# TIBCO iProcess® Conductor

## Installation

*Software Release 11.2.1*
*August 2012*

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## Important Information

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# Preface

**This software may be available on multiple operating systems. However, not all operating system platforms for a specific software version are released at the same time. Please see the readme file for the availability of this software version on a specific operating system platform.**

TIBCO iProcess Conductor enables you to build and deploy complex business processes as execution plans to achieve a set of business goals. TIBCO iProcess Conductor Server is the application server component that administers and manages the orchestration of execution plans.

## Topics

# Changes from the Previous Release of This Guide

This section itemizes the major changes from the previous release of this guide.

### Platform Support

iProcess Conductor version 11.2.1 adds support for Novell SUSE Linux Enterprise 11.x, Red Hat Enterprise Linux Server 6, IBM AIX 6.1 and 7.1, and Windows Server 2008 R2.

### Database Versions

iProcess Conductor version 11.2.1 adds support for Oracle 11g R2.

### Application Server Versions

iProcess Conductor version 11.2.1 drops support for Oracle WebLogic 9.2.x, and adds support for Oracle WebLogic 10.3.4 and JBoss EAP 5.1.

### Remove JDBC Driver Package

JDBC drivers are no longer packaged with the iProcess Conductor installer package. You need to specify the location of the JDBC drivers during the installation. See Installation Procedure Change.

### Installation Procedure Change

In previous releases, you needed to copy the third-party JAR files to the corresponding locations after you installed the product.

From this release onwards, you need to copy the third-party JAR files to a directory before installing the product, then specify the directory during installation. See Copy the Third-party JAR Files on page 13.

# Related Documentation

This section lists documentation resources you may find useful.

## TIBCO iProcess Conductor Documentation

The following documents form the TIBCO iProcess Conductor documentation set:

- *TIBCO iProcess Conductor Concepts* Read this manual to gain an understanding of the product that you can apply to the various tasks you may undertake.
- *TIBCO iProcess Conductor Installation* Read this manual for instructions on site preparation and installation.
- *TIBCO iProcess Conductor Implementation* Read this guide for instructions on how to design, plan, and implement the fulfillment of orders.
- *TIBCO iProcess Conductor User's Guide* Read this guide for instructions on using the TIBCO iProcess Conductor user interface to orchestrate execution plans, create process components, amend orders, and so on.
- *TIBCO iProcess Conductor Administrator's Guide* Read this guide for instructions on common administrative tasks, such as archiving completed execution plans, managing users, and deploying the TIBCO iProcess Decisions rule sets.
- *TIBCO iProcess Conductor Release Notes* Read the release notes for a list of new and changed features. This document also contains lists of known issues and closed issues for this release.
- *TIBCO iProcess Conductor Utility Framework User's Guide* Read this guide for details of the Utility Framework and the applications used to export and import plans and process components.
- *TIBCO iProcess Conductor AOPD Message-Driven API Developer's Guide* Read this guide for details of the iProcess Conductor's execution plan interfaces, and the facilities for automatic execution plan development.

## Other TIBCO Product Documentation

You may find it useful to refer to the documentation set for TIBCO iProcess® Suite, which is used with TIBCO iProcess Conductor.

## Third-party Documentation

You may find it useful to read the documentation for the following third-party products:

- Oracle® Database
- Oracle® WebLogic Server
- JBoss® Application Server

# Typographical Conventions

The following typographical conventions are used in this manual.

*Table 1 General Typographical Conventions*

| Convention | Use |
|---|---|
| *iProcessConductor Dir* | The directory where you install TIBCO iProcess Conductor. For example:<br>• on Windows systems, `c:\Program Files\iProcessConductor`.<br>• on UNIX systems, `/opt/comDomain/iProcessConductor`. |
| *iProcessConductor Domain* | The target directory where you install the TIBCO iProcess Conductor domain. For example:<br>• on Windows systems, *BEA_HOME*`\user_projects\domains\iPCDomain`;<br>or *JBOSS_HOME*`\server\`*server_type*`\deploy` under JBoss.<br>• on UNIX systems, *BEA_HOME*`/user_projects/domains/iPCDomain`.<br>or *JBOSS_HOME*`/server/`*server_type*`/deploy` under JBoss. |
| *ORACLE_HOME* | The pathname to your Oracle home. See your database administrator for details.<br>If you are installing iProcess Conductor to work with a local database (see Oracle Requirements on page 18), this pathname must point to the Oracle database server.<br>If you are installing iProcess Conductor to work with a remote database, this pathname must point to an Oracle client. |
| *JAVA_HOME* | The pathname to the directory where you install Java. For example:<br>• on Windows systems, `C:\Program Files\Java\jdk1.6.0_21`.<br>• on UNIX systems, `/opt/Java/jdk1.6.0_21`.<br>**Note:** When you install the product on AIX platforms:<br>— set *JAVA_HOME* as the pathname to the directory of Java incorporated by iProcess Engine 11.3.1 if you want to work with iProcess Engine 11.3.1<br>— install JRE 1.6.0 IBM J9 2.4 AIX SR6, and set *JAVA_HOME* as the pathname to the installation directory of JRE 1.6.0 IBM J9 2.4 AIX SR6 if you want to work with iProcess Engine versions earlier than 11.3.1 |
| **If you are using JBoss:** | |
| *JBOSS_HOME* | The pathname to the home directory of your JBoss installation. For example:<br>• on Windows systems, `c:\jboss\jboss-4.2.1`.<br>• on UNIX systems, `/opt/JBoss/JBoss-4.2.1`. |

*Table 1 General Typographical Conventions (Cont'd)*

| Convention | Use |
|---|---|
| **If you are using Oracle WebLogic:** | |
| *BEA_HOME* | The pathname to the home directory of your Oracle WebLogic installation. For example:<br>• on Windows systems, `c:\bea`.<br>• on UNIX systems, `/opt/bea`.<br>**Note:** Oracle WebLogic was previously known as BEA WebLogic. The existing variable name has been retained in the iProcess Conductor documentation. |
| *WL_HOME* | The directory where you install Oracle WebLogic. For example:<br>• on Windows systems, `c:\bea\wlserver_10.3`.<br>• on UNIX systems, `/opt/bea/wlserver_10.3`. |
| **Other conventions:** | |
| `code font` | Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example:<br>Use `MyCommand` to start the foo process. |
| **`bold code font`** | Bold code font is used in the following ways:<br>In procedures, to indicate what a user types. For example: Type **`admin`**.<br>In large code samples, to indicate the parts of the sample that are of particular interest.<br>In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, `MyCommand` is enabled:<br>`MyCommand [`**`enable`**` \| disable]` |
| *italic font* | Italic font is used in the following ways:<br>To indicate a document title. For example: See *TIBCO ActiveMatrix BusinessWorks Concepts*.<br>To introduce new terms. For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal.<br>To indicate a variable in a command or code syntax that you must replace. For example: `MyCommand` *PathName* |
| Key combinations | Key name separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C.<br>Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q. |
|  | The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances. |

*Table 1 General Typographical Conventions (Cont'd)*

| Convention | Use |
|---|---|
|  | The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result. |
|  | The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken. |

*Table 2 Syntax Typographical Conventions*

| Convention | Use |
|---|---|
| `[ ]` | An optional item in a command or code syntax.<br>For example:<br>`MyCommand [optional_parameter] required_parameter` |
| `\|` | A logical `OR` that separates multiple items of which only one may be chosen.<br>For example, you can select only one of the following parameters:<br>`MyCommand para1 \| param2 \| param3` |
| `{ }` | A logical group of items in a command. Other syntax notations may appear within each logical group.<br>For example, the following command requires two parameters, which can be either the pair `param1` and `param2`, or the pair `param3` and `param4`.<br>`MyCommand {param1 param2} \| {param3 param4}`<br>In the next example, the command requires two parameters. The first parameter can be either `param1` or `param2`, and the second can be either `param3` or `param4`:<br>`MyCommand {param1 \| param2 {param3 \| param4}`<br>In the next example, the command can accept either two or three parameters. The first parameter must be `param1`. You can optionally include `param2` as the second parameter. And the last parameter is either `param3` or `param4`.<br>`MyCommand param1 [param2] {param3 \| param4}` |

# Connecting with TIBCO Resources

## How to Join TIBCOmmunity

TIBCOmmunity is an online destination for TIBCO customers, partners, and resident experts. It is a place to share and access the collective experience of the TIBCO community. TIBCOmmunity offers forums, blogs, and access to a variety of resources. To register, go to http://www.tibcommunity.com.

## How to Access TIBCO Documentation

You can access TIBCO documentation here:

http://docs.tibco.com

## How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, contact TIBCO Support as follows:

- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

  http://www.tibco.com/services/support

- If you already have a valid maintenance or support contract, visit this site:

  https://support.tibco.com

  Entry to this site requires a user name and password. If you do not have a user name, you can request one.

# Chapter 1 Introduction

This chapter provides an overview of the installer, system requirements, software requirements, and other options you should be aware of before starting the installation.

## Topics

# Installation Overview

This section provides an overview of the TIBCO iProcess Conductor installer.

The installer package contains the following three components:

- the setup program
- media.inf
- setup.jar

The `media.inf` and `setup.jar` files must be under the same directory with the setup program to guarantee the product can be installed successfully.

## Installation Modes

The installer can run in GUI mode and console mode.

### GUI Mode

In GUI mode, the installer presents panels that allow you to make choices about product selection, product location, and so on. To invoke the installer in GUI mode, double-click the executable file.

A graphic environment, such as CDE or X Windows, is required to run the installer in GUI mode on UNIX platforms.

### Console Mode

Console mode allows you to run the installer from the command prompt or terminal window on systems that have no graphic environment.

## Installation Types

Two installation types are available when choosing which components to install: Typical and Custom.

- A typical installation has minimal prompts and installs standard components in default locations.
- A custom installation prompts you to choose which components of the product suite to install and installs only those components.

Two installation types are available when deciding whether you use the software alone or in a cluster: Standalone and Cluster.

- A standalone installation:
  - In a WebLogic environment, one WebLogic server is installed on the local machine.
  - In a JBoss environment, one JBoss server is installed on the local machine.
- A cluster installation:
  - In a WebLogic environment, a cluster consists of one WebLogic cluster administration server and multiple managed servers.
  - In a JBoss environment, a cluster is a group of several nodes. Each node is a JBoss server instance, and the machine that hosts the JBoss node (and hosts an iProcess Conductor instance) is a node server.

## Installer Account

To install iProcess Conductor, you must be a user with at least the following permissions:

- Ownership of the installation directory, or else Read, Write, and Execute permissions on the directory.
- Ownership of *JBOSS_HOME* or *WL_HOME* as appropriate, or else Read, Write, and Execute permissions on that directory and its subdirectories.
- Ownership of Oracle WebLogic Domain, or else Read, Write, and Execute permissions on that directory if you install the product under Oracle WebLogic.

### Database Owner

In previous versions of iProcess Conductor, the operating system user ID that owned the database also needed to have ownership of the installation directory. From version 11.2.0 on, it is possible to install the database using a username that does not have this access. During installation you are prompted as to whether you want to provide an existing database user ID, or whether you want the installer to create one.

