Oracle Service-Oriented Architecture 11g Essentials
Exam Study Guide (1Z0-478)

Tom Barrett
Senior Technical Project Manager
WWA&C Partner Enablement
Objective & Audience

Objective
Help you prepare to take the Oracle SOA Suite 11g Essentials exam (1Z0-478) exam by providing pointers to resources that you can use in your preparation.

Targeted Audience
• Consultants who know how to install the Oracle SOA Suite 11g and perform the tasks required to configure and manage it.
• Field experience with SOA Suite 11g in addressing customer integration opportunities is valuable.
• Up-to-date SOA Suite 11g product training is strongly recommended.
Exam Topics & Objectives

Exam Topics
The Oracle SOA Foundation Practitioner exam consists of 11 topics:
1. Fundamentals
2. Adapters
3. BPEL Modeling
4. Business Rules
5. Human Task Services
6. Service Mediation
7. Business Activity Monitoring (BAM) and Events
8. Securing Services
9. Governance
10. Deployment and Troubleshooting
11. Installation and Configuration

Exam Objectives
The exam objectives are defined by learner or practitioner level of knowledge:
• Learner-level: questions require the candidate to recall information to determine the correct answer. Example: Define the term “event-driven architecture.”
• Practitioner-level: questions require the candidate to derive the correct answer from the application of their knowledge, which is typically attained by experience with using the product. Example: The client sees a need for event-driven architecture in their application. Why might you recommend implementing BPEL sensors instead of Oracle Event Processing?
Training Options

For each exam topic there have been identified alternative training options that are available at Oracle. The training options are divided into four categories:

• **Boot Camps**
  The boot camps are designed as a "jump start" training to enhance your skills by providing role-based training on industry-leading Oracle solutions and services. The boot camps are built as concise, intensive, and real-time training to give partners a competitive advantage as they prepare to build powerful solutions for their own customer base. Partners can choose to attend these boot camps in class or in a live virtual class format to maximize the effectiveness and the time allocated to training. Partners can take any publicly-scheduled Oracle University courses at steep discounts. Benefit from hands-on experience to gain real working skill and work toward Oracle certifications.

• **Online Training**
  Oracle partners are entitled free access to the Oracle Knowledge Center, a vast library of recorded product courses. New courses are regularly added to the library, providing partners with the latest information and training to master new products or to increase proficiency on the new releases.

• **Documentation**
  Books, white papers, product user guides and reference manuals are available from Oracle on the web.
Topic 1: Fundamentals

Objectives

- Describe how SOA concepts map to implementation in composites and Service Bus Level: Learner
- Describe the components and architecture of SOA Suite Level: Learner
- Use the right components to implement common integration patterns Level: Practitioner
- Analyze XPath expressions to retrieve elements in an XML document Level: Practitioner
- Describe how B2B capabilities enable trading partner relationships Level: Learner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Online Training
  - Oracle SOA Suite 11g: New Features (84 minutes)
- Documentation
  - Getting Started with Oracle SOA Suite
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Introduction to Building Applications with Oracle SOA Suite
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Developing SOA Composite Applications with Oracle SOA Suite
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 1 – SOA and Its Evolution
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 2 – Product Architecture

Sample Questions

- In Oracle Service Bus, loose-coupling between service provider and service consumer is provided by a _____.
  A. database tables stored in MDS
  B. proxy service and a business service *
  C. JMS-based queuing mechanism
  D. Mediator component
  E. XRef table
- Which SOA Suite capability enforces WS-* standards for authentication and authorization?
  A. BPEL Process Manager
  B. Enterprise Manager
  C. B2B
  D. Web Services Manager *
Topic 2: Adapters

Objectives

- Describe the role adapters play in a SOA composite application
- Describe the adapter architecture
- Use the file, database and JMS adapters
- Configure adapters at design-time and run-time

Level

Learner

Practitioner

Training Options

Instructor-Led Training

- Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
- Oracle SOA Suite 11g: Essential Concepts (3 days)
- Oracle SOA Suite 11g: Build Composite Applications (5 days)

