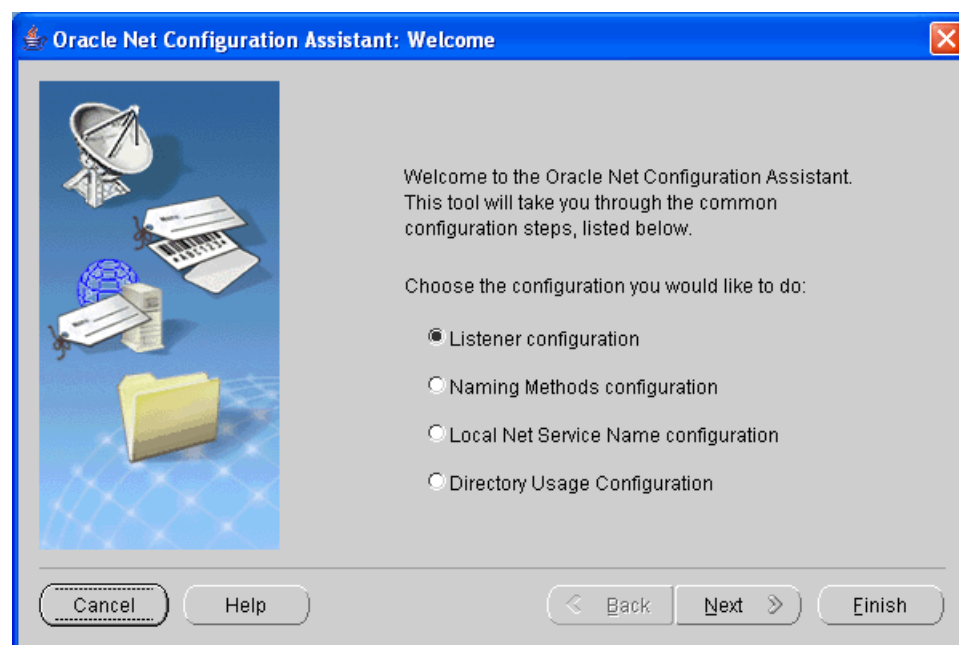
9. The **Listener Configuration Done** dialog box displays the **Listener configuration complete** message. Click **Next**.

**Note**

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



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



## **Activity**

- Activity: *Create a database server*  
Operating system account to use: **oracle**
- Activity: *Create a listener*  
Operating system account to use: **oracle**
- Activity: *Start and stop the listener*  
Operating system account to use: **oracle**

## 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

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

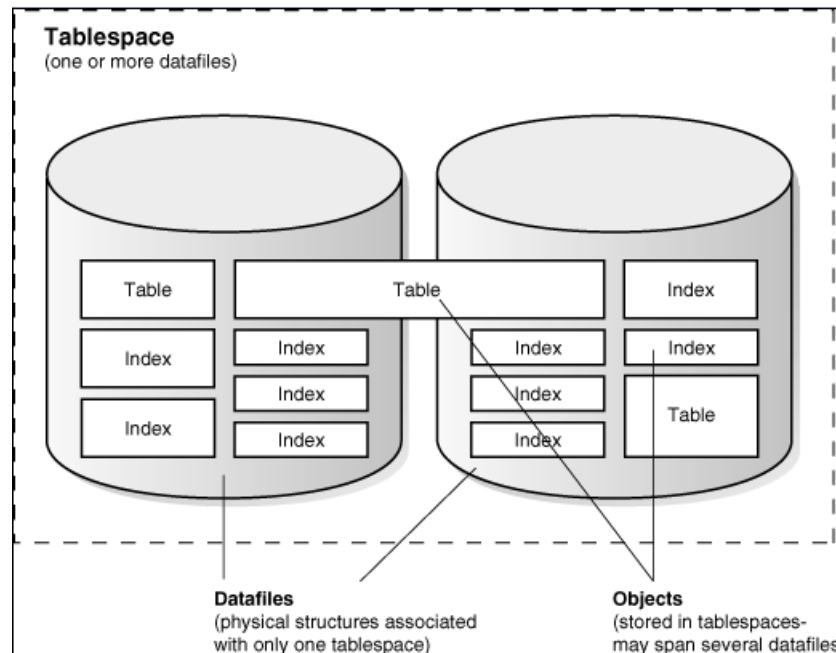
The Oracle Database Configuration Assistant creates the **sys** user and you are prompted to provide a password. The password can be changed at a later date as required with the Oracle tools.

- 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:

Tablespace	Description
<b>SYSTEM</b>	The <b>SYSTEM</b> 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 <b>SYS</b> schema, and can only be accessed by <b>SYS</b> user or other administrative users with the required privilege.
<b>SYSAUX</b>	This is an auxiliary tablespace to the <b>SYSTEM</b> tablespace. Some components and products that, prior to Oracle database 10g, used the <b>SYSTEM</b> tablespace or their own tablespaces now use the <b>SYSAUX</b> tablespace. This reduces the load on the <b>SYSTEM</b> tablespace and reduces maintenance because there are fewer tablespaces to monitor and maintain. Every Oracle database 10g or later must have a <b>SYSAUX</b> tablespace.
<b>TEMP</b>	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.
<b>UNDOTBS</b>	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 <b>SYSTEM</b> .
<b>IDATA</b>	This tablespace stores all of the Teamcenter metadata. It is the most actively accessed tablespace and receives the most growth.
<b>INDX</b>	The database administrator has the option of separating the indexes from the <b>IDATA</b> tablespace thus reducing the load created by <b>IDATA</b> .
<b>ILOG</b>	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**

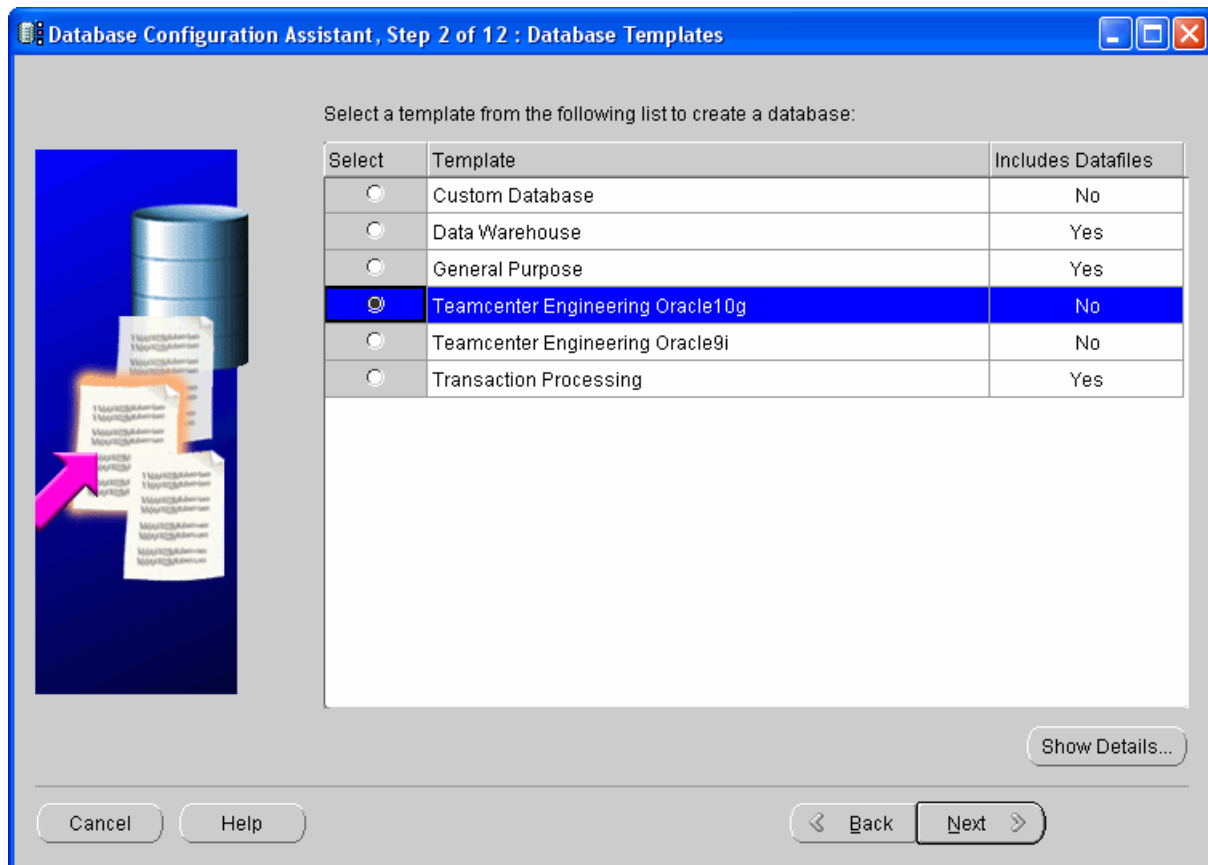
Create a multipurpose database manually using Oracle DBCA and then use Teamcenter Environment Manager to automatically configure the database with the Oracle user accounts and required tablespaces.

An advantage to creating a multipurpose database instance is that you determine the settings, such as memory usage and indexing services. For example, you can create a multipurpose database that allows multiple users per Oracle SID.

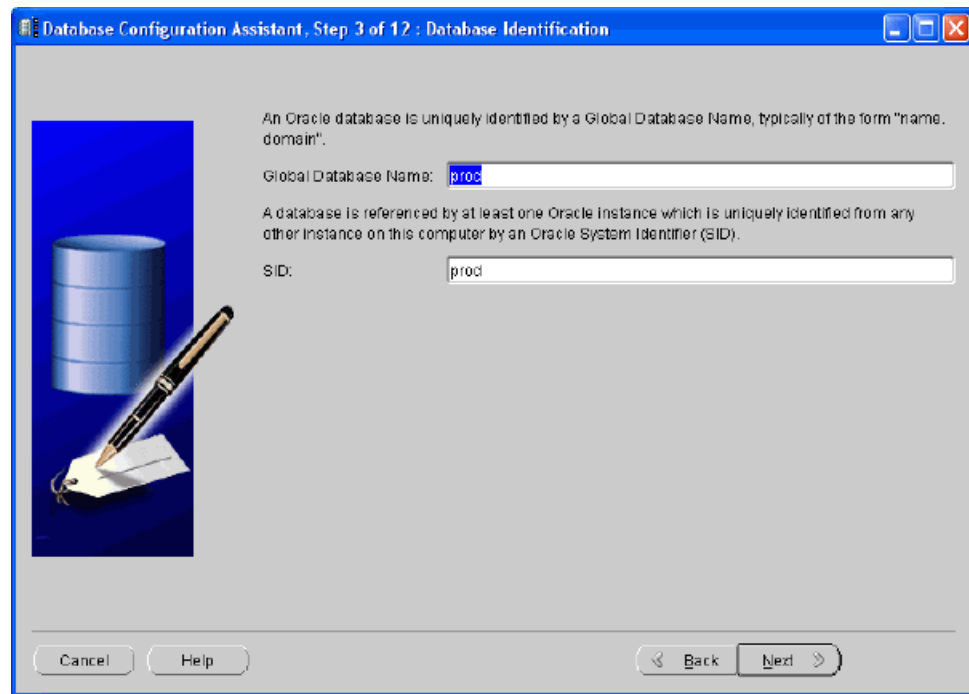
You should record the Oracle user/password associated with this SID and the absolute path to the tablespace directory on the database server host. This information is needed when running Teamcenter Environment Manager to configure the multipurpose database.

## 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 directory:  
`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** and click **Next**.

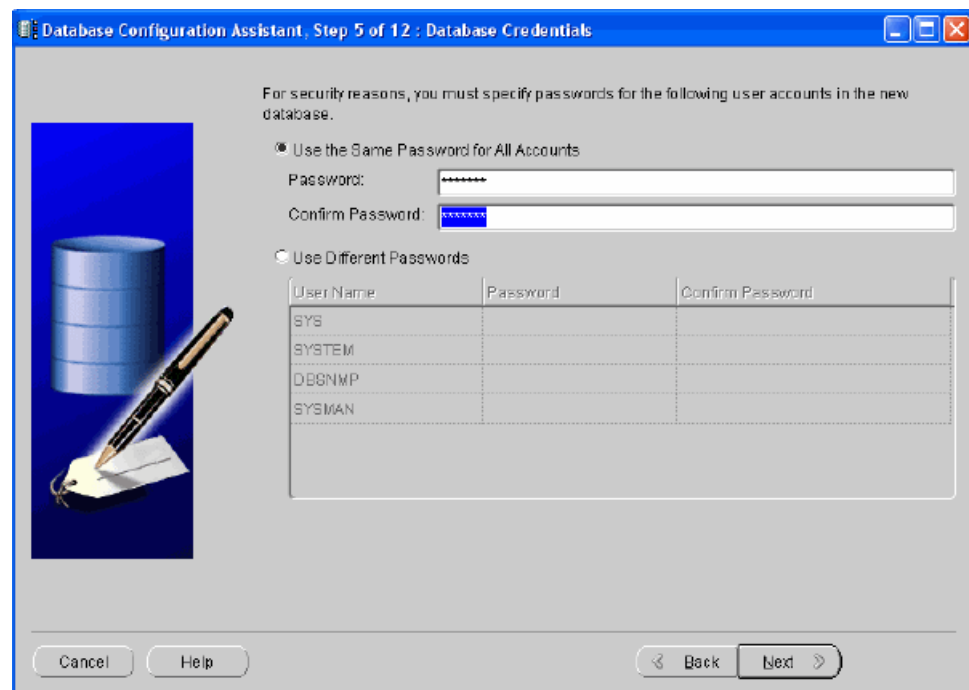


7. In the **Database Identification** dialog box, for the **Global Database Name** and **SID** and then click **Next**.



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.

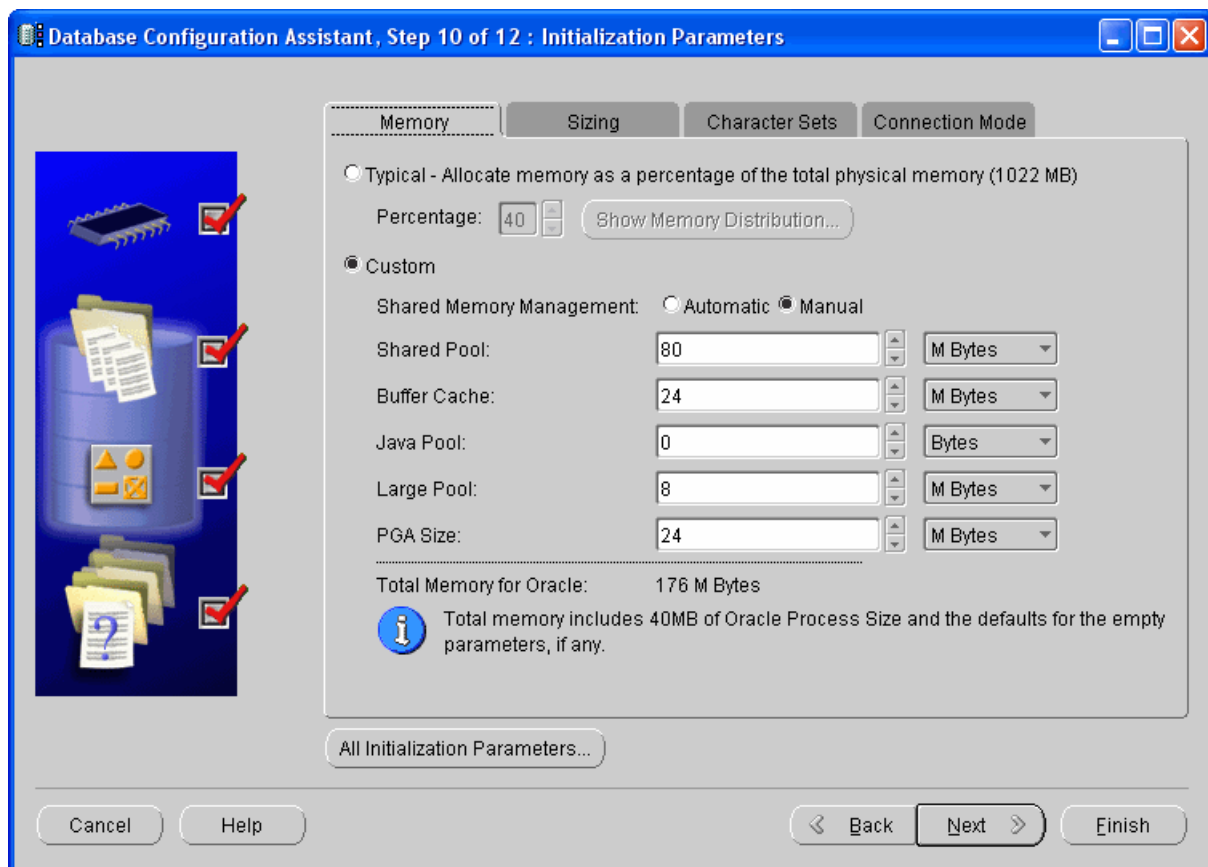
Record the passwords you define. You need the password for the **infodba** Oracle user to install Teamcenter.



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. Accept the defaults in the **Initialization Parameters** dialog box.

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.

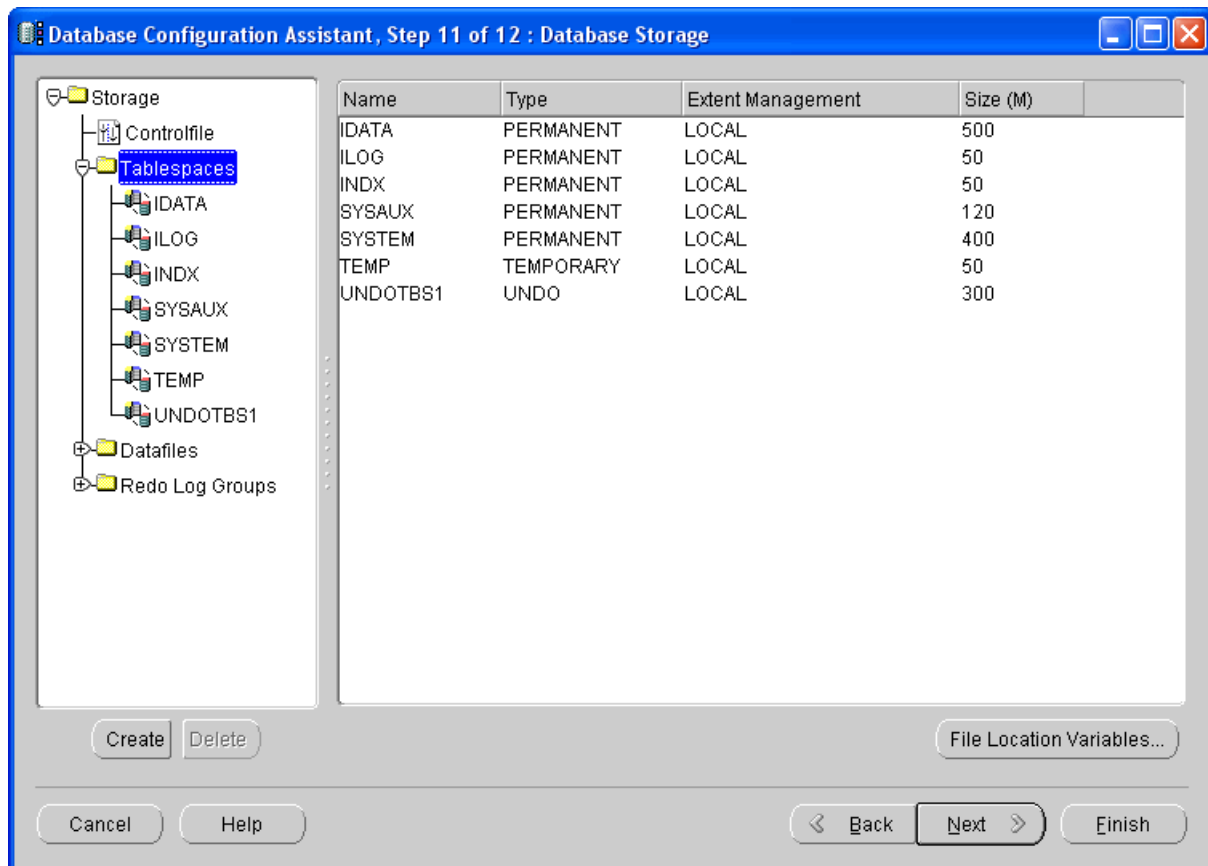
If you are separating tablespaces or modifying their initial sizes, click **Next**.



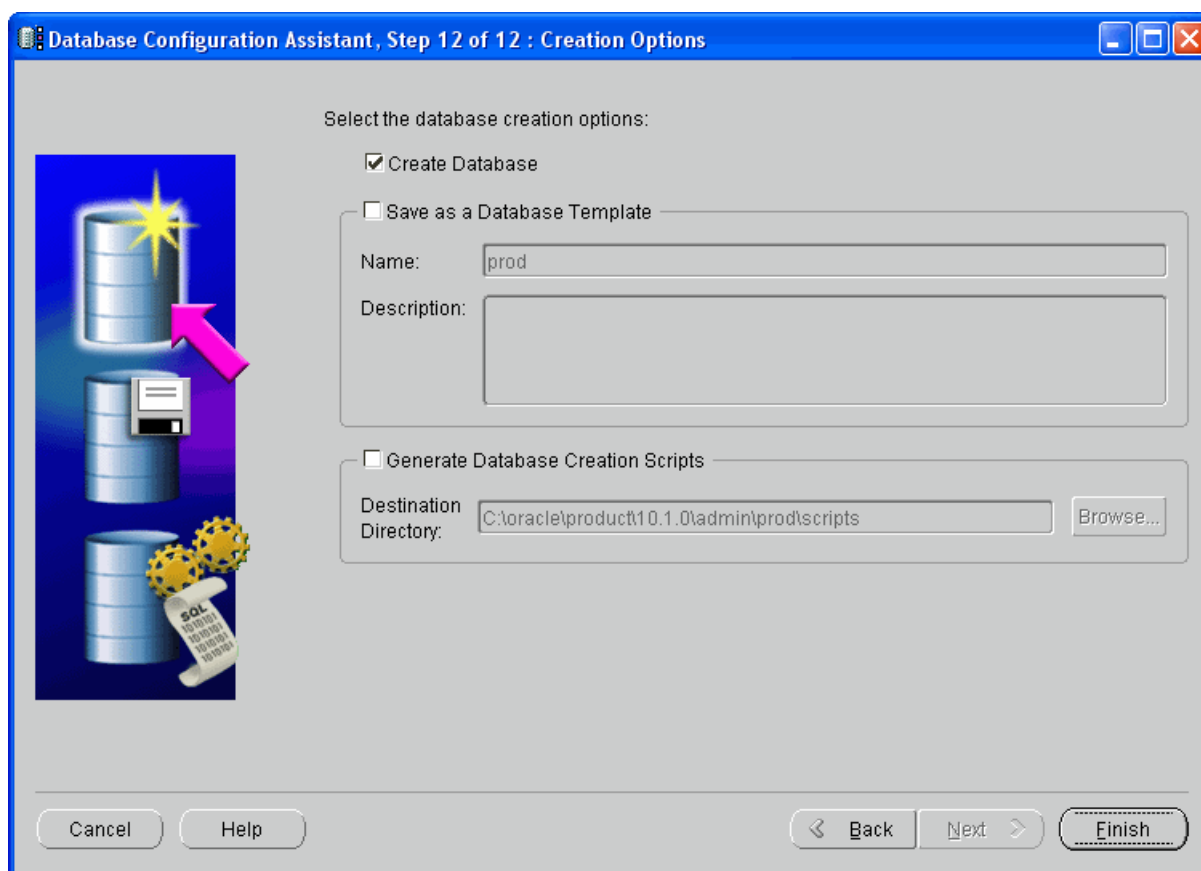
15. In the **Database Storage** dialog box, define the path and initial size of each tablespace, control file, and redo log.

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

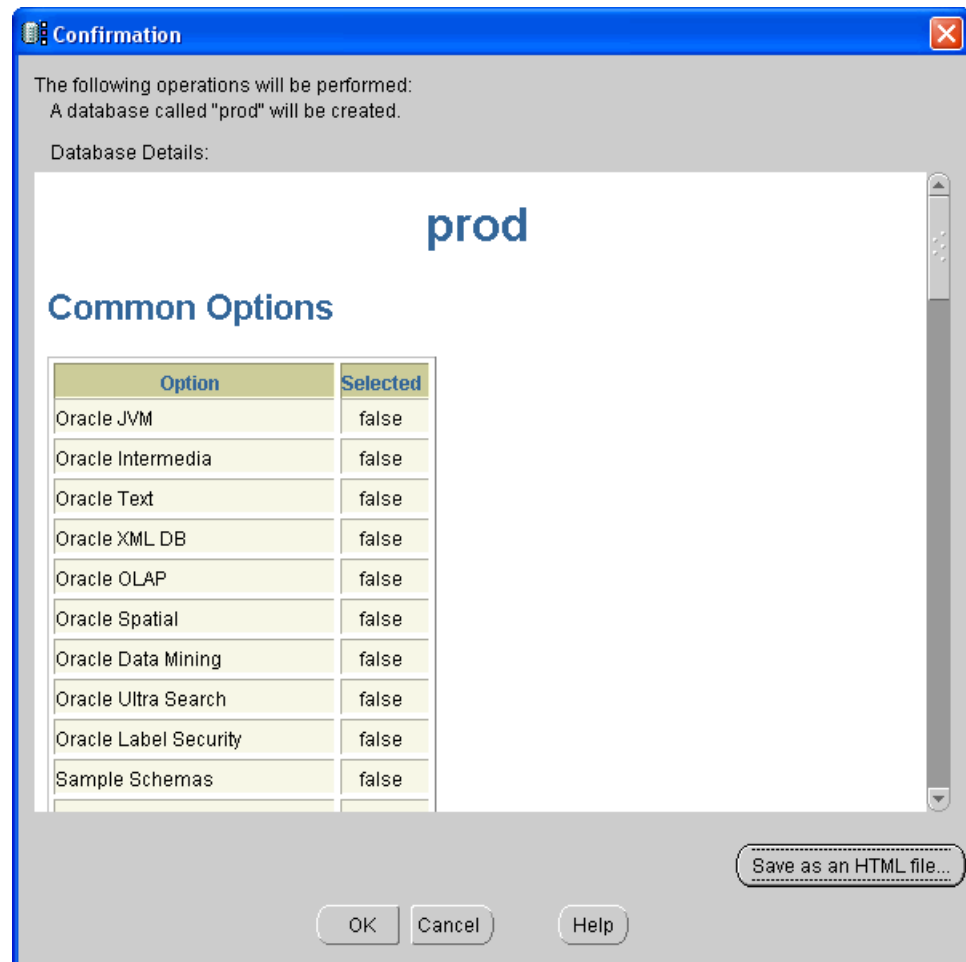




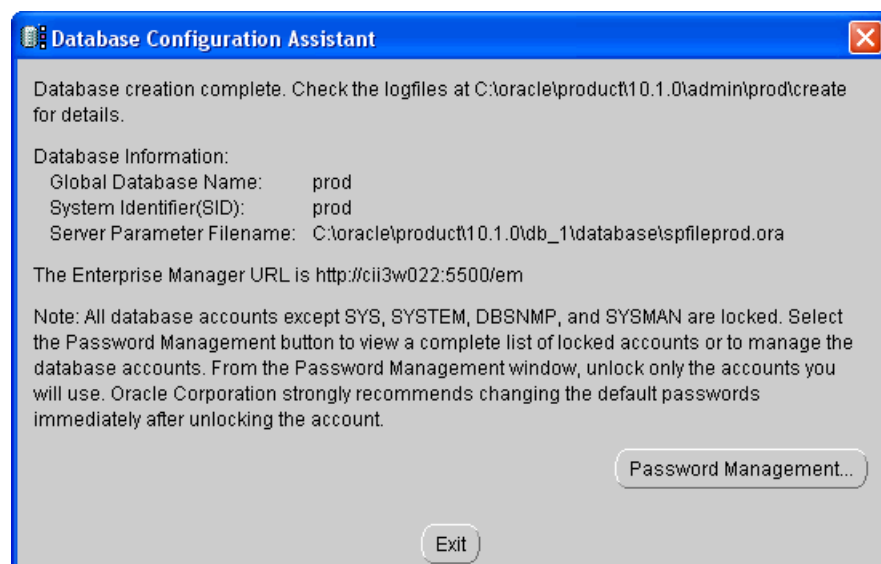
16. In the **Creation Options** dialog box, select **Create Database** and click **Finish**.



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\_BASE\admin\SID\create* directory.

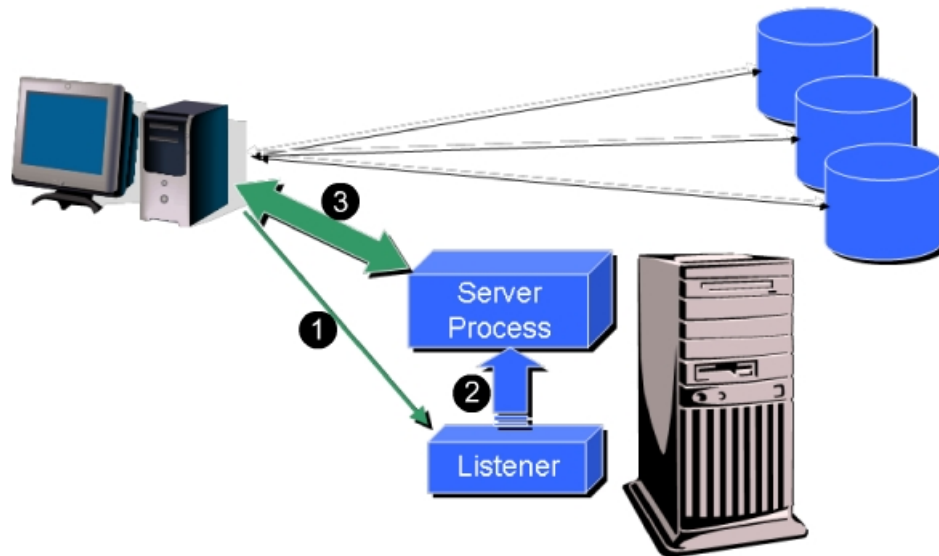
**Note**

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

In order 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** panel.
- **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 up 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 sqlplus 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.

## Activity

- Activity: *Create a database*  
Operating system account to use: **oracle**
- Activity: *Start and stop a database instance*  
Operating system account to use: **oracle**

## **Review questions**

Answer these review questions. Select all answers that apply.

1. The Oracle \_\_\_\_\_ monitors remote connection requests made of the database.
  - A. Database server
  - B. Listener
  - C. Universal Install
2. \_\_\_\_\_ is the protocol used for communication between the database server, the listener, and the database.
  - A. FTP
  - B. HTTP
  - C. IIOP
  - D. 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.
  - A. True
  - B. False
4. A \_\_\_\_\_ is a logical structure used to store data. A table corresponds to a class of items.
  - A. Bin
  - B. Data file
  - C. Row
  - D. Table

**Answers to review questions**

1. The Oracle \_\_\_\_\_ monitors remote connection requests made of the database.  
A. Database server  
**Correct:** B. Listener  
C. Universal Install
2. \_\_\_\_\_ is the protocol used for communication between the database server, the listener, and the database.  
A. FTP  
B. HTTP  
C. IIOP  
**Correct:** D. 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.  
**Correct:** A. True  
B. False
4. A \_\_\_\_\_ is a logical structure used store data. A table corresponds to a class of items.  
A. Bin  
B. Data file  
C. Row  
**Correct:** D. Table

## **Summary**

Topics learned in this lesson:

1. The Oracle architecture used to support Teamcenter
2. Oracle database server
3. Oracle listener
4. Oracle database
5. Starting and stopping Oracle processes

Answer the review questions for this lesson.





