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Preface

About this publication

The Integration for SAP GRC Access Control Installation and Configuration Guide provides the basic information that you use to install and configure the IBM® Security Identity Manager Integration for SAP Governance, Risk and Compliance Access Control. SAP Governance, Risk and Compliance Access Control is also called SAP GRC Access Control.

IBM Security Identity Manager was previously known as Tivoli® Identity Manager.

This integration enables compliant user provisioning and risk analysis between IBM Security Identity Manager and the SAP NetWeaver Application Server ABAP by using SAP GRC Access Control.

Access to publications and terminology

This section provides:
- A list of publications in the IBM Security Identity Manager library.
- Links to Online publications.
- A link to the IBM Terminology website on page x.

IBM Security Identity Manager library


Online publications

IBM posts product publications when the product is released and when the publications are updated at the following locations:

IBM Security Identity Manager library


IBM Security Systems Documentation Central

IBM Security Systems Documentation Central provides an alphabetical list of all IBM Security Systems product libraries and links to the online documentation for specific versions of each product.

IBM Publications Center

IBM Terminology website


Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

Technical training

For technical training information, see the following IBM Education website at [http://www.ibm.com/software/tivoli/education](http://www.ibm.com/software/tivoli/education).

Support information

IBM Support provides assistance with code-related problems and routine, short duration installation or usage questions. You can directly access the IBM Software Support site at [http://www.ibm.com/software/support/probsub.html](http://www.ibm.com/software/support/probsub.html).

Appendix A, “Support information,” on page 57 provides details about:

- What information to collect before contacting IBM Support.
- The various methods for contacting IBM Support.
- How to use IBM Support Assistant.
- Instructions and problem-determination resources to isolate and fix the problem yourself.

Note: The Community and Support tab on the product information center can provide additional support resources.

Statement of Good Security Practices

IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed, misappropriated or misused or can result in damage to or misuse of your systems, including for use in attacks on others. No IT system or product should be considered completely secure and no single product, service or security measure can be completely effective in preventing improper use or access. IBM systems, products and services are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT ANY SYSTEMS, PRODUCTS OR SERVICES ARE IMMUNE FROM, OR WILL MAKE YOUR ENTERPRISE IMMUNE FROM, THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.
Chapter 1. Integration for SAP GRC Access Control
Installation and Configuration Guide

This installation guide provides the basic information that you use to install and configure the IBM Security Identity Manager Integration for SAP GRC Access Control. The Integration for SAP GRC Access Control enables connectivity between the IBM Security Identity Manager server and SAP GRC Access Control.

Overview of the integration

The Integration for SAP GRC Access Control extends the IBM Security Identity Manager SAP NetWeaver Adapter.

In addition to the provisioning capabilities of the SAP NetWeaver Adapter, this integration sends access requests to SAP GRC Access Control for Separation of Duties (SoD) checks. The SAP GRC Access Control result allows a decision to be made on whether to provision the account. The provisioning step can be performed by either the SAP NetWeaver Adapter or by SAP GRC Access Control. The integration contains components that enable IBM Security Identity Manager to integrate with SAP GRC Access Control 5.3, 10.0, or both.

This integration can also invoke the SAP GRC Access Control Risk Analysis web service on role assignments during an access request. It also enables rejected accounts and role assignments to be removed from the access request that was sent to the SAP NetWeaver Adapter.

Architecture of the integration

The integration uses two profiles. The first profile contains SAP NetWeaver Adapter account and service attributes only. This profile does not enable a connection with SAP GRC Access Control. The second profile contains an extended set of account and service attributes for interaction between SAP GRC Access Control (version 5.3 or 10.0) and SAP NetWeaver.

This interaction enables IBM Security Identity Manager to coordinate the account compliance checking process in SAP GRC Access Control with the SAP NetWeaver account provisioning process. This profile effectively enables a single account provisioning request to perform two tasks:
1. Submission of an access request to SAP GRC Access Control from IBM Security Identity Manager.
2. Submission of an account provisioning request to SAP NetWeaver from IBM Security Identity Manager, depending whether an approval or rejection is granted for the IBM Security Identity Manager request.

The relationships between components of the adapter are shown in Figure 1 on page 2.
A high level of control is obtained over the provisioning process by configuring IBM Security Identity Manager workflow extensions for SAP GRC Access Control. The IBM Security Identity Manager workflow extensions allow Add, Modify, Suspend, Restore, and Delete requests to be sent to SAP GRC Access Control. SoD compliance checks are then performed in SAP GRC Access Control before provisioning the account in SAP NetWeaver. The risk analysis and remediation features of SAP GRC Access Control Compliant Provisioning can be used to:

- Modify the request
- Submit an approval
- Submit a rejection
- Cancel the request

In IBM Security Identity Manager workflow, there are two possible modes to configure each type of request. These modes are referred to as Non-blocking mode and Blocking mode.

In Non-blocking mode, SAP GRC Access Control takes control of account provisioning on the target system. Following submission of an access request to SAP GRC Access Control, IBM Security Identity Manager workflow continues execution and does not wait for the result of the request in SAP GRC Access Control. This mode passes the responsibility of provisioning the account in SAP NetWeaver to SAP GRC Access Control.

In Blocking mode, IBM Security Identity Manager workflow blocks (or wait/pause) following submission of an access request to SAP GRC Access Control. The workflow continues to block until the result of the request is received from SAP GRC Access Control. A dedicated Notification Service deployed in WebSphere® is responsible for:

- Periodically querying SAP GRC Access Control
- Relaying results of completed requests to IBM Security Identity Manager
- Unblocking the relevant IBM Security Identity Manager workflows.

The IBM Security Identity Manager workflow becomes the central point of coordination and auditing for account provisioning. IBM Security Identity Manager
determines whether an account is provisioned in SAP NetWeaver, depending on pre-conditions such as whether the request was approved or rejected in SAP GRC Access Control.

**Supported configurations**

The integration requires the interaction of several components.

The fundamental components of the integration are:
- An IBM Security Identity Manager Server
- A Tivoli Directory Integrator server
- An IBM Security Identity Manager SAP NetWeaver Adapter
- The Integration for SAP GRC Access Control 5.3 or 10.0
Chapter 2. Integration installation planning

Installing and configuring the integration involves several steps that must be completed in the appropriate sequence.

Review the pre-installation and installation roadmaps before you begin the installation process.

Preinstallation roadmap

Use these steps to prepare the environment before you install the integration.

<table>
<thead>
<tr>
<th>What to do</th>
<th>Where to find more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify that the software and hardware requirements for the integration that you want to install have been met.</td>
<td>See “Prerequisites.”</td>
</tr>
<tr>
<td>Collect the necessary information for the installation and configuration.</td>
<td>See “Installation worksheet for the integration” on page 6.</td>
</tr>
<tr>
<td>Obtain the installation software</td>
<td>Download the software from Passport Advantage®. See “Software downloads” on page 7.</td>
</tr>
</tbody>
</table>

Installation roadmap

You must complete these steps to install the integration, including completing post-installation configuration tasks and verifying the installation.

<table>
<thead>
<tr>
<th>What to do</th>
<th>Where to find more information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Import the SAP NW GRC profile.</td>
<td>See “Importing the SAP NetWeaver GRC profile into the IBM Security Identity Manager Server” on page 9.</td>
</tr>
<tr>
<td>Create a service.</td>
<td>See “SAP NetWeaver GRC service creation” on page 9.</td>
</tr>
<tr>
<td>Verify the installation.</td>
<td>See “SAP GRC AC Workflow components installation verification” on page 47.</td>
</tr>
<tr>
<td>Configure the SAP GRC workflow extensions for the integration.</td>
<td>See Chapter 4, “SAP GRC Access Control workflow extension installation and configuration,” on page 19.</td>
</tr>
</tbody>
</table>

Prerequisites

Verify that all of the prerequisites are met before you install the Integration for SAP GRC Access Control.

Table 3 on page 6 identifies hardware, software, and authorization prerequisites to install the Integration for SAP GRC Access Control.
Table 3. Prerequisites to install the integration

<table>
<thead>
<tr>
<th>Prerequisite</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating System</td>
<td>The Integration for SAP GRC Access Control can be used on any operating system that is supported by IBM Security Identity Manager.</td>
</tr>
<tr>
<td>Network Connectivity</td>
<td>TCP/IP network</td>
</tr>
<tr>
<td>System Administrator Authority</td>
<td>The person who completes the Integration for SAP GRC Access Control installation procedure must have system administrator authority.</td>
</tr>
<tr>
<td>Tivoli Directory Integrator server</td>
<td>See the IBM Security Identity Manager SAP NetWever adapter release notes for the supported versions.</td>
</tr>
<tr>
<td>IBM Security Identity Manager</td>
<td>Version 6.0</td>
</tr>
<tr>
<td>IBM Security Identity Manager Adapter (also known as the Dispatcher)</td>
<td>See the IBM Security Identity Manager SAP NetWever adapter release notes for the supported versions.</td>
</tr>
<tr>
<td>IBM Websphere Application Server*</td>
<td>WebSphere Application Server 7.0 FixPack 19 (7.0.0.19)</td>
</tr>
<tr>
<td>SAP NetWeaver AS ABAP with SAP Basis Component</td>
<td>See the IBM Security Identity Manager SAP NetWever adapter release notes for the supported versions.</td>
</tr>
<tr>
<td>SAP JCo</td>
<td>3.0.8</td>
</tr>
<tr>
<td>SAP GRC Access Control</td>
<td>5.3, 10.0 FP08</td>
</tr>
</tbody>
</table>

* The minimum WebSphere Application Server FixPacks listed are required to satisfy web service dependencies that the integration has in WebSphere.

Installation worksheet for the integration

Use this information to install the Integration for SAP GRC Access Control.

