NetWeaver Components

Detail

Exchange Infrastructure
Today’s Integration Challenge

Integration costs are high
- Lots of heterogeneous systems
- Long integration projects
- IT environments become increasingly rigid

Pressure on IT increases
- Must leverage existing investments
- Must show quick results
- Must reduce total cost of ownership (TCO)
How to Lower TCO

Reduce complexity
- Minimize the number of connections - using hubs
- Use only 1 platform to integrate all people, information, and systems

Reduce custom integration
- Deliver .NET and J2EE interoperability
- Deliver adaptors for ISV products
- Deliver products, not projects!

Increase company performance
- Increase ease of use, scalability and adaptability
- Increase business process flexibility by using an Enterprise Services Architecture
Objective

Add new levels of flexibility while leveraging existing investments

ESA is the blueprint for complete and services-based business solutions

Empowers all participating people (internal and external, all relevant roles)

Manages all information (structured and unstructured)

Encompasses all systems (SAP and non-SAP)

SAP delivers its business solutions using an Enterprise Services Architecture

SAP NetWeaver implements an ESA

SAP xApps, mySAP Business Suite, custom solutions are powered by SAP NetWeaver
SAP Solutions Powered by SAP NetWeaver™
Open integration on all levels for the mySAP Business Suite

SAP NetWeaver

People Integration
Multi-Channel Access
Portal
Collaboration

Information Integration
Knowledge Mgmt
Business Intelligence
Master Data Mgmt

Process Integration
Integration Broker,
Business Process Mgmt

Application Platform
J2EE
ABAP,
DB and OS Abstraction

SAP R/3 Enterprise
mySAP SRM
mySAP SCM

Strategic Sourcing
Supplier Evaluation
SRM Backbone
Demand/
Source of Supply

3rd party Solution

R/3

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SAP Solutions Powered by SAP NetWeaver™
Orchestrating new, cross-functional business processes

SAP NetWeaver

People Integration
- Multi-Channel Access
- Portal
- Collaboration

Information Integration
- Knowledge Mgmt
- Business Intelligence
- Master Data Mgmt

Process Integration
- Integration Broker
- Business Process Mgmt

Application Platform
- J2EE
- ABAP, DB and OS Abstraction

SAP xApps

SAP xApp Resource and Program Mgmt

- Project Portfolio Mgmt
- Project Execution
- Staffing Resource Assignmt
- Advanced Skills Mgmt

Integration Broker, Business Process Mgmt

J2EE, ABAP, DB and OS Abstraction

PLM

3rd party HR

Project System

Microsoft Office

3rd party FI
Web services

- Application functions become Web services
  - Self-contained, modularized functionality that can be described, published, discovered, and accessed through open internet standards
  - In addition, all kinds of services that are relevant for "classical EAI and remote communication" (via adapters)
- Open syndication of Web services
- Regardless of location

Web-centric Architecture

- XML and message based infrastructure for open collaboration supporting open standards and leveraging Java, ABAP and .Net
- Central Integration Repository and Directory capturing shared Collaboration knowledge
- Open for mySAP.com e-business solutions and 3rd party components
- All customer touchpoints based on open XML and Java technology
The Solution – Shared Business Semantics

Shared Integration Knowledge

- Business scenarios, business processes, Web services, interfaces, mappings, routing rules, ...
- For a common understanding of how collaborative business processes work
- Enabling distributed execution
- Shared classification and discovery of businesses and services
  - Support for UDDI (Universal Description, Discovery and Integration)

Loose coupling via XML messaging

- Asynchronous communication as far as possible
- Synchronous communication where required

Evolution

- Allow easy and non-disruptive addition of new services and processes
- Integration of existing and new SAP components
- Integration of existing customer and 3rd party components
Overview Exchange Infrastructure 2.0

Shared Collaboration Knowledge
- Design
  - Integration Repository
  - Integration Directory
- Configuration
  - System Landscape Directory

Execute Collaborative Business Processes
- Runtime
  - Integration Server
    - Integration Engine
    - Business Process Engine
    - Additional Integration Services
  - Runtime Workbench
    - 3rd Party and Messaging Systems
    - SAP Systems
    - Marketplaces
    - SOAP Plain HTTP
    - Partner Eco-System (additional 3rd Party Adapters and Industry Standards)
Integration Repository