Documentation

- Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Section 4.5 - Introduction to Adapters
- Oracle Fusion Middleware User's Guide for Technology Adapters 11g: Introduction to Oracle JCA Adapters
- Oracle Fusion Middleware User's Guide for Technology Adapters 11g: Adapter Integration with Oracle Application Server Components
- Oracle Fusion Middleware User's Guide for Technology Adapters 11g: Oracle JCA Adapter for Database
- Oracle Fusion Middleware User's Guide for Technology Adapters 11g: Oracle JCA Adapter for JMS
- Oracle Fusion Middleware User's Guide for Technology Adapters 11g Release 1 (11.1.1): Adapter Integration with Oracle Application Server Components
- J2EE Connector Architecture Specification Version 1.5
- Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 5 – Basic Components: Web Services Binding, Mediator and Database Adapter
- Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 6 – Accessing Files Using the File Adapter
- Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 10 – Using the JMS Adapter

Sample Questions

- What is true about a J2CA Common Client Interface?
  A. The JCA Binding Component uses JCA Common Client Interface APIs to communicate with the Resource Adapter
  B. The Resource Adapter uses Common Client Interface APIs to communicate with EIS
  C. The Resource Adapter implements the standard MessageListener interface to poll for events from EIS
  D. The Application Server uses Common Client Interface APIs to communicate with EIS

- Which statement is not true about enabling streaming support in Adapters?
  A. Streaming will allow larger payloads to be read by the adapters.
  B. Streaming will improve message throughput and latency
  C. Streaming leverages features of XDK's Scalable DOM.
  D. Streaming benefits are better when payloads are of relatively large sizes.
Topic 3: BPEL Modeling

Objectives

- Use BPEL Editor to create BPEL synchronous and asynchronous processes  
  Level: Practitioner
- Use WSDL partner link types and BPEL partner link elements to interact with services  
  Level: Practitioner
- Use the Assign activity to manipulate data in BPEL variables  
  Level: Practitioner
- Model conditional branching, parallel processing and repetitive activities  
  Level: Practitioner
- Implement exception handling and compensating transactions  
  Level: Practitioner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Online Training
  - BPEL Component Overview (2 hours)
- Documentation
  - Oracle Fusion Middleware Developer’s Guide for Oracle SOA Suite11g: Using Parallel Flow in a BPEL Process
  - Oracle Fusion Middleware Developer’s Guide for Oracle SOA Suite11g: Using Conditional Branching in a BPEL Process
  - Oracle Fusion Middleware Developer’s Guide for Oracle SOA Suite11g: Incorporating Java and Java EE Code in a BPEL Process
  - Oracle Fusion Middleware Developer’s Guide for Oracle SOA Suite11g: Using Fault Handling in a BPEL Process
  - Oracle Fusion Middleware Developer’s Guide for Oracle SOA Suite11g: Using Correlation Sets and Message Aggregation
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 14 – Adding Exception Handling

Sample Questions

- An invoke activity in a BPEL process is dehydrated ____.  
  A. immediately after execution if idempotent is set to True  
  B. before execution if idempotent is set to True  
  C. immediately after execution if idempotent is set to False  
  D. before execution if idempotent is set to False  
- You are modeling a conditional branch using a switch element. You elect not to include an otherwise branch. What is the result?  
  A. A business fault is generated if one of the case branches can’t execute.  
  B. A design-time error is indicated by JDeveloper.  
  C. You need to include a fault handler to account for none of the case branches being able to execute.  
  D. If none of the case branches can execute, control passes to the next element in the BPEL model.  

Topic 4: Business Rules

Objectives

• Create if/then rules with Rules Designer
• Create decision table rules with Rules Designer
• Integrate a rule into a BPEL process

Training Options

• Instructor-Led Training
  – Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  – Oracle SOA Suite 11g: Essential Concepts (3 days)
  – Oracle SOA Suite 11g: Build Composite Applications (5 days)
• Online Training
  – Business Rule Component Overview (180 minutes)
• Documentation
  – Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite11g: Getting Started with Oracle Business Rules
  – Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 9 – Business Rules

Sample Questions

• Which is true about an if-then rule evaluation?
  A. It can be evaluated more than once. *
  B. It is evaluated once and only once.
  C. It must evaluate only native variable types.
  D. It cannot change the assessment for another if-then rule.

