

Oracle Web Service Manager Implementation Guide
Oracle Banking Corporate Lending

Release 14.7.5.0.0

Part No. G16885-01

September 2024



Table of Contents

1. INTRODUCTION	1-1
2. PREREQUISITES	2-1
3. INSTALLATION.....	3-1
4. ATTACHING POLICIES TO THE WEB SERVICE.....	4-1
5. TESTING WEB SERVICE WITH POLICIES.....	5-1
5.1 TESTING WEB SERVICE THROUGH ENTERPRISE MANAGER	5-1
5.2 TESTING OF WEB SERVICE VIA SOAP UI (EVIWARE SOAPUI3.0.1)	5-6

1. Introduction

The Oracle Web Services Manager (WSM) Policy Manager is the security and management policy lynchpin for Oracle Fusion Middleware 11g Web services. It provides a policy framework to manage and secure Web services consistently across your organization. Oracle WSM can be used by both developers, at design time, and system administrators in production environments. The policy framework is built using the WS-Policy standard

The following list provides examples of specific tasks that you can perform using Oracle WSM:

- Handle WS-Security (for example, encryption, decryption, signing, signature validation, and so on)
- Define authentication and authorization policies against an LDAP directory.
- Generate standard security tokens (such as SAML tokens) to propagate identities across multiple Web services used in a single transaction.
- Segment policies into different namespaces by creating policies within different folders.
- Examine log files.

2. Prerequisites

This document assumes that the following software are installed and configured properly.

- Oracle SOA Suite 11g
- Oracle Weblogic Server 11g
- Oracle Web Service Manager 11g which comes along with Oracle SOA suite 11g
- eviware soapUI3.0.1 (For testing the web service with policy)

Gateway EJB and Gateway Web Services has to be deployed on weblogic server before attaching policies.

For gateway EJB and gateway Web services deployment please refer to Gateway Installation guide.

3. Installation

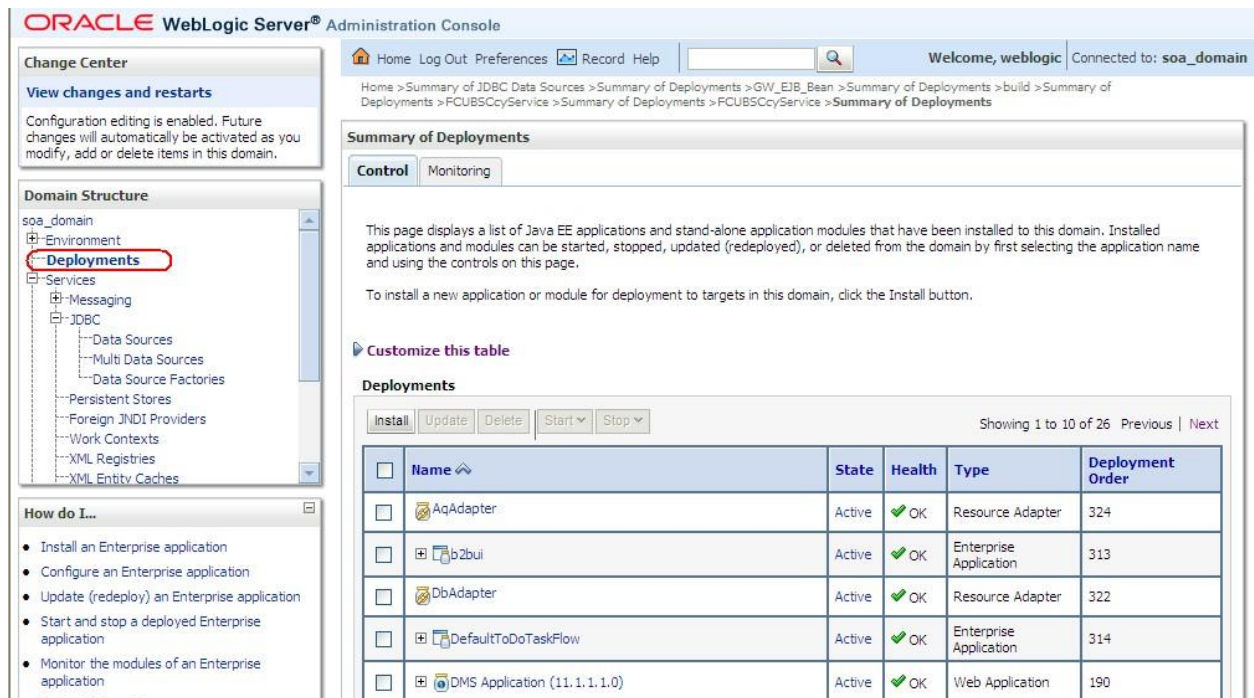
For the installation of Oracle SOA 11g and Oracle Weblogic 11g please refer to Installation Guide for Oracle SOA Suite and Getting Started With Installation for Oracle Weblogic Server respectively.

4. Attaching policies to the Web Service

The following policy which have been tested with FLEXCUBE services :

- policy:oracle/wss_username_token_service_policy
- Please follow the procedure mentioned to attach a policy to the web service.

Navigate to the Summary of Deployments page.



The screenshot displays the Oracle WebLogic Server Administration Console. On the left, the 'Domain Structure' tree shows 'soa_domain' expanded to 'Services' and then 'Deployments', which is highlighted with a red box. The main area is titled 'Summary of Deployments' and contains a table of installed applications. The table has columns for Name, State, Health, Type, and Deployment Order. The following table represents the data shown in the screenshot:

	Name	State	Health	Type	Deployment Order
<input type="checkbox"/>	AqAdapter	Active	OK	Resource Adapter	324
<input type="checkbox"/>	b2bui	Active	OK	Enterprise Application	313
<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190

1. Expand the web service application and click on Web Services link.

- Update (redeploy) an Enterprise application
- Start and stop a deployed Enterprise application
- Monitor the modules of an Enterprise application
- Deploy EJB modules
- Install a Web application

System Status

Health of Running Servers

- Failed (0)
- Critical (0)
- Overloaded (0)
- Warning (0)
- OK (2)

<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input type="checkbox"/>	FCUBSCcyService	Active	OK	Enterprise Application	100
	Modules				
	FCUBSCcyService			Web Application	
	EJBs				
	None to display				
	Web Services				
	FCUBSCcyService			Web Service	
<input type="checkbox"/>	FileAdapter	Active	OK	Resource Adapter	321
<input type="checkbox"/>	FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	150
<input type="checkbox"/>	FtpAdapter	Active	OK	Resource Adapter	325

Install Update Delete Start Stop

Showing 1 to 10 of 26 Previous | Next

2. Navigate to the Configuration tab.

ORACLE WebLogic Server® Administration Console

Home Log Out Preferences Record Help Welcome, weblogic Connected to: soa_domain

Home > Summary of Deployments > GW_EJB_Bean > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Settings for FCUBSCcyService

Overview **Configuration** Security Testing Monitoring

A Web Service is a set of functions packaged into a single entity that is available to other systems on a network. It is implemented using a Java Web Service (JWS) file, which is a Java class that uses JWS metadata annotations to specify the shape and behavior of the Web Service.

