

WebSphere Adapter for SAP Application Software

MQ Series Link for R/3 upgrade

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Agenda

- Adapter Overview and Migration
- Development using the WebSphere SAP Adapter
- Configure the WebSphere SAP Adapter
- Migration Steps and pre-build artifacts
- IBM WebSphere Adapter for SAP software requirements

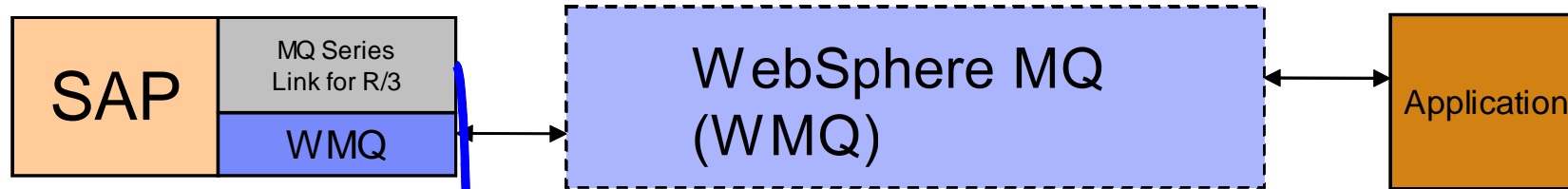
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IBM Makes It Easy to Upgrade From MQ Series Link for R/3

- End-of-Support for MQ Series Link for R/3 V1.2 on April 30, 2010
- Upgrade offering available
- Various topologies possible

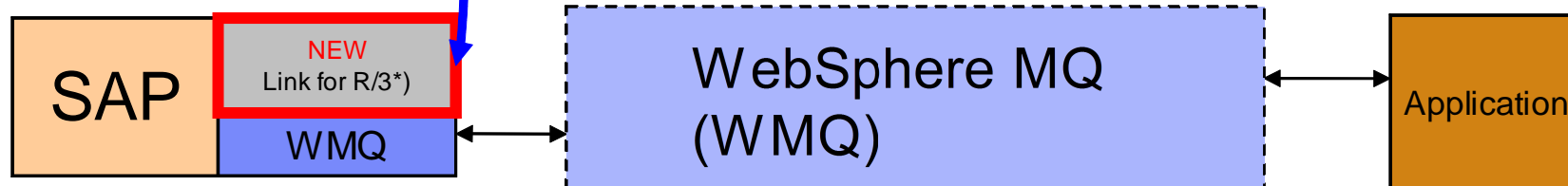
As-Is



Upgrade Effort:

- no code changes
- no changes to SAP, MQ nor application

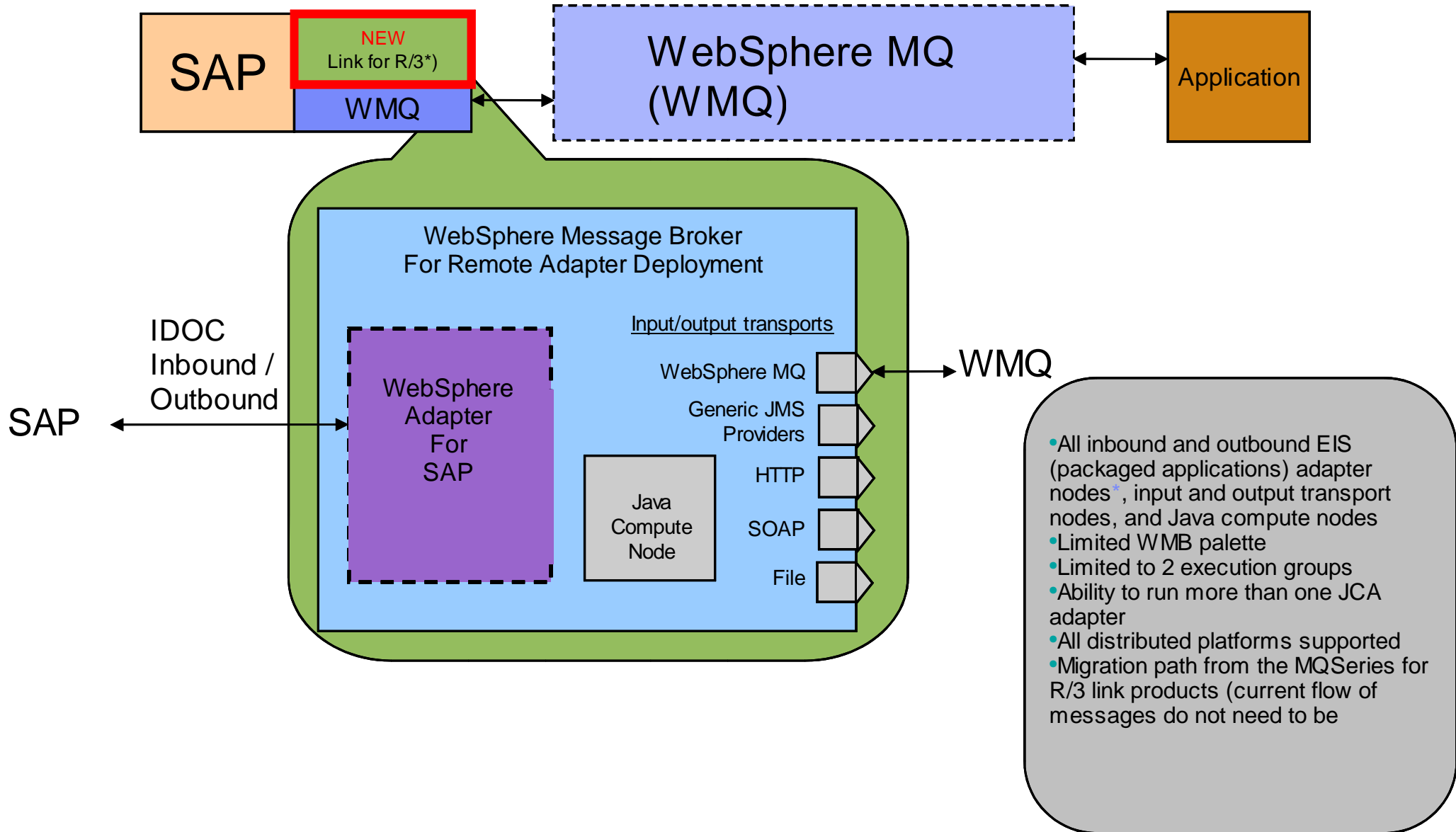
To-Be



*) name is used for simplicity, not an official product name

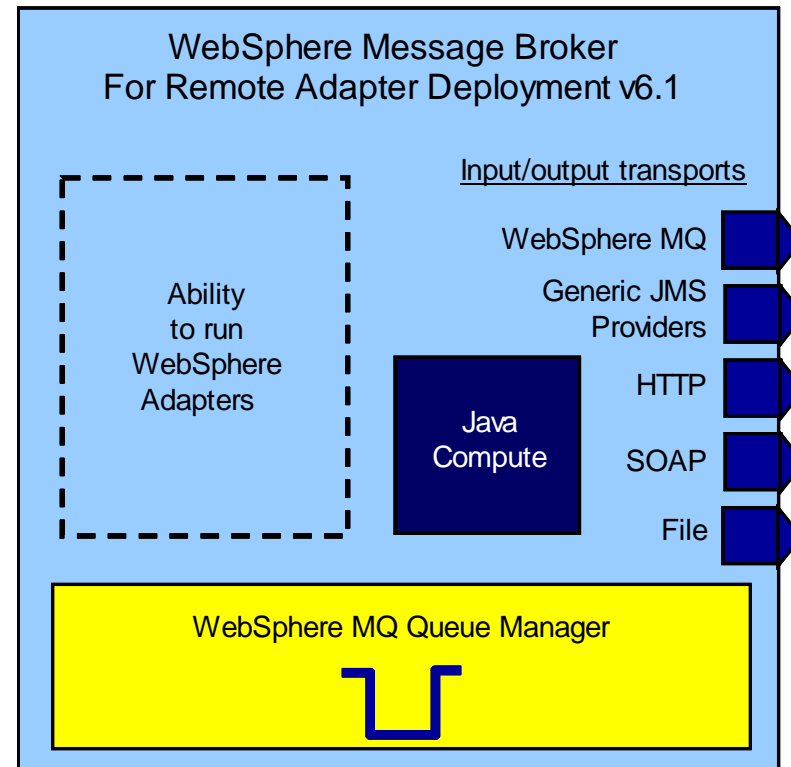
To-Be – Detailed View

To-Be



What is WebSphere Message Broker for Remote Adapter Deployment?

