

# **FUJITSU Software Systemwalker Service Catalog Manager V15.3.1**

A decorative horizontal band with a red-to-dark-red gradient, featuring abstract white and light red curved lines and glowing points.

## **ServerView Resource Orchestrator Integration (GlassFish)**

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# Contents

	<b>About this Manual.....</b>	<b>5</b>
<b>1</b>	<b>Introduction.....</b>	<b>7</b>
1.1	Components Involved in the ROR Integration.....	7
1.2	Usage Scenarios.....	8
<b>2</b>	<b>Installing the ROR Integration Software.....</b>	<b>9</b>
<b>2.1</b>	<b>Prerequisites and Preparation.....</b>	<b>9</b>
2.1.1	CT-MG and ROR.....	9
2.1.2	Hardware and Operating Systems.....	9
2.1.3	Java and Ant.....	9
2.1.4	Application Server.....	9
2.1.5	Relational Database.....	10
2.1.6	Mail Server.....	11
<b>2.2</b>	<b>Installation.....</b>	<b>11</b>
2.2.1	Preparing the Software and Setup Utilities.....	11
2.2.2	Configuring the ROR Integration.....	12
2.2.3	Setting up the Database.....	13
2.2.4	Setting up the Application Server Resources.....	14
2.2.5	Exchanging Certificates.....	14
<b>2.3</b>	<b>Update Installation.....</b>	<b>16</b>
<b>3</b>	<b>Creating and Publishing Services.....</b>	<b>18</b>
3.1	Prerequisites and Preparation.....	18
3.2	Creating Technical Services.....	18
3.3	Creating and Publishing Marketable Services.....	19
<b>4</b>	<b>Using ROR Services in CT-MG.....</b>	<b>20</b>
4.1	Subscribing to Services.....	20
4.2	Modifying Subscription Parameters.....	21
4.3	Executing Service Operations.....	21
4.4	Terminating Subscriptions.....	21
<b>5</b>	<b>Administrating the ROR Integration.....</b>	<b>22</b>

---

<b>5.1</b>	<b>Controlling the Provisioning Process.....</b>	<b>22</b>
<b>5.2</b>	<b>Handling Problems in the Provisioning Process.....</b>	<b>22</b>
<b>5.3</b>	<b>Backup and Recovery.....</b>	<b>23</b>
<b>5.4</b>	<b>Updating Configuration Settings.....</b>	<b>24</b>
<b>6</b>	<b>Uninstallation.....</b>	<b>26</b>
	<b>Appendix A Configuration Settings.....</b>	<b>27</b>
<b>A.1</b>	<b>Database Configuration Settings.....</b>	<b>27</b>
<b>A.2</b>	<b>GlassFish Configuration Settings.....</b>	<b>28</b>
<b>A.3</b>	<b>APP Configuration Settings.....</b>	<b>30</b>
<b>A.4</b>	<b>Controller Configuration Settings.....</b>	<b>32</b>
	<b>Appendix B Service Parameters.....</b>	<b>34</b>
	<b>Glossary .....</b>	<b>37</b>

## About this Manual

This manual describes the integration of FUJITSU ServerView Resource Orchestrator (ROR) with FUJITSU Software Systemwalker Service Catalog Manager - hereafter referred to as Catalog Manager or CT-MG.

This manual is structured as follows:

Chapter	Description
<i>Introduction on page 7</i>	Provides an overview of the CT-MG ROR integration, the components involved, and the supported usage scenarios.
<i>Installing the ROR Integration Software on page 9</i>	Describes how to prepare and carry out the installation of the ROR integration software.
<i>Creating and Publishing Services on page 18</i>	Describes how to create and publish services for ROR in CT-MG.
<i>Using ROR Services in CT-MG on page 20</i>	Describes how to provision, modify, and deprovision virtual systems in ROR through services in CT-MG.
<i>Administering the ROR Integration on page 22</i>	Describes administration tasks related to the CT-MG ROR integration.
<i>Uninstallation on page 26</i>	Describes how to uninstall the CT-MG ROR integration software.

## Readers of this Manual

This manual is directed to operators who want to offer virtual platforms and servers controlled by ROR through services on a marketplace provided by CT-MG. It assumes that you have access to existing CT-MG and ROR installations and that you familiar with the concepts and administration of both products.

## Notational Conventions

This manual uses the following notational conventions:

<b>Add</b>	The names of graphical user interface elements like menu options are shown in boldface.
<code>init</code>	System names, for example, command names, and text that is entered from the keyboard are shown in Courier font.
<code>&lt;variable&gt;</code>	Variables for which values must be entered are enclosed in angle brackets.
<code>[option]</code>	Optional items, for example, optional command parameters, are enclosed in square brackets.
<code>one   two</code>	Alternative entries are separated by a vertical bar.
<code>{one   two}</code>	Mandatory entries with alternatives are enclosed in curly brackets.

---

## Abbreviations

This manual uses the following abbreviations:

<b>APP</b>	Asynchronous Provisioning Platform
<b>CT-MG</b>	Catalog Manager
<b>IaaS</b>	Infrastructure as a Service
<b>IdP</b>	SAML Identity Provider
<b>ROR</b>	ServerView Resource Orchestrator
<b>SAML</b>	Security Assertion Markup Language
<b>STS</b>	Security Token Service
<b>WSDL</b>	Web Services Description Language

## Available Documentation

The following documentation on CT-MG is available:

- *Overview*: A PDF manual introducing CT-MG. It is written for everybody interested in CT-MG and does not require any special knowledge.
- *Online Help*: Online help pages describing how to work with the administration portal of CT-MG. The online help is directed and available to everybody working with the administration portal.
- *Installation Guide*: A PDF manual describing how to install and uninstall CT-MG. It is directed to operators who set up and maintain CT-MG in their environment.
- *Operator's Guide*: A PDF manual for operators describing how to administrate and maintain CT-MG.
- *Technology Provider's Guide*: A PDF manual for technology providers describing how to prepare applications for usage in a SaaS model and how to integrate them with CT-MG.
- *Supplier's Guide*: A PDF manual for suppliers describing how to define and manage service offerings for applications that have been integrated with CT-MG.
- *Reseller's Guide*: A PDF manual for resellers describing how to prepare, offer, and sell services defined by suppliers.
- *Broker's Guide*: A PDF manual for brokers describing how to support suppliers in establishing relationships to customers by offering their services on a marketplace.
- *Marketplace Owner's Guide*: A PDF manual for marketplace owners describing how to administrate and customize marketplaces in CT-MG.
- *Developer's Guide*: A PDF manual for application developers describing the public Web service interface of CT-MG and how to integrate applications and external systems with CT-MG.
- *ServerView Resource Orchestrator Integration*: A PDF manual for operators describing how to offer and use virtual platforms and servers controlled by ServerView Resource Orchestrator through services in CT-MG.
- Javadoc documentation for the public Web service interface of CT-MG and additional resources and utilities for application developers.

# 1 Introduction

Catalog Manager (CT-MG) is a set of services which provide all business-related functions and features required for turning on-premise applications and tools into 'as a Service' (aaS) offerings and using them in the Cloud. This includes ready-to-use account and subscription management, online service provisioning, billing and payment services, and reporting facilities.

