

## Installation Guide



# SAP Workforce Management (WFM) application 3.1

Document Version 1.00 – March 2, 2009



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## Typographic Conventions

Type Style	Description
Example Text	Words or characters quoted from the screen. These include field names, screen titles, pushbuttons labels, menu names, menu paths, and menu options. Cross-references to other documentation
Example text	Emphasized words or phrases in body text, graphic titles, and table titles
EXAMPLE TEXT	Technical names of system objects. These include report names, program names, transaction codes, table names, and key concepts of a programming language when they are surrounded by body text, for example, SELECT and INCLUDE.
Example text	Output on the screen. This includes file and directory names and their paths, messages, names of variables and parameters, source text, and names of installation, upgrade and database tools.
Example text	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
<Example text>	Variable user entry. Angle brackets indicate that you replace these words and characters with appropriate entries to make entries in the system.
EXAMPLE TEXT	Keys on the keyboard, for example, F2 or ENTER.

## Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Additional icons are used in SAP Library documentation to help you identify different types of information at a glance. For more information, see *Help on Help* → *General Information Classes and Information Classes for Business Information Warehouse* on the first page of any version of *SAP Library*.

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# 1 Introduction

## Purpose

The SAP Workforce Management application (WFM) is composed of the following components:

- SAP Workforce Management (ABAP and non-ABAP components)
- Business Package for Retail
- iTime Clock Server

WFM performs the complex process of creating optimum employee schedules utilizing business variables entered during implementation and actual sales and traffic data or contact data. Within the solution, flexible forecasting:

- Allows you to model work at your locations to create a forecast that best represents your actual requirements.
- Enables you to effectively align the workforce scheduling strategy at each location with the goals of the corporation, the expectations of customers, and the career needs of your employees.

Once it has been generated, WFM uses the forecast to calculate the best possible floor schedule while balancing such weighted variables as staffing needs, employee skill levels, payroll requirements, employee availabilities and workplace rules. The result – scheduling is transformed from a necessary, tedious, clerical function into an analytical, cost-effective, business management process.

You create and maintain employee schedules within WFM accessing the content of the Business Package for Retail through SAP Enterprise Portals.

Additionally as part of the overall Workforce Management application, you can utilize iTime Clock to:

- Capture employee punch data
- Perform employee punch exception message processing
- Perform pre-payroll calculation of hours worked, benefit hours calculations, accrual balance(s), and punch data allowing you to make this information available to SAP HCM or other third-party time management solutions

This document describes the process of installing the WFM application components.

## Implementation Considerations

If you want to install the component SAP Workforce Management in the context of the implementation of an SAP Business Suite solution or one of its business scenarios, it is essential that you familiarize yourself with the contents of the corresponding Master Guide before starting to install. The Master Guide is the central document for the implementation of SAP Business Suite solutions and business scenarios. It lists the components and third-party applications required by each business scenario of a SAP Business Suite solution, and refers to the required installation and upgrade guides. It also defines the installation sequence of the business scenarios of the corresponding SAP Business Suite solution.

Depending upon your organizational requirements, you can implement iTime Clock either as a central application or in a distributed environment.

## **Integration**

WFM is installed as a standalone application. You can integrate WFM to SAP ECC to take advantage of HCM processing capabilities. In this scenario, personnel information is available to WFM and changes to manager's making personnel information changes within WFM are reported back to HCM. Additionally, if utilizing iTime Clock you can perform pre-payroll calculation of hours worked, benefit hours calculations, accrual balance(s), and punch data allowing you to make this information available to HCM.



## 1.2 Before You Start

The following sections provide information about:

- SAP Notes for the Installation
- Information Available on SAP Service Marketplace
- Naming Conventions

## 1.2.1 SAP Notes for the Installation

You **must** read the following SAP Notes **before** you start the installation. These SAP Notes contain the most recent information on the installation, as well as corrections to the installation documentation.

Make sure that you have the up-to-date version of each SAP Note, which you can find in the *SAP Service Marketplace* at the Internet address:

`service.sap.com/notes`.

SAP Note Number	Title	Description
1290989	Installing RTLWFM on NetWeaver 7.0	Installing SAP Workforce Management (WFM) application 3.1 ABAP portion using SAINT
1145240	SAP Workforce Management 3.1 Java configuration	Provides more details on Java configuration for WFM 3.1
1290362	SAP Workforce Management application 3.1 SP00	Release information
1246568	WFM/ITC cannot run on a SAP J2EE Engine with 2 server nodes	Workforce Management applications (including iTime Clock) cannot run on a SAP J2EE Engine that has 2 server nodes.
1005145	WFM or WFMCS Java application cannot connect to WFM back-end	Information about the prerequisites for the JCO (SAP Java Connector) connection to the WFM ABAP back-end system.

## 1.2.2 Information Available in SAP Service Marketplace

Information on the following areas is available in the SAP Service Marketplace.

### Documentation

Description	Internet Address	Title
SAP NetWeaver 7.0	SAP Service Marketplace: <a href="http://service.sap.com/swdc">http://service.sap.com/swdc</a> → Downloads → Installation and Upgrades → Entry by Application Group. Choose SAP NetWeaver → SAP NetWeaver → SAP NetWeaver 7.0 → Installation and Upgrades. Navigate to the desired OS and Database.	<i>Installation and Upgrades</i>

### General Quick Links

Description	Internet Address	Title
SAP Notes	<a href="http://service.sap.com/notes">service.sap.com/notes</a>	–
Released platforms	<a href="http://service.sap.com/platforms">service.sap.com/platforms</a>	–
System sizing	<a href="http://service.sap.com/sizing">service.sap.com/sizing</a>	<i>Quick Sizer tool</i>
Front-end installation	<a href="http://service.sap.com/instguides">service.sap.com/instguides</a>	<i>Front End Installation Guide</i>
Security	<a href="http://service.sap.com/security">service.sap.com/security</a>	–
Enterprise Portal Installation	<a href="http://service.sap.com/epinstall">service.sap.com/epinstall</a>	–

## 1.2.3 Naming Conventions

In this documentation, the following naming conventions apply:

### Terminology

The terms Calculation Server and Application Server refer to the physical machine on which you deploy the Workforce Management components.

The terms Calculation Services and Application Services refer to the software components that are deployed onto the Calculation Server and Application Server, respectively.

### Variables

Variables	Description
<SAPSID>	SAP system ID in uppercase letters
<sapsid>	SAP system ID in lowercase letters
<DBSID>	Database system ID in uppercase letters
<dbsid>	Database system ID in lowercase letters
<INSTDIR>	Installation directory for the SAP system
<CD-DIR>	Directory on which a CD is mounted
<DVD-DIR>	Directory on which a DVD is mounted
<OS>	Operating system name within a path
<epip>	Enterprise Portal Host IP Address

In addition, the following table describes the variables specific to SAP WFM. If your configuration uses only a single calculation server host machine, that machine is the Central Calculation Server. If your implementation uses multiple calculation server host machines, then you will be asked to define one of those hosts as the Central Calculation Server.

Variables	Description
<J2EEHOST>	SAP J2EE Host Name where the software component is deployed
<J2EEHTTTPORT>	SAP J2EE HTTP Port Number where the software component is deployed

The following examples show how the variables are used:



- Log on as user <sapsid>adm and change to the directory /usr/sap/<SAPSID>. If your SAP system ID is C11, log on as user c11adm and change to the directory /usr/sap/C11.

- Change to the directory <CD-DIR>/UNIX/<OS>.  
If the CD is mounted on /sapcd1 and your operating system is AIX, change to /sapcd1/UNIX/AIX\_64.

