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Multi-factor Authentication

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Oracle Revenue Management and Billing Multi-factor Authentication

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Preface

About This Document

This document helps you to configure multi-factor authentication for Oracle Revenue Management and Billing (ORMB) using Oracle SOA Suite and Oracle Access Management.

Intended Audience

This document is intended for the following audience:

- System Administrators
- Consulting Team
- Implementation Team

Note: The person who is setting up multi-factor authentication for ORMB should have basic knowledge on how to install and work with Oracle SOA Suite and Oracle Access Management.

Organization of the Document

The information in this document is organized into the following sections:

Section No.	Section Name	Description
Section 1	Multi-factor Authentication	Explains the multi-factor authentication feature. It also provides the high-level steps on how to configure multi-factor authentication for ORMB.
Section 2	Configuring Oracle User Messaging Service	Explains how to configure the email driver and credentials for the User Messaging Service (UMS).
Section 3	Configuring Adaptive Authentication Service	Explains how to enable and configure the adaptive authentication service. It also explains how to protect the resources on the application domain using the adaptive authentication scheme.
Section 4	Verifying Multi-factor Authentication for ORMB	Explains how to verify whether the multi-factor authentication is successfully configured for ORMB.

Related Documents

You can refer to the following documents for more information:

Document	Description
<i>Oracle Revenue Management and Billing Version 2.6.0.1.0 Release Notes</i>	Provides a brief description about the new features, enhancements, UI and database level changes, supported platforms, framework upgrade, supported upgrades, and technology upgrade made in this release. It also highlights the discontinued features, bug fixes, and known issues in this release.
<i>Oracle Revenue Management and Billing Banking User Guide</i>	Lists and describes various banking features in Oracle Revenue Management and Billing. It also describes all screens related to these features and explains how to perform various tasks in the application.
<i>Oracle Revenue Management and Billing Insurance User Guide</i>	Lists and describes various insurance features in Oracle Revenue Management and Billing. It also describes all screens related to these features and explains how to perform various tasks in the application.

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1. Multi-factor Authentication

Oracle Access Management (OAM) provides the adaptive authentication service. This service offers stronger multi-factor (also referred to as second factor) authentication for sensitive applications that require additional security along with the standard user name and password type authentication.

Multi-factor authentication involves more than one stage while verifying the identity of an entity attempting to access services from a server or on a network. For example, when multi-factor authentication is configured, the traditional user name and password is used as the first factor in the authentication process. Additional security is enforced by adding a One Time Pin (OTP) step, or an Access Request (Push) Notification step as a second factor in the authentication process.

Once the first and second factor authentications are successfully validated, the user is directed to the protected resource on the application domain.

To configure multi-factor authentication for ORMB wherein the second factor authentication is done using the One Time Pin (OTP) received on the email, you need to do the following:

1. Configure email address, through which you want to send the OTP, using Oracle SOA Suite
2. Configure the adaptive authentication service using which you want to generate and authenticate the OTP

2. Configuring Oracle User Messaging Service

Oracle SOA Suite provides a component named User Messaging Service (UMS) which enables you to send notifications via various channels, such as Email, Short Message Service (SMS), Instant Messaging (IM) and Voice Mail. Each of these channels needs to be configured before they can be used. This section explains how to configure the Email server as the default mail server for UMS from where you want to send the One Time Pin (OTP) for the second factor authentication.

2.1 Configuring the Email Driver

To set the properties of the email driver:

1. Login to Oracle Enterprise Manager.
2. Expand the **User Messaging Service** node in the left pane of the **Oracle Enterprise Manager 11g Fusion Middleware Control** window.
3. Right-click on the **usermessagingdriver-email (soa_server1)** node. A shortcut menu appears.



Figure 1: usermessagingdriver-email Shortcut Menu

4. Select the **Email Driver Properties** option. The **usermessagingdriver-email** page appears in the right pane of the window.

Name	Description	Mandatory	Encoded Credential	Value
CheckMailFreq	Messages from the mail server. The unit is in seconds and the default value is 30 seconds.			30
ReceiveFolder	The name of the folder the driver is polling messages from. The default value is INBOX.			INBOX
OutgoingMailServer	The name of the SMTP server. Mandatory only if e-mail sending is required.			
OutgoingMailServerPort	The port number of SMTP server. Typically 25.			25
OutgoingMailServerSecurity	The security used by SMTP server. Possible values are None, TLS and SSL. Default value is None.			None ▾
OutgoingDefaultFromAddr	The default FROM address (if one is not provided in the outgoing message).			
OutgoingUsername	The username used for SMTP authentication. Required only if SMTP authentication is supported by the SMTP server.			

Figure 2: Driver-Specific Configuration

5. Set the values of the following properties in the **Driver-Specific Configuration** section:

Property	Description	Mandatory (Yes or No)
OutgoingMailServer	Used to specify the name of the SMTP server.	Yes
OutgoingMailServerPort	Used to specify the port number of the SMTP server.	Yes
OutgoingMailServerSecurity	Used to indicate the security setting used by the SMTP server. The valid values are: <ul style="list-style-type: none"> • None • TLS • SSL <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Note: You must select the None option from the list. </div>	Yes

6. Save the changes and restart the Oracle WebLogic server.

2.2 Setting Credentials for UMS

The adaptive authentication service uses Oracle SOA's User Messaging Service (UMS) to send email notifications. The OAM server needs the UMS credentials to establish the connection to UMS Web service.

To set credentials for UMS:

1. Login to Oracle Enterprise Manager.
2. Expand the **WebLogic Domain** node in the left pane of the **Oracle Enterprise Manager 11g Fusion Middleware Control** window.
3. Right-click on the domain name. A shortcut menu appears.