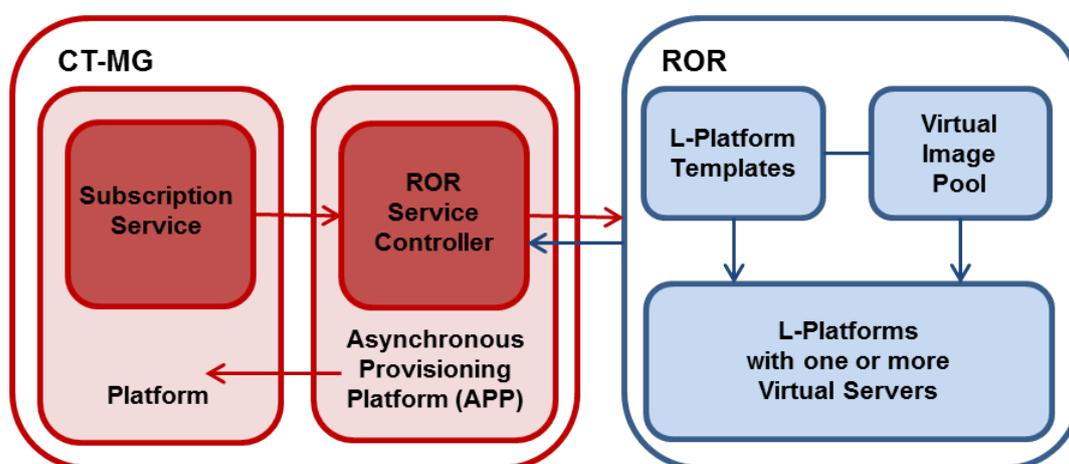
ServerView Resource Orchestrator (ROR) is a data center management tool which provisions virtual systems configured and tuned for the user's needs. On virtual platforms, users can, for example, request specific servers and operating systems, firewalls, load balancers, or pre-installed software and databases. Servers can be added and removed dynamically as required.

The integration of ROR with CT-MG provides for an Infrastructure as a Service (IaaS) solution that leverages the features of both products: Through services, which are published on a marketplace in CT-MG, users can request and use virtual platforms and servers in ROR. The usage costs can be calculated and charged by means of the CT-MG billing and payment services.

The ROR integration package provided with CT-MG includes all the components required for connecting existing CT-MG and ROR installations. This manual describes how to deploy this package and how to create and use services for ROR on a CT-MG marketplace.

## 1.1 Components Involved in the ROR Integration

The following picture provides an overview of the main components involved in the integration of CT-MG and ROR:



In CT-MG, customer subscriptions are managed by means of the **Subscription service**. When a customer creates, modifies, or terminates a subscription for a virtual system in ROR, the Subscription service asynchronously triggers the corresponding actions in ROR through the **Asynchronous Provisioning Platform (APP)** and the **ROR service controller**: Virtual platforms or servers are created, modified, or deleted in ROR.

APP is a framework which provides a provisioning service, an operation service, as well as functions, data persistence, and notification features which are always required for integrating applications with CT-MG in asynchronous mode. The actual communication with the applications is carried out by service controllers. For each application, a specific and dedicated service

controller is required. APP and the ROR service controller are the main components that make up the ROR integration software.

In ROR, the basic configurations of virtual platforms (L-Platforms) and virtual servers for typical usage scenarios are defined by the ROR administrators in so-called **templates**. Virtual images for provisioning the virtual servers are provided in the **Virtual Image Pool**. For example, a template may define a virtual platform that has a firewall, two application servers, a load balancer, and a database server. Different templates can be made available for small, medium, and large scale operation. Users can choose a template and reconfigure it to their needs.

## 1.2 Usage Scenarios

The CT-MG ROR integration supports the following usage scenarios:

- **Provisioning of a virtual platform (L-Platform):** When a customer subscribes to a corresponding service on a CT-MG marketplace, ROR is triggered to create a virtual platform with one or more virtual servers based on a specific template.
- **Horizontal scale-up and scale-down:** By changing the corresponding parameters in an existing subscription, customers can trigger ROR to add a virtual server to their virtual platform. In the same way, they can request ROR to remove a virtual server from the platform.
- **Vertical scale-up and scale-down:** By changing the corresponding parameters in an existing subscription, customers can trigger ROR to add CPUs to each virtual server in their virtual platform. In the same way, they can request ROR to remove CPUs from the virtual servers.
- **Assignment of a single server to an existing virtual platform:** When a customer subscribes to a corresponding service on a CT-MG marketplace, ROR is triggered to instantiate a virtual server. This virtual server is added to an existing virtual platform for which the same customer already has a subscription.
- **Starting and stopping a virtual platform:** A customer can explicitly start and stop a virtual platform in ROR by executing a service operation at the corresponding subscription.
- **Deletion of a virtual platform or server:** When a customer terminates a subscription for a virtual platform or server, ROR is triggered to delete these items. The subscription is terminated independent on whether the deletion is successful.

In ROR, the virtual platforms and servers created for CT-MG subscriptions are managed in the same way as other virtual platforms and servers. They can be viewed and monitored with the standard ROR tools.

For more details on the usage scenarios, refer to *Using ROR Services in CT-MG* on page 20.

## 2 Installing the ROR Integration Software

The following sections describe how to install and configure the ROR integration software as well as the preparations you need to take before.

**Note:** Installing the ROR integration software consists of installing APP and registering the ROR service controller. If you have already a working APP installation in your environment, you can use it for the ROR integration and just register the ROR service controller in it. In this case, follow the instructions in the APP documentation.

### 2.1 Prerequisites and Preparation

The following sections describe the prerequisites that must be fulfilled and the preparations you need to take before installing and deploying the ROR integration software.

#### 2.1.1 CT-MG and ROR

- You must have access to a fully functional CT-MG installation. You can install the ROR integration software in the same environment or on a different server.  
You must have access to CT-MG as an administrator and a technology manager of an organization that has at least the technology provider role.
- You must have access to a fully functional ROR installation.  
In ROR, a tenant must have been set up for your organization. You must have the necessary credentials to access this tenant and to create and configure virtual platforms (L-Platforms) for it.

#### 2.1.2 Hardware and Operating Systems

The ROR integration software as a Java application does not rely on specific hardware or operating systems. It can be deployed on any platform supported by the application server and the database management system.

#### 2.1.3 Java and Ant

The ROR integration requires a Java Development Kit (JDK), version 7, 64 bit.

For being able to execute the installation scripts, you need to install the Apache Ant 1.8 (or higher) open source software. In the subsequent sections, `<ANT_HOME>` is the installation directory of Apache Ant.

#### 2.1.4 Application Server

The ROR integration software must be deployed on an application server compatible with Java EE version 6. The following application server is supported:

Oracle GlassFish Server, version 3.1.2.2.

You can deploy the ROR integration software on the same application server you use for CT-MG. Alternatively, you can use a separate application server installation.

**Note:** Before installing GlassFish, make sure that the `JAVA_HOME` environment variable points to a Java Development Kit (JDK), version 7, 64 bit.

Proceed as follows:

1. Install the application server as described in its documentation, and configure it as required by your environment.

---

**Note:** Make sure that the path of the GlassFish installation directory does not contain blanks.

---

2. After having configured GlassFish, make a backup copy of the GlassFish installation.
3. Make sure that GlassFish is running in a JDK 7 environment. Also, make sure that no other applications (e.g. Tomcat) are running on your GlassFish ports.

The installation of the ROR integration software creates the `app-domain` in the application server. If required, you can change the domain name in the `glassfish.properties` file before installing the software.

In the subsequent sections, `<GLASSFISH_HOME>` is the installation directory of GlassFish.

## 2.1.5 Relational Database

The ROR integration software stores its data in a relational database. The following database management system (DBMS) is supported:

PostgreSQL, version 9.1.12.

Install the DBMS as described in its documentation.

If required, you can use a separate machine for the ROR integration database.

### Setup and Configuration

Edit the file

```
<postgres_dir>/data/postgresql.conf
```

as follows (`<postgres_dir>` is the PostgreSQL installation directory):

1. Set the `max_prepared_transactions` property value to 50.
2. Set the `max_connections` property value to 210.

This property determines the maximum number of concurrent connections to the database server.

Be aware of the following: This setting is used in combination with the JDBC pool size settings for the domains on your application server. If you change the JDBC pool size, you might need to adapt the `max_connections` setting. Refer to the *CT-MG Operator's Guide*, section *Tuning Performance*, for details.

3. Set the `listen_addresses` property value:

Specify the IP addresses of all application servers on which the database server is to listen for connections from client applications. If you use the entry `'*'`, which corresponds to all available IP addresses, you must be aware of possible security holes.

