TIBCO iProcess® Engine for UNIX

Installation

Software Release 11.4.1
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TIBC⦵™

Two-Second Advantage®

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. See the readme file for the availability of this software version on a specific operating system platform.

This manual describes how to install TIBCO iProcess Engine on Unix platforms.

Topics

Related Documentation

This section lists documentation resources you may find useful.

TIBCO iProcess Engine Documentation

The following documents form the TIBCO iProcess Engine documentation set:

- *TIBCO iProcess Engine Installation* Read this manual for instructions on site preparation and installation.

- *TIBCO iProcess Engine 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 Suite Documentation This documentation set contains all the manuals for TIBCO iProcess Engine and other TIBCO products in TIBCO iProcess® Suite. The manuals for TIBCO iProcess Engine are as follows:

    — *TIBCO iProcess Engine Architecture Guide*

    — TIBCO iProcess Engine Administrator's Guides:

      TIBCO iProcess Engine Administrator's Guide

      TIBCO iProcess Objects Director Administrator's Guide

      TIBCO iProcess Objects Server Administrator's Guide

    — TIBCO iProcess Engine Database Administrator's Guides:

      TIBCO iProcess Engine (DB2) Administrator's Guide

      TIBCO iProcess Engine (Oracle) Administrator's Guide

      TIBCO iProcess Engine (SQL) Administrator's Guide

    — *TIBCO iProcess swutil and swbatch Reference Guide*

    — *TIBCO iProcess Engine System Messages Guide*

    — *TIBCO iProcess User Validation API User's Guide*

    — *LDAPCONF Utility User's Guide*

Other TIBCO Product Documentation

You may find it useful to read the documentation for the following TIBCO products:

- TIBCO ActiveMatrix BusinessWorks™

- TIBCO Business Studio™

- TIBCO Enterprise Message Service™

- TIBCO Hawk®

- TIBCO Rendezvous®

Third-party Documentation

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

- Oracle® Database

- Microsoft SQL Server®

- IBM® WebSphere®

- Oracle WebLogic Server®

Typographical Conventions

The following typographical conventions are used in this manual.

Table 1   General Typographical Conventions

Convention	Use
$SWDIR	TIBCO iProcess Engine installs into a directory. This directory is referenced in documentation as *$SWDIR*.
	For example, if *$SWDIR* is set to `/swerver/staffw_nod1` on a UNIX server, then the full path to the `swutil` command is `/swerver/staffw_nod1/bin/swutil` or *$SWDIR*`/bin/swutil`.
`code font`	Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example:
	Use `MyCommand` to start the foo process.
`bold code font`	Bold code font is used in the following ways:
	• In procedures, to indicate what a user types. For example: Type **`admin`**.
	• In large code samples, to indicate the parts of the sample that are of particular interest.
	• In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, `MyCommand` is enabled: `MyCommand [`**`enable`**`	disable]`
italic font	Italic font is used in the following ways:
	• To indicate a document title. For example: See *TIBCO ActiveMatrix BusinessWorks Concepts*.
	• To introduce new terms. For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal.
	• To indicate a variable in a command or code syntax that you must replace. For example: `MyCommand` *PathName*
Key combinations	Key names separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C.
	Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q.

Table 1 General Typographical Conventions (Cont'd)

Convention	Use
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	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.
	For example:
	`MyCommand [optional_parameter] required_parameter`
|	A logical OR that separates multiple items of which only one may be chosen.
	For example, you can select only one of the following parameters:
	`MyCommand para1	param2	param3`
{ }	A logical group of items in a command. Other syntax notations may appear within each logical group.
	For example, the following command requires two parameters, which can be either the pair `param1` and `param2`, or the pair `param3` and `param4`.
	`MyCommand {param1 param2}	{param3 param4}`
	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`:
	`MyCommand {param1	param2} {param3	param4}`
	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`.
	`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, 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 All TIBCO Documentation

After you join TIBCOmmunity, you can access the documentation for all supported product versions here:

http://docs.tibco.com/TibcoDoc

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 username and password. If you do not have a username, you can request one.

Chapter 1   **Introduction**

This chapter explains installation modes, requirements, and other options you need to be aware of before starting the installation.

Topics

Installation Overview

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

Installation Modes

The installer can run in the following modes on Microsoft Windows platforms:

- Console Mode
- Silent Mode

Console Mode

In Console mode, you are allowed to run the installer from the command prompt or terminal window.

For detailed information, see Installing TIBCO iProcess Engine in Console Mode on page 35.

Silent Mode

In Silent mode, the installer uses a control file that was saved during an earlier installation. Silent mode installs without prompting you for information.

For detailed information, see Installing TIBCO iProcess Engine in Silent Mode on page 40.

Organization Roles

To install TIBCO iProcess Engine, you will need to perform a number of pre-installation tasks, run the installer, and perform a number of post-installation tasks.

Each of these stages requires the involvement of one or more of the organizational roles described in Table 3.

Table 3   Organization Roles During Installation

Role	Knowledge Required	Permissions Required
iProcess Files-install Owner	iProcess Engine configuration (including all optional iProcess Engine components) Database configuration	To install and configure iProcess Engine files and directories **Note:** You must use the root user or the iProcess Engine background user for this role.
iProcess Schema-install Owner	Database configuration	To create and configure the iProcess Engine database schema **Note:** You must use the root user or the iProcess Engine background user for this role.
DBA	Database configuration	To create table spaces and users for iProcess Engine
root	Certain system-wide parameters	To run certain commands and set file permissions

Depending on your operational and security environment, these roles can be performed either by the same person or by different departments or individuals.

TIBCO recommends that, if possible, you run the installer as a `root` user who also has full DBA-level access. This allows the installer to perform all necessary installation tasks.

If you run the installer without either `root` or DBA-level access, further manual tasks will be required to complete the installation after the installer has finished. The exact tasks required, and who will need to perform them, will vary according to your installation scenario.

Installation Types

The following three installation types are available:

- **Install or upgrade schema and files**

    If you are an iProcess Files-install Owner as well as an iProcess Schema-install Owner, you can install or upgrade schema and files simultaneously.

- **Install or upgrade shema only**

    If you are only an iProcess Schema-install Owner, you can only install or upgrade schema during the installation.

- **Install or upgrade files only**

If you are only an iProcess Files-install Owner, you can only install or upgrade files during the installation.

For an iProcess Files-install Owner, two installation types are available when installing iProcess files, Full Installation and Partial Installation.

- **Full Installation**

  If you want to install iProcess Engine in a single automated operation, you can perform a full installation.

  To complete a full installation:

  — you must run the installer as the `root` user, and

  — the `root` user must have DBA-level access to the database.

  If granting this level of access (for the duration of the installation process) is compatible with your site's security policies, TIBCO strongly recommends doing so, as this considerably simplifies the installation task.

- **Partial Installation**

  If you want to split the installation into separate tasks according to its component roles (as discussed on iProcess Engine Architecture on page 6), you can perform a partial installation. The users acting in the different roles will need to run further commands to complete the installation after the installer has finished.

  If a partial installation is performed, the installer creates a *$SWDIR*/`logs`/`TODO` file, which lists the tasks that must be performed manually, the order in which they must be done, and who needs to do them. See The $SWDIR/logs/TODO File on page 44 for more information.

Table 4 summarizes the available installation options.

Table 4   Partial Installation Information

| If You Run The Installer As | **And** | | You Do Not Have DBA Access, Or You Want To Create Or Upgrade The Database Later |
| | **You Have DBA-level Access *And*** | | |
	You Want The Installer To Create The Database	**You Want The Installer To Use An Existing Database**	
`root`	The installer performs a full installation. It creates the database and sets all necessary file permissions.	The installer performs a full installation. It uses the specified database and sets all necessary file permissions.	The installer performs a full installation. The DBA will need to create or upgrade the database to complete the installation, as specified in the *$SWDIR*/logs/TODO file.
the iProcess Engine `background` user	The installer performs a partial installation. `root` will need to run certain commands and set file permissions to complete the installation, as specified in the *$SWDIR*/logs/TODO file.	The installer performs a partial installation. `root` will need to run certain commands and set file permissions to complete the installation, as specified in the *$SWDIR*/logs/TODO file.	The installer performs a partial installation. To complete the installation: • The DBA will need to create or upgrade the database. • `root` will need to run certain commands and set file permissions as specified in the *$SWDIR*/logs/TODO file.

For DB2 database users

If you run the installer as a `non-root` user, the following warning message is displayed:

```
The version of the Database cannot be validated when against DB2 as
a non root install.
```

You can proceed with the installation, provided that your version of DB2 is one of the required versions listed on IBM DB2 Database on page 19. However, to be absolutely certain that the version of DB2 you are using is correct, run the following command as the `root` user or the DB2 user:

```
/home/db2inst2/sqllib/adm/db2licm -v
```

For example, suppose that you want to install a new iProcess Engine, and the iProcess Files-install Owner, iProcess Schema-install Owner, DBA, and `root` user roles are each performed by different users. In this case, the following sequence is required to perform the installation:

1. The iProcess Files-install Owner:

    a. logs in as the iProcess Engine background user and runs the installer.

    b. enters all the necessary configuration information except for the database details.

    c. accepts the prompt to perform a partial installation.

    The installer installs iProcess Engine files, performs basic configuration tasks, and creates a *$SWDIR*/`logs/TODO` file.

2. The iProcess Schema-install Owner runs the *$SWDIR*/`util/swinitora` script to supply the database configuration information and create the iProcess Engine database schema.

3. The DBA runs the *$SWDIR*/`util/swpostinst` script to populate the database with the appropriate initial values.

4. The root user runs the *$SWDIR*/`logs/rootscript` script, to set file permissions and perform any other configuration activities that require `root` access.

iProcess Engine Architecture

The iProcess Engine can be installed using either of the following architectures:

- **Single Server**—The iProcess Engine `node` is installed and run on a single server.

- **Node Cluster**—The iProcess Engine `node` is distributed across multiple servers, each of which runs iProcess Engine processes. One server acts as the master server, while all other servers in the cluster are slave servers.

The master server and all slave servers use the *same* iProcess Engine database schema. The schema can be hosted on an Oracle instance or on a SQL Server database that is either local (to one of the servers in the iProcess node cluster) or remote.

The iProcess Engine architecture is scalable. You can convert from a single server to a node cluster at any time simply by adding another server to the installation. See *TIBCO iProcess Engine Architecture Guide* for more information about the iProcess Engine architecture.

Installing the iProcess Engine on a Node Cluster

If you want to install a new iProcess Engine using a node cluster architecture, you must:

1. Install the iProcess Engine on the master server (to create the iProcess Engine database schema).

2. Install the iProcess Engine on each slave server (to add the server to the node cluster, using the same database schema).

> You must use the same properties, such as nodename, database name, RPC numbers, and UNIX account names, on each slave server as you did on the master server. Any specific differences in the installation process for a slave server are noted in the text.

Upgrading the iProcess Engine on a Node Cluster

If you want to upgrade an existing iProcess Engine, either from or to a node cluster architecture, follow the appropriate instructions shown in Table 5.

Table 5   Upgrading iProcess Engine on a Node Cluster

To Upgrade...		Do this...
From	**To**	
single server	single server	Upgrade the iProcess Engine on the single (master) server, using the instructions in this documentation.
node cluster	node cluster	Upgrade the iProcess Engine on the master server, using the instructions in this documentation. Upgrade the iProcess Engine on each slave server, using the instructions in this documentation.
single server	node cluster	Upgrade the iProcess Engine on the single (master) server, using the instructions in this documentation. Install the iProcess Engine on each slave server that you want to add to the node, using the instructions in this documentation.
node cluster	single server	Remove the iProcess Engine on each slave server, using the instructions in the Installation guide for that version. Upgrade the iProcess Engine on the master server, using the instructions in this documentation.

Installation Requirements

This section describes the installation requirements for this product.

- Basic System Requirements, page 8
- Additional System Requirements, page 10
- Supported Databases, page 16

Basic System Requirements

Before installing TIBCO iProcess Engine, make sure your system meets the system requirements listed in Table 6.

The Disk Space column in Table 6 indicates the amount of disk space needed for the iProcess Engine distribution set when it is extracted to the temporary installation directory. See Extracting the Installation Set to a Temporary Installation Directory on page 62 for more information.

You also need to add the following amounts to this figure to obtain the total amount of disk space you will need for the iProcess Engine installation:

- 1 GB for the contents of the *$SWDIR* directory structure after installation. For more information about the *$SWDIR* directory, see Installation Directory on page 130.

- the amount of database tablespace needed for iProcess Engine data.

  See Configuring the Oracle Schema on page 71 for more information about how to calculate this figure for Oracle tablespaces.

Table 6   Basic System Requirements on UNIX Platforms

Supported Platform		Disk Space	
Supported Database Type		Oracle	DB2
Sun SPARC	Solaris 9 (64-bit)	N/A	480 MB
	Solaris 10 (32-bit and 64-bit)	575 MB	
Oracle SPARC	Solaris 11 (64-bit)	575 MB	480 MB
Sun x86	Solaris 10 (32-bit and 64-bit)	575 MB	N/A
Oracle x86	Solaris 11 (64-bit)	575 MB	N/A

Table 6   Basic System Requirements on UNIX Platforms (Cont'd)

Supported Platform		Disk Space	
Supported Database Type		Oracle	DB2
HP-UX on Itanium	HP-UX 11i Version 1 (B.11.23) (64-bit)	1065 MB	N/A
	HP-UX 11i Version 3 (B.11.31) (64-bit)	1065 MB	N/A
IBM AIX	AIX 6L Version 6.1 (32-bit and 64-bit)	635 MB	555 MB
	AIX 7L Version 7.1 (64-bit)		
Linux	Novell SUSE Linux Enterprise 10.x (32-bit and 64-bit) **Note**: Any subsequent service packs, patches, updates, and fix packs released for the same major version are also supported.	510 MB	420 MB
	Novell SUSE Linux Enterprise 11 (64-bit) **Note**: Any subsequent service packs, patches, updates, and fix packs released for the same major version are also supported.		
	Red Hat Enterprise Linux Advanced Platform 5.5 (32-bit and 64-bit)		
	Red Hat Enterprise Linux Server 5.5 (32-bit and 64-bit) **Note**: Any subsequent service packs, patches, updates, and fix packs released for the same major version are also supported.		
	Red Hat Enterprise Linux Server 6.x[1](32-bit and 64-bit) **Note**: Any subsequent service packs, patches, updates, and fix packs released for the same major version are also supported.		

1. If you want to install TIBCO iProcess Engine Version 11.4.1 on Red Hat Enterprise Linux Server 6 (64-bit), you must perform the following steps first:

   Install the following 32-bit packages:

   ```
   cracklib-2.8.16-4.el6.i686.rpm
   db4-4.7.25-16.el6.i686.rpm
   libselinux-2.0.94-5.el6.i686.rpm
   audit-libs-2.1-5.el6.i686.rpm
   pam-1.1.1-8.el6.i686.rpm
   ncurses-libs-5.7-3.20090208.el6.i686.rpm
   ```

   Run the following command to add the path of the `libfreebl3.so` library installed with Red Hat Enterprise Linux Server 6 (64-bit) into the entry of the `LD_LIBRARY_PATH` environment variable:

   ```
   export LD_LIBRARY_PATH=<path of the library "libfreebl3.so">:$LD_LIBRARY_PATH
   ```

Additional System Requirements

Additional system requirements are described below:

- TIBCO iProcess Objects, page 10
- iProcess Server Manager, page 12
- Activity Publishing and Work Queue Delta Publication, page 12
- Java Runtime Environment (JRE), page 14
- Korn Shell, page 16

TIBCO iProcess Objects

The iProcess Objects Server receives requests for services or data from TIBCO iProcess Objects (COM, JAVA, or C++) or TIBCO iProcess Server Objects (JAVA or .NET). The iProcess Objects Server processes the request, then makes the appropriate call to an iProcess Engine to initiate the desired service or obtain the desired information.

The iProcess Objects Director is a stand-alone program that maintains a list of iProcess Objects Servers that are configured in a node cluster. When a client needs access to an iProcess Objects Server, it first establishes a connection to the iProcess Objects Director. The iProcess Objects Director then decides, based on a pick method, which iProcess Objects Server the client should connect to.

If you want to enable the iProcess Objects Server and/or iProcess Objects Director, see Enable iProcess Objects Server on page 151 and Enable iProcess Objects Director on page 152 for details. You need to take account of additional disk space and memory requirements listed in Table 7.

Table 7   Additional Runtime Disk Space Requirements for TIBCO iProcess Objects

Component	Supported Platform	Runtime Disk Space Requirement	Memory
iProcess Objects Server	Sun SPARC	5 MB +Log	N/A
	Sun x86	5 MB +Log	N/A
	Oracle SPARC	5 MB +Log	N/A
	Oracle x86	5 MB +Log	N/A
	IBM pSeries AIX	20 MB +Log	N/A
	Linux x86	5 MB +Log	N/A
	By default, the maximum size of the iProcess Objects Server log file is 15 MB. This can be configured after installation. See *TIBCO iProcess Objects Server Administrator's Guide* for more information. The log file is not created during installation. It is created the first time iProcess Objects Server is used.		
iProcess Objects Director	Sun SPARC	500 MB +Log	50 MB
	Sun x86	500 MB +Log	50 MB
	Oracle SPARC	500 MB +Log	50 MB
	Oracle x86	500 MB +Log	50 MB
	HP-UX on Itanium	500 MB +Log	70 MB
	IBM pSeries AIX	500 MB +Log	20 MB
	Linux x86	500 MB +Log	50 MB
	By default, the maximum size of the iProcess Objects Director log file is 15 MB. This can be configured after installation using the LOG_FILE_MAX_SIZE process attribute. (See *TIBCO iProcess Objects Director Administrator's Guide* for more information.) The log file is not created during installation. It is created the first time the iProcess Objects Director is used.		

iProcess Server Manager

The iProcess Server Manager is a JSP web client application that you can use to start, stop, restart, and pause iProcess Engine server processes. It utilizes the iProcess Web Server service and TIBCO Hawk to provide a graphical view of iProcess Engine server processes on a machine or a node cluster.

If you are planning to use the iProcess Server Manager, you must have:

- TIBCO Hawk Version 4.9.0 installed on the machine where you intend to install iProcess Engine.

- TIBCO Rendezvous Version 8.1.1 installed on the machine where you intend to install iProcess Engine. (This is the minimum version required to run TIBCO Hawk Version 4.9.0.)

> If you have a version of TIBCO Rendezvous earlier than 8.1.1 already installed, you should either remove TIBCO Rendezvous or upgrade it to Version 8.1.1 before installing iProcess Engine. This is because the installer cannot upgrade an earlier version of TIBCO Rendezvous.

- TIBCO Hawk Version 4.9.0 installed on the machines on which you want to administer iProcess Engine processes.

Activity Publishing and Work Queue Delta Publication

If activity publishing is enabled, activity information about auditable objects (for example, procedures and steps) can be published to an external application. (The BG process publishes monitored activities to the IAPJMS process.) This enables real-time monitoring of auditable objects so that mission critical or important business events can be easily monitored.

Enabling activity publishing also enables Work Queue Delta publication via JMS. This allows an external application to monitor a work queue and to retrieve only those work items in a given work queue that have changed. In this case the WIS process publishes messages about the monitored queue to the IAPJMS process, and IAPJMS in turn publishes messages to a JMS topic which can be monitored by the external application. See *iProcess Engine System Administration Guide* for configuring activity publishing and work queue delta publication once they are enabled.

If you plan to enable activity publishing (see Enable Activity Publishing on page 147) you must ensure that the computer hosting the iProcess Engine has access to the Java Message Service (JMS) provider that you want to use. This must be one of the JMS providers listed in Table 8.

Table 8   JMS Providers

JMS provider	Minimum Supported Versions	Additional Requirements
TIBCO Enterprise Message Service (EMS)	5.1.5 6.0 6.3 7.0 7.0.1 8.0	If you are upgrading iProcess Engine and you are using EMS, you must ensure that your version of EMS is updated. See How Do I Upgrade TIBCO EMS on page 205 for details.
IBM WebSphere	6.1 7.0 8.5.5	The IBM Client for JMS on J2SE with WebSphere Application Server must be installed on the machine hosting the iProcess Engine. See Installing the IBM Client for JMS on J2SE with IBM WebSphere Application Server on page 105 for more information.
Oracle WebLogic Server	9.2 10 10.3 12.1.1	If the WebLogic Server is hosted remotely, one of the following WebLogic client types must be installed on the machine hosting iProcess Engine: WebLogic T3 client (`weblogic.jar`), or WebLogic JMS Thin Client (`wljmsclient.jar` and `wlclient.jar`) These JAR files are located in the *WL_HOME*`\server\lib` subdirectory of the WebLogic Server installation directory, where *WL_HOME* is the top-level installation directory for the entire WebLogic Platform (for example, `c:\bea\weblogic90\server\lib`). See JMS Provider on page 156 for more information.
JBoss EAP	4.3 5.1 6.1.0	None

Table 8   JMS Providers (Cont'd)

JMS provider	Minimum Supported Versions	Additional Requirements
Other		The JMS provider can be hosted either on the local machine or on a remote machine. If the JMS provider is hosted remotely, appropriate client application JAR files must be installed on the machine hosting the iProcess Engine. See your JMS provider documentation for more information about required client JAR files. You specify the location of these JAR files when you run the installer. See JMS Provider on page 156 for more information.
		The JMS provider must support Java Virtual Machine (JVM) 1.5.0_11, 1.6, or 1.7. JVM 1.7 is distributed with this version of iProcess Engine, and installed into the *SWDIR*\java directory.

Java Runtime Environment (JRE)

The following information is listed in Table 9:

- the iProcess Engine components and other dependant iProcess products that use Java, and therefore need access to a Java Virtual Machine (JVM) or other JRE libraries on the computer hosting the iProcess Engine.

- the default JRE that each component or product uses to locate the libraries that it needs.

- the configuration tool provided to allow you to configure the location of the JRE used by each component or product (if applicable).

Table 9   JRE Information

Component or Product	Default JRE Location	Configuration Tool
IAPJMS process	*$SWDIR*/java	SWLIB_PATH process attribute value See "Administering Process Attributes" in *TIBCO iProcess Engine Administrator's Guide* for more information.
iProcess Server Manager	*$SWDIR*/java	None
JMX Engine	*$SWDIR*/java	None
TIBCO EMS	*$SWDIR*/java	None
TIBCO Hawk	*$SWDIR*/java	None

Table 9   JRE Information (Cont'd)

Component or Product	Default JRE Location	Configuration Tool
TIBCO iProcess BusinessWorks Connector Server Plug-in	Selectable when you install the plug-in	TIBCO iProcess Technology Plug-ins installer See *TIBCO iProcess Technology Plug-ins Installation* for more information.
TIBCO iProcess Java Server Plug-in	Selectable when you install the plug-in	TIBCO iProcess Technology Plug-ins installer See *TIBCO iProcess Technology Plug-ins Installation* for more information. **Note:** On some platforms, if you are installing iProcess Java Server Plug-in to use with this version of iProcess Engine, you cannot run the installer with Java 1.6. You must use an earlier version, such as Java 1.5. However, you can use Java 1.6 at runtime.
TIBCO iProcess Engine Web Service Server Plug-in	Selectable when you install the plug-in	TIBCO iProcess Engine Web Services Plug-in installer See *TIBCO iProcess Engine Web Services Plug-in Installation* for more information.

TIBCO strongly recommends that you use one of the JREs listed in Table 10 to provide the necessary Java functionality when using the components and products listed in the table above:

1. The Distributed JVM version, which is distributed with this version of the iProcess Engine and installed into the *$SWDIR/*java directory.

2. The Supported JVM version, which TIBCO has validated for compatibility with this version of the iProcess Engine.

Table 10   Distributed and Supported Java Virtual Machine (JVM)

Platform	Distributed JVM *in $SWDIR/***java**	Supported JVM
Sun SPARC	1.7.0_45	1.7.0
Sun x86	1.7.0_45	1.7.0
Oracle SPARC	1.7.0_45	1.7.0
Oracle x86	1.7.0_45	1.7.0
IBM pSeries AIX	7.0.0.110	1.7.0

Table 10   Distributed and Supported Java Virtual Machine (JVM) (Cont'd)

Platform	Distributed JVM *in $SWDIR*/**java**	Supported JVM
HP-UX on Itanium	1.7.0_08	1.7.0
Linux x86	1.7.0_45	1.7.0

⚠️
- If you are using JRE 1.7 with Solaris 10 on a Sun T*xxxx* server, you must first disable the hardware cryptography. Failure to do so will cause the swrpcsvr to crash. See swrpcsvr Crashes When Starting iProcess Engine on page 225 for more information.
- If you need to use a different version of the JRE for any reason, TIBCO strongly recommends that you contact TIBCO Support before doing so, to determine if the JRE you want to use is fully compatible with this version of the iProcess Engine.

Korn Shell

Korn Shell (KSH) is a UNIX shell. Before installing TIBCO iProcess Engine on any supported UNIX platform, you must make sure that KSH has been installed.

The public domain korn shell (pdksh) is not supported.

Supported Databases

The following database types are supported for TIBCO iProcess Engine on Windows platforms:

- Oracle Database
- IBM DB2 Database

Oracle Database

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

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

- Oracle 12c release 12.1 (server) with 11.2.0.3 (client)

> When you install iProcess Engine with the Oracle database server 11.2.0.2, you must install the 10065474 patch on the Oracle database server.

The exact Oracle version requirements depend on which of the following two types of database connections you intend to use:

- a *direct connection* to the default database hosted on the computer where you will install or upgrade TIBCO iProcess Engine. For detailed information, see Direct Connection Requirements for Oracle on page 17.

- a *Transparent Network Substrate (TNS) connection*, connected to either:

  — the default database hosted on the computer where you will install or upgrade TIBCO iProcess Engine, or to

  — a remote database, meaning a database that is either hosted on a remote computer, or a non-default database on the computer where you will install or upgrade iProcess Engine.

  For detailed information, see TNS Connection Requirements for Oracle on page 18.

> In Oracle version 11g, by default, Oracle files and directories are created with more restricted permissions compared to previous versions. If these default permissions are used, iProcess Engine does not have the necessary permissions to access the libraries that it needs in the *$ORACLE_HOME* directory, and so will fail to start.
>
> To ensure that this problem does not occur, you need to modify the default permissions on the Oracle database server (for a direct connection) or client (for a TNS connection) home by running a `changePerm.sh` script.
>
> If you run the installer as the `root` user, the installer may be able to run this script for you.

Direct Connection Requirements for Oracle

Figure 1 illustrates a direct connection from TIBCO iProcess Engine to the default Oracle database.

Figure 1   Direct Connection
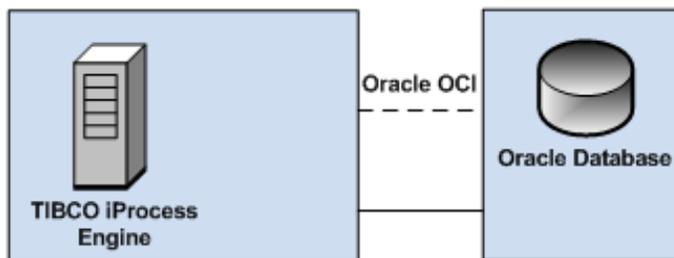
When using a direct connection, you must set the *ORACLE_HOME* environment variable to the pathname of the Oracle Database.

