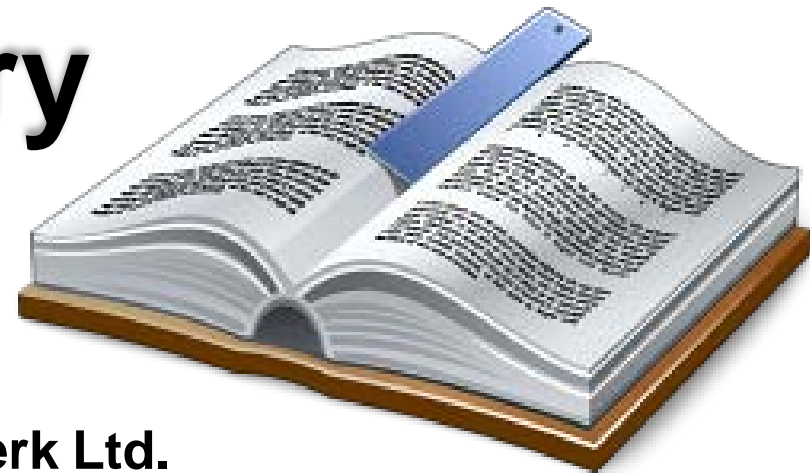




# Integrating Progress Rollbase with OpenEdge – the REST of the story



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## Consultingwerk Ltd.

- Independent IT consulting organization
- Focusing on **OpenEdge** and **.NET**
- Located in Cologne, Germany
- Vendor of tools and consulting programs
- 24 years of Progress experience (V5 ... OE11)
- Specialized in GUI for .NET, OO, Software Architecture Application Integration

## OpenEdge® application modernization solutions

- WinKit
- **SmartComponent Library**
- Dynamics4.NET
- Tools can be used together or separately
- Share common code base
- SmartComponents.Mobile,  
SmartComponents.Web
- SmartBPMAdapter for OpenEdge BPM/Savvion
- **Smart Rollbase Adapter for OpenEdge**

# Agenda

- Progress Rollbase
- Integration using a shared OpenEdge Database
- Progress OpenEdge Adapter for Rollbase
- Rollbase REST APIs
- Implementing an REST Client in OpenEdge
- Accessing Rollbase Objects and meta data from OpenEdge
- Conclusion

## Progress Rollbase

- Hybrid cloud development platform
- RAD – rapid application development
- App(lications) in the browser and for mobile devices
- Applications for public websites (Portal) and internal users
- html + JavaScript (on Client and Server)

## Progress Rollbase

- Acquisition by Progress Software in June 2013 – announced during PUG Challenge Americas 2013
- **Hosted by Progress Software** on <http://www.rollbase.com>
- Alternatively Download and **Install on your own hardware** or with a different cloud provider
- Component of the Progress Pacific PaaS offering

## Progress Rollbase

- Progress Software's "*force.com*," (SalesForce's development platform) but allowing you to host locally
- Supports migration of *force.com* or MS Access – based applications
- Supports styling and corporate identity
- Progress Exchange 2014 Website runs on Rollbase





Register by July 15 & save \$500

https://www.rollbase.com/

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Remember when the idea of running your business on tablet computers seemed like science fiction?

Today, everyday devices can transmit real-time data, too - anytime, anywhere. Your customers have an ever-growing number of these devices in their lives. Soon they'll want them in their business. And they'll be driven by applications.

The opportunity is coming. Your customers will be asking. And we'll make sure you're ready.



## Progress Rollbase

The screenshot shows a web browser window displaying the Progress Rollbase application. The browser's address bar shows the URL: <https://www.rollbase.com/prod1/m/main.jsp?appId=81253817&tabId=8125390>. The application header includes the Progress Pacific logo, the Consultingwerk logo, and the text "Sports 2000". A user profile for "Hey Mike" is visible in the top right corner. Below the header, there are navigation tabs for "Customers", "Items", "Salesreps", "Orders", and "Orderlines". The "Customers" tab is active, showing a list of customers. The list has columns for "Action", "Name", "Updated At", and "Updated By". The first few rows of the list are:

Action	Name	Updated At	Updated By
<input type="checkbox"/> Edit   Del	Mark Hardy	04/03/2014 01:40 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	Test 123	04/02/2014 04:08 PM	Mike Fechner
<input type="checkbox"/> Edit   Del	Düngel Corp.	02/24/2014 11:45 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	flusso	02/21/2014 03:21 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	Mike Liewehr	02/03/2014 03:55 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	Martyn, Martin and Steve	01/22/2014 09:09 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	bla bla bla	01/22/2014 05:36 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	This is a new test lead	01/22/2014 05:34 AM	Mike Fechner
<input type="checkbox"/> Edit   Del	test	01/22/2014 05:19 AM	Mike Fechner

On the left side of the application, there are several utility sections: "APPLICATIONS" with a dropdown for "Sports 2000" and buttons for "New App" and "Find Apps"; "CREATE" with a "New Record..." dropdown; "CALENDAR" with buttons for "Day", "Week", and "Month"; and "RECENT ITEMS" listing "flusso (Customer)", "Sports2000 Customer Portal (Portal)", "Customer (Object)", and "Marko Rüterbories (User)".

## Progress Rollbase

The screenshot shows a web browser window with two tabs: "Rapid Application Development" and "Consultingwerk Ltd. | Customer". The address bar displays the URL: <https://www.rollbase.com/prod1/m/main.jsp?id=83056281&pageId=81253837>. The page header features the "PROGRESS Pacific" logo and the "Consultingwerk" logo with the tagline "software architecture and development". The main title is "Sports 2000" and there is a search filter set to "All".

The left sidebar contains several sections:

- APPLICATIONS**: A dropdown menu showing "Sports 2000" and a "New Application" button.
- CREATE**: A dropdown menu showing "New Record..."
- CALENDAR**: Buttons for "Day", "Week", and "Month".
- RECENT ITEMS**: A list showing "Consultingwerk Ltd. (Customer)".

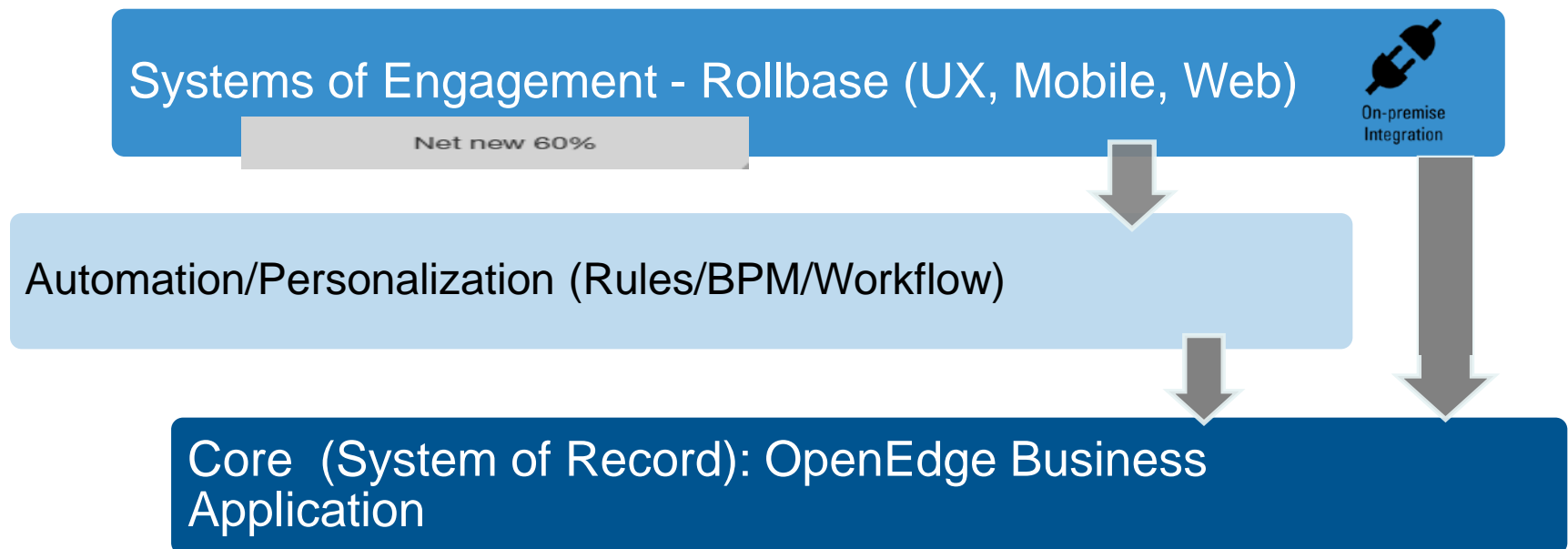
The main content area has a navigation menu with "Customers" selected, and other options: "Items", "Salesreps", "Orders", "Orderlines", "eCustomer", "Tests", and a "+" sign. Below the navigation, the text "Customer: Consultingwerk Ltd." is displayed. To the right of this text are three buttons: "Save", "Save & New", and "Cancel".

