

ā'pěks alpe adria

Dev Team Insights on Oracle APEX Fusion Apps Extensions



Oracle Applications Cloud

April 12th, 2024
Steve Muench,
Senior Architect, APEX Dev Team

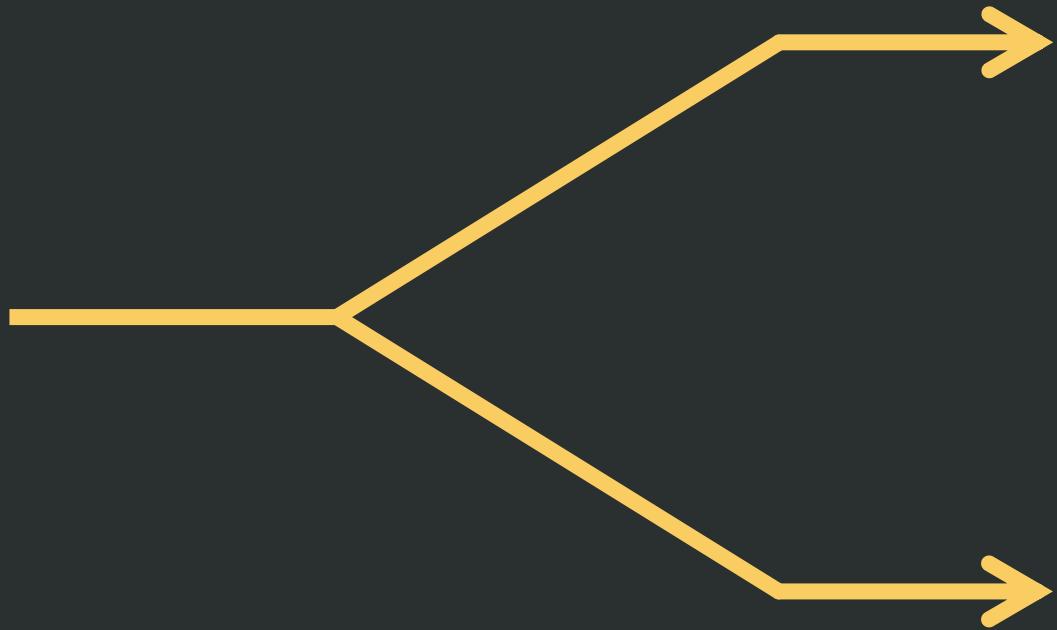


Background

- Fusion Applications (FA) exposes many documented REST APIs
- Before 23.2, APEX supported *read-only* pagination for FA data
- Customers with low-code, SQL-centric skills want to extend FA

The screenshot shows a dark-themed web interface for the Oracle Fusion Cloud Help Center. At the top, there's a navigation bar with a logo, a "Help Center" link, a search bar containing "REST API for Sales and Fusion Service in Oracle Fusion C...", and a user icon. Below the header, the URL "Cloud / Cloud Applications / Sales" is visible. The main title is "REST API for Sales and Fusion Service in Oracle Fusion Cloud Customer Experience". On the left, a sidebar menu includes "Sales Insights", "Sales Leads" (which is expanded, showing "Accept lead", "Assign leads", "Convert a lead to an opportunity", "Create a sales lead", "Delete a sales lead", "Get a sales lead", "Get all sales leads", and "Rank leads"), and other icons for filters, search, and download. The main content area starts with "Get all sales leads" with a "GET" button and the endpoint "/crmRestApi/resources/11.13.18.05/leads". It features navigation arrows and a "Jump to" dropdown. Below this is a "Request" section with a "Query Parameters" table containing a row for "effectiveDate: string".

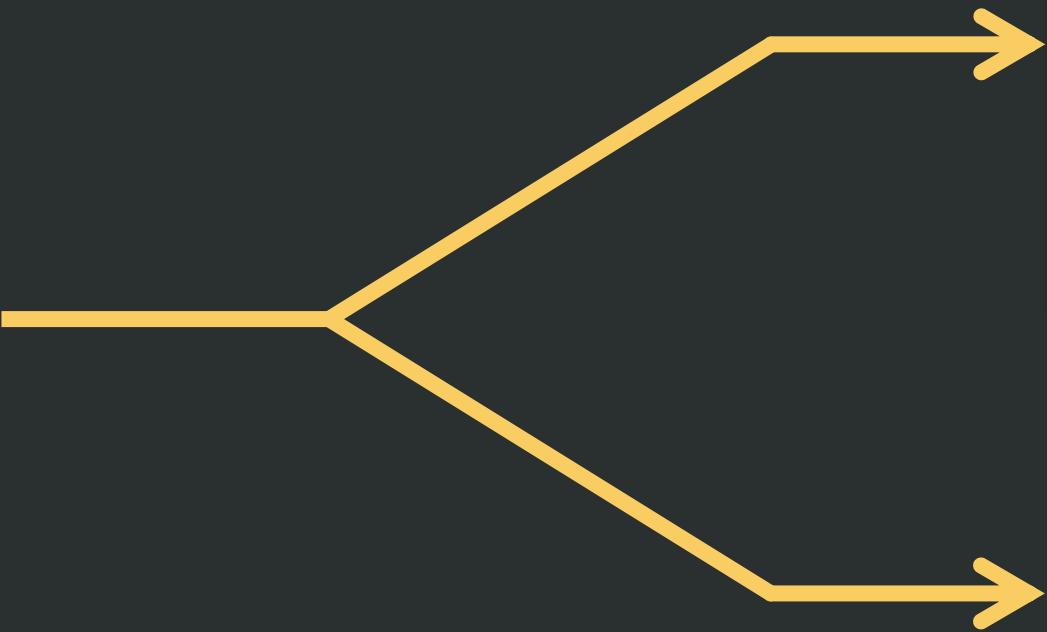
APEX Strategy to Simplify Low-Code FA Extensions



Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region

Simplify using FA single sign-on (SSO) and
user identity propagation to FA REST API
calls to engage FA data security

APEX Strategy to Simplify Low-Code FA Extensions: Progress Update



APEX 23.2

Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region

APEX 23.2

Simplify using FA single sign-on (SSO) and
user identity propagation to FA REST API
calls to engage FA data security

Recorded Video Demos of the Features in Action

APEX 23.2

Simplify using sophisticated
read/write functionality of
FA REST APIs with any APEX region



New Feature Overview



APEX Office Hours Demo

Goal: Self-Service Option for APEX in FA "Circle of Trust"



Oracle Applications Cloud

Oracle IDCS "Stripe"

Simplify using FA single sign-on (SSO) and user identity propagation to FA REST API calls to engage FA data security

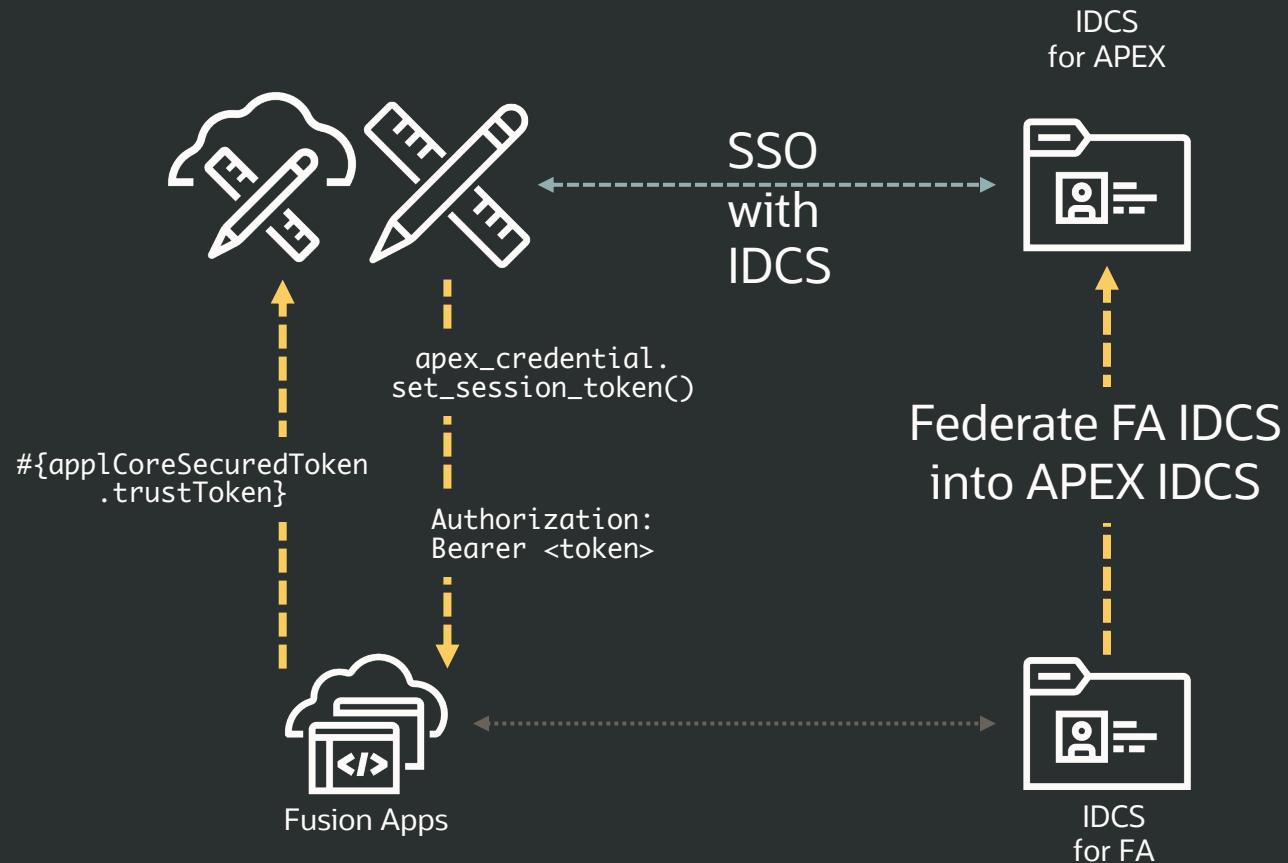
APEX and FAaaS teams are Actively Working on Delivering this in the Future

(Possible today by following instructions in technical papers, but not **easy** yet)



Safe Harbor Statement

Integrate Oracle APEX IDCS with Fusion Apps IDCS



Integrate Oracle APEX IDCS with Fusion Apps IDCS

The screenshot shows a blog post from 'A-Team Chronicles'. The title is 'Integrating SSO between APEX Cloud and Identity Cloud Service the Easy Way'. Below the title, it says 'August 5, 2019 | 9 minute read'. The author is 'Tim Melander, A-Team Cloud Solution Architect'. There are social sharing icons for Facebook, Twitter, LinkedIn, and Email. The main content discusses integrating APEX with Oracle Identity Cloud Service, mentioning a trial workspace setup and integration with Fusion SaaS applications.

