

Open Integration with Oracle VBCS

This Whitepaper contains the configurations for integrating Siebel Open Integration with Oracle Visual Builder Cloud Service (VBCS) to modernize the user experience and enable real-time access to Siebel data and workflows via REST APIs, by leveraging metadata-driven configuration and low-code development tools, we delivered a responsive, customizable web front end that connects seamlessly with Siebel's backend services, improving agility, usability, and business efficiency.

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Purpose statement

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Summary

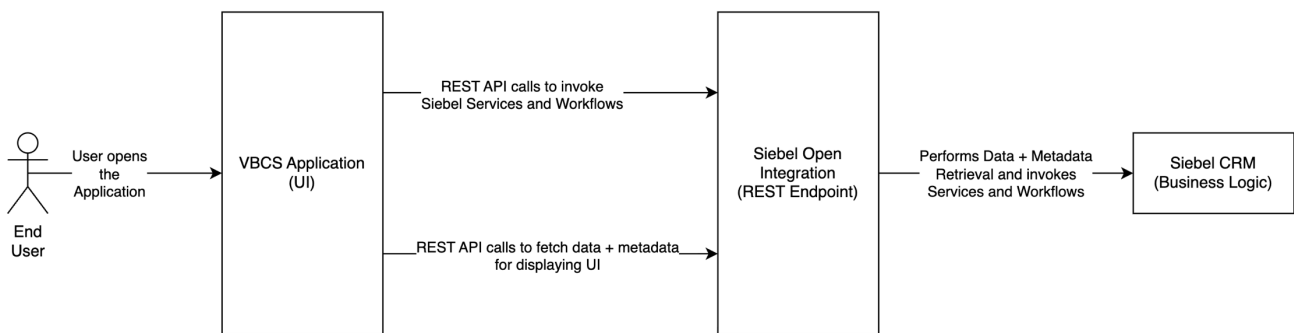
As part of the modernization of Siebel CRM leveraging OpenIntegration APIs and Oracle VBCS, we enabled the development of scalable, targeted edge applications. These new apps expose Siebel's core features and workflows in a modern UI, opening new business scenarios such as personalized customer retention in telecom and other industries.

Introduction

Siebel CRM is a core customer relationship management system, but its traditional interface is outdated compared to modern expectations. Oracle VBCS enables rapid web application development. Our goal was to expose Siebel business logic (e.g., workflows and business services) securely through REST APIs, then consume these APIs in a VBCS application that renders the UI dynamically based on Siebel metadata.

Solution Architecture

Preparing Views for VBCS with Siebel Open Integration



- Clients use browsers to access VBCS.
- VBCS app connects to Siebel Open Integration via REST.
- Siebel responds with the data and metadata required to dynamically display views in VBCS
- VBCS presents with dynamically created views and data received from Siebel

Performing Siebel Business Service invocation & Workflow invocation using Siebel Open Integration

- User performs a button click to trigger a business service or workflow in Siebel
- VBCS app forms the REST API payload and invokes Siebel Open Integration APIs
- Siebel open integration invokes the Siebel application and returns to VBCS with the Response

The architecture decouples the UI from Siebel logic. All communication is via secure REST calls; VBCS consumes both data and metadata to render dynamic pages, and no direct DB access is exposed to users.

NB : Authentication is managed using Siebel responsibilities and REST security setup.

Industry/Use Case Scenario

Industry Use Case: Telco Customer Retention

Background

Telecom operators often struggle with customer churn. Traditionally, Siebel processes disconnect requests in a transactional manner, missing opportunities for tailored retention.

Modernized Experience:

By integrating Siebel Open Integration APIs with VBCS, when a customer attempts to disconnect an asset, the VBCS front-end retrieves their Customer Life-Time Value (CLTV) in real time from Siebel. The app then dynamically presents targeted retention offers—such as discounts or account upgrades—based on that CLTV, all within an intuitive, responsive web interface.

Business Impacts:

- **Enable Modernization of Siebel:** Unlock legacy business processes for use by modern applications without modifying Siebel's underlying logic or data structure.
- **Promote Customer Retention:** React quickly to customer actions (like disconnect requests) using real-time, integrated insights.
- **Enhance Customer Satisfaction:** Deliver a more efficient, attractive, and interactive experience.
- **Seamless System Integration:** Orchestrate complex workflows between Siebel and other enterprise applications through standardized APIs.

Implementation Details

Pre-requisites

For Development

- Siebel Version 25.6 or higher for both the Application Interface (AI) and Siebel Enterprise Server.
- Oracle VBCS instance.
- Test user configured for REST access and mapped to required Siebel responsibilities.
- On Premise customers can deploy Siebel Open Integration either on Windows or Linux Platforms, based on the deployment choice.
 - If using Siebel OpenIntegration on a Windows platform, Install Powershell for Windows
 - For Linux operating system, wget command for Linux
 - Please make sure to configure Siebel SSO, before going ahead with the Open Integration configurations. In your Identity Provider, either manually provision the required Siebel user identities or federate them from your directory/IdP.
 - Update the OpenIntegration settings in the config.json file located in <INSTALL_DIR>/openint-deploy folder.
 - To use the Cache configuration feature in Siebel Open Integration, you must have Siebel version 25.10 or later

For Production Readiness

- Use trusted TLS certificates (recommended) to prevent browser security bypasses; the workaround command should be used only for testing to bypass CORS/SSL errors.
- Use a strong authentication method - typically OAuth 2.0 and/or SSO through the enterprise IdP (for example, Oracle IDCS), in line with organizational standards.
- Apply least-privilege access for workflows and services, and ensure appropriate auditing and logging are enabled.

Siebel Open Integration Configuration

- Follow the steps provided in Siebel Open Integration documentation sample profile.json :

```
{
  "Openint": {
    "server": {
      "shutdown-grace-period": "PT15S",
      "tls": {
        "trust": {
          "keystore": {
            "resource": {
              "resource-path": "siebeltruststore.jks"
            },
            "type": "JKS",
            "passphrase": "siebel",
            "trust-store": true
          }
        },
        "private-key": {
          "keystore": {
            "resource": {
              "resource-path": "siebelkeystore.jks"
            },
            "type": "JKS",
            "passphrase": "siebel",
            "key": {
              "alias": "siebel"
            }
          }
        }
      }
    },
    "features": {
      "security": {
        "paths": [
          {
            "path": "*/data*",
            "methods": ["get", "post", "put", "delete", "patch"]
          },
          {
            "path": "*/data*",
            "methods": ["get", "post", "put", "delete", "patch"]
          }
        ],
        "authenticate": true,
        "authorize": false,
        "abac": {
          "scopes": []
        }
      }
    }
  },
  "cache": {
    "enabled": true,
    "cluster-name": "siebel",
    "request-timeout": "2s",
    "tlsEnabled": true,
    "wka": [
      "127.0.0.1"
    ]
  }
}
```

```

    },
    "threshold": {
      "ui-connection-threshold": 75
    },
    "tracing": {
      "enabled": true,
      "service": "open-integration",
      "otlp-protocol": "grpc",
      "protocol": "http",
      "host": "localhost",
      "port": 4317,
      "sampler-type": "const",
      "sampler-param": 1,
      "propagation": "b3",
      "tags": {
        "env": "development"
      }
    },
    "security": {
      "enabled": true,
      "config": {
        "require-encryption": false
      },
      "providers": [
        {
          "oidc": {
            "identity-uri": "https://idcs-*****.identity.oraclecloud.com",
            "client-id": "*****",
            "client-secret": "*****",
            "audience": "https://*****.oraclevcn.com:5443",
            "server-type": "idcs",
            "redirect": false,
            "header-use": true
          }
        }
      ]
    },
    "restrictive-cors": {
      "allow-origins": [],
      "allow-methods": []
    },
    "cors": {
      "paths": [
        {
          "path-pattern": ["//*"],
          "allow-origins": [ "*" ,"https://releasedev-paasdevoic-stb.integration.dev.ocp.oc-
test.com/*"],
          "allow-methods": ["GET", "POST", "PUT", "DELETE"]
        }
      ]
    },
    "Profile": {
      "ProfileName": "phoenix20141201807"
    },
    "ConfigParam": {
      "defaults": {
        "AuthenticationProperties": {
          "SessionTimeout": "900",
          "TrustToken": "*****",
          "AnonUserName": "GUESTCST",
          "AnonPassword": "*****",
          "SingleSignOn": true,
          "UserSpec": "*****",
          "GuestSessionTimeout": "300"
        },
        "MaxTasks": "20"
      },
      "Applications": [
        {
          "Name": "ecomunications",
          "Language": "enu",
          "ObjectManager": "ecomunicationsobjmgr_enu",
          "MaxTasks": "20",
          "AuthenticationProperties": {