The "Customer Information" section contains the following fields:

- Customer Number:
- Name:
- Address:
- Address2:
- Postal Code:
- City:

## OpenEdge and Rollbase

- OpenEdge is the system of record – the single source of truth



## Demo

- Login to Rollbase Portal
- Navigate objects
- Show object definition

## Agenda

- Progress Rollbase
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- Progress OpenEdge Adapter for Rollbase
- Rollbase REST APIs
- Implementing an REST Client in OpenEdge
- Accessing Rollbase Objects and meta data from OpenEdge
- Conclusion



## Integration using shared Database

- **Rollbase may store objects and meta data in an OpenEdge Database**
- Tables already existing in the database (e.g. tables of an OpenEdge application) may be included in external tables in Rollbase
- Only supported when installing Rollbase on your own hardware or own cloud provider, **not supported on Progress hosted Rollbase**
- “Rollbase in Action,” Appendix C



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## Progress OpenEdge Adapter for Rollbase

- Access to “Business Entities” running on the OpenEdge AppServer from Rollbase
- Using the same technology as OpenEdge Mobile (now part of Rollbase)
- OpenEdge AppServer REST Adapter and JSDO (JavaScript Data Object)
- Wizards in Rollbase for creating external objects
- Navigation and manipulation of Data from Rollbase
- Data persistence done by OE AppServer (OE DB)

## Backend architecture

- Progress AppServer as the Backend for reading modifying data, execute custom code (OO, procedural)
- REST as the communication protocol
- **REST Adapter** deployed to Tomcat Java Servlet Container (like WSA und AIA)
- “ProxyGen” integrated into PDSOE
- JSON as data transfer format between Rollbase and AppServer
- Based on today’s standards and protocols

## Demo

- OpenEdge “Business Entity” as REST Service
- Import into Rollbase as external Objekt
- Browse Sports2000.Customer records

APPLICATIONS

Setup ▾

New App Find Apps

CREATE

New Record... ▾

CALENDAR

Day Week Month

RECENT ITEMS

- MobileSampleService (Application)
- flusso (Customer)
- Sports2000 Customer Portal (Portal)
- Customer (Object)
- Marko Rüterbories (User)

Recycle Bin (0)

« [Personal Setup](#) [Applications Setup](#) [Administration Setup](#)

Application Setup > Applications

Tip: Import Objects and Relationships from uploaded OpenEdge JSDO catalog file [Learn more](#)

## Import Objects from OpenEdge Services

Next >

Cancel

### OpenEdge Service

OpenEdge JSDO Catalog  MobileSamp...vice.json

### JSDO Service URI and Credentials

Service URI

Example: <http://oemobiledemo.progress.com/CustomerService>

Login Name

Password

Next >

Cancel

# Progress OpenEdge Adapter for Rollbase

- “Rollbase in Action,” Appendix E
- For information on the REST adapter and OpenEdge backend, refer to my last year’s PUG Challenge presentation: “The backend for OpenEdge Mobile”



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## Rollbase API's

- Login/Logoff
- Query Data
- Query Meta Data
- Modify Data (Create, Update, Delete)
  
- Multiple versions of the APIs: SOAP and REST, XML and JSON

## Login to retrieve Session ID

<https://www.rollbase.com/rest/api/login?loginName=mikefechner&password=>

Send

Save

Preview

Add to collection

Body

Cookies (5)

Headers (9)

STATUS 200 OK

TIME 216 ms

Pretty

Raw

Preview



JSON

XML

```

1 <?xml version="1.0" encoding="UTF-8" ?>
2 <resp status="ok">
3   <sessionId>3c8e9fa165134fb6819aa65eebc3044d@80644224</sessionId>
4 </resp>
5