Integrating SSO between APEX Cloud and Identity Cloud Service the Easy Way

August 5, 2019 | 9 minute read

Tim Melander
A-Team Cloud Solution Architect

Johannes Murmann wrote a great blog [Integrating APEX with Oracle Identity Cloud Service](#), but this integration is for APEX running on-premises. Fast forward, APEX has moved to the cloud like many other things, so I thought I should write an article on how to integrate the cloud version of APEX with Oracle Identity Cloud Service. The integration is quite different as it uses the OpenID Connect protocol, and should be possible with any APEX cloud application. As a bonus you can do this entire setup using a free trial APEX workspace at <https://apex.oracle.com> that takes about 2 minutes, install a sample application that comes with the APEX workspace in about 3 minutes, and complete the integration with Identity Cloud Service in about 15 minutes (Assuming you have an IDCS tenant and are an Administrator). In all, this entire setup from start to finish should only take about 30 minutes or less. So let's hit that timer and get started!

Install a Sample Application in APEX

This section assumes you can follow the simple steps to get your free trial APEX workspace, and then will step you through installing a sample Calendar application so that we have an example to configure OpenID Connect with Identity Cloud Service. This section should take about 5-7 minutes.

The diagram illustrates the integration between Oracle APEX and Oracle Cloud Identity. It shows a user interacting with an APEX application, which then performs SOAP and REST Web Service Calls to the Oracle Cloud Identity service. The Oracle Cloud logo is also present.

User only interacts with APEX

SOAP and REST Web Service Calls

https://www.jmjcloud.com/blog/oracle-apex-as-a-cloud-erp-paas-solution

Making Oracle APEX Roll for Fusion SaaS Application Extensions

Bhavesh S.
Technical Architect at Oracle | Helping Customers Realize Goals with Oracle Cloud PaaS/SaaS | TOGAF® 9 Certified Enterprise Architect

12 articles + Follow

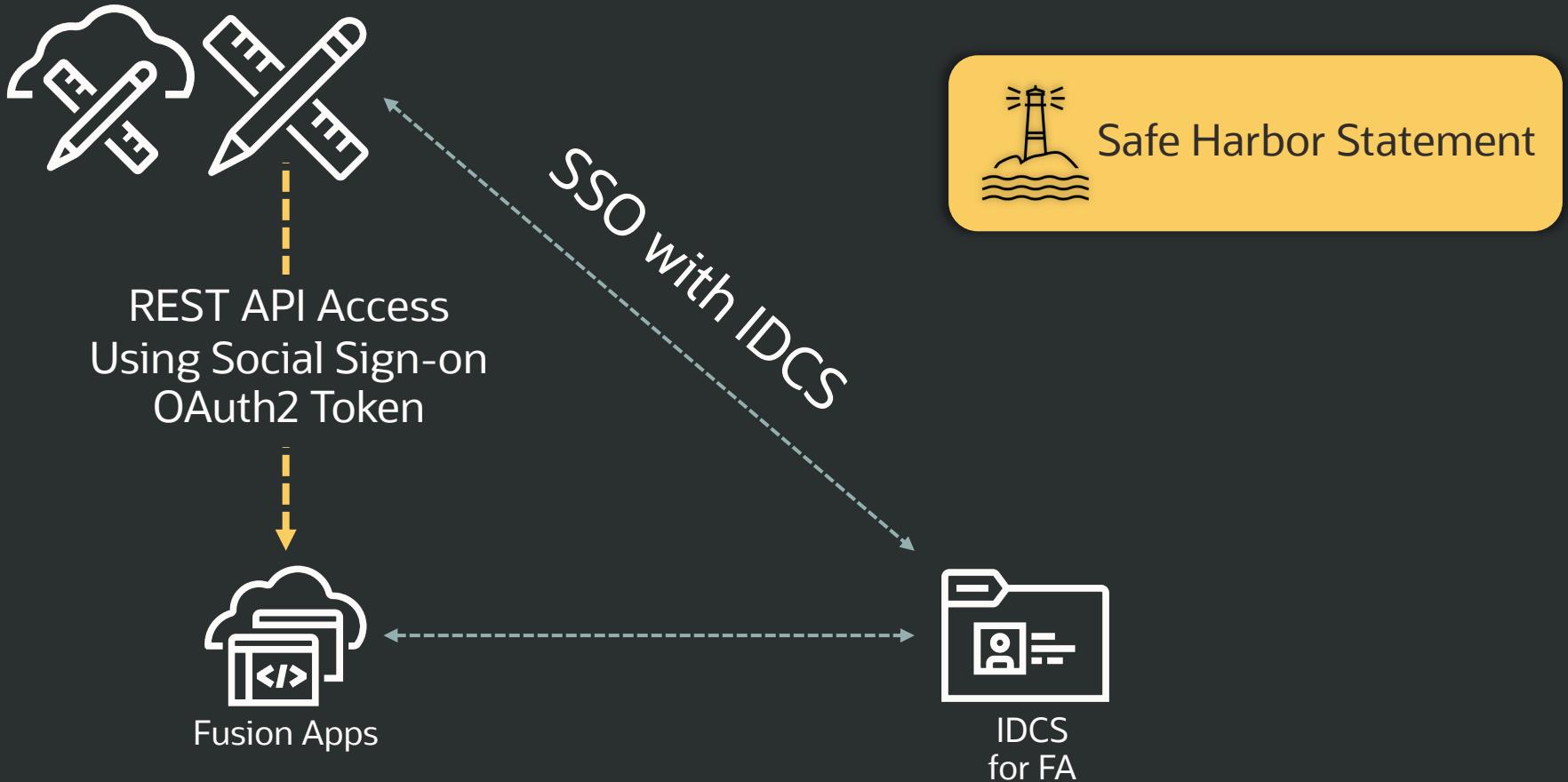
June 13, 2021

Open Immersive Reader

In a [previous article](#) I compared APEX and VBCS, two low code application platforms from Oracle. While VBCS is an obvious choice for many use-cases around extending Oracle Fusion SaaS applications, depending upon use-case there are a couple of things that weigh on VBCS. One is pricing and another is size of data persistence. APEX positions itself very well in both these areas and hence it makes absolute sense to consider it for SaaS extensions. Let us look at a few things to keep in mind while using APEX for this purpose.



Future Simplification (Joint FAaaS + APEX Effort)



APEX Now a *First Class* App Builder for FA Extensions

- Discover all query and CRUD operations and simplify data sources by hiding unused fields
- Use with all APEX regions: faceted search, maps, interactive reports/grids, forms, etc.

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 - Select only required data & get total row count without fetching all (e.g. 1-10 of 200)
- See validation errors from backend business objects like regular APEX validation errors

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- Build parent/child select lists, popup LOVs, all region types & QBE screens w/ filter params
- Work against a Fusion Apps sandbox to iterate APEX UI for pending data model extensions

APEX Now a *First Class* App Builder for FA Extensions

The screenshot shows the Fusion Art Gallery application. On the left, there's a search interface with filters for 'Artist' (set to '< All >') and 'Medium' (set to 'Lithograph Vintage Poster'). The main area displays a list of artworks, including 'Absinthe Robette' by Henri Privat-Livemont, 'Salon Des Cent' by Alphonse Mucha, 'Hatfield Route 155' by Gregory Brown, 'San Francisco' by Joseph Binder, and 'Las Vegas' by David Klein. On the right, a modal window titled 'Artwork' shows detailed information for the 'San Francisco' piece: Title 'San Francisco', Artist 'Joseph Binder', Medium 'Lithograph Vintage Poster', Year '1957', and Price '2400'. Below the modal is a thumbnail image of the artwork, which is a vintage poster for United Air Lines featuring a San Francisco street scene.

Oracle Applications Cloud

← →
Oracle Cloud Apps (SaaS)
REST Data Sources



Fusion App Composer

The screenshot shows the Oracle Fusion App Composer interface. At the top, there's a yellow header bar with the project name "apex-extensions-demo" and a "Tools" dropdown. To the right of the header is a "Sandbox Mode: Edit" button with a red notification badge showing "1". Below the header is a dark navigation bar featuring the Oracle logo, a search bar, and various navigation icons.

The main content area has a teal background with a binary code pattern. It displays a personalized greeting: "Good afternoon, Matt Hooper". Below the greeting is a horizontal navigation menu with links: "Me" (which is underlined), "My Team", "My Client Groups", "Workspace", "Risk Management", and "Partner".

On the left side, there's a "QUICK ACTIONS" section containing links to "Personal Details", "Document Records", "Identification Info", "Contact Info", "Family and Emergency Contacts", and "My Organization Chart", each with a corresponding icon.

On the right side, there's a "APPS" section organized in a grid of cards:

- Directory
- Connections
- Journeys
- Pay
- Time and Absences
- Career and Performance

Custom Objects in Fusion App Composer

The screenshot shows the Oracle Application Composer interface. The top navigation bar includes 'apex-extensions-demo ▾', 'Tools ▾', 'Sandbox Mode: Edit ▾' with a notification badge '1', and various icons for search, home, star, etc. The left sidebar has sections for 'Application' (CRM Cloud), 'Object name' search, 'Object Tags' (Innovation, Sales, Quality), and 'Objects' (Custom Objects, Standard Objects). Below this are 'Common Setup' options like CX Extension Generator, Copy Maps, Data Quality Rules, Desktop Pages, Global Functions, Mashup Content, Metadata Manager, Mobile Application Setup, Notification Preferences, Object Workflows, Oracle Sales Assistant Setup, and Outlook Setup. The main content area is titled 'Custom Objects ?' and lists objects with columns for Display Label, Name, Description, Parent Object, REST Resource, and Actions. A callout bubble points to the 'Art Medium' object in the list.

Display Label	Name	Description	Parent Object	REST Resource	Actions
AC_CO_Change...	AC_CO_Change...			Service Describe	
AC_CO_Child	AC_CO_Child		AC_CO_Change...	Via Parent	
AGCO1	AGCO1			Service Describe	
AccountCustom...	AccountCustom...			Service Describe	
AdfRegularNQu...	AdfRegularNQu...			Service Describe	
AdfRelated...	AdfRelated...			Service Describe	
Art Medium	ArtMedium			Service Describe	
Artist	Artist			Service Describe	
Artwork	Artwork			Service Describe	
Artwork Inquired	ArtworksInquired		Sales Lead	Service Describe	

Custom Objects in FA

Custom Attributes in Fusion App Composer

The screenshot shows the Oracle Application Composer interface. On the left, the sidebar displays the application as 'CRM Cloud' and lists various objects under 'Custom Objects' and 'Artwork'. The main area is titled 'Fields' and shows a table of custom attributes for a specific object. A yellow box highlights the first two rows of the table, which correspond to the 'Artist' and 'Medium' fields shown in the diagram below. A callout bubble points to this highlighted area with the text 'Custom Attributes on a Custom Object'.

