Document Information

<table>
<thead>
<tr>
<th>Document Part Number</th>
<th>007-012848-001, Rev. E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release Date</td>
<td>July 2015</td>
</tr>
<tr>
<td>Applicability</td>
<td>This version of the SAS Synchronization Agent Configuration Guide is applicable to SAS Synchronization Agent version 3.4.15343.29468 or later.</td>
</tr>
</tbody>
</table>

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SafeNet invites constructive comments on the contents of this document. These comments, together with your personal and/or company details, should be sent to the address or email below.
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Purpose of this Guide

This document describes how to configure the SafeNet Authentication Service (SAS) Synchronization Agent.

Applicability

The information in this document applies to:

- **SafeNet Authentication Service (SAS)**—A cloud authentication service of SafeNet, Inc.
- **SafeNet Authentication Service – Service Provider Edition (SAS-SPE)**—The software used to build a SafeNet authentication service.
- **SafeNet Authentication Service – Private Cloud Edition (SAS-PCE)**—A term used to describe the on-premises implementation of SAS-SPE/PCE.

**NOTE:** This version of the **SAS Synchronization Agent Configuration Guide** is applicable to SAS Synchronization Agent 3.4.170.28367 or later, and requires SafeNet Authentication Service v3.4 or later.

Audience

This document is intended for personnel responsible for maintaining your organization’s security infrastructure. This includes SAS users and security officers, the key manager administrators, and network administrators. It is assumed that the users of this document are proficient with security concepts.

All products manufactured and distributed by SafeNet, Inc. are designed to be installed, operated, and maintained by personnel who have the knowledge, training, and qualifications required to safely perform the tasks assigned to them. The information, processes, and procedures contained in this document are intended for use by trained and qualified personnel only.
Support Contacts

If you encounter a problem while installing, registering, or operating this product, make sure that you have read the documentation. If you cannot resolve the issue, contact your supplier or SafeNet Customer Support. SafeNet Customer Support operates 24 hours a day, 7 days a week. Your level of access to this service is governed by the support plan arrangements made between SafeNet and your organization. Please consult this support plan for further information about your entitlements, including the hours when telephone support is available to you.

<table>
<thead>
<tr>
<th>Contact Method</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>SafeNet, Inc.</td>
</tr>
<tr>
<td></td>
<td>4690 Millennium Drive</td>
</tr>
<tr>
<td></td>
<td>Belcamp, Maryland  21017 USA</td>
</tr>
<tr>
<td>Phone</td>
<td>United States</td>
</tr>
<tr>
<td></td>
<td>1-800-545-6608</td>
</tr>
<tr>
<td></td>
<td>International</td>
</tr>
<tr>
<td></td>
<td>1-410-931-7520</td>
</tr>
<tr>
<td>Technical Support</td>
<td><a href="https://serviceportal.safenet-inc.com">https://serviceportal.safenet-inc.com</a></td>
</tr>
<tr>
<td>Customer Portal</td>
<td>Existing customers with a Technical Support Customer Portal</td>
</tr>
<tr>
<td></td>
<td>account can log in to manage incidents, get the latest</td>
</tr>
<tr>
<td></td>
<td>software upgrades, and access the SafeNet Knowledge Base.</td>
</tr>
</tbody>
</table>
The SafeNet Authentication Service (SAS) Synchronization Agent has been developed to simplify the task of user creation in SAS. Without the Synchronization Agent, the administrator must manually input user information via the web-based management interface. With the Synchronization Agent configured, LDAP or SQL user groups are monitored for membership changes, and user information updates are automatically made in SAS to reflect these changes.

1. The organization imports its encrypted Synchronization Agent Key File into the SAS Synchronization Agent, configures a connection to its LDAP Directory Server or SQL Server, and selects one or more LDAP or SQL user groups.
2. The SAS Synchronization Agent queries the LDAP Directory Server or SQL Server for all users within the selected groups.
3. Details of the users within the selected groups are transmitted and stored in the agent’s user source.
4. When the SAS Synchronization Agent service is started and configured, the agent pushes all user and group information to SAS, which in turn creates each user and group in the Virtual Server. The Synchronization Agent queries the LDAP Directory Server or SQL Server periodically. The default synchronization period is every 20 minutes. When a change is detected, the user or group is updated in the Virtual Server.
## Environment

