Systemwalker
Service Catalog Manager V15.1.0
(Business Support System)

Overview

High Risk Activity

The Customer acknowledges and agrees that the Product is designed, developed and manufactured as contemplated for general use, including without limitation, general office use, personal use, household use, and ordinary industrial use, but is not designed, developed and manufactured as contemplated for use accompanying fatal risks or dangers that, unless extremely high safety is secured, could lead directly to death, personal injury, severe physical damage or other loss (hereinafter "High Safety Required Use"), including without limitation, nuclear reaction control in nuclear facility, aircraft flight control, air traffic control, mass transport control, medical life support system, missile launch control in weapon system. The Customer shall not use the Product without securing the sufficient safety required for the High Safety Required Use. In addition, FUJITSU (or other affiliate's name) shall not be liable against the Customer and/or any third party for any claims or damages arising in connection with the High Safety Required Use of the Product.

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About this Manual

This manual is an introduction to Systemwalker Service Catalog Manager - hereafter referred to as Business Support System (BSS).

The manual is structured as follows:

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BSS for Technology Providers on page 11	Describes how software vendors can integrate their applications with BSS.
BSS for Suppliers on page 14	Describes how software vendors or independent sellers can define and manage service offerings for applications in BSS.
BSS for Customers on page 18	Describes how customers can subscribe to services in BSS, manage their subscriptions, and work with the services they have subscribed to.
BSS for Marketplace Owners on page 21	Describes how marketplace owners can administrate and customize their marketplaces in BSS.
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Readers of this Manual

This manual is written for everybody interested in BSS. It offers a basic introduction for readers who do not know BSS and for those who have already started using the services. The manual does not require any special knowledge.

Abbreviations

This manual uses the following abbreviations:

BSS	Business Support System
IaaS	Infrastructure as a Service
LDAP	Lightweight Directory Access Protocol
PaaS	Platform as a Service
PSP	Payment service provider
SaaS	Software as a Service

Available Documentation

The following documentation on BSS is available:

- *Overview:* A PDF manual introducing BSS. It is written for everybody interested in BSS and does not require any special knowledge.
- *Online Help:* Online help pages describing how to work with the user interface of BSS. The online help is directed and available to everybody working at the user interface.
- *Installation Guide:* A PDF manual describing how to install and uninstall BSS. It is directed to operators who set up and maintain BSS in their environment.
- *Operator's Guide:* A PDF manual for operators describing how to administrate and maintain BSS.
- *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 BSS.
- *Supplier's Guide:* A PDF manual for suppliers describing how to define and manage service offerings for applications that have been integrated with BSS.
- *Marketplace Owner's Guide:* A PDF manual for marketplace owners describing how to administrate and customize marketplaces in BSS.
- *Developer's Guide:* A PDF manual for application developers describing the public Web service interface of BSS and how to use it to integrate applications and external systems with BSS.
- Javadoc documentation for the public Web service interface of BSS and additional resources and utilities for application developers.

1   What is BSS?

Business Support System (BSS) is a set of services which provide all business-related functions and features required for turning on-premise software applications into Software as a Service (SaaS) 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, BSS covers all the business-related aspects of a Platform as a Service (PaaS) or Cloud platform. It supports software vendors as well as their customers in leveraging the advantages of Cloud Computing:

- Sharing: Through the Internet, many customers use applications which are installed centrally and share a common IT infrastructure. Each customer's security and privacy are not sacrificed, but even improved by the concentration of security means and expertise at the data centers.
- Pay-per-use: Software vendors as well as their customers only pay for the services they actually use, without upfront investment or entry costs for both human and non-human resources. Customers simply subscribe to the services they like to use and pay for what they consume.
- Centralized management: Cloud application providers maintain and operate the applications centrally for all their customers. This substantially reduces installation and maintenance costs for all participants.

Integration with BSS does not require software vendors to design or implement their applications in a specific way. Instead, BSS offers open and standards-based interfaces, which enable software vendors to:

- Easily and rapidly provide new as well as existing applications with the required business services without the need of rewriting existing applications or changing their development environment.
- Leverage an open platform suitable for multiple sales channels such as online marketplaces, value-added resellers, system integrators, and direct sales.

While being open in its interfaces, BSS provides all the required means and ways to ensure customer privacy and data security.

BSS is typically operated and used in a SaaS environment. It supports, however, all types of "as-a-Service" environments.

