FUJITSU

# FUJITSU Software Enterprise Service Catalog Manager V19.1

# Marketplace Owner's Guide

February 2021

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# About this Manual

This manual describes how marketplace owners can administrate and customize their marketplaces with ) FUJITSU Software Enterprise Service Catalog Manager, hereafter referred to as ESCM.

The manual is structured as follows:

| Chapter | Description |
|---|---|
| *Introduction* on page 6 | Outlines the role of a marketplace owner and gives an overview of the marketplace owner's tasks. |
| *Managing Permissions for Marketplaces* on page 11 | Describes how to define who is allowed to access a marketplace and publish services to it. |
| *Administrating Marketplaces* on page 13 | Describes the administration options available for marketplace owners. |
| *Customizing Marketplaces* on page 17 | Describes the customizing options available for marketplace owners. |
| *Managing Billing and Payment* on page 20 | Describes how ESCM supports marketplace owners in calculating and collecting their revenue shares. |
| *Customer Billing Data* on page 21 | Describes the elements of an XML file created by exporting customer billing data. |

## Readers of this Manual

This manual is directed to users who are responsible for administrating and customizing marketplaces in ESCM. It assumes that you are familiar with the ESCM concepts as explained in the *Overview* manual.

## Notational Conventions

This manual uses the following notational conventions:

| | |
|---|---|
| **Add** | Names of graphical user interface elements. |
| `init` | System names, for example command names and text that is entered from the keyboard. |
| `<variable>` | Variables for which values must be entered. |
| `[option]` | Optional items, for example optional command parameters. |
| `one \| two` | Alternative entries. |
| `{one \| two}` | Mandatory entries with alternatives. |

## Abbreviations

This manual uses the following abbreviations:

| | |
|---|---|
| **ESCM** | Enterprise Service Catalog Manager |
| **IaaS** | Infrastructure as a Service |
| **PaaS** | Platform as a Service |
| **SaaS** | Software as a Service |

# Available Documentation

The following documentation on ESCM is available:

- *Overview:* A PDF manual introducing ESCM. It is written for everybody interested in ESCM and does not require any special knowledge.
- *Operator's Guide:* A PDF manual for operators describing how to administrate and maintain ESCM.
- *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 ESCM.
- *Supplier's Guide:* A PDF manual for suppliers describing how to define and manage service offerings for applications that have been integrated with ESCM.
- *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 ESCM.
- *Microsoft Azure Integration:* A PDF manual for operators describing how to offer and use virtual systems controlled by Microsoft Azure through services in ESCM.
- *Amazon Web Services Integration:* 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 ESCM.
- *OpenStack Integration:* A PDF manual for operators describing how to offer and use virtual systems controlled by OpenStack through services in ESCM.
- *VMware vSphere Integration:* A PDF manual for operators describing how to offer and use virtual machines provisioned on a VMware vSphere server through services in ESCM.
- *Shell Integration:* A PDF manual for operators describing how to use Shell scripts through services in ESCM.
- *Online Help:* Online help pages describing how to work with the administration portal of ESCM. The online help is intended for and available to everybody working with the administration portal.

# 1 Introduction

Enterprise Service Catalog Manager (ESCM) 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.

With its components, ESCM supports software vendors as well as their customers in leveraging the advantages of Cloud Computing.

The basic scenario of deploying and using applications as services in the ESCM framework involves the following organizations:

- **Technology providers** (e.g. independent software vendors) technically prepare their applications for usage in the Cloud and integrate them with ESCM. They register the applications as technical services in ESCM.
- **Suppliers** (e.g. independent software vendors or sales organizations) define service offerings, so-called marketable services, for the technical services in ESCM. They publish the services to a marketplace.
- **Customers** register themselves or are registered by an authorized organization in ESCM and subscribe to one or more services. Users appointed by the customers work with the underlying applications under the conditions of the corresponding subscriptions.
- **Marketplace owners** are responsible for administrating and customizing the marketplaces to which services are published.
- **Operators** are responsible for deploying and maintaining ESCM.

  ESCM is provided in Docker containers and deployed in a container environment. The applications integrated with ESCM and their data may be hosted on the same system (Docker host) as ESCM or in different locations.

In extended usage scenarios, the suppliers who define marketable services may involve additional users and organizations in offering and selling these services:

- **Brokers** support suppliers in establishing relationships to customers by offering the suppliers' services on a marketplace. A service subscription is a contract between the customer and the supplier.
- **Resellers** offer services defined by suppliers to customers applying their own terms and conditions. A service subscription establishes a contract between the customer and the reseller.

## 1.1 The Marketplace Owner's Tasks in ESCM

As a marketplace owner, you are responsible for one or more marketplaces. This involves the followings tasks:

- Defining who is allowed to access your marketplace.
- Defining the suppliers, brokers, and resellers who are allowed to publish services to your marketplace.
- Administrating your marketplace, for example, managing categories or enabling specific features and settings.
- Customizing your marketplace to adapt it to your organization's standards, for example, adapting the texts presented to customers on the marketplace.

- Collecting your share of the revenue for the services offered by suppliers, brokers, and resellers on your marketplace.

## 1.2 Marketplaces in ESCM

A marketplace is a virtual platform on which seller organizations with the supplier, broker, or reseller role can offer their services to customers. Visitors of the marketplace can browse the service catalog, search for services, sort and organize them by different criteria, and subscribe to them.

Marketplaces are created by operators. For each marketplace, the operator specifies a marketplace owner organization. An organization can become the owner of one or several marketplaces. The organization is automatically assigned the marketplace owner role, and its administrators are assigned the marketplace manager role.

The operator who creates a marketplace defines its initial features and settings. He specifies whether:

- The marketplace is open to any seller or only to sellers authorized by the marketplace owner.
- The services can be organized and searched for by categories and tags of a tag cloud.
- Customers can rate services, and write comments.

These settings can be changed later at any time by the marketplace owner.

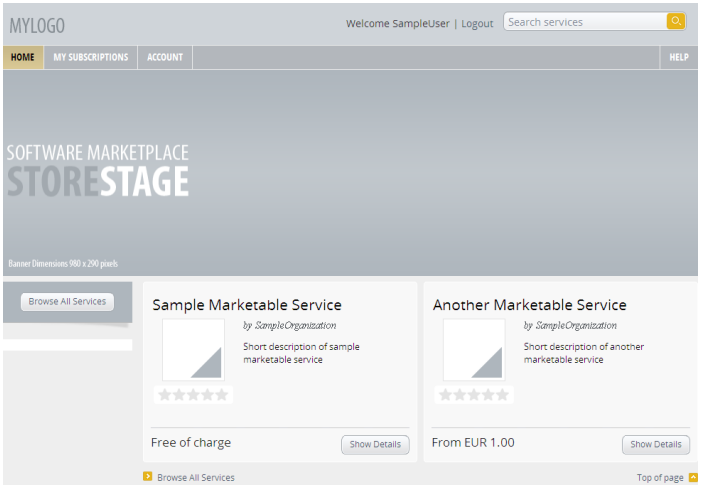
The operator also defines revenue shares for marketplace owners, brokers, and resellers. The revenue shares define how the entire revenue collected from the customers is shared between all participating parties: the marketplace owner, the operator, brokers, resellers, and suppliers. The revenue shares may differ for individual marketplaces, suppliers, brokers or resellers, or even specific services.

When a marketplace is created, it is public and accessible by any anonymous or registered users. The marketplace owner can restrict the access to it to the users of specific registered organizations.

Marketplace owners specify which services they want to highlight on a marketplace. They can select the services they want to present on the marketplace home page, or display services and subscriptions. The latter requires a login by home page visitors and allows them to directly use any service their customer organization has subscribed to.

A new marketplace has a neutral layout and branding which the marketplace owner can customize according to his organization's standards and requirements. The marketplace owner can also adapt the texts and the stage of the marketplace, i.e. the area where, for example, advertisements, eye catchers, or further information can be placed.

The following picture shows a marketplace with an initial, neutral layout and branding:




After customization, a marketplace may look like this:

## 1.3 Accessing ESCM

To perform your tasks, you use the ESCM user interface. The role of your organization as a marketplace owner and your user role within the organization determine which features are available to you at the ESCM user interface.