```

```

        "UserSpec": "*****",
        "TrustToken": "*****",
        "SingleSignOn": "true",
        "AnonUserName": "GUESTCST",
        "AnonPassword": "*****",
        "SessionTimeout": "900",
        "GuestSessionTimeout": "300"
    }
}
],
"RESTInBound": {
    "MaxConnections": "4",
    "RESTAuthenticationProperties": {
        "TrustToken": "*****",
        "AnonUserName": "GUESTCST",
        "AnonPassword": "*****",
        "UserSpec": "*****"
    },
    "ObjectManager": "eaiobjmgr_enu"
}
}
}
}

```

- Update the config.json file in Siebel openintegration folder by replacing the apigen.resources section with the new API definitions.
NB : We are using a Siebel Telco Environment for this flow

```

{
  "app": {
    "siebel": {
      "useCG": false,
      "profile-path": "profile.json",
      "connect-string":
"siebel.tcpip.none.none://phoenix180715.appsdev1.fusionappsdpdx1.oraclevcn.com:3321/siebel",
      "loginpath": "/siebel/app/ecommunications/enu"
    },
    "context": "oracle",
    "port": 8433
  },
  "apigen": {
    "resources": {
      "openintegration/v1.0/ui": [
        "All Account List View/SIS Account List Applet",
        "Activity List View/Activity List Applet With Navigation",
        "Account Screen Homepage View/Recent Record Account List Applet",
        "SIS OM Customer Account Portal View/SIS Account Entry Applet",
        "SIS OM Customer Account Portal View/SIS Account Entry Applet/Id/SIS OM Products & Services Root List Applet (Billing) - Tiny",
        "SIS OM Customer Account Portal View/SIS Account Entry Applet/Id/SIS OM Products & Services Root List Applet (Service)",
        "TOUI Customer Dashboard View/TOUI CustDash Action Launchpad",
        "TOUI Customer Dashboard View/TOUI CustDash Navigation Links",
        "TOUI Customer Dashboard View/TOUI CustDash Account",
        "TOUI Customer Dashboard View/TOUI CustDash Account/Id/TOUI CustDash Installed Assets",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Payment Info Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Order List Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Recommendation List Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Installed Asset Hierarchy Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Nav Links",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard TimeLine VBC Applet",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Broadband Usage",
        "TOUI Dashboard UI View/TOUI Dashboard Account Form Applet/Id/TOUI Dashboard Voice Usages Applet",
        "Order Entry - Line Items View (Sales)/Order Entry - Order Form Applet Dashboard (Sales)",
        "Order Entry - Line Items View (Sales)/Order Entry - Order Form Applet Dashboard (Sales)/Id/Order Entry - Line Item List Applet (Sales)",
        "Order Entry - Line Items View (Sales)/Order Entry - Order Form Applet Dashboard (Sales)/Id/Order Entry - Order SubTotal Form Applet (Sales)"
      ],
      "openintegration/v1.0/data": [
        "Account/Account"
      ],
      "openintegration/v1.0/workflow": [
        "SISOMSuspendWebService-Order"
      ]
    }
  }
}

```

```

    "SISOMDisconnectWebService-Order",
    "SWIOrderUpsert"
  ],
  "openintegration/v1.0/service": [
    "Asset Management/QueryPage",
    "getAssetNumber/Invoke",
    "SWI Order Upsert/QueryById"
  ]
}
}
}

```

Siebel Configurations

You can either apply these sif files([Workspace 1.sif](#), [Workspace 2.sif](#),[Workspace 3.sif](#)) on your Siebel Telco Environment and just do Step 4 or Follow the steps 1 to 4

1. Create the business service getAssetNumber in Siebel Tools with a method named Invoke to fetch asset numbers based on user input.

```

function Invoke(Inputs, Outputs)
{
  var assetId = Inputs.GetProperty("Id");
  var bc = TheApplication().GetBusObject("Account").GetBusComp("Asset Mgmt - Asset (Order Mgmt)");
  with(bc){
    SetViewMode(AllView);
    ActivateField("Asset Number");
    ClearToQuery();
    SetSearchSpec("Id", assetId);
    ExecuteQuery(ForwardOnly);

    if (FirstRecord()) {
      var assetNumber = GetFieldValue("Asset Number");
      Outputs.SetProperty("AssetNumber", assetNumber);
    } else {
      Outputs.SetProperty("Error", "No asset found with the given Id.");
    }
  }
}
return (ContinueOperation);
}

```

Add the Input and Output parameters for the Invoke method as shown below

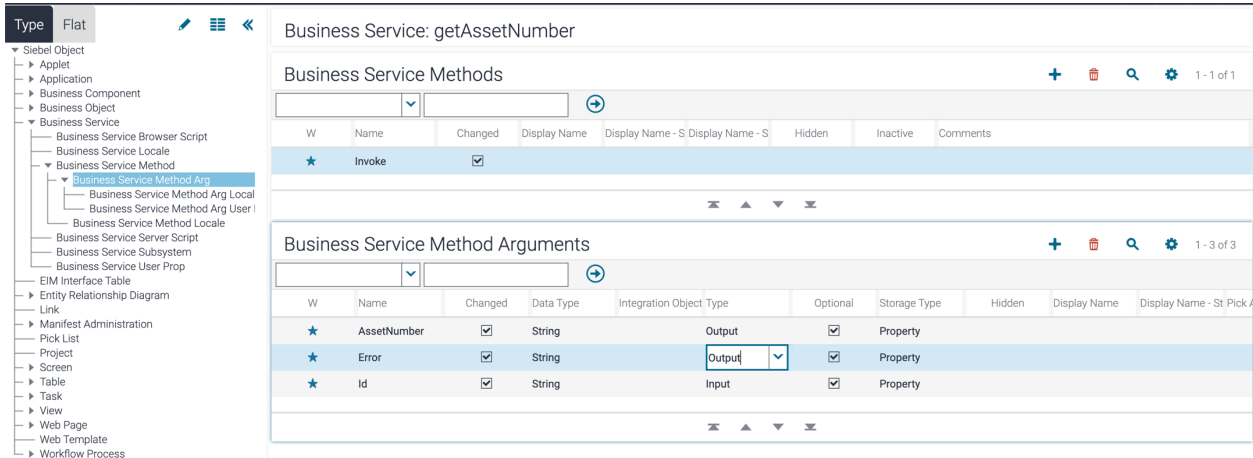


Figure 1: getAssetNumber Business Service Arguments

2. Include the below code in the Business Service PreInvokeMethod to enable the method

```
function Service_PreInvokeMethod (MethodName, Inputs, Outputs)
{
    if(MethodName === "Invoke"){
        Invoke(Inputs, Outputs);
        return (CancelOperation);
    }
    return (ContinueOperation);
}
```

