White paper
How to increase efficiency of service catalog management in Hybrid IT environments

As enterprises move to digital business processes, they continue to build their IT sourcing strategy on a mix of options across cloud and non-cloud IT. Enterprise Service Catalog Manager (ESCM) offers a single, flexible self-service portal that provides managed service providers and enterprise IT teams with all the capabilities for an efficient management of the service catalog, life-cycle operations and user access of all IT services in a hybrid IT environment.

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Introduction

Whether you are an independent service provider delivering IT services to external customers or an enterprise IT organization delivering IT services to internal users, life in a Hybrid IT world presents you with a constantly widening range of IT sourcing options hosted either on-premises or off-premises. Hybrid IT lets you mix and match all these options to achieve the best of both worlds: the control of on-premises deployments and the cost-effectiveness of the cloud.

No doubt, within this Hybrid IT world, the cloud deployment model has clearly gained the most traction in the last couple of years. However, besides the increasing use of cloud services, enterprise data centers are still hosting a huge number of on-premises IT resources that are not yet ready for use in an “as a Service” model. To fully leverage the benefits of the cloud (i.e. centralized management, self-service, automated provisioning and pay-per-use), IT teams need to make sure that they have the right tools in place to make these resources fit for use in a cloud style, while also addressing the resulting integration, governance and administrative challenges with existing cloud services.

This white paper explains how Enterprise Service Catalog Manager helps organizations to easily transform existing on-premises IT resources into an “as a Service” model, and integrate these with 3rd party cloud services in a service catalog on an “App store-like” marketplace that enables users to access and consume all services in a Hybrid IT environment in a consistent way.

Usage scenarios

ESCM supports a huge variety of usage scenarios involving a number of different organizational roles like technical providers, suppliers, brokers, resellers and of course the users of the provided services, whether internal or external (see Figure 1).

One of the most prominent usage scenarios is when someone wants to offer an existing technical service (i.e. an application, a server/storage infrastructure or even a complete platform) in an “as-a-Service” model (IaaS, PaaS or SaaS). This could be the provider of the technical service itself, but also an enterprise IT organization or a managed service provider that wants to offer in-house or 3rd party developed technical services to internal or external users. ESCM helps these organizations to transition to a supplier role by providing the business-related functionality needed to turn a technical service into a marketable service that can be published on a self-service portal or marketplace, where users can easily find and use these services.

Besides assisting organizations in moving to a supplier role in making technical services fit for cloud use, ESCM also supports the involvement of broker and reseller roles in the service offering or selling process. Brokers and resellers support suppliers in selling their services by offering the services in their own marketplace. Whereas brokers offer a service as defined by the supplier, resellers can apply their own terms and conditions. A subscription to a service offered by a reseller forms a contract between a customer and the reseller. A subscription to a service offered by a broker, however, establishes a contract between a customer and the supplier of the service. Brokers and resellers usually receive a share of a supplier’s revenue. ESCM provides the means to define these revenue shares and to calculate and retrieve the actual amounts from the service usage fees.

In the remainder of this paper, we want to focus on how ESCM supports managed service providers or enterprise IT organizations in taking on the service supplier role.

![Figure 1: ESCM usage scenarios and roles](image-url)
**Deployment model**

The typical deployment model (see Figure 2) at a service provider or an enterprise IT organization is pretty much the same except that service providers serve external customers, whereas enterprise IT organizations predominately serve internal users. IT teams define, publish and manage services in ESCM via the admin portal. Service users access ESCM via the self-service portal, where they subscribe to and use services. ESCM supports multi-tenancy, making sure that each tenant’s data is isolated and remains invisible to other tenants. This allows you to define customer-specific service catalogs for different customer groups. You can also use just one catalog and define different prices for different customers. For the automatic deployment of services, ESCM triggers the provisioning interface of the respective service instances (IaaS, PaaS or SaaS) that may be hosted either on- or off-premises.

![ESCM deployment model and key capabilities](image)

ESCM provides a broad range of pre-defined integration modules (connectors) that allow you to quickly and easily integrate services into your catalog. As of October 2018, ESCM supports the following pre-defined integration modules as a product feature or as a sample service:

- **IaaS** (OpenStack (SUSE, RedHat), Amazon W3C, Microsoft Azure, Microsoft Hyper-V, VMware ESXi / vSphere 4, 5, 6)
- **PaaS** (Amazon WS LAMP Stack, Citrix XenApp, Oracle Glassfish, PostgreSQL, Fujitsu FlexFrame Orchestrator, Kubernetes (Docker), Microsoft Exchange, Microsoft Lync, VMware Desktop)
- **SaaS** (Salesforce.com, Microsoft Office 365, Symantec end-user-protect, RunMyProcess)

On request, Fujitsu can provide further connectors. In case you want to implement your own specific connectors, we can provide you with all necessary information.