TNS Connection Requirements for Oracle

When using a TNS connection, you *must*:

- ensure that the remote Oracle database uses one of the Oracle Database releases specified in Table 11.

- ensure that the correct Oracle Client release is installed on the computer where you will install or upgrade the iProcess Engine, as described in Table 11.

Figure 2 illustrates a TNS connection from TIBCO iProcess Engine to the default database.

Figure 2   TNS Connection
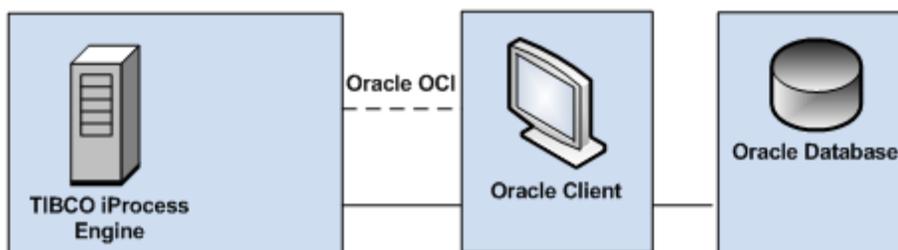
You need to:

- set the *ORACLE_HOME* environment variable to the path name of the Oracle Client.

- use the TNS name to connect the iProcess Engine to the Oracle Database. See Oracle Database Connection and Account Details Menu on page 174 for details.

Table 11 shows the required Oracle database and client versions when you use a TNS connection to the default database or to a remote database.

Table 11   Required Oracle Database and Client Versions

Certified Database Release	Compatible Database Release		Client Release
11.1.0.6	11.1.0.x where x is 6 or higher	*with*	11.2.0.3
11.2.0.2	11.2.0.x where x is 2 or higher	*with*	11.2.0.3
11.2.0.3	11.2.0.x where x is 3 or higher	*with*	11.2.0.3
12.1	12.1.0.x where x is 1 or higher	*with*	11.2.0.3

If you are using an Oracle version (Database or Client) that is:

• earlier than the releases explicitly mentioned in the table above, you must upgrade to one of the specified releases.

• later than the releases explicitly mentioned in the table above, contact TIBCO Support to confirm whether or not that release is supported by your iProcess Engine version.

> You will need access to an Oracle Metalink account to be able to access the required patches and patch sets.
>
> TIBCO iProcess Engine uses Oracle Call Interface (OCI) to access data in the Oracle database. For reasons of stability, TIBCO iProcess Engine is statically linked with the Oracle client libraries that provide the required OCI routines. Oracle only supports products that run against the same set of libraries they were built with. This means you *must* use particular Oracle Client versions, depending on the method you use to connect to the database.
>
> If you are using Oracle Real Application Clusters (RAC), TIBCO recommends that you install the iProcess Engine on a machine that is *not* part of the RAC, and use a TNS connection to connect to the remote database.

IBM DB2 Database

The DB2 requirements depend on whether you intend to use a local or remote database with iProcess Engine:

• A **local database** is a database that is hosted on the computer where you will install the iProcess Engine.

If you intend to use a local database:

— You must have a DB2 Server installed on the computer where you will install or upgrade iProcess Engine.

— The TCP/IP communications protocol must be enabled.

- A **remote database** is a database that is hosted on a different computer to the one where you will install the iProcess Engine.

If you intend to use a remote database:

— You must have a DB2 Runtime Client or Administration Client installed on the computer where you will install or upgrade the iProcess Engine.

— The DB2 client must be configured to access the remote DB2 server using TCP/IP.

See your DB2 documentation for more information about how to install DB2 servers and clients, and how to configure communications between them.

The following table shows the required DB2 server and client versions.

Table 12   Required DB2 Server and Client Versions

Platform	DB2 Version	Required Release Level
Solaris	DB2 Universal Database for Solaris (Server and/or Client)	9.5, 9.7, or 10.1
AIX	DB2 Universal Database for AIX (Server and/or Client)	9.5, 9.7, or 10.1
x86	DB2 Universal Database for Linux (Server and/or Client)	9.5, 9.7, or 10.1

Upgrade Requirements

If you are using TIBCO iProcess Engine version 11.0 or higher, or TIBCO Process Engine 9.0, you can upgrade to version 11.4.1 directly without upgrading through an intermediate version.

If you are upgrading iProcess Engine, you must ensure that your version of EMS is updated. See How Do I Upgrade TIBCO EMS on page 205.

The iProcess Engine Version 11.4.1 requires specific operating system and database versions. See Installation Requirements on page 8 for more information.

If your current iProcess Engine is running with an operating system and/or a database version that does not meet these requirements, you will need to upgrade your operating system and/or database to a supported version before you can upgrade the iProcess Engine.

Log Files

This section describes the different log files that the installer may write to the *SWDIR*\logs directory during the course of an installation or upgrade.

sw_error.log and sw_warn.log

sw_error and sw_warn are system log files used to record information, as well as error and warning messages. The sw_error.log and sw_warn.log files only record information received on the current date. When the date changes, if new information needs to be recorded to the log files, the previously generated sw_error.log and sw_warn.log files will be archived with the new file names, sw_error*timestamp*.log and sw_warn*timestamp*.log.

For example, if the original sw_error.log file is generated on July 1, 2012, the new error messages need to be written in the new error log file on July 5, 2012, then the original log file will be archived with the new file name sw_error20120701.log.

Errors or warnings can be written to these files during installation or upgrade.

For a full description of the sw_error.log and sw_warn.log files and their contents, see *TIBCO iProcess Engine System Messages Guide*.

init2Kora-*tok*.tablelog

This file logs the progress of the init2Kora.sql SQL script used to create the iProcess Engine database schema in Oracle.

The log file is always created when the script is run, whether the script runs successfully or not.

init2Kdb2-*tok*.tablelog

This file logs the progress of the init2Kdb2.sql SQL script used to create the iProcess Engine database schema in DB2.

The log file is always created when the script is run, whether the script runs

successfully or not.

ScriptName-*tok*.tablelog

This file logs the progress of the *ScriptName*. `sql` SQL script used to upgrade the iProcess Engine database schema from one version to another. Multiple upgrade scripts can be run during an upgrade, depending on the version being upgraded from.

A log file is always created for each upgrade script that is run, whether the script runs successfully or not.

Control File

TIBCO iProcess Engine provides a control file *$SWDIR*/logs/swinstall.dat to record all the configuration items when completing the installation, either by being allowed to run to completion, or if you quit from any of the configuration menus. For more information about configuration menus, see Configuration Menus for TIBCO iProcess Engine Installation on page 121.

If you quit from one of the configuration menus, any changes you have made to items on the current menu are not saved to the control file. If you want to save these changes you must first move to a different menu, then move back before quitting the installation.

- How to Use the Control File, page 24
- Control File Naming Convention, page 25
- Control File Format, page 25
- Control File Keywords, page 25

How to Use the Control File

The control file can be used in the following two ways:

- The control file can be used as a short-cut when you run the installer. You can use the control file values to populate the configuration menus.

  The following prompts appear during your installation:

```
A complete version 11.4.1 configuration for an install already exists.
Use this information for the current install (Y/N - default N):
```

or

```
An incomplete version 11.4.1 configuration for an install already exists.
Use this information for the current install (Y/N - default N):
```

Enter **Y** to use the configuration information saved in the control file to continue with the installation.

- The control file can be used as a template to run a similar installation silently. You may want to do this if, for example, you are installing a master server and multiple slave servers. See Installing TIBCO iProcess Engine in Silent Mode on page 40 for more information about silent installation.

Control File Naming Convention

If the control file *$SWDIR*/logs/swinstall.dat already exists, the existing file is renamed as *$SWDIR*/logs/oldswins.*nnn*, where *nnn* is a unique sequence starting from 001.

For example, if you have run the installer three times, you can find the following files stored in the *$SWDIR*/logs directory:

Filename	Contains configuration information from...
swinstall.dat	the most recent (that is, third) execution of the installer
oldswins.002	the second execution of the installer
oldswins.001	the first execution of the installer

Control File Format

The control file contains several lines to record configuration information during the installation. Each line in the control file consist of a *Keyword* and *Value* pair with the following format:

Keyword="Value"

where:

- *Keyword* is one of the keywords listed in Table 13.

- *Value is* a valid value for that keyword.

The file can also contain comment lines, which must start with a hash character "#" in the first column.

A number of passwords can be stored in the control file. If the control file is generated by the installer, these passwords are encrypted. When reading the control file, the installer can read both encrypted and unencrypted passwords.

The entire password string (*Keyword* and *Value*) is encrypted. Therefore you cannot therefore distinguish which password an encrypted string defines.

Control File Keywords

Table 13 lists all the keywords that can appear in the control file.

The Configuration Menu Item / Description column provides either:

- a description of the possible values that the keyword can take, or

- a link to the description of the equivalent configuration menu item, which describes the item and its possible values in more detail.

The Status column indicates whether the keyword is:

- **M**—Mandatory. The keyword must appear in the control file and must have a valid value.

- **O**—Optional. The keyword can be omitted from the control file, in which case the installer uses the appropriate default value.

- **R**—Reserved. The keyword is automatically generated by the installer as required. TIBCO recommends that you do not change its value.

Table 13   Keywords in the Control

Keyword	Configuration Menu Item / Description	Status
General		
IPEI_INSTALLUSER	Name of the UNIX user account that is running the installer. **Note:** This value is written to the control file by the installer for information only. It is not actually used by the installer.	R
IPEI_DEFSYSLANG	Default system language	O
IPEF_INTERACTIVE	"Y" for Interactive installation	R
Policy to Install Schema and Files Menu		
IPEI_INSPOLICY	Installation Policy	R
IPEI_UPGRADE_PART0	Installation Policy Which part (files or schema) has been upgraded first.	O
IPEI_UPGRADE_PART1	Installation Policy Which part (files or schema) has been upgraded next.	O
Location, Identification and OS Accounts Menu		
IPEI_SWDIR	Installation Directory	M
IPEI_NODENAME	iProcess Engine Nodename	M
IPEI_LICENSEE	iProcess Engine Licensee Name	O
IPEI_BGUSER	iProcess Engine Background User Name	O

Table 13   Keywords in the Control (Cont'd)

Keyword	Configuration Menu Item / Description	Status
IPEI_ADMUSER	iProcess Engine Administration User Name	O
IPEI_USRGROUP	iProcess Engine User Group Name	O
IPEF_REDIRADM	Redirect Administration Queue	O
IPEF_CREATBGUSR	**Y** to Create OS iPE BG User	O
IPEF_CREATADMUSR	**Y** to Create OS Admin User	O
IPEF_CREATGROUP	**Y** to Create iPE Group	O
IPEF_ATGBGUSR	**Y** to add OS iPE BG User to iPE Group	R
IPEF_ATGADMUSR	**Y** to add OS Admin User to iPE Group	R
Configuration Options Menu		
IPEI_RPCNUM	iProcess Engine Client RPC Number	O
IPEF_CLNTPASSWD	iProcess Engine Client Password Required	O
IPEF_ENABLECDN	Enable Case Data Normalization	O
IPEF_PREDICT	Enable Prediction	O
IPEF_AUTOSTART	Enable Autostart	O
IPEF_ENABLEIAP	Enable Activity Publishing	O
IPEF_EAIMAIL_ENABLECONFIG	Configure iProcess Email Plug-in	O
IPEI_JMX_PORT	JMX Port Number	O
IPEF_SPOSERVER_ENABLED	Enable iProcess Objects Server	O
IPEF_SPODIRECTOR_ENABLED	Enable iProcess Objects Director	O
IPEF_WEBDAV_ENABLED	Enable Write Access to WebDav	R
IAP Configuration Menu		
IPEI_JMSPROVIDER	JMS Provider	O
IPEI_JMSLOCATION	Base JAR Files Location	O
IPEI_ADDJARLOC	Additional JAR Files Location	O

Table 13   Keywords in the Control (Cont'd)

Keyword	Configuration Menu Item / Description	Status
IPEI_CTXTFACTORY	Context Factory Name	O
IPEI_JMSURL	URL for JMS Provider	O
IPEI_CONNFACTORY	Connection Factory Name	O
iProcess Email Plug-in Configuration Menu		
IPEI_EAIMAIL_SMTPHOST	SMTP Host	O
IPEI_EAIMAIL_SMTPPORT	SMTP Port Number	O
IPEI_EAIMAIL_MAILFROM	Mail from Address	O
IPEI_EAIMAIL_BAKSMTPHOST1	BACKUP SMTP Host	O
IPEI_EAIMAIL_BAKSMTPHOST2	BACKUP SMTP Host	O
IPEI_EAIMAIL_BAKSMTPHOST3	BACKUP SMTP Host	O
IPEI_EAIMAIL_BAKSMTPPORT1	BACKUP SMTP Port	O
IPEI_EAIMAIL_BAKSMTPPORT2	BACKUP SMTP Port	O
IPEI_EAIMAIL_BAKSMTPPORT3	BACKUP SMTP Port	O
IPEI_EAIMAIL_RETRYCOUNTS	Retry Counts	O
Oracle Database Installation Method Menu		
IPEI_DBINSTMODEL	Installation Method	O
Database Connection and Account Details Menu		
IPEI_DBIDSTR	Oracle DB TNS Identifier	M
	DB2 Database Alias Name	M
IPEF_USENONTAF	"Y" to use an Oracle DB TNS Identifier that does not have TAF enabled (see page 41)	O
IPEI_DBANAME	Oracle DB Administrator Name	M
IPEI_DBAPASSWD	Oracle DB Administrator Password	M
IPEI_DBSONAME	iProcess Engine DB Schema Owner Name	O

Table 13   Keywords in the Control (Cont'd)

Keyword	Configuration Menu Item / Description	Status
IPEI_DBSOPASSWD	iProcess Engine DB Schema Owner Password	O
IPEI_DBSBGNAME	Reserved for internal use.	R
IPEI_DBUSRNAME	iProcess Engine DB User Name	O
IPEI_DBUSRPASSWD	iProcess Engine DB User Password	O
IPEI_SUPPORTUNICODE	Support Unicode Encoding	O
IPEI_DBTABLESPC	Data Tablespace Name	O
IPEI_DTBLSPCSIZE	Size of the IPEI_DBTABLESPC tablespace. (See Data Tablespace Name for more information.)	O
IPEI_DTBLSPCLOC	Location of the IPEI_DBTABLESPC tablespace. (See Data Tablespace Name for more information.)	O
IPEI_DBTEMPSPC	Temporary Tablespace Name	O
IPEI_TTBLSPCSIZE	Size of the IPEI_DBTEMPSPC tablespace. (See Temporary Tablespace Name for more information.)	O
IPEI_TTBLSPCLOC	Location of the IPEI_DBTEMPSPC tablespace. (See Temporary Tablespace Name for more information.)	O
IPEI_DBSCHEMA_SIZE	Size of the tablesizes control file to be used to configure the iProcess Engine database schema. (See Schema Sizing Configuration for more information.)	O
IPEI_DBSCHEMA_CTRLFILE	Full pathname to a custom tablesizes control file. (See Schema Sizing Configuration for more information.)	O
IPEI_DB2FENCEUSR	DB2 specific Fenced Username	O
IPEF_DBSOUCREATE	**Y** to Create iProcess Engine DB Schema Owner account	R
IPEF_DBFUCREATE	**Y** to Create iProcess Engine DB User account	R
IPEF_DBDTSCREATE	**Y** to Create Database Tablespace	R
IPEF_DBTTSCREATE	**Y** to Create Temporary Tablespace	R
IPEF_GOTDBINFO	**Y** if DB Information is Complete and Validated	R
IPEF_CLUSTERINST	**Y** if sub-node is in existing cluster	R

Table 13   Keywords in the Control (Cont'd)

Keyword	Configuration Menu Item / Description	Status
IPEF_DELETETABLES	**Y** if existing DB schema is to be deleted	R

Chapter 2 **Installing TIBCO iProcess Engine**

This chapter describes how to install TIBCO iProcess Engine on Windows.

Topics

Pre-Installation

The most time-consuming part of a TIBCO iProcess Engine installation is the collection of environment information and parameters. This section helps you complete this process.

Table 14 provides a checklist of the tasks that you must or may need to perform before installing the iProcess Engine. The table shows:

- whether the root, iProcess Files-install Owner, iProcess Schema-install Owner, or DBA user needs to perform the task (see Organization Roles on page 2).

- the status of a task, depending on whether you are installing a new iProcess Engine or upgrading an existing one. This is either:

  — **Required** —You *must* perform this task before installing the iProcess Engine.

  — **Check** — You *may need* to perform this task before installing the iProcess Engine, depending on your installation scenario.

  — **Optional** — You *may wish* to perform this task before installing the iProcess Engine, but it is not essential.

  — **N/A** — You can install the iProcess Engine without performing this task.

  For detailed information about each task, see Pre-Installation Tasks on page 53.

You may want to print this table as a useful quick reference when performing the pre-installation tasks. The Done? column in the table provides a place for you to tick off tasks that have been done.

Table 14   Pre-Installation Tasks Checklist

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Checking For Any Late-Breaking Information	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Required	Required	☐
Backing Up the TIBCO iProcess Engine File System	Oracle DB2	root	N/A	Required	☐

Table 14   Pre-Installation Tasks Checklist (Cont'd)

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Backing up TIBCO iProcess Engine Database Schema	Oracle DB2	iProcess Schema-install Owner	N/A	Required	☐
Checking for the Database Codepage Setting	Oracle DB2	iProcess Schema-install Owner DBA	Required	Check	☐
Upgrading Your Operating System	Oracle DB2	root	Check	Check	☐
Upgrading Oracle	Oracle	iProcess Schema-install Owner DBA	Check	Check	☐
Extracting the Installation Set to a Temporary Installation Directory	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Required	Required	☐
Setting the Number of File Descriptors per Process	Oracle DB2	root	Required	Check	☐
Creating iProcess Engine UNIX Users and Groups	Oracle DB2	root	Optional	N/A	☐
Setting Up the iProcess Engine System Directory	Oracle DB2	iProcess Files-install Owner	Optional	Check	☐
Setting Up Database Environment Variables	Oracle DB2	iProcess Schema-install Owner DBA	Required	Check	☐
Creating Oracle Accounts and Tablespaces	Oracle DB2	DBA	Optional	N/A	☐
Configuring the Oracle Schema	Oracle	iProcess Schema-install Owner	Optional	N/A	☐
Setting up Oracle Transparent Application Failover (TAF)	Oracle	iProcess Schema-install Owner DBA	Check	Check	☐

Table 14   Pre-Installation Tasks Checklist (Cont'd)

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Configuring Oracle OPEN_CURSORS	Oracle	iProcess Schema-install Owner DBA	Required	Check	☐
Configuring Oracle Character Set Support	Oracle	iProcess Schema-install Owner DBA	Check	Check	☐
Disabling Oracle Flashback Query	Oracle	iProcess Schema-install Owner DBA	N/A	Check	☐
Creating an Oracle UNDO Tablespace	Oracle	DBA	Required	Required	☐
Adding DB2 Library Files to the Folder of Your Operating System	Oracle	DBA	Required	Required	☐
Creating a DB2 Database	DB2	iProcess Schema-install Owner DBA	Required	N/A	☐
Configuring a TCP/IP Connection to the Database	DB2	iProcess Schema-install Owner DBA	Required	N/A	☐
Configuring DB2 Character Set Support	DB2	iProcess Schema-install Owner DBA	Check	Check	☐
Configuring Lock Escalation	DB2	iProcess Schema-install Owner DBA	Required	N/A	☐
Removing All User-defined Constraints (or Triggers), Indexes, and Statistics from the iProcess Engine Schema Tables	Oracle DB2	iProcess Schema-install Owner DBA	N/A	Check	☐

Installing TIBCO iProcess Engine in Console Mode

Before installing TIBCO iProcess Engine in Console mode, you need to read the instructions about Using Configuration Menus on page 122 and be familiar with the options that appear on a menu.

Before running the installer, make sure that iProcess Files-install Owner and iProcess Schema-install Owner have already known the following information:

- node name
- *$SWDIR*
- the account of background user. iProcess Schema-install Owner needs to use it if iProcess Schema-install Owner can not use the root account during the installation.

To install TIBCO iProcess Engine in Console mode, complete the following steps:

1. Log in to your operating system as either the root user or as the iProcess Engine background user. For the definition of the iProcess Engine background user, see iProcess Engine Background User Name on page 133.

2. Run the following commands to start the installer:
   ```
   cd DistDir
   ./swinstall
   ```

where *DistDir* is the temporary installation directory containing the iProcess Engine distribution set. See Extracting the Installation Set to a Temporary Installation Directory on page 62 for more information.

3. Read TIBCO Software Inc. End User License Agreement. The following prompts appear:
   ```
   To install the TIBCO iProcess Engine, you must accept the
   preceding agreement.
   Do you accept all the terms of the License Agreement? (Y/N –
   default N):
   ```
   — Enter **Y** to accept the terms of the License Agreement and continue with the installation.
   — Enter **N** to abort the installation.

4. Specify the directory where you want to install iProcess Engine.

— If you have already set the *$SWDIR* environment variable (see) the installer displays the directory where it will install the iProcess Engine:

```
TIBCO iProcess Engine installation directory taken from
environment:
```

— If you have not set *$SWDIR*, the following prompts appear:

```
In which directory will TIBCO iProcess Engine reside?
Enter the full path name (blank to quit):
```

Enter the full pathname of the directory where you want to install the iProcess Engine. For example: /TIBCO/iPE/swnod1.

This directory must not be the temporary installation directory, a user's home directory, or a directory in a temporary or read-only file system.

If the specified directory already exists, the following prompt appears:

```
Directory /iPE/swnod1 already exists.
```
```
Do you wish to install TIBCO iProcess Engine into it? (Y/N -
default N):
```

Enter **Y** to continue with the installation. If you enter **N**, the installer will ask you to enter another directory to install.

If the specified directory does not exist, the following prompt appears:

```
Directory /TIBCO/iPE/swnod1 does not exist.
```
```
Do you wish to create this directory?
```
Enter **Y** to continue with the installation. If you enter **N**, the installer will ask you to enter another directory to install.

5. Enter the Policy to Install Schema and Files menu. For detailed information of this menu, see .

In this menu, you can select one of the installation policies. Depending on your choice, you will be led to different menus to configure your installation.

— Install Schema and Files

Choose this option to install or upgrade both iProcess Engine files and schema tables during the current installation.

After you choose this option, you will enter the following menus to complete additional required configurations:

—Location, Identification, and OS Accounts Menu, page 128

—Configuration Options Menu, page 139

—IAP Configuration Menu, page 154

—iProcess Email Plug-in Configuration Menu, page 164

—(For Oracle only) Oracle Database Installation Method Menu, page 172

—Database Connection and Account Details Menu, page 174

— Install Schema Only

iProcess Schema-install Owner chooses this option to install or upgrade iProcess Engine schema tables only during the current installation.

After choosing this option, iProcess Schema-install Owner will enter the following menus to complete additional required configuration:

—(for Oracle only) Oracle Database Installation Method Menu, page 172

—Database Connection and Account Details Menu, page 174

— Install Files Only

iProcess Files-install Owner chooses this option to install or upgrade iProcess Engine files only during the current installation.

For a new installation, iProcess Files-install Owner cannot choose this option. iProcess Schema-install Owner must install the iProcess Engine schema tables first.

After choosing this option, iProcess Files-install Owner will enter the following menus to complete additional required configurations:

—Location, Identification, and OS Accounts Menu, page 128

—Configuration Options Menu, page 139

—IAP Configuration Menu, page 154

—iProcess Email Plug-in Configuration Menu, page 164

6. Enter **C**, the Configuration Summary page appears. Carefully review the Configuration Summary, then you can see the following prompt at the end:

```
Ready to install TIBCO iProcess Engine-continue (Y/N-default
Y) :
```

— Enter **N** to return to Database Connection and Account Details Menu on page 174.

— Enter **Y** to proceed with the installation. The default option is **Y**.

7. The installer now performs the necessary installation tasks using the supplied configuration information. A number of messages are displayed informing you of the progress of the installation.

   If you are installing a new iProcess Engine, the following prompt appears after the installation complete:

```
At this point you may run an installation verification test.
Run the verification test now? (Y/N - default Y) :
```

— Enter **N**, if you want to skip the installation verification test.

— Enter **Y**, if you want the installer to run tests to verify that the installation has succeeded. If all these tests pass successfully, the following messages are displayed:

```
TIBCO iProcess Engine Nodename ( swnod001 ) checked OK.
TIBCO iProcess Engine RPC Number ( 391875 ) checked OK.
TIBCO iProcess Engine service ports checked OK
TIBCO iProcess Engine process entries OK
```

The installer writes the port numbers used by the iProcess Engine watcher and worker process sentinels to the `/etc/services` file. The entries are:

— *nodename*_worker *nnn*/tcp

— *nodename*_watcher *mmm*/tcp

where:

— *node_name* is the nodename of this iProcess Engine.

— *nnn* and *mmm* are unique numbers in the `services` file depending on what port numbers are already being used on the server.

For example:

– staffw_nod1_watcher 1500/tcp

– staffw_nod1_worker 1501/tcp

If any of the tests fail, a suitable error message is displayed. See Errors Occur on Validating the Installation on page 219 for more information about possible causes of any problems, and how to resolve them.

8. Exit the installer.

If it has been unable to perform all necessary installation tasks, it displays the following message:

```
============================================================
 ** IMPORTANT: See $SWDIR/logs/TODO for outstanding tasks
============================================================
```

If a *$SWDIR*/logs/TODO file exists, you must now perform all the commands listed in that file to complete the installation. See Using the $SWDIR/logs/TODO File to Complete a Partial Installation on page 44 for more information.

Installing TIBCO iProcess Engine in Silent Mode

If you want to install TIBCO iProcess Engine in silent mode, you must have installed it in Console mode on a computer and generated a control file `swinstall.dat` that provides all the configuration information. You can subsequently use this control file as a script to run a similar installation automatically, without the need for you to enter values at the prompts. You may want to do this if, for example, you are installing a master server and multiple slave servers. You can run the installer in Console mode for the master server and run it in silent mode using the resulting control file on each slave server.

The following procedures explain how to install TIBCO iProcess Engine in silent mode:

- Generating a Control File, page 40
- Performing an Installation in Silent Mode, page 41

Generating a Control File

To generate a control file, complete the following steps:

1. Perform all the necessary pre-installation tasks. See Pre-Installation on page 32 for detailed information.

2. Install iProcess Engine in Console mode, entering the required values to all the prompts as normal. See Installing TIBCO iProcess Engine in Console Mode on page 35. The installer writes your configuration information to the *$SWDIR*/`logs/swinstall.dat` file.

3. Perform the post-installation tasks. See Post-Installation on page 48 for detailed information.

4. Start iProcess Engine to make sure that it has been correctly installed.

5. Open the *$SWDIR*/`logs/swinstall.dat` file in a text editor, and make any changes that you need. Make sure that the file conforms to the required format (see Control File Format on page 25 for more information).

With one exception, the installer performs the same checks and validation, during a silent installation as it does during an interactive one. If it encounters a decision point where the installing user needs to confirm something to continue, and the answer is not provided in the control file, it assumes a default answer of N and quits the installation. This could occur, for example, if an existing iProcess Engine database schema is found when installing a new iProcess Engine.

You must therefore ensure that your control file is complete and accurate.