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## Lesson

# 4 *MS SQL Server 2005 server and database*

### Purpose

The purpose of this lesson is to provide 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 *Database server installation* chapter of the [\*Installation on Windows Servers Guide\*](#)

## **MS SQL 2005 Server overview**

The resource tier of both the two-tier and the four-tier architectures is used to store 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:

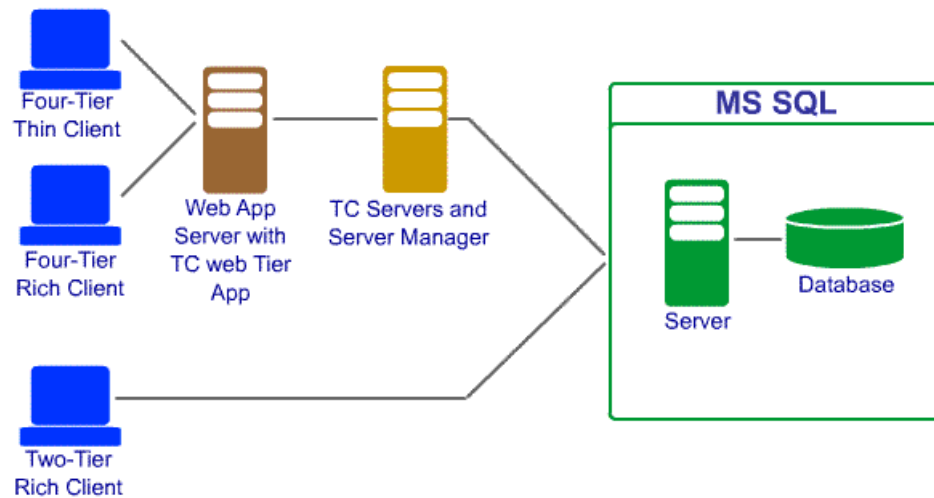
<http://support.ugs.com>

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

## MS SQL 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.



## **MS SQL installation overview**

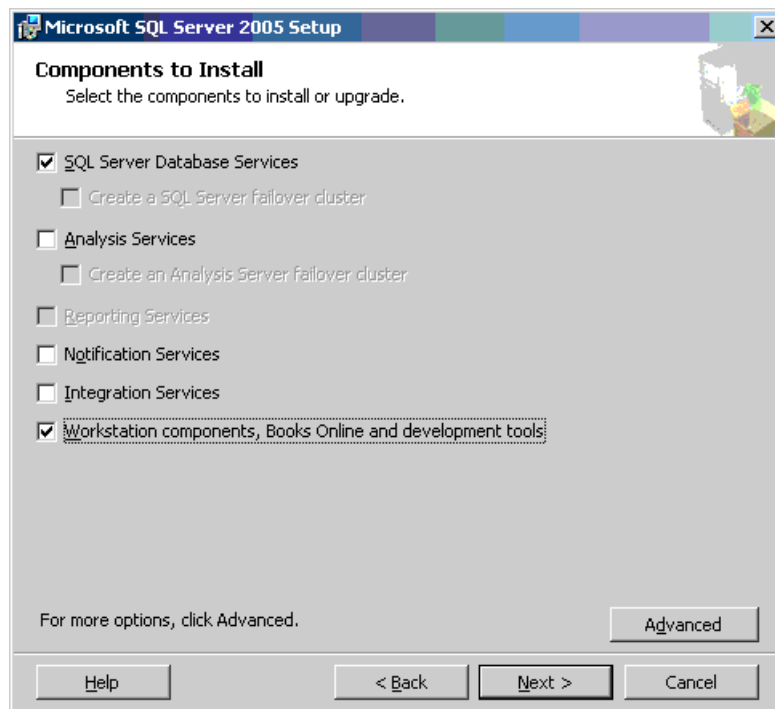
The overall process for installing an MS SQL server and database for use with Teamcenter is:

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

To install MS SQL Server:

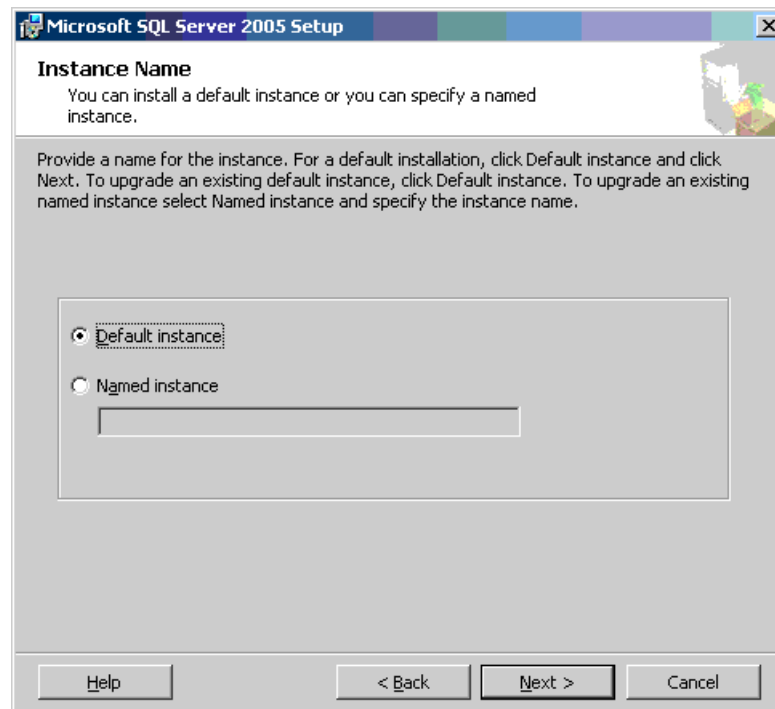
1. Log on to an account with system administrator privileges.
2. Launch the Microsoft SQL Server installation wizard and proceed through the dialog boxes regarding licensing, prerequisites, and registration information.
3. In the **Components to Install** dialog box, select the following components: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



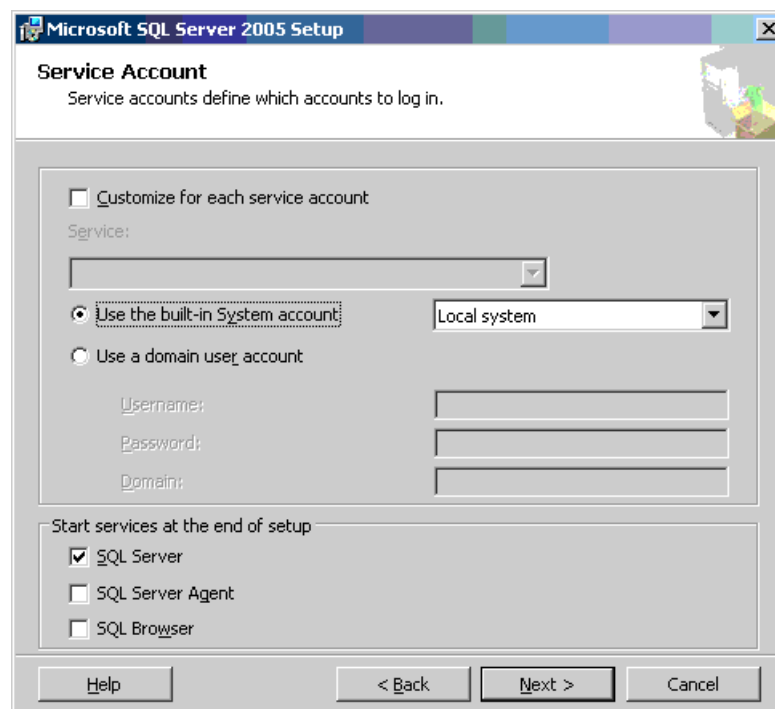
4. In the **Instance Name** dialog box, choose an instance type. Teamcenter supports both **Default Instance** and **Named Instance**.

### Note

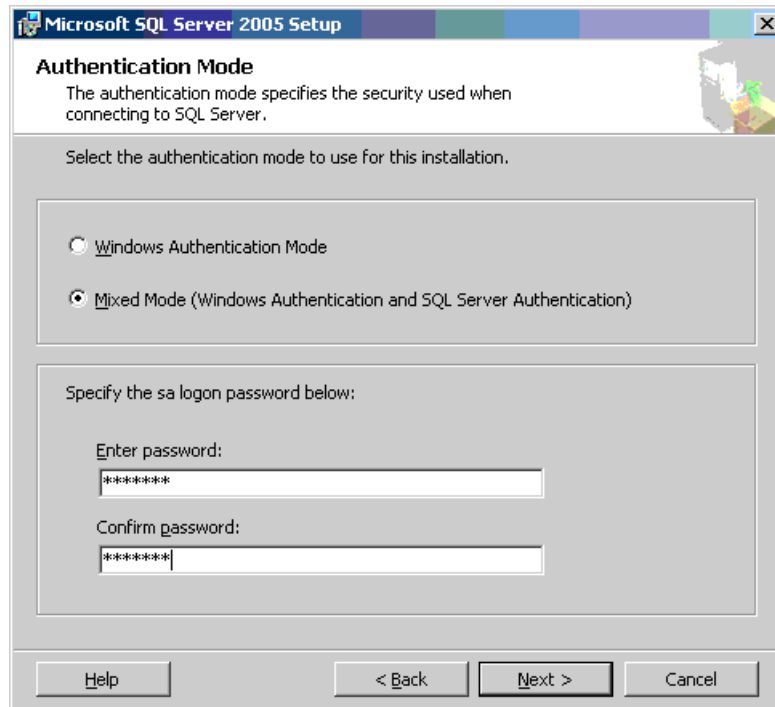
If you choose **Named Instance**, make sure you start the **SQL Browser** service before connecting to the database. If this service is not enabled, you can change these settings using the **SQL Server Configuration Manager** after installation is complete.



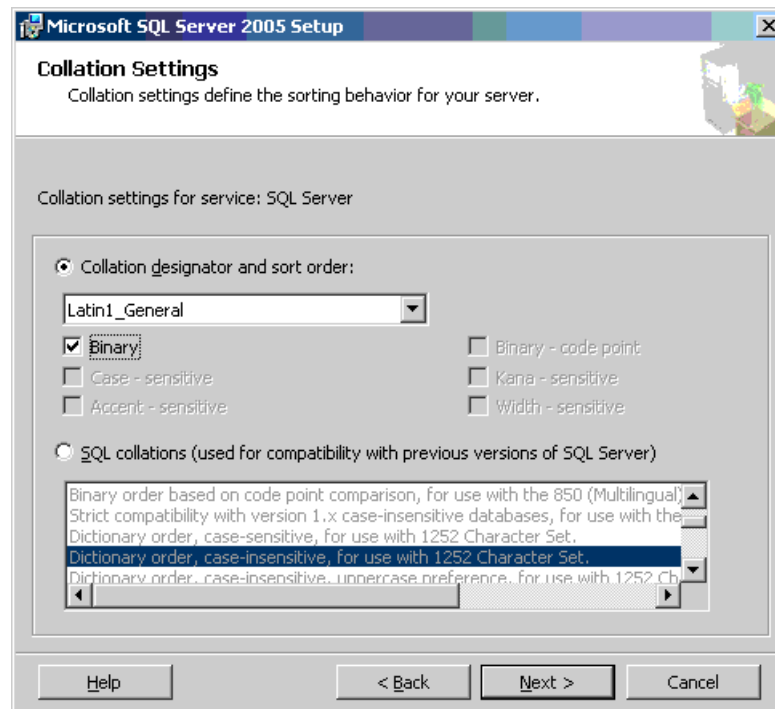
5. In the **Service Account** dialog box, enter the following settings:
- Make sure the **Customize for each service account** check box is cleared.
  - Choose **Use the built-in System account** and select **Local system** in the associated list.
  - Under **Start services at the end of setup**, select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



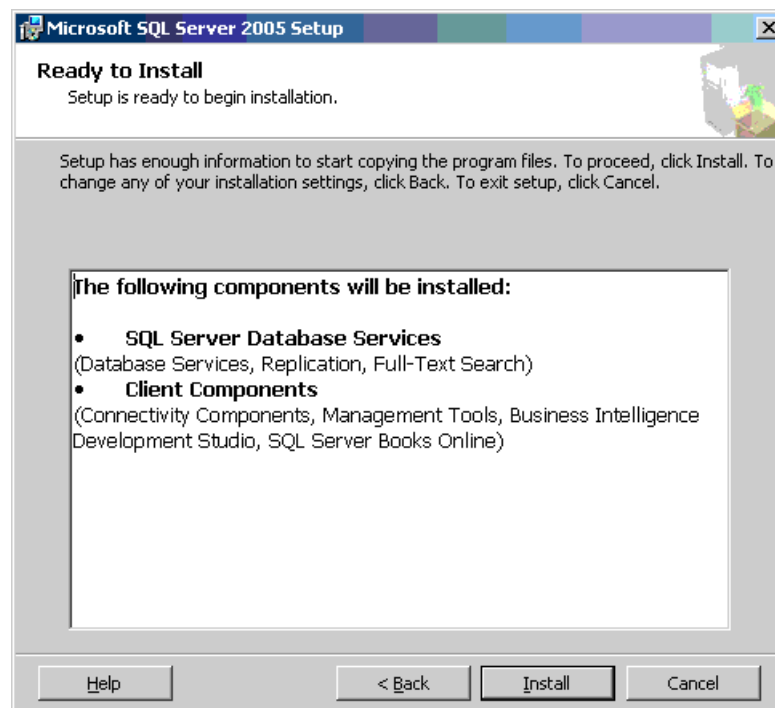
6. In the **Authentication Mode** dialog box, choose **Mixed Mode** and define a password for the SQL Server **sa** logon account.



7. In the **Collation Settings** dialog box, enter the following settings:
- Choose **Collation designator and sort order**.
  - Select **Latin1\_General** from the list.
  - Select **Binary**.

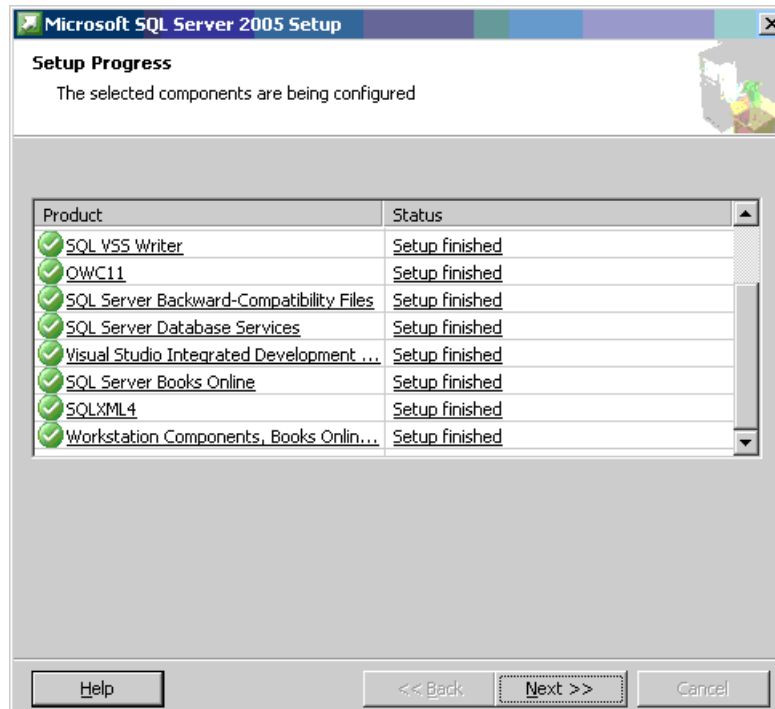


8. In the **Error and Usage Report Settings** dialog box, select the options you wish to use. None of these are used by Teamcenter.
9. On the **Ready to Install** dialog box, review your selections and click **Install**.



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**.

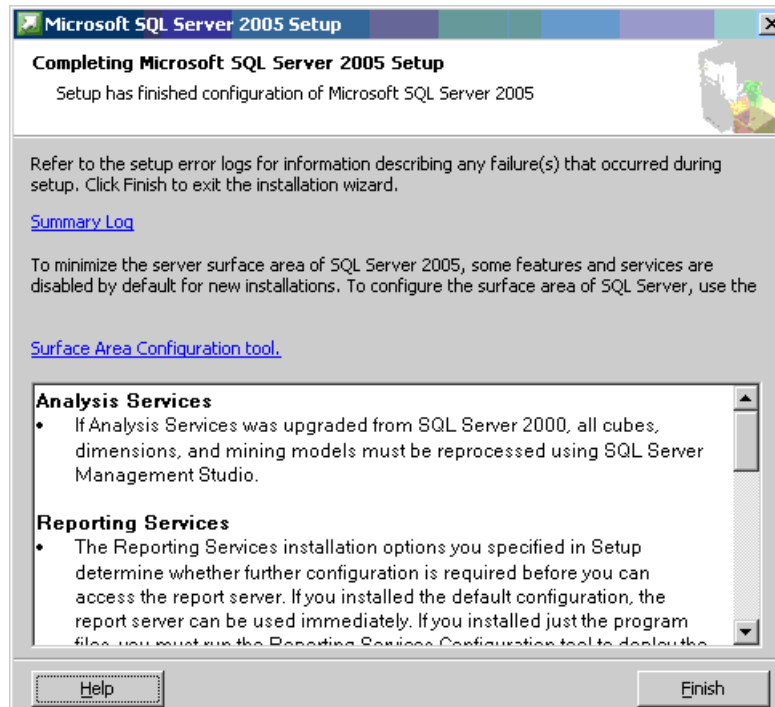




11. The **Completing Microsoft SQL Server 2005 Setup** dialog box provides:

- 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 a 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.

This is covered in the *Creating a corporate server* lesson.

## Install an MS SQL database using SQL Server Management Studio

To install an MS SQL database using SQL Server Management Studio:

1. Make sure you have access to the Teamcenter software distribution image.
2. Launch the 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\ldb\_scripts\mssql\2005** directory in the Teamcenter 2007 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**

- Activity: *Install MS SQL Server*  
Operating system account to use: **oracle**

## Review Questions

Answer these review questions. Pick all answers that apply.

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**.
  - A. True
  - B. False
2. You can create and configure an MS SQL database for use with Teamcenter automatically using \_\_\_\_\_.
  - A. Database Configuration Assistant
  - B. SQL Server Management Studio
  - C. Teamcenter Environment Manager
  - D. 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 2007 software distribution image.
  - A. **configure\_database.sql**
  - B. **connect\_database.sql**
  - C. **create\_database.sql**
  - D. **install\_database.sql**

## **Answers to 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**.
  - **Correct:** A. True
  - B. False
2. You can create and configure an MS SQL database for use with Teamcenter automatically using \_\_\_\_\_.
  - A. Database Configuration Assistant
  - B. SQL Server Management Studio
  - correct:** C. Teamcenter Environment Manager
  - D. 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 2007 software distribution image.
  - A. **configure\_database.sql**
  - B. **connect\_database.sql**
  - Correct:** C. **create\_database.sql**
  - D. **install\_database.sql**

## Summary

Topics learned in this lesson:

1. How to install MS SQL 2005 Server.
2. How to manually configure an MS SQL 2005 Server database.
3. How to use TEM to configure an MS SQL 2005 Server database.

Answer the review questions for this lesson.



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## Lesson

# 5 *Creating a corporate server*

### Purpose

The purpose of this lesson is to explain the function of the Teamcenter corporate server and how to create one.

### Objectives

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

- 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 what a Teamcenter configuration is.
- 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](#)

## 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.

- In the two-tier architecture, it contains the data model and shared binary executables that are copied to each two-tier rich client during client installation.
- In the four-tier architecture, it corresponds to the Enterprise tier.

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)
- Server manager (four-tier only)
- License server (or a setting that points to a license server not on the corporate server)

## **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** is the application root directory. It contains the Teamcenter shared 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.

## Corporate, application, and data servers

The **TC\_ROOT** and **TC\_DATA** directories can be located on one machine or on multiple machines. Where you locate these components depends on hardware distribution and load balancing.

- **Corporate server**

Contains both the **TC\_ROOT** and the **TC\_DATA** directories and serves both application files and the data model.

This server is required and must be installed first. There is only one corporate server configuration per Teamcenter site.

- **Application server**

Contains the **TC\_ROOT** directory and serves the application files.

This type of server is optional and can be installed only after corporate server is installed.

- **Data server**

Contains the **TC\_DATA** directory and serves the data model.

This type of server is optional and can only be installed after corporate server has been installed.

## File Management

Teamcenter uses two systems for file management:

- Teamcenter File Services (TCFS)
  - Used by the Teamcenter 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.
  - Manages file access for NX 4.0.0.25 and earlier and Teamcenter Visualization 5.0 or earlier when you use these products with 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 version 4.0.2.2 and later and Teamcenter for 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

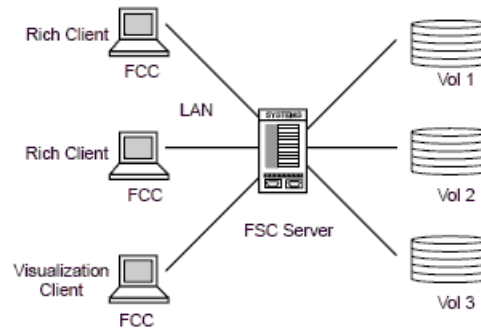
FMS provides file caching on both file servers and rich clients. Both of these components are required.

- **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:

- Running a server manager
- Containing a volume

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 Visualization

## **FCC installation**

### **Rich client**

The rich client requires an FCC, and the Over-the-Web Installer automatically installs an FCC 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, Teamcenter for lifecycle visualization, Visualization 6.0 and NX 4.0.1 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**

Visualization 6.0 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.

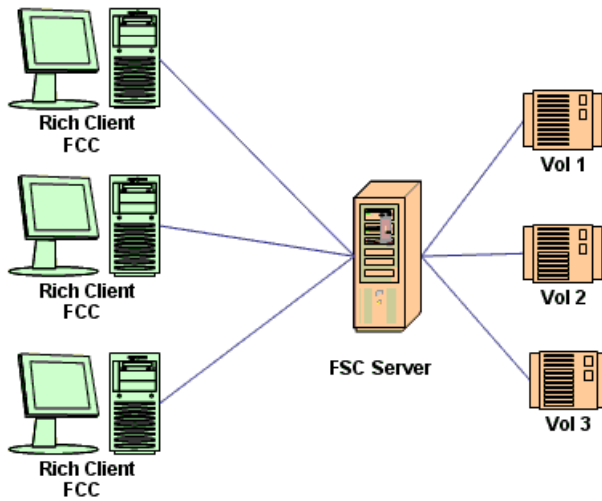
### **Built-in caching infrastructure**

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

### **Deployment flexibility**

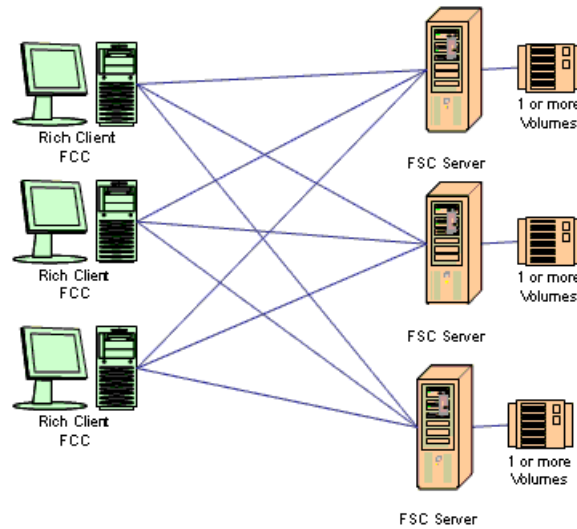
FMS components support a multitude of deployment configurations. This enables administrators to geographically locate volumes and shared FSC servers close to client workstations, providing the capability to tune the system for optimal file transfer performance.

### **FMS example: Single server**



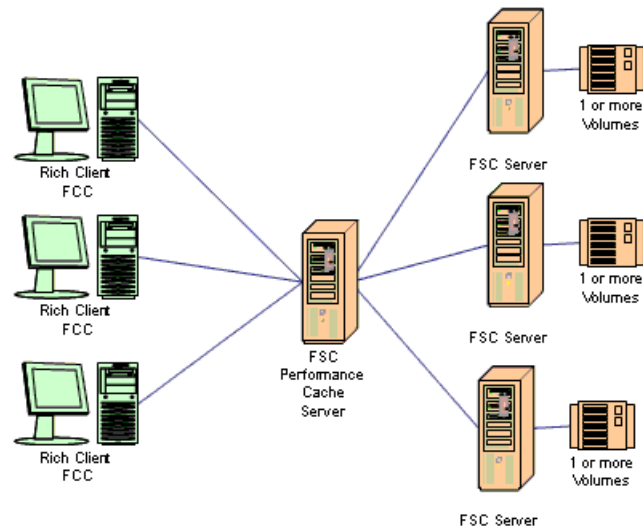
This example shows a single server. All clients connect to this server. The server manages all volumes.

## **FMS example: Multiple servers**

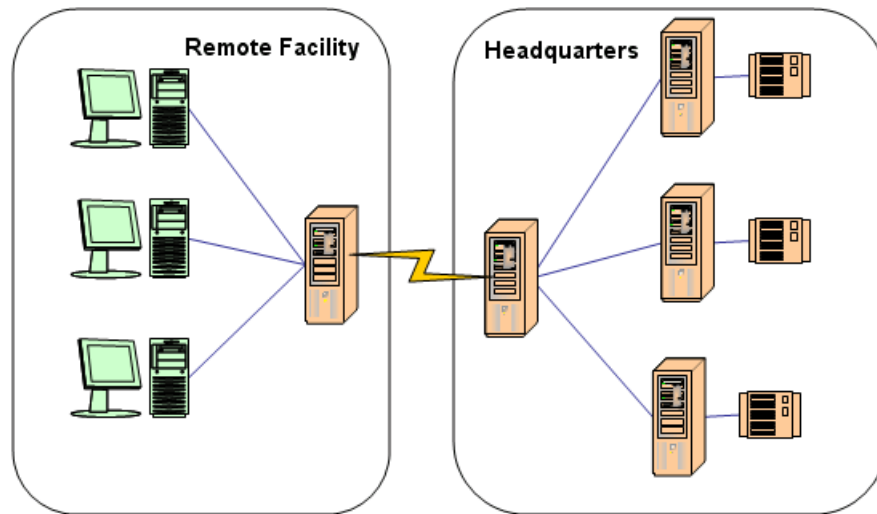


This example shows multiple servers. Each server serves just one volume. All clients can connect to all servers. To which server that a client connects depends on which volume needs to reach.

## **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 that 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
<b>Mode-1</b>	<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>
<b>Mode-2</b>	<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> <p style="text-align: center;"><b>Warning</b></p> <p style="text-align: center;">This mode is a developer level of security and should not be used as the default mode for an entire site.</p>
<b>Mode-3</b>	<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 <b>444</b> and the application reads it through NFS. When the application finishes reading the file, it changes the file permissions to <b>400</b>. If it is proper to update the file in the volume, a new file is created. Permissions on this new file are set to <b>666</b> until the application completes writing the new file. The permissions are then set to <b>400</b>.</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.

<b>Windows</b>	<b>Accessor</b>	<b>Read</b>	<b>Change</b>
Volume	Everyone	(RX) (RX)	
	<b>infodba</b>		(RWXC) (RWXC)
Volume/group	Everyone	(RX) (RX)	
	<b>infodba</b>		(RWXC) (RWXC)
Volume/group/*.prt	<b>infodba</b>	Special Access (R)	

## FLEX license manager

The Teamcenter installation program provides two FLEX license configuration options for Teamcenter servers:

- FLEX license server

Choose this option to enable the Teamcenter server host to provide license authorizations to nodes on the network running Teamcenter applications software.

The license server configuration requires the license file and a FLEX service process (**lmgrd**).

- FLEX license client

Choose this option to enable the Teamcenter server host to receive license authorizations from another server in the network. No local license file is needed.

The applications software requests licenses from the server. The client installation requires minimum configuration. No license file is required, only the **UGII\_LICENSE\_FILE** environment variable. The Teamcenter installation program sets this environment variable to point to the license server.

## **FLEX performance**

The license server is initialized by setting the **UGII\_LICENSE\_FILE** environment variable as follows:

*port@host.*

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

```
UGII_LICENSE_FILE=27000@ahsun014
```

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

- When you use commas, FLEX 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.
- If you use colons or semicolons, FLEX 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:

```
UGII_LICENSE_FILE=27000@ahsun014,27000@osnsun3,27000@vpdmsgi1
```

## Solutions

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

The solutions and features you select determine the functionality that is installed on the corporate server.

The available solutions are:

- **Business Modeler IDE**
  - **Corporate Server**
  - **EDA Standalone Client**
  - **Flex Licensing Server**
  - **Log Manager Query Service**
  - **Multi-Site Collaboration Proxy Server**
  - **Rich Client 2–tier**
  - **Rich Client 4–tier**
  - **Translation Management (TSTK)**
  - **Volume Server**
- 
- **Business Modeler IDE**  
Installs the Business Modeler IDE development environment.
  - **Corporate Server**  
Installs the corporate server and allows you to create and populate a database.
  - **EDA Standalone Client**  
Installs the EDA stand-alone client and related integrations (Cadence, Markup, and Mentor).
  - **Flex Licensing Server**  
Installs a FLEX licence server process.
  - **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.
  - **Multi-Site Collaboration Proxy Server**  
Creates a Multi-Site Proxy configuration where the system serves as a relay outside a firewall between internal and external sites.
  - **Rich Client 2–tier**  
Installs the two-tier rich client.
  - **Rich Client 4–tier**  
Installs the four-tier rich client.
  - **Translation Management (TSTK)**  
Installs Translation Management (TSTK) that functions as an independent server that translates files from one format to another.
  - **Volume Server**  
Installs the service that support a stand-alone volume server.

