IBM Security Verify Governance Identity Manager

Amazon Web Services Installation and Configuration Guide

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Chapter 1. Overview

Adapters can be installed on the managed resource. The Identity server manages access to the resource by using the security system. Adapters function as trusted virtual administrators on the target operating system. The adapter creates, suspends, restores user accounts, and other functions that administrators run manually. The adapter runs as a service, independently of whether you are logged on to the Identity server.

The Amazon Web Services adapter uses the Security Directory Integrator functions to facilitate communication between the Identity server and Amazon Web Services Identity and Access Management.

Features of adapter

The Amazon Web Services adapter automates several administrative tasks on the Identity and Access Management. The AWS IAM adapter checks the connection between the AWS Identity and Access Management and Identity server.

The adapter automates the following tasks:

- Reconcile group and group attributes.
- Reconcile role and role attributes.
- Reconcile policy and policy attributes.
- Reconcile user and user attributes.
- Create, modify, suspend, restore, change password, and delete a user.

Architecture of adapter

Several components are involved in running and using the adapter. Install all these components so that the adapter can function correctly.

The adapter requires the following components:

- The Dispatcher
- The IBM Security Directory Integrator connector
- Identity server adapter profile

You must install the Dispatcher and the adapter profile; however, the Security Directory Integrator connector might already be installed with the base Security Directory Integrator product.

The AWS IAM adapter consists of IBM Security Directory Integrator Assembly Lines. When an initial request is made by Identity server to the AWS IAM adapter, the assembly lines are loaded into the Security Directory Integrator server. Subsequent service requests do not require those same assembly lines to be reloaded.

Supported configurations

The AWS IAM adapter supports a number of different configurations and is designed to operate with Identity server.

The following components are the fundamental components of an AWS IAM adapter environment:

- An Identity server
- An IBM Security Directory Integrator server
- The managed resource
- The AWS IAM adapter

As part of each configuration, the AWS IAM adapter must be installed on the computer that is running the IBM Security Directory Integrator server.

For a single-server configuration, you must install the Identity server, IBM Security Directory Integrator server, and the AWS IAM adapter on one server. That server communicates with the AWS IAM server.

Chapter 2. Planning

Installing and configuring the adapter involves several steps that you must complete in a specific sequence. Follow the roadmap for the main tasks.

Prerequisites

Verify that your environment meets the software and hardware requirements for the adapter.

The following table identifies the software and operating system prerequisites for the AWS IAM adapter installation.

Ensure that you install the adapter on the same workstation as the Security Directory Integrator server.

Table 1. Prerequisites to install the adapter

Prerequisite	**Description**
Operating system	The AWS IAM can be used on any operating system that is supported by Security Directory Integrator.
Network Connectivity	Internet Protocol network
System Administrator authority	To complete the adapter installation procedure, you must have system administrator authority.
Directory Integrator	• IBM Security Directory Integrator 7.1.1 + 7.1.1-TIV-TDI-FP0004 + 7.2.0-ISS-SDI-LA0008 • IBM® Security Directory Integrator Version 7.2 **Note:** • Earlier versions of IBM Security Directory Integrator that are still supported might function properly. However, to resolve any communication errors, you must upgrade your Directory Integrator release to the versions that the adapter officially supports. • The adapter supports IBM Security Directory Integrator 7.2, which is available only to customers who have the correct entitlement. Contact your IBM representative to find out whether you have the entitlement to download IBM Security Directory Integrator 7.2.
Identity server	The following servers are supported: • Identity server Version 10.0 • Identity server Version 10.0 • IBM Security Identity Governance and Intelligence server Version 5.2.2 + 5.2.2.0- ISS-SIGI-FP0001 + 5.2.2.1-ISS-IGI-IF0002 • IBM Security Identity Governance and Intelligence server Version 5.2.3

Table 1. Prerequisites to install the adapter (continued)	
Prerequisite	**Description**
Security Directory Integrator adapters solution directory	A Security Directory Integrator adapters solution directory is a Security Directory Integrator work directory for adapters. For more information, see the *Dispatcher Installation and Configuration Guide*.
AWS SDK for Java	See the *AWS IAM Adapter Release Notes* for the supported API package name and version.

For more information about the prerequisites and supported operating systems for Security Directory Integrator, see the *IBM Security Directory Integrator 7.2: Administrator Guide*.

Software downloads

Download the software through your account at the IBM Passport Advantage® website.

Go to IBM Passport Advantage.

See the corresponding *IBM Security Verify Governance Identity Manager Download Document* for instructions.

Note:

You can also obtain additional adapter information from IBM Support.

Installation Worksheet

The installation worksheet lists the information that is required to install and configure the adapter. Complete this worksheet before you start the installation procedure for ease of reference. Make a copy of the worksheet for each adapter instance you install.

