

# Extending Oracle Fusion Cloud Applications Suite using Oracle APEX

**Oracle APEX Technical Paper** 

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# **Purpose statement**

This document provides an overview of Extending Oracle Fusion Cloud Applications Suite using Oracle APEX in release 24.2. It is intended solely to help you assess the business benefits and planning for the implementation of your Fusion extensions built with Oracle APEX in release 24.2.

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# **Executive Overview**

This paper outlines how to extend Oracle Fusion Cloud Applications Suite functionality utilizing Oracle APEX. We discuss different integration patterns, deployment topologies, architecture considerations and best practice security guidelines. We have also included examples to help you build your first Fusion Extension application with APEX with a sample end to end flow.

# Introduction

Oracle Fusion Cloud Applications Suite delivers a wide range of functionality in the Enterprise Resource Planning (ERP), Supply Chain & Manufacturing (SCM), Human Capital Management (HCM), Sales, Service and Marketing domains that handle core areas of business processing. However, there are situations where you want to extend your information systems beyond the range of Oracle Fusion Cloud Applications Suite. Typical extension use cases include integrating on-premises customer applications with Oracle Fusion Cloud Applications, handling specific customer requirements and developing custom flows such as third party integrations for responding to changing business dynamics. The complexity of your Fusion Extension application depends on the business requirements of the enhancement developed.

Oracle APEX is a powerful low-code application development platform that provides a browser-based interface, declarative programming framework, and simple wizards to enable you to quickly build robust applications. The platform offers easy REST service integrations that enhance the power of the application extensions you build.

While Oracle manages the patching and upgrades of the Oracle Fusion Cloud Application Suite, you are in control of the Fusion extensions applications you build using this rapid application development platform. Your team can deliver ongoing updates to your extension applications on your own schedule. You can continue to take advantage of Oracle's SaaS offering while being in control of any custom functionality you introduce for your enterprise. You can also take advantage of PL/SQL expertise and apply those techniques to extending enterprise applications.

Get ready to build your first low-code APEX based Fusion Extension application!

# What's New in APEX 24.2

APEX 24.2 adds the Fusion Integrated Starter App Wizard. This enables automatic connection between your Fusion instance and your APEX instance. All security configuration is now behind-the-scenes and configured by Oracle APEX. Your Fusion extension applications can take advantage of the security configuration in the Fusion Integrated Starter application. The Database Tools Fusion Integration option further simplifies connecting your Fusion instance to APEX. We outline details of how you can configure this connection in later sections of this document.

APEX 24.2 also adds support for the Oracle Cloud Applications (BOSS) REST Service. This new REST Data Source type lets you use Fusion Applications REST APIs whose URLs contain /api/boss. These

newer APIs use a different technology underpinning than the ones with /xxxRestApi/resources/ in their URL. APEX Developers can now work with either kind of Fusion REST APIs with equal ease and productivity.

# **Oracle APEX Concepts**

A few basic Oracle APEX concepts are key to understand before extending Oracle Fusion Cloud Applications. Oracle APEX runs inside the Oracle Database. You can create new schema objects using SQL Workshop functionality in Oracle APEX. Application developers can create pages, drop UI components onto the page, bind UI components to data using different data sources like local tables, REST APIs and more. Oracle APEX lets you quickly create pages to display and edit application data by providing different types of UI components like Interactive Report, Interactive Grid, Form, Cards, Chart, Classic Report, Faceted Search, Master Detail, etc. Navigation and Page flow functionality to traverse pages and relate pages to build a fully-fledged application is intuitive with Oracle APEX. Your APEX applications can leverage all built-in Oracle Database data types and utility packages to simplify delivering a wide range of functionality to end users.

Oracle APEX also offers support for Generative AI. Developers less familiar with SQL can use the AIpowered APEX Assistant to help generate appropriate queries from natural language. For more information on APEX and Generative AI please view this link.

For additional details on features and functionality supported by Oracle APEX please refer Oracle APEX documentation.

# **APEX** Architecture

Oracle APEX is part of the Oracle RAD stack. Core components include REST Data Services (ORDS), APEX and Database. You can use APEX and deploy your application on any Oracle Database in the cloud or on-premises. When using Oracle Autonomous Database Cloud Service, patches and updates for APEX are managed by Oracle and newer APEX releases will be available to you at a regular cadence.



Oracle APEX applications are model-driven. As developers use APEX Builder to define the pages and processes comprising their app, APEX saves metadata describing the options they have configured. The APEX engine interprets that metadata at runtime to render pages for end-users and to manage their updates. ORDS delegates incoming requests to the APEX engine and returns the response the engine generates back to the requester. That happens both when a developer is using the APEX Builder, as well as when an end-user is running the APEX application. The APEX Builder is built using APEX, so it is an APEX application whose "business data" is the application metadata for other applications that developers build. At design time, application metadata update requests are processed by the APEX engine and metadata is persisted. At runtime, application security is enforced at the database layer against database defined security credentials. Since APEX runs inside the database, applications can access local data with zero latency for both display and business logic processing in PL/SQL or serverside JavaScript. For additional information on Oracle APEX architecture please refer to this link.

# **Oracle Fusion Application Cloud Suite Concepts**

You can view your deployed Fusion Application instances in Oracle Cloud Console. The Oracle Fusion Applications Cloud Suite is a Software as a Service (SaaS) offering from Oracle. This means Oracle manages application patches and updates. Customers can take advantage of new Fusion features deployed to the cloud at a regular cadence.

Extending Oracle Fusion Applications requires an understanding of Fusion security concepts. Oracle Fusion Applications supports Role-based access control (RBAC). Roles are assigned function security and data security privileges. Function security policies determine which roles have access to UI pages and components. Data security policies determine what data users can see. It is possible to define custom roles and privileges that extend the out of the box seeded security policies. Administrators can use the Fusion Security Console to modify role assignments to users and make other implementation specific updates to security policies.

Oracle Fusion Applications Cloud Suite is a SaaS offering from Oracle and its internal architecture and server topology is abstracted from customers. You can view environment information via Fusion Application environment management features supported by Oracle in cloud console.

For additional details on Oracle Fusion Applications Cloud Suite please refer to Oracle Fusion Applications Cloud Suite documentation.

# **Fusion REST Services**

Oracle Fusion Applications Cloud Suite exposes REST APIs for different business objects supported by Fusion areas such as ERP, CRM and HCM.