```

## List available object names (JSON)

<https://www.rollbase.com/rest/api/getObjectDefNames?sessionId=3c8e9fa165134fb6819aa65eebc3044d@80644224&output=json>

Send

Save

Preview

Add to collection

Body

Cookies (5)

Headers (9)

STATUS 200 OK

TIME 119 ms

Pretty

Raw

Preview



JSON

XML

```
1 [
2   "$GROUP",
3   "$ORG_DEPT",
4   "$ORG_FUNC",
5   "$ORG_LOCN",
6   "$SETTINGS",
7   "account55",
8   "COMMLOG",
9   "contact40",
10  "Customer4",
11  "eCustomer",
12  "item10",
13  "lead23",
14  "meeting",
15  "order6",
16  "orderline",
17  "salesrep_recordname",
18  "test80",
19  "todo",
20  "USER"
21 ]
```

## Query records (objects)

<https://www.rollbase.com/rest/api/selectQuery?sessionId=3c8e9fa165134fb6819aa65eebc3044d@80644224&output=json&query=SELECT%20id,%20name>

Send

Save

Preview

Add to collection

Body

Cookies (7)

Headers (9)

STATUS 200 OK

TIME 154 ms

Pretty

Raw

Preview



JSON

XML

```

1  [
2  [
3      82113304,
4      "Lift Tours",
5      "Gloria Shepley",
6      1
7  ],
8  [
9      82689189,
10     "Consultingwerk Ltd.",
11     null,
12     4
13  ],
14  [
15     82732914,
16     "PUG Challenge",
17     null,
18     2003530
19  ],
20  [
21     82799434,
22     "web4biz Consulting",
23     "Robert Prediger",
24     2003535
25  ],
26  [
27     82801301

```

## Query records (objects)

- <https://www.rollbase.com/rest/api/selectQuery?sessionId=3c8e9fa165134fb6819aa65eebc3044d@80644224>
- output=json
- query=SELECT id, name, contact, CustNum  
FROM Customer4
- maxRows=10
  
- URL is case-sensitive



# Update records (simple API)

- Method: update2
- id is similar to ROWID (Rollbase internal key)
- contact=Mike Fechner  
name/value pairs of fields to change

<https://www.rollbase.com/rest/api/update2?sessionId=3c8e9fa165134fb6819aa65eebc3044d@80644224&id=82113304&contact=Mike%20Fechner>

Send

Save

Preview

Add to collection

Body

Cookies (7)

Headers (9)

STATUS

200 OK

TIME

171 ms

Pretty

Raw

Preview



JSON

XML

```
1 <?xml version="1.0" encoding="UTF-8" ?>
2 <resp status="ok">
3   <Msg>1 fields have been processed.</Msg>
4 </resp>
5
```

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- **Implementing an REST Client in OpenEdge**
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## Implementing REST Client in OpenEdge

- I couldn't get the SOAP APIs to work from ABL
- OpenEdge does not come with a REST client



# Implementing REST Client in OpenEdge

- REST is a simple protocol
- http is not rocket science



## Implementing REST Client in OpenEdge

- REST is a simple protocol
- http is not rocket science
- OpenEdge 10.2B (GUI) and OpenEdge 11 (GUI and Windows AppServer) can use .NET http client
- ABL http implementations are available
- Based on sockets
- <https://community.progress.com/technicalusers/f/19/t/9419.aspx>

## Sample using .NET

```
ASSIGN cUserName = "mikefechner"
```

```
cUrl = SUBSTITUTE ("https://www.rollbase.com/rest/api/login?loginName=&1&&password=&2",  
cUserName, cPassword) .
```

```
MESSAGE "Login Request" SKIP (2)
```

