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Kimball International:
Working with
WebServices from
ABAP

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Learning Points

- Learn how to create a WebService using ABAP
- Learn how to consume a WebService using ABAP
- See Real World Examples of this technology



SAP SAP DEVELOPER NETWORK

WebAS Technology Overview

- What if I have R/3 4.6C or lower?
 - Prod R/3: HP-UX – 2 Servers: Quad PA8600 CPUs 32Gigs of Memory each
 - Prod WebAS: Compaq Proliant – Single Server: Dual 2.8Ghz Xeons with 4 Gigs of Memory

Dev: R/3 46C Unix/Oracle	QAS: R/3 46C Unix/Oracle	Prod: R/3 46C Unix/Oracle
Dev: WebAS 640 Win2K/MSSQL	QAS: WebAS 640 Win2K/MSSQL	Prod: WebAS 640 Win2K/MSSQL

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Creating WebServices 620

- Start with any Remote Enabled Function Module

Function module: Z_E RFC_WS_GET_PLANT_VALUES

Classification

Function group: ZES_WEB_MASTER_DATA

Short text: Read the allowed values for Plant from

Processing type

Normal function module

Remote-enabled module

General Data

Person Resp

Last changed

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Creating WebServices 620

- Follow similar rules to creating a BAPI
 - Avoid Exceptions – Instead Return a Message Structure (BAPIRET2)
 - Run *Dark* – Avoid anything that would trigger a Screen (Short Dump: DYNPRO_SEND_IN_BACKGROUND)

Creating WebServices 620

- RFC in 620 system might just be a wrapper for an R/3 Function running on an Older Release
- [z_e_rfc_ws_get_plant_values.txt](#)
- Be sure to catch any Remote Exceptions
- We built a table to store RFC Destinations per function

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Creating WebServices 620

- WebService Browser:
bc/bsp/sap/webservicebrowser/search.htm

Search

By Index **A B C D E F G H I J K L M N O P Q R S T U**
X Y Z ☐

By Name
 (i.e. RFC_* for all services prefixed with RFC_)

Result

Z_E_RFC_WS_GET_LVEND_FROM_SAP	wsdl ?
Z_E_RFC_WS_GET_MAT_LISTING	wsdl ?
Z_E_RFC_WS_GET_MAT_STATUS	wsdl ?
Z_E_RFC_WS_GET_MAT_TYPE_VALUES	wsdl ?
Z_E_RFC_WS_GET_MULTI_MATERIAL	wsdl ?
Z_E_RFC_WS_GET_PLANT_VALUES	wsdl ?

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Creating WebServices 620

- With the generated WSDL, we can now easily consume in another Development Environment

Web services found at this URL:

1 Service Found:

- wsdl11?services=Z_E_RFC_WS_MAIL_SERVICE&sap-client=088

Web reference name:
com.kimball.kww-d15e

Buttons: Add Reference, Cancel, Help

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Creating WebServices 620

- Pro: Very Quick and Easy to expose RFC as WebService
- Con: No Control over individual WebServices
- Con: Can't set security per WebService
- Con: All Remote Enabled Functions are Automatically Exposed as WebServices

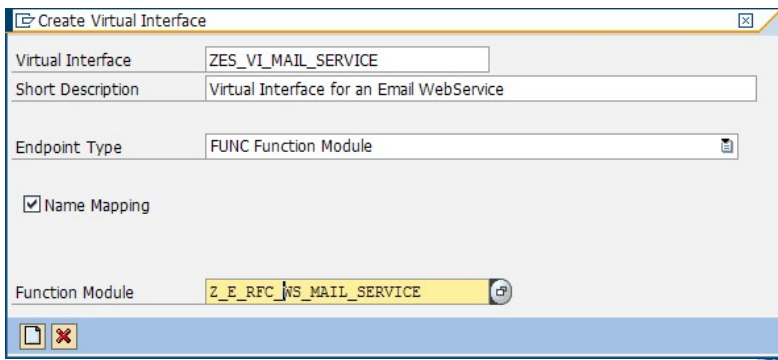
Creating WebServices 640

- We still start with an RFC
- Follow the same rules as before for Creating the RFC