4. Save the file.

If you use a server name in all configuration files instead of `localhost` during installation, edit the file

```
<postgres_dir>/data/pg_hba.conf
```

as follows (`<postgres_dir>` is the PostgreSQL installation directory):

1. Add the IP address of the application server that is to host the ROR integration software.

For example:

```
host all all 123.123.12.1/32 md5
```

There are authentication methods other than `md5`. For details, refer to the PostgreSQL documentation.

2. Save the file.

Restart your PostgreSQL server for the changes to take effect.

## 2.1.6 Mail Server

For informing users about relevant issues (e.g. their registration or assignment to a subscription), the ROR integration software requires a mail server in its environment. You can use any mail server that supports SMTP.

The settings for addressing the mail server are defined in the `glassfish.properties` file of the ROR integration package.

## 2.2 Installation

The installation of the ROR integration software consists of the following main steps:

- *Preparing the Software and Setup Utilities* on page 11
- *Configuring the ROR Integration* on page 11
- *Setting up the Database* on page 13
- *Setting up the Application Server Resources* on page 14
- *Exchanging Certificates* on page 14

### 2.2.1 Preparing the Software and Setup Utilities

The ROR integration software and setup utilities are provided in the ROR integration package, `fujitsu-bss-ror-install-pack.zip`. The contents of this package need to be made available in your environment as follows:

1. Extract the contents of the ROR integration package, `fujitsu-bss-ror-install-pack.zip`, to a separate temporary directory on the system from where you want to install and deploy the ROR integration software.

In the following, this directory will be referred to as `<install_pack_dir>`.

**Note:** The path and name of `<install_pack_dir>` must not contain blanks.

2. Extract the contents of the file

```
<install_pack_dir>/fujitsu-bss-ror-setup.zip
```

```
to <install_pack_dir>/fujitsu-bss-ror-setup.
```

The directory contains the configuration files and XML files that support you in setting up the databases and application server resources for the ROR integration.

In the following sections, this directory will be referred to as `<setup_dir>`.

## 2.2.2 Configuring the ROR Integration

The ROR integration software and setup utilities require a number of settings. These settings are provided in the following files in `<setup_dir>`:

- `db.properties`: Settings for the database setup and access.
- `glassfish.properties`: Configuration settings for the application server.
- `configsettings.properties`: Configuration settings for APP.

The initial installation stores these settings in the `bssapp` database, where you can change them later, if required. An update installation only adds new settings to the database but does not overwrite existing ones.

- `controller\configsettings_controller.properties`: Configuration settings for the ROR service controller.

The initial installation stores these settings in the `bssapp` database, where you can change them later, if required.

For details on the configuration settings, refer to *Configuration Settings* on page 27.

You need to adapt the settings in the files above to your environment. In particular, server names, ports, paths, user IDs, and passwords require adaptation. Proceed as follows:

1. Open each of the files listed above with an editor.
2. Check the settings in each file and adapt them to your environment.
3. Save the files to their original location in `<setup_dir>`. For future reference, it is a good idea to create a backup of the files.

### Observe the following configuration issues:

- The specified ports are suggestions and work with the default settings used in the files.
- If you install everything on the local system, use either the server name or `localhost` in all configuration files for all URLs that need to be resolved by APP.

**Do not mix the specification of server names and `localhost`.**

The `APP_BASE_URL` setting in the `configsettings.properties` file must be resolved by clients. They always require the specification of the server name.

Specify the `APP_BASE_URL` setting as follows:

```
APP_BASE_URL=http://<host>:<port>/fujitsu-bss-app
```

If you have changed the `glassfish.app.domain.portbase` setting in the `glassfish.properties` file, you must change the port here accordingly.

### Configuration for SAML\_SP authentication mode:

If the CT-MG installation you want to work with is configured for SAML\_SP authentication mode, Web service calls to it are secured and authenticated by a Security Token Service (STS). This is a Web service that issues security tokens as defined in the WS-Security/WS-Trust specification. The STS is usually provided by the Identity Provider (IdP) system in use (for example, Active Directory Federation Service, Cloudminder, or OpenAM).

For using an STS for Web service calls, you must perform the following steps before installing the ROR integration software:

1. From the IdP or CT-MG operator, obtain a metadata exchange file in WSDL format generated with and for the IdP system in use. The metadata include namespace information required for connecting to the STS.

2. Save the metadata exchange file to the following file in <setup\_dir>, overwriting the existing empty file:

```
<setup_dir>\wsit\STSService.xml
```

3. Open the STSService.xml file and retrieve the value of targetNamespace, for example:

```
http://schemas.microsoft.com/ws/2008/06/identity/securitytokenservice
```

4. Open the following file in <setup\_dir>:

```
<setup_dir>\wsit\wsit-client.xml
```

5. Replace the placeholder in the namespace tag of the wsit-client.xml with the targetNamespace value copied from the STSService.xml file.

6. Close and save the wsit-client.xml file to its original location.

7. Make sure to enter correct values for the SAML\_SP authentication mode in the configsettings.properties file in <setup\_dir>:

- BSS\_AUTH\_MODE=SAML\_SP
- BSS\_WEBSERVICE\_URL\_STS\_PORT=https://<server>:<port>/{SERVICE}/v1.6/STS?wsdl
- APP\_KEYSTORE\_PASSWORD=changeit
- APP\_TRUSTSTORE\_PASSWORD=changeit

### 2.2.3 Setting up the Database

The database is created by executing installation scripts. It needs to be initialized with the appropriate schema and settings.

Proceed as follows:

1. Make sure that the database server is running.
2. Open the command prompt (Windows) or a terminal session (UNIX/Linux).
3. Set the following environment variable for your current session:

DB\_INTERPRETER: The absolute path and name of the psql executable of PostgreSQL. The executable is usually located in the bin subdirectory of the PostgreSQL installation directory.

Example:

```
export DB_INTERPRETER="/opt/PostgreSQL/9.1/bin/psql"
```

4. Create the database by executing the build-db.xml file in <setup\_dir> as follows:

```
<ANT_HOME>/bin/ant -f build-db.xml
  createAndUpdateDatabaseWithController
```

If you set an ID or password other than postgres for the PostgreSQL user account when installing the database management system, you have to specify the ID or password with the call to the build-db.xml file as follows:

```
<ANT_HOME>/bin/ant -f build-db.xml
  createAndUpdateDatabaseWithController
  -Ddb.admin.user=<user ID> -Ddb.admin.pwd=<password>
```

**Note:** It may be required to enclose -Ddb.admin.user and -Ddb.admin.pwd=<password> in double or single quotes depending on the operating system.

If the setup of the database fails with errors, proceed as follows:

1. Check and correct the configuration files.
2. Execute the `build-db.xml` file as follows:

```
<ANT_HOME>/bin/ant -f build-db.xml dropDatabases
<ANT_HOME>/bin/ant -f build-db.xml dropUsers
```

3. Repeat the setup.

## 2.2.4 Setting up the Application Server Resources

The ROR integration requires specific settings and resources in the application server, such as a data source or mail settings.

Proceed as follows to create the resources and make the required settings in the application server:

1. Open the command prompt (Windows) or a terminal session (UNIX/Linux).
2. Execute the `build-glassfish-setup.xml` file in `<setup_dir>` as follows:

```
<ANT_HOME>/bin/ant -f build-glassfish-setup.xml
  setupAPPWithController
```

This command has the following results:

- The `app-domain` domain is created and started.
- The settings and resources for the ROR integration are created in the application server.
- APP (`fujitsu-bss-app`) and the ROR service controller (`fujitsu-bss-app`) are deployed to the `app-domain` domain.

**If the setup of the application server domain fails with errors, proceed as follows:**

1. Stop the `app-domain` domain.
2. Delete the `app-domain` domain.
3. Repeat the setup.

## 2.2.5 Exchanging Certificates

For secure communication of the ROR integration software with CT-MG and ROR, you need to exchange the corresponding certificates. You need to:

- Import the certificates of CT-MG and ROR into the truststore of the `app-domain` application server domain of the ROR integration software.
- Export the certificate of the `app-domain` and import it to the `bes-domain` application server domain of CT-MG.