These REST APIs let developers retrieve and manipulate Fusion business object data. They also encapsulate all appropriate business logic and validation rules. Application extensions use REST Data Sources corresponding to the Fusion REST APIs they need to work with. Developers can select these in bulk from the Fusion REST API Catalog or define them one by one. Once properly configured, APEX automatically provides the Fusion user security context required to invoke any Fusion REST API. This ensures functional and data security is appropriate for the end-user using the application extension.

Fusion REST APIs can be implemented using two different underlying technologies. For REST APIs with /xxxRestApi/resources/ in the URL, APEX developers use a REST data source of type "Oracle Cloud Application (SaaS) REST Service". For those with /api/boss in the URL, they use the "Oracle Cloud Application (BOSS) REST Service" instead.

# **Fusion APEX Extension Application**

A Fusion APEX extension delivers an application UI that consists of APEX pages and flows. It is integrated with a single Fusion application instance. You can build your own application UI's and deploy them so that they are accessible from the same Fusion Apps dashboard, or as standalone interfaces to Fusion to simplify specific processes. You can use the Redwood Light style in Universal Theme to match the look and feel of your Fusion extension application with Oracle Fusion Cloud Applications The following diagram shows the different components of a Fusion APEX extension application.

Figure 2: Fusion APEX extension application architecture



# **User Personas**

The following types of users typically cooperate to build a Fusion APEX extension application.

- The APEX System Administrator
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- This user manages the APEX instance and its integrations with other systems.
- The APEX Application Developer
  - This user builds the application UI and functionality of the extension application.
- The Fusion System Administrator
  - This user manages roles and users in the Fusion instance.

# **Integration Design Patterns**

Integration design patterns are template solutions for connecting different software systems or applications so that they work together. These patterns describe common scenarios and solutions for handling different custom tasks for integrating your applications with Fusion.

Choosing the right Integration pattern depends on the following factors:

- Amount of data exchanged with Fusion
- Real-time data synchronization needs
- Fusion user role and security privilege considerations
- Error handling and recovery scenarios.
- Fusion extensions in the Fusion instance such as Flexfields
- APEX deployment topology

# **Coordinate: Integrated APEX UI and Fusion UI**

You will need this pattern when a business user works with multiple applications for your business scenario. This pattern can be implemented by creating a mashup for Fusion UI and APEX UI where single sign on between Fusion and APEX ensures seamless transition between UI flows initiated in APEX UI or Fusion UI.

We suggest the usage of following APEX Components for this pattern:

- Fusion Starter App for integrated single sign-on
- REST Data Source of type: Oracle Cloud Applications (SaaS) REST Service
- APEX UI Components such as Interactive Report and Interactive Grid

# **Handover: Copy Fusion Data**

With the handover pattern you create a local copy of Fusion data for additional business processing. This pattern can be implemented by retrieving relevant Fusion data via API as one-time process execution in APEX to transfer Fusion data to APEX database. You are responsible for implementing security policies on the downloaded data as per your security requirements for the data. The Handover data pattern is a potential data pattern to be used when building custom AI training models for your business usecases.

We suggest the usage of following APEX Components for this pattern:

- Fusion Starter App for integrated single sign-on
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- REST Data Source of type: Oracle Cloud Applications (SaaS) REST Service
- APEX SQL Workshop and Object Browser for creating tables in APEX schema to hold data downloaded from Fusion into local tables.
- APEX REST Data Source synchronization for automatically creating the local table and handling data sync, optionally on a repeating schedule you can configure declaratively.

# **Collaborate: Exchange data with Fusion**

Different apps share and change the same business data. This supports bi-directional data integration in real time. This pattern is implemented when you both read data from Fusion and update data into Fusion.

We suggest the usage of following APEX Components for this pattern:

- Fusion Starter App for integrated single sign-on
- REST Data Source of type: Oracle Cloud Applications (SaaS) REST Service
- Edit pages in APEX UI that manipulate Fusion data such as Forms and Interactive Grid
- View pages in APEX UI such as Interactive Reports and Interactive Grid

# **Delegate: Trigger Fusion Processes**

Specialized app to be used for one business function or process. You can send all relevant data via API or as batch and receive regular status updates.

We suggest the usage of following APEX Components for this pattern:

- Fusion Starter App for integrated single sign-on
- Oracle Cloud Applications (SaaS) REST Service
- APEX Submit UI Components such as a Button (an example use case is where a button in APEX UI triggers an ESS job in Fusion by invoking the corresponding Fusion REST API)
- APEX Workflow

Depending on the complexity of the extension application developed it can be a combination of different design patterns and will use different APEX functions for successful end to end execution.

# **Deployment Topologies**

A set of representative topologies for the extension application is shown in Figure 3: Deployment Topologies. You must identify your system configuration and topology and ensure that connectivity between the Fusion application REST endpoint and APEX database is setup correctly. You may need to work with your system administrator to ensure network connections are opened and firewall is configured as appropriate. To configure Fusion Starter App with success a route must exist from the Fusion tenancy to the sqlnet listener port on APEX database. Conversely for APEX to invoke Fusion REST APIs a route must exist between APEX database and Fusion external endpoint port in the Oracle Public Cloud hosted Fusion instance.



Figure 3: Deployment Topologies



# **Connecting Fusion Applications with Oracle APEX Application**

You must configure single sign-on between the APEX extension application and Fusion applications to establish connectivity. This ensures function security and data security rules configured in Fusion are automatically available in the APEX application. Authentication and authorization is implemented using the 3-legged Oauth flow. To configure this flow manually for existing APEX applications please refer to the related blog and APEX office hours recording.

Figure 4: APEX - Fusion security handshake for single sign-on



# **Configuring Single Sign-On with APEX Starter App**

Oracle recommends you perform the configuration steps outlined in this section if you do not have an existing APEX extension application you need to connect to Fusion instance. This flow will create a APEX Starter App that is pre-configured with a Fusion application instance. By using the APEX Starter App, you avoid any manual configuration steps to orchestrate the 3-legged OAuth flow.

#### Steps to be performed by the APEX and Fusion System Administrator

• Login to Cloud Console into the tenancy that hosts your Fusion Applications instance.

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• Notice the steps performed to orchestrate the integration such as creating the confidential application in IDCS and related database credentials.

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• Retry of integration with the Fusion instance will fail with the following error "APEX is already integrated with Fusion Applications"

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# Steps to be performed by the APEX Application Developer

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	Create App From a File Upload a CSV, XLSX, XML or JSON file, or copy and paste data, then create your application.		
	Create App From Quick SQL Build your own data model or use an existing one and create a new application from it.		
	Create Fusion Integration     Create a starter application with pre-configured integrations to an Oracle Fusion Applications instance.		
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• Select the linked Fusion instance

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• Click on Create Integration

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	Apex Developer fusiondev
Create Fusion Integration	
Edit Application  Instal one of many Sample and Starter Apps from the Galery:	
Copy Existing App Create a new application as a copy of an existing application in your workspace.	