Table 4. Required information to install the integration

<table>
<thead>
<tr>
<th>Required information</th>
<th>Description</th>
</tr>
</thead>
</table>
| Administrator account on the managed resource for SAP GRC Access Control 5.3 | An administrator account on the managed resource that has the necessary administrative privileges for SAP GRC. The administrator account must have the following assigned role in UME:  
  • AEADMIN |
| Administrator account on the managed resource for SAP GRC Access Control 10.0 | An administrator account on the managed resource that has the necessary administrative privileges for SAP GRC 10.0. The administrator account must have at least the following assigned roles:  
  • SAP_GRC_NWBC  
  • SAP_GRAC_*  
  See the GRC 10.0 Post-installation and Security guides for further information. |
Table 4. Required information to install the integration (continued)

<table>
<thead>
<tr>
<th>Required information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAP GRC 10.0 Web Service</td>
<td>Endpoint bindings must be created in the transaction SOAMANAGER under Service Administration - Single Service Configuration - Configurations, for at least the following SAP GRC 10.0 web services:</td>
</tr>
<tr>
<td>Endpoint creation</td>
<td>• GRAC_AUDIT_LOGS_WS</td>
</tr>
<tr>
<td></td>
<td>• GRAC_LOOKUP_WS</td>
</tr>
<tr>
<td></td>
<td>• GRAC_REQUEST_DETAILS_WS</td>
</tr>
<tr>
<td></td>
<td>• GRAC_REQUEST_STATUS_WS</td>
</tr>
<tr>
<td></td>
<td>• GRAC_RISK_ANALYSIS_WITH_NO_WS</td>
</tr>
<tr>
<td></td>
<td>• GRAC_USER_ACCESS_WS</td>
</tr>
</tbody>
</table>

After the endpoint binding has been created, the "Calculated Access URL" for the web service is found under the "Transport Settings" tab. This URL is defined on the service form. The service form in the SAP GRC Access Control integration and SAPNotify.props make use of these URLs to locate the relevant SAP GRC Access Control 10.0 web service.

Software downloads

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

Go to IBM Passport Advantage

See the IBM Security Identity Manager Download Document for instructions.

Note:

You can also obtain additional adapter information from IBM Support.
Chapter 3. Integration installation

Use the following information to install and configure the Integration for SAP GRC Access Control.

Importing the SAP NetWeaver GRC profile into the IBM Security Identity Manager Server

An IBM Security Identity Manager integration profile defines the types of resources that the IBM Security Identity Manager Server can manage.

Before you begin

Before importing the SapGRCNWProfile.jar profile, verify that the following conditions are met:
- The IBM Security Identity Manager Server is installed and running.
- You have root or Administrator authority on the IBM Security Identity Manager Server.

About this task

In this case, the profile SapGRCNWProfile.jar is used to create a SAP GRC Access Control service on the IBM Security Identity Manager server. The SapGRCNWProfile.jar profile must be imported into the IBM Security Identity Manager server.

Procedure

1. Log in to the IBM Security Identity Manager server by using an account that has the authority to perform administrative tasks.
2. Import the integration profile by using the import feature for your IBM Security Identity Manager product. See the online help or the product documentation for specific instructions about importing the integration profile.
3. Restart the Dispatcher service.
   If an error related to the schema is received when the integration profile is imported, go to the trace.log file for information about the error. The trace.log file location is specified by the handler.file.fileDir property defined in the IBM Security Identity Manager enRoleLogging.properties file. The enRoleLogging.properties file is installed in the ITIM_HOME/data directory.

SAP NetWeaver GRC service creation

You must define attributes on the SAP GRC SERVICE ATTRIBUTES TAB when you create an SAP NetWeaver GRC service.

If the SapGRCNWProfile.jar profile was imported, then an additional SAP GRC Service Attributes tab is displayed that contains the set of the following attributes.

Enable GRC Workflow Extensions

Optional attribute. Flag to indicate whether workflow extensions are configured for either SAP GRC Access Control 5.3 or 10.0. The value of this flag is only used by the “Check GRC Version” workflow extension. It has no effect otherwise.
GRC Version
Optional attribute. The version of SAP GRC Access Control the service is configured against. This attribute can be used in the workflow to determine the path to take if these conditions exist:

- A combination of different SAP GRC Access Control versions exists in the environment.
- The environment is supported by a single IBM Security Identity Manager server instance.

The value of this flag is only used by the "Check GRC Version" workflow extension. It has no effect otherwise.

GRC Admin Id
The SAP GRC Access Control user name with privileges to invoke SAP GRC web services and submit Access Control requests. A value is required if the authentication and security services are enabled on the SAP NetWeaver Application server on which Access Control is deployed.

GRC Password
Password of the SAP GRC Access Control Admin ID.

Access Control Request URL
The URL address of the Access Control Submit Request web service. The format is http://remotehost:port/web-service-name where:

- The remotehost is the SAP GRC Access Control host.
- The port is the port number on which SAP NetWeaver application server listens.
- The web-service-name is the web service exposed by SAP GRC Access Control that receives requests from IBM Security Identity Manager.

For example, the URL for SAP GRC 5.3 might be specified as
http://remotehost:port/SAPGRC_AC_IDM_SUBMITREQUEST/
Config1?style=document

The URL for SAP GRC 10.0 might be specified as http://remotehost:port/
sap/bc/srt/rfc/sap/grac_user_acces_ws/clientnumber/
grac_user_acces_ws/binding?sap-client=clientnumber

Access Control Look Up URL
The URL address of the Access Control Look Up Request web service. The format is http://remotehost:port/web-service-name where:

- The remotehost is the SAP GRC Access Control host.
- The port is the port number on which SAP NetWeaver ABAP application server listens.
- The web-service-name is the web service exposed by SAP GRC Access Control that receives requests from IBM Security Identity Manager.

For example, the URL for SAP GRC Access Control 10.0 might be specified as http://remotehost:port/sap/bc/srt/rfc/sap/grac_lookup_ws/
clientnumber/grac_lookup_ws/binding?sap-client=clientnumber

Access Control Risk Analysis URL
The URL address of the Access Control Risk Analysis Request with Request ID web service. The format is http://remotehost:port/web-service-name where:

- The remotehost is the SAP GRC Access Control host.
• The *port* is the port number on which SAP NetWeaver ABAP application server listens.

• The *web-service-name* is the web service exposed by SAP GRC Access Control that receives requests from IBM Security Identity Manager.

For example, the URL for SAP GRC Access Control 10.0 might be specified as:

```
grac_risk_analysis_with_no_ws/binding?sap-client=clientnumber
```

**Access Control Request Details URL**

The attribute for Update Account Attribute Request. The URL address of the Access Control Request Details web service. The format is:

```
http://remotehost:port/web-service-name
```

• The *remotehost* is the SAP GRC Access Control host.

• The *port* is the port number on which SAP NetWeaver ABAP application server listens.

• The *web-service-name* is the web service exposed by SAP GRC Access Control that receives requests from IBM Security Identity Manager.

For example, the URL for SAP GRC Access Control 10.0 might be specified as:

```
http://remotehost:port/sap/bc/srt/rfc/sap/grac_request_details_ws/
clientnumber/grac_request_details_ws/
binding?sap-client=clientnumber
```

**System Identifier**

The system identifier is the SAP connector name defined in Access Control to enable provisioning directly to the target SAP ABAP server from SAP GRC Access Control. This system identifier is also supplied to SAP GRC Access Control on a request submission in the account role data.

**Detail Logging**

Optional attribute. Flag to enable SAP GRC request debugging trace output. For SAP GRC Access Control 5.3, this option writes a log file called `grcextension.log` to the location specified by the Java™ system property `user.home`. For SAP GRC Access Control 10.0, this option enables the IBM Security Identity Manager trace log file for the workflow extension component.

**Note:** The IBM Security Identity Manager logging level must be set to `DEBUG_MIN`.

---

**Adapter attributes and object classes**

After the GRC profile is installed, the integration supports a standard set of attributes from the NetWeaver adapter in addition to attributes required for SAP GRC Access Control.

The following table lists the standard attributes supported for SAP GRC Access Control, in addition to the SAP NetWeaver attributes that are listed in the *Adapter for SAP NetWeaver Installation and Configuration Guide*.

The following table shows the SAP GRC Access Control attributes used by requests sent to the SAP GRC Access Control 5.3 or 10.0. The set of attributes between SAP GRC Access Control versions is different as indicated in Table 3.
The list of SAP GRC Access Control service form attributes can be found in Table 5.

<table>
<thead>
<tr>
<th>IBM Security Identity Manager Name</th>
<th>Attribute Name</th>
<th>Description</th>
<th>Data Type</th>
<th>Required for SAP GRC Access Control 5.3 Request</th>
<th>Required for SAP GRC Access Control 10.0 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable GRC Workflow Extensions</td>
<td>ersapgrcenabled</td>
<td>Optional attribute. Indicates whether SAP GRC Access Control workflow extensions have been configured</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>GRC Version</td>
<td>ersapgrcversion</td>
<td>Optional attribute. The version of SAP GRC Access Control the service has been configured against. Used when there is a combination of different version of SAP GRC Access Control needs to be supported in the a single server instance.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>GRC Admin Id</td>
<td>ersapgrcsubmitrequestuid</td>
<td>User ID of the SAP GRC Access Control Administrator</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>GRC Password</td>
<td>ersapgrcabappwd</td>
<td>Password of the SAP GRC Access Control Administrator</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>System Identifier</td>
<td>ersapgrcsystemid</td>
<td>System identifier</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Access Control Request URL</td>
<td>ersapgrcsubmitrequesturl</td>
<td>The URL address of the Access Control Submit Request Web service</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Access Control Look Up URL</td>
<td>ersapgrclookupurl</td>
<td>The URL address of the Access Control Look Up Request web service</td>
<td>String</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 5. Supported SAP GRC AC service attributes (continued)

<table>
<thead>
<tr>
<th>IBM Security Identity Manager Name</th>
<th>Attribute Name</th>
<th>Description</th>
<th>Data Type</th>
<th>Required for SAP GRC Access Control 5.3 Request</th>
<th>Required for SAP GRC Access Control 10.0 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Control Risk Analysis URL</td>
<td>ersapgrcriskanalysisurl</td>
<td>The URL address of the Access Control Risk Analysis Request web service</td>
<td>String</td>
<td>No</td>
<td>Yes, If using Risk Analysis workflow extension</td>
</tr>
<tr>
<td>Access Control Request Detail URL</td>
<td>ersapgrcrequestdetailsurl</td>
<td>The URL address of the Request Detail web service</td>
<td>String</td>
<td>No</td>
<td>Yes, If using Update Account Attribute workflow extension</td>
</tr>
<tr>
<td>Detail Logging</td>
<td>ersapgrcdebug</td>
<td>Flag to enable GRC request debugging trace output</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Note:** A GRC request contains values of several attributes that are supplied from the SAP NetWeaver account form tabs such as Given name, Surname, Email address, and Role. The list of SAP GRC and NetWeaver account form attribute values that are forwarded onto a GRC request is found in Table 6.

