Service-Oriented Architect and Application Developer skills roadmap

Role
The service-oriented architect is expected to articulate business and technical values of service-oriented architecture (SOA), help determine return on investment, be familiar with new industry standards, design patterns, and be able to craft service-oriented architecture solutions using existing assets and new components. Such an architect should also understand and be able to contribute to governance issues related to service development, deployment and management within the organization.

Assumptions
It is assumed that the individual following this roadmap has architect skills and needs to learn about service-oriented architecture, design concepts and SOA implementation technologies.

1 Prerequisite skills for Architect

Objectives
After completing this step, students should be able to:
- Describe the organization of use-case, analysis, design, and deployment models.
- Generate an analysis model from a requirements model and elaborate on the model.
- Generate a design model from an analysis model and elaborate on the model.
- Incorporate existing code and reusable assets in the development of a new application.
- Add elements used for testing and verification to the design.
- Model a service in Rational Software Architect using the UML Profile for Software Services.
- Create a User Experience model and generate JSF elements from that model.
- Incorporate the IBM Patterns for e-business in the design of a system
- Define and customize RequisitePro project structure and components
- Create and build a project
- Create, import, and revise requirements, attributes, and requirement documents
- Define hierarchies of requirements
- Trace requirements to one another
- Manage changing requirements through views, queries, metrics, and revision notification

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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Delivery Method</th>
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<tbody>
<tr>
<td>RD565</td>
<td>Essentials of Modeling with Rational Software Architect, V7.5</td>
<td>Classroom (2 days)</td>
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<tr>
<td>RR332</td>
<td>Essentials of Rational RequisitePro</td>
<td>Classroom (1 day)</td>
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<tr>
<td>REQ370</td>
<td>Instructor-led online (1 day)</td>
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**LEGEND**
- **TYPE**
  - Classroom (public or private)
  - Instructor-led online (public or private)
  - Self-paced virtual
  - Web-based
- **Delivery Method**
  - Instructor-led in a classroom
  - Instructor-led in a classroom
  - On demand online with labs
  - On demand online without labs

CONTINUED on the following page...
SOA fundamentals

Objectives
After completing this step, students should be able to:

- Explain the business and technical value of adopting SOA
- Describe SOA and explain how it relates to contemporary software architectural styles
- Explain the principles and characteristics of services within SOA, and identify various service types
- Explain Information Services, and how and when to apply it
- Describe service-oriented integration (SOI) and explain how it differs from contemporary integration approaches
- Identify methodologies for service-oriented analysis and design
- Describe programming models and standards that support the realization of SOA and SOI
- Describe Web services, and explain how they support the realization of SOA solutions
- Describe IBM’s SOA Foundation, and identify IBM offerings that support IBM’s SOA life cycle
- Explain the need for SOA governance
- Explain IBM’s SOA governance offerings for establishing SOA governance within an organization
- Explain IBM’s SOA scenarios and describe how these support adoption of SOA within an organization
- Fundamentals of cloud computing

Do you only need implementation skills?

Yes → 5 SOA application development

No → 7 Skills for SOA governance
3 Basic Web services skills

**Objectives**
After completing this step, students should be able to:
- Identify the core standards that define Java EE 5 web services
- Describe real-world scenarios involving web services
- Describe the need for a platform-independent service contract (WSDL)
- Describe the need for a platform-independent messaging format (SOAP)
- Identify the categories of Java EE components that can be enabled as web services
- Explain the role of the web service generation tools provided by the JAX-WS runtime in IBM WebSphere Application Server V7
- Use IBM Rational Application Developer V7.5 to generate web services from existing Java EE 5 assets
- Describe the web services support provided in IBM WebSphere Application Server V7
- Test and monitor a web service using the web services explorer in IBM WebSphere Application Server V7

<table>
<thead>
<tr>
<th>Introduction to Java EE 5 Web Services</th>
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<tr>
<td>ZD511</td>
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<tr>
<td>Self-paced virtual class</td>
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4 SOA design, modeling and realization skills

**Objectives**
After completing this step, students should be able to:
- Define the functional, data and operational aspects of a service-oriented architecture
- Specify IBM software and Web services technologies to fulfill a service-oriented architecture
- Identify issues that arise when defining service-oriented architectures, by handling a variety of difficulties in the case studies and working with other experienced IT professionals to resolve them
- Apply Service design principles such as the use of explicit interfaces, the use of loose coupling, and the passing of data by value rather than by reference.
- Perform service identification and modeling
- Categorize services
- Apply SOA design patterns
- Craft SOA adoption roadmap for an organization
- Help define and apply SOA governance

<table>
<thead>
<tr>
<th>Designing SOA Solutions using IBM SOA Foundation</th>
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<tbody>
<tr>
<td>WS008 OR Classroom (3 days)</td>
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<tr>
<td>VS008 OR Instructor-led online (3 days)</td>
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<tr>
<td>ZS008 Self-paced virtual class</td>
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**Certification test**
See certification Web site
For test preparation

**Test 667**
IBM Certified SOA Solution Designer
Architectural Design of SOA Solutions

<table>
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<tr>
<th>Architecting Services with IBM Rational Software Architect V7</th>
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<tr>
<td>RA902 Classroom (2 days)</td>
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**Architecting Services with Rational Software Architect V7.5 and SoaML**

| RA903 Classroom (2 days)                                      |

END HERE
SOA application development skills using WebSphere Enterprise Service Bus (WESB), WebSphere Message Broker (WMB), WebSphere Process Manager (WPM) and WebSphere Integration Developer (WID)