• Click on Run Application and login to Fusion Applications via configured Single Sign-on.

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# **Integrating APEX Security and Fusion Security**

Fusion Users and roles are defined in the Fusion application instance. APEX users and roles are defined in Oracle Database. We discuss the strategies you can follow for managing user roles and security policies in the integrated Application.

# **Managing Oauth Token Expiry**

By default, the access token which Fusion Starter application receives from Fusion IDCS will expire after a maximum of one hour, whereas the APEX session will have a longer lifetime, as will your underlying Fusion Applications login session. To help prevent users from having to needlessly reauthenticate, and to reduce the number of "session expired" errors that they encounter whilst navigating within an FA integrated APEX application, it is possible to automatically obtain new access tokens without the user's involvement. To configure refresh token and prevent Oauth Token expiry refer to <u>this document</u>.

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Manual page refresh of your APEX page within the expiry window can be used as a workaround to prevent token expiration as the page refresh gets a new token.

# **Integrating Fusion REST APIs**

The majority of Fusion REST APIs are delivered as Application Development Framework - Business Components (ADF-BC) REST services. For more information on ADF-BC please view supporting documentation here. Newer Fusion REST APIs are delivered as Spectra REST Services. For more information on the internal Fusion Spectra initiative, please view this blog. If the URL pattern matches "/xxxRESTApi/resources/\$restApiVersion/\*" then the REST service is ADF-BC based. If the URL pattern matches "/api/boss" then it's Business Object for Spectra Services (BOSS) based. The Fusion REST API Explorer Utility App is specific to the "Oracle Cloud Applications (SaaS) REST Service" REST Data Source in APEX release 24.2.

# **Security Role requirements for invoking Fusion REST APIs**

Before configuring your REST Data Source you must be logged in with a valid Fusion login session by running your Fusion Starter App. Your Fusion login session must be with the Fusion roles required to invoke the REST service to be configured. If your user does not have the required role you will be unable to configure the REST Data Source. If you are not using Fusion Starter App then these steps can be performed in any APEX application that is manually configured to connect to a Fusion instance and configured for Fusion single sign-on. You must use the web credentials created to map to the Fusion Oauth Client to configure your REST Data Source.

Common Fusion roles used for invoking REST services are as follows:

- Human Capital Management Integration Specialist (Job Role)
- Supply Chain Integration Specialist (Job Role)
- Integration Specialist (Job Role)
- <u>Customer Relationship Management Integration Specialist (Job Role)</u>

For a complete list of Fusion roles and privileges required to invoke Fusion REST APIs please refer to the Fusion documentation.

# **Creating Fusion REST Data Sources.**

The following steps are common steps and must be followed prior to creating REST Data Sources of type "Oracle Cloud Applications (SaaS) REST Service" and "Oracle Cloud Applications (BOSS) REST Service" to acquire a security token that the APEX Builder can then also use.

• Navigate to AppBuilder → Run Fusion Starter App

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Login to Fusion via Single Signon

S (	ign In Dracle Applications Clo	pud	
	User ID MyFusionUser Password Password Forgot Password Sign In	]	

• Navigate to Application → Shared Components → REST Data Sources → Create REST Data Sources

0	APEX Appl	Builder 🗸	SQL Workshop $ \lor $ Team Development $ \lor $ Gallery				24	(?) AD Apex Developer fusiondev		
🕈 🔳 Application 110 \ Shared Components \ REST Data Sources										
REST Data Sources Synchronizations Utilization History About										
Qv		Create >	REST Data Sources act as a reference to one or multiple external web (REST) services. A							
REST Source Name	Synchronized	Operations	Endpoint URL	Authentication	Subscribed From	Subscription Status	Subscriber	REST Data Source can contain one or many Operations which are the references to a concrete external web service.		
HCM Self Details			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/latest/selfDetails				Configurations at the REST source level are shared acro all contained operations.			
								Learn More		
								Tasks		

# "Oracle Cloud Applications (SaaS) REST Service" REST Data Source

To configure your application to use ADF-BC REST services you must create a REST Data Source of type "Oracle Cloud Applications (SaaS) REST Service". These steps must be performed by the APEX Application developer to use Fusion ADF-BC REST Apis.

• Enter details of your Fusion REST API endpoint.



Create REST Data Source			
Type Oracle Cloud Applications (SaaS) REST Service \vee 📀			
Iame My ADF-BC Rest Data Source 0			
point https://ianyqy.fa.ocs.oraclecloud.com			
lame	0		
e' N dt	Oracle Cloud Applications (SauS) REST Service      One of the service	e Type Oracle Cloud Applications (SaaS) REST Service V () Name My ADF-BC Rest Data Source () depeint https://unyqyta.ocs.oraclecloud.com () Name ()	e Type Oracle Cloud Applications (SaaS) REST Service V

• Select default rendered values for Base URL and Service URL Path

.9		
Meth	d Create REST Data Source - Remote Server	
Ren	ote Server	
Remote Ser	rer - Create New - V	
* Base U	RL https://ianyqy.fa.ocs.oraclecloud.com	
* Service URL P	th https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/latest/eligibil	
Service URL P	Inntps://winyepta.ocs.oraciecloud.com//fcmikestApi/resources/latest/eligibil	

• Select desired values for Batch DML, Total Results and Pagination.

		Create REST Data Source - Settings	$\otimes$
Ø	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	settings	
	Use Batch DML	Yes v 💿	
	Use Total Results	No v O	
	Use Pagination	Yes 🗸 🗸	
1			
			ext >

• Enter the credentials created for integration with Fusion instance in Fusion Starter App





• The REST Data Source is created with success.

Ο ΑΡΕΧ	App Builder	✓ SQL Wo		Q Search		2	Apex Developer fusiondev			
1 application 110 \ Shared Components \ REST Data Sources										
REST Data Sources Synchronizations Utilization History About										
Qv	Q V Co 🗄 🏛 Actions V Copy Create >									
REST Source Name	Synchronized	Operations	Endpoint URL	Authentication	Subscribed From	Subscr Status	one or many <b>Operations</b> which are the references to a concrete			
GetAllWorkers			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/latest/publicWorkers				external web service. Configurations at the REST source level are shared across all contained operations.			
HCM Self Details			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/latest/selfDetails							
EligibilityObjects	No	5	https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/latest/eligibilityObjectResul	ts Yes			Tasks Copy from another app			

• View details of available operations for your newly configured Fusion REST Data Source.

