



FUJITSU Software Systemwalker Service Catalog Manager V15.4

Release Notes

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About this Manual

This manual describes new features and changes to existing features of FUJITSU Software Systemwalker Service Catalog Manager (CT-MG) V15.4 as compared to V15.3.2. In addition, this manual provides compatibility information and information on known restrictions.

CT-MG can be operated on the platforms specified in the *Installation Guide*.

This manual is structured as follows:

Chapter	Description
<i>What's New?</i> on page 6	Describes new features, changes, and enhancements.
<i>Compatibility</i> on page 10	Describes compatibility issues when upgrading an installation from a previous release of CT-MG.
<i>Restrictions</i> on page 15	Describes the known restrictions of this release.

Readers of this Manual

This manual is intended for operators who are responsible for installing CT-MG.

It assumes that you are familiar with the following:

- Administration of the operating systems in use, including the adaption and execution of batch files or shell scripts.
- Java EE technology, particularly as to the deployment on application servers.
- Relational databases and their administration, in particular the PostgreSQL database.
- CT-MG concepts as explained in the *Overview* manual.
- Installation and administration of Web servers.
- Installation and administration of the GlassFish application server.

Notational Conventions

This manual uses the following notational conventions:

Add	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><variable></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.

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 intended for and available to everybody working with the administration portal.
- *Installation Guide (GlassFish)*: A PDF manual describing how to install and uninstall CT-MG. It is intended for 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 (GlassFish)*: 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.
- *Amazon Web Services Integration (GlassFish)*: A PDF manual for operators describing how to offer and use virtual servers controlled by the Amazon Elastic Compute Cloud Web service through services in CT-MG.
- *OpenStack Integration (GlassFish)*: A PDF manual for operators describing how to offer and use virtual systems controlled by OpenStack through services in CT-MG.
- *Trusted Public S5 Integration (GlassFish)*: A PDF manual for operators describing how to offer and use virtual systems controlled by FUJITSU Cloud IaaS Trusted Public S5 through services in CT-MG.
- *Systemwalker Runbook Automation Integration Guide*: A PDF manual for operators describing how to offer and use automated operation processes of Systemwalker Runbook Automation through services in CT-MG.
- *IaaS Integration Guide*: A PDF manual for operators describing how to offer and use virtual systems on different platforms 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 What's New?

This chapter describes changes and enhancements made in CT-MG since V15.3.2.

1.1 Runtime API Versioning

A new versioning concept regarding the CT-MG public Web services has been introduced: Runtime versioning of Web service clients. With future changes to the CT-MG public Web services, compatible clients no longer need to be rebuilt in case they do not want to make use of updated Web services functionality. Incompatible clients (clients whose version is no longer compatible with the server version, or clients that want to make use of updated functionality) must still be rebuilt.

CT-MG Web Services

In order to support the runtime versioning concept, the version of a CT-MG Web service is no longer part of the technical contract (WSDL file). Instead, it is a documentation issue: In the WSDL files of the CT-MG Web services contained in the `fujitsu-bss-integration-pack.zip` archive, the current service version value is provided in a `<documentation>` tag. For this release, this is `v1.7`, this means that the `<documentation>` tag of the delivered WSDL files contains the value `v1.7`. During installation, `v1.7` and `v1.6` of the WSDL files are deployed.

The namespace and endpoints of the CT-MG Web services now come without version value.

For example, the endpoints for the Account Service are now as follows:

- `https://localhost8081/AccountService/BASIC`
- `https://localhost8081/AccountService/CLIENTCERT`
- `https://localhost8081/AccountService/STS`

A compatibility layer ensures that SOAP messages received from a Web service client are analyzed, and, if required, converted to the newest format. In addition, outgoing SOAP messages from CT-MG are adapted to the version the client can consume. Refer to *Compatibility* on page 10 for details.

GlassFish generates the WSDL files when the CT-MG integration package is deployed. For example, the Web service description of the Account Service is accessible as follows:

- `https://localhost8081/AccountService/BASIC?wsdl`
- `https://localhost8081/AccountService/CLIENTCERT?wsdl`
- `https://localhost8081/AccountService/STS?wsdl`

CT-MG uses an internal servlet for providing the content of the shipped WSDL files. This means that the WSDL files are delivered as static content. The Web service description of the delivered Account Service WSDL file, for example, is accessible as follows.

