Enterprise SOA in a Nutshell

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Typographic Conventions

Type Style	Represents
Example Text	Words or characters that appear on the screen. These include field names, screen titles, pushbuttons as well as menu names, paths and options.
	Cross-references to other documentation
Example text	Emphasized words or phrases in body text, titles of graphics and tables
EXAMPLE TEXT	Names of elements in the system. These include report names, program names, transaction codes, table names, and individual key words of a programming language, when surrounded by body text, for example, SELECT and INCLUDE.
Example text	Screen output. This includes file and directory names and their paths, messages, names of variables and parameters, source code as well as names of installation, upgrade and database tools.
`Example text`	Exact user entry. These are words or characters that you enter in the system exactly as they appear in the documentation.
`<Example text>`	Variable user entry. Pointed brackets indicate that you replace these words and characters with appropriate entries.
EXAMPLE TEXT	Keys on the keyboard, for example, function keys (such as F2) or the ENTER key.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Contents

Enterprise SOA in a Nutshell

Enterprise SOA revolutionizes the design of business applications, enabling the rapid composition of business solutions. With enterprise SOA, you can encapsulate business logic and expose it as enterprise services -- smaller functionality components that can be re-assembled quickly to form new innovative business solutions that meet changing business requirements.

Based on SAP NetWeaver's SOA platform, enterprise SOA provides you with business and industry-specific context views through enterprise services and safeguards scalability, robustness, and governance for your IT.

Enterprise SOA is therefore your blueprint for an adaptable, flexible, and open IT architecture for developing services-based, enterprise-scale business solutions.

> For more information about Enterprise Service-Oriented Architecture, see https://www.sdn.sap.com/irj/sdn/enterprisesoa .

Web Services and Enterprise Services

Enterprise services allow you to leverage SAP solutions to include a wide range of composite applications provided by customers and partners to build new, flexible, and innovative solutions. In a nutshell, enterprise services are highly-integrated Web services combined with business logic and semantics that can be accessed and used repeatedly to support a particular business process. SAP publishes all enterprise services that support SAP Business Suite functionality at the Enterprise Services Workplace in the SAP Developer Network (SDN).

The following characteristics differentiate enterprise services from regular web services:

- Business semantics: Enterprise services are structured according to a harmonized enterprise model based on business objects, process components, and global data types (GDTs). They are defined using an outside-in approach: common business rules and know-how, rather than SAP-specific implementations, are the guideline for defining the business content of SAP applications.

- Quality and stability: Enterprise services safeguard a stable interface for future versions (backward compatibility). Their behavior, prerequisites, dependencies of usage and configuration possibilities are well documented.

- Standards: Enterprise services are based on open standards. The interfaces are described according to WSDL. They are created by using global data types which are based on UN/CEFACT CCTS (Core Component Technical Specification). B2B enterprise services are defined in compliance with e-business standards, where applicable.

There are different application areas for enterprise services, for example application-to-application (A2A) and business-to-business (B2B) integration or user interfaces.

Enterprise services are identified at a business level that supports business processes. With the Enterprise Services Community (ESC), SAP actively engages customers and partners in the process of identifying and defining enterprise services. In this respect, SAP continuously analyzes all business processes from the perspective of the main key business drivers for enterprise SOA: business process automation, business process innovation, user efficiency, and deployment flexibility. As a result, SAP has defined and productized -- and continues to do so -- a comprehensive set of enterprise services to help customers, partners, and developers. These services are published in the Enterprise Services Workplace.

SAP has developed an advanced meta model and governance process to define and model enterprise services. Key concept is the business object model. Each enterprise service is assigned to a business object, representing a well-defined business entity or document. Each business object is assigned to a process component. Process components are pieces of software covering a well-defined set of business tasks which belong logically together and are usually executed in the same department.

All identified services were modeled by SAP architects and developers in the Enterprise Services Repository (ESR), which is supported by SAP NetWeaver technology.