- All inbound and outbound EIS (packaged applications) adapter nodes*, input and output transport nodes, and Java compute nodes
- Limited WMB palette
- Limited to 2 execution groups
- Ability to run more than one JCA adapter
- All distributed platforms supported
- Migration path from the MQSeries for R/3 link products (current flow of messages do not need to be changed)

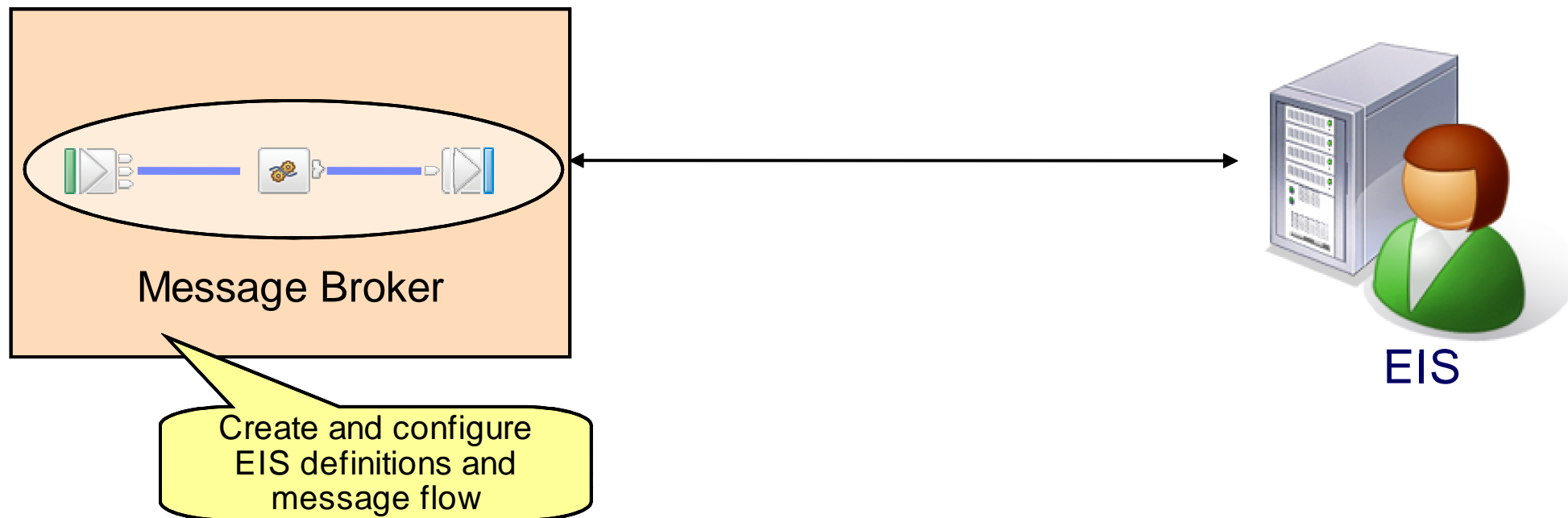


Add customization using Java compute node!

* Adapters are a separate charge if deployed

WebSphere Adapters

- Integrated set of libraries that enables EIS connectivity from within WebSphere Process Server and WebSphere ESB
 - ...and now, WebSphere Message Broker
- Based on the JCA 1.5 WebSphere Adapter foundation classes
- One Set of EIS definitions

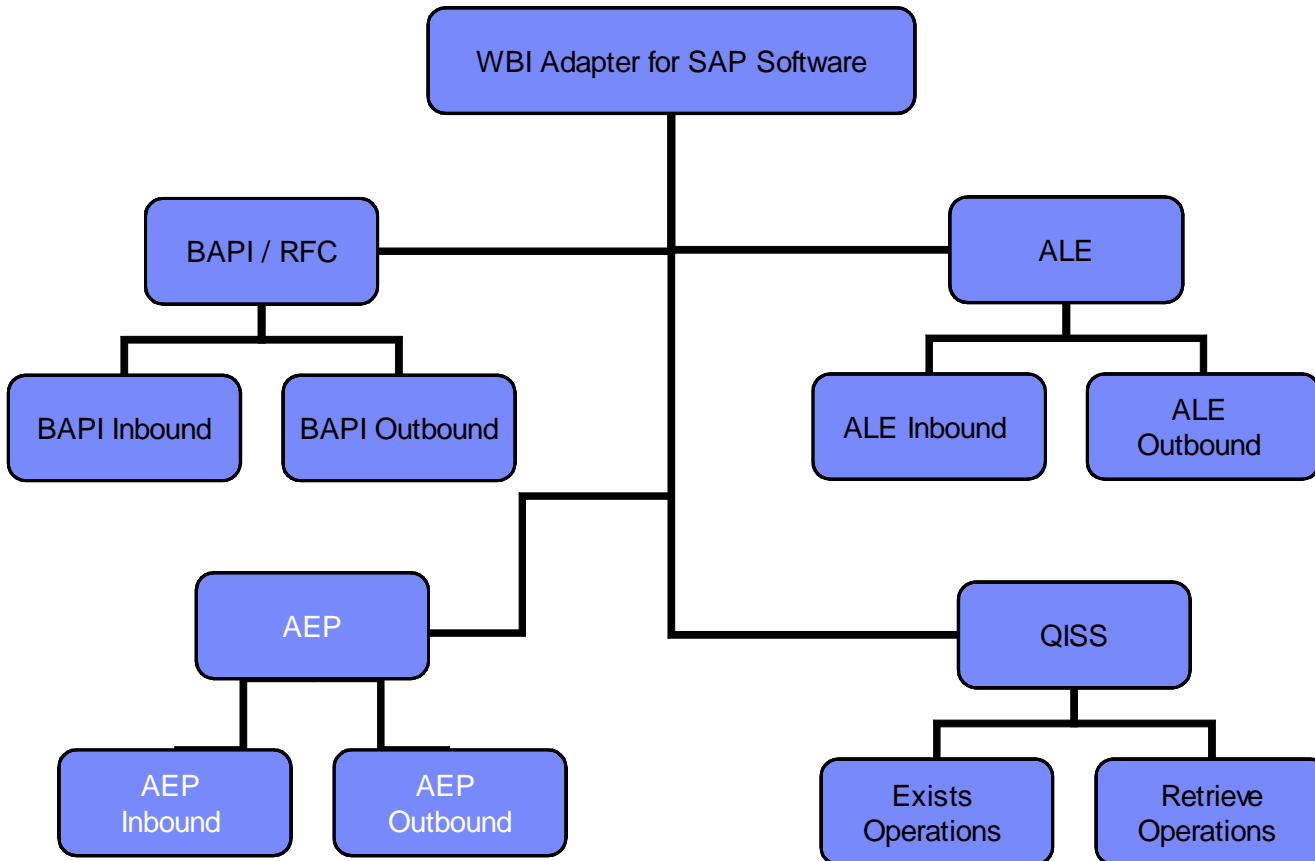


WebSphere Adapter for SAP Software

- The IBM WebSphere Adapter for SAP Software facilitates the exchange of business data between SAP applications and various programming models like J2EE applications and SCA Service Component Architecture.
- The SAP resource adapter connects to SAP applications running on SAP Web Application servers.
- The SAP resource adapter supports many SAP integration interfaces including BAPI (Business Applications Programming Interface), RFC (Remote Function Interfaces), ALE (Application Link Enabling) and Hierarchical Data Retrieval from SAP Application Tables (Query Interface for SAP Software), Synchronous Callback Interface, BAPI Result Set and qRFC .
- SAP resource adapter communicate with the SAP applications using SAP Java Connector (Sapjco) API.