ESCM distinguishes between the following users roles within marketplace owner organizations:

- **Administrator**: Each organization must have at least one user with this role. An administrator can manage the organization's account and subscriptions as well as its users and their roles. The first administrator of an organization is defined when the organization is created.
- **Marketplace manager**: This role allows a user to define the organizations who are allowed to publish services to a marketplace as well as update and customize a marketplace. It is automatically assigned to all administrators of the marketplace owner organization when a marketplace is created.

To access the ESCM user interface, you use the login information provided in the email you receive when your organization becomes the owner of a marketplace. If your organization uses an external authentication system, passwords are managed in this system. This means that you log in with the password as stored in this system, and the email sent by ESCM does not contain a password.

To log in to the administration portal for managing your marketplace:

1. Click the link provided in the email, or type the access URL in your Web browser's address bar.

   The access URL has the following format:

   `https://<host_fqdn>:8081/oscm-portal`

   `<host_fqdn>` is the fully qualified name or IP address of the host used to access ESCM, `8081` is the port. Omit the port if ESCM is operated with its proxy. `oscm-portal` is the default context root of ESCM and cannot be changed.

   If your organization uses an external system for user management and authentication, the identifier of a corresponding tenant may be appended to the URL:

   `https://<host_fqdn>:8081/oscm-portal/?tenantID=<id>`

2. On the **Login** page, type your user ID and password.

   Depending on the system used for user authentication, the **Login** page may be that of ESCM or of an external provider like Microsoft Azure, or it may be skipped entirely if single sign-on is supported and you are already logged in.

3. Click **Login**, or press **Return**.

To access the marketplace itself:

1. Click the link provided in the email, or type the access URL in your Web browser's address bar.

   The access URL has the following format:

   `https://<host_fqdn>:<port>/oscm-portal?marketplaceId=<mId>`

   `<mId>` is the ID of the marketplace. Omit the port if ESCM is operated with its proxy.

2. To log in, click **Login** at the top right of the marketplace.
3. On the **Login** page, type your user ID and password.

   Depending on the system used for user authentication, the **Login** page may be that of ESCM or of an external provider like Microsoft Azure, or it may be skipped entirely if single sign-on is supported and you are already logged in.

4. Click **Login**, or press **Return**.

You are either logged in directly, or you are prompted to change your initial password when you log in for the first time. It is highly recommended to change the initial password.

If you try to log in with a wrong password, your account may be locked after the third attempt. This depends on whether your organization maintains its user data in an external authentication system. In this case, passwords can only be changed or reset in this system. If user data are

maintained in the platform, contact your administrator who can reset your password. You will get a new temporary password for your next login.

If you have forgotten your password, click **Forgot your password?** on the **Login** page. This allows you to define a new password for your user ID. Defining a new password is not possible if your account is locked or if your organization maintains its user data in an external authentication system.

If you have forgotten your user ID, contact your administrator who can look up the IDs of all users registered for your organization.

If your session expires, you have to log in again.

# 2 Managing Permissions for Marketplaces

As a marketplace owner, you are responsible for managing the permissions for your marketplace. You can define:

- The users and organizations who are allowed to access your marketplace and the services published on it.
- The suppliers, brokers, and resellers who are allowed to publish services to your marketplace.

## 2.1 Managing the Access to a Marketplace

When a marketplace is created, it is public and accessible by any anonymous or registered users. The marketplace owner can restrict the access to it to the users of specific registered organizations. In this case, the users need to log in to be able to see, subscribe to, and use the services published on the marketplace. New customers cannot register themselves on the marketplace but need to be registered by a supplier, broker, reseller, or the platform operator.

If you turn a marketplace from a public into a non-public one, organizations with existing subscriptions or services published on the marketplace are automatically granted access to it. You can at any time revoke the access permission for each of these organizations in the same way as for organizations which were granted access explicitly. As a prerequisite, the organization's existing subscriptions must have been terminated and its services published on the marketplace must have been deactivated.

A marketplace with restricted access can at any time be made public again and thus accessible by any users and organizations.

To define the access permissions for a marketplace, use the **Manage access** menu option in the **Marketplace** menu of the ESCM administration portal.

## 2.2 Managing Service Sellers

As a marketplace owner, you are responsible for deciding who is allowed to publish services to your marketplace. There are two basic strategies to do this:

- Use an open marketplace, where any seller organization can publish services. Explicitly exclude specific suppliers, brokers, and resellers, if required.
- Use a marketplace for authorized sellers only, and explicitly admit the suppliers, brokers, and resellers who are to publish their services to it.

The operator who creates a marketplace specifies whether it is open to all sellers or restricted to authorized sellers only. As the marketplace owner, you can change this setting later.

### Open Marketplaces

On an open marketplace, any seller organization can publish services immediately after the marketplace has been created. For you as the marketplace owner, this strategy reduces the effort of managing and controlling the marketplace and the sellers. However, it also increases the risk that many sellers publish numerous services to the marketplace and customers are lost in the variety.

Another issue you may encounter on an open marketplace is the presence of sellers who do not adhere to the code of conduct, do not pay their fees for using the marketplace, or offer services which are not acceptable for some reason. As the marketplace owner, you can exclude these

sellers from the marketplace and add them to a blacklist. The sellers' services are deactivated and customers can no longer subscribe to them. Existing subscriptions are not affected.

After the problems have been sorted out, you can re-admit a seller you have excluded from the marketplace and thus remove him from the blacklist. The seller can then again publish services to the marketplace.

ESCM automatically notifies a seller by email when you exclude him from the marketplace or re-admit him.

To exclude and re-admit sellers, use the **Manage sellers** menu option in the **Marketplace** menu of the ESCM administration portal.

## Marketplaces for Authorized Sellers

A marketplace can be restricted to one or more sellers who are explicitly authorized by the marketplace owner. By requiring that the publishing of services needs explicit approval, marketplaces for authorized sellers provide the marketplace owners with optimum control. Different marketplaces can be operated independently. This is useful, for example, if a seller in one country is not to be allowed to offer services on a marketplace in another country.

When the operator creates a marketplace for authorized sellers, the organization specified as the marketplace owner is automatically admitted to it, provided that it is assigned the supplier, broker, or reseller role. The marketplace owner can then authorize any number of sellers to publish services to the marketplace.

As the marketplace owner, you can revoke the publishing approval for a seller at any time, for example if he is in arrears with his payments. If the seller already published services to the marketplace, these services are automatically deactivated. Customers can no longer subscribe to them. Existing subscriptions are not affected.

ESCM automatically notifies a seller by email when you admit him to a marketplace or when you revoke your publishing approval.

To allow sellers to publish services to your marketplace or to revoke your approval, use the **Manage sellers** menu option in the **Marketplace** menu of the ESCM administration portal.

## Changing the Seller Policy for a Marketplace

You can at any time turn a marketplace which is open to any seller into a marketplace for authorized sellers only, and vice versa.

When you switch from an open marketplace to a marketplace for authorized sellers only, the sellers of all the services published so far are automatically admitted to it. Furthermore, the blacklist of the open marketplace is retained. This means that sellers you excluded from the marketplace will still be excluded, if you later decide to change the marketplace back to an open one.

The same applies in the opposite direction: The list of authorized sellers is retained when you turn a marketplace into an open one. Additionally, the services of the authorized sellers remain published on the marketplace, unless the sellers are included in the marketplace's blacklist.

To change the seller policy for a marketplace, use the **Update marketplace** menu option in the **Marketplace** menu of the ESCM administration portal.

# 3 Administrating Marketplaces

Your tasks as a marketplace owner include the administration of your marketplace. You can:

- Change the marketplace features and settings.
- Define featured services for promoting services on the marketplace.
- Define categories for organizing services and searching for them.
- Remove ratings and comments on services.
- Deactivate services that sellers have published to the marketplace.
- Insert tracking code into the marketplace Web pages to monitor the marketplace traffic.
- Rename the marketplace.

## 3.1 Changing Marketplace Features and Settings

You can at any time change the features and settings of your marketplace, which are initially defined by the operator who creates the marketplace. The following features and settings are available:

- **Tagging**: When enabled, the tag cloud is available on the marketplace. Visitors can filter and browse the services by the available tags. Tags are search terms that characterize the services. They are defined by the technology providers of the applications underlying to the services.

  When you disable this feature, the tag cloud is not displayed on the marketplace. The tags defined for the services are not affected.