Logically, an enterprise service is a service operation, derived from a standardized interface pattern, which contains operation names such as *create*, *update*, or *cancel,* and incorporates communicational patterns. It is described as a WSDL or an XML scheme in the ESR. The consuming application and the back-end systems communicate through messages that manage the input and output of the service operation data fields. In this document, service operations are often used as synonyms for particular enterprise services.

For example, the ERP process component *Sales Order Processing* provides the enterprise service interface *Manage Sales Order In,* among others. From this interface, you can access the enterprise service operation *Create Sales Order.*

The enterprise SOA governance process takes care that all enterprise services are defined according to the given rules. This safeguards consistency, standards compliance, harmonization of semantics and reuse across all SAP solutions. Based on the semantic definition, each enterprise service is subject to a harmonized service cut, an aligned naming, consistent documentation, a common service description and service orchestration. In result, enterprise services represent a "common language of business" at the optimal level of granularity.

See the glossary for a definition of the technical terms used above, or see the *Introduction to mySAP Business Suite Service Provisioning*, available at the *ES Workplace Knowledge Center* at the bottom of the ES Workplace home page in SDN.

Enterprise Services Bundles

ES bundles are collections of enterprise services and related documentation that enable delivery of focused, high-impact business capabilities to customers. They are designed to provide customers with quick wins to utilize the business benefits of enterprise SOA, thereby increasing flexibility and productivity while lowering costs. They are grouped by main SAP business scenarios and processes, which can be adopted swiftly and easily. In this way, SAP is promoting an evolutionary path to enterprise SOA and lowering barriers to overall enterprise SOA adoption.

Enterprise Services (ES) bundles can be used to enhance the functions of SAP ERP 6.0. Each ES bundle provides a new set of enterprise services along with documentation on how you use the services to extend and reconfigure processes in a specific business scenario. Furthermore, each ES bundle includes explanations of the relevant processes, business scenario, and roles involved, together with descriptions of business objects and tips on how to implement the services.

The enterprise services delivered through ES bundles can be used to create composite applications using SAP NetWeaver's enterprise services development and modeling tools. Using ES bundles to create composite applications and in other ways allows the functions of SAP ERP 6.0 to be expanded to meet new requirements.

ES bundles are just one example of how SAP is implementing a program of service enablement as part of its overall strategy of moving toward enterprise SOA across all of its products. In the Enterprise Services Community, SAP customers and partners can suggest ideas on new services and development

Discovering Enterprise SOA

SAP offers a wide range of opportunities to discover and evaluate enterprise services. You can choose them according to your skill level and role.

Enterprise Services Workplace

The Enterprise Services Workplace (ES Workplace) provides partners, developers, and customers with straight-forward access to the latest versions of all enterprise services available for the SAP Business Suite 2005 in a hosted environment. It represents the Enterprise Services Inventory of SAP, which provides streamline, continuous, and complete information about all enterprise services currently productized by SAP, from a business and technical perspective.

The ES Workplace is designed to take into account the different areas of expertise that users have and the information they require. The Information requirements of both business process experts and solution architects are met, thereby closing any communication gaps that can exist between both groups. Since the enterprise services are placed in a business and technical context, both groups can now focus on the business process challenges and fully leverage the power of SAP's enterprise SOA.

Discovering and evaluating enterprise services through the ES Workplace makes enterprise SOA tangible for you. With the ES Workplace, you can:

- Gain an insight into the wide range of enterprise services that SAP has to offer with its SAP Business Suite

- Check whether a specific business scenario or solution component has already been enabled by enterprise services from SAP

- Test enterprise service interfaces and operations in a hosted IDES environment

For more information about the rich content of the ES Workplace, see https://www.sdn.sap.com/irj/sdn/explore-es.