Table 2. Required information to install the adapter		
Required information	**Description**	**Value**
Security Directory Integrator Home Directory	The *ITDI_HOME* directory contains the jars/connectors subdirectory that contains adapter JAR files.	Windows: • *drive*\Program Files \IBM\TDI\V7.2 UNIX: • /opt/IBM/TDI/V7.2
Adapters solution directory	For more information about the solution directory, see the *Dispatcher Installation and Configuration Guide*.	The default solution directory is at: Windows: • *drive*\Program Files \IBM\TDI\V7.2*timsol* UNIX: • /opt/IBM/TDI/V7.2/ *timsol*

Chapter 3. Installing

Installing the adapter mainly involves importing the adapter profile and creating an adapter service. Depending on the adapter, several other tasks can be involved to completely install it.

All IBM Security Directory Integrator based adapters require the Dispatcher for the adapters to function correctly. If the Dispatcher is installed from a previous installation, do not reinstall it unless the Dispatcher is upgraded.

Installing the dispatcher

If this is the first Security Directory Integrator-based adapter installation, you must install the RMI Dispatcher before you install the adapter. Install the RMI Dispatcher on the same Security Directory Integrator server where you want to install the adapter.

If you already installed the RMI Dispatcher for another adapter, you do not need to reinstall it.

If you have not yet installed the RMI Dispatcher in the Security Directory Integrator environment, download the Dispatcher installer from the IBM Passport Advantage website. For more information about the installation, see the *Dispatcher Installation and Configuration Guide*.

Installing the adapter binaries or connector

The connector might or might not be available with the base Security Directory Integrator or Security Directory Integrator product. The connector is required to establish communication between the adapter and the Dispatcher.

Before you begin

- The Dispatcher must be installed.

Procedure

1. Create a temporary directory on the workstation where you want to extract the adapter.
2. Extract the contents of the compressed file in the temporary directory.
3. Copy the `AWSIAMConnector.jar` file to the *`ITDI_HOME`*`/jars/connectors` directory.
4. Restart the adapter service.

Installing third-party client libraries

The adapter requires access to the AWS SDK Java Client Library at run time.

Before you begin

Download the API library from the Amazon Web Services website https://aws.amazon.com/sdk-for-java/.

About this task

Amazon Web Services might provide client library files, which are newer than what is documented in the guide or in the release notes. While the newer library files can work with the adapter, use these files with caution because they are not tested by IBM. If possible, use the same version as listed here or in the release notes.

Procedure

1. Go to the AWS SDK for Java website at https://aws.amazon.com/sdk-for-java/.
2. Download the AWS SDK for Java package to a temporary directory.

3. Extract SDK files.
4. From the `lib` directory, copy the file `aws-java-sdk-1.11.191.jar` into *ITDI_HOME*`\jars\patches` directory.
5. Under `third-party\lib`, copy all files except `spring* jars` into *ITDI_HOME*`\jars\patches`. See the *AWS IAM Adapter Release Notes* for these JAR files in the package.
6. Restart the Dispatcher service.

   For more information about starting and stopping the service, see the *Dispatcher Installation and Configuration Guide*.

Creating a service user

To create a service for the Amazon Web Services, you specify the Amazon Web Services user.

Before you begin

If you do not have an AWS account, you must create an account to use IAM. It is not mandatory to specifically sign up to use IAM. You can use IAM without any charge. To create an AWS account, perform the following steps.

1. Access the website http://aws.amazon.com.
2. Click **Create an AWS Account**.
3. Follow the on-screen instructions.

About this task

As a best practice, do not use the AWS account root user wherever possible. Instead, create a new IAM service user for Amazon Web Services that requires administrator access. Then, grant an administrator role to the user by adding the user into an `Administrators` group to which, you attach the administrator access managed policy.

Procedure

1. Open https://console.aws.amazon.com/iam with IAM account root user.
2. In the navigation pane, select **Users**, and then select **Add user**.
3. Specify a user name in **User name** box. The name can consist of letters, digits, and the following characters: plus (+), equal (=), comma (,), period (.), at (@), underscore (_), and hyphen (-). The name is not case-sensitive and can be a maximum of 64 characters in length.
4. Select the check box next to **Programmatic access**.
5. Select **Next: Permissions**.
6. On the **Set permissions for user** page, select **Add user to group** if you already have a group with an `AdministratorAccess`. If you do not have a group with `AdministratorAccess`, then choose `Attach existing policies directly`, and select `AdministratorAccess`.

   Note: If you do not want to grant `AdministratorAccess` to the service user, grant the permission that has administrator privileges on Amazon Web Services Identity and Access Management.
7. Choose **Next: Review** to see the list of group memberships to be added to the new user.
8. When you are ready to proceed, select **Create user**.

   In the next page, created user name, access key ID, and secret access key are displayed.
9. Save the `Access Key ID` and `Secret Access Key` to configure AWS IAM Adapter.

Importing the adapter profile

You can import a profile definition file, which creates a profile in Identity server. Use this option for importing adapter profiles.