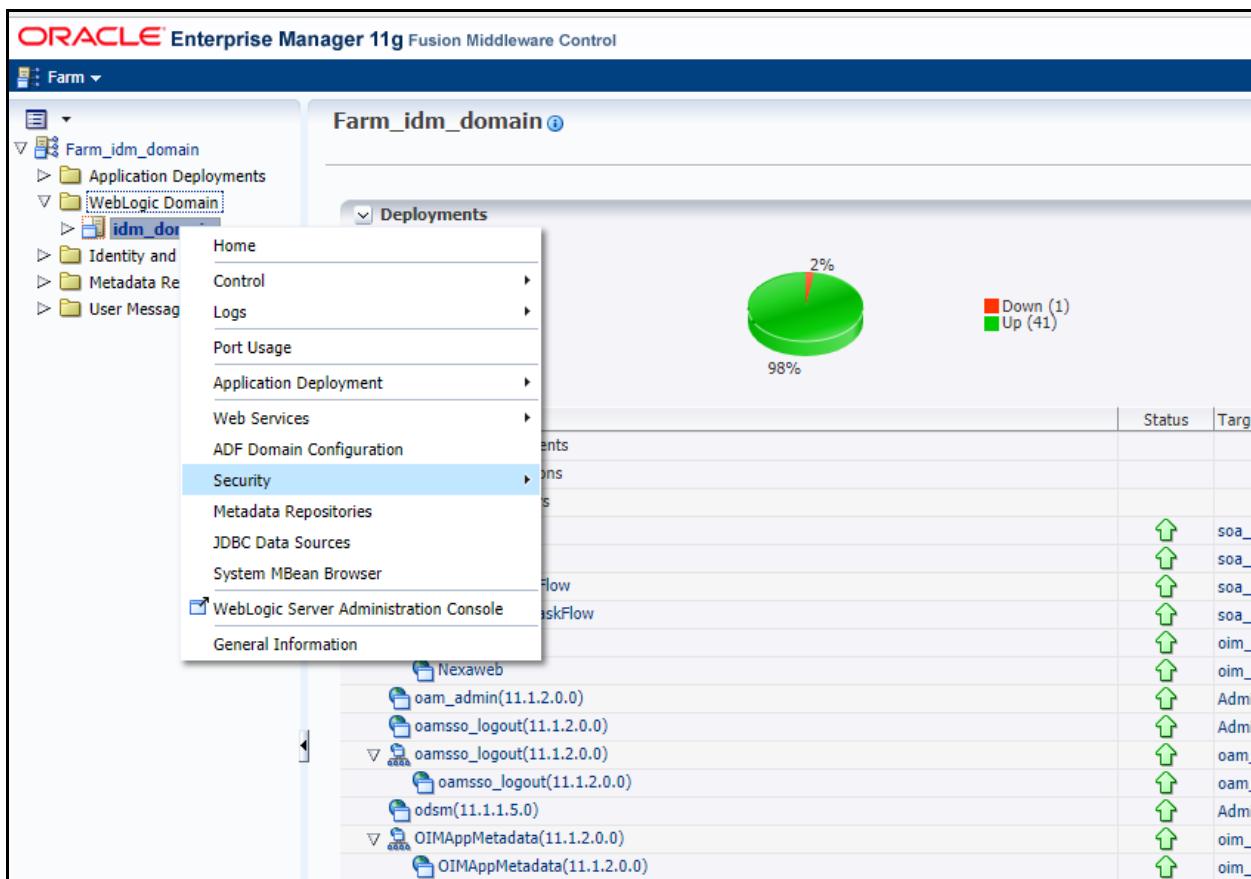
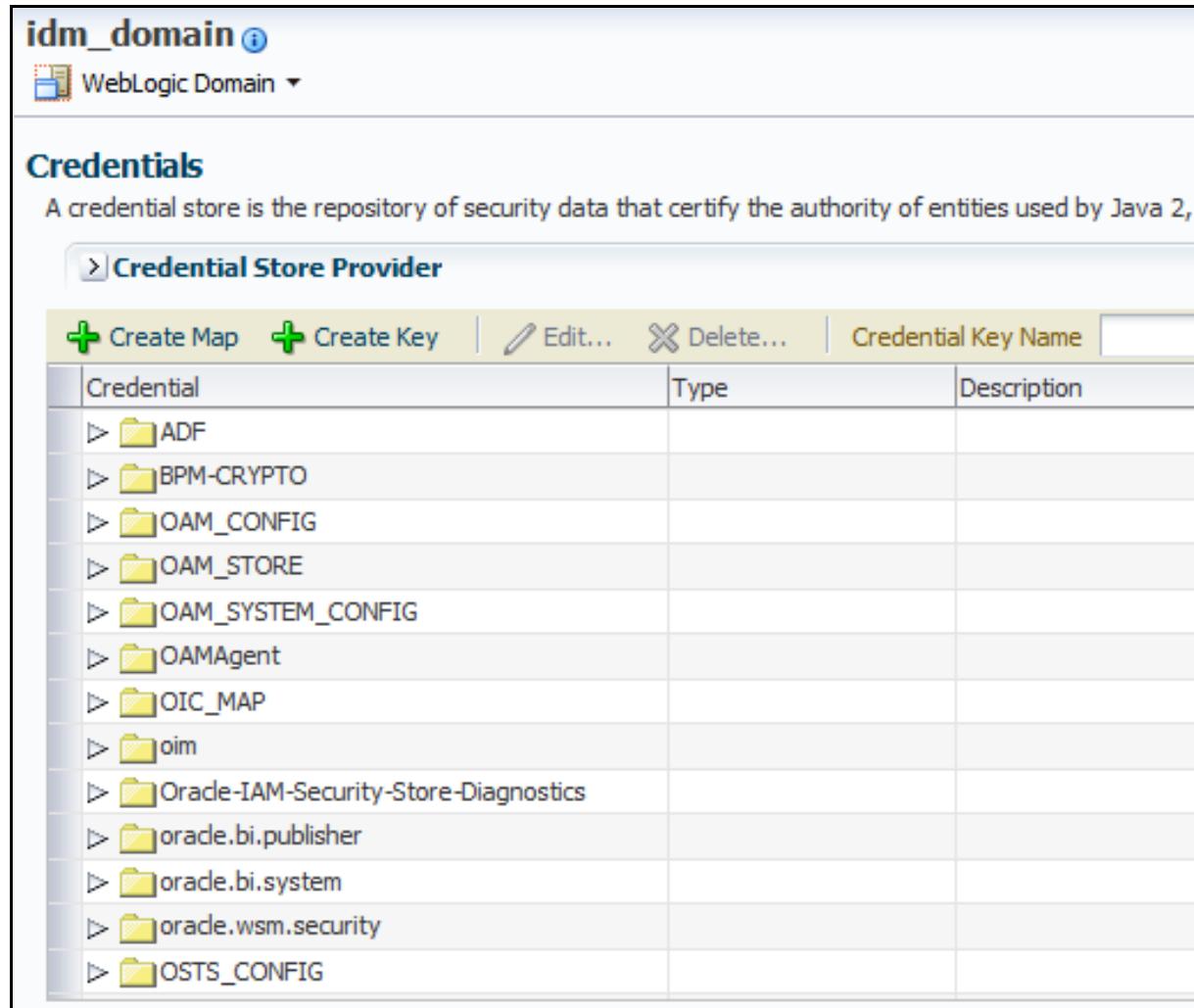


Figure 3: WebLogic Domain Shortcut Menu

4. Select the **Security** option from the shortcut menu. A sub-menu appears.
5. Click the **Credentials** option from the **Security** sub-menu. The **Credentials** screen appears.