Supported Interfaces

SAP Standard Interfaces as well as Value-Add Interfaces



- BAPI
- Business Applications Programming Interface
- RFC
- Remote Function Call
- ALE
- Applications Link Enabling
- QISS
- Query Interface for SAP Software
- Outbound
- Outbound processing form Adapter to SAP Application
- Inbound
- Inbound processing into Adapter from SAP application

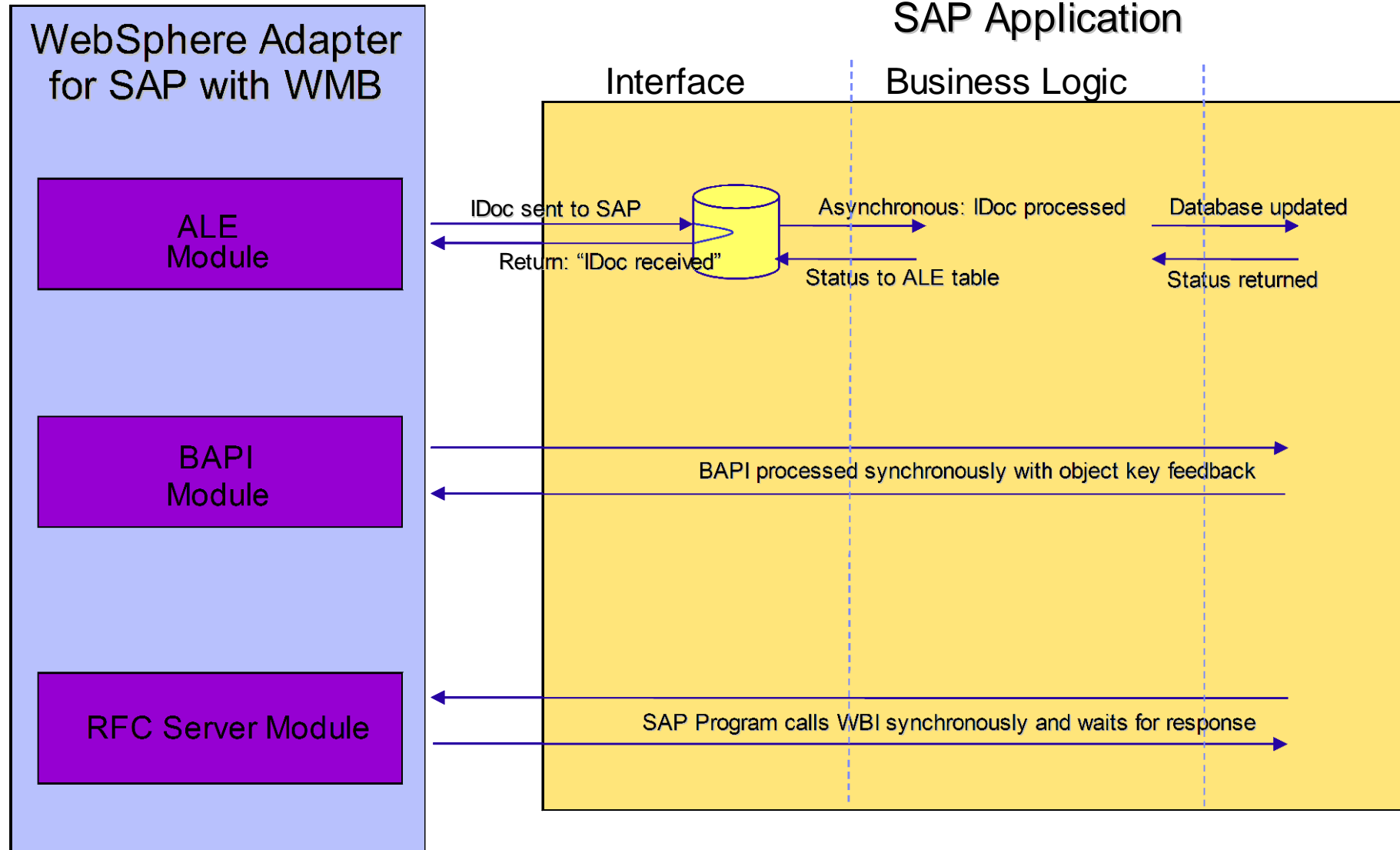
Features

- Support for SAP WebAS (NetWeaver) based applications as well as SAP R/3 applications.
- Supports standard SAP integration interfaces - BAPI, ALE, Synchronous Listener (RFC Server)
- Value-add Interfaces
- AEP (Advanced Event Processing)
- Data retrieval from SAP Application Tables
- Enterprise Metadata Discovery tooling for service discovery
- Unicode Support

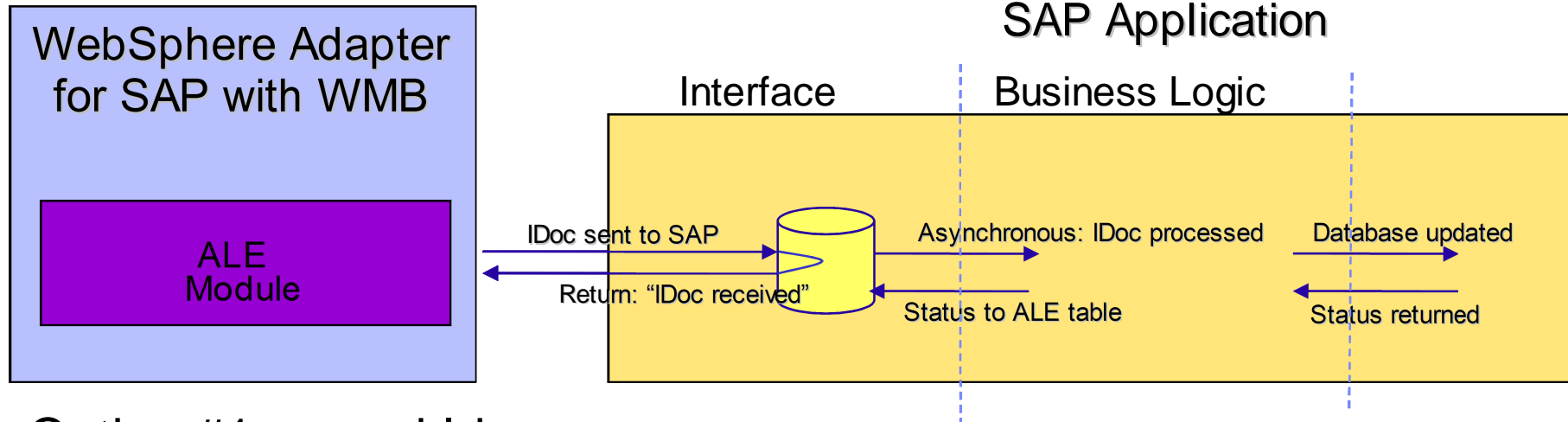
Features Contd..

- Bidirectional event processing
- Synchronous and Asynchronous event processing
- End to end J2EE transactions support
- Assured event delivery
- Event Recovery
- High performance

WebSphere Adapter for SAP Software capabilities



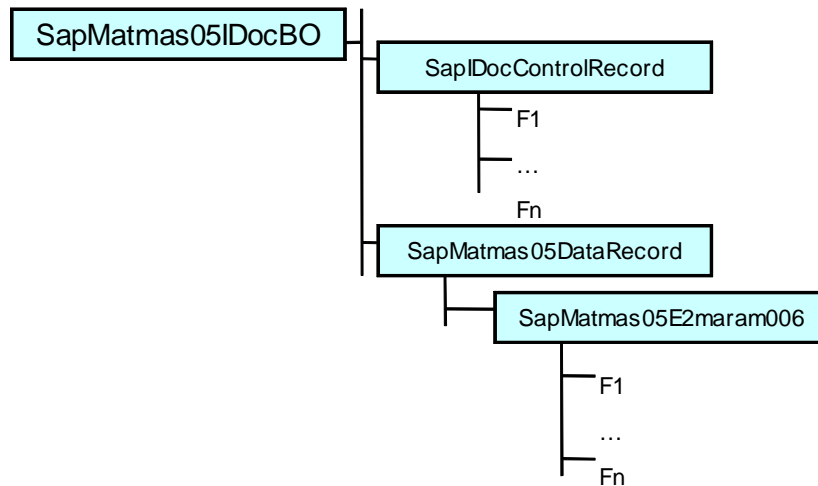
WebSphere Adapter for SAP Software capabilities



