

Workflow Integration Suit (WFI)

Install and configure WFI suit applications on a WebLogic Server

Version 1.0

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1. Overview

1.1 Preface

WFI Suite is a platform which help products to integrate workflows and rules to their applications with minimum configurations and maximum efficiency. Current version of WFI suite includes a component that can be used to instantiate and execute workflows and rules through an interface available as REST API, a UI component called Task Inbox which is integrated with ELKTS system to access and complete human task based on user group policy and a notification component which provides a means of delivering messages (e-mail) to a user group when a task get generated.

Created as web deployable WAR files, WFI suite can be deployed on any web container.

1.2 Audience

This guide is intended for users who will install & maintain the applications listed above. This document assumes that users performing this activity have good knowledge and are comfortable working in UNIX, Oracle DB and WebLogic.

1.3 Revision History

|  |  |  |
| --- | --- | --- |
| **Revision** | **Date** | **Description** |
| 1.0 | 20.04.2020 | Steps to install WFI suite |

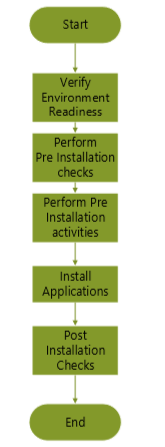
1.4 Typographical Conventions

| **Style** | **Description** |
| --- | --- |
| Boldface | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| Italic, highlighted in yellow | Italic type highlighted in yellow indicates placeholder variables for which you supply particular values. |
| Italic | Italic type indicates any command that you have run – either in UNIX or SQL console. |

**2. Installation Overview**

## Installation Roadmap

The steps to install and configure the application are summarized in the Figure 1.1.



|  |  |
| --- | --- |
| **Tasks** | **Details and Documentation** |
| Verify Environment Readiness | Perform steps to ensure that your target environment meets the general installation requirements for CDD Phase components |
| Pre Installation Steps | Perform the set of steps, required to be performed before commencing the installation of the application |
| Install Applications | Run a series of steps to install the different application components. |
| Post Installation Steps | Perform a series of steps post installation to update configuration entries. |

## Preparing for Installation

Before continuing, make sure you have the latest software version is baselined in the respective stream on the RTC server.

|  |  |
| --- | --- |
| **Stream** | **Name** |
| DEV |  |
| SIT |  |
| UAT |  |

You have to extract the contents of the all the folder (& sub-folders) from the respective stream into a folder in installation machine. Hence forth, this folder would be referenced as ‘USER\_LOCAL\_BASE’ within this document

## Hardware Requirements

All the WFI components are certified for installation on systems running on Linux Operating System (OS) v 7.3

The following table provides more information on the hardware requirements for the different servers

|  |  |  |  |
| --- | --- | --- | --- |
| **Server** | **Core CPU** | **RAM ( GB)** | **Application Storage (GB)** |
| Database Server | 64 | 128 | 1500 |
| Application Server | 4 | 16 | 300 |

## Software Requirements

Prior to installing the application, the following software should be installed and running

* Java Open JDK version 1.8.0\_102 64 bit Server VM
* Redhat Process Automation Manager v 7.3
* WebLogic Application Server v 12.2.1.3
* Oracle 12c Enterprise Edition

## Perform Pre-Installation Checks

You have to perform the following pre-installation checks, before proceeding with the installation

### Availability of Database and Tables

* Oracle Database should be setup and running.
* You must have the database server IP address, database SID, user name and password to connect to the database.
* Prior to the installation, the database user id should be made INTERACTIVE and hence forth would be referenced as ‘*INTERACTIVE\_DB\_ID*’

If you encounter any errors at this stage, please resolve this with help of DBA support team before proceeding.

### Availability of Managed Server

* You must verify that a managed server is available in WebLogic to deploy the applications in WFI suite.
* If it is not available, follow the steps mentioned in the Oracle WebLogic Server guide to create a new managed server. Hence forth, within this document, the managed server for WFI is referenced as *‘WFI\_SERVER’*

If you encounter any errors at this stage, please resolve this with help of Middleware support team before proceeding

If you encounter any errors at this stage, please resolve this with help of Middleware support team before proceeding

## Perform Pre-Installation Activities

You have to perform this step only once (first time installation) and for the subsequent installations, it becomes a pre-installation check.