## 2 Planning

Before installing the SAP WFM application, ensure that:

- You have installed and configured all the required software components and supporting systems including:
  - SAP Enterprise Portals
  - SAP NetWeaver
- Optionally install and configure SAP ECC and/or SAP CRM if using these components within your implementation.
  - You require SAP ECC only if you are integrating WFM with HCM
  - If you are installing WFM on CRM there are BADIs you will require regarding Business Partner
- You have sized all components accordingly.
- You have taken all applicable SAP R/3 security measures.
- You have the following access:
  - **SAP\_ALL** access for SAINT
  - **SAP\_WFM\_RETAIL\_MANAGER** role for access to the WFM and iTime Clock enterprise portal
  - **S\_ENTW\_SHOW** profile for administrator access to calculation services

# 3 Preparation

Careful planning is a prerequisite for a successful SAP WFM installation. To determine what configuration is appropriate for your implementation, answer the following questions:

- How many employees or resources will your system schedule?
- How many users will access the system?
- Will multiple sites require access to a single, shared calculation server?
- What other applications (SAP or third-party applications) share the machine on which you will deploy WFM components?

## 3.1 Checking Hardware and Software Requirements

The following table lists the requirements.

The host machine must meet the following requirements:

Requirement Type	Requirement
Hardware Requirements	<ul style="list-style-type: none"> <li>• Disk Space: 512 MB EIDE, SCSI or ATA 66 disk</li> <li>• RAM: 1 GB memory</li> <li>• Intel Pentium 4, 2 GHz</li> </ul> <p>The hardware requirements for SAP WFM 3.1 are mainly dependent on the requirements of the J2EE engine and vary depending on the size of the implementation.</p>
Software Requirements	<ul style="list-style-type: none"> <li>• SAP Workforce Management 3.1</li> <li>• NetWeaver 7.0</li> <li>• Business Package for Retail 3.1</li> </ul>
Operating System / Platform Requirements	SAP WFM 3.1 supports all NetWeaver 7.0 platform / database combinations.



The recommendations are the minimum requirements.

### 3.1.1 Hardware Requirements for Calculation Server

Number of Employees to be scheduled	Minimum WFM Deployment Configuration	Minimum Hardware Recommendations
Fewer than 1,000	Single Server	Intel Pentium 4, 2 GHz, 1 GB memory, 512 MB EIDE, SCSI or ATA 66 disk
1,000 to 2,000	Dual Implementation	2 x Intel Pentium 4, 2GHz, 2GB memory, 1 GB EIDE, Wide SCSI or ATA 100 disk
More than 2,000	Distributed Implementation	4 x Intel Pentium 4, 2GHz+, 4GB memory, 2 GB EIDE, UltraWide SCSI or ATA 100/133 disk.

### 3.1.2 Hardware Requirements for iTime Clock

Beside the standard minimum hardware requirements, we recommend allowing 2GB of storage for every 50,000 employees using the iTime Clock instance. This is based on maintaining two weeks of punch data and assumes that the data purge is scheduled so that it removes records older than two weeks.



## **3.2 Non-Production Systems**

This document describes the process for installing WFM 3.1 in a production environment. For a productive business implementation, it is unlikely that you would want to deploy WFM application and calculation services on the same machine. The complex optimization algorithms used to calculate the schedule place a heavy load on system resources and could render other applications unusable while the calculation is underway.

It is important to note that this is not an architectural limitation, but rather a performance one. In non-production landscapes, such as those used for testing, training, or development, calculation requests are usually less frequent and less complex. The load placed on calculation services would be much lower than what would typically be observed in a production environment. Therefore, to minimize implementation costs, all WFM components can be deployed on a single machine for testing, training, or development purposes. This machine can also host other non-production SAP or third-party applications.

### 3.3 Data Archiving

SAP WFM utilizes standard SAP archiving tools (for both ABAP and Java data) to archive and delete data from the SAP WFM database. For information on administrative requirements, see the archiving documentation available at [help.sap.com](http://help.sap.com) → *SAP for Industries* → *SAP for Retail* → *SAP Workforce Management*.

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## 4 Installation

The following sections outline the deployment of the SAP WFM installation process.

- Deploy the Retail Workforce Management (ABAP) Component
- Deploy the non-ABAP Components for SAP WFM
- Connect the SAP Enterprise Portal and SAP Business Warehouse (BI)

## 4.1 Deploy the Retail Workforce Management (ABAP) Component

### Use

This procedure tells you how to install the Retail Workforce Management ABAP component (RTLWFM 3.1). RTLWFM 3.1 contains all necessary ABAP classes and libraries required for SAP WFM. You use the SAP Add-On Installation Tool (transaction **SAINT**) to install the component.



For complete information on SAINT see *SAP Service Marketplace* → *SAP Support Portal* → *Release & Upgrade Info* → *Installation and Upgrade Guides* → *Industry Solutions* → *Add-On Components* → *SAINT Documentation*.

### Procedure

1. Log on to your ABAP system.
2. Install RTLWFM 3.1 using transaction SAINT as described in SAP Note 1290989.

## 4.2 Deploy the non-ABAP Components for SAP WFM

### Use

The non-ABAP portion of SAP Workforce Management application (SAP WFM) is delivered with the following non-ABAP software components:

.SAC File	Application Names (in the <J2EE-DIR>\cluster\server0\sap.com folder\)	Description
ISRWFM<SP-level>_0.sca	is~wfm~app is~wfmcs~app	Workforce scheduling and forecasting
ITIMECLOCK<SP-level>_0.sca	is~itc~app is~itcadmin~app	iTime Clock Service and iTime Clock Administration; used to manage employee time data
BPRETAIL<SP-level>_0.sca	is~pct~isretail~pcd is~pct~isretail~wfm is~pct~isretail~wfmcs	Business package portal content and .par files

You can choose to deploy the software components either on a single server or in a multiple server environment. SAP Enterprise Portal is required for a single server environment.

### Prerequisites

You have successfully completed the installation and configuration of SAP NetWeaver 7.0.



You can download the NetWeaver 7.0 DVD from SAP Service Marketplace: <http://service.sap.com/swdc> → Downloads → Installation and Upgrades → Entry by Application Group. Choose SAP NetWeaver → SAP NetWeaver → SAP NetWeaver 7.0 → Installation and Upgrades. Navigate to the desired operating system and database.

You have applied the required SAP Stack and patches.



You can download the SP Stack from SAP Service Marketplace: <http://service.sap.com/sp-stacks>.

If using multiple servers, you have successfully completed the installation and configuration of AS Java. For multiple servers:

- BPRETAIL<SP-level>\_0.sca must be deployed on a server where SAP Enterprise Portal has been installed
- ISRWFM<SP-level>\_0.sca and ITIMECLOCK<SP-level>\_0.sca must be deployed on a server where AS Java has been installed.

### Procedure

1. Ensure that SAP NetWeaver 7.0 – Enterprise Portal is started and has been successfully configured.
2. Insert the SAP WFM Installation CD or DVD. If you are downloading the installation files, save them to your hard disk.
3. Copy or move the SCAs you want to deploy in the global EPS directory:  
`/usr/sap/trans/EPS/in.`
4. Start the Java Support Package Manager (JSPM) to deploy the software component archives. The JSPM tool is part of every NetWeaver 7.0 installation.
5. Choose the *Deployment* tab. JSPM guides you through the process of deploying the new software components via a wizard, which consists of the following five steps:
  - Select Package Type
  - Specify Queue
  - Check Queue
  - Deploy Queue
  - Completed

6. Select *Package Type*.
  - For a new installation, choose the *New Software Components* indicator.
  - If you currently have WFM 3.0 installed, choose *Business and Enhancement Packages*.
  - Once you have selected the package type, choose *Next*.