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Creating WebServices 640

- Create a Virtual Interface
 - Can be created off of a BAPI, Function Module, or Function Group

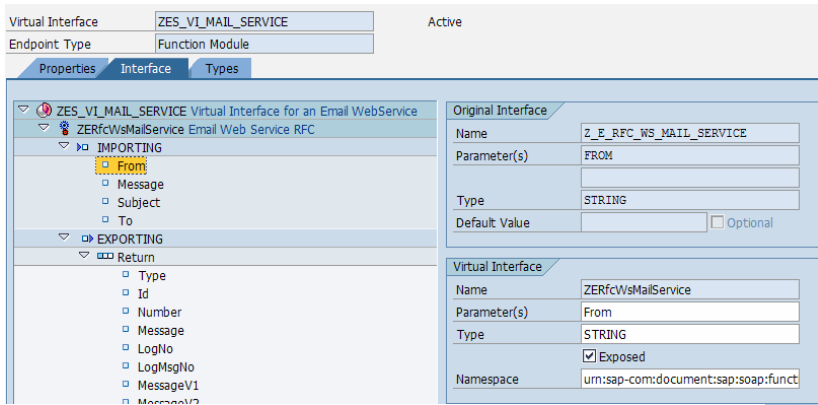


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Creating WebServices 640

- Rename or Reduce Elements via the Virtual Interface

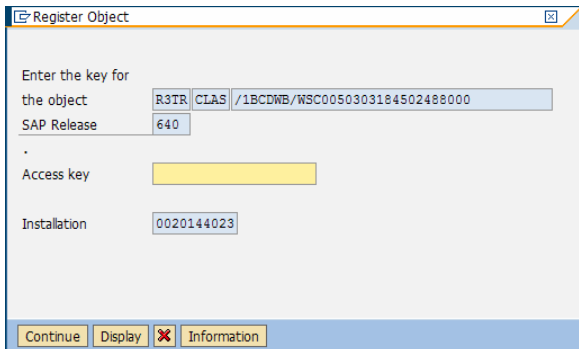


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Creating WebServices 640

- Register Object Screen??? (640 SP10)

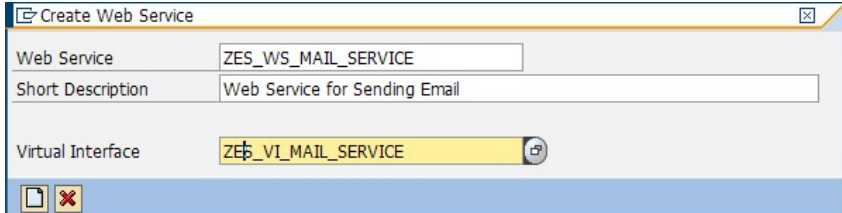


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Creating WebServices 640

- Create the WebService Definition itself



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Creating WebServices 640

- WebService Features

Session-Oriented Communication

Authentication

Transport Guarantee

Short Description Session-Oriented Communication for Stateful Web Service Comm

Select Feature

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Creating WebServices 640

- WebService Features

Session-Oriented Communication

Authentication

Transport Guarantee

Short Description Security: Authentication (Identity Check)

Select Feature

Authentication Level

Select_Property

Values

None Default Value

Basic

Strong

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Creating WebServices 640

- **WebService Features**

Session-Oriented Communication
 Authentication
Transport Guarantee

Short Description: Security: Transport Guarantee for Communication

Select Feature

Transport Guarantee Level

Select Property

Values

None Default Value

Integrity

Confidentiality

Both

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Creating WebServices 640

- **Publish TModel to a UDDI**

Web Service Definition: ZES_WS_MAIL_SERVICE

Properties Features **UDDI**

Publish

Logon Data

Registry

Users

Password

✓ ✗

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Creating WebServices 640

- Release our WebService (WSCONFIG)