The exception is that the installer does not check that you are installing on an operating system and/or database version that TIBCO has validated for use with this version of the iProcess Engine (see Installing on an Unvalidated Platform or Database Version on page 212). The following message is displayed on your screen:

```
WARNING: Skipping Platform Validation Tests (silent install)
```

The silent installation then continues.

If you create a control file from scratch and you are using an Oracle DB TNS Identifier that does not have Oracle TAF enabled, you must add the `IPEF_USENONTAF="Y"` line to your control file. This is because the install (if run interactively) checks and prompts you to enter **Y** to continue with the installation if Oracle TAF is not enabled (see Oracle TAF is Not Enabled on page 215 for more information).

Performing an Installation in Silent Mode

To perform an installation in silent mode, complete the following steps:

1. Prepare a control file `swinstalldat`. For detailed information, see Generating a Control File on page 40.

2. Perform all the necessary pre-installation tasks on each machine where you want to install the iProcess Engine. See Pre-Installation on page 32 for detailed information.

3. Copy the `swinstall.dat` file from the *$SWDIR*/`logs` directory to the *DistDir* directory.

4. Log in as either `root` or as the `iProcess Engine background user` (see iProcess Engine Background User Name on page 133 for more information).

5. Enter the following commands to run the installer silently:

```
cd DistDir

./swinstall swinstall.dat
```

where:

DistDir is the temporary installation directory containing the iProcess Engine distribution set. See Extracting the Installation Set to a Temporary Installation Directory on page 62 for more information.

> You need to redirect standard output (`stdout`) and standard error (`stderr`) from the installer to a log file. Any errors or warnings that will be displayed during the installation will be sent to this log file.
>
> Redirection syntax for `stdout` and `stderr` depends on the shell you are using. See your UNIX documentation for information.

6. Check the log file to make sure that the installation succeeded.

7. Perform the post-installation tasks. See Post-Installation on page 48 for detailed information.

> You can run the installer interactively using the values from your control file by using the following command:
>
> `./swinstall swinstall.dat -i`
>
> It is useful if you want to test or troubleshoot a control file that is intended to be used for an installation in silent mode.

8. Start iProcess Engine to make sure that it has been correctly installed.

Upgrading TIBCO iProcess Engine

If you are using TIBCO iProcess Engine version 11.0 or higher, or TIBCO Process Engine 9.0, you can upgrade to version 11.4.1 directly without upgrading through an intermediate version. For detailed information of upgrade, see Installing TIBCO iProcess Engine in Console Mode on page 35.

Upgrade Performance and Timing

Upgrading to Version 11.4.1 can involve significant changes to iProcess data and data structures. The upgrade process is therefore complex, and can take a significant amount of time to complete if the system being upgraded has a large amount of case data.

TIBCO cannot provide an estimate of how long the upgrade will take because of the number of customer-specific factors that could have an impact, and the complexity of their interaction, for example, the amount of data in your existing system, the configuration of your database, and the hardware setup you are running.

TIBCO therefore strongly recommends that you test the upgrade before performing it on your target system, either on a representative production environment, or using a copy of your production system. This will allow you to determine how long the upgrade is likely to take, and to identify any specific factors that may affect the success or duration of the upgrade.

Using the $SWDIR/logs/TODO File to Complete a Partial Installation

This section explains what you need to do to complete a partial iProcess Engine installation, using the information supplied in the *$SWDIR*/logs/TODO file.

- The $SWDIR/logs/TODO File, page 44
- Run the $SWDIR/util/swpostinst Script, page 45
- Run the $SWDIR/util/upgr Command, page 46
- Copy the ssolite Shared Library, page 46
- Run the $SWDIR/logs/rootscript Script, page 47

The $SWDIR/logs/TODO File

⚠️ You must perform all tasks shown in the *$SWDIR*/logs/TODO file before moving on to do the Post-Installation Tasks on page 93.

The installer creates a *$SWDIR*/logs/TODO file if it cannot perform all the tasks necessary to complete the installation itself. This will be the case if you have run the installer as:

- the iProcess Engine background user (see iProcess Engine Background User Name on page 133). In this case the installer cannot run certain commands or set certain file permissions that need root access.

- a user who either does not have DBA access to the database, or does not have complete and/or correct database configuration information. In this case, the installer cannot create (or upgrade) the database, or perform any of the tasks that must be performed after the database has been created or upgraded.

The *$SWDIR*/logs/TODO file provides a list of all commands that need to be run to complete the installation. Commands are listed in the order that they need to be performed, and the user that needs to run them (either root, the DBA or the user who ran the installer) is identified.

📋 The list of required commands will vary according to your installation scenario, and whether or not the installer has root and/or DBA permissions.

The sections on the following pages describe in more detail each of the tasks that you may need to perform.

Run the $SWDIR/util/swpostinst Script

⚠️ Only run this script if you are instructed to do so in the *$SWDIR*/logs/TODO file.

The *$SWDIR*/util/swpostinst script is used to populate (or update) the database tables with the necessary iProcess Engine configuration data.

To run swpostinst:

1. Login as the user shown in the *$SWDIR*/logs/TODO file.

2. Make sure that the database is running.

3. Run the swpostinst command exactly as shown in the *$SWDIR*/logs/TODO file. For example:

```
/iProcess/swnod1/util/swpostinst -c
```

The following prompt is displayed:

```
An installation configuration file already exists.
Do you want to proceed using those details (Y/N - default N):
```

This question allows you to choose which set of values swpostinst will use as defaults for the database configuration information that it creates or modifies.

Enter:

— **Y**, to use the database configuration values saved in the swinstall.dat configuration file. These are the values listed in the Database Connection and Account Details Menu on page 174 when the installer runs.

— **N**, to use the system default values. These are the values taken either from the distribution set or from the current installation, as appropriate. Appendix C on page 121 describes these default values.

If you are installing:

— *on a single-node system, or on a master server in a node cluster*, swpostinst sets up a default iProcess Engine system (processes, queues, Mbox sets, and process attributes).

— *on a slave server in a node cluster*, swpostinst simply adds the server to the node. You will need to manually configure any processes that you want to run on the node later (see Configuring the Default iProcess Engine Installer on page 108).

4. Exit `swpostinst`. See the *$SWDIR*/`logs`/`TODO` file for instructions regarding what you need to do next.

Run the $SWDIR/util/upgr Command

Run this script only if you are instructed to do so in the *$SWDIR*/`logs`/`TODO` file.

The `$SWDIR`/`util`/`upgr` program is used to upgrade the iProcess Engine system.

To run `upgr`:

1. Log in as the user shown in the *$SWDIR*/`logs`/`TODO` file.

2. Run the `upgr` command exactly as shown in the *$SWDIR*/`logs`/`TODO` file. For example:

```
/iProcess/swnod1/util/upgr "i11.1-o(3.0)" "i11.3-o(0.0)"
```

When `upgr` completes successfully, the following message is displayed.

```
Upgrade completed successfully
```

See the `$SWDIR`/`logs`/`TODO` file for instructions regarding what you need to do next.

If `upgr` encounters an error, it exits. You can find a debug log of the `upgr` session in the `/tmp/upgrfull`*nnnn*`.log` file (where *nnnn* is a unique identifier for the log file).

If you terminate the installation at this point, contact TIBCO Support for further assistance in resolving the problem and completing the upgrade.

Copy the ssolite Shared Library

Run this script only if you are instructed to do so in the *$SWDIR*/`logs`/`TODO` file.

This section is only for DB2 users.

The `ssolite` library is needed by the iProcess Engine `SW_GET_SEQ_TRANS()` stored procedure, which is used to obtain sequence numbers from the `sequences` table.

To copy the ssolite library:

1. Log in as the user shown in the *$SWDIR*/logs/TODO file.

2. If you are using:

   — *a local DB2 database*, run the cp command exactly as shown in the *$SWDIR*/logs/TODO file. For example:

   ```
   cp /iProcess/swnod1/libs/ssolite.so db2inst1/
   sqllib/function/ssolite
   ```

   — *a remote DB2 database*, copy the ssolite library file shown in the cp command to the indicated destination on the machine hosting the DB2 database.

If the machine that hosts your remote DB2 database uses a different operating system than the machine that hosts the iProcess Engine (for example, AIX instead of Solaris, or a 64-bit version instead of a 32-bit version), you will need to use a different version of the ssolite shared library file. Contact TIBCO Support to obtain the correct version of the file for the operating system that hosts the remote DB2 database.

Run the $SWDIR/logs/rootscript Script

Run this script only if you are instructed to do so in the *$SWDIR*/logs/TODO file.

The *$SWDIR*/logs/rootscript script sets the necessary file permissions in the iProcess Engine directory structure and performs other configuration activities that require root-level access.

To run rootscript:

1. Log in as the root user.

2. Run the rootscript command exactly as shown in the *$SWDIR*/logs/TODO file. For example:

   ```
   /TIBCO/iPE/ swnod001/logs/rootscript
   ```

Post-Installation

This section describes the tasks you need to perform after you have installed TIBCO iProcess Engine following the instructions in Installing TIBCO iProcess Engine in Console Mode on page 35.

Table 15 provides a checklist of the tasks that you must or may need to perform before starting the iProcess Engine. The table shows:

- whether the iProcess Files-install Owner, iProcess Schema-install Owner, or DBA user needs to perform the task (see Organization Roles on page 2).

- the status of a task, depending on whether you are installing a new iProcess Engine or upgrading an existing one. This is either:

    — **Required** —You *must* perform this task before starting the iProcess Engine.

    — **Check** — You *may need* to perform this task before starting the iProcess Engine, depending on your installation scenario.

    — **Optional** — You *may wish* to perform this task before starting the iProcess Engine, but it is not essential.

    — **N/A** — You can start the iProcess Engine without performing this task.

For detailed information about each task, see Post-Installation Tasks on page 93.

You may want to print this table as a useful quick reference when performing the post-installation tasks. The Done? column in the table provides a place for you to tick off tasks that have been done.

Table 15   Post-Installation Tasks Checklist

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Re-implementing Changes to Upgraded Configuration Files	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	N/A	Optional	☐
Configuring Firewall Port Ranges on Slave Servers	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Check	Check	☐

Table 15 Post-Installation Tasks Checklist

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Enabling Oracle Function-based Indexes	Oracle	iProcess Schema-install Owner DBA	Check	Check	☐
Granting Permissions on Stored Procedures in EAI Database Steps	Oracle DB2	iProcess Schema-install Owner DBA	Check	Check	☐
Recreating All User-defined Constraints (Or Triggers), Indexes, and Statistics on the iProcess Engine Schema Tables	Oracle DB2	iProcess Schema-install Owner DBA	N/A	Check	☐
Configuring Your Hard and Soft Data Size Limits (AIX Only)	Oracle DB2	root	Check	Check	☐
Setting Up the Shared Library Path for the iProcess Engine	Oracle DB2	root	Required	Check	☐
Setting Up iProcess Engine Environment Variables	Oracle DB2	root	Required	Check	☐
Installing the IBM Client for JMS on J2SE with IBM WebSphere Application Server	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Check	Check	☐
Configuring IAPJMS Security Settings	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐
Configuring the Default iProcess Engine Installer	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐

Table 15   Post-Installation Tasks Checklist

Task	Database Type	To be done by	Install Status	Upgrade Status	Done?
Updating the iProcess Objects Server Configuration File	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	N/A	Optional	☐
Recreating Prediction Data	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	N/A	Optional	☐
Disabling or Re-enabling Write Access to WebDav	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐
Configuring JMX Ports to Run Through a Firewall	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐
Enabling Secure Socket Layer (SSL)	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐
Setting Up iProcess Engine with an IPv6 Address	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐
Starting TIBCO iProcess Engine	Oracle DB2	iProcess Files-install Owner iProcess Schema-install Owner	Optional	Optional	☐

Chapter 3 **Uninstalling iProcess Engine**

You can use the *$SWDIR*/`bin/swdel` utility to uninstall iProcess Engine from your system if it is no longer required.

- If you have a node cluster in which you have iProcess Engine installed on several servers, you will need to run `swdel` on each server.

- You cannot attempt to delete iProcess Engine files directly, as some may remain on the system, causing problems if you wish to re-install the iProcess Engine later.

- `swdel` does not remove any configuration changes that were made prior to installation (for example, the number of file descriptors per process). Any changes made must be manually changed back to their original values.

Topics

Running swdel

To remove the iProcess Engine installation from your computer:

> ⚠️ It is essential that if you have TIBCO iProcess Technology Plug-ins installed, you run the uninstaller for these *before* deleting *$SWDIR* via the swdel script. See *TIBCO iProcess Technology Plug-ins Installation* for information on how to do this.

1. Make sure that all iProcess Engine users are logged out, then stop the iProcess Engine and Process Sentinels. See "Stopping the TIBCO iProcess Engine" in *TIBCO iProcess Engine Administrator's Guide* for more information about how to do this.

2. Log in as root and make sure that:

   — *$SWDIR* points to the directory containing the iProcess Engine that you want to uninstall.

   — *$SWDIR*/bin is on root's PATH.

   — (For DB2 users only) $DB2PATH and $DB2INSTANCE are set up correctly.

   — (For Oracle users only) $ORACLE_HOME points to the correct Oracle instance.

3. If necessary, run the cd command to locate a directory that is not under the *$SWDIR* that you want to remove.

4. Enter the following command to uninstall iProcess Engine:

   ```
   swdel
   ```

5. Remove the entries for the Process Sentinel processes from the /etc/services file.

6. Delete the iProcess Engine database and database users from the Oracle Server or DB2 database. See your database documentation for more information about how to do this.

7. Finally, delete the iProcess Engine user accounts from UNIX (unless they are required for other iProcess Engine installations on this computer).

   See your UNIX documentation for more information about how to do this.

Appendix A **Pre-Installation Tasks**

This appendix lists the pre-installation tasks.

Topics

Checking For Any Late-Breaking Information

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   Before installing TIBCO iProcess Engine, you need to check if there any restrictions, known issues, or other late-breaking information that may affect your installation.

See *TIBCO iProcess Engine Release Notes* for detailed information.

Procedure   To check for late-breaking information:

1. Read *TIBCO iProcess Engine Release Notes* and *TIBCO iProcess Engine Readme* that are supplied with the iProcess Engine software.

2. Visit the TIBCO Support web site at
   http://www.tibco.com/services/support.

Backing Up the TIBCO iProcess Engine File System

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database Oracle, DB2

Description

You must back up your iProcess Engine system before an upgrade.

Make sure that you back up the entire *SWDIR* directory structure, and any other files you want to restore if a failure occurs during upgrade. The upgrade process has no undo capability. If it fails for any reason, you will require a full backup of your *SWDIR* file system to be able to restore your original iProcess Engine system.

You must also back up your database schema. For detailed information, see Backing up TIBCO iProcess Engine Database Schema on page 58.

Procedure Complete the following steps to back up an existing iProcess Engine:

1. Log in your operating system as the `root` user.

2. Get all users to log out of the iProcess Engine.

3. Run the following command to stop the iProcess Engine processes and Process Sentinels:

```
$SWDIR/bin/swstop
$SWDIR/bin/swstop -p
```

4. Back up the entire *$SWDIR* directory structure and any other files that you want to restore if an installation failure occurs by using your operating system backup utility.

If you have made any changes to the following files since they were installed, you need to manually re-implement those changes after upgrading the iProcess Engine:

- *SWDIR*\etc\language.lng\staffico
- *SWDIR*\etc\language.lng\auditusr.mes

This is because the files are overwritten during the upgrade and any changes to the original files are not automatically merged into the new files. See Re-implementing Changes to Upgraded Configuration Files on page 94 for more information.

See Also   For more information about the procedures, see *TIBCO iProcess Engine Administrator's Guide* and your operating system documentation.

Backing up TIBCO iProcess Engine Database Schema

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description

⚠️   You must back up your iProcess Engine database schema before an upgrade.

In some circumstances, an upgrade may fail and leave the iProcess Engine in an unusable condition. If this happens, you need to back up your database schema to restore the system to its previous condition before you can either use it or attempt to upgrade it again.

Procedure   See your database documentation for more information about how to back up the iProcess Engine database schema.

Checking for the Database Codepage Setting

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database Oracle, DB2

Description Before installing TIBCO iProcess Engine, check that the database codepage setting and the codepage setting of your system environment variable used to start up iProcess Engine are consistent.

Node Cluster The codepage setting of your database must be consistent with the system environment variable in both master server and slave servers.

Procedure For detailed information about how to configure the codepage setting of the system environment variable and databases, see your operating system documentation and your database documentation.

For example, if you want to use UTF-8 codepage for your databases and your system environment variable, you need to do the following settings:

On Oracle: `export NLS_LANG=AMERICAN_AMERICA.AL32UTF8`

On DB2: `export DB2CODEPAGE=1208`

Upgrading Your Operating System

Status		
	If you are...	**This task is...**
	Installing a new iProcess Engine Version 11.4.1	Possibly required
	Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   TIBCO iProcess Engine requires a specific release version of an operating system. For supported operation systems information, see Basic System Requirements on page 8.

Node-Cluster   The operating system version used must be the same on the master server and on each slave server.

Procedure   If you are using an operating system version that does not meet the specified requirements, you must upgrade it.

See Also   See your operating system documentation for more information about how to upgrade your operation system.

Upgrading Oracle

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Possibly required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database Oracle

Description TIBCO iProcess Engine requires a specific release level of the Oracle Database and/or Client, depending on whether you are using a local or remote database. For more information, see Oracle Database on page 16 for more information.

Node-Cluster The Oracle version used must be the same on the master server and on each slave server.

Procedure If you are using a version of Oracle that does not meet the specified requirements, you must upgrade it immediately.

See Also See *Oracle documentation* for more information about how to upgrade Oracle.

Extracting the Installation Set to a Temporary Installation Directory

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   The installation set for the iProcess Engine is supplied as a TAR file on the physical media. You must extract the installation set from the TAR file before you can run the installer.

Procedure   To extract the installation set from the TAR file to a temporary installation directory:

1. Log in as the user who will run the installer. This must be either the `root` user or the iProcess Engine `background` user. For the definition of the iProcess Engine background user, see iProcess Engine Background User Name on page 133.

2. Create a temporary installation directory and run `the cd` command to locate it.

3. Mount the physical media.

4. Copy the `staffwar.tar.Z` file from the physical media into your temporary installation directory.

5. Run the following command to extract the `staffwar.tar` file into the temporary installation directory:

   ```
   uncompress staffwar.tar.Z
   ```

6. Use the following TAR command to extract the installation set from the `staffwar.tar` file into your temporary installation directory:

   ```
   tar xvf staffwar.tar
   ```

7. Un-mount the physical media.

See Also   For more information about how to mount and un-mount the physical media, see your operating system documentation.

Setting the Number of File Descriptors per Process

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle, DB2

Description   When iProcess Engine is started, it must have a sufficient number of available file descriptors per process, based upon the number of iProcess Engine users.

The number of files per user that will be needed by iProcess Engine will vary depending on a number of factors that are unique to each site's procedures and transactions. However, as a guideline, the *minimum* number of file descriptors per process needed will be the *highest* of the following three values:

- 1024

- (*Number of iProcess Engine users*) * 2

- Number of file descriptors required by the TIBCO iProcess Objects Server, if an iProcess Objects Server is also installed on this machine. See *TIBCO iProcess Objects Server Release Notes* for details of how to calculate the number of required file descriptors per process.

When the iProcess Engine is started, it attempts to set the number of files from the system default number to the maximum number allowed. You can display:

- the default value by using the UNIX `ulimit -n` or `ulimit -Sn` commands (`S` indicates the `soft` or default limit).

- the maximum value by using the UNIX `ulimit -Hn` command (`H` indicates the `hard` or maximum limit).

Procedure   If your current per process file limit is less than the number needed, you must either raise the number of open files for the entire system, or use a script with `root` execute permissions to set the file handle limit. For more information about how to do this, please see your operating system documentation.

It is highly recommended that you set the per process file limit as high as possible. iProcess Engine may exhibit unpredictable behavior or even fail if there are no more file descriptors available. Running the command `ulimit -n unlimited` will set the file limit to the operating system design limits. This command will only be successful if the system limits allow this.

Creating iProcess Engine UNIX Users and Groups

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   iProcess Engine needs the following UNIX user accounts and groups:

1. iProcess Engine Background user account. This is the UNIX user account that owns most iProcess Engine files and is used to run the iProcess Engine background processes. See iProcess Engine Background User Name on page 133 for more information. You may choose to create this account before you run the installer. If you choose not to, the installation process will create the account (if you are installing as the root user) or create a script to do so.

2. iProcess Engine Administration user account. This is the UNIX user account that is used to administer iProcess Engine. See iProcess Engine Administration User Name on page 135 for more information. You can either create this account now or let the installer create it for you. You may choose to create this account before you run the installer. If you choose not to, the installation process will create the account (if you are installing as the root user) or create a script to do so.

3. iProcess Engine User group. This is the UNIX group to which all iProcess Engine users must belong. See iProcess Engine User Group Name on page 137 for more information. You may choose to create this group before you run the installer. If you choose not to, the installation process will create the group (if you are installing as the root user) or create a script to do so.

> You can use the same UNIX account as both the iProcess Engine Background user and iProcess Engine Administration user.

For DB2

The iProcess Engine also needs the following UNIX user accounts to communicate with the DB2 database:

1. iProcess Engine DB Schema Owner account. This is the UNIX user account that owns the iProcess Engine database schema. See iProcess Engine DB Schema Owner Name on page 184 for more information. You must create this account before you run the installer.

2. iProcess Engine DB User account. This is the UNIX user account that the iProcess Engine uses to access to the iProcess Engine database schema. This user has the REFERENCES, SELECT, DELETE, and UPDATE permissions. See iProcess Engine DB User Name on page 187 for more information. You must create this account before you run the installer.

Node-Cluster   You must use the same UNIX account names on the master server and each slave server.

Procedure   To set up these users and groups:

1. Log in as the root user.

2. Create the iProcess Engine Background user account.

3. (Optional) Create the iProcess Engine Administration user account. Make sure that logins are enabled and that the account is password-protected.

4. Create the iProcess Engine User group.

5. Add the following user accounts as members of the iProcess group:

   — iProcess Engine Background user account

   — iProcess Engine Administration user account

   — all other users who will require access to any files under *$SWDIR* (for example, to run *$SWDIR*/bin/swutil commands, or to use a SERVERRUN command that accesses a file under *$SWDIR*).

If you are using the DB2 database, continue with the following two steps:

6. Create the iProcess Engine DB Schema Owner account.

7. Create the iProcess Engine DB User account.

See Also   See your operating system documentation for more information about how to create UNIX user accounts and groups.

Setting Up the iProcess Engine System Directory

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   *$SWDIR* is the iProcess Engine system directory, where the iProcess Engine software is installed.

$SWDIR must not be the temporary installation directory, a user's home directory or a directory in a temporary or read-only filesystem.

If you are upgrading and you want to run the installer as the iProcess Engine background user (see iProcess Engine Background User Name on page 133), this user must have the necessary permissions to the *$SWDIR* directory structure. The `root` user will need to grant these permissions.

Node-Cluster   *$SWDIR* must be setup on the master server and on each slave server.

Procedure

1. Log in as the user who will run the installer (either `root` or the iProcess Engine background user).

2. Set the *$SWDIR* environment variable to the directory where you want to install (or upgrade) the iProcess Engine. For example:

   ```
   export $SWDIR=/iProcess/swnod1
   ```

3. If you are upgrading and you want to run the installer as the iProcess Engine background user:

   a. Log in as `root`.

   b. Use the following command to make sure that all files in *$SWDIR* and all of its sub-directories have full read and write permissions (`rw-rw-rw`):

   ```
   chmod -R a+rw $SWDIR
   ```

c. Use the following commands to change the ownership of certain files under *$SWDIR* to the iProcess Engine background user.

```
chown pro $SWDIR/bin/fixperms
chown pro $SWDIR/util/swinitora
chown pro $SWDIR/util/upgr
chown pro $SWDIR/util/swpostinst
```

where *pro* is the name of the iProcess Engine background user.

See Also See your operating system documentation for more information about how to set environment variables.

Setting Up Database Environment Variables

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   The iProcess Engine uses the following environment variables for communication with the database:

For Oracle

- *ORACLE_HOME*—the directory that contains the appropriate Oracle Server or Client software. See Oracle Database on page 16 for more information.

- *ORACLE_SID*—the Oracle System Identifier, or *SID*, which is the name of the Oracle Server instance.

> If you intend to use TNS to connect to a remote Oracle instance (see TNS Connection Requirements for Oracle on page 18) the *ORACLE_SID* environment variable is not used, but is set to a dummy value.

For DB2

- *DB2PATH*—the directory where the DB2 software is installed.

- *DB2INSTANCE*—the name of the DB2 instance that will hold the iProcess Engine database. (If you want to use a new instance for the iProcess Engine database you should create the instance now.)

- *DB2CONNECT_IN_APP_PROCESS*—this DB2 system environment variable must be either set to `Yes`, or not set (the default setting). If this variable is set to `No` the iProcess Engine will fail to start.

Node-Cluster   These environment variables must be set up on the master server and on each slave server.

For Oracle

If you are using the Oracle database and installing iProcess Engine on a slave server in an existing node cluster, you need to add TWO_TASK—the Oracle *default connect identifier,* which defines the default Oracle database to connect to. This is set to the appropriate Oracle Service Name (that is, the entry in the *$ORACLE_HOME*/network/admin/tnsnames.ora file for the Oracle instance that holds the iProcess Engine tables).

Procedure   Follow the different procedures based on your database type.

For Oracle

Set these environment variables in the shell of the user who is going to run the installer (either root or the iProcess Engine background user).

For DB2

1. Set *DB2PATH* and *DB2INSTANCE* in the shell of the user who is going to run the installer (either root or the iProcess Engine background user).

2. Make sure that *DB2CONNECT_IN_APP_PROCESS* is either set to Yes, or is not set (the default setting). Use the DB2 db2set command to check and, if necessary, reset the value of this variable.

Example   **For Oracle**

```
export ORACLE_HOME=/opt/oracle/product/10.2.0.5
export ORACLE_SID=sw10202
```

For DB2

```
export DB2PATH=/opt/IBM/db2/V8.2
export DB2INSTANCE=db2inst1
```

See Also   See your operating system documentation for more information about how to set environment variables.

Creating Oracle Accounts and Tablespaces

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database Oracle

Description If you want to run the installer without DBA-level access, you need to create the Oracle accounts, passwords and tablespaces needed by the iProcess Engine *before* you run the installer.

In other circumstances you do *not* need to create these entities now.

Procedure Create the Oracle accounts, passwords, and tablespaces needed by the iProcess Engine, as listed in Table 16.

Table 16   Creating Oracle Accounts and Tablespaces

Item	Description
iProcess Engine DB Schema Owner Name	The name of the Oracle user that owns the iProcess Engine database schema.
iProcess Engine DB Schema Owner Password	The password for the iProcess Engine database schema owner.
iProcess Engine DB User Name	The name of the Oracle user that the iProcess Engine uses for read access to the iProcess Engine database schema.
iProcess Engine DB User Password	The password for the iProcess Engine database user.
Data Tablespace Name	The tablespace in which to create the iProcess Engine database schema.
Temporary Tablespace Name	The temporary tablespace associated with the iProcess Engine database schema and users.

See Also The following sections:

- How Do I Decide Which Oracle Database Creation Method to Use, page 203
- Database Connection and Account Details Menu, page 174

Configuring the Oracle Schema

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   Oracle

Description   When running the installer, it creates a small database (approximately 50 MB) that is suitable for benchmarking or development purposes by default).