This page displays the general configuration of a deployed Web Service, such as the name that appears in the Deployments table of the Administration Console, the name of the WAR or JAR file in which it is packaged, and name that appears in the WSDL that describes the Web Service.

Deployment Name:	FCUBSCcyService	The name of the Web Service as it appears in the Deployments table. More Info...
Module Name:	FCUBSCcyService.war	The name of the Web Service archive file, either a WAR file or EJB JAR file depending on the Web Service features it implements. More Info...
Service Name:	FCUBSCcyService	The name of this Web Service. This name appears in the WSDL file that defines the public contract of this Web Service. More Info...

3. Click 'WS-Policy'.

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- soa_domain
 - Environment
 - Deployments
 - Services
 - Messaging
 - JDBC
 - Data Sources
 - Multi Data Sources
 - Data Source Factories
 - Persistent Stores
 - Foreign JNDI Providers
 - Work Contexts
 - XML Registries
 - XML Entity Caches

Settings for FCUBSCcyService

Overview **Configuration** Security Testing Monitoring

General Handlers WSDL **WS-Policy** Port Components

Save

Use this page to view the general configuration of this Web Service, such as the type of archive it is packaged in (WAR or EJB JAR), the file that contains the Web Service implementation, and so on.

Name:	FCUBSCcyService	The name of the Web Service. More Info...
Description:	(No value specified)	Specifies the description of the Web Service. More Info...
Web Service Type:	JAX-WS 2.1	The Web Service Type (JAX-WS / JAX-RPC). More Info...
Implementation Type:	WAR	
Implementation Source:	FCUBSCcyService.war	

WSDL Publish File: Flag that specifies whether to publish the WSDL of the deployed Web Service for JAX-RPC Web Services. Note that JAX-WS Web Services always publish the WSDL. Valid values include true or false. If set to true, then the server returns the WSDL upon request using the URL format: service_address?WSDL. If false, then the server returns a 404 code because the WSDL is not available. The WSDL file is defined by the <wsdl-file> element in the webservice.xml descriptor. [More Info...](#)

4. Select web service end point of the web service.

ORACLE WebLogic Server® Administration Console

Home Log Out Preferences Record Help Welcome, weblogic Connected to: soa_domain

Home > Summary of Deployments > GW_EJB_Bean > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Change Center

View changes and restarts

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- soa_domain
 - Environment
 - Deployments
 - Services
 - Messaging
 - JDBC
 - Data Sources
 - Multi Data Sources
 - Data Source Factories
 - Persistent Stores
 - Foreign JNDI Providers
 - Work Contexts
 - XML Registries
 - XML Entity Caches

Settings for FCUBSCcyService

Overview **Configuration** Security Testing Monitoring

General Handlers WSDL **WS-Policy** Port Components

This page lists the policy files that are associated with the endpoints and operations of this WebService. The operations are listed below the endpoint - click on the + sign to view them. Click on the endpoint or operation name to configure an associated policy file. For example, you can specify that the policy file applies only for inbound (request) SOAP messages, and so on .

WS-Policy Files Associated With This Web Service

Showing 1 to 1 of 1 Previous | Next

Service Endpoints and Operations	Policies
<ul style="list-style-type: none"> FCUBSCcyServiceSEI 	

Showing 1 to 1 of 1 Previous | Next

5. Select OWSM web service policy and navigate to the next page by clicking on 'Next'.

ORACLE WebLogic Server® Administration Console

Home Log Out Preferences Record Help Welcome, weblogic Connected to: soa_domain

Home > Summary of Deployments > GW_EJB_Bean > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Save Deployment Plan Assistant

OK Cancel

Save Deployment Plan

You have made configuration changes that need to be stored in a new deployment plan.

Select or enter the path of a deployment plan file. The path must end with '.xml'. It is highly recommended that this file be named 'Plan.xml'.

Each plan should be located in its own directory, otherwise applications can inadvertently share deployment plan files. The plan file will be overwritten if it already exists. Other files in the plan directory may be overwritten as well.

Path: D:\QualificationGateway\Kernel10.5\CO\FCUBSCcyService\build\Plan.xml

Recently Used Paths:
 D:\QualificationGateway\Kernel10.5\CO\FCUBSCcyService\build
 D:\QualificationGateway\Kernel10.5\CO\FCUBSCcyService
 D:\QualificationGateway\Kernel10.5\GW_EJB\build

Current Location: cvrhp0707.i-flex.com \D: \QualificationGateway \Kernel10.5 \CO \FCUBSCcyService \build

META-INF
 plan
 Plan.xml
 web.xml

OK Cancel

8. Click on Deployment to restart the application to reflect the plan.

ORACLE WebLogic Server® Administration Console

Home Log Out Preferences Record Help Welcome, weblogic Connected to: soa_domain

Home > Summary of Deployments > GW_EJB_Bean > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Messages

✔ All changes have been activated. No restarts are necessary.
 ✔ A new deployment plan has been successfully created in D:\QualificationGateway\Kernel10.5\CO\FCUBSCcyService\build\Plan.xml.
 ⚙ Remember to restart your deployment to reflect the new plan.

Settings for FCUBSCcyService

Overview Configuration Security Testing Monitoring

A Web Service is a set of functions packaged into a single entity that is available to other systems on a network. It is implemented using a Java Web Service (JWS) file, which is a Java class that uses JWS metadata annotations to specify the shape and behavior of the Web Service.

This page displays the general configuration of a deployed Web Service, such as the name that appears in the Deployments table of the Administration Console, the name of the WAR or JAR file in which it is packaged, and name that appears in the WSDL that describes the Web Service.

Deployment Name:	FCUBSCcyService	The name of the Web Service as it appears in the Deployments table. More Info...
Module Name:	FCUBSCcyService.war	The name of the Web Service archive file, either a WAR file or EJB JAR file depending on the Web Service features it implements. More Info...
Service Name:	FCUBSCcyService	The name of this Web Service. This name appears in the WSDL file that defines the public contract of this Web Service. More Info...

9. Stopping the application.

This page displays a list of Java EE applications and stand-alone application modules that have been installed to this domain. Installed applications and modules can be started, stopped, updated (redeployed), or deleted from the domain by first selecting the application name and using the controls on this page.

To install a new application or module for deployment to targets in this domain, click the Install button.

Customize this table

Deployments

Install Update Delete Start Stop Showing 1 to 10 of 26 Previous Next

<input type="checkbox"/>	Name	State	Health	Type	Deployment Order
<input type="checkbox"/>	AqAdapter	Active	OK	Resource Adapter	324
<input type="checkbox"/>	b2bui	Active	OK	Enterprise Application	313
<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input checked="" type="checkbox"/>	FCUBSCcyService	Active	OK	Enterprise Application	100
<input type="checkbox"/>	FileAdapter	Active	OK	Resource Adapter	321

10. Starting the application.

This page displays a list of Java EE applications and stand-alone application modules that have been installed to this domain. Installed applications and modules can be started, stopped, updated (redeployed), or deleted from the domain by first selecting the application name and using the controls on this page.