The screenshot shows the 'Credentials' screen for the 'idm_domain' WebLogic Domain. The title bar includes the domain name and a 'WebLogic Domain' dropdown. The main area is titled 'Credential Store Provider' with a sub-section 'Credential'. The interface includes buttons for 'Create Map' (green plus), 'Create Key' (green plus), 'Edit...', 'Delete...', and a search bar for 'Credential Key Name'. A table lists the following credential nodes:

Credential	Type	Description
▷ ADF		
▷ BPM-CRYPTO		
▷ OAM_CONFIG		
▷ OAM_STORE		
▷ OAM_SYSTEM_CONFIG		
▷ OAMAgent		
▷ OIC_MAP		
▷ oim		
▷ Oracle-IAM-Security-Store-Diagnostics		
▷ oracle.bi.publisher		
▷ oracle.bi.system		
▷ oracle.wsm.security		
▷ OSTS_CONFIG		

Figure 4: Credentials Screen

6. Select the **OAM_CONFIG** node and then click **Create Key**. The **Create Key** window appears.



Figure 5: Create Key Window

The **Create Key** window contains the following fields:

Field Name	Field Description	Mandatory (Yes or No)
Select Map	Used to indicate the map for which you want to create the key.	Yes
Key	Used to specify the name for the key.	Yes
Type	Used to indicate the type of credential that you want to specify in the key. The valid values are: <ul style="list-style-type: none"> • Password • Generic 	Yes
User Name	Used to specify the user name using which you want to connect the UMS server.	Yes
Password	Used to specify the password using which you want to connect the UMS server.	Yes
Confirm Password	Used to specify the password using which you want to connect the UMS server.	Yes
Description	Used to specify the description for the key.	No

7. Ensure that the **OAM_CONFIG** option is selected from the **Select Map** list and the **Password** option is selected from the **Type** list.
8. Enter `umsKey` in the **Key** field.
9. Enter the required user name and password in the **Create Key** window.
10. Click **OK**. The key is defined to establish connection with the UMS server.

3. Configuring Adaptive Authentication Service

This section explains how to enable and configure the adaptive authentication service. It also explains how to protect the resources on the application domain using the adaptive authentication scheme.

3.1 Enabling the Adaptive Authentication Service

To enable the adaptive authentication service:

1. Login to Oracle Access Management using the administrator's credentials.
2. Click the **Configuration** button. The **Launch Pad** tab appears.

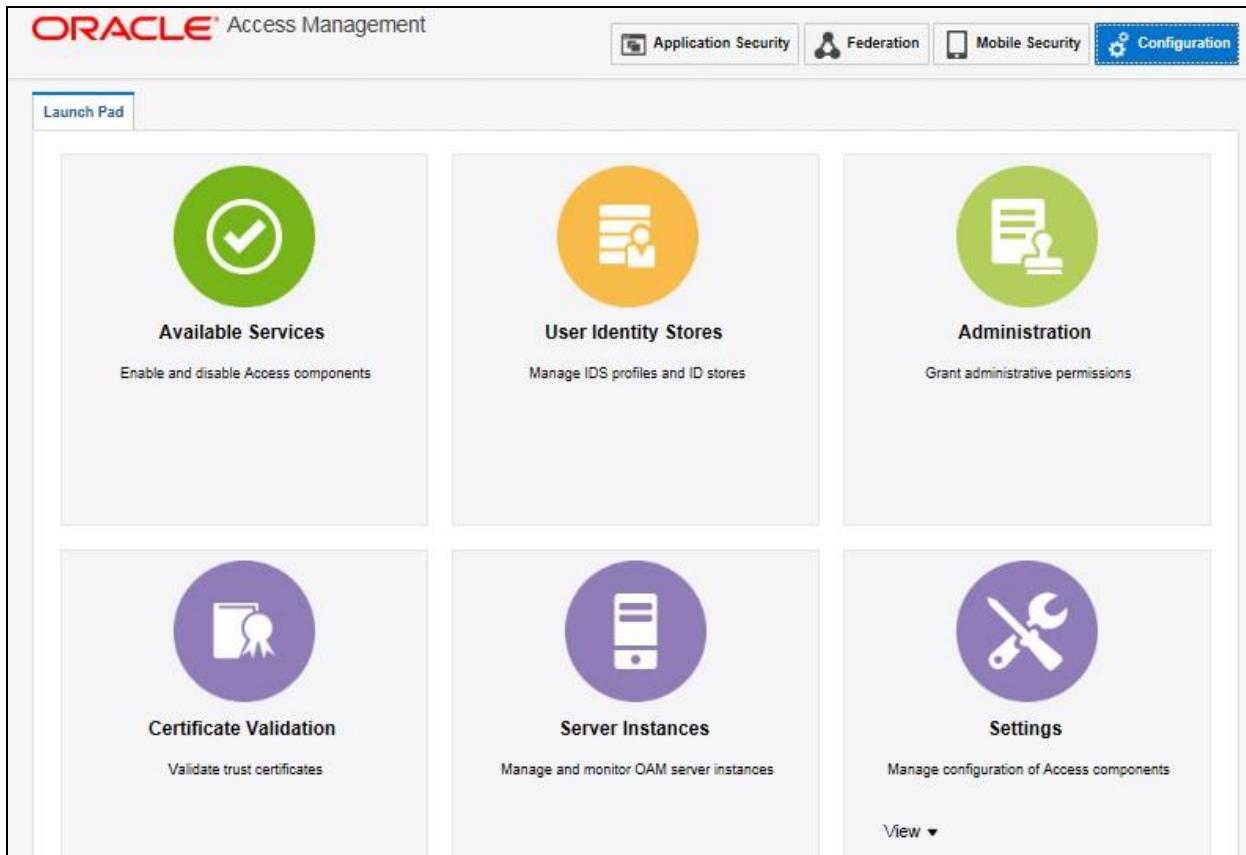


Figure 6: Configuration Launch Pad

3. Click the **Available Services** icon. The **Available Services** tab appears.

Available Services																				
The following is the list of services installed in your current deployment. Disabling a service will only turn off that service and will not uninstall it from the system.																				
<table border="1"> <thead> <tr> <th colspan="2">Application Security</th> </tr> </thead> <tbody> <tr> <td></td> <td>Access Manager</td> </tr> <tr> <td></td> <td>Adaptive Authentication Service</td> </tr> <tr> <td colspan="2"> <table border="1"> <thead> <tr> <th colspan="2">Federation</th> </tr> </thead> <tbody> <tr> <td></td> <td>Identity Federation</td> </tr> </tbody> </table> </td> </tr> <tr> <td></td> <td>Enabled</td> </tr> <tr> <td></td> <td>Disabled</td> </tr> <tr> <td></td> <td>Disabled</td> </tr> </tbody> </table>			Application Security			Access Manager		Adaptive Authentication Service	<table border="1"> <thead> <tr> <th colspan="2">Federation</th> </tr> </thead> <tbody> <tr> <td></td> <td>Identity Federation</td> </tr> </tbody> </table>		Federation			Identity Federation		Enabled		Disabled		Disabled
Application Security																				
	Access Manager																			
	Adaptive Authentication Service																			
<table border="1"> <thead> <tr> <th colspan="2">Federation</th> </tr> </thead> <tbody> <tr> <td></td> <td>Identity Federation</td> </tr> </tbody> </table>		Federation			Identity Federation															
Federation																				
	Identity Federation																			
	Enabled																			
	Disabled																			
	Disabled																			

Figure 7: Available Services Tab

4. Click the **Enable Service** button corresponding to the adaptive authentication service in the **Application Security** section. The **Enabled** icon appears corresponding to the adaptive authentication service indicating that the service is enabled.