## **Features**

Commonly used features include:

- **Teamcenter Foundation**
- **FMS Server Cache**
- **Teamcenter File Services**
- **NX UG Integration**
- **J2EE Based Server Manager**
- **.NET Based Server Manager**
- **Multi-Site Collaboration ODS Service**
- **Multi-Site Collaboration IDSM Service**
- **Database Daemons**
- **Teamcenter Translation Server**
- **Flex License Server**
- **Clearance DB**
- **Full Text Search Engine**
- **Online Help**
- **Wire Harness Configuration**
- **Sample files**
- **Teamcenter Secirity Services**
- **Comprehensive Manufacturing Types**
- **QPL for Repeatable Digital Validation**

Component	Description
<b>Teamcenter Foundation</b>	<p>Installs the complete Teamcenter application root directory (<i>TC_ROOT</i>), including the Teamcenter server process (<b>tcserver</b>), 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>
<b>FMS Server Cache</b>	<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>
<b>Teamcenter File Server</b>	<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 Visualization products.</p> <p>When you also install FMS, the operating system user running TCFS must be the same operating system user running FMS.</p>
<b>NX UG Integration</b>	<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>

Component	Description
<b>J2EE Based Server Manager</b>	<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>
<b>.NET Based Server Manager</b>	<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>
<b>Multi-Site Collaboration ODS and IDSM Services</b>	<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>
<b>Database Daemons</b>	<p>Installs optional database support services:</p> <ul style="list-style-type: none"> <li> <b>Action Manager service</b> <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 Teamcenter Subscription Monitor application.</p> </li> <li> <b>Subscription Manager service</b> <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 Teamcenter Subscription Monitor application.</p> </li> <li> <b>Task Monitor service</b> <p>Service that checks user inboxes for tasks that have passed due dates, notifies the delegated recipients, and marks the task as late.</p> </li> </ul>



Component	Description
	<p>Installing the Task Monitor service is required to enable notification of late tasks.</p> <ul style="list-style-type: none"> <li>Tessellation service</li> </ul> <p>Specifies that you want to install the service that tessellates <b>UGMASTER</b> and <b>UGALTREP</b> datasets to the JT (Direct Model) dataset and attaches the JT dataset back to the item revision and <b>UGMASTER</b> and <b>UGALTREP</b> dataset.</p> <p>Installing the Tessellation 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 <b>DirectModel</b> datasets are updated as the NX files are released.</p>
Teamcenter Translation Server	<p>Installs Teamcenter Translation Server (TTS), an integration of the Translation Solution Toolkit (TSTK) and Teamcenter.</p> <p>TTS and TSTK enable My Teamcenter users to translate CAD data files that are managed by Teamcenter to JT or CGM file format for viewing in Teamcenter Visualization.</p> <p>Prerequisites:</p> <ul style="list-style-type: none"> <li>The Translation Solution Toolkit must be installed, configured, and operational.</li> </ul> <p>For information, see the <i>Translation Solution Toolkit</i> manual available on the Teamcenter documentation CD-ROM.</p> <ul style="list-style-type: none"> <li>Appropriate translators must be installed, configured, and verified as operational using the Translation Solution Toolkit test client.</li> </ul> <p>For information, see the <i>Translation Solution Toolkit</i> manual available on the Teamcenter documentation CD-ROM.</p> <p>Required information:</p> <ul style="list-style-type: none"> <li>A name of the Teamcenter user that logs on for TTS services (the <i>ETS proxy user</i>)</li> </ul> <p>It is recommended that the TTS proxy user not be the same as the Teamcenter administrative user as the proxy user requires a unique access rule.</p>

<b>Component</b>	<b>Description</b>
<b>Flex License Server</b>	<p>Configures the local host to provide NX FLEXlm license authorizations to nodes on the network running Teamcenter applications software.</p> <p>Prerequisites:</p> <ul style="list-style-type: none"> <li>• The NX FLEXlm service process (<b>lmgrd</b>) must be installed on the local host.</li> <li>• The Teamcenter license file must be installed on the local host.</li> </ul> <p>If you do not choose this option, Teamcenter Environment Manager configures the local host as a NX FLEXlm client, receiving Teamcenter license authorizations from another server in the network.</p>
<b>Clearance DB</b>	<p>Installs the clearance database server. Installing this server is required to enable users to perform clearance analysis in the rich client DesignContext, Product Structure Editor, and Collaboration Context applications. A batch process performs a clearance analysis on an assembly and Teamcenter stores the results in the clearance database.</p> <p>This option creates the <b>clearanceDB</b> directory in the Teamcenter root installation directory and sets the <b>CLR_ROOT</b> environment variable.</p>
<b>Full Text Search Engine</b>	<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>
<b>Online Help</b>	<p>Installs the Online Help Library files on the local host:</p> <ul style="list-style-type: none"> <li>• To be directly accessed by rich clients.</li> <li>• To be accessed by the optional administrative rich client installed on this server.</li> </ul> <p>This component is optional. You can install the online help individually; you need not install any other components.</p>
<b>Wire Harness Configuration</b>	<p>Installs Teamcenter schema support for wire harnesses.</p>
<b>Sample files</b>	<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
<b>Teamcenter Security Services</b>	<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"> <li>• Application ID for this instance of Teamcenter in the Security Services application registry.</li> <li>• Complete URL of the Security Services Login Service Web application.</li> <li>• Complete URL of the Security Services Identity Service Web application.</li> </ul>
<b>Comprehensive Manufacturing Types</b>	<p>Installs additional data types for Teamcenter Manufacturing.</p>
<b>QPL for Repeatabe Digital Validation</b>	<p>Installs and configures QPL files used in conjunction with the DesignContext application.</p> <p>For QPL-based DesignContext, installing Repeatabe 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"> <li>• The path to the location of an installed NX application.</li> <li>• The type of search engine to use, either an NX-based engine or a JT-based engine.</li> <li>• Database configuration for use with Repeatabe Digital Validation.</li> </ul>

## 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**

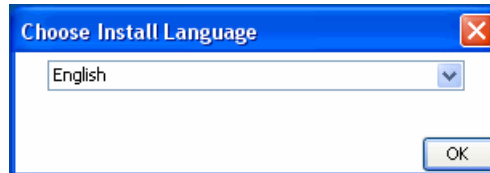
When a configuration is installed on a host, a TEM is created on that host. You use this TEM (not the TEM on the installation DVD) to modify the installed configuration.

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

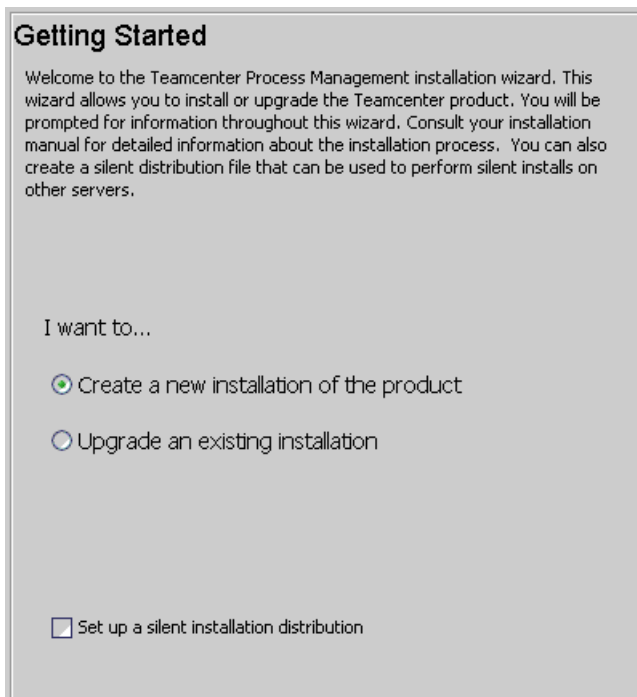
**Start® All Programs® UGS Teamcenter 2007® Teamcenter 2007® Environment Manager**

## Create a corporate server

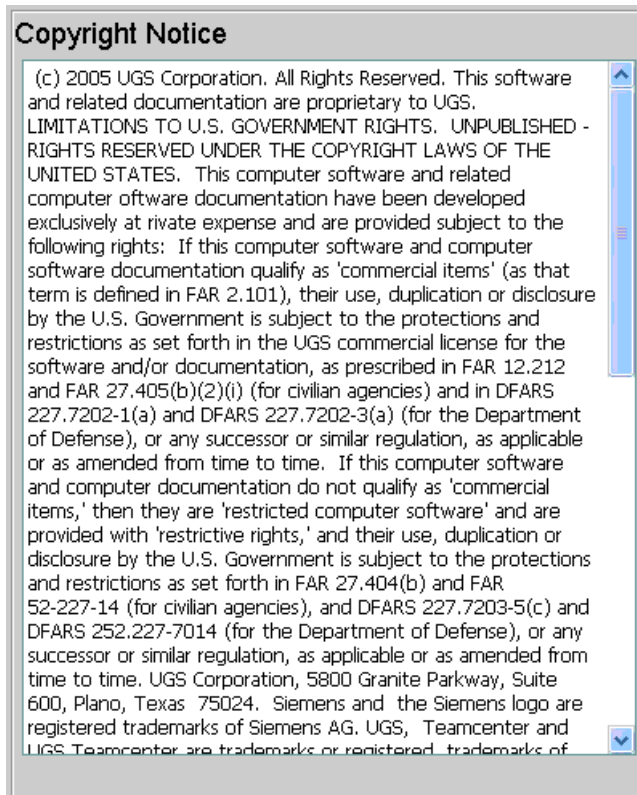
1. Start TEM by double-clicking **tem.bat** on the Teamcenter installation DVD.
2. In the **Choose Install Language** dialog box, select the language you wish to use to install the corporate server and click **OK**.



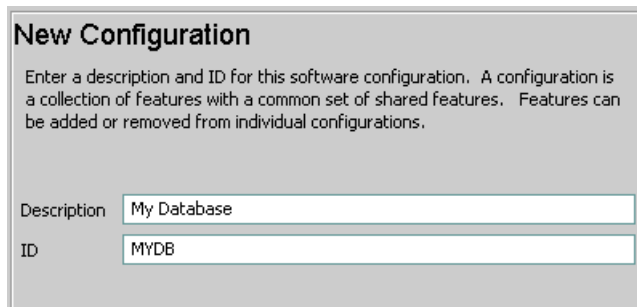
3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.



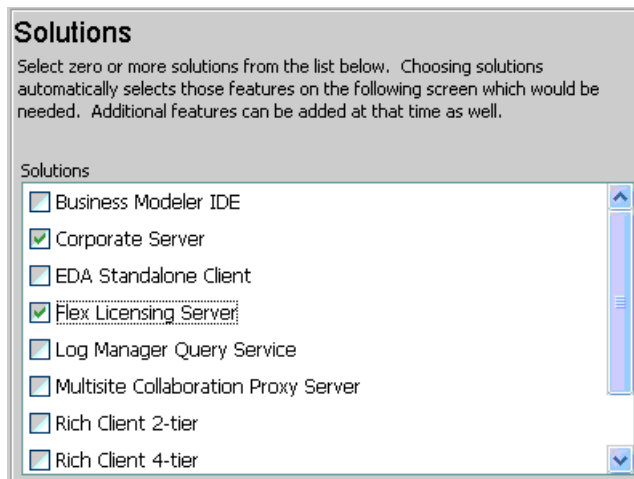
4. In the **Copyright Notice** dialog box, click **Next**.



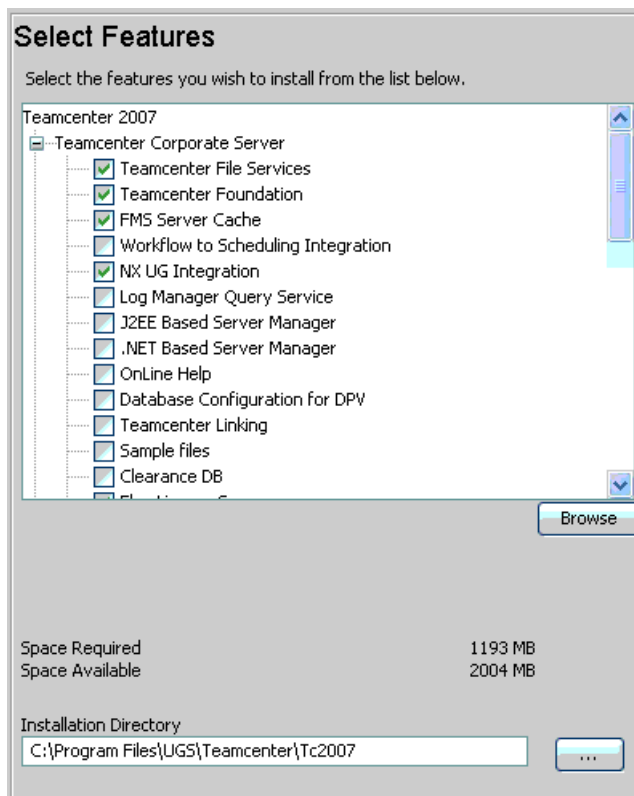
5. In the **New Configuration** dialog box, type a description and a unique ID. Then click **Next**.



6. In the **Solutions** dialog box, select the solution you want to install. To create a corporate server, select at a minimum the **Corporate Server** solution. For this example, the **Corporate Server** and **Flex Licensing Server** solutions are selected. Click **Next**.



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**.



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



**TCFS Service**

The Teamcenter TCFS service is used by the FSC process to handle disk access. If a volume is to be created during this install, the TCFS service is required; otherwise, you may choose to install the TCFS service if you intend to create a volume on this server in the future.

Name:

Port:

9. 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, then click **Next**.

**Operating System User**

All services will run as the following user. On Windows systems you must verify that the user has the permissions to run a service. You can determine this by going to Control Panel > Administrative Tools > Local Security Policy. In there go to Local Policies > User Rights Assignment and look at 'Log on as a service' right.

User:

Password:

Confirm:

10. 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.

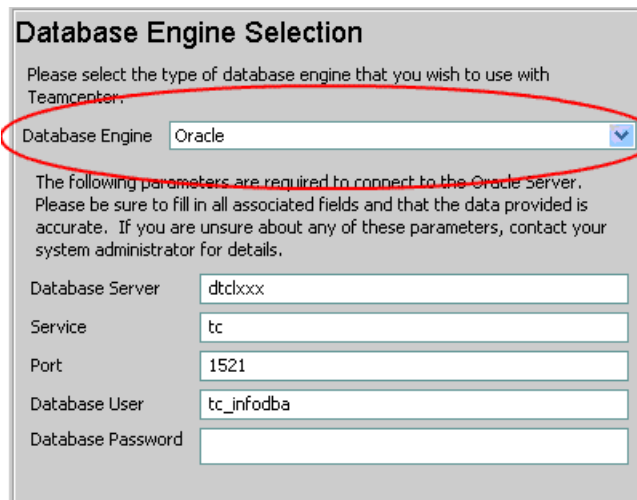
☒ Create a new data directory

☐ 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**. You will be 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. 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

Service

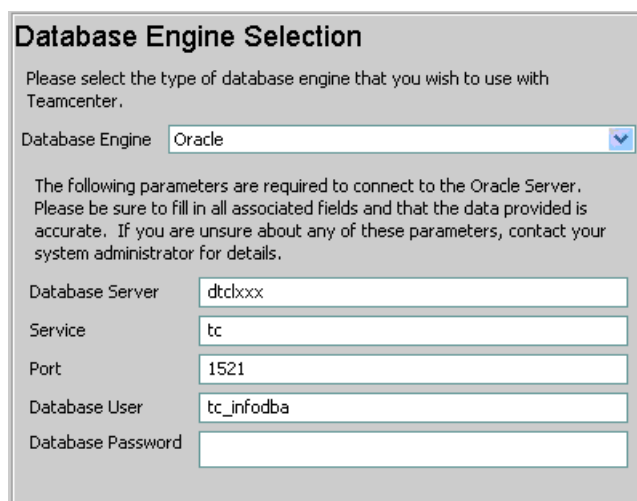
Port

Database User

Database Password

12. In you chose **Oracle** for the **Database Engine**, complete this step. If you chose **MS SQL Server 2005** for the **Database Engine**, 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.



**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. 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

Service

Port

Database User

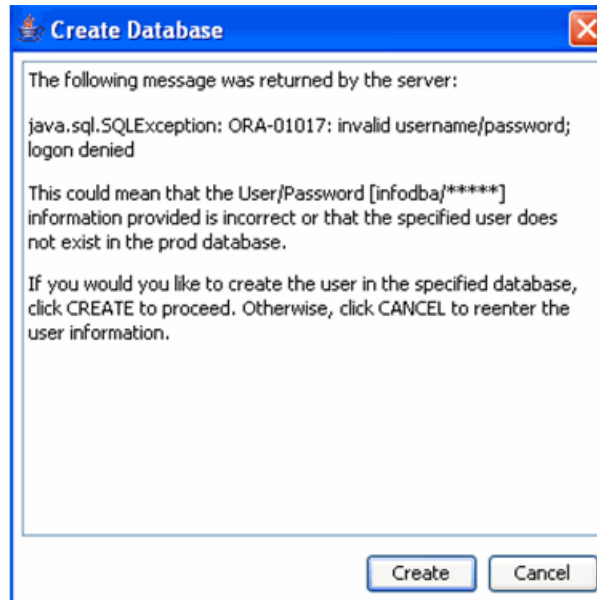
Database Password

- In the **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 database user's password.
- Click **Next**.

If you are connecting to an existing database, the **Volume Specification** dialog box appears. Skip to step 14 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. In you chose **Oracle** for the **Database Engine**, skip to step 14. If you chose **MS SQL Server 2005** for the **Database Engine**, 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 fillin 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 \*\*\*\*\*

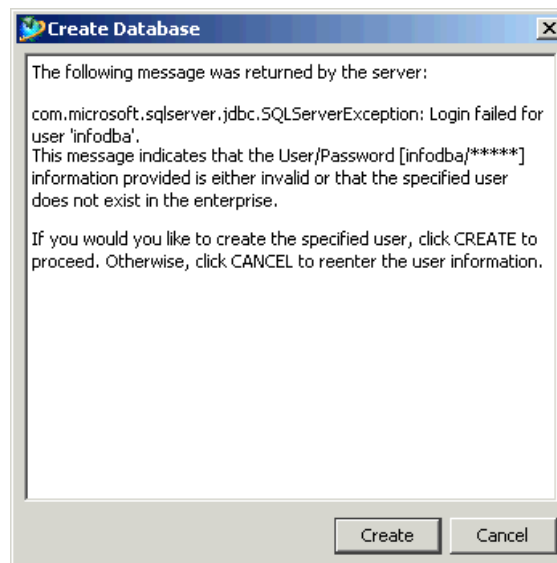
Database Name tc

- 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 **Databse Name**.
- Click **Next**.

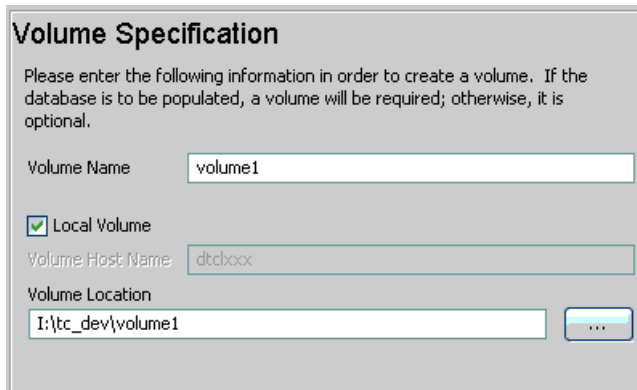
If you are connecting to an existing database, the **Volume Specification** dialog box appears. Skip to step 14 in this procedure. Otherwise, continue with this list.

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



**Volume Specification**

Please enter the following information in order to create a volume. If the database is to be populated, a volume will be required; otherwise, it is optional.

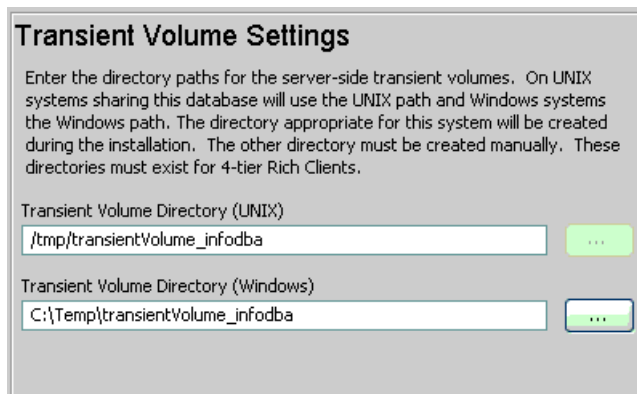
Volume Name:

☒ Local Volume

Volume Host Name:

Volume Location:

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



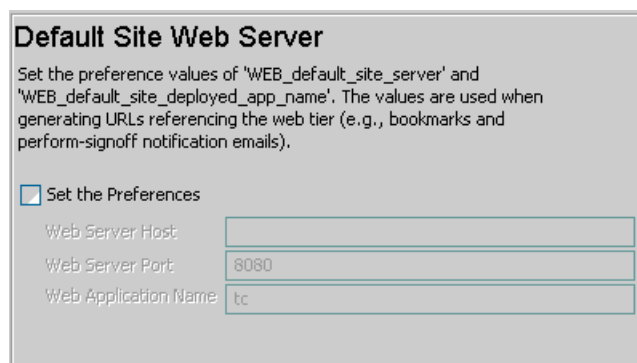
**Transient Volume Settings**

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):

Transient Volume Directory (Windows):

16. 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).

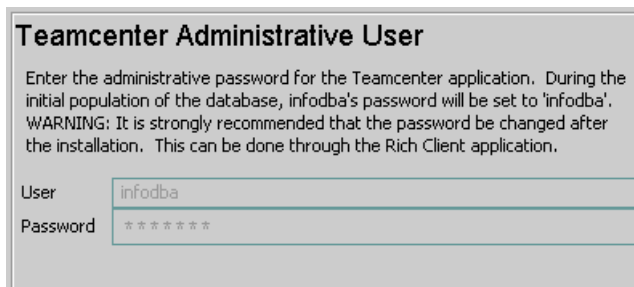
☐ Set the Preferences

Web Server Host:

Web Server Port:

Web Application Name:

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



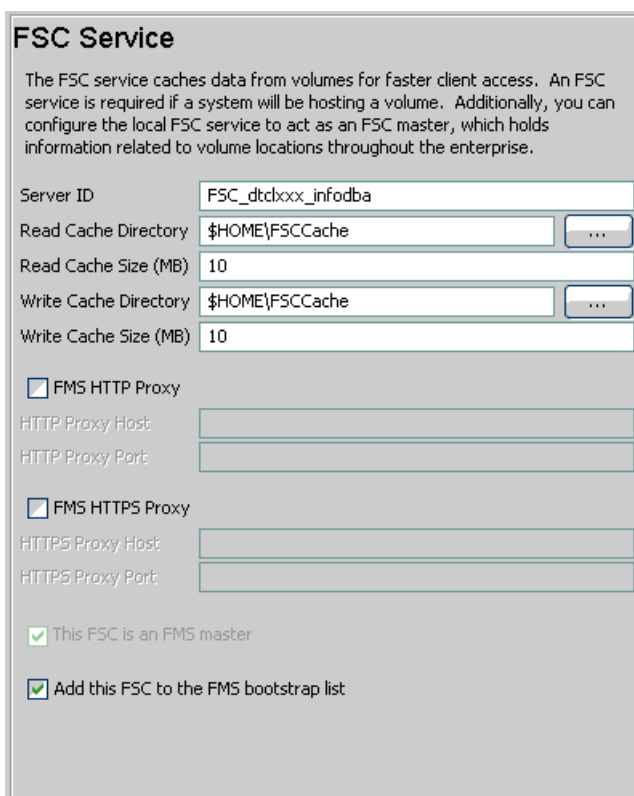
**Teamcenter Administrative User**

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:

18. 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

19. 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

20. In the **FSC Service: FCC Defaults** dialog box, you define the directory location, maximum read and write cache sizes, and maximum segment read cache size. 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

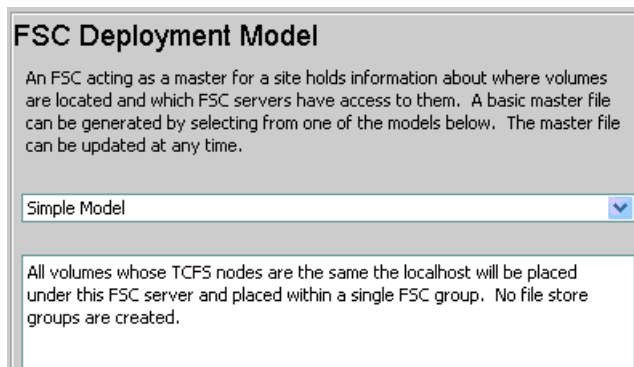
21. In the **FSC Service: Additional Sites** dialog box, you can add additional sites. Click **Next**.

**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).

Site ID	FSC ID	FSC Server	Priority
---------	--------	------------	----------

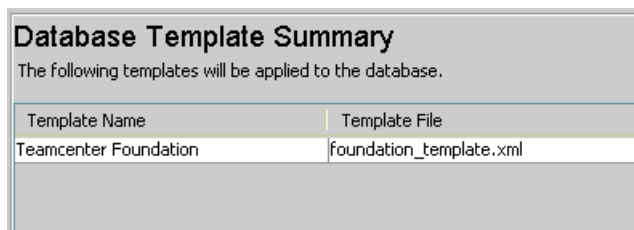
22. In the **FSC Deployment Model** dialog box, you select the FSC deployment model, either **Simple Model** or **Failover Model**. Click **Next**.



23. In the **Flex License Server** dialog box, provide the path of the license file. Click the browse button and navigate to the location of the license file. You obtain a license file from GTAC. Click **Next**.

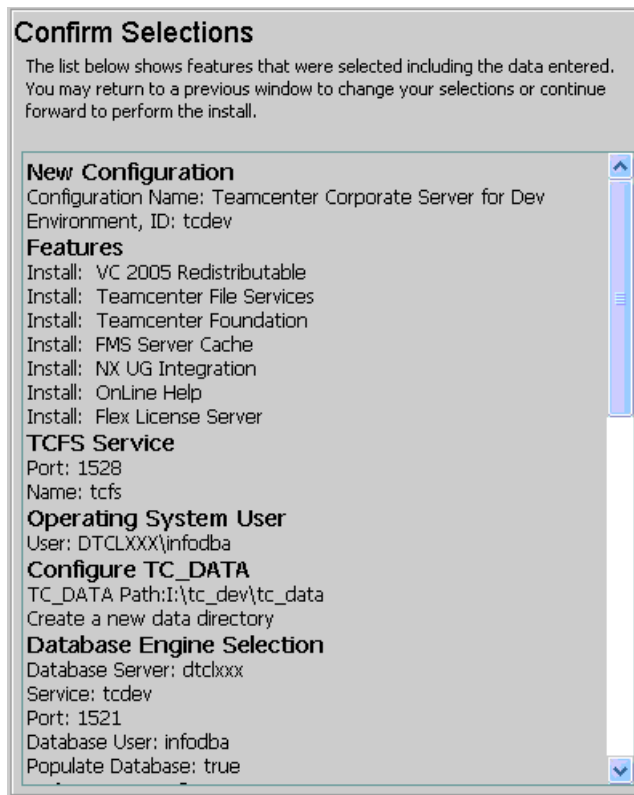


24. In the **Database Template Summary** dialog box, select the templates to apply when creating the database. There is a template supplied with the install image. If you have created a custom template, use the browse button at the bottom of the dialog box to locate it. Click **Next**.

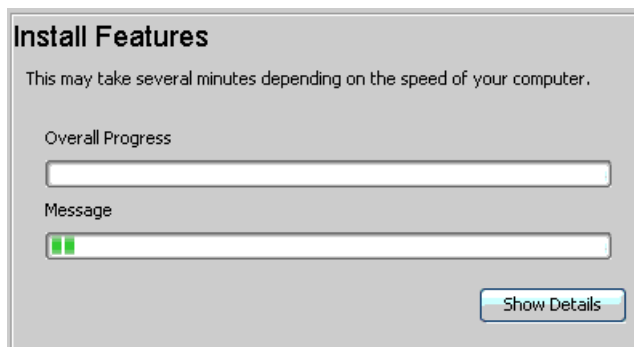


25. In the **Confirm Selection** dialog box, you can scroll through the list of selections you made to ensure they are correct. If you need to modify any selection, click **Prev**. If your selections are correct, click **Next** to begin the installation.



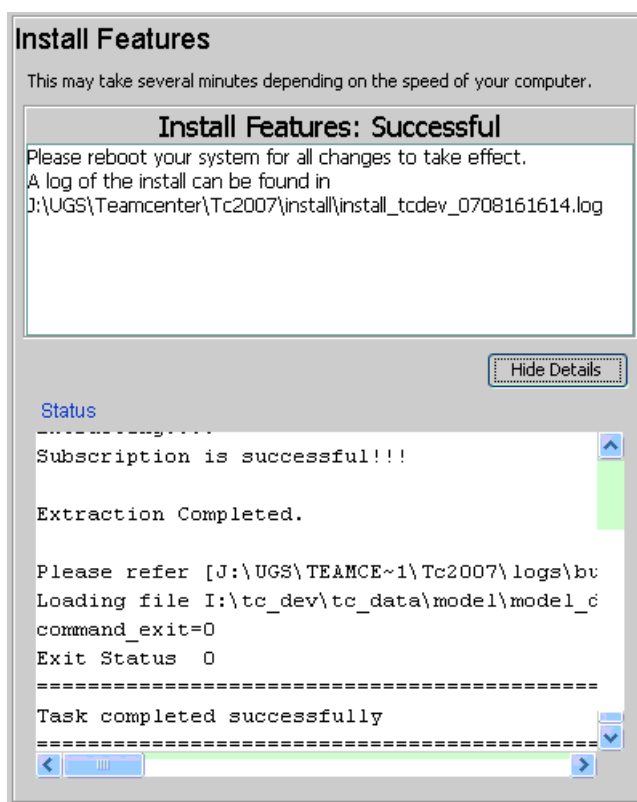


The **Install Features** dialog box displays the status of the installation.



26. During the installation, you are prompted for the location of the **tchelp.jar** file. This file is located on the Teamcenter Publications DVD. Select the directory containing this file to continue the installation.
27. When the installation is complete, you see the **Install Features: Successful** message. Note that the first line under this message instructs you to reboot the system.

Click **Close** in the **Install Features** dialog box to close TEM and then reboot your system.



## 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 pages.

- **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 POM_TRANSMIT_DIR=%TC_DATA%\pom_transmit
set IMAN_DB_CONNECT=infodba:GZCveaQos8N@tc
set IMAN_XML_ENCODING=ISO-8859-1
set IMAN_LOCALIZATION_DIR=en
set TC_DB_CONNECT=infodba:GZCveaQos8N@tc
@rem set TC_DB_CONNECT=
set ORACLE_SERVER=c1i3w022
set ORACLE_SID=tc
@rem set TC_ONLINE_HELP=
set TC_XML_ENCODING=ISO-8859-1
set TC_LOCALIZATION_DIR=en
set Tcfs__svc_tcfs=1528
@rem set TC_FS_Service=
set TCFS_Service=tcfs
set UGII_LICENSE_FILE=27000@dtclxxx
@rem set FSC_HOME=
set JRE_HOME=%TC_ROOT%\install\install\jre
```

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.

- **UGII\_LICENSE\_FILE**

*portnumber@servername*

Points to the FLEX license 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      : Sun Jan 21 00:32:59 EST 2007
#####

tc =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = c113w022)(PORT = 1521))
    )
    (CONNECT_DATA = (SERVER = DEDICATED) (SERVICE_NAME = tc )
  )
)
```

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

<b>prod=</b>	Service name or alias
<b>(PROTOCOL=TCP)</b>	Required protocol
<b>(Host=rebuilt)</b>	Host ID of Oracle server
<b>(Port=1521)</b>	TCP/IP port address
<b>(SERVICE_NAME = prod)</b>	Database service name

## Activity

- Activity: *Install the corporate server*  
Operating system account to use: **infodba**

## Review questions

Answer these review questions. Select all answers that apply.

1. \_\_\_\_\_ contains the Teamcenter shared binary executables and files.
  - A. TC\_BASE
  - B. TC\_DATA
  - C. TC\_HOME
  - D. TC\_ROOT
2. \_\_\_\_\_ contains the Teamcenter data model.
  - A. TC\_BASE
  - B. TC\_DATA
  - C. TC\_HOME
  - D. TC\_ROOT
3. A \_\_\_\_\_ server contains both the Teamcenter executables and the Teamcenter data model. This server must be installed first.
  - A. Application
  - B. Corporate
  - C. Data
  - D. Volume
4. File Management System (FMS) handles file transfer between volumes and clients for both the two-tier and the four-tier architectures.
  - A. True
  - B. False

**Answers to review questions**

1. \_\_\_\_\_ contains the Teamcenter shared binary executables and files.