Proceed as follows:

1. Obtain a `.crt` file with the certificate of CT-MG.

The `.crt` file can be created, for example, by executing the following command at the command prompt (Windows) or in a terminal session (UNIX/Linux) on the application server where CT-MG is deployed:

```
<AppServerJRE>/bin/keytool -export -rfc -alias slas
  -file ctmgbss.crt -storepass <password> -keystore
```

```
<GLASSFISH_HOME>/glassfish/domains/bes-domain/config/keystore.jks
```

2. Obtain a `.cer` file with the certificate of ROR.

The `.cer` file can be created, for example, in the following ways in ROR:

- Open the URL of the ROR API (`https://<ROR server>:<port>/cfmgapi/endpoint`) in a Web browser. View the certificate of the page and export it to a file using the standard procedures of the Web browser.
- Use the `scsexppfx` command included in ROR. For details, refer to the ROR documentation.

3. Import the certificates of CT-MG and ROR into the truststore of the `app-domain` application server domain.

To import the CT-MG certificate from the `.crt` file you created, you can use, for example, the following command at the command prompt (Windows) or in a terminal session (UNIX/Linux) on the application server:

```
<AppServerJRE>/bin/keytool -import -trustcacerts -alias ctmgbss
-file ctmgbss.crt -storepass <password> -keystore
<GLASSFISH_HOME>/glassfish/domains/app-domain/config/cacerts.jks
```

To import the ROR certificate from the `.cer` file you created, you can use, for example, the following command at the command prompt (Windows) or in a terminal session (UNIX/Linux) on the application server:

```
<AppServerJRE>/bin/keytool -import -trustcacerts -alias ctmgror
-file ctmgror.cer -storepass <password> -keystore
<GLASSFISH_HOME>/glassfish/domains/app-domain/config/cacerts.jks
```

4. Create a `.crt` file with the certificate of the `app-domain` domain in which you have deployed the ROR integration software

The `.crt` file can be created, for example, by executing the following command at the command prompt (Windows) or in a terminal session (UNIX/Linux) on the application server:

```
<AppServerJRE>/bin/keytool -export -rfc -alias slas
-file ctmgapp.crt -storepass <password> -keystore
<GLASSFISH_HOME>/glassfish/domains/app-domain/config/keystore.jks
```

5. Import the certificate of the `app-domain` domain into the `bes-domain` application server domain of CT-MG.

To do this, you can use, for example, the following command at the command prompt (Windows) or in a terminal session (UNIX/Linux) on the application server:

```
<AppServerJRE>/bin/keytool -import -trustcacerts -alias ctmgapp
-file ctmgapp.crt -storepass <password> -keystore
<GLASSFISH_HOME>/glassfish/domains/bes-domain/config/cacerts.jks
```

6. If the ROR integration software and CT-MG are configured for SAML\_SP authentication mode, obtain the relevant certificates from the IdP system and import them in the truststore of the `app-domain` domain.

For example, when using Microsoft Active Directory as the IdP, you need to obtain and import the service communications and token-signing certificates.

7. Stop and restart the `app-domain` and the `bes-domain` domains for the certificates to become effective.

## 2.3 Update Installation

Before updating your installation of the ROR integration software to a new release, read the *Release Notes* of the new release. They contain information on compatibility issues, changes and enhancements, and known restrictions.

### Preparing the Update

Before you start with an update installation, carry out the following steps:

1. In the `app-domain` domain, disable or undeploy the following applications:
  - `fujitsu-bss-app`
  - `fujitsu-bss-app-ror`
2. Check for `.glassfishStaleFiles` files in the `app-domain`. If there are any, delete them. The files are located in
 

```
app-domain/applications/<application name>/.glassfishStaleFiles
```

 For example:
 

```
app-domain/applications/fujitsu-bss-app/.glassfishStaleFiles
```
3. Set the following environment variable for your current session:
 

`DB_INTERPRETER`: The absolute path and name of the `psql` executable of PostgreSQL. The executable is usually located in the `bin` subdirectory of the PostgreSQL installation directory.

 Example:

```
export DB_INTERPRETER="/opt/PostgreSQL/9.1/bin/psql"
```

If you are running CT-MG and the ROR integration software in SAML\_SP authentication mode, take the following additional preparations:

1. Extract the `fujitsu-bss-app.ear` file included in the ROR integration package to a separate folder.
2. Extract the `fujitsu-bss-app.jar` file of this folder into a separate folder.
3. In the `wsit` subfolder of `<setup_dir>`, adapt the files as required by your environment. For details, refer to *Configuring the ROR Integration* on page 11
4. Copy the `wsit` subfolder of `<setup_dir>` with all its files to the folder to which you extracted the `fujitsu-bss-app.jar` file.
5. Recreate the `fujitsu-bss-app.jar` file from the subfolder with the modified contents.
6. Recreate the `fujitsu-bss-app.ear` file with the modified `fujitsu-bss-app.jar` file and use it for the update installation.

### Updating the Database

After having executed the preparation steps, proceed with updating the database as follows:

1. Create a backup of the `bssapp` database using the standard PostgreSQL commands. The database backup must be compatible with PostgreSQL 9.1.12.
2. Update the following configuration files so that the settings match your current installation:
  - `db.properties`

- `configsettings.properties`
- `controller\configsettings_controller.properties`

3. Update the schema and configuration settings of the `bssapp` database by executing the `build-db.xml` file in `<setup_dir>` as follows:

```
<ANT_HOME>/bin/ant -f build-db.xml
updateDatabaseWithController
```

If you set a password other than `postgres` for the PostgreSQL user account (`postgres`) when installing the database management system, you have to specify the password with the call to the `build-db.xml` file as follows:

```
<ANT_HOME>/bin/ant -f build-db.xml
updateDatabaseWithController
-Ddb.admin.pwd=<password>
```

**Note:** Make sure that Ant runs in a Java 7 runtime environment when calling the `build-db.xml` file.  
It may be required to enclose `-Ddb.admin.pwd=<password>` in double or single quotes depending on the operating system.

4. Check whether the file:`lib` directory of the `app-domain` contains the following file:

```
postgresql-9.1-903.jdbc4.jar
```

is contained in the following directories of the application server:

- `lib` directory of the `app-domain` domain
- `<GLASSFISH_HOME>\mq\bin\ext`

If this is not the case, copy the file from the `<setup_dir>\lib` directory to the location where it is missing.

## Updating the Application Server

After having executed the preparation steps, redeploy or deploy the applications that make up the ROR integration software in the `app-domain` domain:

1. `fujitsu-bss-app`
2. `fujitsu-bss-app-ror`

Restart the `app-domain` domain.

## 3 Creating and Publishing Services

The following sections describe how to create and publish services in CT-MG by means of which customers can request and use virtual platforms and servers in ROR.

### 3.1 Prerequisites and Preparation

- For creating technical services for the ROR integration in CT-MG, you must have access to CT-MG as a technology manager. You must be a member of the technology provider organization which is responsible for the ROR service controller as specified in the configuration settings for the installation.
- In ROR, appropriate templates for virtual platforms (L-Platforms) and virtual servers (Virtual Image Pool) must exist, to which the technical services in CT-MG can be mapped. The ROR user specified in the configuration settings for the installation must have the necessary credentials to create and configure virtual platforms and servers based on these templates. The ROR integration package includes technical services as samples. In order to use these samples, the virtual platforms in ROR must allow for configuring clusters consisting of up to 6 servers (1 master, up to 5 slaves). The servers must be operable with up to 4 CPUs.
- For creating marketable services for the ROR integration in CT-MG, you must have access to CT-MG as a service manager of an organization with the supplier role. This may be the same organization as the technology provider organization or a different one.
- For publishing your marketable services, you must have access to an appropriate marketplace in CT-MG in your service manager role.