1.1 Basic Usage Scenario

The basic scenario of deploying and using applications as services in the BSS framework involves different users and organizations:
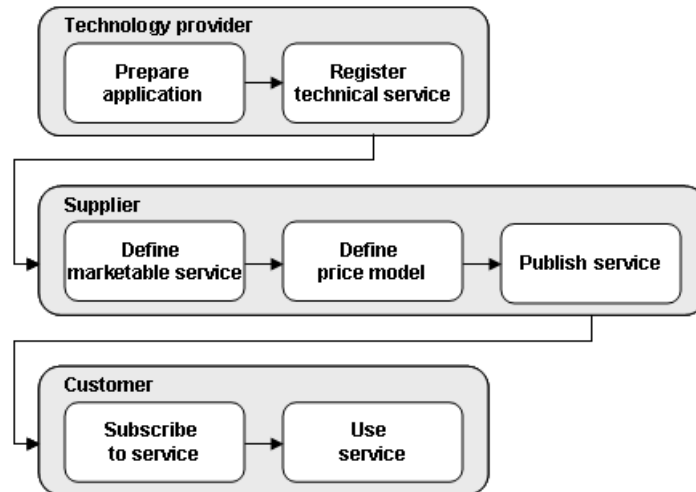
1. **Technology providers** (e.g. independent software vendors) technically prepare their applications for usage in the Cloud and integrate them with BSS. They register the applications as technical services in BSS.

   For details, refer to *BSS for Technology Providers* on page 11.

2. **Suppliers** (e.g. independent software vendors or sellers) define service offerings, so-called marketable services, for the technical services in BSS. They publish the services to a marketplace.

   For details, refer to *BSS for Suppliers* on page 14.

3. **Customers** register themselves or are registered by a supplier in BSS and subscribe to one or more services. Users appointed by the customers work with the underlying applications under the conditions of the corresponding subscriptions.

   For details, refer to *BSS for Customers* on page 18.

In addition to technology providers, suppliers, and customers, the following users are involved in the preparation and operation of BSS and the applications integrated with it:

- **Marketplace owners** are responsible for administrating and customizing the marketplaces to which suppliers publish their services. For details, refer to *BSS for Marketplace Owners* on page 21.

- **Operators** are responsible for installing and maintaining BSS. For details, refer to *BSS for Operators* on page 23. BSS is typically operated in data centers on servers providing for optimum performance, scalability, and non-stop operation. The applications integrated with BSS and their data may be hosted in the same data centers as BSS or in different locations.

BSS offers features and functions which are of relevance for all these participating parties. These include a state-of-the-art user interface, account and identity management, and external process control. A public Web service interface is available by which developers can integrate applications and external systems with BSS. For details, refer to *BSS Across Organizations* on page 24.

1.2 Organizations and User Roles

Each user working in BSS is a member of a specific organization. An organization typically represents a company, but it may also stand for a department of a company or a single person. Each organization in BSS has a unique account and ID as well as one or more of the following roles: **operator**, **technology provider**, **supplier**, **marketplace owner**, **customer**.

When a customer registers with BSS or is registered by a supplier, an organization with the customer role is created. Organizations with other roles can also act as customers, i.e. they are implicitly assigned the customer role. These organizations are created and assigned their roles as follows:

*   When BSS is installed, an organization with the operator role is created.
*   Operators can assign the supplier and/or technology provider role to any existing organization or create new organizations with these roles.
*   When operators create a marketplace, they specify an existing organization as the owner of the marketplace. In this way, the organization is assigned the marketplace owner role.

The roles of an organization determine which features are available to its users at the BSS interfaces and which roles the users can be assigned. These user roles control the actions an individual user is allowed to carry out:

*   **Standard user**: Users with this non-privileged role can work with services their organization has subscribed to. Every user registered in BSS automatically is a standard user. Additional user roles must be assigned explicitly by an administrator.
*   **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.
*   **Technology manager**: This role allows a user to define technical services in BSS. It can be assigned to users of technology provider organizations.
*   **Service manager**: This role allows a user to define marketable services and price models as well as publish marketable services. It can be assigned to users of supplier organizations.
*   **Marketplace manager**: This role allows a user to define the suppliers who are allowed to publish services to a marketplace as well as update and customize a marketplace. This role can be assigned to users of marketplace owner organizations. It is automatically assigned to all administrators of the marketplace owner organization when a marketplace is created.
*   **Operator**: This role allows a user to carry out configuration and maintenance tasks, manage organizations, and create marketplaces. The first operator is created together with its operator organization when BSS is installed.

1.3 BSS Components

BSS comprises the following technical components which provide the business framework for software applications in the Cloud:
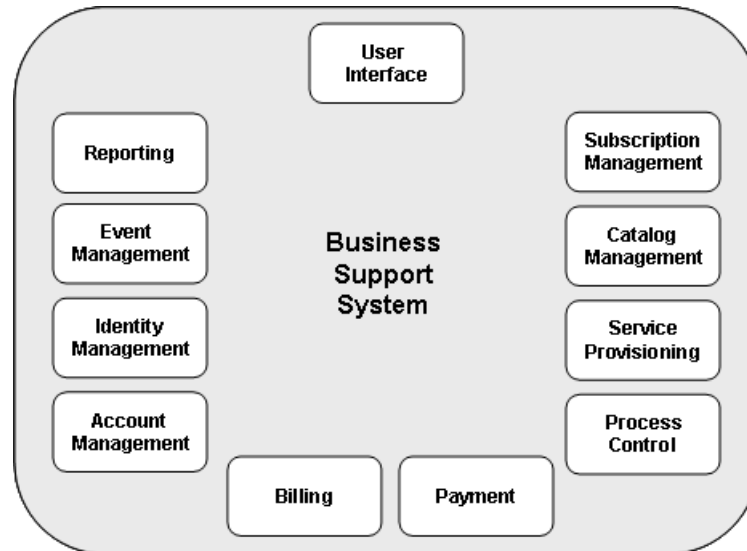
Service Provisioning is the interface for making applications available in service offerings on a marketplace. Marketplaces are created and managed through the **Catalog Management** component. Customers can subscribe to the available services and manage their subscriptions through **Subscription Management**.