• You want to include documentation in the BPEL source code for a business rule component you are adding to your BPEL model. Where would you enter it?
  A. As the value for a BPEL global variable
  B. As a comment attribute on the surrounding scope element
  C. As an annotation on the business rule component *
  D. As user documentation on the business rule component.
Topic 5: Human Task Services

Objectives

- Design a human task
- Invoke a human task from a BPEL process
- Generate ADF task forms for human tasks
- Interact with the Worklist application to act on tasks

Level

- Practitioner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Online Training
  - Human Task Component Overview (180 minutes)
- Documentation
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Introduction to Human Workflow Services
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Getting Started with Human Workflow
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g): Using Oracle BPM Worklist
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 8 – Creating Human Tasks

Sample Questions

- Which two are not steps involved in defining a human task?
  A. Setting the task owner
  B. Specifying outcomes
  C. Specifying parameters
  D. Adding the human task to a BPEL process *
  E. Specifying the assignment and routing policy
  F. Defining the task in the Workspace web application *

- How are task outcomes processed in a BPEL process?
  A. Each path out of the human task activity has a condition in which you specify the outcome that causes that path to be followed.
  B. With onMessage or pick activities that receive the outcome from the human workflow engine.
  C. With a switch containing a case for each outcome of interest plus an optional otherwise case after the human task activity. *
  D. With a switch, after the human task, containing a case for each possible outcome.
Topic 6: Service Mediation

Objectives

• Differentiate between when to use Mediator and when to use Service Bus Practitioner
• Explain the role of Service Bus and the benefits it provides Practitioner
• Create and configure a Service Bus proxy, pipeline and business service Practitioner
• Use throttling, endpoint management and caching to scale business services Practitioner

Training Options

• Instructor-Led Training
  – Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  – Oracle SOA Suite 11g: Essential Concepts (3 days)
  – Oracle SOA Suite 11g: Build Composite Applications (5 days)
• Online Training
  – Mediator Component Overview (78 minutes)
  – Oracle Service Bus Essential Concepts (60 minutes)
  – Getting Started with Oracle Service Bus: How to Provision a Service in Oracle Service Bus (7 minutes)
• Documentation
  – Oracle Service Bus Concepts and Architecture
  – Oracle Fusion Middleware Concepts and Architecture for Oracle Service Bus 11g: Oracle Service Bus Architecture
  – Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Getting Started with Oracle Mediator
  – Oracle Fusion Middleware Administrator's Guide for Oracle Service Bus: Section 36.7.5 - Improving Performance by Caching Business Service Results
  – Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 5 – Basic Components: Web Services Binding, Mediator and Database Adapter
  – Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 11 Reusing and Virtualizing Services with Oracle Service Bus

Sample Questions

• What is the most accurate reason to use the Mediator component in an SCA application instead of using the Oracle Service Bus?
  A. The Oracle Service Bus runs outside of an SCA application. Therefore the Mediator is the only choice for translation and transformation tasks within an SCA application. *
  B. The Mediator is much faster than the Oracle Service Bus.
  C. The Mediator supports transactions while the Oracle Service Bus does not.
  D. It is always better to use the Oracle Service Bus instead of the Mediator.
• What best describes a business service in Oracle Service Bus?
  A. A business service is a service that is highly aligned with the goals of the business.
  B. A business service is really just meta-data about an external service interface that allows the Service Bus to integrate with the external service. *
  C. A business service is a programmable entity that allows the Oracle Service Bus to connect to a wide variety of interfaces.
  D. A business service is a complicated object that often takes days or weeks to implement, but is highly scalable and reliable once complete.
Topic 7: Business Activity Monitoring (BAM) and Events

Objectives

- Describe the role of Business Activity Monitoring (BAM) [Learner]
- Create and configure BPEL and composite sensors [Practitioner]
- Use components to publish and consume events [Practitioner]
- Explain the role of Oracle Event Processing (OEP) [Learner]

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Documentation
  - Oracle Fusion Middleware User's Guide for Oracle Business Activity Monitoring 11g: Introduction to Oracle Business Activity Monitoring
  - Oracle Fusion Middleware Getting Started Guide for Oracle Complex Event Processing 11g: Overview of Oracle CEP
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Defining Composite Sensors
  - Event Delivery Network with Oracle SOA Suite 11g R1
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 17 – Event Delivery Network

Sample Questions

- You want to monitor a specific BPEL process variable in your process and you have all the capabilities of SOA Suite at your disposal. Which approach should you take if you want the variable data written to a JMS queue to be processed by another application?
  A. Identify the variable as a Key Performance Indicator and track it in BAM.
  B. Use a composite sensor on the appropriate service or reference binding.
  C. **Use a BPEL Process Manager sensor to collect the value and context.** *
  D. Use Complex Event Processing to monitor the activities being executed in the BPEL process.