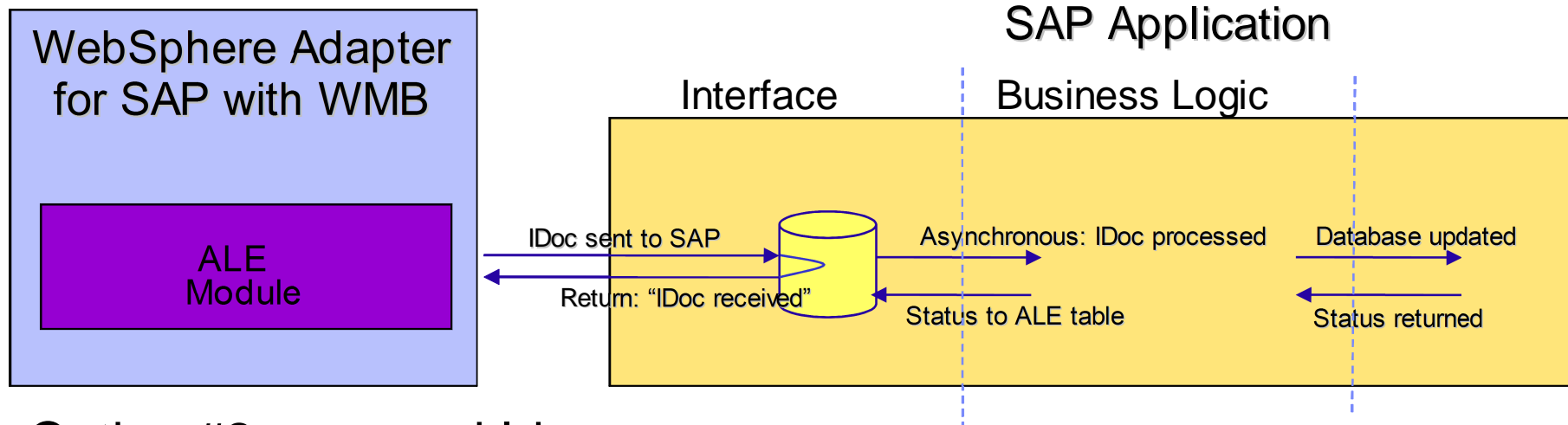
Option #1 parsed Idoc

Idoc will be parsed to a XML-Document

Whole data content can be accessed by WMB



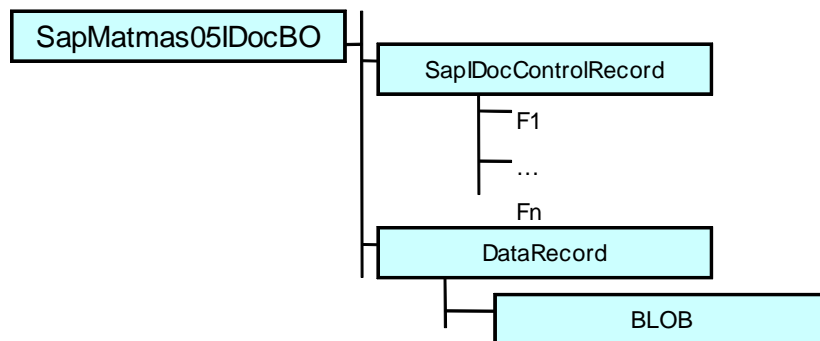
WebSphere Adapter for SAP Software capabilities



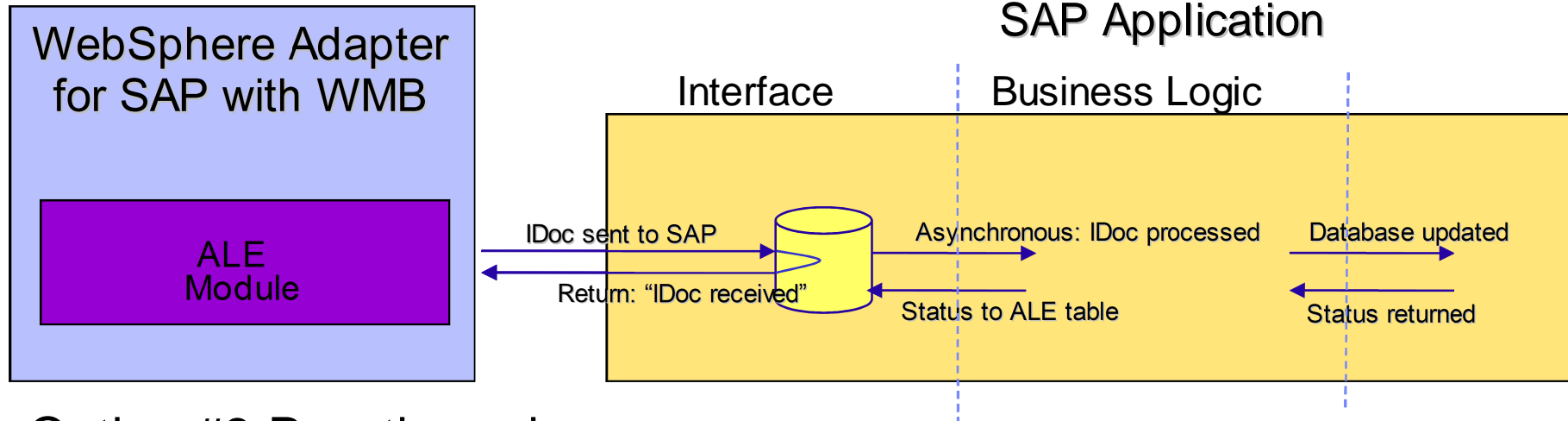
Option #2 unparsed Idoc

Only Idoc control record will be parsed to XML

the data content will be a blob



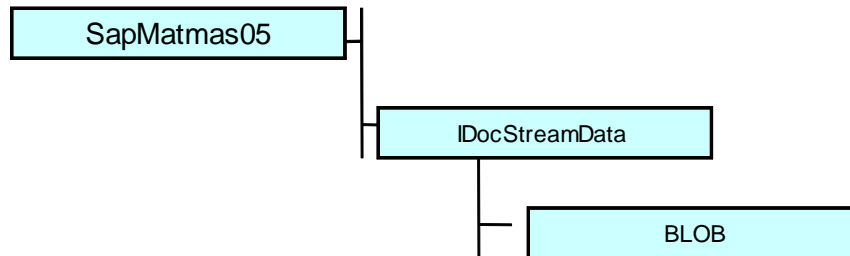
WebSphere Adapter for SAP Software capabilities



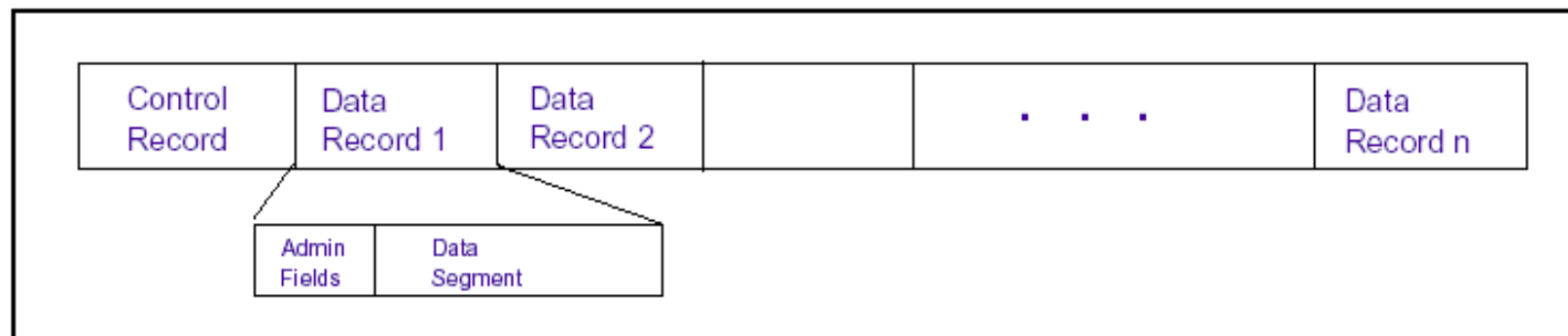
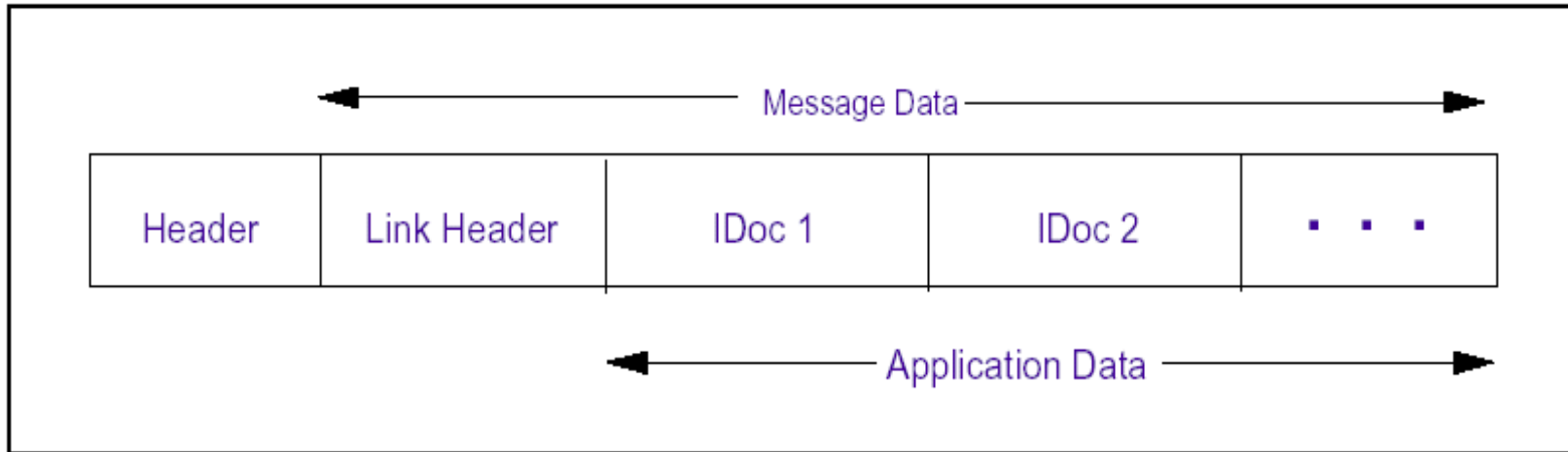
Option #3 Passthrough