3. Change the workflow mode of SWIOrderUpsert to Service Flow from Interactive flow (Only for testing out this edge application) through Siebel Webtools

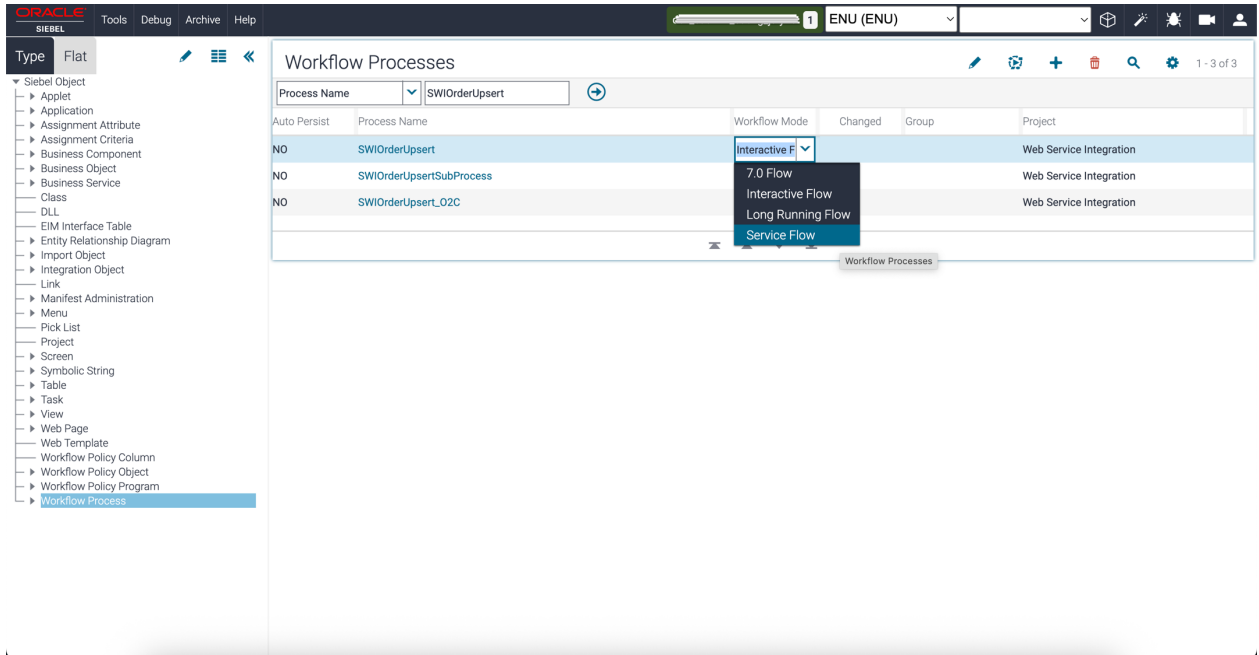


Figure 2 : SWIOrderUpsert Workflow

4. Configure REST access by assigning required Responsibilities (corresponding to the user configured in Siebel open integration setup) to the workflows and business services specified in the config.

SISOMSuspendWebService-Order,
 SISOMDisconnectWebService-Order,
 SWIOrderUpsert

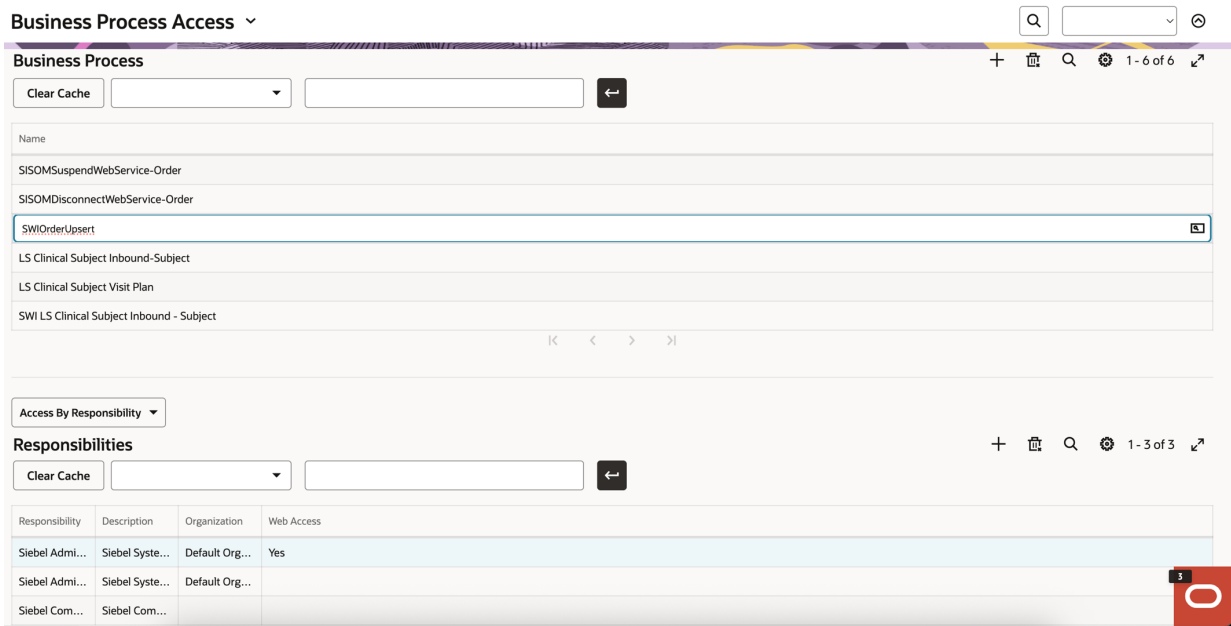


Figure 3 : Configure Business Process Access using Responsibilities

getAssetNumber

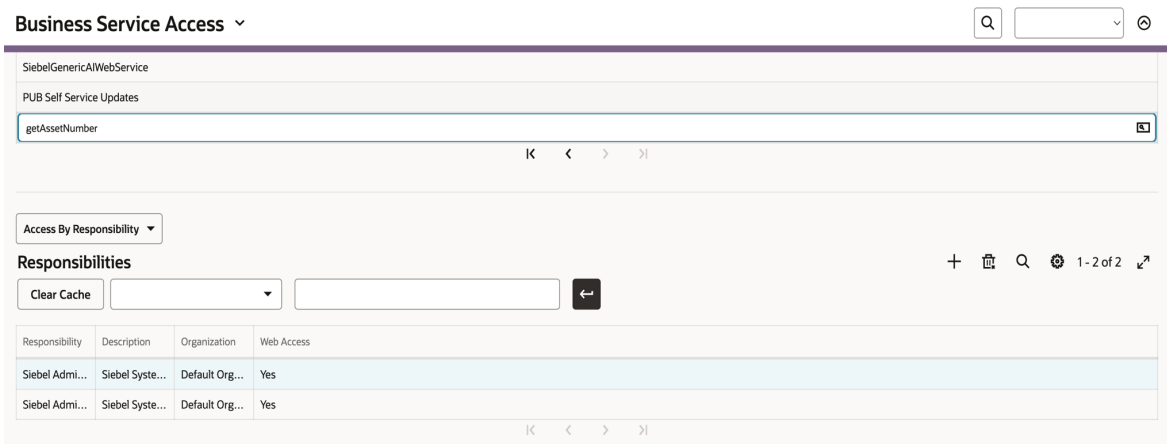


Figure 4 : Configure Business Service Access using Responsibilities

VBCS Setup

- Import the VBCS project ([Openint_story_quickstart.zip](#)).
- For bypassing SSL issues during development, Run Chrome with web security disabled :

```
/Applications/Google\ Chrome.app/Contents/MacOS/Google\ Chrome --disable-web-security --ignore-certificate-errors --user-data-dir="/tmp/chrome-dev"
```

(NB : Only for non-production testing.)