Account Management provides for the registration of customers and the management of the customer accounts. The individual users of BSS, their accounts, roles, and logins are handled by the **Identity Management** component. As users work with the services and underlying applications, **Event Management** collects specific events, which serve as the basis for reporting and billing.

The **Billing** and **Payment** components are involved when it comes to calculating the charges for the customers depending on the services their users have consumed and to preparing the creation of invoices and payment collection.

Process Control allows for integrating customer-specific processes. Usually, such processes include approval processes and can be modeled and automated with a process control system.

The **Reporting** facilities offer comprehensive reports for different purposes and at different levels of detail. Different types of report satisfy the needs of all participating parties.

BSS provides a state-of-the-art **User Interface** for all participating parties.

Some of the components mentioned above are available as Web services which applications can use to integrate with BSS.

2 BSS for Technology Providers

Technology providers are the companies, departments, or people who want to provide their applications in a SaaS model using BSS to cover the business-related functionality.

To achieve this goal, the following tasks must be completed:

1. Prepare the applications for usage in a SaaS model.
2. Integrate applications with BSS.
3. Provision the applications as technical services in BSS.

Technology providers can use the reporting facilities at the BSS user interface, for example, for retrieving information on the number of subscriptions for their services or on the usage and load of the underlying applications.

The following sections provide an overview of the technology providers' tasks and briefly outline the planning considerations a technology provider has to take into account to make his application ready for SaaS. For details, refer to the *Technology Provider's Guide*.

2.1 Preparing Applications for Usage in a SaaS Model

An application that is to be offered in a SaaS model should take the following aspects into consideration:

- A remote interface by which users can access the application from anywhere in the Web (Internet/Intranet). This may be, for example, a Web user interface or a Web service.

- Multi-tenancy at least with respect to the management of data: The data of different customers or of different service subscriptions of a customer should be clearly separated from each other and only be accessible by the respective customer or subscription user.

  In BSS, the term "instance" refers to what is provisioned for a tenant (customer or subscription) on the application side. Before integrating an application with BSS, you must decide what to consider an instance in the context of the application. Possible solutions range from using different workspaces in one data container over maintaining different databases to instantiating different virtual servers in an Infrastructure as a Service (IaaS) environment.

- High scalability, because the number of users, performance, and space requirements may differ to a great extent for each customer.

- High availability, ideally 24x7. It is usually required to host an application in a professional data center that takes care of non-stop operation, backup, data security, and regular maintenance.

- Security aspects such as the following: Web service calls between BSS and an application can be sent as plain text containing a user ID and password. For secure communication, the usage of certificates is recommended.

Technology providers may have to adapt their applications to fulfill these recommendations. They do this in their own development environments using their own tools and facilities.

2.2 Integrating Applications with BSS

The technology provider is responsible for implementing the interfaces by which the application is integrated with BSS.

An application can be integrated with BSS components as shown in the following illustration. The BSS components are colored in dark grey:
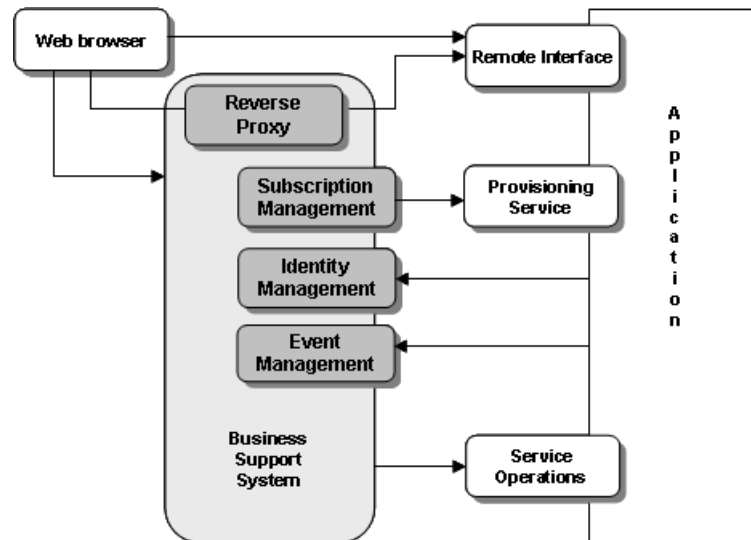
Depending on the requirements, the integration involves the following tasks:

1. Decide how users access the application.

   Users may access an application directly or through BSS. When access occurs through BSS, user management and authentication are under full control of the BSS identity management, and price models on a per-user basis can be used.