Before you begin

- The Identity server is installed and running.
- You have administrator authority on the Identity server.
- The file to be imported must be a Java™ archive (JAR) file. The *<Adapter>*`Profile.jar` file includes all the files that are required to define the adapter schema, account form, service/target form, and profile properties. If necessary, you can extract the files from the JAR file, modify the files, and repackage the JAR file with the updated files.

About this task

Target definition files are also called adapter profile files. The profile definition files are provided with the various IBM Security Verify Adapter. The adapter profile must be imported because it defines the types of resources that the Verify Governance Identity Manager server can manage.

The adapter profile definition file is used to create a target profile on the Verify Governance Identity Manager server and to establish communication with the adapter. If the adapter profile is not imported, you cannot create a connector for that adapter type.

An upload error might occur when no file is selected, or when the file is empty, or due to any upload operation error, such as a timeout or connection error. If the adapter profile is not installed correctly, the adapter cannot function correctly. You cannot create a connector with the adapter profile or open and account on the service. You must import the adapter profile again.

This task can be completed from the Enterprise Connectors module in the Administration Console. To import an adapter target profile, complete these steps:

Procedure

1. Log in to the Verify Governance Identity Manager Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage** > **Profiles**.
4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. Click **Actions** > **Import**.
6. On the **Import** page, complete these steps:
   a) Select **Profile**.
   b) Click **Browse** to locate the JAR file that you want to import.
   For example, `AWSIAMProfile.jar`.
   c) Click **Upload file**.
   A message indicates that you successfully imported a profile.
7. Click **Close**.
   The new profile is displayed in the list of profiles.

Results

The upload is synchronous but has a timeout. The progress bar on the **Import** page accurately indicates the upload status. However, when a timeout is reached, the following message occurs: "The import is still

in progress and will complete shortly. Close this window to proceed." If you see that message, allow a few minutes for the upload to complete and for the profile to be available.

What to do next

After the target profile is imported successfully, complete these tasks.

- "Importing attribute mapping file" on page 8.
- "Adding a connector and mapping attributes" on page 8.

Importing attribute mapping file

After importing the adapter profile, you must import an attribute map from a profile mapping definition file.

About this task

This task involves importing an account attribute mapping definition file, which is included in the adapter package. For AWS adapter, the attribute mapping file name is `AWSIAMProfileMapping.def`.

Procedure

1. Log in to the Verify Governance Identity Manager Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage** > **Profiles**.
4. Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. Click **Actions** > **Import**.
6. On the **Import** page, complete these steps:
   a) Select **Attribute Mapping**.
   b) Click **Browse** to locate the attribute mapping file that you want to import.
   For example, `AWSIAMProfileMapping.def`.
   c) Click **Upload file**.
   A message indicates that you successfully imported the file.
7. Click **Close**.

Adding a connector and mapping attributes

After you import the adapter profile on the Verify Governance Identity Manager server, add a connector so that Verify Governance Identity Manager server can communicate with the managed resource.

Procedure

1. Log in to the Verify Governance Identity Manager Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Manage** > **Connectors**.
   A list of connectors is displayed on the **Connectors** tab.
4. Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
5. To view all of the columns in the list of connectors, expand the **Connectors** pane.
6. Click **Actions** > **Add**.
   The **Connector Details** pane is enabled for your input.

7. On the **Connector Details** tab, complete these steps:
   a) Assign a name and description for the connector.
   b) Select the target profile type as `Identity Brokerage` and its corresponding target profile.
   c) Select the entity, such as **Account** or **User**.
      Depending on the connector type, this field might be preselected.
   d) Optional: Select **Trace ON** and the corresponding **Trace Level** to enable trace logs.
      The available trace levels are DEBUG, INFO, and ERROR.
   e) Optional: Select **History ON** to save and track the connector usage.
   f) Click **Save**.
      The fields for enabling the channels for sending and receiving data are now visible.
   g) Select the channel modes that you want to enable.
   h) Click **Save**.
8. Select **Driver Configuration** tab.
   a) Under **Service** section, in the Security Directory Integrator **location**, specify the URL for the IBM Security Directory Integrator instance. The valid syntax for the URL is.`rmi://ip-address:port/ITDIDispatcher`.
   b) Under **Connection** section, provide values for **Access Key Id** and **Secret Access Key**.
   c) Default value for **Region** is `us-east-1`. Leave this value empty if you do not want to change the default value.
   d) Select **Enable Reconcile Roles** check box to monitor roles in AWS.
   e) Click **Save**.
   f) Click **Test Connection**.
9. Select **Channel-Write To** tab.
   a) Click the **Mapping** icon.
   b) Click **Map** button to map the attribute `eruid` to `CODE`.
   c) Click **Map** button to map the attribute `erpassword` to `PASSWORD`.
10. Select **Channel-Read From** tab.
    a) Click the **Mapping** icon.
    b) Click **Map** button to map the attribute `CODE` to `eruid`.
    c) Click **Map** button to map the attribute `PASSWORD` to `erpassword`.