- A. TC\_BASE
- B. TC\_DATA
- C. TC\_HOME

**Correct:** D. TC\_ROOT

2. \_\_\_\_\_ contains the Teamcenter data model.

- A. TC\_BASE
- C. TC\_HOME
- D. TC\_ROOT

**Correct:** B. TC\_DATA

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

- A. Application

**Correct:** B. Corporate

- C. Data
- D. Volume

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

**Correct:** A. True

- B. False



## Summary

Topics learned in this lesson:

1. The function of the Teamcenter corporate server
2. The components of a corporate server
3. How FMS and TCFS manage files
4. Definition of solutions and features
5. The features available for a corporate server
6. What a Teamcenter configuration is
7. What Teamcenter Environment Manager (TEM) is
8. How to create a corporate server
9. The function of **tc\_profilevars.bat**
10. The function of **tnsnames.ora**

Answer the review questions for this lesson.



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## Lesson

# 6 *Two-tier rich client*

### Purpose

The purpose of this lesson is to describe the two-tier architecture, demonstrate how to install the two-tier rich client, and demonstrate how to start the two-tier rich client.

### Objectives

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

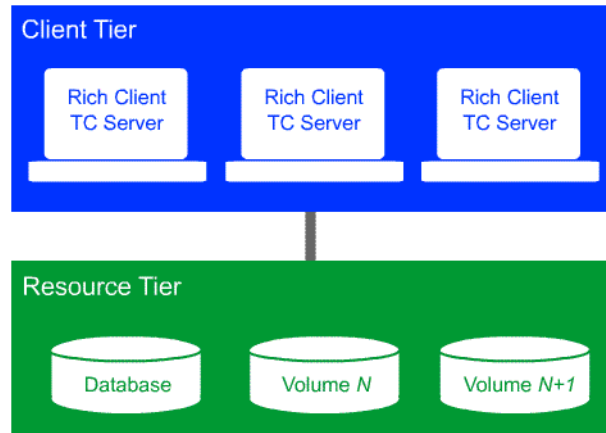
- Describe the two-tier architecture.
- Install the two-tier rich client.
- Start the two-tier rich client.

### Help topics

Additional information for this lesson can be found in:

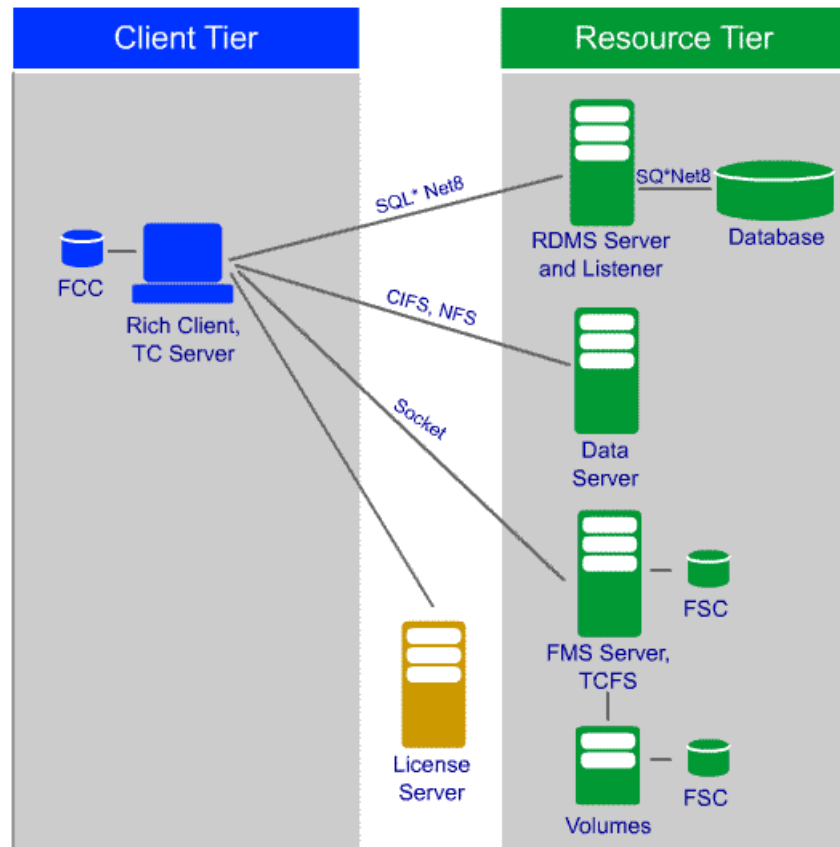
- *Installing the rich client* topic in the [Installation on Windows Clients Guide](#)
- *Installing the rich client* topic in the [Installation on UNIX and Linux Clients Guide](#)

## Two-tier concepts



- 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.  
It contains:
  - Database server and instance
  - 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 via NFS and CIFS.

## Features of the two-tier rich client solution

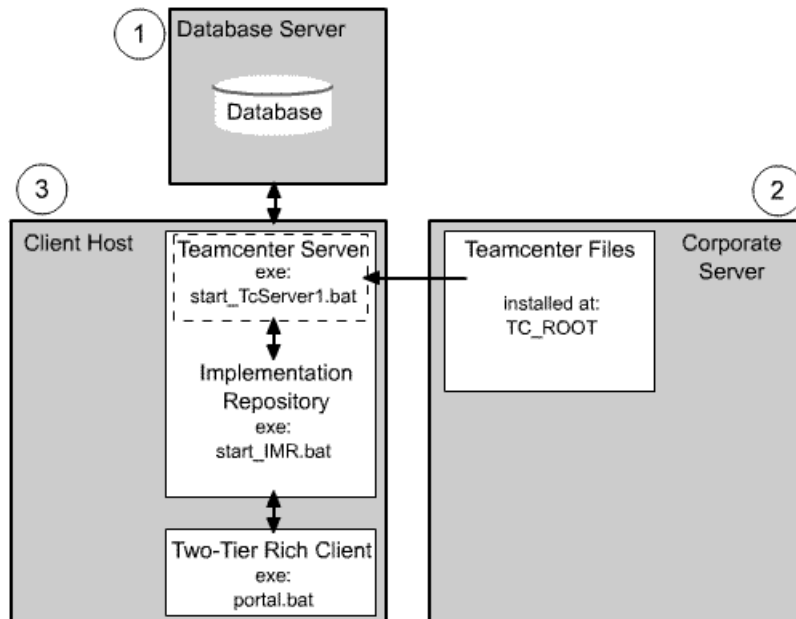
You use Teamcenter Environment Manager (TEM) to install the two-tier rich client by selecting the **Rich Client 2-tier** solution.

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 for Rich Client**  
Optional feature that provides integration with the stand-alone visualization product.
- **Embedded Visualization 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.

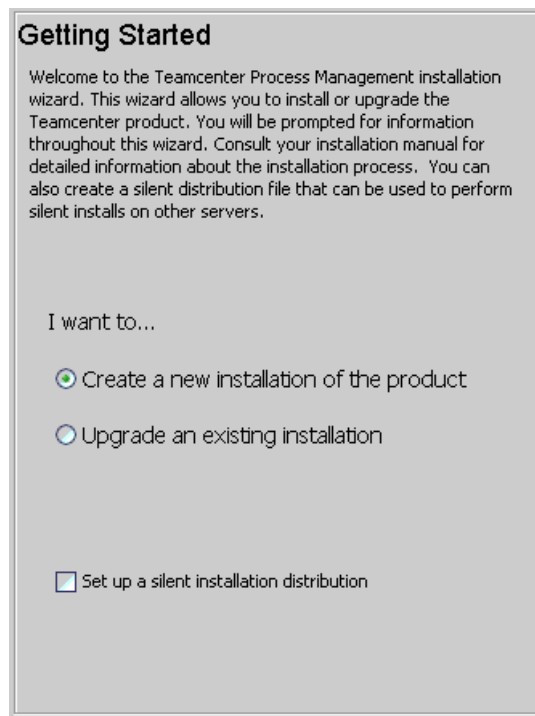


## Install a two-tier rich client

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**.

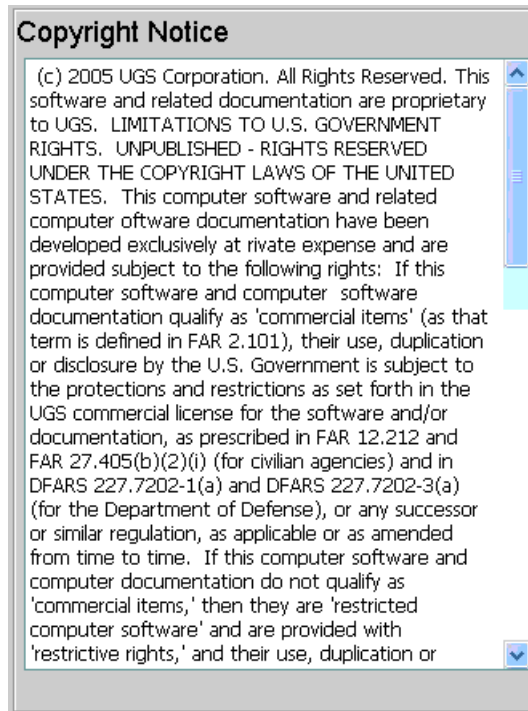


3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.

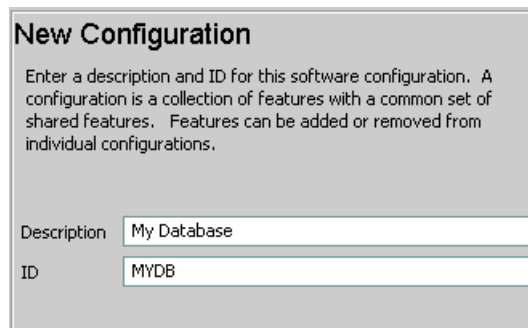


4. Observe the copyright notice and click **Next**.

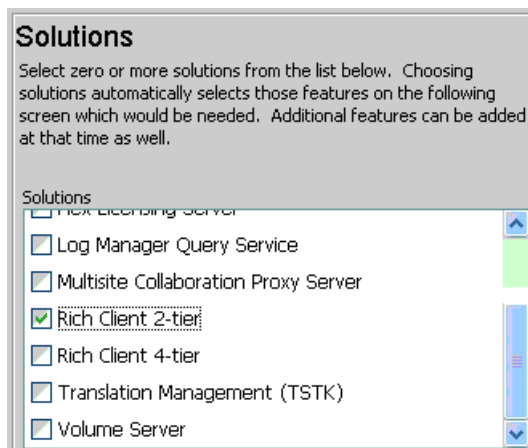




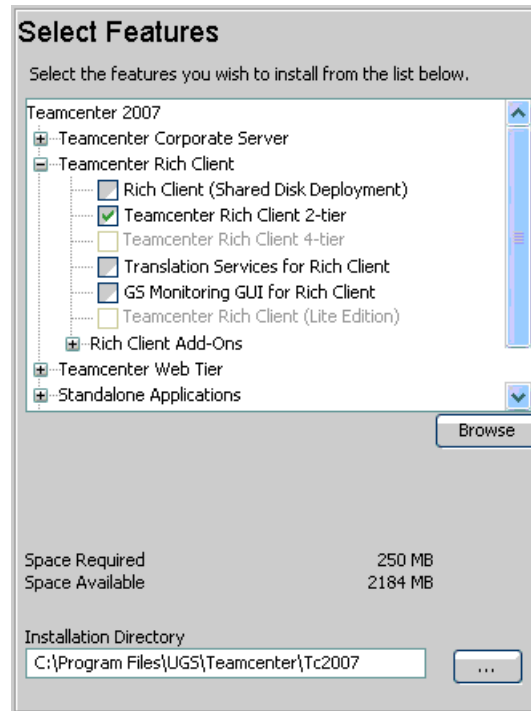
5. In the **New Configuration** dialog box, type a **Description**, unique **ID**, and click **Next**.



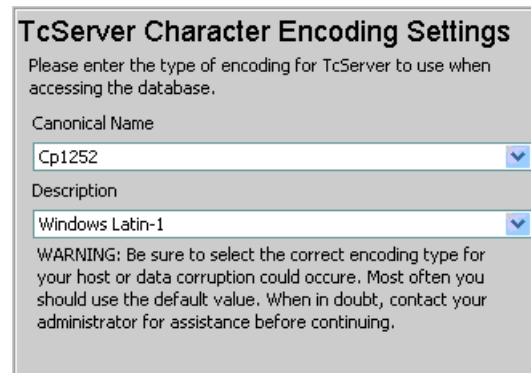
6. In the **Solutions** dialog box, select the **Rich Client** solution and click **Next**.



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

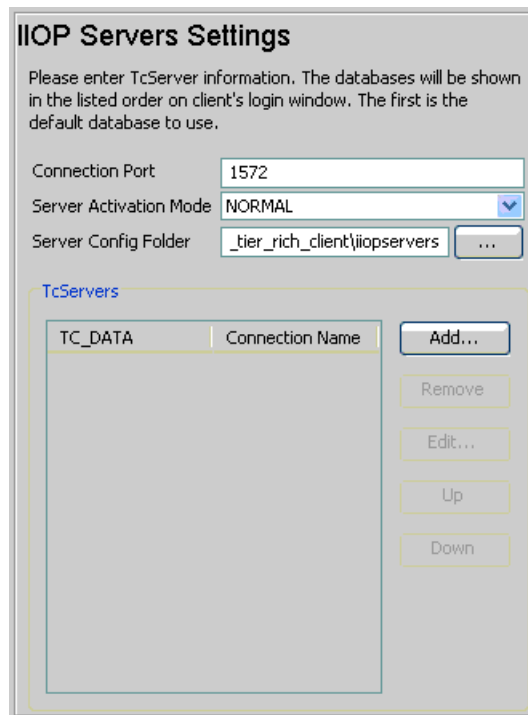


8. In the **TcServer Character Encoding Settings** dialog box, select the encoding used when the TcServer accesses the database, and then click **Next**.



9. 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 on the rich client login dialog box to connect to the database.



**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

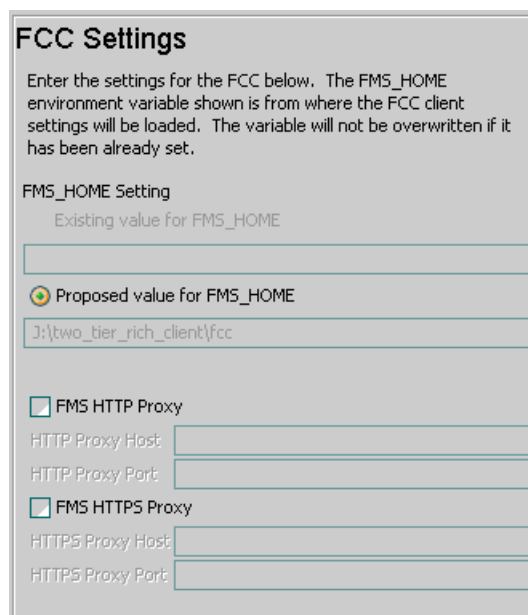
Server Config Folder: \_tier\_rich\_client\iiopservers

**TcServers**

TC_DATA	Connection Name

Buttons: Add..., Remove, Edit..., Up, Down

- In the **FCC Settings** dialog box, type the setting used by the FCC. If no environment variable has been set for **FMS\_HOME**, a path is provided. If one already exists, it is used.



**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

☐ FMS HTTP Proxy

HTTP Proxy Host:

HTTP Proxy Port:

☐ FMS HTTPS Proxy

HTTPS Proxy Host:

HTTPS Proxy Port:

- 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

#### FCC Parents

Pr...	Host	Port	Pri...	Tr...
http		4544	0	lan

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

### Rich Client Settings

Please enter Rich Client settings.

Runtime Temp Folder

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

### Online Help

Enter a directory location or URL address where the Teamcenter help files can be located or you may choose not to configure help at this time.

#### Online Help Access

☒ Direct Access

Help Files Directory

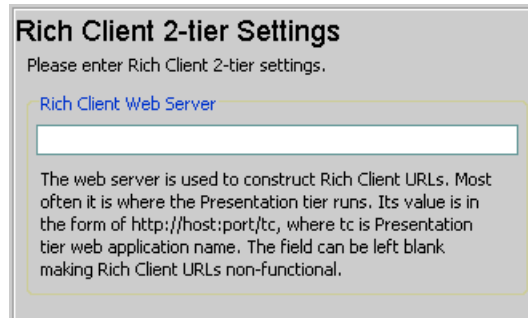
☐ Via Web Server

URL Location

Note that Rich Client will append 'index.html' to this string.

☒ Do not configure Online Help

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.



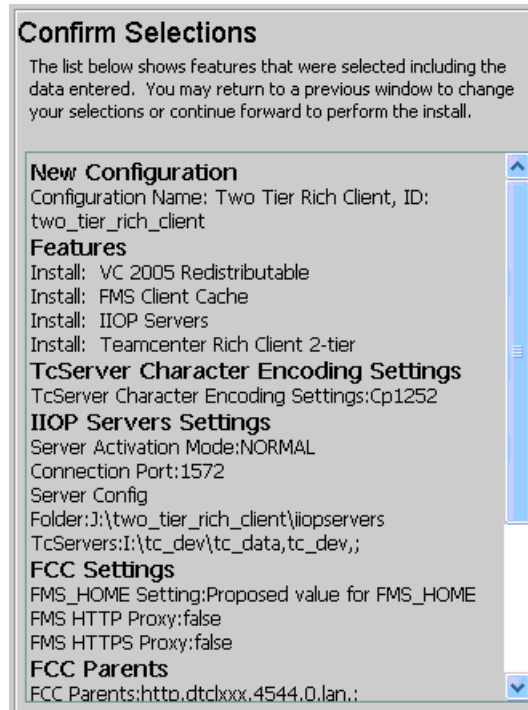
**Rich Client 2-tier Settings**

Please enter Rich Client 2-tier settings.

[Rich Client Web Server](#)

The web server is used to construct Rich Client URLs. Most often it is where the Presentation tier runs. Its value is in the form of `http://host:port/tc`, where `tc` is Presentation tier web application name. The field can be left blank making Rich Client URLs non-functional.

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.



**Confirm Selections**

The list below shows features that were selected including the data entered. You may return to a previous window to change your selections or continue forward to perform the install.

**New Configuration**  
 Configuration Name: Two Tier Rich Client, ID: two\_tier\_rich\_client

**Features**  
 Install: VC 2005 Redistributable  
 Install: FMS Client Cache  
 Install: IIOP Servers  
 Install: Teamcenter Rich Client 2-tier

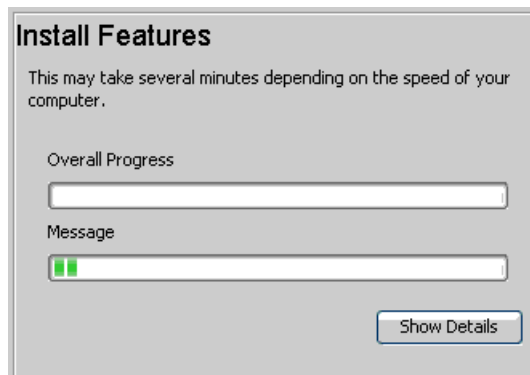
**TcServer Character Encoding Settings**  
 TcServer Character Encoding Settings:Cp1252

**IIOP Servers Settings**  
 Server Activation Mode:NORMAL  
 Connection Port:1572  
 Server Config  
 Folder:J:\two\_tier\_rich\_client\iiopservers  
 TcServers:I:\tc\_dev\tc\_data,tc\_dev,;

**FCC Settings**  
 FMS\_HOME Setting:Proposed value for FMS\_HOME  
 FMS HTTP Proxy:false  
 FMS HTTPS Proxy:false

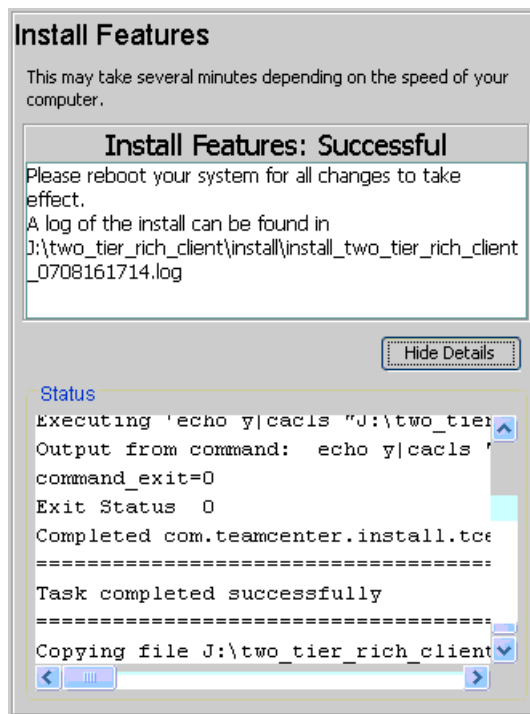
**FCC Parents**  
 FCC Parents:http.dtcxxx.4544.0.lan.:

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. Notice that the first line of this message informs you that you must reboot your machine in order for all changes to take effect.

Click **Close** in the **Install Features** dialog box and reboot your machine.



## Start and log on to the two-tier rich client

1. Start the two-tier rich client in one of the following ways:
  - Double-click the **Teamcenter 2007** icon that was created on the client desktop during installation.
  - Choose **Start® All Programs® UGS Teamcenter 2007® Teamcenter 2007® Teamcenter 2007**.
  - Open **Windows Explorer**, navigate to *two-tier-root\portal*, and double-click **portal.bat**.

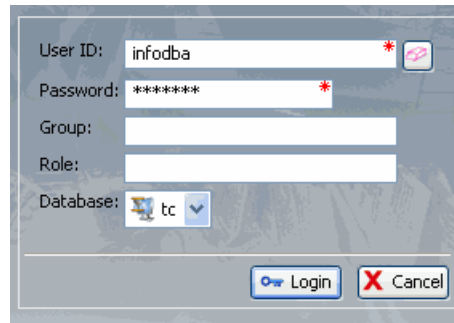
This file is the target of the desktop icon and **Start** menu command.

The rich client opens and displays the Getting Started page.


2. In the **Getting Started** page, click **Open my workspace or Inbox**.



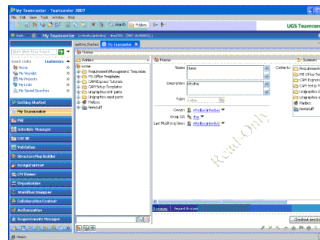
3. In the logon dialog box, type a user name, password, group (optional), role (optional), select a database, and click **Login**.



A screenshot of the Teamcenter login dialog box. It contains the following fields and controls:

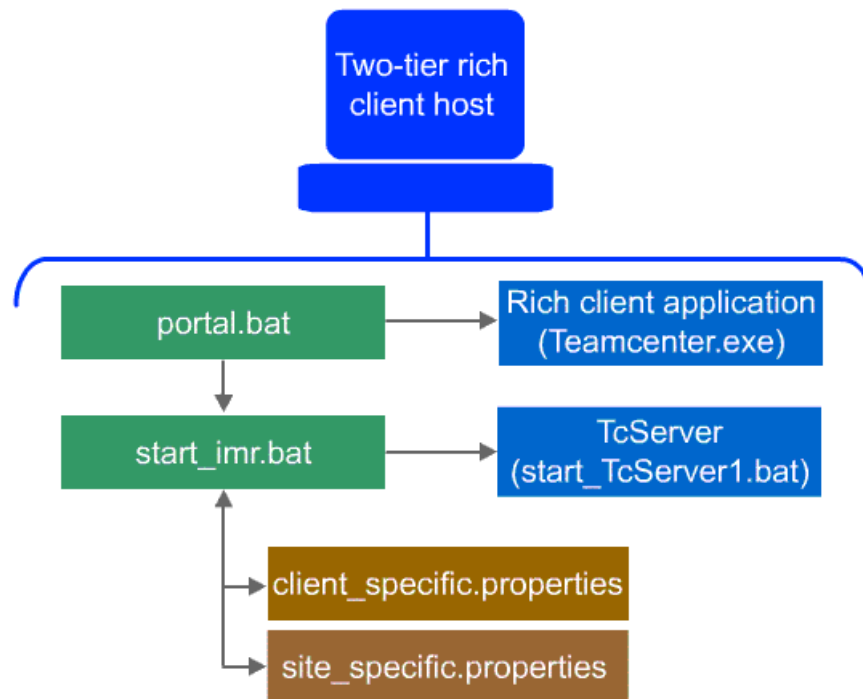
- User ID:  with a red asterisk and a password icon.
- Password:  with a red asterisk.
- Group:
- Role:
- Database:   with a dropdown arrow.
- Buttons:  and .

4. 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 2007**, 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\iiopservers\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\iiopservers\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.

## Activity

- Activity: *Create a two-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Examine file created during the two-tier rich client installation*  
Operating system account to use: **infodba**
- Activity: *Start the two-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Create a dataset*  
Operating system account to use: **infodba**

## Review questions

Answer these review questions. Pick all answers that apply.

1. In the two-tier architecture, the client tier contains the Teamcenter server and executables.
  - A. True
  - B. 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.
  - A. True
  - B. False
3. The two-tier rich client is installed using \_\_\_\_\_.
  - A. Configuration Assistant
  - B. OUI
  - C. Over-the-Web Installer
  - D. TEM

## **Answers to review questions**

1. In the two-tier architecture, the client tier contains the Teamcenter server and executables.  
**Correct:** A. True  
B. 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.

A. True

**Correct:** B. False

3. The two-tier rich client is installed using \_\_\_\_\_ .

A. Configuration Assistant

B. OUI

C. Over-the-Web Installer

**Correct:** D. TEM

## Summary

Topics learned in this lesson:

1. Two-tier architecture concepts
2. How to install the two-tier rich client
3. How to start the two-tier rich client

Answer the review questions for this lesson.

---

## Lesson

# 7 *Four-tier architecture*

### Purpose

The purpose of this lesson is to describe 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 the Web Application Manager.
- Describe and install the J2EE Web tier.
- Describe the function of the .NET Web tier.
- Describe and install the distribution server.
- Describe and install the distribution server instance.
- Discuss how to managing distribution servers and distribution server instances.
- Install and run a four-tier client.
- Install a four-tier rich client using TEM.

### Help topics

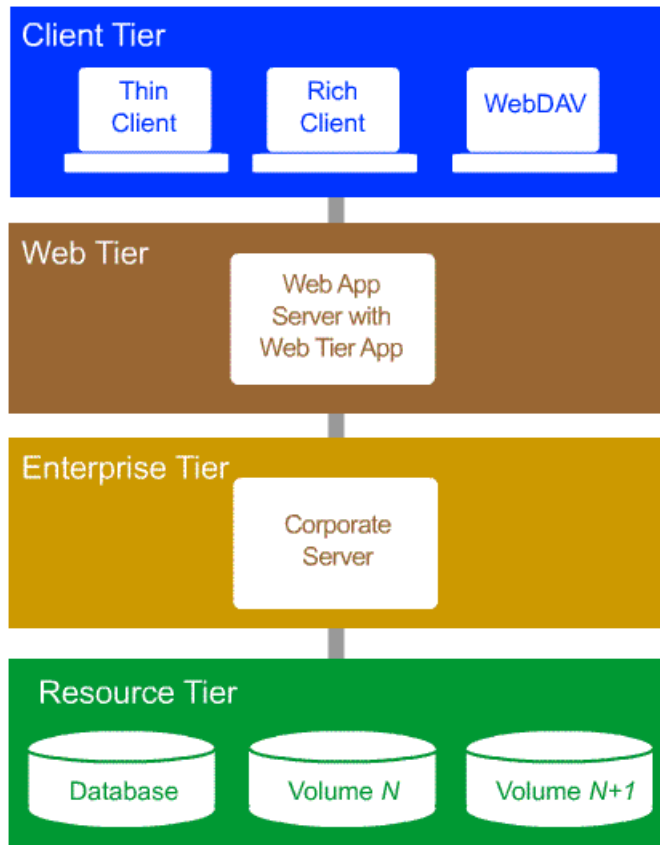
Additional information for this lesson can be found in:

- *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 and Linux Clients Guide](#)*



## Four-tier architecture



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

Available clients include:

- Thin client
- Rich client
- WebDAV client
- Additional applications such as Teamcenter for lifecycle visualization
- The *Web tier* handles client installs, processes login 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:

- 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 sits on the Teamcenter corporate server. It is composed of:

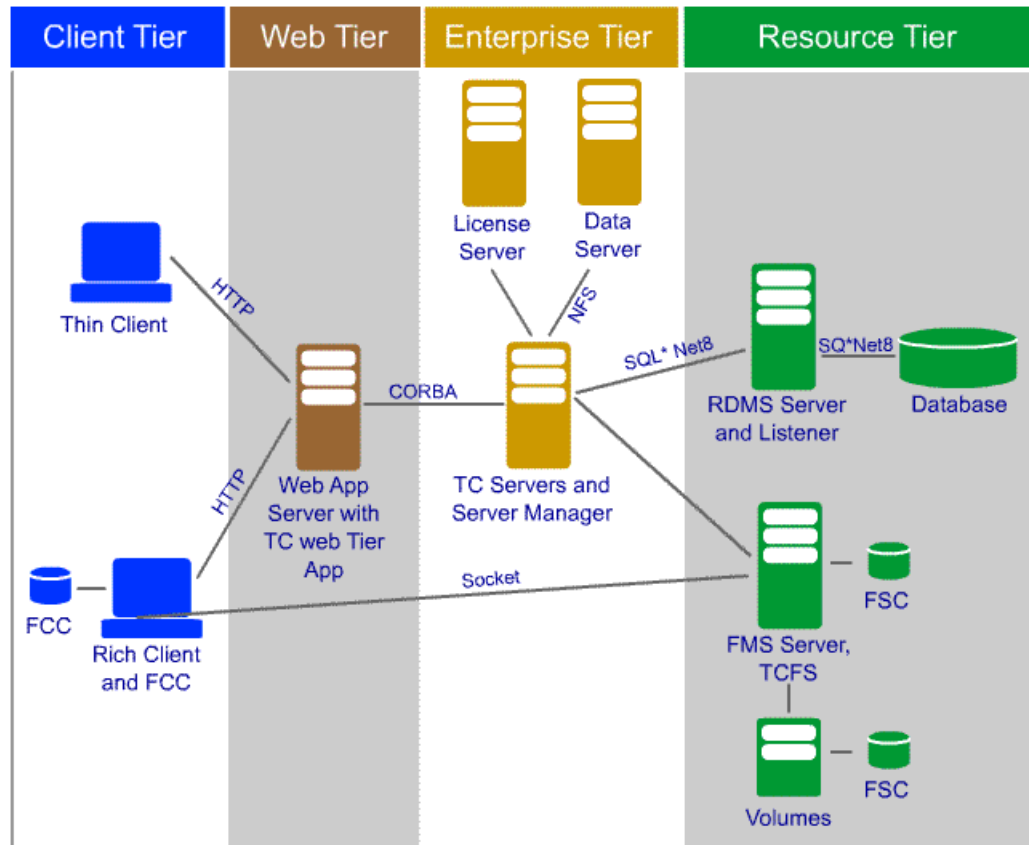
- Shared binary executables
- Shared data directories and files
- License server
- A pool of server processes managed by a server manager (four-tier environments only)
- The *resource tier* stores persistent metadata and files managed by the environment.

