Oracle Mobile Development 2015 Essentials Exam Study Guide
Getting Started

Earning this certification helps OPN members differentiate in the marketplace through proven in-depth expertise, and helps their partner company qualify for the Oracle Mobile Development Specialization.

Target Audience
The Oracle Mobile Development 2015 Essentials exam audience defines the type of participants who are likely to pass the exam and targets individuals with a specific level of education and expertise:

*Job Role:*
- Senior Developer
- Senior Implementation Consultant

*Level of Competency:*
- Candidates should understand development considerations when building Mobile Application Framework.
- Participants should have field experience implementing mobile solutions for customers.
- Participants should possess good knowledge of key technologies like: SOAP web services, REST-XML data and REST-JSON data through data controls and Java APIs.
- Candidates should be able to explain key factors to use when designing a mobile app architecture.
- Deep experience in at least one other Oracle product family is highly recommended.

Exam Topics
The Oracle Mobile Development 2015 Essentials Exam covers nine topics:

- Fundamentals
- Architecture and Structure
- Mobile Application Framework (MAF) Data Layer
- User Interface (UI) Development
- Device Services Integration
- App Security
- Advanced Programming Topics
- Testing, Debugging, Configurability and Deployment
- Back-end Architecture
Levels of Knowledge

Each exam topic contains objectives and each objective is categorized as either a learner or practitioner level of knowledge.

**Learner** items test foundational grasp and require product comprehension (not recognition or memorization).

Example:
“When setting up price list modifiers in Advanced Pricing, which three steps must be completed in order to successfully activate surcharge and price break features?”

**Practitioner** items present on-the-job scenarios and require the ability to: integrate and apply knowledge in new contexts, analyze and troubleshoot complex issues, and solve problems.

Example:
1) “You are creating price list modifiers in Advanced Pricing. Your customer has three requirements: X, Y, Z. Identify the two steps that must be completed in order to meet those requirements.
2) “You are running a two-instance database with six redo logs defined. You decide to add a third thread to support a third database instance, on the third node of the cluster. Using command line administration, which two commands will you execute to achieve this?”

Training Options

Throughout the study guide each exam topic recommends one or several training/documentation titles:

**Recommended Training**

Online Training  - recorded or live virtual training sessions
OPN Boot Camps - a combination of classroom lectures, hands-on lab exercises, and case studies
Oracle University Training  - instructor-led in-class training, live virtual class, on-demand training

**Recommended Documentation**

Oracle Documentation – product manual in on-line format
Product tutorials - on-line information on how to use the product
Datasheets and white papers - documents that summarize the performance and other technical characteristics of a product, machine, component
Books – product information written text that published in printed or electronic form

While the Oracle PartnerNetwork facilitates free access to online training, in class trainings often require a fee.
Exam Details per Topic

This section covers details associated to all exam topics such as: exam topics overview, objectives, levels of knowledge, recommended trainings and sample questions. Specialization exams include all application functionalities not only the most frequently used ones.

**Topic 1: Fundamentals**

**Objectives**

- Describe the components of Mobile Suite and Mobile Application Framework (MAF)  
  Learner
- Explain key considerations when gathering mobile app requirements and how these considerations impact the architecture  
  Learner
- Describe the three mobile architectures and determine which architecture to use based on customer requirements  
  Learner
- Explain the service developer and mobile app developer roles  
  Learner
- Describe key steps in mobile app development  
  Learner

**Recommended Training**

**Online Training**

- [Oracle Enterprise Mobility 2015 Sales Specialist Guided Learning Path](#)
- [Oracle Mobile Application Framework - Market Definition](#)
- [Oracle Mobile Application Framework - Product Overview](#)
- [Oracle Mobile Platform - Introduction and Overview 4-Part Video Series](#)

**Recommended Documentation**

**Oracle Documentation**

- [Introduction to Oracle Mobile Application Framework](#)

**Product Tutorials**

- [Building Mobile Applications with Oracle Mobile Application Framework](#)

**Datasheets and whitepapers**

- [Oracle Mobile Application Framework Data Sheet](#)

**Books**

- [Enterprise Mobility for Dummies: Oracle Special Edition E-Book](#)

**Sample Questions**

- Which requirement influences your choice of architecture (native, hybrid, or web mobile) for your application?
  A. interacting with REST-enabled back ends
B. incorporating data from an Oracle Fusion Apps Database
C. working in a disconnected mode
D. sending an email