Results

The connector is saved and added to the list of connectors in the **Connectors** pane and required attributes are mapped.

Reconciling and starting a connector

Use this procedure to set up reconciliation between the Access Governance Core repository and the target system.

About this task

Note: Legacy Verify Governance Identity Manager Enterprise connectors use `Reconciliation` channel, whereas Identity Brokerage Enterprise connectors use `Read From Channel` and `Change Log Sync`.

Procedure

To enable the read-from and write-to channels, and to set the change log synchronization schedule for each new connector, complete these steps in Verify Governance Identity Manager V5.2.3:

1. Log in to the Verify Governance Identity Manager Administration Console.
2. From the Administration Console, select **Enterprise Connectors**.
3. Select **Monitor** > **Change Log Sync Status**.

   A list of connectors is displayed.
4. On the **Change Log Sync Status** tab, complete these steps:
   a) Optional: Click **Filter** to toggle the filter on to refine your search results, or click **Hide Filter** to toggle the filter off. When the filter is visible, you can specify search criteria for your requests, and then click **Search**.
   b) Select a connector, and click **Actions** > **Sync Now**.

      The synchronization process begins.
   c) Optional: To view the status of the synchronization request, select **Sync History** in the right pane.

      Information about the synchronization is displayed in the **Sync History** tab.
5. Set the change log synchronization schedule for each new connector that you migrated.
6. Start the connector by selecting **Monitor** > **Connector Status**. Select the connector that you want to start, and then select **Actions** > **Start**.

Results

Reconciliation generates many events in the **Access Governance Core** > **Monitor** > **TARGET Inbound-Access events**.Complete the following steps to list reconciled group and policies.

1. Log in to the Administration Console.
2. Select the application that you created by navigating to **Access Governance Core** > **Manage** > **Application**.
3. From the right pane, select **Application Access** and **Filter**.
4. To list `AWSIAMGroups`, select **External Role** from the **Type** drop box.
5. To list `AWSIAMPolicies`, select **Permission** from the **Type** drop box.

Attribute Mapping

Attribute mapping is required to define which target attributes correspond to the Verify Governance Identity Manager account attributes.

About this task

This task involves an account attribute mapping definition file, which is included in the adapter package.

The file consists of Verify Governance Identity Manager account attributes and their equivalent attributes in the managed target. The file is structured as *<IGI_attribute> = <target_attribute>*.

The *<IGI_attribute>* is fixed and must not be modified. Edit only the *<target_attribute>*. Some *<IGI_attribute>* already has a fixed equivalent *<target_attribute>* of `eraccount`.

Some *<IGI_attribute>* do not have a defined *<target_attribute>* and you can assign the mapping. For example:

```
USER_TYPE=USER_TYPE
ATTR1=ATTR1
```

Note:

- The default mapping is already included out-of-the box. If there are no changes to the attribute mapping, there is no need to import the attribute mapping files.

- It might take up to 10 minutes for the attribute mapping changes to take effect once the file is imported.

Procedure

1. Open the mapping definition file by using any text editor.
2. Edit the mapping.
3. If the target attribute has a list of predefined values, use the following syntax to convert its values to the corresponding Verify Governance Identity Manager attribute values.

```
[conversion].<target_attribute>.<IGI_attribute> =
[<target_attribute_value1>=<IGI_attribute_value1>;...;
<target_attribute_valuen>=<IGI_attribute_valuen>]
```

4. For attributes that contains date and time, use the following syntax to convert its values.
For example:

```
[conversion.date].erbirthDate.BIRTHDAY=[yyyyMMdd=dd/MM/yyyy HH:mm:ss]
[conversion.date].ACCOUNT_EXPIRY_DATE.ACCOUNT_EXPIRY_DATE=
[dd/MM/yyyy HH:mm:ss=dd/MM/yyyy HH:mm:ss]
```

5. Import the updated mapping definition file through the Enterprise Connectors module. For more information, see *Attribute-to-permission mapping service* in the IBM Security Verify Governance Identity Manager product documentation.
6. Map the following attributes for **Chanel-Write To** and **Chanel-Read From**

Attribute	Mapped Attribute
eruid	CODE
erpassword	PASSWORD

For more information, see *Mapping attributes for a connector* in the IBM Security Verify Governance Identity Manager product documentation.

Restarting the adapter service

Various installation and configuration tasks might require the adapter to be restarted to apply the changes. For example, you must restart the adapter if there are changes in the adapter profile, connector, or assembly lines. To restart the adapter, restart the Dispatcher.

The adapter does not exist as an independent service or a process. The adapter is added to the Dispatcher instance, which runs all the adapters that are installed on the same Security Directory Integrator instance.

See the topic about starting, stopping, and restarting the Dispatcher service in the *Dispatcher Installation and Configuration Guide*.