Table 6. Supported SAP GRC/NetWeaver account attributes

<table>
<thead>
<tr>
<th>IBM Security Identity Manager Name</th>
<th>Attribute Name</th>
<th>Description</th>
<th>Data Type</th>
<th>Required for GRC 5.3 Request</th>
<th>Required for GRC 10.0 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority</td>
<td>ersapgrcpriority</td>
<td>Request Priority. The value must match the identifier of a configured AC priority.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Location</td>
<td>ersapgrclocation</td>
<td>The work location of the user to be provisioned.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Employee Type</td>
<td>ersapgrcemployeetype</td>
<td>Type of employee. This attribute value must match configuration in AC.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>IBM Security Identity Manager Name</td>
<td>Attribute Name</td>
<td>Description</td>
<td>Data Type</td>
<td>Required for GRC 5.3 Request</td>
<td>Required for GRC 10.0 Request</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Requestor ID</td>
<td>ersapgrcrequesteruid</td>
<td>User name of the requester.</td>
<td>String</td>
<td>Yes</td>
<td>If Requestor ID is not defined, SAP GRC Access Control 10.0 will default it to the SAP GRC Access Control Admin ID defined on the service form as the requestor.</td>
</tr>
<tr>
<td>Requestor First Name</td>
<td>ersapgrcrequesterfirstname</td>
<td>Given name of the requester.</td>
<td>String</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Requestor Last Name</td>
<td>ersapgrcrequesterlastname</td>
<td>Surname of the requester.</td>
<td>String</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Requestor Email</td>
<td>ersapgrcrequesteremail</td>
<td>The email address of the requester.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Requestor Telephone</td>
<td>ersapgrcrequestertelephone</td>
<td>Telephone number of the requester.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Manager ID</td>
<td>ersapgrcmanageruid</td>
<td>User name of the employee manager. This attribute value must match the user ID of a user in the AC authentication data source.</td>
<td>String</td>
<td>Yes</td>
<td>If Manager is configured as one of the approver in GRC 10.0, this attribute is required.</td>
</tr>
<tr>
<td>Manager First Name</td>
<td>ersapgrcmanagerfirstname</td>
<td>Given name of the employee manager.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Manager Last Name</td>
<td>ersapgrcmanagerlastname</td>
<td>Surname of the employee manager.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Manager Email</td>
<td>ersapgrcmanageremail</td>
<td>Email address of the employee manager.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>IBM Security Identity Manager Name</td>
<td>Attribute Name</td>
<td>Description</td>
<td>Data Type</td>
<td>Required for GRC 5.3 Request</td>
<td>Required for GRC 10.0 Request</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------</td>
<td>-------------</td>
<td>-----------</td>
<td>------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Manager Telephone</td>
<td>ersapgrcmanagertelephone</td>
<td>Telephone number of the employee's manager.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Locale</td>
<td>ersapgrclocale</td>
<td>Locale of the employee. For example, EN, DE, US.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Request Reason</td>
<td>ersapgrcrequestreason</td>
<td>The reason for the AC request.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Organization Unit</td>
<td>ersapgrcorgunit</td>
<td>Organization Unit</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Business Process</td>
<td>ersapgrcbusprocess</td>
<td>Business Process. This attribute value must match the configuration in AC.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Functional Area</td>
<td>ersapgcffunctionalarea</td>
<td>Functional Area</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Personnel Area</td>
<td>ersapgcppersonnelarea</td>
<td>Personnel Area</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Employee Job</td>
<td>ersapgrcemployeejob</td>
<td>Job of Employee</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Employee Position</td>
<td>ersapgrcemployeeposition</td>
<td>Position of Employee</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Request Due Date</td>
<td>ersapgrcrequestduedate</td>
<td>Due Date of the request</td>
<td>Date</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Request Item Comments</td>
<td>ersapgrcreqitemcomment</td>
<td>Comments on the request item</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Custom Fields</td>
<td>ersapgrccustomfields</td>
<td>Custom fields that are configured in AC. This attribute is a multi-valued attribute that must be supplied in the format: &quot;&lt;custom field name&gt;</td>
<td>&lt;custom field value&gt;&quot; It must match a configured custom field in AC.</td>
<td>Key/Value Pair String</td>
<td>No</td>
</tr>
<tr>
<td>Given Name</td>
<td>ersapnwgivenname</td>
<td>Given name of the user.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Surname</td>
<td>ersapnwsurname</td>
<td>Surname of the user.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>IBM Security Identity Manager Name</td>
<td>Attribute Name</td>
<td>Description</td>
<td>Data Type</td>
<td>Required for GRC 5.3 Request</td>
<td>Required for GRC 10.0 Request</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Email Address</td>
<td>ersapnwemailaddress</td>
<td>The value of the “primary email address” given in the Communication tab. For more information about the format for providing email addresses, see the email section under Special Attributes.</td>
<td>String</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Company</td>
<td>ersapnwcompany</td>
<td>Represents the identifier of a company configured in AC. The value must match a “Company ID” configured in AC role attributes. This value is set as the value for company in both the AC request and all requested roles for the request.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Department</td>
<td>ersapnwdepartment</td>
<td>Represents the department of the user to be provisioned.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Function</td>
<td>ersapnwfunction</td>
<td>Represents the department of the user to be provisioned. The value must match a “Functional Area” configured in AC role attributes.</td>
<td>String</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Table 6. Supported SAP GRC/NetWeaver account attributes (continued)

<table>
<thead>
<tr>
<th>IBM Security Identity Manager Name</th>
<th>Attribute Name</th>
<th>Description</th>
<th>Data Type</th>
<th>Required for GRC 5.3 Request</th>
<th>Required for GRC 10.0 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>ersapnwagname</td>
<td>Multi-valued attribute that contains the proposed group of roles to be provisioned for the account. The request uses the values supplied for system ID, company, role name, start date, and end date in the role data. CUA client names are not used as the system ID in the role data.</td>
<td>Custom Data Type</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CUA Systems</td>
<td>ersapnwcuasystem</td>
<td>Connector name for CUA clients.</td>
<td>String</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

There are constraints imposed by SAP GRC AC for a successful request submission, such as attribute values that match pre-configured values in SAP GRC AC. The attributes that have values that must match values in SAP GRC AC are listed in Table 7.

Table 7. Attributes with required data in SAP GRC AC 10.0

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>All roles that exist on an SAP GRC AC request are inspected. Therefore all roles that exist in the target SAP NetWeaver system must also exist in SAP GRC AC 10.0.</td>
</tr>
<tr>
<td>CUA Systems</td>
<td>The value must match the connector name of a configured SAP Client.</td>
</tr>
<tr>
<td>Priority</td>
<td>The value must match the identifier of a configured AC priority. If the priority codes in SAP GRC AC are different from the supported defaults 006=HIGH, 007=LOW, 008=MEDIUM then the ersapgrcpriority form element on the account form must be edited to match the configured priorities. To customize the adapter profile, see the IBM Security Identity Manager SAP NetWeaver Adapter Installation and Configuration Guide.</td>
</tr>
<tr>
<td>Employee Type</td>
<td>This attribute value must match configuration in AC.</td>
</tr>
<tr>
<td>System Identifier</td>
<td>The attribute value must match the name of a connector that is configured in SAP GRC AC 10.0.</td>
</tr>
<tr>
<td>Manager ID</td>
<td>This attribute value must match the user ID of a user in the AC authentication data source.</td>
</tr>
<tr>
<td>Function</td>
<td>The value must match a 'Functional Area' configured in AC.</td>
</tr>
<tr>
<td>Business Process</td>
<td>This attribute value must match the business process configuration in AC.</td>
</tr>
</tbody>
</table>
Chapter 4. SAP GRC Access Control workflow extension installation and configuration

You can install and configure the SAP GRC Access Control workflow extensions, which are used as workflow objects within the IBM Security Identity Manager.

There are slightly different procedures to follow depending on which target system you want to support.

Support SAP GRC Access Control 5.3 only

1. “Installing SAP GRC Access Control 5.3 workflow extension”
2. “Configuring SAP GRC Access Control 5.3 workflow extension” on page 22
3. “Log file locations for workflow extensions” on page 38
4. “Installing and configuring the notification component for SAP GRC Access Control 5.3” on page 25

Support SAP GRC Access Control 10.0 only

1. “Installing SAP GRC Access Control 10.0 workflow extension” on page 27
2. “SAP GRC Access Control 10.0 workflow extension configuration” on page 30
3. “Log file locations for workflow extensions” on page 38
4. “Installing and configuring the notification component for SAP GRC Access Control version 10.0” on page 36

Support SAP NetWeaver, SAP GRC Access Control 5.3, and SAP GRC Access Control 10.0

1. “Installing SAP GRC Access Control 5.3 workflow extension”
2. “Installing SAP GRC Access Control 10.0 workflow extension” on page 27
3. “Log file locations for workflow extensions” on page 38
4. “Configuring workflow extensions to concurrently support SAP GRC Access Control 5.3, 10.0, and SAP NetWeaver” on page 39
5. “Installing and configuring the notification component for SAP GRC Access Control 5.3” on page 25
6. “Installing and configuring the notification component for SAP GRC Access Control version 10.0” on page 36

Installing SAP GRC Access Control 5.3 workflow extension

Follow these steps to install the workflow extensions.

Procedure

1. Edit the workflowextensions.xml file under the ITIM_HOME/data directory to add a workflow extension. Add the following workflow extension:

   Note: This sample is provided as part of the installation package as workflow\grc53\GRC53WorkflowExtensions.xml. After modifications to
Workflow extensions.xml are complete, open it with an Internet browser to make sure there are no XML syntax errors in the file.

```xml
<ACTIVITY ACTIVITYID="SAPGRCNonblockingAddRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="nonblockingSAPGRCAddRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRCBlockingAddRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="blockingSAPGRCAddRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRCNonblockingModifyRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="nonblockingSAPGRCModifyRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRCBlockingModifyRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="blockingSAPGRCModifyRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRCNonblockingDeleteRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="nonblockingSAPGRCDeleteRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRCBlockingDeleteRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION
      CLASS_NAME="com.ibm.tivoli.sapgrc53.wfe.SapGRCApplicationExtension"
      METHOD_NAME="blockingSAPGRCDeleteRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>
```
2. Copy workflow\grc53\SAPGRC53Workflow.jar from the installation package to the appropriate directory:

WEBSHARE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib

If the directory does not exist, create a new one.

3. Restart the IBM Security Identity Manager application from the WebSphere console, or restart the WebSphere server itself. After a successful restart, continue with configuration.
Configuring SAP GRC Access Control 5.3 workflow extension

You can define workflow extensions for the existing SAP GRC NetWeaver account type.

Procedure

1. Log on to IBM Security Identity Manager.
   a. Select Configure System > Manager Operations.
   b. For the Operation Level, select Entity level.
   c. Select Account as the Entity type.
   d. Select SAP GRC NetWeaver Account as the type of account to be configured with the SAP GRC Access Control workflow extension.

2. Click the Add button to create an add operation if it does not already exist. The operation diagram is displayed. Provide the same changes as those shown in the following diagram.