2. Implement a provisioning service.

   If an application is to integrate with the subscription management of BSS, it must provide a corresponding Web service (provisioning service). By the provisioning service, BSS triggers the application to provision and manage whatever is required for a subscription.

3. Adapt the application's login/logout implementation.

   If an application is to be accessed through BSS, its login/logout implementation must be adapted. Depending on the access type, the methods defined by the provisioning service must be implemented.

4. Integrate with the BSS event management.

   The application can send events to the event management of BSS. Events can be used as a basis for price models, billing, and reporting. Integrating the event management is optional, but recommended for fine-grained pay-per-use billing.

5. Implement service operations.

   The application can implement operations that can be executed from the BSS user interface. Service operations can be used to access the resources of the application and perform administrative tasks.

2.3 Provisioning Applications as Services in BSS

After the required preparations and adaptations of the applications are finished, technology providers register the applications as technical services in BSS. By registering an application, the technology provider makes it available for suppliers.

An application can be registered in either of the following ways:

- If an application does not provide any parameters, options, user roles, events, or operations, the technology provider can register it using the BSS user interface. Afterwards, the technology provider can update the service definition and add, for example, license information.

- If an application is complex and provides parameters, options, or events, the technology provider can create a technical service definition as an XML file and import this file into BSS using the BSS user interface.

After registering an application, a technology provider has to appoint one or more suppliers who are to be able to create service offerings based on the technical service. The suppliers must be known to BSS, i.e. they must have been previously registered by the operator. A supplier can be an entirely independent organization, yet a technology provider can also act as his own supplier.

3 BSS for Suppliers

Suppliers are the companies, departments, or people who use BSS to offer the technology providers' applications to customers.

Suppliers perform the following basic tasks:

- Define marketable services.
- Define price models for the services.
- Publish the marketable services to a marketplace.
- Manage the interaction with their customers.
- Prepare billing and payment.

For all tasks mentioned above, suppliers can use the BSS user interface. They can also use the reporting facilities at the BSS user interface for retrieving customer billing data and information on the usage of the marketable services they offer.

The following sections briefly outline the basic tasks of suppliers. For details, refer to the *Supplier's Guide*.

3.1 Defining Marketable Services

A marketable service is a service offering to customers based on a technical service provided by a technology provider. It defines parameters, conditions, and restrictions for using the underlying application. A price model must be defined for each marketable service before it can be published and provided to customers for subscription.

For each technical service, any number of marketable services can be defined, applying different price models, configurations, and upgrade and downgrade options. A supplier could, for example, define three marketable services based on one technical service, thus offering three different editions of an application to his customers. The services could be defined as follows:

	Configuration	Price
Trial edition	Limited subscription for 4 weeks Limited set of features Number of users limited to 1	Free of charge
Standard edition	No limit of subscription lifetime Standard set of features Number of users limited to 25	Basic charge of 45 € per month
Enterprise edition	No limit of subscription lifetime Full set of features Unlimited number of users	Basic charge of 60 € per month 1 € per user login

If defined for the underlying application, specific parameters can take on different values which the supplier can make available to customers as different options. When a customer subscribes to the service, he can choose between these options. This makes service definitions flexible, since there is no need for defining separate services for every option the supplier wants to offer.

BSS supports suppliers in changing the definition of a marketable service. The textual elements of the definition can be localized and made available to customers in all languages supported by BSS.

Suppliers can copy a marketable service including its price model. This may be useful for offering an existing service with slightly different properties, for example, a higher service level with a higher price, or special discounts for a promotion campaign.

If suppliers do not want to offer a marketable service to customers any longer, they can delete it.

3.2   Defining Price Models

A price model specifies whether and how much customers subscribing to a service will be charged for:

- Using the subscription as such.
- Each user assigned to the subscription.
- Individual events. These include, for example, login and logout by users to the underlying application through BSS, the completion of specific transactions, or the creation or deletion of specific data.
- Parameters and their options.

It depends on the implementation of the underlying application and on its integration with BSS whether fees for events or parameters can be defined.

Price Model Scope

Price models can have different scopes:

Service price models are the basic price models. A service price model must be defined for every marketable service.

In addition to service price models, BSS allows the definition of **customer price models**. A customer price model can be used, for example, to offer special discounts to a long-time customer, or to make a new service available to a pilot customer at no charge. A customer price model is specific to one customer and to one service that is used by the customer. It is not available for any other services offered to the same or a different customer.

To support even greater flexibility, a supplier can define **subscription price models** in BSS. A subscription price model is specific to one subscription of an individual customer. It is not available for any other subscriptions of the same or a different customer.