- `https://localhost8081/fujitsu-bss/v1.7/AccountService/BASIC?wsdl`
- `https://localhost8081/fujitsu-bss/v1.7/AccountService/CLIENTCERT?wsdl`
- `https://localhost8081/fujitsu-bss/v1.7/AccountService/STS?wsdl`

With future releases of CT-MG, the version number will be increased, for example, to `v1.8` or `v1.9`. To be able to make use of runtime migration in the future (the version value is changed at runtime), it is recommended not to use the generated WSDL files, but the ones shipped with CT-MG.

CT-MG Web Service Clients

Web service clients must provide the version of the Web services they want to consume in the header of their outgoing SOAP messages. This version is needed for the compatibility layer (see above). `v1.7` is the version value for this release.

The version value can be specified in a configuration property of the Web service client. In this way, a client can easily be migrated to the newest version of the CT-MG Web services in a future release: In case of compatible changes to the Web services in a new release of CT-MG, it is sufficient to only change the version value in the configuration of the client.

Integration Helpers

The integration helpers contained in the `fujitsu-bss-integration-pack.zip` file have been extended and adapted to the new versioning concept. The integration helpers now include a sample implementation of a Web service client and a JSP page for testing Web service calls.

The configuration files of the integration helpers have changed. A new properties file has been introduced (`webserviceclient.properties`) for specifying the information needed to access the CT-MG Web services. The `tokenhandler.properties` file is still used for specifying the relative URL to the custom login module of your application.

Asynchronous Provisioning Platform (APP)

The APP Web service interface as well as the implementation of the delivered controllers have been extended and adapted to the new versioning concept.

The following configuration settings have been introduced:

- `BSS_WEBSERVICE_WSDL_URL`
- `BSS_STS_WEBSERVICE_WSDL_URL`

If you are upgrading to this release, you need to specify the above configuration settings.

In addition, the syntax of the following settings has changed:

- `BSS_WEBSERVICE_URL`
- `BSS_STS_WEBSERVICE_URL`

Refer to the APP documentation for details.

Source Code Samples

Due to the change in the versioning concept of the API, the sample PHP and .NET applications for integration with CT-MG are no longer included in the CT-MG integration package.

Migrating Existing Applications

Refer to *Compatibility* on page 10 for information on how to migrate existing Web service client applications as well as on general compatibility issues.

1.2 YAML Support for OpenStack

The integration of OpenStack with CT-MG now supports two types of templates: The AWS CloudFormation Template (CFN/JSON) and the Heat Orchestration Template (HOT/YAML).

The technical service included in the OpenStack integration package specifies two templates as parameter options. The corresponding templates are also included in the OpenStack integration package: `samples/template.json` and `samples/template.yaml`.

1.3 Compatibility Mode in GlassFish

Full compatibility with Glassfish 3.1 is now supported. All CT-MG components no longer need to be deployed in compatibility mode. In addition, CT-MG now supports JavaServer Faces 2 (JSF 2.1) and Java RichFaces 4.

1.4 TPS5 Service Controller

CT-MG comes with an integration package for the FUJITSU Cloud IaaS Trusted Public S5 platform (TPS5): `fujitsu-bss-tps5-install-pack.zip`.

TPS5 gives you on-demand access to a shared pool of fully configured virtual server, storage, and network resources hosted in the FUJITSU global network of data centers. The provisioning of computing resources in the Cloud allows you to rapidly scale and flex your infrastructure to support new business initiatives or roll out services. On virtual platforms, users can, for example, request specific servers and operating systems, firewalls, load balancers, middleware services, or databases. Servers can be added and removed dynamically as required.

The integration of CT-MG with TPS5 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 with one or more virtual servers in TPS5. The usage costs can be calculated and charged by means of the CT-MG billing and payment services.

The TPS5 integration package provided with CT-MG includes all components required for connecting an existing CT-MG installation with TPS5. A new manual, *Systemwalker Service Catalog Manager Trusted Public S5 Integration (GlassFish)*, is available describing how to deploy this package and how to create and use services for TPS5 on a CT-MG marketplace.

1.5 RB-A and Microsoft Azure Integration

CT-MG comes with an integration package for Systemwalker Runbook Automation (RB-A) and Microsoft Azure.

RB-A is a software that automates operation work by registering a series of operations as an "automated operation process (operation flow)" including not only OS/middleware operations but also work performed by people, such as confirmation and determination. For example, virtual machines can be created and deleted or system monitoring operations can be performed automatically by registering them as an automated operation process, which reduces the workload of system operation.