The default iProcess Conductor database username is `IPCUSER`. If you do not use that username, you will need to substitute the name you have chosen when prompted for the database username.

The database user needs to have at least the following permissions for installation:

| | |
|---|---|
| **Role** | RESOURCE, XDBADMIN |
| **System Privileges Required** | CREATE SESSION, ALTER SESSION, QUERY REWRITE, UNLIMITED TABLESPACE |

The database user also needs to have at least the following permissions for runtime:

| | |
|---|---|
| **Role** | XDBADMIN |
| **System Privileges Required** | CREATE SESSION, ALTER SESSION, QUERY REWRITE |
| **System Privileges Recommended** | UNLIMITED TABLESPACE |

If you specify an existing account as database user, the installer will check that the name you supply has these permissions.

If you create your own database user, or use a pre-existing user ID, you must specify the default roles for that ID as follows:

```
ALTER USER ipcuser DEFAULT ROLE ALL;
```

where *ipcuser* is the database user ID.

## Installer Log File

After installing TIBCO iProcess Conductor, the `logs` folder is created in the *iProcessConductorDir*`\iProcessConductor` directory.

The following files may be present in the `logs` folder:

— `InstallerOutput.log` is created whether iProcess Conductor is installed successfully or not (unless the installer terminates unexpectedly because of some runtime error).

— `InstallerDebug.log` is created if you have selected an invalid option at any point in the installation process before you click the Install button (see

step 16) and have been prompted to change your selection, or if the installer is started in debug mode.

— `InstallerError.log` is created only if the installation process encountered an error after you click the Install button (see step 16).

— `loadXSD` is created whether iProcess Conductor database is installed successfully or not (unless the installer terminates unexpectedly because of some runtime error).

# Installation Requirements

This section describes the disk space requirements, system memory requirements, software requirements, and supported platforms for this product.

See the documentation supplied with the applications listed below for the installation requirements of the individual applications.

## Supported Platforms

See the readme file for the supported operating system platforms, and versions and required patches for the platforms.

## System Requirements

To install TIBCO iProcess Conductor, your machine must have the system requirements described in this section.

100 MB of free space is required for the iProcess Conductor distribution set during installation.

The disk space requirement cited here is for basic installation, and does not take into consideration the requirements of the WebLogic or JBoss application server, nor the additional Oracle tablespace for iProcess data.

2GB of physical memory is required.

## Supported Databases

TIBCO iProcess Conductor supports Oracle databases only.

You can either install the iProcess Conductor database server on the same machine as the iProcess Conductor software itself, or remotely on a different machine. This means that you can have iProcess Conductor and the database running on different operating systems.

If you use a remote Oracle database server, you must install Oracle client on your machine on which you want to install iProcess Conductor. See Oracle Database Client on page 10.

TIBCO iProcess Conductor requires one of the following Oracle database versions:

- Oracle 10g release 10.2.0.5 (server)

- Oracle 11g release 11.1.0.6 (server)
- Oracle 11g release 11.2.0.2 (server)
- Oracle 11g release 11.2.0.3 (server)

### Oracle Requirements

The TIBCO iProcess Conductor installer uses the Oracle `sql*loader` utility to load `.xsd` files to the database tables. TIBCO iProcess Conductor uses Oracle Easy Connect as the connecting method to connect `sql*loader` to Oracle.

Therefore, you must have an Oracle client installed and ensure that `EZCONNECT` is included in `NAMES.DIRECTORY_PATH` in the *ORACLE_HOME*`\NETWORK\ADMIN\sqlnet.ora` file.

By default, installing an Oracle server also installs the Oracle client files. However if you cancel the selection of Oracle Client components to save space, specifying the Oracle Server path as *ORACLE_HOME* will cause the iProcess Conductor installation to fail.

Configure your Oracle database as follows:

1. Ensure that your Oracle database block size is 8 KB.

   To ensure the TIBCO iProcess Conductor database tables are created correctly, the DB Block Size of the database needs to be set to 8192 bytes (8 KB).

2. Configure your Oracle database to support international character sets.

   TIBCO still recommends that you ensure your Oracle database is configured to support an international character set, for example WE8MSWIN1252 or UTF-8. (Some character sets do not store non-English characters, for example, US7ASCII.)

To change both these Oracle settings, consult your Oracle database administrator.

Make sure that you have installed and configured Oracle XML DB before installing iProcess Conductor, otherwise the iProcess Conductor installation will fail. See the documentation supplied with Oracle for more information about Oracle XML DB.

## Software Requirements

Table 3 lists the required and optional software products.

The iProcess Server machine, iProcess Client machine, and iProcess Conductor machine can be one machine or separate machines.

*Table 3 Software Requirements*

| Software | Description | Install on |
|---|---|---|
| **TIBCO Software**<br>The software products below are distributed and installed separately from this product.<br>See the iProcess Conductor readme file for the supported versions. | | |
| TIBCO iProcess Engine (Oracle) | Required. TIBCO iProcess Engine provides the runtime execution environment for business processes that are coordinated by TIBCO iProcess Conductor.<br>Note: TIBCO iProcess Objects Server is installed as a component of iProcess Engine. It must be enabled during the iProcess Engine installation. | iProcess Server Machine |
| TIBCO iProcess Technology Plug-ins | Required. You should install the following TIBCO iProcess Technology Plug-ins components:<br>• TIBCO iProcess® Java Server Plug-in<br>It must be configured as delayed release. See "Using Delayed Release or Immediate Release Invocations" in *TIBCO iProcess Java Plug-in User's Guide* for more information.<br>• TIBCO iProcess® Conductor Server Plug-ins (Order and Orchestration)<br>• TIBCO iProcess® XML Transform Server Plug-in<br>You should stop all running iProcess engine processes before installing the plug-ins. | iProcess Server Machine |
| TIBCO iProcess Decisions Server | Optional. Install only if you use TIBCO iProcess Decisions to define rules that will select the fulfillment process to be used. | iProcess Server Machine |
| TIBCO iProcess Decisions Server Plug-in | Optional. Install only if you use TIBCO iProcess Decisions Plug-in to select the execution plan template. | iProcess Server Machine |
| TIBCO Enterprise Message Service | Optional. Install only if you want to install TIBCO iProcess Conductor in cluster mode. TIBCO iProcess Conductor uses TIBCO Enterprise Message Service as its JMS provider for cluster solution. | EMS Server Machine |

*Table 3 Software Requirements (Cont'd)*

| Software | Description | Install on |
|---|---|---|
| TIBCO iProcess Workspace (Windows) | Optional when you use TIBCO iProcess Conductor to run existing procedures.<br>Required when you use TIBCO iProcess Conductor to create new procedures.<br>TIBCO iProcess Workspace (Windows) is the single focal point for defining and managing iProcess procedures. It includes TIBCO iProcess Modeler. | iProcess Client Machinet |
| TIBCO iProcess Workspace Plug-ins | Optional when you use TIBCO iProcess Conductor to run existing procedures.<br>Required when you use TIBCO iProcess Conductor to create new procedures. You should install the following iProcess Workspace Plug-ins components:<br>• TIBCO iProcess® Java Client Plug-in<br>• TIBCO iProcess® Conductor Client Plug-ins (Order and Orchestration)<br>• TIBCO iProcess® XML Transform Client Plug-in | iProcess Client Machine |
| TIBCO iProcess Decisions Studio | Optional. Install only if you use TIBCO iProcess Decisions to define rules that will select the fulfillment process to be used. | iProcess Client Machine |
| TIBCO iProcess Decisions Client Plug-in | Optional. Install only if you use TIBCO iProcess Decisions Plug-in to select the execution plan template. | iProcess Client Machine |
| TIBCO iProcess Objects (Java) | Required. TIBCO iProcess Objects (Java) comprises a set of objects that are used to build applications that automate business processes. | iProcess Conductor Machine |
| **Third-party Software**<br>See the readme file for the supported versions. | | |
| Oracle Database Server | Required. It is used for the iProcess database. | Oracle Database Server Machine |
| Hibernate | Required. | iProcess Conductor Machine |
| JBoss J2EE Application Server | Optional. Install JBoss J2EE Application Server or JBoss Enterprise Application Platform (EAP) only if you use JBoss as the application server in standalone mode. | iProcess Conductor Machine |

*Table 3 Software Requirements (Cont'd)*

| Software | Description | Install on |
|---|---|---|
| JBoss Enterprise Application Platform (EAP) | Optional. Install only if you use JBoss as the application server in cluster mode. | iProcess Conductor Machine |
| Oracle WebLogic | Optional. Install only if you use WebLogic as the application server.<br>Note that Oracle WebLogic is not supported on AIX platforms. | iProcess Conductor Machine |
| Oracle Database Client | Optional. Install only if the iProcess Conductor database runs on a remote server.<br>It should be installed before you install TIBCO iProcess Conductor. | iProcess Conductor Machine |
| Java Development Kit (JDK) | Optional. Install JDK or JRE to provide a Java environment.<br>**Note:** JDK can be used with JBoss or WebLogic. | iProcess Conductor Machine |
| Java Runtime Environment (JRE) | Optional. Install JDK or JRE to provide a Java environment.<br>**Note:** JRE can only be used with WebLogic. | iProcess Conductor Machine |
| JDBC Drivers | Required. JDBC drivers are used by TIBCO iProcess Conductor to access the iProcess database and by services to access JDBC resources. | iProcess Conductor Machine |
| Web Browsers | Required to run the TIBCO iProcess Conductor GUI. | Any Machine |

# Chapter 2 Installing TIBCO iProcess Conductor

This chapter describes how to install TIBCO iProcess Conductor and the iProcess Conductor database.

You can install TIBCO iProcess Conductor alone, for example, if you use an existing database or you install TIBCO iProcess Conductor on a node in a cluster.

## Topics

# Installation Prerequisites

Before installing TIBCO iProcess Conductor, you must:

- Set Up Environment Variables
- Check the CLASSPATH Environment Variable
- Copy the Third-party JAR Files
- Create a Custom Tablespace if you do not want to use the default tablespace created during installation
- Set Up EMS in a Cluster if you install iProcess Conductor in a cluster

## Set Up Environment Variables

You can set up these environment variables manually before you start the installation process, or you can specify them at the dialogs during installation.

The following environment variables are required:

- *ORACLE_HOME*

Add the *ORACLE_HOME*`/bin` directory to the environment variable on UNIX platforms.

For an Oracle WebLogic installation:

- *WL_HOME*
- *BEA_HOME*

For a JBoss installation:

- *JAVA_HOME*
- *JBOSS_HOME*

## Check the CLASSPATH Environment Variable

If you are using a WebLogic application server, ensure that the value of the CLASSPATH environment variable does not contain any double quotes.

Installing iProcess Objects places double quotes in the CLASSPATH environment variable, which causes problems with the WebLogic application server. This problem is only manifested if the CLASSPATH has already been set before you install iProcess Objects. If the CLASSPATH is created by installing iProcess Objects, there are no double quotes, and the application server functions correctly.