To install a new application or module for deployment to targets in this domain, click the Install button.

Customize this table

Deployments

Install Update Delete Start Stop Showing 1 to 10 of 26 Previous Next

<input type="checkbox"/>	Name	State	Health	Type	Deployment Order
<input type="checkbox"/>	AqAdapter	Active	OK	Resource Adapter	324
<input type="checkbox"/>	b2bui	Active	OK	Enterprise Application	313
<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input checked="" type="checkbox"/>	FCUBSCcyService	Prepared	OK	Enterprise Application	100
<input type="checkbox"/>	FileAdapter	Active	OK	Resource Adapter	321

11. After starting the application make sure that it is active.

modify, add or delete items in this domain.

Start requests have been sent to the selected Deployments.

Domain Structure

- soa_domain
 - Environment
 - Deployments**
 - Services
 - Messaging
 - JDBC
 - Data Sources
 - Multi Data Sources
 - Data Source Factories
 - Persistent Stores
 - Foreign JNDI Providers
 - Work Contexts
 - XML Registries
 - XML Entity Caches

Summary of Deployments

Control Monitoring

This page displays a list of Java EE applications and stand-alone application modules that have been installed to this domain. Installed applications and modules can be started, stopped, updated (redeployed), or deleted from the domain by first selecting the application name and using the controls on this page.

To install a new application or module for deployment to targets in this domain, click the Install button.

[Customize this table](#)

Deployments

Install Update Delete Start Stop

Showing 1 to 10 of 26 Previous Next

<input type="checkbox"/>	Name	State	Health	Type	Deployment Order
<input type="checkbox"/>	AqAdapter	Active	OK	Resource Adapter	324
<input type="checkbox"/>	b2bui	Active	OK	Enterprise Application	313
<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input type="checkbox"/>	FCUBSCcyService	Active	OK	Enterprise Application	100

12. Expand the application and click on the web service to verify the policies attached with it.

How do I...

- Install an Enterprise application
- Configure an Enterprise application
- Update (redeploy) an Enterprise application
- Start and stop a deployed Enterprise application
- Monitor the modules of an Enterprise application
- Deploy EJB modules
- Install a Web application

System Status

Health of Running Servers

- Failed (0)
- Critical (0)
- Overloaded (0)
- Warning (0)
- OK (2)

<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input type="checkbox"/>	FCUBSCcyService	Active	OK	Enterprise Application	100
	Modules				
	FCUBSCcyService			Web Application	
	EJBs				
	None to display				
	Web Services				
	FCUBSCcyService			Web Service	
<input type="checkbox"/>	FileAdapter	Active	OK	Resource Adapter	321
<input type="checkbox"/>	FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	150
<input type="checkbox"/>	FtpAdapter	Active	OK	Resource Adapter	325

Install Update Delete Start Stop

Showing 1 to 10 of 26 Previous Next

Change Center

View changes and restarts

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- soa_domain
 - Environment
 - Deployments
 - Services
 - Messaging
 - JDBC
 - Data Sources
 - Multi Data Sources
 - Data Source Factories
 - Persistent Stores
 - Foreign JNDI Providers
 - Work Contexts
 - XML Registries
 - XML Entity Caches

How do I...

- Start and stop a Web Service
- View the Web Service configuration
- View the WSDL of a Web Service
- Monitor a Web Service
- Install a Web Service

Home Log Out Preferences Record Help

Welcome, weblogic Connected to: soa_domain

Home > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Settings for FCUBSCcyService

Overview **Configuration** Security Testing Monitoring

A Web Service is a set of functions packaged into a single entity that is available to other systems on a network. It is implemented using a Java Web Service (JWS) file, which is a Java class that uses JWS metadata annotations to specify the shape and behavior of the Web Service.

This page displays the general configuration of a deployed Web Service, such as the name that appears in the Deployments table of the Administration Console, the name of the WAR or JAR file in which it is packaged, and name that appears in the WSDL that describes the Web Service.

Deployment Name:	FCUBSCcyService	The name of the Web Service as it appears in the Deployments table. More Info...
Module Name:	FCUBSCcyService.war	The name of the Web Service archive file, either a WAR file or EJB JAR file depending on the Web Service features it implements. More Info...
Service Name:	FCUBSCcyService	The name of this Web Service. This name appears in the WSDL file that defines the public contract of this Web Service. More Info...

- Configure an Enterprise application
- Update (redeploy) an Enterprise application
- Start and stop a deployed Enterprise application
- Monitor the modules of an Enterprise application
- Deploy EJB modules
- Install a Web application

System Status

Health of Running Servers

- Failed (0)
- Critical (0)
- Overloaded (0)
- Warning (0)
- OK (2)

<input type="checkbox"/>	DbAdapter	Active	OK	Resource Adapter	322
<input type="checkbox"/>	DefaultToDoTaskFlow	Active	OK	Enterprise Application	314
<input type="checkbox"/>	DMS Application (11.1.1.1.0)	Active	OK	Web Application	190
<input type="checkbox"/>	em	Active	OK	Enterprise Application	400
<input type="checkbox"/>	FCUBSCcyService	Active	OK	Enterprise Application	100
Modules					
	FCUBSCcyService			Web Application	
EJBs					
None to display					
Web Services					
	FCUBSCcyService			Web Service	
<input type="checkbox"/>	FileAdapter	Active	OK	Resource Adapter	321
<input type="checkbox"/>	FMW Welcome Page Application (11.1.0.0.0)	Active	OK	Enterprise Application	150
<input type="checkbox"/>	FtpAdapter	Active	OK	Resource Adapter	325

Install Update Delete Start Stop

Showing 1 to 10 of 26 Previous Next

Change Center
View changes and restarts

Configuration editing is enabled. Future changes will automatically be activated as you modify, add or delete items in this domain.

Domain Structure

- soa_domain
 - Environment
 - Deployments
 - Services
 - Messaging
 - JDBC
 - Data Sources
 - Multi Data Sources
 - Data Source Factories
 - Persistent Stores
 - Foreign JNDI Providers
 - Work Contexts
 - XML Registries
 - XML Entity Caches

How do I...

Home > Summary of Deployments > build > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService > Summary of Deployments > FCUBSCcyService

Settings for FCUBSCcyService

- Overview
 - Configuration**
 - Security
 - Testing
 - Monitoring
- General
 - Handlers
 - WSDL
 - WS-Policy**
 - Port Components

This page lists the policy files that are associated with the endpoints and operations of this WebService. The operations are listed below the endpoint - click on the + sign to view them. Click on the endpoint or operation name to configure an associated policy file. For example, you can specify that the policy file applies only for inbound (request) SOAP messages, and so on .