Available Services								
The following is the list of services installed in your current deployment. Disabling a service will only turn off that service and will not uninstall it from the system.								
<table border="1"> <thead> <tr> <th colspan="2">Application Security</th> </tr> </thead> <tbody> <tr> <td></td> <td>Access Manager</td> </tr> <tr> <td></td> <td>Adaptive Authentication Service</td> </tr> </tbody> </table>			Application Security			Access Manager		Adaptive Authentication Service
Application Security								
	Access Manager							
	Adaptive Authentication Service							
	Enabled							
	Enabled							

Figure 8: Enabled Adaptive Authentication Service

3.2 Configuring the Adaptive Authentication Plugin

To configure the email related settings in the adaptive authentication plugin:

1. Login to Oracle Access Management using the administrator's credentials.

2. Click the **Application Security** button. The **Launch Pad** tab appears.

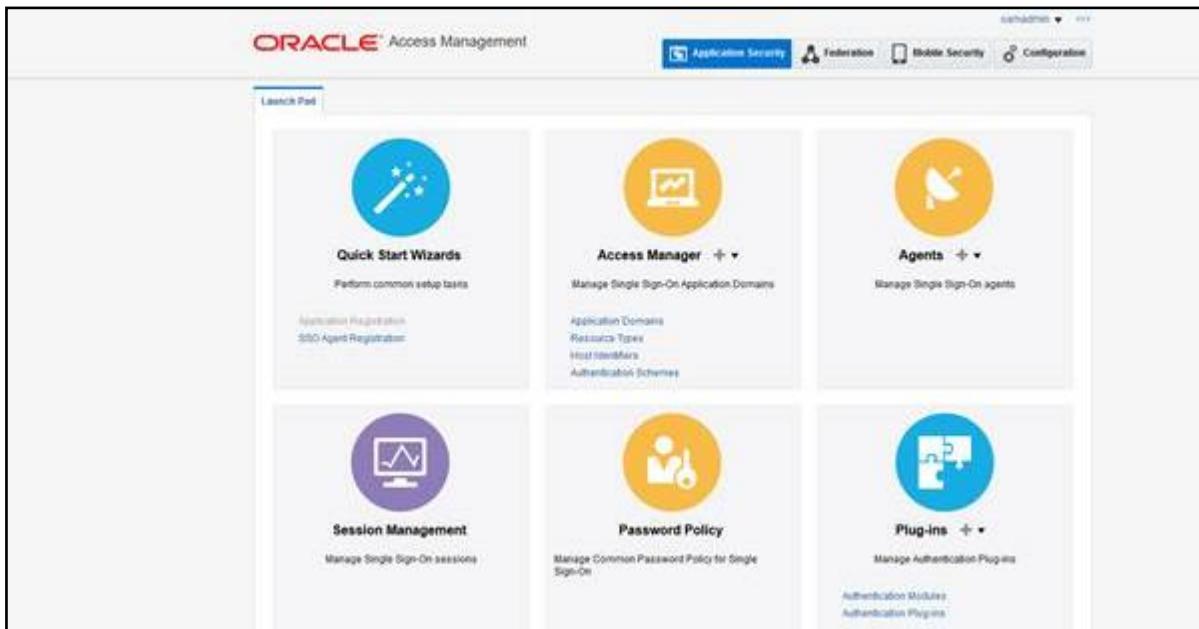


Figure 9: Application Security Launch Pad

3. Click the **Authentication Plug-ins** link in the **Plug-ins** section.

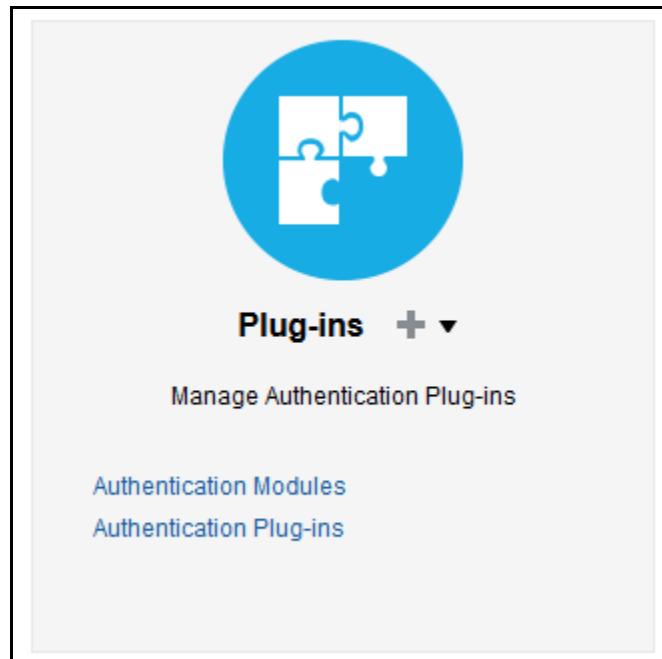


Figure 10: Plug-ins Section

4. The **Plug-ins** tab appears.
5. Type `AdaptiveAuthenticationPlugin` in the field which is above the **Plug-in Name** column and then press **Enter**. A row appears in the grid.