### Performing Activities in Database

In this step, create functions, sequences, stored procedures and inserting seed data. To do this, perform the following steps,

1. Navigate to the *USER\_LOCAL\_BASE* folder
2. Execute DBInstall.sh, by typing the command *./DBInstall.sh*
3. When prompted, enter the following
   * 1. “Enter the version :” *1.2.0.0*
     2. “Enter Database Schema Name : ‘*INTERACTIVE\_DB\_ID*’
     3. “Enter Password :” <*Password of Interactive Database ID*>
     4. “Enter SID :” <*SID of the Database*>
4. The installer would verify the connectivity to the database and run the scripts to install the tables and seed configuration data
5. The installation script would create a log file by the name 1.2.0.0\_<DD\_MM\_YY>.log

Scan the log file for errors and if there are errors, consult the application support for advice, before proceeding further.

**3. Configuring WebLogic server For Installation**

Before deploying WFI applications into Oracle WebLogic Server, you must configure system properties, security settings, JMS requirements, and other properties on Oracle WebLogic Server. These configurations promote an optimal integration with different components.

You have to perform this step only once (first time installation) and for the subsequent installations, it becomes a pre-installation check.

**Prerequisites**

* Oracle WebLogic Server is installed and running.
* You are logged in to the WebLogic Administration Console.

## 3.1 Configuring JDBC Data Source

A data source is an object that enables a Java Database Connectivity (JDBC) client, such as an application server, to establish a connection with a database. Applications look up the data source on the Java Naming and Directory Interface (JNDI) tree or in the local application context and request a database connection to retrieve data. You must configure data sources for Oracle WebLogic Server to ensure proper data exchange between the servers and the designated database.

**Procedure**

1. In the WebLogic Administration Console, navigate to **Change Center → Lock & Edit.**
2. Under **Domain Structure**, click **Services** → **Data Sources**.
3. On the **Summary of Data Sources** page, click **New** → **Generic Data Source**.
4. On the **JDBC Data Sources Properties** page, enter or select the following information:

* **Name**: Enter a name for this JDBC data source. This name is used in the configuration file (**config.xml**) and throughout the Administration Console whenever referring to this data source.(Any name)
* **JNDI Name:** Enter the JNDI name as **jdbc/CCUIDB**
* **Database Type**: Select the DBMS that you want to connect to (Oracle).

1. Click **Next** to continue.
2. Select the **Database Driver** that you want to use to connect to the database.
3. On the **Transaction Options** page, leave the Supports Global Transactions option selected and choose from the available transaction options.
4. Click **Next** to continue.
5. On the **Connection Properties** page, enter values for the following properties:

* **Service Name:** Specify the service name of the database to which you want to connect.
* **Database Name**: Enter the name of the database that you want to connect to.
* **Host Name**: Enter the DNS name or IP address of the server that hosts the database.
* **Port**: Enter the port on which the database server listens for connection requests.
* **Database User Name**: Enter the database user account name that you want to use for each connection in the data source (Should have read write privileges).
* **Password/Confirm Password:** Enter the password for the database user account.
* **oracle.jdbc.DRCPConnectionClass:** Optionally, enter the Database Resident Connection Pooling (DCRP) connection class if required by your environment.

1. Click **Next** to continue.
2. On the **Test Database Connection** page, review the connection parameters and click Test Configuration.
3. Click **Next** to continue or to skip this step if the JDBC driver you selected is not installed on the Administration Server.
4. On the Select Targets page, select the servers or clusters on which you want to deploy the data source and click Finish.
5. Return to the main menu of the WebLogic Administration Console and select **Change Center → Activate Changes.**

## 3.2 Configuring Java Messaging Services (JMS)

The Java Message Service (JMS) is a Java API that Server uses to exchange messages with other application servers such as Oracle WebLogic Server and IBM WebSphere Application Server. You must configure your application server to send and receive JMS messages to ensure proper collaboration between the two servers.