The RB-A integration realizes automated operation processes provided by RB-A as CT-MG services. CT-MG customer administrators can execute automated operation processes on RB-A through services published on a CT-MG marketplace.

The Microsoft Azure integration allows for effective use and efficient operation and management of ICT resources that are provided by RB-A on Azure environments. As automated operation processes can be created using combinations of operation components and flows on RB-A, providing resources based on requests from service users is possible. In addition, it is possible to create, delete, and modify virtual machines dynamically upon request.

With the integration of CT-MG and RB-A, Azure resources can be used efficiently. CT-MG customer administrators can subscribe for and use virtual machines through services published on a CT-MG marketplace.

The RB-A integration package provided with CT-MG includes all components required for connecting an existing CT-MG installation with RB-A. A new manual, *Systemwalker Runbook*

Automation Integration Guide, is available describing how to deploy this package and how to create and use services for RB-A and Microsoft Azure on a CT-MG marketplace.

1.6 List of Subscriptions

The lists showing customer subscriptions have been optimized for large numbers of subscriptions: Less information on individual subscriptions is shown, filtering, sorting, and paging functionality has been introduced.

This applies to the following pages of the CT-MG administration portal:

- **Customer** menu:
 - View Subscription
 - Manage subscription attributes
 - Terminate subscription
- **Price model** menu:
 - Define for subscription

The filtering and sorting mechanism has also been introduced for subscriptions listed on the following pages of CT-MG marketplaces so that users can manage their subscriptions more efficiently:

- **Home > Account > Subscriptions**
- **Home > My Subscriptions**

1.7 System Environment

Web Browsers

The CT-MG user interface supports the following Web browsers:

- Google Chrome 42.0, 43.0
- Microsoft Internet Explorer 9.0, 10.0, or 11.0
- Mozilla Firefox 31.0 - 38.0

Operating System

CT-MG has been tested with and can now be run with Red Hat Linux V7.

1.8 Documentation

All manuals and online help pages as well as the marketplace FAQs have been revised to reflect the newly introduced or changed features.

One new manual is available:

Trusted Public S5 Integration (GlassFish): A PDF manual for operators describing how to offer and use virtual systems controlled by FUJITSU Cloud IaaS Trusted Public S5 through services in CT-MG.

2 Compatibility

This chapter describes compatibility issues when upgrading to CT-MG V15.4.

2.1 Public Web Service Interface

CT-MG V15.4 comes with a **compatibility layer** so that applications (clients) implemented with CT-MG V15.3.1 or V15.3.2 can still be used without having to be rewritten. Versions older than V15.3.1 are not supported.

A Web service client accesses exactly one version of the public Web service interface. The versioning pattern is as follows:

Current Web service versions	Shipped with CT-MG version
Platform services: v1.6 Notification service API: v1.6 Provisioning service API: v1.5 Operation service API: v1.2 PSP integration service: v1.6	V15.4 (this release)

Supported Web service versions	Shipped with CT-MG version
Platform services: v1.6 Notification service API: v1.6 Provisioning service API: v1.5 Operation service API: v1.2 PSP integration service: v1.6	V15.3.1
Platform services: v1.6 Notification service API: v1.7 Provisioning service API: v1.5 Operation service API: v1.3 PSP integration service: v1.6	V15.3.2

If CT-MG is installed in INTERNAL authentication mode, Web services with the `BASIC` or `CLIENTCERT` suffix can be used. If CT-MG is installed in SAML_SP mode, Web services with the `STS` suffix can be used.

A WSDL URL is used to address a specific Web service. The WSDL URL of a specific service in a current version can be found out as follows:

1. In the GlassFish administration console, go to **Common Tasks -> Applications -> fujitsu-bss**.
2. On the **Descriptor** tab, open the `META-INF/sun-ejb-jar.xml` descriptor file of the `fujitsu-adm-um-webservices.jar` subcomponent.

For every platform service, the endpoint address URI shows the Web service name and whether it is to be addressed through basic authentication (`BASIC`), certificate-based authentication (`CLIENTCERT`), or a security token service (`STS`).

The URL pointing to the WSDL definition of a platform service is constructed as follows:

```
<BASE_URL_HTTPS>/<endpoint-address-uri>?wsdl
```

where

<BASE_URL_HTTPS> points to the local server and port where the platform services have been deployed.

<endpoint-address-uri> is the address as defined in the `sun-ejb-jar.xml` descriptor file.

?wsdl is the suffix to be used for identifying a WSDL file.