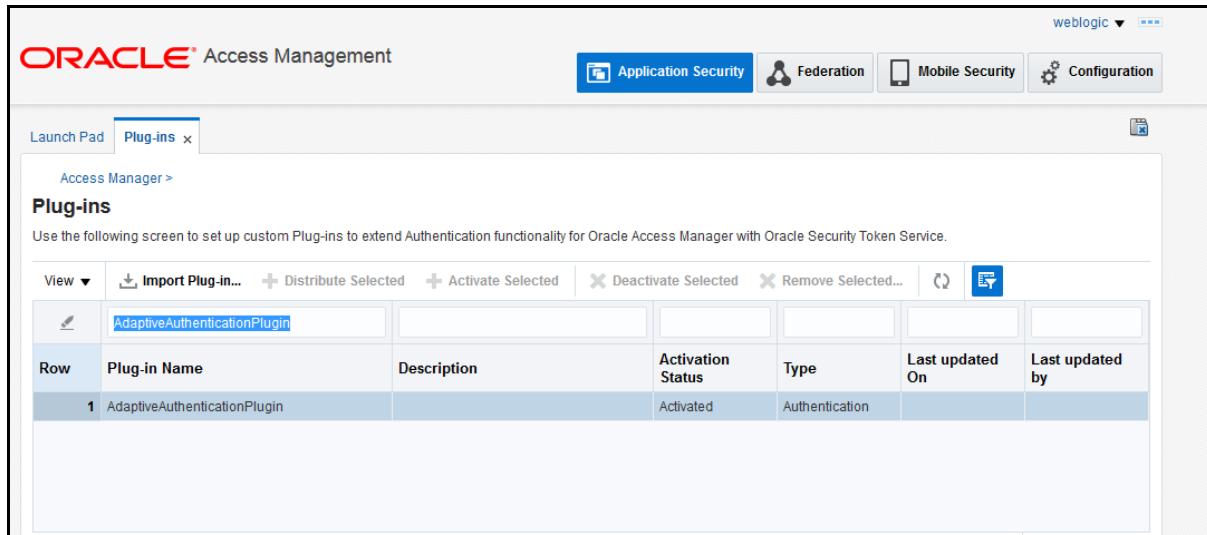


Figure 11: Searching AdaptiveAuthenticationPlugin

6. In the **Plug-in Details: AdaptiveAuthenticationPlugin** section, ensure that the **Configuration Parameters** tab is selected.

Figure 12: Configuration Parameters Tab

7. Enter the values for the following parameters:

Parameter	Description	Mandatory (Yes or No)
SFATypes	Used to indicate the type of second factor authentication. For sending OTP through email, you must specify the email ID as the parameter value.	Yes

Parameter	Description	Mandatory (Yes or No)
Email_Enabled	<p>Used to indicate that you want to send OTP through email. The valid values are:</p> <ul style="list-style-type: none"> • true • false <p>Note: Here, you must set this parameter value to true.</p>	Yes
IdentiyStoreRef	<p>Used to indicate the user identity store using which you want to authenticate the user at the first level.</p> <p>Note: You must specify a user identity store where the directory type is set to OUD.</p>	Yes
UMSAvailable	<p>Used to indicate whether you want the adaptive authentication service to send the email using UMS. The valid values are:</p> <ul style="list-style-type: none"> • true • false <p>Note: Here, you must set this parameter value to true.</p>	Yes
UmsClientUrl	Used to specify the URL of UMS web service.	Yes
EmailField	<p>Used to indicate the field which contains the user's email address (to which you want to send the email) in the user identity store.</p> <p>Note: Here, you must set this parameter value to mail.</p>	Yes
PinLength	Used to specify the length of OTP which you want to send via email.	Yes
PinChars	Used to indicate the characters using which you want to generate the OTP. If you only want digits in OTP, enter 0123456789.	Yes
EmailMsgSubject	Used to specify the subject for the email through which you want to send the OTP.	Yes

Parameter	Description	Mandatory (Yes or No)
EmailMsgFrom	Used to indicate the email address from which you want to send the OTP.	Yes
EmailMsgFromName	Used to specify the sender's name that you want to display in the email.	Yes

8. Click **Save**. The changes are saved.

3.3 Verifying the Adaptive Authentication Plugin Details

To verify the adaptive authentication plugin details:

1. Login to Oracle Access Management using the administrator's credentials.
2. Click the **Application Security** button. The **Launch Pad** tab appears.