- **Categories**: When enabled, categories are shown on the marketplace and can be used by visitors for filtering and browsing the services. The categories are also taken into consideration by the full-text search feature on the marketplace. Categories are defined by marketplace owners and assigned to services by suppliers, brokers, and resellers. Marketplace owners can also use the categories for grouping the services displayed on the marketplace home page. For details, refer to *Defining Categories* on page 14 and *Defining Featured Services* on page 13.

  When you disable this feature, categories are not available to marketplace visitors for searching, filtering, and browsing, but can still be defined and assigned to services. Existing category definitions and assignments are not affected.

- **Reviews**: When enabled, customers who subscribed to services on the marketplace can rate these services and write comments on them. Other visitors can see the ratings and comments.

  When you disable this feature, ratings and comments are not available on the marketplace. Existing ratings and comments are retained, but they are not visible. They re-appear when you enable the feature again.

- **Authorized sellers only**: When enabled, only authorized suppliers, brokers, and resellers are allowed to publish services to the marketplace. When disabled, the marketplace is open to any seller organization. For details, refer to *Managing Service Sellers* on page 11.

To change the features and settings of a marketplace, use the **Update marketplace** menu option in the **Marketplace** menu of the ESCM administration portal.

## 3.2 Defining Featured Services

ESCM allows you to highlight or promote services on a marketplace by presenting them on the marketplace home page.

By default the marketplace home page displays the six services created most recently. The remaining services are displayed to marketplace visitors when they browse the service catalog. From the marketplace home page a marketplace visitor can access any service he wants to subscribe to.

You can specify how many and which services are to be displayed on the home page. By defining the sequence of the services, you can also rank these services, putting, for example, the most attractive offering to the very beginning of the home page

As an alternative, you can choose to display services and subscriptions on the marketplace home page and group them by categories. This requires each home page visitor to log in to the marketplace with his personal login data. As soon as he is logged in, the services and the existing subscriptions of the customer organization to which he belongs are displayed. They are grouped by the first three categories that are defined for the marketplace and listed in the order in which they were created.

The home page visitor can directly use the services his organization has subscribed to and he can access any service he is interested in.

To specify which services to promote on the marketplace home page, use the **Define featured services** menu option in the **Marketplace** menu of the ESCM administration portal.

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| **Note:** | Some services may not be visible to some users depending on the organizational units they are assigned to. |

## 3.3 Defining Categories

Categories can be used for organizing and classifying services on a marketplace. For example, they may group different types of application software, such as word processing, desktop publishing, or spreadsheet software.

As a marketplace owner, you can create any number of categories for your marketplace. Suppliers, brokers, and resellers can assign these categories to the services they publish to the marketplace. Marketplace visitors can use the categories for browsing the service catalog and filtering the services, provided that you have enabled the display of categories. Categories are also taken into consideration by the full-text search feature on the marketplace.

As a marketplace owner, you can decide to use the defined categories for grouping the services displayed on the marketplace home page. For details, refer to *Defining Featured Services* on page 13.

A category can be provided in all supported languages. For each category, you define a language-independent ID and the actual term to be displayed in each language.

You can at any time update the language-independent IDs and the language-specific terms of categories. The new values are available immediately to visitors of the marketplace and for assignment to services. The same applies when you delete a category: It is removed immediately from the marketplace and from the services it was assigned to. The sellers of the services are notified by email about the removal.

To create, update, and delete categories, use the **Manage categories** menu option in the **Marketplace** menu of the ESCM administration portal.

## 3.4 Removing Ratings and Comments

Customers can give ratings and comments on services to which they have subscribed. You can remove these ratings and comments from your marketplace, if you do not want them to be read by visitors. This enables you to moderate the customer reviews.

**Note:** An alternative to removing individual ratings and comments is to deactivate the display of reviews completely. For details, refer to *Changing Marketplace Features and Settings* on page 13.

When you remove a review from a marketplace, you have to state a reason. ESCM automatically notifies the user who wrote the review by email about your intervention and the reason you entered.

To remove ratings and comments on a service, log in to the marketplace and display the details of the service. In the **Customer Reviews** section, choose the **Delete** option next to the entry you want to remove.

## 3.5 Deactivating Services

You can deactivate a service that a supplier, broker, or reseller published to your marketplace. Deactivating a service may be required under exceptional circumstances, for example, in the case of an infringement of the terms and conditions.

**Note:** An alternative to deactivating an individual service of a seller is to no longer allow the seller to publish services at all. By doing this, all published services of the seller are automatically deactivated. For details, refer to *Managing Service Sellers* on page 11.

You can deactivate a service at any time. When you do this, you have to state a reason. A deactivated service is no longer displayed in the service catalog on the marketplace. Thus, it cannot be subscribed to by customers any longer. Existing subscriptions to the service are not affected.

As soon as the problem is solved, you can reactivate the service. The seller is not allowed to reactivate it by himself. After the reactivation, customers can instantly subscribe to the service again.

ESCM automatically notifies a seller by email about the deactivation of a service and the reason you entered for it.

To deactivate a service, log in to the marketplace and display the details of the service to be deactivated. Choose the **Deactivate service** option. For a deactivated service, the option turns into **Reactivate service**.

## 3.6 Inserting Tracking Code

ESCM supports you in inserting tracking code into your marketplace Web pages.

Tracking code allows you to monitor the marketplace traffic by measuring the frequency in which the marketplace is accessed by visitors. You are free to choose your preferred Web analytics software. ESCM enables you to insert the desired HTML code for tracking the access into each marketplace Web page. When a page is loaded, the tracking script is executed and you can evaluate the analytics data.

To insert or remove tracking code, use the **Add tracking code** menu option in the **Marketplace** menu of the ESCM administration portal.

## 3.7 Renaming a Marketplace

ESCM allows you to change the name of a marketplace. The name is defined by the operator when he creates the marketplace.

The marketplace name is offered for selection when you administrate or customize the marketplace, or manage the sellers who are allowed to publish services to it.

To rename a marketplace, use the **Update marketplace** menu option in the **Marketplace** menu of the ESCM administration portal.

# 4 Customizing Marketplaces

ESCM offers various options that allow you to customize marketplaces. You can customize the following:

- Texts presented on the Web pages of a marketplace and in emails
- Stage of a marketplace
- Layout and branding of a marketplace

The following sections describe the individual options.

## 4.1 Texts

ESCM allows you to customize various texts that are provided on a marketplace. You can adapt the following:

- User interface texts, email texts, messages
- Terms and conditions and privacy policy
- Imprint

### User Interface Texts, Email Texts, Messages

ESCM supports you in customizing the texts used at the user interface, such as menu options, dialog fields, buttons, or messages. This includes:

- The user interface your customers work with when they visit your marketplace, register with ESCM, and use services on your marketplace.
- The administration portal you use to manage a marketplace.

In addition, ESCM allows you to customize the texts used in automatically generated emails.

Translations for the texts can be provided in all languages supported by ESCM. If a language is to be added to ESCM, contact the platform operator.

You can export the current texts to a Microsoft Excel file, and change or translate them in the file as desired. To apply your changes, you just import the customized and localized file to ESCM. As soon as you have saved the file contents in ESCM, the changes are visible.

To export and later import the texts, use the **Customize texts** menu option in the **Marketplace** menu of the ESCM administration portal.

| | |
|---|---|
| **Note:** | When an operator upgrades to a new release of the platform, new keys may have been added to the system, others may have been changed or deleted. Your customized texts are not overwritten by the upgrade. However, be aware that you need to check for changes, and it may be necessary to update your customizations.<br>Make sure to have a backup of your changes. After the upgrade, export the texts again and save them to a new file. Compare the new file with the one containing your previous customizations and make the necessary changes. Then import your customized file again. |

### Terms and Conditions and Privacy Policy

The terms and conditions and the privacy policy have to be accepted by users when they register with ESCM on a marketplace. Links to the terms and conditions and the privacy policy are provided at the bottom of each marketplace Web page.

You can enter the texts for the terms and conditions and the privacy policy directly in ESCM. The texts can be provided in all languages supported by ESCM.

To enter, update, or localize the terms and conditions and the privacy policy, use the **Customize texts** menu option in the **Marketplace** menu of the ESCM administration portal.

### Imprint

The imprint of a marketplace can be accessed by users via a link at the bottom of each marketplace Web page.

You can enter the URL of a Web page that shows the imprint. Different URLs can be specified for different languages.

To enter, update, or localize the URL pointing to the imprint, use the **Customize texts** menu option in the **Marketplace** menu of the ESCM administration portal.