You see software components that are available for deployment from the global EPS inbox directory.

7. Choose the software components:
  - BPRETAIL<SP-level>\_0.sca
  - ISRWFM<SP-level>\_0.sca
  - ITIMECLOCK<SP-level>\_0.sca

In a multi-server implementation, ISRWFM<SP-level>\_0.sca and ITIMECLOCK<SP-level>\_0.sca must be deployed on a server where AS Java has been installed.

8. From the *SP Level* dropdown box, select the SP level you want and choose *Next*.
9. The status of the software components you selected can be *OK*, *Warning*, or *Revise*.

If the status is either *OK* or *Warning*, you can continue with the deployment and choose *Next*. You can view the details about the software component by choosing *Show Details*.

If the status is *Revise*, you cannot go on with the deployment. You have to change the content in the global EPS inbox directory and go back to the wizard step *Select Package Type*.

10. JSPM performs *the Deploy Queue* step, starts the deployment of the selected software components, and changes the status to *Scheduled*.
11. JSPM deploys the software components and displays the status:
  - *Deployed* – the component has been deployed
  - *Deployed with Warning* – the component has been deployed

- *Error* – an error has occurred and you must go back to the wizard step *Deploy Queue*. You correct the error by changing the content of the Global EPS Inbox Directory and then choose *New Deployment* to re-start the process.

Successfully deploying a component does not ensure it will work properly with other deployed software components. Should this occur, choose *Show Details* to view details about the software component.

12. If the deployment of the software components finishes with the status *Deployed*, you can choose *New Deployment* or *Exit*.
13. Restart the SAP NetWeaver 7.0 – Enterprise Portal.

## 4.3 Connect the SAP Enterprise Portal and SAP BI

### Use

To facilitate integration between SAP Enterprise Portal (EP) and SAP Business Information Warehouse (BW).

### Prerequisites

1. The RFC destination has been established for the communication from in SAP Business Information Warehouse (BW) to SAP R/3 where the SAP WFM application runs.
2. The source system for R/3 system has to be defined for that RFC in BW.
3. The WFM data sources in the R/3 system have to be replicated and then activated in BW.
4. The BI Content 7.0.3 SP04 Feature Pack is activated for the source system in BW.



## 5 Post-Installation Steps

This section covers the post installation steps for:

- WFM
- iTime Clock
- Business Package for Retail

## 5.1 Post Installation Steps for WFM

You must perform the following steps to check and configure the WFM Application Services (WFM AS) and WFM Calculation Services (WFM CS):

- Configure WFM Application and Calculation Services
- Check WFM calculation services
- Check the installation of WFM AS/CS

## 5.1.1 Configure WFM Application and Calculation Services

### Use

WFM Application Services (WFM AS) sends calculation and forecasting requests to a WFM ABAP back-end system. WFM Calculation Services (WFM CS) picks up the requests from this WFM ABAP back-end system. You define the connection to the WFM ABAP back-end system through configuration administration.



If WFM Application Services and WFM Calculation Services are running on the same J2EE server instance, then you only need to configure WFM Calculation Services because WFM AS and WFM CS share the same configuration.

The `cs.jco.xxxxxx` configuration parameters define the JCO connection to the SAP WFM ABAP system where the WFM CS maintains forecast and calculation requests. You can connect to the WFM ABAP system using one of the following:

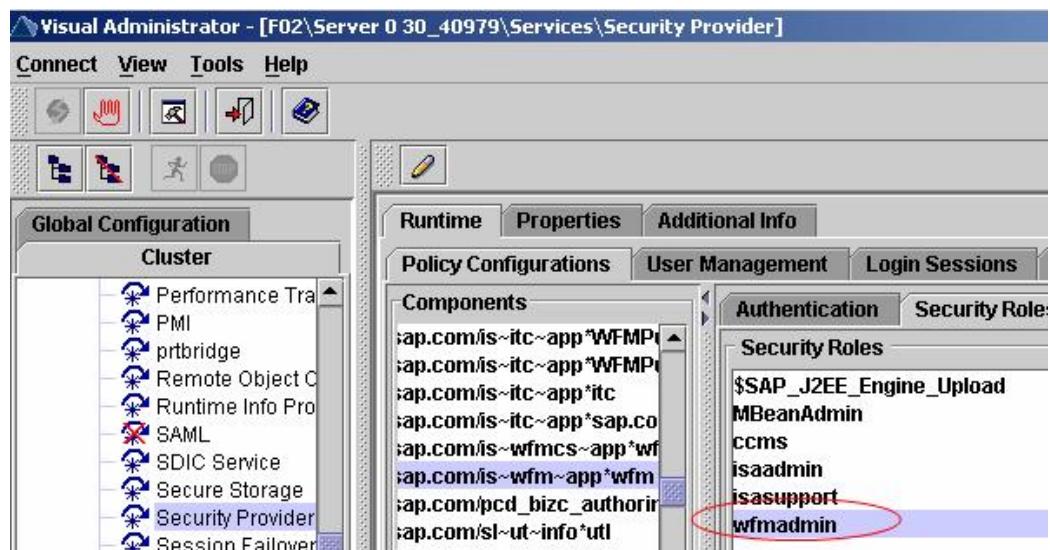
- A message or dispatching server by specifying `cs.jco.mshost`, `cs.jco.group`, and `cs.jco.r3name`
- An application server by specifying `cs.jco.ahost` and `cs.jco.sysnr`

In either case, you must also specify: `cs.jco.client`, `cs.jco.user`, and `cs.jco.password`.

Use this procedure to configure the WFM Application.

### Prerequisites

In order to access the WFM / WFMCS configuration pages, you must have the security role `wfadmin` for the wfm and wfmcs applications:



## Procedure

1. Access the WFM application configuration tool using the following URL:  
<http://<J2EEHOST>:<J2EEHTTTPORT>/wfm/admin/Config.do?>
2. Enter the following settings:

Settings	Description
cs.jco.ashost	Application server host name of the SAP WFM ABAP system
cs.jco.sysnr	System number of the SAP WFM ABAP system (for example, 09)
cs.jco.mshost	Message server host name of the SAP WFM ABAP system
cs.jco.group	Group of the SAP WFM ABAP system (case sensitive; for example, PUBLIC)
cs.jco.r3name	System ID of the SAP WFM ABAP system (for example, IDES)
cs.jco.client	Client of the SAP WFM ABAP system
cs.jco.user	Back-end user for JCO connection to the SAP WFM ABAP system
cs.jco.passwd	Password for the SAP WFM back-end user

3. Save your entries.  
You see the message "You must restart the application for the saved settings to take effect"
4. Restart the application.
5. Access the WFM Calculation Services configuration tool using the following URL:  
<http://<J2EEHOST>:<J2EEHTTTPORT>/wfmcs/admin/Config.do?>
6. Enter the following settings:

Settings	Description
cs.http.port	The http port of the web server where the wfmcs application is running (for example, 50000)
cs.jco.ashost	Application server host name of the SAP WFM ABAP system
cs.jco.sysnr	System number of the SAP WFM ABAP system (for example, 09)
cs.jco.mshost	Message server host name of the SAP WFM ABAP system
cs.jco.group	Group of the SAP WFM ABAP system (case sensitive; for example, PUBLIC)
cs.jco.r3name	System ID of the SAP WFM ABAP system (for example, IDES)
cs.jco.client	Client of the SAP WFM ABAP system
cs.jco.user	Back-end user for JCO connection to the SAP WFM ABAP system
cs.jco.passwd	Password for the SAP WFM back-end user

7. Save your entries.  
You see the message "You must restart the application for the saved settings to take effect"
8. Restart the application.