Web Service Defintion

Name: ZES_WS_MAIL_SERVICE
 SOAP Application: urn:sap-com:soap:runtime:application:rfc
 Security: Authentication Level: None
 Security: Transport Guarantee Level: None

Web Service Settings | **Operations**

Release Text: Web Service for Sending Email

Call Details

Virtual Host: 0 default_host
 URL: /sap/bc/srt/rfc/sap/ZES_WS_MAIL_SERVICE

[ICF Details](#)

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Creating WebServices 640

- Administer our WebService (WSADMIN)

Web Service ID

Web Service Key: BA6117C70EB90A4BB24826193FB706E3
 Release Text: Web Service for Sending Email
 Web Service Definition: ZES_WS_MAIL_SERVICE

Transport Binding Settings

Virtual Host: 0 default_ho
 URL: /sap/bc/srt/rfc/sap/ZES_WS_MAIL_SERVICE

Trace Settings: 1000 Default Settings (Errors Only)
 Log Settings: 1000 Default Settings (Errors Only)

UDDI Publications

Name of UDDI Registry	UDDI Key of an Object
KII	720bc979-3bf4-4cac-85c6-784bc83b1314
KII_TEST	54159b73-6991-4fac-84b4-5189fe961fee

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Creating WebServices 640

- **WebService Home Page**

Address: <http://kww-d15a.kimball.com:12001/soapnavigator.jsp?explorer.jsp?description=description&url=http%3A%2F%2Fkww-d15a.kimball.c>

SAP THE BEST-RUN BUSINESSES RUN SAP

Home Overview Test

Request

ZERfcvtMailService

- parameters (test.types.p1.ZERfcvtMailService)
 - From (String) tjuno@kimball.com
 - Message (String) Test
 - Subject (String) Test
 - To (String) tjuno@kimball.com

Response

ZERfcvtMailService

- response (test.types.p1.ZERfcvtMailServiceResponse)
 - Return (test.types.p1.Bapiret2)
 - Type (String)
 - Id (String)
 - Number (String) 000
 - Message (String)
 - LogNo (String)
 - LogMsgNo (String) 000000
 - MessageV1 (String)
 - MessageV2 (String)
 - MessageV3 (String)
 - MessageV4 (String)
 - Parameter (String)
 - Row (Integer) 0
 - Field (String)
 - System (String)

```

POST /sap/bc/stt/sic/sap/ZES_WS_MAIL_SER
Host: kww-d15a.kimball.com:80
Content-Type: text/xml; charset=UTF-8
Connection: close

```

```

HTTP/1.1 200 OK
Set-Cookie: <value is hidden>
Set-Cookie: <value is hidden>
content-type: text/xml; charset=utf-8

```

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Migration 620->640

- Very Easy to do
- Converted 28 function modules into 12 separate VI/WebServices in about 2 hours (Includes registration into our Corp. UDDI).

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Calling WebServices 620

- No Client Proxy Generation!
- One Solution: by pass SOAP and call directly using HTTP Client Functionality
- Use SAP delivery SOAP Classes: not forward compatible with 640

Calling WebServices 620

- HTTP Client approach
- [z_e_rfc_ws_send_sms_webtel.txt](#)

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Calling WebServices 640

- Creating a Client Proxy

The image shows two dialog boxes from the SAP WebService Wizard. The first dialog, titled 'WSDL Source', has radio buttons for 'URL / HTTP Destination' (selected), 'Local File', 'UDDI', and 'XI Repository'. The second dialog, titled 'Choose URL or HTTP Destination', has radio buttons for 'URL' (selected) and 'HTTP Destination'. The 'URL' field contains the text 'http://www.winisp.net/cheeso/books/books.asmx?'. Below the 'URL' field are fields for 'Destination' and 'Path Suffix'. Both dialog boxes have checkmark and close buttons at the bottom.