WS-Policy Files Associated With This Web Service

Showing 1 to 1 of 1 Previous | Next

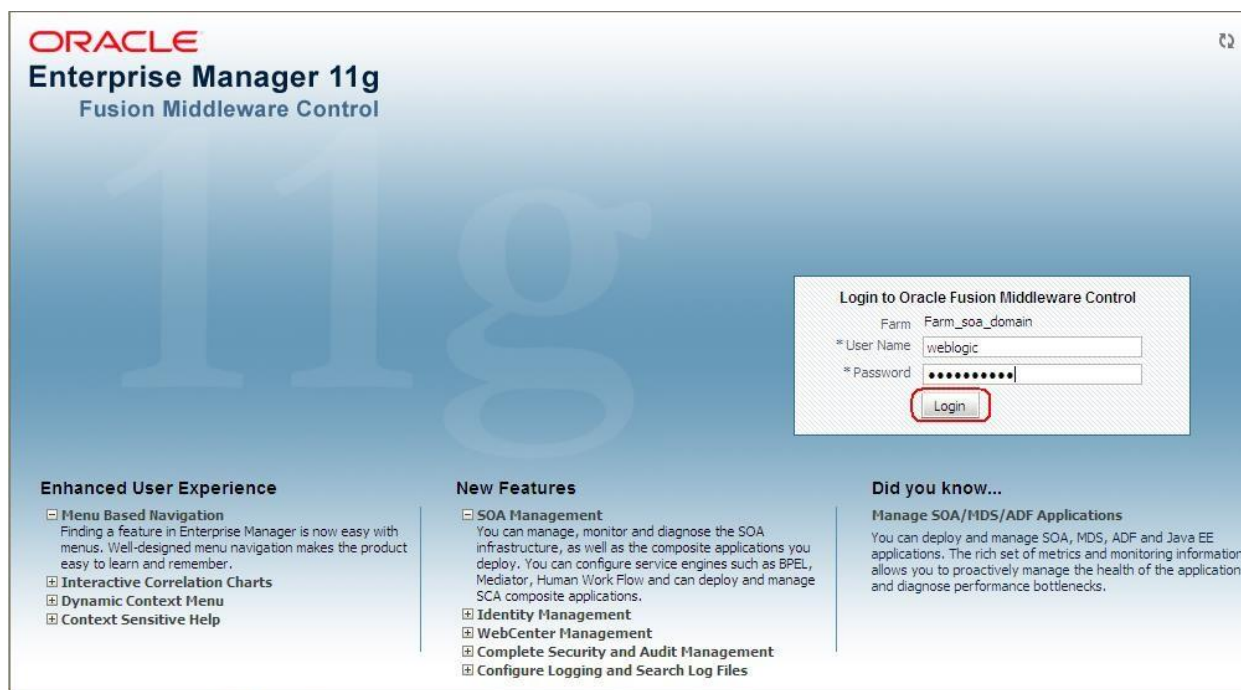
Service Endpoints and Operations	Policies
FCUBSCcyServiceSEI	policy:oracle/wss_username_token_service_policy