3. Remove the transition line from the Start node to the CREATEACCOUNT extension node.

4. Add a new extension node between Start and CREATEACCOUNT.

5. Double-click on the new Extension node. A pop-up window displays all the extensions registered using workflowextensions.xml.

6. Select the Extension Name as SAPGRCBlockingAddRequest and fill in the Activity ID with GRC_ADD. Set the Activity Name to GRC ADD.
7. Select OR for the Split Type.
8. Click Ok and attach the transitions to the newly-added extension.
9. Click the Properties button.
10. Click the Add button next to Relevant Data.
11. Create a new result Relevant Data. Enter result in the ID field. Ensure that the Type is String and leave Default Value as blank. Click Ok to finish.

12. Double-click on the transition connecting the newly-added extension to the CRETACCOUNT extension node and key in the condition activity.resultSummary=="SS". Name the transition "approved". Click Ok to close the transition properties window.
13. Double-click on the transition connecting the newly-added extension to the END node and key in the condition `activity.resultSummary!="SS"`. Name the transition "rejected". Click **Ok** to close the transition properties window.

14. Click **Update** and then click **OK** to close the Operations window.

15. Repeat Steps 2 to 14 above for delete, modify, suspend and restore operations, replacing the type of workflow extension to be invoked as needed.

**Note:** When configuring the properties of the newly-added extension nodes (see Step 6) for these operations, the following values are suggested:

<table>
<thead>
<tr>
<th>Blocking Operations</th>
<th>ActivityID</th>
<th>Extension Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD</td>
<td>GRC_ADD</td>
<td>SAPGRCBlockingAddRequest</td>
</tr>
<tr>
<td>DELETE</td>
<td>GRC_DELETE</td>
<td>SAPGRCBlockingDeleteRequest</td>
</tr>
<tr>
<td>MODIFY</td>
<td>GRC_MODIFY</td>
<td>SAPGRCBlockingModifyRequest</td>
</tr>
<tr>
<td>RESTORE</td>
<td>GRC_RESTORE</td>
<td>SAPGRCBlockingRestoreRequest</td>
</tr>
<tr>
<td>SUSPEND</td>
<td>GRC_SUSPEND</td>
<td>SAPGRCBlockingSuspendRequest</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Blocking Operations</th>
<th>ActivityID</th>
<th>Extension Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Installing and configuring the notification component for SAP GRC Access Control 5.3

Install the workflow notification component for SAP GRC Access Control 5.3.

#### Procedure

1. If the `SAPGRC53Workflow.jar` file does not exist for SAP GRC Access Control 5.3, copy it from the installation package `\workflow\grc53\SAPGRC53Workflow.jar` to the directory:
   
   \WEBSHIRE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib
   
   If the `WEB-INF\lib` directory does not exist, create one.

2. Copy the `jaas_login_was.conf`, `runNotifierWAS7`, and `SAPNotify.props` files from the installation packages `\workflow\grc53\notifier` to a directory on the IBM Security Identity Manager server.
   
   Use the `runNotifierWAS7.sh` file for UNIX systems or the `runNotifierWAS7.bat` file for Windows systems.

3. Edit the `runNotifierWAS7` script and update the following variables to match your environment:

   - **APP_SRV_HOME**: The location of the IBM Security Identity Manager server, including the profile name. For example, `c:\Program Files\IBM\WebSphere\AppServer\profiles\server1`
   - **JAVA_HOME**: The location of the root directory of a JAVA. For example: `c:\Program Files\IBM\WebSphere\AppServer\java`
   - **ITIM_HOME**: The location on the IBM Security Identity Manager installation, not the IBM Security Identity Manager deployed ear. For example, `c:\Program Files\IBM\itim`
   - **APP_SRV_CELL**: Name of the WebSphere cell that the IBM Security Identity Manager application is deployed on. This attribute is required to find the `SAPGRCWorkflow.jar` file.
   - **WFE_HOME**: The location of the `SAPGRCWorkflow.jar` file.

4. Edit the `SAPNotify.props` file and provide the correct value for each of these attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRCNotifyURL</td>
<td>This attribute is the URL to the SAP GRC Access Control 5.3 Request Status WebService. For example, the URL might be: <a href="http://sapgrc53:50100/SAPGRC_AC_IDM_REQUESTSTATUS/Config1?style=document">http://sapgrc53:50100/SAPGRC_AC_IDM_REQUESTSTATUS/Config1?style=document</a></td>
</tr>
<tr>
<td>GRCUserName</td>
<td>An administration user ID used to access the SAP GRC Access Control system.</td>
</tr>
<tr>
<td>GRCPassword</td>
<td>The password for the Administrator user name.</td>
</tr>
<tr>
<td>itim.user</td>
<td>An IBM Security Identity Manager user with administration privileges.</td>
</tr>
<tr>
<td>itim.pswd</td>
<td>The password for the IBM Security Identity Manager user</td>
</tr>
</tbody>
</table>

#### Table 8. SAP GRC Access Control 5.3 Workflow Extension Options (continued)

<table>
<thead>
<tr>
<th>Blocking Operations</th>
<th>ActivityID</th>
<th>Extension Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADD</td>
<td>GRC_ADD</td>
<td>SAPGRCNonblockingAddRequest</td>
</tr>
<tr>
<td>DELETE</td>
<td>GRC_DELETE</td>
<td>SAPGRCNonblockingDeleteRequest</td>
</tr>
<tr>
<td>MODIFY</td>
<td>GRC_MODIFY</td>
<td>SAPGRCNonblockingModifyRequest</td>
</tr>
<tr>
<td>RESTORE</td>
<td>GRC_RESTORE</td>
<td>SAPGRCNonblockingRestoreRequest</td>
</tr>
<tr>
<td>SUSPEND</td>
<td>GRC_SUSPEND</td>
<td>SAPGRCNonblockingSuspendRequest</td>
</tr>
</tbody>
</table>
itim.home | Path to the IBM Security Identity Manager server directory. For example, the path might be: C:/Program Files/IBM/itim

apps.context.factory | This attribute is the context to get access to the IBM Security Identity Manager server. Use the default value com.ibm.itim.apps.impl.websphere.WebSpherePlatformContextFactory, unless otherwise instructed by an IBM representative.

isim.authentication.factory.classname | This attribute is the authentication factory class name. For IBM Security Identity Manager 6.0. Use the default value com.ibm.tivoli.auth.ISIM6AuthenticationFactory, unless otherwise instructed by an IBM representative.

isim.jaas.logincontextname | This attribute is the JAAS login context name. The default value is used if no value is defined. For IBM Security Identity Manager 6.0, the default value is WSLogin.

enrole.appServer.realm | This attribute is the application server realm name. The default value is defined in the ISIM_HOME\data\enrole.properties file.

5. Validate the configuration by running runNotifierWAS7 from the command line.

   The following two lines are displayed on the command line:
   
   Starting Notifier
   ....
   Stopping Notifier
   
   The notification service updates all relevant workflows in IBM Security Identity Manager to either "APPROVED_SUCCESS" or "APPROVED_REJECTED" if:
   
   - There is a request in SAP GRC that was closed, either "Approved," "Rejected," or "Cancelled".
   - The request has a matching SAP GRC Access Control request ID for an IBM Security Identity Manager workflow currently in the PENDING state.

6. Edit the logging.properties file in the JAVA_HOME\lib directory to enable more or less logging. For example, WAS_HOME\java\jre\lib\logging.properties

   This log file contains the jlog configuration. By adding the following line the logging level can be increased:
   
   com.ibm.tivoli.sapgrc53.level=ALL
   
   The console handler might also need to be increased to allow for the output of all logging:
   
   java.util.logging.ConsoleHandler.level=ALL
   
   Logging might be disabled. This disablement might be required when running the notifier as a scheduled task. To turn logging off, set the following values:
   
   java.util.logging.ConsoleHandler.level=NONE
   com.ibm.tivoli.sapgrc53.level=NONE

7. If security is enabled on WebSphere, import the WebSphere key into the IBM Security Identity Manager keystore. The IBM Security Identity Manager keystore file and its password are defined in the ISIM_HOME\data\enrole.properties file, look for the enrole.encryption.keystore and enrole.encryption.password:

   a. Navigate to the WAS_HOME\bin directory.
   b. Launch the ikeyman.bat file from C:\Program Files\IBM\WebSphere\AppServer\bin.
   c. Select Key Data File > Open.
   d. Select Key database type PKCS12 and then browse to the keystore file in WAS_HOME\config\cell\iqint17aNode01Cell\nodes\iqint17aNode01\key.p12
   e. Enter the keystore password WebAS.
   f. Select Export to export the key to a temp directory C:\temp\default.p12.
   g. Enter password WebAS.
h. Select Key Data File > Open.
i. Select Key database type JCEKS and then browse to the IBM Security Identity Manager keystore.
j. Enter the keystore password.
k. Select Import to import the key from C:\temp\default.p12 into the IBM Security Identity Manager keystore and save it.

8. After confirming that the configuration is correct, place the runNotifierWAS7 script into a scheduled task so that it runs on a regular basis. On Windows systems, use the Windows scheduler to schedule the task. On Linux or UNIX systems, use the crontab command. Contact your system administrator to set up these tasks.

**Installing SAP GRC Access Control 10.0 workflow extension**

Follow these steps to install the workflow extensions.