<table>
<thead>
<tr>
<th>Environment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Supported Platforms</strong></td>
<td>- Windows Server 2012 R2 (64-bit)</td>
</tr>
<tr>
<td></td>
<td>- Windows Server 2012 (64-bit)</td>
</tr>
<tr>
<td></td>
<td>- Windows Server 2008 SP2 (64-bit)</td>
</tr>
<tr>
<td></td>
<td>- Windows Server 2008 R2 (64-bit)</td>
</tr>
<tr>
<td><strong>Supported Architecture</strong></td>
<td>- 32-bit</td>
</tr>
<tr>
<td></td>
<td>- 64-bit</td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>TCP Port 80 or 443</td>
</tr>
<tr>
<td><strong>Additional Software Components</strong></td>
<td>Windows .Net 2.0</td>
</tr>
<tr>
<td><strong>Network Ports</strong></td>
<td>- <strong>LDAP</strong>: TCP Port 389 - TCP Port 636 (optional)</td>
</tr>
<tr>
<td></td>
<td>- <strong>SAS</strong>: TCP Port 8456 (required)</td>
</tr>
<tr>
<td></td>
<td>- <strong>SQL</strong>: Appropriate TCP port</td>
</tr>
<tr>
<td><strong>LDAP Directory Server Access or SQL Access</strong></td>
<td>Read-only</td>
</tr>
<tr>
<td><strong>Supported LDAP or SQL User Groups</strong></td>
<td>Single or multiple LDAP or SQL group(s)</td>
</tr>
<tr>
<td><strong>Supported LDAP Directory Servers</strong></td>
<td>- Active Directory</td>
</tr>
<tr>
<td></td>
<td>- Novell eDirectory 8.x</td>
</tr>
<tr>
<td></td>
<td>- Sun One 5.x</td>
</tr>
<tr>
<td><strong>Supported SQL Servers</strong></td>
<td>- MS SQL</td>
</tr>
<tr>
<td></td>
<td>- MySQL</td>
</tr>
<tr>
<td></td>
<td>- Oracle</td>
</tr>
<tr>
<td></td>
<td>- PostgreSQL</td>
</tr>
</tbody>
</table>
Features

Most organizations maintain information about their users in an SQL database or in an LDAP directory such as Active Directory. The purpose of the Synchronization Agent is to auto-populate SAS with users maintained in one of these user sources.

Key features of the Synchronization Agent include the following:

- Can be used with most LDAP directory servers and SQL servers
- Can accommodate custom schemas
- Does not write to the user source
- Does not require an administrator account to connect to the user source
- Can synchronize multiple user sources, such as multiple LDAP directory servers or multiple SQL servers
- Uses AES encryption between the Synchronization Agent and SafeNet Authentication Service
- Supports SSL between the Synchronization Agent and the LDAP directory server or SQL server
Installing the Synchronization Agent

NOTE: In SAS Cloud, these settings are already configured by the SAS administrators. SAS Cloud users should skip to step 7.

1. Open the SAS Management Console.
2. Click VIRTUAL SERVERS.
3. Under Managed Account List, select the applicable server.
4. Click COMMS > Communications > LDAP Sync Server Settings.

   This is where the SAS server is configured to accept synchronized data from LDAP repositories. The host and port settings determine the communication between the LDAP directory server (for example, Active Directory) and the SAS authentication service (cloud or on-premises).

5. If you are managing your own on-premises SAS server, select the Custom option, and then enter the following information:

   **Sync Agent Primary Host**

   **Sync Agent Secondary Host**

   **Sync Agent Port (used only if you are using a non-default port)**

   The details entered here are used to set the communication between the LDAP Directory Server (for example, Active Directory) and SAS (cloud or on-premises).

6. Click Apply.
7. On the COMMS tab of your Virtual Server, click Authentication Processing > LDAP Sync Agent Settings.

![LDAP Sync Agent Settings](image)

8. Click Download to download and save the SASSyncConfigFile.bmc key file. This file will be required during configuration of the Synchronization Agent.

9. Download and install the SAS Synchronization Agent installation package.
   - A link to the agent and other software can be found on the Snapshot tab in the References module.
   - Installers are available for Windows 32-bit and 64-bit operating systems.