Display Label	Name	Type	Required	Updatable	Description	Parent Field
Artist	Artist	Choice List (Dynamic) <Artist>	—	✓		
Medium	Medium	Choice List (Dynamic) <ArtMedium>	—	✓		
Owner	OraZcxOwner	Choice List (Dynamic) <Resource>	✓	✓	Owner of the re...	
Price	Price	Number	—	✓		
Title	Title	Text	✓	✓		
Year	Year	Number	—	✓		

Custom Attributes on a Custom Object

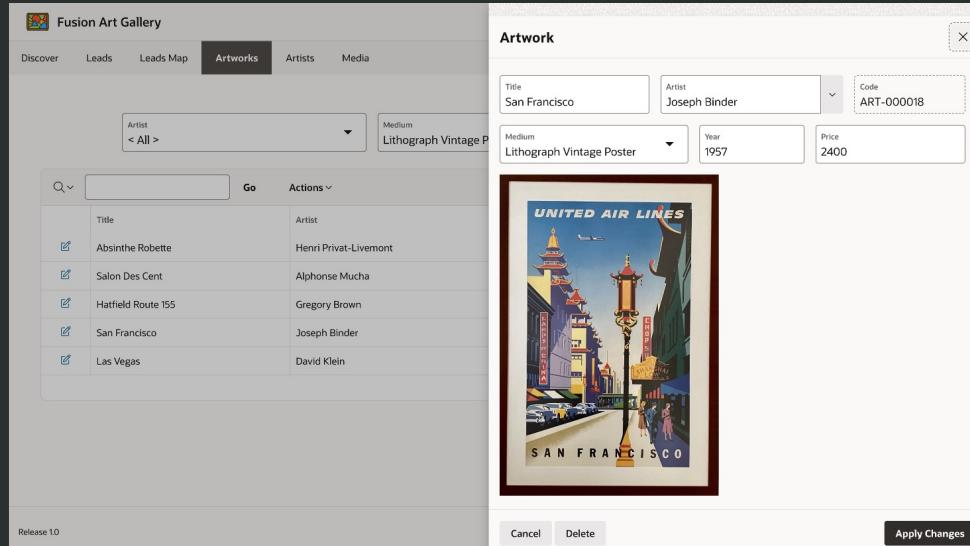
Custom Child Objects in Fusion App Composer

The screenshot shows the Oracle Fusion App Composer interface. On the left, a sidebar displays the application as 'CRM Cloud' and lists various object tags like Resource, Sales Account, Sales Campaign, Sales Competitor, and Sales Lead. Under Sales Lead, there are sections for Fields, Joins, Pages, Actions and Links, Security, and Server Scripts. A section for 'Artwork Inquired' is also visible. The main area is titled 'Fields' and shows a table of custom fields for a child object. The table has columns for Display Label, Name, Type, Required, Updatable, Description, and Parent Field. Two rows are listed: 'Artwork' (Name: Artwork, Type: Choice List (Dynamic) <Artwork>) and 'Interest Level' (Name: InterestLevel, Type: Choice List (Fixed) <Artwork Interest ...>). A callout bubble points to these rows with the text 'Custom Attributes on a Custom Child Object'. The top navigation bar includes 'apex-extensions-demo', 'Tools', 'Sandbox Mode: Edit', and various icons for search, home, and notifications.

Display Label	Name	Type	Required	Updatable	Description	Parent Field
Artwork	Artwork	Choice List (Dynamic) <Artwork>	—	✓		
Interest Level	InterestLevel	Choice List (Fixed) <Artwork Interest ...>	—	✓		

Custom Attributes on a Custom Child Object

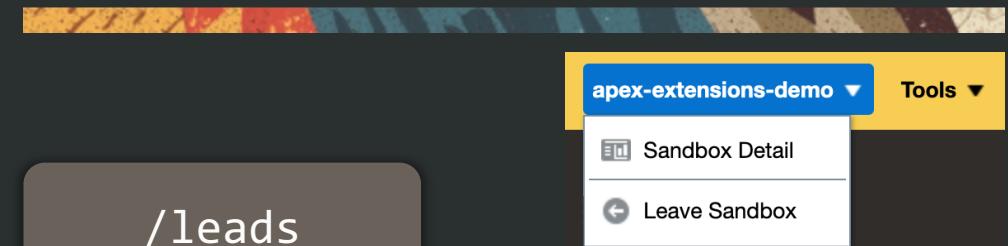
Combine Local Data with Custom Objects



artwork_images

APEX

Oracle Applications Cloud



/leads

/ArtworkInquired_c

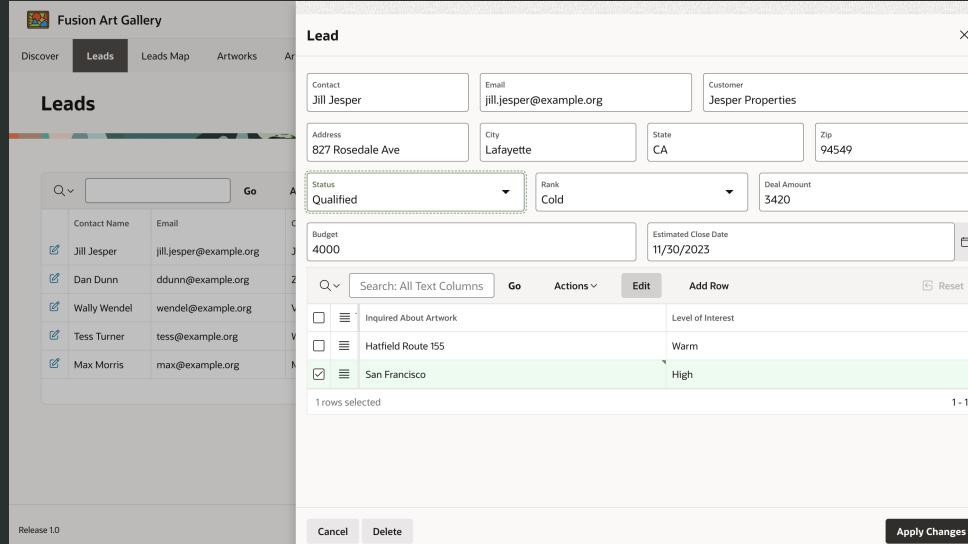
/Artwork_c

/Artist_c

/ArtMedium_c

Oracle Cloud Apps (SaaS)
REST Data Sources

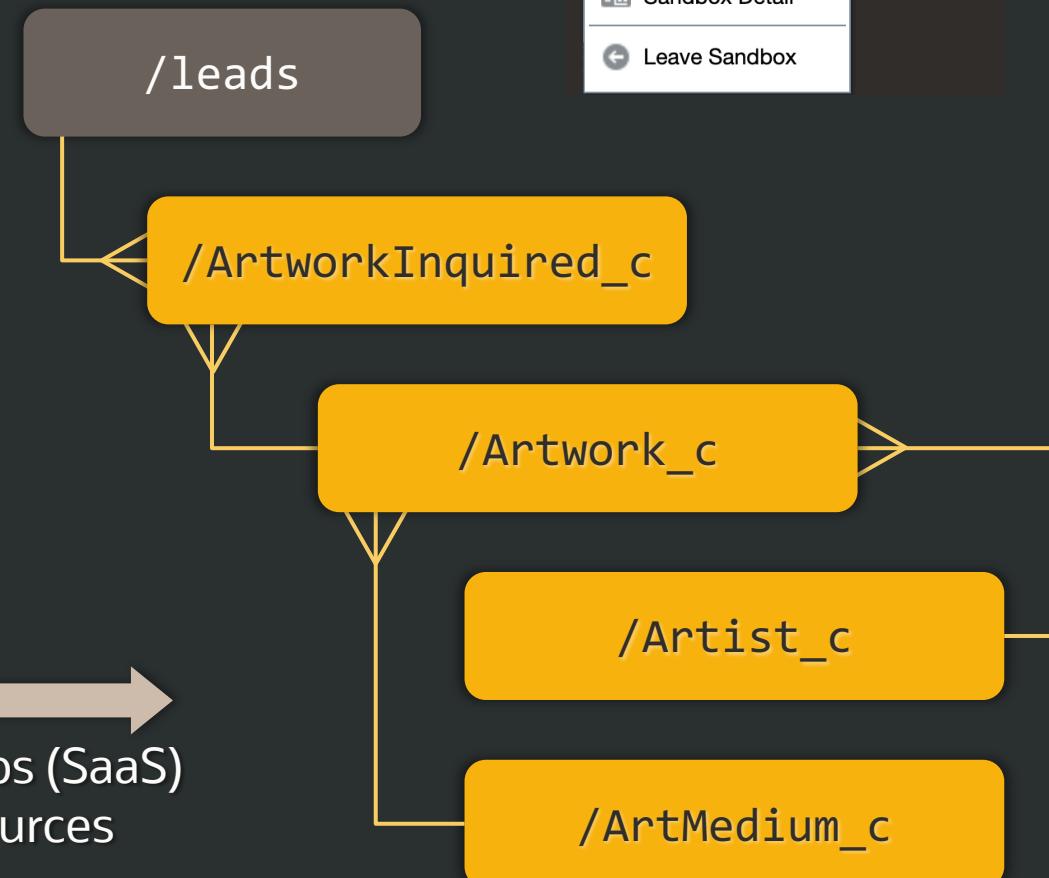
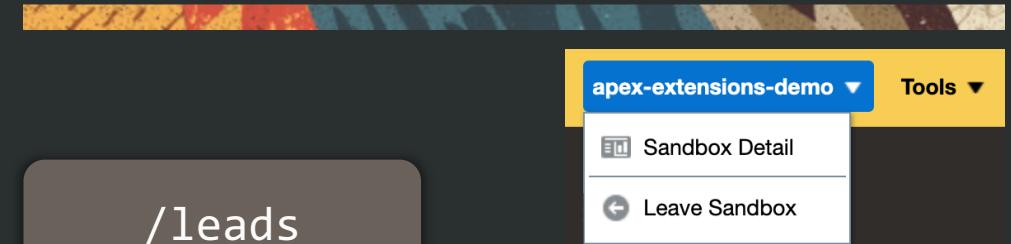
Combine Standard Objects with Custom Objects



artwork_images

APEX

Oracle Applications Cloud



O

In 23.2 Use FA REST APIs as Easily as a Local Table...

Fusion Art Gallery

mhoope

Discover Leads Leads Map Artworks Artists Media

The image shows a screenshot of the Fusion Art Gallery application. At the top, there's a header with the logo 'Fusion Art Gallery' and a user profile icon 'mhoope'. Below the header is a navigation bar with tabs: 'Discover' (which is highlighted in black), 'Leads', 'Leads Map', 'Artworks', 'Artists', and 'Media'. The main content area displays three artworks as cards:

- Left Card:** A sketch-style illustration of a man in a chef's hat standing outside a building with a sign that reads 'THE NEW YORKER'.
- Middle Card:** A colorful painting of several birds in flight over a cityscape, featuring a large bird in the foreground and smaller birds like a bee and a hawk in the background.
- Right Card:** A painting of a knight on a horse in front of a large, ornate building with domes and towers. The word 'PADOVA' is written at the bottom of the card, along with two small logos.

Below these three cards, there are two more cards partially visible, showing abstract or architectural scenes.