You can modify this default database configuration if you want to optimize it for your Oracle environment, taking into account factors specific to your installation, such as the number of cases, the amount of case data, the life of cases, and so on.

The Default iProcess Engine Schema Configuration

By default, the installer performs the following operations when it creates the iProcess Engine schema:

- It creates the following tablespaces for the Oracle instance. In the non- RAC environment, the default tablespaces location is *ORACLE_HOME*\database. In a RAC environment, the installer does not specify the `datefile` value, and RAC determines the tablespaces location automatically.

  — a data tablespace (with a default name of `staffwar`). By default, all iProcess Engine tables, indexes, and Oracle AQ queues are stored in this tablespace.

  — a temporary tablespace (with a default name of `temp`), which is used for sorting.

- It creates the following Oracle users:

  — iProcess Engine DB Schema Owner user (with a default name of `swpro`).

  — iProcess Engine DB User (with a default name of `swuser`).

  The `staffwar` and `temp` tablespaces are allocated to these users as their default tablespaces.

- It creates the iProcess Engine schema tables, indexes, and Oracle AQ queues in the default `staffwar` tablespace.

The use of the `staffwar` tablespace is defined in the `tablesizes` file. See How the Installer Sets Up the Default Configuration on page 72 for details.

How the Installer Sets Up the Default Configuration

The installer uses the init2Kora_tok.sql file and the tablesizes file as the template files to create the iProcess Engine schema:

- the init2Kora_tok.sql file

  The init2Kora_tok.sql file defines the following configuration macros for each iProcess Engine table and index that is to be created:

  — *SIZE*TABLESIZE—the initial size (in extents) of a table.

  — *SIZE*TABLEPCTINCREASE—the percentage increase to be applied when growing a table.

  — *SIZE*TABLESPACE—the tablespace to be used by a table.

  — *SIZE*INDEXSPACE—the tablespace to be used by an index.

  where *SIZE* is one of seven different categories, as shown in Table 17.

Table 17   SIZE Categories

Category	Used For	Example
TINY	Small tables that do not grow.	flag_table procedure_lock
SMALL	Generally static tables that contain small amounts of data.	list_names dbs_names
MEDIUM	Generally static tables that contain more data.	user_names user_values
BIG	Slightly larger tables that typically hold values for references held in SMALL and MEDIUM tables.	user_values db_str_values
LARGE	Most of the tables that contain case-related information, typically ones that only have 1 or 2 rows per case.	case_information outstanding_addr staffo
HUGE	Tables that hold multiple rows per case, but not for all cases.	pack_data pack_memo
MASSIVE	Tables that hold multiple rows per case for all cases.	audit_trail case_data

See *TIBCO iProcess Engine (Oracle) Administrator's Guide* to see which macros are defined for each table and index in the iProcess Engine database.

- the `tablesizes` file

  The `tablesizes` file defines a real value for each configuration macro in the `init2Kora_tok.sql` file. For example, the default values for the different `TABLESIZE` macros are shown below:

```
#
# Initial size (in extents) for each
# category of table.
#
TINYTABLESIZE=1K
SMALLTABLESIZE=2K
MEDIUMTABLESIZE=40K
BIGTABLESIZE=200K
LARGETABLESIZE=500K
HUGETABLESIZE=500K
MASSIVETABLESIZE=1M
```

How the Installer Uses These Template Files

When you run the installer to install the iProcess Engine:

1. The installer copies the following files to the *$SWDIR*/util directory:

   — `init2Kora_tok.sql`

   — `swinitora`

   — the `tablesizes` file specified in the Schema Sizing Configuration item on the Oracle Database Connection and Account Details Menu on page 174.

2. The installer calls the *$SWDIR*/util/swinitora script.

3. The *$SWDIR*/util/swinitora script pre-processes the *$SWDIR*/util/init2Kora_tok.sql script to:

   — replace the configuration macros with the actual values from the *$SWDIR*/util/tablesizes file.

   — replace occurrences of the default data tablespace name (`staffwar`) with the name specified in the Data Tablespace Name item on the Oracle Database Connection and Account Details Menu on page 174.

   The *$SWDIR*/util/swinitora script then saves the results as the *$SWDIR*/util/init2Kora.sql script.

4. The *$SWDIR*/util/init2Kora.sql script creates the iProcess Engine database schema.

How to Change the Default Configuration

You can change the default configuration of the iProcess Engine schema to match your particular requirements. Depending on the level of configuration control you need, you can use any combination of the following methods:

*   **Change the Default Data or Temporary Tablespace**

    There are two ways in which you can change the default data tablespace to be used:

    —   The installer can automatically create the default data and temporary tablespaces for you. Menu options and prompts allow you to choose:

    —the default tablespace names (`staffwar` and `temp`), or tablespace names that you specify.

    —the default tablespace location (`$ORACLE_HOME/dbs`), or directories that you specify. You can use the same directory for both tablespaces, or put each tablespace in a different directory as you require.

    See Oracle Database Connection and Account Details Menu on page 174 for more information. TIBCO recommends that you use this method where possible.

    —   Alternatively, you can create the default tablespaces manually before running the installer. You may want to do this if, for example, you want to spread the larger iProcess tables across multiple tablespaces.

> If you are using Oracle Real Application Clusters (RAC) you *must* create all required tablespaces on the RAC shared storage devices before running the installer. If you do not do this, the installer creates the data files for the tablespace in the *ORACLE_HOME/*`dbs` directory.

    To do this:

    —Manually create the tablespaces you want to use as the default data (or temporary) tablespaces.

    —Edit the `tablesizes` file that you intend to use. Change the value of each *SIZE*`TABLESPACE` and *SIZE*`INDEXSPACE` macro that you want to use the default data tablespace, from `staffwar` to your new tablespace name.

> If you allow the installer to create the data tablespace for you, it automatically updates the `tablesizes` file to use the correct tablespace.
>
> If the `tablesizes` file is not modified, the iProcess Engine tables, indexes and AQ queues will be created in the wrong tablespace.

—When you run the installer, make sure that you specify your new tablespace name as the default value when prompted (See Oracle Database Connection and Account Details Menu on page 174). If you have created multiple tablespaces, simply specify the name of one of these tablespaces.

- **Use an Alternative tablesizes File**

  When you run the installer, you can use the Schema Sizing Configuration option on the Oracle Database Connection and Account Details Menu on page 174 to choose one of the following alternative tablesizes file:

  — `tablesizes.med`—Using this file will create a medium-sized database, requiring at least 2.5 GB of disk space.

  — `tablesizes.large`—Using this file will create a large-sized database, requiring at least 65 GB of disk space.

See Appendix D, Usage Profiles for Tablesizes Files, on page 197 for more information about the intended usage profiles of these files.

- **Customize Specific Configuration Macros in the tablesizes File**

  If you require more specific configuration control, you can edit the `tablesizes` file to change the values assigned to specific configuration macros. For example, you may want to:

  — increase the initial size of tables that use the LARGETABLESIZE macro.

  — spread the larger iProcess tables across multiple tablespaces or filesystems (to aid i/o performance and reduce contention), by modifying individual *SIZE*TABLESPACE or *SIZE*INDEXSPACE entries.

Remember to create any additional tablespaces before you run the installer.

To do this:

a. Copy the `tablesizes` file from the installation directory to a directory of your choice.

b. Edit the file according to your requirements.

c. When you run the installer, use the Schema Sizing Configuration option on the Oracle Database Connection and Account Details Menu on page 174 to choose your customized `tablesizes` file.

- **Customize the init2Kora_tok.sql File to Assign Different Configuration Macros or Values to Specific Tables or Indexes**

  Finally, you can edit the `init2Kora_tok.sql` file to assign different configuration macros (or hard code specific values) to specific tables and indexes. You can do this when you run the installer.

By default, the `predict` and `predict_lock` tables use the `SMALL` macro values. If you intend to enable background case prediction on your system (using the `ENABLE_CASE_PREDICTION` process attribute), TIBCO recommends that you change these tables to use a larger value in line with the level of background prediction activity you expect. See "Administering Process Attributes" in *TIBCO iProcess Engine Administrator's Guide* for more information.

See Also For more information about how to estimate the size and layout requirements of your iProcess Engine schema, consult the following sources:

- *TIBCO iProcess Engine (Oracle) Administrator's Guide*—This guide defines the structure of each table, and provides guidance on the number of records a table should contain depending on the iProcess data.

- the `swinitora` and `init2Kora.sql` scripts in the installation directory.

- your TIBCO representative, who can work with you to prepare a detailed sizing and on figuration estimate.

Setting up Oracle Transparent Application Failover (TAF)

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional or Required (see below)
Upgrading from an iProcess Engine Version 11.0 or later	Optional or Required (see below)

Database   Oracle

Description   Oracle TAF enables an application user (such as the iProcess Engine) to automatically reconnect to a database if the connection fails. If you are running parallel servers, using TAF can allow the iProcess Engine to switch to an alternative instance if the one that it is using fails. Even if you are not using parallel servers, using TAF still means that although the iProcess Engine will not function while the database is down, it can recover immediately and automatically when the database is recovered.

> ⚠️ TIBCO strongly recommends the use of Oracle TAF with the iProcess Engine to provide 24*7 resilient operation. If you are deploying the iProcess Engine for user acceptance testing (UAT) or to a production environment, you *must* enable TAF.
>
> For more information about how the iProcess Engine supports database failover, see *TIBCO iProcess Engine Architecture Guide*.

> 📝 You should not use TAF to protect the iProcess Engine from a scheduled Oracle shutdown.
>
> The standard Oracle client connection is not protected by TAF. Therefore, if a failover occurs, iProcess Engine Workspace users may need to log back in.

To enable the use of TAF with the iProcess Engine, you need to configure TAF support for the service name that you intend to use to connect to the Oracle database (See Oracle DB TNS Identifier on page 178).

Procedure   The procedure you use to set up TAF depends on whether you are using Oracle RAC:

- If you are not using Oracle RAC, you must manually configure a net service name that includes the FAILOVER_MODE parameter included in the CONNECT_DATA section of the connect descriptor.

You must specify at least the TYPE and METHOD sub-parameters for the FAILOVER_MODE parameter.

- If you are installing the iProcess Engine on one of the nodes of an Oracle RAC, you can use Oracle's Database Configuration Assistant (DBCA) to create a new service that will use TAF. DBCA will update all the tnsnames.ora files for the instances you choose to be in the Oracle RAC. If your iProcess Engine is connected via an Oracle client to the Oracle RAC, you can copy the changes that DBCA makes to the Oracle database tnsnames.ora file to the client's tnsnames.ora file.

See Also   For more information about how to set up TAF, see the following documents in the Oracle documentation set:

- *Oracle Net Services Administrator's Guide*

- *Oracle Clusterware and Oracle Real Application Clusters Administration and Deployment Guide* (if you are using Oracle RAC)

Configuring Oracle OPEN_CURSORS

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   Oracle

Description   The Oracle OPEN_CURSORS parameter is defined in the initialization parameter file for the Oracle instance. It defines the limit on the maximum number of cursors (active SQL statements) for each session on this Oracle instance.

Procedure   Make sure that the Oracle OPEN_CURSORS parameter is set to a value of at least **200**.

See Also   See the Oracle documentation for more information about the initialization parameter file and the OPEN_CURSORS parameter.

Configuring Oracle Character Set Support

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Possibly required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle

Description   Oracle's NLS_LANG parameter sets the language, territory, and character set that the iProcess Engine uses to communicate with the Oracle database. The iProcess Engine requires that NLS_LANG uses an 8-bit character set.

Node-Cluster   NLS_LANG must be set to the same value on the master server and on each slave server.

Procedure   To set NLS_LANG, complete the following steps:

1. Log in as the user (root, iProcess Files-install Owner, or iProcess Schema-install Owner), see iProcess Engine Architecture on page 6 for more information) who will run the installer.

2. Set the NLS_LANG environment variable to use an 8-bit character set component (charset).

3. If you are using a TNS connection, make sure that the character set component (charset) of the NLS_LANG environment variable for the Oracle client matches the character set component of the NLS_LANG setting on the Oracle database.

The format of the NLS_LANG string is: NLS_LANG = *language_territory.charset*

Example

```
export NLS_LANG=American_America.WE8ISO8859P1
```

See Also   For more information about using NLS_LANG, see *Oracle Database Globalization Support Guide*.

Disabling Oracle Flashback Query

Status		
	If you are...	**This task is...**
	Installing a new iProcess Engine Version 11.4.1	N/A
	Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle

Description   Oracle has a *flashback query* feature, which lets you view and repair historical data. (The initialization parameter, UNDO_RETENTION, provides a means of explicitly specifying the amount of undo information to retain.)

If flashback query is enabled, the amount of undo tablespace required while you are upgrading (see Creating an Oracle UNDO Tablespace on page 82 for details) will increase significantly. Therefore you may want to disable this feature while you are upgrading the iProcess Engine or Process Engine.

However, this may not be possible if there are other applications that use the same database and that may require a flashback query while the upgrade is taking place. If that is the case, you must leave the feature enabled and make sure you have sufficient undo tablespace available.

It is possible for undo to reach 100% as the flashback query undo will still be allocated. This will make it difficult to monitor the undo tablespace.

If undo is set to autoextend, it may grow extremely large as all undo transactions for the entire upgrade will be stored.

Procedure   To disable flashback query, use the Oracle command:

```
alter system set UNDO_RETENTION=0
```

See Also   See your Oracle documentation for more information about flashback query.

Creating an Oracle UNDO Tablespace

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle

Description   Beginning with Oracle9*i*, Oracle uses UNDO tablespaces to rollback transactions. Previous versions of Oracle used rollback segments.

Procedure   Create an Oracle UNDO tablespace for the iProcess Engine database.

See Also   See:

- your Oracle documentation, for more information on how to create and manage UNDO tablespaces.

- Disabling Oracle Flashback Query on page 81, for more information about Oracle's flashback query feature and its impact on the amount of UNDO tablespace you require.

Adding DB2 Library Files to the Folder of Your Operating System

Status		

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database DB2

Description Before installing iProcess Engine on IBM AIX, Linux, or Solaris SPARC, you need to add the DB2 library files to your operation system.

Procedure To add DB2 library files to your operation system:

- On IBM AIX, copy the `libdb2.a` file from the following directory to the `/usr/lib` directory:
  - IBM AIX (32-bit): *DB2_HOME*/`lib32`
  - IBM AIX (64-bit): *DB2_HOME*/`lib64`
- On Linux, copy the `libdb2.so.1` file from the following directory to the `/usr/lib` directory:
  - Linux (32-bit): *DB2_HOME*/`lib32`
  - Linux (64-bit): *DB2_HOME*/`lib64`
- On Solaris SPARC, copy the `libdb2.so.1` file from the following directory to the `/usr/lib` directory:
  - Solaris SPARC (32-bit): *DB2_HOME*/`lib32`
  - Solaris SPARC (64-bit): *DB2_HOME*/`lib64`

The *DB2_HOME* variable specifies the directory path where the DB2 database is installed.

Creating a DB2 Database

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   DB2

Description   You must create an empty DB2 database to hold iProcess data before you install iProcess Engine. The installer will populate this database with the necessary iProcess data.

⚠️   If you intend to use the SQL Explain facility with the iProcess Engine database, you must ensure that the iProcess Engine DB Schema Owner account (see Creating iProcess Engine UNIX Users and Groups on page 64) has the necessary permissions to create and write to the Explain tables.

If the account does not have these permissions, the installer will not be able to create the iProcess Engine stored procedures when it populates the database. Any application that uses these stored procedures, such as the TIBCO iProcess Web Services Plug-in, will not work.

See your DB2 documentation for more information about explain tables and how to grant create or write access to them.

Procedure   To create the database:

1. Log in as a user who has the necessary permissions to create a database in the `$DB2INSTANCE` instance.

2. Make sure that `$DB2INSTANCE` points to the correct instance.

3. Use the following DB2 command to create the database:

```
alter system set UNDO_RETENTION=0
```

where *db_name* is the name you want to use for the iProcess Engine database.

Give the iProcess Engine DB Schema Owner account the necessary permissions to create and write to any Explain tables on the database.

See Also   See your DB2 documentation for detailed information about how to create a database and the `CREATE DATABASE` command.

Configuring a TCP/IP Connection to the Database

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   DB2

Description   iProcess Engine needs to communicate with the database over a TCP/IP connection. This applies whether the database is hosted on a local or remote machine.

Shared memory connections cannot be used for communication with the DB2 server.

Procedure   To configure a TCP/IP connection:

1. Add a TCP/IP node entry to the DB2 node directory. This entry defines that the TCP/IP communications protocol is used to access the specified DB2 node. To do this, use the following DB2 command:

   ```
   db2 catalog tcpip node nodename remote hostname server svcename
   ```

   where:

   — *nodename* is the name you want to use for this entry.

   — *hostname* is the TCP/IP host name or IP address of the node where the iProcess Engine database resides. If you are using a local database, *hostname* is the localhost address (127.0.0.1).

   — *svcename* is the Connection Service name used by the DB2 instance where the iProcess Engine database resides.

   This name defines the TCP/IP port used by the instance to listen for client requests, and is defined in the /etc/services file. For example:

   ```
   db2c_db2inst1    50000/tcp   # Connection port for DB2
                                # instance db2inst1
   ```

2. Add an alias for the iProcess Engine database to the system database directory. This alias uses the TCP/IP node entry you specified above. To do this, use the following DB2 command:

```
db2 catalog database db_name as alias at node nodename
```

where:

— *db_name* is the name of the iProcess Engine database you created earlier (see Creating a DB2 Database on page 84).

— *alias* is an alternative name for this database. You will use this name to identify the database when you run the installer (see DB2 Database Connection and Account Details Menu on page 176).

— *nodename* is the TCP/IP node entry you defined above.

3. If the database manager configuration file for this DB2 instance is not already using the *svcename* Connection Service name you specified above, update it so that it does by using the following command.

```
db2 update database manager configuration using svcename
svcename
```

You can use the `db2 get database manager configuration` command to check what Connection Service name the DB2 instance is currently using.

4. Enable the use of the TCP/IP protocol for the instance using the following command:

```
db2set DB2COMM=protocol
```

where *protocol* is either TCPIP or, if the instance needs to use multiple communication protocols, a comma-separated list of the appropriate keywords. See your DB2 documentation for more information.

5. Stop and restart the DB2 instance to apply the configuration changes. Use the following commands:

```
db2stop force
db2start
```

Example 1:
Using a Local
Database

The following example shows the commands needed to set up TCP/IP connections to an iProcess Engine database called swnod501 that is on the same computer as the iProcess Engine.

The alias r_sw501 will be used to identify this database to the iProcess Engine.

```
db2 catalog tcpip node loopfix remote 127.0.0.1 server db2c_db2inst1
db2 catalog database swnod501 as r_sw501 at node loopfix
db2 update database manager configuration using svcename db2c_db2inst1
db2set DB2COMM=TCPIP
db2stop force
db2start
```

Example 2:
Using a Remote
Database

The following example shows the commands needed to set up TCP/IP connections to an iProcess Engine database called swnod502 that is installed on a remote computer called llama3.

The alias r_sw502 will be used to identify this database to the iProcess Engine.

```
db2 catalog tcpip node db24sw1 remote llama3 server db2cdb2inst2
db2 catalog database swnod502 as r_sw502 at node db24sw1
db2 update dbm cfg using svcename db2cdb2inst2
db2set DB2COMM=TCPIP
db2stop force
db2start
```

Configuring DB2 Character Set Support

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Possibly required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   DB2

Description   Ensure that the language, territory, and character set that iProcess Engine uses to communicate with the DB2 database are set correctly.

See Also   For more information about configuring the DB2 Character set, see your DB2 documentation.

Configuring Lock Escalation

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   DB2

Description   DB2 maintains a lock list for the iProcess Engine database, which contains the locks held by all applications concurrently connected to the database. Both rows and tables can be locked.

Lock escalation is the process of replacing row locks with table locks, so reducing the total number of locks in the list. The following DB2 database configuration parameters control lock escalation:

- *locklist* indicates the amount of storage that is allocated to the database lock list.

- *maxlocks* defines the percentage of the lock list that an application can hold before the database manager performs lock escalation. (Lock escalation also occurs if the lock list runs out of space.)

If you use the default `maxlocks` and `locklist`, iProcess Engine performance may be affected. The iProcess Engine Background (`BG`) process locks multiple rows as part of its normal operations, and the number of locked rows can exceed the `maxlocks` percentage. Some or all of these row locks are therefore escalated to table locks, which blocks access to those tables by other iProcess Engine processes or applications.

Procedure   To prevent row locks from being escalated to table locks, you should increase the values of the `locklist` and `maxlocks` parameters. Use the following commands:

```
db2 update database configuration for db_name using maxlocks 40
db2 update database configuration for db_name using locklist 1000
```

where *db_name* is the name of the iProcess Engine database you created earlier (see Creating a DB2 Database on page 84).

.

TIBCO recommends values of 40 for `maxlocks` and 1000 for `locklist`. However, these values are only a guide as the amount of locks in a BG process transaction depends on the amount of data being written to various tables. You should modify these values to suit your particular requirements.

See Also   For more information about these parameters and commands, see your DB2 documentation.

Removing All User-defined Constraints (or Triggers), Indexes, and Statistics from the iProcess Engine Schema Tables

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle, DB2

Description   For an existing iProcess Engine, you have created constraints (or triggers), indexes, and statistics in the iProcess Engine schema tables. As part of an upgrade, the installer needs to modify certain columns in the iProcess Engine schema tables, then recreate constraints (or triggers), indexes, and statistics after the necessary columns have been changed in the upgrade process.

To successfully upgrade an existing iProcess Engine, you need to remove any user-defined constraints (or triggers), indexes, and statistics from the iProcess Engine schema tables manually before running the upgrade installer, because the installer cannot automatically remove them, you need to remove during the upgrade.

Procedure   Using an appropriate SQL utility, remove all user-defined constraints (or triggers), indexes, or statistics that you have added to iProcess Engine schema tables.

You can manually recreate them after completing the upgrade. See Recreating All User-defined Constraints (Or Triggers), Indexes, and Statistics on the iProcess Engine Schema Tables on page 98 for more information.

Appendix B   **Post-Installation Tasks**

This appendix lists the post-installation tasks.

Topics

Re-implementing Changes to Upgraded Configuration Files

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   If you made any changes to the default values in the following files on your original system, you should now manually re-implement any of those changes that you want to keep in the upgraded files:

- *SWDIR*/etc/*language*.lng/staffico
- *SWDIR*/etc/*language*.lng/auditusr.mes

See Also   For more information about the default contents of these files, and how to edit them, see the following references:

For information about...	See...
SWDIR/etc/*language*.lng/staffico	"Using iProcess Engine Configuration Files" in *TIBCO iProcess Engine Administrator's Guide*
SWDIR/etc/*language*.lng/auditusr.mes	"Defining Audit Trail Entries" in *TIBCO iProcess swutil and swbatch Reference Guide.*

Configuring Firewall Port Ranges on Slave Servers

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   Onwards firewall port range configuration data in TIBCO iProcess Engine Version 11.4.1 is stored in the `port_range` database tables, and can be configured by using the *$SWDIR*/`util`/`swadm` utility.

If you are installing or upgrading an iProcess Engine as:

- a slave server in a node-cluster, you must now manually configure any required firewall port range data.

- a master server or single server, you do not need to do anything. The installer automatically creates the necessary port range configuration data in this case, either using default values for a new installation, or using the existing values from the *$SWDIR*/`etc`/`staffcfg` file for an upgrade.

Procedure   If you are either:

- installing a new slave server, or

- upgrading an existing slave server,

you should use the `swadm` utility to create the necessary port range configuration data for your firewall configuration.

See Also   See Chapter 9, "Administering Firewall Port Ranges" in *TIBCO iProcess Engine Administrator's Guide*, for more information about using the iProcess Engine with a firewall, and how to use the *$SWDIR*/`util`/`swadm` utility to configure firewall port ranges.

Enabling Oracle Function-based Indexes

Status		

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	N/A

Database   Oracle

Description   The `case_information` table contains an Oracle function-based index, `idx_ci_casedesc_UC`, which allows iProcess Engine to perform case insensitive searches on the table.

Procedure   To enable the use of the `idx_ci_casedesc_UC` index in Oracle, you must:

1. Set the following Oracle initialization parameters:

```
QUERY_REWRITE_INTEGRITY=TRUSTED;
QUERY_REWRITE_ENABLED=TRUE;
```

2. Ensure that the following SQL command is run at regular intervals (for example, as a scheduled job in the database or as part of your maintenance activities).

```
analyze table case_information compute statistics;
```

On systems with large amounts of data, this command can take a long time to complete. TIBCO recommends that you run the command when there are not many users logged in, for example, overnight.

This command computes the necessary statistics on the `case_information` table, which the Oracle query optimizer uses to perform Cost-Based Optimization (CBO). If there is no cost-based information, or if CBO is disabled, searches involving the `case_information` table will require a full table scan, which can take a long time to complete.

See Also   See your Oracle documentation for more information about function-based indexes and CBO.

Granting Permissions on Stored Procedures in EAI Database Steps

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Possibly required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle, DB2

Description   The EAI steps are used to communicate with database stored procedures. You must grant execute permission to swuser on all custom stored procedures used by EAI Database steps if you are using TIBCO iProcess Engine version 11.4.0 or later.

If you are using TIBCO iProcess Engine earlier version than 11.4.0, the foreground processes connect to the database using the Oracle foreground user (swuser), whereas the Oracle background user (swpro), is used for the background processes. For example, the WIS processes connect to the Oracle database as the swuser user whereas the BG processes connected to the Oracle database as the swpro user.

If you are using TIBCO iProcess Engine version 11.4.0 or later, all the processes, regardless of whether they are background or foreground processes, connect to the Oracle database as the Oracle foreground user, which by default is the swuser user.

Procedure   See related database documentation on how to grant execute permission.

Recreating All User-defined Constraints (Or Triggers), Indexes, and Statistics on the iProcess Engine Schema Tables

Status

If you are...	This task is...
Installing a new iProcess Engine	N/A
Upgrading from an iProcess Engine 11.1 or later	Possibly required

Database   Oracle, DB2

Description   After the upgrade has finished, you need to recreate any user-defined constraints (or triggers), indexes, or statistics that you deleted before upgrading the iProcess Engine. See Removing All User-defined Constraints (or Triggers), Indexes, and Statistics from the iProcess Engine Schema Tables on page 91 for more information.

Procedure   Using an appropriate SQL utility, recreate all user-defined constraints (or triggers), indexes, or statistics on iProcess Engine schema tables that you deleted before you upgraded.

Configuring Your Hard and Soft Data Size Limits (AIX Only)

Status

If you are...	This task is...
Installing a new iProcess Engine	Required
Upgrading from an iProcess Engine 11.1 or later	Required

Database Oracle, DB2

Description On AIX, the iProcess Engine processes are built to use the large address-space data model, which allows them to access the larger data areas that they require.

When iProcess Engine is started, the system attempts to modify the soft limit on data size to accommodate the requirement for large data. If the modified soft limit is greater than the hard limit, the initial iProcess Engine processes are killed during `exec` processing. (The only message you receive is `killed`, which informs you that a process was killed.)

Procedure If this occurs, you must either raise the hard limit, or reduce the soft limit, on data size for the shell that you use to start the iProcess Engine.