For more information see SAP Note 1145240.

## 5.1.2 Verify You Can Access WFM Configuration

### Use

After configuring Workforce Management Calculation Services (WFM CS) and restarting the application, you need to go to the WFM CS configuration page to check that it is running.

### Prerequisites

- You have completed the WFM Application Service (AS) and CS installation procedures as described in this document.
- You have installed the Business Package for Retail 3.1 and performed the post-installation steps for the business package (see *Section 5.3 Post Installation Steps for the Business Package for Retail* [page 46]).
- You must have access to the Retail Workforce Manager role in the Enterprise Portal to complete this part of the WFM AS and CS installation.

### Procedure

1. Access the WFM CS configuration page through the Enterprise Portal using the role Retail Workforce Manager.
2. Choose *Workforce Management* → *WFM Calculation Services* → *Configuration*.

You see the configuration page which contains the following sections:

Tab	To Complete Installation	For ongoing Configuration Management
<i>Calculation Servers</i>	Required for each additional calculation server	Required for each additional calculation server
<i>Logging Localization</i>	No	Required to add or change logging once fully operational

3. Save your entries.

## 5.1.3 Verify the Installation of WFM AS and WFM CS

### Use

This section tells you how to check that the Workforce Management Application Services (WFM AS) and WFM Calculation Services (WFM CS) Java components are each installed correctly and are listening for HTTP requests.

With the procedure below you can create a simple calculation request and verify that the Calculation Server has received the request. This helps you check that all WFM AS and WFM CS components have been correctly installed and are communicating with each other.

### Prerequisites

- You have completed all the installation steps described in this documentation.
- You have connected WFM AS and WFM CS components with the Enterprise Portal.
- You have installed the Business Package for Retail 3.1.

### Procedure

1. Enter the following URL:

```
http://<J2EEHOST>:<J2EEHTTTPORT>/wfm/logon.do
```

2. The application is working when you see the following message:

*Your session has expired. Please renew your session by clicking a section link in the Portal menu.*

3. Access the WFM CS from the Enterprise Portal through the Retail Workforce Manager role and check that the WFM Calculation Services page comes up without an error.

If the page does not come up, possible errors are:

Error message	Cause
Missing value for WFM configuration parameter <code>cs.http.port</code>	The WFM parameter <code>cs.http.port</code> was not filled.
The request could not be completed due to the following errors: <followed by details of the particular error, usually related to the JCO connection>	One of the WFM parameters <code>cs.jco.xxxxx</code> may be wrong. For example, the user or password are incorrect.

4. Test the submission of a calculation request to see if the WFM CS can process the request. You can simulate a calculation request submission by executing the RFC `WFA_WFDCS_CALCREQ_SUBMITTEST` from the SAP WFM ABAP backend system defined in the `cs.jco.xxxxx` WFM parameters of WFM Calculation Services.



When you installed WFM CS, you configured the `cs.jco.xxxxx` WFM parameters to point to System ID Q4R Client 600. You now need to log in to Q4R client 600 and execute `WFA_WFDCS_CALCREQ_SUBMITTEST` with transaction SE37 using the default import parameters.

5. Check the Requests tab of the WFM CS page to check the status of entries with the location name `SMOKETEST`:

- *FAILED* indicates a successful smoketest. It means that the Request Manager successfully sent the request to the Solver, which successfully processed it.
- *QUEUED* probably means that the WFM parameter `cs.http.port` was incorrect.

## 5.2 Post-Installation Steps for iTime Clock Server

You perform the following steps once you have installed iTime Clock:

- Configure iTime Clock Server
- Copy iTime Clock Server Configuration
- Check iTime Clock Connections
- Restart iTime Clock Application
- Verify iTime Clock Server is Operational



## 5.2.1 Configure iTime Clock Server

### Use

This section describes technical configuration required in a new installation. The configuration can be at the store level (end-node distributed deployment), regional level (middle-node distributed deployment) or corporate level (central deployment).

### Prerequisites

You have configured the Time Collection Settings IMG configuration on the SAP WFM ABAP system.

### Procedure

1. To configure the iTime Clock Server Java application, enter the following URL:

```
http://<J2EEHOST>:<J2EEHTTPPORT>/itc/admin/Config.do
```

You see the iTime Clock configuration page where you maintain four sets of parameters (see the descriptions of the parameters in the sub-sections that follow). The parameter settings are saved into `.properties` files in the J2EE engine, such as in the secure `<J2EE-DIR>/cluster/server0/itc/` folder, where `<J2EE-DIR>` is the root folder of your SAP J2EE instance.

2. When prompted for a user name and password, enter the user name and password of one of the following:
  - A J2EE user belonging to the Administrators group
  - A J2EE user associated with the security role `itcadmin`
3. Save your configuration changes.
4. Restart the application.

### Configure Data Service (`dataServiceConfig.properties`)

The iTime Clock solution architecture uses a data provider framework that allows you to connect to various data providers using different communications protocols, such as HTTP, RFC, and TCP socket messaging.

These are parameters to access the central master data, such as data in the SAP WFM ABAP back-end using the back-end connector class for JCO. You can connect to the SAP WFM ABAP system using one of the following:

- A message or dispatching server by specifying `r3_mshost`, `r3_group`, and `r3_name`
- An application server by specifying `r3_ahost` and `r3_sysnr`

Regardless of the how you connect to the SAP WFM ABAP system, you must also specify: `r3_client`, `r3_user`, and `r3_password`.

Parameter Name	Description
<code>backendConnectorClassName</code>	Backend Connector Class Name. The default value is <code>com.sap.itc.datasync.connectors.jco.rfc.RFCAdapter</code> ; there is no need to change this value if you are using the SAP WFM ABAP system as the back-end
<code>r3_ahost</code>	Application server host name of the SAP WFM ABAP system

Parameter Name	Description
r3_sysnr	System number of the SAP WFM ABAP system (for example, 09)
r3_mshost	Message server host name of the SAP WFM ABAP system
r3_group	Group of the SAP WFM ABAP system (case sensitive; for example, PUBLIC)
r3_name	System ID of the SAP WFM ABAP system (for example, IDES)
r3_client	Client of the SAP WFM ABAP system
r3_user	Back-end user for JCO connection to the SAP WFM ABAP system
r3_password	Password for the SAP WFM back-end user

### Configure Local Persistence (`localPersistenceConfig.properties`)

Parameter Name	Description
sapStandard	If you are running on the standard SAP J2EE Engine with SAP database you do not need to specify the local database connection parameters in this section
dbAdapterClassName	Database Adapter Class Name. The default value is <code>com.sap.itc.persistence.db.maxdb.DBManager</code> ; if you do not plan to use a local database, specify <code>com.sap.itc.persistence.db.nodb.NoDBManager</code>
dbDriver	Full class name of the JDBC driver used for this connection (example: <code>com.sap.dbtech.jdbc.DriverSapDB</code> )
dbURL	URL string specifying the location of the database (example: <code>jdbc:sapdb:///DEMODE</code> )
dbName	Database schema name (example: ITC)
dbUser	Database User
dbPassword	Database Password

### Configure Location (`appConfig.properties`)

Parameter Name	Description
backup_instance	Is this itc application running as a backup instance?
location_group	The group name of the locations that are to be managed by this application instance (may be empty)
location	The only location that is to be managed by this application instance ( <code>location_group</code> must be empty)
http_port	The http port of the web server where the itc application is running (for example, 50000)

### Configure Local Cache (`cacheConfig.properties`)

The default values for these parameters are the recommended values.