support for native IDocs, and MQSeries link for R/3 link migration

Dokumentation csap_ale_R3_link



MQSeries Link for R/3 Idoc Message



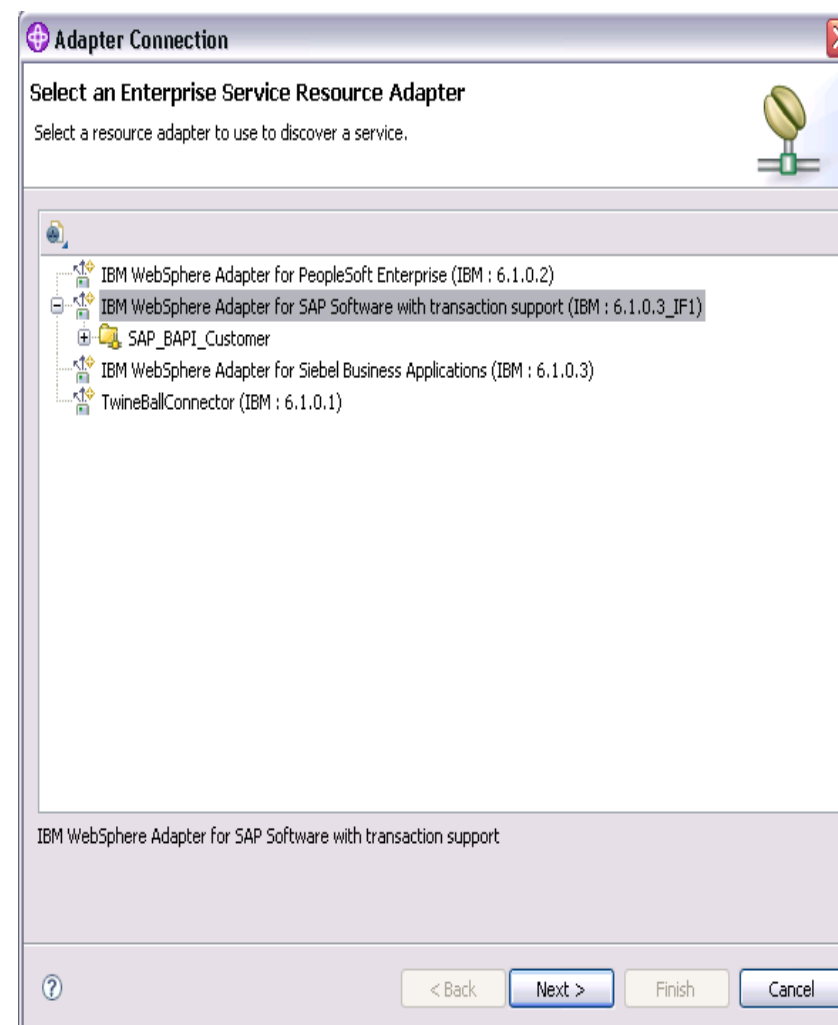
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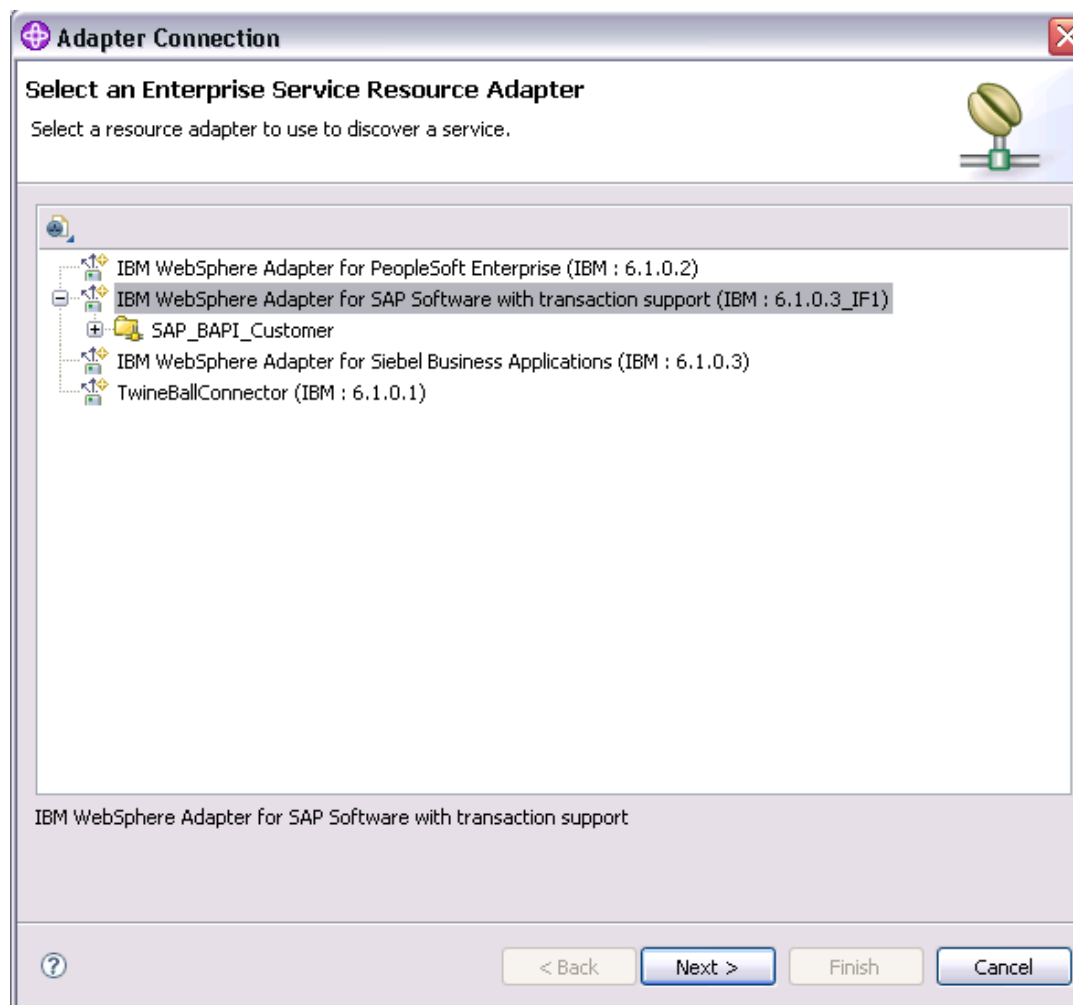
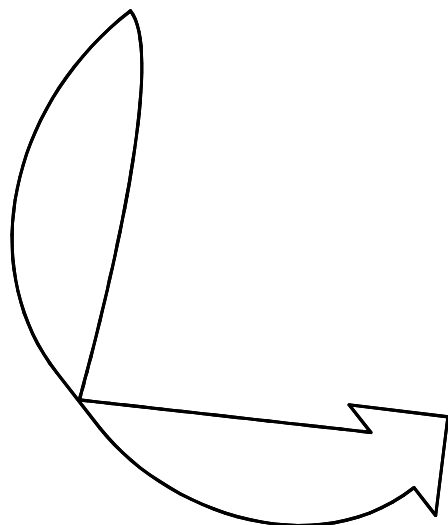
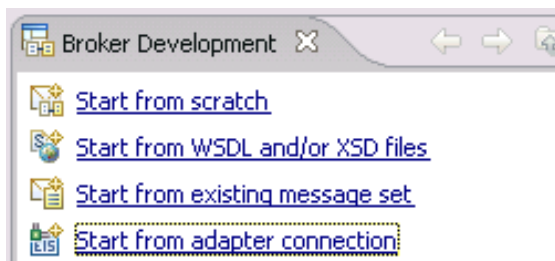
Enterprise Metadata Discovery

- A joint specification from IBM and BEA
 - A Java framework and specification for creating user interface support for discovering metadata residing on the target EIS system
 - Whitepaper available at: <http://www-128.ibm.com/developerworks/library/specification/j-emd/index.html>
- Enterprise Service Discovery Wizard
 - Used EMD technology to discover operations offered by an EIS
 - Creates:
 - Interfaces
 - For operations offered by an EIS
 - Message Set
 - Define data for interaction with an EIS
 - EIS Configuration
 - Provide starting point to create an integration solution