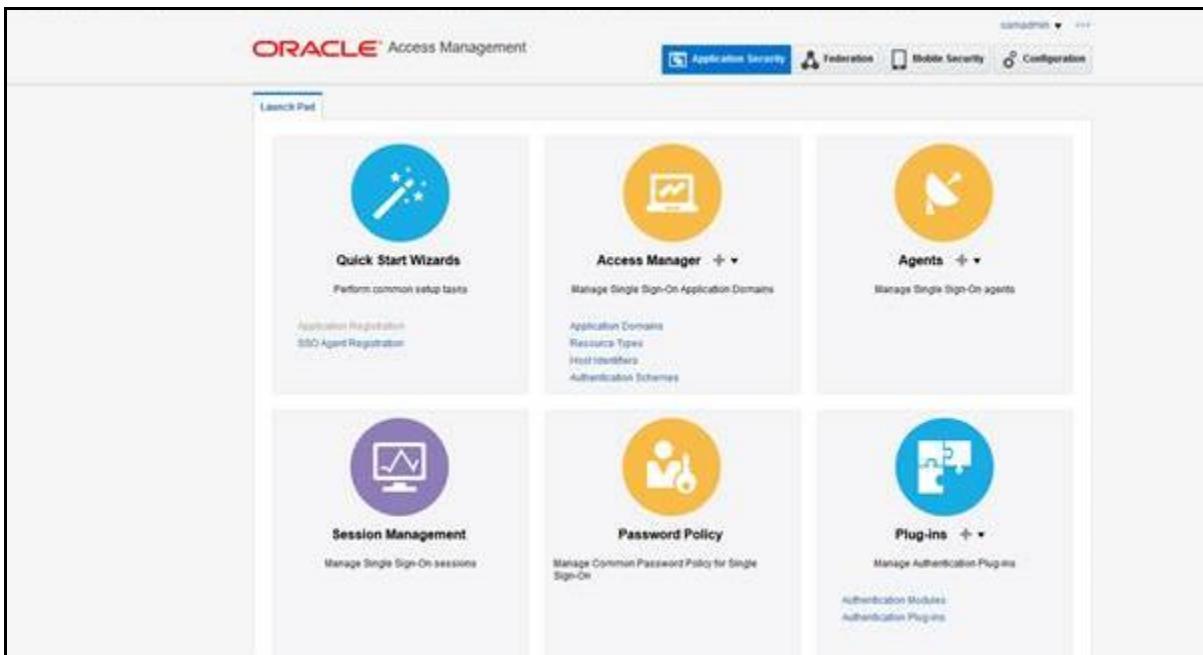


Figure 13: Application Security Launch Pad

3. Click the **Authentication Modules** link in the **Plug-ins** section. The **Authentication Modules** tab appears.

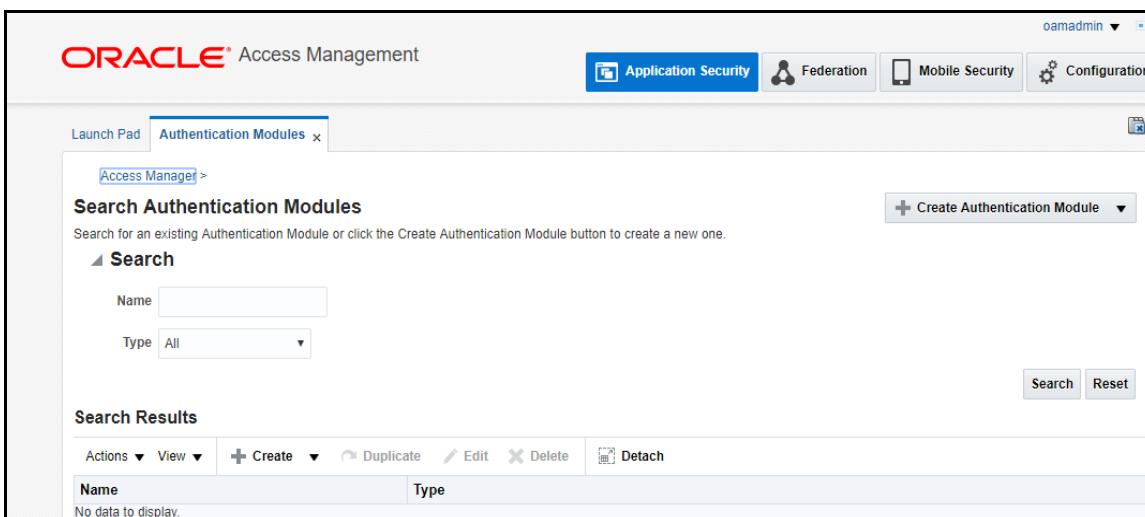


Figure 14: Authentication Modules Tab

4. In the **Search** section, select the **Authentication Plugin** option from the **Type** list.

5. Enter **AdaptiveAuthenticationModule** in the **Name** field and then click **Search**. A row appears in the **Search Results** section.

Access Manager >

Search Authentication Modules

Search for an existing Authentication Module or click the Create Authentication Module button to create a new one.

Search

Name

Type

Search Results

Actions		<input type="button" value="Create"/>	<input type="button" value="Duplicate"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Detach"/>
Name	Type					
AdaptiveAuthenticationModule	Authentication Plugin					

Search **Reset**

Figure 15: Searching AdaptiveAuthenticationModule

6. In the **Search Results** section, click the **AdaptiveAuthenticationModule** link. The **AdaptiveAuthenticationModule** tab appears.

Access Manager >

Authentication Module **AdaptiveAuthenticationModule**

Custom Authentication Module relies on bundled plug-ins (or those that are developed using the Access Manager Authentication Extensibility Java API). This module uses more than one plug-in that you can orchestrate to ensure that each one performs a specific authentication function.

General **Steps** **Steps Orchestration**

* Name

Description

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Figure 16: AdaptiveAuthenticationModule Tab

7. Click the **Steps** tab. The **Steps** tab appears.

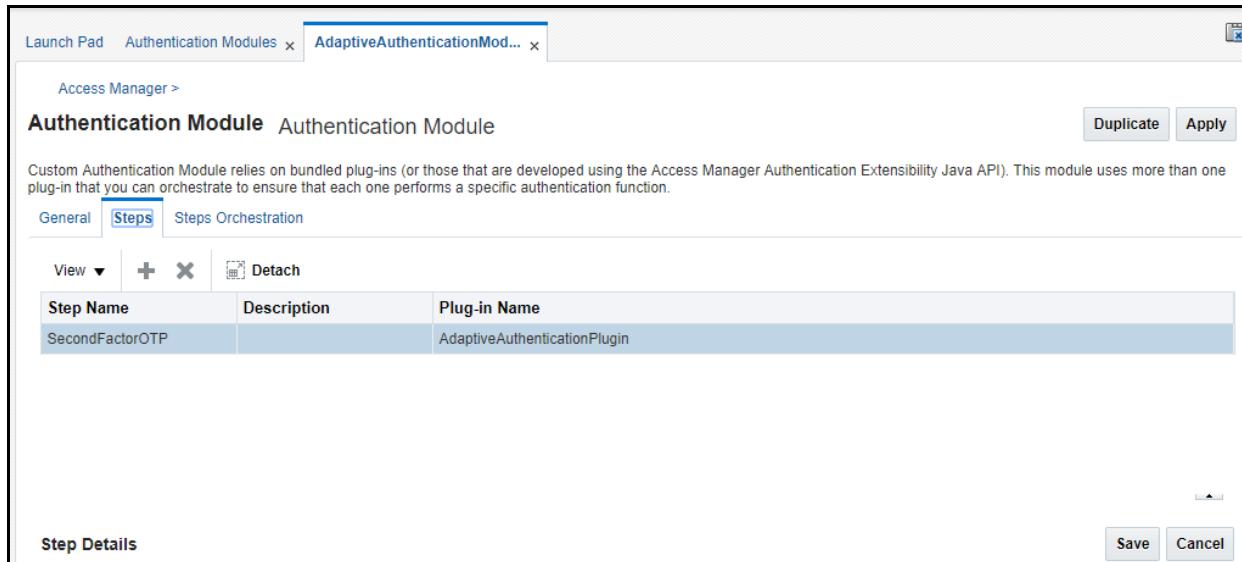


Figure 17: Steps Tab

8. In the **Step Details** section, verify the details specified while configuring the adaptive authentication plugin. You can edit the details, if required.

3.4 Protecting the Resource using Adaptive Authentication Scheme

To protect the resource using the adaptive authentication scheme:

1. Login to Oracle Access Management using the administrator's credentials.
2. Click the **Application Security** button. The **Launch Pad** tab appears.