Price Model Elements

Each price model - independent of its scope - consists of different elements that determine how the charges for a service are calculated. The following elements can be defined:

- One-time fee
- Recurring charge per subscription
- Recurring charge per user
- Prices for parameters and options
- Prices for events
- Role-based prices

Stepped prices are supported which allow the definition of ranges for which different price model elements apply. In addition, discounts can be granted to individual customers.

The calculation of the actual charges for a service varies depending on the combination of the elements listed above. The calculation is based on milliseconds. Billing data is generated by BSS once a month.

3.3 Publishing Marketable Services

Publishing marketable services means making them available to customers for subscription on a marketplace. When defining a marketable service, the supplier can already specify the marketplace to which the service is to be published.

Publishing a marketable service includes the following steps:

- Activate the marketable service to be published. Only services activated by the supplier are available on a marketplace.

- Publish the URL of the marketplace to make the service known to customers. A supplier can publish the URL, for example, by email or on his organization's website or portal.

3.4 Managing Customers

BSS offers various features for managing the interaction of a supplier organization with its customers. Suppliers can:

- Register customers with BSS.
- Define custom attributes.
- View the details of subscriptions.
- Terminate subscriptions.

Registering Customers

A supplier can register his customers with BSS so that they do not need to do this themselves. Registering a customer creates a new customer organization as well as an initial administrator account. All login information is automatically sent to this administrator of the new customer organization per email. The login information enables the administrator to access the given marketplace and subscribe to services.

Defining Custom Attributes

Custom attributes are a means to store data needed for controlling the cost and activity accounting. For example, a supplier may want to specify the profit center to which a particular customer's revenue is to be accounted. Since there is no standard for such data, the supplier can define his own custom attribute for storing the profit center. Another example is defining a unique customer identifier as a custom attribute since a customer name may not be unique. The customer identifier can be used by an external accounting system to uniquely identify the customer to whom specific billing data is related.

Custom attributes can be defined for customers and for subscriptions. They are included in the billing data that is generated by BSS every month.

Handling Subscriptions

A supplier can view the details of each service subscription. The entire information a customer specified when subscribing to a service is accessible for the supplier, for example, the activation date and the number of users assigned to the subscription.

A supplier can also explicitly terminate a subscription. This may be required, for example, if a customer does not comply with the license agreement or does not pay for the subscription.

3.5 Preparing Billing and Payment

As users of customers work with the subscribed services, BSS automatically calculates the fees based on the related price models. It aggregates all the events, users, and configuration data associated with a subscription and rates them according to the applicable price model. BSS generates billing data that can be used for creating invoices at regular intervals.

The supplier is responsible for the following preparations related to the billing and payment services:

- Specify the types of payment to be offered to customers.
- Define the VAT rates to be used for calculating the customer charges.

BSS offers the following support to suppliers for creating invoices and collecting payments:

- The supplier can export the generated billing data to make it available to external accounting systems.
- The supplier can integrate and use the facilities of a commercial payment service provider (PSP).

Managing Payment Types

A supplier is responsible for defining how customers may pay for their subscriptions, for example, on receipt of invoice, with credit card, or by direct debit.

The payment types available to a supplier must be set up by the operator. The supplier can then choose the payment types he wants to offer to his customers. Different payment types can be chosen for individual customers and individual services they have subscribed to.

Managing VAT Rates

In case a supplier wants to invoice usage charges for subscriptions as gross prices, he can enable VAT rate support for his organization.

In addition to a basic VAT rate, that applies by default to all prices for all customers of the organization, a supplier can define country-specific or even customer-specific VAT rates.

Exporting Billing Data

If a supplier has defined invoice as a payment type, BSS allows him to export the billing data of one or several customers for a specific time frame. The exported data can be forwarded, for example, to an accounting system which can be set up so that the data are processed seamlessly. In this way, the supplier can use any billing and payment process that has already been established in his organization.

Integrating PSP Support

BSS supports suppliers in using the facilities of a commercial payment service provider (PSP) for the creation of invoices and payment collection. The billing data generated in BSS can be transferred to the PSP. The PSP can then create and deliver customer invoices, thus initiating the payment request.

For using the services of a PSP, the supplier organization needs to have a valid contractual relationship with the PSP. Using the public Web service interface of BSS, the services of any PSP can be integrated with BSS.

4 BSS for Customers

Customers are the companies, departments, or people who subscribe to one or more marketable services on a marketplace. After a customer has subscribed to a service in BSS, his registered users who are assigned to the subscription can work with the underlying application in the Cloud.

Customers perform the following basic tasks which are described in more detail in the sections below:

- Access the services they want to subscribe to on a marketplace.
- Register in BSS.
- Subscribe to services.
- Register service users and assign them to subscriptions.
- Use the services they subscribed to.
- Manage existing subscriptions.
- Pay for the services consumed.

Customers can use the reporting facilities provided by BSS to get, for example, an overview on all users assigned to their subscriptions and on the billable events that occurred in using the services.