### 3.2 Creating Technical Services

The first step in providing CT-MG services for ROR is to create one or more technical services. Proceed as follows:

1. Define one or more technical services in an XML file.

As a basis, you can use the technical service definitions which are included in the `fujitsu-bss-ror-install-pack.zip` file:

- `samples\TechnicalService_VirtualPlatform.xml` for the provisioning of virtual platforms with one or more virtual servers
- `samples\TechnicalService_VirtualServer.xml` for the provisioning of a virtual server on an existing virtual platform

In the technical service definition, be sure to specify:

- The asynchronous provisioning type
- The direct or user access type
- Service parameters which represent the virtual platform and server templates defined in ROR. For details on the supported service parameters, refer to *Service Parameters* on page 34.

2. Log in to the CT-MG administration portal with your technology manager account.
3. Import the technical services you created and appoint one or more supplier organizations for them.

For details on these steps, refer to the *Technology Provider's Guide* and to the online help of CT-MG.

### 3.3 Creating and Publishing Marketable Services

As soon as the technical services for the ROR integration exist in CT-MG, you can define and publish marketable services based on them.

Proceed as follows:

1. Log in to the CT-MG administration portal with your service manager account.
2. Define one or more marketable services based on the technical services you created for ROR.
3. Define price models for your marketable services.
4. Publish the services to a marketplace.

For details on these steps, refer to the *Supplier's Guide* and to the online help of CT-MG.

---

## 4 Using ROR Services in CT-MG

The following sections describe how users can subscribe to and work with the services you have created for ROR in CT-MG. You will find details of the supported usage scenarios outlined in *Usage Scenarios* on page 8.

### 4.1 Subscribing to Services

Users of customer organizations can subscribe to the services you have created for ROR on the marketplace where you have published them. This results in the provisioning of a virtual platform or server in ROR, depending on the underlying technical service.

The following scenarios are supported by the ROR integration software:

- **Provisioning of a virtual platform (L-Platform):** When a customer subscribes to a corresponding service, ROR is triggered to create a virtual platform with one or more virtual servers based on a specific template.

The customer can specify a name for the virtual platform. The technical service may specify a prefix which is prepended to this name, as well as a pattern against which the name is checked before the provisioning operation is started.

Depending on the parameters defined for the technical service, the customer can select or enter the number of virtual servers and/or the number of CPUs for each server.

As soon as the virtual platform is available, the ROR service controller informs the master virtual server of the number and IP addresses of the slave servers.

If all steps are completed successfully, the subscription and the virtual platform and servers are ready to use. The IP addresses of the virtual servers and the initial passwords for accessing them are output in the subscription details on the marketplace.

- **Assignment of a single server to an existing virtual platform:** When a customer subscribes to a corresponding service, ROR is triggered to instantiate a virtual server. This virtual server is added to an existing virtual platform for which the same customer already has a subscription.

The customer can specify a name for the virtual server. The technical service may specify a prefix which is prepended to this name, as well as a pattern against which the name is checked before the provisioning operation is started.

Depending on the parameters defined for the technical service, the customer can select or enter the number of CPUs for the new server. Technical parameters, such as the IDs of the virtual platform or the network within the virtual platform, to which the new server is to be added, are usually specified in the technical service, not by the customer.

If all steps are completed successfully, the subscription and the new virtual server are ready to use. The IP address of the new virtual servers and the initial password for accessing it are output in the subscription details on the marketplace.

The provisioning operations are carried out in asynchronous mode. As long as the provisioning is not complete, the status of the subscription is **pending**. The status changes to **ready** as soon as the provisioning has been finished successfully.

The users assigned to a subscription can access the virtual servers provided by ROR using the IP addresses and initial passwords indicated in the subscription details. The initial user ID for accessing the virtual servers is `Administrator` for Microsoft Windows systems, `root` for Linux systems. It is strongly recommended to change the initial password after the first login.

---

In ROR, the virtual platforms and servers created for CT-MG subscriptions are managed in the same way as other virtual platforms and servers. They can be viewed and monitored with the standard ROR tools.

## 4.2 Modifying Subscription Parameters

By modifying the corresponding service parameters at their subscriptions, customers can change the virtual platforms and servers provisioned in ROR.

The following scenarios are supported by the ROR integration software:

- **Horizontal scale-up and scale-down:** By changing the corresponding service parameters, customers can trigger ROR to add a virtual server to their virtual platform. In the same way, they can request ROR to remove a virtual server from the platform.

In both cases, the ROR service controller informs the master virtual server of the new number and IP addresses of the slave servers.

If all steps are completed successfully, the subscription and the virtual platform and servers are ready to use with the changed parameters. The IP addresses of the virtual servers and the initial passwords for accessing them are output in the subscription details. The initial user ID for accessing the virtual servers is `Administrator` for Microsoft Windows systems, `root` for Linux systems. It is strongly recommended to change the initial password after the first login.

- **Vertical scale-up and scale-down:** By changing the corresponding service parameters, customers can trigger ROR to add CPUs to each virtual server in their virtual platform. In the same way, they can request ROR to remove CPUs from the virtual servers.

If all steps are completed successfully, the subscription and the virtual platform and servers are ready to use with the changed parameters.

The modifications are carried out in asynchronous mode. As long as the update is not complete, the status of the corresponding subscription is **pending update**. The status changes to **ready** as soon as the modification has been finished successfully.

**Note:** If the subscription was **suspended** before starting the modification, its status changes to **suspended update** as long as the operation is not complete.

In the technical service definition, you can specify an address to which emails are to be sent that notify service users or administrators of customer organizations about a successful modification of a virtual platform or server.

## 4.3 Executing Service Operations

Customers can explicitly start and stop a virtual platform in ROR from CT-MG. To do this, they execute the appropriate service operation from the subscription for the virtual platform:

- **Start:** Starts the virtual platform if it was stopped.
- **Stop:** Stops the virtual platform if it was started.

## 4.4 Terminating Subscriptions

A customer can at any time terminate a subscription for a virtual platform or server in ROR.

ROR is triggered to delete the virtual platform or server. The subscription is terminated independent on whether the deletion is successful.

## 5 Administrating the ROR Integration

The following sections describe administration tasks you may need to perform in your role as an operator of the ROR integration software:

- *Controlling the Provisioning Process* on page 22
- *Handling Problems in the Provisioning Process* on page 22
- *Backup and Recovery* on page 23
- *Updating Configuration Settings* on page 23

### 5.1 Controlling the Provisioning Process

The ROR integration provides you with the following feature for controlling the provisioning, modification, and deprovisioning of virtual platforms and servers:

In the definition of the technical services for ROR, you can specify the `MAIL_FOR_COMPLETION` parameter. This is an address to which emails are to be sent that describe manual steps required to complete an operation.

If you specify this parameter, the ROR service controller interrupts the processing of each operation before its completion and waits for a notification about the execution of a manual action. This notification consists in opening the link given in the email.

Omit the `MAIL_FOR_COMPLETION` parameter if you do not want to interrupt the processing.

### 5.2 Handling Problems in the Provisioning Process

If the provisioning or modification of a virtual system fails on the ROR side or if there are problems in the communication between the participating systems, the corresponding subscription in CT-MG remains pending. The ROR service controller informs the technology managers of its responsible technology provider organization by email of any incomplete provisioning, modification, or delete operation in ROR.

You can then take the appropriate actions to solve the problem in ROR or in the communication. For example, you could remove an incomplete virtual platform or server, or you could restore a missing connection.

After solving the problem, the ROR integration components and CT-MG need to be synchronized accordingly. You do this by triggering a corresponding action in the APP component. Proceed as follows:

1. Work as a technology manager of the technology provider organization which is responsible for the ROR service controller.
2. Invoke the instance status interface of APP for the ROR service controller by opening the following URL in a Web browser:

```
https://<server>:<port>/fujitsu-bss-app/controller/?cid=ess.ror
```

The Web page shows all subscriptions for ROR, including detailed information such as the customer organization, the ID of the related ROR instance, and the provisioning status.