0	APEX	App Builder	<ul> <li>SQL Workshop ~</li> </ul>			Q		24	Apex Developer fusiondev		
🕆 🚍 Application 110 \ Shared Components \ REST Data Sources \ EligibilityObjects 😥 📎 💧											
REST Show All	<b>Data S</b> I REST D	ource	Apply Changes	REST Data Sources REST Data Sources act as a reference to one or multiple external web services. A REST Data Source can contain one or many Operations which are the							
Operat	ions							Add Operation	references to a concrete external web service. Configurations at the top level		
Edit	Name	Operation	URL Pattern	Database Action	For Nested Rows	Parameter Count	Test Operation	Last Updated	Configurations at the top level are shared across all operations.		
1				Fetch rows				53 minutes ago	Stay on page 🧿		
1		POST		Insert row				53 minutes ago	Learn More		
1			/:APEX\$ResourceKey	Fetch single row				53 minutes ago	Manage Synchronization >		
1		PATCH	/:APEX\$ResourceKey	Update row				53 minutes ago	REST Source Catalogs		
1	-	DELETE	/:APEX\$ResourceKey	Delete row	-	-		53 minutes ago			
								1-5	T		

# "Oracle Cloud Applications (BOSS) REST Service" REST Data Source

To configure your application to use BOSS REST services you must create a REST Data Source of type "Oracle Cloud Applications (BOSS) REST Service". These steps must be performed by the APEX Application developer to use Fusion BOSS REST APIs.

• Enter details of your Fusion REST API endpoint.

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• Select default rendered values for Base URL and Service URL Path



• Select desired values for Discover References, Use Bulk DML, Use Total Results, Use Pagination



• Enter the credentials created for integration with Fusion instance in Fusion Starter App

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The REST Data Source is created with success.

O APEX	App Builder 🗸 🛛 S	QL Workshop 🗸	Team Development \vee Gallery			Q, Sear	dh	\$	Apex Develop fusiondev		
🕈 💼 Applicati	on 110 🛝 Shared Comp										
REST Data Sources	REST Data Sources Synchronizations Utilization History About										
Qv		Go 🗄	Actions V					lopy Create >	REST Data Sources act as a reference to one or multiple external web (REST) services.		
REST Source Name	Synchronized	Operations	Endpoint URL	Authentication	Subscribed From	Subscription Status	Subscribers	Updated	REST Data Source can contain one or many Operations which are the references to a concrete		
GetAllWorkers	No	2	https://wnyoyfa.ocs.oraclecloud.com/hcmRestApi/resources/latest/publicWorkers	Yes	-	-		ó days ago	external web service. Configurations at the REST		
Service Request Tags	No		https://wnyty/s.ccs.orschecloud.com/api/bass/data/objects/ors/csServiceCore/srMgmt/vl/serviceRequestTags	Yes				Now	source level are shared across all contained operations.		
CRM Product Groups	No	3	https://ianyoy/a.ocs.oraclecloud.com/cmnRestApi/resources/latest/catalogProductGroups	Yes	1			33 minutes ego			
HCM Self Details									Tasks		
EligibilityObjects			https://anyoy/a.ocs.oraclecloud.com/homRestApi/resources/latest/eligibilityObjectResults					ó days ago	Corru from another ann		

#### Caveats

If you create a REST Data Source Catalog using Fusion Open API end points and then try to create a REST Data Source from the catalog the REST Data source will be created with type "Simple HTTP" instead of type "Oracle Cloud Applications (SaaS) REST Service". Oracle recommends you create a REST Data Source using the "Oracle Cloud Applications (SaaS) REST Service" REST Data Source so that you can take advantage of the enhanced functionality provided by this type of data source.

# **REST Source Operation Caching**

You can cache the data you retrieve from your Fusion Instance using REST Source Operation Caching. Following types of caching preferences are available:

- Disabled: This is the default mode and no data is cached.
- For all Users: In this mode data is retrieved once and cached for all users
- By User: This this mode, data is retrieved once per user and subsequent API invocations for that user across sessions use the cached data
- By Session: In this mode, data is retrieved once per user session and cached.

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#### **Invalidating Cached Data**

You can configure cache invalidation criteria to invalidate your cache. Once the cache is invalidated data will be refreshed from the source when the Rest API is invoked. Cache invalidation criteria can be specified in many ways.

- Using "DBMS\_SCHEDULER Calendaring Expression": Cached content can be invalidated using flexible intervals, for instance at the top of the hour, at midnight, or another specific recurring point in time.
- 0: The content will be cached only in memory, for the current page processing.
- 15: The content will expire 15 minutes after it has been cached.

You can configure REST Source Operation as follows

• Navigate to Application->Shared Components-> REST Data Sources->Your REST Data Source->Operations



• Edit the GET operation on your Rest Data Source

REST D	REST Data Source Dutier Apply Changes									
Operation	15							Add Operation	references to a concrete external web service.	
Edit	Name	Operation	URL Pattern	Database Action	For Nested Rows	Parameter Count	Test Operation	Last Updated	Configurations at the top level are shared across all operations.	
1		DELETE		Delete row				6 weeks ago	Stay on page 🧿	
1	-	GET								
1	-	POST		Insert row				ó weeks ago		
1				Update row				ó weeks ago		
									Source. Settings at the operation-level only apply to this operation.	

Configure your caching preference and cache invalidation criteria

1 Applicati	on 1066 \ Shared Cor	mponents \ REST Data Sources \ Ben	fitsEligibilityObject \ Operation				D 📎	₼	Edit Page 1	۲
REST Source	REST Source Operation Control Determined Advanced								Operations A REST Source Operation contains the actual information about the external web service handler. For REST services, an	
Caching	Caching	By Session V 📀							operation is made combination of a L and an HTTP verb A REST Data Sourc multiple operation	from the IRL pattern (GET, POST). te can contain 5.
	Invalidate When								Operations can be Database Operati- enables Oracle API components to pic correct operation.	mapped to ons which EX k up the Reports, or CSS
									A stay on page	up the mapped to abase the module- nong all he REST Data the y apply to

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# **Exploring Service Metadata with Oracle Cloud Apps Data Source Explorer**

You can install the Oracle Cloud Apps Data Source Explorer app as follows:

• Navigate to Gallery→Utility Apps and Install Oracle Cloud Apps Data Source Explorer