If there are any double quotes, the `setup` program will detect them and prompt you to change the value. You need to remove the double quotes and restart the installer. For example, replace:

```
"C:\Program Files\Staffware\Staffware EntObj Java"
```

with:

```
C:\Program Files\Staffware\Staffware EntObj Java
```

## Copy the Third-party JAR Files

In previous releases, you need to copy the third-party JAR files after installing the software. From release 11.2.1 on, you must copy these JAR files to a directory before installation and specify the directory during installation. The installer will automatically copy the files to the corresponding directories.

Table 4 describes the third-party JAR files that need to be copied to a specified directory before installation.

*Table 4 Third-party JAR Files*

| File | You Copy this File from... | Installer Automatically Copies this File to... |
|---|---|---|
| JDBC Drivers (You need to provide and install the JDBC drivers first.) | | |
| ojdbc14.jar | *ORACLE_HOME*\jdbc\lib if your target database server is Oracle 10.2.0.5 | **JBoss:** *JBOSS_HOME**server_type*\lib<br>**WebLogic:** *WL_HOME*\server\lib |
| orai18n.jar | *ORACLE_HOME*\jlib (required no matter what version of Oracle database you are using) | |
| ojdbc6.jar | Download from the Oracle website if your target database server is Oracle 11.1.0.6, 11.2.0.2 or 11.2.0.3 | |
| XMLDB Files | | |
| xdb.jar | *ORACLE_HOME*\RDBMS\jlib | **JBoss:** *JBOSS_HOME**server_type*\lib<br>**WebLogic:** *iProcessConductorDomain*\lib |
| xmlparserv2.jar | *ORACLE_HOME*\RDBMS\lib | |
| Hibernate Jar File | | |

*Table 4 Third-party JAR Files*

| File | You Copy this File from... | Installer Automatically Copies this File to... |
|---|---|---|
| hibernate2.jar | Download `hibernate-2.1.8.zip` from http://download.tibco.com and extract the ZIP file.<br>**Note:** Entry to this site requires a username and password. If you do not have a username, you can request one. | **JBoss:** *JBOSS_HOME*`\server_type\lib`<br>**WebLogic:** *iProcessConductorDomain*`\lib` |
| EMS JAR File (Required only when EMS is used as the JMS provider) | | |
| tibjms.jar | *EMS_HOME*`\lib` | **JBoss:** *JBOSS_HOME*`\server_type\lib`<br>**WebLogic:** *iProcessConductorDomain*`\lib` |

If you are installing in a WebLogic cluster, you also need to manually copy the following files after installation:

- JDBC drivers, XMLDB files, and Hibernate JAR file to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks` (see Copy the Third-party JAR Files in a WebLogic Cluster on page 30)
- `tibjms.jar` to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks`, and *SWDIR*`\eaijava\libs\repository\user` on the iProcess Engine server (see Copy the tibjms.jar File and Configure EMS Security on page 30)

## Create a Custom Tablespace

You may also need to create a tablespace for the iProcess Conductor database. The iProcess Conductor installation process can create the tablespace, but it assumes that the tablespace for the iProcess Conductor database schema will use a default size of 200 MB, and a default location. If you want to use a tablespace with a different size or location, you must create the tablespace in advance and specify its name when required during the installation procedure. See Conductor Tablespace for details.

200 MB is the minimum size for this tablespace. Do not attempt to install iProcess Conductor using a smaller tablespace size than this.

## Set Up EMS in a Cluster

You need to set up EMS if you install the software in a cluster mode.

To configure an iProcess Conductor clustered installation, using either JBoss or WebLogic, to work with EMS, carry out the following steps:

1. Set up the EMS Fault Tolerant environment. See the TIBCO EMS documentation for details.
2. To change the EAI Orchestration server plug-in to work with EMS, modify the `eaiorch.jndi.factory`, `eaiorch.jms.factory` and `eaiorch.jndi.url` values in *$SWDIR*`\eaijava\properties\eaiorch\eaiorch.properties` to specify TIBCO EMS values as follows:

```
# TIBCO iProcess Conductor Orchestration Server Plug-in
eaiorch.jndi.factory=com.tibco.tibjms.naming.TibjmsInitialContextFactory
eaiorch.jndi.url=tibjmsnaming://host_name:port_number
eaiorch.jms.factory=XAQueueConnectionFactory
eaiorch.jms.principal=comEAIStepUser
eaiorch.jms.credentials=staffware
eaiorch.authconf.location=$SWDIR/ipc/appserverclient/auth.conf
```

# Installing TIBCO iProcess Conductor

TIBCO iProcess Conductor can be installed on any machine that can access iProcess Engine and the iProcess Engine database. It is the application server component that administers and manages the execution of orders and order plans.

The iProcess Conductor database can be installed either on the same machine as the application server, or remotely.

Use one of the following modes to install TIBCO iProcess Conductor:

- Installing in GUI Mode, page 16
- Installing in Console Mode, page 27

## Installing in GUI Mode

To install the product in GUI mode, complete the following steps:

1. Log in as a user with appropriate permissions. See Installer Account for the required permissions.
2. Open the physical media or download the TIBCO iProcess Conductor installation package from a network server.
3. Extract the contents of the package to a temporary directory and navigate to the temporary directory.
4. Run the `setup` program. The Welcome dialog appears.
5. Review the information in the Welcome dialog and click the **Next** button. The Software License Agreement dialog appears.
6. Select the **I accept the terms of the license agreement** radio button and click the **Next** button. The Setup Type dialog appears.
7. Select an installation type, Typical or Custom.
   — Select Typical if you want to install the default configuration for TIBCO iProcess Conductor.

TIBCO recommends that you select Typical, and install the default configuration for a standalone iProcess Conductor instance.

— Select Custom if you want to select the components of TIBCO iProcess Conductor that will be installed. You can choose to install TIBCO iProcess Conductor Application Server or TIBCO iProcess Conductor Database.

You will need to select Custom if you want to install TIBCO iProcess Conductor alone, for example, if you are using an existing database or are installing on a node in a cluster.

Click the **Next** button, the Application Server dialog appears.

8. Select whether you want to install iProcess Conductor on Oracle WebLogic or on JBoss.

   — If you want to install the product on Oracle WebLogic, select the **iProcess Conductor on WebLogic** radio button to continue with Install on Oracle WebLogic.

   — If you want to install the product on JBoss, select the **iProcess Conductor on JBOSS** radio button to continue with Install on JBoss.

### Install on Oracle WebLogic

To continue to install TIBCO iProcess Conductor on Oracle WebLogic, complete the following steps:

1. Select the **iProcess Conductor on WebLogic** radio button in the Application Server dialog, and click the **Next** button. A list of requirements appears.
2. Check that all the listed requirements are already installed before you proceed.

The list depends on which application server you have selected and what components you have chosen to install. Missing one of these prerequisites can cause your installation to fail.

Click the **Next** button. The Oracle Environment Variable dialog appears.

3. In the Oracle Environment Variable dialog,

   — Check the path of the *ORACLE_HOME* environment variable that appears in the Select ORACLE HOME field.

If you have installed the iProcess Conductor database on a remote database server, you must install the Oracle client on the current server first, and *ORACLE_HOME* must point to the Oracle client.

— Select **Yes, I would like to provide DBA account details and let installer create it** if you would like to provide details of the DBA account and let the installer create the corresponding iProcess Conductor user.

Or, select **No, I have created it manually as per installation manual instructed** if you would like to use an iProcess Conductor user ID that you have previously created manually.

Click the **Next** button**.** The Environment Variable dialog appears.

4. Specify additional environment variables.

*Table 5 Environment Variable Dialog for WebLogic*

| Field/Tab | Description/Action |
|---|---|
| Select WebLogic HOME | Click the **Browse** button and navigate to the WebLogic HOME directory. |
| Select BEA HOME | Click the **Browse** button and navigate to the BEA HOME directory. |
| Select WebLogic Server Version | Select **WebLogic-10.3** or **WebLogic-10.3.4** from the drop-down list. |

Click the **Next** button. The WebLogic Administration Settings dialog appears.

5. Specify the WebLogic administrator username, password, and the WebLogic installation type.

*Table 6 WebLogic Administration Settings Dialog*

| Field/Tab | Description/Action |
|---|---|
| Admin User | Type the WebLogic Administrator username. Its default value is `bootuser`. |
| Admin Password | Type the WebLogic Administrator password. Its default value is `bootpassword`. You must change the default password to contain certain numbers, characters, and special characters so that iProcess Conductor can be fully installed. |
| Choose iPC installation type | Select **Standalone iPC Application** or **Clustered iPC Admin Server**.<br>If you select clustered installation type, the installer sets up the iProcess Conductor administration server on the current machine. It also displays the WebLogic Cluster Configuration dialog later in the installation sequence, and generates a package called `iPCManagedServer` for installing the iProcess Conductor managed servers. See step 13. |

Click the **Next** button**.** The Installation Directory dialog appears.

6. Type the path directly, or click the **Browse** button and navigate to your preferred location.

If you want to install TIBCO iProcess Conductor on both WebLogic and JBoss, you can do so, but you will need to run the installation process twice, and install two iProcess Conductor instances separately on two different installation directories.

Click the **Next** button**.** The iProcess Conductor Utilities dialog appears.

7. Accept the default directory, or click the **Browse** button and navigate to your preferred location.

   Click the **Next** button. The iProcess Conductor Database Configuration dialog appears.

8. Specify the iProcess Conductor database configuration details.

*Table 7 iProcess Conductor Database Configuration Dialog*

| Field | Description/Action |
|---|---|
| TIBCO iProcess Conductor Database Configuration | |
| Host | Type the address of the machine where your Oracle instance is installed. |
| Database Server Service Name | Type the service identifier, which is the name of the iProcess Conductor Oracle Server instance. |
| Port | Type the port number used by your Oracle installation to listen for requests. The default is `1521`. |
| The following fields are available *only* if you select to install the database and select the **Yes, I Would Like To Provide DBA Account Details And Let Installer Create It** radio button in the Oracle Environment Variable dialog. | |
| Conductor Tablespace | Type the name of the tablespace in which to create the iProcess Conductor database schema. The name defaults to `CONDUCTOR`.<br>If the tablespace that you specify already exists, it will be used.<br>If this tablespace does not already exist, you will be prompted to select a different name or to continue anyway with the existing tablespace. The installer creates a tablespace of the selected name, using a default size of 200 MB and a default location. |
| DBA User | Type the name of the Oracle DBA user (that is, the Oracle user that iProcess should use when it needs to connect to the database as a database administrator (DBA)). This must be an Oracle user with DBA privileges. It defaults to `System`. |

*Table 7 iProcess Conductor Database Configuration Dialog (Cont'd)*

| Field | Description/Action |
|---|---|
| DBA User Password | Type the password of the Oracle DBA User. |
| TIBCO iProcess Conductor User Details | |
| User Name | Type the name of the user who you want to own the TIBCO iProcess Conductor database tables.<br>If you enter the name of a user that already exists, you are given the opportunity either to drop the existing user or to specify a new user and carry on with the installation. Choosing to drop the existing user deletes that user ID from the database immediately. |
| User Password | Type the password of the iProcess Conductor user. |
| Confirm Password | Type the user password again to confirm. |

- If you want to retain an existing database user, you must select Custom installation and choose to install Application Server only in step 7.
- The installer uses the default temporary tablespace for details of this user during the installation process. If this tablespace is not defined, the installation fails and an error message is displayed.