Objectives
After completing this step depending on the selected path, students should be able to:

- Describe IBM ESB products and capabilities such as WESB, WMB, DataPower, DataStage, WebSphere Information Integrator
- Articulate ESB design patterns and its role in IBM SOA Reference Architecture
- Design ESB Solutions and select appropriate products to use as ESB
- Apply best practices for product integration and federation
- Integrate WebSphere Business Integration adapter with ESB
- Use Web services bindings (SOAP/HTTP and SOAP/JMS) for access to the bus
- Describe the security features and key capabilities of IBM DataPower SOA Appliances
- Configure key security services on an IBM DataPower SOA Appliance
- Create a human task to include human interaction in a business process
- Use dynamic endpoint for routing of messages
- Design and develop mediation solutions
- Implement security in ESB
- Create a business state machine

Case Study: Service Creation
SOA Scenario
REDP-4377-00
Redpiece

Case Study: Service Connectivity
SOA Scenario
REDP-4380-00
Redpiece

What is your focus area?

Service Creation and Reuse
Business Processes
Implementing BPM and SOA: Architecture and Capability Considerations
WU620
Classroom (3 days)

Service Connectivity

IBM WebSphere Message Broker V8 Application Development I
WM664
Classroom (5 days)

VM664
Instructor-led online (5 days)

ZM664
Self-paced virtual class (5 days)

WebSphere ESB

DataPower SOA Appliances

Accelerate, Secure and Integrate with WebSphere DataPower SOA Appliances V4.0.1
WE400
Classroom (5 days)

VE400
Instructor-led online (5 days)

ZE400
Instructor-led online (3 days)

Are you familiar with SOA fundamentals?

Yes

No

Proceed to:

2 SOA fundamentals

Process Modeling and Implementation with IBM Business Process Manager
WB733
Classroom (5 days)

VB733
Instructor-led online (5 days)

ZB733
Self-paced virtual class

Application Developer skills for IBM Business Process Manager Advanced V7.5
WB751
Classroom (5 days)

VB751
Classroom (5 days)

ZB751
Self-paced virtual class

(Case Study: Service Connectivity SOA Scenario)

Yes

No

Proceed to:

Case Study: Service Creation SOA Scenario
REDP-4377-00
Redpiece

Web Service Development for IBM WebSphere Application Server V7
WD506
Classroom (5 days)

VD506
Instructor-led online (5 days)

ZD506
Self-paced virtual class

CICS V3.2 Application Development for SOA and Web Services
WM870
Classroom (5 days)

VM870
Instructor-led online (5 days)

(Optional) Proceed to training path:
For more courses on SOA implementation see WebSphere training paths for Business Integration, Business Process Management, and Message Broker
6 Skills for SOA on systems i and z

Objectives
After completing this step, students should be able to:
- Explain how SOA can be extended to Systems i and z
- Describe how the existing assets can participate in an SOA solution in Systems i and z
- Prescribe ways to modernize the application and infrastructure environment using IBM SOA Foundation on Systems i and z

CONTINUED from the previous page...

7 Skills for SOA governance

Objectives
After completing this step, students should be able to:
- Describe the role of a service registry and repository within a service-oriented architecture (SOA)
- Describe the architecture of WebSphere Service Registry and Repository
- Explain how WebSphere Service Registry and Repository supports SOA governance and service life cycle management
- Explain the need for a federated registry/repository strategy within SOA, and describe how WebSphere Service Registry and Repository supports this strategy
- Describe the topology considerations for planning a WebSphere Service Registry and Repository deployment configuration
- Configure security for WebSphere Service Registry and Repository
- Customize the information metamodel in WebSphere Service Registry and Repository to suit the SOA governance model for an organization
- Implement governance policies and service life cycles
- Describe how to integrate WebSphere Service Registry and Repository with IBM WebSphere Enterprise Service Bus (ESB) solutions such as WebSphere Enterprise Service Bus, WebSphere Message Broker, and DataPower to perform dynamic lookup of service metadata and service policies
- Describe the benefits of runtime integration between WebSphere Service Registry and Repository and IBM Tivoli Composite Application Manager for SOA V6.1

CONTINUED on the following page...
8 Skills for SOA security

Objectives
After completing this step, students should be able to:
- Describe common security architectures and network models
- Describe security standards and technologies
- Apply security to SOA design as a business requirement
- Articulate integrated security management for SOA
- Explain the impact of security requirements on SOA design
- Recommend appropriate products to address security requirements

Can be taken in any order

Understanding SOA Security Design and Implementation
SG24-7310 Redbook

Enterprise Security Architecture Using IBM Tivoli Security Solutions
SG24-6014-04 Redbook

9 Skills for Software-as-a-Service (SaaS) with WebSphere Cast Iron

Objectives
After completing this step, students should be able to:
- Transform data
- Implement business logic
- Receive data from and deliver data to our most commonly used endpoints including: File servers, Web servers (by using HTTP or web services), Email servers, Database management systems

Configuration
Skills Required
Administration

WebSphere Cast Iron Integration Appliance V6.1 Configuration
WE942 Classroom (3 days)
VE942 Instructor-led online (3 days)
ZE942 Self-paced virtual class

WebSphere Cast Iron Integration Appliance V6.1 Administration
ZE952 Self-paced virtual (.5 day)

Supplemental resources
+ Building SOA Solutions Using the Rational SDP – Redbook - SG24-7356-00
+ Patterns: SOA Design using WebSphere Message Broker and WebSphere ESB – Redbook - SG24-7369-00