You can display the default value by using the UNIX `ulimit -d` or `ulimit -Sd` commands (`S` indicating the `soft` or default limit). You can display the maximum value by using the `ulimit -Hd` command (`H` indicating the `hard` or maximum limit).

See Also For more information about the AIX large address-space data model, see "Large Program Support" in the AIX book *General Programming Concepts: Writing and Debugging Programs*.

Setting Up the Shared Library Path for the iProcess Engine

Status

If you are...	This task is...
Installing a new iProcess Engine	Required
Upgrading from an iProcess Engine 11.1 or later	Required

Database   Oracle, DB2

Description   To allow the iProcess Engine to operate correctly, the shared library path environment variable must be correctly set up for the following UNIX users:

- All users who want to use iProcess Engine administration utilities such as *$SWDIR*/util/swadm.

- The iProcess Engine background user, to allow the BG process to start and function correctly.

You can check the current value of the shared library path variable using the commands listed in Table 18.

Table 18   The Commands To Check The Shared Library Path

Database	Platform	Command
Oracle	HP-UX	`echo $SHLIB_PATH`
Oracle, DB2	IBM AIX	`echo $LIBPATH`
Oracle, DB2	Sun SPARC Solaris, Oracle SPARC Solaris	`echo $LD_LIBRARY_PATH`
Oracle, DB2	Sun SPARC Solaris, Oracle SPARC Solaris	`echo $LD_LIBRARY_PATH`
Oracle, DB2	Linux	`echo $LD_LIBRARY_PATH`

Procedure   Make sure that the strings listed in Table 19 are included in the shared library path variable for each user that needs it.

Table 19   The Included String in the Shared Licrary Path Variable

Database	Command
Oracle	*$ORACLE_HOME/*`lib:`*$SWDIR/*`libs`
	Note: If you are installing on HP-UX, you may need to ensure that the shared library path includes the locations of TIBCO Hawk and TIBCO Rendezvous. The following is the shared library path by default:
	`/opt/tibco/hawk/ami_api/lib:/opt/tibco/tibrv/lib:`
DB2	*$DB2PATH/*`lib:`*$SWDIR/*`libs`
	Note: You must also ensure that the `libdb2` library is in a standard directory, such as `/usr/lib`.
	When you use the `$SWDIR/bin/swstart -p` command to start iProcess Engine, the `RPC_UDP_LI` process fails to start up if it cannot find the `libdb2` library in a standard directory, such as `/usr/lib`. This is because it is a SUID process, and therefore ignores the `LD_LIBRARY_PATH` environment variable.

Setting Up iProcess Engine Environment Variables

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required
Upgrading from an iProcess Engine Version 11.0 or later	Required

Database   Oracle, DB2

Description   To allow iProcess Engine to operate correctly, the iProcess Engine Background and Administrator accounts must have the environment variables set for the database and system.

For both Oracle and DB2

The *SWDIR* environment variable is the iProcess Engine system directory, where the iProcess Engine software is installed.

For Oracle Only

The following environment variables should be set:

- *ORACLE_HOME*—the directory that contains the appropriate Oracle Server or Client software. See Oracle Database on page 16 for more information.

- *ORACLE_SID*—the Oracle System Identifier, or *SID*, which is the name of the Oracle Server instance.

> If you intend to use TNS to connect to a remote Oracle instance (see TNS Connection Requirements for Oracle on page 18) the *ORACLE_SID* environment variable100 is not used, but is set to a dummy value.

For DB2 Only

The following environment variable should be set:

- *DB2PATH*—the directory where the DB2 software is installed.

- *DB2INSTANCE*—the name of the DB2 instance that will hold the iProcess Engine database. (If you want to use a new instance for the iProcess Engine database you should create the instance now.)

For IBM AIX System Only (Optional)

To improve TIBCO iProcess Engine performance on AIX, you can set the value of the MALLOCMULTIHEAP system environment variable to 1.

For more information about the MALLOCMULTIHEAP system environment, see http://pic.dhe.ibm.com/infocenter/aix/v7r1/index.jsp?topic=%2Fcom.ibm.aix. prftungd%2Fdoc%2Fprftungd%2Fthread_env_vars.htm.

Procedure   Make sure that the above environment variables are included in the login profiles of the following users:

• the iProcess Engine Background account.

• the iProcess Engine Administrator account.

Example

For Oracle

```
export ORACLE_HOME=/opt/oracle/product/10.2.0.5
export ORACLE_SID=sw10202
```

For DB2

```
export DB2PATH=/opt/IBM/db2/V9.1

export DB2INSTANCE=db2inst1
```

See Also   See your operating system documentation for more information about how to set environment variables.

Installing the IBM Client for JMS on J2SE with IBM WebSphere Application Server

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Required *if you use Websphere 6.x*
Upgrading from an iProcess Engine Version 11.0 or later	Required *if you use Websphere 6.x*

Database   Oracle, DB2

Description   If you intend to use Websphere 6.x as your JMS provider for Activity Publication, and you do not already have the IBM Client for JMS on J2SE with WebSphere Application Server (referred to as the *IBM JMS Client* in the rest of this section) installed on your system, you must install it now.

⚠️ You must install the IBM JMS Client into the directory you specified for it when you ran the installer. See Base JAR Files Location on page 158 for details.

The IBM JMS Client is an embeddable technology that provides JMS V1.1 connections to a service integration bus messaging engine in WebSphere Application Server V6.0.2 (or above). It is available from the following IBM URL:

http://www-1.ibm.com/support/docview.wss?uid=swg24012804

Procedure   To do this:

1. Download the IBM JMS Client download file (sibc_install-*build*.jar) from the above URL.

2. Use the following command to install the IBM JMS Client:

   `java –jar sibc_install-*build*.jar jms_jndi_*platform* *directory*`

   where:

   — *platform* is ibm if you are installing on AIX, or Sun if you are installing on Solaris, HP-UX, or Linux. (jms_jndi_*platform* is the installation option for JMS + JNDI for the JRE that is distributed with the iProcess Engine.)

— *directory* is the same path name that you entered in the Base JAR Files Location field on the IAP Configuration Menu. You must install to this directory because that is where the iProcess Engine will look for the client JAR files.

Configuring IAPJMS Security Settings

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   If you chose to enable Activity Publication when you ran the installer (see Configuration Options Menu on page 139), default values for the JNDI/JMS username and password are written to the SecurityPrinciple and SecurityCredentials properties (respectively), in the $SWDIR/etc/iapjms.properties file. (This file contains all the configuration information for the IAPJMS library.)

If you want to change these values for security reasons, you should do so now.

> Enabling activity publishing does not result in events being automatically published by the iProcess Engine. See Enable Activity Publishing on page 147 for more information.

See Also   For more information about how to change the default values for the JNDI/JMS username and password, see "Updating the IAP Security Principle and Credentials" in *TIBCO iProcess Engine Administrator's Guide*.

Configuring the Default iProcess Engine Installer

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database Oracle, DB2

Description The installer creates a default set of server processes, process attributes, message queues, and Mbox sets for the iProcess Engine. You can change this default installer to suit your particular requirements.

Node Cluster The default processes are all set up on the master server. When a slave server is added, no processes are initially configured to run on it.

Procedure Use the *$SWDIR*/util/swsvrmgr and/or *$SWDIR*/util/swadm utilities to set up server processes, process attributes, message queues, and Mbox sets according to your requirements.

See Also See the following references in *TIBCO iProcess Engine Administrator's Guide* for more information.

For information about configuring...	See this chapter...
processes	Administering iProcess Engine Server Processes
process attributes	Administering Process Attributes
message queues and Mbox sets	Administering Message Queues and Mbox Sets

Updating the iProcess Objects Server Configuration File

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   If you have upgraded an existing iProcess Engine installation, the installer does not overwrite the *$SWDIR*/seo/data/swentobjsv.cfg iProcess Objects Server configuration file, because you may have customized it for your particular needs. Instead, the installer installs a sample.cfg file in the *$SWDIR*/seo/data directory.

The newly installed configuration file (swentobjsv.cfg and/or sample.cfg) is the configuration file for the version to which you have upgraded. It may contain new configuration parameters or other changes. See *TIBCO iProcess Objects Server Release Notes* for more information.

> All configuration parameters in the new configuration files are commented out. If used as is, iProcess Objects Server will use the default values for all parameters.

Procedure   If the new configuration file contains new or modified information, you can copy that information and paste it into your existing configuration file.

You can use the diff program (diff swentobjsv.cfg sample.cfg) to determine what is different between your configuration file and the new configuration file.

> Whether or not you make any modifications, the *$SWDIR*/seo/data directory must contain a swentobjsv.cfg file, which will be used to configure the iProcess Objects Server when it is started.
>
> If any of the configuration parameters contain invalid values, the iProcess Objects Server will not start. Since the iProcess Objects Server log file is not opened until after the configuration file is read, if there is an error in the configuration file, it is not written to the log file. Instead, it is written to the *$SWDIR*/logs/seo_error file. (This file is created when the iProcess Objects Server starts, so the presence of the file does not mean there were errors.)

See Also   For more information about how to configure and use the iProcess Objects Server, see the following guides:

- *TIBCO iProcess Objects Server Administrator's Guide*

- *TIBCO iProcess Objects Programmer's Guide*

Recreating Prediction Data

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	N/A
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database Oracle, DB2

Description During the upgrade process the `predict` and `predict_lock` tables are dropped and then recreated. Accordingly, any prediction data contained in those tables is lost.

Procedure You can recreate the data in these tables (for any procedures that you want to) by using the following command:

```
$SWDIR/bin/swutil PREDICT procname ALL_CASES
```

where *procname* is the name of the procedure that you want to recreate prediction data for.

See Also For more information about:

- case prediction, see "Using Case Prediction to Forecast Outstanding Work Items" in *TIBCO iProcess Modeler Advanced Design.*

- the `swutil PREDICT` command, see "Updating Prediction for Cases" in *TIBCO iProcess swutil and swbatch Reference*.

Disabling or Re-enabling Write Access to WebDav

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   You may find, once you have installed or upgraded the iProcess Engine, that you want to disable or re-enable write access to WebDav on the Apache Tomcat Application Server installed with the iProcess Engine. To do this, you must edit the *$SWDIR*/tomcat/webdav/WEB-INF/web.xml file.

Procedure   To disable or re-enable write access to WebDav on the Apache Tomcat Application Server installed with the iProcess Engine, complete the following steps:

1. In a text editor, open the *$SWDIR*/tomcat/webdav/WEB-INF/web.xml file.

2. Depending on your requirements, either uncomment or comment out the following section:

    ```
    <init-param>
    <param-name>readonly</param-name>
    <param-value>false</param-value>
    </init-param>
    ```

3. Save the file.

Configuring JMX Ports to Run Through a Firewall

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   JMX relies on JAVA technology called RMI, which uses dynamic ports to be able to communicate between a client and a server. Firewalls cannot handle dynamic ports, as they need to know the port number. iProcess overcomes this problem by statically assigning a listening port for the RMI server.

To do this you need to configure the *$SWDIR*/etc/swjmx.properties file.

Procedure   To configure the swjmxproperties file, complete the following steps:

1. Open the *$SWDIR*/etc/swjmx.properties file and you will see lines similar to the following:

   SWJMXConfig.location=C:/swserver/staffw_nod1/etc/swjmx_config.xml

   SWJMXConfig.port=10025

2. The default port is 10025 but you can change this to a port of your choosing.

   The RMI server port number will then be automatically set to the value of SWJMXConfig.port +1.

3. Save the file.

Enabling Secure Socket Layer (SSL)

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database   Oracle, DB2

Description   SSL provides a secure connection between a client and a server based on the SSL configurations at the client and server sides.

One, or both communicating applications has a public-private key pair. These keys are symmetric. Data encrypted with the public key can be decrypted with the private key, and vice versa.

To use SSL on all supported directory servers, the server's key pair must be pregenerated and configured in the server.

Procedure   To enable Secure Socket Layer (SSL), you must set up the connection to the LDAP server:

1. Select the following option from the LDAPCONF menu:

    ```
    [1] Set Connection Information
    ```

    The following prompt is displayed:

    ```
    Enter name of host on which the LDAP server resides
    (localhost):
    ```

2. Enter the name of the machine where the LDAP server is running, either as a host name specified in your local machine's hosts file, or as an IP address.

    The following prompt is displayed:

    ```
    Enter port number on host to connect to (389):
    ```

3. Enter the TCP port number (a valid numeric value greater than 1) to connect to on the specified *host*. The default value for LDAP servers is 389.

The following prompt is displayed:

```
Enter the distinguished name of the entry to bind as (NULL):
```

4. Enter the distinguished name (DN) of the entry which will be used to authenticate this connection to the LDAP server. (If you accept the default option LDAPCONF will connect as a default LDAP user.)

The following prompt is displayed:

```
Do you wish to change the password (Y/N):
```

5. Enter:

    — **Y**, if you want to change the password associated with this entry. You will then be prompted to enter and confirm the new password.

    — **N**, if you want to use the existing password.

```
SSL is enabled, do you wish to disable it (Y/N):
```

or

```
SSL is disabled, do you wish to enable it (Y/N):
```

6. Enter:

    — **Y**, if you want to change the status of SSL.

    — **N**, if you want to keep the current status of SSL.

If you enable SSL, the following prompt is displayed:

```
PATH to the Certificate Database for SSL(/home/certs/):
```

7. Enter the path to the Certificate Database.

8. If you have enabled SSL, the following prompt is displayed:

```
Is the target LDAP provider Microsoft Active Directory [No]
(Y/N):
```

This is necessary because Microsoft Active Directory handles password changes differently from other LDAP providers.

Enter:

— **Y**, if the LDAP server to which you are connecting uses Microsoft Active Directory.

— **N**, if the LDAP server does not use Microsoft Active Directory. This is the default value.

The LDAPCONF main menu is re-displayed.

Once you have enabled SSL, iProcess Engine must be restarted for the change to take effect.

See Also   For more information about LDAPCONF, see *LDAPCONF Utility User's Guide.*

Setting Up iProcess Engine with an IPv6 Address

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Possibly required
Upgrading from an iProcess Engine Version 11.0 or later	Possibly required

Database   Oracle, DB2

Description   If you want to use iProcess Engine with an IPv6 Address, you need to set up your iProcess Engine. The IPv4 address is used for iProcess Engine by default.

To use LDAP server with an IPv6 address, you need to add an IPv6 address as a host name when setting up the LDAP server connection. See "Setting Up the Connection" in *LDAPCONF Utility User's Guide*.

Procedure   Perform the following steps to set up IPv6 in iProcess Engine:

The network and machines that host iProcess Engine servers or clients must support IPv6.

1. Configure your database to support IPv6.

   — **Oracle** To configure IP addresses for Oracle, edit the `tnsnames.ora` file, which is located in the *ORACLE_HOME*/network/admin directory. Set the value of the HOST parameter to the IPv6 address. The *ORACLE_HOME* directory specifies where your Oracle database installs into. For more information about how to edit the `tnsnames.ora` file, see Oracle documentation.

   — **DB2** To configure IP addresses for DB2, add an IPv6 node entry to the DB2 node directory. See Configuring a TCP/IP Connection to the Database on page 85 for more information about how to add a node to the DB2 node directory.

2. Stop iProcess Engine by running the following commands:

   a. *$SWDIR*/bin/swstop

   b. *$SWDIR*/bin/swstop -p

3. Configure the STAFFCFG file, which is located in the *$SWDIR*/etc directory. Change the value of the IPPROPTOCOL parameter to 6:

   IPPROTOCOL, 6; 4 is IPV4, 6 is IPV6

For more information about the IPPROTOCOL parameter see "Tuning the iProcess Engine Using SWDIR\etc\staffcfg Parameters" in *TIBCO iProcess Engine Administrator's Guide*.

4. Restart iProcess Engine.

Starting TIBCO iProcess Engine

Status

If you are...	This task is...
Installing a new iProcess Engine Version 11.4.1	Optional
Upgrading from an iProcess Engine Version 11.0 or later	Optional

Database Oracle, DB2

Description The iProcess Engine is now properly installed, configured, and ready to start up.

Node Cluster Install each node in the cluster before trying to start the iProcess Engine.

Procedure To start the iProcess Engine:

When you install iProcess Engine with the Oracle database 11g, if the Oracle server and client have been installed on an x86 platform and a non-x86 platform respectively, you must run the following steps before starting iProcess Engine:

1. Log in to SQLPlus using the system account.
2. Run the following statement:

   ```
   alter system set events='10867 trace name context forever, level 1';
   ```

1. Log in as the iProcess Engine background user
2. Enter the following command to start the process sentinels:

   ```
   $SWDIR/bin/swstart -p
   ```

   — If you selected Enable Autostart on the Configuration Options Menu on page 139, the process sentinels automatically start all of the iProcess Engine processes.

   — If you did *not* select Enable Autostart on the Configuration Options Menu on page 139, enter the following command to start the iProcess Engine processes.

   ```
   $SWDIR/bin/swstart
   ```

Quick Starting and Restarting iProcess Engine

You can also use the following command to quick start the iProcess Engine processes:

```
SWDIR/bin/swstart -q
```

You can use the RESTART_SPO_CACHE_PROC process attribute to define how many latest versions of procedure definition to be cached by the iProcess Objects Server processes when restarting the iProcess Objects Server processes or quick starting iProcess Engine; use the RESTART_WIS_CACHE_THRESHOLD process attribute to define the threshold number of work items in a work queue to be cached by the WIS processes when restarting the WIS processes or quick starting iProcess Engine.

For more information about the swstart -q command, see "Controlling the iProcess Engine" in *TIBCO iProcess Engine Administrator's Guide*. For more information about the RESTART_SPO_CACHE_PROC and RESTART_WIS_CACHE_THRESHOLD process attributes, see "Administering Process Attributes" in *TIBCO iProcess Engine Administrator's Guide*.

See Also   See "Controlling the iProcess Engine" in *TIBCO iProcess Engine Administrator's Guide* for more information about how to start the iProcess Engine.

Appendix C **Configuration Menus for TIBCO iProcess Engine Installation**

This appendix lists the configuration menus for TIBCO iProcess Engine installation.

Topics

Overview

When installing TIBCO iProcess Engine, the installer needs you to provide configuration information in each specified menu, as shown in Table 20.

Table 20   Configuration Menus

Menu	Applied Database	Description
Policy to Install Schema and Files Menu	Oracle DB2	This menu allows you to choose an installation policy to complete the installation.
Location, Identification, and OS Accounts Menu	Oracle DB2	This menu allows you to define the basic operating system level information needed by the installer.
Configuration Options Menu	Oracle DB2	This menu allows you to specify basic iProcess Engine configuration details.
IAP Configuration Menu	Oracle DB2	This menu allows you to configure the necessary Java Message Service (JMS) parameters if Activity Monitoring is enabled.
iProcess Email Plug-in Configuration Menu	Oracle DB2	This menu allows you to configure the parameters for the SMTP server that the iProcess Email Server Plug-in connects to.
Oracle Database Installation Method Menu	Oracle	This menu allows you to configure the method used to install iProcess Engine tablespaces, users, and schema in the Oracle database.
Database Connection and Account Details Menu	Oracle DB2	This menu allows you to configure the connection parameters and accounts for the iProcess Engine database.

For information about how to use configuration menus, see Using Configuration Menus on page 122.

Using Configuration Menus

Each configuration menu has the following basic structure and controls:

Basic Structure

For a new installation, the menu structure is as follows:

```
Installing TIBCO iProcess Engine Version 11.4.1

Menu Title

n. Menu Item                               : value

Enter Number of Item to Edit, (C)ontinue, (B)ack or (Q)uit:
```

For an upgrade installation, the menu structure is as follows:

```
Upgrading TIBCO iProcess Engine from Version PreviousRelease to Version 11.4.1

Menu Title

n. Menu Item                               : value

Enter Number of Item to Edit, (C)ontinue, (B)ack or (Q)uit:
```

Only the new installation menus will be shown as the examples in this manual.

Basic Control

You can perform the following operations on each menu:

- If you want to change the value of a menu item, enter its number. A prompt for the new value is then displayed. If you want to leave the value unchanged, just press the **ENTER** key at this prompt.

You cannot change the value of a menu item if it is preceded by an asterisk (*) instead of a number.

- Enter **C** to move to the next menu.
- Enter **B** to return to the previous menu.
- Enter **Q** if you want to quit the installation. The following prompt appears:

```
Configuration information entered will be saved to the control file:
/TIBCO/iPE/swnod1/logs/swinstall.dat
Are you sure you want to quit this install ? (Y/N - default N):
```

Enter **Y** to quit the installation. The following prompt appears:

Exiting install. Configuration saved as *TIBCO/iPE/swnod1*/logs/swinstall.dat

---

Configuration information entered will be saved to the control file */TIBCO/iPE/swnod1*/logs/swinstall.dat, but any changes that you have made to the current menu are lost.

For detailed information about the swinstall.dat control file, see Control File on page 24.

Policy to Install Schema and Files Menu

The Policy To Install Schema And Files menu allows you to choose one of the following options to complete the installation:

- Install Schema and Files

- Install Schema Only

- Install Files Only

For example:

```
Installing TIBCO iProcess Engine version 11.4.1


Policy to Install Schema and Files Menu


Select the polciy to install the schema and files
of TIBCO iProcess Engine. Choose from :

Install schema and files : You must have access to an Oracle/DB2
                           DB Administrator account to do this.
Install schema only      : You must have access to an Oracle/DB2
                           DB Administrator account to do this.
Install files only       : The schema should been installed already.


See the Installation Guide for more information about these options.
1 ) Installation Policy                      : Install schema and files

Enter number of item to edit, (C)ontinue or (Q)uit:
```

Table 21 lists the configuration items in the Policy To Install Schema And Files Menu.

Table 21   Configuration Items in the Policy to Install Schema and Files Menu

Item	Description
Installation Policy	The policy you can choose when installing iProcess Engine.

Installation Policy

Policy to Install Schema and Files Menu

Description   The policy you can choose when installing or upgrading iProcess Engine.

Database   Oracle, DB2

Value   Enter **1**, the following prompts appear:

```
Select Installation Policy from the following list.

1 ) Install schema and files
2 ) Install schema only

Enter selection, or Q(uit):
```

or

```
Select Installation Policy from the following list.

1 ) Upgrade schema and files
2 ) Upgrade schema only
3 ) Upgrade files only

Enter selection, or Q(uit):
```

Table 22 lists the installation policy options.

Table 22   Installation Policy Options

Item	Description
Install Schema and Files (Upgrade Schema and Files)	Install or upgrade both iProcess Engine files and schema tables during the current installation. **Note:** To choose this option, you must have the DB Administrator account.
Install Schema Only (Upgrade Schema Only)	Install or upgrade iProcess Engine schema tables only during the current installation. **Note:** To choose this option, you must have the DB Administrator account.

Table 22   Installation Policy Options (Cont'd)

Item	Description
Install Files Only (Upgrade Files Only)	Install or upgrade iProcess Engine files only during the current installation
	Note: For a new installation, iProcess Files-install owner cannot see this option in the menu because the installer has already selected this option automatically.

Control File Keyword	IPEI_INSPOLICY
	IPEI_UPGRADE_PART0
	IPEI_UPGRADE_PART1

Location, Identification, and OS Accounts Menu

The Location, Identification, and OS Accounts Menu allows you to define the basic operating system level information needed by the installer.

For example:

```
Installing TIBCO iProcess Engine version 11.4.1

Location, Identification, and OS Accounts Menu

* ) Installation Directory                    : /TIBCO/iPE/swnod1
2 ) iProcess Engine Nodename                  : redhatas5
3 ) iProcess Engine Licensee Name             : TIBCO iPE 11.4.1 Install
4 ) iProcess Engine Background User Name       :  pro
5 ) iProcess Engine Administration User Name : swadmin
6 ) iProcess Engine User Group Name           : staffwar


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 23 lists the configuration items in the Location, Identification, and OS Accounts Menu.

Table 23   Configuration Items in the Location, Identification, and OS Accounts Menu

Item	Description
Installation Directory	The directory where this iProcess Engine is installed.
iProcess Engine Nodename	The logical name of this iProcess Engine.
iProcess Engine Licensee Name	The descriptive name used to identify this iProcess Engine.
iProcess Engine Background User Name	The UNIX account that is used to run the iProcess Engine.
iProcess Engine Administration User Name	The UNIX account that is used to administer the iProcess Engine.
iProcess Engine User Group Name	The UNIX group to which all iProcess Engine users must belong.

Table 23 Configuration Items in the Location, Identification, and OS Accounts Menu (Cont'd)

Item	Description
Redirect Administration Queue	Whether (Y) or not (N) work items from the original Administration User Name is redirected to the new account.
	Note: This item is only displayed if you are upgrading and you change the Administration User Name.

Edit the configuration items if needed and then enter **c** to continue with the installation. The installer now checks whether the operating system users and groups you have specified are valid. The following prompt appears:

```
Checking OS User and Group Accounts ...
```

If either of these users or an iProcess Engine group does not exist, you are prompted to create them.

The next displayed menu is the Configuration Options Menu on page 139.

Installation Directory

Location, Identification, and OS Accounts Menu

Description   The directory where the iProcess Engine is to be installed or upgraded.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Either: – the current *$SWDIR* value (if set), or – the directory specified when running the installer. You cannot change this value.	The current *$SWDIR* value You cannot change this value.

Control File Keyword   IPEI_SWDIR

iProcess Engine Nodename

Location, Identification, and OS Accounts Menu

Description   The logical identifier for this iProcess Engine node.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any name that: – is between 1 and 24 lowercase, alphanumeric characters long. – begins with an alpha character (a-z). – is unique on the network.	The current nodename, as defined on line 2 of the *$SWDIR*/swdefs file. You cannot change this value.
Default Value	Either: – the machine name, if this is the first iProcess Engine installation on this computer, or – swnod*nnn*, if this is a subsequent iProcess Engine installation on this computer where *nnn* is the number of worker or watcher entries in the /etc/services file. For example, if this is the second iProcess Engine installation on this computer, the default nodename is swnod001.	
Node-cluster	If you are installing a slave server, the nodename used must be the same name used for the master server.	

Control File Keyword   IPEI_NODENAME

iProcess Engine Licensee Name

Location, Identification, and OS Accounts Menu

Description   The descriptive name used to identify this iProcess Engine.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any name that: is between 1 and 30 printable characters long.	The current licensee name.
Default Value	`TIBCO iPE 11.4.1 installed`	

Control File Keyword   IPEI_LICENSEE

iProcess Engine Background User Name

Location, Identification, and OS Accounts Menu

Description   The UNIX user account that owns most iProcess Engine files and is used to run the iProcess Engine background processes.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any name that: – is between 1 and 8 characters long. – contains only alphanumeric, period (.), underscore (_), and hyphen (–) characters.	The current account name, taken from line 2 of the *$SWDIR/*`swdefs` file. You cannot change this value.
Default Value	The name of the user account that is being used to run the installer. **Note:** If you are logged in as the *background* user, you cannot change this name.	
Node-cluster	If you are installing a slave server, the account name used must be the same name used on the master server.	

Notes   You can use the same UNIX account for both the *iProcess Engine Background User Name* and *iProcess Engine Administration User Name*.

If the account name you specify does not exist, you are prompted to create it. For example:

```
Installing TIBCO iProcess Engine version 11.4.1

Location, Identification and OS Accounts Menu

* ) Installation Directory                    : /TIBCO/iPE/swnod1
2 ) iProcess Engine Nodename                  :  redhatas5
3 ) iProcess Engine Licensee Name             : TIBCO iPE 11.4.1 Install
4 ) iProcess Engine Background User Name       :  pro
5 ) iProcess Engine Administration User Name  : swadmin
6 ) iProcess Engine User Group Name            :  staffwar

Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit: 4
Enter new value for iProcess Engine Background User Name: pro1
User (pro1) does not exist on this system.
Create user? (Y/N - default N): y
```

- If you enter **Y**, the user is flagged for creation and the new username is displayed in the menu.

- If you enter **N**, the previous name is shown.

The user account is not actually created until the installer performs the installation. See Installing TIBCO iProcess Engine in Console Mode, step 7.

Control File Keyword   IPEI_BGUSER

iProcess Engine Administration User Name

Location, Identification, and OS Accounts Menu

Description   The UNIX account that is used to administer the iProcess Engine.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any name that: – is between 1 and 8 characters long. – contains only alphanumeric, period (.), underscore (_), and hyphen (-) characters.	The current account name, taken from line 3 of the *$SWDIR/*swdefs file. **Note:** If you change this value, the Redirect Administration Queue menu item is displayed.
Default Value	swadmin	
Node-cluster	If you are installing a slave server, the account name used must be the same name used on the master server.	

Notes   You can use the same UNIX account for both the *iProcess Engine Background User Name* and *iProcess Engine Administration User Name*.

If the account name you specify does not exist, you are prompted to create it. For example:

```
Installing TIBCO iProcess Engine version 11.4.1

Location, Identification, and OS Accounts Menu

* ) Installation Directory                     : /TIBCO/iPE/swnod1
2 ) iProcess Engine Nodename                   : redhatas5
3 ) iProcess Engine Licensee Name              : TIBCO iPE 11.4.1 Install
4 ) iProcess Engine Background User Name        : pro
5 ) iProcess Engine Administration User Name : swadmin
6 ) iProcess Engine User Group Name            : staffwar

Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit: 5
Enter new value for iProcess Engine Administration User Name: swadmin1
User (swadmin1) does not exist on this system.
Create user? (Y/N - default N): y
```

- If you enter **Y**, the user is flagged for creation and the new username is displayed in the menu.

- If you enter **N**, the previous name is shown.

> The user account is not actually created until the installer performs the installation. See Installing TIBCO iProcess Engine in Console Mode, step 7 for more information.

Control File Keyword   IPEI_ADMUSER

iProcess Engine User Group Name

Location, Identification, and OS Accounts Menu

Description   The UNIX group to which all iProcess Engine users must belong.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any name that: – is between 1 and 8 lowercase, alphanumeric characters long. – begins with an alpha character.	The current iProcess Engine group name, taken from the *$SWDIR*/`etc/staffpms` file. You cannot change this value.
Default Value	`staffwar`	
Node-cluster	If you are installing a slave server, the group name used must be the same name used on the master server.	

Notes   You must ensure that all iProcess Engine users are members of this group.

> The group is not actually created until the installer performs the installation.

Control File Keyword   IPEI_USRGROUP

Redirect Administration Queue

Location, Identification, and OS Accounts Menu

Description	To determine whether work items from the original iProcess Engine Administration User Name are redirected to the new account.
Database	Oracle, DB2
Value	Either:

- **Y,** if work items from the original iProcess Engine Administration User Name are redirected to the new account, or

- **N**, if work items from the original iProcess Engine Administration User Name are left in that queue.

Notes	This menu item is only displayed if you are upgrading and you change the iProcess Engine Administration User Name.

Example

```
Upgrading TIBCO iProcess Engine version 11.4.1


Location, Identification, and OS Accounts Menu

* ) Installation Directory                 : /TIBCO/iPE/swnod1
2 ) iProcess Engine Nodename              : redhatas5
3 ) iProcess Engine Licensee Name         : TIBCO iPE 11.4.1 Install
4 ) iProcess Engine Background User Name   : pro
5 ) iProcess Engine Administration User Name : swadmin
6 ) iProcess Engine User Group Name       : staffwar
7 ) Redirect Administration Queue         : Y


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Control File Keyword	IPEF_REDIRADM

Configuration Options Menu

The Configuration Options Menu allows you to specify basic iProcess Engine configuration details.