- You want to define a new event to be managed by the EDN. The XSD is in place that defines the element that is to be the basis of the new event. Which step should you do next?
  A. **Create a new event definition in the SOA Composite Editor.** *
  B. Use an editor to create the event using event definition language syntax.
  C. Create the new event definition as you configure the Invoke activity that publishes the event in your BPEL process.
  D. Use Enterprise Manager to register the new event to EDN.
Topic 8: Securing Services

Objectives

- Describe the role and features of Oracle Web Services Manager (OWSM)  
  Level: Learner
- Describe security and identity propagation  
  Level: Learner
- Attach security policies to end points at design-time and run-time  
  Level: Practitioner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)

- Documentation
  - Securing Web Services and Service-Oriented Architectures with Oracle Web Services Manager 11g White Paper
  - Oracle Fusion Middleware Security and Administrator's Guide for Web Services 11g: Attaching Policies to Web Services
  - Oracle Fusion Middleware Extensibility Guide for Oracle Web Services Manager 11g: Understanding Policies and Assertions
  - Oracle Identity Management 11gR1 White Paper
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 15 – Securing Services

Sample Questions

- An OWSM agent _____.
  A. can apply categories of policies in any specified order
  B. generates a request to an LDAP directory to lookup policy definitions
  C. always fails if the Policy Manager becomes unavailable
  D. **intercepts requests to and responses from a client or service** *

- In your solution, a web service client needs to invoke a series of three web services in support of a single transaction. The third web service needs the identity of the original web service client. Which one correctly describes how the identity will be made available?
  A. The transaction manager accesses an internal table that maintains credentials used to invoke each individual web service in the chain.
  B. Each web service in the chain does its own authentication so the third web service handles its own identity checking.
  C. **OWSM sets the user in the Java Subject when the first web service successfully authenticates and the Java Subject is used by subsequent web services to access the identity.** *
  D. OWSM stores a SAML token from the first web service invocation in a database table and that table is accessed by subsequent web services in the chain to retrieve identity.
Topic 9: Governance

Objectives

- Describe the benefits of governance for SOA 
  Learner
- Describe the main features of Oracle Enterprise Repository/Registry 
  Learner
- Implement life cycle management 
  Practitioner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)

- Documentation
  - Oracle Fusion Middleware Concepts Guide for Oracle Enterprise Repository 11g: Governance Infrastructure
  - Securing Web Services and Service-Oriented Architectures with Oracle Web Services Manager 11g White Paper: Oracle WSM’s Role in SOA Governance
  - Right from the Start: SOA Lifecycle Governance, An Oracle White Paper
  - Getting Started With Oracle SOA Suite 11g R1 - A Hands-On Tutorial: Chapter 16 – Gaining Visibility into Your Process Activities

Sample Questions

- Which two are beneficial results of a successful SOA governance initiative?
  A. Maintains a direct connection between business objectives and the production and consumption of services *
  B. Provides technical standards for the creation of web services.
  C. Prevents the proliferation of services of questionable utility, reliability and business value *
  D. Develops strategy maps and value-chain analyses that help define business requirements

- You are implementing SOA asset life cycle management in your organization. In the service definition phase architects and business analysts identify requirements. What should you do with these so they can be tracked through the life cycle?
  A. Document them BPEL models
  B. Add them to the enterprise repository *
  C. Add them to the service registry
  D. Use harvesting tools to produce web services implementations
  E. Produce value-chain and strategy map documentation
Topic 10: Deployment and Troubleshooting

Objectives

- Deploy and undeploy components to SOA Suite
  - Level: Practitioner
- Create test cases to initiate inbound messages and to emulate outbound, fault and callback messages
  - Level: Practitioner
- Monitor components deployed to SOA Suite
  - Level: Practitioner
- Describe how SOA Suite applications scale to large-scale production
  - Level: Learner
- Troubleshoot a deployed SOA Suite application
  - Level: Practitioner