4.1 Accessing Services on a Marketplace

BSS offers various features and functions that support customers in finding the services they want to use on a marketplace.

Customers can:

- Browse the service catalog and organize the services on different pages.
- Sort the services by different criteria.
- Search for services in the service catalog using a full-text search feature.
- Filter the services by terms from a tag cloud or by categories.
- Rate and comment on services.
- Bookmark services and share them in social networks.

4.2 Registering as a Customer

There are two ways of how customers can register in BSS with suppliers who offer the desired services:

- The customer registers himself on a registration Web page.

   The URL of the registration Web page may have been published by the supplier, or the customer may be forwarded to it automatically when subscribing to a service on a marketplace.

- The supplier registers the customer so that he does not need to do this himself.

BSS notifies a new customer by email of his registration.

4.3 Subscribing to Services

A customer can subscribe to any of the marketable services provided on a marketplace, accepting the applicable terms and conditions, privacy policy, and license terms. BSS even allows for making several subscriptions to the same service.

When subscribing to a service, the customer can choose between the options defined for the underlying service and view the details on charging conditions and prices. If a service is free of

charge by its price model, the customer can immediately subscribe to it. Otherwise, the customer has to supply his payment information before he can subscribe. Depending on the facilities used for payment collection, the payment information may consist, for example, of a credit card number or bank account data. BSS even allows a customer to enter different payment information for different subscriptions as desired.

When a customer subscribes to a service, BSS triggers the underlying application to provision all the required items, typically a specific set of data or configuration, for exclusive use by the customer in the scope of the subscription.

4.4 Registering Users for Subscriptions

Depending on the application underlying to a service a customer has subscribed to, the users may access the application under the control of BSS, i.e. they log in to a marketplace and start their application sessions from there.

To be able to do so, the users must be registered in BSS and assigned to the relevant subscriptions.

There are two ways of how customers can register users:

- The administrator of a customer organization can register the users manually.
- If prepared by the supplier and operator, the customer may use his own identity management system for user authentication. The administrator of the customer organization can import the users from the external LDAP system, thus registering them with BSS. For details, refer to *BSS Across Organizations* on page 24.

For a registered user, BSS creates a user account and notifies the user by email of his registration. The email includes all login information necessary for the user to access a marketplace.

Before a user can access a service, he needs to be assigned to the relevant subscription. The administrator of a customer organization can assign registered users to one or more of the organization's subscriptions.

When a user is assigned to a subscription, BSS notifies the user as well as the underlying application. The application may take corresponding actions, for example, add the new user to its own user management system and create an appropriate workspace.

A user can be assigned a service role for each subscription in BSS, provided that the underlying technical service defines such roles. The evaluation and handling of this information is to the discretion of the application. It may, for example, grant specific access rights to users with a certain service role.

4.5 Using Services

After a customer has subscribed to a service, his registered users who are assigned to the subscription can work with the underlying application.

BSS supports two basic ways for a user to access an application:

- The user logs in to BSS and works with the application.
- The user logs in directly to the application without involving BSS.

The type of access available for each application depends on the application itself and on how it has been integrated with BSS.

Accessing Applications Through BSS

If a user accesses an application through BSS, he logs in to BSS on a Web page whose URL he has received from BSS. Depending on this URL:

- The user is forwarded immediately to the remote interface of the application and can start his work, or
- The user is directed to a marketplace that presents the services the user is entitled to use. The user just selects the desired service. This forwards him to the remote interface of the underlying application where he can start his work.

An additional login to the application is not required. In the application, the user works in the context and on the data which are maintained for the applicable service subscription in BSS.

When the user has completed his work, the application usually offers a way to log out, including a route back to the marketplace if he has started his work from there.

Accessing Applications Outside of BSS

Users can work directly with applications underlying to BSS services, without a previous login to BSS.

In this case, the application itself provides the user with the appropriate information and a URL for logging in and starting work.

In the application, the user works in the context and on the data which are maintained for the applicable service subscription in BSS.

4.6 Managing Subscriptions

BSS offers various means for customers to manage their existing subscriptions. Administrators of customer organizations can:

- Change the user assignments for a subscription. If a subscription assignment is changed, the affected user is sent an email with the appropriate information.
- Upgrade or downgrade a subscription to a different usage or price model as offered by the supplier.
- Modify a subscription. This includes renaming the subscription or choosing different options that are available for the subscribed service.
- Terminate a subscription. If a subscription is terminated, BSS deactivates the related data but keeps it. The application underlying to the subscription is triggered to deprovision all the items related to the subscription. The assigned users are sent an email informing them about the termination.

4.7 Paying for Services

As users work with the subscribed services, it comes to paying for those which are not free of charge.

A customer has to supply his payment information before he can subscribe to a service for which he will be charged. The payment information includes the address that will be printed on invoices and an email address to which invoices will be sent. Depending on the facilities used for payment collection, the payment information may also consist, for example, of a credit card number or bank account data.