For example:

```
Installing TIBCO iProcess Engine version 11.4.1

Configuration Options Menu

1 ) iProcess Engine Client RPC Number       : 391875
2 ) iProcess Engine Client Password Required : Y
3 ) Enable Case Data Normalization          : Y
4 ) Enable Prediction                       : N
5 ) Enable Autostart                        : Y
6 ) Enable Activity Publication             : N
7 ) Configure iProcess Email Plug-in        : Y
8 ) JMX Port Number                         : 10025
9 ) Enable iProcess Objects Server          : Y
10) Enable iProcess Objects Director        : N
11) Enable Write access to WebDav           : N


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 24 lists the configuration items in the Configuration Options Menu.

Table 24   Configuration Items in the Configuration Options Menu

Item	Description
iProcess Engine Client RPC Number	The RPC number that iProcess Workspaces use to communicate with this iProcess Engine.
iProcess Engine Client Password Required	Whether (Y) or not (N) users must supply a password when they log in to this iProcess Engine from an iProcess Workspace.
Enable Case Data Normalization	Whether (Y) or not (N) case data normalization is enabled to make case data searching more efficient and faster.
Enable Prediction	Whether (Y) or not (N) the case prediction server process (BGPREDICT) is enabled.

Table 24 Configuration Items in the Configuration Options Menu (Cont'd)

Item	Description
Enable Autostart	Whether (Y) or not (N) the Process Sentinels automatically start the server processes after the Process Sentinels have started.
Enable Activity Publishing	Whether (Y) or not (N) the IAPJMS process is enabled and started. The IAPJMS process is required to enable both iProcess Activity Publication, if configured, and Work Queue Delta Publication if requested. See Enable Activity Publishing on page 147 for more information.
Configure iProcess Email Plug-in	Whether (Y) or not (N) you want to configure SMTP server parameters for the iProcess EMail Server Plug-in as part of the installation. You can configure SMTP server parameters at this point, or you can configure them after you have installed the iProcess Engine.
JMX Port Number	The port number on which the Java Management Extensions (JMX) engine runs.
JMX Port Number	Whether (Y) or not (N) the iProcess Objects Server process (SPO) is enabled.
Enable iProcess Objects Director	Whether (Y) or not (N) the iProcess Objects Director process (DIRECTOR) is enabled.
Enable Write Access to WebDav	Whether (Y) or not (N) WebDav is enabled.

Edit the configuration items if needed, then enter **c**. Depending on the options you have chosen, the next relevant menu in the following list is displayed:

— the IAP Configuration Menu, page 154.

— the iProcess Email Plug-in Configuration Menu, page 164.

— (For Oracle Only) the Oracle Database Installation Method Menu, page 172.

— (For DB2 Only) the DB2 Database Connection and Account Details Menu, page 176.

iProcess Engine Client RPC Number

Configuration Options Menu

Description   The RPC service number that iProcess Workspaces use to communicate with this iProcess Engine.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Any valid 1-6 digit RPC number. **Note:** 391875 to 391879 is the reserved iProcess Engine client-server RPC program number range. Using a number in this range should prevent any clash with other applications using the same number, provided that other applications also use legitimate RPC numbers.	The current client RPC number, taken from the *$SWDIR*/swdefs file. You cannot change this value.
Default Value	391875 + *n* where *n* is the number of existing iProcess Engine installations on this computer, calculated from the number of worker or watcher entries in the /etc/services file. For example, if this is the first iProcess Engine installation on this computer, the default client RPC number is 391875.	
Node-cluster	If you are installing a slave server, the client RPC number used must be the same number used on the master server.	

Control File Keyword   IPEI_RPCNUM

iProcess Engine Client Password Required

Configuration Options Menu

Description	To determine whether iProcess Workspace users must enter their passwords to log in to this iProcess Engine.
Database	Oracle, DB2
Value	

Installation Type	New Installation	Upgrade Installation
Value	Y, if iProcess Workspace users must enter their passwords to log in to this iProcess Engine. N, if iProcess Workspace users can log in to this iProcess Engine without supplying their passwords.	The current client RPC number, taken from the line 4 of the *$SWDIR*/etc/staffpms file.
Default Value	Y	

Control File Keyword	IPEF_CLNTPASSWD

Enable Case Data Normalization

Configuration Options Menu

Description   To determine whether case data normalization is enabled.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Y, if case data normalization is enabled. N, if case data normalization is disabled.	The current setting, as defined by the value of the NORMALISE_CASE_DATA process attribute.
Default Value	Y	If this setting is Y, you cannot change it. If it is N, you can change it to Y if you want.

Notes   Case data normalization is a feature used to make case data searching more efficient, and therefore faster. It uses the field_value_N column in the case_data table in the iProcess Engine database. This column provides a *normalized* value of the value in the field_value column, allowing the database to do simple string comparisons, instead of having to do type conversions.

⚠️   If you intend to use iProcess Objects to perform case data searches, TIBCO strongly recommends that you enable case data normalization. If you do not do this, you will be able to view and start procedures, but you will not be able to view the cases until you normalize the data.

You can either enable case data normalization as part of the installation, or upgrade process by setting this menu item. Or, you can do so afterwards by using the Case Data Normalization Utility. See the "Administering Case Data Normalization" section in *TIBCO iProcess Engine Administrator's Guide* for more information about this utility.

For the Oracle database, if you are upgrading, note that creating the data for the field_value_N column can significantly increase the time taken to perform the upgrade if the system has a large number of cases. See How Long Will an Upgrade Take on page 204 for more information.

For the DB2 database, if you are upgrading, before choosing to enable case data normalization, note that the installer will need to populate the field_value_N column for every row in the case_data table, using the values from the

field_value column. This can significantly impact the duration of the upgrade process if there are large numbers of cases on the system. See How Long Will an Upgrade Take on page 204 for more information.

Control File Keyword   IPEF_ENABLECDN

Enable Prediction

Configuration Options Menu

Description	To determine whether the case prediction server process (BGPREDICT) is enabled.
Database	Oracle, DB2
Value	

Installation Type	New Installation	Upgrade Installation
Value	Y, if BGPREDICT is enabled. N, if BGPREDICT is disabled.	The current setting, as defined by the value of the ENABLE_CASE_PREDICTION process attribute.
Default Value	N	If this setting is Y, you cannot change it. If it is N, you can change it to Y if you want.

Notes	The case prediction server process only affects background case prediction. It has no effect on live case prediction or case simulation.
See Also	For more information about the use of case prediction, see the "Using Case Prediction to Forecast Outstanding Work Items" section in *TIBCO iProcess Modeler Advanced Design Guide.*
Control File Keyword	IPEF_PREDICT

Enable Autostart

Configuration Options Menu

Description   To determine whether the Process Sentinels automatically start the server processes after the Process Sentinels have started.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Y, if the server processes is automatically started by the Process Sentinels. N, if the server processes is manually started.	The current setting, as defined by the value of the PM_AUTO_BOOT process attribute.
Default Value	Y	

See Also   For more information about the PM_AUTO_BOOT process attribute, see the "Administering Process Attributes" section in *TIBCO iProcess Engine Administrator's Guide*.

Control File Keyword   IPEF_AUTOSTART

Enable Activity Publishing

Configuration Options Menu

Description   To determine whether the `BG` process is enabled to publish monitored activities to the `IAPJMS` process and the `WIS` process publishes Work Queue Deltas.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	`Y`, enable publishing of monitored activities and work queue deltas.	The current setting, as defined by the value of the `IAPJMS_PUBLISH` process attribute.
	`N`, disable publishing of monitored activities and work queue deltas.	If this setting is `Y`, you cannot change it. If it is `N`, you can change it to `Y` if you want.
Default Value	`N`	

Node-Cluster   If you enable activity publishing on the master server, you must also enable it on each slave server.

Notes   The installer writes this value to the `IAPJMS_PUBLISH` process attribute and enables the `IAPJMS` process.

If activity publishing is enabled, activity information about auditable objects, for example, procedures and steps, can be published to an external application. This enables real-time monitoring of auditable objects so that mission-critical or important business events can be easily monitored.

Enabling activity publishing does not result in events being automatically published by the iProcess Engine.

To get the iProcess Engine to actually monitor and publish events, you must also:

1. configure the activities and events that you want to monitor and publish. See the "Configuring Activity Monitoring" section in *TIBCO iProcess Modeler Integration Techniques Guide* for more information about how to do this.

2. configure how the iProcess Engine will handle and publish monitored events. See the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide* for more information about how to do this.

Similarly, details of a work item are provided whenever the work item changes on a queue that the subscribing application is subscribed to.

**Control File
Keyword**   IPEF_ENABLEIAP

Configure iProcess Email Plug-in

Configuration Options Menu

| **Description** | To determine whether you want to configure SMTP server parameters for the iProcess Email Plug-in as part of the installation. |

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Y, configure SMTP server parameters.	
	N, do not configure SMTP server parameters.	
Default Value	Y	

Notes   You can either configure the SMTP server parameters as part of the installation process, or do so after you have installed the iProcess Engine.

See Also   See *TIBCO iProcess Email Plug-in User's Guide* for more information about the SMTP server parameters.

Control File Keyword   IPEF_EAIMAIL_ENABLECONFIG

JMX Port Number

Configuration Options Menu

Description	The port number on which the Java Management Extensions (JMX) engine runs.
Database	Oracle, DB2
Value	

Installation Type	New Installation	Upgrade Installation
Value	The port number must be: – an integer value between 0 and 65535. – unique across all iProcess Engine installations on this computer.	The current port number, as defined in the *$SWDIR*/etc/swjmx.properties file.
Default Value	10025	

Node-Cluster	You must use the same value on the master server and each slave server.
Notes	The iProcess Engine includes a JMX engine that enables Business Studio to deploy procedures to the iProcess Engine.
	In Business Studio, a Deployment Server can use this port number to deploy processes to this iProcess Engine, using the JMX Remote Method Invocation (RMI) interface.
	The port number will be written to the SWJMXConfig.port entry in the *$SWDIR*/etc/swjmx.properties file, and can be changed after installation if desired. See *TIBCO iProcess Engine Administrator's Guide* for more information.
See Also	For more information about how to deploy processes from Business Studio, see *TIBCO Business Studio Implementation Guide*.
Control File Keyword	IPEI_JMX_PORT

Enable iProcess Objects Server

Configuration Options Menu

Description	To determine whether you want to enable the iProcess Objects Server (SPO) process.
Database	Oracle, DB2
Value	

Installation Type	New Installation	Upgrade Installation
Value	Y, enable the SPO process. N, disable the SPO process.	Y, if the SPO is already installed and enabled. N, if the SPO is not installed, or is installed but disabled.
Default Value	Y	

See Also	For more information about how to configure and use the iProcess Objects Server, see the following guides:

- *TIBCO iProcess Objects Server Administrator's Guide*

- *TIBCO iProcess Objects Programmer's Guide*

Control File Keyword	IPEF_SPOSERVER_ENABLED

Enable iProcess Objects Director

Configuration Options Menu

Description To determine whether you want to enable the iProcess Objects Director (DIRECTOR) process.

Database Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Y, enable the DIRECTOR process. N, disable the DIRECTOR process.	Y, if the DIRECTOR is already installed and enabled.
Default Value	N	N, if the DIRECTOR is not installed, or is installed but disabled. You cannot change this value.

See Also For more information about how to configure and use the iProcess Objects Director, see *TIBCO iProcess Objects Director Administrator's Guide*.

Control File Keyword IPEF_SPODIRECTOR_ENABLED

Enable Write Access to WebDav

Configuration Options Menu

Description To determine whether or not write access to WebDav is enabled on the Apache Tomcat application server that is installed with iProcess Engine.

Database Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Y, enable write access to WebDav.	
	N, disable write access to WebDav.	
Default Value	N	

Notes Selecting this option enables you to easily deploy your TIBCO Forms using TIBCO Business Studio. If you want to use TIBCO Forms and do not want to enable this option, then you must install the forms manually on this or your own web server.

There are security issues around enabling WebDav and if you select this option, the following warning message is displayed:

```
You have enabled write access to WebDAV, which allows you to make
your own deployed forms for the browser client. This may cause your
server potential security issues and/or cause your deployed forms
for the browser client to fail. TIBCO Software Inc. is not
responsible for these or any other consequences caused by your use
of the write access to WebDAV.
```

If you do not want to use TIBCO Forms, then TIBCO recommends that you do not enable write access to WebDav. See the documentation supplied with Apache Tomcat Application Server for more information about security.

See Also For more information about TIBCO Forms, see TIBCO Forms documentation.

Control File Keyword IPEF_WEBDAV_ENABLED

IAP Configuration Menu

The IAP Configuration Menu allows you to configure the necessary Java Message Service (JMS) parameters if you want to enable Activity Monitoring on the iProcess Engine.

For example:

```
Installing TIBCO iProcess Engine version 11.4.1


IAP Configuration Menu

1 ) JMS Provider                               : TIBCO EMS
2 ) Base jar files location                    : /opt/tibco/ems/clients/java
3 ) Additional jar files location              :
4 ) Context Factory Name                       :
com.tibco.tibjms.naming.TibjmsInitialContextFactory
5 ) URL for JMS Provider                       : tibjmsnaming://localhost:7222
6 ) Connection Factory Name                    : TopicConnectionFactory


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit :
```

The IAP Configuration Menu is only displayed if you have changed the setting of the `Enable Activity Publication` option from `N` to `Y` on the Configuration Options Menu.

If you are upgrading a system where activity monitoring is already enabled, you cannot reconfigure it as part of the upgrade. In this situation, the `Enable Activity Publication` option is set to `Y` on the Configuration Options menu and you cannot change it, and the IAP Configuration Menu is not available.

You need to consult the administrator of your JMS Provider software to obtain the necessary information to fill in the items on this menu.

Table 25 lists the configuration items in the IAP Configuration Menu.

Table 25   Configuration Items in the IAP Configuration Menu

Item	Description
JMS Provider	The name of the JMS provider that the iProcess Engine publishes messages to. **Note:** If you change this value, appropriate default values are automatically displayed for all the other items in this menu.
Base JAR Files Location	The full path (or comma-separated paths) of the JAR files required by this JMS provider.
Additional JAR Files Location	The full path (or comma-separated paths) of any additional JAR files that are required for your configuration.
Context Factory Name	The name of the context factory that produces context instances for this JMS Provider.
URL for JMS Provider	The URL that the iProcess Engine uses to connect to this JMS Provider.
Connection Factory Name	The name of the object that the iProcess Engine uses to create a connection to this JMS Provider.

Edit the configuration items if needed and then enter **c**. Depending on the options you have chosen on the Configuration Options Menu on page 139, the next relevant menu in the following list is displayed:

— the iProcess Email Plug-in Configuration Menu, page 164.

— (For Oracle Only) the Oracle Database Installation Method Menu, page 172.

— (For DB2 Only) the DB2 Database Connection and Account Details Menu, page 176.

JMS Provider

IAP Configuration Menu

Description   The name of the JMS provider that the iProcess Engine publishes messages to.

Database   Oracle, DB2

Value

Installation Type	New Installation	Upgrade Installation
Value	Select one from the following list: – TIBCO EMS – TIBCO EMS 8.0 – IBM WebSphere V8.x – IBM WebSphere V6.x – Oracle Weblogic Server – JBoss – JBoss 6.x – Other	If you are upgrading iProcess Engine, you must ensure that your version of EMS is updated. See How Do I Upgrade TIBCO EMS on page 205 for details.
Default Value	TIBCO EMS	

Notes   If you want to use TIBCO EMS, select **TIBCO EMS 8.0** if you are using TIBCO EMS version 8.0, otherwise select TIBCO EMS if you are using TIBCO EMS other supported versions.

If you want to use JBoss 6.x, select the **JBoss 6.x** option. If you want to use any other version of JBoss or JBoss Messaging, select the JBoss option instead.

If you want to use IBM Websphere 7.x, you need to select the **IBM Websphere 8.x** button. If you are using IBM Websphere 8.x, SSL will be enabled by default. Since SSL is disabled by default in TIBCO iProcess Engine, you should either disable SSL in IBM Websphere 8.x or enable SSL in TIBCO iProcess Engine.

Similarly, if you want to use Oracle WebLogic Server Version, select the Oracle WebLogic Server option. If you want to use any other version of WebLogic Server, select the Other option instead.

If you select the Other option for the JMS Provider, no defaults are entered. You must supply appropriate values for the other menu items.

The JMS provider software does not need to be installed on the same machine as the iProcess Engine.

See Also   For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.

Control File   IPEI_JMSPROVIDER
Keyword

Base JAR Files Location

IAP Configuration Menu

Description   If your chosen JMS provider is

- **IBM Websphere 6.x** the full path of the directory containing the IBM Client for JMS on J2SE with WebSphere Application Server. The iProcess Engine IAPJMS process must use this client to communicate with the WebSphere 6.x Application Server.

    If you do not have this client installed on this computer, TIBCO recommends that you use the default location (*$SWDIR*/jmsclient). You *must* then install this client into the specified directory after you have installed the iProcess Engine. See Installing the IBM Client for JMS on J2SE with IBM WebSphere Application Server on page 105 for more information about how to do this.

- **IBM Websphere 8.x** You must specify the *websphere_home* directory where IBM Websphere 8.x is installed and make sure the following files are saved in the *websphere_home*/runtimes directory:

    — com.ibm.ws.sib.client.thin.jms_*versionnumber*.jar

    — com.ibm.ws.ejb.thinclient_*versionnumber*.jar

    — com.ibm.ws.orb_*versionnumber*.jar

- **JBoss 6.x** the full path of the directory containing the following files:

    — jboss-jms-api_1.1_spec.jar

    — jnp-client.jar

    — hornetq-core-client.jar

    — hornetq-jms-client.jar

    — netty.jar

    — jboss-logging.jar

    Note: In JBosss 6.x, JMS service is provided by HornetQ. So you need to install HornetQ. On the other hand, you can find the listed .jar files either in HornetQ or in JBoss 6.x final installation directory.

- **anything else** the full path (or comma-separated paths) of the JAR files required by this JMS provider.

Database   Oracle, DB2

Default Value   /opt/tibco/ems/*version_number*/lib

Notes   The default value shown is for the default JMS Provider (which is TIBCO EMS). If you change the JMS Provider, the default value is automatically changed to the appropriate value for that JMS Provider.

The installer writes this value to the IAPJMS configuration file *$SWDIR*/etc/iapjms_classpath.properties.

See Also   For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.

Control File   IPEI_JMSLOCATION
Keyword

Additional JAR Files Location

IAP Configuration Menu

Description	The full path (or comma-separated paths) of any additional JAR files that are required for your JMS configuration.
Database	Oracle, DB2
Default Value	None
Notes	The installer writes this value to the IAPJMS configuration file *$SWDIR*/etc/iapjms_classpath.properties.
See Also	For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.
Control File Keyword	IPEI_ADDJARLOC

Context Factory Name

IAP Configuration Menu

Description	The name of the context factory that produces context instances for this JMS Provider.
Database	Oracle, DB2
Default Value	`com.tibco.tibjms.naming.TibjmsInitialContextFactory`
Notes	The default value shown is for the default JMS Provider (which is TIBCO EMS). If you change the JMS Provider, the default value is automatically changed to the appropriate value for that JMS Provider.
	The installer writes this value to the `IAPJMSConnect.InitialContextFactory` property in the IAPJMS configuration file: *$SWDIR*`/etc/iapjms.properties`.
See Also	For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.
Control File Keyword	IPEI_CTXTFACTORY

URL for JMS Provider

IAP Configuration Menu

Description	The URL that the iProcess Engine uses to connect to this JMS Provider.
Database	Oracle, DB2
Default Value	`tibjmsnaming://localhost:7222`
Notes	The default value shown is for the default JMS Provider (which is TIBCO EMS). If you change the JMS Provider, the default value is automatically changed to the appropriate value for that JMS Provider.
	The installer writes this value to the `IAPJMSConnect.InitialURL` property in the IAPJMS configuration file *$SWDIR*/etc/`iapjms.properties`.
See Also	For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.
Control File Keyword	IPEI_JMSURL

Connection Factory Name

IAP Configuration Menu

Description	The name of the object that the iProcess Engine uses to create a connection to this JMS Provider.
Database	Oracle, DB2
Default Value	`TopicConnectionFactory`
Notes	The default value shown is for the default JMS Provider (which is TIBCO EMS). If you change the JMS Provider, the default value is automatically changed to the appropriate value for that JMS Provider.
	The installer writes this value to the `IAPJMSConnect.TopicConnectionFactory` property in the IAPJMS configuration file *$SWDIR*`/etc/iapjms.properties`.
See Also	For more information about the use of this parameter, see the "Administering Activity Monitoring" section in *TIBCO iProcess Engine Administrator's Guide*.
Control File Keyword	IPEI_CONNFACTORY

iProcess Email Plug-in Configuration Menu

The iProcess Email Plug-in Configuration menu allows you to define the parameters that the iProcess EMail Server Plug-in will use to connect to an SMTP server.

The iProcess Email Plug-in Configuration Menu is only displayed if you have set the `Configure iProcess Email Plug-in` option to `Y` on the Configuration Options Menu.

For example:

```
Installing TIBCO iProcess Engine version 11.4.1


iProcess Email Plug-in Configuration Menu

1 ) SMTP Host                                    :
2 ) SMTP Port Number                             : 25
3 ) Mail From Address                            :
4 ) BACKUP SMTP Host 1                           :
5 ) BACKUP SMTP Port 1                           : 25
6 ) BACKUP SMTP Host 2                           :
7 ) BACKUP SMTP Port 2                           : 25
8 ) BACKUP SMTP Host 3                           :
9 ) BACKUP SMTP Port 3                           : 25
10) Retry Counts                                 : 3


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 26 lists the configuration items in the iProcess Email Plug-in Configuration Menu.

Table 26   Configuration Items in the iProcess Email Plug-in Configuration Menu

Item	Description
SMTP Host	The IP address or the name of the machine hosting your SMTP server.
SMTP Port Number	The port number of the SMTP server.

Table 26   Configuration Items in the iProcess Email Plug-in Configuration Menu (Cont'd)

Item	Description
Mail from Address	The email address that you want to send iProcess Email messages from.
BACKUP SMTP Host (BACKUP SMTP Host 1, 2, 3)	For each backup server in turn, you can specify the machine name or the IP address of the machine hosting the backup SMTP server. There can be as many backup host entries as there are SMTP servers available for failover.
BACKUP SMTP Port (BACKUP SMTP Port 1, 2, 3)	The port number on which the preceding backup host is running. There must be one backup port entry for each backup host server.
Retry Counts	Specify how many times the plug-in should use a backup server before retrying the primary host. Enter a non-zero numeric value. The default is 3. **Note:** – If a negative value is entered, it is interpreted as 50. – If zero or a non-numeric value is entered, the configuration of backup servers has no effect and the plug-in reverts to the primary host. If a successful connection is made on retrying the primary host, the plug-in reverts to using that host. If not, the plug-in continues with the backup server that is currently in use.

Edit the configuration items if needed and then enter **c**. The next menu in the following list is displayed:

— (For Oracle Only) the Oracle Database Installation Method Menu, page 172.

— (For DB2 Only) the DB2 Database Connection and Account Details Menu, page 176.