The resource tier contains:

- Database server and instance
- Volumes
- File servers

## 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**

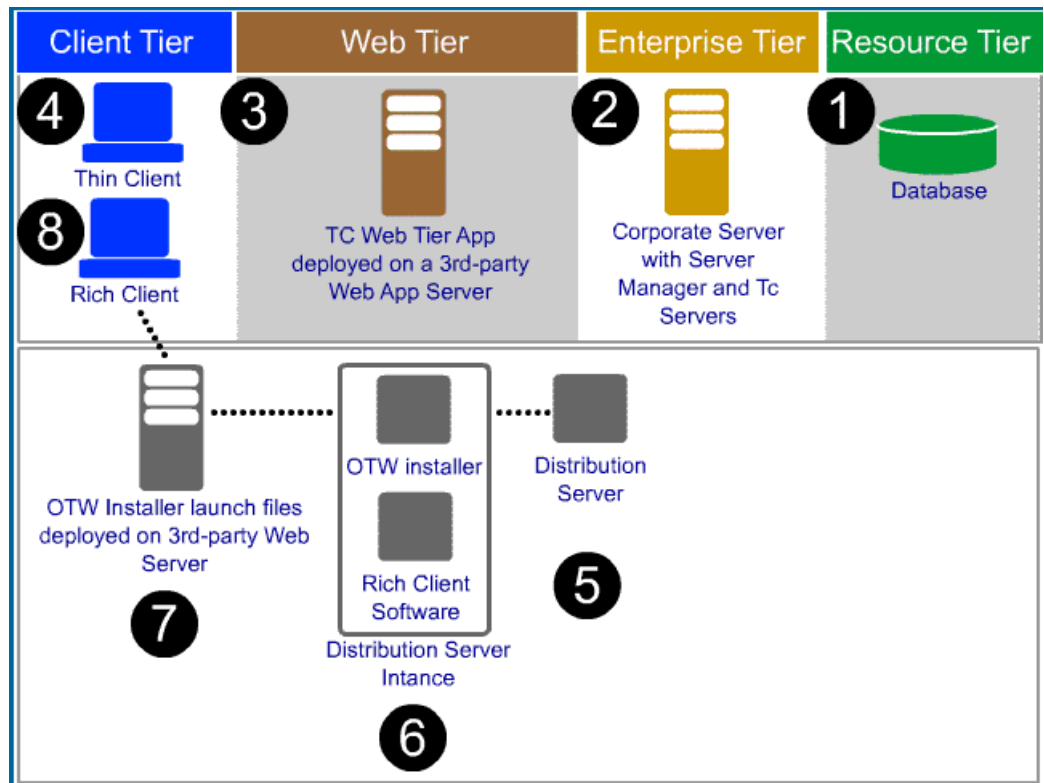
You can design deployments that host the Web tier, resource tier, and enterprise tiers on the same computer or on separate computers:

- 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 the third-party database server software, either Oracle or MS SQL Server.
2. Install the enterprise tier using TEM, being sure to choose the server manager component.  
  
TEM installs the pool of Teamcenter servers and the server manager, creates and or populates the database, and configures a volume.
3. Generate the Web tier application as an enterprise archive (EAR) file using the Web Application Manager.  
  
The Web tier application EAR file is deployed on a third-party Web application server such as WebLogic.
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.



## **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.

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

## 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.



## **The Web Application Manager**

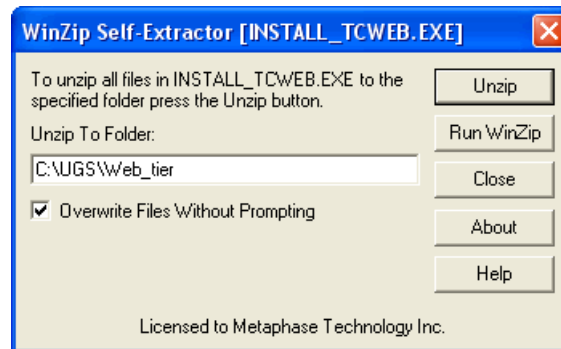
The Web Application Manager is used to create:

- 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.

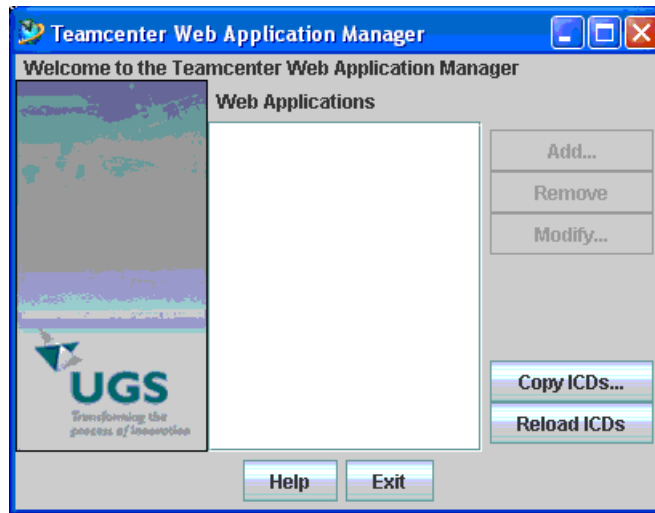


3. In the **Unzip To Folder** box, type the location to which the Web Application Manager is to be installed.
4. Click **Unzip**.  
The files in the zip file are extracted to the location you selected.
5. Click **Close**.

## 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 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 Enterprise Tier Web application**

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

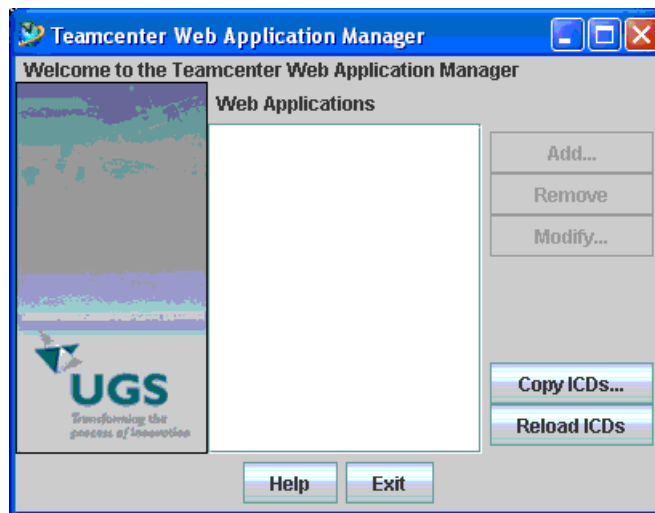
The solutions that comprise the Teamcenter Enterprise Tier Web application are:

- Teamcenter Enterprise Tier
- Teamcenter Presentation Tier Infrastructure
- Teamcenter Presentation Tier

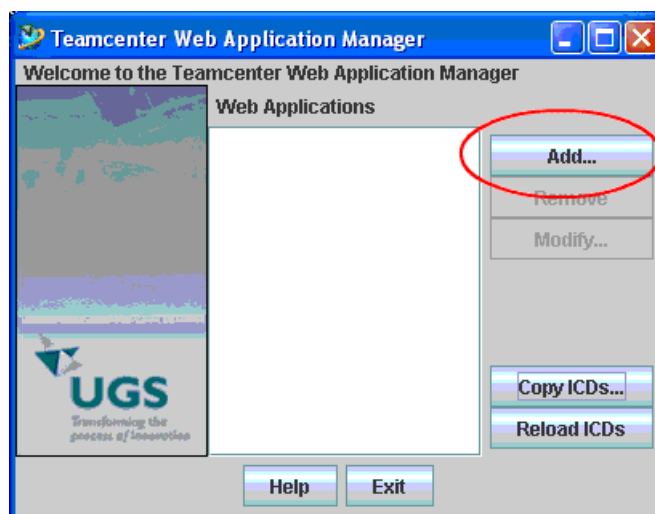
After you build the Teamcenter Enterprise Tier application, you can build additional thin client solutions, including custom solutions, according to your needs.

## Create a Web application

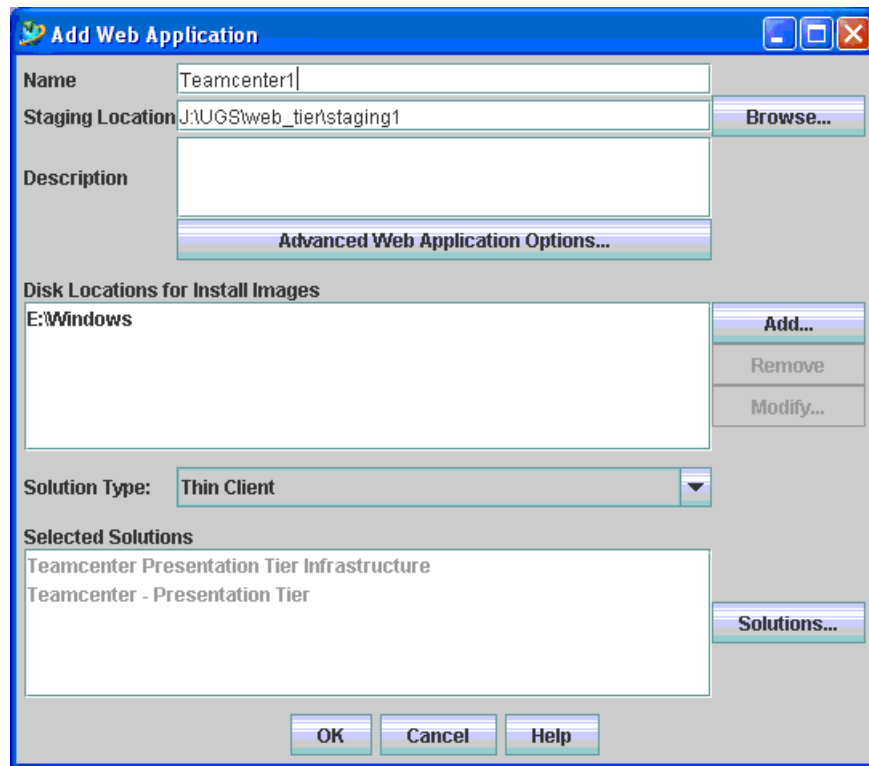
1. Start the Web Application Manager by double-clicking **insweb.bat**.



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 2007 installation DVD.
  - c. Select **Web\_tier**.
  - d. The **Progress** dialog box appears and displays the message, **Click OK to Continue**, when the files have been copied.
3. Begin creating a Web tier application by clicking **Add** on the Web Application Manager.

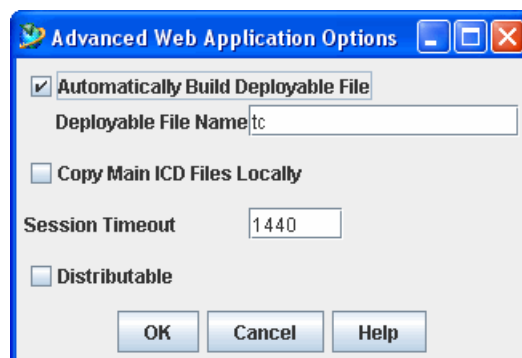


4. In the **Add Web Application** dialog box, define the Web application.



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

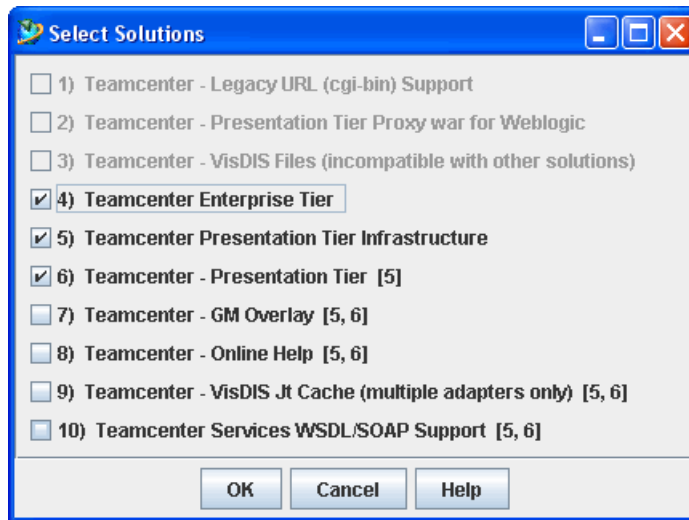
After completing the dialog box, click **OK**.



- e. In the **Disk Locations for Install Images** section, provide the location of the install images. If you need to change the paths in the list, click **Add** or select a path from 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 Presentation Tier Infrastructure** and **Teamcenter - Presentation Tier** are preselected.

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

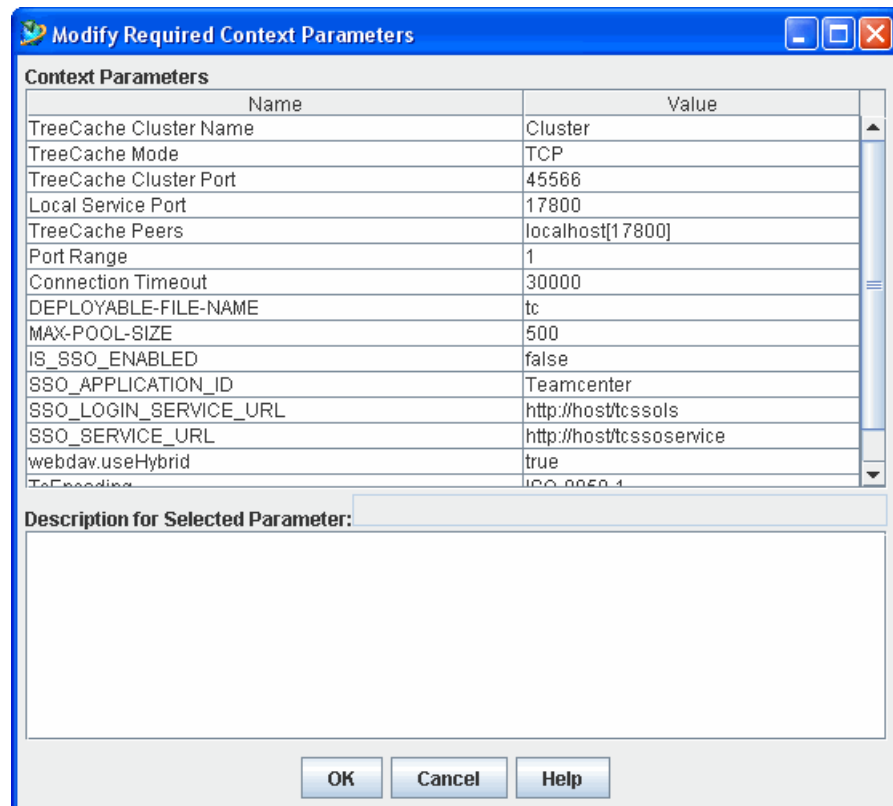


- 5. In the **Modify Context Parameters** dialog box, set the required parameters.

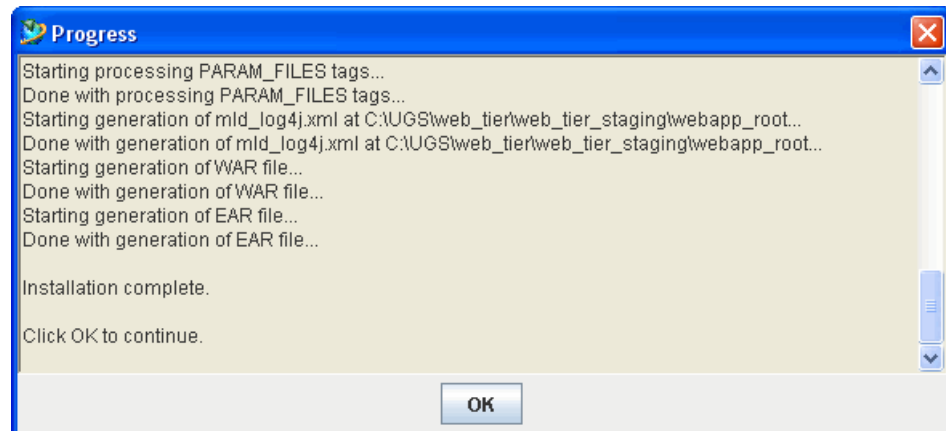
To set a context parameter, double-click the **Value** box for the given parameter and type the new value. To view a description of any context parameter, click the parameter name in the **Modify Required Context Parameters** dialog box.

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

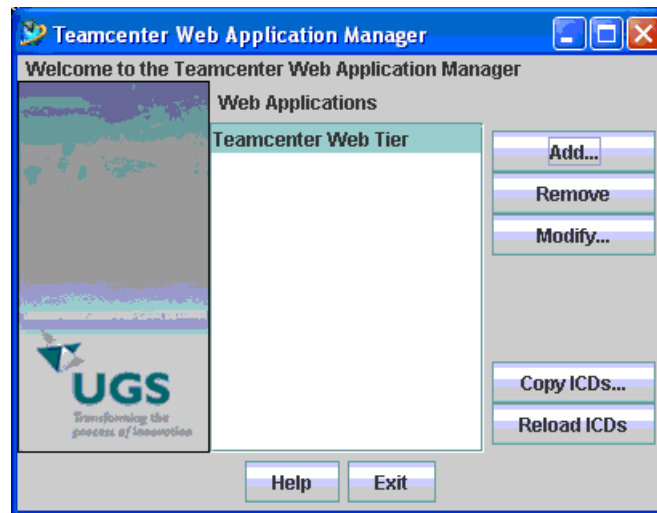




6. The **Progress** dialog box appears and displays the status of the installation. When the installation is complete, it displays the message, **Click OK to continue.**



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

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 created 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.

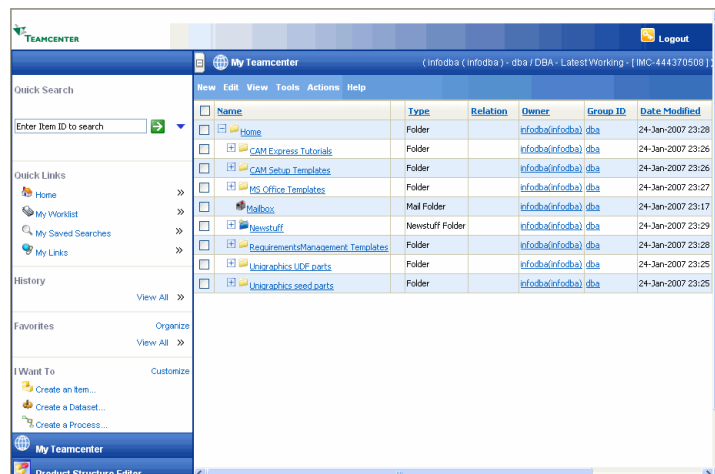
## Launch the thin client

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.



## Activity

- Activity: *Install the Web Application Manager*  
Operating system account to use: **infodba**
- Activity: *Create the Web tier application*  
Operating system account to use: **infodba**
- Activity: *Install the WebLogic Web application server and create a domain*  
Operating system account to use: **infodba**
- Activity: *Deploy a Web tier application on WebLogic*  
Operating system account to use: **infodba**
- Activity: *Start the server manager*  
Operating system account to use: **infodba**
- Activity: *Log in to the thin client*  
Operating system account to use: **infodba**

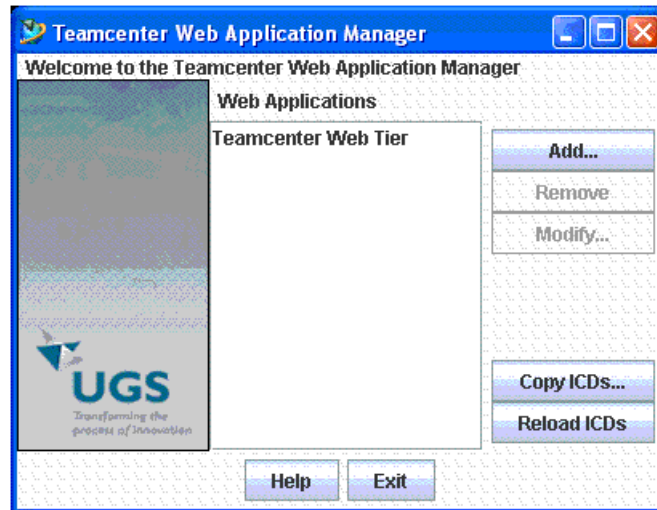
## **Distribution server**

The distribution server:

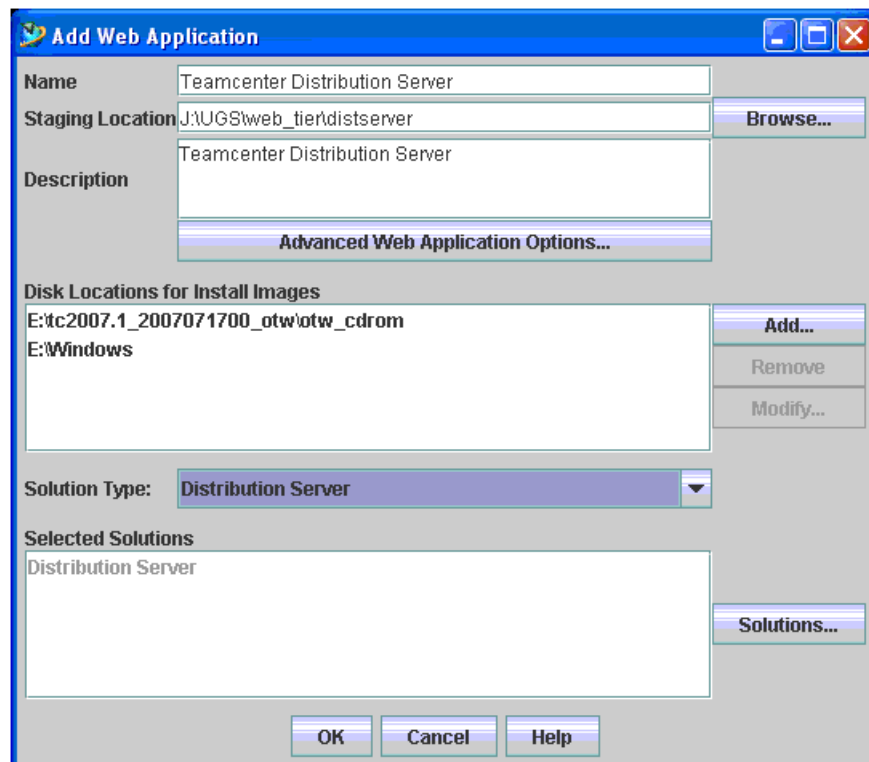
- Manages the connection between a distribution server instance and the Over-the-Web Installer. The Over-the-Web Installer contacts the distribution server for the rich client files to download to the client machine.
- Can manage multiple distribution server instances.
- Is created using the Web Application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

## Create a distribution server

1. Start the Web Application Manager.



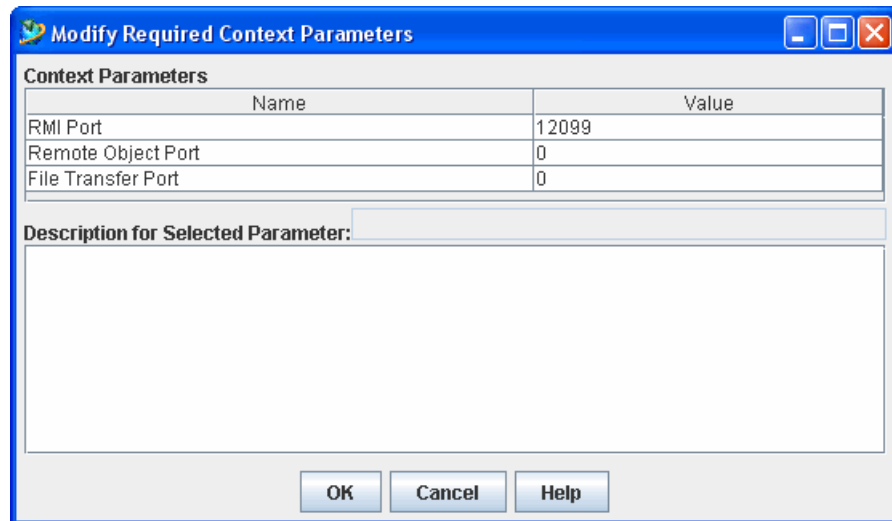
2. Copy the ICD files needed to create the distribution server and the distribution server instance by clicking **Copy ICDs** and selecting the **icd** directory on the Over-the-Web installation DVD. After the files are copied, click **OK**.
3. Begin creating the distribution server by clicking **Add**.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

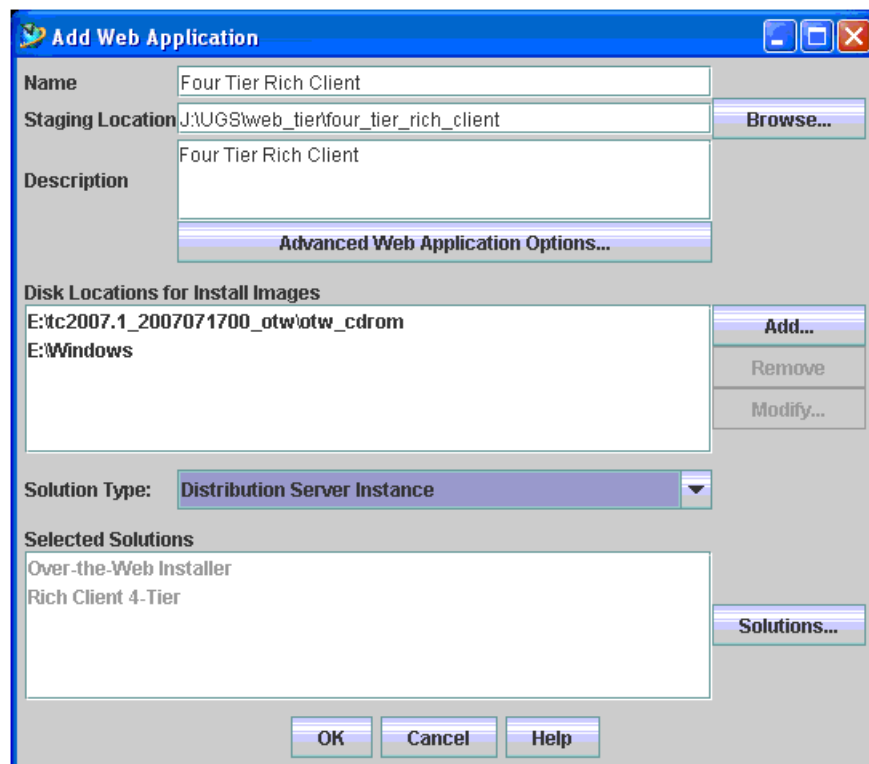
## **Distribution server instance**

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.
  - In the **Name** box, type a unique name.
  - In the **Staging Location** box, type the location in which to build the distribution server instance.
  - In the **Disk Locations** section, click **Add** and add the path to the OTW installation DVD.
  - In the **Solution Type** list, select **Distribution Server Instance**.
  - 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.
  - Click **OK** in the **Add Web Application** dialog box.



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

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

**Modify Required Context Parameters**

Name	Value
RMI Port	12099
WindowsLocation	C:\UGS\Teamcenter\OTW2007
UnixLocation	/UGS/Teamcenter/OTW2007
WebBrowserUnixLocation	/usr/local/bin/mozilla
RichClientHelpWebServer	http://host:8080
RichClientHelpLocation	/richclienthelp
HTTPUseGZip	true

**Description for Selected Parameter:** WindowsLocation  
 The default directory for a Windows installation.  
 The value must be of type 'STRING'. Its default value is 'C:\Program Files\UGS\Teamcenter\OTW2007'.

OK Cancel Help

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

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

**Modify Required Table - ParentFSCAddressTable**

Table: ParentFSCAddressTable

Protocol	Host	Port
http://	cii3w022	4544

Add Row...  
Remove Row

**Table Description**  
 The list of parent FSC addresses in the form of protocol://host:port.

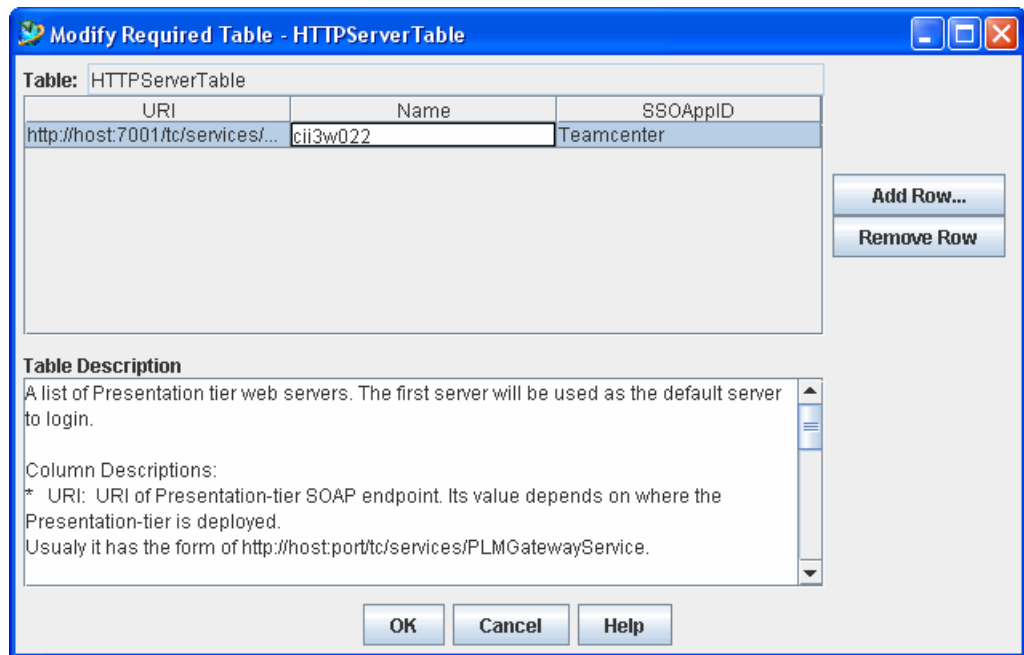
Column Descriptions:  
 \* Protocol: Protocol used by the parent FSC.  
 The value must be of type 'STRING'. This column requires a value in each field.

\* Host: Host where the parent FSC runs.

OK Cancel Help

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

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



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 message, **Distribution Server Started**.