Click the **Next** button.

9. The installation process now checks:
   - the block size of both the Oracle database and the target tablespace if you selected an existing tablespace in step 8 to see that it is suitable
   - the XML database requirements have been met.

   Click the **Next** button. The iProcess Engine Database Configuration dialog appears.
10. Specify the values needed to connect to the iProcess Engine database.

*Table 8 iProcess Engine Database Configuration Dialog*

| Field | Description/Action |
|---|---|
| TIBCO iProcess Engine Database Configuration | |
| Host | Type the address of the machine where your Oracle instance is installed. |
| Database Server Service Name | Type the service identifier, which is the name of the iProcess Database Adapter Oracle Server instance. |

*Table 8 iProcess Engine Database Configuration Dialog (Cont'd)*

| Field | Description/Action |
|---|---|
| Port | Type the port number used by your Oracle installation to listen for requests. The default is `1521`. |
| TIBCO iProcess Engine User Details | |
| iProcess Pro User | Type the name of the user who owns the TIBCO iProcess Engine database tables. The installation program checks that you enter the username and password of a valid PRO user. |
| iProcess Pro Password | Type the password of the iProcess Pro user. |

If the iProcess Pro user's username or password is subsequently changed, you must change the username and password appropriately in your application server (WebLogic or JBoss), or else the iProcess Conductor will fail to start properly, and an error message may or may not be displayed.

See *TIBCO iProcess Conductor Administrator's Guide* for details of how to change the username and password.

Click the **Next** button. The iProcess Conductor Performance Configuration dialog appears.

11. Specify the values you need to optimize the performance of iProcess Conductor.

*Table 9 iProcess Conductor Performance Configuration Dialog*

| Field | Description/Action |
|---|---|
| Connection pool size | Type the maximum size of the Oracle database connection pool for iProcess Conductor. It defaults to `40`. The application server dynamically allocates connections, from zero to the maximum specified here. |
| Orchestrator message queues num | Type the number of threads that deal with messages other than `START_PLAN` messages. It defaults to `25`. |
| Orchestrator start plan threads num | Type the number of threads that deal with `START_PLAN` messages. It defaults to `5`. |

In most circumstances it is not necessary to change the default values for `Orchestrator start plan threads num` or `Orchestrator message queues num`, but you can increase them if a high number of orchestration messages is expected.

You can adjust the values you select for these parameters either in the JBoss or WebLogic console, or using the `AppConfig.xml` file as described in the Load Balancing Queues section of *TIBCO iProcess Conductor Administrator's Guide*.

Click the **Next** button. The WebLogic Domain Configuration dialog appears.

12. Specify the WebLogic domain settings.

*Table 10 WebLogic Domain Configuration Dialog*

| Field | Description/Action |
|---|---|
| Domain Name | Type the name of your TIBCO iProcess Conductor domain.<br>An error message will be displayed if you enter an existing domain name, and you will be required to create a new domain. The installer also checks that the current user has the write permissions necessary to create a new domain. |
| Host | Type the name of the machine where WebLogic is installed. This is the same name you entered when installing the TIBCO iProcess Conductor Orchestration Server Plug-in.<br>Type `localhost` if the WebLogic server is on the same machine where you are installing iProcess Conductor. However, you cannot specify localhost if you are installing in a WebLogic cluster. |
| Port | Type the port number used by your WebLogic installation to listen for requests. The default is `8001`.<br>An error message will be displayed if the port number you select is already in use. You will need to free it or specify another port. |
| Select the target domain directory | Click the **Browse** button and navigate to the target directory where you want to install your TIBCO iProcess Conductor domain. |

Click the **Next** button.

13. (Cluster Only) If you select Clustered in the WebLogic Administration Settings Dialog, the WebLogic Cluster Configuration dialog appears.

*Table 11 WebLogic Cluster Configuration Dialog*

| Field | Description/Action |
|---|---|
| Cluster Name | Type the cluster name that you intend to use. |
| Multicast Address | Type the multicast address, which can be an IP number between 224.0.0.0 and 239.255.255.255. |
| Multicast Port | Type the multicast port for this address. |

*Table 11 WebLogic Cluster Configuration Dialog (Cont'd)*

| Field | Description/Action |
|---|---|
| Managed Servers | Type the managed server information using the following form: *<managedservername1>:<ipaddress1>:<port1>,<managedservername2>:<ipaddress2>:<port2>*. For example: **`Server1:192.168.65.1:8001,Server2:192.168.65.2:8001`**.<br>The installation process generates a package named *iProcessConductorDir*`\iProcessConductor\iPCManagedServer`, which you need to copy to the other managed servers as described in Setting Up iProcess Conductor on Managed Servers on page 34. |

Click the **Next** button. The **E**MS Settings dialog appears

TIBCO recommends that you use the `java utils.MulticastTest` utility supplied with WebLogic to ensure that managed servers can listen to each other using the specified cluster address and port.

14. (Cluster Only) Specify the EMS settings.

*Table 12 EMS Settings Dialog*

| Filed | Description/Action |
|---|---|
| EMS Connection URL | TIBCO recommends that you supply the address of a fault-tolerant EMS environment here. For example: `tibjmsnaming://192.168.69.97:7222,tibjmsnaming://192.168.69.97:7224` |
| Queue ConnectionFactory Name | Type the value defined in the *EMS_HOME*`/bin/factories.conf` file. |
| Topic ConnectionFactory Name | Type the value defined in the *EMS_HOME*`/bin/factories.conf` file. |

Click the **Next** button. The iProcess Objects (Java) Client Details dialog appears.

15. In the iProcess Objects (Java) Client Details dialog,
    - Accept the default path or click the **Browse** button to locate the directory. The installation program checks that this path is valid, and will not proceed if it is not.

iProcess Objects (Java) from version 10.4 places its `.dll` or `.so` files in its installation directory. The iProcess Conductor installer needs access to these files, and obtains this by adding the iProcess Objects (Java) installation directory to its Path.

— Click the **Browse** button and navigate to the directory which stores the third-party JAR files. See Copy the Third-party JAR Files on page 13.

Click the **Next** button. The Pre-installation Summary dialog appears.

16. Review the information. If you need to change any details, click the **Back** button to step through the previous dialogs. If it is correct, click the **Install** button to install the product.
17. The Post-installation Summary dialog appears when the installation is finished. The folder containing the log files automatically appears in a new window.

    Click the **Finish** button to exit.

### Install on JBoss

To continue to install TIBCO iProcess Conductor on Oracle WebLogic, complete the following steps:

1. Select the **iProcess Conductor on JBOSS** radio button in the Application Server dialog, and click the **Next** button. A list of requirements appears.
2. Check that all the listed requirements are already installed before you proceed.

The list depends on which application server you have selected and what components you have chosen to install. Missing one of these prerequisites can cause your installation to fail.

Click the **Next** button. The Oracle Environment Variable dialog appears

3. In the Oracle Environment Variable dialog,

— Check the path of the *ORACLE_HOME* environment variable that appears in the Select ORACLE HOME field.

If you have installed the iProcess Conductor database on a remote database server, you must install the Oracle client on the current server first, and *ORACLE_HOME* must point to the Oracle client.

— Select **Yes, I would like to provide DBA account details and let installer create it** if you would like to provide details of the DBA account and let the installer create the corresponding iProcess Conductor user.

Or, select **No, I have created it manually as per installation manual instructed** if you would like to use an iProcess Conductor user ID that you have previously created manually.

Click the **Next** button. The Environment Variable dialog appears.

4. Specify additional environment variables.

*Table 13 Environment Variable Dialog for JBoss*

| Field/Tab | Description/Action |
|---|---|
| Select JAVA HOME | Click the **Browse** button and navigate to the JAVA HOME directory.<br>See JAVA_HOME for more information. |
| Select JBOSS HOME | Click the **Browse** button and navigate to the JBOSS HOME directory. |
| JBOSS Server Version | Select **JBOSS-4.2.1, JBOSS-EAP-4.3**, or **JBOSS-EAP-5.1** from the drop-down list. |
| JBOSS Server Configuration | Select **Default, All,** or **Production** from the drop-down list.<br>• Default provides the standard services used by most J2EE applications.<br>• All provides all available services<br>• Production is similar to All, but has its log messages, deployment scanning, and memory usage tuned to accommodate production deployment requirements. (Available for JBoss EAP 4.3 and 5.1)<br>You must specify the server type as All (or as Production under JBoss EAP only) if you intend to use iProcess Conductor in a cluster. The Default server type does not support clustering. |
| Installation Type | Select **Standalone Mode** if you are not installing in a cluster,<br>or **Cluster Mode** if you are installing in a JBoss cluster. |

Click the **Next** button**.** The Installation Directory dialog appears.

5. Type the path directly, or click the **Browse** button to browse to your preferred location.

If you want to install TIBCO iProcess Conductor on both WebLogic and JBoss, you can do so, but you will need to run the installation process twice, and install two iProcess Conductor instances separately on two different installation directories.

Click the **Next** button**.** The iProcess Conductor Utilities dialog appears.

6. Accept the default directory, or click the **Browse** button and navigate to your preferred location.

   Click the **Next** button**.** The iProcess Conductor Database Configuration dialog appears.

7. Specify the iProcess Conductor database configuration details. See Table 7 for more information.

   Click the **Next** button.

8. The installation process now checks:

   — the block size of both the Oracle database and the target tablespace if you selected an existing tablespace in the previous step to see that it is suitable

   — the XML database requirements have been met

   — the JDK Home requirements have been met.

   Click the **Next** button**.** The iProcess Engine Database Configuration dialog appears.

9. Specify the values needed to connect to the iProcess Engine database. See Table 8 for more information.

   Click the **Next** button. The iProcess Conductor Performance Configuration dialog appears.

10. Specify the values you need to optimize the performance of iProcess Conductor. See Table 9 for more information.

    Click the **Next** button.

11. (Cluster Only) If you select Clustered in the Environment Variable Dialog for JBoss, the **E**MS Settings dialog appears.

    Specify the EMS settings. See Table 12 for more information.

    Click the **Next** button to continue. The iProcess Objects (Java) Client Details dialog appears.

12. In the iProcess Objects (Java) Client Details dialog,

    — Accept the default path or click the **Browse** button to locate the directory. The installation program checks that this path is valid, and will not proceed if it is not.

    — Click the **Browse** button and navigate to the directory which stores the third-party JAR files. See Copy the Third-party JAR Files on page 13.

    Click the **Next** button. The Pre-installation Summary dialog appears.

13. Review the information. If you need to change any details, click the **Back** button to step through the previous dialogs. If it is correct, click the **Install** button to install the product.