- Establish Service Connections in VBCS pointing to Siebel REST APIs by replacing all instances of "<your-siebel-env>:<openintegration-port>/<context-string-given-in-config.json>" and "<your-siebel-env>:<siebel-port-number>" with appropriate values according to your setup. example :

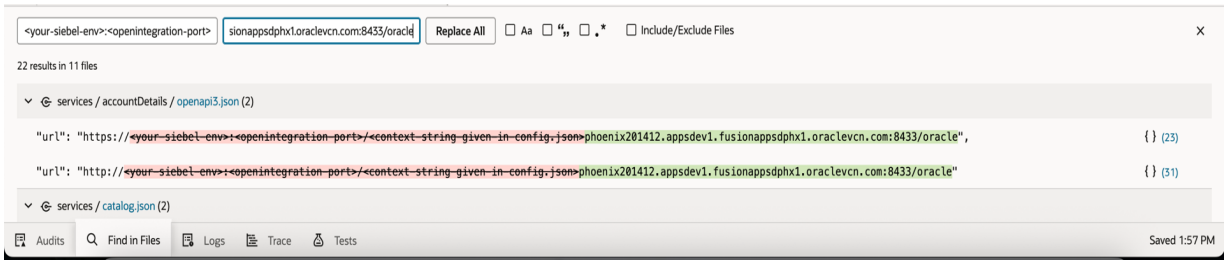


Figure 5 : Replace Open Integration URL with appropriate value

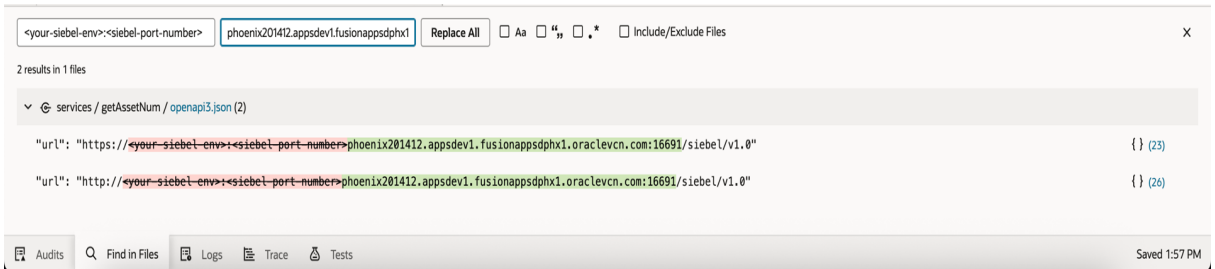


Figure 6 : Replace Siebel env URL with appropriate value

- Edit the Service Connections according to the security configurations for your open integration setup



Figure 7 : Edit Service Connections: Servers List

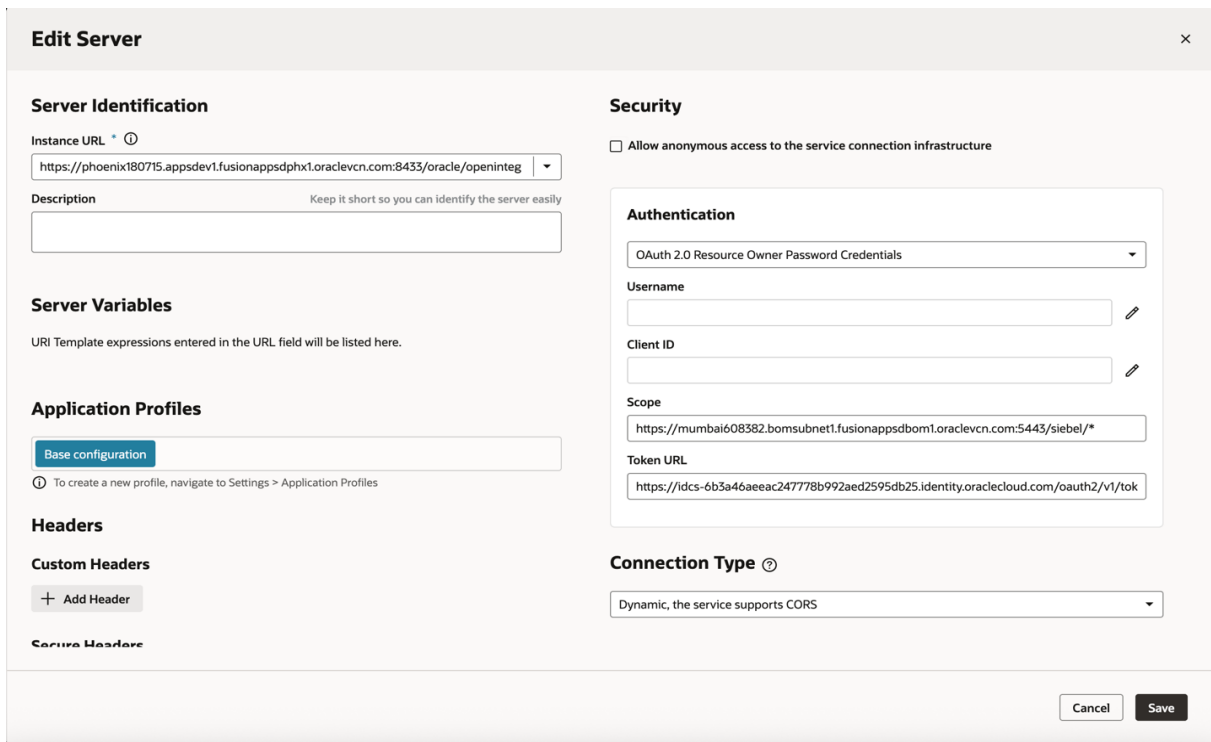


Figure 8 : Edit Service Connections: Server Details and Auth

- Test and verify that service connections are working
- Run the prototype edge application

Security

- REST endpoints accessible only via HTTPS.
- Only users with correct Siebel responsibilities can invoke specific APIs.
- For production, trusted SSL certificates and Oracle IDCS/OAuth2 are recommended for API authentication.

UI and Metadata Utilization

- VBCS reads metadata from Siebel like:

```
[ {"UIType": "List", "DisplayName": "Asset Number", "FieldName": "AssetNum"},
  {"UIType": "Text", "DisplayName": "Status", "FieldName": "Status"} ]
```

- UI is generated dynamically based on this metadata (e.g., list pages, detail pages, profile cards).

