

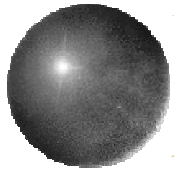
The Web, Java & R/3: Friends or Foes

E. F. Hale III, LL.M.

Associate Vice Chancellor for Information
Technology

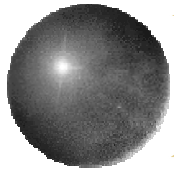
University of Mississippi

hale@olemiss.edu



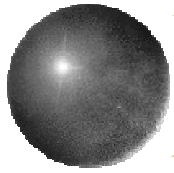
INTRODUCTION

- Background
- RFCs & BAPIs
- Java Connector
- XML
- ALE (IDOC)
- Business Connector
- Demonstration



BACKGROUND

- Homogeneous/Heterogeneous Systems
 - R/3 to R/3
 - Legacy to R/3
- Interface IBM OS390 & third-party software packages
- Web
 - **I**nternet **T**ransaction **S**erver (ITS)
 - **I**nternet **S**ervice **R**equests (ISR) (4.6C)
- Client/Server



RFCs & BAPIs

■ **Remote Function Calls**

- ABAP Function Modules
- Remotely Enabled
- Parameters & Tables

■ **Business Application Programming Interfaces**

- RFC Enabled Function Calls
- Business Objects
- Methods
- Workflow



Explorer Edit Goto Environment System Help

SAP

Icons: Home, Back, Forward, Stop, Refresh, Print, Help, Project

BAPI Explorer



Hierarchical Alphabetical

- ▶ AddressContPart
- ▶ AddressOrg
- ▶ AddressPers
- ▶ Applicant
- ▶ Appraisal
- ▶ AppraisalModel
- ▶ ApprovingOfficer
- ▶ AssetAcquisition
- ▶ AssetPostCapitalizn
- ▶ AssetRetirement
- ▶ Assortment
- ▶ AssortmentList
- ▶ Attendee
- ▶ BBPIncomingInvoice
- ▶ BackgroundJob
- ▶ BapiService
- ▶ Barcode

Detail Documentation Tools Project

Object

Object name: Applicant

Short description: Applicant

Object type: APPLICANT

Development class: PAPL Component: PA-RC

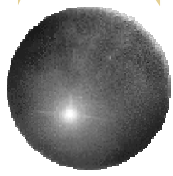
Person responsible: SAP

Created on: 01/19/1995 Release: 30A

Status

Release status: Released

Last changed by: BHALE1 Changed on: 03/18/2001



SAP

Objecttype Edit Goto Utilities Environment Settings System Help

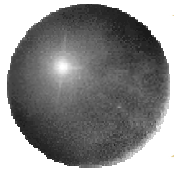
Navigation icons: Home, Back, Forward, Stop, Refresh, Print, Help, Search, etc.

Display Object Type **APPLICANT**

Business object **APPLICANT** ✓ Applicant

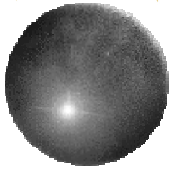
- Interfaces
- Key fields
- Attributes
- Methods
 - Applicant.Find
 - Applicant.ExistenceCheck ✓
 - Applicant.ChangePassword ✓
 - Applicant.CheckPassword ✓
 - Applicant.InitPassword ✓
 - Applicant.CreatePassword ✓
 - Applicant.DeletePassword ✓
 - Applicant.GetPassword ✓
 - Applicant.GetStatus ✓
 - Applicant.CreateFromData ✓
 - Applicant.ZApplicantGetdetail ✓
 - Applicant.Display ✓
 - Applicant.EventCreate ✓
 - Applicant.Edit ✓
 - Applicant.Create ✓
- Events
 - Find object
 - Existence Check
 - Change password
 - Check password
 - Initial password
 - Create password
 - Delete password
 - Get password
 - Get status
 - Create from data
 - GetDetail
 - Display
 - Create applicant action
 - Change
 - Create

PRD (1) (300) umap1 INS



JAVA CONNECTOR

- <http://service.sap.com/connectors>
 - Java Connector
 - Business Connector
- Java Middleware
 - Inbound (Java to ABAP)
 - Outbound (ABAP to Java)
- Metadata
- Parameters & Tables
- Example



Electronic Forms

User Name:

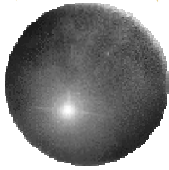
Password:

Guest Logon

Signon

Please close your WEB browser when you are done to prevent others from gaining access to your password.
For comments or questions, contact the [System Administrator](#).