**Procedure**

1. Edit the workflowextensions.xml file under the ISIM_HOME/data directory to add a workflow extension.

   **Note:** This sample is provided as part of the installation package as workflow\grc10\GRC10workflowExtensions.xml. To avoid confusion with the SAP GRC Access Control 5.3 workflow extensions the SAP GRC Access Control 10.0 workflow extensions exist in different packages. They were also given different names to ensure that the correct code is executed after invoking the extension. For example, if the SAPGRC53Workflow.jar file was mistakenly installed in WebSphere but the SAP GRC Access Control 10.0 workflow extensions are invoked, an error is displayed. The error informs the user that the SAP GRC Access Control 10.0 workflow extension could not be found. After the SAP GRC Access Control 10.0 workflow extensions are added to workflowextensions.xml, take the following actions:
   a. Open the file with a browser.
   b. Check that the file does not contain any XML syntax errors.
   c. Add the following SAP GRC Access Control 10.0 workflow extensions:

```xml
<ACTIVITY ACTIVITYID="SAPGRC10NonblockingAddRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
                  METHOD_NAME="nonblockingSAPGRC10AddRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10BlockingAddRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
                  METHOD_NAME="blockingSAPGRC10AddRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>
```
<ACTIVITY ACTIVITYID="SAPGRC10NonblockingModifyRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="nonblockingSAPGRC10ModifyRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10BlockingModifyRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="blockingSAPGRC10ModifyRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="account" TYPE="Account" />
    <IN_PARAMETERS PARAM_ID="service" RELEVANT_DATA_ID="service" TYPE="Service" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10NonblockingDeleteRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="nonblockingSAPGRC10DeleteRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10BlockingDeleteRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="blockingSAPGRC10DeleteRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10NonblockingSuspendRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="nonblockingSAPGRC10SuspendRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10BlockingSuspendRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="blockingSAPGRC10SuspendRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>

<ACTIVITY ACTIVITYID="SAPGRC10NonblockingRestoreRequest" LIMIT="0">
  <IMPLEMENTATION_TYPE>
    <APPLICATION CLASS_NAME="com.ibm.tivoli.sapgrc10.wfe.SapGRC10ApplicationExtension"
    METHOD_NAME="nonblockingSAPGRC10RestoreRequestExtension" />
  </IMPLEMENTATION_TYPE>
  <PARAMETERS>
    <IN_PARAMETERS PARAM_ID="account" RELEVANT_DATA_ID="Entity" TYPE="Account" />
    <OUT_PARAMETERS PARAM_ID="result" RELEVANT_DATA_ID="result" TYPE="String" />
  </PARAMETERS>
</ACTIVITY>
2. Copy workflow\grc10\SAPGRC10Workflow.jar from the installation package to the appropriate directory: WEBSPHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib
   If the directory does not exist, create a new one.
3. Restart the IBM Security Identity Manager application from the WebSphere console, or restart the WebSphere server itself. After a successful restart, continue with configuration.
SAP GRC Access Control 10.0 workflow extension configuration

SAP GRC Access Control 10.0 workflow extensions support these different SAP GRC operations: Access Request, Risk Analysis, and Update Account Attributes.

Use these steps to configure these workflow extensions using the Add operation as an example:

- “Configuring Access Request workflow extension”
- “Configuring Risk Analysis workflow extension” on page 32
- “Configuring Update Account Attributes workflow extension” on page 35

Configuring Access Request workflow extension

You can define Access Request workflow extensions for the existing SAP GRC NetWeaver account type.

Procedure

1. Log on to IBM Security Identity Manager.
   a. Select Configure System > Manager Operations.
   b. For the Operation Level, select Entity level.
   c. Select Account as the Entity type.
   d. Select SAP GRC NetWeaver Account as the type of account to be configured with the SAP GRC Access Control workflow extension.

2. Click the Add button to create an add operation if it doesn't already exist. The operation diagram is displayed. Provided the same changes as those shown in the following screen capture.

3. Remove the transition line from the Start node to the CREATEACCOUNT extension node.

4. Add a new extension node between Start and CREATEACCOUNT.

5. Double-click on the new Extension node. A pop-up window displays all the extensions registered using workflowextensions.xml.

6. Select the Extension Name as SAPGRC10BlockingAddRequest and fill in the Activity ID with GRC_ADD. Set the Activity Name to GRC ADD.

7. Select OR for the Split Type.
8. Click **Ok** and attach the transitions to the newly-added extension.
9. Click the **Properties** button.
10. Click the **Add** button next to Relevant Data.
11. Create a new **result** Relevant Data. Enter result in the ID field. Ensure that the **Type** is String and leave **Default Value** as blank. Click **Ok** to finish.
12. Double-click the transition connecting the newly-added extension to the **CREATEACCOUNT** extension node and key in the condition `activity.resultSummary="SS"`. Name the transition "approved". Click **Ok** to close the transition properties window.
13. Double-click the transition connecting the newly-added extension to the **END** node and key in the condition `activity.resultSummary!="SS"`. Name the transition "rejected". Click **Ok** to close the transition properties window.
14. Click Update and then click Ok to close the Operations window.
15. Repeat Steps 2 to 12 for delete, modify, suspend, and restore operations.

**Note:** When configuring the properties of the newly-added extension nodes (see Step 6) for these operations, the following values can be used:

<table>
<thead>
<tr>
<th>Table 9. SAP GRC Access Control 10.0 Workflow Extension Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blocking Operations</strong></td>
</tr>
<tr>
<td><strong>ActivityID</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>ADD</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>DELETE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MODIFY</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>RESTORE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SUSPEND</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Non-Blocking Operations</strong></td>
</tr>
<tr>
<td><strong>ActivityID</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>ADD</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>DELETE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>MODIFY</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>RESTORE</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SUSPEND</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Configuring Risk Analysis workflow extension**

This workflow extension allows IBM Security Identity Manager to send a risk analysis request for a specific access request ID to SAP GRC Access Control 10.0.

**About this task**

The risk analysis result is recorded by IBM Security Identity Manager workflow as a string output parameter named “riskDetail”. Risk results returned from SAP GRC Access Control are indicated by a ‘#’ character. Each risk consists of a number of
name-value pairs. These name-value pairs are separated by a ‘|’ character. The risk name and its value are separated by a ‘:’ character. If the value is multi-valued, then the set of values is enclosed by ‘[ ]’ characters, and each value in the set is separated by a ‘,’ character.

An example of the riskDetail returned to IBM Security Identity Manager workflow looks like:

#Risk Number:1|Risk Id:B009|Risk Description:Basis Table Maintenance & System Administration|Risk Level:High|System Name:GC7CLNT001|UserId:AC102509|Role List:[SAP_XI_ADMINISTRATOR_ABAP, SAP_XI_CONFIGURATOR, SAP_XI_BPE_ADMINISTRATOR_ABAP, SAP_XI_ADMINISTRATOR]|Action List:[SXMB_ADM, SM30, SM12, SXMB_ADM_BPE, SM59]|

If necessary, the output parameter can be parsed in IBM Security Identity Manager workflow to catch risk violations that have been detected by SAP GRC Access Control 10.0. Detail on how to parse the riskDetail output parameter is out-of-scope of this guide.

Define Risk Analysis workflow extensions for the existing SAP GRC NetWeaver account type.

**Procedure**

1. Log on to IBM Security Identity Manager.
   a. Select **Configure System > Manager Operations**.
   b. For the **Operation Level**, select **Entity level**.
   c. Select **Account** as the **Entity type**.
   d. Select **SAP GRC NetWeaver Account** as the type of account to be configured with the SAP GRC Access Control workflow extension.

2. Click the **Add** button to create an add operation if it does not already exist. The operation diagram is displayed. Provided the same changes as those shown in the following screen capture.

3. Remove the transition line from the **GRC_ADD** extension node to the **CREATEACCOUNT** extension node.

4. Add a new extension node between **GRC_ADD** and **CREATEACCOUNT**.

5. Double-click on the new **Extension** node. A pop-up window displays all the extensions registered using workflowextensions.xml.

6. Select the **Extension Name** as **SAPGRC10RiskAnalysisRequest** and fill in the **Activity ID** with **GRC_RiskAnalysis**. Set the **Activity Name** to **GRC RiskAnalysis**.

7. Select **OR** for the **Split Type**.
8. Click OK and attach the transitions to the newly-added extension.

9. Click the Properties button.

10. Click the Add button next to Relevant Data.

11. Create a new reqid Relevant Data. Enter reqid in the ID field. Ensure that the Type is String and leave Default Value as blank. Click OK to finish.
12. Create a new riskDetail Relevant Data. Enter riskDetail in the ID field. Ensure that the Type is String and leave Default Value as blank. Click OK to finish.

13. Double-click on the transition connecting the newly-added extension to the CREATEACCOUNT extension node and key in the condition activity.resultSummary=="SS". Name the transition "approved". Click OK to close the transition properties window.

14. Double-click on the transition connecting the newly-added extension to the END node and key in the condition activity.resultSummary!="SS". Name the transition "rejected". Click OK to close the transition properties window.

15. Click Update and then click OK to close the Operations window.

16. Repeat Steps 2 to 14 above for another operation when risk analysis is applicable.

### Configuring Update Account Attributes workflow extension

This workflow extension compares the list of roles on an approved request that is returned by SAP GRC Access Control 10.0 with the list of roles that are requested by IBM Security Identity Manager.

#### About this task

If the status of a role is not “approved”, then the role is assumed to have been rejected in SAP GRC AC 10.0. The extension then removes the rejected roles from the request in IBM Security Identity Manager. The same behavior applies to
rejection of account assignments. This workflow extension should be executed before the account is provisioned in SAP NetWeaver.

Define Update Account Attribute workflow extensions for the existing SAP GRC NetWeaver account type.

**Procedure**

1. Log on to IBM Security Identity Manager.
   a. Select *Configure System > Manager Operations*.
   b. For the *Operation Level*, select *Entity level*.
   c. Select *Account* as the *Entity type*.
   d. Select *SAP GRC NetWeaver Account* as the type of account to be configured with the SAP GRC Access Control workflow extension.

2. Click the Add button to create an add operation if it doesn't already exist. The operation diagram is displayed. Provided the same changes as those shown in the following screen capture.

3. Remove the transition line from the GRC_ADD extension node to the CREATEACCOUNT extension node.

4. Add a new extension node between GRC_ADD and CREATEACCOUNT.

5. Double-click on the new Extension node. A pop-up window displays all the extensions registered using workflowextensions.xml.

6. Set the *ActivityId* to GRC_UPDATE_ACCOUNT and *ExtensionName* as SAPGRC10UpdateAccountAttributesExtension(Account account, Service service).

7. Click Ok to save and close the popup window.

8. Connect the GRC_UPDATE_ACCOUNT extension node to the End node with a transition line. Enter the following condition:
   activity.resultSummary!="SS"

9. Click Update and then click Ok to close the Operations window.

10. Repeat steps 2 to 7 above for another operation when update account attributes is applicable.

---

**Installing and configuring the notification component for SAP GRC Access Control version 10.0**

Install the notification component for SAP GRC Access Control version 10.0.

**Procedure**

1. If the SAPGRC10Workflow.jar file does not exist for SAP GRC Access Control 10.0, copy it from the installation package \workflow\grc10\SAPGRC10Workflow.jar to the directory: \WEBSPHHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib
   If the \WEB-INF\lib directory does not exist, create one.
2. Copy the jaas_login_was.conf, runNotifierWAS7.[bat|sh], and SAPNotify.props files from the installation packages workflow\grc10\notifier to a directory on the IBM Security Identity Manager server. Use the runNotifierWAS7.sh file for UNIX systems or the runNotifierWAS7.bat file for Windows systems.