Showing 1 to 1 of 1 Previous | Next

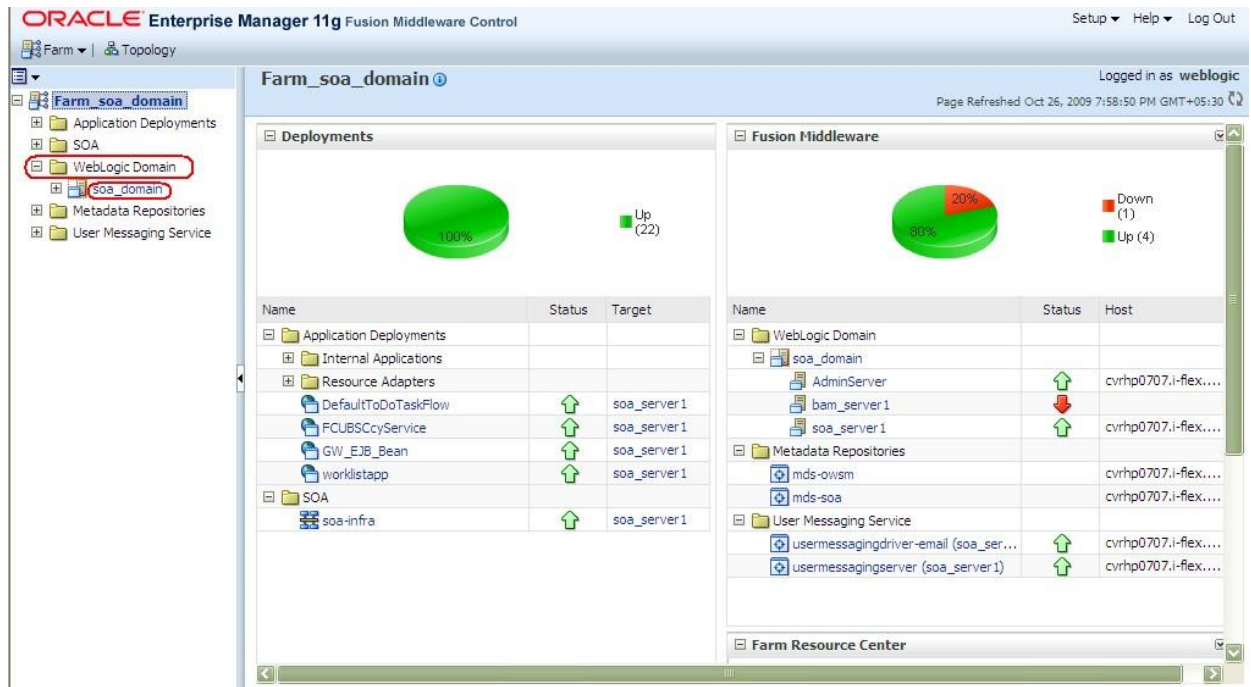
5. Testing Web Service with Policies

5.1 Testing Web Service through Enterprise Manager

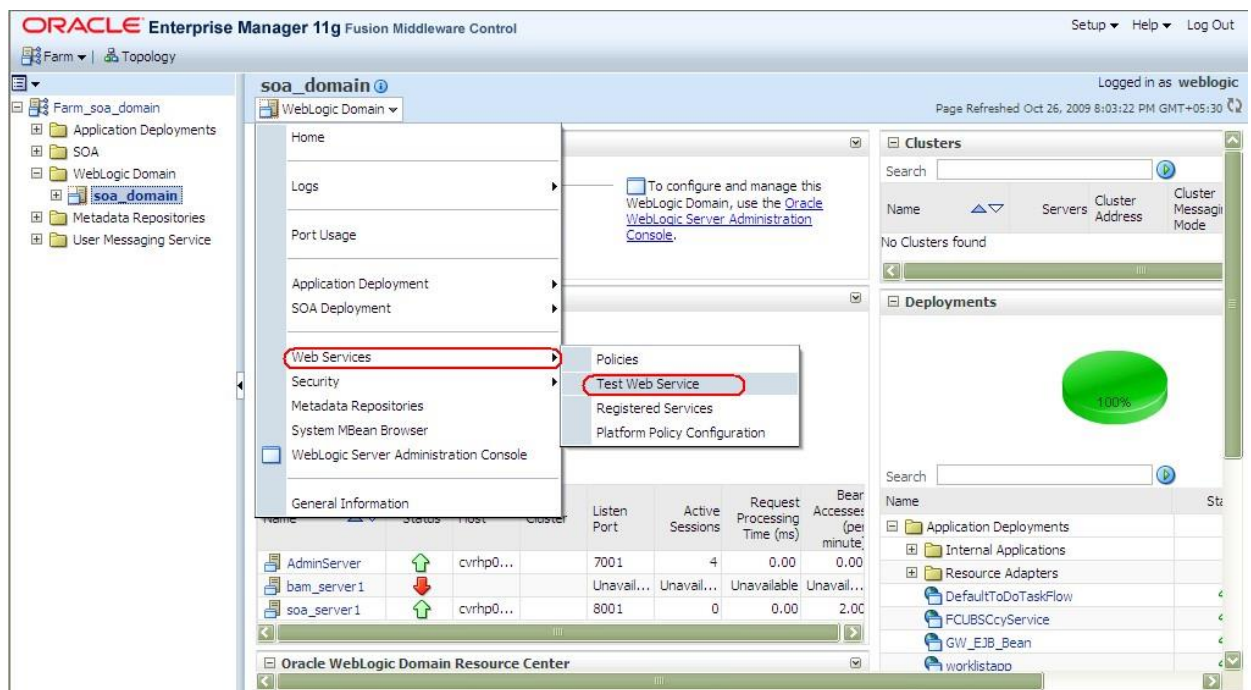
1. Once attaching the policies is finished, login to the enterprise manager (<http://hostname:port/em>)



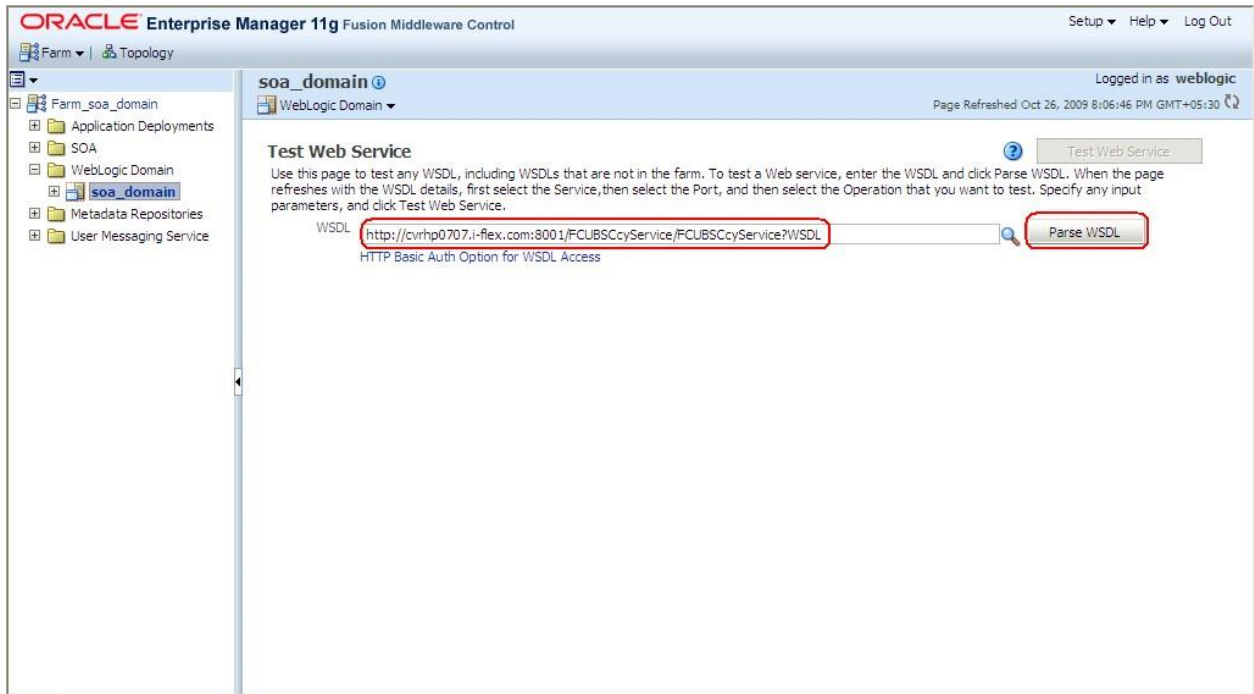
2. Expand the Weblogic Domain and Select the domain (created during SOA installation).



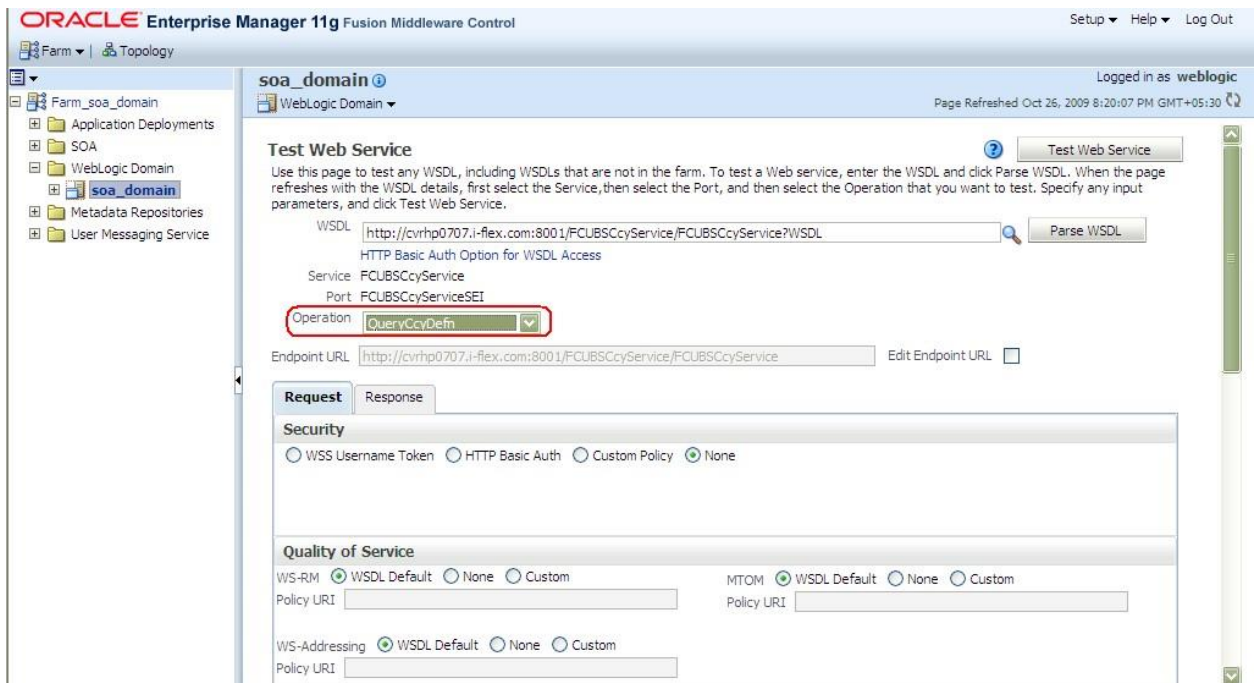
3. Select Test Web Service link from the fusion middleware control.