## 4.2 Stage

ESCM supports you in customizing the stage of a marketplace. The stage is the area of the marketplace where you can place, for example, advertisements, eye catchers, or further information.

The marketplace stage can be provided as an image or as HTML code linking, for example, to animations. ESCM allows you to use a separate stage for each of the supported languages.

You specify the stage as HTML code referencing the desired stage image. For optimum display, you can use different stage images for desktop and mobile devices.

As common with website banners, the image for desktop devices should have a size of 1600 x 500 pixels or multiples thereof with the same aspect ratio. The image for mobile devices should have a size of 768 x 940 pixels or multiples thereof with the same aspect ratio. The recommended width of the stage is 100%. The recommended height is between 200 and 300 pixels for the desktop stage, and between 680 and 720 pixels for the mobile stage.

Example:

```
<iframe FRAMEBORDER="0" width="100%" height="290px" marginwidth="0"
marginheight="0" SRC="mystage.htm" SCROLLING="no"></iframe>
```

A preview function allows you to view a stage before it is published. As soon as you confirm the preview, the stage is published and visible to all visitors of the marketplace.

To customize the marketplace stage, use the **Customize stage** menu option in the **Marketplace** menu of the ESCM administration portal.

## 4.3 Layout and Branding

ESCM allows you to customize the layout and branding of a marketplace to suit your organization's standards and requirements. This includes the colors, fonts, background images, and logos displayed to the marketplace visitors.

You define the layout and branding of a marketplace in a style sheet and in files and images referenced by it. The best way to create an appropriate style sheet is to use the platform's default style sheet as a basis and adapt it as required.

The layout and branding of marketplaces is based on the Bootstrap framework and Sass (Syntactically Awesome Stylesheets). The Sass sources of the platform's default style sheet and the referenced files and images are provided in the branding package, a ZIP file which you can download from ESCM.

Proceed as follows:

1. Log in to the ESCM administration portal.
2. Download the branding package by using the **Customize layout** menu option in the **Marketplace** menu of the ESCM administration portal. The branding package is provided as a ZIP file.
3. Extract the ZIP file to a local directory.
4. Adapt the files as required. For details on how to proceed to achieve the desired layout and branding, refer to *Marketplace Customization Guide with Bootstrap and Sass*.
5. Create an archive (ZIP) containing your customized files.

   The customized branding must have the same structure as the original branding in the `branding-package.zip` file.
6. Provide this archive to the platform operator so that he can deploy your customized branding package.
7. Ask the platform operator for the URL of the deployed customized style sheet.
8. To load the customized layout:
   a. On the **Customize layout** page, select the marketplace and enter the URL provided by the platform operator pointing to your customized style sheet. If no URL is set, the default style sheet is used.

      By default, the URL is as follows:

      `https://<host_fqdn>:8443/<new-folder-name>/css/mp.css`

      `<host_fqdn>` is the fully qualified name or IP address of the host used to access ESCM, `8443` is the port. Omit the port if ESCM is operated with its proxy. `<new-folder-name>` is the name of the folder containing the customized files.
   b. To verify the branding, go to the respective marketplace and log in again.

# 5 Managing Billing and Payment

As a marketplace owner, you usually receive a share of the revenue for the services offered on your marketplace. ESCM provides the means to define this revenue share and calculate the actual amounts from the service usage fees.

The operator is responsible for defining the revenue share you are entitled to receive when he creates your marketplace. If required, the operator can change the revenue share later. You are not authorized to change the revenue share yourself.

ESCM offers the following billing and payment options that support you in collecting or paying your revenue share, depending on your contracts with the seller organizations and the operator:

- You can view the revenue share that is defined.
- You can retrieve and export information on the actual revenue.

For details, refer to the following sections.

## Viewing the Revenue Share

You can view the percentage you receive from the total revenue generated by the services offered on your marketplace.

For this purpose, use the **Update marketplace** menu option in the **Marketplace** menu of the ESCM administration portal. The menu option displays the features and settings that are currently defined for your marketplace. You can view the revenue share you receive as the marketplace owner as well as the revenue shares that brokers and resellers receive who publish services to your marketplace.

## Exporting Revenue Share Data

As users work with the services offered on your marketplace, ESCM automatically calculates the charges based on the related price models. At regular intervals, it generates the billing data for the customers' service usage as well as the revenue share data for each marketplace. Discounts granted by a supplier to his customers are deducted from the revenue shares.

To retrieve information on your actual revenue for a specific time frame, ESCM allows you to export the corresponding data. To do this, use the **Export billing data** menu option in the **Account** menu of the ESCM administration portal.

The data can be saved to an XML file or opened in an editor of your choice. You can edit it and work with it as required. The data can, for example, be forwarded to an accounting system. You can use it as the basis for collecting your revenue share or paying others, depending on your contracts with the seller organizations and the operator.

For a detailed description of the elements and attributes that may occur in the XML file, refer to *Customer Billing Data* on page 21.

# Appendix A: Customer Billing Data

The charges for the usage of a service in ESCM are calculated based on the price model defined for the service, customer, or subscription.

A supplier or reseller can export the billing data for one or several of his customers for a specific time. Suppliers also have access to the billing data of customers of broker organizations that sell their services. The exported data can be forwarded, for example, to an accounting system for further processing.

The result of the export is stored in an XML file, the customer billing data file. The billing data file conforms to the XML schema `BillingResult.xsd`, which can be found in the ESCM integration package.

The billing data file is named `<date>BillingData.xml`, where `<date>` represents the creation date.

This appendix describes the meaning of the elements and attributes that may occur in a billing data file.

## BillingDetails

Top-level container element of a billing data file. For each subscription, a `BillingDetails` element is added to the billing data file.

A `BillingDetails` element contains the following subelements:

- `Period` (see *Period* on page 21)
- `OrganizationDetails` (see *OrganizationDetails* on page 22)
- `Subscriptions` (see *Subscriptions* on page 22)
- `OverallCosts` (see *OverallCosts* on page 35)

A `BillingDetails` element has the following attributes:

**`key`** - (optional, data type `long`) Unique identifier allowing, for example, accounting systems to relate billing data to an invoice. The billing data key is printed on the invoice. Suppliers and customers may use the billing data key to create a detailed billing report for an existing invoice or subscription. A supplier can retrieve the key from a billing report, a customer gets the billing data key from the corresponding invoice.

**`timezone`** - (required, data type `string`) Time zone based on the UTC time standard. It reflects the standard server time without daylight saving time. For example, 18:00:00 o'clock on June 1st in Berlin (UTC+1) will be output as follows in the XML file:

```
<BillingDetails timezone="UTC+01:00" key="31122">
  <Period startDate="1370106000000"
  startDateIsoFormat="2013-06-01T16:00:00.000Z" ..."/>
```

The time zone is relevant for price models with costs (see *PriceModel* on page 24).

## Period

Specifies the billing period for which the data is exported. The start and end time of the billing period are output according to the start day of the billing period which was defined by the supplier or reseller.

A `Period` element has the following attributes:

- **`startDate`** - (data type `long`) Start time of the period. The start time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.

- **`startDateIsoFormat`** - (optional, data type `dateTime`) Same as `startDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`) .
- **`endDate`** - (data type `long`) End time of the period. The end time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.
- **`endDateIsoFormat`** - (optional, data type `dateTime`) Same as `endDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`).

**Example**:

```
<Period startDateIsoFormat="2012-08-31T22:00:00.000Z"
  startDate="1346450400000"
  endDateIsoFormat="2012-09-30T22:00:00.000Z"
  endDate="1349042400000"/>
```

## OrganizationDetails

Provides details of the customer for which the billing data have been exported. The details may include a `Udas` element with custom attributes that store additional information on the customer organization.

An `OrganizationDetails` element contains the following subelements:

**Email**

Specifies the email address of the organization (data type `string`).

**Name**

Specifies the name of the organization (data type `string`).

**Address**

Specifies the address of the organization (data type `string`).

**Paymenttype**

Specifies the payment type used for subscriptions of the organization (data type `string`).