Use any Regions with Native Filtering & Sorting

Fusion Art Gallery

mhoope

Discover Leads Leads Map Artworks Artists Media

Leads

	Contact Name	Email	Customer	Status	Rank	Budget	Close Date	Deal Amount	City	Post Code	State
	Jill Jesper	jill.jesper@example.org	Jesper Properties	UNQUALIFIED	COOL				Lafayette	94549	CA
	Dan Dunn	ddunn@example.org	Zenith Sounds	UNQUALIFIED	COOL				El Cerrito	94530	CA
	Wally Wendel	wendel@example.org	VocalEdge Communications	QUALIFIED	WARM	6000	11/10/2023	5505	Alameda	94501	CA
	Tess Turner	tess@example.org	Wavefront Innovations	QUALIFIED	COOL	3000	11/15/2023	1250	Walnut Creek	94598	CA
	Max Morris	max@example.org	Maximum Beats	QUALIFIED	HOT	6000	11/24/2023	5600	San Francisco	94114	CA

1 - 5 of 8 >

Release 1.0

Easily Use Maps and Faceted Search

Fusion Art Gallery  mhoope 

Discover Leads **Leads Map** Artworks Artists Media

Leads Map

Search... 

Budget  

Medium (4)

Small (1)

Status  

Qualified (4)

Rank 

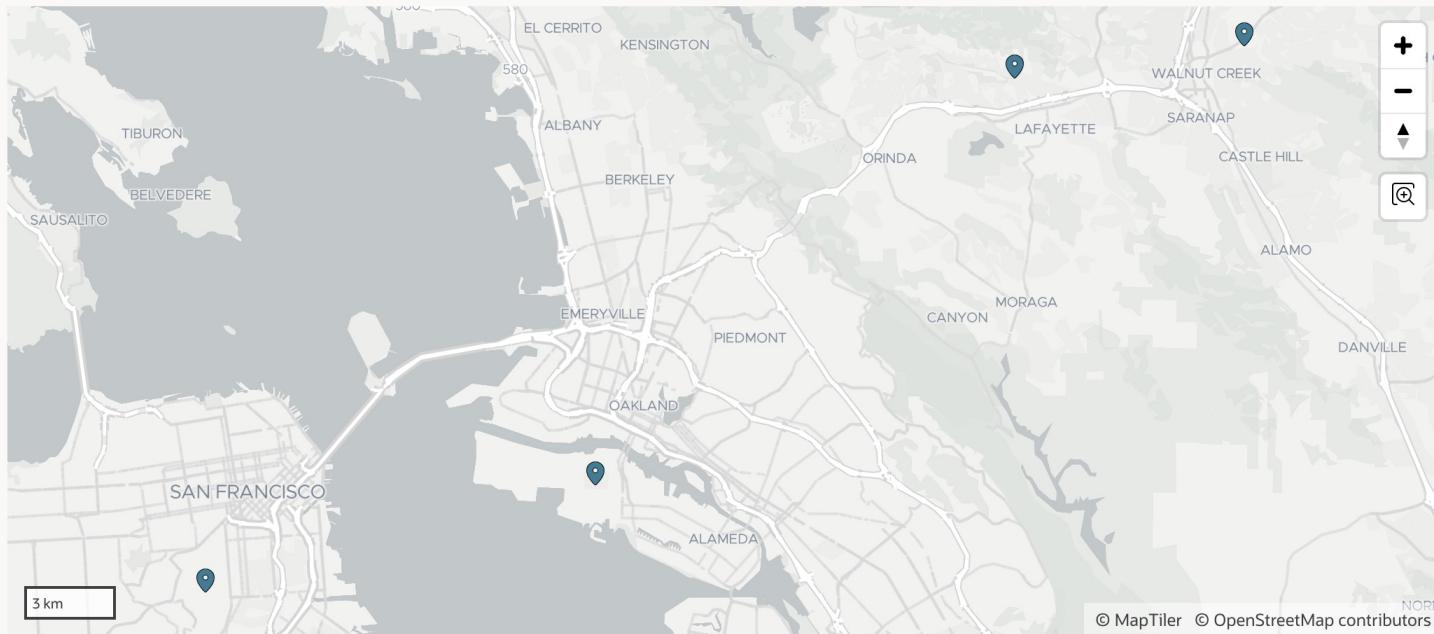
Hot (2)

Cold (1)

Warm (1)

Leads Shown 4

Budget **Medium**  Status **Qualified**   



3 km

© MapTiler © OpenStreetMap contributors



Easily Create Query by Example & Cascade Filters

Fusion Art Gallery  mhoope ▾

Discover Leads Leads Map **Artworks** Artists Media

Artist < All > Medium < Any > Created < Anytime > 

	Title	Artist	Medium	Year	Price
	Just a Pinch	Peter de Sève	Drawing on Paper	2014	1550
	The Bite of Spring	Peter de Sève	Watercolor Painting on Paper	2000	3500
	Padova	Marcello Dudovich	Seriograph Vintage Poster	1930	1100
	Grand Central Station	Michael John Ashcroft	Oil Painting on Canvas	2022	1300
	Afrique du Nord Air France	Bernard Villemot	Seriograph Vintage Poster	1948	1400

1 - 5 of 13 >

Release 1.0 



Easily Create Query by Example & Cascade Filters

Fusion Art Gallery

mhoope

Discover Leads Leads Map **Artworks** Artists Media

Artist < All >

Medium Lithograph Vintage Poster

Created Before 1960

Q Go Actions Create

	Title	Artist	Medium	Year	Price
	Absinthe Robette	Henri Privat-Livemont	Lithograph Vintage Poster	1896	2100
	Salon Des Cent	Alphonse Mucha	Lithograph Vintage Poster	1897	3200
	Hatfield Route 155	Gregory Brown	Lithograph Vintage Poster	1916	1020
	San Francisco	Joseph Binder	Lithograph Vintage Poster	1957	2400
	Las Vegas	David Klein	Lithograph Vintage Poster	1958	1005

1 - 5 of 6 >

Release 1.0



Easily Integrate Data from Fusion Apps & Local APEX DB

Fusion Art Gallery

Discover Leads Leads Map Artworks Artists Media

Artist < All > Medium Lithograph Vintage P

Q Go Actions

	Title	Artist
	Absinthe Robette	Henri Privat-Livemont
	Salon Des Cent	Alphonse Mucha
	Hatfield Route 155	Gregory Brown
	San Francisco	Joseph Binder
	Las Vegas	David Klein

Release 1.0

Artwork

X

Title San Francisco Artist Joseph Binder Code ART-000018

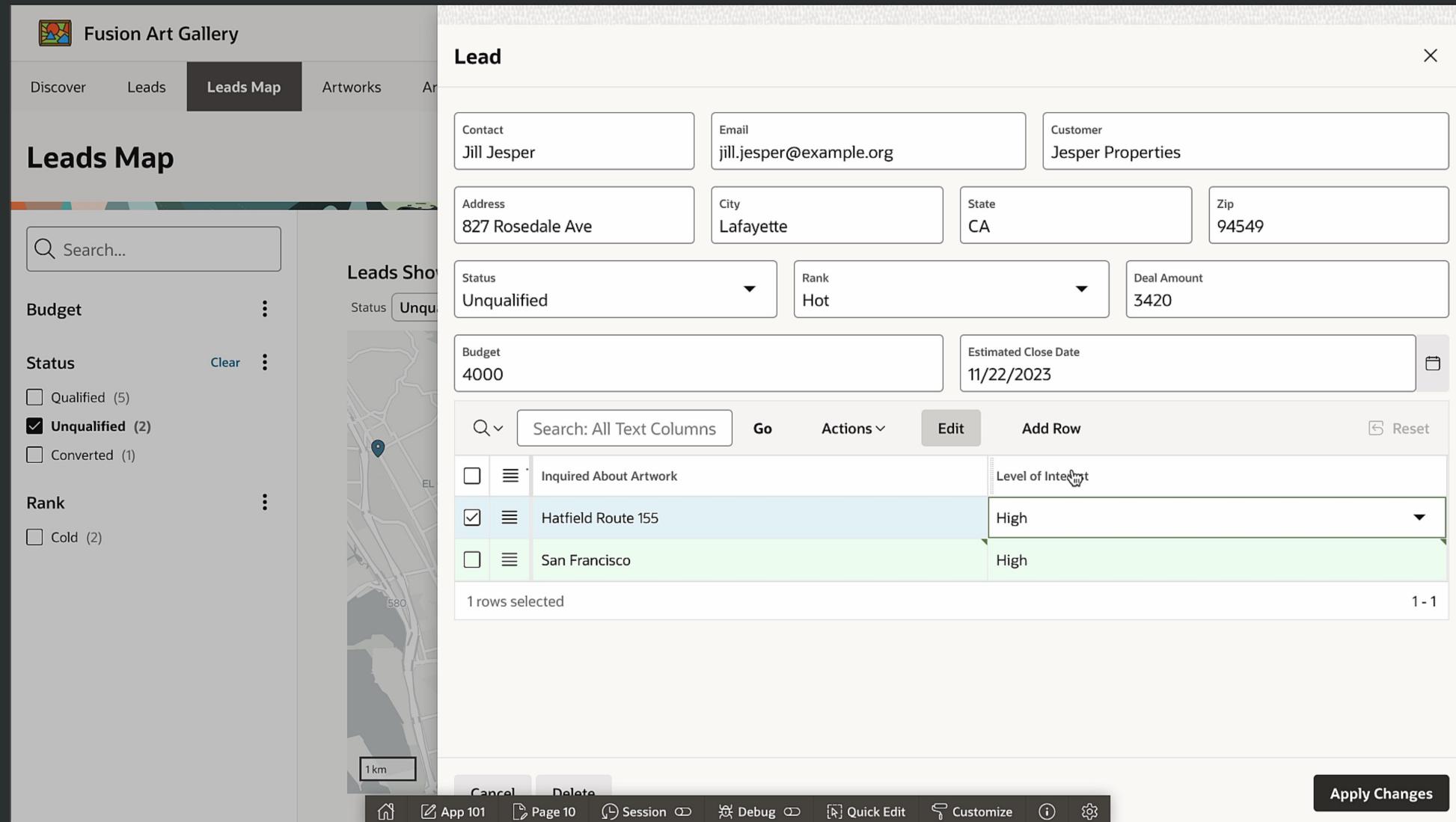
Medium Lithograph Vintage Poster Year 1957 Price 2400

Cancel Delete Apply Changes

/leads

/ArtworkInquired_c

Easily Blend Parent/Child Data



Business Object Validation Rule in App Composer

The screenshot shows the Oracle Application Composer interface for creating a validation rule. The left sidebar lists various application objects like CRM Cloud, Sales Lead, and Sales Competitor. The main panel is titled "Edit Object Validation Rule" for the "Sales Lead" object. The "Name" section contains a required field "Rule Name" with the value "No_Budget_for_Unqualified_Leads". The "Error Message" section contains a descriptive message: "Unqualified leads cannot have a budget or close date." The "Rule Definition" section shows a script editor with the following code:

```
1 if (StatusCode == "UNQUALIFIED") {  
2     return BudgetAmount == null && EstimatedCloseDate == null  
3 }  
4 return true
```

Automatically See Business Object Errors

Fusion Art Gallery

Discover Leads Leads Map Artworks Artwork Details

Leads Map

Search...
Budget Status Rank

Unqualified (2)

Qualified (5)
Unqualified (2)
Converted (1)

Cold (2)

Leads Show

Status Unqualified

Status: Unqualified

Contact: Jill Jesper Email: jill.jesper@example.org

Address: 827 Rosedale Ave City: Lafayette State: CA Zip: 94549

Budget: 4000 Deal Amount: 3420

Estimated Close Date: 11/22/2023

Inquired About Artwork: Hatfield Route 155 (High Interest)

Inquired About Artwork: San Francisco (High Interest)

1 rows selected

Cancel Delete

App 101 Page 10 Session Debug Quick Edit Customize

Apply Changes



Creating an FA REST Data Source

Create REST Data Source

General

REST Data Source Type: Oracle Cloud Applications (SaaS) REST Service

* Name: Books

* URL Endpoint: burn-1.ocp.oraclecloud.com/ic/builder/design/APEX_Testing/1.0/resources/data/Book

HTTPS Host Name:

< Next >

Source type for FA REST

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes 

Use Total Results? No 

Use Pagination? Yes 

Perform all data changes for a region in a single transaction
(i.e. single HTTP request)

< Next >

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes ?