## 3.2.1 Configuring JMS Server

**Procedure**

1. In the WebLogic Administration Console, navigate to **Services → Messaging → JMS Servers.**
2. Click New to create a new JMS server.
3. Enter a name for your JMS server and click **Next**.
4. Select the target server chosen for the application deployment.
5. Click **Finish**.

## 3.2.2 Creating JMS Module

You must create a JMS module to store your JMS resources, such as connection factories and queues.

**Prerequisites**

* You have created a JMS server

**Procedure**

1. In the WebLogic Administration Console, navigate to **Services → Messaging → JMS Modules.**
2. Click **New** to create a module.
3. Enter a module name and click **Next**.
4. Select the target server chosen for the wfi suite components deployment and click **Finish**.
5. Click the newly created module name and then click **Subdeployments**.
6. Click **New** to create a subdeployment for your module.
7. Give your subdeployment a name and click **Next**.
8. Select the check box to choose the previously created JMS server.
9. Click **Finish** to complete the subdeployment configuration.

## 3.2.3 Create JMS Connection Factories

You must create a JMS module to store your JMS resources, such as connection factories and queues.

**Prerequisites**

* You have created a JMS server.
* You have created a JMS module.

**Procedure**

1. In the WebLogic Administration Console, navigate **to Services → Messaging → JMS Modules** to see a list of JMS modules.
2. Select your previously created module and click **New** to create a new JMS resource.
3. Select **Connection Factory** and click **Next**.
4. For each of the following required connection factories in the table below, enter the name of the connection factory and the JNDI name and click **Next**. The connection factory automatically selects the servers assigned to the JMS Module as the default.
5. Click **Finish** to add the connection factory, and repeat for each required factory.

**Required JMS connection factories for WFI Suite**

|  |  |
| --- | --- |
| **Name** | **Value** |
| WFI.WFIJMSConnectionFactory | jms/WFIJMSConnectionFactory |

## 3.2.4 Create JMS Queues

JMS queues are the destination end points for point-to-point messaging. You must create certain JMS queues to enable JMS messaging with Server.

**Prerequisites**

* You have created a JMS server.
* You have created a JMS module.

**Procedure**

1. In the WebLogic Administration Console, navigate **to Services → Messaging → JMS Modules** to see a list of JMS modules.
2. Select your previously created module and click **New** to create a new JMS resource.
3. Select **Queue** and click **Next**.
4. For each of the following required connection factories in the table below, enter the name of the connection factory and the JNDI name and click **Next**. The connection factory automatically selects the servers assigned to the JMS Module as the default.
5. Choose the JMS module subdeployment that connects to the JMS server.

**Required JMS queues for WFI suite**

|  |  |
| --- | --- |
| **Name** | **Value** |
| WFI.WFITaskNotifyQueue | jms/WFITaskNotifyQueue |

**4. Installing WFI Components**

## 4.1 Installing REST Services Component

For applications to interact with core workflow engine, WFI REST API component is used. It will provide services like trigger workflows, claim and submit tasks etc. This component will also act as the end point for Inbox application as well.

**Procedure**

1. In the WebLogic Administration Console, navigate to **Deployments** to view all existing applications.
2. Click **Install**.
3. Navigate to the temporary directory where you downloaded and extracted the **.tar** file.
4. Select the **wfi.war** file and click **Next** to continue.
5. Select **Install this deployment as an application** as the targeting style and click **Next**.
6. Select ‘*WFI\_SERVER*’ from the list of managed servers and click the “**Next**”.
7. Set the application name to **wfi** and set the security model to DD Only. Leave the remaining options as default and click **Next** to continue.
8. In the **Additional Configuration** section, choose **No, I will review the configuration later** and click **Finish**.

## 4.2 Installing UI Component (Task Inbox)

This is the UI component in WFI suite which will allow users to see the task in their name and to act on it. It’s integrated with ELKTS UAM system.