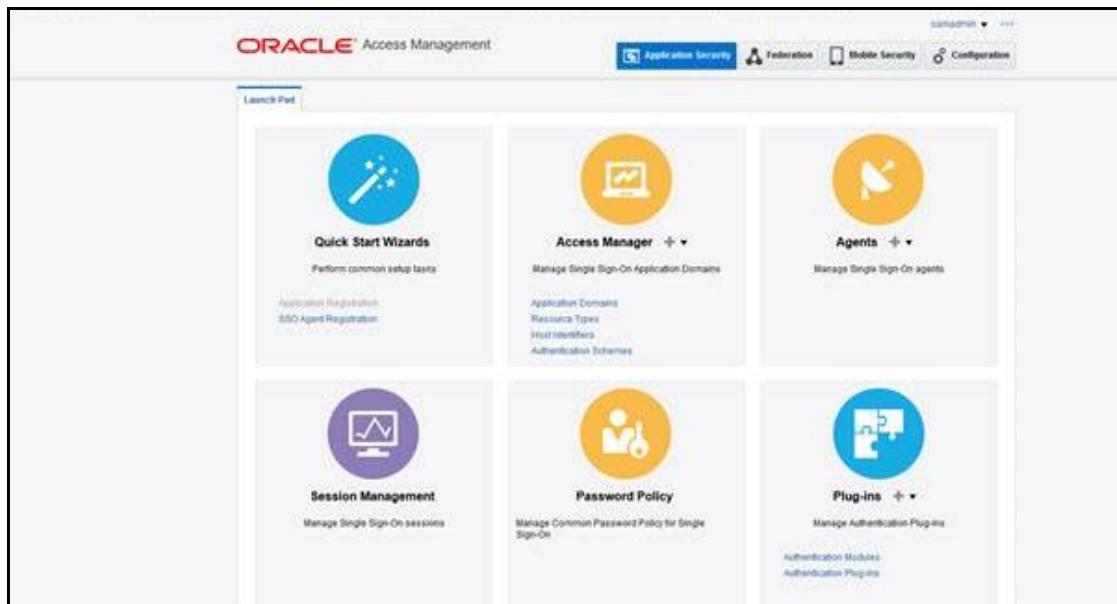


Figure 18: Application Security Launch Pad

3. Click the **Application Domains** link in the **Access Manager** section. The **Application Domain** tab appears.

Figure 19: Application Domain Tab

4. Search for the required application domain in the **Application Domain** tab.
 5. In the **Search Results** section, click the link in the **Name** column corresponding to the application domain whose resources you want to protect using the authentication policy.

Figure 20: {Application Domain} – Summary Tab

6. Click the **Authentication Policies** tab. The **Authentication Policies** tab appears.

Access Manager >
Webgate_IDM_11g Application Domain

Application Domain provides a logical container for resources or sets of resources, and the associated policies that dictate who can access specific protected resources.

Summary Resources **Authentication Policies** Authorization Policies Token Issuance Policies Administration

Select an existing Authentication Policy from the list or click the Create Authentication Policy button to create a new one.

Actions ▾ View ▾ **+ Create** **Duplicate** **Edit** **Delete** **Detach**

Row	Name	Description
1	Public Resource Policy	Policy set during domain creation. Add resources to this policy to allow anyone access.
2	Protected Resource Policy	Policy set during domain creation. Add resources to this policy to protect them.

Figure 21: {Application Domain} – Authentication Policies Tab

7. Click the **Protected Resource Policy** link in the **Name** column. The **{Application Domain}: Protected Resource Policy** tab appears.

Launch Pad Application Domain x Webgate_IDM_11g x **Webgate_IDM_11g : Protect...** x

Access Manager >

Protected Resource Policy Authentication Policy

Authentication Policy defines the type of verification that must be performed to provide a sufficient level of trust for Access Manager to grant access to the protected resources. A policy can be defined to protect one or more resources in the Application Domain.

* Name Success URL
 Description Failure URL
 * Authentication Scheme

Resources Responses Advanced Rules

Resources		+ Add	X Delete
Resource Type	Host Identifier	Resource URL	Query String
HTTP	IAMSuiteAgent	/**	

Figure 22: {Application Domain}: Protected Resource Policy Tab

8. Click the **Advanced Rules** tab. The **Advanced Rules** tab appears.

Launch Pad Application Domain x Webgate_IDM_DEV_11g x Webgate_IDM_DEV_11g : Pro... x

Access Manager >

Protected Resource Policy Authentication Policy

Authentication Policy defines the type of verification that must be performed to provide a sufficient level of trust for Access Manager to grant access to the user making the request. A single policy can be defined to protect one or more resources in the Application Domain.

* Name: Protected Resource Policy

Description: Policy set during domain creation. Add resources to

* Authentication Scheme: LDAPScheme

Success URL: [empty]

Failure URL: [empty]

Resources Responses Advanced Rules

Pre-Authentication Post-Authentication

View Add Delete Top Up Down Bottom Detach

Order Rule Name Description

This Policy does not have any Pre-Authentication rules

Figure 23: Advanced Rules Tab

9. Click the **Post-Authentication** tab. The **Post-Authentication** tab appears.

Launch Pad Application Domain x Webgate_IDM_DEV_11g x Webgate_IDM_DEV_11g : Pro... x

Access Manager >

Protected Resource Policy Authentication Policy

Authentication Policy defines the type of verification that must be performed to provide a sufficient level of trust for Access Manager to grant access to the user making the request. A single policy can be defined to protect one or more resources in the Application Domain.

* Name: Protected Resource Policy

Description: Policy set during domain creation. Add resources to

* Authentication Scheme: LDAPScheme

Success URL: [empty]

Failure URL: [empty]

Resources Responses Advanced Rules

Pre-Authentication Post-Authentication

View Add Delete Top Up Down Bottom Detach

Order Rule Name Description

This Policy does not have any Post-Authentication rules

Figure 24: Post-Authentication Tab

10. Click **Add** in the **Post-Authentication** tab. The **Add Rule** window appears.

The screenshot shows the 'Add Rule' window. It has a title bar 'Add Rule' and a close button 'X'. Inside, there are fields for 'Rule Name' (marked with an asterisk), 'Description', and 'Condition' (marked with an asterisk). Below these is a 'Deny Access' checkbox. A section labeled 'If condition is true' contains a 'Switch Authentication Scheme to' dropdown menu with a downward arrow. At the bottom are 'Add' and 'Cancel' buttons.

Figure 25: Add Rule Window

11. Create a rule with the following condition:

'true'=='true'

Note: It indicates that OTP should be generated and sent through the email when the first factor authentication is successful.

12. Select the **AdaptiveAuthenticationScheme** option from the **If condition is true** list.

Add Rule

* Rule Name	TestOTP
Description	Test OTP
* Condition	'true'=='true'
If condition is true	<input type="checkbox"/> Deny Access
* Switch Authentication Scheme to	
AdaptiveAuthenticationScheme ▾	
Add Cancel	

Figure 26: Adding a Rule

13. Click **Add**. The rule appears in the **Post-Authentication** tab.
14. Click **Apply**.

4. Verifying Multi-factor Authentication

Once you setup the multi-factor authentication, you need to verify whether the first and second factor authentication is working properly for ORMB.