• Configure the authentication scheme for your Oracle Cloud Apps Data Source Explorer with Fusion authentication scheme

APEX App Builder 🗸 SQL Workshop	<ul> <li>Team Development</li> </ul>	∽ Gallery			Q, Search		\$	② AD Apex Develop fusiondev
1 Application 116 \ Shared Components \ Aut								
Authentication Schemes History								About
۹ ا	🗄 🖽 Actions 🗸						Greate >	An Authentication Scheme is saved configuration you can apply to your application.
Name († 11.	Is Current	Scheme Type	Subscribed From	Subscription Status	Subscribers	Updated		To turn off authentication you must create and make current No. Authentication scheme
PEX_FA_IANYQY_OAUTH	Yes	Social Sign-In	102	Needs refresh		4 weeks ago		Learn More
Vrade APEX Accounts		Oracle APEX Accounts				4 weeks ago		Testa
								Considered another and
								Refresh Subscriptions

 Open the application and run it to see a view of REST Data Sources available across applications in your workspace.

🚯 Orac	le Cloud Ap	ps Data Source Explorer - REST Data Sources		④ 🗘 Install App 오
Endpoints	In Use All E	ndpoints Background Progress		
Q~		Go 1. Primary Report ∨ Actions ∨	C Refresh List	Download Remaining Service Descriptions In Background
Action	Endpoint URL	REST Data Source Static Id $\uparrow =$	Application	]
C	G	HCM_SELF_DETAILS	Fusion App with Roles (102)	
С	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy) (115)	
с	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy) (110)	
4	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy-dev1) (105)	
<u></u>	G	crm_product_groups	Fusion Integrated Sample App (ianyqy) (110)	

 Download service metadata by clicking on the download icon for the service or download in background option for all remaining services.

Orac	le Cloud Ap:	ps Data Source Explorer - REST Data Sources		③ 🖓 Install App 오				
Endpoints	In Use All E	ndpoints Background Progress						
Q~		Go 1. Primary Report ∨ Actions ∨	${f C}$ Refresh List	$\circlearrowright$ Download Remaining Service Descriptions In Background				
Action	Endpoint URL	REST Data Source Static Id $\uparrow =$	Application					
C	G	HCM_SELF_DETAILS	Fusion App with Roles (102)					
С	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy) (115)					
C	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy) (110)					
	G	HCM_SELF_DETAILS	Fusion Integrated Sample App (ianyqy-dev1) (105)					
4	G	crm_product_groups	Fusion Integrated Sample App (ianyqy) (110)					
С	G	eligibilityobjects	Fusion Integrated Sample App (ianyqy) (110)					
С	G	getallworkers	Fusion Integrated Sample App (ianyqy) (110)					

 For a detailed service metadata view navigate to Service details by clicking on the REST Data Source name in the REST Data Source Static Id column

🙆 Oracle Cloud Apps Data Source Explorer - Service Details: HCM Self Details Show Only Visible Attributes 🗸 🛈 🖒 Install App 🖇 somelinaamdar@oracle.com 🗸												
Attributes Child Objects												
Q v Go 1. Primary Report v Actions v												
Attribute Name	Туре	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required?	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
PersonNumber	string(30)	Person Number	Person number of the person record linked to the user account.			N	Y	N	N	N	N	
UserDistinguishedName	string(4000)	User Distinguished Name	Distinguished name of the user.			N	N	N	N	N	N	
Username	string(100)	User Name	User name of the person. This a unique identifier for a user session.			N	N	N	N	N	N	
DisplayName	string(240)	Display Name	Display name of the person.			N	N	N	N	N	N	
FirstName	string(150)	First Name	First name of the person.			N	N	N	N	N	N	
LastName	string(150)	Last Name	Last name of the person.			N	Y	N	N	N	N	
MiddleNames	string(80)	Middle Name	Middle name of the person.			N	N	N	N	N	N	

# **Creating a UI Page with Fusion Data**

You are now acquainted with the tools provided to build a UI page with Fusion data. We will next show the steps for creating a form page with Fusion LOVs (List of Values). We will use the Sales Lead as an example Fusion data source.

• Create a REST Data Source for Sales Lead

O APEX	App Builder 🗸	SQL Work	shop 🗸 Team Development 🗸 Gallery			Q Search		24	AD     Apex Developer     fusiondev			
🕈 📃 Application 110 \ Shared Components \ REST Data Sources												
REST Data Sources Synchronizations Utilization History Abo												
Q v Co B II Actions v Copy Create >												
REST Source Name	Synchronized	Operations	Endpoint URL	Authentication	Subscribed From	Subscription Status	Subscribers	Updated	REST Data Source can contain one or many Operations which are the references to a concrete			
GetAllWorkers			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/publicWorkers					9 days ago	external web service. Configurations at the REST source level are shared across			
Service Request Tags			https://ianyqy.fa.ocs.oraclecloud.com/api/boss/data/objects/ ora/cxServiceCore/srMgmt/v1/serviceRequestTags						all contained operations. Learn More			
CRM Product Groups			https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/resources/ latest/catalogProductGroups					3 days ago	Tasks			
HCM Self Details			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/selfDetails					9 days ago				
EligibilityObjects			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/eligibilityObjectResults					9 days ago				
Sales Leads	No	5	https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/resources/ latest/leads	Yes	-	-	-	77 minutes ago				

• Review API Metadata in API Explorer and apply filter to review list of Required fields for creating a Sales Lead

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Ary Oracle Cloud Apps Data Source Explorer - Service Details. Sales Leads												
Attributes Child Objects												
Q~	Go	1. Primary Report V Actions V										
🔹 🔽 Required? = 'Y'		×										
Attribute Name	Туре	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	
CreationDate	datetime	Creation Date	Indicates the date and time when this record is created.		Date Picker	Y	Y	N	N	N	N	
LastUpdateDate	datetime	Last Update Date	Who column: indicates the date and time of the last update of the row.		Date Picker	Y	Y	N	N	N	N	
LeadId	integer(18)	Lead Identifier	Partner Type. Indicates the type of partner stamped on the lead.			Y	Y	Y	Y	Y	N	

• Review API Metadata in API Explorer to identify LOV fields and copy the provided LOV enpoint URLs.