<b>Parameter Name</b>	<b>Description</b>
employee_cache	Cache employee data in memory?
schedule_cache	Cache schedule data in memory?
timeEvents_cache	Cache time events in memory?

## 5.2.2 Copy iTime Clock Server Configuration

If you have many J2EE instances that you need to configure iTime Clock Server for, you can copy the configuration files from one J2EE instance to another. The configuration files include:

- `dataServiceConfig.properties`
- `localPersistenceConfig.properties`
- `appConfig.properties`
- `cacheConfig.properties`

In SAP J2EE, these files are maintained in a folder such as `<J2EE-DIR>/cluster/server0/itc/` where `<J2EE-DIR>` is the root folder of your J2EE instance.

In a standard SAP installation (using the SAP J2EE engine and SAP database), the `r3_password` is not maintained in `dataServiceConfig.properties`.

After copying these configuration `.properties` files, you must go to the configuration page `http://<J2EEHOST>:<J2EEHTTTPORT>/itc/admin/Config.do` on each J2EE instance, and save the configuration, in order to save the encrypted `r3_password`.



You should also test the configuration to verify all other configuration variables are maintained correctly.

## 5.2.3 Configure iTime Clock Administration

### Use

This section describes the technical configuration for iTime Clock Administrator. If iTime Clock Administration is running on the same J2EE server instance as iTime Clock Server (a central deployment scenario), then iTime Clock Administration shares the same configuration as iTime Clock Server, and there is no need to configure iTime Clock Administration separately.

### Prerequisites

You have configured the Time Collection Settings IMG configuration on the SAP WFM ABAP system.

### Procedure

1. To configure the iTime Clock Administrator Java application, enter the following URL:  
`http://<J2EEHOST>:<J2EEHTTPPORT>/itcadmin/admin/Config.do`  
 You see the iTime Clock Administration configuration page where you maintain five sets of parameters. The parameter settings are saved into .properties files in the J2EE engine (for example, in the secure <J2EE-DIR>/cluster/server0/itc/ folder, where <J2EE-DIR> is the root folder of your SAP J2EE instance).
2. When prompted for a User name and password, enter the user name and password of one of the following:
  - A J2EE user belonging to the Administrators group
  - A J2EE user associated with the security role `itcadmin`
3. Save your configuration changes.
4. Restart the application.

### Configure Data Service (`dataServiceConfig.properties`)

The iTime Clock solution architecture uses a data provider framework that allows you to connect to various data providers using different communications protocols, such as HTTP, RFC, and TCP socket messaging.

These are parameters to access the central master data, such as data in the SAP WFM ABAP back-end using the back-end connector class for JCO. You can connect to the SAP WFM ABAP system using one of the following:

- A message or dispatching server by specifying `r3_mshost`, `r3_group`, and `r3_name`
- An application server by specifying `r3_ahost` and `r3_sysnr`

Regardless of the how you connect to the SAP WFM ABAP system, you must also specify: `r3_client`, `r3_user`, and `r3_password`.

Parameter Name	Description
<code>backendConnectorClassName</code>	Backend Connector Class Name. The default value is <code>com.sap.itc.datasync.connectors.jco.rfc.RFC</code>

Parameter Name	Description
	Adapter; there is no need to change this value if you are using the SAP WFM ABAP system as the back-end
r3_ashost	Application server host name of the SAP WFM ABAP system
r3_sysnr	System number of the SAP WFM ABAP system (for example, 09)
r3_mshost	Message server host name of the SAP WFM ABAP system
r3_group	Group of the SAP WFM ABAP system (case sensitive; for example, PUBLIC)
r3_name	System ID of the SAP WFM ABAP system (for example, IDES)
r3_client	Client of the SAP WFM ABAP system
r3_user	Back-end user for JCO connection to the SAP WFM ABAP system
r3_password	Password for the SAP WFM back-end user

### Configure Local Persistence (localPersistenceConfig.properties)

Parameter Name	Description
sapStandard	If you are running on the standard SAP J2EE Engine with SAP database you do not need to specify the local database connection parameters in this section
dbAdapterClassName	Database Adapter Class Name. The default value is <code>com.sap.itc.persistence.db.maxdb.DBManager</code> ; if you do not plan to use a local database, specify <code>com.sap.itc.persistence.db.nodb.NoDBManager</code>
dbDriver	Full class name of the JDBC driver used for this connection (example: <code>com.sap.dbtech.jdbc.DriverSapDB</code> )
dbURL	URL string specifying the location of the database (example: <code>jdbc:sapdb:///DEMODB</code> )
dbName	Database schema name (example:ITC)
dbUser	Database User
dbPassword	Database Password

### Configure Location (appConfig.properties)

Parameter Name	Description
http_port	The http port of the web server where the itcadmin application is running (for example, 50000)

### Configure iTime Clock Archiving (appConfig.properties)

Parameter Name	Description
archive_days	Number of days (of data) to store in each archive (default is 7)

### Configure Custom Pre-Pay Calculation (CustomCalcDef.properties)

You are not required to configure this section unless you want to implement your own calculation results export or pre-pay calculation code.

Parameter Name	Description
ExportToExternalImplementationName	Implementation name for exporting pre-pay calculation results to external system
AllowCustomCalc (checkbox)	Allow custom pre-payroll calculation? If checked, you will see a list of organizations where you can specify a custom pre-pay calculation implementation for.
CustomImplementationName	Custom implementation name for pre-pay calculation

## 5.2.4 Check Connections

When you have completed your configuration, click *Save and Test* to test the following conditions:

- Back-end connection to the SAP WFM ABAP system
- Local persistence (for example, local database) connection
- Retrieval of location (or location group) information
- HTTP port connection (as specified in `http_port`)



## 5.2.5 Restart iTime Clock Application

Save your configuration and click *Restart Application* to download / resynchronize your instance of iTime Clock with the latest information, including location configuration, employee information, restriction profiles, and rule messages.

## 5.2.6 Verify that iTime Clock Server is Operational

### Use

Prior to using iTime Clock, you should verify that the iTime Clock server is collecting data and able to output punches.

### Prerequisites

- You have configured the Time Collection Settings IMG configuration on the WFM SAP ABAP system.
- You have configured iTime Clock Server

### Procedure

- Start the iTime Clock Server application using a URL like the following:  

```
http://<J2EEHOST>:<J2EEHTPPORT>/
itc/init.do?lang=XX&store_id=<location>&dateFormat=yyyy/MM/dd&timeFormat=HH:mm:ss
```
- Verify that you can view the punch page for iTime Clock.  
 See the *Example* section to view the types of settings required for iTime Clock.

### Example

In the Time Collection Settings IMG configuration, you defined this location group to consist of 3 locations:

#### Change View "iTime Clock Location Mapping": Details

The screenshot displays the SAP configuration interface for iTime Clock Location Mapping. At the top, there are icons for 'New Entries', 'Print', and 'Help'. Below this is a form titled 'iTime Clock Location Mapping' with the following fields:

Profile ID	NORTH EAST
Short Text	North East
Long Text	North East

Below the form are two tables: 'Available Locations' and 'Assigned Locations'. Both tables have columns for 'Location Profile', 'Short Description', and 'Long Description'.