BSS provides reporting facilities that keep customers informed about the costs they have to expect in their next invoice.

5 BSS for Marketplace Owners

Marketplace owners are the companies, departments, or people who manage the marketplaces in BSS. When operators create a marketplace, they specify an existing organization as the owner. An organization can own one or several marketplaces.

Marketplace owners perform the following basic tasks:

- Define who is allowed to publish services to their marketplaces.
- Administrate their marketplaces.
- Customize their marketplaces to adapt them to their organization's standards.

The following sections briefly outline the basic tasks of marketplace owners. For details, refer to the *Marketplace Owner's Guide*.

5.1 Managing Suppliers

A marketplace owner is responsible for deciding who is allowed to publish services to his marketplace. BSS distinguishes between two supplier policies:

On an **open marketplace**, any organization with the supplier role can publish services immediately after the marketplace has been created. The marketplace owner can exclude specific suppliers from the marketplace. This may be required, for example, if a supplier does not adhere to the code of conduct or does not pay his fees for using the marketplace. After the problems with a supplier have been sorted out, the marketplace owner can re-admit him so that he can again publish his services to the marketplace.

By defining that a marketplace is open to any supplier, the marketplace owner does not need to spend effort on managing and controlling the marketplace and the suppliers. However, it also increases the risk that many suppliers publish numerous services on the marketplace and customers are lost in the variety.

On a **marketplace for authorized suppliers**, only suppliers who are explicitly admitted by the marketplace owner can publish services. Any number of suppliers can be admitted. The publishing approval for a supplier can be revoked at any time, for example, if the supplier is in arrears with his payments.

By requiring that the publishing of services needs explicit approval, these marketplaces provide the marketplace owners with optimum control. Different marketplaces can be operated independently. This is useful, for example, if a supplier in one country is not to be allowed to offer services on a marketplace in another country.

The operator who creates a marketplace specifies the supplier policy for it. The marketplace owner can at any time turn a marketplace which is open to any supplier into a marketplace for authorized suppliers only, and vice versa.

5.2 Administrating Marketplaces

Administrating a marketplace includes the following:

- Change the name of the marketplace.
- Define categories that can be used for organizing and classifying the services on the marketplace. Categories may, for example, group different types of application software, such as word processing, desktop publishing, or spreadsheet software.

- Change the marketplace features and settings. This includes the supplier policy for the marketplace as well as the availability of tags, reviews, social bookmarks, and categories to visitors of the marketplace.
- Deactivate a service that a supplier has published to the marketplace. This may be required under exceptional circumstances, for example, in the case of an infringement of the terms and conditions. You can reactivate the service, as soon as the problem is solved.
- Remove customer ratings and comments on services from a marketplace if you do no want them to be read by visitors. This enables you to moderate your customer's reviews.

5.3　Customizing Marketplaces

BSS offers various features and functions that allow a marketplace owner to adapt a marketplace to his organization's standards.

A marketplace owner is responsible for providing legal information to visitors of his marketplace. This includes, for example, the terms and conditions and the privacy policy of the marketplace that must be read and accepted by customers when they register. A marketplace owner can enter and update these texts and provide them in all languages supported by BSS.

To suit the standards of the marketplace owner organization, BSS allows for customizing and localizing the texts presented at the user interface and used in automatically generated emails. In addition, a marketplace owner can customize the stage of the marketplace. The stage is the area on the marketplace where, for example, advertisements, eye catchers, or further information can be placed. BSS allows marketplace owners to provide a separate stage for each of the supported languages.

To adapt the layout and branding of a marketplace to his organization's requirements, the marketplace owner can customize the colors, fonts, background images, and logos displayed to the marketplace visitors. The layout and branding is defined in a style sheet and in files and images referenced by it. BSS provides a default style sheet that can be used as a basis and adapted as required. A customized style sheet must be deployed on a Web server and configured in BSS to become effective for the marketplace visitors.

6   BSS for Operators

Operators are the people who install, operate, and maintain BSS in their environment.

The tasks of an operator comprise the following:

- Set up and maintain the BSS runtime environment. This includes the installation and deployment of BSS and the interfacing with an application server, mail server, and database.
- Monitor BSS to track system usage and problems that occur at runtime. This includes configuring log levels and maintaining log files.
- Create regular backups of the BSS databases, configuration settings, and log files.
- Create and manage organizations and users. This includes creating technology provider and supplier organizations, locking and unlocking user accounts, and resetting the password of users.
- Create and manage marketplaces. This includes creating marketplaces, assigning organizations as marketplace owners, and deleting marketplaces.
- Execute billing tasks. This includes the explicit start of billing runs or the manual retry of payment processing when, for example, communication problems caused the automatic payment processing for an organization to fail.
- Set up a commercial payment service provider (PSP) for a supplier. This includes setting up the payment types and specifying the communication settings.
- Create certificates for trusted communication, import and sign them. Certificates are required for BSS to authenticate a calling client and to allow for trusted communication between BSS and an application underlying a technical service, a PSP, or an external process control system.