14. The Post-installation Summary dialog appears when the installation is finished. The folder containing the log files automatically appears in a new window.

Click the **Finish** button to exit.

## Installing in Console Mode

You can also run the `setup` program in console mode. Console mode is more suited to running `setup` on UNIX platforms. It displays text prompts and is usually faster than a graphical interface.

To install the product in console mode:

1. Log in as a user with appropriate permissions. See Installer Account for the required permissions.
2. Open the physical media or download the TIBCO iProcess Conductor package.
3. Extract the product's archive file to a temporary directory.
4. Using a console window, navigate to the temporary directory.
5. Run the command, for example, `setupSolaris.bin -console.`
6. Complete the installation by responding to the console window prompts.

Generally, the prompts in console mode expect you to enter a number to indicate your selection, press 0 (zero) to submit the selection made, and then type 1 to proceed to the next prompt (or 3 to cancel and 5 to redisplay). You always have the combination of pressing zero and then 1 to proceed to the next screen.

If a value is shown in square brackets at the end of the prompt (for example, [0]), it signifies a default. Click the **Enter** button to submit that value.

## Cluster Installation

You can install iProcess Conductor in a clustered environment, using either WebLogic or JBoss EAP as the application server. Clustering can have the following advantages:

- Scalability

  You can increase the capacity of an application deployed on a server cluster to meet increasing demand. You can add server instances to a cluster without interruption of service, so the application continues to run without any impact on users. Multiple copies of the application enable load balancing between the clustered servers.

- High Availability

  In a server cluster, application processing can continue when one server fails. If one server instance on which iProcess Conductor is running fails, another

server instance on which it is already deployed can continue processing. This is known as *failover*.

### WebLogic Clustering

A cluster in a WebLogic environment consists of one WebLogic cluster administration server and multiple managed servers.

If you choose to install in a WebLogic cluster, the outline of the installation procedure is as follows:

1. Run the iProcess Conductor installer on the administration server as described in Installing in GUI Mode on page 16, or Installing in Console Mode on page 27.

   The installer then installs the iProcess Conductor administration server on the current server machine and generates a package called `iPCManagedServer`, which helps you to install the iProcess Conductor managed servers later.

2. Install iProcess Conductor on each managed server as described in Setting Up iProcess Conductor on Managed Servers on page 34.

3. Update the Order Server Plug-in and Orchestration Server Plug-in settings as described in Updating the Plug-in Settings on page 35.

4. Start iProcess Conductor on each managed server as described in Starting iProcess Conductor in a WebLogic Clustered Environment on page 36.

5. For information on managing a clustered iProcess Conductor installation, see the chapter "Clustering" in *TIBCO iProcess Conductor Administrator's Guide*.

### JBoss EAP Clustering

A cluster, or partition, in a JBoss environment is a group of several nodes. Each node is a JBoss server instance, and the machine which hosts the JBoss node (and hosts an iProcess Conductor instance) is a node server.

If you choose to install in a JBoss cluster, the outline of the installation procedure is as follows:

1. Run the iProcess Conductor installer on one node server as described in Installing in GUI Mode on page 16, or Installing in Console Mode on page 27.

2. On each of the other node servers, run the iProcess Conductor installer to install iProcess Conductor *without* a database.

   Provide the same database information, EMS settings, and so on as you did for the first node server.

3. Configure each iProcess Conductor instance as described in Configuring and Starting iProcess Conductor in a JBoss Cluster on page 36.

4. Start iProcess Conductor on each node server as described in Starting iProcess Conductor in a JBoss Cluster on page 37.

# Post-Installation

This section describes what to do after you have installed TIBCO iProcess Conductor and the database.

## Post-Installation Tasks

Once you have installed TIBCO iProcess Conductor, you need to complete the following tasks:



### Task A Copy the Third-party JAR Files in a WebLogic Cluster

You need to copy the third-party files to a directory before installation, and specify the directory during installation, as described in Copy the Third-party JAR Files on page 13.

If you install iProcess Conductor in a WebLogic cluster, you also need to copy the third-party JAR files to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks` manually after installation.

### Task B Copy the tibjms.jar File and Configure EMS Security

If you are installing iProcess Conductor using TIBCO EMS as its JMS provider, then you must copy the `tibjms.jar` file from *EMS_HOME*`\lib` to:

- *JBOSS_HOME*`\server_type\lib` if you are using JBoss
- *iProcessConductorDomain*`\lib` if you are using WebLogic

If you are installing the iProcess Conductor administration server in a cluster under Oracle WebLogic, you must also copy the `tibjms.jar` file to the following folders:

- *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks`
- *SWDIR*`\eaijava\libs\repository\user` on the iProcess Engine server

If EMS security is enabled, you also need to revise the `AppConfig.xml` file to enable these settings:

```
INTERNAL_QUEUE_USER, INTERNAL_QUEUE_USER_PASSWORD
INTERNAL_TOPIC_USER, INTERNAL_TOPIC_USER_PASSWORD
```

The `AppConfig.xml` file is located in the following directory:

| Application Server | Directory |
|---|---|
| JBoss<br>JBoss EAP | *JBOSS_HOME*`\server\`*server_type*`\conf\appframeworks` |
| WebLogic | *iProcessConductorDomain*`\appframeworks` |
| For the WebLogic administration server in a cluster | *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks` |

### Task C Configure Users

To enable users to log in to TIBCO iProcess Conductor, do the following:

1. From the TIBCO iProcess Administrator, create an iProcess group for your TIBCO iProcess Conductor users. The name of this group is defined in the `AppConfig.xml` file. The file is located in:

   — *iProcessConductorDomain*`\appframeworks` under Oracle WebLogic

   — *JBOSS_HOME*`\server\`*server_type*`\conf\appframeworks` under JBoss

   The default is `COMUsers`, but you can change this by amending the `AppConfig.xml` file. See *TIBCO iProcess Conductor Administrator's Guide* for more information about the `AppConfig.xml` file.

2. Add all the iProcess users who need access to TIBCO iProcess Conductor to the `COMUsers` group.

See *TIBCO iProcess Workspace (Windows) Manager's Guide* for information on creating groups in iProcess.

### Task D Manually Remove ISMP Files

This task is needed only for UNIX platforms.

As part of the installation, the `Setup` program creates the ISMP files in the home directory of the user you log in as when you perform the installation. TIBCO recommends that you remove these files once you have finished the installation.

### Task E License and Deploy TIBCO iProcess Decisions Server

TIBCO iProcess Conductor is shipped with a demo license for TIBCO iProcess Decisions Server Plug-in. You need to obtain a full license. Once you have obtained your license, copy the following files under WebLogic to the *iProcessConductorDomain*`\applications\COM-ORCH-2.0.ear` directory, or under JBoss to the *JBOSS_HOME*`\server\`*server_type*`\deploy\COM-ORCH-2.0.ear` directory:

- `CcConfig.jar`
- `CcServer.jar`
- `CcServerLicense.jar`
- `CcThirdPartyJars.jar`
- `CcI18nBundles.jar`

iProcess Conductor no longer supports iProcess Decisions 3.

### Task F Deploy TIBCO iProcess Decisions Rule Sets

Define and deploy the TIBCO iProcess Decisions rule sets `OrderRequest.ccj` and `GenericOrder.ccj`. See *TIBCO iProcess Conductor Administrator's Guide* for instructions on how to do this.

If you are installing the iProcess Conductor administration server in a cluster under WebLogic, you must also deploy these rule sets to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks.`

If you are installing iProcess Conductor in a cluster under JBoss, you must also deploy these rule sets to each node server in the cluster.

### Task G Check Log Files

To check TIBCO iProcess Conductor is installed correctly, do the following:

1. Navigate to *iProcessConductorDir*.

2. Check for output files in the `\iProcessConductor\logs` directory. .

Checking the output files is an essential step in confirming that TIBCO iProcess Conductor has installed correctly.

The log files will not necessarily catch all possible errors.

### Task H Export ClassLoader Option

This task is only necessary if your iProcess Engine is running on Sun JDK 1.6.

1. Make sure that iProcess Engine and iProcess Conductor are not running.
2. Add the following to the system environment:

   `SWJVM_OPTIONS=-Dsun.lang.ClassLoader.allowArraySyntax=true`

   This copes with a change in the behavior of `ClassLoader.loadClass()` before you start up the iProcess Engine, if the iProcess Engine is running with Sun JDK1.6.
3. Restart iProcess Engine.

### Task I Start TIBCO iProcess Conductor Domain

To start a TIBCO iProcess Conductor domain on Oracle WebLogic, do the following:

1. Make sure TIBCO iProcess Engine is running.
2. Start the TIBCO iProcess Conductor domain.

   Run `StartTibcoIPCDomain.cmd` if you are installing on Windows platforms

   Run `StartTibcoIPCDomain.sh` if you are installing on UNIX platforms.

### Task J Set Up the CacheProcEAIStep Configuration Parameter

This task is only necessary if you want to use iProcess Conductor to communicate with iProcess Engine 11.3.1.

To set up `CacheProcEAIStep`, do the following:

On Windows:

1. Open your Registry Editor.

2. Navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\Staffware plc\Staffware EntObj Server\Nodes\`*node_name*
3. On the Edit menu, select **New > String Value**.
4. Type **`CacheProcEAIStep`** for the new value.
5. Double-click the **CacheProcEAIStep** value, the Edit String dialog appears.
6. In the Value Data field, type **1**.
7. Click the **OK** button.

On UNIX:

1. Open the `swentobjsv.cfg` file located in the *$SWDIR*`/seo/data` directory.
2. Add the `CacheProcEAIStep` parameter and set its value to `1`.

## Configuring and Starting iProcess Conductor in a WebLogic Cluster

Once you have installed iProcess Conductor on the WebLogic administration server, you need to set up the other servers in the cluster known as the managed servers.

### Preliminary steps

Ensure that:

1. You have installed iProcess Conductor in the administration server.
2. You have copied the third-party JAR files to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks`. See Copy the Third-party JAR Files in a WebLogic Cluster on page 30.
3. You have deployed the iProcess Decisions rule sets to *iProcessConductorDir*`\iProcessConductor\iPCManagedServer\appframeworks`. See Deploy TIBCO iProcess Decisions Rule Sets on page 32.

### Setting Up iProcess Conductor on Managed Servers

On each managed server in turn:

1. Ensure that Oracle WebLogic and Enterprise Object Java Client are installed on the managed server.
2. Ensure that *WL_HOME* has been set correctly.
3. Copy the `iPCManagedServer` package from *iProcessConductorDir*`\iProcessConductor\iPCManagedServer` on the administration server to any directory in the managed server.

4. Revise the parameters inside the `iPCManagedServer\comEnv.properties` file as follows:

| | |
|---|---|
| wlHome | Specify the top-level installation directory for WebLogic Server, for example, `\export\home\bea\weblogic_10.3`. |
| domainHome | Specify the domain home, for example, `\export\home\bea\user_projects\domains`. |
| sweoPath | Specify the install path of Enterprise Object Java Client, for example, `\usr\sweojni`. |
| serverName | Specify the name of this iProcess Conductor managed server. This must be exactly the same as the name defined during installation. See step 13. |

5. Execute the following command:

   `deploy.sh` *domainpassword*

   Where *domainpassword* is the WebLogic domain password, which by default is `bootpassword`.