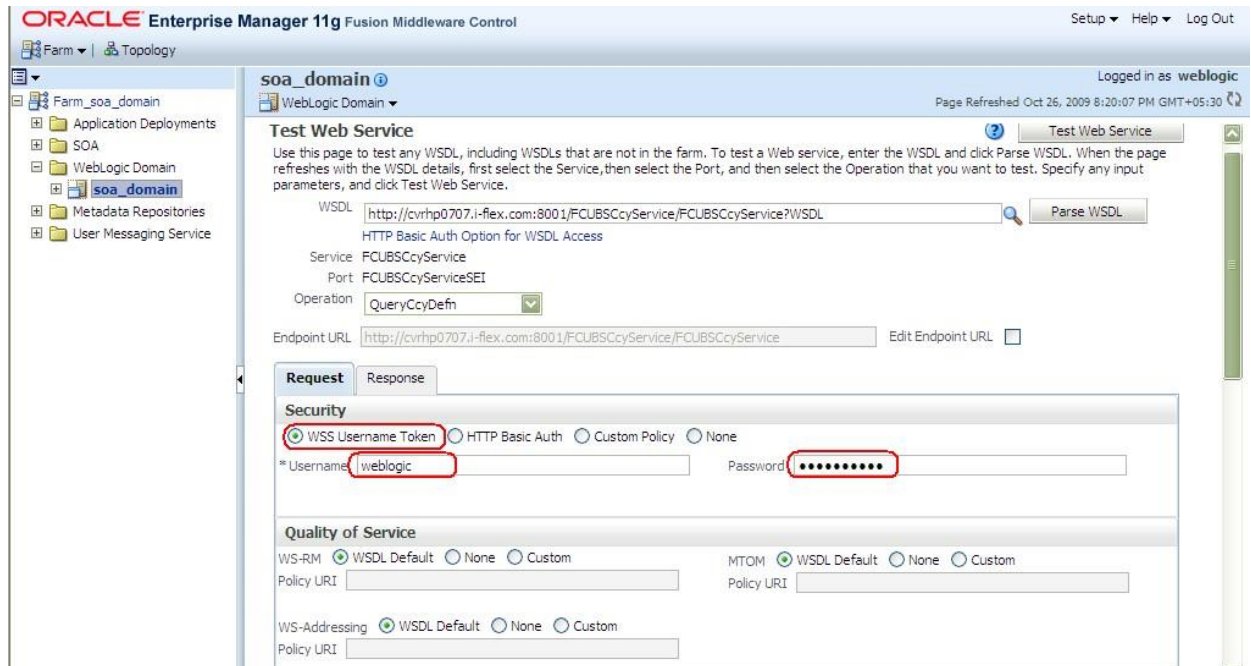
4. Enter the WSDL URL of the web service for which policy is applied and click on Parse WSDL.



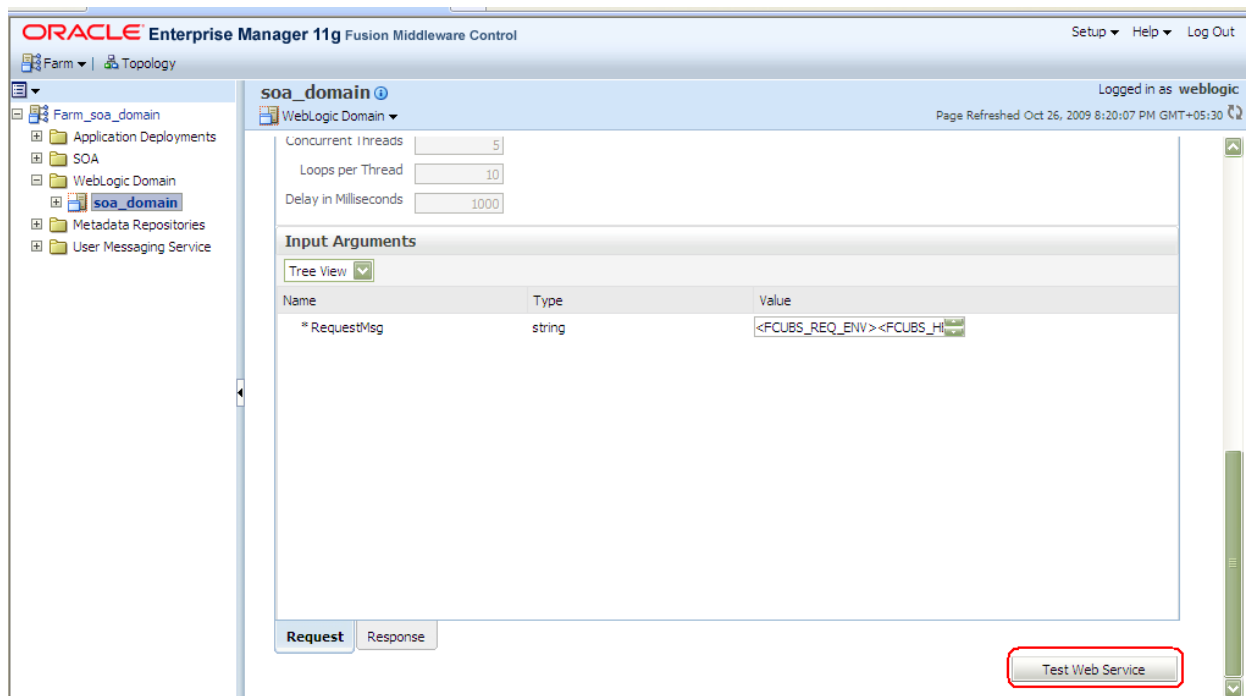
5. Select the operation for which you want to test the web service.



6. Select WSS Username Token and enter the Weblogic credentials.



7. Enter the Request Message and Click on Test Web Service button.



8. The Test Status Passed indicates the web service is properly authenticated by the policy.

Test Web Service

Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the page refreshes with the WSDL details, first select the Service, then select the Port, and then select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL: Parse WSDL

HTTP Basic Auth Option for WSDL Access

Service: FCUBSCcyService

Port: FCUBSCcyServiceSEI

Operation:

Endpoint URL: Edit Endpoint URL

Request **Response**

Test Status: **Passed**

Response Time (ms): 8781

Tree View

Name	Type	Value
ResponseMsg	string	<?xml version="1.0"?> <FCUBS_RES_ENV xmlns="http://fcubs.i-flex.com/service/FCUBSCcyService/QueryCcyDefn" > <FCUBS_HEADER > <SOURCE>FLEXCUBE</SOURCE>

9. Wrong credential will result to an error during Testing of web service.

Test Web Service

Use this page to test any WSDL, including WSDLs that are not in the farm. To test a Web service, enter the WSDL and click Parse WSDL. When the page refreshes with the WSDL details, first select the Service, then select the Port, and then select the Operation that you want to test. Specify any input parameters, and click Test Web Service.