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
  <OrganizationDetails>
    <Email>info@company.com</Email>
    <Name>company</Name>
    <Address>Street</Address>
    <Paymenttype>INVOICE</Paymenttype>
  </OrganizationDetails>
...
</BillingDetails>
```

## Subscriptions

Contains the billing data for the subscriptions of the customer which are relevant for the current billing period.

For every subscription of an organization, the `Subscriptions` element contains a `Subscription` element. In this element, the costs of the affected subscription are specified.

A `Subscription` element has the following attributes:

- **`id`** - (required, data type `string`) Unique subscription name.

- **purchaseOrderNumber** - (data type `string`) Optional reference number as specified by the customer when subscribing to a service.

A `Subscription` element contains a `PriceModel` element with the billing data for the price model of the subscription (see *PriceModel* on page 24). A `Udas` element with custom attributes that store additional information on the subscription may also be included (see *Udas* on page 23).

If a subscription is assigned to an organizational unit at the end of the billing period, the `Subscription` element also contains an `OrganizationalUnit` element with the following attributes:

- **name** - (required, data type `string`) Required name of the organizational unit to which the subscription is assigned.
- **referenceID** - (optional, data type `string`) Optional reference ID of the organizational unit to which the subscription is assigned.

Be aware that the organizational units to which the subscription may have been assigned before the generation of the billing data are not shown.

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
  <Subscriptions>
    <Subscription id="Mega Office Basic" purchaseOrderNumber="12345">
      <OrganizationalUnit name="ProjectTeam" referenceID="123abc"/>
      <PriceModels>
        <PriceModel calculationMode="PRO_RATA" id="14001">
...
        </PriceModel>
      </PriceModels>
    </Subscription>
  </Subscriptions>
...
</BillingDetails>
```

## Udas

Contains custom attributes that store additional information on an organization or subscription. This could be, for example, the profit center to which a customer's revenue is to be accounted.

A `Udas` element may be included in an `OrganizationDetails` or a `Subscription` element.

For every custom attribute, a `Uda` element is included in the `Udas` element.

A `Uda` element has the following attributes:

- **id** - (required, data type `string`) ID of the custom attribute.
- **value** - (required, data type `string`) Value of the custom attribute.

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
  <Subscriptions>
    <Subscription id="Mega Office Basic" purchaseOrderNumber="12345">
...
      <Udas>
        <Uda id="Profit Center" value="My Company"/>
      </Udas>
    </Subscription>
  </Subscriptions>
```

```
...
</BillingDetails>
```

## PriceModel

Contains the billing data for a price model used to calculate the utilization charges for a subscription.

A `PriceModel` element is included in every subscription element. It contains the following subelements:

- `UsagePeriod` (see *UsagePeriod* on page 24)
- `GatheredEvents` (see *GatheredEvents* on page 25)
- `PeriodFee` (see *PeriodFee* on page 26)
- `UserAssignmentCosts` (see *UserAssignmentCosts* on page 27)
- `OneTimeFee` (see *OneTimeFee* on page 28)
- `PriceModelCosts` (see *PriceModelCosts* on page 28)
- `Parameters` (see *Parameters* on page 29)

A `PriceModel` element has the following attributes:

**`id`** - (required, data type `string`) Unique name identifying the price model.

**`calculationMode`** - (required, data type `string`) Cost calculation option of the price model. Can be set to one of the following values: `FREE_OF_CHARGE` (the service is free of charge), `PRO_RATA` (the costs are calculated exactly for the time a service is used, based on milliseconds), `PER_UNIT` (the costs are calculated based on fixed time units).

## UsagePeriod

Specifies the actual period in which a price model is used for calculating the charges of a subscription.

A usage period usually begins when a customer subscribes to a service and ends when the subscription is terminated. In case a free trial period is defined for the service, the usage period begins when the free trial period has ended. When the customer upgrades or downgrades the subscription, a new usage period is started in which the price model of the new service is applied. If the customer changes elements that determine how the charges for the service are calculated (e.g. the number of assigned users, the service roles of the assigned users, or the parameter values), a new usage period is started in which the updated elements are applied.

A `UsagePeriod` element is contained in a `PriceModel` element.

A `UsagePeriod` element has the following attributes:

- **`startDate`** - (data type `long`) Start time of the period. The start time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.
- **`startDateIsoFormat`** - (optional, data type `dateTime`) Same as `startDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`) .
- **`endDate`** - (data type `long`) End time of the period. The end time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.
- **`endDateIsoFormat`** - (optional, data type `dateTime`) Same as `endDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`).

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="14001">
```

```
  <UsagePeriod endDate="1306879200000"
   endDateIsoFormat="2011-05-31T22:00:00.000Z"
   startDate="1304755088065"
   startDateIsoFormat="2011-05-07T07:58:08.065Z"/>
...
</PriceModel>
```

## GatheredEvents

Specifies the costs for all chargeable events that occurred in the current usage period of the subscription. These include, for example, login and logout by users to the underlying application, the completion of specific transactions, or the creation or deletion of specific data. It depends on the implementation and integration of the underlying application which events are available.

A `GatheredEvents` element is contained in a `PriceModel` element.

A `GatheredEvents` element contains the following subelements:

- `Event`
- `GatheredEventsCosts`

### Event

For every event, an `Event` element is included in the `GatheredEvents` element.

An `Event` element has the following attribute:

**`id`** - (required, data type `string`) Event ID as specified in the technical service definition.

An `Event` element contains the following subelements:

- `Description`
- `SingleCost`
- `NumberOfOccurence`
- `CostForEventType`

### Description

Contains the description of the event.

### SingleCost

Specifies the price for the event as defined in the price model. If an event has stepped prices, this element is omitted. A `SteppedPrices` element is included instead (see *SteppedPrices* on page 34).

A `SingleCost` element has the following attribute:

**`amount`** - (required, data type `decimal`) Price for a single event.

### NumberOfOccurence

Specifies how often the event occurred.

A `NumberOfOccurence` element has the following attribute:

**`amount`** - (required, data type `long`) Number of times the event occurred.

### CostForEventType

Specifies the total costs for the event in the billing period.

A `CostForEventType` element has the following attribute:

**`amount`** - (required, data type `decimal`) Total costs for the event. The total costs for an event are calculated from the singular costs (`SingleCost`) multiplied with the number of occurrences (`NumberOfOccurence`). If role-based costs and/or stepped prices are specified for events, these

costs are added (see *RoleCosts* on page 33 and *SteppedPrices* on page 34). The value is rounded to two decimal places.

**GatheredEventsCosts**

Specifies the total costs for all events in the current `GatheredEvents` element.

A `GatheredEventsCosts` element has the following attribute:

**`amount`** - (required, data type `decimal`) Total costs for events. The value is rounded to two decimal places.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="14001">
...
  <GatheredEvents>
    <Event id="USER_LOGOUT_FROM_SERVICE">
      <Description xml:lang="en">Logout from the service.</Description>
      <SingleCost amount="100.00"/>
      <NumberOfOccurrence amount="3"/>
      <CostForEventType amount="300.00"/>
    </Event>
...
    <GatheredEventsCosts amount="1200.00"/>
  </GatheredEvents>
...
</PriceModel>
```

## PeriodFee

Specifies the costs for using the subscription in the given usage period.

For each subscription, a charge can be defined that a customer has to pay on a recurring basis. Monthly, weekly, daily, or hourly periods are supported. The recurring charge for a subscription is independent of the amount of users, events, or other usage data.

The calculation of the charges depends on the cost calculation option which was chosen for the price model (see *PriceModel* on page 24 for details).

A `PeriodFee` element is contained in a `PriceModel` element.

A `PeriodFee` element has the following attributes:

- **`basePeriod`** - (required, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (required, data type `decimal`) Recurring charge per base period according to the price model.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the period fee for the subscription. The factor is calculated from the usage period of the subscription divided by the base period (`basePeriod`). The recurring charge is multiplied with this factor to calculate the total costs (`price`).
- **`price`** - (required, data type `decimal`) Total period fee for the subscription. This value is calculated from the recurring charge (`basePrice`) multiplied with the factor (`factor`). The value is rounded to two decimal places.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="14001">
...
  <PeriodFee basePeriod="MONTH" basePrice="10.00"
 factor="0.4020212567204301" price="4.02"/>
```

```
...
</PriceModel>
```

## UserAssignmentCosts

Specifies the costs for the user assignments to the subscription.

For the users assigned to a subscription, a charge can be defined that a customer has to pay on a recurring basis. Monthly, weekly, daily, or hourly periods are supported. The charge depends on the amount of time units one or more users are assigned to the subscription. This type of charge can only be defined for services with the login or user access type.

The recurring charge for users is independent of the recurring charge per subscription or other usage data.