   This command automatically sets up the iProcess Conductor managed server. See iProcessConductorDir\iPCManaged Server for the scripts used to create the managed server.

### Updating the Plug-in Settings

You must update the Order Server Plug-in and Orchestration Server Plug-in settings to work in a clustered environment under WebLogic. To do so, complete the following steps:

1. Shut down iProcess Engine.
2. Update the Order Server properties by navigating to *$SWDIR*`/eaijava/properties/eaiorder`. Revise the JNDI configuration as shown below:

```
eaiorder.jndi.factory=weblogic.jndi.WLInitialContextFactory
eaiorder.jndi.url=t3://<managedserver1>:port,<managedserver2>:p
ort
eaiorder.security.principal=comEAIStepUser
eaiorder.security.credentials=staffware
eaiorder.authconf.location=
```

3. Update the Orchestration Server properties by navigating to *$SWDIR*`/eaijava/properties/eaiorch`. Revise the JNDI configuration as shown below:

```
eaiorch.jndi.factory=com.tibco.tibjms.naming.TibjmsInitialConte
xtFactory
eaiorch.jndi.url=tibjmsnaming://<ip1>:port,tibjmsnaming://<ip2>
:port
eaiorch.jms.factory=XAQueueConnectionFactory
eaiorch.jms.principal=comEAIStepUser
eaiorch.jms.credentials=staffware
eaiorch.authconf.location=
```

It is recommended that you configure EMS to implement fault tolerance. The specified `eaiorch.jndi.url` would therefore specify a fault-tolerant server pair. See the Tibco EMS documentation for more details of fault tolerance.

For the `eaiorch.jms.factory` specify the EMS queue connection factory defined in the *$EMS_HOME*`\bin\factories.conf` file.

Other parameters can be set to the values shown in the example above.

4. Restart the iProcess Engine server.

### Starting iProcess Conductor in a WebLogic Clustered Environment

Start iProcess Conductor as follows:

1. On the administration server, run:

   *iProcessConductorDomain*`\StartTibcoIPCDomain.cmd`

   This starts iProcess Conductor on the administration server.

2. On each managed server in turn, run:

   *iProcessConductorDomain*`\StartTibcoIPCManagedServer.exe`

   This starts iProcess Conductor on the managed server. The managed server then automatically connects to the administration server, downloads configurations, and deploys the iProcess Conductor components to the local managed server.

## Configuring and Starting iProcess Conductor in a JBoss Cluster

Once you have installed iProcess Conductor on all the node servers of a JBoss cluster as described in JBoss EAP Clustering on page 28, you need to carry out the following steps on every node server in the cluster:

- Copy the necessary JAR files. See Copy the Third-party JAR Files on page 13.
- Deploy the rule sets. See Deploy TIBCO iProcess Decisions Rule Sets on page 32.
- Update the plug-in settings to operate in a clustered environment.

### Updating the Plug-in Settings

You must update the Order Server Plug-in and Orchestration Server Plug-in settings to work in a JBoss clustered environment as follows:

1. Shut down iProcess Engine.
2. Update the Order Server properties by navigating to *$SWDIR*\eaijava\properties\eaiorder. Revise the JNDI configuration as shown below:

```
eaiorder.jndi.factory=org.jboss.security.jndi.LoginInitialContextFactory
eaiorder.jndi.url=jnp://<nodeserver1>:1100,<nodeserver2>:1100
eaiorder.security.principal=comEAIStepUser
eaiorder.security.credentials=staffware
eaiorder.authconf.location=$SWDIR/ipc/appserverclient/auth.conf
```

3. Update the Orchestration Server properties by navigating to *$SWDIR*\eaijava\properties\eaiorch. Revise the JNDI configuration as shown below:

```
eaiorch.jndi.factory=com.tibco.tibjms.naming.TibjmsInitialContextFactory
eaiorch.jndi.url=tibjmsnaming://<nodeserver1>:<port>,tibjmsnaming://<nodeserver1>:<port>
eaiorch.jms.factory=XAQueueConnectionFactory
eaiorch.jms.principal=comEAIStepUser
eaiorch.jms.credentials=staffware
eaiorch.authconf.location=$SWDIR/ipc/appserverclient/auth.conf
```

### Starting iProcess Conductor in a JBoss Cluster

Start each iProcess Conductor instance in turn. When starting each instance, specify the partition name and multicast host as follows:

— On Windows:

`run.bat -b` *ip.address* [`-c` *servertype*] `-g` *partition* `-u` *multicast.address*

For example:

```
run.bat -b 192.168.69.60 -c all -g iPCPartition -u 233.3.4.5
```

— On UNIX:

`run.sh -b` *ip.address* [-c *servertype*] `-g` *partition* `-u` *multicast.address*

For example:

```
run.sh -b 192.168.69.60 -c all -g iPCPartition -u 233.3.4.5
```

where:

- *ip.address* is the address of the server.
- *partition* is the JBoss cluster partition name.
- -c *servertype* is an optional parameter that specifies the JBoss server type. It defaults to Production or can be (for JBoss EAP) All. See JBOSS Server Configuration for details.
- *multicast.address* is the multicast address.

## Accessing TIBCO iProcess Conductor from a Web Browser

You can access TIBCO iProcess Conductor from a browser window. To do this, go to the following URL:

http://*machine name:port number*/COM

where:

- *machine name* is the host name of the computer that you entered when you installed the TIBCO iProcess Conductor.
- *port number* is the port number of the machine where your TIBCO iProcess Conductor installation is listening to requests. The TIBCO iProcess Conductor default is `8001` for Oracle WebLogic installations, or `8800` for JBoss installations.
- COM is the context root of the TIBCO iProcess Conductor web application. (If required, you can change this context root by modifying `web.xml`. See your application server documentation for more information on how to do this.)

For example, if TIBCO iProcess Conductor is installed on a machine called `iPConductor`, access it using the following URL:

http://iPConductor:8001/COM

In a WebLogic clustered environment, *machine name* can be the name of any of the iProcess Conductor managed servers. It is also possible to enable iProcess Conductor load balancing, either by using the standard `HttpClusterServlet` provided with WebLogic, or by using dedicated load-balancing hardware, and thus access iProcess Conductor on different managed servers as load balancing requires.

### Access to JBoss

If the application server you are using is a version of JBoss, another step may be necessary.

You may need to start JBoss using a `runsh` command, such as `run.sh -b 192.168.66.66` to bind iProcess. If not, you may not be able to access iProcess Conductor from Internet Explorer, and may not even be able to access the JBoss console page.

See the JBoss documentation for more details.

## Configuring Microsoft Internet Explorer for TIBCO iProcess Conductor

To configure Microsoft Internet Explorer to work with TIBCO iProcess Conductor, you need to:

- Enable ActiveX so that you can view the TIBCO iProcess Conductor web pages. See Enabling ActiveX in Microsoft Internet Explorer on page 39.
- Reload your Java Policy Configuration so that the plan applet viewer can be used. See Reloading the Java Policy Configuration to View the Order Plan Summary on page 40.
- Set to check for newer versions every time you visit a page. See Configuring the Check for Newer Versions of Stored Pages Option on page 40.
- Enable support for UTF-8 URLs. See Supporting UTF-8 URLs on page 41.

### Enabling ActiveX in Microsoft Internet Explorer

To enable ActiveX in Microsoft Internet Explorer, do the following:

1. From Microsoft Internet Explorer, select **Tools** > **Internet Options**. The Internet Options dialog appears.
2. In the Security tab, click the **Local Intranet** button.
3. Click the **Sites** button. The Local Intranet dialog appears.
4. Click the **Advanced** button. Another Local Intranet dialog appears.
5. In the Add This Website To This Zone field, type the TIBCO iProcess Conductor web address. (See Accessing TIBCO iProcess Conductor from a Web Browser on page 38).
6. Click the **Add** button to add the website. Then click the **Close** button to exit this dialog.
7. Click the **OK** button to return to the Internet Options dialog.
8. In the Security Level For This Zone area, click the **Custom Level** button. The Security Settings dialog appears.

9. In the Security Settings dialog, scroll down to ActiveX controls and plug-ins in the Settings area. Enable the following settings:
   - Download signed ActiveX controls
   - Download unsigned ActiveX controls
   - Initialize and script ActiveX controls not marked as safe for scripting
   - Run ActiveX controls and plug-ins
   - Script ActiveX controls marked safe for scripting

   Click the **OK** button twice to return to your Microsoft Internet Explorer window.

### Reloading the Java Policy Configuration to View the Order Plan Summary

To reload your Java Policy Configuration so that you can view the TIBCO iProcess Conductor Order Plan Summary, do the following:

1. From the Windows task bar, right-click the  button and select **Open Console**. The Java Console appears.
2. Type **`r`** to reload the policy configuration.
3. Type **`x`** to clear the classloader cache.
4. Click the **Close** button to close the Java Console.

### Configuring the Check for Newer Versions of Stored Pages Option

To set the check for newer versions of stored pages option, do the following:

1. From Microsoft Internet Explorer, select **Tools** > **Internet Options**. The Internet Options dialog appears.
2. In the General tab, click the **Settings** button in Browse History area. The Temporary Internet Files and History Settings dialog appears.
3. From the Temporary Internet Files area of the window, click the **Settings** button. The Settings dialog appears.
4. Select the **Every Time I Visit The Webpage** radio button.
5. Click the **OK** button twice to return to your Microsoft Internet Explorer window.

### Supporting UTF-8 URLs

Ensure that on all iProcess client machines that are to be used with iProcess Conductor, your web browser is configured to support UTF-8 URLs. In Microsoft Internet Explorer, go to **Tools > Internet Options > Advanced > International**, and ensure that the Send UTF-8 URLs checkbox is checked.

# Chapter 3 Uninstalling and Upgrading iProcess Conductor

This chapter explains how to uninstall and upgrade TIBCO iProcess Conductor.

## Topics

# Uninstalling TIBCO iProcess Conductor

To uninstall TIBCO iProcess Conductor from your computer:

1. Shut down your TIBCO iProcess Conductor domain from the Oracle WebLogic console, or shut down the JBoss server.
2. Log in with the same username used when you installed TIBCO iProcess Conductor.
3. Navigate to the *iProcessConductorDir*_iProcessConductorUninst directory.
4. Run the TIBCO iProcess Conductor uninstall program `uninstaller.exe`

   The uninstall Wizard appears. Continue with the next step.

You can also run the uninstall program in console mode by typing **`uninstaller.bin -console`** from the command line. Console mode is more suited to running uninstallation on UNIX platforms. It displays text prompts and is usually faster than a graphical interface.

5. Review the Welcome screen, then click the **Next** button to continue.
6. The Summary dialog appears. Review the information. If it is correct, click the **Uninstall** button. If you need to change the details, click the **Back** button to go back through the previous dialogs.

An error message `No such file or directory` may be displayed. This can be ignored.