- Example screenshot :

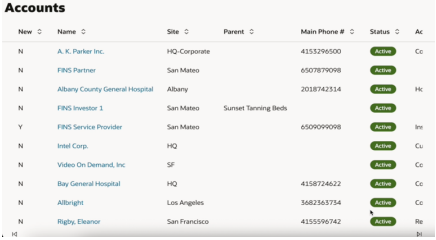
Accounts

New	Name	Site	Parent	Main Phone #	Status	Ac
N	A. K. Parker Inc.	HQ-Corporate		4153296500	Active	Co
N	FINS Partner	San Mateo		6507879098	Active	
N	Albany County General Hospital	Albany		2018742314	Active	Hc
N	FINS Investor 1	San Mateo	Sunset Tanning Beds		Active	
Y	FINS Service Provider	San Mateo		6509099098	Active	Ins
N	Intel Corp.	HQ			Active	Cu
N	Video On Demand, Inc	SF			Active	Co
N	Bay General Hospital	HQ		4158724622	Active	Co
N	Allbright	Los Angeles		3682363734	Active	Co
N	Rigby, Eleanor	San Francisco		4155596742	Active	Re

Figure 9 : Sample Screenshot: Account List

Implementation Guide

Table 1 : UI Metadata Utilization Table

Applet Type	UI Metadata (Example, not complete)	Utilized Metadata	Screenshot	Sample
List Applets	<pre> "UIMetadata": { "RowCount": null, "ScrollDir": null, "ScrollAmount": 0, "Controls": { "Name": { "MessageVariableMap": {}, "ColNum": -1, "Width": "352", "Name": "Name", "Name", "UIType": "PlainText", "DisplayName": "Name", "DisplayFormat": "", "FieldName": "Name", "Justification": "left", "EDEnabled": null, "ForceLTRText": null, "MethodName": null, "EnabledBmp": null, </pre>	<p>UIType, DisplayName, FieldName</p>	 <p>Figure 10: UI Element Implementation: List Fragment</p>	<pre> const restCallVariableResult = await Actions.callRest(context, { endpoint: 'ui_All_Account_List_View_SIS_Account_List_Applet/op enintegration_v1.0_ui_All_Account_List_View_SIS_Acco unt_List_Applet_get', uriParams: { StartRowNum: '0', PageSize: 10, }, }); if ('restCallVariableResult.ok') { \$variables.listADP.data = restCallVariableResult.body.items; let columns = []; let columnsForSearch = []; let item, item2; let controls = restCallVariableResult.body.UIMetadata.Controls; Object.values(controls).forEach(record => { if (record.UIType === "ImageControl") { } item = { headerText: record.DisplayName, field: record.FieldName, template: record.DisplayName }; item2 = { label: record.DisplayName, value: record.FieldName, }; columns.push(item); columnsForSearch.push(item2); }); \$variables.columnsArray = columns; \$variables.searchColumn.data = columnsForSearch; \$variables.indexOfName = columns.findIndex(value => value.field === "Name"); \$variables.indexOfStatus = columns.findIndex(value => value.headerText === "Status"); </pre>

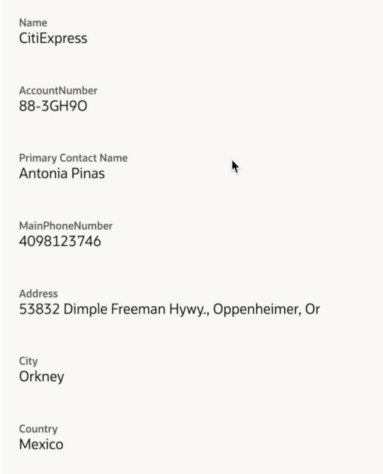
<pre> "DisabledBmp": null, "DispMode": "EncodeData", "Height": "24", "Seq": "0", "PickApplet": "", "MaxSize": "100", "DefaultMethod": ": null, "CaseSensitive": ": "1", "LabelJustification": "Right", "HTMLAttr": "", "PostChanges": "false", "WaterMarkValue": null, "FileTypeFilterValue": null, "ControlMsg": null, "UIName": "Name", "IsEditable": false, "RequestParams": ": { "childArray": [], "childEnum": 0, "propArray": {}, "propArrayLen": : 0, "type": "", "value": "", "axObj": null }, </pre>		<pre> <oj-table scroll-policy="loadMoreOnScroll" class="oj-flex-item oj-sm-flex-initial" data="[\$variables.listADP]]" columns="{ \$variables.columnsArray }" selection-mode.row="none" horizontal-grid- visible="disabled"> <template slot="cellTemplate"> <oj-bind-if test="[\$current.columnIndex === \$variables.indexOfName]]"> <a on- click="[[\$listeners.hyperlinkClick]]"> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> <oj-bind-if test='[\$current.columnIndex === \$variables.indexOfStatus]]'> <oj-bind-if test='[\$current.data === "Active" \$current.data === "New Customer" \$current.data === "Present Customer"]]'> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> <oj-bind-if test='[\$current.data === "Suspended" \$current.data === "Cancelled" \$current.data === "Disconnected" \$current.data === "Red Customer"]]'> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> <oj-bind-if test='[\$current.data === "Candidate" \$current.data === "Temporary" \$current.data === "Short Term" \$current.data === "Marked For Deletion" \$current.data === "Contract Pending"]]'> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> <oj-bind-if test='[\$current.data === "Inactive" \$current.data === "Other"]]'> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> <oj-bind-if test='[\$current.data !== "Active" && \$current.data !== "New Customer" && \$current.data !== "Present Customer" && \$current.data !== "Suspended" && \$current.data !== "Cancelled" && \$current.data !== "Disconnected" && \$current.data !== "Red Customer" && \$current.data !== "Candidate" && \$current.data !== "Temporary" && \$current.data !== "Short Term" && \$current.data !== "Marked For Deletion" && \$current.data !== "Contract Pending" && \$current.data !== "Inactive" && \$current.data !== "Other"]]'> <oj-bind-text value="[\$current.data]]"></oj-bind-text> </oj-bind-if> </pre>
---	--	---

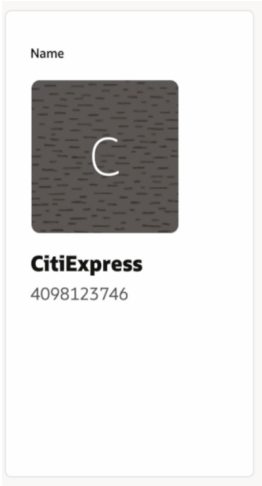
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<p>Details Page</p>	<pre> "UIMetadata": { "RowCount": null, "ScrollDir": null, "ScrollAmount" : 0, "Controls": { "Name": { "MessageVariab leMap": {}}, "ColNum": -1, </pre>	<p>FieldN ame, UIType , Name,</p>	 <p>Figure 11 : UI Element Implementation: Details Fragment</p>	<pre> let response = await Actions.callRest(context, { endpoint: 'accountDetails/openintegration_v1.0_ui _TOUI_Customer_Dashboard_View_TOUI_CustDash_Account_ {toui_custdash_account_key}_get', uriParams: { 'toui_custdash_account_key': \$variables.accountId, }, }); if (response.ok) { let temp = []; \$variables.formDataHolder = response.body; let controls = response.body.UIMetadata.Controls; Object.values(controls).map(control => { if (control.FieldName) { if (control.UIType === "PlainText") { </pre>

			<pre> temp.push({ "UIType": "PlainText", "DisplayName": control.Name, "FieldName": control.FieldName, "canUpdate": false }); } if (control.UIType === "ImageControl") { temp.push({ "UIType": "ImageControl", "DisplayName": control.Name, "FieldName": control.FieldName, "canUpdate": false }); } } }); \$variables.formData = temp; console.log("controlconfig :", \$variables.formControlConfig); } </pre> <pre> <div class="oj-flex oj-sm-margin-2x oj-flex-bar- middle"> <div class="oj-flex-item oj-sm-12 oj-sm-margin- 2x-top oj-md-12"> <oj-form-layout class="oj-formlayout-full- width"> <oj-bind-for-each data="[[\$variables.formData]]"> <template> <oj-bind-if test="[[\$current.data['UIType'] === 'PlainText' && \$variables.formDataHolder[\$current.data.DisplayName] !==' ']]"> <oj-input-text label-hint="[[\$current.data['FieldName']]]" value="{ \$variables.formDataHolder[\$current.data.DisplayName] }" readonly="true" class="no-border"> </oj-input-text> </oj-bind-if> </template> </oj-bind-for-each> </oj-form-layout> </div> </div> </pre>
<p>Profile Card (Not dynamic)</p>		 <p>Figure 12 : UI Element Implementation: Profile Card</p>	<pre> <oj-sp-profile-card id="profile" caption="Name" primary-text='[[\$variables.formDataHolder?.Name ? \$variables.formDataHolder?.Name : ""]]' secondary-text='[[\$variables.formDataHolder.MainPhoneNumber && \$variables.formDataHolder.MainPhoneNumber != "" ? \$variables.formDataHolder.MainPhoneNumber : ""]]' avatar.initials='[[\$variables.formDataHolder.Name ? \$variables.formDataHolder.Name[0] : ""]]' class="oj-sm-10 oj-md-4 oj-sm-margin-4x-top"> </oj-sp-profile-card> </pre>