Oracle Cloud Apps Data Source Explorer - Service Details: Sales Leads							Show Only Vis	ible Attributes	✓ ④ Ջ			
Attribute Name	Туре	Label	Description	LOV Endpoint	Preferred UI	Queryable?	Required? 1	Defaulted?	Editable?	Remote PK?	Custom?	Only Operators?
LeadId	integer(18)	Lead Identifier	type of partner stamped on the lead.			Y	Y	Y	Y	Y	N	
CreatedBy	string(64)	Created By	Indicates the user who created this record.			N	Y	N	N	N	N	
LastUpdatedBy	string(64)	Last Updated By	Who column: indicates the user who last updated the row.			N	Y	N	N	N	N	
ToReassignFlag	boolean(1)	Reassign	Identifies leads that are marked for reassignment.	G	Switch	N	Y	N	Y	N	N	
BusinessUnitId	integer(18)	Business Unit Identifier	Business Unit Identifier associated with the business unit of the sales lead creator.	Q	Select List	N	Y	Y	On Create	N	N	
ConflictId	integer(15)	Conflict Identifier				Y	Y	N	Y	N	N	
AccountPartyNumber	string(30)	Account Number				Y	Y	N	N	N	N	
ContactPartyNumber	string(30)	Primary Contact Number				Y	Y	N	N	N	N	
OwnerPartyNumber	string(30)	Owner Number				Y	Y	N	N	N	N	

#### • Edit the copied URLs to remove special characters, if any.

#### Table 1: Replacement of special characters

Special char	Replacement Value
%3B	;
%3D	=
%2C	,

Table 2: Sample LOV URLs

Field	URLs



	Copied URL
ToReassignFlag	<ul> <li><u>https://ianyqy.fa.ocs.oraclecloud.com/crmRESTApi/resources/11.13.0.0/fndStatic</u> <u>Lookups?finder=LookupTypeActiveEnabledOrBindCodeFinder%3BBindLookupType</u> <u>%3DYES_NO</u></li> <li>Replacement URL         <ul> <li><u>https://ianyqy.fa.ocs.oraclecloud.com/crmRESTApi/resources/11.13.0.0/fndStatic</u> <u>Lookups?finder=LookupTypeActiveEnabledOrBindCodeFinder;BindLookupType=YE</u></li> </ul> </li> </ul>
	<u>S_NO</u>
Business Unit	https://ianyqy.fa.ocs.oraclecloud.com/crmRESTApi/resources/11.12.0.0/crmBusiness <u>Units</u>

Create REST Data Sources from the LOV endpoint URLs

Ο ΑΡΕΧ	App Builder $$							24	Apex Develope fusiondev	
1 m Applic	ation 110 \ Shared	Components	REST Data Sources							
REST Data Source	s Synchroniza	tions Utilizz	ation History						About	
Qv	R Copy Create > Copy Create > C									
REST Source Name	Synchronized	Operations	Endpoint URL	Authentication	Subscribed From	Subscription Status	Subscribers	Updated	REST Data Source can contain one or many Operations which are the references to a concrete	
GetAllWorkers			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/publicWorkers					9 days ago	external web service. Configurations at the REST source level are shared across	
Service Request Tags			https://ianyqy.fa.ocs.oraclecloud.com/api/boss/data/objects/ ora/cxServiceCore/srMgmt/v1/serviceRequestTags					3 days ago	all contained operations. Learn More	
CRM Product Groups			https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/resources/ latest/catalogProductGroups					3 days ago	Tasks	
Business Units	No	2	https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/ resources/11.12.0.0/crmBusinessUnits	Yes		-	-	30 seconds ago		
HCM Self Details			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/selfDetails					10 days ago		
EligibilityObjects			https://ianyqy.fa.ocs.oraclecloud.com/hcmRestApi/resources/ latest/eligibilityObjectResults					9 days ago		
Sales Leads			https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/resources/ latest/leads					2 hours ago		
ToReassignFlag	No	2	https://ianyqy.fa.ocs.oraclecloud.com/crmRestApi/ resources/11.13.0.0/IndStaticLookups	Yes	-	-	-	80 seconds ago	]	

• Create a form with Required fields.

APEX App Builder V SQL Wo	Create Form	2	Apex Dev	reloper
1 Application 110				
Fusion Integrated Sample App (ianyqy)	Page Definition	cation Definition		
	Page Number 6 🕐			
	*Name Sales Leads		copy, or delete an applica Select a page to edit the j properties, or click <b>Creat</b> to add a page to the appli	ition. page e Page lication.
	Page Mode Normal Modal Dialog Drawer 🕜			
	Data Source			
Run Application	Data Source REST Source 🗸 ⊘	port		
	* REST Data Source Sales Leads 🗸 🕜			
Q.~ G0	Nested Rows None 🗸 ⊘	Create Page		
	Navigation			
	Use Breadcrumb 🛛 🚺 🕜			
0 - Global Page 1 - H	Breadcrumb Parent Entry			
	Cancel Next >			

Create List of Values for the LOV fields from REST Data Sources

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APEX App Builder      SQL Workshop	APEX App Builder v SQL Workshop v Team Development v Gallery Q Search							
↑ 📃 Application 110 \ Shared Components								
Application Logic	Security	Other Components		About				
Application Definition     Application Herms     Application Processes     Application Settings     build options     1		Liss of Values     Plug ins     Component Settings     Shortcals     Component Groups     Data Lad Definitions		Shared components can display or be applied on any page within the application. This page provides a list of available shared components. Learn More Tasks Export Application				
Navigation and Search	User Interface	Files and Reports						
Liss 2     Navigation Meru     Breadcrumtes 1     Navigation & Liss     Sarari, Confinuations	User Interface Attributes Progressive Web App Themes Templates Final Terminates			Objects     Provide the second s				

• Enter a name for the List of Values

		Create List of Values	×
<b>~</b> —		•	
		Name and Type	
Static lists of values a dynamic data source	re based on pr of either Local	redefined pairs of display and return values. Dynamic lists of values are based on a I Database, REST Enabled SQL, REST Data Source, Duality Views or JSON Source.	
	* Name	BUSINESS Units LOV	
	Type:	Dynamic ⑦ Static	
< Cancel		Next	>

• Associate the List of Values with the REST Data Source

		Create Li	ist of Values	×
<b>~</b> -			•	
			List of Values Source	
	Data Source	REST Source	✓ ⑦	
	* REST Data Source	Business Units	<u>~</u> 0	
	Nested Rows	None	✓ ⑦	
< Cancel				Next >

• Select the return column for the List of Values

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		Create List	of Value	es		
<b>~</b> -				<b>~</b>		
					Column Mapping	
	* Return Column	BUID	<b>~</b> ?			
	Display Column	APEX\$RESOURCEKEY	<b>~</b> ?			
				1		
< Cancel					Cr	eate