7. Click the **Finish** button.

### Post-uninstallation

After uninstalling TIBCO iProcess Conductor, you need to complete the following actions to finish the uninstallation:

- Delete the TIBCO iProcess Conductor installation directory because the uninstaller program is left in a temporary folder within the TIBCO iProcess Conductor installation directory.

  For example, if you installed your TIBCO iProcess Conductor in a UNIX environment in the `/opt/iPConductor` directory, you need to delete the `iPConductor` directory.
- Remove the TIBCO iProcess Conductor database tables.

The uninstall program does not automatically delete the TIBCO iProcess Conductor and iProcess Database Adapter database tables and users. From the Oracle server, manually drop the TIBCO iProcess Conductor database tables and database users using the cascade option. See your RDBMS documentation for more information about how to do this.

# Upgrading TIBCO iProcess Conductor

If you are upgrading iProcess Conductor from a previous installation, and you want to continue to use the same database, you must:

1. If you are upgrading iProcess Conductor from a non-clustered to a clustered environment, decide whether you can run all your outstanding execution plans to completion or whether you will need to use the timer migration tool described in Upgrading to Quartz on page 52. If you decide on the first option, complete all execution plans before uninstalling your previous version of iProcess Conductor.
2. You may need to make a copy of the iProcess Conductor Utility Framework properties file. From version 11.2.0 on, the `iPCUtil.xml` configuration file has been used instead of the `iPCUtil.properties` file of previous versions. Existing configuration information in this file is lost if you install iProcess Conductor in the same location as the previous version. Unless you are installing iProcess Conductor in a different location, you should make a copy of the `iPCUtil.properties` file so that you have a record of your configuration data that you can copy to the new `iPCUtil.xml` file.
3. Uninstall the previous version of iProcess Conductor. See Uninstalling TIBCO iProcess Conductor on page 44 for details. This uninstall process does not delete the database.
4. Start the `setup` program for this release of iProcess Conductor. Select Custom in the Setup type dialog.
5. Check the **Application Server** checkbox only, and make sure that the database option is not selected.
6. Continue with the installation procedure for installing iProcess Conductor without the database. In the TIBCO iProcess Conductor Database Configuration dialog, specify the details of your existing database.
7. If you are upgrading from a version older than 11.0 to version 11.0 or later, evolve your database as described in the following section.
8. If you are upgrading iProcess Conductor for use in a clustered environment (under either JBoss or WebLogic), you must add some tables for use with Quartz as described in Upgrading the Database for a Clustered Environment on page 49.

## Upgrading the Existing Database

Some XML schemas were updated in iProcess Conductor 11.0, for example, a new element `jeopardyDetection` has been added to both `OrderHeaderTypes.xsd` and `ExecutionPlanTypes.xsd`. This means that if you want to use your existing database when upgrading iProcess Conductor from a pre-11.0 version, you must update your existing database as described in this section.

1. Log in to the database using the database username and execute the following script to get the iProcess Conductor directory path, which is actually the iProcess Conductor installation destination on the database server:

   select `DIRECTORY_PATH from ALL_DIRECTORIES`

   where `DIRECTORY_NAME='IPCUSER_CATDIR'`

The default iProcess Conductor database username is `IPCUSER`. If you have changed that username, substitute the changed name in the example above.

2. Download the iProcess Conductor 11 database schemas from the TIBCO download site and extract all the schema files to **$***DIRECTORY_PATH***/**`iProcessConductor/oracle/iProcessConductor/xsd/`.

   Where:

   — *DIRECTORY_PATH* is the directory on the database server. Do not confuse this with the path on the application server.

3. Perform XML Schema Evolution as described in the following sections.

### For an Oracle 10g Database

1. Log in to the database using the database username to evolve the Order schema and dependent schemas as shown below:

```
declare
  newOrderHeaderType    XMLType;
  orderHeader           XMLType;
  headerTypes           XMLType;
  headers               XMLType;
  orderTypes            XMLType;
  orderMEType           XMLType;
  thisoder              XMLType;

begin
  newOrderHeaderType :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/OrderHeaderTypes.xsd'));
```

```
  orderHeader :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/OrderHeader.xsd'));
  headerTypes :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/HeaderTypes.xsd'));
  headers     :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/Header.xsd'));
  orderTypes  :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/OrderTypes.xsd'));
  orderMEType :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/OrderMEType.xsd'));
  thisoder    :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/Order.xsd'));

dbms_xmlschema.CopyEvolve(xdb$string_list_t('http://www.staffwa
re.com/frameworks/schema/OrderHeaderTypes.xsd','http://www.staf
fware.com/frameworks/schema/OrderHeader.xsd','http://www.staffw
are.com/frameworks/schema/HeaderTypes.xsd','http://www.staffwar
e.com/frameworks/schema/Header.xsd','http://www.staffware.com/f
rameworks/schema/OrderTypes.xsd','http://www.staffware.com/fram
eworks/schema/OrderMEType.xsd','http://www.staffware.com/framew
orks/schema/Order.xsd'),XMLSequenceType(newOrderHeaderType,orde
rHeader,headerTypes,headers,orderTypes,orderMEType,thisoder),NU
LL,FALSE,NULL,TRUE,TRUE,NULL);
  commit;

end;
```

2. Log in as `IPCUSER` and execute the following script to evolve the ExecutionPlan schema and dependent schemas:

```
declare
 newexecutionPlanTypes    XMLType;
 executionPlan          XMLType;

begin
   newexecutionPlanTypes :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/ExecutionPlanTypes.xsd'));
 executionPlan :=
xmltype(getDocument('/iProcessConductor/oracle/iProcessConducto
r/xsd/ExecutionPlan.xsd'));
dbms_xmlschema.CopyEvolve(xdb$string_list_t('http://www.staffwa
re.com/frameworks/schema/ExecutionPlanTypes.xsd','http://www.st
affware.com/frameworks/schema/ExecutionPlan.xsd'),
XMLSequenceType(newexecutionPlanTypes,executionPlan),NULL,FALSE
,NULL, TRUE,TRUE,NULL);
 commit;

end;
```

3. Verify that the schemas have updated successfully. Log in as the system user, and execute the following script to check whether there is an element called `jeopardyDetection` inside each result schema:

```
select SCHEMA from DBA_XML_SCHEMAS
where  OWNER='IPCUSER'
AND SCHEMA_URL in
('http://www.staffware.com/frameworks/schema/OrderHeaderTypes.x
sd','http://www.staffware.com/frameworks/schema/ExecutionPlanTy
pes.xsd')
```

### Upgrading from an Oracle 9i Database


Oracle 9i is no longer supported by iProcess Conductor 11.2.1.

TIBCO recommends that you install the iProcess Conductor 11.2.1 database and migrate your data into the new database. See the Oracle documentation for details about how to do this.

## Upgrading the Database for a Clustered Environment

If you are upgrading iProcess Conductor to the current release for use in a clustered environment, you must add some tables for use with Quartz.

Use the Oracle SQL*Plus utility to log in as `ipcuser`.

1. Amend TABLE SCHEDULED_EVENTS by running the following SQL:

```
ALTER TABLE SCHEDULED_EVENTS
ADD (nodeId  VARCHAR2(50));
```