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	<pre>"AppletLabel": "Account", "AppletSummary ": "Account" }</pre>			
<p>Details Row View</p>		<p>UIType , Name, Display, Name, FieldName, Width</p>		<pre>const response = await Actions.callRest(context, { endpoint: 'ui_TOUI_Customer_Dashboard_View_TOUI_CustDash_Account_Id_TOUI_CustDash_Installed_Assets/openintegration_v1.0_ui_TOUI_Customer_Dashboard_View_TOUI_CustDash_Account_toui_custdash_account_key_TOUI_CustDash_Installed_Assets_{toui_custdash_installed_assets_key}__get', uriParams: { 'toui_custdash_account_key': \$variables.accountId, 'toui_custdash_installed_assets_key': \$variables.selectedAsset, }, }); let temp = {}; Object.keys(response.body).filter(key => key !=="UIMetadata" && key !== "Link").forEach(elem => { console.log(elem); temp[elem] = response.body[elem]; }); console.log(temp); \$variables.selectedAssetDetails = temp; const fieldsContainer = document.getElementById("assetdetails"); fieldsContainer.innerHTML = ''; let controls = response.body.UIMetadata.Controls; if (!controls typeof controls !== 'object') { fieldsContainer.textContent = 'No metadata found.'; return; } const entries = Object.entries(controls); // Separate ImageControl (if any) and other controls const imageControls = entries.filter(([_, meta]) => meta.UIType === 'ImageControl'); const otherControls = entries.filter(([_, meta]) => meta.UIType !== 'ImageControl'); // Combine with image control(s) first const sortedControls = [...imageControls, ...otherControls]; sortedControls.forEach(([key, metadata]) => { const fieldValue = response.body[metadata.Name]; const displayName = metadata.DisplayName metadata.FieldName; const fieldDiv = document.createElement('div');</pre>

				<pre> fieldDiv.className = 'field'; const label = document.createElement('div'); label.className = 'label'; label.textContent = displayName; if (metadata.UIType === 'ImageControl') { const value = document.createElement('img'); value.src = 'https://www.freeiconspng.com/download/11948'; value.alt = displayName; value.style.maxWidth = (parseInt(metadata.Width, 10) / 2) + "px"; value.style.height = 'auto'; value.textContent = fieldValue ?? '-'; fieldDiv.appendChild(label); fieldDiv.appendChild(value); fieldsContainer.appendChild(fieldDiv); } else { const value = document.createElement('div'); value.textContent = fieldValue ?? '-'; fieldDiv.appendChild(label); fieldDiv.appendChild(value); fieldsContainer.appendChild(fieldDiv); } }); </pre>
<p>Details Display (Recent Account t)</p>	<pre> "UIMetadata": { "RowCount": null, "ScrollDir": null, "ScrollAmount": 0, "Controls": { "Name": { "MessageVariableMap": {}, "ColNum": -1, "Width": "352", "Name": "Name", "UIType": "PlainText", "DisplayName": "Name", "DisplayFormat": "" </pre>	<p>UIType , Display Name, Width</p>	 <p>Figure 13 : UI Element Implementation: Recent Account Fragment</p>	<pre> getInt(str_num) { return parseInt(str_num, 10); } <oj-form-layout class="oj-formlayout-full-width"> <oj-bind-if test='[[\$variables.status]]'> <oj-bind-for-each data="[[\$variables.formData]]"> <template> <oj-bind-if test="[[\$current.data['UIType'] === 'PlainText' && \$variables.formDataHolder[\$current.data.DisplayName] !==' && \$current.data.DisplayName === \$variables.nameField]]"> <div class="oj-sm-12 oj-sm-padding-1x- vertical no-border oj-typography-subheading-sm oj- form-control-text-align-start"> <a on- click="[[\$listeners.hyperlinkClick]]" class="oj-sm- padding-2x-start"> <oj-bind-text value="[[\$variables.formDataHolder[\$current.data.DisplayName]]]"></oj-bind-text> </div> </oj-bind-if> </oj-bind-if> </pre>