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Calling WebServices 640

- Generated Class and Structures

The image shows the 'Structure' tab of the SAP WebService Wizard. The title bar indicates 'Message Interface (Outbound) | LookyBookServiceSoap | Active'. The tabs are 'Properties', 'Generation', 'Structure', and 'Preconfiguration'. The 'Structure' tab displays a tree view of the generated proxy class and its structure:

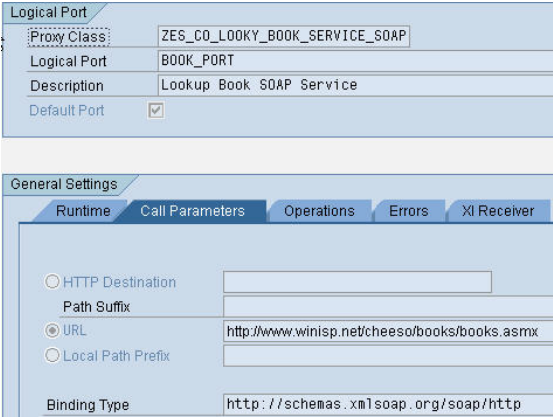
Proxy Objects	Type	Description
Class ZES_CO_LOOKY_BOOK_SERVICE_SOAP		Proxy Class (gener...
Method GET_INFO		retrieves book inform...
Importing INPUT	ZES_GET_INFO_SOA...	
ISBN	STRING	
Exporting OUTPUT	ZES_GET_INFO_SOA...	
GET_INFO_RESULT	ZES_BOOK_INFO	
ISBN	STRING	
TITLE	STRING	
AUTHOR	STRING	
PUBDATE	STRING	
PUBLISHER	STRING	
FORMAT	STRING	
IMG_URL	STRING	
TIMESTAMP	STRING	
VENDORPRICE	ZES_BOOK_INFO_VE...	
NAME	STRING	
SITE_URL	STRING	
PRICF_PREFI...	STRING	

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Calling WebServices 640

- Logical Port



The screenshot shows the configuration for a Logical Port in SAP. The 'Logical Port' section includes the following fields:

Proxy Class	ZES_CO_LOOKY_BOOK_SERVICE_SOAP
Logical Port	BOOK_PORT
Description	Lookup Book SOAP Service
Default Port	<input checked="" type="checkbox"/>

The 'General Settings' section includes the following fields:

HTTP Destination	
Path Suffix	
URL	http://www.winisp.net/cheeso/books/books.asmx
Local Path Prefix	
Binding Type	http://schemas.xmlsoap.org/soap/http

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Calling WebServices 640

- Coding against the Proxy Class
- [ZESU_OLD_DIR_WS_CLIENT_TEST.txt](#)

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Exposed Webservice Example

- Shop Floor Interfaces
 - Expose BAPI BAPI_REPMANCONF1_CREATE_MTS
 - Need to support Mixed Code Pages (Latin-1 & Latin-2)
 - Run Over WAN US->Poland
 - Be Near Real Time
 - Basic Authentication ->HTTPS
 - Latency ->qRFC
 - Duplicate Records -> GUID

Calling Webservice Example

- Corp. Global Directory
 - UDDI Integration
 - Reuse across platforms (.Net and NetWeaver)
 - Webservice Interoperability
 - xsi:nil="true" inside complex Structures

Resources

- [BSP – a Developer's Journal Part XIII: Developing ABAP WebServices](#)
- [BSP a Developer's Journal Part XIV - Consuming WebServices with ABAP](#)
- [Publishing ABAP WebServices to an External UDDI Server](#)
- [Develop a Web Service that sends an Email - in ABAP](#)
- [WebServices: A real world implementation experience](#)