**Functional Overview**

Enterprise Service Catalog Manager provides all business-related functions and features required to turn on- and off-premises technical services into “as a Service” (aaS) offerings and to integrate them in a marketplace for self-service access.

- **Catalog Management**
  - The catalog management capability allows organizations to create and manage marketplaces, and to define and publish marketable services in the service catalog for self-service access.

- **Subscription Management**
  - Allows users to subscribe to the available services on the marketplace and manage their subscriptions. A service subscription is a contract between the user and the service supplier that gives the user access to the underlying technical service of marketable services in ESCM.

- **Account and Identity Management**
  - Allows registration and management of organization/user accounts and provides role-based access control for the individual users of ESCM. ESCM supports also the integration with an existing identity management system for user authentication.

- **Service Provisioning**
  - By the provisioning service, ESCM triggers the corresponding interface of a technical service to automatically deploy all resources and to manage whatever is required for the subscription of a marketable service.

- **Event Management**
  - The event management service in ESCM collects specific events generated during operation. These events can be used for price models, billing, and reporting. Examples of events are the completion of a specific transaction, or the creation or deletion of specific data.

- **Billing and Payment**
  - ESCM comes with its own native billing system for managing price models and calculating costs for services. However, it can also be integrated with one or more external billing systems. This is suitable, for example, when a customer already has a billing system in place or when offering services from external providers with their own pricing and billing facilities. It is also useful when prices and costs for services need to be based on metering information not available in ESCM.

- **Process Control**
  - ESCM allows for integration with organization-specific processes (i.e. for registering users, subscribing to services, or defining prices), which usually include approval processes and are modeled and automated with an existing process control system. ESCM provides an interface to trigger actions in such a process control system. If, for example, an approval for a certain action is required, ESCM suspends the action until it is approved or rejected. If no approval is required, the action is executed instantly.

- **Reporting**
  - ESCM offers comprehensive reports for different purposes and in different levels of detail. You can choose from a variety of predefined reports covering technical and marketable service usage.

- **User Interface**
  - ESCM provides a state-of-the-art user interface for all participating parties. This includes the self-service portal, where users subscribe to services, as well as an administration portal to manage the life-cycle of services.

Some of the components mentioned above are available as public Web services and provide APIs for integrating ESCM with existing management tools. For trusted communication between ESCM and a technical service, Web Service calls are authenticated either by providing a user key or ID and a password, or by certificates. SSL is used for authentication and for encryption at transport level.

For details please see the following [web site](www.fujitsu.com/emeia/escm).
**Marketplace / Self-Service Portal**

A marketplace is a virtual platform on which organizations offer their services to customers/users. Visitors of the marketplace can browse the service catalog, search for services, sort and organize them by different criteria and subscribe to them. In addition, a marketplace offers various features for managing the interaction between organizations and their customers/users. This includes customer registration and the definition of customer-specific attributes, insight into the details of subscriptions, but also providing a support interface, where customers/users can report any issues. An organization can create any number of marketplaces to present a targeted service offering for different customers/user groups.

ESCM offers various options that allow you to customize marketplaces. These include:

- **Text sections** on web pages (terms and conditions, privacy policy and imprint), in messages and emails.
- **The stage** of a marketplace, where you can place advertisements, eye catchers, or further information.
- **The layout and branding** of a marketplace, which allows you to customize the look and feel 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.

Figure 3 shows a sample marketplace layout and service catalog.
**Marketable Services**

Marketable services are the service offerings that are available for user subscription on a marketplace. Each marketable service is based on a technical service provided by a technology provider, which may be either inside or outside of your organization. Through the definition of a marketable service, you can make the different parameters of a technical service available as easily understandable service options that a user can choose, when subscribing to the service on the service catalog. Any number of marketable services can be defined for each technical service, applying different price models, service levels, configurations, feature sets, upgrade or downgrade options. Examples may be marketable services that provide different service level options (Gold, Silver, Bronze) or configuration dimensions (Small, Medium, Large) or editions (Trial, Standard, Advanced, Enterprise), each based on the same technical service. You 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 at a higher price, or special discounts for a promotions campaign. ESCM allows the definition of a marketable service to be changed at any time, making service catalog management very agile. This is especially important for service providers who frequently need to react to changing market conditions.