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Online Training
  - Deploying a SOA Composite Application (6 minutes)
  - SOA Configuration Management Using Enterprise Manager Grid Control (7 minutes)
- Documentation
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Deploying SOA Composite Applications
  - Oracle Fusion Middleware Developer's Guide for Oracle SOA Suite 11g: Automating Testing of SOA Composite Applications
  - Oracle Fusion Middleware Administrator's Guide for Oracle SOA Suite and Oracle Business Process Management Suite 11g: Monitoring the SOA Infrastructure
  - Oracle Fusion Middleware Administrator's Guide 11g: Scaling Your Environment
  - Understanding WebLogic Server Clustering
Sample Questions

• Composite A has two versions deployed to the SOA runtime. A (v 2.0) is the default revision, whereas A (v 1.0) is an earlier but active revision. A (v 2.0) has 100 instances in Running state. It also has 50 instances that are waiting for a callback on a mid-process <receive> within a BPEL component within the composite. You undeploy A (v 2.0). What statement holds true after the undeployment completes?

A. All running instances and the callbacks will be allowed to complete on A (v 1.0). But all new requests are served by A (v 1.0).
B. All running instances will be allowed to complete, but the callbacks will fail after undeployment. All new requests are served by A (v 1.0).
C. All running instances immediately go stale, including the instances that are awaiting callbacks on the mid-process receive. *
D. All running instances immediately go stale. But the callbacks are processed by A (v 1.0).

• Which three of the following can have tests created against them using the SCA test framework?

A. Reference binding components *
B. Service components like a BPEL process or a Mediator *
C. Wire *
D. Invoke activity in a BPEL process

E. Composite Sensors
Topic 11: Installation and Configuration

Objectives

- Describe the runtime architecture of SOA Suite  
  **Learner**
- Provide advice for optimal installation and configuration of SOA Suite  
  **Practitioner**
- Install and configure SOA Suite  
  **Practitioner**

Training Options

- Instructor-Led Training
  - Oracle Service-Oriented Architecture Suite 11g Implementation Boot Camp (4 days)
  - Oracle SOA Suite 11g: Essential Concepts (3 days)
  - Oracle SOA Suite 11g: Build Composite Applications (5 days)
- Online Training
  - SOA Configuration Management Using Enterprise Manager Grid Control (7 minutes)
- Documentation
  - Oracle Fusion Middleware Installation Guide for Oracle SOA Suite and Oracle Business Process Management Suite 11g
  - Understanding WebLogic Server Domains
  - Understanding WebLogic Server Clustering
  - Overview of Node Manager

Sample Questions

- Which three are valid BPEL thread pools?
  A. **Engine** *
  B. Callback
  C. **Invoke** *
  D. **System** *
  E. Service

- Which option best describes the recommended use of shared storage in a SOA Suite high availability (HA) implementation?
  A. **Allow access to a common installation home for all domain cluster members.** *
  B. Enable access to a shared JTA log.
  C. Shared storage is not recommended for SOA Suite.
  D. Allow all domain cluster members access to the default user store on the file system.
Exam Registration

• **How to register for the exam?**
  You can register for all Oracle certification exams with Pearson VUE. Before a registration can be submitted, a Pearson VUE profile must be created using your Company ID. Your Company ID can be obtained by contacting your local Oracle Partner Business Center or by signing in to your OPN account. Your Company ID is located in the section on the right under "Company information".

  Please follow these instructions in order to properly set-up your Pearson VUE account for the first time.

• **Have you completed an Oracle Certification Exam in the past?**
  Due to systems enhancements, each partner who has completed an Oracle Certification Exam will need to update their Pearson VUE profile in order to receive credit and for those records to appear in the OPN Competency Center.

• **How to get full recognition as Certified Implementation Specialist?**
  To get full recognition as a Certified Implementation Specialist you need to:
  A. Update your Pearson VUE profile with your Company ID
  B. Activate your Certview Account

  Please follow these instructions and your records will be properly recorded.
SOFTWARE. HARDWARE. COMPLETE.