Use Total Results? No ?

Use Pagination? Yes ?

Return total number of results for pagination display

< Next >

Creating an FA REST Data Source

Create REST Data Source - Settings

Settings

Use Batch DML? Yes ?

Use Total Results? No ?

Use Pagination? Yes ?

Disable when service does not support pagination

< Next >

The screenshot shows a dark-themed UI for creating a REST data source. At the top, there's a progress bar with three green checkmarks and two grey dots. Below it, the title 'Create REST Data Source - Settings' is centered. Underneath, the word 'Settings' is displayed. There are three dropdown menus: 'Use Batch DML?' set to 'Yes', 'Use Total Results?' set to 'No', and 'Use Pagination?' set to 'Yes'. The 'Use Pagination?' dropdown is highlighted with a yellow border. A tooltip bubble points to this dropdown with the text 'Disable when service does not support pagination'. At the bottom left is a back arrow, and at the bottom right is a green 'Next >' button with a white cursor pointing to it.

Creating an FA REST Data Source

Authentication

* Authentication Required [?](#)

Credentials [VB APEX](#) [?](#)

[<>](#) [Create REST Source Manually](#) [Advanced >](#) [Discover >](#)

Creating an FA REST Data Source

REST Data Source Discovery

Preview

Data Data Profile Response Body

Apex\$Resourcekey	ID	Creationdate	Lastupdatedate	Createdby	Lastupdatedby	Title	ISBN	Publisheddate	Publisher
2	2	11-JUL-23 07:10:10.000000000 AM +00:00	11-JUL-23 07:10:10.003000000 AM +00:00	steve.muench@oracle.com	steve.muench@oracle.com	Oracle PL/SQL Programming: 6th Edition	978-1449324452	01/23/2014	1
3	3	11-JUL-23 07:10:48.000000000 AM +00:00	30-JUL-23 03:28:41.000000000 PM +00:00	steve.muench@oracle.com	steve.muench@oracle.com	Modern Oracle Database Programming: Level Up Your Skill Set to Oracle's Latest and Most Powerful Features in SQL, PL/SQL, and JSON	978-1484291658	07/31/2023	2
						Extending Oracle Application			

< More Detail Create REST Data Source

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All Supported Operations Automatically Configured

The screenshot shows the 'Operations' section of the REST Data Source configuration page. The table has columns for Edit, Name, Operation, Database Action, URL Pattern, Parameters, and Test Operation. Five rows are listed: DELETE (Delete row, URL Pattern /:APEX\$ResourceKey), GET (Fetch rows, URL Pattern .), GET (Fetch single row, URL Pattern /:APEX\$ResourceKey), POST (Insert row, URL Pattern .), and PATCH (Update row, URL Pattern /:APEX\$ResourceKey). The 'Operation' column is highlighted with a yellow border. A double-headed yellow arrow points from the bottom text box to the 'Operation' column header.

Edit	Name	Operation	Database Action	URL Pattern	Parameters	Test Operation
	-	DELETE	Delete row	/:APEX\$ResourceKey	-	
	-	GET	Fetch rows	.	-	
	-	GET	Fetch single row	/:APEX\$ResourceKey	-	
	-	POST	Insert row	.	-	
	-	PATCH	Update row	/:APEX\$ResourceKey	-	

All Query and CRUD operations "just work" with no fiddling

All FA REST Services Use APEX\$ResourceKey as PK

REST Data Source

Table

Show All REST Data Source Settings Synchronization Authentication Returns Subscription REST Source Catalog Advanced Response Format Returns

Operations Add Operation

Edit	Name	Operation	Database Action	URL Pattern	Parameters	Test Operation
	-	DELETE	Delete row	/:APEX\$ResourceKey	-	
	-	GET	Fetch rows	.	-	
	-	GET	Fetch single row	/:APEX\$ResourceKey	-	
	-	POST	Insert row	.	-	
	-	PATCH	Update row	/:APEX\$ResourceKey	-	

Consistent resource key for:

1. Single-attribute primary key
2. Multi-attribute primary key
3. Alternate unique key

1 - 5

All FA REST Services Use APEX\$ResourceKey as PK

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Name: Accounts
Format: JSON
Row Selector: items
Contains Single Row:

Always the first data profile column, mapped to selector `@context.key`

Sequence ↑	Name	Column Type	Data Type	Selector	Primary Key	Visible
1	APEX\$RESOURCEKEY	Data	VARCHAR2	@context.key	Yes	Yes
2	PARTYID	Data	NUMBER	PartyId	No	Yes
3	PARTYNUMBER	Data	VARCHAR2	PartyNumber	No	Yes
4	SOURCESYSTEM	Data	VARCHAR2	SourceSystem	No	Yes
5	SOURCESYSTEMREF	Data	VARCHAR2	SourceSystemRef	No	Yes

Columns

Resequence Columns

Search: All Text Columns

Cancel

Note for FA REST Services with Over 150 Fields

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts

* Format: JSON

Row Selector: items

Contains Single Row:

Max 150 data profile columns initially visible, others marked *Visible* = No

Columns

Resequence Columns | Add Column >

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
<input type="checkbox"/>	<input type="checkbox"/>	103	PARTYSTATUS	Data	VARCHAR2	PartyStatus	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	104	PARTYTYPENAME	Data	VARCHAR2	PartyType	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	105	CREATEDBYMODULE	Data	VARCHAR2	CreatedByModule	No	No
<input type="checkbox"/>	<input type="checkbox"/>	106	CREATEDBY	Data	VARCHAR2	CreatedBy	No	No
<input type="checkbox"/>	<input type="checkbox"/>	107	CREATIONDATE	Date	TIMESTAMPDATETIME	CreatedDate	No	No

Search: All Text Columns | Go | Edit | Add Data Column

Cancel | Apply Changes

Note for FA REST Services with Over 150 Fields

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Name: Accounts
Format: JSON
Row Selector: items
Contains Single Row:

Resequence Columns Add Column >

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
<input type="checkbox"/>	<input type="checkbox"/>	103	PARTYSTATUS	Data	VARCHAR2	PartyStatus	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	104	PARTYTYPENAME	Data	VARCHAR2	PartyType	No	Yes
<input type="checkbox"/>	<input type="checkbox"/>	105	CREATEDBYMODULE	Data	VARCHAR2	CreatedByModule	No	No
<input type="checkbox"/>	<input type="checkbox"/>	106	CREATEDBY	Data	VARCHAR2	CreatedBy	No	No
<input type="checkbox"/>	<input type="checkbox"/>	107	CREATIONDATE	Date	TIMESTAMPDATETIME	CreatedDate	No	No

Cancel Apply Changes

150 is not a hard limit, but avoids bad "out of box" experience for devs who take all the defaults

A region with 200+ fields from a REST service uses a SQL statement that can exceed 32k

Note for FA REST Services with Over 150 Fields

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts
* Format: JSON
Row Selector: items
Contains Single Row:

Columns

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
	=	170	PROMOTEDACCOUNTID	Data	NUMBER	PROMOTEDACCOUNTID	No	No
	/	197	PROMOTEDFLAG	Data	VARCHAR2	PromotedFlag	No	No
	/	198	PROMOTEDPARTYNAME	Data	VARCHAR2	PromotedPartyName	No	No
	/	199	PROMOTEDPARTYNUMBER	Data	VARCHAR2	PromotedPartyNu...	No	No
	/	200	ORGANIZATIONDEO_CUSTOMERTYPE_C	Data	VARCHAR2	OrganizationDEO_...	No	Yes

FA REST services prioritize custom fields whose names end with the _c suffix

Other REST service types pick the first 150

Cancel Apply Changes

Note for FA REST Services with Over 150 Fields

Data Profile

Data Profiles describe how Data Source format are being parsed and converted to rows and columns. For XML or JSON data format, the **Row Selector** attribute stores an XML or JSON path expression pointing to the node containing the collection of rows. **Data Profile Columns** determine how one row is parsed and converted to multiple columns.

Data Profile

* Name: Accounts
* Format: JSON
Row Selector: items
Contains Single Row:

Use editable grid to quickly change the *Visible* setting of any data profile column(s)

		Sequence ↑↓	Name	Column Type	Data Type	Selector	Primary Key	Visible
	=	170	PROMOTEDACCOUNTID	Data	NUMBER	PROMOTEDACCOUNTID	No	No
<input checked="" type="checkbox"/>	/	197	PROMOTEDFLAG	Data	VARCHAR2	PromotedFlag	No	<input checked="" type="checkbox"/>
	/	198	PROMOTEDPARTYNAME	Data	VARCHAR2	PromotedPartyName	No	No
	/	199	PROMOTEDPARTYNUMBER	Data	VARCHAR2	PromotedPartyNu...	No	No
	/	200	ORGANIZATIONDEO_CUSTOMERTYPE_C	Data	VARCHAR2	OrganizationDEO_...	No	Yes

Resequence Columns | Add Column >

Search: All Text Columns | Go | Edit | Add Data Column

Cancel | Apply Changes

APEX App Builder Page Designer

Page 1: Home

Components

- Breadcrumb Bar
 - Leads
- Body
 - Leads
 - Latitude
 - Longitude
 - Name
 - RecordID
 - LeadName
 - Rank
 - SourceCode

Layout Page Search Help

Home

BREADCRUMB BAR

Leads

REGION CONTENT

BODY

Leads

REGION CONTENT

Regions Items Buttons

Avatar Badge

Breadcrumbs Calendar Cards

Chart Classic Report

Column Toggle Report

Comments Content Row

Dynamic Content Faceted Search Form

Help Text Interactive Grid

Expand All Below

Collapse All Below

Uncomment

Delete

New *Comment* and *Uncomment* feature makes it easy to quickly include only the columns required.

APEX Only Retrieves Necessary Data!