- Identify the three common tasks required on the back end to support a mobile application.
  A. **Service-enable existing systems to support a REST interface.**
  B. Rearchitect all existing systems to support mobile apps.
  C. **Ensure that the REST services for existing systems handle necessary security protocols.**
  D. **Plan to secure your REST services as needed.**
  E. Rearchitect your current security strategy for your entire enterprise.
Topic 2: Architecture and Structure

Objectives

- Describe the architecture of MAF
- Determine which application content type to use
- Use navigation and UI components for MAF and key application artifacts
- Setup the application development environment
- Configure application-level artifacts such as application ID, navigation bar, springboard and preferences
- Create AMX-based features and define feature constraints
- Create local HTML-based features and add custom HTML files to features
- Create remote URL features and define white listing for security
- Implement application and feature lifecycle listeners
- Design for modularity and reusability in MAF by leveraging application and feature archives
- Create application and feature archives

Level

Learner
Practitioner
Practitioner
Practitioner
Practitioner
Practitioner
Practitioner
Practitioner
Practitioner
Practitioner

Recommended Training

Online Training

- Developing Applications with Oracle Mobile Application Framework

Recommended Documentation

Oracle Documentation

- About the Mobile Application Framework Runtime Architecture
- Setting Up the Development Environment
- About Lifecycle Event Listeners
- Using Lifecycle Listeners in a Mobile Application
- Defining the Content Type for an Application Feature
- Creating MAF AMX Pages
- Implementing Application Feature Content Using Remote URLs
- Working with Feature Archive Files

Books

- Oracle Mobile Application Framework Developer Guide: Build Multiplatform Enterprise Mobile Apps
Sample Questions

- You are developing the UI pages of your Oracle MAF application and you want the pages to be cross platform-compatible and future-proof from changes to support the updated platforms.

  Which is the best content type choice for developing your UI pages in MAF?
  
  A. Local HTML  
  **B. Local AMX**  
  C. Remote URL  
  D. Page Fragment  

- In an application created from an application archive, which one of the archives can be extended, but cannot be directly seen?

  A. AMX page source code  
  **B. Java classes**  
  C. bounded task flows  
  D. unbounded task flows  
  E. maf-applications.xml
Topic 3: Mobile Application Framework (MAF) Data Layer

Objectives

- Describe back-end data scenarios and how they impact the data layer design  
  Level: Learner
- Use the data sources and transports supported by MAF  
  Level: Practitioner
- Describe data control concepts  
  Level: Learner
- Use service and data objects and bean data controls  
  Level: Practitioner
- Develop apps that consume SOAP web services through data controls and Java APIs  
  Level: Practitioner
- Develop apps that consume REST-XML data through data controls and Java APIs  
  Level: Practitioner
- Develop apps that consume REST-JSON data through data controls and Java APIs  
  Level: Practitioner
- Use local database and data sync extensions to provide offline support  
  Level: Practitioner
- Explain approaches that are used in developing an effective data layer  
  Level: Learner

Recommended Training

Online Training

- [Developing Applications with Oracle Mobile Application Framework](#)
- [Working with Data and Web Services](#)

Recommended Documentation

Oracle Documentation

- [Using Web Services](#)
- [Using the Local Database](#)
- [Using Bindings and Creating Data Controls](#)

Sample Questions

- Which two statements are true about the scope of data control instances in AMX features?
  A. Data control instances have a global scope and can be used to share data state across AMX features.
  B. Data control instances have a per AMX feature scope and cannot be used to share data across features.
  C. Data control instances are in an application scope and can be used to share data between features of any technology.
  D. Data control instances can be used to share data state between views in a bounded task flow.
- Identify two use cases that require Java access to a SOAP data control.
  A. **client-side caching of data queried from a SOAP service**
  B. exposing SOAP header information for edit
  C. adding web service security
  D. **mapping a SOAP payload to a custom data object structure on the client side**
Topic 4: User Interface (UI) Development

Objectives

- Describe approaches, key design principles and resources that need to be considered when developing an effective mobile UI
- Use mobile UI components and patterns
- Describe the components of the UI layer and how they work together
- Create bounded and unbounded task flows
- Use list components to display data collection
- Use data components to support data display and data entry
- Use Data Visualization components to display charts, graphs and maps
- Use layout components to create a tablet UI vs. a Smartphone-optimized UI
- Create managed beans and assign appropriate scope for their use
- Use bindings and page definitions
- Use data change event APIs
- Extend UI components with custom and declarative components
- Overwrite and extend out-of-the-box CSS styles with style sheets
- Explain design considerations for optimal UI performance

Level

Learner

Practitioner

Recommended Training

Online Training

- Developing Applications with Oracle Mobile Application Framework
- UI Development in Oracle MAF