2. Create the tables required for (named `qrtz_*`) by running the following SQL. If you have already separately installed the iProcess Conductor database, you can find the SQL script file under *iProcessConductorDir*`/iProcessConductor/oracle/iProcessConductor/sql/scheduler/quartz_tables_oracle.sql`:

```
CREATE TABLE qrtz_job_details
  (
    JOB_NAME  VARCHAR2(200) NOT NULL,
    JOB_GROUP VARCHAR2(200) NOT NULL,
    DESCRIPTION VARCHAR2(250) NULL,
    JOB_CLASS_NAME   VARCHAR2(250) NOT NULL,
    IS_DURABLE VARCHAR2(1) NOT NULL,
    IS_VOLATILE VARCHAR2(1) NOT NULL,
    IS_STATEFUL VARCHAR2(1) NOT NULL,
    REQUESTS_RECOVERY VARCHAR2(1) NOT NULL,
    JOB_DATA BLOB NULL,
    PRIMARY KEY (JOB_NAME,JOB_GROUP)
);
CREATE TABLE qrtz_job_listeners
```

```
  (
    JOB_NAME  VARCHAR2(200) NOT NULL,
    JOB_GROUP VARCHAR2(200) NOT NULL,
    JOB_LISTENER VARCHAR2(200) NOT NULL,
    PRIMARY KEY (JOB_NAME,JOB_GROUP,JOB_LISTENER),
    FOREIGN KEY (JOB_NAME,JOB_GROUP)
REFERENCES QRTZ_JOB_DETAILS(JOB_NAME,JOB_GROUP)
);
CREATE TABLE qrtz_triggers
  (
    TRIGGER_NAME VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    JOB_NAME  VARCHAR2(200) NOT NULL,
    JOB_GROUP VARCHAR2(200) NOT NULL,
    IS_VOLATILE VARCHAR2(1) NOT NULL,
    DESCRIPTION VARCHAR2(250) NULL,
    NEXT_FIRE_TIME NUMBER(13) NULL,
    PREV_FIRE_TIME NUMBER(13) NULL,
    PRIORITY NUMBER(13) NULL,
    TRIGGER_STATE VARCHAR2(16) NOT NULL,
    TRIGGER_TYPE VARCHAR2(8) NOT NULL,
    START_TIME NUMBER(13) NOT NULL,
    END_TIME NUMBER(13) NULL,
    CALENDAR_NAME VARCHAR2(200) NULL,
    MISFIRE_INSTR NUMBER(2) NULL,
    JOB_DATA BLOB NULL,
    PRIMARY KEY (TRIGGER_NAME,TRIGGER_GROUP),
    FOREIGN KEY (JOB_NAME,JOB_GROUP)
REFERENCES QRTZ_JOB_DETAILS(JOB_NAME,JOB_GROUP)
);
CREATE TABLE qrtz_simple_triggers
  (
    TRIGGER_NAME VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    REPEAT_COUNT NUMBER(7) NOT NULL,
    REPEAT_INTERVAL NUMBER(12) NOT NULL,
    TIMES_TRIGGERED NUMBER(7) NOT NULL,
    PRIMARY KEY (TRIGGER_NAME,TRIGGER_GROUP),
    FOREIGN KEY (TRIGGER_NAME,TRIGGER_GROUP)
REFERENCES QRTZ_TRIGGERS(TRIGGER_NAME,TRIGGER_GROUP)
);
CREATE TABLE qrtz_cron_triggers
  (
    TRIGGER_NAME VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    CRON_EXPRESSION VARCHAR2(120) NOT NULL,
    TIME_ZONE_ID VARCHAR2(80),
    PRIMARY KEY (TRIGGER_NAME,TRIGGER_GROUP),
    FOREIGN KEY (TRIGGER_NAME,TRIGGER_GROUP)
REFERENCES QRTZ_TRIGGERS(TRIGGER_NAME,TRIGGER_GROUP)
);
CREATE TABLE qrtz_blob_triggers
  (
    TRIGGER_NAME VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    BLOB_DATA BLOB NULL,
    PRIMARY KEY (TRIGGER_NAME,TRIGGER_GROUP),
```

```
    FOREIGN KEY (TRIGGER_NAME,TRIGGER_GROUP)
        REFERENCES QRTZ_TRIGGERS(TRIGGER_NAME,TRIGGER_GROUP)
);
CREATE TABLE qrtz_trigger_listeners
  (
    TRIGGER_NAME  VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    TRIGGER_LISTENER VARCHAR2(200) NOT NULL,
    PRIMARY KEY (TRIGGER_NAME,TRIGGER_GROUP,TRIGGER_LISTENER),
    FOREIGN KEY (TRIGGER_NAME,TRIGGER_GROUP)
REFERENCES QRTZ_TRIGGERS(TRIGGER_NAME,TRIGGER_GROUP)
);
CREATE TABLE qrtz_calendars
  (
    CALENDAR_NAME  VARCHAR2(200) NOT NULL,
    CALENDAR BLOB NOT NULL,
    PRIMARY KEY (CALENDAR_NAME)
);
CREATE TABLE qrtz_paused_trigger_grps
  (
    TRIGGER_GROUP  VARCHAR2(200) NOT NULL,
    PRIMARY KEY (TRIGGER_GROUP)
);
CREATE TABLE qrtz_fired_triggers
  (
    ENTRY_ID VARCHAR2(95) NOT NULL,
    TRIGGER_NAME VARCHAR2(200) NOT NULL,
    TRIGGER_GROUP VARCHAR2(200) NOT NULL,
    IS_VOLATILE VARCHAR2(1) NOT NULL,
    INSTANCE_NAME VARCHAR2(200) NOT NULL,
    FIRED_TIME NUMBER(13) NOT NULL,
    PRIORITY NUMBER(13) NOT NULL,
    STATE VARCHAR2(16) NOT NULL,
    JOB_NAME VARCHAR2(200) NULL,
    JOB_GROUP VARCHAR2(200) NULL,
    IS_STATEFUL VARCHAR2(1) NULL,
    REQUESTS_RECOVERY VARCHAR2(1) NULL,
    PRIMARY KEY (ENTRY_ID)
);
CREATE TABLE qrtz_scheduler_state
  (
    INSTANCE_NAME VARCHAR2(200) NOT NULL,
    LAST_CHECKIN_TIME NUMBER(13) NOT NULL,
    CHECKIN_INTERVAL NUMBER(13) NOT NULL,
    PRIMARY KEY (INSTANCE_NAME)
);
CREATE TABLE qrtz_locks
  (
    LOCK_NAME  VARCHAR2(40) NOT NULL,
    PRIMARY KEY (LOCK_NAME)
);
INSERT INTO qrtz_locks values('TRIGGER_ACCESS');
INSERT INTO qrtz_locks values('JOB_ACCESS');
INSERT INTO qrtz_locks values('CALENDAR_ACCESS');
INSERT INTO qrtz_locks values('STATE_ACCESS');
INSERT INTO qrtz_locks values('MISFIRE_ACCESS');
```

```
create index idx_qrtz_j_req_recovery on
qrtz_job_details(REQUESTS_RECOVERY);
create index idx_qrtz_t_next_fire_time on
qrtz_triggers(NEXT_FIRE_TIME);
create index idx_qrtz_t_state on qrtz_triggers(TRIGGER_STATE);
create index idx_qrtz_t_nft_st on
qrtz_triggers(NEXT_FIRE_TIME,TRIGGER_STATE);
create index idx_qrtz_t_volatile on qrtz_triggers(IS_VOLATILE);
create index idx_qrtz_ft_trig_name on
qrtz_fired_triggers(TRIGGER_NAME);
create index idx_qrtz_ft_trig_group on
qrtz_fired_triggers(TRIGGER_GROUP);
create index idx_qrtz_ft_trig_nm_gp on
qrtz_fired_triggers(TRIGGER_NAME,TRIGGER_GROUP);
create index idx_qrtz_ft_trig_volatile on
qrtz_fired_triggers(IS_VOLATILE);
create index idx_qrtz_ft_trig_inst_name on
qrtz_fired_triggers(INSTANCE_NAME);
create index idx_qrtz_ft_job_name on
qrtz_fired_triggers(JOB_NAME);
create index idx_qrtz_ft_job_group on
qrtz_fired_triggers(JOB_GROUP);
create index idx_qrtz_ft_job_stateful on
qrtz_fired_triggers(IS_STATEFUL);
create index idx_qrtz_ft_job_req_recovery on
qrtz_fired_triggers(REQUESTS_RECOVERY);


commit;
```

## Upgrading to Quartz

If you are upgrading iProcess Conductor from a standalone to a clustered environment, the timer utility being employed changes from the standard Java timer `java.util.Timer` used in standalone installations, to the Quartz Enterprise Job Scheduler from OpenSymphony, which is used in a clustered environment to synchronize the timing on all servers on which iProcess Conductor is installed. Any active execution plans will not be recognized by the new timer and will not execute correctly.

If you are not upgrading to a clustered environment, you can ignore this section.

There are two ways you can deal with this:

- TIBCO recommends that you run all execution plans so that they finish before you upgrade to a clustered environment. This way, Quartz starts with a clean slate in the clustered environment and there are no timer migration issues.

- If this is not possible, a migration tool is provided that converts events from the standard Java timer to the Quartz timer.

To use the migration tool:

1. Create a file named `migrate_timer_events_to_quartz` in the following directory:

   *iProcessConductorDomain*`\conf\appframeworks`

   This is a flag file, meaning that its content does not matter (it can be empty). Only the presence of a file with that name is important.

2. Start iProcess Conductor, as described in Starting iProcess Conductor in a WebLogic Clustered Environment on page 36. Active execution plans are migrated automatically to the Quartz timer. The time taken by this migration varies according to the number and complexity of the execution plans.

3. Warning messages are printed in the `FFTrace.log` file as follows:

```
2009-06-1314:28:54,753 WARN
[com.staffware.frameworks.scheduler.provider.quartz.QuartzTimer]
File migrate_timer_events_to_quartz exists, system will try to
convert non-quartz events to quartz events

2009-06-13 14:28:55,551 WARN
[com.staffware.frameworks.scheduler.session.SchedulerEventInjector
] 2 events of total 2 are successfully loaded
```

4. When migration is completed, the TIBCO iProcess Conductor application server starts. If you can access iProcess Conductor (as described in Accessing TIBCO iProcess Conductor from a Web Browser on page 38), the execution plans have been successfully migrated.

5. Remove the `migrate_timer_events_to_quartz` file.

# Appendix A TIBCO iProcess Conductor Scripts

The TIBCO iProcess Conductor scripts provided are for support use only.

You should only run these scripts under the supervision of TIBCO Support. To contact TIBCO Support, see Connecting with TIBCO Resources on page xiv.

This section only lists scripts on Windows platforms. On UNIX platforms, the scripts share the same name except for file format. For example, the uninstaller script is `iProcessConductorUninstall.exe` on Windows, and `iProcessConductorUninstall.bin` on UNIX.

### iProcessConductorDir\iProcessConductorUninst

This directory contains scripts for uninstalling TIBCO iProcess Conductor. It contains the following files:

- `uninstaller.exe` — This is the uninstaller script.
- `uninstall.dat` — This is the supporting uninstaller DAT file.

### iProcessConductorDir\iProcessConductor\BEAWebLogic

This directory contains the scripts used to create and administer the TIBCO iProcess Conductor domain on a target Oracle WebLogic application server. It contains the following scripts:

- `StartTibcoIPCDomain.cmd` — This is the TIBCO iProcess Conductor domain start-up script. It is copied to the domain root directory and is used to configure the system classpath extensions.
- `comEnv.cmd` — This script is generated by the installer and consolidates environment variables gathered from the installation wizard.
- `build.xml` — This is an Ant script that contains the Ant targets used to create and configure the TIBCO iProcess Conductor domain.
- `runBatchSetup.cmd` — This script configures the necessary WLS environment and runs the Ant command to build the TIBCO iProcess Conductor domain.

### iProcessConductorDir\iProcessConductor\JBOSS\bin

This directory contains the script used to start the TIBCO iProcess Conductor domain on a target JBoss application server:

- `run.bat` — This is the TIBCO iProcess Conductor start-up script. It starts the JBoss server, which in turn starts TIBCO iProcess Conductor.

You should not use this script to start iProcess Conductor under normal circumstances.

### iProcessConductorDir\JBOSS\server\server_type\deploy

This directory contains the scripts used to create and administer the TIBCO iProcess Conductor domain on a target JBoss application server. Under it, the `bin` directory contains the following script:

- `copyThirdParty.cmd` — This script automatically copies the third-party JAR files to the corresponding locations.
- `deployjboss.cmd` — This script configures the necessary JBoss environment and copies and deploys TIBCO iProcess Conductor onto JBoss.
- `oracle-ds.xml` — This file is generated by the installer and consolidates the Oracle server settings and credentials.
- `oracle-xa-ds.xml` — This file is generated by the installer and consolidates the iProcess Database Adapter settings and credentials.

### iProcessConductorDir\com

This directory is the enterprise archive and supporting libraries for TIBCO iProcess Conductor. It contains the following sub-directories:

- *iProcessConductorDir*`\com\ear` — contains the `com-ORCH-2.0.ear` file.
- *iProcessConductorDir*`\com\appframeworks` — contains the supporting libraries and property files. These are backup copies.
- *iProcessConductorDir*`\com\ejb` — contains the `ORDER-ejb-2.0.jar` file.
- *iProcessConductorDir*`\com\war` — contains the `ORDER-web-2.0.war` file.

### iProcessConductorDir\oracle\iProcessConductor\

This directory contains the TIBCO iProcess Conductor and iProcess Database Adapter database configuration scripts. It contains the following subdirectories:

- *iProcessConductorDir*\oracle\iProcessConductor\sql — contains the COMSQLSetup.cmd script that can be used to re-administer your TIBCO iProcess Conductor database.
- *iProcessConductorDir*\oracle\iProcessConductor\xsd — contains the TIBCO iProcess Conductor schemas registered by the Oracle database. These should not be moved, deleted, or modified.
- *iProcessConductorDir*\oracle\iProcessConductor\xslt — contains the XSLT that is registered with the TIBCO iProcess Conductor database for use when importing Microsoft Project Plans into TIBCO iProcess Conductor.

### iProcessConductorDir\iPCManaged Server

This directory contains the scripts used to create the iProcess Conductor Managed server on a target WebLogic server. It contains the following scripts:

- StartTibcoIPCManagedServer.sh — This is the iProcess Conductor managed server start-up script. It is copied to the domain root directory on each managed server and is used to configure the system classpath extensions.
- iPCManagedServerSetup.py — This is a Jython script in charge of creating WebLogic domains using WLST Offline.
- build.xml — This is an Ant script that contains the Ant targets used to create and configure the iProcess Conductor domain.
- deploy.sh — This script is used to run the Ant command to build the iProcess Conductor domain on each managed server.

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