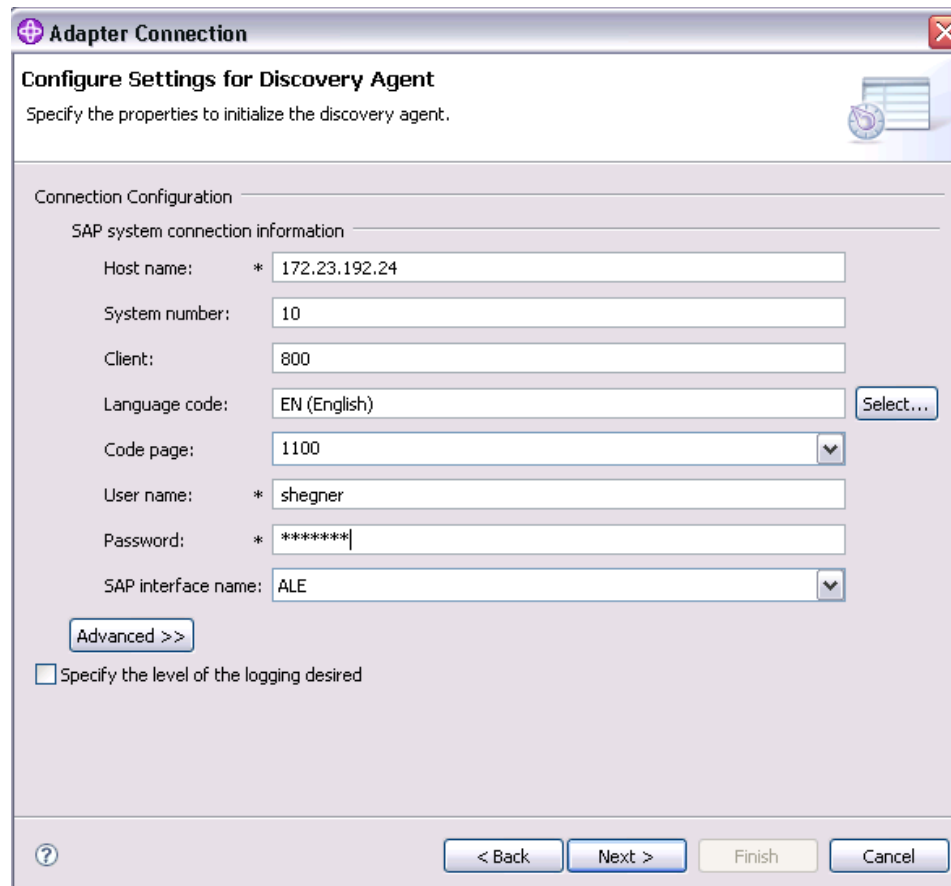
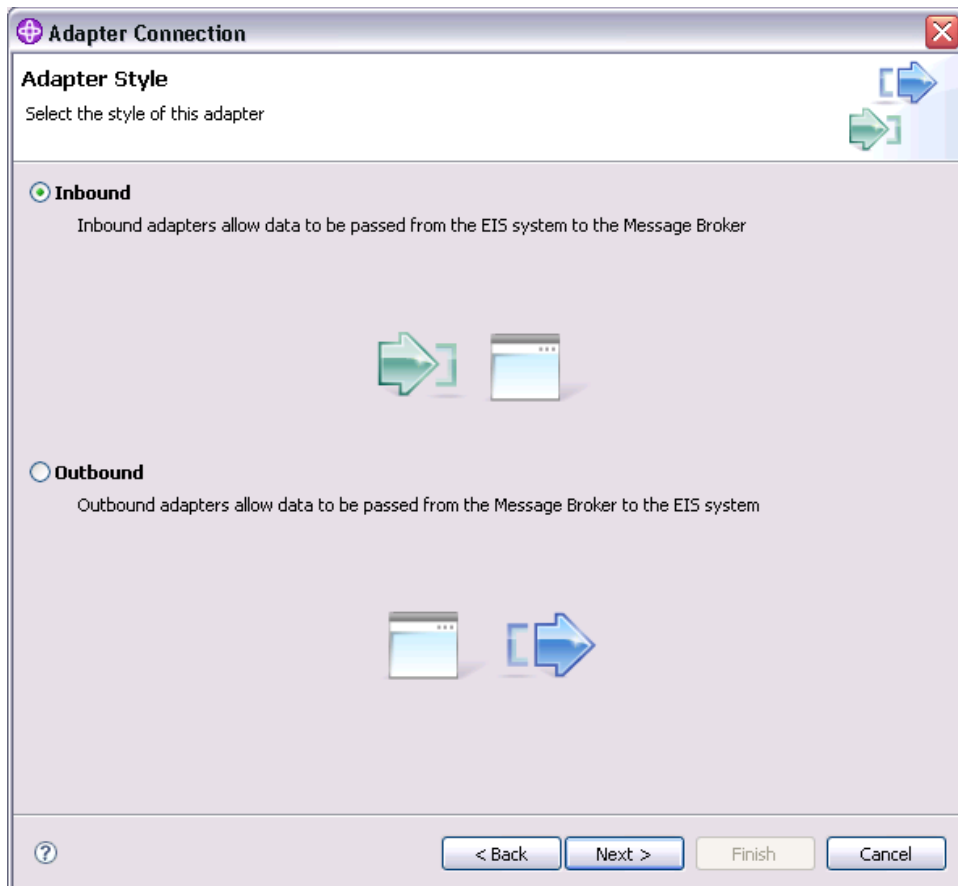
ESD Wizard



Start with a new Connection



Adapter Style and Connection Details



Define Which Idoc to Retrieve

The screenshot displays three overlapping configuration windows in SAP NetWeaver:

- Adapter Connection (Left):** Shows the 'Find and Discover Services' section. Under 'Objects discovered by query', a tree view shows 'ALE' expanded to 'Discover IDoc From System (filtered)', which contains a list of IDoc types: MATMAS01, MATMAS02, MATMAS03, MATMAS04, MATMAS05, MATMASDI, MATMAS_BAPI01, and MATMAS_MASS_BAPI01. Below this list is 'Discover IDoc From File'.
- Adapter Connection (Middle):** Titled 'Configuration Parameters for 'MATMAS05''. It contains several configuration options:
 - Attribute names of discovered objects can be changed to more descriptive names. Use SAP field names to generate attribute names.
 - The adapter can process the inbound IDoc packet as an individual business object. Send an IDoc packet as one business object.
 - The adapter can directly exchange IDocs. Send IDoc with unparsed data record.
 - If your IDoc type has not been released or you want to discover the latest IDoc release version to discover the latest IDoc release version: IDoc release version: [text field]
- Adapter Connection (Right):** Titled 'Configure Objects'. It is used to specify properties for objects imported by the discovery agent.
 - Configure IDoc inbound service operations:**
 - IDoc to configure: * [text field containing 'MATMAS05'] (Buttons: Add..., Remove)
 - Service operations for selected IDoc: * [text field containing 'Create'] (Buttons: Add..., Remove)
 - IDoc values to identify selected operation: * [text field containing 'ReceivingPartner=WBIASH; MessageType=MATMAS;'] (Button: Select...)
 - Business object namespace: * [text field containing 'http://www.ibm.com/xmlns/prod/websphere/j2ca/sap']
 - Specify the relative folder for generated business object: Folder: [text field]

Finally Generate Development Artefacts

Assistant creates now:

- Message Flow Project
- Message Set Project
- Message Set
- Adapter Component
- Working Set

Adapter Connection

Publishing Properties
Specify the properties for publishing.