Service or target form details

Complete the service/target form fields.

Service Details

Service Name
Specify a name that defines the adapter service on the Identity server.

Note: Do not use forward (/) or backward slashes (\) in the service name.

Description
Specify a description that identifies the service for your environment.

Security Directory Integrator location

Specify the URL for the IBM Security Directory Integrator instance. The valid syntax for the URL is `rmi://`*`ip-address`*`:`*`port`*`/ITDIDispatcher`, where *ip-address* is the IBM Security Directory Integrator host and *port* is the port number for the RMI Dispatcher.

The default URL for the default SDI1 instance is `rmi://localhost:1099/ITDIDispatcher`.

The following table shows the ports that are open in the firewall for every instance that is created. However, usage of these port numbers do not support high availability.

Table 3. Ports

Instance	Ports
SDI1	1199, 1198, 1197, 1196, 1195, 1194
SDI2	2299, 2298, 2297, 2296, 2295, 2294
SDI3	3399, 3398, 3397, 3396, 3395, 3394
SDI4	4499, 4498, 4497, 4496, 4495, 4494
SDI5	5599, 5598, 5597, 5596, 5595, 5594
SDI6	6699, 6698, 6697, 6696, 6695, 6694
SDI7	7799, 7798, 7797, 7796, 7795, 7794
SDI8	8899, 8898, 8897, 8896, 8895, 8894
SDI9	9999, 9998, 9997, 9996, 9995, 9994
SDI10	11099, 11098, 11097, 11096, 11095, 11094

For a high availability implementation, use any of these port numbers.

- 1099
- 2099
- 3099

Connection Details

Access Key ID

Secret Access Key

Own access keys to make programmatic calls to AWS from the AWS SDKs. When a user creates an access key, IAM returns the access key ID and secret access key. Access the website http://aws-portal.amazon.com/gp/aws/developer/account/index.html?action=access-key. See *Security Credentials* section of your account to obtain your access keys.

Region

The default region for Amazon Web Service Connection. The default value is `us-east-1`.

Enable Reconcile Roles

Select the check box to accumulate the AWS roles during the reconciliation.

Enable TDI Detailed Debugging

Select the check box to enable detailed log option of an assembly line.

Dispatcher Attributes

AL FileSystem Path

Specify the file path from where the dispatcher loads the assembly lines. If you do not specify a file path, the dispatcher loads the assembly lines that are received from Identity server. You can specify a file path to load the assembly lines from the `profiles` directory of the Windows operating system such as: *`drive`*`:\Program Files\IBM\TDI\V7.2\profiles`. You can also specify the following file path to load the assembly lines from the `profiles` directory of the UNIX and Linux® operating system: `/opt/IBM/TDI/V7.2/profiles`

Max Connection Count
Specify the maximum number of assembly lines that the dispatcher can run simultaneously for the service. Enter `10` when you want the dispatcher to run a maximum of 10 assembly lines simultaneously for the service. If you enter `0` in the **Max Connection Count** field, the dispatcher does not limit the number of assembly lines that are run simultaneously for the service.

Disable AL Caching
Select the check box to disable the assembly line caching in the dispatcher for the service. The assembly lines for the `add`, `modify`, `delete`, and `test` operations are not cached.

Status and information
The page contains read only information about the adapter and managed resource. These fields are examples. The actual fields vary depending on the type of adapter and how the service form is configured. The adapter must be running to obtain the information. Click **Test Connection** to populate the fields.

Last status update: Date
Specifies the most recent date when the Status and information tab was updated.

Last status update: Time
Specifies the most recent time of the date when the Status and information tab was updated.

Managed resource status
Specifies the status of the managed resource that the adapter is connected to.

Adapter version
Specifies the version of the adapter that the service uses to provision request to the managed resource.

Profile version
Specifies the version of the profile that is installed in the Identity server.

TDI version
Specifies the version of the Security Directory Integrator on which the adapter is deployed.

Dispatcher version
Specifies the version of the Dispatcher.

Installation platform
Specifies summary information about the operating system where the adapter is installed.

Adapter account
Specifies the account that running the adapter binary file.

Adapter up time: Date
Specifies the date when the adapter started.

Adapter up time: Time
Specifies the time of the date when the adapter started.

Adapter memory usage
Specifies the memory usage for running the adapter.

If the connection fails, follow the instructions in the error message. Also

- Verify the adapter log to ensure that the test request was sent successfully to the adapter.
- Verify the adapter configuration information.
- Verify service parameters for the adapter profile. Verify parameters such as the work station name or the IP address of the managed resource and the port.

Verifying that the adapter is working correctly

After you install and configure the adapter, verify that the installation and configuration are correct.