BSS provides the following facilities to support the operators in performing their tasks:

- After an operator has successfully installed and configured BSS, he can access and use the BSS user interface.
- A command line tool is available that provides a subset of the functionality that is available at the BSS user interface for operators.

For a detailed description of all tasks involved in the operation and maintenance of BSS, refer to the *Operator's Guide*. For details on how to install and configure BSS, refer to the *Installation Guide*.

7 BSS Across Organizations

BSS offers features and functions which are of relevance for all its users irrespective of their organization's role or their user role within the organization. These include:

- User interface
- Account and identity management
- External process control
- Public Web service interface

7.1 User Interface

The user interface of BSS is a state-of-the-art Web interface accessible from any of the supported Web browsers. Technology providers, suppliers, customers, marketplace owners, and operators use it to perform their tasks as described in this document.

BSS ensures that each user can only see and access the options and services he is entitled to by his organization and his role within the organization.

The BSS user interface supports multiple languages, each user being able to select his preferred one.

7.2 Account and Identity Management

Each registered user logs in and works in BSS in the context of a specific organization.

For each organization, BSS maintains a separate account. This **organization account** can be managed by the administrators of the organization. The user who registers a customer or requests the operator to register a technology provider or a supplier becomes the first administrator. He can add additional users and assign them administrator privileges for the organization.

In addition to organization accounts, BSS maintains a separate account for each registered user. A **user account** serves to store user data such as the user's name, email address, preferred language, and password. Each user can change this data for his own account.

Instead of maintaining user accounts in BSS, an organization can also connect to its own identity management system for user authentication. In this case, user data is maintained in the external system. The data is imported into BSS so that the users can be assigned to subscriptions and receive notification emails sent by BSS. BSS only stores the user data and is not involved in user authentication.

The administrators of an organization are allowed to change most of the information for the user accounts in their organization. They are also allowed to delete user accounts, if required. Administrators cannot change another user's password in BSS, but they can reset it to a new password generated by BSS.

Users who have forgotten data required for logging in need to contact their administrator. The administrators of an organization can look up the user IDs of all users registered for their organization.

7.3 External Process Control

Organizations often have specific processes for registering users, subscribing to services, or defining prices. Usually, such processes include approval processes and are modeled and automated with a process control system.

For certain actions of customers and suppliers, BSS provides a way to interact with such process control systems: Triggers can be configured to be invoked when specific actions are carried out at

the user interface. The triggers start the corresponding process in the process control system. If approval for the action is required, it is suspended until it is approved in the process control system. If no approval is required, the process control system is informed about the execution of the action.

Users can see all pending actions at the BSS user interface, can cancel them, or delete aborted ones.

For a complete list of the actions that may be subject to process control and for a description of how to integrate an external process control system with BSS, refer to the *Developer's Guide*.

7.4 Public Web Service Interface

BSS exposes its basic functionality as a public Web service interface. This interface enables developers to make applications ready for SaaS and use the BSS features.

The Web service interface provides **platform services** that can be invoked by any application that implements Web services. In addition, the following utilities for developers are available:

- **Provisioning API**: Resources for implementing a provisioning service which is necessary for integrating an application with the subscription management of BSS.
- **Notification API**: Resources for implementing a notification service which must be provided to enable BSS to interact with an external process control system.
- **Operation API**: Resources for implementing the interface for calling operations for a technical service, such as backup and restore.
- **Payment Service API**: Resources for integrating a payment service provider (PSP) with BSS.
- **Integration Helpers**: Web application package to support application developers in adapting the login/logout implementation of a Java-based Web application.

For a description of the basic concepts and usage of the public Web service interface as well as the additional resources and samples that are provided for developers, refer to the *Developer's Guide*. For a description of the resources for integrating a PSP, refer to the documentation shipped with the `fujitsu-bss-integration-psp-pack.zip` file.

Glossary

Administrator

A privileged user role within an organization. Each organization has at least one administrator.

Application

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

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 BSS 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 BSS, based on a technical service. A marketable service defines prices, conditions, and restrictions for using the underlying application.

Marketplace

A virtual platform for suppliers in BSS to provide their services to customers.

Marketplace Owner

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

Marketplace Manager

A privileged user role within a marketplace owner organization.

Operator

An organization or person responsible for maintaining and operating BSS.

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, marketplace owner, operator.

Payment Service Provider (PSP)

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

Payment Type

A specification of how a customer may pay for the usage of his subscriptions. The operator defines the payment types available in BSS; the supplier 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.

Role

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

Service

Generally, a discretely defined set of contiguous or autonomous business or technical functionality, for example, an infrastructure or Web service. BSS 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 BSS. By subscribing to a service, the customer is given access to the underlying application under the conditions defined in the marketable service.

Supplier

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

Technical Service

The representation of an application in BSS. 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 BSS.