Example: `https://myserver:8081/AccountService/BASIC?wsdl`

The CT-MG integration package (`fujitsu-bss-integration-pack.zip`) contains archive files in the `doc/en` subdirectory, where you can find detailed information on changes to the Web services. Use the `changes.html` file of every package for viewing the respective documentation. With this Fix, no changes have been made to the API.

CT-MG uses an internal servlet for providing the content of the shipped WSDL files. This means that the WSDL files are delivered as static content. This static content enables runtime migration of Web service clients to a future release of CT-MG.

If applications integrated with CT-MG rely on pure HTTP calls, you need to change their setup to use HTTPS.

2.1.1 Migrating Existing Applications

If you have existing Web service client applications, and want to make use of the runtime API versioning concept introduced with CT-MG V15.4, you must perform the following steps for migrating them to this CT-MG release:

1. Adapt your interface implementation of the provisioning, operation, notification, and/or PSP integration service.
2. Adapt the XML description file of the underlying technical service.
3. Adapt the source code of your application.

Note: Applications using CT-MG V15.3.1 or V15.3.2 only need to be changed if you want to use new functionality. They can still be run with this release.

Adapting the Interface Implementation

The description below shows how to adapt a provisioning service for your application. For implementations of the other interface, you can proceed analogically.

1. Remove the version value from the target namespace of the CT-MG Web services. For example:

Replace `http://bss.fujitsu.com/xsd/v1.4` with `http://bss.fujitsu.com/xsd`.

2. From the `fujitsu-bss-integration-pack.zip` package, copy the `ProvisioningService.wsdl` and its related schema file to the location where you implement your application (for example, to `META-INF/wsdl`). The `ProvisioningService.wsdl` and its schema file can be found in the

`fujitsu-bss-integration-pack/apis/provisioning/schema` folder.

3. If your provisioning service is implemented as an EJB (annotated bean) for an application that is to be deployed in a Java EE-compliant application server (GlassFish), add the WSDL file as follows in the `webservices.xml` descriptor file:

```
<webservices xmlns="http://java.sun.com/xml/ns/javaee"
```

```

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" version="1.2"
xsi:schemaLocation=
  "http://java.sun.com/xml/ns/javaee
  http://www.ibm.com/webservices/xsd/
  javaee_web_services_1_2.xsd">
<webservice-description>
  <display-name>ProvisioningService</display-name>
  <webservice-description-name>ProvisioningService
  </webservice-description-name>
  <wsdl-file>ProvisioningService.wsdl</wsdl-file>
  <port-component> ... </port-component>
  ...
</webservice-description>

```

If your provisioning service is deployed as a standard `.war` archive (non-EJB implementation), add the provisioning service WSDL file to the `sun-jaxws.xml` descriptor file:

```

<endpoints version="2.0"
  xmlns="http://java.sun.com/xml/ns/jax-ws/ri/runtime">
  <endpoint name="ProvisioningService"
  implementation="com.fujitsu.jaxws.ProvisioningServiceImpl"
  url-pattern="/ProvisioningService"
  wsdl="ProvisioningService.wsdl" />
</endpoints>

```

4. Make sure that your application references the `fujitsu-bss-extsvc-provisioning.jar` library provided with the integration package of this release (`fujitsu-bss-integration-pack/apis/provisioning/lib`).
5. Rebuild your provisioning service.

Adapting the Technical Service Definition

In the XML description of the technical service underlying your application, adapt the version value of the provisioning service to `1.7` and check the URL referencing your provisioning service.

For example:

```

<tns:TechnicalServices
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="fujitsu.adm.um.serviceprovisioning/1.7/
  TechnicalService.xsd
  ../../fujitsu-adm-um-serviceprovisioning/javares/
  TechnicalServices.xsd"
  xmlns:tns="fujitsu.adm.um.serviceprovisioning/1.7/
  TechnicalService.xsd">

```

If your application provides technical service operations, you need to adapt the URL referencing the operation service as follows:

```

<Operation actionURL="https://<host>:<port>/
  OperationService/AsynchronousOperationProxy?wsdl"
  id="STOP_VIRTUAL_SYSTEM">
  <LocalizedName locale="de">Stop</LocalizedName>
</Operation>

```

Adapting the Application Source Code

Adapt the source code of your application so that it can use and address the new CT-MG Web services:

1. Take a look at the new `IntegrationHelper.zip` file contained in the `fujitsu-bss-integration-pack.zip` archive. You can implement your Web service client in analogy to the integration helpers. They provide a sample CT-MG Web service client implementing runtime API versioning.
2. Compare the sources of your previous CT-MG installation with the ones contained in the new integration package. Adapt, for example, the code in your `WsProxyInfo.java` class.
3. Copy all newly delivered `.jar` files to the location where you implement your application.
4. Rebuild and redeploy your application.