Location Profile	Short Description	Long Description
ASL_ORG1		
ASL_ORG10		
ASL_ORG11		

Location Profile	Short Description	Long Description
WFM_STR800	WFM_STR800	WFM STORE 800
WFM_STR900	ITC TEST	ITC TEST
WFM_TEST_ORG	WFM_STR_TEST	

In the *Time Collection Settings Profile* you set the configuration to display the following buttons:

Settings Profile: ITIME\_CLOCK\_TEST

Configuration Types				
Sttng Type	Long Description	Yes?	Int Value	
001	Display in button?	<input checked="" type="checkbox"/>	0	▲
002	Display out button?	<input checked="" type="checkbox"/>	0	▼
003	Display meal button?	<input checked="" type="checkbox"/>	0	
004	Display break button?	<input checked="" type="checkbox"/>	0	
005	Display select work area picklist?	<input checked="" type="checkbox"/>	0	
006	Display view punch button?	<input checked="" type="checkbox"/>	0	
007	Display view schedule button?	<input checked="" type="checkbox"/>	0	
008	Display future week schedule?	<input type="checkbox"/>	0	

In iTime Clock Server Configuration, you defined your Location Configuration to point to the North East group:

**Location Configuration**

location\_group: NORTH EAST

location:

http\_port: 50100

The group contains three locations WFM\_STR800, WFM\_STR900, and WFM\_TEST\_ORG. To punch in to each location in the group, you must set up three URLs, for example:

- `http://<J2EEHOST>:<J2EEHTTTPPORT>/itc/init.do?lang=en&store_id=WFM_STR800&dateFormat=yyyy/MM/dd&timeFormat=HH:mm:ss`
- `http://<J2EEHOST>:<J2EEHTTTPPORT>/itc/init.do?lang=en&store_id=WFM_STR900&dateFormat=yyyy/MM/dd&timeFormat=HH:mm:ss`
- `http://<J2EEHOST>:<J2EEHTTTPPORT>/itc/init.do?lang=en&store_id=WFM_TEST_ORG&dateFormat=yyyy/MM/dd&timeFormat=HH:mm:ss`

Test one of the URLs to make verify that the iTime Clock Server is operational. When it is operational, you see:

iTime Clock - Microsoft Internet Explorer

2006/10/12  
15:22:09

Please Enter ID#:

Punch In      Select Work Area

Punch Out

Meal

Break

View Punches

View Schedules

Refresh iTime Clock

Check the *Troubleshooting* section if you do not see this iTime Clock punch page.

## 5.3 Post-Installation Steps for the Business Package for Retail

### Use

The Business Package for Retail contains the enterprise portal definitions for SAP Workforce Management application. The post installation steps include:

- Define a system in the Enterprise Portal and associate it with the system alias SAP\_WFM
- Define a system in the Enterprise Portal and associate it with the system alias SAP\_BW
- Map a portal user to the SAP\_WFM system
- Map a portal user to the SAP\_BW system
- Assign the Retail Workforce Manager role to the portal user

### Prerequisites

You have performed the following installation steps:

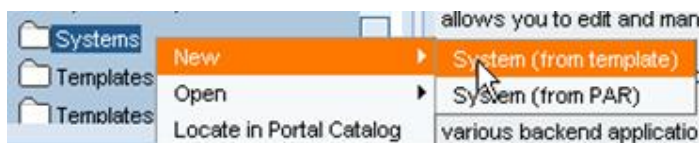
- Implement RTLWFM 3.1 (ABAP back-end code) using transaction SAINT
- Install the Java components (WFM, iTime Clock Server)
- Set up the BW system

If you are utilizing the Adobe reports contained in the release, you must additionally:

- Configure and activate the ADS server
- Activate the WebDynpro applications in SICF.

### 5.3.1 Define the SAP\_WFM System

1. Login to the portal server as a portal administrator.
2. Navigate to *System Administration* → *System Configuration* → *System Landscape*.
3. Click the *Search* tab and search for all folders.
4. Go to the *Systems* folder.
5. Click on the *Systems* folder with the alternate mouse button and choose *New* → *System (from template)* from the menu:

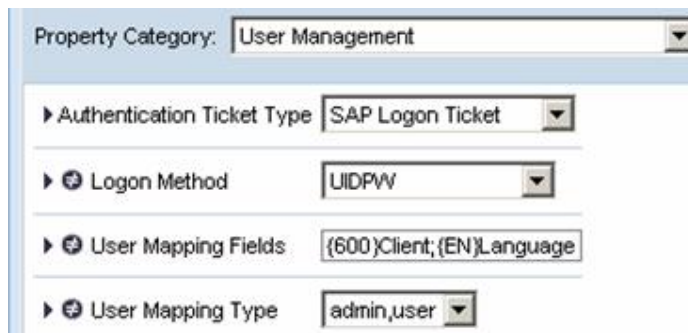


6. In the System Wizard *Template Selection*, select one of the following:
  - SAP system using dedicated application server
  - SAP system with load balancing
7. Continue with the step to specify *General Properties* such as the name and ID.

8. At the end of the *System Wizard*, choose the next step *Open the object for editing*.
9. Select the *Property Category Connector*.
  - If you defined a system using a dedicated application server, specify:
    - Application Host
    - SAP Client
    - SAP System Number
  - If you defined a system with load balancing, specify:
    - Group
    - Message Server
    - SAP Client
    - SAP System ID (SID)
10. Select the *Property Category Web Application Server (Web AS)*. This is the web access point for the Web Dynpro reports. This step is required only if using the Web Dynpro Adobe reports in your implementation. Specify:
  - Web AS Host Name (for example: `usciq39.wdf.sap.corp:50021`)
  - Web AS Protocol: (for example: `http`)

To determine the values to specify for Property Category **Web Application Server (Web AS)**, check the WFM Web Dynpro applications in your back-end system.

- a. In your back-end system, execute transaction `SE80`.
  - b. Select package `WFA_BIW`.
  - c. Navigate to *Web Dynpro* → *Web Dynpro Applicat.*
  - d. Select one of the applications (for example, `Wfabwz_dsv_app`).
  - e. In the *Application Properties* tab of the application, note the URL (the URL will look similar to the following example):  
`http://usciq39.wdf.sap.corp:50021/sap/bc/webdynpro/sap/wfabwz_dsv_app`. From the URL, you can determine the Web AS Host Name and Web AS Protocol.
11. Select the *Property Category WFM*. This is the web access point for WFM -- the SAP J2EE server where WFM is running. Specify:
    - WFM Host Name (for example: `pwdf2672.wdf.sap.corp:50100`)
    - WFM Protocol (for example: `http`)
  12. Select the *Property Category WFM CS*. This is the web access point for WFM Calculation Services (CS) -- the SAP J2EE server where WFM CS is running. Specify:
    - WFM CS Host Name (for example: `pwdf2672.wdf.sap.corp:50100`)
    - WFM CS Protocol (for example: `http`)
  13. Select *Property Category User Management* and set the values for user mapping.  
Here is an example for manually mapping a portal user to a (back-end) system user.



Property Category: User Management

▶ Authentication Ticket Type: SAP Logon Ticket

▶ Logon Method: UIDPW

▶ User Mapping Fields: {600}Client;{EN}Language

▶ User Mapping Type: admin\_user

This is the last entry for setting the Object properties.

14. Add a system alias to this System.
  - a. In the *Display* field, select *System Aliases*.
  - b. Add the *Alias Name* **SAP\_WFM**.
15. Save your entries.