APEX App Builder SQL Workshop Team Development Gallery

Application 101 \ Page Designer

Page 1: Home

Pre-Rendering Components

Breadcrumb Bar

Body

Leads

Columns

- APEx\$RESOURCEKEY
- OWNERPARTYNAME
- STATUSCODE
- CUSTOMERPARTYNAME
- INVENTORYITEMDESCRIPTION
- DEALAMOUNT
- PRIMARYCONTACTID
- PRIMARYCONTACTPARTYNAME
- PRIMARYCONTACTADDRESS1
- PRIMARYCONTACTCITY
- PRIMARYCONTACTCOUNTRY
- PRIMARYCONTACTEMAILADDRESS

LATITUDE

LONGITUDE

NAME

RECORDTYPE

LEADNU

RANK

SOURCECODE

Regions Items Buttons

Avatar Badge

Breadcrumbs Calendar Cards

Chart Classic Report

Column Toggle Report

Comments Content Row

Dynamic Content Faceted Search

Form Help Text Interactive Grid

Keeps REST payloads small and performance fast.

APEX Only Retrieves Necessary Data!



APEX App Builder - Application 101 \ Page Designer

Layout Page Search Help

Page 1: Home

Pre-Rendering

Components

Breadcrumb Bar

Leads

Body

Leads

Columns

APEX\$RESOURCEKEY

OWNERPARTYNAME

STATUSCODE

CUSTOMERPARTYNAME

INVENTORYITEMDESCRIPTION

DEALAMOUNT

PRIMARYCONTACTID

PRIMARYCONTACTPARTYNAME

PRIMARYCONTACTADDRESS1

PRIMARYCONTACTCITY

PRIMARYCONTACTCOUNTRY

PRIMARYCONTACTEMAILADDRESS

LATITUDE

LONGITUDE

NAME

RECORDTYPE

LEADNU

RANK

SOURCECODE

Regions Items Buttons

Avatar Badge

Breadcrumbs Calendar Cards

Chart Classic Report

Column Toggle Report

Comments Content Row

Dynamic Content Faceted Search

Form Help Text

Interactive Grid

Could just delete the unused columns... but they'll come back on next Synchronize Columns!

APEX Only Retrieves Necessary Data!

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. The current page is "Application 101 \ Page Designer". The left sidebar shows the page structure: "Page 1: Home" with sections for Pre-Rendering, Components, Body, and Columns. Under Components, "Breadcrumb Bar" contains a "Leads" item, and "Body" also contains a "Leads" item. The "Columns" section lists various fields: APEX\$RESOURCEKEY, OWNERPARTYNAME, STATUSCODE, CUSTOMERPARTYNAME, INVENTORYITEMDESCRIPTION, DEALAMOUNT, PRIMARYCONTACTID, PRIMARYCONTACTPARTYNAME, PRIMARYCONTACTADDRESS1, PRIMARYCONTACTCITY, PRIMARYCONTACTCOUNTRY, and PRIMARYCONTACTEMAILADDRESS. A specific column, "LATITUDE", is highlighted with a yellow border and has a context menu open. The menu options for "LATITUDE" are: Expand All Below, Collapse All Below, Uncomment (with a cursor icon), and Delete. The "Uncomment" option is highlighted with a yellow arrow. The bottom right corner of the interface features a red square with a white letter "O".

APEX Only Retrieves Necessary Data!

Use a column again with an *Uncomment* operation.

The screenshot shows the Oracle APEX Page Designer interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery. The current page is "Application 101 \ Page Designer". The left sidebar displays the page structure: "Page 1: Home" with sections for Pre-Rendering, Components, Body, and Columns. Under Components, there is a "Breadcrumb Bar" component labeled "Leads". The Columns section lists various fields: APEX\$RESOURCEKEY, OWNERPARTYNAME, STATUSCODE, CUSTOMERPARTYNAME, INVENTORYITEMDESCRIPTION, DEALAMOUNT, PRIMARYCONTACTID, PRIMARYCONTACTPARTYNAME, PRIMARYCONTACTADDRESS1, PRIMARYCONTACTCITY, PRIMARYCONTACTCOUNTRY, and PRIMARYCONTACTEMAILADDRESS. Below these, several columns are listed, including LATITUDE, LONGITUDE, NAME, RECORDS, LEADNUM, RANK, and SOURCECODE. A context menu is open over the "SOURCECODE" column, with options like "Expand All Below", "Collapse All Below", "Uncomment", and "Delete". The main content area shows a "Breadcrumb Bar" region containing a "Leads" item, and a "BODY" region also containing a "Leads" item. At the bottom, a toolbar provides icons for Regions, Items, Buttons, Avatar, Badge, Breadcrumbs, Chart, Classic Report, Column Toggle Report, Comments, Dynamic Content, Faceted Search, Form, Help Text, and Interactive Grid.

NOTE: Only *Visible* = Yes data profile columns show
Synchronize Columns after "unhiding" a profile column.

APEX Only Retrieves Necessary Data!

Simplify Parameterized Queries with Filter Params

Leads

Home Leads

Salesperson Will Mugatu

Only show the leads for selected salesperson

Lead

AccountPartyNumber = PartyNumber
CustomerId = PartyId

Account

Contact

PrimaryContactId = PartyNumber
CustomerId = PartyId

OwnerId = PartyNumber
CustomerId = PartyId

Resources

Product

PrimaryInventoryItemId = InventoryItemId

Simplify Parameterized Queries with Filter Params

The screenshot shows the Oracle Database REST Data Sources interface for creating a new REST operation named "Leads by Owner". The "Operation" tab is selected. The "URL Pattern" field contains a placeholder ". ". The "REST Source Base URL" is set to <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>. The "HTTP Method" is set to "GET" and the "Database Operation" is "Fetch rows". A callout bubble points to the "URL Pattern" field with the text: "Define optional URL pattern parameters on **Fetch Rows** operation. Each param name indicates:" followed by a numbered list 1, 2, and 3. An arrow points from the "Operation Parameters" section down to the first row of the table below.

REST Source Operation

Cancel Delete Apply Changes

Show All Operation Operation Parameters Caching Advanced

Operation

Name

URL Pattern .

REST Source Base URL <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>

* HTTP Method ⓘ

Database Operation ⓘ

Add Parameter

Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

1 3

OwnerId_eq\$norowsifnull
2

Simplify Parameterized Queries with Filter Params

The screenshot shows the 'REST Source Operation' configuration page in Oracle APEX. The 'Operation' tab is selected. A tooltip is displayed on the right side, containing the number '2' and the text 'Supported operators: eq, startsWith, contains'. The 'URL Pattern' field is highlighted with a yellow box and arrow, and the 'OwnerId_eq\$norowsifnull' parameter in the 'Operation Parameters' section is also highlighted with a yellow box and arrow.

② Supported operators:
eq
startsWith
contains

②

REST Source Operation

Name:

URL Pattern: .

REST Source Base URL: <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>

* HTTP Method: GET

Database Operation: Fetch rows

Add Parameter

Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

OwnerId_eq\$norowsifnull

②

Simplify Parameterized Queries with Filter Params

The screenshot shows the 'REST Source Operation' configuration page in Oracle APEX. The URL pattern is set to '.', and the REST Source Base URL is <https://fa-esec-saasfademo1.ds-fa.oracledemos.com:443/crmRestApi/resources/latest/leads>. The HTTP Method is GET, and the Database Operation is Fetch rows.

A callout bubble highlights the 'Supported behaviors:' section, which lists three options: ignoreifnull, norowsifnull, and matchifnull.

An arrow points from the 'Operation Parameters' section to the 'OwnerId_eq\$norowsifnull' entry in the table below.

Type	Direction	Default Value	Required	Static	Last Updated
URL Pattern	In	-	No	No	2 days ago

Simplify Parameterized Queries with Filter Params

The screenshot shows the Oracle APEX Page Designer interface for Application 101 \ Page Designer. The left sidebar displays the page structure with components like P2_SALESPERSON, Leads Map, and a parameter named OwnerId_eq\$norowsifnull. The main area shows the 'Leads Map by Salesperson' page with a 'BODY' section containing a 'P2_SALESPERSON' region and a 'Leads Map' region. The 'Leads Map' region has a 'REGION CONTENT' placeholder. On the right, the 'Parameter' panel shows the 'OwnerId_eq\$norowsifnull' entry with its 'Value' set to 'P2_SALESPERSON'. A yellow box highlights the parameter entry and its corresponding value mapping.

APEX App Builder SQL Workshop Team Development Gallery Search ? SA

Application 101 \ Page Designer

Layout Page Search Help

Parameter

Filter Identification

Name: OwnerId_eq\$norowsifnull

Operation

Parameter

Value

Type: Item

Item: P2_SALESPERSON

Region Content

OwnerId_eq\$norowsifnull

P2_SALESPERSON

Leads Map

REGION CONTENT

OwnerId_eq\$norowsifnull

P2_SALESPERSON

Simplify Query by Example Pages with Filter Params

≡  VB BugDB  smuench ▾

Product 

<Any Product>

Q  Go Actions ▾ Create

	Bug Number	Status	Severity	Description	Product	Component	Subcomponent	Filedby	Assignedto
	143	Open	2: Severe	NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Oracle Database	DB Development Tools	DB Regression Spotter	smuench	
	144	Need More Info	2: Severe	NOT OBVIOUS THAT YOU CAN DRAG TO PAN/SCROLL ACTION CHAIN DIAGRAMMER CANVAS	Visual Builder Cloud Service	New VBCS Design Time	Actions	smuench	
	145	Open	2: Severe	COLUMN CONFLICTS NOT RESOLVED IF CONFLICTING COLUMNS ARE IN USE BY A SANDBOX	Oracle JDeveloper	Simplified Customization	Attribute Taskflows	smuench	jloropez

1 - 3



Simplify Query by Example Pages with Filter Params

The screenshot shows a web-based application interface for managing bugs. At the top left is a red icon of a bug with wings. Next to it is the text "VB BugDB". On the far right is a search bar with the placeholder "smuench" and a user profile icon.

A dropdown menu labeled "Product" is open, showing "Oracle Database" as the selected option. Below this is a search bar with a magnifying glass icon and a dropdown arrow, followed by a "Go" button and an "Actions" dropdown.

A "Create" button is located in the top right corner of the main content area. The main content area displays a table with the following data:

Bug Number	Status	Severity	Description	Product	Component	Subcomponent	Filedby	Assignedto
143	Open	2: Severe	NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Oracle Database	DB Development Tools	DB Regression Spotter	smuench	

At the bottom right of the table, there is a page number "1 - 1".