• The List of Values is created with success

APEX App Builder					Q Searc		24	
↑ 🔄 Application 110 \ Sha	ared Components \ Lists of \	Values					)	
Lists of Values Edit Null Text	Locally Defined Gri	d Edit Conditional E	ntries Utilization Hi					
Qv	Go	Actions ~					Create >	
Name 🚘	Туре	Entry Count	Subscribed From	Subscription Status	Subscribers	Updated	Сору	
BUSINESS UNITS LOV	REST Data Source					3 minutes ago	G	
TOREASSIGNFLAGLOV	REST Data Source					2 hours ago	G	

• Associate the List of values with the corresponding Page Item in the Form Page



• Associate the List of Values created with the corresponding page item on the Form page

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APEX App Builder      SQL Work	rshop ∨ Team I	Development 🗸 Gallery			Q Search		24	0	AD fusion	developer dev
↑ 🗾 Application 110 \ Page 6: Sales Leads			D~	6 🗘 Go					Save	۲
■ 夕 ⇔ Ѧ	Layout Page I	tem Page Search					Help			
P6_LASTUPDATEDBY      M P6_LASTUPDATEL( ≡ ~	Q. Filter						Select a comp	onent an	d then select an	attribute
P6_TOREASSIGNFLAG	Value Required						in the Propert attribute.	y Editor te	o display help o	n that
P6_FOLLOWUPTIMESTAMP	List of Value									
E P6_CUSTOMERID	Туре	Shared Component								
P6_BUSINESSUNITID	List of Values	BUSINESS UNITS LOV				>				
	Display Extra Values									
P6_DESCRIPTION	Display Null Value									
P6_REJECTCOMMENT	Null Display Value									
P6_REJECTREASONCODE	Null Return Value									
P6_RETIRECOMMENT     P6_RETIREREASONCODE	Cascading Lis	st of Values								
P6_REASSIGNCOMMENT	Parent Item(s)					ŧ≡				
P6_REASSIGNREASONCODE	Advanced									

• When you run the application you will see the LOV values retrieved from Fusion

APEX App Builder      SQL Workshop      Team Development      Gallery	Q Search & O AD Apex Developer fusiondev
↑ 📃 Application 110 \ Page 6: Sales Leads	<mark>⊡∽ 6 ≎ co</mark> 1⊡ ⊃ C +~ &~ & Save ⊙
■ 夕 CJ 合 Layout Page Item Page Search	Help
≡ Fusion Integrated Sample App (ianyqy)	C Fusion Cloud Applications
Sales Leads	
Customerid	
Businessunitid	•
Supremo US Business Unit	
Description	

#### Improving performance of a page with Fusion LOVs

Rest Data Sources configured for Fusion Rest APIs retrieve data from your configured Fusion instance. LOV data is configuration data that is a very good candidate for caching in your APEX application. Depending on the specifics of the Fusion LOV used in your APEX application you can configure the appropriate caching preference. A subset of Fusion LOVs are configured with Fusion security policies. When you are working with a Fusion LOV configured with Fusion security policies you can configure Rest Data Source caching. It is recommended you configure your Fusion LOV REST Data Source with REST Source Operation Caching "By Session" with cache invalidation criteria at "0" so that the content is cached in memory for the current page processing.

# **Integration APEX Extension application UI and Fusion UI**

#### Launching APEX application from Fusion

The Fusion Navigation menu can be easily extended to support launch of the APEX Extension application. The following steps demonstrate configuring a sample APEX application link in the Fusion navigator menu. Refer to the latest Fusion documentation for the most current information on configuring the Fusion navigation menu.

#### Steps to be performed by the Fusion System Administrator

Login to Fusion UI and navigate to Configuration → Sandboxes

$\leftarrow$			Show More		ΟĢ	SI
Supply Chain Planning			~			
Product Management			~			88
Cash Management			~			
Fixed Assets			~	con or the company logo. bess this page by selecting the My		
Academics			~	navigation menu.		
Academic Tools			~			
My Enterprise			~			
Tools			~			
Configuration			^			
Sandboxes	60 Migration	Appearance				
Structure	User Interface Text	Business Objects				
Replication Composer	Page Integration					
Others			~			

#### • Create new Sandbox

					û û 🥵
Sandboxes ② 🖛					
Available Sandboxes Published Sandboxes Dele	eted Sandboxes				
Find All v					Create Sandbox
Tools	Name	Context	Publishable	Tools	Enter Sandbox
Application Composer	No data to display.				
Configure Business Objects					<ul> <li>+</li> </ul>
HCM Experience Design Studio					
Appearance					
Structure					
Manage Service Mappings					
User Interface Text					
Data Security					

• Enter a name for the new Sandbox and ensure that the "Structure" tool is activated for the Sandbox.

≡⊂	DRACLE			Û Û S
Crea	ate Sandbox ⑦			Create Create and Enter Cancel
	* Name APEX Publishable  Yes No	Description		
All To	ols			
Activ	e Name	Description	Supported Context Additional Information	
	Application Composer	Create custom objects and fields, extend user interfaces and business lo	Site	
	% Configure Business Objects	Configure Business Objects	Site	
	HCM Experience Design Studio	HCM Experience Design Studio	Site	
	/ Appearance	Change the look and feel of the application	Site	_
	Structure	Configure the Navigator and springboard	Site	
	Manage Service Mappings	Search, create, edit, or delete service mappings	Site	

• The newly created Sandbox is now visible. You can enter the sandbox.

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					О Ҿ <sup>si</sup>
Sandboxes ⊘ 🕶					
Available Sandboxes Published Sandboxes De	eleted Sandboxes				
Find All v					Create Sandbox
Tools	Name	Context	Publishable	Tools	Enter Sandbox
Application Composer	APEX	Site	Yes		٥
Configure Business Objects					
HCM Experience Design Studio					
Appearance					
Structure					
Manage Service Mappings					
User Interface Text					
🔲 💼 Data Security					

• Whilst in the Sandbox, navigate to Tools→Structure

APEX - Tools -		Sandbox Mode: Edit 🔻 🥑
		☐ ₽ <sup>51</sup>
	Good afternoon,	
	Sales My Enterprise Tools Configuration Others	
000000	QUICK ACTIONS APPS	
	今 Create Contact	
	Create Appointment Products	
		- Carlos -
00 <sub>0</sub>		1999 (1998) (1997) - L

• Create a new Group by navigating to "Create Group"