Recommended Documentation

Oracle Documentation

- What You May Need to Know About Bounded and Unbounded Task Flows
- Creating the MAF AMX User Interface
- Providing Data Visualization
- How to Style Data Visualization Components
- About Data Change Events
- About the Managed Beans Category
Sample Questions

- Identify two properties of an `ams:commandButton`.
  - A. can have both an `Action` property and an `ActionListener` property set
  - B. cannot perform navigation to another AMX page
  - C. can show text or an icon
  - D. can catch a double-click event

- Your application requires a user preference to allow users to select between displaying Celsius and Fahrenheit temperatures across several MAF features. The user preference will be stored in a managed bean. Which single scope would be best in this scenario?
  - A. `applicationScope`
  - B. `backingBeanScope`
  - C. `pageFlowScope`
  - D. `requestScope`
  - E. `sessionScope`
  - F. `viewScope`
**Topic 5: Device Services Integration**

**Objectives**

- Describe how MAF apps interact with services
- Use the provided mechanisms to invoke device services
- Integrate devices in MAF
- Integrate apps with contacts, camera and location services
- Describe approaches used when working with device services

**Level**

- Learner
- Practitioner

**Recommended Training**

**Online Training**

- Developing Applications with Oracle Mobile Application Framework
- Integrating with Device Services

**Recommended Documentation**

**Oracle Documentation**

- Using the DeviceFeatures Data Control
- Allowing Access to Device Capabilities

**Tutorials**

- Building Mobile Applications with Oracle Mobile Application Framework

**Books**

- Oracle Mobile Application Framework Developer Guide: Build Multiplatform Enterprise Mobile Apps

**Sample Questions**

- You dragged a `getPicture` camera integration onto your page and forgot to set the value for the source of the image in the wizard. Where can you update the value of that parameter?
  
  A. in the AMX component code
  
  B. in the `maf-feature.xml`
  
  C. in the `pagedef.xml` or binding tab of the AMX page
  
  D. You must write a managed bean to change this value.

- A MAF application features a map to allow mobile sales representatives to determine how far away their customers are so they can play for a day in the field. Identify two actions the application developer must perform to implement the map feature.
  
  A. Use the `sendEmail` data control to enable the sales representative to send an email indicating his or her upcoming visit.
  
  B. Create input text and list fields to allow the sales rep to enter or select their starting address.
  
  C. Use the device’s location as the default center of the map.
D. Use the `startLocationMonitor` data control to find the device’s geographical location.
Topic 6: App Security

Objectives

- Describe framework security features
- Describe how Mobile Security Suite provides complete security and management
- Configure authentication and access control
- Configure security policies for SOAP and REST exchanges
- Explain the runtime steps that are performed when accessing secured SOAP or REST services
- Use advanced security features and social login integration in Oracle Access Manager and Social Integration
- Use mobile application management solutions such as Oracle Secured Enterprise Workspace to manage and secure MAF apps

Recommended Training

Online Training
- Developing Applications with Oracle Mobile Application Framework
- Oracle MAF Security
- Delivering a Secure Enterprise Workspace

Recommended Documentation

Oracle Documentation
- About Mobile Application Framework Security
- Overview of the Authentication Process for Mobile Applications
- How to Configure Access Control

Datasheets and whitepapers
- Oracle Mobile and Social Access Service

Books
- Oracle Mobile Application Framework Developer Guide: Build Multiplatform Enterprise Mobile Apps

Sample Questions

- How does a MAF application authorize users?
  A. Login credentials are sent to a Configuration Service which uses a cookie to store the user roles.
  B. The user’s username is sent to an Access Control Service which returns roles and privileges for that user.
  C. The user’s credentials are sent to a Login Server which returns roles and privileges for that user.
  D. The user’s username is sent to either an HTTP Basic, SSO, direct, or a third-
party OAuth provider for authorization.