Simplify Cascading Select Lists with Filter Params

≡  VB BugDB Cancel Delete Apply Changes smuench

Bug Number 143	Description NO NEED TO SHOW A MODEL DIALOG WHEN THE CODE TYPECHECKS SUCCESSFULLY	Assigned			
Type Dev Bug	Severity 2: Severe	Status Open			
Product Oracle Database	Component DB Development	Subcomponent DB Regression S	Rel Status Beta	Platform macOS	Base Bug
Filed By smuench	Filed 5/14/2018	Updated By steve.muench@oracle.com	Updated 8/16/2023		
Tags REL13BLOCKER					
Add Comment					



Simplify Cascading Select Lists with Filter Params

VB BugDB

Bug Number: 143

Description: NO NEED TO SHOW A MODEL DIALOG

Type: Dev Bug

Product: Oracle Database

Component: DB Development

Filed By: smuench

Filed: 5/14/2018

Updated By: steve.muench@oracle.com

Status: Open

Platform: macOS

Assigned: Base Bug

Tags: REL13BLOCKER

Add Comment

Cancel Delete Apply Changes

smuench

ESSFULLY

DB BugBuddy Tool
DB Diag Score Tool
DB Kspare Tool
DB Mergescript Checks
✓ DB Regression Spotter
RDBMS Auto Bugs Assignment Tool



Use External Filter for Powerful Where Clauses

The screenshot shows a user interface for a Fusion Art Gallery application. At the top, there is a navigation bar with links for Discover, Leads, Leads Map, Artworks (which is the active tab), Artists, and Media. On the right side of the header, there is a user profile with a search icon and the name mhoope. Below the header, there are three dropdown filters: 'Artist < All >', 'Medium Lithograph Vintage Poster', and 'Created Before 1960'. A magnifying glass icon is positioned next to the third filter. The main area displays a table of artwork records:

	Title	Artist	Medium	Year	Price
	Absinthe Robette	Henri Privat-Livemont	Lithograph Vintage Poster	1896	2100
	Salon Des Cent	Alphonse Mucha	Lithograph Vintage Poster	1897	3200
	Hatfield Route 155	Gregory Brown	Lithograph Vintage Poster	1916	1020
	San Francisco	Joseph Binder	Lithograph Vintage Poster	1957	2400
	Las Vegas	David Klein	Lithograph Vintage Poster	1958	1005

At the bottom of the table, there is a page number indicator '1 - 5 of 6 >'. To the right of the table, there is a sidebar with various filters and settings. One specific filter, 'Created Before 1960', is highlighted with a yellow box. The sidebar also includes sections for 'Report' and 'By'.



Use External Filter for Powerful Where Clauses

The screenshot shows the Oracle APEX Page Designer interface for an application named "Fusion Art Gal". The page being edited is "Page 3: Artworks".

Left Sidebar: Shows the navigation tree with "Discover" and "Leads" selected. Under "Components", "Body" is expanded, showing "Filters" which contains "Region Body" with parameters "P3_ARTIST", "P3_MEDIUM", and "P3_BEFORE_YEAR".

Middle Panel: Displays the "Artworks" report. The "Filters" section shows the three parameters mentioned above. Below it is the "REGION CONTENT" area.

Right Panel (Properties):

- Identification:** Title is "Artworks", Type is "Interactive Report".
- Source:** Location is "REST Source", REST Source is "Artworks".
- Page Items to Submit:** Contains "P3_ARTIST,P3_MEDIUM,P3_BEFORE_YEAR".
- External Filter and Order By:** Enabled, with a "Filter" field containing the expression "Year_c < &P3_BEFORE_YEAR".
- Local Post Processing:** Type is "- Select -".

A yellow box highlights the "P3_BEFORE_YEAR" parameter in the "Filters" section of the page body. A yellow arrow points from this box to the "Filter" field in the "External Filter and Order By" section of the properties panel, illustrating how the external filter is used to build a powerful WHERE clause.

Values Computed Server-Side Shown Automatically

≡ VB Things smuensch

Things Grid

Search: All Text Columns Go Actions ▾ Edit Save Add Row

Values updated by end-user Reset

	Name	Description	Quantity	Datepurchased	PriceinUSD ↑	Priceineur	Userkey
<input type="checkbox"/>	The Peasants	Based on Nobel-Prize...	9	6/30/2023	10 28	6.4 16.47	CHŁOPI FUNG3
<input checked="" type="checkbox"/>	Quirky Fungus	Interesting vegan boyan	2	4/3/2023			
<input type="checkbox"/>	Big Boy	Large able bodied per...	3	6/21/2023	18	16.47	XXXY
<input type="checkbox"/>	Theoretically	Tee One Plus	2	7/21/2023	123	112.51	xyz
<input type="checkbox"/>	Cowboy C4	Electric Bike	1	6/26/2023	300	274.43	BIKE0156
<input type="checkbox"/>	Something Very Exciting	by David Hockney	10	7/3/2023	1001	915.67	DH
<input type="checkbox"/>	Loving Vincent	First feature length oil...	1	6/26/2023	3354	3068.09	ZZZQQQ

1 rows selected 1 - 40

Values Computed Server-Side Shown Automatically

≡ VB Things

Changes saved

Things Grid

Search: All Text Columns Go Actions ▾ Edit Save Add Row

	Name	Description	Quantity	Datepurchased	Priceinusd ↑	Priceineur	Userkey
<input type="checkbox"/>	The Peasants	Based on Nobel-Prize...	9	6/30/2023	10	9.15	CHŁOPI
<input checked="" type="checkbox"/>	Quirky Fungus	Interesting vegan boyan	2	4/3/2023	28	25.61	FUNG3
<input type="checkbox"/>	Big Boy	Large able bodied per...	3	6/21/2023	18	16.47	XXXY
<input type="checkbox"/>	Theoretically	Tee One Plus	2	7/21/2023	123	112.51	xyz
<input type="checkbox"/>	Cowboy C4	Electric Bike	1	6/26/2023	300	274.43	BIKE0156
<input type="checkbox"/>	Something Very Exciting	by David Hockney	10	7/3/2023	1001	915.67	DH
<input type="checkbox"/>	Loving Vincent	First feature length oil...	1	6/26/2023	3354	3068.09	ZZZQQQ

1 rows selected 1 - 40

Values computed by
"Before Update" business
object triggers in the
REST API backend

An APEX App Can Now Optionally Work with a Sandbox

The screenshot shows the Oracle APEX App Builder interface. The top navigation bar includes links for APEX, App Builder, SQL Workshop, Team Development, and Gallery, along with a search bar and user profile icons. The current page is "Component Settings" under "Application 581 \ Shared Components \ Component Settings". The main content area displays a table of components, with the "Oracle Cloud Applications (SaaS) REST Service" row highlighted by a yellow box and a callout bubble. The callout bubble contains the text: "Configure the optional sandbox name in Component Settings for the Oracle Cloud Applications (SaaS) REST Service REST Data Source". The table columns are: Name, Type, Subscribed From, Subscription Status, Subscribers, and Updated.

Name	Type	Subscribed From	Subscription Status	Subscribers	Updated
Checkbox	Item	-	-	-	3 weeks ago
Color Picker	Item	-	-	-	3 weeks ago
Date Picker	Item	-	-	-	3 weeks ago
Geocoded Address	Item	-	-	-	3 weeks ago
Interactive Report	Region	-	-	-	3 weeks ago
Map	Region	-	-	-	3 weeks ago
Oracle Cloud Applications (SaaS) REST Service	REST Data Source	-	-	-	3 weeks ago
Region Display Selector	Region	-	-	-	3 weeks ago
Star Rating	Item	-	-	-	3 weeks ago
Switch	Item	-	-	-	3 weeks ago

An APEX App Can Now Optionally Work with a Sandbox

The screenshot shows the 'Component Settings' page for Application 581. The navigation path is Application 581 \ Shared Components \ Component Settings \ Edit. The page title is 'Component Settings'. Below it, there are three tabs: 'Show All' (selected), 'Settings', and 'Subscription'. The 'Settings' tab is currently active.

The main section displays a component configuration with the following fields:

- Name: **Oracle Cloud Applications (SaaS) REST Service**
- Sandbox Name: **[Empty Field]**

A yellow box highlights the 'Sandbox Name' input field. A yellow arrow points from this box to a callout bubble containing the text: "When empty, the FA REST services in this app use production FA REST endpoints".

Below the configuration, there is a 'Subscription' section with a 'Subscribe From' dropdown and a note: "This is the 'master' copy of this component settings." It also states: "No components subscribed to this component settings."

An APEX App Can Now Optionally Work with a Sandbox

The screenshot shows the 'Component Settings' page for Application 581. The navigation path is Application 581 \ Shared Components \ Component Settings \ Edit. The page title is 'Component Settings'. Below it, there are tabs: Show All (selected), Settings, and Subscription.

Settings

Name: **Oracle Cloud Applications (SaaS) REST Service**

Sandbox Name: **cloud-world-apex-demo**

A callout bubble with a yellow border points to the 'Sandbox Name' input field. The text inside the bubble reads: "Enter FA metadata sandbox name to work with its pending changes to the FA data model".

Subscription

Subscribe From: [dropdown menu]

This is the "master" copy of this component settings.

No components subscribed to this component settings.

Oracle Cloud Apps Data Source Explorer Utility App

The screenshot shows the Oracle Cloud Apps Data Source Explorer Utility App listed in the APEX Gallery. The app icon is a green square with a white magnifying glass and brackets symbol. The title is "Oracle Cloud Apps REST Data Source Explorer" by Oracle. The description text is: "This application shows all Oracle Cloud Applications REST Data Sources in the apps in your workspace and helps you retrieve useful, searchable reference info about them including business object attributes and child objects available. It also lets you discover what other REST endpoints are available for use. Easily copy REST endpoint URLs for List of Values, child objects, and other available services to the clipboard for use in the APEX Builder's Create REST Data Source wizard." The version is 23.2.0. There are "More" and "Install" buttons at the bottom.

A yellow arrow points from a callout bubble labeled "New gallery tab" to the "Utility Apps" tab in the top navigation bar, which is highlighted with a green dashed border.

New gallery tab

Utility Apps

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - REST Data Sources

Install App smuench ▾

All the Oracle Cloud Application (SaaS) REST Service data sources in your workspace appear on the *Endpoints In Use* tab below. All endpoints available from the Fusion Apps pillars in use show on the *All Endpoints* tab. After downloading the description of an in-use data source, click its name to explore its attributes and child objects...