10. Prepare the following information, as it will be required for the Synchronization Agent configuration:
   - The IP address/host name and port number of your LDAP directory server or SQL server.
   - An account name and password that can be used by the Synchronization Agent to connect to the LDAP directory server or SQL server. The account password should be set to never expire to ensure that the Synchronization Agent is always able to connect to LDAP or SQL. The user account does not need write permissions because the Synchronization Agent only reads from the directory.
   - For LDAP environments, TCP Port 389 or 636 must be open between the Synchronization Agent and the LDAP directory server.
   - TCP Port 8456 must be open between the Synchronization Agent and SAS.

11. Configure the SAS Synchronization Agent by following the instructions in the next chapter.

**Upgrading the Synchronization Agent**

To upgrade the Synchronization Agent, launch the provided installer file. It is not necessary to stop the service or uninstall the agent.

**Upgrading Multiple Redundant Agents**

SAS supports syncing a Virtual Server through multiple agents that are configured with the same groups and attribute mappings. All agents must be upgraded at the same time. To upgrade, stop all agents except one. Upgrade this agent (which can still be running) and then start it, upgrade another agent and then start it, until all agents have been upgraded.
CHAPTER 3
Configuration

Configuring the Synchronization Agent for SQL

For SQL environments, prepare the SQL schema before configuring the connection details.

NOTE: For LDAP environments, refer to “Configuring the Synchronization Agent for LDAP” on page 17.

1. From an administrator account, launch the Synchronization Agent by clicking Start > SafeNet > Agents > SAS Sync Agent. If necessary, right-click SAS Sync Agent and select Run as administrator.
2. Under **SafeNet Authentication Server Virtual Server**, click **Add**. Browse to the location of the `SASSyncConfigFile.bmc` key file saved in step 8 on page 10 and load the file.

   The **Virtual Server Name** field displays the name of your Virtual Server.

3. To configure an SQL schema for your SQL server environment, click the **Configuration** tab.
a. Under SQL Schema Configuration, click Configure. The SQL Schema Management window is displayed, showing the first of five statements in the sample user source schema.

b. To add a new schema, enter a name in the Mapping Schema Name field and then click Add. The number of each SQL statement is displayed at the bottom left of each window:
   - 1 Single User
   - 2 User List
   - 3 Groups
   - 4 User’s Groups
   - 5 Group’s Membership

c. In each statement’s window, do the following:
   - Following the word SELECT in the SQL Statement box, replace each default field name with the corresponding field name used in your SQL environment. Ensure that all of the fields in the edited statement are listed in the same order as in the default statement.
   - Under Filter Columns, replace each default field name with the corresponding field name used in your SQL environment.

d. Click Next or Previous to move through the statements.
e. When the field names in all five SQL statements comply with the field names used in your SQL environment, click OK > Apply to save the configured SQL schema.
4. Click the **Configuration** tab.
   a. Under **User Source Configuration**, click **Configure**.
   b. On the **User Source Type** window, select **SQL**, and then click **Next**.
   c. In the **Provider** field, select the appropriate database provider from the list, and then click **Next**.
d. Enter the configuration settings required for your SQL database, and then click **Next**.

For example:

**For PostgreSQL:**

![PostgreSQL Configuration](image1)

**For MySQL:**

![MySQL Configuration](image2)

**For MS SQL:**

![MS SQL Configuration](image3)

**For Oracle:**

![Oracle Configuration](image4)

Depending on your SQL settings, you may be prompted to enter one or more failover hosts or servers for the agent to connect to in the event that the primary SQL server is inaccessible.
5. On the **Database Found** window, click **Next**.

6. On the **Custom SQL Mapping** window, select the SQL schema whose statements were defined previously (see page 13) and then click **Next**.

7. On the **Configuration Complete** window, click **Finish**.

8. Click the **Status** tab.
   a. Under **Synchronization Details**, click **Details** to see the SQL connection information.
b. On the **User Source Connection Details** window, click **OK**.

**NOTE:** Password information is not displayed.

The SAS Synchronization Agent has been configured for SQL.

The next step is to configure the SQL group memberships that are used to determine which users are synchronized. See “Configuring Groups for Synchronization” on page 22.

### Configuring the Synchronization Agent for LDAP

An appropriate pre-configured LDAP schema has been provided for each of the supported LDAP Directory Servers. These default schemas cannot be changed but new schemas can be created if necessary. However, it is recommended that the default schemas be used if possible.

**NOTE:** For SQL environments, See “Configuring Groups for Synchronization” on page 22.

1. From an administrator account, launch the SAS Synchronization Agent by clicking **Start > SafeNet > Agents > SAS Sync Agent**. If necessary, right-click **SAS Sync Agent** and select **Run as administrator**.