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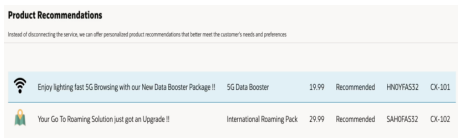
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<p>Suggestions List</p>	<pre> "UIMetadata": { "RowCount": null, "ScrollDir": null, "ScrollAmount": : 0, "Controls": { "Product Image": { "Name": "Product Image", "DisplayName": "Product Image", "UIType": "ImageControl" }, "FieldName": "Product Image", "Justification": ": "left", "Width": "70", "IsEditable": false }, "Description": { "Name": "Description", "DisplayName": "Description", "UIType": "Text", "FieldName": "Description", "Justification": ": "left", "Width": "200", "IsEditable": false, "IsRequired": true </pre>	<p>Name, UIType , FieldN ame, Width</p>	 <p>Product Recommendations</p> <p>Instead of disconnecting the service, we can offer personalized product recommendations that better meet the customer's needs and preferences.</p> <p>Enjoy lighting fast 5G Browsing with our New Data Booster Package! 5G Data Booster 19.99 Recommended HN0YFAS32 CX-101</p> <p>Your Go To Roaming Solution just got an Upgrade! International Roaming Pack 29.99 Recommended SAH0FAS32 CX-102</p> <p>Figure 14 : UI Element Implementation: Suggestions Fragment</p>	<pre> // Dummy data const response = { "body": { "items": [{ "Id": "CX-101", "Product Name": "5G Data Booster", "Description": "Enjoy lighting fast 5G Browsing with our New Data Booster Package !!", "Adjusted List Price": "19.99", "Status": "Recommended", "Serial Number": "HN0YFAS32", "Product Image": "https://www.freeiconspng.com/download/11948", "Link": [] }, { "Id": "CX-102", "Product Name": "International Roaming Pack", "Description": "Your Go To Roaming Solution just got an Upgrade !!", "Adjusted List Price": "29.99", "Status": "Recommended", "Serial Number": "SAH0FAS32", "Product Image": "https://www.freeiconspng.com/download/8220", "Link": [] }], "Link": [], "UIMetadata": { "RowCount": null, "ScrollDir": null, "ScrollAmount": 0, "Controls": { "Product Image": { "Name": "Product Image", "DisplayName": "Product Image", "UIType": "ImageControl", "FieldName": "Product Image", "Justification": "left", "Width": "70", "IsEditable": false }, "Description": { "Name": "Description", "DisplayName": "Description", "UIType": "Text", "FieldName": "Description", "Justification": "left", "Width": "200", "IsEditable": false, "IsRequired": true }, "Product Name": { "Name": "Product Name", "DisplayName": "Product", "UIType": "Text", "FieldName": "Product Name", "Justification": "left", "Width": "200", "IsEditable": false, "IsRequired": true, "DrillDownArray": [true, true, true] }, "Adjusted List Price": { "Name": "Adjusted List Price", "DisplayName": "Price", </pre>
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<pre> }, "Product Name": { "Name": "Product Name", "DisplayName": "Product", "UIType": "Text", "FieldName": "Product Name", "Justification ": "left", "Width": "200", "IsEditable": false, "IsRequired": true, "DrillDownArra y": [true, true, true] }, "Adjusted List Price": { "Name": "Adjusted List Price", "DisplayName": "Price", "UIType": "Text", "FieldName": "Adjusted List Price", "Justification ": "left", "Width": "100", "IsEditable": false }, "Status": { "Name": "Status", "DisplayName": </pre>		<pre> "UIType": "Text", "FieldName": "Adjusted List Price", "Justification": "left", "Width": "100", "IsEditable": false }, "Status": { "Name": "Status", "DisplayName": "Recommendation", "UIType": "Text", "FieldName": "Status", "Justification": "left", "Width": "120", "IsEditable": false }, "Serial Number": { "Name": "Serial Number", "DisplayName": "Serial", "UIType": "Text", "FieldName": "Serial Number", "Justification": "left", "Width": "120", "IsEditable": false } }, "NumRows": 2, "Name": "Recommended Products Applet", "ParentAppletTitle": "Recommendations", "HasTotalRow": false, "TotalMap": { "Product Image": "", "Product Name": "", "Status": "", "Serial Number": "", "Adjusted List Price": "" }, "Mode": "View Only", "AppletLabel": "Recommended Products", "AppletSummary": "Products we think you'll love" } }; let columns = []; let controls = response.body.UIMetadata.Controls; Object.values(controls).forEach(record => { let item = { headerText: record.DisplayName, field: record.Name, template: record.DisplayName, type: record.UIType, width: record.Width }; columns.push(item); }); \$variables.tempData = response.body.items.map(({ Link, ...others }) => others); const controlFields = Object.keys(controls); if (!(controlFields.find(cntrl => cntrl === "Id"))) { controlFields.push("Id"); } // Map each item to include only the fields in controlFields const filteredItems = \$variables.tempData.map(_item => { const filtered = {}; </pre>
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<pre> "Recommendation", "UIType": "Text", "FieldName": "Status", "Justification": "left", "Width": "120", "IsEditable": false }, "Serial Number": { "Name": "Serial Number", "DisplayName": "Serial", "UIType": "Text", "FieldName": "Serial Number", "Justification": "left", "Width": "120", "IsEditable": false } } </pre>			<pre> controlFields.forEach(field => { if (!_item.hasOwnProperty(field)) { filtered[field] = _item[field]; } }); return filtered; }); console.log(controls); console.log(columns); console.log(filteredItems); console.log(controlFields); \$variables.controlFields = controlFields; \$variables.suggestionsADP.data = filteredItems; \$variables.indexOfSuggestionImage = columns.findIndex(value => value.type === "ImageControl"); \$variables.suggestionImageWidth = columns[\$variables.indexOfSuggestionImage].width; } <div class="oj-flex"> <oj-table scroll-policy="loadMoreOnScroll" class="oj-flex-item adjust-white-space oj-sm- padding-4x-horizontal oj-sm-12 oj-table-data-cell- no-padding" data="[[\$variables.suggestionsADP]]" selection-mode.row="single" horizontal-grid- visible="disabled" selection-required="true" columns="{ { \$variables.controlFields } }" vertical-grid- visible="disabled" columns-default.header-style="display:none;" selection-mode.column="single"> <template slot="cellTemplate"> <oj-bind-if test='[[\$current.columnIndex === \$variables.indexOfSuggestionImage]]'> </oj-bind-if> <oj-bind-if test='[[\$current.columnIndex !== \$variables.indexOfSuggestionImage]]'> <oj-bind-text value="[[\$current.item.data[\$variables.controlFields[\$current .columnIndex]]]"> </oj-bind-text> </oj-bind-if> </template> <oj-menu slot="contextMenu"> <oj-option value="select">Select</oj-option> <oj-option value="cancel">Cancel</oj-option> </oj-menu> </oj-table> </div> </pre>
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Adding new Endpoints to the Application

- On the Services Tab, Click on the '+' icon and choose Service Connection

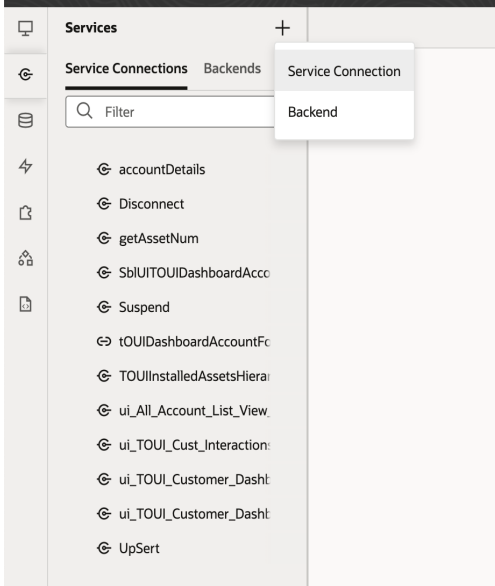


Figure 15 : Add New Service Connection: Service Connections List

- Choose Define by Specification

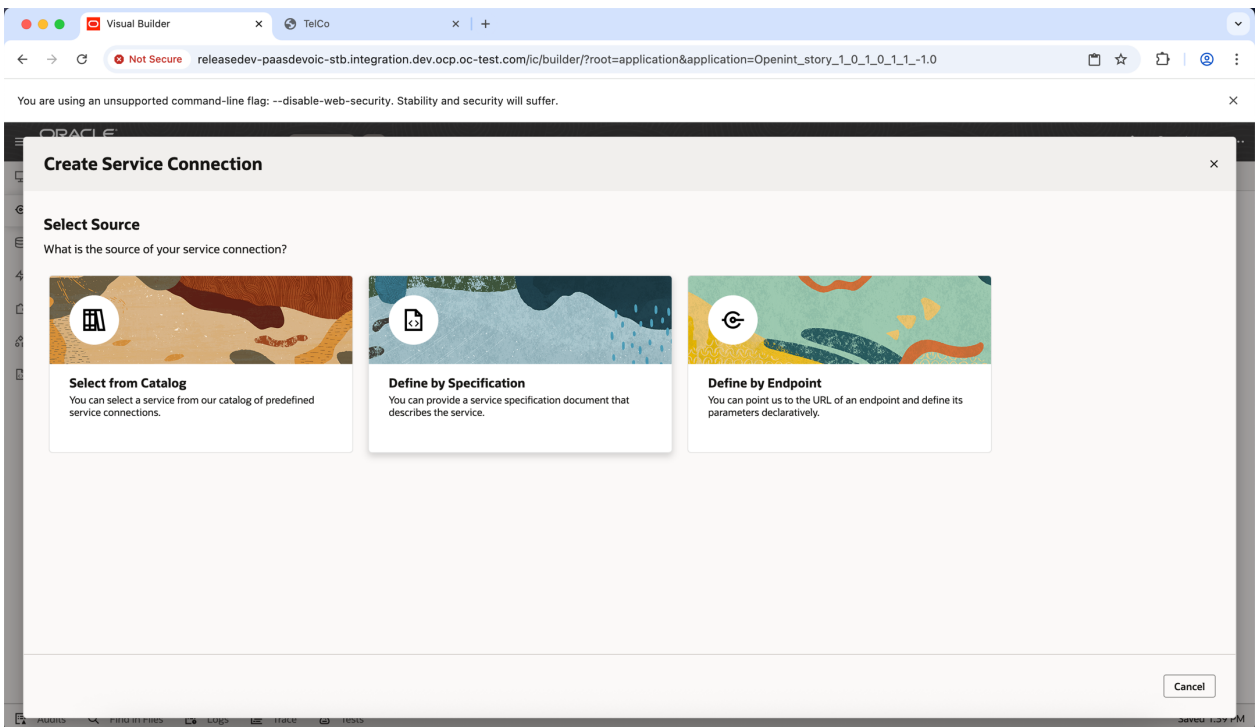


Figure 16 : Add New Service Connection: Define by Specification

- Choose the service name, provide the URL for the describe endpoint corresponding to the service and provide authentication details. Click on 'Create'