SMTP Host

iProcess Email Plug-in Configuration Menu

Description	The name or IP address of the machine hosting the SMTP server that you want to use.
Database	Oracle, DB2
Value	

Installation Type	New Installation	Upgrade Installation
Value	N/A	The current value, taken from the *$SWDIR*/libs/eai_mail.cfg file.
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes	The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.
See Also	For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.
Control File Keyword	IPEI_EAIMAIL_SMTPHOST

SMTP Port Number

iProcess Email Plug-in Configuration Menu

Description   The TCP port number on which the SMTP server is running.

Database   Oracle, DB2

Default Value

Installation Type	New Installation	Upgrade Installation
Default Value	25	The current value, taken from the *$SWDIR*/libs/eai_mail.cfg file.
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes   The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.

See Also   For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.

Control File Keyword   IPEI_EAIMAIL_SMTPPORT

Mail from Address

iProcess Email Plug-in Configuration Menu

Description   The default email address that you want to use to send EAI Mail messages from.

Database   Oracle, DB2

Default Value

Installation Type	New Installation	Upgrade Installation
Default Value	N/A	The current value, taken from the *$SWDIR*/libs/eai_mail.cfg file.
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes   The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.

See Also   For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.

Control File Keyword   IPEI_EAIMAIL_MAILFROM

BACKUP SMTP Host

iProcess Email Plug-in Configuration Menu

Description	Backup Hosts 1 to 3 are the names or IP addresses of the machines hosting the backup SMTP servers that you want to use.
Database	Oracle, DB2
Default Value	

Installation Type	New Installation	Upgrade Installation
Default Value	N/A	The current value, taken from the *$SWDIR*/libs/eai_mail.cfg file.
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes	The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.
See Also	For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.
Control File Keyword	IPEI_EAIMAIL_BAKSMTPHOST1 IPEI_EAIMAIL_BAKSMTPHOST2 IPEI_EAIMAIL_BAKSMTPHOST3

BACKUP SMTP Port

iProcess Email Plug-in Configuration Menu

Description   Backup Ports 1 to 3 are the TCP port numbers on which the associated backup SMTP server is running.

Database   Oracle, DB2

Default Value

Installation Type	New Installation	Upgrade Installation
Default Value	N/A	The current value, taken from the *$SWDIR*/libs/eai_mail.cfg file.
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes   The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.

See Also   For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.

Control File Keyword   IPEI_EAIMAIL_BAKSMTPPORT1
IPEI_EAIMAIL_BAKSMTPPORT2
IPEI_EAIMAIL_BAKSMTPPORT3

Retry Counts

iProcess Email Plug-in Configuration Menu

Description   How many times the plug-in should use a backup server before retrying the primary host.

Enter a non-zero numeric value.

- If a negative value is entered, it is interpreted as 50.

- If zero or a non-numeric value is entered, the configuration of backup servers has no effect and the plug-in reverts to the primary host.

Database   Oracle, DB2

Default Value

Installation Type	New Installation	Upgrade Installation
Default Value	3	3
Node-Cluster	You must use the same value on the master server and each slave server.	

Notes   The installer writes this value to the global SMTP parameter file *$SWDIR*/libs/eai_mail.cfg.

See Also   For more information about the use of this parameter, see *TIBCO iProcess EMail Plug-in User's Guide*.

Control File Keyword   IPEI_EAIMAIL_RETRYCOUNTS

Oracle Database Installation Method Menu

The Oracle Database Installation Method menu allows you to choose one of the following options to install TIBCO iProcess Engine tablespaces, users, and schema in the Oracle database:

- Install Database Now
- Use Existing Database

For example:

```
Installing TIBCO iProcess Engine version 11.4.1


Oracle Database Installation Method


Select the method you want to use to install the TIBCO iProcess Engine
tablespaces, users and schema in the Oracle database. Choose from:


Install database now  : Let swinstall install the iProcess Engine tablespaces,
                        users and schema. You must have the privilege to do this.
Use existing database : Let swinstall install the iProcess Engine schema, using
                        tablespaces and users that have already been
                        created by an Oracle DB Administrator.


1 ) Installation Method                        : Install database now


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 27 lists the configuration items in the Policy To Install Schema And Files menu.

Table 27   Configuration Items in the Oracle Database Installation Method Menu

Item	Description
Installation Method	The method you can choose to install iProcess Engine tablespaces, users, and schema in the Oracle database.

Choose the installation method and then enter **C**. the Oracle Database Connection and Account Details Menu on page 174 is displayed.

Installation Method

Oracle Database Installation Method Menu

Description   The method you can choose to install iProcess Engine tablespaces, users, and schema in the Oracle database.

Database   Oracle

Value

Enter **1**, the following prompts appear:

```
Select Installation Method from the following list.

1 ) Install database now
2 ) Use existing database

Enter selection, or Q(uit):
```

Table 28 lists the installation method options.

Table 28   Installation Method Options

Item	Description
Install Database Now	Let the installer to install iProcess Engine tablespaces, users, and schema in the Oracle database.
	Note: To choose this option, you must have access to an Oracle DB Administrator account.
Use Existing Database	Let the installer installs iProcess Engine schema, and use tablespaces and users that have already been created by an Oracle DB Administrator.

Control File Keyword   IPEI_DBINSTMODEL

Database Connection and Account Details Menu

The Database Connection and Account Details Menu allows you to provide the information that the installer needs to be able to communicate with the database.

- Oracle Database Connection and Account Details Menu, page 174
- DB2 Database Connection and Account Details Menu, page 176

Oracle Database Connection and Account Details Menu

The Oracle Database Connection and Account Details menu is shown below:

```
Installing TIBCO iProcess Engine version 11.4.1


ORACLE Database Connection and Account Details

1 ) Oracle DB TNS Identifier               :
2 ) Oracle DB Administrator Name           : system
3 ) Oracle DB Administrator Password       :
4 ) iProcess Engine DB Schema Owner Name   : swpro
5 ) iProcess Engine DB Schema Owner Password : staffpro1
6 ) iProcess Engine DB User Name           : swuser
7 ) iProcess Engine DB User Password       : swuser1
8 ) Support Unicode Encoding               : N
9 ) Data Tablespace Name                   : STAFFWAR
10) Temporary Tablespace Name              : TEMP
11) Schema Sizing Configuration            : Small


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 29 lists the configuration items in the iProcess Email Plug-in Configuration Menu.

Table 29   Configuration Items in the Oracle Database Connection and Account Details Menu

Item	Description
Oracle DB TNS Identifier	The TNS identifier of the Oracle instance that the iProcess Engine will connect to.

Table 29   Configuration Items in the Oracle Database Connection and Account Details Menu (Cont'd)

Item	Description
Oracle DB Administrator Name	The Oracle username that the iProcess Engine should use when it needs to connect to the database as a DBA.
Oracle DB Administrator Password	The password for the Oracle DBA account.
iProcess Engine DB Schema Owner Name	The name of the Oracle user that owns the iProcess Engine database schema. **Note**: If you are using Oracle 12c, you must specify the name with the prefix, c##. For example, c##swpro.
iProcess Engine DB Schema Owner Password	The password for the iProcess Engine database schema owner.
iProcess Engine DB User Name	The name of the user that the iProcess Engine uses to access the iProcess Engine database schema. This user has the REFERENCES, SELECT, DELETE, and UPDATE permissions. **Note**: If you are using Oracle 12c, you must specify the name with the prefix, c##. For example, c##swuser.
iProcess Engine DB User Password	The password for the iProcess Engine database user.
Support Unicode Encoding	Whether the iProcess database should support UTF-8 encoding.
Data Tablespace Name	The tablespace in which to create the iProcess Engine database schema. **Note:** This menu item is only displayed if you are installing a new iProcess Engine. It is not displayed if you are upgrading an existing installation.
Temporary Tablespace Name	The temporary tablespace associated with the iProcess Engine database schema and users. **Note:** This menu item is only displayed if you are installing a new iProcess Engine. It is not displayed if you are upgrading an existing installation.
Temporary Tablespace Name	The `tablesizes` configuration file to be used to size the iProcess Engine database schema. **Note:** This menu item is only displayed if you are installing a new iProcess Engine. It is not displayed if you are upgrading an existing installation.

Edit the configuration items if needed and then enter **c**. For more information, see Checking DB Connectivity and Users on page 177.

DB2 Database Connection and Account Details Menu

The Oracle Database Connection and Account Details menu is shown below:

```
Installing TIBCO iProcess Engine version 11.4.1

DB2 Database Connection and Account Details

1 ) DB2 Database Alias                    : DB2917
2 ) iProcess Engine DB Schema Owner Name  : swpro
3 ) iProcess Engine DB Schema Owner Password :
4 ) iProcess Engine DB User Name          : swuser
5 ) iProcess Engine DB User Password      :
6 ) Support Unicode Encoding              : N


Enter number of item to edit, (C)ontinue, (B)ack or (Q)uit:
```

Table 30 lists the configuration items in the iProcess Email Plug-in Configuration Menu.

Table 30   Configuration Items in the Oracle Database Connection and Account Details Menu

Item	Description
DB2 Database Alias Name	The alias of the DB2 iProcess Engine database.
iProcess Engine DB Schema Owner Name	The name of the DB2 user that owns the iProcess Engine database schema.
iProcess Engine DB Schema Owner Password	The password for the iProcess Engine database schema owner.
iProcess Engine DB User Name	The name of the DB2 user that the iProcess Engine uses to access the iProcess Engine database schema. This user has the REFERENCES, SELECT, DELETE, and UPDATE permissions.
iProcess Engine DB User Password	The password for the iProcess Engine database user.
Support Unicode Encoding	Whether the iProcess database should support UTF-8 encoding.

Checking DB Connectivity and Users

Edit the configuration items if needed and then enter **c**. The following prompt appears:

```
Checking DB connectivity and users ...
```

The installer automatically checks the following items listed in Table 31 to validate if it can create or upgrade the iProcess Engine database schema using the supplied information.

Table 31 Database-related Information Checklist

Item	DBA-level access Required	See
NLS_LANG value	No	Configuring Oracle Character Set Support on page 80
UNDO tablespace	No	Creating an Oracle UNDO Tablespace on page 82
TAF	Yes	Setting up Oracle Transparent Application Failover (TAF) on page 77
OPEN_CURSORS value	Yes	Configuring Oracle OPEN_CURSORS on page 79
Advanced Queuing configuration	Yes	

Note: If you do *not* have the name and password of an Oracle DBA account, the installer cannot check the TAF, OPEN_CURSORS, and Advance Queuing configuration, so you need to check these items manually before proceeding.

If the installer encounters any problems, it displays appropriate messages, error codes and/or further prompts. See:

— the relevant sections in Appendix C, Configuration Menus for TIBCO iProcess Engine Installation on page 121 for information about additional prompts on specific menu items.

— Appendix F, Troubleshooting on page 207 for more information about other messages and prompts that may occur.

After the installer checks the information listed in Table 31, the Configuration Summary page is display. Review the Configuration Summary and then start to install iProcess Engine. For detailed information, see Installing TIBCO iProcess Engine in Console Mode, step 6.

Oracle DB TNS Identifier

Database Connection and Account Details Menu

Description   The TNS identifier of the Oracle instance that the iProcess Engine will connect to.

Value

Installation Type	New Installation	Upgrade Installation
Value	The appropriate Oracle Service Name that is the entry in the `$ORACLE_HOME`/network/admin/tsnames.ora file for the Oracle instance that you want to use to hold the iProcess Engine tables.	The current Oracle connect string taken from the fifth entry (after the fourth backslash character) on line 9 of the `$SWDIR`/etc/staffpms file. You cannot change this value.
Default Value	Either: —the value of the TWO_TASK environment variable, if that variable is defined in the installing user's environment. —no value, if TWO_TASK is not defined. **Note:** The TNS Identifier is the only menu item that can be blank (that is, have no value). If this menu item has a value and you want to reset it to have no value, you must type Ctrl + D at the prompt to enter a new value.	
Node Cluster	If you are installing a slave server, the TNS identifier used must connect to the same database, using the same users, as the master server.	

Notes   You must define a TNS identifier if you intend to use:

- a TNS connection to the Oracle database (whether it is remote or local).

- Oracle's Transparent Application Failover (TAF) feature (whether the Oracle instance is local or remote).

For more information about TAF and how to set up and configure it, see Setting up Oracle Transparent Application Failover (TAF) on page 77 and your Oracle documentation.

If a TNS identifier is not defined, the iProcess Engine will attempt to connect to the local Oracle instance, and TAF will not be supported.

Control File Keyword   IIPEI_DBIDSTR

Oracle DB Administrator Name

Database Connection and Account Details Menu

Description   The Oracle username that the iProcess Engine should use when it needs to connect to the database as a database administrator (DBA).

Value

Installation Type	New Installation	Upgrade Installation
Value	An Oracle account name that: —has DBA-level access to the Oracle database. —is between 1 and 30 characters long. —contains only lowercase, alphanumeric, and underscore (_) characters. —has a leading alphanumeric character.	Either: —the current Oracle DBA account name, or —no value (that is, leave the field blank)
Default Value	system	N/A
Node Cluster	If you are installing a slave server, the name used must connect to the same database as the master server.	If you are upgrading a slave server, the name used must connect to the same database as the master server.

Notes   The account used must have the necessary permissions to create tablespaces and users in the Oracle instance, that is, it must either have the DBA role assigned or it must have access to the Oracle Data Dictionary.

If you are upgrading, you only need to supply the Oracle DBA name (and password) if you want the installer to perform certain checks to validate that it can upgrade the iProcess Engine database schema. The installer performs these checks when you enter C on the Oracle Database Connection and Account Details Menu, and needs DBA-level access to check the following items:

- TAF (see Setting up Oracle Transparent Application Failover (TAF) on page 77).

- OPEN_CURSORS value (see Configuring Oracle OPEN_CURSORS on page 79).

- Advanced Queuing configuration (see Disabling Oracle Flashback Query on page 81).

If you do not need the installer to check these items, or you do not have access to the Oracle DBA name and/or password, you can leave this field blank. (Make sure that you have checked these items manually before running the installer.) The upgrade can still continue but these checks will be skipped.

Control File Keyword   IPEI_DBANAME

Oracle DB Administrator Password

Database Connection and Account Details Menu

Description   The password for the Oracle DB Administrator Name.

Value

Installation Type	New Installation	Upgrade Installation
Value	A string that is between 1 and 30 characters long	Either: —The password for the current Oracle DBA account name, or —no value (that is, leave the field blank)
Default Value	`manager`	N/A

Notes   If you are upgrading, you only need to supply the Oracle DBA password (and name) if you want the installer to perform certain checks to validate that it can upgrade the iProcess Engine database schema. The installer performs these checks when you enter C on the Oracle Database Connection and Account Details Menu, and needs DBA-level access to check the following items:

- TAF (see Setting up Oracle Transparent Application Failover (TAF) on page 77).

- OPEN_CURSORS value (see Configuring Oracle OPEN_CURSORS on page 79).

- Advanced Queuing configuration (see Disabling Oracle Flashback Query on page 81).

If you do not need the installer to check these items, or you do not have access to the Oracle DBA password and/or name, you can leave this field blank. (Make sure that you have checked these items manually before running the installer.) The upgrade can still continue but these checks will be skipped.

Control File Keyword   IPEI_DBAPASSWD

This keyword is encrypted in the control file.

DB2 Database Alias Name

Database Connection and Account Details Menu

Description   The alias of the DB2 iProcess Engine database.

Value

Installation Type	New Installation	Upgrade Installation
Value	The alias of the DB2 iProcess Engine database you created before running the installer (see page 86). The alias must: be between 1 and 8 characters long. contain only alphanumeric and underscore (_) characters. have a leading alphanumeric character.	The current DB2 iProcess Engine database alias. You cannot change this value.
Default Value	None	
Node Cluster	If you are installing a slave server, the alias used must be the same number used on the master server.	

Control File Keyword   IPEI_DBIDSTR

iProcess Engine DB Schema Owner Name

Database Connection and Account Details Menu

Description   The name of the Oracle user (for Oracle users) or the UNIX account (for DB2 users) that owns the iProcess Engine database schema.

> For Oracle users, you can either create this account before you run the installer, let the installer create it for you, or create it after you have run the installer. See How Do I Decide Which Oracle Database Creation Method to Use on page 203.

Value

Installation Type		New Installation	Upgrade Installation
Value	Oracle	An Oracle account name that: —is between 1 and 20 characters long. —contains only lowercase, alphanumeric, and underscore (_) characters. —has a leading alphanumeric character.	The name of the existing iProcess Engine database schema owner, taken from the second entry (after the first backslash character) on line 9 of the *$SWDIR*/etc/staffpms file. You cannot change this value.
	DB2	A UNIX account name that: —is between 1 and 8 characters long. —contains only alphanumeric and underscore (_) characters. —has a leading alphanumeric character. —is a member of the DB2 SYSADM_GROUP OS group.	
Default Value		swpro	
Node Cluster		If you are installing a slave server, the account name used must be the same name used on the master server. (Conversely, if you are installing separate instances of iPE in the same database then the schema owners must be different.)	

Notes   The Oracle account name used must have the following permission grants:

- connect
- resource
- create table
- create view

- AQ_ADMINISTRATOR_ROLE

- query rewrite

- execute on dbms_aqadm

- execute on dbms_aq

⚠️ If you create this Oracle account before running the installer (see Creating Oracle Accounts and Tablespaces on page 70), you must also associate the account with the data tablespace (see Data Tablespace Name on page 191) and temporary tablespace (see Temporary Tablespace Name on page 193) to be used by the iProcess Engine.

If the account name you specify does not already exist, you are prompted to create it when you continue from the Oracle Database Connection and Account Details Menu. For example:

```
iProcess Engine DB Schema Owner (swpro001) does not exist.
Create user (Y/N - default N): Y
```

If you enter:

- **Y**, the user is flagged for creation and the new username is displayed in the menu.

- **N**, the old name is shown.

📝 The account is not actually created until the installer performs the installation. See step 7 in Installing TIBCO iProcess Engine in Console Mode on page 35.

Control File Keyword   IPEI_DBSONAME

iProcess Engine DB Schema Owner Password

Database Connection and Account Details Menu

Description   The password for the iProcess Engine DB Schema Owner Name account.

Value

Installation Type		New Installation	Upgrade Installation
Value	Oracle	A string that is between 1 and 30 characters long.	The password for the current iProcess Engine DB Schema Owner Name account.
	DB2	A string that is between 1 and 24 characters long.	The value is displayed as a string of asterisks.
Default Value	Oracle	staffpro1	
	DB2	None	

Notes   The default value is displayed on initial installation. Once you change this default, asterisks are subsequently displayed.

Control File Keyword   IPEI_DBSOPASSWD

This keyword is encrypted in the control file.

iProcess Engine DB User Name

Database Connection and Account Details Menu

Description   The name of the Oracle user (for Oracle users) or the UNIX account (for DB2 users) that the iProcess Engine uses to access the iProcess Engine database schema. This user has the iProcess Engine uses to access the iProcess Engine database schema with the REFERENCES, SELECT, DELETE, and UPDATE permissions

> You can either create this account before you run the installer, let the installer create it for you, or create it after you have run the installer. See How Do I Decide Which Oracle Database Creation Method to Use on page 203.

Value

Installation Type		New Installation	Upgrade Installation
Value	Oracle	An Oracle account name that: —is between 1 and 30 characters long. —contains only lowercase, alphanumeric, and underscore (_) characters. —has a leading alphanumeric character.	The name of the existing iProcess Engine database user account, taken from the third entry (after the second backslash character) on line 9 of the *$SWDIR*/etc/staffpms file. You cannot change this value.
	DB2	A UNIX account name that: —is between 1 and 8 characters long. —contains only alphanumeric and underscore (_) characters. —has a leading alphanumeric character.	
Default Value		`swuser`	
Node Cluster		If you are installing a slave server, the account name used must be the same name used on the master server.	

Notes   The Oracle account name used must have the following permission grants:

- `connect`

- `resource`

- `create table`

- `AQ_ADMINISTRATOR_ROLE`

- execute on dbms_aq

⚠️ If you create this Oracle account before running the installer (see Creating Oracle Accounts and Tablespaces on page 70), you must also associate the account with the data tablespace (see Data Tablespace Name on page 191) and temporary tablespace (see Temporary Tablespace Name on page 193) to be used by the iProcess Engine.

If the account name you specify does not already exist, you are prompted to create it when you continue from the Oracle Database Connection and Account Details Menu. For example:

```
iProcess Engine DB Schema Owner (swpro001) does not exist.
Create user (Y/N - default N): Y
```

If you enter:

- **Y**, the user is flagged for creation and the new username is displayed in the menu.
- **N**, the old name is shown.

📝 The account is not actually created until the installer performs the installation. See step 7 in Installing TIBCO iProcess Engine in Console Mode on page 35.

Control File Keyword   IPEI_DBUSRNAME

iProcess Engine DB User Password

Database Connection and Account Details Menu

Description   The password for the iProcess Engine DB User Name account.

Value

Installation Type		New Installation	Upgrade Installation
Value	Oracle	A string that is between 1 and 30 characters long.	The password for the current iProcess Engine DB Schema User Name account.
	DB2	A string that is between 1 and 24 characters long.	The value is displayed as a string of asterisks.
Default Value	Oracle	`swuser1`	
	DB2	None	

Notes   The default value is displayed on initial installation. Once you change this default, asterisks are subsequently displayed.

Control File Keyword   IPEI_DBUSRPASSWD

This keyword is encrypted in the control file.

Support Unicode Encoding

Database Connection and Account Details Menu

Description	To determine whether the iProcess database should support Unicode (UTF-8) encoding.
Value	Either:

- Y, if you want the iProcess database to support Unicode encoding, or

- N, if you do not want the iProcess database to support Unicode.

Notes	The default value is displayed on initial installation.
Control File Keyword	IPEI_SUPPORTUNICODE

> If you want TIBCO iProcess Engine to support Unicode (UTF-8) encoding, run the following command to set the NLS_LANG property before running TIBCO iProcess Engine:
>
> export NLS_LANG=*Language_Territory*.AL32UTF8
>
> For example, export NLS_LANG=*American_America*.AL32UTF8

Data Tablespace Name

Database Connection and Account Details Menu

Description   The tablespace in which to create the iProcess Engine database schema.

> For Oracle users, you can either create this account before you run the installer, let the installer create it for you, or create it after you have run the installer. See How Do I Decide Which Oracle Database Creation Method to Use on page 203.

Value

Installation Type	New Installation	Upgrade Installation
Value	A name that: —is between 1 and 30 characters long. —contains only lowercase, alphanumeric, and underscore (_) characters. —has a leading alphanumeric character.	The name of the existing default database tablespace, taken from the *$SWDIR*/etc/tablespace file. You cannot change this value.
Default Value	STAFFWAR	
Node Cluster	If you are installing a slave server, the tablespace name used must be the same name used on the master server.	

Notes   This menu item is not displayed if you are upgrading an existing iProcess Engine.

By default, all iProcess Engine tables, indexes, and Oracle AQ queues are stored in this tablespace.

If you are using pre-created multiple tablespaces (see Change the Default Data or Temporary Tablespace on page 74), you should specify the name of one of the pre-created tablespaces.

If you are using Oracle Real Application Clusters (RAC) you must create all required tablespaces on the RAC shared storage device before running the installer. If you do not do this, the installer creates the data file for the tablespace in the *$ORACLE_HOME/*dbs directory.

If the tablespace you specify does not already exist, you are prompted to create it when you continue from the Oracle Database Connection and Account Details Menu. For example:

```
Data Tablespace Name (sw961) does not exist
create Tablespace (Y/N - default N): Y
```

If you enter:

- **N**, the menu is re-displayed and the old name is shown.

- **Y**, the tablespace is flagged for creation and you are prompted to enter two further pieces of information:

   a. the tablespace size. For example:

```
Enter size (in Mb) for tablespace sw961 [default: 50 Mb]:
```

   Either enter a value or press ENTER to accept the default value.

   b. the tablespace location. For example:

```
Enter location for tablespace sw961 files [default "" ]:
```

   Either enter a directory name or press ENTER key to accept the default location, which is *$ORACLE_HOME/*dbs.

The tablespace is not actually created until the installer performs the installation. See step 7 in Installing TIBCO iProcess Engine in Console Mode on page 35. The name of the database tablespace is saved in the *$SWDIR*/etc/tablespace file.

See Also   Configuring the Oracle Schema on page 71.

Control File Keyword   IPEI_DBTABLESPC

Temporary Tablespace Name

Database Connection and Account Details Menu

Description   The temporary tablespace associated with the iProcess Engine database schema
and users.

> For Oracle users, you can either create this account before you run the installer, let
> the installer create it for you, or create it after you have run the installer. See How
> Do I Decide Which Oracle Database Creation Method to Use on page 203.

Value

Installation Type	New Installation	Upgrade Installation
Value	A name that: —is between 1 and 30 characters long. —contains only lowercase, alphanumeric, and underscore (_) characters. —has a leading alphanumeric character.	The name of the existing temporary tablespace. You cannot change this value.
Default Value	TEMP	
Node Cluster	If you are installing a slave server, the tablespace name used must be the same name used on the master server.	

Notes   This menu item is not displayed if you are upgrading an existing iProcess Engine.

If the tablespace you specify does not already exist, you are prompted to create it
when you continue from the Oracle Database Connection and Account Details
Menu. For example:

```
Temporary Tablespace Name (temp2) does not exist
create Tablespace (Y/N - default N): Y
```

If you enter:

- **N**, the menu is re-displayed and the old name is shown.

- **Y**, the tablespace is flagged for creation and you are prompted to enter two
  further pieces of information:

a. the tablespace size. For example:

```
Enter size (in Mb) for tablespace temp2 [default: 25 Mb]:
```

Either enter a value or press ENTER to accept the default value.

b. the tablespace location. For example:

```
Enter location for tablespace temp2 files [default "" ]:
```

Either enter a directory name or press ENTER key to accept the default location, which is *$ORACLE_HOME/*dbs.

The tablespace is not actually created until the installer performs the installation. See step 7 in Installing TIBCO iProcess Engine in Console Mode on page 35.

See Also Configuring the Oracle Schema on page 71.

Control File Keywords IPEI_DBTEMPSPC

Schema Sizing Configuration

Database Connection and Account Details Menu

Description   The `tablesizes` configuration file to be used to size the iProcess Engine database schema.

Value

Installation Type	New Installation	Upgrade Installation
Value	One of the following: 1—(Small) 2—(Medium) 3—(Large) 4—(Custom)	The name of the existing Tablesizes configuration file. You cannot change this value.
Default Value	`1`	
Node Cluster	If you are installing a slave server, the option chosen must be the same as the one used on the master server.	

Notes   This menu item is not displayed if you are upgrading an existing iProcess Engine.

If you want to change the default value, edit the Schema Sizing Configuration entry. The following menu is displayed:

```
Select from the list Schema Sizing Configuration

1 ) Small
2 ) Medium
3 ) Large
4 ) Custom
Enter selection, or Q(uit):
```

Enter the appropriate value for the `tablesizes` configuration file that you want to use:

- **Small**—use the default `tablesizes` file (see The Default iProcess Engine Schema Configuration on page 71). This creates a small database requiring at least 50 MB of disk space.

- **Medium** —use the alternative `tablesizes.med` file supplied in the installation directory (see Use an Alternative tablesizes File on page 75). This creates a medium-sized database, requiring at least 2.5 GB of disk space.

- **Large**—use the alternative tablesizes.large file supplied in the installation directory (see Use an Alternative tablesizes File on page 75). This creates a large-sized database, requiring at least 65 GB of disk space.