### 5.3.2 Define SAP\_BW System

1. Login to the portal server as a portal administrator.
2. Navigate to *System Administration* → *System Configuration* → *System Landscape*.
3. Click the *Search* tab and search for all folders.
4. Go to the *Systems* folder.
5. Click on the *Systems* folder with the alternate mouse button and choose *New* → *System (from template)* from the menu:
6. In the *System Wizard Template Selection*, select one of the following:
  - SAP system using dedicated application server
  - SAP system with load balancing
7. Continue with the step to specify **General Properties** like the name and ID.
8. At the end of the *System Wizard*, choose the next step *Open the object for editing*.
9. Select the *Property Category* **Connector**.
  - If you defined a system using a dedicated application server, specify:
    - Application Host
    - SAP Client
    - SAP System Number
    - System Type = SAP\_BW
  - If you defined a system with load balancing, specify:
    - Group
    - Message Server
    - SAP Client

- SAP System ID (SID)
  - System Type = SAP\_BW
10. Select the *Property Category* **Web Application Server (Web AS)**. Specify:
    - Web AS Host Name (for example: `uscig75.wdf.sap.corp:50010`)
    - Web AS Protocol (for example: `http`)
  11. Select *Property Category* **User Management** and set the values for user mapping.  
This is the last entry for setting the Object properties.
  12. Add a system alias to this System.
    - a. In the *Display field*, select *System Aliases*.
    - b. Add the *Alias Name* **SAP\_BW**.
  13. Save your entries.

### 5.3.3 Map a Portal User to the SAP\_WFM System

The following steps are required to manually map a portal user to a user in the back-end system associated with SAP\_WFM.

1. Login to the portal server as a portal administrator.
2. Navigate to *User Administration* → *Identity Management* → *Create User*.
3. Enter the required *General Information*.
4. Click the *User Mapping for System Access* tab.
5. Specify the back-end user and password, client, and language for the system **SAP\_WFM**. Here is an example:

The screenshot shows the 'Details of User retailman' form. At the top, there are 'Save' and 'Cancel' buttons. Below them are three tabs: 'General Information', 'Account Information', and 'Contact Information'. The 'System Selection' section contains a 'System' dropdown menu set to 'SAP\_WFM', a 'Refresh' button, and a link 'Why are some systems missing?'. The 'Mapping Data' section includes a 'Mapped User ID' text box with 'kooj', a 'Mapped Password' text box with masked characters, and a table for field selection.

Field	Value Selection
Client	600
Language	EN

6. Save your entries.

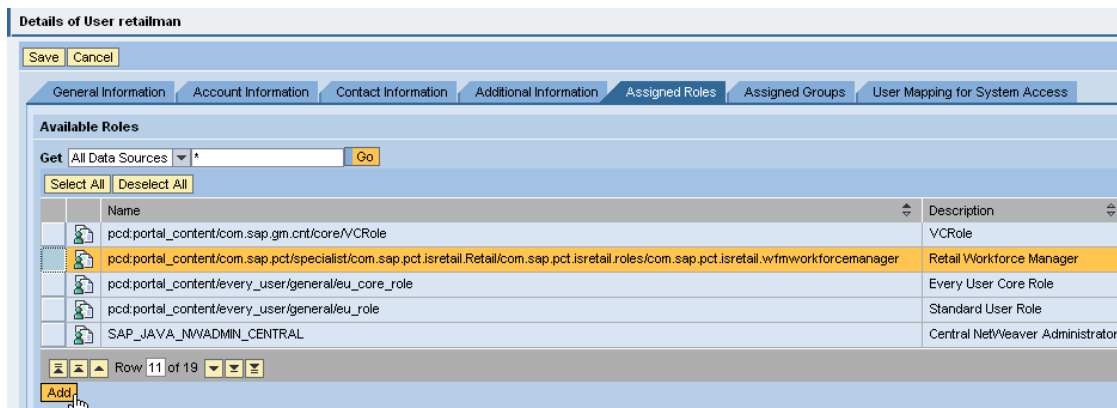


### 5.3.4 Map a Portal User to the SAP\_BW System

The steps to map a portal user to the SAP\_BW system are the same as the steps to map a portal user to the SAP\_WFM system, except that you select the system SAP\_BW.

### 5.3.5 Assign the Retail Workforce Manager Role to the Portal User

1. Login to the portal server as a portal administrator.
2. Navigate to *User Administration* → *Identity Management*.
3. Search for a portal user that should have the *Retail Workforce Manager* role.
4. Choose the user and click *Modify* to edit.  
In edit mode, you see the *Available Roles* in the *Assigned Roles* tab.
5. Search for the available role *Retail Workforce Manager* and assign it to the user.



6. Save your entries.

### 5.3.6 Check the Portal Integration

1. Login to the portal server as the user with the *Retail Workforce Manager* role.
2. Check that you have access to the Workforce Management workset containing the menu links.
3. Navigate to Workforce Management and click on the various links to verify that you can access the pages.

## **6 Additional Information**

This section contains:

- Installation Troubleshooting
- Install iTime Clock Server on Non-SAP Web Application Server

## 6.1 Installation Troubleshooting

### 6.1.1 iTime Clock Server

The error messages that come up when you try to start iTime Clock Server are self-explanatory. Examples:

Error Message	Solution
The application is at 20% of the start-up process. Please try again later.	Try it later. When the start-up synchronization process is complete, your page should come up.
The application failed at 0% of the start-up process, with error: <i>No orgs retrieved for configuration entries: location_group=&lt;location_group&gt; one location=&lt;location&gt;. Please check ITC configuration in the configuration screen</i>	Check the iTime Clock Server configuration in <code>http://&lt;J2EEHOST&gt;:&lt;J2EEHTTTPPORT&gt;/itc/admin/Config.do</code>

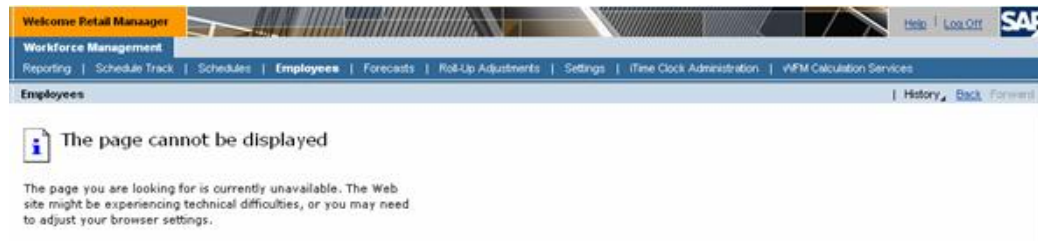
After configuring iTime Clock Server, test the connections by clicking *Save and Test*.

Restart the application after saving the corrected configuration.

### 6.1.2 Cannot Display WFM or iTime Clock Administration

#### Problem

You cannot display either the WFM or iTime Clock Administration iViews in the Enterprise Portal. The example below is for the *Employees* iView:



#### Solution

Click on the workset link (the menu item link) again and note the URL at the bottom of the page. Example:

Opening page `http://pwwf2672.wdf.sap.corp/wfm/logon.do...`

Check if the host name (for example: `pwwf2672.wdf.sap.corp`) is correct and complete. In this case it is incorrect. To correct the host name:

1. Login to the portal server as a portal administrator.
2. Navigate to *System Administration* → *System Configuration* → *System Landscape*.
3. Search for the system associated with the system alias **SAP\_WFM**.
4. Open the system object for editing.

5. Check and correct the *Property Categories* **WFM** and **WFM CS**. The *Host Name* should include the `http port` (for example: `pwdf2672.wdf.sap.corp:50100`).

## Problem

You get the error *An error occurred while processing your request*: while accessing pages in either WFM or iTime Clock Administration.