Properties for service

Message flow project name: * SAP_IDOCApp

Message set project name: * SAP_IDOCAppMessageSet

Message set name: * SAP_IDOCAppMessageSet

Message flow creation

Create a new message flow in my flow project

Message flow name: * SAP_IDOCAppFlow

Working set creation

Create a new working set for these resources

Working set name: * SAP_IDOCApp

Adapter component name: * SAP_IDOC_Adapter

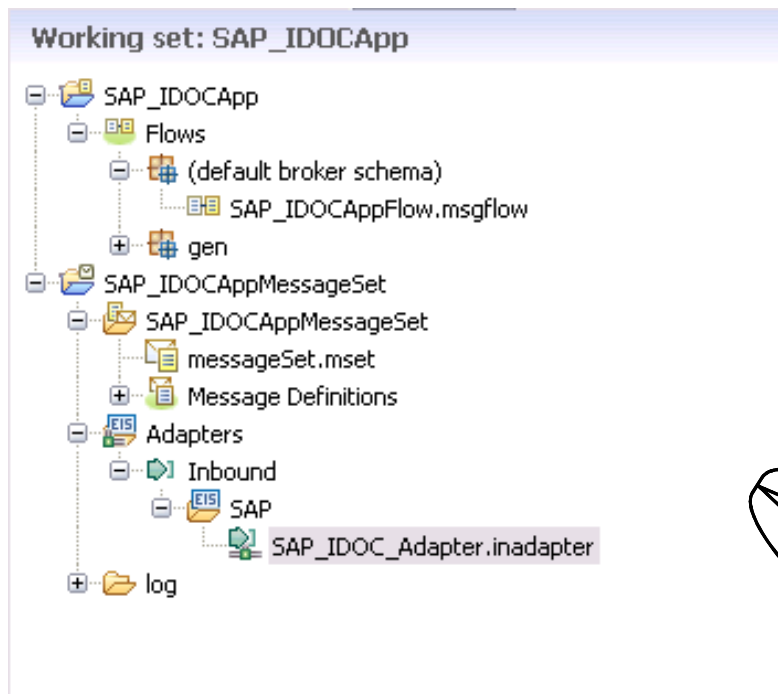
Namespace: http:///SAPInboundInterface

Use default namespace

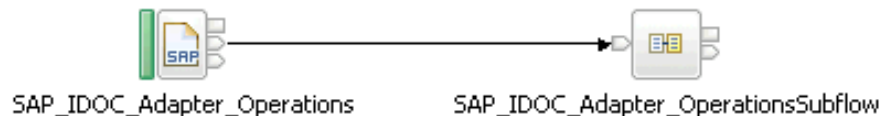
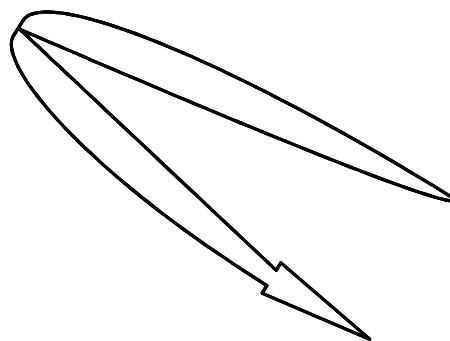
Description:

< Back Next > Finish Cancel

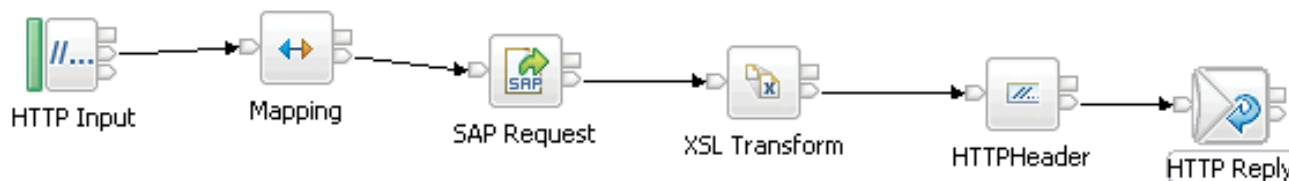
Ready to start !!



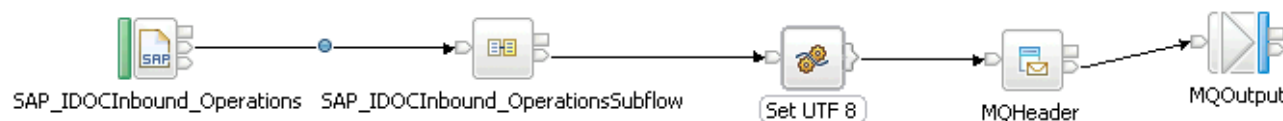
Drag'n Drop the Adapter component to create a message flow template



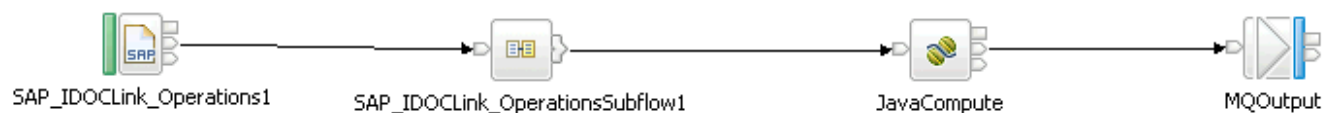
Flow Samples



Bapi request with xslt transformation



IDOC inbound to WMB



MQSeries link for R/3 migration

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Configure Runtime Environment

Configure the broker with the location of the EIS provider JAR files and native libraries

Sample

- `mqsichangeproperties WBRK61_DEFAULT_BROKER -c EISProviders -o SAP -n jarsURL -v c:\sapjco\jars`
 - `mqsichangeproperties WBRK61_DEFAULT_BROKER -c EISProviders -o SAP -n nativeLibs -v c:\sapjco\bin`
- Documentation ae37170_

You can create your own configurable services by using the **`mqsicreateconfigurable`** command.

Sample set SAP host and SAP Client

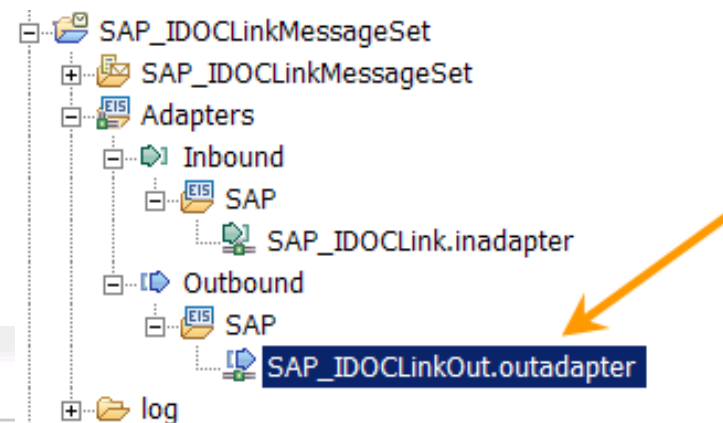
- `mqsicreateconfigurable WBRK61_DEFAULT_BROKER -c SAPConnection -o mySAPAdapter.outadapter -n applicationServerHost,client -v test.sap.ibm.com,001`

–Documentation an60170_

basic adapter configuration

- SAP System connection information
- Documentation *rbp_sap_activationspec_props*

SAP Inbound Resource Adapter



SAP system connection information	
Host name: *	<input type="text" value="172.23.192.24"/>
RFC program ID:*	<input type="text" value="WBIASH1"/>
Gateway host:	<input type="text" value="172.23.192.24"/>
Gateway service:	<input type="text" value="sapgw10"/>
Client:	<input type="text" value="800"/>
Language code:	<input type="text" value="EN (English)"/> <input type="button" value="Select..."/>
Code page:	<input type="text" value="1100"/> <input type="button" value="v"/>
System number:	<input type="text" value="10"/>
User name:	<input type="text" value="shegner"/>
Password:	<input type="text" value="*****"/>

▶ Show Advanced

advanced adapter configuration

- SAP System connection information advanced performance optimization

SAP Outbound Resource Adapter

▼ SAP system connection information

Host name: * 172.23.192.24

System number: 10

Client: 800

Language code: EN Select...

Code page: 1100

Hide Advanced

- ▶ Advanced connection configuration
- ▶ Secure Network Connection(SNC) Configuration
- ▶ SAP RFC trace configuration
- ▶ Bidi properties

▼ Advanced connection configuration

Properties for SAP system load balancing, enhancing performance and configuring failure recovery.

Message server host:

Logon group name:

Number of Listeners:

SAP system ID:

Partner character set: ▼

Maximum number of retries in case of system connection failure:

Time between retries in case of system connection failure (milliseconds):

advanced adapter configuration

- Event persistence configuration

▼ Event persistence configuration

Properties to configuring event persistence to assure once-only delivery of inbound events.

Ensure once-only event delivery (may reduce performance)

Auto create event table

Event recovery table name: *

Event recovery data source(JNDI) name: *

User name used to connect to event data source:

Password used to connect to event data source:

Database schema name:

advanced adapter configuration

- ALE event status configuration

▼ ALE event status configuration

Properties to configure packet error handling and to enable updates of SAP system audit records.

Ignore IDoc packet errors

ALE update status

ALE selective update:

ALE status message code:

ALE success code: *

ALE failure code: *

ALE success text: *

ALE failure text: *

IDocs	Numb...
Selected IDocs	000004
Outbound IDocs	000002
MATMAS	000002
Status 41	000002
Inbound IDocs	000002
ALEAUD	000002
Status 53	000002

Inbound IDocs ALEAUD Status: 53

IDoc Number	Segm...	Stat...	Stat...	Partner	BasicType
00000000000792746	2	53	○○●	LS/ MWBIASH1	ALEAUD01
00000000000792748	2	53	○○●	LS/ MWBIASH1	ALEAUD01

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Migration Steps

Steps	Effectuated component	Product feature	Implementation feature	If existing
Install runtime for WebSphere Adapter for SAP	WebSphere Message Broker	✓		
Install build-time for WebSphere Adapter for SAP	WebSphere Messge Broker toolkit	✓		
Creating WebSphere Adapter Instances	WebSphere Messge Broker toolkit		✓	
Configure runtime parameters	Convert MQSeries Link for R/3 *.ini files to WMB runtime parameters		✓	Script support can by provided
Configure ALE outbound routing	Implementing routing rules from MQSeries link for R/3 smqDestConf in WMB		✓	Prebuild artifact can by provided. The smqDestConf file can by used as is.
Configure logging/Monitoring	WebSphere Message Broker runtime	✓	✓	Prebuild artifacts can be provided for file logging. For more business oriented monitoring WBM can be used.