To verify the multi-factor authentication:

1. Login to Oracle Revenue Management and Billing. The **Oracle Access Manager Welcome** screen appears.

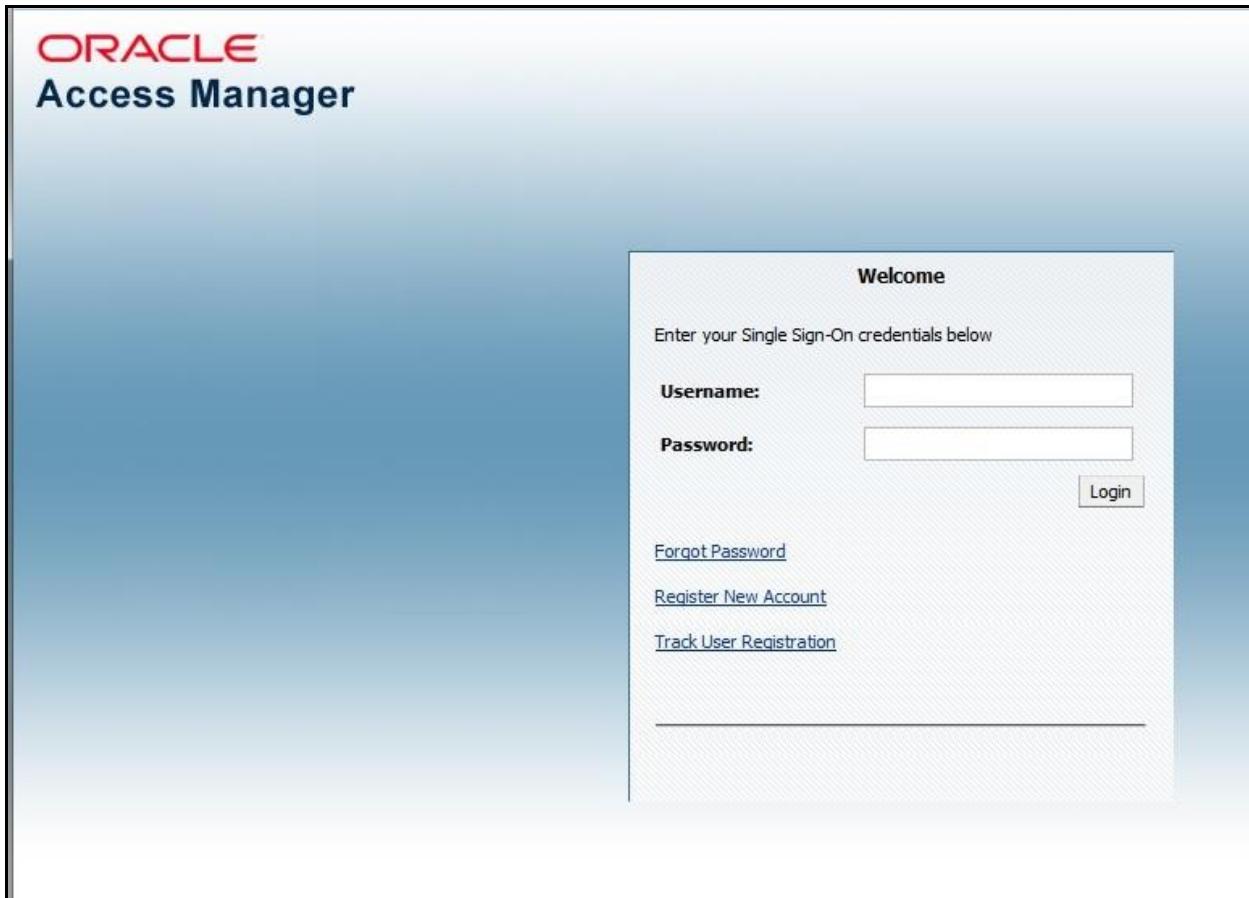


Figure 27: Oracle Access Manager Welcome Screen

2. Enter the user name and password in the respective fields.
3. Click **Login**. The **Second Factor Authentication** screen appears.

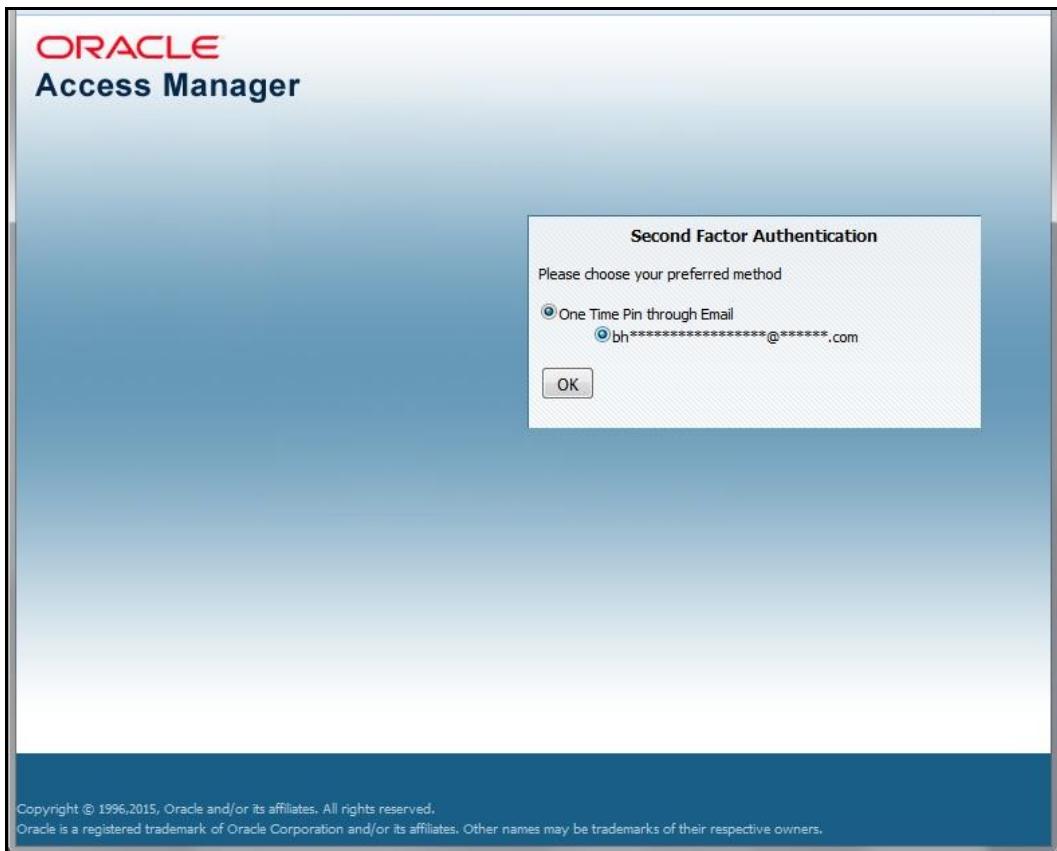


Figure 28: Second Factor Authentication Screen

4. Ensure that the **One Time Pin through Email** option is selected.
5. Click **OK**. The **Second Factor Authentication** screen appears where you can enter the One Time Pin (OTP) which you have received through an email.



Figure 29: Second Factor Authentication – One Time Pin

6. Enter the One Time Pin (OTP) and then click **Login**. The **Oracle Revenue Management and Billing** window appears.