## 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**. This opens the **Modify Web Application** dialog box.
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 Visualization to the four-tier rich client, type the paths to the 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**. This opens the **Modify Context Parameters** dialog box. 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 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 Visualization, NX, or eIntegrator Interface to iWay, the location in which users must install those products

Users must have write 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**)

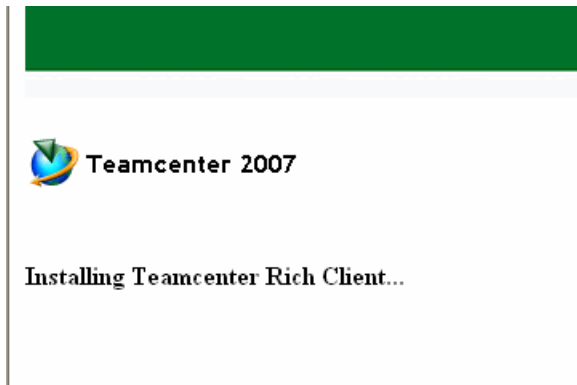
## Install the four-tier rich client using the Over-the-Web installer

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

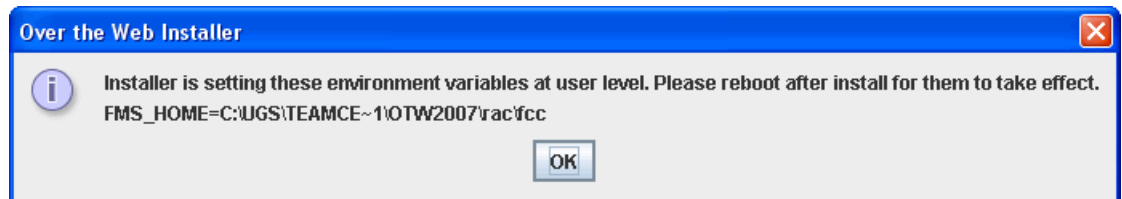
`http://host-name/distribution-instance-deployment/otw.html`

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

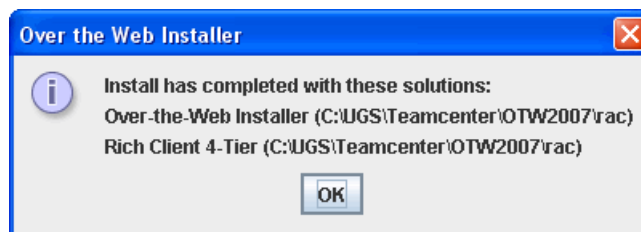
A Web page opens and displays a message saying that the Teamcenter rich client is be installed.



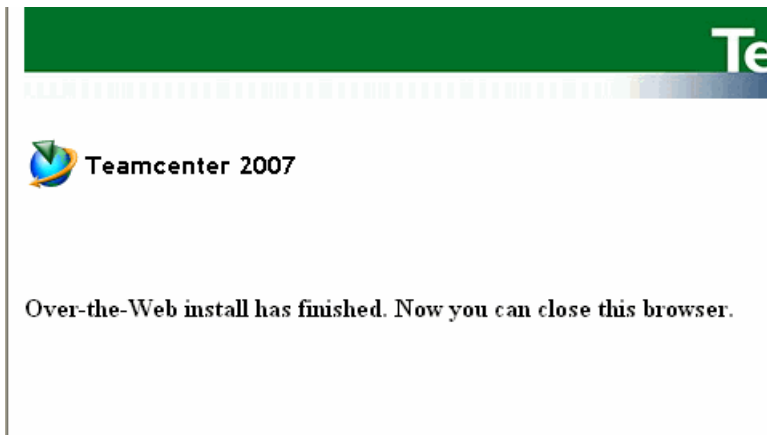
2. You receive a message stating that the installer is setting some environment variables at the user level and you need to reboot the machine for them to take effect. Click **OK**.



3. You receive a message says the installation is complete and listing the installed solutions. Click **OK**.



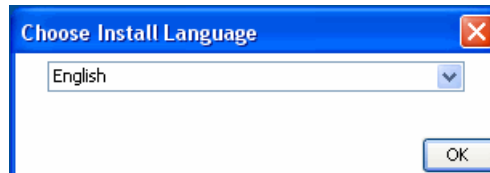
4. The Web page displays a message saying that the installation is complete and you can close the browser. Close the browser.



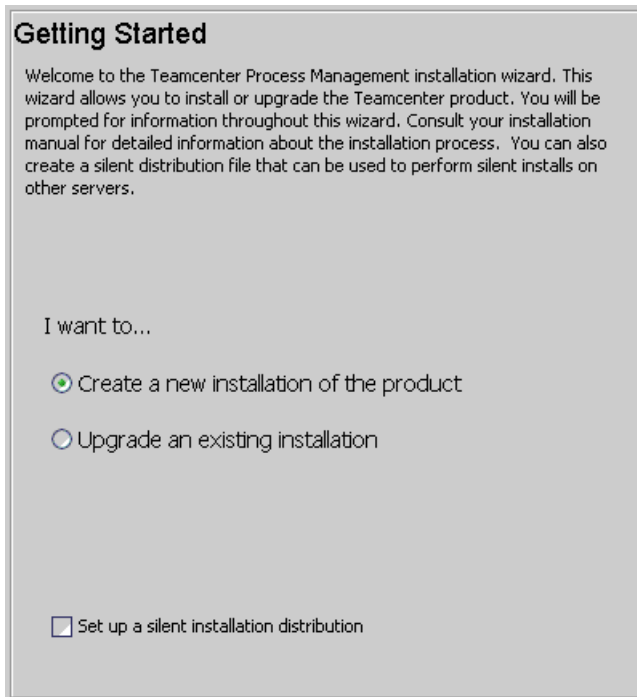
5. Reboot your computer so that the environment variables can take effect.

## Install the four-tier rich client using TEM

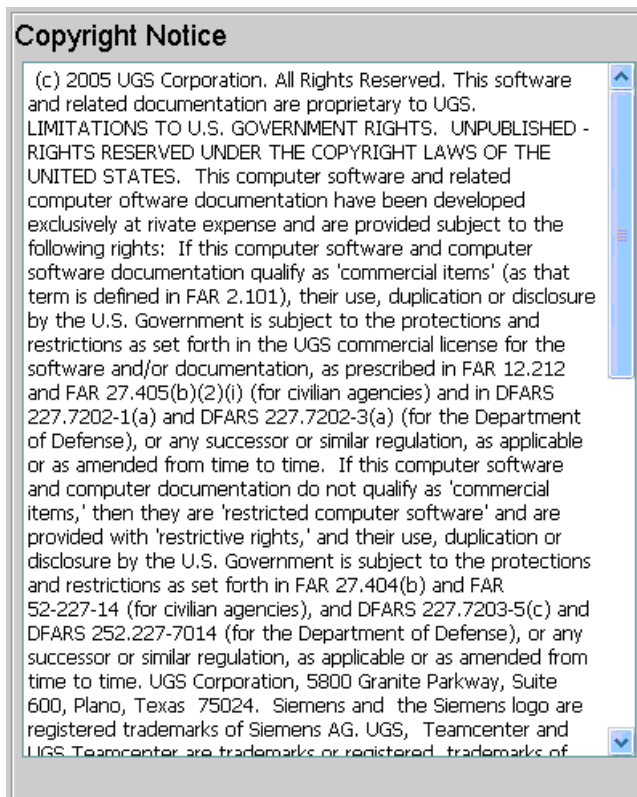
1. Start TEM by double-clicking **tem.bat** on the Teamcenter installation DVD.
2. In the **Choose Install Language** dialog box, select the language you want to use to install the corporate server and click **OK**.



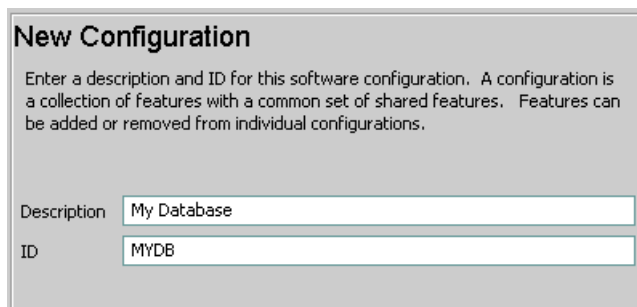
3. In the **Getting Started** dialog box, select **Create a new installation of the product** and click **Next**.



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

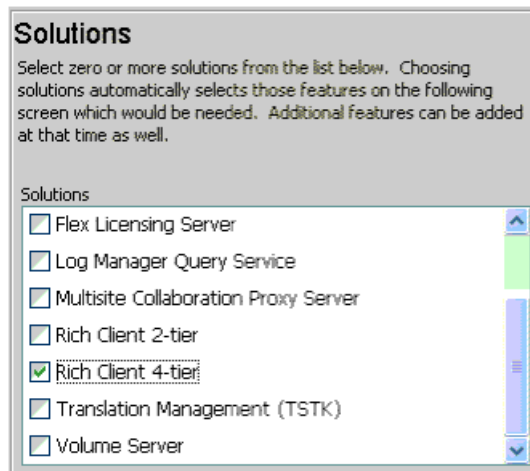


5. In the **New Configuration** dialog box, type a value for the **Description** box and a unique value for the **ID** box. Then click **Next**.

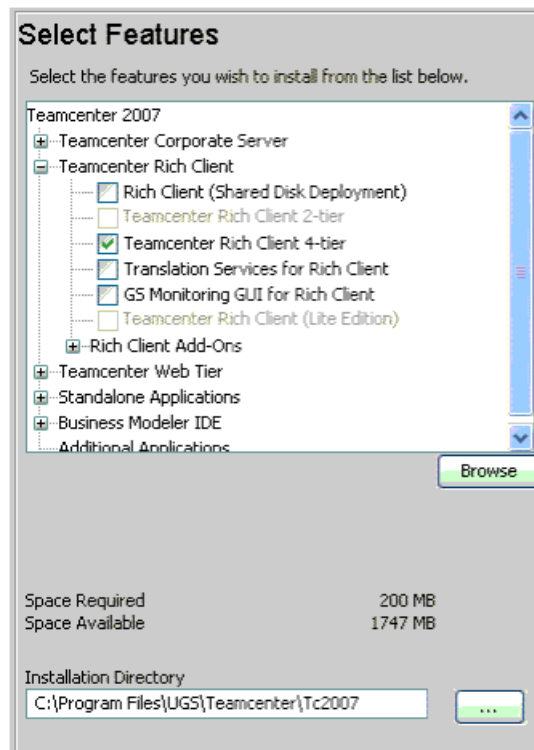


6. Select the **Rich Client 4-tier** solution and click **Next**.





7. In the list, 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. Then click **Next**.



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

**Middle-tier Servers Settings**

Please enter middle-tier web application server information. The servers will be shown in the listed order on client's login window. The first is the default server to use.

☒ Compress(gzip) the responses from web application servers

Middle-tier Servers

URI	Connection Name
http://hostname/:7000	TcWeb1

Add Remove Up Down

9. 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\_tier\_rich\_client\fcc

☐ Proposed value for FMS\_HOME  
C:\Program Files\UGS\Teamcenter\7i2007\fcc

☐ FMS HTTP Proxy  
HTTP Proxy Host:   
HTTP Proxy Port:

☒ FMS HTTPS Proxy  
HTTPS Proxy Host:   
HTTPS Proxy Port:

10. 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	Priority	Transp...
http		4544	0	lan

- Define the location of the runtime temporary folder for the rich client.

### Rich Client Settings

Please enter Rich Client settings.

Runtime Temp Folder

- Define how the rich client will access online help.

### Online Help

Enter a directory location or URL address where the Teamcenter help files can be located or you may choose not to configure help at this time.

#### Online Help Access

☐ Direct Access

Help Files Directory

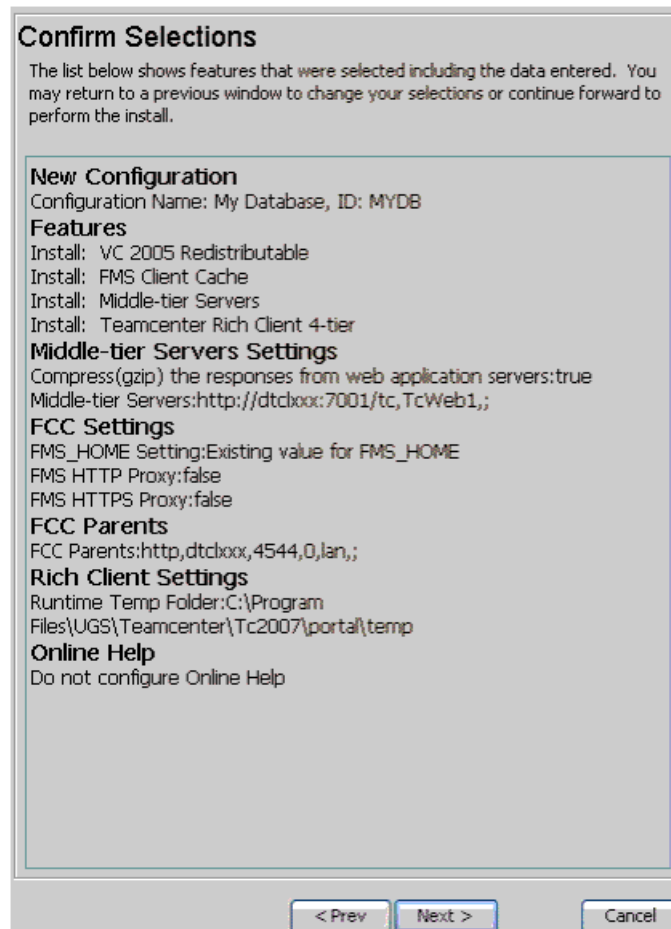
☐ Via Web Server

URL Location

Note that Rich Client will append 'index.htm' to this string to construct the ...

☒ Do not configure Online Help

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



14. When the **Install Features** dialog box displays the message, **Install Features: Successful**, click **Close**.
15. You must reboot your machine in order for the **FMS\_HOME** environment variable to take effect.

## 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:

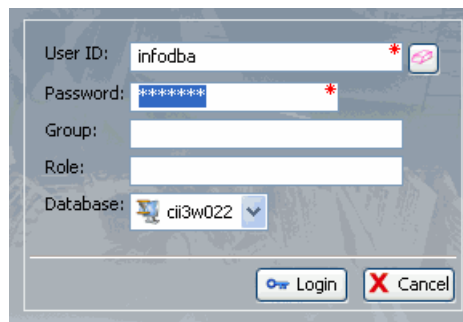
- Distribution server (only needed if the client is to check for updates)
- Database instance service
- Listener service
- FSC service
- TCFS service
- Teamcenter server pool manager (**mgrstartconfiguration-id.bat**)  
*configuration-id* is the configuration ID for the corporate server.
- RMI registry (**start\_rmi.bat**)

## Run the four-tier rich client

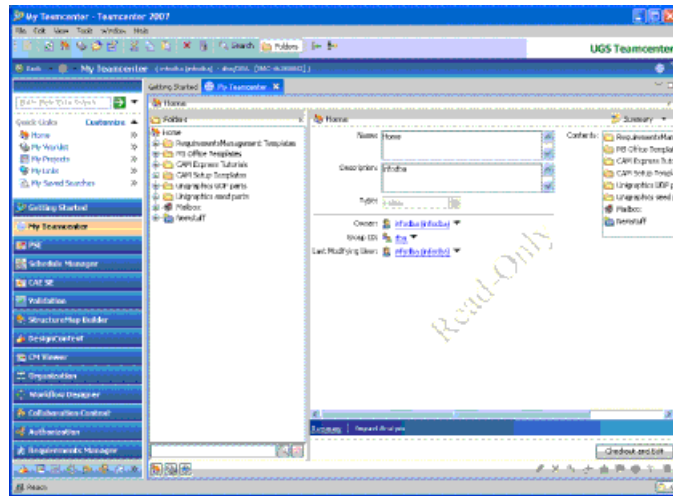
1. Start the four-tier rich client by double-clicking the **Teamcenter 2007 Rich Client 4-Tier** icon on the desktop.
2. In the **Getting Started** page, click **Open my workspace or Inbox**.



3. Log on by providing values for **User ID**, **Password**, **Group** (optional), and **Role** (optional).



You are now logged on.



## Activity

- Activity: *Create a distribution server*  
Operating system account to use: **infodba**
- Activity: *Create a distribution server instance*  
Operating system account to use: **infodba**
- Activity: *Install an Apache HTTP server*  
Operating system account to use: **infodba**
- Activity: *Download and install the four-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Start services and servers required for installing and logging into the four-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Start the four-tier rich client*  
Operating system account to use: **infodba**



## Review questions

Answer these review questions. Select all answers that apply.

1. The four-tier architect is composed of the resource tier, the enterprise tier, the Web tier, and the client tier.
  - A. True
  - B. 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.
  - A. Application server
  - B. Rich client
  - C. Server manager
  - D. Tool agent
3. \_\_\_\_\_ is used to create Web tier applications, distribution servers, and distribution server instances.
  - A. Application Manager
  - B. Teamcenter Enterprise Manager
  - C. Universal Installer
  - D. Web Application Manager
4. The \_\_\_\_\_ contains the thin client functionality and is contacted by the four-tier rich client in order to access the enterprise tier.
  - A. Distribution server instance
  - B. Over-the-Web installer
  - C. Server manager
  - D. Web tier application
5. The \_\_\_\_\_ contains the Over-the-Web installer and the rich client software to be installed on the client.
  - A. Distribution server instance
  - B. Web Application Manager
  - C. Server manager
  - D. Web tier application
6. \_\_\_\_\_ is used to create the .NET Web tier.
  - A. Application Manager

- B. Teamcenter Enterprise Manager
- C. Universal Installer
- D. Web Application Manager

**Answers to review questions**

1. The four-tier architect is composed of the resource tier, the enterprise tier, the Web tier, and the client tier.  
**Correct:** A. True  
B. 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.  
A. Application server  
B. Rich client  
**Correct:** C. Server manager  
D. Tool agent
3. \_\_\_\_\_ is used to create Web tier applications, distribution servers, and distribution server instances.  
A. Application Manager  
B. Teamcenter Enterprise Manager  
C. Universal Installer  
**Correct:** D. Web Application Manager
4. The \_\_\_\_\_ contains the thin client functionality and is contacted by the four-tier rich client in order to access the enterprise tier.  
A. Distribution server instance  
B. Over-the-Web installer  
C. Server manager  
**Correct:** D. Web tier application
5. The \_\_\_\_\_ contains the Over-the-Web installer and the rich client software to be installed on the client.  
**Correct:** A. Distribution server instance  
B. Web Application Manager  
C. Server manager  
D. Web tier application
6. \_\_\_\_\_ is used to create the .NET Web tier.  
A. Application Manager

**Correct:** B. Teamcenter Enterprise Manager

C. Universal Installer

D. Web Application Manager

## Summary

Topics learned in this lesson:

1. Components of the four-tier architecture
2. Four-tier architecture installation process
3. Describe and install the Web Application Manager
4. Describe and install the J2EE Web tier
5. Describe the function of the .NET Web tier
6. Describe and install the Distribution server
7. Describe and install the Distribution server instance
8. Discuss how to managing distribution servers and distribution server instances
9. Install and run a four-tier client

Answer the review questions for this lesson.



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## Lesson

# 8 *Installing the Business Modeler IDE*

### Purpose

The purpose of this lesson is to demonstrate 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 to 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 1.5 (5.0) or Java SDK 1.5 (5.0)
- One GB of RAM
- Eclipse 3.2

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. Start TEM: **All Programs→UGS Teamcenter 2007→Teamcenter 2007→Environment Manager**
2. In the **Maintenance** dialog box, select **Configuration Manager**.
3. In the **Configuration Maintenance** dialog box, select **Perform maintenance on an existing configuration**.
4. In the **Configuration Selection** dialog box, select the configuration to add the Business Modeler IDE to.
5. In the **Feature Maintenance** dialog box, select **Add/Remove Features**.
6. 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**

This options to automatically create a server connection profile for deployment of data model changes to a test server. Choose 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**

This options to automatically create a server connection profile for deployment of data model changes to a test server. Choose this option if you want to connect to a test server in a four-tier environment using HTTP protocol.

7. 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 extension work.

For more information about Eclipse, see the following URL:

<http://www.eclipse.org/>

1. Ensure you have Eclipse 3.2 installed. To download Eclipse, see the following URL:

<http://www.eclipse.org/downloads/>

2. On your installation source (for example, a DVD disc), browse to the **additional\_applications\bmide\_plugins** directory.
3. Extract the following archive files to your Eclipse directory (*ECLIPSE\_HOME*):
  - **bmide\_plugins.zip**  
Contains the Business Modeler IDE plug-ins.
  - **emf-sdo-xsd-SDK-2.2.0.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. Install this only if your Eclipse environment does not already have EMF.
  - **GEF-SDK-3.2.zip**  
Contains the Graphical Editing Framework (GEF) plug-ins. GEF allows developers to take an existing application model and create a graphical editor. Install this only if your Eclipse environment does not already have GEF.
4. After unzipping the plug-ins, verify their installation at *ECLIPSE\_HOME\plugins*.
5. Install the Business Modeler IDE development templates using the Teamcenter Environment Manager (TEM).

On the **Select Features** panel, choose **Business Modeler IDE**→**Business Modeler Templates** (do not choose **Client**). The templates are installed under the **Installation Directory** location in a **bmide\templates** subdirectory.

To make extensions against these data model files, you must create a project that points to these files in the Teamcenter model directory.

## **Start the IMR**

IMR starts the Client-Server communication.

Before you start the Business Modeler IDE server, start the IMR using the following file:

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

### **Caution**

You must do this before starting the Business Modeler IDE in the two-tier architecture in order to deploy your extensions.

## 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→UGS Teamcenter 2007→Teamcenter 2007→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
```

## Activity

- Activity: *Install the Business Modeler IDE as a stand-alone application*  
Operating system account to use: **infodba**
- Activity: *Start the Business Modeler IDE as a stand-alone application*  
Operating system account to use: **infodba**

## Review questions

Answer these review questions. Select all answers that apply.

1. The Business Modeler IDE is built on top of Eclipse, which is a generic platform for tool development that is extended via its plug-in and extension point technology.
  - A. True
  - B. False
2. The Business Modeler IDE can be installed as a stand-alone application using \_\_\_\_\_ .
  - A. a hammer
  - B. Teamcenter Environment Manager
  - C. Universal Installer
  - D. Web Application Manager
3. The following features are required when installing the Business Modeler IDE as a stand-alone application:
  - A. Business Modeler Templates
  - B. Client
  - C. Digital Dashboard
  - D. Mapping Designer
4. The **2 Tier Teamcenter Server Connection** and **4 Tier Teamcenter Server Connection** options to automatically create a server connection profile for deployment of data model changes to a test server.
  - A. True
  - B. False

**Answers to review questions**

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

**Correct:** A. True

B. False

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

A. A hammer

**Correct:** B. Teamcenter Environment Manager

C. Universal Installer

D. Web Application Manager

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

**Correct:** A. Business Modeler Templates

**Correct:** B. Client

C. Digital Dashboard

D. Mapping Designer

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

**Correct:** A. True

B. False



## Summary

Topics learned in this lesson:

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

Answer the review questions for this lesson.



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## Lesson

# 9 *Administer the in-production system*

### Purpose

The purpose of this lesson is to familiarize you with some of the tasks involved in administering the in-production system.

### Objectives

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

- Create a volume using the rich client Organization application.
- Update the FMS master configuration file.
- Relocate a volume.
- Purge volumes.
- View volume details.
- Delete unreferenced files.
- View volume paths.
- Generate a report of corrupt datasets.
- Purge corrupt datasets.

### Help topics

Additional information for this lesson can be found in:

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

## **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® UGS Teamcenter 2007® Teamcenter 2007® 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
```

## Volumes

A volume:

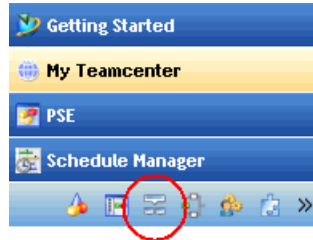
- Is a Teamcenter-controlled directory that stores files managed by Teamcenter.
- Is not directly accessible by users and can only be accessed via a Teamcenter session.
- Is the location in which a file is created when a user creates a file from the rich client.

Creating volumes:

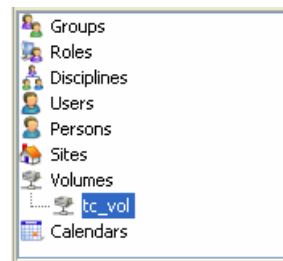
- At least one standard Teamcenter volume is required per database. You define and create this first volume in TEM while installing the corporate server.
- You can create additional volumes for a database by:
  1. Using the rich client Organization application to create the volume.
  2. Restarting all FSCs so that the updated FMS master configuration file can take effect.

## 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.

std\_vol

Volume Name: std\_vol \*

Node Name: dtclxxx \*

Machine Type: ☐ Unix ☒ Windows

UNIX Path Name:

Windows Path Name: D:\es1\_vols\std\_vol \*

FSC Path Name:

ID Type: ☒ FSC ☐ Filestore Group ☐ Load Balancer

ID: \*

FMS Configuration: Reload Report Display

Statistics: Size: 12284 Mb  
Used: 8345 Mb  
% Full: 67%

Mirrored:

Accessors: dba  
Engineering

Create Modify Delete Clear

5. After entering all necessary information, click **Create**.  
The volume is created and is added to the FMS master configuration file.
6. Stop and restart all FSCs so that the changes to the FMS master can take effect.

## Purge volumes

A Teamcenter user can delete a Teamcenter object but 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® UGS Teamcenter 2007® Teamcenter 2007® 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® UGS Teamcenter 2007® Teamcenter 2007® 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® UGS Teamcenter 2007® Teamcenter 2007® 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

## **Activity**

- Activity: *Create a volume using the Organization rich client application*  
Operating system account to use: **infodba**
- Activity: *Add the new volume's information to the FMS master configuration file using TEM*  
Operating system account to use: **infodba**

## 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 (i.e., 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® UGS Teamcenter 2007® Teamcenter 2007® 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® UGS Teamcenter 2007® Teamcenter 2007® 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.

## install utility

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

- Determine if the user can connect to the Oracle database using the current **TC\_DB\_CONNECT** string.
- Change the Oracle 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**

The **install** utility has a wide variety of command line switches, many of which are used only during the installation or upgrade of Teamcenter and are set by the setup program. It is strongly recommended that these switches not be used at any other time.

## **POM schema file**

The 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® UGS Teamcenter 2007® Teamcenter 2007® 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 will see the following output:

```
Install terminated successfully
```