3. Find the subscription for which you solved the problem in the most recent provisioning, modification, or deprovisioning operation.

4. In the **Action** column, select the action for the ROR integration components to execute next. Possible actions are the following:
  - `RESUME` - to resume the processing of a provisioning operation in APP which was suspended.
  - `SUSPEND` - to suspend the processing of a provisioning operation in APP, for example, when ROR does not respond.
  - `UNLOCK` - to remove the lock for an ROR instance in APP.
  - `DELETE` - to terminate the subscription in CT-MG and remove the instance in APP, but keep the virtual platform or server in ROR for later use. For this action, the service manager role is required in addition.
  - `DEPROVISION` - to terminate the subscription in CT-MG, remove the instance in APP, and deprovision the virtual platform or server in ROR. For this action, the service manager role is required in addition.
  - `ABORT_PENDING` - to abort a pending provisioning or modification operation in CT-MG.
  - `COMPLETE_PENDING` - to complete a pending provisioning or modification operation in CT-MG.
5. Click **Execute** to invoke the selected action.

## 5.3 Backup and Recovery

The ROR integration software does not offer integrated backup and recovery mechanisms. Use the standard file system, application server, and database mechanisms instead.

### Backup

It is recommended to create a regular backup of the following data according to the general guidelines of your organization:

- Database (`bssapp`). The frequency of database backups depends on the amount of changes and on the availability of time slots with low load. PostgreSQL supports database backups without previous shutdown. For details, refer to the PostgreSQL documentation.
- Certificates contained in the truststore of the `app-domain` domain (`cacerts.jks` file).
- Configuration files.

**Note:** When preparing for an update installation of the current ROR integration software, always create a backup of all the data mentioned above.

### Recovery

If you need to recover your ROR integration installation, the recommended procedure is as follows:

1. Restore the `bssapp` database from the backup using the relevant PostgreSQL commands.
2. Stop the `app-domain` domain of the application server.
3. Restore the certificate truststore of the `app-domain` domain (`cacerts.jks` file) from the backup.
4. Start the `app-domain` domain.

## 5.4 Updating Configuration Settings

The ROR integration software and setup utilities require a number of settings. In the installation, you adapted the settings to your environment, in particular server names, ports, paths, and user IDs.

The configuration settings are provided in the following files in the directory to which you extracted the `fujitsu-bss-ror-setup.zip` file (`<install_dir>/fujitsu_bss_ror_setup`) when you installed the ROR integration software. In the following sections, this directory is referred to as `<setup_dir>`.

- `db.properties`: Settings for the database setup and access.
- `glassfish.properties`: Configuration settings for the application server.
- `configsettings.properties`: Configuration settings for APP.

The initial installation stores these settings in the `bssapp` database, where you can change them later, if required. An update installation only adds new settings to the database but does not overwrite existing ones.

- `controller\configsettings_controller.properties`: Configuration settings for the ROR service controller.

The initial installation stores these settings in the `bssapp` database, where you can change them later, if required.

For details on the configuration settings, refer to *Configuration Settings* on page 27.

If you need to change the settings, proceed as described in the following sections.

### To update the configuration settings for database access:

1. Log in to the administration console of the application server.
2. Adapt the settings as required.

### To update the configuration settings for the application server:

1. Open the `glassfish.properties` file with an editor.
2. Check the settings in the file and adapt them to your environment, if required.
3. Save the file to its original location in `<setup_dir>`.
4. Update the settings and resources in the application server by executing the `build-glassfish-setup.xml` file in `<setup_dir>` as follows:

```
<ANT_HOME>/bin/ant -f <setup_dir>/build-glassfish-setup.xml
```

### To update the configuration settings for the APP services:

1. Edit the content of the `configsettings.properties` file as required.
2. Execute the `build-db.xml` file in `<setup_dir>` as follows:

```
<ANT_HOME>/bin/ant -f <setup_dir>/build-db.xml updateConfigSettings
```

### To update the configuration settings for the ROR service controller:

1. Edit the content of the `configsettings_controller.properties` file as required.
2. Execute the `build-db.xml` file in `<setup_dir>` as follows:

```
<ANT_HOME>/bin/ant -f <setup_dir>/build-db.xml
updateConfigSettingsController
```

If you only want to change the technology provider organization which is responsible for the ROR service controller, you can use the Web interface of APP:

1. In a Web browser, access the base URL of APP, for example,  
`http://127.0.0.1:8880/fujitsu-bss-app`
2. Log in with the ID and password of the user you specified for `BSS_USER_KEY` in the configuration settings for APP or as another administrator of the same organization.
3. Specify the technology provider organization for the ROR service controller, `ess.ror`.
4. Save the settings.

## 6 Uninstallation

If you want to uninstall the ROR integration software, take the following preparations:

1. Back up resources and data you would like to keep. For details, refer to *Backup and Recovery* on page 23.
2. In CT-MG, delete the marketable services and technical services related to ROR.

**To uninstall the ROR integration software:**

1. Stop the `app-domain` in the application server.
2. Delete the `app-domain` domain.
3. Delete the `bssapp` database in the database management system.
4. Uninstall the database management system and the application server, if you no longer need them for other purposes.

For details on how to proceed, refer to the documentation of the database management system and the application server.

## Appendix A: Configuration Settings

The configuration settings for the ROR integration software and setup utilities are provided in the following files in the directory to which you extracted the `fujitsu-bss-ror-setup.zip` file (`<install_dir>/fujitsu-bss-ror-setup`):

- `db.properties`
- `glassfish.properties`
- `configsettings.properties`
- `controller\configsetting_controller.properties`

This appendix describes the settings in detail.

### A.1 Database Configuration Settings

The `db.properties` file contains the configuration settings for database access. This configuration is used for the initial setup and schema updates.

#### **db.driver.class**

The Java class of the JDBC driver.

Default: `org.postgresql.Driver`

#### **db.url**

The connection URL of the database.

Default: `jdbc:postgresql://localhost:5432/bssapp`

#### **db.host**

The database host.

Default: `localhost`

#### **db.port**

The database port.

Default: `5432`

#### **db.name**

The name of the database.

Default: `bssapp`

#### **db.user**

The name of the user to connect to the database.

Default: `bssappuser`

#### **db.pwd**

The password of the user to connect to the database.

Default: `bssappuser`

**db.type**

The type of the database.

Default: `postgresql`

## A.2 GlassFish Configuration Settings

The `glassfish.properties` file contains the configuration settings for the GlassFish application server. The settings are required for configuring a GlassFish domain for APP.

**GLASSFISH\_HOME**

The absolute path and name of the GlassFish installation directory.

**JDBC\_DRIVER\_JAR\_NAME**

The name of the PostgreSQL JDBC driver jar file as available after installation.

Example: `postgresql-9.1-903.jdbc4.jar`

**MAIL\_HOST**

The host name or IP address of your mail server. This setting is required for the application server mail resource.

**MAIL\_RESPONSE\_ADDRESS**

The email address used by the server as the sender of emails.

Example: `service@example.com`

**MAIL\_PORT**

The port of your mail server.

Default: `25`

**MAIL\_USE\_AUTHENTICATION**

Optional. Defines whether mails can only be sent to users authenticated against the SMTP mail system.

Allowed values: `true`, `false`

Default: `false`

**MAIL\_USER**

Mandatory if `MAIL_USE_AUTHENTICATION=true`. Specifies the name of the user to be used for authentication against the SMTP mail system.

**MAIL\_PWD**

Mandatory if `MAIL_USE_AUTHENTICATION=true`. Specifies the password of the user to be used for authentication against the SMTP mail system.

**MAIL\_TIMEOUT**

Optional. The time interval in milliseconds for sending email messages, i.e. until a socket I/O timeout occurs.

Allowed values: Any value between 0 and 4924967296

Default: 30000

### **MAIL\_CONNECTIONTIMEOUT**

Optional. The time interval in milliseconds for establishing the SMTP connection, i.e. until a socket connection timeout occurs.