For this type of charge, stepped prices can be applied: Recurring charges can be defined that depend on the sum of the time units of all user assignments.

The calculation of the charges depends on the cost calculation option which was chosen for the price model (see *PriceModel* on page 24 for details).

With per time unit calculation, the costs for a time unit in which a user is assigned to a subscription are always fully charged. There is no difference in the costs between a user who is assigned from the start until the end of the time unit and a user who is assigned for a part of the time unit only. A time unit is charged only once if a user is deassigned from and re-assigned to a subscription within the same time unit. Yet, canceling an assignment, deleting the user, and then creating a new user with the same user ID is treated as if two different users are assigned to the subscription. The time unit is charged twice, accordingly.

A `UserAssignmentCosts` element is contained in a `PriceModel` element.

A `UserAssignmentCosts` element has the following attributes:

- **`basePeriod`** - (optional, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (optional, data type `decimal`) Recurring charge for users per base period according to the price model. If the charge for users has stepped prices, this attribute is omitted.
- **`factor`** - (optional, data type `decimal`) Factor used to calculate the costs for the user assignments. The factor is calculated by summing up the factors for each user specified in the `UserAssignmentCostsByUser` element. The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`).
- **`numberOfUsersTotal`** - (optional, data type `long`) Number of users assigned to the subscription in the usage period.
- **`total`** - (data type `decimal`) Total costs for the user assignments including role-based costs and stepped prices. The value is rounded to two decimal places. For details on role-based costs and stepped prices, refer to *RoleCosts* on page 33 and *SteppedPrices* on page 34.
- **`price`** - (optional, data type `decimal`) Costs for the user assignments. This value is calculated from the recurring charge (`basePrice`) multiplied with the factor (`factor`). The value is rounded to two decimal places.

A `UserAssignmentCosts` element contains the following subelement. If role-based costs and/or stepped prices are specified, a `RoleCosts` element and/or `SteppedPrices` element is also present (see *RoleCosts* on page 33 and *SteppedPrices* on page 34).

**UserAssignmentCostsByUser**

Specifies the fraction of the usage period a user was assigned to the subscription.

A `UserAssignmentCostsByUser` element has the following attributes:

- **`factor`** - (required, data type `decimal`) Fraction of the usage period the given user was assigned to the subscription. The factors of the single user assignments are summed up to calculate the total costs for the user assignments.
- **`userId`** - (required, data type `string`) User ID.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="18000">
...
  <UserAssignmentCosts basePeriod="MONTH" basePrice="19.00"
   factor="0.5337726052867383" numberOfUsersTotal="2"
   total ="50.00" price="10.14">
     <UserAssignmentCostsByUser factor="1.0499215949820788E-4"
     userId="admin"/>
     <UserAssignmentCostsByUser factor="0.5336676131272401"
     userId="miller"/>
   </UserAssignmentCosts>
...
</PriceModel>
```

## OneTimeFee

Specifies the one-time fee for the subscription.

A one-time fee defines the amount a customer has to pay for a subscription in the first billing period of the subscription. It is added to the total charges for the first billing period. It is independent of the number of users, events, or other usage data.

If a one-time fee is defined for a service to which a customer upgrades or downgrades a subscription, it is added to the total charges for the customer, even if the service from which the customer migrates also defines a one-time fee.

A `OneTimeFee` element is contained in a `PriceModel` element.

A `OneTimeFee` element has the following attributes:

- **`amount`** - (required, data type `decimal`) Total costs for the one-time fee. The value is rounded to two decimal places.
- **`baseAmount`** - (required, data type `decimal`) One-time fee as defined in the price model.
- **`factor`** - (required, data type `long`) Factor used for calculating the one-time fee. Since this charge occurs only once, the factor is 1 for the first billing period, and 0 in case the one-time fee has already been charged in a previous billing period.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="14001">
...
  <OneTimeFee amount="10.00" baseAmount="10.00" factor="1"/>
...
</PriceModel>
```

## PriceModelCosts

Specifies the total costs for the subscription in the current usage period.

A `PriceModelCosts` element is contained in a `PriceModel` element.

A `PriceModelCosts` element has the following attributes:

- **`currency`** - (required, data type `string`) ISO code of the currency in which the costs are calculated.
- **`amount`** - (required, data type `decimal`) Total amount of the costs for the subscription. The value is rounded to two decimal places.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="14001">
...
  <PriceModelCosts currency="EUR" amount="990.00"/>
</PriceModel>
```

## Parameters

Specifies the costs for parameters defined for the service underlying the subscription.

A price model can define prices for service parameters and options. It depends on the implementation and integration of the underlying application whether and which parameters and options are available.

A price can be defined for every parameter and option, and the price can be charged per subscription or per user assigned to the subscription. Numeric parameters are a multiplier for the price. For boolean parameters, the multiplier is `1` if the value is `true`. In all other cases, the multiplier is `0`.

The calculation of charges for parameters and options depends on the cost calculation option which was chosen for the price model (see *PriceModel* on page 24 for details).

If the charges for a subscription are calculated per time unit and a customer changes a parameter value within a time unit, the affected time unit is charged pro rata. This means that the customer is charged exactly for the time each parameter value is set.

For numeric parameters, stepped prices can be applied per subscription: Different prices can be defined depending on the parameter values.

The prices for parameters and options are independent of other price model elements.

A `Parameters` element is contained in a `PriceModel` element.

A `Parameters` element contains the following subelements:

- `Parameter`
- `ParametersCosts`

**Parameter**

For every parameter, a `Parameter` element is included in the `Parameters` element.

A `Parameter` element has the following attribute:

**`id`** - (required, data type `string`) Parameter ID.

A `Parameter` element contains the following subelements:

- `ParameterUsagePeriod`
- `ParameterValue`
- `PeriodFee`
- `UserAssignmentCosts`
- `ParameterCosts`
- `Options`

**ParameterUsagePeriod**

Specifies the actual usage period for the parameter.

The usage period for a parameter begins when a customer subscribes to the service with the given parameter definition in the price model and ends when the subscription is terminated.

In case a free trial period is defined for the service, the usage period for the subscription begins when the free trial period has ended. If a parameter value is changed, a new usage period is started in which the updated value is applied for calculating the costs.

A `ParameterUsagePeriod` element has the following attributes:

- **`startDate`** - (data type `long`) Start time of the period. The start time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.
- **`startDateIsoFormat`** - (optional, data type `dateTime`) Same as `startDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`) .
- **`endDate`** - (data type `long`) End time of the period. The end time is specified in milliseconds, the starting point for the calculation is `1970-01-01, 00:00`.
- **`endDateIsoFormat`** - (optional, data type `dateTime`) Same as `endDate`, but specified in ISO 8601 format (`YYYY-MM-DDThh:mm:ss.fffZ`).

**ParameterValue**

Specifies the costs and data type for the parameter.

A `ParameterValue` element has the following attributes:

- **`amount`** - (required, data type `string`) Costs for the parameter as defined in the price model.
- **`type`** - (required, data type `string`) Data type of the parameter. Can be set to one of the following values: `BOOLEAN`, `INTEGER`, `LONG`, `STRING`, `ENUMERATION`, `DURATION`.

**PeriodFee**

Specifies the costs for using the parameter in the given usage period. If a parameter has stepped prices, a `SteppedPrices` element is included in the `PeriodFee` element.

A `PeriodFee` element has the following attributes:

- **`basePeriod`** - (required, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (optional, data type `decimal`) Recurring charge per base period according to the price model. If a parameter has stepped prices, this attribute is omitted.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the costs for using the parameter. The factor is calculated from the usage period divided by the base period (`basePeriod`). The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`).
- **`price`** - (required, data type `decimal`) Costs for using the parameter. This value is calculated from the recurring charge (`basePrice`) multiplied with the factors (`factor` and `valueFactor`). The value is rounded to two decimal places.
- **`valueFactor`** - (required, data type `float`) Factor to calculate the total costs for using the parameter depending on the parameter value. The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`). This factor is set depending on the data type of the parameter. For numeric parameters it is set to the value of the parameter. For boolean parameters, the factor is set to `1` if the value is `true`. In all other cases, the factor is set to `0`.

**UserAssignmentCosts**

Specifies the costs for the parameter related to the user assignments of the subscription based on the price per user for the parameter as defined in the price model. If costs for service roles are

defined, a `RoleCosts` element is included in the `UserAssignmentCosts` element (see *RoleCosts* on page 33 for details).

A `UserAssignmentCosts` element has the following attributes:

- **`basePeriod`** - (required, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (required, data type `decimal`) Recurring charge for users per base period for the parameter according to the price model.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the costs for using the parameter. The factor is calculated from the parameter usage period divided by the base period (`basePeriod`) multiplied with the number of users. The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`).
- **`price`** - (required, data type `decimal`) Costs for using the parameter. This value is calculated from the recurring charge (`basePrice`) multiplied with the factors (`factor` and `valueFactor`). The value is rounded to two decimal places. If stepped prices are defined for user assignments, the costs are given in the `price` attribute.
- **`total`** - (data type `decimal`) Total costs for using the parameter including role-based costs. The value is rounded to two decimal places. For details on role-based costs, refer to *RoleCosts* on page 33.
- **`valueFactor`** - (required, data type `float`) Factor to calculate the total costs for using the parameter depending on the parameter value. The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`). This factor is set depending on the data type of the parameter. For numeric parameters it is set to the value of the parameter. For boolean parameters, the factor is set to `1` if the value is `true`. In all other cases, the factor is set to `0`.

**ParameterCosts**

Specifies the total costs for using the parameter.

A `ParameterCosts` element has the following attribute:

**`amount`** - (required, data type `decimal`) Total costs for the parameter calculated by summing up the costs specified in the `PeriodFee` and the `UserAssignmentCosts` element for the parameter and its options. If role-based costs and/or stepped prices are specified for the parameter, these are added (see *RoleCosts* on page 33 and *SteppedPrices* on page 34). The value is rounded to two decimal places.

**ParametersCosts**

Specifies the total costs for all parameters.

A `ParametersCosts` element has the following attribute:

**`amount`** - (required, data type `decimal`) Total costs for the parameters calculated by summing up the costs of the individual parameters as specified in the `ParameterCosts` elements. The value is rounded to two decimal places.

**Example**:

```
<Parameters>
...
  <Parameter id="MAX_FOLDER_NUMBER2">
    <ParameterUsagePeriod endDate="1306879200000"
     endDateIsoFormat="2011-05-31T22:00:00.000Z"
     startDate="1304755088065"
     startDateIsoFormat="2011-05-07T07:58:08.065Z"/>
    <ParameterValue amount="200" type="INTEGER"/>
    <PeriodFee basePeriod="MONTH" basePrice="0.00"
     factor="0.5337789669205496" price="0.00" valueFactor="200.0"/>
```

```
    <UserAssignmentCosts basePeriod="MONTH" basePrice="0.00"
     factor="0.5337726052867383" total ="0.00"
     price="0.00" valueFactor="200.0"/>
    <ParameterCosts amount="0.00"/>
  </Parameter>

...
  <ParametersCosts amount="600.00"/>
</Parameters>
```

## Options

Specifies the costs for parameter options.

An `Options` element is contained in a `Parameter` element.

For every option, an `Option` element is included in the `Options` element.

An `Option` element has the following attribute:

**`id`** - (required, data type `string`) Option ID.

An `Option` element contains the following subelements:

- `PeriodFee`
- `UserAssignmentCosts`
- `OptionCosts`

### PeriodFee

Specifies the costs for using the parameter option in the given usage period.

A `PeriodFee` element has the following attributes:

- **`basePeriod`** - (required, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (required, data type `decimal`) Recurring charge per base period according to the price model.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the costs for using the parameter option. The factor is calculated from the usage period divided by the base period (`basePeriod`). The recurring charge (`basePrice`) is multiplied with this factor to calculate the total costs (`price`).
- **`price`** - (required, data type `decimal`) Costs for the parameter option. This value is calculated from the recurring charge (`basePrice`) multiplied with the factor (`factor`), and is rounded to two decimal places.

### UserAssignmentCosts

Specifies the costs for the parameter option related to the user assignments of the subscription based on the price per user for the option as defined in the price model. If costs for service roles are defined, a `RoleCosts` element is included in the `UserAssignmentCosts` element (see *RoleCosts* on page 33).

A `UserAssignmentCosts` element has the following attributes:

- **`basePeriod`** - (required, data type `string`) Period on which the charges are based. Can be set to one of the following values: `MONTH`, `WEEK`, `DAY`, `HOUR`.
- **`basePrice`** - (required, data type `decimal`) Recurring charge for users per base period for the parameter option according to the price model.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the costs for using the parameter option. The factor is calculated from the usage period divided by the base period

(`basePeriod`). The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`).

- **`total`** - (data type `decimal`) Total costs for using the parameter option including role-based costs. The value is rounded to two decimal places. For details on role-based costs, refer to *RoleCosts* on page 33.
- **`price`** - (required, data type `decimal`) Costs for using the parameter option. This value is calculated from the recurring charge (`basePrice`) multiplied with the factor (`factor`). The value is rounded to two decimal places. If stepped prices are defined for user assignments, the costs are given in the `price` attribute.

**OptionCosts**

Specifies the total costs for using the parameter option.

An `OptionCosts` element has the following attribute:

**`amount`** - (required, data type `decimal`) Total costs for the parameter option calculated by summing up the costs specified in the `PeriodFee` and the `UserAssignmentCosts` element. The value is rounded to two decimal places.

**Example**:

```
<Parameter id="MEMORY_STORAGE">
...
  <Options>
    <Option id="2">
      <PeriodFee basePeriod="MONTH" basePrice="100.00"
       factor="1.0" price="100.00"/>
      <UserAssignmentCosts basePeriod="MONTH" basePrice="0.00"
       factor="1.0" total ="0.00" price="0.00"/>
      <OptionCosts amount="100.00"/>
    </Option>
  </Options>
...
</Parameter>
```

## RoleCosts

Specifies the costs for service roles.

If defined for the underlying application, roles can be used to grant specific privileges to different users. The roles are specified in the technical service definition as service roles. Service roles can be mapped to corresponding permissions in the application.

For each role, a price can be defined. This price is added to the base price per user in the cost calculation for a billing period.

The calculation of the charges for service roles depends on the cost calculation option which was chosen for the price model (see *PriceModel* on page 24 for details).

If the charges are calculated per time unit and the role assignment of a user is changed within a time unit, the affected time unit is charged pro rata. This means that the customer is charged exactly for the time each user role is assigned.

If the charges are calculated per time unit and a user with a specific role is removed from the subscription and assigned to it again with a different role in the same time unit, the customer is also charged for the time during which the user is not assigned to the subscription. This means that he is charged with the price for the first service role until the user is assigned to the subscription with the second service role.

A `RoleCosts` element is contained in a `UserAssignmentCosts` element (as subelement of the `PriceModel`, `Parameters`, or `Option` element).

A `RoleCosts` element has the following attribute:

**`total`** - (required, data type `decimal`) Total amount of costs for the service roles. The value is rounded to two decimal places.

For every service role, a `RoleCost` element is included in the `RoleCosts` element.

A `RoleCost` element has the following attributes:

- **`id`** - (required, data type `string`) ID of the service role.
- **`basePrice`** - (required, data type `decimal`) Recurring charge for the service role according to the price model.
- **`factor`** - (required, data type `decimal`) Factor used to calculate the costs for the service role. The factor is calculated as a fraction of the actual usage period. The recurring charge (`basePrice`) is multiplied with this factor to calculate the costs (`price`).
- **`price`** - (required, data type `decimal`) Costs for the service role. This value is calculated from the recurring charge (`basePrice`) multiplied with the factor (`factor`). The value is rounded to two decimal places.

**Example**:

```
<Parameter id="MEMORY_STORAGE">
...
  <RoleCosts total="0.00">
    <RoleCost basePrice="0.00" factor="0.4020087753882915"
     id="USER" price="0.00"/>
    <RoleCost basePrice="0.00" factor="0.8040175186678614"
     id="ADMIN" price="0.00"/>
  </RoleCosts>
...
</Parameter>
```

## SteppedPrices

Specifies the stepped prices for a user assignment, event, or parameter.

Stepped prices allow for the definition of ranges for which different price factors apply. Step limits, i.e. the upper limits of ranges, can be set for:

- The **sum of the time units** users are assigned and work with a subscription in a billing period. For example, up to 10 hours one user is assigned to a subscription cost 10.00 € per hour, every additional hour the user is assigned costs 8.00 €.
- The **number of events** occurring in the usage of a subscription. For example, up to 10 file downloads cost 1.00 € per download, any additional download costs 0.50 €.
- **Values of numeric parameters**. For example, uploading up to 100 files costs 1.00 € per file, any additional upload costs 0.50 € per file.

Stepped prices are independent of any other price model elements.

A `SteppedPrices` element is contained in `UserAssignmentCosts` (as subelement of the `PriceModel` element), `Event`, and `PeriodFee` (as subelement of the `Parameters` element) elements.

A `SteppedPrices` element has the following attribute:

**`amount`** - (required, data type `decimal`) Summed up costs for all steps including the last one.

For every price step, a `SteppedPrice` element is included in a `SteppedPrices` element.

A `SteppedPrice` element has the following attributes:

- **`additionalPrice`** - (required, data type `decimal`) Summed up costs for the previous steps. The costs are calculated from the `limit`, `freeAmount` and `basePrice` attributes of the previous step (`(limit - freeAmount) * price`). The `additionalPrice` attribute of the first step always has a value of `0`. The value is rounded to two decimal places.
- **`basePrice`** - (required, data type `decimal`) Costs for the current step according to the price model.
- **`freeAmount`** - (required, data type `long`) Amount of units for the current step that are considered as a fixed discount, for example, the number of users that are free of charge. The value corresponds to the value of the `limit` attribute in the previous step. The `freeAmount` attribute of the first step always has a value of `0`.
- **`limit`** - (required, data type `string`) Step limit as defined in the price model.
- **`stepAmount`** - (optional, data type `decimal`) Summed up costs for the current step. These costs are calculated from the `basePrice` and `stepEntityCount` attributes of the current step. The value is rounded to two decimal places.
- **`stepEntityCount`** - (optional, data type `decimal`) Factor used to calculate the costs for the current step.

**Example**:

```
<PriceModel calculationMode="PRO_RATA" id="350001">
...
  <UserAssignmentCosts basePeriod="MONTH" factor="2.707940780619112"
 numberOfUsersTotal="4" price="1283.18">
    <SteppedPrices amount="1283.18">
      <SteppedPrice additionalPrice="0.00" basePrice="500.00"
       freeAmount="0" limit="2" stepAmount="1000.00"
 stepEntityCount="2"/>
      <SteppedPrice additionalPrice="1000.00" basePrice="400.00"
       freeAmount="2" limit="3" stepAmount="283.18"
       stepEntityCount="0.707940780619112"/>
      <SteppedPrice additionalPrice="1400.00" basePrice="300.00"
       freeAmount="3" limit="null" stepAmount="0.00"
 stepEntityCount="0"/>
    </SteppedPrices>
  </UserAssignmentCosts>
...
</PriceModel>
```

## OverallCosts

Contains the total amount of the charges to be paid by a customer for all subscriptions in the current billing period. The costs are given in the currency specified in the price model.

If a discount was specified, the net amount of the costs is given in the `Discount` element (see *Discount* on page 37). If a VAT rate was defined, it is given in the `VAT` element (see *VAT* on page 36).

An `OverallCosts` element has the following attributes:

- **`netAmount`** - (required, data type `decimal`) Net costs after the net discount has been deducted from the original net costs (see *Discount* on page 37). The value is rounded to two decimal places.
- **`currency`** - (required, data type `string`) ISO code of the currency in which the costs are calculated.

- **grossAmount** - (required, data type `decimal`) Gross amount of the costs, calculated from the net costs (`netAmount`) plus VAT (see *VAT* on page 36). The value is rounded to two decimal places.

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
<OverallCosts netAmount="900.00" currency="EUR" grossAmount="1053.00"/>

</OverallCosts>
</BillingDetails>
```

## VAT

Specifies the VAT rate to be applied.

A supplier can define a basic VAT rate that applies by default to all prices for his customers. In addition to this basic VAT rate, country-specific or even customer-specific VAT rates can be defined. You can:

- Enable VAT rate support for your organization.
- Define a default VAT rate that applies to all prices for all customers.
- Define a country-specific VAT rate for every country where you want to sell your services.
- Define a customer-specific VAT rate, for example, in case a customer organization has a subsidiary located in another country than its parent organization.

The VAT rate settings have the following effects on the cost calculation for a customer:

- If VAT rate support is disabled, prices are calculated as net prices; no VAT is added to the overall costs.
- A customer-specific VAT rate takes priority over any default or country-specific VAT rate.
- The country-specific VAT rate for the country where the customer organization is located is applied to the cost calculation when no customer-specific VAT rate is defined.
- The default VAT rate is used in all other cases.

The VAT rate does not affect any price model elements. The calculated VAT amount is added to the overall costs and results in the gross price to be paid by a customer.

A `VAT` element is contained in the `OverallCosts` element.

A `VAT` element has the following attributes:

- **percent** - (required, data type `float`) VAT rate in percent, specified as a decimal number.
- **amount** - (required, data type `decimal`) Net amount of VAT to be added to the net costs (`netAmount` attribute of the `OverallCosts` element). The value is rounded to two decimal places.

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
  <OverallCosts netAmount="900.00" currency="EUR" grossAmount="1053.00">
    <VAT percent="17.0" amount="153.00"/>
  </OverallCosts>
</BillingDetails>
```

## Discount

Specifies the discount granted to the customer.

A discount can be defined for a customer which applies to all subscriptions of the customer to services. A discount may be valid as of the current or a future month. It can be restricted to a certain period of time. Before the time expires, the customer is notified by email so that he can react and contact the supplier.

The discount is defined as a percentage that is subtracted from the regular total price for a subscription. It is granted for all costs of a customer that incur in a billing period in which the discount is valid. It does not matter whether the discount is valid for the whole billing period or only a part of it.

A discount is completely independent of what a customer might purchase. If a discount is changed, the new discount is valid the next time the billing data is generated. Usually, a discount is only changed in agreement with the relevant customer.

A `Discount` element is contained in the `OverallCosts` element.

A `Discount` element has the following attributes:

- **`percent`** - (required, data type `float`) Percentage of costs to be deducted from the net costs, specified as a decimal number.
- **`discountNetAmount`** - (required, data type `decimal`) Net discount to be deducted from the original net costs (`netAmountBeforeDiscount`). The value is rounded to two decimal places.
- **`netAmountAfterDiscount`** - (required, data type `decimal`) Net costs after the net discount (`discountNetAmount`) has been deducted from the original net costs (`netAmountBeforeDiscount`). The value is rounded to two decimal places.
- **`netAmountBeforeDiscount`** - (required, data type `decimal`) Net costs before the net discount (`discountNetAmount`) has been deducted. The value is rounded to two decimal places.

**Example**:

```
<BillingDetails key="10002" timezone="UTC+01:00">
...
  <OverallCosts netAmount="900.00" currency="EUR" grossAmount="1053.00">
    <Discount percent="10.00" discountNetAmount="100.00"
     netAmountAfterDiscount="900.00"
     netAmountBeforeDiscount="1000.00" />
    <VAT percent="17.0" amount="153.00"/>
  </OverallCosts>
</BillingDetails>
```

# 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.

### Billing System

A system responsible for calculating the charges for using a service.

### 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 ESCM 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 ESCM, 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 ESCM to provide their services to customers.

### Marketplace Owner

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

### Marketplace Manager

A privileged user role within a marketplace owner organization.

### OIDC

An authentication mode of ESCM where users are managed and authenticated by means of OpenID Connect in an external system such as Microsoft Azure Active Directory, the so-called OIDC provider.

### OIDC Tenant

An entity in ESCM representing a configuration of settings and parameters required to connect to a specific tenant at an OIDC provider, for example, a specific domain and directory in Microsoft Azure Active Directory.

### Operator

An organization or person responsible for maintaining and operating ESCM.

### 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.

### Organizational Unit

A set of one or more users within an organization representing, for example, a department in a company, an individual project, a cost center, or a single person. A user may be assigned to one or more organizational units.

### OU Administrator

A privileged user role within an organization allowing a user to manage the organizational units for which he has been appointed as an administrator, and to create, modify, and terminate subscriptions for these units.

### Payment Type

A specification of how a customer may pay for the usage of his subscriptions. The operator defines the payment types available in ESCM; 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. ESCM 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 ESCM. 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 ESCM for offering applications provisioned by technology providers to customers.

### Technical Service

The representation of an application in ESCM. 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 ESCM.