Electronic Forms

If you are using Netscape Navigator [Click Here.](#)

[help](#)

[logout](#)

Request For Additional Pay - Form 40
Please enter one or more of the following:

personnel forms

Personnel ID:

Last Name:

Cost Center:

[change password](#)

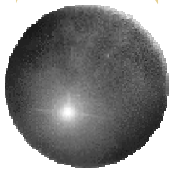
[notify by email?](#)

[Get Employee Data](#)

[Help](#)

[save route name?](#)





Last Name: hale

Search Results

00000535	HALE III, EMMETTE F
00001245	HALE, PAUL W JR
00001264	HALE, STEPHEN K
00001965	HALE, SUE T
00005292	HALE, ANNA L
00006419	HALE, JENNIFER
00006782	HALE, JASON GRADY

[help](#)

[logout](#)

[personnel forms](#)

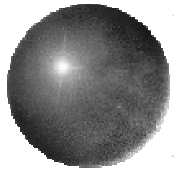
[Search again?](#)

[change password](#)

[notify by email?](#)

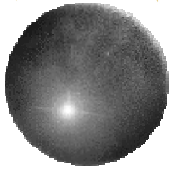
[save route name?](#)





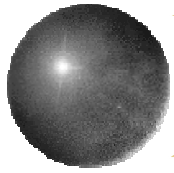
XML

- ❑ eXtensible Markup Language (XML)
- ❑ Characteristics
 - Well-formed
 - Valid
- ❑ Document Type Definition (DTD)/Schema
- ❑ eXtensible Stylesheet Language (XSL)
- ❑ Flavors
 - Microsoft BizTalk
 - Simple Access Object Protocol (SOAP)



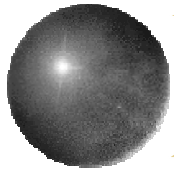
```
E:\CompanyCode_GetDetail.xml - Microsoft Internet Explorer
File Edit View Favorites Tools Help

<?xml version="1.0" encoding="iso-8859-1" ?>
- <biztalk_1 xmlns="urn:biztalk-org:biztalk_1">
- <header>
- <delivery>
- <message>
  <messageID>824A81E7F70DC25B0000002B</messageID>
  <sent>2001-01-23T08:54:07</sent>
</message>
- <to>
  <address>urn:sap-com:logical-system:SAPSYS0001</address>
</to>
- <from>
  <address>urn:sap-com:logical-system:BUSCON0001</address>
</from>
</delivery>
</header>
- <body>
- <doc:CompanyCode.GetList xmlns:doc="urn:sap-com:document:sap:business" xmlns="">
- <CompanyCodeList>
- <item>
  <COMP_CODE />
  <COMP_NAME />
</item>
</CompanyCodeList>
</doc:CompanyCode.GetList>
</body>
</biztalk_1>
```



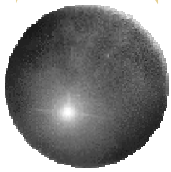
XML REFERENCES

- World Wide Web Consortium
 - <http://www.w3.org/>
- SAP Internet Business Framework
 - <http://ifr.sap.com/>
- Biztalk
 - <http://www.biztalk.org/>
- SOAP
 - <http://www.w3.org/TR/SOAP/>



ALE (IDOC)

- Application Link Enabling (ALE)
- Intermediate DOCument (IDOC)
 - Inbound
 - Outbound
- Asynchronous Transactions
- IDOC-BAPI Interface
- Workflow



```
E:\Student_DocPost_IDOC.xml - Microsoft Internet Explorer
File Edit View Favorites Tools Help

<?xml version="1.0" encoding="iso-8859-1" ?>
- <STUDENT_DOCPOST>
  - <IDOC BEGIN="1">
    + <EDI_DC40 SEGMENT="1">
      - <E1BPFADOCHEADER SEGMENT="1">
        <ACADEMICYR>2001</ACADEMICYR>
        <SESSIONID>001</SESSIONID>
        <DOC_DATE>2001-02-01</DOC_DATE>
        <POST_DATE>2001-02-01</POST_DATE>
      </E1BPFADOCHEADER>
      <E1BPFADOCITEMS SEGMENT="1">
        <COMP_CODE>1</COMP_CODE>
        <STUDENT>000000006</STUDENT>
        <SPONSOR />
        <GRANT_NO />
        <AID_TYPE>DIS</AID_TYPE>
        <AID_STATUS>DIS</AID_STATUS>
        <CURRENCY>USD</CURRENCY>
        <CURRENCY_ISO />
        <AMOUNT>1000.0000</AMOUNT>
        <EFFECTIVE_DATE />
        <REF_DOCUMENT />
        <REF_SYSTEM />
        <TEXT />
      </E1BPFADOCITEMS>
    + <E1BPFADOCITEMS SEGMENT="1">
      </IDOC>
    </STUDENT_DOCPOST>
```



SAP R/3

File Edit Goto System Help

Technical short info

[Direction] 2 Inbox

Current status 51 ●●●

Basic type STUDENT_DOCPOST01

Extension

Message type STUDENT_DOCPOST

Parth.number UMBC

Parth.type LS

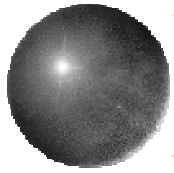
Port TRFC

Content of selected segment

Fid name	Fid cont.