Procedure

1. Test the connection for the service that you created on the Identity server.

2. Run a full reconciliation from the Identity server.
3. Run all supported operations such as add, modify, and delete on one user account.
4. Verify the `ibmdi.log` file after each operation to ensure that no errors are reported.
5. Verify the `trace.log` file to ensure that no errors are reported when you run an adapter operation.

Chapter 4. Configuring

After you install the adapter, configure it to function correctly. Configuration is based on your requirements or preference.

Configuring the SSL connection between the Dispatcher and the AWS IAM server

To enable communication between the adapter and the AWS IAM server, you must configure keystores for the Dispatcher.

About this task

For more information about SSL configuration, see the *Dispatcher Installation and Configuration Guide*.

Procedure

1. Open a browser.
2. Log in to https://console.aws.amazon.com/iam with a user that is created. See "Creating a service user" on page 6.
3. View the certificate.
   - Click **SSL lock**.
   - If your browser reports that revocation information is not available, click **View Certificate**.
4. Click **Certification Path**
5. Select the **CA Root** certificate.
6. Export the certificate into a file that is encoded in the Base64 format.
7. Complete one of the following actions.
   - If the Dispatcher already has a configured keystore, use the **keytool.exe** program to import the AWS IAM Server certificate. Type the command on a single line.

     ```
     keytool -import -alias awsiam -file c:\AWSIAMCertificate.crt
     -keystore c:\truststore.jks -storepass passw0rd
     ```

   - If the keystore is not configured, create it by running the following command from a command prompt. Type the command on a single line.

     ```
     keytool -import -alias awsiam -file c:\AWSIAMCertificate.crt
     -keystore c:\truststore.jks -storepass passw0rd
     ```

     a. Download the Base-64 encoded X.509 (.CER) format of the CA certificate `Root 1 - Equifax Secure Certificate Authority`. Go to the GeoTrust website and search for `ca certificates`.

     b. Import the certificate into the keystore.

     ```
     keytool -import -alias Equifax -file C:\Equifax_Secure_Certificate_Authority.cer
      -keystore C:\truststore.jks -storepass passw0rd
     ```

8. Edit *ITDI_HOME*`/timsol/solution.properties` file to specify truststore and keystore information.

   In the current release, only **jks-type** is supported:

   ```
   # Keystore file information for the server authentication.
   # It is used to verify the server's public key.
   # example
   javax.net.ssl.trustStore=truststore.jks
   ```

```
javax.net.ssl.trustStorePassword=passw0rd
javax.net.ssl.trustStoreclass=jks
```

9. After you modify the `solution.properties` file, restart the Dispatcher.

   For more information about SSL configuration, see the *Dispatcher Installation and Configuration Guide*.

Creating accounts with programmatic access

An adapter user can select an access type on an account form to create a user account with programmatic access. Programmatic access supports to create a user with access key ID and secret access key as credentials.

Procedure

1. Open the Amazon Web Services account form.
2. Select `Programmatic Access` or `Console and Programmatic Access` to create a user with programmatic access.

   After a user account is created through the adapter, the `Secret Access Key` for that account is stored along with an `Access Key ID` in the `IDI_PS_DAFAULT(TABLE)` under the `Property Stores` of a Derby database in the Security Directory Integrator. Adapter user can see the `Secret Access Key` on account form after the first reconciliation of that account.

   Note: To preserve the `Secret Access Key` for the user accounts that are created through the adapter, the Derby database in the Security Directory Integrator must be in a listening mode.

Create accounts with different access types in IBM Security Verify Governance Identity Manager

Create Amazon Web Services account with different access types.

To create accounts, users must add the **Access Type** as the target attribute to the IBM Security Verify Governance Identity Manager account form with one of the following access types:

- **Console Access**
- **Programmatic Access**
- **Console and Programmatic Access**

When you are creating the account on Amazon Web Services, the user must enter the following canonical values for each of the access types in account form in IBM Security Verify Governance Identity Manager:

- **Console Access**- `cnslaccess`
- **Programmatic Access**- `prgmaccess`
- **Console and Programmatic Access**- `bothaccess`

Note: The canonical values are case sensitive.

Modify Amazon Web Services account `Access Key` attribute

Users can set `Access Key` status in Amazon Web Services as `Active`, `Inactive`, or `Delete`.

Users must specify the canonical value in the **Status** field of the Account form.

User must add the **Status** field as target attribute in the IBM Security Verify Governance Identity Manager Account form. Then while modifying the Account, the user must enter the following canonical values:

- Active- `active`
- Inactive- `inactive`
- Delete- `delete`

Note: The canonical values are case sensitive.

Restore Amazon Web Services Account

Users can restore Amazon Web Services account.

Perform the following procedure to restore the Amazon Web Services account:

- **Console Account**- Click **Change Password** to enable the account.
- **Programmatic Access Account**- Click **Suspend/Restore** and set the value from 1 to 0.
- **Console Access and Programmatic Access**- Click **Restore** and **Change Password** link.