3. Edit the runNotifierWAS7 script and update the following variables to match your environment:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>APP_SRV_HOME</td>
<td>The location of the IBM Security Identity Manager server, including the profile name. For example: c:\Program Files\IBM\WebSphere\AppServer\profiles\server1</td>
</tr>
<tr>
<td>JAVA_HOME</td>
<td>The location of the root directory of a JAVA installation. For example, c:\Program Files\IBM\WebSphere\AppServer\java</td>
</tr>
<tr>
<td>ITIM_HOME</td>
<td>The location on the IBM Security Identity Manager installation, not the ITIM deployed ear. For example: c:\Program Files\IBM\itim</td>
</tr>
<tr>
<td>APP_SRV_CELL</td>
<td>Name of the WebSphere cell that the IBM Security Identity Manager application is deployed on. This attribute is required to find the SAPGRC10Workflow.jar file.</td>
</tr>
<tr>
<td>WFE_HOME</td>
<td>The location of the SAPGRC10Workflow.jar file.</td>
</tr>
</tbody>
</table>

4. Edit the SAPNotify.props file and provide the correct value for each of the attributes.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRCNotifyURL</td>
<td>This attribute is the URL to the SAP GRC Access Control 10.0 Audit Logs Web Service. For example, the URL could resemble: <a href="http://remotehost:port/sap/bc/srt/rfc/sap/grc_audit_logs_ws/client_number/grac_audit_logs_ws/binding?sap-client=client_number">http://remotehost:port/sap/bc/srt/rfc/sap/grc_audit_logs_ws/client_number/grac_audit_logs_ws/binding?sap-client=client_number</a></td>
</tr>
<tr>
<td>GRCUserName</td>
<td>An administration or user ID used to access the SAP GRC Access Control system.</td>
</tr>
<tr>
<td>GRCPassword</td>
<td>The password for the Administrator user name.</td>
</tr>
<tr>
<td>itim.user</td>
<td>An IBM Security Identity Manager user with administration privileges.</td>
</tr>
<tr>
<td>itim.pswd</td>
<td>The password for the IBM Security Identity Manager user.</td>
</tr>
<tr>
<td>itim.home</td>
<td>Path to the IBM Security Identity Manager server directory. For example, the path might be: C:\Program Files\IBM\itim</td>
</tr>
<tr>
<td>apps.context.factory</td>
<td>This attribute is the context to get access to the IBM Security Identity Manager server. Use the default value com.ibm.itim.apps.impl.websphere.WebSpherePlatformContextFactory, unless otherwise instructed by an IBM representative.</td>
</tr>
<tr>
<td>isim.authentication.Factory.classname</td>
<td>This attribute is the authentication factory class name. For IBM Security Identity Manager 6.0. Use the default value com.ibm.tivoli.auth.ISIM6AuthenticationFactory, unless otherwise instructed by an IBM representative.</td>
</tr>
<tr>
<td>isim.jaas.logincontextname</td>
<td>This attribute is the JAAS login context name. The default value is used if no value is defined. For IBM Security Identity Manager 6.0, the default value is WSLogin.</td>
</tr>
<tr>
<td>enrole.appServer.realm</td>
<td>This attribute is the application server realm name. The default value is defined in the ISIM_HOME\data\enrole.properties file.</td>
</tr>
</tbody>
</table>

5. Validate the configuration by running runNotifierWAS7 from the command line. The following two lines are displayed on the command line:

Starting Notifier
......
Stopping Notifier

The notification service updates all relevant workflows in IBM Security Identity Manager to either "APPROVED_SUCCESS" or "APPROVED_REJECTED" if:
- There is a request in SAP GRC that was closed, either "Approved," "Rejected," or "Cancelled."
The request has a matching SAP GRC Access Control request ID for an IBM Security Identity Manager workflow currently in the PENDING state.

6. Edit the `logging.properties` file in the JAVA_HOME lib directory to enable more or less logging. For example, `WAS_HOME\java\jre\lib\logging.properties` This log file contains the jlog configuration. By adding the following line the logging level can be increased:
   ```
   com.ibm.tivoli.sapgrc10.level=ALL
   ```
   The console handler might also need to be increased to allow for the output of all logging:
   ```
   java.util.logging.ConsoleHandler.level=ALL
   ```

7. Logging might be disabled. This disablement might be required when running the notifier as a scheduled task. To turn logging off, set the following values:
   ```
   java.util.loging.ConsoleHandler.level=NONE
   com.ibm.tivoli.sapgrc10.level=NONE
   ```

8. If security is enabled on WebSphere, import the WebSphere key into the IBM Security Identity Manager keystore. The IBM Security Identity Manager keystore file and its password are defined in the `ISIM_HOME\data\enrole.properties` file, look for the `enrole.encryption.keystore` and `enrole.encryption.password`:
   a. Navigate to the `WAS_HOME\bin` directory.
   b. Launch the `ikeyman.bat` file from `C:\Program Files\IBM\WebSphere\AppServer\bin`.
   c. Select Key Data File > Open.
   d. Select Key database type PKCS12 and then browse to the keystore file in `WAS_HOME\config\cells\iqint17aNode01Cell\nodes\iqint17aNode01\key.p12`
   e. Enter the keystore password WebAS.
   f. Select Export to export the key to a temp directory `C:\temp\default.p12`.
   g. Enter password WebAS.
   h. Select Key Data File > Open.
   i. Select Key database type JCEKS and then browse to the IBM Security Identity Manager keystore.
   j. Enter the keystore password.
   k. Select Import to import the key from `C:\temp\default.p12` into the IBM Security Identity Manager keystore and save it.

9. After confirming that the configuration is correct, place the `runNotifierWAS7` script into a scheduled task so that it runs on a regular basis. On Windows systems, use the Windows scheduler to schedule the task. On Linux or UNIX systems, use the `crontab` command. Contact your system administrator to set up these tasks.

---

**Log file locations for workflow extensions**

The log file locations for SAP GRC Access Control are different for versions 5.3 and 10.0. You must enable logging for SAP GRC Access Control 10.0.

**SAP GRC Access Control 5.3**

   The logging for the workflow extensions is in the `user.home\grcextension.log` file.

**SAP GRC Access Control 10.0**

   The logging for the workflow extensions is in the IBM Security Identity Manager `trace.log` file.
To enable logging for the extensions, modify the settings in the enRoleLogging.properties file in the ISIM_HOME\data\ directory to:

```
logger.trace.com.ibm.itim.workflowextensions.AccountExtensions.level=DEBUG_MAX
```

---

**Configuring workflow extensions to concurrently support SAP GRC Access Control 5.3, 10.0, and SAP NetWeaver**

You can support SAP GRC Access Control 5.3, SAP GRC Access Control 10.0, and non-GRC managed SAP NetWeaver resources in a single IBM Security Identity Manager server instance. You create a subprocess to encapsulate these operations.

**About this task**

The control flow path in the sub-process is determined by the value given to the GRC Version attribute on the service form.

Define Access Request workflow extensions for the existing SAP GRC NetWeaver account type.

**Procedure**

1. Log in to IBM Security Identity Manager
   - Select Configure System > Manage Operations.
   - For the Operation Level, select Entity level.
   - Select Account as the Entity type.
   - Select SAP GRC NetWeaver Account as the type of account to be configured with the SAP GRC Access Control workflow extension.

2. To simplify the layout of the workflow extension for this operation, create the SAP GRC Access Control workflow configuration as a subprocess and reference it by an operation node.

---

**Operation Diagram**

<table>
<thead>
<tr>
<th>Operation Name</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>add</td>
<td>Account-SapNW/Account</td>
</tr>
</tbody>
</table>

---

Chapter 4. SAP GRC Access Control workflow extension installation and configuration 39
The following steps will use the Add operation as an example to show how to configure a GRC_ADD operation node to support the Add operation when different SAP GRC Access Control versions need to be supported in a single server instance.

3. Click the **Add** button to create a **GRC_ADD** operation. The operation diagram is displayed. Provide the same changes as those shown in the following diagram:

4. Add all the required input parameters and relevant data.
   a. Click the **Properties** button to add the following attributes:

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Context</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>owner</td>
<td>Owner</td>
<td>Requestee</td>
<td>Person</td>
</tr>
<tr>
<td>service</td>
<td>Service</td>
<td>N/A</td>
<td>Service</td>
</tr>
<tr>
<td>account</td>
<td>Account</td>
<td>Subject</td>
<td>Account</td>
</tr>
</tbody>
</table>
Table 11. Relevant data

<table>
<thead>
<tr>
<th>ID</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>grcVersion</td>
<td>String</td>
</tr>
<tr>
<td>result</td>
<td>String</td>
</tr>
<tr>
<td>reqid</td>
<td>String</td>
</tr>
<tr>
<td>riskDetail</td>
<td>String</td>
</tr>
</tbody>
</table>

5. Add nodes to support SAP NetWeaver only.
   a. Select two Extension nodes and connect them together from Start to End as shown in the diagram:

   ![Diagram](image)

   b. Double click the first extension, set the ActivityID to CHECK_GRC_VERSION and ExtensionName as checkGRCVersion(Account account).

c. Click the Search Relevant Data button to find the relevant data for the input parameters and the output parameters.
d. Click **Ok** to save and close the popup window.

e. Double click the second extension, set the *ActivityID* to **CREATEACCOUNT** and *ExtensionName* as the default `createAccount(Person owner, Service service, Account account)`.

f. Click the *Search Relevant Data* button to find the relevant data for the input parameters.
g. Click Ok to save and close the popup window.

h. Click the Update button. The workflow extension should look similar to the following diagram:

![Extension workflow diagram](image)

i. Double click the transition line between the two extension nodes to enter the following condition: `grcVersion.get() == "na"`

If the output parameter `grcVersion` string returns a value of `na`, that means the **Enable GRC workflow configuration** option is not enabled on the service form.

j. To ensure that workflow is invoked correctly, use a transition line to connect the first extension node to the End node and enter the following condition:

```
(grcVersion.get() != "10.0") && (grcVersion.get() != "5.3") && (grcVersion.get() != "na")
```
k. Click **Update** to save the current configuration.

6. Add nodes to support SAP GRC Access Control 5.3.
   a. Select one Extension node and connect it to the existing extensions as shown in the following diagram:

   ![Diagram](image)

   b. Double click this extension to set the **ActivityID** to `GRC53_ADD` and **ExtensionName** to `SAPGRCBlockingAddRequest(Account account, Service service)`.

   c. Click the **Search Relevant Data** button to find the relevant data for the input parameters and the output parameters.

![Properties Extension Node](image)
d. Click **OK** to save and close the popup window.

e. Double click the transition line between the **CHECK_GRC_VERSION** extension node and **GRC53_ADD** extension node to enter the following condition: `grcVersion.get()=='5.3'`.

f. Connect the **GRC53_ADD** extension node to the **End** node with a transition line and enter the following condition: `activity.resultSummary!='S5'`.

g. Click the **Update** button. The workflow extension should look similar to the following diagram:

![Diagram](image)

h. Click **Update** to save the current configuration.