Accessing the ES Workplace

All information about discovering and evaluating enterprise services on ES Workplace is available to registered SDN users, but login is required for testing in the back-end systems. Partners and customers can test the hosted enterprise services free of charge. You can apply for free ES Workplace access at https://sdn.sap.com/irj/sdn/esareg. Alternatively, you can call up the registration form at https://sdn.sap.com by choosing *Enterprise SOA –> Explore Enterprise Services –> Test-drive -> apply for free access now..*

Discovering ES Bundles

As an extension to the process component and solution-oriented views that the ES Workplace provides, SAP has set up the Enterprise Services Wiki, a collaborative environment based on Wiki technology to publish the ES bundles catalogue. The catalogue is structured on innovative business scenarios complementary to SAP ERP 6.0.

Each ES bundle provides the enterprise services and business objects that you need to extend business applications in numerous ways.

With ES bundles, you can:

- Build new applications and composite applications on top of existing SAP processes and scenarios

- Enrich existing processes to safeguard higher process efficiency

- Provide connectivity to third-party applications enabling new process definitions

- Reduce costs of customizing and enriching SAP solutions

- Improve readability and reuse of application interfaces to lower TCO

- Increase process openness, flexibility, and efficiency

- Accelerate process adaptability

SAP delivers ES bundles together with the Enhancement Packs for SAP ERP 6.0. The ES wiki is accessible for all SAP partners and customers after registration at https://wiki.sdn.sap.com/wiki/x/LQ0.
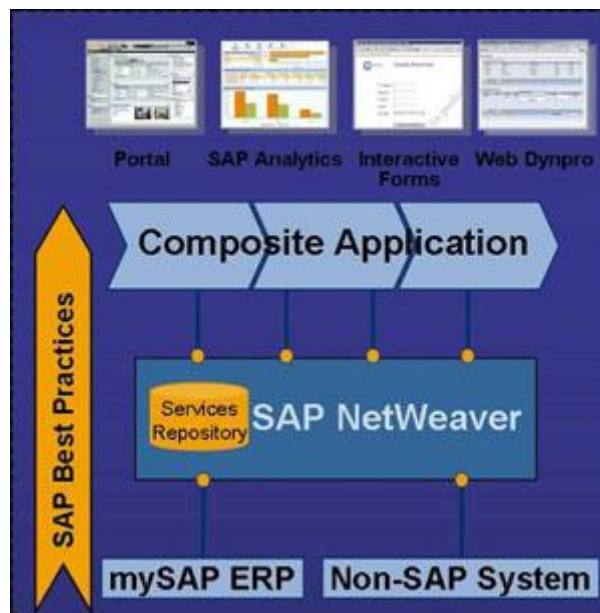
SAP Discovery System for Enterprise SOA

The SAP Discovery System for enterprise service-oriented architecture (enterprise SOA) is designed to help customers and partners map their paths to a successful adoption of enterprise SOA. With SAP Discovery System, developers and enterprise architects have a clear risk-free first step in experimenting with enterprise SOA, enabling them to test-drive the simplicity and flexibility of composing new business processes using enterprise services in a standalone SOA environment. Today's release delivers a pre-configured SOA landscape that gives customers and partners immediate access to the latest software and tools available from SAP as well as a comprehensive set of sample business scenarios.

According to the research firm IDC, the majority of companies that have adopted SOA prefer to approach SOA by first creating a pilot project or proof of concept. With SAP Discovery System, SAP provides the SOA environment in which you can take this first key step, gain experience with enterprise SOA and develop a pilot project or proof of concept to learn and understand the potential value to the organization.

For customers, partners and independent software vendors (ISVs), SAP is accelerating the transition to enterprise SOA further by providing a very simple, low-cost and low-risk starting point on their road maps.

Today's release of SAP Discovery System features the latest version of SAP ERP running several common business scenarios that are implemented as composite applications, and also leverages enterprise services built on the SAP NetWeaver platform. For example, the procurement scenario illustrates how business processes can be streamlined significantly by enabling users to gain insight and take action within the relevant business context and across multiple systems and applications. This scenario, which uses standard enterprise services, follows the procurement process through all standard steps, from creating the sales order, analyzing stock, listing suppliers, and requesting quotations through to placing the purchase order, confirming the order, and receiving the goods. The scenario supports the four major user roles necessary to procurement: salesperson, purchasing agent, procurement manager, and warehouse manager. Additional business process scenarios and analytical scenarios such as investment approval, requests for new supplier master data, or production order rescheduling, are also included.