Allowed values: Any value between 0 and 4924967296

Default: 30000

### **glassfish.app.domain.portbase**

Mandatory. The base number for all ports used by the domain of the APP application.

Example: 8800

### **glassfish.app.admin.domain.port**

The administration port of the domain used for APP.

Example: 8848

### **glassfish.app.domain.name**

The name of the domain where you deployed APP.

Example: `app-domain`

### **glassfish.app.domain.admin.user**

The user name of the APP domain administrator.

Default: `admin`

### **glassfish.app.domain.admin.pwd**

The password of the APP domain administrator.

Default: `adminadmin`

### **glassfish.app.domain.admin.master.pwd**

The master password of the APP domain administrator.

Default: `changeit`

### **glassfish.bes.domain.name**

The name of the domain where CT-MG is deployed .

Example: `bes-domain`

### **glassfish.bes.domain.admin.master.pwd**

The master password of the CT-MG domain administrator.

Default: `changeit`

### **glassfish.domain.stop.waitSeconds**

Mandatory. The time in seconds the application server waits until a stop domain operation is executed.

Default: 60

### **glassfish.domain.start.maxWaitSeconds**

Mandatory. The maximum time in seconds the application server waits until it checks whether a domain is started.

Default: 600

## **A.3 APP Configuration Settings**

The `configsettings.properties` file contains the configuration settings for APP.

### **APP\_BASE\_URL**

```
APP_BASE_URL=http://<server>:<port>/fujitsu-bss-app
```

The URL used to access APP.

### **APP\_TIMER\_INTERVAL**

```
APP_TIMER_INTERVAL=15000
```

The interval (in milliseconds) at which APP polls the status of instances. If you increase the value, provisioning will take longer. If you decrease it, more load is put on the system.

### **APP\_MAIL\_RESOURCE**

```
APP_MAIL_RESOURCE=mail/APPMail
```

The JNDI name of the GlassFish mail resource which is used to send emails.

The resource `mail/APPMail` is created during setup with the parameters defined in the `glassfish.properties` file. This setting only needs to be changed if you want to use a different mail resource.

### **APP\_ADMIN\_MAIL\_ADDRESS**

```
APP_ADMIN_MAIL_ADDRESS=admin@example.com
```

The email address which is used for sending email notifications.

### **APP\_KEYSTORE\_PASSWORD**

```
APP_KEYSTORE_PASSWORD=changeit
```

Required when `BSS_AUTH_MODE` is set to `SAML_SP`. The password required to access the keystore of the domain used for APP in the application server.

### **APP\_TRUSTSTORE\_PASSWORD**

```
APP_TRUSTSTORE_PASSWORD=changeit
```

Required when `BSS_AUTH_MODE` is set to `SAML_SP`. The password required to access the truststore of the domain used for APP in the application server.

### **BSS\_AUTH\_MODE**

```
BSS_AUTH_MODE=INTERNAL
```

---

Specifies whether CT-MG is used for user authentication or whether it acts as a SAML service provider and allows for Web browser single sign-on. The setting must be identical to the `AUTH_MODE` setting in CT-MG.

Possible values: `INTERNAL` (CT-MG user authentication is used) or `SAML_SP` (CT-MG acts as a SAML service provider).

Contact the CT-MG platform operator for details on which value to set.

## BSS\_USER\_KEY

`BSS_USER_KEY=<userKey>`

The user key for accessing CT-MG.

Replace `<userKey>` with the user key which you receive with the confirmation email for your user account.

The user specified here must have the administrator role for your organization in CT-MG. The user account is used for carrying out actions on behalf of APP in CT-MG. In addition, the user is allowed to register service controllers in APP.

## BSS\_USER\_ID

`BSS_USER_ID=<userId>`

The identifier of the user specified in `BSS_USER_KEY` for accessing CT-MG.

Replace `<userId>` with the user ID.

## BSS\_USER\_PWD

`BSS_USER_PWD=_crypt:<password>`

The BSS user password.

Replace `<password>` with the plain text password which is valid for the user given in `BSS_USER_KEY`. The password is encrypted when it is stored in the database.

## BSS\_WEBSERVICE\_URL

`BSS_WEBSERVICE_URL=https://<server>:<port>/{SERVICE}/v1.6/BASIC?wsdl`

Required when `BSS_AUTH_MODE` is set to `INTERNAL` and basic authentication is used. The URL of the CT-MG server to be used. The `{SERVICE}` placeholder must not be replaced.

CT-MG is the HTTPS server while APP is a Web service client. The Web service calls are secured with SSL. The following requirements must be met to establish a connection to CT-MG:

- The CT-MG server must present a valid certificate.
- The CT-MG certificate must be trusted by APP.

For details on certificates, refer to the *Operator's Guide* of the CT-MG user documentation.

## BSS\_WEBSERVICE\_URL\_STS\_PORT

`BSS_WEBSERVICE_URL_STS_PORT=https://<server>:<port>/{SERVICE}/v1.6/STS?wsdl`

Required when `BSS_AUTH_MODE` is set to `SAML_SP`. The URL of the CT-MG server to be used. The `{SERVICE}` placeholder must not be replaced.

---

## A.4 Controller Configuration Settings

The `configsetting_controller.properties` file contains the configuration settings for the ROR service controller. This configuration is used for the initial setup and stored in the APP database .

### CONTROLLER\_ID

```
CONTROLLER_ID=ess.ror
```

The identifier of the service controller.

### IAAS\_API\_LOCALE

```
IAAS_API_LOCALE=<locale>
```

The locale to be used for accessing ROR.

Replace `<locale>` with the identifier of the desired locale, for example, `en` or `ja`.

### IAAS\_API\_PWD

```
IAAS_API_PWD=_crypt:<password>
```

The password of the user for accessing the tenant in ROR.

Replace `<password>` with the plain text password which is valid for the user given in `IAAS_API_USER`. The password is encrypted when it is stored in the database.

### IAAS\_API\_TENANT

```
IAAS_API_TENANT=<tenant>
```

The identifier of the tenant for your organization in ROR.

### IAAS\_API\_URI

```
IAAS_API_URI=https://<ROR server>:<port>/cfmgapi/endpoint
```

The URL of the ROR API.

Replace `<ROR server>` and `<port>` with the host name and port of your ROR server.

### IAAS\_API\_USER

```
IAAS_API_USER=<user>
```

The user ID to be used for accessing the tenant for your organization in ROR. The user must have the necessary credentials to create and configure virtual platforms and servers for the tenant.

### BSS\_ORGANIZATION\_ID

```
BSS_ORGANIZATION_ID=<organizationID>
```

The ID of the organization in CT-MG which is responsible for the service controller. The organization must have the technology provider role.

### BSS\_USER\_KEY

```
BSS_USER_KEY=<userKey>
```

The user key for accessing CT-MG.

Replace `<userKey>` with the user key which you receive with the confirmation email for your user account.

The user specified here must have the technology manager role in CT-MG and belong to the organization specified in the `BSS_ORGANIZATION_ID` setting. The user account is used for carrying out any actions on behalf of the service controller in CT-MG.

### **BSS\_USER\_ID**

`BSS_USER_ID=<userId>`

The identifier of the user specified in `BSS_USER_KEY` for accessing CT-MG.

Replace `<userId>` with the user ID.

### **BSS\_USER\_PWD**

`BSS_USER_PWD=_crypt:<password>`

The BSS user password.

Replace `<password>` with the plain text password which is valid for the user given in `BSS_USER_KEY`. The password is encrypted when it is stored in the database.

---

## Appendix B: Service Parameters

The following sections describe the technical service parameters which are supported by the ROR service controller.

### All Scenarios

The following parameters apply to all scenarios:

---

#### APP\_CONTROLLER\_ID

Mandatory. The ID of the APP sample service controller as defined in its implementation.