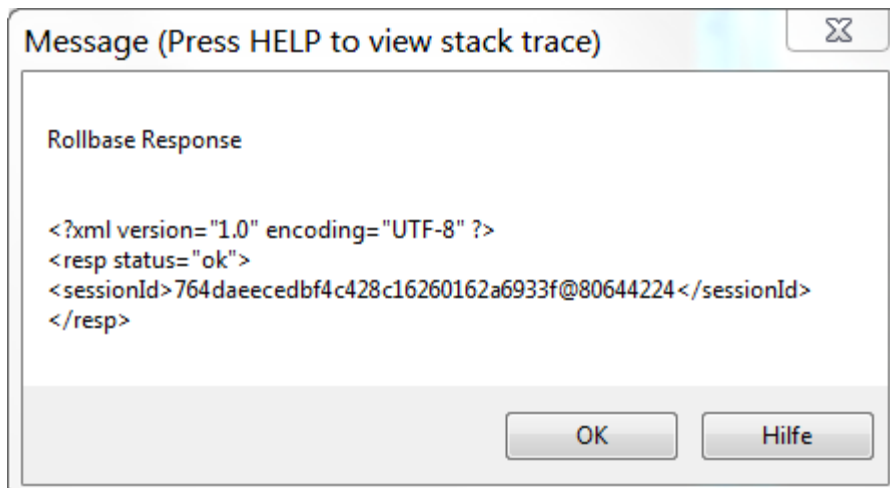
```
    SUBSTRING (cUrl, 1, R-INDEX (cUrl, "=")) + "secret"  
VIEW-AS ALERT-BOX.
```

```
oWebClient = NEW System.Net.WebClient().  
lcResponse = oWebClient:DownloadString (cUrl).
```

```
oWebClient:Dispose() .  
DELETE OBJECT oWebClient.
```

```
MESSAGE "Rollbase Response" SKIP (2)
```

```
    STRING (lcResponse)  
VIEW-AS ALERT-BOX.
```





# Sample using ABL Socket based http

```
ASSIGN cUserName = "mikefechner"

      cUrl      = SUBSTITUTE ("https://www.rollbase.com/rest/api/login?loginName=&1&&password=&2",
                             cUserName, cPassword) .

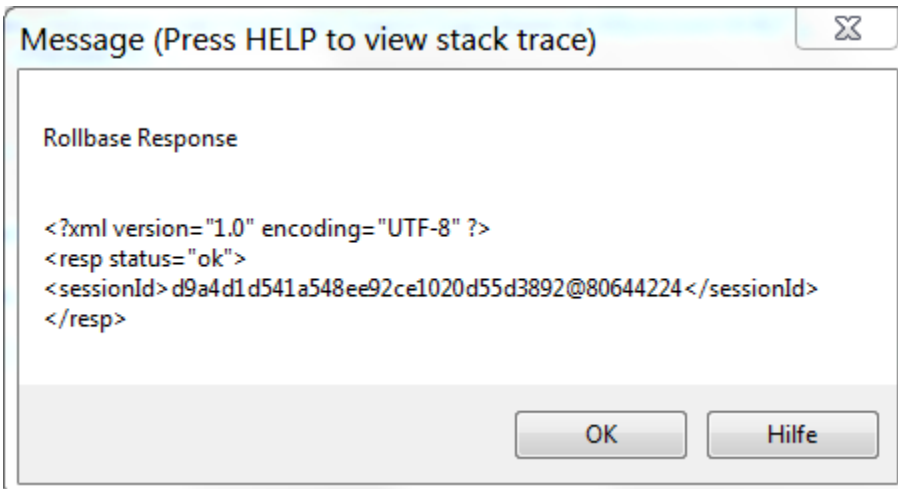
MESSAGE "Login Request" SKIP (2)
      SUBSTRING (cUrl, 1, R-INDEX (cUrl, "=")) + "secret"
VIEW-AS ALERT-BOX.

oHttpClient = NEW Consultingwerk.HttpClient () .

lcResponse = oHttpClient:GetLongchar ("www.rollbase.com", cUrl) .

DELETE OBJECT oHttpClient.

MESSAGE "Rollbase Response" SKIP (2)
      STRING (lcResponse)
VIEW-AS ALERT-BOX.
```



## Demo

- Review Consultingwerk.HttpClient class
- READ-RESPONSE handler is a procedure that calls back into class to workaround OOABL incapability with data

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## Import required root certificate

- Accessing hosted Rollbase from ABL required us to import root certificate into OpenEdge
- Export root CA certificate from web browser to file
- Details on this process in K-Base

```
proenv> certutil -install  
Equifax_Secure_Certificate_Authority.pem  
Importing trusted certificate to alias name:  
594f1775
```

## Handling of Rollbase responses

- Some APIs return XML, JSON or both
- JSON parser part of OpenEdge 11, very simple and straight forward API
- XML parser in OpenEdge 10 and 11
- I prefer JSON 😊
  
- Some of the JSON responses need “post-processing” on ABL Client, e.g. dates, special characters