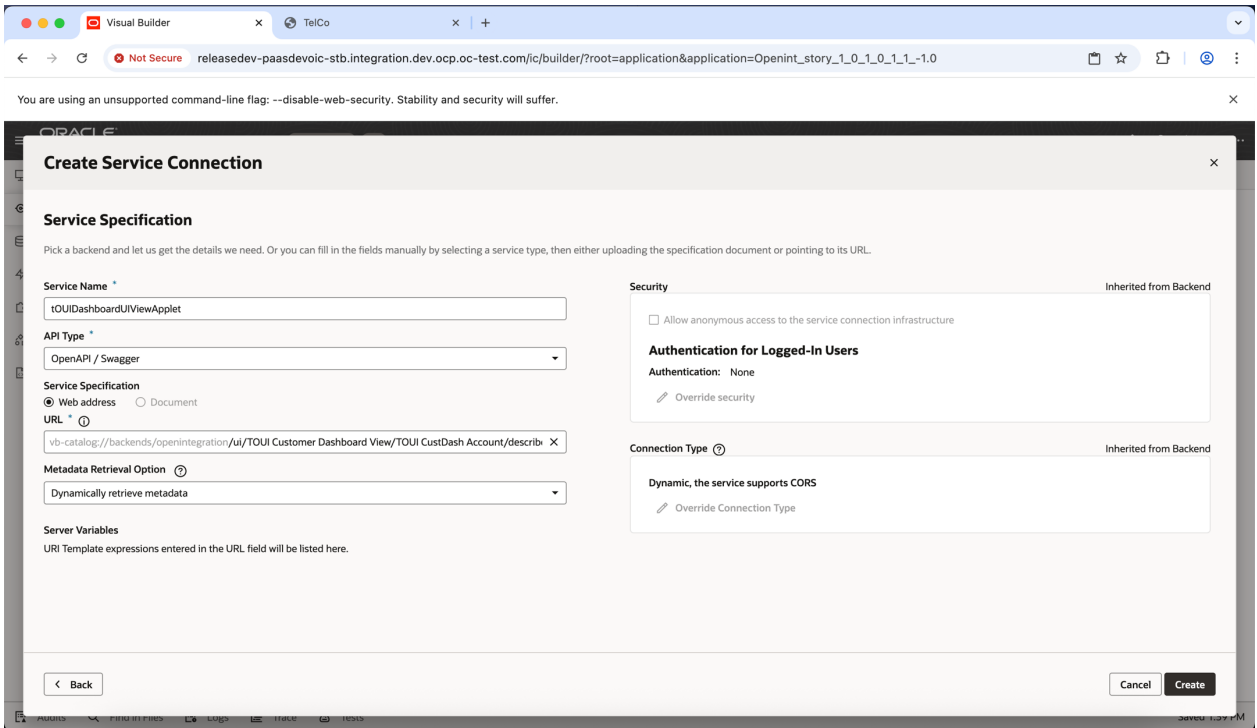


Figure 17 : Add New Service Connection: Create Service Connection

- Verify the Service Connection, corresponding Endpoints and test the endpoints

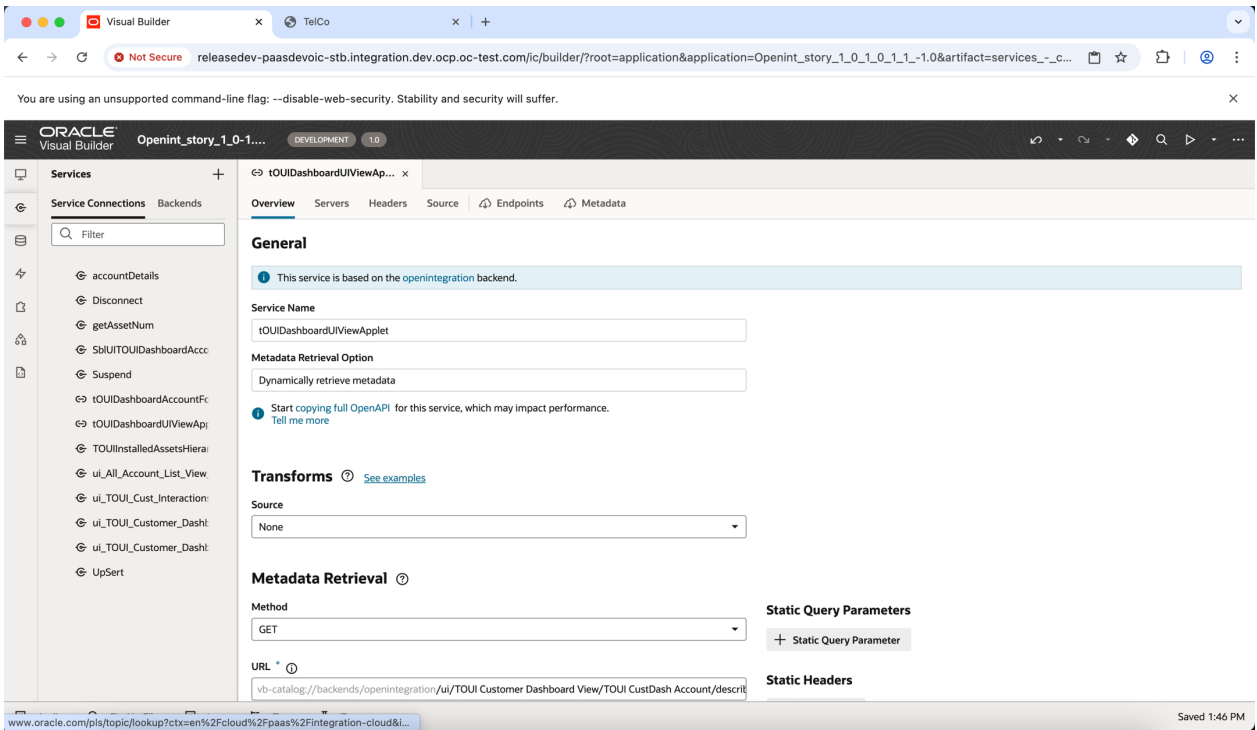


Figure 18 : Add New Service Connection: Verify the Service Connection

Benefits and Results

- Provided a modern, responsive web UI to Siebel data and processes.
- Improved speed and accuracy of asset lookups.
- Greatly reduced the effort to add new Siebel UI screens—no Siebel GUI development required.
- Business units can access real-time data without legacy navigation.

Future Enhancements

- Implement single sign-on and multifactor authentication.
- Extend metadata-driven UI to cover more Siebel modules.
- Integrate with Oracle Analytics for reporting on Siebel data.

Conclusion

Integrating Siebel Open Integration with VBCS enabled rapid UI modernization. The approach future-proofs Siebel by separating business logic from the presentation layer, allowing business-driven changes without backend rework, and reducing operational risks.

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