7. Add nodes to support SAP GRC Access Control 10.0.

SAP GRC Access Control 10.0 workflow extensions also support RiskAnalysis and UpdateAttributes workflow extensions. See "Configuring Access Request workflow extension" on page 30 and "Configuring Update Account Attributes workflow extension" on page 35.

a. Select one Extension node and connect it to the existing extensions as shown in the following diagram:

![Diagram](image)

b. Double-click this extension to set the **ActivityID** to GRC10_ADD and **ExtensionName** to `SAPGRC10BlockingAddRequest(Account account, Service service)`.

c. Click the **Search Relevant Data** button to find the relevant data for the input parameters and the output parameters.
d. Click OK to save and close the popup window.

e. Double-click the transition line between the CHECK_GRC_VERSION extension node and GRC10_ADD extension node to enter the following condition: grcVersion.get()="10.0".

f. Connect the GRC10_ADD extension node to the End node with a transition line and enter the following condition: activity.resultSummary!="SS"

g. Click the Update button. The workflow extension should look similar to the following:
h. Click **Update** to save the current configuration.

**SAP GRC AC Workflow components installation verification**

If the integration is installed correctly, these components exist on the IBM Security Identity Manager server.

*Table 12. SAP GRC Access Control Workflow and Notification components*

<table>
<thead>
<tr>
<th>Directory</th>
<th>Workflow component</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAS_HOME\AppServer\profiles\APP_SERVER\installedApps\NodeCell\ITIM.ear\</td>
<td>SAPGRCC53Workflow.jar</td>
</tr>
<tr>
<td>app_web.war\WEB-INF\lib</td>
<td>SAPGRCC10Workflow.jar</td>
</tr>
<tr>
<td>Notification_Component_HOME</td>
<td>jaas_login_was.conf runNotifierWAS7.bat runNotifierWAS7.sh SAPNotify.props</td>
</tr>
<tr>
<td>ITIM_HOME\data</td>
<td>workflowextensions.xml</td>
</tr>
</tbody>
</table>

**Reconciliation configuration for the SAP NetWeaver adapter with SAP GRC Access Control**

Because of limitations in the SAP GRC Access Control reconciliation capability, the adapter uses the SAP ABAP server as an account repository for reconciliation process.

As result, all attributes that are specific to SAP GRC Access Control will be lost during reconciliation because the SAP AS ABAP server will not recognize them. To avoid losing values of SAP GRC Access Control-specific attributes, the reconciliation operation must **exclude** all of the SAP GRC Access Control-specific attributes listed in **Table 6 on page 13**.
Chapter 5. Integration upgrade

You can upgrade the Integration for SAP GRC Access Control to support SAP GRC Access Control 5.3 or 10.0.

Upgrade to support SAP GRC Access Control 10.0

To upgrade the integration to support SAP GRC Access Control 10.0, you must do several tasks.

Follow these steps:

- **Profile import**
- **SAP NetWeaver GRC service creation**
- **Installing the SAP GRC Access Control 10.0 workflow extension**
- **SAP GRC Access Control 10.0 workflow extension configuration** on page 50

Profile import

Obtain the SapGRCNWProfile.jar profile from the installation package and import the profile into IBM Security Identity Manager.

SAP NetWeaver GRC service creation

After the SapGRCNWProfile.jar is imported into IBM Security Identity Manager successfully, update the attributes under the SAP GRC Service Attributes tab on the service form.

See "SAP NetWeaver GRC service creation” on page 9 for details on how to create a service and how to define those attributes on the SAP GRC Service Attributes tab.

To support the different versions of SAP GRC Access Control with the same profile, the * which indicates mandatory account attributes has been removed from the account form because these attributes are not necessarily required for SAP GRC Access Control 10.0 support. Refer to Table 5 for a full reference of supported account attributes.

Installing the SAP GRC Access Control 10.0 workflow extension

Follow these steps to install the SAP GRC Access Control 10.0 workflow extension.

**Procedure**

1. Edit the workflowextensions.xml file under the ITIM_HOME/data directory to add a workflow extension. For more information, see "Installing SAP GRC Access Control 10.0 workflow extension” on page 27.

2. Copy workflow\grc10\SAPGRC10Workflow.jar from the installation package to the appropriate directory: WEBSPHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib

If the directory does not exist, create one.
3. Restart the IBM Security Identity Manager application from the WebSphere console, or restart the WebSphere server itself. After a successful restart, continue with configuration.

**SAP GRC Access Control 10.0 workflow extension configuration**

The SAP GRC Access Control 10.0 workflow extensions support Access Request, Risk Analysis, and Update Account Attributes features by configuring the IBM Security Identity Manager workflow extension.

For more information, see "SAP GRC Access Control 10.0 workflow extension configuration" on page 30.

---

**Upgrade to support SAP GRC Access Control 5.3**

To upgrade the adapter to support SAP GRC Access Control 5.3, you must do several tasks.

Follow these steps:

- "Profile import"
- "SAP NetWeaver GRC service creation"
- "Installing SAP GRC Access Control 5.3 workflow extension"
- "SAP GRC Access Control 5.3 workflow extension configuration" on page 51

---

**Profile import**

Obtain the SapGRCNWProfile.jar profile from the installation package and import the profile into IBM Security Identity Manager.

**SAP NetWeaver GRC service creation**

After the SapGRCNWProfile.jar is imported into IBM Security Identity Manager successfully, update the attributes under the SAP GRC Service Attributes tab on the service form.

See "SAP NetWeaver GRC service creation" on page 9 for details on how to create a service and how to define those attributes on the SAP GRC Service Attributes tab.

To support the different versions of SAP GRC AC with the same profile, the * which used to indicate mandatory account attributes has been removed from the account form as these attributes are not necessarily required for SAP GRC Access Control 10.0 support. Refer to Table 5 for a full reference of supported account attributes.

**Installing SAP GRC Access Control 5.3 workflow extension**

The workflow extension JAR file for SAP GRC Access Control 5.3 is renamed. You must perform two actions, if the SAP GRC Access Control 5.3 notification component is already configured before you install and configure the new component.

**Procedure**

1. Edit the workflowextensions.xml file under the ITIM_HOME/data directory to remove all SAP GRC Access Control 5.3 extensions
2. Delete the SAPGRCWorkflow.jar file from the appropriate directory where it is installed: `WEBSHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib`

3. Install the new SAP GRC Access Control 5.3 workflow extension.
   a. Edit the workflowextensions.xml file under the ITIM_HOME/data directory to add a workflow extension. See “Installing SAP GRC Access Control 5.3 workflow extension” on page 19 for details.
   b. Copy workflow\grc53\SAPGRC53Workflow.jar file from the installation package to the appropriate directory: `WEBSHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib`
      If the directory does not exist, create one.
   c. Restart the IBM Security Identity Manager application from the WebSphere console, or restart the WebSphere server itself. After a successful restart, continue with configuration.

**SAP GRC Access Control 5.3 workflow extension configuration**

The SAP GRC Access Control 5.3 workflow extensions support only the Access Request feature by configuring the IBM Security Identity Manager workflow extension.

For more information, see “SAP GRC Access Control 10.0 workflow extension configuration” on page 30.

**Installing and configuring SAP GRC Access Control 5.3 notification component**

The workflow extension JAR file for SAP GRC Access Control 5.3 is renamed. You must take two actions, if the SAP GRC Access Control 5.3 notification component is already configured before you install and configure the new component.

**Procedure**

1. Delete the SAPGRCWorkflow.jar file from the appropriate directory where it is installed: `WEBSHERE_HOME\AppServer\profiles\SERVER_NAME\installedApps\NODE_NAME\ITIM.ear\app_web.war\WEB-INF\lib`
2. Delete the runNotifierWAS7 script.
   See “Installing and configuring the notification component for SAP GRC Access Control version 10.0” on page 36.
Chapter 6. Uninstalling the Integration for SAP GRC Access Control

To uninstall the integration, you must remove the SAP GRC Access Control workflow extensions from IBM Security Identity Manager.

Procedure

1. Log on to IBM Security Identity Manager, navigate to **Configure System > Manage Operations**. Remove the SAP GRC Access Control workflow extension configuration for the add, delete, modify, restore, and suspend operations for the SAP GRC NetWeaver Account type.

2. Delete SAPGRC53Workflow.jar or SAPGRC10Workflow.jar from the following directory: `WEBSPHERE_HOME/AppServer/profiles/Server_Name/installedApps/Node_Name/ITIM.ear/app_web.war/WEB-INF/lib`

3. Remove the following SAP GRC Access Control workflow activity from the `ITIM_HOME/data/workflowextensions.xml` file.
   - If using SAP GRC Access Control 5.3:
     - SAPGRCNonblockingAddRequest
     - SAPGRCBlockingAddRequest
     - SAPGRCNonblockingModifyRequest
     - SAPGRCBlockingModifyRequest
     - SAPGRCNonblockingDeleteRequest
     - SAPGRCBlockingDeleteRequest
     - SAPGRCNonblockingSuspendRequest
     - SAPGRCBlockingSuspendRequest
     - SAPGRCNonblockingRestoreRequest
     - SAPGRCBlockingRestoreRequest
   - If using SAP GRC Access Control 10.0:
     - SAPGRC10NonblockingAddRequest
     - SAPGRC10BlockingAddRequest
     - SAPGRC10NonblockingModifyRequest
     - SAPGRC10BlockingModifyRequest
     - SAPGRC10NonblockingDeleteRequest
     - SAPGRC10BlockingDeleteRequest
     - SAPGRC10NonblockingSuspendRequest
     - SAPGRC10BlockingSuspendRequest
     - SAPGRC10NonblockingRestoreRequest
     - SAPGRC10BlockingRestoreRequest
     - SAPGRC10RiskAnalysisRequest
     - SAPGRC10UpdateAccountAttributesExtension
     - checkGRCVersion

4. Restart WebSphere Application Server.

5. To remove the SAP GRC Access Control workflow notification component:
   a. Log on to IBM Security Identity Manager server.
   b. Remove the following notification configuration files from `ITIM_HOME/bin` or the directory where it was installed.
      - `jaas_login_was.conf`
      - `runNotifierWAS7.bat` or `runNotifierWAS7.sh`
      - `SAPNotify.props`
Chapter 7. Runtime problems