**Flexible Price Models**

In the definition process of a marketable service, you need to specify a price model before going public with the service for customer subscriptions. A price model specifies whether and how much customers subscribing to a service will have to pay. Price models may be based on the subscription as such, each user assigned to the subscription, service parameters and options, or individual events like login/logout activities of users in relation to the underlying application, the completion of specific transactions, or the creation or deletion of specific data. The question of whether fees for events or parameters can be defined depends on the implementation of the underlying technical service and on its integration with ESCM. For marketable services based on technical services using the native billing system of ESCM, price models are defined and maintained in ESCM. When an external billing system is used, the price models are created and managed in this system and imported to ESCM for information purposes.

Besides the definition of a service price model, which is a mandatory part of every marketable service, ESCM allows you to define customer price models, which may be used 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 used by the customer. It is not available for any other services offered to the same customer or a different customer. For even greater flexibility, you can define subscription price models specific to one subscription of an individual customer.

Each price model defined in ESCM for use with the native billing system consists of different elements that determine how the charges for a service are calculated. ESCM supports the following elements: one-time fee, recurring charges per subscription, recurring charges for users, prices for parameters and options, prices based on consumption events provided by the service platform, role-based prices (see Figure 4).

Graded prices are supported, allowing ranges to be defined for which different price model elements apply. In addition, you can define a free trial period or discounts for individual customers. The actual charges for a service depend on the combination of the price model elements. The charges are either calculated pro rata (based on milliseconds) or per time unit (month, week, day, or hour). With pro rata calculation, customers are charged exactly for the time a service was used. With per time unit calculation, customers are charged for complete time units, for example, one week, even if the service was not used for the whole week.

**Billing and Payment**

When working with services that use the native billing system, ESCM automatically aggregates all the events, users, and configuration data associated with a subscription and calculates the fees based on the related price models. It supports suppliers to specify payment types (i.e., invoice, credit card or direct debit), VAT rates and billing periods. In addition, ESCM allows suppliers to export the billing data and forward to an accounting system to generate invoices. This means that suppliers can use billing and payment processes that have already been established in their organization. As an alternative, suppliers can also use the capabilities of a commercial payment service provider (like PayPal), which can be integrated on demand via public Web services and APIs of ESCM. For all services that use an external billing system, the billing and payment rules and conditions of this system apply and all billing data and invoices are then generated and handled outside of ESCM.

One example of an external cost management system is Fujitsu Cloud Service PICCO, a Software as a Service offering that enables IT organizations to visualize, analyze, manage and maintain enterprise-wide cloud usage and costs. By providing a complete overview of your cloud costs, Fujitsu Cloud Service PICCO helps prevent budget overspend and identify potential areas for cost savings.
Summary

Whether you are with a managed service provider that wants to implement a highly adaptable service catalog in an attractive marketplace with automated service provisioning, or an enterprise IT organization that wants to introduce an “as a Service” model and offer self-service access to IT resources, ESCM offers you all the capabilities to efficiently manage the service catalog, life-cycle operations and user access for all IT services in a Hybrid IT environment.

- ESCM simplifies service consumption by giving users easy access through a self-service portal that provides the same user experience as the public cloud. Service users can easily find, subscribe to, use and control any internal or external hosted service (IaaS, PaaS or SaaS). For service providers the highly adaptable service catalog allows them to respond quickly to changing market requirements.
- ESCM helps you to efficiently manage and hide the complexity of integrating multiple internal and external service sources, and align these with existing processes.
- ESCM provides a broad range of pre-defined integration modules to quickly and easily offer new IaaS, PaaS and SaaS services.
- ESCM helps automate service provisioning processes to enable more efficient and faster service deployment, saving operational costs and improving productivity in IT operations.
- ESCM provides single-pane visibility across all services in a multi-cloud environment. This enables service providers and service users to stay on top of service consumption and costs.

ESCM is also available as free, open-source software. To learn more about "Open Service Catalog Manager" and join the community, check out [http://openservicecatalogmanager.org](http://openservicecatalogmanager.org)