IDoc display

- IDoc 0000000000004001
 - Control rec.
 - Data records
 - E1BPFADOCHEADER
 - E1BPFADOCITEMS
 - E1BPFADOCITEMS
 - Status records
 - 51 Total number: ... Segment 000 ... Segment 000 ... Segment 000 ...
 - 51 Error: Applicati...
 - 51 Cannot access fee ca
 - 51 Error: Applicati...
 - 62 Cannot access fee ca
 - 62 IDoc passed t...
 - 64 Direct call started
 - 64 IDoc ready to ...
 - 50 No filters , No convers
 - 50 IDoc added



BUSINESS CONNECTOR

- B2B Middleware Server & Developer
- 100% Java using Java Connector
- Flows
- Services
 - RFC
 - BAPI
 - IDOC
- Routing Rules



- Statistics
- Settings
- Scheduler
- Packages
- Services
- Access
- Logout
- Shutdown
- About
- Database
- Routing
- SAP

Routing Rule "BC1/ERP/BAPI_EMPLOYEE_GETDATA"

Sender: BC1 Receiver: ERP

Message Type: BAPI_EMPLOYEE_GETDATA

Service Information

Name: wm.PartnerMgr.flows.BC1.ERP.BAPI_ Package Location: Default

Actions

Invoke Pre-Processing Service: []

Transport: RFC

Configure RFC Transport

Specify SAP Destination: ERP

Name of Outbound Service: wm.PartnerMgr.gateway.transport.RFC:OutboundProcess

Save

SAP @ Ole Miss

University of Mississippi

Connection Method

Business Connector

Java Connector

System Address

ERP

Username

bhale1

Password

Submit



SAP @ Ole Miss

University of Mississippi

Connection Method

Business Connector

Java Connector

System Address

ERP

Username

bhale1

Password

Submit

	datetime		text	username
11	4/3/01 9:51:29 PM	BAPI		mpaduda1
12	4/3/01 9:48:25 PM	EmployeeGetData		mpaduda1
13	4/3/01 9:47:45 PM	BAPI		mpaduda1
14	4/3/01 9:44:09 PM	EmployeeGetData		mpaduda1
15	4/3/01 9:44:02 PM	JavaCon		mpaduda1

Please enter the last name of the employee
you would like to return.

K%

Continue

Cancel



	Last Name	First Name	Department
1	KAUFMAN	MIKE	
2	KUBAT	JAN	
3	KLINSMANN	MARTINA	
4	KUNITZ	ROGER	
5	KOCH	FRED	
6	KRAUS	BERND	
7	KERZE	OLAF	
8	KUNZE	HEINER	
9	KABISCH	KATJA	
10	KRUG	FRANK	
11	KOPPER	MEIKE	
12	KOHL	GUSTAV	
13	KAYSERS	HELMUT	
14	KRANICH	ALEXANDER	
15	KELLER	GERHARD	
16	KERNAL	HEIKO	
17	KARIMABADI	AMAN	
18	KANELLOPOULOS	KONSTANTINOS	
19	KANNOFSKY	ALEXANDER	
20	KALCIN	ABDUL	

Connecting to SAP using the Business Connector

XML Filename

E:\EmployeeGetData.xml

Cancel

System Name

ERP

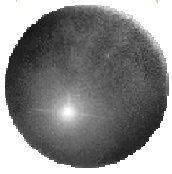
Continue

Search Criteria

M*



	Name	Department	Personnel Number
1	Anja Müller	Human Resources (D)	00001000
2	Michaela Maier	Travel expenses (D)	00001001
3	Hilde Müller	Finance & Administration	00001008
4	Beate Müller-Hinze	Exec.director - Germany	00001020
5	Reinhold Messner	PC production	00001039
6	Gerhard Metzger	Canteen (D)	00001041
7	Manfred Mannheim	Travel expenses (D)	00001052
8	Alexander Meier	Berlin Production Site	00001240
9	Siegfried Maier	Quality Manager Berlin	00001250
10	Astrid Magnuson	Sales Group 130 S1	00001265
11	Randy Mamola	Assembly Motorbikes (D)	00001276
12	Udo Mark	Assembly Motorbikes (D)	00001281
13	Horst Marstaller	PC production	00001298
14	Chris Miller	Marketing (D)	00001309
15	Heinz Maier	Techn. Service West inter	00001322
16	Hans Marzahn	Techn. Service West inter	00001325
17	Helga Milster	Material storage Hamburg	00001351
18	Klaus Maier	Assembly SAPSOTA	00001506
19	Alexander Maroto	TS tech. service	north



THE UNIVERSITY OF MISSISSIPPI

The Web, Java & R/3: Friends or Foes