# Parsing Login Response (SAX XML)

```
/*-----  
    Purpose: Parses the Login Reponse  
    Notes:  
    @param plcResponse The response of the REST Login method  
-----*/  
METHOD PUBLIC VOID ParseResponse (plcResponse AS LONGCHAR):  
  
    DEFINE VARIABLE hSaxReader AS HANDLE NO-UNDO.  
  
    CREATE SAX-READER hSaxReader .  
    hSaxReader:HANDLER = hSaxHandler .  
  
    hSaxReader:SET-INPUT-SOURCE ("LONGCHAR":U, plcResponse).  
  
    hSaxReader:SAX-PARSE () .  
  
    FINALLY:  
        IF VALID-HANDLE (hSaxReader) THEN  
            DELETE OBJECT hSaxReader .  
        END FINALLY.  
  
END METHOD .
```

# Parsing Login Response (SAX XML)

```
/*-----  
Purpose: Invoked when the XML parser detects the end of an XML document.  
Notes:  
@param pcNamespaceURI A character string indicating the namespace URI of the  
@param pcLocalName A character string indicating the non-prefixed element name  
@param pcName A character string indicating the actual name of the element in  
-----*/  
METHOD PUBLIC VOID SaxEndElement (pcNamespaceURI AS CHARACTER,  
                                  pcLocalName AS CHARACTER,  
                                  pcName AS CHARACTER):  
  
    CASE pcName:  
        WHEN "sessionId":U THEN DO:  
            ASSIGN THIS-OBJECT:SessionId = lcCharacterData  
                lExpectingCharacter = FALSE .  
        END.  
        WHEN "err":U THEN DO:  
            ASSIGN THIS-OBJECT:ErrorMessage = lcCharacterData  
                lExpectingCharacter = FALSE .  
        END .  
    END CASE .  
  
END METHOD .
```



# Parsing the GetObjDefNames (JSON)

```
/*-----  
Purpose: Parses the response of the ObjectDefNames request  
Notes:  
@param plcResponse The longchar with the response data from the ObjectDefNames request  
@return The Character array with the Object Definition Names  
-----*/  
METHOD PUBLIC CHARACTER EXTENT ParseResponse (plcResponse AS LONGCHAR):  
  
    DEFINE VARIABLE cNames          AS CHARACTER          NO-UNDO EXTENT.  
    DEFINE VARIABLE oObjectModel AS ObjectModelParser NO-UNDO .  
    DEFINE VARIABLE oArray          AS jsonArray          NO-UNDO .  
    DEFINE VARIABLE i                AS INTEGER           NO-UNDO .  
  
    oObjectModel = NEW ObjectModelParser () .  
  
    oArray = CAST (oObjectModel:Parse (plcResponse), jsonArray).  
  
    EXTENT (cNames) = oArray:Length .  
  
    DO i = 1 TO EXTENT (cNames):  
        cNames[i] = oArray:GetCharacter (i) .  
    END.  
  
    RETURN cNames .  
  
END METHOD .
```

## Demo – using the SelectQuery API

- Review Object Definition in ABL GUI
- Import Rollbase Object Definition into Temp-Table
- Run SelectQuery API from ABL procedure

```
{eCustomer.i}

/* ***** Main Block ***** */

oAdapter:SelectToTempTable ("Customer4":U,
                            'WHERE name LIKE "Mike%":U,
                            0,
                            100,
                            INPUT-OUTPUT TABLE eCustomer BY-REFERENCE) .

FOR EACH eCustomer:
    DISPL id
        CustNum FORMAT ">>>>>>>>9"
        Name     FORMAT "x(40)"
        WITH DOWN .
```

## Demo – Application Portal Integration

- Create new “Lead” in Rollbase Portal
- Import Lead as Customer in ABL Application
- Review Customer in Rollbase GUI

## Demo

- Using the Rollbase Metadata API to create object and view definition from the ABL

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## Conclusion

- OpenEdge and Rollbase offer various options for integration
- Getting started with Rollbase is simple, simple access to OpenEdge from Rollbase
- Data persistence in OpenEdge or Rollbase
- Access to Rollbase from OpenEdge through REST may be implemented with not too much effort
- Perfect solution for extending OpenEdge applications with satellite apps, e.g. where currently end customers help themselves using MS Access or Excel based solutions

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# Questions?