## Solution

If there is no error detail like *No Host Name found in Property Category WFM CS for system SAP\_WFM*:

- Check if the **SAP\_WFM** system alias is defined
  - If the problem is still not obvious, go to the iView definition and set *WFMD Debugger* to **on**.
1. Login to the portal server as a portal administrator.
  2. Navigate to *Content Administration* → *Portal Content* → *Content Provided by SAP* → *specialist* → *Retail* → *iViews* → *Retail Workforce Manager*.
  3. Open the iView object for editing.
  4. In the *Property Category* field, filter by *Show All*.
  5. Scroll down to the *WFMD Debugger* setting and set the value to **on**.
  6. Save the iView.

Log in as the user in the *Retail Workforce Manager* role, and try accessing the iView again to see if there are more details.

## 6.2 Install iTime Clock Server on Non-SAP Web Application Server

### Purpose

The Web Application Server resident components of the iTime Clock Server application are compatible with and portable to any platform combination (hardware and operating system) that supports a Web Application Server with a Servlet 2.3 JSP 1.2 specification compatible Web Container service.



We have included this section to provide general information on this procedure. There is no official support for installing iTime Clock on a web application server other than NW04S.

To install iTime Clock Server on a non-SAP web application server, you:

- Install SAP Java Connector (to connect to the SAP WFM ABAP back-end system)
- Deploy the iTime Clock Server web archive (.war) on your web application server
- Create local database tables using an SQL script

### Procedure

#### 1. Install SAP Java Connector

The SAP Java Connector (SAP JCo) is a toolkit that allows a Java application to communicate with any SAP system.

Go to <http://service.sap.com/connectors> to download the SAP Java Connector. On the left side panel, you will see that this quick link has taken you to *SAP NetWeaver* → *SAP NetWeaver in Detail* → *Application Platform* → *Connectivity* → *Connectors*. Navigate further to *SAP Java Connector* → *Tools & Services* for the download links and related installation information.

#### 2. Deploy the iTime Clock Server Web Archive

**Refer to the documentation of your web application server.** Listed here are examples of how to deploy and configure the iTime Clock Server application on a particular instance of Tomcat 5.5.

#### 3. Extract the iTime Clock Server Web Archive

- Use a file compression utility like WinRAR or WinZip to open the .sca file. The iTime Clock Server Java software component is packaged in a file `ITIMECLOCK*.sca`.
- Extract the file `DEPLOYARCHIVES/sap.com_is~itc~app.sda` from `ITIMECLOCK*.sca`.
- Use a file compression utility to open `DEPLOYARCHIVES/sap.com_is~itc~app.sda`.
- Extract the file `sap.com~is~itc~web.war` from `DEPLOYARCHIVES/sap.com_is~itc~app.sda`.
- Rename the file `sap.com~is~itc~web.war` to `itc.war`. This is the web archive you can deploy on your web application server.

#### 4. Deploy the iTime Clock server

The steps in this example are for Tomcat 5.5 and might differ depending upon your web application server.

- a. Copy the file `itc.war` to the `webapps` folder of the Tomcat installation folder (example: `$CATALINA_HOME/webapps`).
- b. Start Tomcat (example: by executing `$CATALINA_HOME/bin/startup.bat`).

#### 5. Configure iTime Clock Server (Tomcat 5.5 Example)

- a. Create a user with the role "itcadmin" to access the iTime Clock Data Service configuration page. An example of how to do this is to add a user to `$CATALINA_HOME/conf/tomcat-users.xml`:  

```
<user username="testadmin" password="tester0" roles="itcadmin"/>
```
- b. Configure the application as described in the post-installation instructions (for example, by accessing the URL <http://localhost:8080/itc/admin/Config.do>). After you save your configuration, the `.properties` files are created in `$CATALINA_HOME/bin/itc/`.
- c. Restart the application after saving the configuration.

#### 6. Create Local Database Tables using an SQL Script



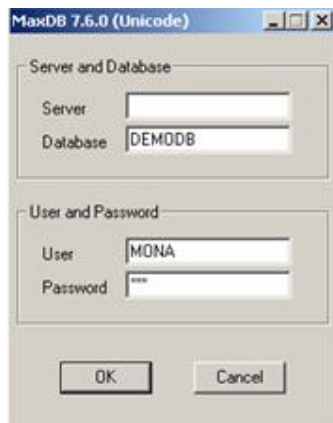
In the following steps, we are using an example where you created a MaxDB database instance called `DEMODB`, with a database user `MONA`, password `RED`.

#### 7. Extract the SQL script file

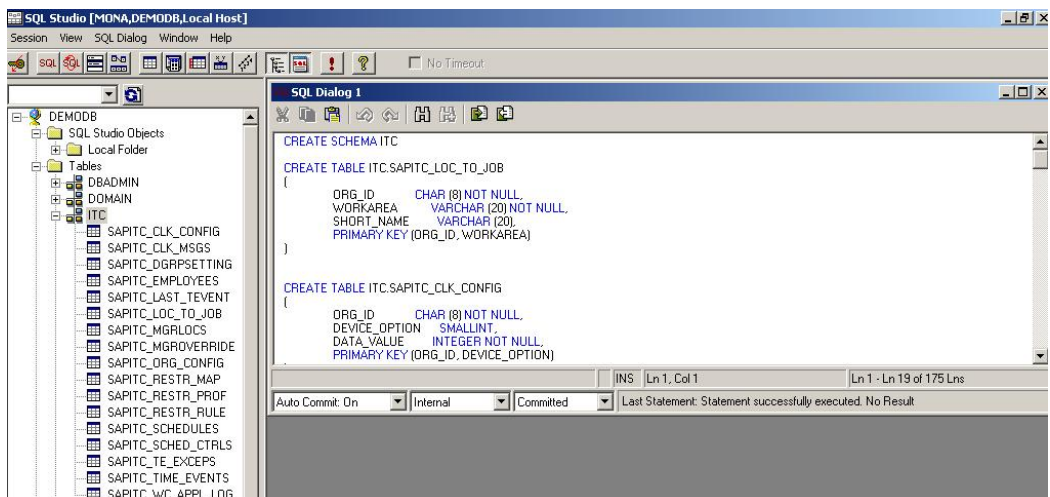
- a. The iTime Clock Server Java software component is packaged in a file `ITIMECLOCK*.sca`. Use a file compression utility like WinRAR or WinZip to open the `.sca` file.
- b. Extract the file `DEPLOYARCHIVES/sap.com_is~itc~app.sda` from `ITIMECLOCK*.sca`.
- c. Use a file compression utility to open `DEPLOYARCHIVES/sap.com_is~itc~app.sda`.
- d. Extract the file `META-INF/itc_schema.txt` from `DEPLOYARCHIVES/sap.com_is~itc~app.sda`.  
`itc_schema.txt` is the SQL script file for creating the `SAPITC_*` tables in the schema `ITC`.

#### 8. Create the local database tables

- a. Launch the process by entering *All Programs* → *MySQL MaxDB* → *SQL Studio*.
- b. At the session connect to the `DEMODB` database instance.



- c. In the SQL Dialog window, right-click to display the pop-up.
- d. Select *Import File* and specify the script file `itc_schema.txt`.
- e. Execute the import and you see the following results:



9. Configure the local database connection parameters
  - a. Bring up `http://<J2EEHOST>:<J2EEHTPPORT>/itc/admin/Config.do` to configure the iTime Clock Server.
  - b. Enter the following values for this example:

Parameter Name	Value
sapStandard	false
dbAdapterClassName	com.sap.itc.persistence.db.maxdb.DB Manager
dbDriver	com.sap.dbtech.jdbc.DriverSapDB
dbURL	jdbc:sapdb:///DEMODB
dbName	ITC
dbUser	MONA
dbPassword	RED

10. Save your entries.