Pre-configured with the latest version of SAP ERP, SAP Discovery System includes eight sample business scenarios delivered as composite applications. These composite applications leverage enterprise services, the latest version of the SAP NetWeaver platform, a composite development toolbox including the SAP Composite Application Framework, Guided Procedures and SAP NetWeaver Visual Composer, SAP NetWeaver Developer Studio, SAP Best Practices offerings, and the Enterprise Services Workplace.

The SAP Discovery System can be ordered either directly from HP as a pre-installed image on the Intel Xeon-based HP ProLiant DL380 server, or from Fujitsu Siemens Computers based on their PRIMERGY TX300 S3 Server, including a recovery feature set. Customers and partners can visit either the HP Direct online store at http://www.hp.com/go/server/sap, or the Fujitsu Siemens page at http://www.fujitsu-siemens.com/sapdiscovery for more information and ordering.

Note that as a partner, you need to have a valid test and demo license in place to run the applications and tools that are pre-installed on this system.

SAP meets the unique needs of customers, partners, and ISVs and addresses various levels of experience with enterprise SOA:

- For customers, the SAP Discovery System enables technical staff to start leveraging the latest software available from SAP today and gain an immediate hands-on learning experience with a typical enterprise SOA environment – at a low-cost entry point.

- For ISVs, the SAP Discovery System provides a full SAP ERP application landscape against which they can test their own applications.

- For system integrators (SIs), the SAP Discovery System provides an additional element in their portfolios to help customers understand enterprise SOA and see the potential value of simplifying the learning and technology discovery process.

- For developers that have never experimented with or used composite applications, the SAP Discovery System includes a composite development toolbox to create composite applications using the SAP Composite Application Framework (SAP CAF) tool, guided procedures, and SAP NetWeaver Visual Composer.

For more information about SAP Discovery System for enterprise SOA, see http://sdn.sap.com/irj/sdn/esadiscovery.

Enterprise Services in Your Own SAP System

To discover enterprise services that are available in your own SAP ERP 6.0 system, simply call transaction WSADMIN in your GUI and expand the folder *SOAP Application for XI Proxies*. This displays the technical names of all enterprise services that are available in the Enterprise Services Repository of your system.
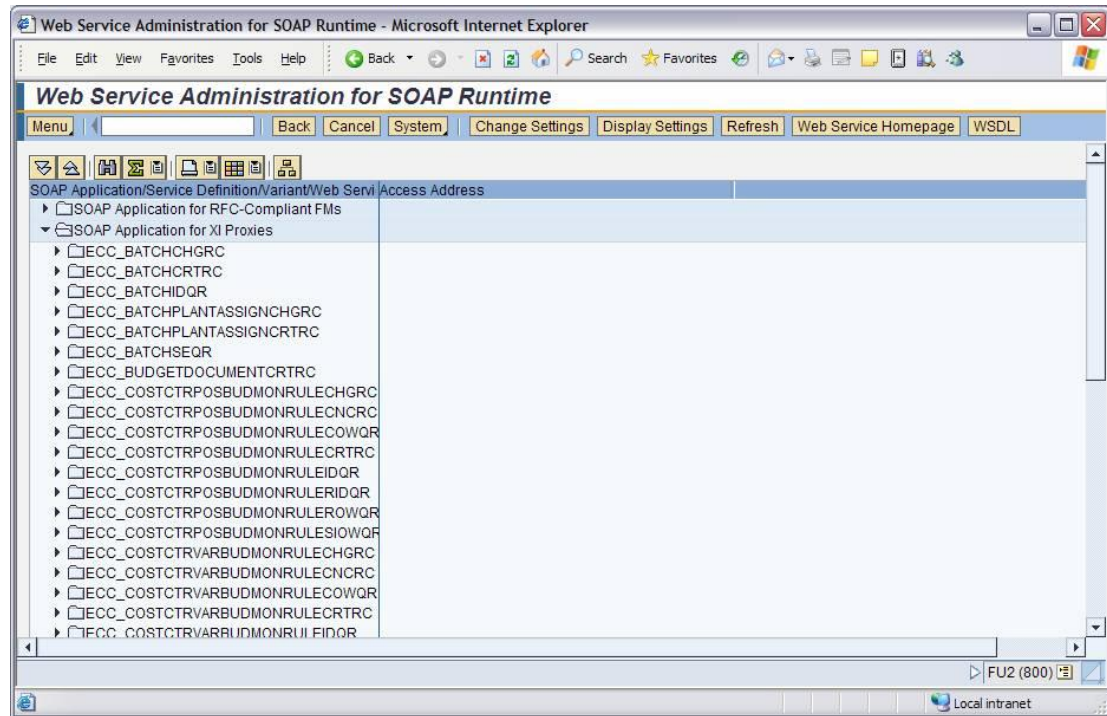
Glossary