- Integration Content provided at Design Time
- Already contains Integration knowledge for mySAP solutions
- Open for Partner and Customer to add collaboration knowledge of non-SAP systems
- Content can be filled from different sources using open standard descriptions (e.g. WSDL)
- XML and Java based tools
Integration Repository – Business Scenarios

Business scenarios

- Provide overview of business semantics of an integration scenario
- Show involved communication partners and their roles
- Outline choreography of message exchange
- Provide central access to all involved design time objects (like interfaces, mappings)
- Provide input for configuration
- Support top-down and bottom-up modeling

SAP standard business scenario
“Supplier Managed Inventory …”
Integration Repository - Interfaces

Central place to define and catalog global and component-specific interfaces

- Interfaces assigned to components
- Tracks different interface versions
- Descriptions of all existing BAPI, IDOCs, and RFCs

Includes message types and data types for high reusability

Based on WSDL (Web Service Description Language, W3C)

- Outbound and inbound interfaces
- Synchronous and asynchronous interfaces
- XML Schema to describe data types

Basis for Proxy generation

Global interfaces and types populate

Application developer designs a new interface
Proxy Generation – Key Benefits

Separation of Business Application from technical Exchange Infrastructure

Platform and programming language independent principles

Generation of proxies in Java, ABAP and .NET platform

- Using interface description (WSDL) of Interfaces in the Integration Repository
- Design time activity

Proxy connects to (local) Integration Engine

- Executes shared integration knowledge (Integration Directory)
Integration Repository - Mappings

Contains preconfigured information for:
- Structural transformation
- Value mapping

Interface Mappings register mappings for interface pairs.

Message Mappings are used to implement mappings.

Message Mapping definition in the Integration Repository:
- Graphical Mapping Editor
- Import schema (XSD, XML)
- Import IR message types
- Import archives (zip or jar)
- Import RFC, IDoc
- Write own Java functions

Mappings are stored in the Integration Repository, selected for business processes in Configuration Time, executed by the Integration Engine at runtime.
Integration Directory

Integration Content provided at Configuration Time

Contains productive integration knowledge at customer site
- Can be derived from Integration Repository during installation and configuration

Open for Customer to add collaboration knowledge relevant to non-SAP components

XML and Java based tools

Diagram:
- Business Processes
- Receiver Determinations
- Interface Determinations
- Web Services
- System Landscape (SLD)
- Business Partners
- Integration Directory
The Integration Server retrieves required Collaboration Knowledge on Routing, Mapping and Address resolution from the Integration Directory.
Features of the Integration Engine

Different quality of service for message delivery or Web service invocation
- Synchronous: always „best effort“
- Asynchronous:
  - „exactly-once“
  - „exactly-once-in-order“
  - support of acknowledgement

Different messaging models
- Request/Response
- Publish/Subscribe

Error handling
- Return or storage of fault messages
- Automatic retry

Monitoring
- Configurable monitoring and tracing of all messages
- Application related monitoring functionality

Deployment as local Integration Engine or stand alone Integration Server
Adapters Overview

- **Connection to existing SAP systems**
  - RFC adapter
  - IDoc adapter

- **Connection to 3rd party and messaging systems**
  - File adapter
  - Database (JDBC) adapter
  - Java Messaging Service (JMS) adapter
  - SOAP adapter
  - Plain HTTP adapter

- **Connection to marketplaces**
  - MarketSet adapter

- **Adapter framework for selected partners**

- **Adapters provided by partners**
  - For application systems like Siebel, JDE, Oracle, …
  - For industry standard protocols like RosettaNet, CIDX, …
Capturing Shared Knowledge at Design/Config Time

Integration Repository
- Product to be used at design/development time
- At SAP, partner, and customer site
- Shipped along with content

Integration Directory
- Product to be used at configuration time
- At customer site
- Content partially derivable from Integration Repository by configuration tools

Integration Engine
- Product to be used at runtime
- At customer site
- Relies on content of Integration Directory