2.1.2 Java 5 Client Applications with Certificate-Based Authentication

If applications integrated with CT-MG are implemented with JDK 5 and use certificate-based authentication, you need to set the following security property for GlassFish 3.1.2.2 in the JVM options of the `bes-domain` domain:

```
sun.security.ssl.allowUnsafeRenegotiation=true
```

This setting is required because the handshake protocol has changed since JDK 5. However, it is not recommended. It is safer to migrate your applications to a higher Java version.

If credentials are passed for a Web service call, although certificate-based authentication is defined, authentication takes place using the user name and password. In order to use certificate-based authentication, the applications must be changed in a way that no user name and password is sent via HTTP headers. With GlassFish 2.1 and JDK 5, the credentials were not evaluated.

2.2 Update Installation

CT-MG

An update installation is possible from a CT-MG 15.3.1 or 15.3.2 installation to this release. If you want to upgrade from a previous release, you need to uninstall CT-MG and restart with a new installation following the instructions in the *Installation Guide*.

Due to the migration of the CT-MG search indexer application to the most recent versions of Hibernate Search and Apache Lucene, it is necessary to change settings in the VM options of the application server. The index directories must be deleted before starting an update installation. For details, refer to the *Installation Guide*.

APP and Controllers

The platform operator and technology managers must make sure that the following rules are observed when updating CT-MG, APP, and/or controllers (AWS, OpenStack, ROR, or TPS5):

The CT-MG version must be higher or equal to the APP version. The APP version must be equal to the controller version.

Example: If you want to use the AWS controller included in the V15.3.2 release, you must upgrade CT-MG and APP to V15.3.2 first.

2.3 Asynchronous Provisioning Platform

Manual Migration of Technical Services

With V15.3.2, APP implements HTTPS client authentication for Web services in APP (both, the Provisioning Service and the Operation Service). The Web service endpoints in APP have been configured for CLIENTCERT authentication.

In case you have implemented and provided technical service definitions using the HTTP protocol for provisioning service calls in APP, you must manually migrate the technical services so that the HTTPS protocol is used:

1. Export the relevant service definition.
2. Adapt the `provisioningUrl` attribute of the `TechnicalService` element to use the HTTPS protocol.
3. Adapt the `actionURL` attribute of the `Operation` element.
4. Import the service definition into CT-MG.

The Web applications (APP and controller user interface) work as before.

Assigning Users to a Subscription in the Pending State

With CT-MG V15.3.1, a customer can subscribe to a service and afterwards instantly assign users to the subscription, even if the subscription has not yet been provisioned (if CT-MG is running in asynchronous mode) or has not yet been approved (if an approval process is implemented).

As of CT-MG V15.3.2, a customer can subscribe to a service, and users can be assigned as soon as the subscription has been successfully provisioned or approved.

3 Restrictions

This chapter describes known restrictions of this CT-MG release.

Java Version

CT-MG requires a Java Development Kit (JDK), version 7, 64 bit. Deployment with JDK 7, Update 45 has been tested and is recommended.

As of JDK, version 7, Update 25, sending a newly created HashMap over a remote EJB call in GlassFish and adding an entry to the HashMap in the EJB method throws an `ArrayIndexOutOfBoundsException`. Workaround: Add and remove an entry before sending the HashMap in the EJB call.

Due to a CORBA library change which is incompatible with Oracle GlassFish Server version 3.1.2.2, CT-MG cannot be deployed with JDK 7, Update 55, and higher.

Note: Third-party tools that you integrate with CT-MG may require a different Java version.

Certificate-Based Authentication

Certificate-based authentication cannot be used when calling CT-MG functions whose execution requires that a user role be specified. The user role determines whether the calling user is allowed to execute the function. Instead, you must use basic authentication for such Web service calls.

If you need to use certificate-based authentication in such scenarios, contact your FUJITSU support organization.

Web Browsers

Concurrent Sessions

CT-MG does not support multiple sessions in Web browsers. This means that you cannot run and log in to CT-MG using several tabs or instances of the same Web browser. If you want to use multiple sessions, run CT-MG in different Web browsers, for example, in Microsoft Internet Explorer and Mozilla Firefox.