Endpoints In Use All Endpoints Background Progress

Go Actions ▾

Action	Endpoint URL	REST Data Source Static Id ↑	Application
C	accounts		Leads (101)
C	contacts		Leads (101)
C	leads		Leads (101)
C	leads_by_owner		Leads (101)
C	products		Leads (101)
C	resources		Leads (101)

See all FA REST data sources in use in the apps in your workspace

1 - 6



Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuench ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Go 2. All Attributes Actions ▾

Alternative Default: All Attributes

Drill down for info about attributes and LOVs

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Oper
Name	string(250)	Lead Name	Lead Name used for identifying the lead.			Y	Y	N	Y	N	N	
RecordSet	string	Record Set			Select List	Y	N	N	N	N	N	
LeadNumber	string(30)	Lead Number	User friendly unique identifier for a lead.			Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.		Popup LOV	Y	N	N	Y	N	N	

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuench ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects Go

Default

- 1. Primary Report
- 2. All Attributes
- 3. Attributes with LOV
- 4. Queriable Attributes
- 5. Updateable Attributes

Alternative Default: All Attributes

Pre-defined filters to narrow focus

Attribute Name	Type	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Open
Name	string(250)	Lead Name Lead Name used for identifying the lead.			Y	Y	N	Y	N	N	
RecordSet	string	Record Set		Select List	Y	N	N	N	N	N	
LeadNumber	string(30)	Lead Number			Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner		Popup LOV	Y	N	N	Y	N	N	

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuench ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Q Go 5. Updateable Attributes Actions ▾

Alternative Default: Updateable Attributes Editable? != 'N'

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
Name	string(250)	Lead Name	Lead Name used for identifying the lead.			Y	Y	N	Y	N	N	
LeadNumber	string(30)	Lead Number	User friendly unique identifier for a lead.			Y	N	Y	On Create	N	N	
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.		Popup LOV	Y	N	N	Y	N	N	
StatusCode	string(30)	Status	Pre-defined code used to indicate the status of a lead.		Select List	Y	N	N	Y	N	N	
Rank	string(30)	Rank	Rank associated with this sales lead.		Select List	Y	N	N	Y	N	N	
SourceCode	string(30)	Source Code	Marketing source code associated with this sales lead.		Popup LOV	Y	N	N	Y	N	N	
CustomerPartyName	string(360)	Account Name	Name of the customer.			Y	N	N	Y	N	N	
ProductGroupName	string(250)	Product Group	Name of the product group associated with a lead.		Popup LOV	Y	N	N	Y	N	N	
InventoryItemDescription	string(240)	Product Item	The description of the product added to a lead.		Popup LOV	N	N	N	Y	N	N	
RegistrationNumber	string(120)	Registration Number	Registration number of the sales lead. This unique identifier is generated when the sales lead is approved. This is a deal specific attribute.			Y	N	N	Y	N	N	

Oracle Cloud Apps Data Source Explorer Utility App

FA REST Data Source Explorer - Service Details: Leads

Install App smuench ▾

Explore the Leads data source's attributes and child objects below. Click the application icon to return to the data source list...

Attributes Child Objects

Q v Go Actions ▾

Endpoint URL	Cardinality	Object Name
AccountPlan_Lead_Tgt_LeadToAccountPlan_Lead_c_Tgt	1 to *	AccountPlan_Lead_Tgt_LeadToAccountPlan_Lead_c_Tgt
AllLeadAttachments	1 to *	AllLeadAttachments
Assessments	1 to *	Assessments
Interviews	1 to *	Interviews
LeadCampaigns	1 to *	LeadCampaigns
LeadCompetitors	1 to *	LeadCompetitors
LeadOpportunity	1 to *	LeadOpportunity
LeadRollup	1 to 1	LeadRollup
MklLeadResources	1 to *	MklLeadResources
MklLeadTcMembers1	1 to *	MklLeadTcMembers1
MklLeadTeam	1 to *	MklLeadTeam

See related objects your APEX app might need

Copy service URL & paste into Create REST Data Source wizard



Oracle Cloud Apps Data Source Explorer Utility App

All the Oracle Cloud Application (SaaS) REST Service data sources in your workspace appear on the *Endpoints In Use* tab below. All endpoints available from the Fusion Apps pillars in use show on the *All Endpoints* tab. After downloading the description of an in-use data source, click its name to explore its attributes and child objects...

Endpoints In Use All Endpoints Background Progress

Q Row text contains 'sales' Go Actions Base Url Refresh Catalog In Background

Base Url: https://fa-esec-saasfademo1.ds-fa.oraclepdemos.com:443/crmRestApi/resources/11.15.10.05

Endpoint URL	Resource Name ↑	Title
EXTSalesParent_c		EXT SalesParent
SalesAssessment_c		Sales Assessments
SalesLeadDeals_c		SalesLeadDeals
SalesTool_c		Sales Tools
competitorAccounts		Sales Competitor
iisFeatures		Intelligence in Sales Features
leads		Sales Leads
lightboxDocuments		Sales Lightbox Documents
otypyStatusesLOV		Sales Lookup SDO

Browse & search all FA REST endpoints from the "pillars" your app is using

"Pillar" is family of related apps (HCM, ERP, CX, SCM, Common)

Use Case: Retrieve Only Leads for Logged in User

Oracle Cloud Apps Data Source Explorer - Service Details: Leads

Show Only Visible Attributes ▾ ⓘ ⚡ Install App 🔎 smuensch ▾

Attributes Child Objects

Search: Go 4. Queryable Actions ▾

Queryable owner Queryable?

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
OwnerPartyName	string(360)	Owner	Name associated with the owner of this sales lead.	_popup_lov	Popup LOV	Y	N	N	Y	N	N	
OwnerId	integer(18)	Owner ID	Party identifier associated with the owner of this sales lead.			Y	N	Y	Y	N	N	
OwnerPartyNumber	string(30)	Owner Number				Y	Y	N	N	N	N	

1 - 3

Who owns the Lead?

Use Case: Retrieve Only Leads for Logged in User

Oracle Cloud Apps Data Source Explorer - Service Details: Resources

Show Only Visible Attributes ▾ ⓘ ⬤ Install App ⬤ smuench ▾

Attributes Child Objects

Q ▾ Go 4. Queryable Actions ▾

Queryable Id Queryable?

Attribute Name	Type	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
ResourceProfileId	integer(18)	Resource Profile ID	Unique identifier for the Resource Profile. Primary Key.			Y	Y	Y	N	Y	N	
PartyId	integer(18)	Resource	Identifier for the party. Foreign key to the HZ_PARTIES PARTY_ID.			Y	Y	N	On Create	N	N	
PartyNumber	string(30)	Registry ID	Unique identification number for this party			Y	Y	N	N	N	N	

Id of the Resource (Salesperson in this case)



Use Case: Retrieve Only Leads for Logged in User

Application Process

Cancel Delete Apply Changes

Show All Name Subscription Source Conditions Authorization Configuration Comments

Name

Application **10001 Leads** ⓘ

* Sequence **1** ⓘ

* Process Point **After Authentication** ⓘ

* Name **SET_SESSION_INFO_FOR_USER** ⓘ

Type **Execute Code** ⓘ

Subscription

Subscribe From ⓘ

This is the "master" copy of this application process.

No application process subscribed to this process.

Source

Language **PL/SQL** ⓘ

* Code ⓘ

```
leads_app.set_session_info_for_user;
```

Get the numeric PartyId
and user full name from
the logged-in session
username



Use Case: Retrieve Only Leads for Logged in User

```
procedure set_session_info_for_user
is
    l_ctx apex_exec.t_context;
    l_ret number;
begin
    l_ctx := oca_ds.open_query(
        p_select => 'PartyId,PartyName',
        p_from   => 'resources',
        p_where  => 'upper.Username) = '||apex_exec.enquote_literal(
                                         get_session_username));
    if apex_exec.next_row(l_ctx) then
        apex_session_state.set_value('APP_USER_FULLNAME',
                                      oca_ds.get_varchar2(l_ctx,'PartyName'));
        apex_session_state.set_value('APP_USER_PARTYID',
                                      oca_ds.get_number(l_ctx,'PartyId'));
    end if;
    oca_ds.close(l_ctx);
end set_session_info_for_user;
```

Use Case: Retrieve Only Leads for Logged in User

The screenshot shows the Oracle APEX App Builder interface for a page named "Page 2: Leads". The left sidebar displays the page structure with a "Leads" component selected. The main area shows the "BODY" section with two regions: "PartyId" and "Leads". The "Leads" region is highlighted with a green box. The right panel contains the "Region" configuration for the "Leads" component, including fields for Name (Leads), Title, Type (Interactive Report), Source (REST Source, REST Source: Leads), and an External Filter and Order By section. The filter condition "OwnerId = &APP_USER_PARTYID." is highlighted with a yellow box.

Layout Page Search Help

Page 2: Leads

BODY

PartyId

REGION CONTENT

Leads

REGION CONTENT

Region Attributes Printing

OwnerId = &APP_USER_PARTYID.

Show only leads owned by
the currently logged-in user

Use Case: Retrieve Only Leads for Logged in User

Leads

APP_USER_USERNAME: MHoope, APP_USER_PARTYID: 100010037456865

OwnerId = &APP_USER_PARTYID.

Name	Ownerpartyname	Statuscode	Rank	CustomerPartyName	CreatedDate	PrimaryIndustry	Score
DF Lead for Layout Issue CCUT-TEST 19012018_2304	Matt Hooper	UNQUALIFIED	COOL	BIQA_R13_AccountStandalone1 (USA Fulfillment, US)	1/19/2018		789
sfsfs role_UserMgr_test5@oracle.com 9/6/18 6:43 PM	Matt Hooper	UNQUALIFIED		CSS Automation Test9 US)	9/6/2018	sfsfs role_UserMgr_test5@oracle.com	
BIQA_LEAD_TO_DR_01	Matt Hooper	CONVERTED			4/26/2021		
BIQA_LEAD_TO_DR_02	Matt Hooper	CONVERTED		BIQA B2C Healthcare (Moen, NO)	4/26/2021	BIQA_SER_CONTACT BIQA_SER_CONTACT	
BIQA_LEAD_TO_DR_04	Matt Hooper	CONVERTED		BIQA B2C Healthcare (Moen, NO)	4/26/2021	BIQA_SER_CONTACT BIQA_SER_CONTACT	
BIQA_LEAD_TO_DR_05	Matt Hooper	CONVERTED			4/26/2021	BIQACMN_HH_CONTACT_DEL BIQACMN	
Daniel Bakery	Matt Hooper	QUALIFIED		Sun Microsystems US (Delaware, US)	1/6/2023		
Coffee Shop Redwood	Matt Hooper	UNQUALIFIED		Sun Microsystems US (Delaware, US)	1/6/2023		
Golden Pipes	Matt Hooper	QUALIFIED		Siebel Systems US (SAN MATEO, US)	1/6/2023		
Finland Cars	Matt Hooper	QUALIFIED		Oracle Corporation Subsidiaries (DELAWARE, US)	1/6/2023		
Siebel Bakery	Matt Hooper	UNQUALIFIED		Siebel Technology Company (REDWOOD CITY, US)	1/6/2023		
MKLENGSALES_2112303447	Matt Hooper	UNQUALIFIED			4/20/2023		
MKLENGSALES_2112303447MKTLEAD	Matt Hooper	UNQUALIFIED			4/20/2023		
MKLENGSALES_2112303447MKTLEAD	Matt Hooper	UNQUALIFIED			4/20/2023		



APEX Now a *First Class* App Builder for FA Extensions

- Discover all query and CRUD operations and simplify data sources by hiding unused fields
- Use with all APEX regions: faceted search, maps, interactive reports/grids, forms, etc.
- Work against a Fusion Apps sandbox to iterate APEX UI for pending data model extensions
- Delegate filtering, sorting, and bulk operations to FA REST endpoint
 - Select only required data & get total row count without fetching all (e.g. 1-10 of 200)
- See validation errors from backend business objects like regular APEX validation errors
- Build parent/child select lists, popup LOVs, all region types & QBE screens w/ filter params

Caveats & Other Tips

- Faceted Search
 - Works well, but the APEX engine still computes the ***filtered counts***
 - Requires fetching all matching rows from FA REST to the APEX database
 - Most effective when use case lets initial data to filter be a reasonable set of rows
- Credentials Tip
 - Create the REST DS using basic auth and prime the explorer
 - Then switch credential to OAuth-based credential for runtime use

ā'pěks alpe adria

Thank You! Questions?



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