## **POM schema transmit file**

The 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® UGS Teamcenter 2007® Teamcenter 2007® 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
```

## 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.



## **Activity**

- Activity: *Regenerate the POM schema file*  
Operating system account to use: **infodba**
- Activity: *Regenerate the POM schema transmit file*  
Operating system account to use: **infodba**

## Review questions

Answer these review questions. Select all answers that apply.

1. You can create additional volumes using Organization application.
  - A. True
  - B. False
2. After creating a volume, it is not necessary to recycle all FSCs.
  - A. True
  - B. False
3. One way that a dataset is identified as corrupted the dataset has no reference to a file managed by Teamcenter.
  - A. Ttrue
  - B. False
4. The \_\_\_\_\_ utility is used to generate the encrypted Oracle password for the Teamcenter database user.
  - A. clearlocks
  - B. install
  - C. list\_users
  - D. purge\_password

## **Answers to review questions**

1. You can create additional volumes using Organization application.

**Correct:** A. True

B. False

2. After creating a volume, it is not necessary to recycle all FSCs.

A. True

**Correct:** B. False

3. One way that a dataset is identified as corrupted the dataset has no reference to a file managed by Teamcenter.

**Correct:** A. True

B. False

4. The \_\_\_\_\_ utility is used to generate the encrypted Oracle password for the Teamcenter database user.

A. clearlocks

**Correct:** B. install

C. list\_users

D. purge\_password

## Summary

Topics learned in this lesson:

1. Create a volume using the rich client Organization application.
2. Update the FMS master configuration file.
3. Relocate a volume.
4. Purge volumes.
5. View volume details.
6. Delete unreferenced files.
7. View volume paths.
8. Generate a report of corrupt datasets.
9. Purge corrupt datasets.

Answer the review questions for this lesson.

---

## Lesson

# 10 *Embedded visualization and Teamcenter Integration for NX*

### Purpose

The purpose of this lesson is to add embedded visualization and NX Manager to an existing two-tier rich client.

### Objectives

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

- Install the Embedded Visualization application.
- Add the Embedded Visualization feature to a two-tier rich client using TEM.
- Add the Embedded Visualization solution to a four-tier rich client using the Web Application Manager.
- Install the license server used with NX 5.
- 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 and Linux Clients Guide\*](#)

## Embedded visualization

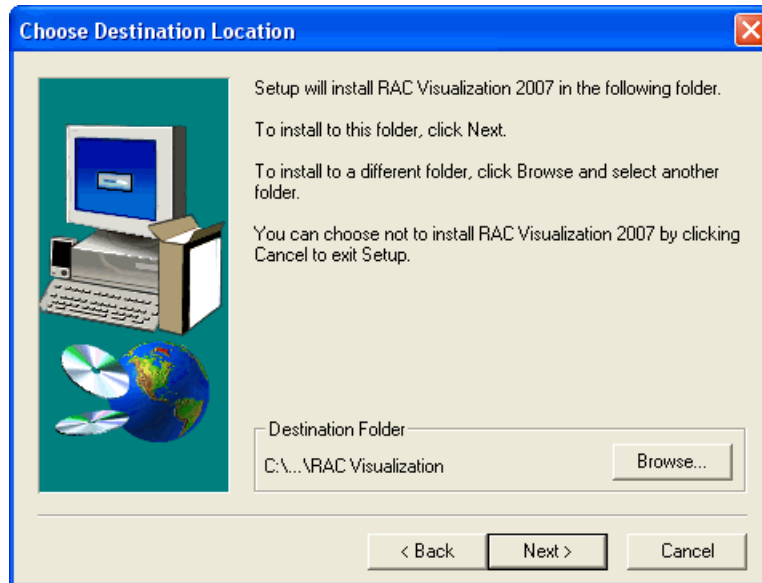
Teamcenter has a viewer that can be added to the rich client to provide enterprise-wide product visualization capabilities and is embedded in the rich client interface.

To incorporate the embedded viewer into a two-tier rich client, you must:

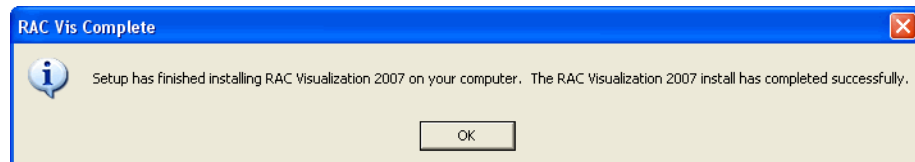
- Install the Embedded Visualization application on the client machine.
- Add the **Embedded Visualization** feature to the two-tier rich client configuration using TEM.

## Install embedded visualization

1. Start the setup program by unzipping **TcEmbeddedVis2007.zip** from the Embedded Visualization installation DVD and double-clicking **Setup.exe**.
2. Choose a destination location and click **Next** to begin the installation.



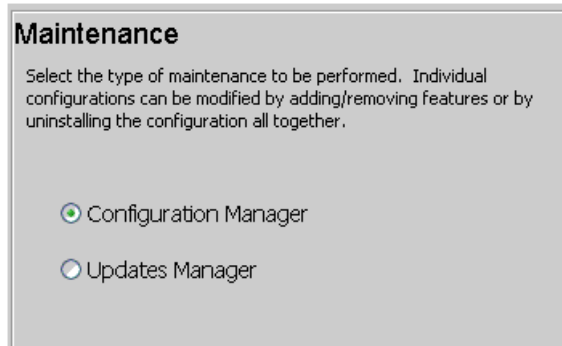
3. When the installation is complete, a message is displayed. Click **OK**.



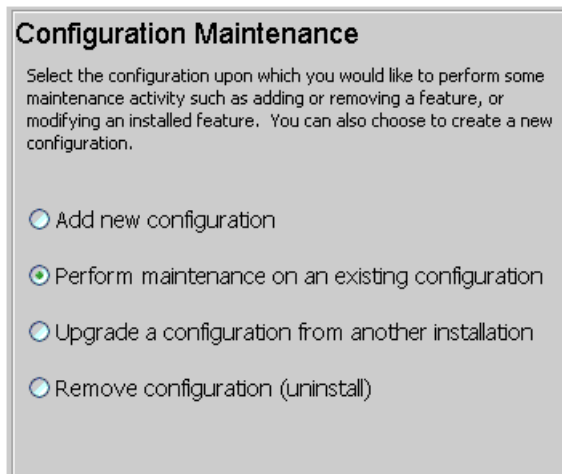
## Add Embedded Visualization for Rich Client to a two-tier rich client

To add the **Embedded Visualization for Rich Client** feature to a two-tier rich client configuration:

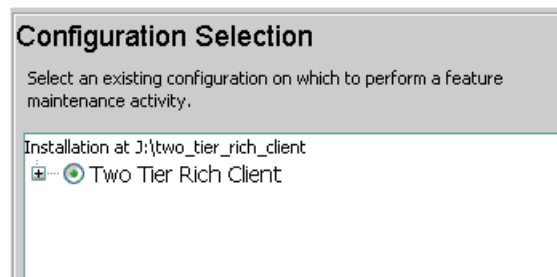
1. Start the TEM associated with the two-tier rich client configuration to which you want to add the **Embedded Visualization for Rich Client** feature.
2. In the **Maintenance** dialog box, select **Configuration Manager** and click **Next**.



3. In the **Configuration Maintenance** dialog box, select **Perform Maintenance on an existing configuration** and click **Next**.

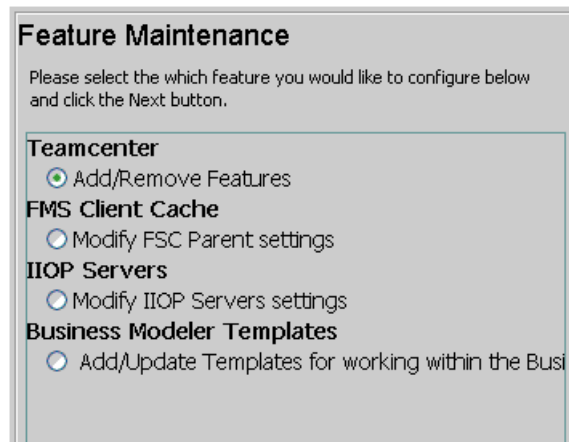


4. In the **Configuration Selection** dialog box, select the configuration to which you want to add embedded visualization and click **Next**.

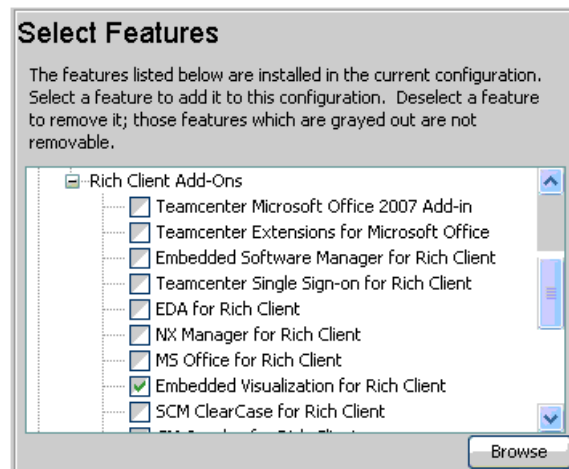


5. In the **Feature Maintenance** dialog box, select **Add/Remove Features** and click **Next**.

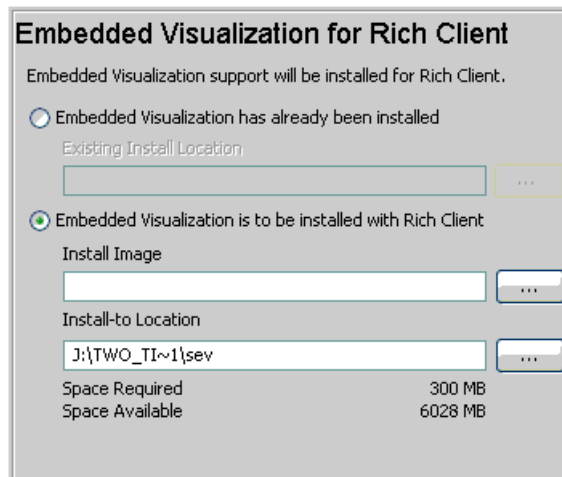




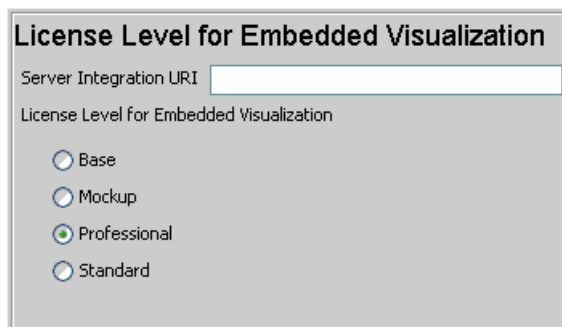
6. In the **Select Features** dialog box, select **Embedded Visualization for Rich Client** and click **Next**.



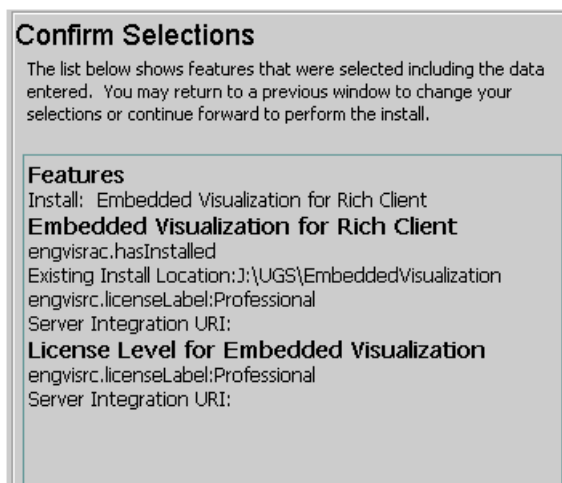
7. In the **Embedded Visualization for Rich Client** dialog box:
- Select **Embedded Visualization has already been installed** if the application has already been installed. Provide the path to the installation.
  - Select **Embedded Visualization is to be installed with Rich Client** if the application has not already been installed. Provide the path to the install image and to the destination location. If you select this option, TEM installs the Embedded Visualization application automatically.



8. In the **License Level for Embedded Visualization** dialog box, select the license level and click **Next**.



9. in the **Confirm Selections** dialog box, review your selections and click **Next**.

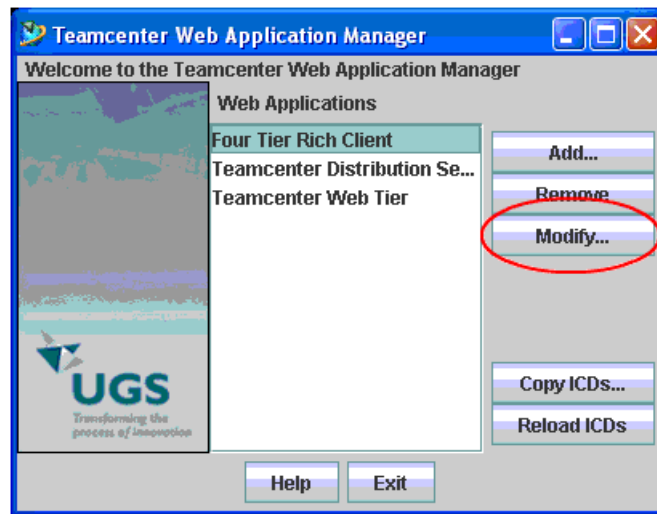


10. When the installation is complete, the **Install Features: Successful** message appears. Click **Close** In the **Install Features** dialog box.

The **Embedded Visualization for Rich Client** feature is now added to the two-tier rich client configuration.

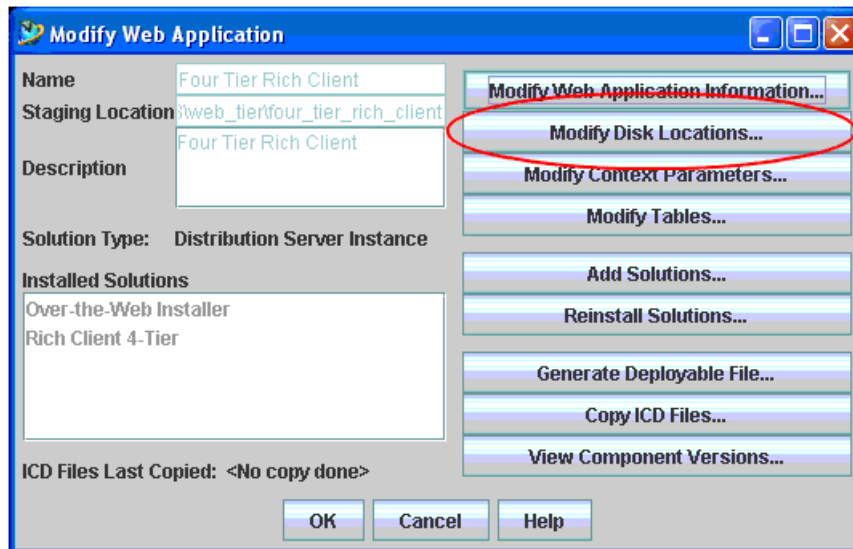
## **Add Embedded Visualization for Rich Client to a four-tier rich client**

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 Embedded Visualization for Rich Client is to be added and click **Modify**.

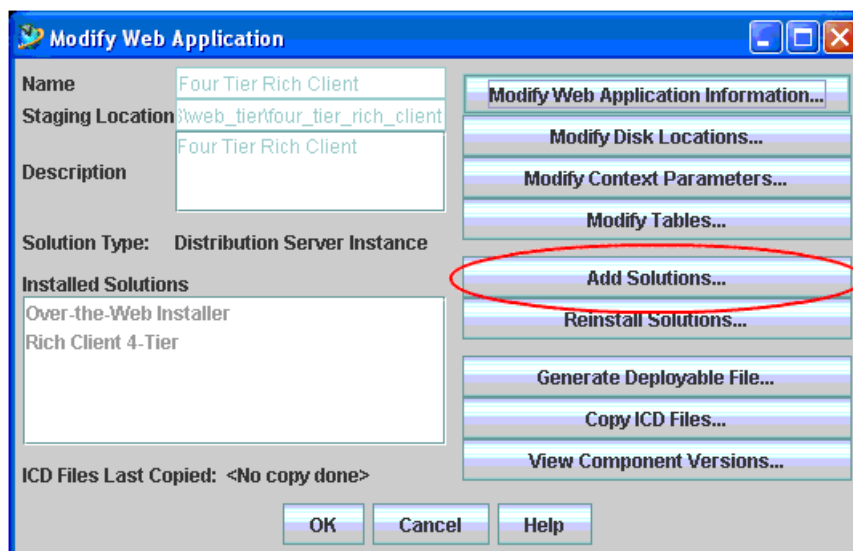


3. If the embedded visualization application is going to be installed using the Over-the-Web installer, you must add the path to the embedded visualization installation zip files for all supported platforms. These files are found on the Product Vision installation DVD. The five required files are:
  - **TcEmbeddedVis2007\_1\_aix.tar.gz**
  - **TcEmbeddedVis2007\_1\_hp-ux.tar.gz**
  - **TcEmbeddedVis2007\_1\_linux64.tar.gz**
  - **TcEmbeddedVis2007\_1\_sun.tar.gz**
  - **TcEmbeddedVis2007\_1\_win.zip**

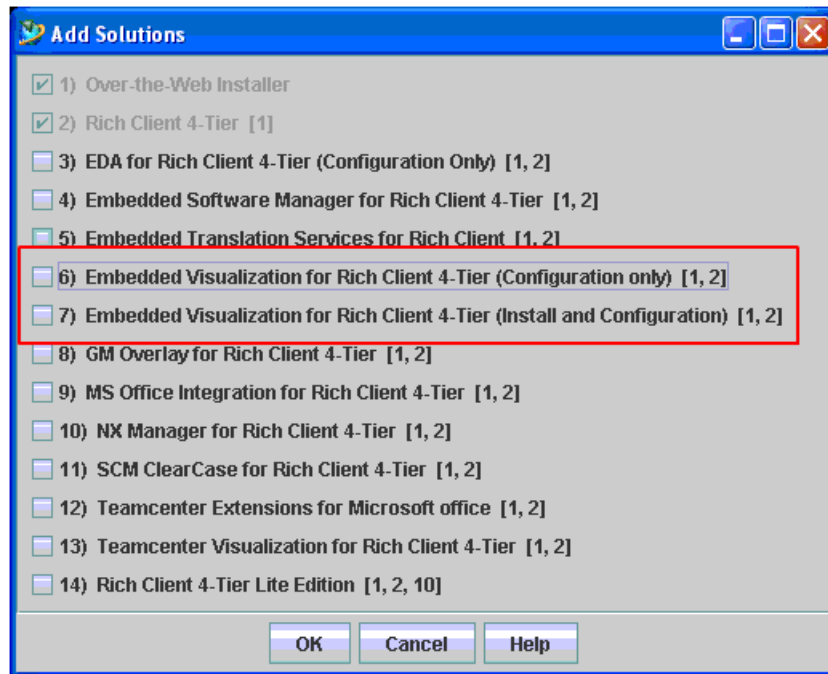
The path to all five files is required even if you are not using all five platforms. Click **Modify Disk Locations** to add the path to these files.



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 **Embedded Visualization for Rich Client 4–tier (Configuration only)** if the embedded visualization application is already installed on the client.
  - Select **Embedded Visualization for Rich Client 4–tier (Install and Configuration)** 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**.

- **EmbVisWindowsLocation**

This is the location on the client in which the embedded viewer was installed. This is used only if the **Embedded Visualization for Rich Client 4-tier (Configuration only)** solution is selected.

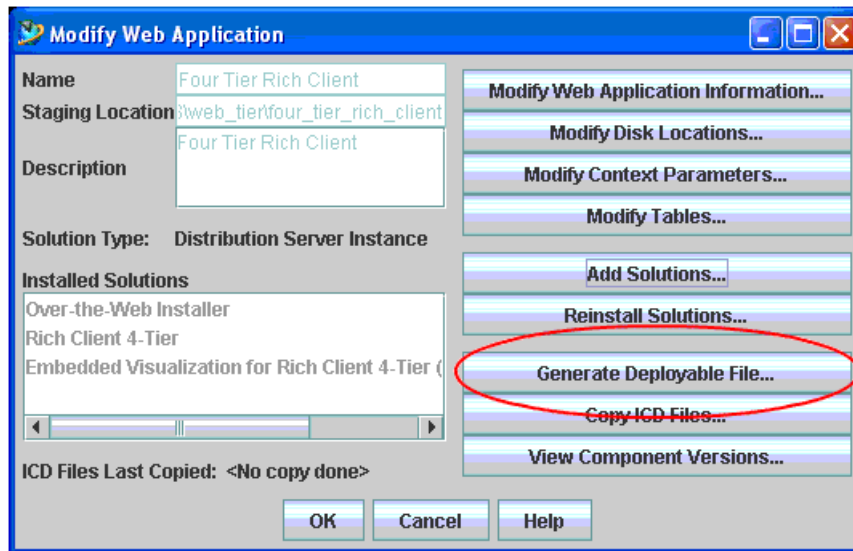
- **EmbVisUnixLocation**

This is the location on the client in which the embedded viewer was installed. This is used only if the **Embedded Visualization for Rich Client 4-tier (Configuration only)** solution is selected.

- **EmbVisLicenseLevel**

This is used to set the license level for the embedded viewer. Choices 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 now updated.
13. The distribution server instance is now 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**)

## **Activity**

- Activity: *Install the embedded viewer*  
Operating system account to use: **infodba**
- Activity: *Add the Embedded Visualization to a two-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Add the Embedded Visualization to a four-tier rich client*  
Operating system account to use: **infodba**

## 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 the license server used with NX
- 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.



## **Install license server for NX 5**

NX 5 uses a different license server than NX 4 and Teamcenter 2007. To install this license server:

1. Double-click **Launch.exe** from the NX 5 installation image.  
The **NX 5 Product Installation** dialog box appears.
2. Click **Install UGS license server**.  
The **Choose Setup Language** dialog box appears.
3. Select **English (United States)** and click **OK**.  
The **Welcome to UGS Licensing** dialog box appears.
4. Click **Next**.  
The **Destination Folder** dialog box appears.
5. If you wish to change the location in which the license server will be installed, click **Change**.  
Click **Next** to proceed.  
The **LICENSE FILE** dialog box appears.
6. Type the location of the NX 5 license file and click **Next**.
7. Click **Install**.
8. When the installation is completed, click **Finish**.

## Install NX 5

To install NX 5 on a client machine:

1. Start the installation program by double-clicking **Launch.exe** from the installation image.

The **Choose Setup Language** dialog box appears.

2. Select **English (United States)** and click **OK**.

The **NX Installshield** dialog box appears.

3. Click **Next**.

The **Setup Type** dialog box appears.

4. Select **Typical** and click **Next**.

The **Destination Folder** dialog box appears.

5. If you want to change the destination directory, click **Change**.

Click **Next**.

The **License Server** dialog box appears.

6. 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.

7. Select the language in which you wish to run NX and click **Next**.

The **Ready to Install the Program** dialog box appears.

8. Review the settings and then click **Install**.

NX installs.

9. When the installation is completed, click **Finish**.

The NX application is now installed on the client machine.

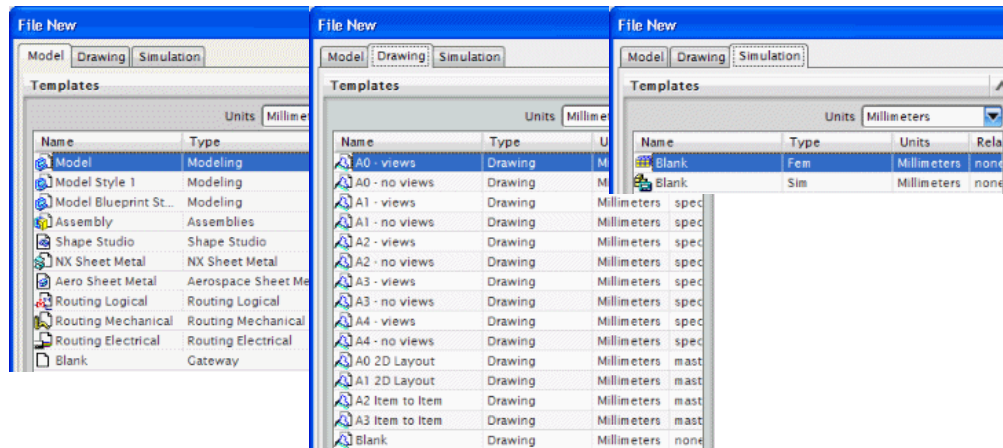
## NX 5 templates

Templates are used 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:

### Model

### Drawing

### Simulation



## **Using NX templates**

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 when you create the item. 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 5 templates**

After Teamcenter and NX are installed, you can install the NX templates.

1. Select **Start® All Programs® UGS Teamcenter 2007® Teamcenter 2007® *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.

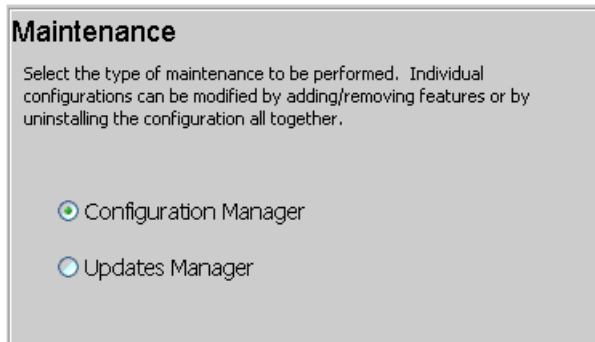
2. In the **Command Prompt** window, enter the following command:

```
UGII_BASE_DIR\ugii\templates\sample\nx5_template_setup.bat -u=infodba  
-p=infodba
```

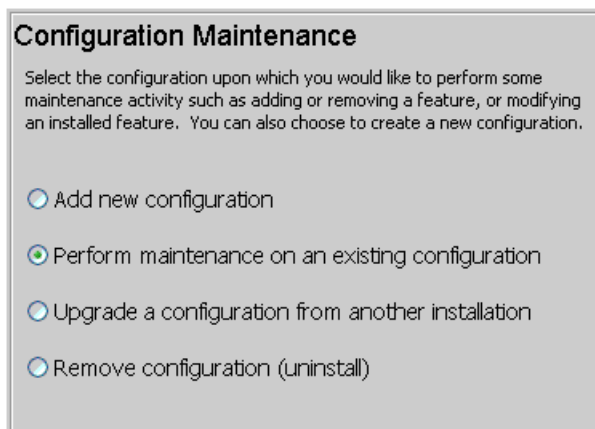
When the program is finished, close the **Command Prompt** window.

## Add NX Manager for Rich Client feature to a two-tier rich client

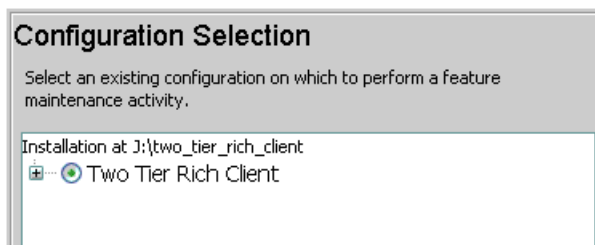
1. Start TEM for the two-tier rich client to which you want to add the **NX Manager for Rich Client** feature.
2. Select **Configuration Manager** and click **Next**.



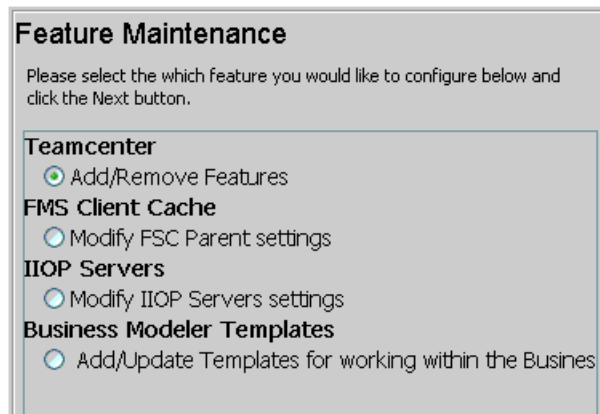
3. In the **Configuration Maintenance** dialog box, select **Perform maintenance on an existing configuration** and click **Next**.



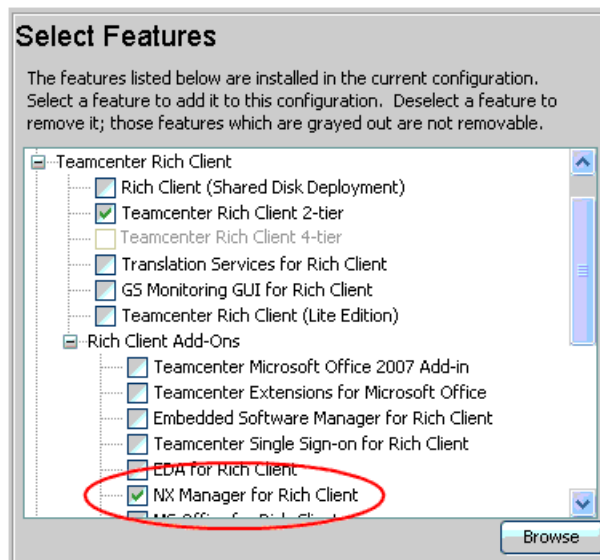
4. In the **Configuration Selection** dialog box, select the configuration to which the feature is to be added and click **Next**.



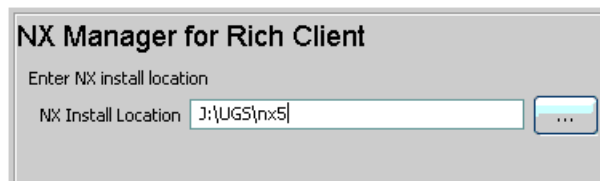
5. In the **Feature Maintenance** dialog box, select **Add/Remove Features** and click **Next**.



6. In the **Select Features** dialog box, select **NX Manager for Rich Client** and click **Next**.



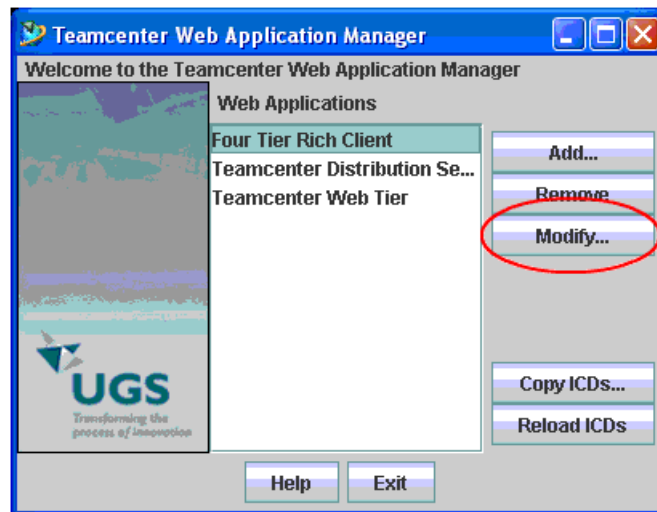
7. In the **NX Manager for Rich Client** dialog box, provide the path to the NX installation and click **Next**.



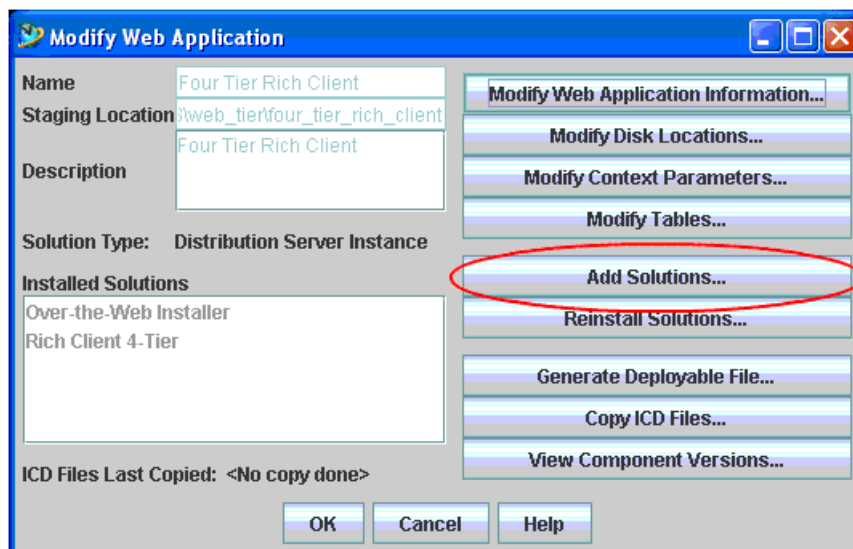
8. In the **Confirm Selection** dialog box, confirm your selections and begin the installation and click **Next**.
9. When the installation is complete, the **Install Features: Complete** message appears. Click **Close**.

## 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**.

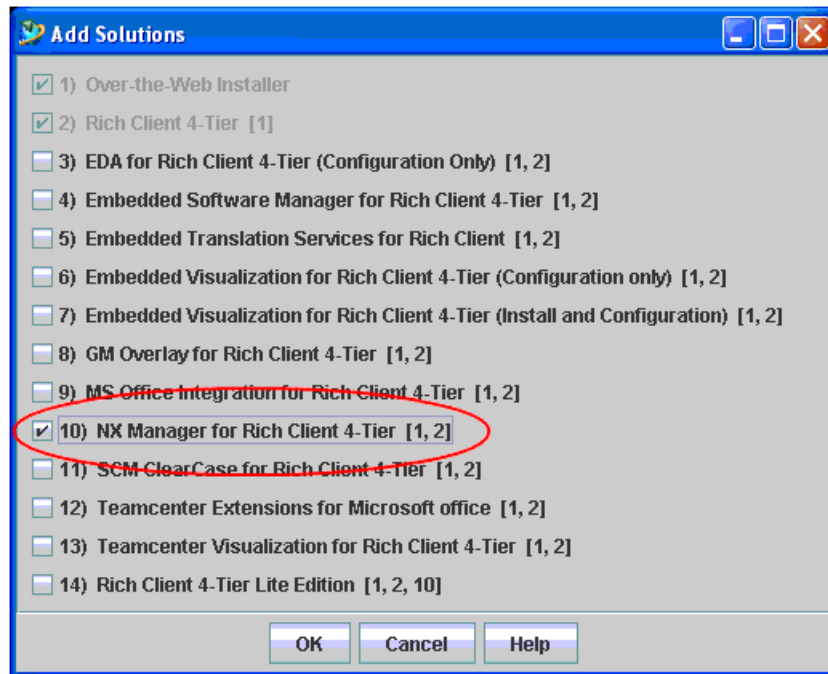


3. In the **Modify Web Applications** dialog box, click **Add Solutions**.

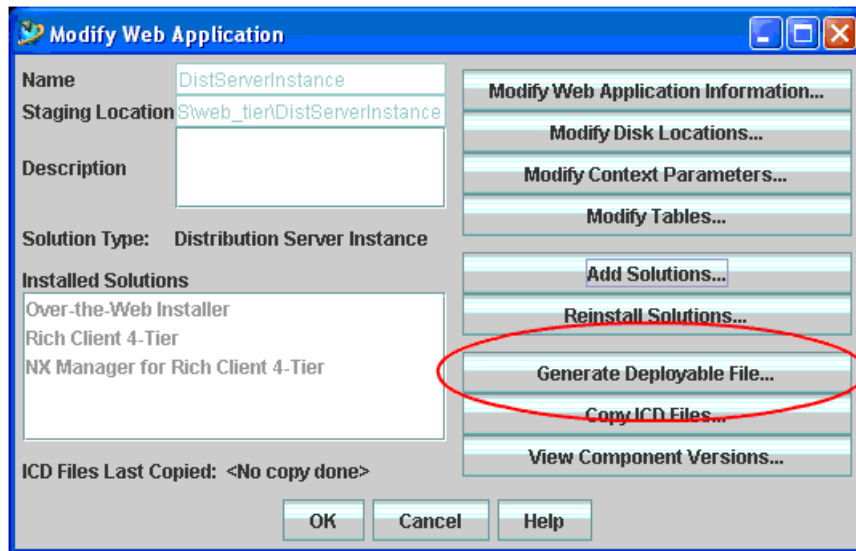


4. In the **Add Solutions** dialog box, select **NX manager for Rich Client 4–Tier**.





5. In the **Modify Context Parameters** dialog box, provide the necessary information and click **OK**.
  - **NXWindowsLocation**  
The location on Windows clients in which NX has been installed.
  - **NXUnixLocation**  
The location on UNIX clients in which NX is installed.
  - **NXVersion**  
The version of NX that has been installed on the client—**V22.0** = NX 4, **V23.0** = NX 5.
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 now updated.
12. The distribution server instance is now 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 NX Manager:

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 is now visible in the Teamcenter tool bar.



## Activity

- Activity: *Install license server for NX*  
Operating system account to use: **infodba**
- Activity: *Install NX*  
Operating system account to use: **infodba**
- Activity: *Install NX templates*  
Operating system account to use: **infodba**
- Activity: *Add the NX Manager to a two-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Add the NX Manager to a four-tier rich client*  
Operating system account to use: **infodba**
- Activity: *Display the NX icon in the rich client*  
Operating system account to use: **infodba**
- Activity: *Run NX Manager*  
Operating system account to use: **infodba**

## **Review questions**

Answer these review questions. Select all answers that apply.

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.
  - A. True
  - B. False
2. NX 5 uses the license server that is available in Teamcenter Environment Manager.
  - A. True
  - B. False
3. You install NX 5 templates using \_\_\_\_\_.
  - A. \*.bat file
  - B. NX 5
  - C. Teamcenter Environment Manager
  - D. Web Application Manager

**Answers to 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.

**Correct:** A. True

B. False

2. NX 5 uses the license server that is available in Teamcenter Environment Manager.

A. True

**Correct:** B. False

3. You install NX 5 templates using \_\_\_\_\_ .

**Correct:** A. \*.bat file

B. NX 5

C. Teamcenter Environment Manager

D. Web Application Manager

## Summary

Topics learned in this lesson:

1. Install the Embedded Visualization application.
2. Add the Embedded Visualization feature to a two-tier rich client using TEM.
3. Install NX.
4. Add the NX Manager for Rich Client feature to a two-tier rich client using TEM.
5. Display the **NX** button in the rich client.

Answer the review questions for this lesson.





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## 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.
- Confirm 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 and Linux 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
```

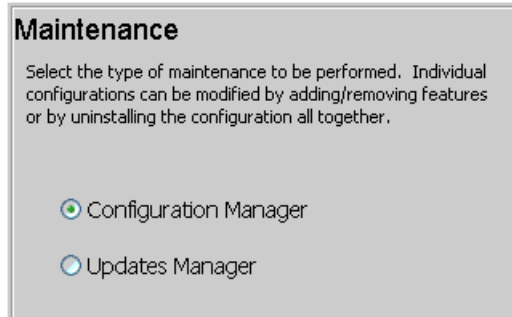
## **Configure the FMS service**

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 are FSC entries for the initial and the additional corporate servers and click **OK**.
8. Note that both sites have been added to the **Remote Sites** list 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.