Default: `ess.ror`

---

#### INSTANCENAME\_PATTERN

Mandatory. A regular expression specifying a pattern for the virtual platform or server instance names entered by the users when they subscribe to a corresponding service. If the names do not match the pattern, the subscription is rejected.

Example: `ror([a-z0-9]){2,25}`

---

#### INSTANCENAME\_PREFIX

Optional. A string to be prepended to the virtual platform or server instance names entered by the users when they subscribe to a corresponding service.

Example: `ror`

---

#### INSTANCENAME

Mandatory. The name of the virtual platform or server to be instantiated. This name must be specified by the users when they subscribe to a corresponding service. The string given in `INSTANCENAME_PREFIX` is prepended to the name. The name including the prefix must match the pattern given in `INSTANCENAME_PATTERN`.

Example: `IASPlatform`

---

#### MAIL\_FOR\_COMPLETION

Optional. The address to which emails are to be sent that describe manual steps required to complete an operation. If you specify this parameter, the service controller interrupts the processing of each operation before its completion and waits for a notification about the execution of a manual action. Omit this parameter if you do not want to interrupt the processing.

Example: `info@company.com`

---

#### MAIL\_FOR\_NOTIFICATION

Optional. The address to which emails are to be sent that notify service users or administrators of customer organizations about a successful modification of a virtual platform or server. Such modifications result from changes in the configuration parameters at a corresponding subscription.

Example: `administrators@company.com`

### Virtual Platform Provisioning and Scaling

The following parameters are required for provisioning a virtual platform with one or more virtual servers as well as for the horizontal and vertical scaling scenarios:

---

**SYSTEM\_TEMPLATE\_ID**

Mandatory. The ID of the ROR template to be used for virtual platforms.

Customers should not be able to enter a value for this parameter, i.e. it should not be configurable.

Example: `template-13c8ab3348d`

---

**MASTER\_TEMPLATE\_ID**

Mandatory. The ID of the ROR template and image to be used for the master server (or the only server) on a virtual platform.

Users should not be able to enter a value for this parameter. This means the parameter should not be configurable for customers or, in case you specify more than one template, have fixed parameter options for selection.

Example: `image-13cedaef7ed`

---

**SLAVE\_TEMPLATE\_ID**

Mandatory. The ID of the ROR template and image to be used for the slave servers on a virtual platform.

Users should not be able to enter a value for this parameter. This means the parameter should not be configurable for customers or, in case you specify more than one template, have fixed parameter options for selection.

Example: `image-13c8a812d25`

---

**CLUSTER\_SIZE**

Mandatory. The number of virtual servers to be provisioned on a virtual platform. Make sure that users can only specify numbers that are supported by the corresponding templates in ROR. This can be done, for example, by presenting the supported numbers as different parameter options for selection.

Example: 2

---

**COUNT\_CPU**

Optional. The number of CPUs each virtual server on a virtual platform is to have. Make sure that users can only specify numbers that are supported by the corresponding templates in ROR. This can be done, for example, by presenting the supported numbers as different parameter options.

Example: 4

---

**Virtual Server Provisioning**

The following parameters are required for instantiating a virtual server and adding it to an existing virtual platform:

---

**VSYS\_ID**

Mandatory. The ROR ID of the virtual platform to which the new virtual server is to be added.

Example: `SampleTe-4LPKTS4KQ`

---

**DISKIMG\_ID**

Mandatory. The ID of the ROR template and image to be used for the new virtual server.

Example: `image-13c8a812d25`

---

---

**NETWORK\_ID**

Mandatory if the virtual platform to which new the virtual server is to be added has more than one network. The ID or name of the network within the virtual platform to which the new virtual server is to be added.

Example: `4LPKTS4KQ-N-2j0v`

---

**VSERVER\_TYPE**

Mandatory. A string describing the type of virtual server. The string must match one of the server types defined in ROR.

Example: `medium`

---

**COUNT\_CPU**

Optional. The number of CPUs the virtual server is to have. Make sure that users can only specify numbers that are supported by the corresponding templates in ROR. This can be done, for example, by presenting the supported numbers as different parameter options.

Example: `4`

---

**VM\_POOL**

Optional. The VM pool to be used for the new virtual server in ROR.

Default: `VMHostPool`

---

**STORAGE\_POOL**

Optional. The storage pool to be used for the new virtual server in ROR.

Default: `StoragePool`

---

## Glossary

### **Administrator**

A privileged user role within an organization with the permission to manage the organization's account and subscriptions as well as its users and their roles. Each organization has at least one administrator.

### **Application**

A software, including procedures and documentation, which performs productive tasks for users.

### **Broker**

An organization which supports suppliers in establishing relationships to customers by offering the suppliers' services on a marketplace, as well as a privileged user role within such an organization.

### **Cloud**

A metaphor for the Internet and an abstraction of the underlying infrastructure it conceals.

### **Cloud Computing**

The provisioning of dynamically scalable and often virtualized resources as a service over the Internet on a utility basis.

### **Customer**

An organization which subscribes to one or more marketable services in CT-MG in order to use the underlying applications in the Cloud.

### **Infrastructure as a Service (IaaS)**

The delivery of computer infrastructure (typically a platform virtualization environment) as a service.

### **Marketable Service**

A service offering to customers in CT-MG, based on a technical service. A marketable service defines prices, conditions, and restrictions for using the underlying application.

### **Marketplace**

A virtual platform for suppliers, brokers, and resellers in CT-MG to provide their services to customers.

### **Marketplace Owner**

An organization which holds a marketplace in CT-MG, where one or more suppliers, brokers, or resellers can offer their marketable services.

### **Marketplace Manager**

A privileged user role within a marketplace owner organization.

**Operator**

An organization or person responsible for maintaining and operating CT-MG.

**Organization**

An organization typically represents a company, but it may also stand for a department of a company or a single person. An organization has a unique account and ID, and is assigned one or more of the following roles: technology provider, supplier, customer, broker, reseller, marketplace owner, operator.

**Payment Service Provider (PSP)**

A company that offers suppliers or resellers online services for accepting electronic payments by a variety of payment methods including credit card or bank-based payments such as direct debit or bank transfer. Suppliers and resellers can use the services of a PSP for the creation of invoices and payment collection.

**Payment Type**

A specification of how a customer may pay for the usage of his subscriptions. The operator defines the payment types available in CT-MG; the supplier or reseller determines which payment types are offered to his customers, for example, payment on receipt of invoice, direct debit, or credit card.

**Platform as a Service (PaaS)**

The delivery of a computing platform and solution stack as a service.

**Price Model**

A specification for a marketable service defining whether and how much customers subscribing to the service will be charged for the subscription as such, each user assigned to the subscription, specific events, or parameters and their options.

**Reseller**

An organization which offers services defined by suppliers to customers applying its own terms and conditions, as well as a privileged user role within such an organization.

**Role**

A collection of authorities that control which actions can be carried out by an organization or user to whom the role is assigned.

**Seller**

Collective term for supplier, broker, and reseller organizations.

**Service**

Generally, a discretely defined set of contiguous or autonomous business or technical functionality, for example, an infrastructure or Web service. CT-MG distinguishes between technical services and marketable services, and uses the term "service" as a synonym for "marketable service".

**Service Manager**

A privileged user role within a supplier organization.

**Standard User**

A non-privileged user role within an organization.

**Software as a Service (SaaS)**

A model of software deployment where a provider licenses an application to customers for use as a service on demand.

**Subscription**

An agreement registered by a customer for a marketable service in CT-MG. By subscribing to a service, the customer is given access to the underlying application under the conditions defined in the marketable service.

**Subscription Manager**

A privileged user role within an organization with the permission to create and manage his own subscriptions.

**Supplier**

An organization which defines marketable services in CT-MG for offering applications provisioned by technology providers to customers.

**Technical Service**

The representation of an application in CT-MG. A technical service describes parameters and interfaces of the underlying application and is the basis for one or more marketable services.

**Technology Manager**

A privileged user role within a technology provider organization.

**Technology Provider**

An organization which provisions applications as technical services in CT-MG.