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

<table>
<thead>
<tr>
<th>Error messages</th>
<th>Problem descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workflow Activity Status Failed CTGIMA407E</td>
<td>A configured workflow activity expected to receive 1 parameters, but 0 parameters were received for &lt;workflow_name&gt; workflow that was processing the &lt;activity_name&gt; activity. If no further information is supplied in IBM Security Identity Manager request details, enable the 'Detail Logging' option on the SAP GRC Service Attributes tab then inspect the IBM Security Identity Manager trace.log file for the root cause. Possible reasons include: incorrect SAP GRC Access Control username/password, SAP GRC Access Control user is unauthorized, Access Control Submit Request URL is incorrect, IBM Security Identity Manager workflow is incorrectly configured, or SAP GRC Access Control rejected the request due to invalid data supplied on the request.</td>
</tr>
<tr>
<td>GRC Request failed : This is the message received from SAP GRC V10: ' msgNo= , msgType= , msgStatement= . '</td>
<td>Incorrect URL for the relevant SAP GRC Access Control 10.0 web service has been specified so no error message was returned by the SAP GRC Access Control web service call. Revise the SAP GRC Service Attributes Tab on the service form to correct the relevant URL.</td>
</tr>
<tr>
<td>Risk Analysis returns ERROR when no risk results are found. GRC Request failed : This is the message received from SAP GRC V10: ' msgNo=4 , msgType=ERROR , msgStatement=Invalid input or no data found for given input data. . .'</td>
<td>This message is returned by the SAP GRC Access Control 10.0 risk analysis web service when no risk results are found. It receives no special handling by the IBM Security Identity Manager Adapter for SAP GRC Access Control 10.0. For more information on the problem see SAP Note “1692553 - Risk Analysis web service output is wrong when no risks”.</td>
</tr>
<tr>
<td>GRC Request failed. This is the message received from SAP GRC V10: ' msgNo=4 , msgType=ERROR , msgStatement=Invalid Item Name. . '</td>
<td>Indicates invalid configuration of either the SAP GRC Access Control connector (System Identifier) referenced on the IBM Security Identity Manager service form, or one or more of the roles specified on the request have not been imported correctly into IBM Security Identity Manager 10.0.</td>
</tr>
<tr>
<td>Activity status terminated.</td>
<td>Inspect IBM Security Identity Manager trace.log. Potential cause is IBM Security Identity Manager workflow misconfiguration such as missing relevant data.</td>
</tr>
<tr>
<td>Notification Failed SEvere: File Not Found Exception during Connection: [java.io.FileNotFoundException: SAPNotify.props (The system cannot find the file specified.)]</td>
<td>SAPNotify.props file is missing. The SAPNotify.props file needs to be existed in the same location where the notifier script is being executed.</td>
</tr>
<tr>
<td>Notification Failed SEvere: File Not Found Exception during Connection: [java.io.FileNotFoundException: \data\enRole.properties (The system cannot find the path specified.)]</td>
<td>Cannot locate the enRole.properties file. Define itim.home in the SAPNotify.props file. For example itim.home=C:/Program Files/IBM/itim</td>
</tr>
<tr>
<td>Error messages</td>
<td>Problem descriptions</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>SEVERE: A value for the property itim.user was not found in SAPNotify.props</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>The user name to login to the Identity Manager server is missing. Define itim_user in the SAPNotify.props file.</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>SEVERE: A value for the property itim.pswd was not found in SAPNotify.props</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>The password for the Identity Manager user is missing. Define itim_pswd in the SAPNotify.props file.</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>SEVERE: A value for the property GRCUserName was not found in SAPNotify.props</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>The user name to login to SAP GRC Access Control system is missing. Define GRCUserName in the SAPNotify.props file.</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>SEVERE: A value for the property GRCPassword was not found in SAPNotify.props</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>The password for the SAP GRC Access Control user is missing. Define GRCPassword in the SAPNotify.props file.</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>SEVERE: A value for the property GRCStatusURL was not found in SAPNotify.props</td>
</tr>
<tr>
<td>Notification Failed</td>
<td>The SAP GRC Access Control 10 Audit Logs Web Service URL is missing. Define the correct URL for the audit logs web service in the SAPNotify.props file. For example: <a href="http://sapgrc10:8000/sap/bc/srt/rfc/sap/grac_audit_logs_ws/001/grac_audit_logs_ws/binding?sap-client=001">http://sapgrc10:8000/sap/bc/srt/rfc/sap/grac_audit_logs_ws/001/grac_audit_logs_ws/binding?sap-client=001</a></td>
</tr>
</tbody>
</table>
| Notification Failed | SEVERE: Exception occurred during request lookup [( 500 ) SRT: Unexpected failure in SOAP processing occurred: ("No Web service configuration for this access path: "/sap/bc/srt/rfc/sap/grac_audit_logs_ws/001/grac_aud")]
| Notification Failed | Incorrect web service URL has been defined in the SAPNotify.props file. Verify the URL for the GRCNotifyURL property. |
| Notification Failed | SEVERE: WSWS3938E: The message is enclos 
| Notification Failed | Incorrect SAP GRC Access Control user password has been defined in the SAPNotify.props file. Verify the GRCPassword property. |
| Notification Failed | SEVERE: Login Exception during Connection: [com.ibm.itim.apps.ITIMFailedLoginException: The information used to login is not correct.] |
| Notification Failed | Incorrect Identity Manager user password has been defined in the SAPNotify.props file. Verify the itim.pswd property. |
| GRC Request failed : | This message is received from SAP GRC V10: 'msgNo=4, msgType=ERROR, msgStatement=Invalid request initiation system.' |
| GRC Request failed : | An incorrect value has been supplied for the System Identifier on the GRC Service Attributes. Revise the value and correct the System Identifier to match the name of the relevant SAP connector in GRC 10.0. |
| GRC Request failed : | The email address on the Communications tab needs to be input using a particular syntax. For more information about this format consult the “Special Attributes” section in the SAP NetWeaver Adapter Installation and Configuration Guide. The GRC 10.0 integration inserts the standard email address into the user information email address field as required by the GRAC_USER_ACCESS_WS web service. |
Appendix A. Support information

You have several options to obtain support for IBM products.

- “Searching knowledge bases”
- “Obtaining a product fix” on page 58
- “Contacting IBM Support” on page 58

Searching knowledge bases

You can often find solutions to problems by searching IBM knowledge bases. You can optimize your results by using available resources, support tools, and search methods.

About this task

You can find useful information by searching the product documentation for IBM Security Identity Manager. However, sometimes you must look beyond the product documentation to answer your questions or resolve problems.

Procedure

To search knowledge bases for information that you need, use one or more of the following approaches:

1. Search for content by using the IBM Support Assistant (ISA).
   ISA is a no-charge software serviceability workbench that helps you answer questions and resolve problems with IBM software products. You can find instructions for downloading and installing ISA on the [ISA website](https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos).

2. Find the content that you need by using the IBM Support Portal.
   The IBM Support Portal is a unified, centralized view of all technical support tools and information for all IBM systems, software, and services. The IBM Support Portal lets you access the IBM electronic support portfolio from one place. You can tailor the pages to focus on the information and resources that you need for problem prevention and faster problem resolution. Familiarize yourself with the IBM Support Portal by viewing the [demo videos](https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos) about this tool. These videos introduce you to the IBM Support Portal, explore troubleshooting and other resources, and demonstrate how you can tailor the page by moving, adding, and deleting portlets.

3. Search for content about IBM Security Identity Manager by using one of the following additional technical resources:
   - [IBM Security Identity Manager version 6.0 technotes and APARs (problem reports)]
   - [IBM Security Identity Manager Support website]
   - [IBM Redbooks®]
   - [IBM support communities (forums and newsgroups)]

4. Search for content by using the IBM masthead search. You can use the IBM masthead search by typing your search string into the Search field at the top of any ibm.com® page.

5. Search for content by using any external search engine, such as Google, Yahoo, or Bing. If you use an external search engine, your results are more likely to
include information that is outside the ibm.com domain. However, sometimes you can find useful problem-solving information about IBM products in newsgroups, forums, and blogs that are not on ibm.com.

Tip: Include “IBM” and the name of the product in your search if you are looking for information about an IBM product.

Obtaining a product fix

A product fix might be available to resolve your problem.

About this task

You can get fixes by following these steps:

Procedure

1. Obtain the tools that are required to get the fix. You can obtain product fixes from the Fix Central Site. See [http://www.ibm.com/support/fixcentral/](http://www.ibm.com/support/fixcentral/).
2. Determine which fix you need.
3. Download the fix. Open the download document and follow the link in the “Download package” section.
4. Apply the fix. Follow the instructions in the “Installation Instructions” section of the download document.

Contacting IBM Support

IBM Support assists you with product defects, answers FAQs, and helps users resolve problems with the product.

Before you begin

After trying to find your answer or solution by using other self-help options such as technotes, you can contact IBM Support. Before contacting IBM Support, your company or organization must have an active IBM software subscription and support contract, and you must be authorized to submit problems to IBM. For information about the types of available support, see the Support portfolio topic in the “Software Support Handbook”.

Procedure

To contact IBM Support about a problem:

1. Define the problem, gather background information, and determine the severity of the problem. For more information, see the Getting IBM support topic in the Software Support Handbook.
2. Gather diagnostic information.
3. Submit the problem to IBM Support in one of the following ways:
   a. Using IBM Support Assistant (ISA):
      Any data that has been collected can be attached to the service request. Using ISA in this way can expedite the analysis and reduce the time to resolution.
      b. Open ISA.
c. Click **Collection and Send Data**.

d. Click the **Service Requests** tab.

e. Click **Open a New Service Request**.

- Online through the [IBM Support Portal](#) You can open, update, and view all of your service requests from the Service Request portlet on the Service Request page.

- By telephone for critical, system down, or severity 1 issues: For the telephone number to call in your region, see the [Directory of worldwide contacts](#) web page.

## Results

If the problem that you submit is for a software defect or for missing or inaccurate documentation, IBM Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM Support website daily, so that other users who experience the same problem can benefit from the same resolution.
Appendix B. Accessibility features for IBM Security Identity Manager

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The following list includes the major accessibility features in IBM Security Identity Manager.

- Support for the Freedom Scientific JAWS screen reader application
- Keyboard-only operation
- Interfaces that are commonly used by screen readers
- Keys that are discernible by touch but do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

The IBM Security Identity Manager library, and its related publications, are accessible.

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

Related accessibility information

The following keyboard navigation and accessibility features are available in the form designer:

- You can use the tab keys and arrow keys to move between the user interface controls.
- You can use the Home, End, Page Up, and Page Down keys for more navigation.
- You can launch any applet, such as the form designer applet, in a separate window to enable the Alt+Tab keystroke to toggle between that applet and the web interface, and also to use more screen workspace. To launch the window, click Launch as a separate window.
- You can change the appearance of applets such as the form designer by using themes, which provide high contrast color schemes that help users with vision impairments to differentiate between controls.

IBM and accessibility

See the IBM Human Ability and Accessibility Center for more information about the commitment that IBM has to accessibility.
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