**Procedure**

1. In the WebLogic Administration Console, navigate to **Deployments** to view all existing applications.
2. Click **Install**.
3. Navigate to the temporary directory where you downloaded and extracted the **.tar** file.
4. Select the **TaskInboxUI.war** file and click **Next** to continue.
5. Select **Install this deployment as an application** as the targeting style and click **Next**.
6. Select ‘*WFI\_SERVER*’ from the list of managed servers and click the “**Next**”.
7. Set the application name to **TaskInboxUI** and set the security model to DD Only. Leave the remaining options as default and click **Next** to continue.
8. In the **Additional Configuration** section, choose **No, I will review the configuration later** and click **Finish**.

## 4.3 Installing Notification Component

This component allow application to send notifications while generating tasks.

**Procedure**

1. In the WebLogic Administration Console, navigate to **Deployments** to view all existing applications.
2. Click **Install**.
3. Navigate to the temporary directory where you downloaded and extracted the **.tar** file.
4. Select the **Notification.war** file and click **Next** to continue.
5. Select **Install this deployment as an application** as the targeting style and click **Next**.
6. Select ‘*WFI\_SERVER*’ from the list of managed servers and click the “**Next**”.
7. Set the application name to **Notification** and set the security model to DD Only. Leave the remaining options as default and click **Next** to continue.
8. In the **Additional Configuration** section, choose **No, I will review the configuration later** and click **Finish**.

**5. Setting System Properties in Weblogic Server**

Set the system properties listed in this section on your Oracle WebLogic Server before you start Process Server.

**Procedure**

1. Set the below system property to increase the Java Virtual Machine (JVM) memory size:

USER\_MEM\_ARGS=-Xms1024m –Xmx3072m.

Its allowed to add this as server startup entry as well (-Xms1024m –Xmx3072m)

If you do not increase the JVM memory size, Oracle WebLogic Server freezes or causes deployment errors when starting Process Server.

1. Specify the following system startup properties on the Server instance

|  |  |
| --- | --- |
| **Name** | **Value** |
| log4j2.contextSelector | org.apache.logging.log4j.core.async.AsyncLoggerContextSelector |
| LOG\_FILE\_PATH | <REPLACE WITH Location on local file system where log4j2\_WorkflowIntegrator.xml logger config file copied from installer> . Refer Section 6.2 for configuring logs path |

## **Perform Post-Installation Activities**

## 6.1 Updating config table

In this stage, you will have to update the config table with the latest URL for the web services. This is done by running SQL queries. You have to follow the steps to update the environment specific URL’s

* Connect to the WFI database using the INTERACTIVE\_DB\_ID
* Run the DML scripts of config table by replacing the environment specific values
* Config table entries are cached. Application restart required after changes.

|  |  |  |
| --- | --- | --- |
| **No.** | **Query** | **Description** |
| 1 | *update config set config\_value= 'http://<IP>:<PORT>/kie-server/services/rest' where config\_short\_code ='JBPM\_BASE\_URL';* | RHPAM Processing servers Hostname/IP and port |
| 2 | *update config set config\_value='<RHPAM\_USERNAME> ' where config\_short\_code ='JBPM\_USER\_NAME';* | RHPAM Processing server username |
| 3 | *update config set config\_value='<RHPAM\_PASSWORD>' where config\_short\_code ='JBPM\_SECURITY\_KEY';* | RHPAM Processing server password |
| 4 | *update config set config\_value='http:// <IP>:<PORT>/wfi/v1/' where config\_short\_code ='WFI\_SERVICE\_URL';* | Hostname/IP and port of wfi.war deployed(REST service component) |
| 5 | *update config set config\_value='<IP>' where config\_short\_code ='SMTP\_HOST';* | SMTP servers Hostname/IP |
| 6 | *update config set config\_value='<PORT>' where config\_short\_code ='SMTP\_PORT';* | SMTP servers port |
| 7 | *update config set config\_value='http:// <IP>:<PORT>/maybank-admin/api/getGroupEmail/{brancCode}/{userGroup}' where config\_short\_code='UAM\_FETCH\_GROUP\_MAIL\_ID';* | UAM applications hostname/IP and port |
| 8 | *update config set config\_value=* *'http:// <IP>:<PORT>/maybank-admin/api/ana/authorise' where config\_short\_code ='UAM\_AUTHORIZE\_USER';* | UAM applications hostname/IP and port |
| 9 | *update config set config\_value= 'http:// <IP>:<PORT>/maybank-admin/api/logout' where config\_short\_code ='UAM\_LOGOUT\_USER';* | UAM applications hostname/IP and port |
| 10 | *update config set config\_value='http:// <IP>:<PORT>/maybank-admin/api/fetchAppMenus/ ' where config\_short\_code ='UAM\_FETCH\_MENU';* | UAM applications hostname/IP and port |
| 11 | *update config set config\_value='http:// <IP>:<PORT>/maybank-admin/api/ana/authenticate' where config\_short\_code ='UAM\_ANA\_SERVICE';* | UAM applications hostname/IP and port |
| 12 | *update config set config\_value=* *'http:// <IP>:<PORT>/Notification/v1/sendMailByTaskId' where config\_short\_code ='NOTIFICATIONS\_URL';* | Hostname/IP and port of Notification.war deployed (Notification component) |