WSDL: Parse WSDL

HTTP Basic Auth Option for WSDL Access

Service: FCUBSCcyService

Port: FCUBSCcyServiceSEI

Operation:

Endpoint URL: Edit Endpoint URL

Request **Response**

Security

WSS Username Token HTTP Basic Auth Custom Policy None

* Username: Password:

Quality of Service

WS-RM: WSDL Default None Custom

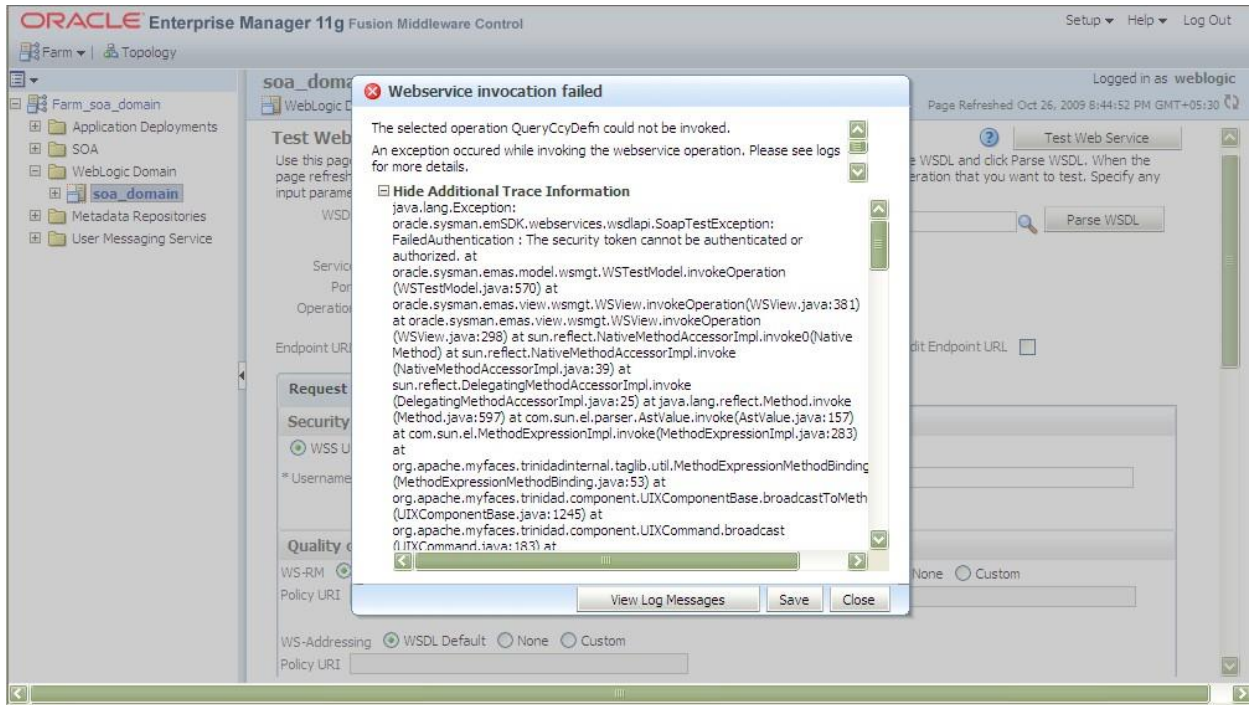
Policy URI:

MTOM: WSDL Default None Custom

Policy URI:

WS-Addressing: WSDL Default None Custom

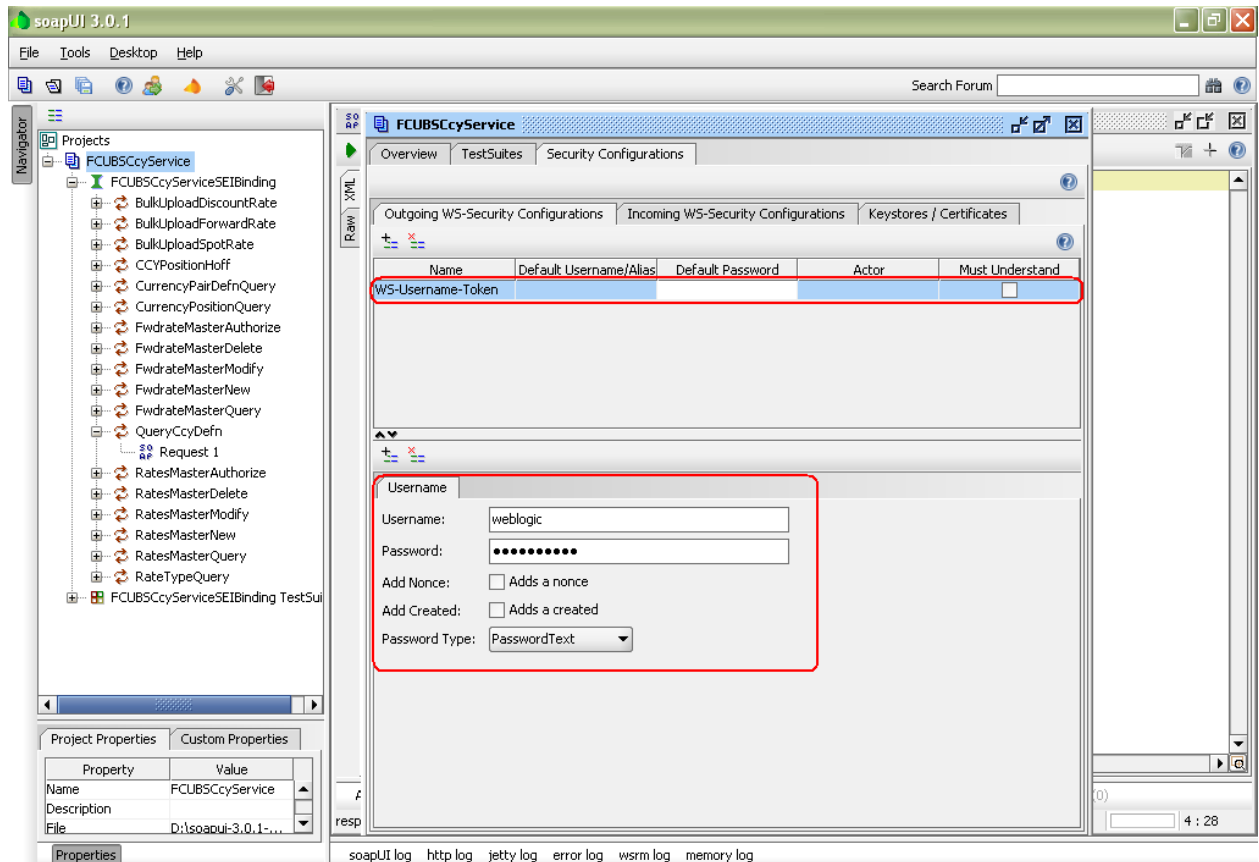
Policy URI:



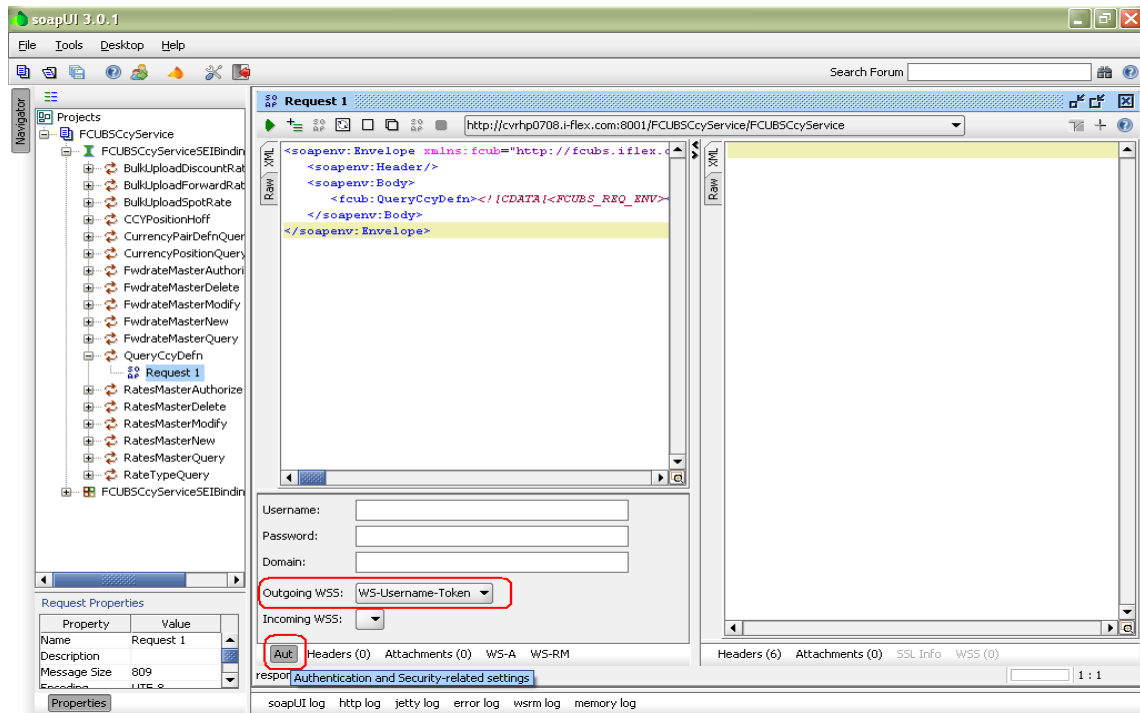
5.2 Testing of Web Service via SOAP UI (eviware soapUI3.0.1)

The above Testing of web service can also be done via SOAP UI as follows:

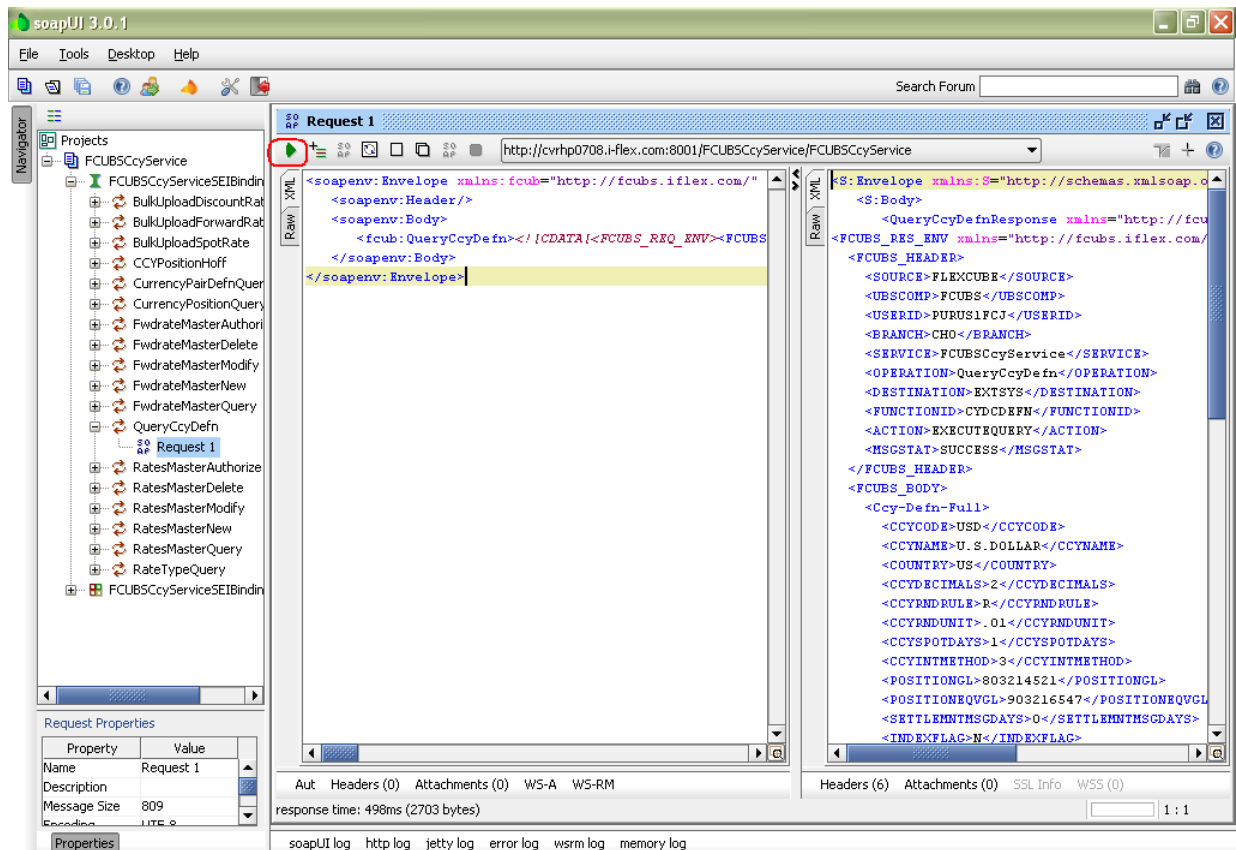
Configure the Outgoing WS- Security Configurations by double clicking the project and navigating to the Security Configurations tab.



1. Create a new request for the operation, which you want to invoke.
2. Configure the Authentication and security related setting by going to Aut Section as shown to apply the WS-User Token into the request.



3. Run the request by clicking the button as shown.





Oracle Web Service Manager Implementation Guide
[September] [2024]
Version 14.7.5.0.0

Oracle Financial Services Software Limited
Oracle Park
Off Western Express Highway
Goregaon (East)
Mumbai, Maharashtra 400 063
India

Worldwide Inquiries:
Phone: +91 22 6718 3000
Fax: +91 22 6718 3001
<https://www.oracle.com/industries/financial-services/index.html>

Copyright © [2007], [2024], Oracle and/or its affiliates. All rights reserved.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

U.S. GOVERNMENT END USERS: Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate failsafe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

This software or hardware and documentation may provide access to or information on content, products and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