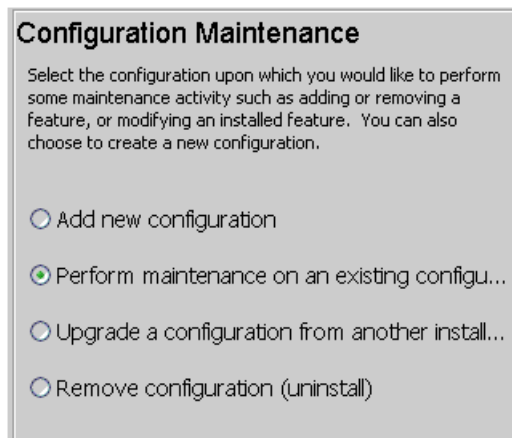
## Modify the two-tier rich client configuration

To modify an existing two-tier rich client to point to multiple databases:

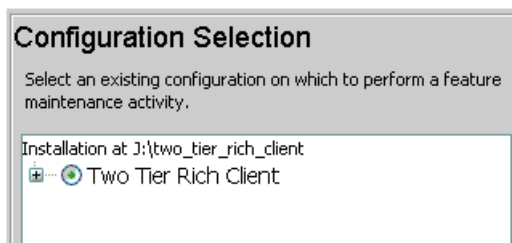
1. Start the TEM for the two-tier rich client.
2. In the **Maintenance** dialog box, select **Configuration Manager** and click **Next**.



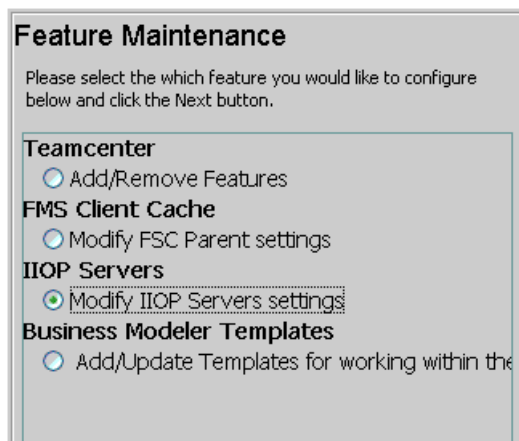
3. In the **Configuration Maintenance** dialog box, select **Perform maintenance on an existing configuration** and click **Next**.



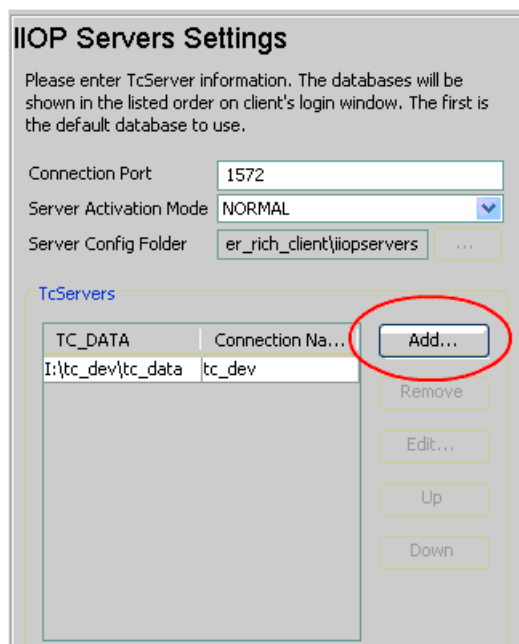
4. In the **Configuration Selection** dialog box, select the configuration you wish to modify and click **Next**.



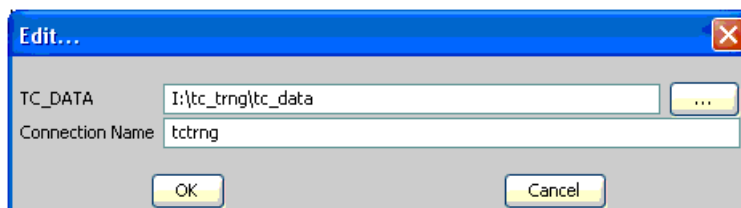
5. In the **Feature Maintenance** dialog box, select **Modify IIOP Server Settings** and click **Next**.



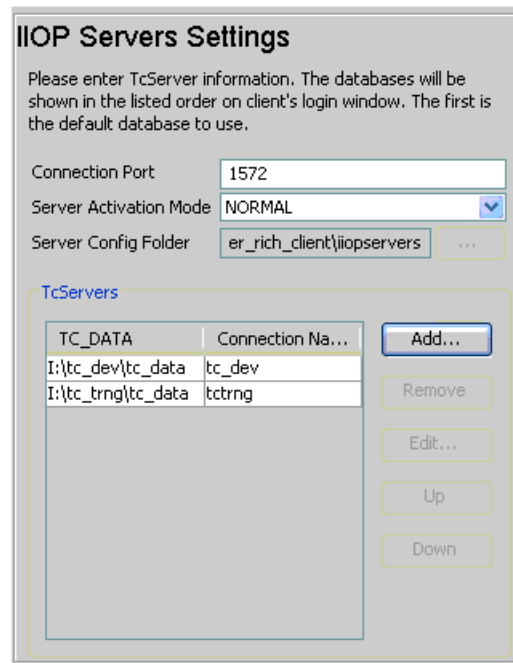
6. In the **IIOP Server Settings** dialog box, click **Add**.



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	tc_trng

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**.

## Activity

If you installed Oracle, perform the following activities:

- Activity: *Create an additional database*  
Operating system account to use: **infodba**
- Activity: *Remove the existing TCFS*  
Operating system account to use: **infodba**
- Activity: *Add an additional corporate server*  
Operating system account to use: **infodba**
- Activity: *Configure the FMS service*  
Operating system account to use: **infodba**
- Activity: *Modify the two-tier rich client to point to both databases*  
Operating system account to use: **infodba**
- Activity: *Test the modified rich client*  
Operating system account to use: **infodba**

If you installed MS SQL, perform the following activities:

- Activity: *Remove the existing TCFS*  
Operating system account to use: **infodba**
- Activity: *Add an additional corporate server*  
Operating system account to use: **infodba**
- Activity: *Configure the FMS service*  
Operating system account to use: **infodba**
- Activity: *Modify the two-tier rich client to point to both databases*  
Operating system account to use: **infodba**
- Activity: *Test the modified rich client*  
Operating system account to use: **infodba**



## **Review questions**

Answer these review questions. Select all answers that apply.

1. You can add additional database connection to a two-tier rich client by \_\_\_\_\_ in the Teamcenter Environment Manager.
  - A. Adding a database logon
  - B. Adding a server connection feature
  - C. Modifying the FSC parent connections
  - D. Modifying the IIOP server settings to add a TcServer connection

### **Answers to review questions**

1. You can add additional database connection to a two-tier rich client by \_\_\_\_\_ in the Teamcenter Environment Manager.

- A. Adding a database logon
- B. Adding a server connection feature
- C. Modifying the FSC parent connections

**Correct:** D. Modifying the IIOP server settings to add a TcServer connection

## **Summary**

Topics learned in this lesson:

1. Describe the overall process of creating an additional Teamcenter site.
2. Remove an existing TCFS service.
3. Configure FMS to include the initial and the additional sites.
4. Confirm the two-tier rich client to point to both sites.

Answer the review questions for this lesson.



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## 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

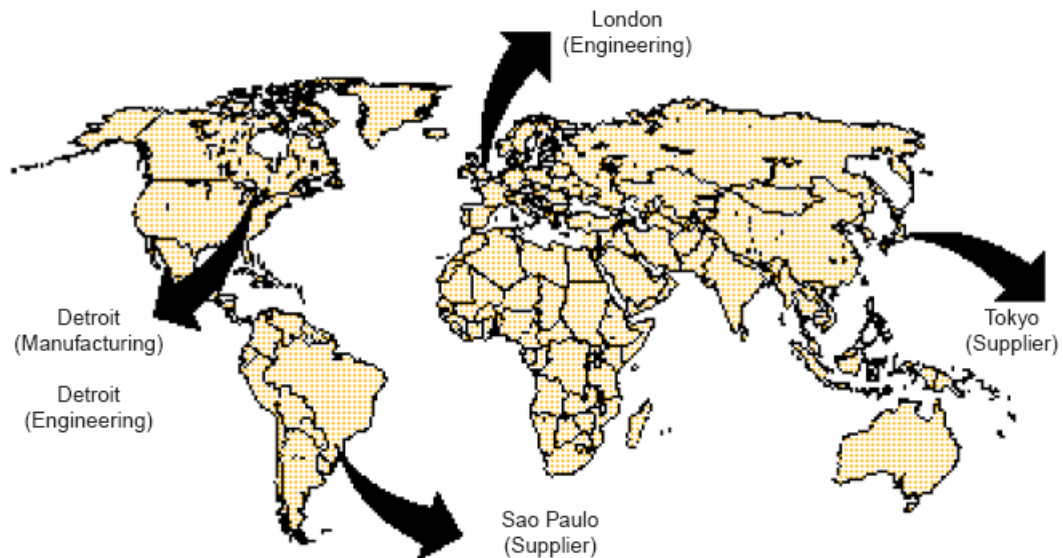
During product development, the engineering sites in Detroit and London occasionally share small amounts of data with one another and with their suppliers in São Paulo and Tokyo. This is accomplished by manually exporting product information as objects, transferring these objects using File Transfer 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 graphic below 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

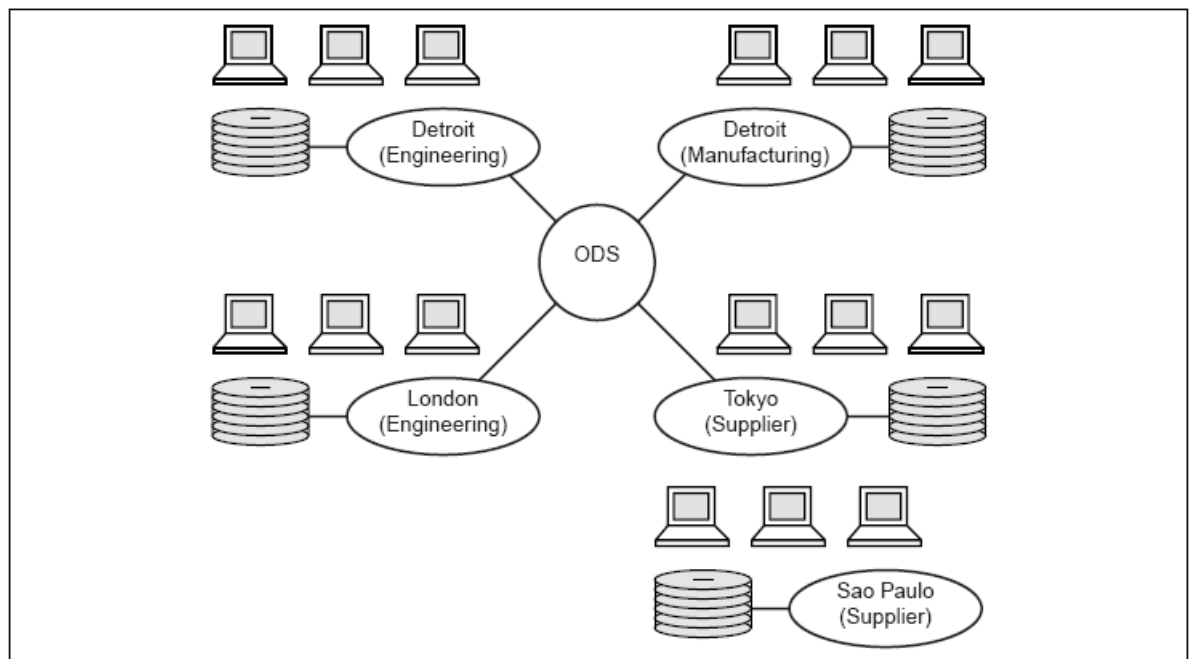
Consider how the enterprise in our first example could implement a Multi-Site Collaboration network. XYZ Widgets decided to link both the Detroit sites with the London and Tokyo sites using a high-speed wide area network (WAN). They also decided that the supplier in São Paulo would not be sharing enough 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).



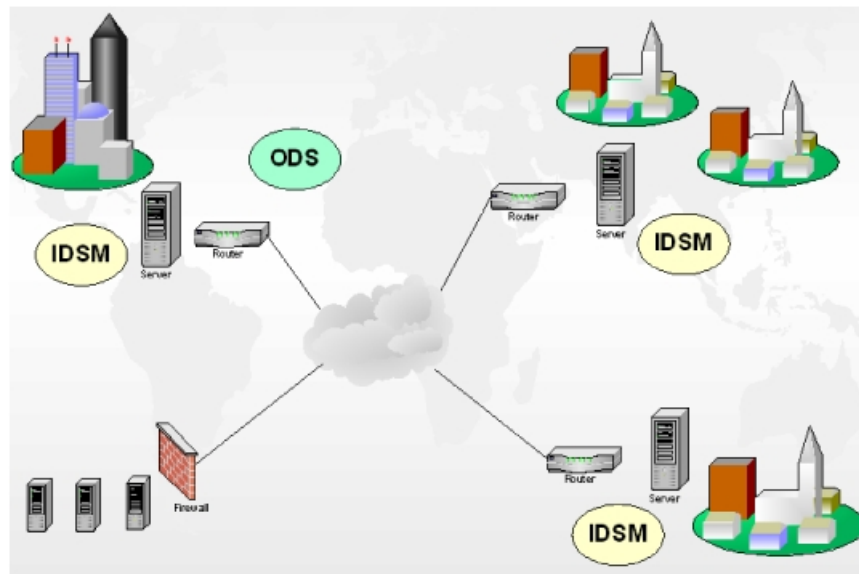


## ODS and IDSM

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**

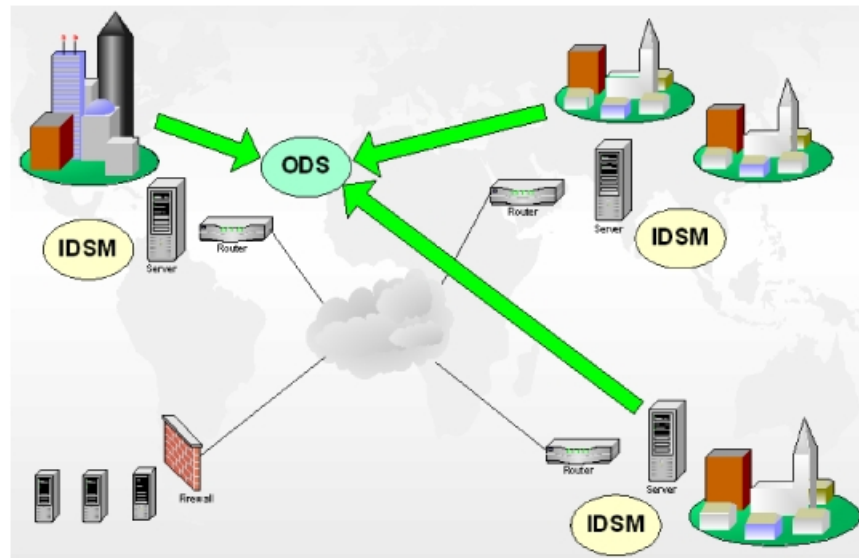
For independent sites within the same enterprise to share data, Multi-Site Collaboration implements an environment that can best be described as a federation of sites. Each site is truly independent, yet is able to operate and share data within a larger entity called the Multi-Site Collaboration network. 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.

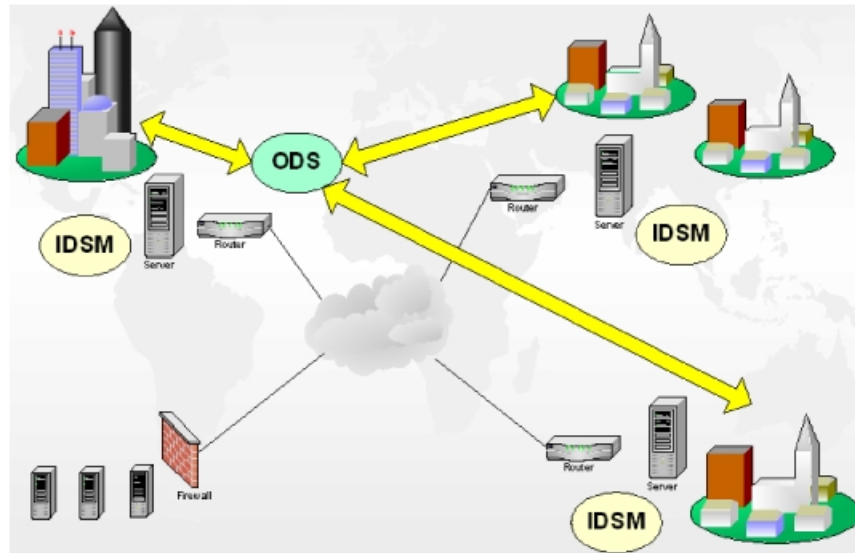
When you publish an object, a publication record is created in the ODS.

- 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**

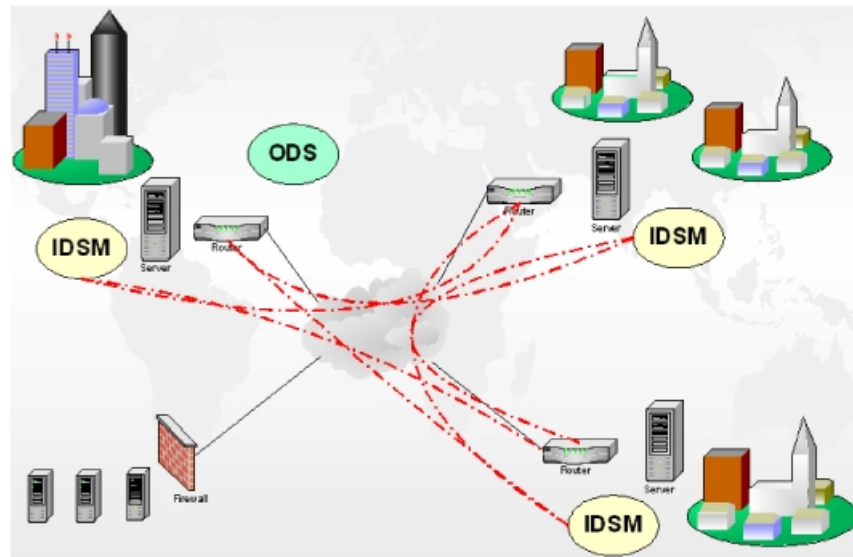
Without proper security controls, replicated product information could fall into the hands of people not authorized to have it.

- **Auditing and tracking**

A replication-based system must provide some method of tracking all replicas of an object not just 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 via 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

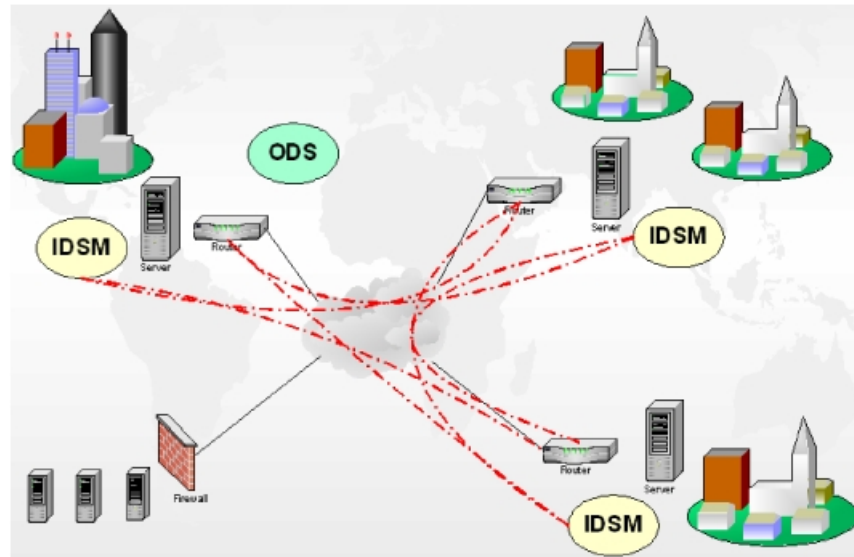
When the master object is modified, replicas can be updated by a system administrator through this utility. The process of keeping replicated data up-to-date is called synchronization. Optionally, synchronization may be limited to visualization data that is directly or indirectly related to datasets. 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

Answer these review questions. Select all answers that apply.

1. The Multi-Site Collaboration solution provides semiautomated, real-time data sharing across an entire enterprise.
  - A. True
  - B. False
2. *Object Directory Services* (ODS) is an object \_\_\_\_\_.
  - A. Locator
  - B. Transporter
3. Publishing an object makes it available only to the owning site
  - A. True
  - B. False

### **Answers to review questions**

1. The Multi-Site Collaboration solution provides semiautomated, real-time data sharing across an entire enterprise.

**Correct:** A. True

B. False

2. *Object Directory Services* (ODS) is an object \_\_\_\_\_ .

**Correct:** A. Locator

B. Transporter

3. Publishing an object makes it available only to the owning site

A. True

**Correct:** B. False

## Summary

Topics learned in this lesson:

1. Discuss the benefits of the Multi-Site Collaboration solution.
2. Define sites, facilities, and the Multi-Site Collaboration network.
3. Discuss how Multi-Site Collaboration using data replication.
4. Discuss what synchronization is.
5. Discuss the purpose of publishing and unpublishing objects.
6. Discuss object ownership.

Answer the review questions for this lesson.

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## Lesson

# 13 *Course Summary*

### Course objectives

- To define the Teamcenter architecture by identifying the components of the two-tier architecture, the four-tier architecture, and File Management System so that the system administrator can plan and install a site.
- To define the pre-installation setup by listing the required operating system users and permissions for Teamcenter so that Teamcenter can be successfully installed.
- To define Relational Database Management System concepts by identifying the RDBMS architecture, users, tablespaces, tables, and the listener so that the system administrator can identify the RDBMS components needed by Teamcenter.
- To have a running database server by installing a database server and LISTENER so that a Teamcenter database can be created.
- To understand the two methods for creating a Teamcenter database by defining the these methods for creating a Teamcenter database so that the most suitable method can be used when creating a Teamcenter database.
- To have an operational Teamcenter database by creating a Teamcenter database so that Teamcenter can manage metadata.
- To understand Teamcenter Environment Manager (TEM) by defining the uses of TEM so that the system administrator can use TEM to install components of the Teamcenter Environment.
- To understand the components of the corporate server that can be installed using TEM by defining the solutions and features that can be installed using TEM so that the system administrator can use TEM to install the corporate server.
- To install the corporate server by running TEM so that a Teamcenter environment can be set up.
- To understand the components of the two-tier rich client that can be installed using TEM by defining the features that can be installed using TEM so that the system administrator can use TEM to install the two-tier rich client.
- To install a two-tier rich client by running TEM so that an end user can use the rich client to access the Teamcenter database.

- To understand the Web Application Manager by defining the uses of the Web Application Manager so that the system administrator can use the Web Application Manager to create the components of the Teamcenter J2EE Web tier.
- To understand the components of the Teamcenter J2EE Web tier by describing the Web tier application, the Rich Client Distribution Server, and the Rich Client Distribution Server Instance so that the system administrator can successfully set up the J2EE Web tier.
- To create the components of the J2EE Web tier by running the Web Application Manager so that the Teamcenter four-tier architecture can be implemented.
- To understand the components of the Teamcenter .NET Web tier by describing the .NET Web tier, .NET, and IIS so that the system administrator can successfully set up the .NET Web tier.
- To set up embedded visualization by adding the appropriate feature to the two-tier rich client using TEM so that users can view CAD models from within the two-tier rich client.
- To set up a CAD integration by adding the appropriate features to the corporate server and to the two-tier rich client using TEM so that users can manage CAD data using Teamcenter.
- To administer the in-production system by administering databases, datasets, and volumes and managing file backup and recovery so that the in-production system runs efficiently.
- To understand Multi-Site Collaboration by defining what the Multi-Site Collaboration solution is, when to use it, sites, facilities, networks, object ownership, and object protection.



## Learning tracks

Learning tracks for the Teamcenter application include:

Course/Track	Application usage	Application administration	System administration
MT25150: <i>Using Teamcenter</i>	X	X	
MT25460: <i>Application and Data Model Administration</i>		X	
MT25350: <i>Installation</i>			X

### Application usage

After completing this learning track, you will be familiar enough with the application to mentor others.

### Application administration

After completing this learning track, you will be able to configure the application to support your company's organization, processes, security, and data model.

### System administration

After completing this learning track, you will be able to install the application and configure the architecture in a production environment.



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## Appendix

# A *Classroom system information*

### Course title class data sheet

Data item	Data value	Domain
OS user ID		Local computer
OS password		
OS user ID		Virtual image
OS password		
host-name		Virtual image
Teamcenter user ID		Virtual image
Teamcenter password		
INSTALL_IMAGES		Virtual image
SERVER_DRIVE		Virtual image
ORACLE_HOME		Virtual image
ORACLE_ADMIN		Virtual image
TC_DEV_ROOT		Virtual image
TC_DEV_DATA		Virtual image
TC_VOLUMES		Virtual image
2-TIER_RC_ROOT		Virtual image
ONLINE_HELP		Virtual image
JAVA_HOME		Virtual image
UGS_DIR		Virtual image
APACHE_HOME		Virtual image
TC_TRNG_DATA		Virtual image



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## Appendix

# *B Course agenda*

### Course title course agenda

Daily schedule based on 8:30 a.m. to 4:30 p.m. schedule.

<b>Day 1</b>	<b>Morning</b>	
	Introduction	
	Course overview	
	Lesson 1	What is collaborative product data management
	Lesson 2	Teamcenter architecture overview
	Lesson 3	Oracle server, listener, and database
	<b>Afternoon</b>	
	Lesson 3 (continued)	Oracle server, listener, and database (continued)
	Lesson 4	MS SQL Server 2005 server and database
<b>Day 2</b>	<b>Morning</b>	
	Lesson 5	Corporate server
	Lesson 6	Two-tier rich client
	<b>Afternoon</b>	
	Lesson 7	Four-tier architecture
<b>Day 3</b>	<b>Morning</b>	
	Lesson 8	Installing the Business Modeler IDE
	Lesson 9	Administer the in-production system
	<b>Afternoon</b>	
	Lesson 10	Embedded visualization and Teamcenter Integration for NX
<b>Day 4</b>	<b>Morning</b>	
	Lesson 11	Creating additional sites
	<b>Afternoon</b>	
	Lesson 12	Multi-Site Collaboration
	Lesson 13	Course Summary



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## Appendix

# C *Student profile*

### Teamcenter student profile

Name \_\_\_\_\_ Date \_\_\_\_\_

Employer \_\_\_\_\_

U.S. citizen? Yes / No

When is your planned departure time? \_\_\_\_\_ am/pm

*Please answer the following questions as honestly as you can. We strive to provide training that meets your needs. If you have any additional comments, please write them on the back of this form.*

1. Job title: \_\_\_\_\_
2. Current responsibilities: \_\_\_\_\_  
\_\_\_\_\_
3. How long have you held these responsibilities? Years \_\_\_\_\_
4. How long have you been working with PDM and CAD/CAM systems? Years \_\_\_\_\_
5. What other PDM systems are you familiar with?  
\_\_\_\_\_  
\_\_\_\_\_
6. What other CAD/CAM systems are you familiar with?  
\_\_\_\_\_  
\_\_\_\_\_
7. Are you currently using Teamcenter? Yes / No Product \_\_\_\_\_  
Version \_\_\_\_\_ Hours per week? \_\_\_\_\_
8. Are you currently using NX? Yes / No Version \_\_\_\_\_ Hours per week? \_\_\_\_\_
9. What are the primary uses of Teamcenter at your site? \_\_\_\_\_  
\_\_\_\_\_
10. What do you model in your NX part files (castings, assemblies, and so on)?  
\_\_\_\_\_  
\_\_\_\_\_

11. List other completed PDM or CAD/CAM courses and the provider including self-paced/computer-based training:

Course	Provider

12. Check the box that best describes your current skill level in the various Teamcenter and NX disciplines listed in the following table.

	None	Novice	Intermediate	Advanced	Future
NX user					
Teamcenter Integrations for NX					
Teamcenter user					
Teamcenter admin					
Teamcenter customizer (BM)					

Additional comments:

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## Appendix

# *D Course evaluation*



## Course Evaluation



You may instead complete this evaluation online at:

<http://training.ugs.com/eval>

The online evaluation will require you to enter a "session ID" for this class. This should be provided by your instructor and noted here: Session ID \_\_\_\_\_

Course Name \_\_\_\_\_ Course # \_\_\_\_\_  
 Dates \_\_\_\_\_ thru \_\_\_\_\_

Please share your opinion in all of the following sections with a "check" in the appropriate box:

**Instructor:** \_\_\_\_\_ ☒

If there were 2 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"/>

**SEE BACK**

## Course Evaluation

Course Name \_\_\_\_\_ Course # \_\_\_\_\_  
 Dates \_\_\_\_\_ thru \_\_\_\_\_

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

\_\_\_\_\_

\_\_\_\_\_

### Hotels: (We try to leverage this information to better accommodate our customers)

- Name of the hotel \_\_\_\_\_ Best hotel I've stayed at... ☐ ☐ ☐ ☐ ☐ ☐
- Was this hotel recommended during your registration process?.....☐ YES ☐ NO
- Problem? (brief description) \_\_\_\_\_

\_\_\_\_\_

### 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"/> |

Student Name (optional): \_\_\_\_\_ Location/room \_\_\_\_\_

☐ Please "check" this box if you would like your comments featured in our training publications.

☐ Please "check" this box if you would like to receive more information on our other courses and services.

*Thank you for your business.  
 We hope to continue to provide your training and personal development for the future!*

Rev-2/1/06-btr