Chapter 5. Troubleshooting

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem. This topic provides information and techniques for identifying and resolving problems that are related to the adapter, including troubleshooting errors that might occur during the adapter installation.

Techniques for troubleshooting problems

Certain common techniques can help with the task of troubleshooting. The first step in the troubleshooting process is to describe the problem completely.

Problem descriptions help you and the IBM technical-support representative find the cause of the problem. This step includes asking yourself basic questions:

- What are the symptoms of the problem?
- Where does the problem occur?
- When does the problem occur?
- Under which conditions does the problem occur?
- Can the problem be reproduced?

The answers to these questions typically lead to a good description of the problem, which can then lead you to a problem resolution.

What are the symptoms of the problem?

When you start to describe a problem, the most obvious question is "What is the problem?" This question might seem straightforward; however, you can break it down into several more-focused questions that create a more descriptive picture of the problem. These questions can include:

- Who, or what, is reporting the problem?
- What are the error codes and messages?
- How does the system fail? For example, is it a loop, hang, crash, performance degradation, or incorrect result?

Where does the problem occur?

Determining where the problem originates is not always easy, but it is one of the most important steps in resolving a problem. Many layers of technology can exist between the reporting and failing components. Networks, disks, and drivers are only a few of the components to consider when you are investigating problems.

The following questions help you to focus on where the problem occurs to isolate the problem layer:

- Is the problem specific to one operating system, or is it common across multiple operating systems?
- Is the current environment and configuration supported?
- Do all users have the problem?
- (For multi-site installations.) Do all sites have the problem?

If one layer reports the problem, the problem does not necessarily originate in that layer. Part of identifying where a problem originates is understanding the environment in which it exists. Take some time to completely describe the problem environment, including the operating system and version, all corresponding software and versions, and hardware information. Confirm that you are running within an environment that is a supported configuration. Many problems can be traced back to incompatible levels of software that are not intended to run together or are not fully tested together.

When does the problem occur?

Develop a detailed timeline of events that lead up to a failure, especially for those cases that are one-time occurrences. You can most easily develop a timeline by working backward: Start at the time an error was reported (as precisely as possible, even down to the millisecond), and work backward through the available logs and information. Typically, you use the first suspicious event that you find in a diagnostic log.

To develop a detailed timeline of events, answer these questions:

- Does the problem happen only at a certain time of day or night?
- How often does the problem happen?
- What sequence of events leads up to the time that the problem is reported?
- Does the problem happen after an environment change, such as upgrading or installing software or hardware?

Responding to these types of questions can give you a frame of reference in which to investigate the problem.

Under which conditions does the problem occur?

Knowing which systems and applications are running at the time that a problem occurs is an important part of troubleshooting. These questions about your environment can help you to identify the root cause of the problem:

- Does the problem always occur when the same task is being done?
- Is a certain sequence of events required for the problem to occur?
- Do any other applications fail at the same time?

Answering these types of questions can help you explain the environment in which the problem occurs and correlate any dependencies. Remember that just because multiple problems might occur around the same time, the problems are not necessarily related.

Can the problem be reproduced?

From a troubleshooting standpoint, the ideal problem is one that can be reproduced. Typically, when a problem can be reproduced you have a larger set of tools or procedures at your disposal to help you investigate. Problems that you can reproduce are often easier to debug and solve.

However, problems that you can reproduce can have a disadvantage: If the problem is of significant business impact, you do not want it to recur. If possible, re-create the problem in a test or development environment, which typically offers you more flexibility and control during your investigation.

- Can the problem be re-created on a test system?
- Do multiple users or applications have the same type of problem?
- Can the problem be re-created by running a single command, a set of commands, or a particular application?

Error messages and problem solving

You might encounter some problems at run time. Use this information to resolve some of these common runtime problems.

Runtime problems and corrective actions are described in the following table.

Table 4. Runtime problems	
Problem	**Corrective Action**
Reconciliation does not return all AWS IAM accounts. Reconciliation is successful but some accounts are missing.	For the adapter to reconcile many accounts successfully, you might need to increase the WebSphere JVM memory. The complete the following steps on the WebSphere host computer: **Note:** Do not increase the JVM memory to a value higher than the system memory. 1. Log in to the administrative console. 2. Expand **Servers** in the left menu and select **Application Servers**. 3. A table displays the names of known application servers on your system. Click the link for your primary application server. 4. Select **Process Definition** from the **Configuration** tab. 5. Select the **Java Virtual Machine** property. 6. Enter a new value for the **Maximum Heap Size**. The default value is 256 MB. If the allocated JVM memory is not large enough, an attempt to reconcile many accounts with the adapter results in log file errors. The reconciliation process fails. The adapter log files contain entries that state `ErmPduAddEntry failed`. The *`WebSphere_install_dir`*`/logs/itim.log` file contains **`java.lang.OutOfMemoryError`** exceptions.
Create or delete operation status is displayed as `Pending` though the operation in adapter is complete.	The `Trace.log` file in TDI contains **`java.lang.ArrayIndexOutOfBoundsException`** exception. This issue might be a result of incompatible java version for the WebSphere servers on the appliance. For more information, see http://www.ibm.com/support/docview.wss?uid=swg21987814.