Web Service

A standardized service encapsulating the functions of an application in a way that other applications can locate and access the service. A Web service can be called directly in a peer-to-peer fashion.

Business Object

A business object is a logical object of significance to the business. It represents a class of entities with common characteristics and common behavior describing well defined business semantics. Business objects are used to model a business process. They therefore represent a specific view on business content.

Enterprise Service/ Service Operation

Enterprise services are basically highly integrated Web services combined with business logic and semantics that can be accessed and used repeatedly to support a particular business process. Enterprise services provide business processes or business process steps that can be used to compose business scenarios while ensuring business integrity and ease of reuse. Logically, an enterprise service equals a service operation whereby the operation is the smallest, separately-callable function, described by a set of data types used as input, output, and fault parameters serving as a signature. An operation is grouped by interfaces. An operation can use multiple message types for inbound / outbound / error messages.

Service Interface

A named grouping of service operations, based on standardized interface patterns, such as *create*, *update*, or *delete.*

Communicational Patterns

Typical communicational patterns used by enterprise service operations are:

- *Request/confirmation*: means that messages are sent back and forth and that the state maintained by the service may change.

- *Query/response*: means that messages are sent back and forth but that the state maintained by the service does not change.

- *Notification*: means that a service sends a message that contains a notification of an event.

- *Information*: means that a service sends a message containing other information.

Process Component

Process components can be seen as the building blocks of each enterprise SOA solution. They are modular, context independent, reusable pieces of software that expose their functionalities as services. A process component contains at least one business object.

Enterprise Service Repository

There is exactly one Enterprise Service Repository (ESR). The ESR plays the role of the central business process integrator. It is where enterprise services, business objects and business processes are modeled centrally.

WSDL

WSDL is an XML-based description of Web services.

WSDL from ESR

WSDL from ESR is an XML-based description of Web services containing structural information.

WSDL from Backend

WSDL from Backend is an XML-based description of Web services containing binding information. Thus the WSDL contains all necessary information to actually call and consume an enterprise service

Message Type

The reference to a data type used to define the data exchange between a service provider and its consumer. An operation comprises one or several message types such as requests, responses, and errors.

Technical Name

The technical name is derived from the service operation name according to SAP naming conventions. It is the name for the service operation defined in ESR.

Composite Application

A composite application is an application that uses data and functions provided as services by underlying applications and combines these into user-centric processes and views, supported by its own business logic and specific user interface.

Global Data Types

An SAP-wide defined data type with meaning, structure, and values based on industry standards where available.

ABAP Proxy Name/WSD Name/Name in Backend

The ABAP proxy name (that is, the WSD name) is a name for the service operation and is a maximum of 30 characters long. Since it is limited to 30 characters, it is different from the technical name defined in the ESR. However, the Services Registry deals with mapping the names.