Pre-build artefact's by WebSphere Tech Sales

This artefact's are samples, prepared by WebSphere Technical sales. The artefact's covers the common functionality provided by MQSeries Link for R/3. Target is to leverage migration to the WebSphere product stack and minimize the customer project cost.

Configure runtime parameters

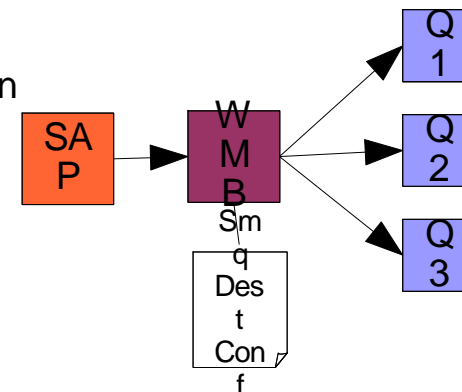
This artifact is a replacement of the MQSeries *.ini file. The outcome is a runtime script for WMB to configure the SAP-Adapter runtime parameters

```

mqsicreateconfigurableService
WBRK61_DEFAULT_BROKER
-c SAPConnection
-o mySAPAdapter.outadapter
-n applicationServerHost,client
•-v test.sap.ibm.com,001
    
```

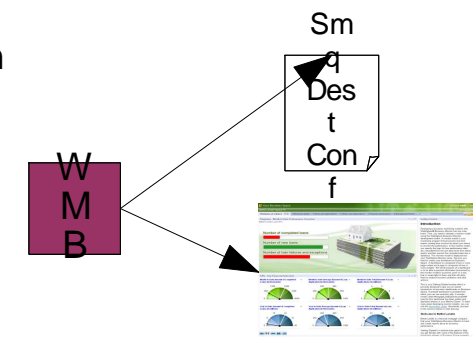
ALE outbound routing

MQSeries link for R/3 provides an ALE outbound routing based on the configuration file smqDestConf. The ALE outbound routing artifact is a WMB Message Flow implementation and uses the smqDestConf file in the same manner.



Logging/Monitoring

MQSeries link for R/3 provides a file based logging mechanism. The logging/monitoring artifact based on the WMB Monitor functionality. The sample covers an improved logging capability. The logging/monitoring artifact can be combined with other monitoring tools like WBM for end-to-end or business monitoring.



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IBM WebSphere Adapter for SAP Software: software requirements

■ Supported SAP versions

- SAP applications running on BASIS 4.0 - 4.6, 7.00
- SAP ECC 6.0
- SAP Solutions running on SAP Web Application Server 6.20 - 7.00, such as SAP ERP Central Component. For a list of SAP Solutions available on SAP Web AS, refer to the SAP website <http://help.sap.com>

Supported operating systems

<http://www-01.ibm.com/support/docview.wss?rs=695&uid=swg27010734>

On x86 32-bit

- Microsoft® Windows® 2000 Advanced Server Update Rollup 1 for SP4 ([Windows 2000 product site](#))
- Microsoft Windows 2000 Professional Server Update Rollup 1 for SP4
- Microsoft Windows 2000 Server Update Rollup 1 for SP4
- Microsoft Windows 2003 Datacenter Edition SP1 ([Windows Server 2003 product site](#))
- Microsoft Windows 2003 Enterprise Edition
- Microsoft Windows 2003 Standard Edition
- Red Hat Enterprise Linux® 4.0 AS,ES,WS
- Red Hat Desktop Linux 4.0
- Red Hat Enterprise Linux 5.0
- Red Hat Enterprise Linux 5.0 Advanced Platform
- Red Hat Enterprise Linux 5.0 Desktop
- SUSE Linux Enterprise Server 9.0
- SUSE Linux Enterprise Server 10.0
- SUSE Linux Desktop 9.0

On x86 64-bit

- Microsoft Windows 2003 Standard x64 Edition
- Microsoft Windows 2003 Enterprise x64 Edition
- Microsoft Windows 2003 Datacenter x64 Edition
- Sun Solaris™ 10 with latest recommended patch cluster ([Sun product site](#))
- Red Hat Enterprise Linux 4.0 AS,ES,WS
- Red Hat Desktop Linux 4.0
- Red Hat Enterprise Linux 5.0
- Red Hat Enterprise Linux 5.0 Advanced Platform
- SUSE Linux Enterprise Server 9.0
- SUSE Linux Enterprise Server 10.0
- SUSE Linux Desktop 9.0

Supported operating systems contd..

SPARC

- Sun Solaris 9 with latest recommended patch cluster ([Sun product site](#))
- Sun Solaris 10 with latest recommended patch cluster

PA-RISC

- HP-UX 11i v2 (HP-UX 11 product site http://welcome.hp.com/country/us/en/prodserv/software_os.html)
- HP-UX 11i v3

IA 64 (Itanium)

- HP-UX 11i v2
- HP-UX 11i v3

System p™

- IBM AIX® 5L 5.2 (ML 5200-07)
(IBM AIX product site <http://www.ibm.com/servers/aix/index.html>)
- IBM AIX 5L 5.3 (SP 5300-05-01)

AIX on POWER™

- IBM AIX 5L 5.2 (ML 5200-07)
- IBM AIX 5L 5.3 (SP 5300-05-01)

Linux on POWER

- Red Hat Enterprise Linux 4.0 AS
- Red Hat Enterprise Linux 5.0 Advanced Platform
- SUSE Linux Enterprise Server 9.0
- SUSE Linux Enterprise Server 10.0

Supported operating systems contd..

- **System iTM**

- i5/OS® V5R3, V5R4 (IBM i5/OS product site <http://www.ibm.com/systems/i/os/i5os/>)

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- **System zTM**

- z/OS® 1.7 (z/OS product site <http://www.ibm.com/servers/eserver/zseries/zos/>)
- z/OS.e 1.7 (z/OSe product site <http://www.ibm.com/systems/z/os/zose/index.html>)
- Red Hat Enterprise Linux 4.0 AS
- Red Hat Enterprise Linux 5.0 Advanced Platform
- SUSE Linux Enterprise Server 9.0
- SUSE Linux Enterprise Server 10.0

IBM WebSphere Message Broker prerequisites

- This adapter is also supported with the following products:
- IBM WebSphere Message Broker
(<http://www-1.ibm.com/support/docview.wss?rs=849&uid=swg27006551>)
- IBM WebSphere Message Broker for z/OS, version 6.1
(<http://www-1.ibm.com/support/docview.wss?rs=849&uid=swg27006551>)

IBM WebSphere Message Broker documentation and resources

WebSphere Message Broker V7.0 Integration with WebSphere Adapter for SAP Software

(<http://www.redbooks.ibm.com/abstracts/redp4644.html?Open>)

WebSphere Message Broker V7.0 Dokumentation

(<http://www-01.ibm.com/software/integration/wbimessagebroker/library/>)

Hardware resources

- <http://publib.boulder.ibm.com/epubs/pdf/c3468662.pdf>

disk resources

Component	Linux on POWER	Linux on x86 ¹	Linux on x86-64	Linux on System z	Windows ¹
Broker, Configuration Manager, and User Name Server	440 MB plus 300 MB temporary space	440 MB plus 300 MB temporary space	600 MB plus 300 MB temporary space	440 MB plus 300 MB temporary space	460 MB plus 300 MB temporary space
Message Broker Toolkit	Not available	1.9 GB plus 1.5 GB temporary space	Not available	Not available	1.9 GB plus 1.5 GB temporary space

Notes:

1. The space required for the Message Broker Toolkit includes space for the shared resources directory and the package group directory.

Table 7. Disk space requirements (UNIX)

Component	AIX	HP-UX on Itanium	HP-UX on PA-RISC	Solaris on SPARC	Solaris on x86-64
Broker, Configuration Manager, and User Name Server	840 MB plus 300 MB temporary space	740 MB plus 300 MB temporary space	800 MB plus 300 MB temporary space	860 MB plus 300 MB temporary space	540 MB plus 300 MB temporary space
Message Broker Toolkit	Not available	Not available	Not available	Not available	Not available

memory resources

512 MB of Random Access Memory (RAM) is required to support runtime operations.

512 MB of RAM is required to support Message Broker Toolkit operations on Linux on x86 or Windows systems. This specification is the minimum supported level; for improved performance, provide 1 GB of RAM.