- Select three common functionalities that are enabled when a MAF application is secured with Mobile Application Management (MAM) solutions such as Oracle Mobile Security Suite.
  A. Discover and download mobile applications from an enterprise app store.
  B. Encrypt the local database and files on the device.
  C. Display the user ID and password in a log file for debugging purposes.
  D. Enforce a data leak protection policy such as disabling copy-paste in the application.
  E. Hide UI fields that contain data not authorized by the logged-in user.
Topic 7: Advanced Programming Topics

Objectives

- Implement client-side code to support push notifications
- Use URL schemes for inter-application invocation and communications
- Use MAF container Java APIs to execute application-level functionality
- Extend device services with Cordova plugins

Recommended Documentation

Oracle Documentation

- Developing Mobile Applications with Oracle Mobile Application Framework
- Enabling Push Notifications
- Integrating Cordova Plugins into Mobile Applications
- The MAF Container Utilities API

Sample Questions

- You need to write code in a managed bean that will get the list of the application’s features in order to perform navigation. Which Java object has the method that you could use to get that list?
  A. AdfmosFeatures
  B. AdfmfContainerUtilities
  C. AdfmfFeaturesUtility
  D. AdfmfJavaUtilities
  E. You can do this only from a JavaScript library

- In embedding an Android third-party Cordova Plugin into your MAF application, the plugin may include a /res directory. What is the purpose of this directory?
  A. It defines a number of Android XML files specifying what device resolutions are supported by the Cordova plugin.
  B. It contains optional pluggable resources that the plugin consumer can bundle into the Cordova plugin at deployment time.
  C. It is a temporary location for build time artifacts.
  D. It contains optional resources required by the plugin at run time such as images, constants, layouts, and strings.
Topic 8: Testing, Debugging, Configurability and Deployment

Objectives

- Describe the application deployment lifecycle and the options for distributing mobile apps  
  Level: Learner
- Explain how configurability allows application updates to be made without reinstalling the app  
  Level: Learner
- Test and debug a MAF app using logs and debuggers  
  Level: Practitioner
- Optimize a MAF app for performance and memory footprint  
  Level: Practitioner
- Prepare a MAF app for distribution  
  Level: Practitioner
- Describe the configurable aspects of an app  
  Level: Learner
- Set up server-side services to deliver configuration updates  
  Level: Practitioner
- Explain the differences between distribution through Apple AppStore and Google Play  
  Level: Learner

Recommended Training

Online Training
- Debugging and Logging

Recommended Documentation

Oracle Documentation
- Developing Mobile Applications with Oracle Mobile Application Framework
- Introduction to Testing and Debugging MAF Applications
- Deploying Mobile Applications

Books
- Oracle Mobile Application Framework Developer Guide: Build Multiplatform Enterprise Mobile Apps

Sample Questions

- Which three are valid options to distribute your production MAF applications?
  A. application marketplace (such as the Apple App Store or Google Play)
  B. download site
  C. enterprise application store provided by solutions such as the Oracle Mobile Security Suite
  D. through Java Web Start by using the Java Network Launch Protocol (JNLP)
  E. the Oracle Store (https://shop.oracle.com)

- Which three options are aspects of a MAF application that can be configured after its deployment?
  A. application-level user preferences
  B. task flow-level user preferences
C. Oracle Metadata Services (MDS) customizations
D. web service end points
E. feature-level preferences
F. feature archive customizations
G. page preferences
Topic 9: Back-end Architecture

Objectives

- Explain the core concepts of service mediation
- Compare REST-JSON, REST-XML and SOAP protocols
- Compare approaches used when securing mobile services
- Describe service enrichment
- Explain techniques used for performance optimization
- Describe data transformation and shaping

Level

Learner

Recommended Documentation

Oracle Documentation

- Learning About Oracle Service Bus
- Understanding Oracle Service Bus Security
- Developing Mobile Applications with Oracle Mobile Application Framework

Tutorials

- Types of Web Services

Sample Questions

- Which two descriptions are examples of service mediation?
  A. programming language independence
  B. loosely coupling interfaces from Java classes
  C. service end-point independence
  D. the ability to intercept a service call and provide additional value through logging, reporting, and applying service level agreements

- Which three technologies does Oracle Mobile Suite use for data shaping?
  A. XQuery
  B. XSLT
  C. MFL
  D. MAF
  E. JavaScript Schema
Exam Registration Details

Full exam preparation details are available on the exam page Oracle Mobile Development 2015 Essentials (1Z0-441), including learning objectives, number of questions, time allowance, pricing and languages available.

The OPN Certified Specialist Exams appointments are available worldwide at Pearson VUE Testing Centers. Reservations can be made via phone or online.

Candidates must have an Oracle Web Account to access CertView and check their exam results. In order to have their certifications reflected on OPN Competency Center, both CertView and Pearson Vue accounts must be updated with the current OPN Company ID. Your Company ID can be obtained by contacting your local Oracle Partner Business Center or by signing in to your OPN account.

Additional Resources

- Oracle Enterprise Mobility Knowledge Zone
- Oracle Mobile Development Specialization
- OPN Guided Learning Paths & Assessments
- OPN Certified Specialist Exam Study Guides