Caching in Internet Explorer 8

If an administrator logs in to the CT-MG administration portal and, during the same session, accesses a marketplace, he is logged out as soon as he wants to return to the administration portal (for example, by entering the respective URL again - `http(s)://<domain>/<context-root>/`). This behavior is due to a setting in Internet Explorer 8 which controls the Web page caching. In order to avoid this behavior and to ensure that the administrator stays logged in:

In Internet Explorer, select **Tools** -> **Internet Options**. On the **General** tab, in the **Browsing history** section, click **Settings**. In the **Check for newer versions of stored pages** section, make sure that **Every time I visit the webpage** is selected.

Back Button

CT-MG does not support the usage of the "Back" button in Web browsers. This means that you must use the CT-MG buttons for moving forward and backward between the CT-MG pages.

HTTP or HTTPS Configuration

CT-MG can be configured to use the HTTP or the HTTPS protocol. If you use both protocols at the same time, PSP (payment service provider) integration will not work.

We recommend to configure the HTTPS protocol for all URLs used by CT-MG.

Report Error Messages

The following reports require input parameters, for example a billing data key or dates:

- Supplier revenue report (can be generated by platform operators)
- Detailed billing report for an existing invoice of a customer (can be generated by suppliers and operators)
- Detailed billing report for an existing invoice (can be generated by customers)

When the input parameter is entered in a wrong or invalid format, e.g. `My<>Key` as a billing data key or `2012.5.12` as a date, the error message generated by the report engine does not contain text explaining the reason for the error. If you receive an error message when trying to generate a report, check the input parameter(s) and ensure that they are in the correct format. For example, you can find the date format in the dialog for entering the start and end date for a report; the billing data key is printed on the invoice.

ROR Integration

If CT-MG is integrated with ServerView Resource Orchestrator (ROR), it is recommended that you use the CT-MG user interface for subscribing to services and that the ROR user interface is used for problem-solving purposes only.

Otherwise, the following situation may occur:

A user requests the provisioning of a platform or a server on an existing platform in ROR and assigns a specific name. ROR deploys the new platform or server instance. If another user decides to use the CT-MG user interface for subscribing to a service for provisioning a platform or a server and assigns the same name, the CT-MG ROR controller assumes that the service instance has been created by APP. The pending subscription in CT-MG is successfully completed (based on the existing platform or server).

Asynchronous Provisioning - Termination of Subscription

When a supplier or reseller terminates a customer's subscription and APP is used for asynchronous provisioning, an email is sent to the technology provider of the underlying service as well as to the customer's administrator or subscription manager. The email contains the information that the subscription has been terminated as well as the reason why. In case, the technology manager uses a default language in his profile different from the one of the administrator or subscription manager, the email to the customer's administrator or subscription manager will show the text of the reason in the technology manager's language.

Logout Error with Active Directory Federation Services in Internet Explorer 11

An error occurs when a user working with CT-MG tries to log out by clicking **Logout** in the administration portal or on a marketplace. This is true for a specific system configuration:

- CT-MG is installed in SAML_SP authentication mode so that Web browser single sign-on can be used.
- Windows Active Directory Federation Services is installed and used as Identity Provider (IdP).
- In CT-MG, the `SSO_IDP_AUTHENTICATION_REQUEST_METHOD` configuration setting is defined as `POST`.
- CT-MG is accessed using Internet Explorer 11.

- Internet Explorer is set up for integrated Windows authentication (IWA) so that no authentication is required when logging in to CT-MG.

The correct behavior would be that the Web browser is refreshed and the user is automatically logged in again. To achieve this, either use Mozilla Firefox or Google Chrome as the Web browser, or set the `SSO_IDP_AUTHENTICATION_REQUEST_METHOD` setting to `GET`.

SAML_SP Mode: allowingOnBehalfActing Cannot be Used

The `allowingOnBehalfActing` attribute of the `TechnicalService` element in a technical service definition cannot be used if CT-MG is installed in SAML_SP mode.

TPS5 Libraries for the TPS5 Integration

The TPS5 libraries that you download from the FUJITSU Cloud IaaS Trusted Public S5 Service Portal and integrate in the TPS5 service controller installation environment before installing the TPS5 integration package do not work properly. Request the valid libraries from your FUJITSU support organization.

Error Messages When Logging in to APP

Error messages displayed when logging in to the Web interface of APP or a service controller are always in English, not in Japanese or any other language.