APE	X 🔻 Tools 👻		Si	andbox Mode: Edi	it 🔻 🗐
≡ •	ORACLE			ΟĢ	SI
	Navigation Configuration 💿				atte 🗖
				Create Group	
$\Diamond$				Create Page En	try
uu	Name	Navigator	Springboard	Order	
	▶ 🚨 Mo	0	0	~ ~	$\cap$
<u> </u>	▶ 儘 My Team	•	0	~ ~	$\leq$
	My Client Groups	0	0	~ ~	
	▶ 🤧 Benefits Administration	0	9	~ ~	
	🕨 🧧 Payroli	0	0	~ ~	
	Im Sales Dashboard	0	0	~ ~	
	🕨 🎓 Workspace	0	0	~ ~	
	Risk Management	0	0	~ ~	
	Risk Management Tools	0	0	~ ~	
	Financial Reporting Compliance	0	0	~ ~	
	Advanced Controls Management	0	0	~ ~	

• Provide a name for your Group and select "Yes" for Show on Navigator



AF APEX V Tools V				Sandbox Mode: Edit 🔻
$\equiv \equiv \text{Oracle}$				Δ÷
Create Group			Save and Continue	Save and Close
*				
<b>.</b>	* Name Fusion Extensions			
	Icon [ 🤤 Q			
	Show on Navigator Yes ~			
Financial Reporting Compliance		0	•	~ ~
Advanced Controls Management		0	0	~ ~

• Create a new Page Entry

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≡ •	DRACLE			ΟĢ	SI
	Navigation Configuration ⑦			Crea	te 🔻
				Create Group	
俞	Name	Navigator	Springboar	Create Page Entr	y 🗌
	Business Licenses	9	9	~ ~ >	
<b>#</b> /	The source Directory	0		$\sim \sim \rightarrow$	0
	a <sup>g</sup> a Social			$\sim \sim \rightarrow$	
	I Getting Started	0	9	$\sim \sim \rightarrow$	
	11 My Dashboard	9	9	$\sim \sim \rightarrow$	
	2 Marketplace	0	9	$\sim \sim \rightarrow$	
	Redwood Reference App	9	0	$\sim \sim \rightarrow$	
	Cloud Customer Connect	0		$\sim \sim \rightarrow$	
	▶ 📗 My Enterprise	0	0	~ ~	
	% Setup and Maintenance			$\sim \sim \rightarrow$	
	🕨 🔆 Tools	0	0	~ ~	

• Provide a name for your new Page Entry for example "My APEX Extension App" and select Icon. Also select group as the previously created group for example "Fusion Extensions" and select LinkType as "Static URL".

APEX <b>v</b> Tools <b>v</b>	Sandbox Mode: Edit 🔻 🧲
Create Page Entry	Save and Continue Save and Close Cancel
Page	
* Name	My APEX Extension App
* Icor	□\$ 9
Group	Fusion Extensions
Show on Navigato	Yes v
Show on Springboard	Yes 🗸
Mobile Enabled	No v
Link Type	Static URL v

• Publish your Sandbox by navigating to Sandbox → Publish

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A	PEX V Tools V	Si	andbox Mod	e: Edit	• ٵ
	Sandbox Detail		$\land$	Δ	SI
	+] Publish			-	
0	□ Leave Sandbox Configuration ⑦			Creat	• •
				Ŧ	-
බ	Name	Navigator Springboard	Order		
	A Resource Directory	0	~ ~	>	
#/	ूर्यं <sub>द</sub> Social		~ ~	>	0
	<b>የ™</b> Getting Started	0 0	~ ~	>	
	1 My Dashboard	o o	~ ~	>	
	2 Marketplace	• •	~ ~	>	
	Redwood Reference App	o o	~ ~	>	
	Cloud Customer Connect	0	~ ~	>	
	My Enterprise	• •	~ ~		
	% Setup and Maintenance		~ ~	>	
	▶ 🔆 Tools	• •	~ ~		
	► P Configuration	• •	~ ~		

• Confirm Sandbox Publish when you are shown the confirmation message for sandbox publish.

APEX <b>v</b> Tools <b>v</b>				Sandbox Mode: Edit 👻 🝏
				Ĉ ₽ SI
Sandbox Deta	ails: APEX ⑦		Actions <b>v</b>	Publish Enter Sandbox Done
Current Status Up to Date		Sandbox Changes Merge Log		Download All
Structure     Basic Information	n	Publish Sandbox You will be taken to the page with sandbox details, where you can publish this sandbox. Do you want to continue? Yes	× ed On	Last Updated By sonali inamdar sonali inamdar
Name Created On	APEX 12/13/24 8:19 PM	/oracle/apps/menu/root_menu.cml		sonali inamdar
Created By Last Updated On	sonali inamdar 12/13/24 8:41 PM			
Last Updated By Last Refreshed On	sonali inamdar			
Context	Site 🗔			

• Publishing your Sandbox ensures that the changes made in your Sandbox are available to all users of your Fusion instance

APEX V Tools V					Sandbox Mode: Edit 🔻 🤅
	E				Ċ ₽ [
Sandbox Det	Publish Enter Sandbox Done				
Current Status			Sandbox Changes Merge Log		
Active Tools		+	Search Detail v		Download All
Structure	Detail		Detail	Last Updated On	Last Updated By
			/oracle/apps/menu/CustResourceBundle.xlf		sonali inamdar
A Basic Informati	on		/oracle/apps/menu/CustResourceBundle_en.xlf		sonali inamdar
Name	APEX		/oracle/apps/menu/root_menu.xml		sonali inamdar
Created On	12/13/24 8:19 PM	٠			
Created By	sonali inamdar				
Last Updated On 12/13/24 8:41 PM					
Last Updated By	sonali inamdar				
Last Refreshed On					
Context	Site 🔝				
Publichable	Ver				

• When your Sandbox is published with success your users will see the newly created group with a link to the APEX extension application.

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# Conclusion

Oracle APEX is an excellent platform for building application extensions to Oracle Fusion Cloud Applications Suite. Oracle APEX has native support for Fusion integrations. You can take advantage of Oracle APEX to allow cross-functional teams to easily collaborate and quickly deliver custom extensions to Oracle Fusion Cloud Applications Suite. Oracle APEX has powerful low-code techniques so you can build your extension UIs rapidly usings forms, reports and also develop your backend application workflows. With the proper deployment architecture, and using techniques outlined in this paper, you can use Oracle APEX to extend the capabilities of your Oracle Fusion Cloud Applications Suite. You can share user authentication and develop seamless flows across components between your extension APEX application and Fusion Cloud Applications.





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