## 6.2 Configuring logger

Go to the location on local file system where log4j2\_WorkflowIntegrator.xml logger config file copied from installer. Update the log file path in the log configuration file by updating basePath property. The logs will be created in this location on application startup. By default logs will be generated as wfi.log, and will be rolled over in case it grows too big. All these values are configurable inside log4j2\_WorkflowIntegrator.xml.

Example:



**7. Stopping and Restarting Weblogic Server**

After you have configured all required system properties in Oracle Weblogic Server, stop and restart the Oracle Weblogic server to ensure that the configurations are applied.

|  |  |  |
| --- | --- | --- |
| **SL No.** | **Steps to follow** | **Expected Output** |
| 1 | Start a browser and enter the WebLogic admin server URL. The URL pattern is as follows  *http://hostname:port/console* | WebLogic displays the Welcome screen and show text boxes to enter the Username and Password |
| 2 | Enter the Admin User Id and Password in the Welcome screen and click **Login** | On successful authentication, WebLogic displays the **Home Page.** |
| 3 | Start the deployment process by clicking on the “**Deployment**” link in the left hand menu | WebLogic displays the “Summary of Deployment” page |
| 4 | Click the **Control** Tab | WebLogic refreshes the “Summary of Deployments” page and show Deployment view. |
| 5 | **Select** the application, which has to be uninstalled | A tick mark appears beside the selected application |
| 6 | Click **Stop button -> When work completes** option | WebLogic displays the “Stop Application Assistant” page and request for confirmation to stop the application |
| 7 | Click the “**Yes**” | WebLogic stops the application and display **Summary of Deployment**s page. The state of the application is “Prepared” |
| 8 | Select the application and click “**Start button->Servicing all requests option**” | The **Start Application Assistant** page is displayed |
| 9 | Click the “**Yes**” button | WebLogic displays the message –“Start requests have been sent to the selected deployments”  Momentarily the application is changed to **Active** state |

**8. Verifying the Installations**

**Procedure**

1. Check the swagger doc of REST services : http://<HOST>:<PORT>/wfi/swagger-ui.html
2. Enter the InboxUI Server URL http://<HOST>:<PORT>/TaskInboxUI
3. Check the doc for Notification : http://<HOST>:<PORT>/Notification/swagger-ui.html

**9. FAQ’s and Solutions to Common Issues faced**

After starting the server, scan the \*.out and \*.log files to check if there are any errors. If there are errors, they must investigate and resolve. The following table provides a list of frequently faced issues and their resolution.

|  |  |
| --- | --- |
| **Issue** | **Resolution** |
| Caused by: java.sql.SQLException: ORA-01017: invalid username/password | Check the values entered for the user id / password defined |
| Caused by: java.sql.SQLException: Cannot create PoolableConnectionFactory | Check the values entered to create a Datasource ( eg) Network URL , Port etc |

If the issue reported are not listed above, contact the application support team for resolution.