- **Custom**—use a customized version of the tablesize file that you have already created (see Use an Alternative tablesizes File on page 75). This creates a database sized to your specific requirements.

If you enter **4** to use a Custom configuration file, the following prompt is displayed:

```
Enter name of configuration file (full path):
```

Enter the full path name of your customized tablesizes file.

See Also   Configuring the Oracle Schema on page 71.

Control File Keywords   IPEI_DBSCHEMA_SIZE, IPEI_DBSCHEMA_CTRLFILE

Appendix D **Usage Profiles for Tablesizes Files**

This appendix shows the usage profiles that have been used to calculate the values used in the alternative tablesizes files, `tablesizes.med` and `tablesizes.large`.

In each file, the sizing of the initial extent is 10% of the maximum estimated tablesize. This means that as the table grows it will expand to fill 10 database extents.

Topics

tablesizes.med File

This file defines tablesizes for a medium-sized installation. If you use this file, you must reserve at least 2.5 GB of disk space for the database.

Statistic	Value
Number of registered iProcess Engine users	200
Number of iProcess Engine groups	10
Number of user-defined attributes	4
Average number of groups a user belongs to	5
Average number of case starts per day	2000
Average number of days before a case is purged	90
Average number of days before a case is closed	30
Average percentage of steps processed via queues	90%
Average number of assigned fields per case	50
Average number of steps processed per case	10
Average number of CustAudits per case	20
Average number of sub-procedure calls per case	3
Average size of field name	10
Average size of field value	50

tablesizes.large File

This file defines tablesizes for a large-sized installation. If you use this file, you must reserve at least 65 GB of disk space for the database.

Statistic	Value
Number of registered iProcess Engine users	9500
Number of iProcess Engine groups	500
Number of user-defined attributes	12
Average number of groups a user belongs to	15
Average number of case starts per day	20000
Average number of days before a case is purged	90
Average number of days before a case is closed	30
Average percentage of steps processed via queues	90%
Average number of assigned fields per case	150
Average number of steps processed per case	25
Average number of CustAudits per case	50
Average number of sub-procedure calls per case	8
Average size of field name	12
Average size of field value	50

Appendix E **Frequently Asked Questions**

This appendix lists some frequently asked questions.

Topics

Does the iProcess Engine Database Support UTF-8

TIBCO iProcess Suite supports Unicode (UTF-8) character encoding natively within its component products. When you install TIBCO iProcess Engine, you have the option to specify whether or not you want your iProcess database to support UTF-8. See Support Unicode Encoding on page 190.

Determining whether or not to support UTF-8 is a major decision. Before you start the installation process, TIBCO recommends that you consult the chapter "Using the TIBCO iProcess Suite in a Multilingual Environment" in *TIBCO iProcess Engine: Architecture Guide*. This sets out the advantages and costs of using UTF-8, both in new installations, and when upgrading existing iProcess installations.

How Do I Decide Which Oracle Database Creation Method to Use

When you install a new iProcess Engine, you can use one of the following methods to create the iProcess Engine tablespaces, users, and schema in the Oracle database:

- Let the installer create the iProcess Engine tablespaces, users, and schema. TIBCO recommends using this method wherever possible. However, to do this, you must have access to an Oracle DB Administrator account when you run the installer.

- Get an Oracle DB Administrator to create the iProcess Engine tablespaces and users *before* you run the installer, as a pre-installation task (see Creating Oracle Accounts and Tablespaces on page 70). Using this method allows you to run the installer without access to an Oracle DB Administrator account.

You can choose the method which best suits the operational, organizational, and security requirements of your particular installation scenario. When you run the installer, you specify which method you are using on the Oracle Database Installation Method Menu on page 172.

How Long Will an Upgrade Take

Upgrading to Version 11.4.1 can involve significant changes to iProcess Engine data and data structures. The upgrade process is therefore complex, and can take a significant amount of time to complete if the system being upgraded has a large amount of case data.

TIBCO cannot provide an estimate of how long the upgrade will take because of the number of customer-specific factors that could have an impact, and the complexity of their interaction, for example, the amount of data in your system, the configuration of your database system, and the hardware setup you are running.

One factor that can significantly impact the duration of an upgrade is enabling case data normalization.

Case data normalization is a feature that is used to make case data searching more efficient, and therefore faster, by enabling the database to do simple string comparisons instead of type conversions.

If you are upgrading from an iProcess Engine version that does *not* already have case data normalization enabled, you can choose to enable case data normalization when you run the installer (see Enable Case Data Normalization on page 143).

If you choose to enable case data normalization, the upgrade process has to create a value for the `field_value_N` column for every row in the `case_data` table. (This column holds a *normalized* value of the `field_value` contents.) Because the upgrade process has to perform this operation on every case of every procedure in the database, this operation can take a significant amount of time if there are large numbers of cases on the system.

TIBCO therefore strongly recommends that you test the upgrade before performing it on your target system, either on a representative production environment, or using a copy of your production system. This will allow you to determine how long the upgrade is likely to take, and to identify any specific factors that may affect the success or duration of the upgrade. If you require further advice or assistance on this, contact TIBCO Support.

How Do I Upgrade TIBCO EMS

TIBCO iProcess Engine version 10.6.*x* was shipped with a version of TIBCO EMS that contains a security vulnerability (EMS 4.4.1 or earlier). See the following link for more information:

http://www.tibco.com/resources/mk/ems_security_advisory_20080115.txt

In order to fix the vulnerability EMS must be updated to version 4.4.2 or later. It is therefore fixed by upgrading EMS to the version required for TIBCO iProcess Engine Version 11.4.1.

Updating EMS

The EMS installer does not currently offer an upgrade option. The install process removes any queues, topics, factories, or other configurations that have been applied to the EMS server and restores to the default configurations.

In order to back up and restore all your existing EMS queues, factories, topics, queue messages, topic messages, and configurations, use the following process:

1. Stop your EMS applications.

2. Stop `tibemsd` and `tibemsadmin`.

3. Make a copy of all `.conf` files and `.db` files found under the `ems/bin` directory and its sub-directories.

4. Uninstall the old EMS version.

5. Install the new EMS version.

6. Replace your `.conf` files and `.db` files from step 3.

For more detailed instructions on how to install and uninstall EMS, see *TIBCO Enterprise Message Service Installation*.

It is important that this configuration is maintained because iProcess features, such as IAPJMS, Technology Plug-ins, and Web Services Plug-in, rely on various EMS queues and topics to function correctly.

IAPJMS-specific Procedure

With a basic iProcess Engine installation, EMS can be used by the IAPJMS process for activity publication.

After the upgrade, IAPJMS will continue to function. IAPJMS uses client JAR files found in the EMS install directory to connect to EMS. As long as the configuration is correct, no other update should be needed.

TIBCO iProcess Web Services Plug-in Specific Procedure

TIBCO iProcess Web Services Plug-in can be configured to use EMS as the JMS provider. In this case, an additional step is required after the EMS upgrade.

Update the `tibjms.jar` file stored under the *$SWDIR*`/jetty-6.1.1/jms/tibco` directory to the new version supplied with the updated EMS server.

> If the new EMS is installed in a different folder to the old one (different versions have different default locations), then you will need to reconfigure the location of the EMS JAR files in *$SWDIR*`/etc/iapjms_classpath.properties`). See the entry:
>
> `classpath.basedir.EMS=/opt/tibco/ems/5.1/lib`

TIBCO iProcess Technology Plug-in Specific Procedure

TIBCO iProcess Technology Plug-in uses EMS to communicate with the BusinessWorks Engine when iProcess Engine > BusinessWorks EAI steps are being defined. The following additional step is required after EMS has been updated:

Update the `tibjms.jar` file stored under the *$SWDIR*`/jmslib/ems` directory to the new version supplied with the updated EMS server.

Appendix F   **Troubleshooting**

This appendix describes how to deal with errors that you may encounter when
installing the iProcess Engine.

If the information in this appendix does not help you resolve the problem, or if
you are in any way unsure as to how to proceed, contact TIBCO Support for
further assistance.

Topics

The Installer Cannot Find a Required OS Utility on the System

Problem Description   When you run the installer, it checks to see if it can find all operating system utilities that it needs, either on the installing user's PATH, or elsewhere on the system. If it cannot find a particular utility, the following message is displayed:

```
ERROR: the OS utility 'UtilityName' cannot be located, and is
required for the TIBCO iProcess Engine installer to run.
```

where *UtilityName* is the name of the missing utility.

The installer then exits.

Affected Database   Oracle, DB2

What To Do   To resolve this problem:

1. Make sure that the *UtilityName* utility is available on the system. Install it if required.

2. If necessary, update the installing user's PATH to include the location where the *UtilityName* utility is installed.

3. Restart the installer.

See Also   See your operating system documentation for more information.

The Installer Cannot Find a Required OS Utility on the User's PATH

Problem Description   When you run the installer, it checks to see if it can find all operating system utilities that it needs, either on the installing user's PATH, or elsewhere on the system. If it cannot find a particular utility on the installing user's PATH, the following message is displayed:

```
WARNING: utility UtilityName is not on the PATH, but has been
located as:
UtilityLocation
Press ENTER to continue.
```

where *UtilityName* is the name of the missing utility, and *UtilityLocation* is the location where the installer has found it.

Affected Database   Oracle, DB2

What To Do   No specific action is required to resolve this problem, since the installer has found the utility it needs. Press ENTER to continue with the installation.

Files and Directories Under *$SWDIR* are Non-writable

Problem Description

When you run the installer to upgrade iProcess Engine and you are logged in as the background user, messages are displayed informing you that directories and files under *$SWDIR* cannot be written to.

For example:

```
There is 1 directory and 98 files under $SWDIR
that cannot be written by the current user.

When running an upgrade as a non-root user, all directories and
files that are located under $SWDIR must be writable by the
non-root user.

Do you want to view the non-writable directories/files ? (Y/N -
default Y):
```

Affected Database

Oracle, DB2

What To Do

To resolve this problem:

1. Enter **Y** to see the list of directories and files that the installer cannot write to. If the list includes iProcess Engine system directories or files, you will need to correct the problem before continuing with the upgrade. However, if the list consists of only user data files (for example, `.xfr` procedure files, user-written utilities, or similar user data files), you can continue, as these will not impact the upgrade.

2. The following prompt is displayed:

```
ERROR: non-writable directories/files under $SWDIR.
Please correct and re-run the upgrade.
Continue with upgrade anyway? (Y/N - default N):
```

3. If you are certain that the non-writable files and directories will not impact the success of the upgrade, enter **Y** to continue.

4. If you need to correct the problem before continuing:

   a. Enter **N** to quit the installer.

   b. Make sure that all directories and files in and under *$SWDIR* are writable. See Setting Up the iProcess Engine System Directory on page 66 for more information about how to do this.

   c. Restart the installer.

Installing on an Incorrect Platform or Database Version

Problem Description

If you try to install or upgrade the iProcess Engine using a distribution set intended for a different operating system and/or database, the installer detects this and displays an appropriate warning message. For example:

```
This distribution is for SunOS, but is being run on HP-UX.
```

The installer then exits.

Affected Database

Oracle, DB2

What To Do

Obtain the correct distribution set for your operating system and/or database, and then restart the installer.

Installing on an Unvalidated Platform or Database Version

Problem Description   If you try to install or upgrade the iProcess Engine using an operating system and/or database version that TIBCO has not validated for use with this version of the iProcess Engine, the installer detects this and displays an appropriate warning message. For example:

```
The version of the OS you are running (SunOS 5.7) is not
a validated platform for this version of the TIBCO iProcess
Engine.
```

TIBCO recommends that you install iProcess Engine using a validated platform and database version. See Basic System Requirements on page 8 for details of these platforms and versions.

Affected Database   Oracle, DB2

What To Do   The following prompt is displayed immediately after the error message:

```
Do you wish to continue with this install (Y/N - default N):
```

If you want to continue with the installation, enter **Y**.

If you do not want to continue with the installation, enter **N**. The following message is displayed:

```
The required pre-requisite conditions for this install have NOT
been met. Terminating the TIBCO iProcess Engine install.
```

The installer then exits. Upgrade your operating system and/or database to a validated version (see Basic System Requirements on page 8) and then restart the installer.

If you are installing iProcess Engine silently, these message are not displayed. Instead, a warning is displayed to the screen, but you do not need to respond. The silent installation continues. See Installing TIBCO iProcess Engine in Silent Mode on page 40.

Oracle DB Administrator Name is Incorrect

Problem Description

When you enter **c** to continue from the Oracle Database Connection and Account Details Menu, the installer performs a series of checks to validate that it can create the iProcess Engine database schema using the supplied information.

The installer displays the following message if it detects that the Oracle DB Administrator Name account that you specify does not have the necessary permissions:

```
The Oracle user UserName is not an Oracle DB Administrator.
```

The Oracle Database Connection and Account Details Menu is then re-displayed.

Affected Database

Oracle

What To Do

To resolve this problem:

1. Either modify the permissions for the specified Oracle DB Administrator Name, or specify a different account to use.

2. Enter **c** to continue from the Oracle Database Connection and Account Details Menu.

No Oracle UNDO Tablespace

Problem Description   The installer displays the following error message when you enter **c** to continue from the Oracle Database Connection and Account Details Menu:

```
This Oracle instance does not have an UNDO tablespace defined.
You cannot continue the installation without an UNDO tablespace.
```

The Oracle Database Connection and Account Details Menu is then re-displayed.

The installer cannot create (or upgrade) the iProcess Engine database schema without an UNDO tablespace.

Affected Database   Oracle

What To Do   To resolve this problem:

1. Make sure that the Oracle database is running and that your computer has a network connection to it.

2. Make sure that an Oracle UNDO tablespace exists for the iProcess Engine database. Create one if it does not. See:

    — your Oracle documentation for more information on how to create and manage UNDO tablespaces.

    — Disabling Oracle Flashback Query on page 81 for more information about Oracle's flashback query feature and its impact on the amount of UNDO tablespace you require.

3. Enter **c** to continue from the Oracle Database Connection and Account Details Menu.

Oracle TAF is Not Enabled

Problem Description

The installer displays one of the following error messages when you enter c to continue from the Oracle Database Connection and Account Details Menu:

Error	Meaning
`This Oracle connection does NOT have TAF enabled, you can still continue, but if this installation is to be used in a UAT or Production environment you MUST enable TAF (Failover).` `Continue without TAF enabled?`	The installer has connected to the Oracle database and determined that Oracle TAF is not enabled for the specified Oracle DB TNS Identifier.
`Unable to determine if TAF is enabled for this Oracle connection.`	The installer has attempted to connect to the Oracle database to determine if Oracle TAF is enabled, but has been unable to do so.

TIBCO strongly recommends the use of Oracle TAF with the iProcess Engine to provide 24*7 resilient operation.

If you are deploying the iProcess Engine for user acceptance testing (UAT), or to a production environment, you must enable TAF.

The Oracle Database Connection and Account Details Menu is then re-displayed.

Affected Database

Oracle

What To Do

If you want to enable TAF before continuing with the installation:

1. Make sure that the Oracle database is running and that your computer has a network connection to it.

2. Enable TAF for the specified Oracle DB TNS Identifier.

3. Enter c to continue from the Oracle Database Connection and Account Details Menu.

If you want to continue with the installation without enabling TAF, enter Y.

Oracle Advanced Queuing is Not Correctly Installed or Configured

Problem Description

The installer displays one of the following error messages when you enter **c** to continue from the Oracle Database Connection and Account Details Menu:

Error	Meaning

`This Oracle connection does NOT have Advanced Queuing installed.`
 	
`Oracle Advanced Queuing (AQ) is required for TIBCO iProcess Engine install.`
	The installer has connected to the Oracle database and determined that Oracle Advanced Queuing is not installed for the specified Oracle DB TNS Identifier.

`A test of Oracle AQ system failed with the following errors: errors`	The installer has connected to the Oracle database to determine if Oracle Advanced Queuing is installed, but the test has failed with the specified Oracle errors.
`Failed to determine whether Oracle AQ is correctly installed`	The installer has attempted to connect to the Oracle database to determine if Oracle Advanced Queuing is installed, but has been unable to do so.

The Oracle Database Connection and Account Details Menu is then re-displayed.

Oracle Advanced Queuing provides the message queuing and event handling systems used by the iProcess Engine. The iProcess Engine will not work if Oracle Advanced Queuing is not installed.

Affected Database

Oracle

What To Do

To resolve this problem:

1. Make sure that the Oracle database is running and that your computer has a network connection to it.

2. Make sure that Oracle Advanced Queuing is installed. Refer to your Oracle documentation for more information about installing Advanced Queuing.

3. Enter **c** to continue from the Oracle Database Connection and Account Details Menu.

Oracle OPEN_CURSORS Value Is Less Than 200

Problem Description

The installer displays one of the following error messages when you enter c to continue from the Oracle Database Connection and Account Details Menu:

Error	Meaning
WARNING: This Oracle instance has the OPEN_CURSORS parameter configured as *150*. It should be set to 200 or greater before running this *install* of TIBCO iProcess Engine.	The installer has connected to the Oracle database and determined that its OPEN_CURSORS parameter is configured to a value less than 200.
Failed to get the current value of the Oracle OPEN_CURSORS parameter. Oracle returned the following text : *error*	The installer has attempted to connect to the Oracle database to determine the value of the Oracle OPEN_CURSORS parameter, but has been unable to do so.

The Oracle Database Connection and Account Details Menu is then displayed again.

Affected Database

Oracle

What To Do

To resolve this problem:

1. Make sure that the Oracle database is running and that your computer has a network connection to it.

2. Make sure that Oracle Advanced Queuing is installed. See your Oracle documentation for more information about installing Advanced Queuing.

3. Enter c to continue from the Oracle Database Connection and Account Details Menu.

Cannot Determine the DB2 Fenced User Name

Problem Description   The installer displays the following error message and prompt when you enter c to continue from the DB2 Database Connection and Account Details Menu:

```
ERROR: Cannot determine the DB2 Fenced User name - check this is
configured.

If this is a remote DB2 installation, enter the remote Fenced
User name (Return if none) :
```

The DB2 Database Connection and Account Details Menu is then re-displayed.

The installer has been unable to determine the name of the UNIX account that is used to run *fenced* stored procedures from the DB2 database, either because it cannot contact the database, or because the database is remote.

> Fenced stored procedures are run outside of the address space used by the DB2 database, to protect the database if a problem occurs in the stored procedure.

Affected Database   DB2

What To Do   To resolve this problem:

1. Make sure that the DB2 database is running and that your computer has a network connection to it.

2. Enter the name of the UNIX account that is used to run fenced stored procedures, or press ENTER to accept the default value.

Errors Occur on Validating the Installation

Problem Description

The installer displays one or more error messages when it attempts to validate that the installation has succeeded (see Installing TIBCO iProcess Engine in Console Mode, step 7). For example:

```
ERROR: process information unobtainable.
```

Affected Database

Oracle, DB2

What To Do

To resolve this problem, locate the error message in the following table and follow the instructions there.

Error Message	What to Do...
`Process information unobtainable.`	The installer cannot access the `process_config` table in the database schema (using the *$SWDIR*/util/swadm `show_processes` command), which appears to be incomplete or corrupt.
	To resolve this problem:
	1. Remove iProcess Engine (see Chapter 3, Uninstalling iProcess Engine, on page 51) or, if you were upgrading, restore the original version (see Restoring Your Original System if an Upgrade Fails on page 223).
	2. Reinstall iProcess Engine.

Error Message	What to Do...
Sentinel `service port` (*portNumber*) `already used, in state` *state*	Another application appears to be using the *portNumber* service port selected for use by the indicated *Sentinel* (either `Watcher` or `Worker`) Process Sentinel process.
	To resolve this error:
	1. Restart the UNIX system and check if these ports are still in use. (You can use the system `netstat` utilities to check which ports are in use.)
	2. If the problem persists, assign different port numbers to be used by the iProcess Engine watcher and worker process sentinels by editing the relevant entries in the `/etc/services` file. The entries are:
	nodename`_worker` *nnn*`/tcp` *nodename*`_watcher` *mmm*`/tcp`
	where:
	— *node_name* is the nodename of this iProcess Engine.
	— *nnn* and *mmm* must be unique numbers in the `services` file depending on what port numbers are already being used on the server.
	For example:
	`staffw_nod1_watcher 1500/tcp` `staffw_nod1_worker 1501/tcp`
`Failed to find` *Sentinel* `entry for this node in the /etc/services file.`	The installer has been unable to update the `/etc/services` file with the port number to be used by the indicated *Sentinel* (either `Watcher` or `Worker`) Process Sentinel process.
	This is not a fatal error, as the iProcess Engine can still run without these entries. However, TIBCO recommends that you manually add the port numbers used by the iProcess Engine watcher and worker process sentinels to the `/etc/services` file before starting the iProcess Engine.
	See the entry above for details of the `/etc/services` file entries you need to add.

Error Message	What to Do...
`RPC Number <RPCNum> is already registered with the system's portmapper.`	The *RPCNum* RPC service number selected for iProcess Workspaces to use to communicate with this iProcess Engine appears to be in use by another application. To resolve this problem: 1. Restart the UNIX system and check if the indicated *RPCNum* is still in use. (You can use the system `rpcinfo` utility to see which numbers are registered with the portmapper.) 2. If the problem persists, change the *RPCNum* used by the iProcess Engine by editing line 11 of the *$SWDIR*/`swdefs` file. See *TIBCO iProcess Engine Administrator's Guide* for more information about the *$SWDIR*/`swdefs` file.
`Failed to get nodename from Database.`	The installer cannot read the iProcess Engine nodename from the `nodes` table in the database (using the *$SWDIR*/`util/plist -n` command). To resolve this problem: 1. Check that the database is running. 2. Check that the iProcess Engine database users (see iProcess Engine DB Schema Owner Name on page 184) have been created, and that these users can successfully connect to the database using the login credentials given during the installation process. (See Changing Database Connection Passwords on page 222 for more information about how to change the passwords used by these users to connect to the database.)
`Nodenames from Database (`*nodeName1*`) and swdefs file (`*nodeName*`) do not match.`	To resolve this problem: 1. Uninstall the iProcess Engine (see Chapter 3, Uninstalling iProcess Engine on page 51), or, if you were upgrading, restore the original version (see Restoring Your Original System if an Upgrade Fails on page 223). 2. Reinstall the iProcess Engine.

If the procedures described above do not resolve the problem, contact TIBCO Support for assistance.

Changing Database Connection Passwords

If you need to change the passwords that the iProcess Engine DB Schema Owner Name account or the iProcess Engine DB User Name account use to connect to the database, follow this procedure:

1. Log in as the iProcess Engine Administration User Name.

2. Enter the following command:

```
$SWDIR\util\swconfig -u
```

The following prompt is displayed:

```
 Please enter a new Background User Password, ('Q' to quit):
```

3. Enter the new password for the iProcess Engine DB Schema Owner Name account. The following prompt is displayed:

```
Please enter a new Foreground User Password, ('Q' to quit):
```

4. Enter the new password for the iProcess Engine DB User Name account.

    The swconfig utility terminates and displays the following message:

```
Now log onto the Database and change the passwords.
```

5. Change the corresponding Oracle (for Oracle users) or UNIX (for DB2 users) passwords for these users. See your Oracle or UNIX documentation for more information about how to do this.

Restoring Your Original System if an Upgrade Fails

**Problem
Description**

In some circumstances, it is possible that an upgrade can fail and leave the iProcess Engine system in an unusable condition. If this happens:

1. You must restore your original system to its previous condition before you can either use it or attempt to upgrade it again.

2. If you suspect that:

   — the error was caused by an external factor (for example, a system hardware failure while the upgrade was in progress), you can, if you wish, attempt to upgrade the system again.

   — the error was connected with the upgrade process itself (for example, the installer crashes for unknown reasons), TIBCO recommends that you *do not* attempt to upgrade again. Instead, you should contact TIBCO Support for further assistance.

**Affected
Database**

Oracle, DB2

What to Do

To restore your original system:

1. Restore the backup of the iProcess Engine database schema that you made earlier (see Backing up TIBCO iProcess Engine Database Schema on page 58). See your database documentation for more information about how to do this.

2. Make sure that *$SWDIR* points to the correct iProcess Engine installation, then delete the *$SWDIR* directory and its contents. (If you are not logged in as root, you should ask the root user to perform this task.)

3. Restore the backup of the *$SWDIR* directory structure that you made earlier (see Backing Up the TIBCO iProcess Engine File System on page 56). See your operating system documentation for more information about how to do this.

4. Use the following command to grant appropriate permissions on all files in and under *$SWDIR*:

```
$SWDIR/bin/fixperms -r -y $SWDIR
```

Your original system should now be restored to the same state it was in before you attempted to upgrade it.

Bad Username Or Password

Problem Description
The following message:

```
L024 SECURITY ERROR: Bad username or password
```

is returned on a new installation, even though the username and password specified have been validated as correct.

Affected Database
Oracle, DB2

What to Do
Check the permissions of etc/swrpcudp. The setuid flag should be set for both the owner and the group:

```
-r-sr-s--- 1 root staffwar 484904 Mar 26 2008 swrpcudp
```

If this is set correctly, also check the mount options of the file system, using the mount -p command. This example shows the mount output for a /tibco file system:

```
dev/vgtibco/lvtibco /tibco vxfs
nosuid,ioerror=mwdisable,delaylog,nodatainlog,dev=40010001 0 0
```

The file system in this case has disabled the ability of iProcess Engine to use setuid, which is a requirement for password verification on UNIX. Remount the file system without the nosuid limitation to enable iProcess logins with password verification.

swrpcsvr Crashes When Starting iProcess Engine

Problem Description

When starting iProcess Engine using JRE 1.6 with Solaris 10 on a Oracle T*xxxx* server, the swrpcsvr crashes with the following, or similar, messages in the log files:

In the rpc_tcp_li01.log file,

```
j004:
==>start_class(com.iProcess.core.swjmx.library.IProcessSwjmx, 2)
```

In the swjmx_java.log file,

```
SWJMXUtils - Creating RMI registry
```

Affected Database

Oracle

What to Do

To resolve this problem, disable the hardware cryptography using the command:

cryptoadm stop

For more information on hardware cryptography, see your operation system documentation.

The Installer Fails with an "Unable to Open the File" Warning Dialog

Problem Description

When you run the installer, a Warning dialog is displayed with the following message:

```
Unable to open the file: fil.dll
```

You can only click the **OK** button to this dialog, and when you do so, the installer exits.

This error occurs if you do not have the correct Oracle database and/or client releases (along with any additionally required patches or components) installed on the computer where you are trying to install the iProcess Engine.

The `fil.dll` file requires the Oracle client `.dll` files to be able to connect to the Oracle database. When the installer starts up, it tries to load the `fil.dll` file, which in turn attempts to load the required Oracle `.dll` files. If these files cannot be found, the error occurs.

What to Do

Install the required Oracle database and(or) client release on the computer where you are trying to install the iProcess Engine. See Oracle Database on page 16 for more information.

Make sure that you have also installed any additional patches or components that are required.

iProcess Engine Cannot Start

Problem Description When you install iProcess Engine with the Oracle database 11g, if the Oracle server and client have been installed on an x86 platform and a non-x86 platform respectively, iProcess Engine cannot start after installation.

This is an Oracle defect. See Oracle Documentation 1306192.1 for more information.

What to Do To resolve this problem, complete the following steps:

1. Log in to SQLPlus using the system account.

2. Run the following statement:

   ```
   alter system set events='10867 trace name context forever, level
   1';
   ```

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