Chapter 6. Uninstalling

To remove an adapter from the Identity server server for any reason, you must remove all components that were added during installation. Uninstalling an IBM Security Directory Integrator based adapter mainly involves removing the connector file, and the adapter profile from the Identity server server. Depending on the adapter, some of these tasks might not be applicable.

Removing the adapter binaries or connector

Use this task to remove the connector file for the AWS IAM adapter.

About this task

To uninstall the Dispatcher, see the *Dispatcher Installation and Configuration Guide*.

Procedure

1. Stop the Dispatcher service.
2. Delete the *ITDI_HOME*`/jars/connectors/AWSIAMConnector.jar` file.
3. Start the Dispatcher service.

Deleting the adapter profile

Remove the adapter service or target type from the Identity server. Before you delete the adapter profile, ensure that no objects exist on the Identity server that reference the adapter profile.

Objects on the Identity server that can reference the adapter profile:

- Adapter service instances
- Policies referencing an adapter instance or the profile
- Accounts

Note: The Dispatcher component must be installed on your system for adapters to function correctly in a Security Directory Integrator environment. When you delete the adapter profile, do not uninstall the Dispatcher.

For specific information about how to delete the adapter profile, see the IBM Security Verify Governance Identity Manager product documentation.

Chapter 7. Reference

Reference information is organized to help you locate particular facts quickly, such as adapter attributes, registry settings, and environment variables.

Adapter attributes and object classes

The Identity server communicates with the adapter by using attributes, which are included in transmission packets that are sent over a network. After you install the adapter profile, the AWS IAM adapter supports a standard set of attributes.

User attributes

The following tables contain the standard attributes and object classes that are supported by the AWS IAM adapter.

Table 5. Supported user attributes

Identity server name	Attribute name in schema	Data type	Note
User ID	eruid	String	None
Password	erpassword	Password	None
User ARN	erawsiamuserarn	String	None
List Policies	erawsiamlistpolicies	String	This attribute is associated with managed policies. Currently, AWS IAM adapter does not show inline policies.
User's Group Name	erawsiamusergroup	String	None
Change Password on Next Login	erawsiamchgpwdnextlogon	String	This attribute is used only when a user is created.
User Last Access Date	erawsiamlastaccessdate	String	None

Group attributes

Table 6. Supported group attributes

Identity server name	Attribute name in schema	Data type	Note
Group ID	erawsiamgroupid	String	This attribute is an object ID of the AWS IAM group.

Table 6. Supported group attributes (continued)			
Identity server name	**Attribute name in schema**	**Data type**	**Note**
Group Name	erawsiamgroupname	String	This attribute is mapped to the IBM Security Verify Identity erGroupName attribute. You cannot use the adapter to modify this attribute.
Group ARN	erawsiamgrouparn	String	This attribute is mapped to the IBM Security Verify Identity erGroupDescription attribute.
List Policies	erawsiamlistpolicies	String	This attribute is associated with managed policies. Currently, AWS IAM adapter does not show inline policies.

Object classes

Table 7. Supported object classes		
Description	**Object class name in schema**	**Superior**
Service class	erawsiamservice	Top
Account class	erawsiamaccount	Top
Group class	erawsiamgroups	Top
Role class	erawsiamroles	Top
Policy class	erawsiampolicies	Top

Supported user attributes and descriptions

Table 8. Supported user attributes and descriptions	
Attribute	**Description**
erawsiamaccesstype	Access Type
erawsiamaccesskeyid1	Access Key ID
erawsiamsecretaccesskey1	Secret Access Key
erawsiamaccesskeyid2	Access Key ID
erawsiamsecretaccesskey2	Secret Access Key
erawsiamcreatedate1	Date Created
erawsiamlastused1	Date Last Used
erawsiamcreatedate2	Date Created

Table 8. Supported user attributes and descriptions (continued)	
Attribute	**Description**
erawsiamlastused	Date Last Used
erawsiamoptypeak1	Status
erawsiamoptypeak2	Status
erawsiamnewaccesskeyid	Create New Access Key ID

Adapter Configuration Properties

The following two logging hierarchies are available in the AWS SDK for Java. Set these two logging hierarchies as WARN in the TDI_HOME/timsol/log4j.properties.

- log4j.logger.com.amazonaws
- log4j.logger.org.apache.http.wire

For more information about setting Security Directory Integrator configuration properties for the operation of the AWS IAM adapter, see the *Dispatcher Installation and Configuration Guide*.

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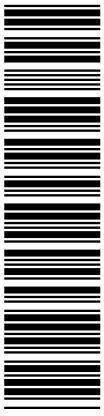

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