2. Under **SafeNet Authentication Server Virtual Server**, click **Add**.

3. Browse to the location of the **SASSyncConfigFile.bmc** key file saved in step 8 of page 10 and load the file. The **Virtual Server Name** field displays the name of your Virtual Server.

4. On the **Sync Agent** window, click the **Configuration** tab. Under **User Source Configuration**, click **Configure**.
5. On the **User Source Type** window, select LDAP and then click **Next**.

![User Source Type Window](image)

6. On the **LDAP Configuration** window, enter the following information, and then click **Next**:

<table>
<thead>
<tr>
<th><strong>Host name or IP</strong></th>
<th>Enter the host name or IP address of the LDAP directory server.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Port</strong></td>
<td>Enter the port number of the LDAP directory server. Usually, TCP port 389 is used. If required, the Active Directory Global Catalog (TCP port 3268) may be used.</td>
</tr>
<tr>
<td><strong>Use SSL</strong></td>
<td>Select this option if you have a certificate installed on the server. If selected, change the Port value to 636.</td>
</tr>
<tr>
<td><strong>Number of Failover hosts</strong></td>
<td>Select the number of failover LDAP directory servers that are available for the Synchronisation Agent to connect to in the event that the primary server is inaccessible.</td>
</tr>
<tr>
<td><strong>Connection Timeout (secs)</strong></td>
<td>Enter a specific timeout value when accessing LDAP. The default value is 60 seconds. An invalid value will display a message at the bottom of the window.</td>
</tr>
</tbody>
</table>

![LDAP Configuration Window](image)
NOTE: All servers must have access to the same Base DN.

7. On the Select LDAP Schema window, select the LDAP Schema from the list, and then click Next.

8. On the LDAP Credentials window, enter the following information, and then click Next:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User DN</td>
<td>Enter the User DN created for the Synchronization Agent connection to the LDAP directory server. The User DN contains the user name (and location of the user within LDAP) that is used by the Synchronization Agent to connect to the LDAP directory server. For AD environments, specifying the UPN is sufficient; for example, <a href="mailto:ldapreadonly@my.domain">ldapreadonly@my.domain</a>.</td>
</tr>
<tr>
<td>Base DN</td>
<td>Select the highest level in the directory in which the Synchronization Agent is to begin its search for users. Note: For an Active Directory schema, this value must be entered in email format. For example: In the sample shown, the Base DN is DC=number, DC=sys. Define the User DN as &lt;username&gt;@number.sys For non-Active Directory schemas, this value may be more complicated. For example: In the sample shown, the Base DN is DC=number, DC=sys. Define the User DN as &lt;username&gt;@number.sys For non-Active Directory schemas, this value may be more complicated. For example: uid=&lt;username&gt;, ou=Administrators, dc=aecl, dc=crypto, dc=prod</td>
</tr>
<tr>
<td>Append Base DN to User DN</td>
<td>Select this option to add the Base DN to the information defined in User DN. For example, if the User DN is uid=&lt;username&gt;, the following would be submitted to the LDAP directory server when connecting: uid=&lt;username&gt;, dc=aecl, dc=crypto, dc=prod</td>
</tr>
<tr>
<td>Password</td>
<td>Enter the password created for the Synchronization Agent connection to the LDAP directory server.</td>
</tr>
</tbody>
</table>
9. After clicking **Next**, the agent starts to search for all containers that have users, starting from the Base DN. To exclude or add containers, select **Manually edit searched Containers**, and then click **Next**.
10. The **Manual DN Configuration** window is displayed. If the **Manually edit searched Containers** option is selected, you can add or remove the containers to be searched for users.
   a. Click **Next** to continue.
   b. On the **Configuration Complete** window, click **Finish**.

![Manual DN Configuration Window]

11. Select the **Status** tab.
   a. Under **Synchronization Details**, click **Details** to view the LDAP connection details.
   b. Click **OK** to close this window.

![User Source Connection Details]

**NOTE:** Password information is not displayed.

The Synchronization Agent is now configured for LDAP.

Repeat these steps for each VIRTUAL SERVER that you wish to add.

The next step is to configure the LDAP group memberships that are used to determine which users are synchronized. See “Configuring Groups for Synchronization” on page 22.
Configuring Groups for Synchronization

The **Synch Groups** box lists all LDAP or SQL user groups configured for synchronization with SAS.

To view the users in the groups selected for synchronization, and ensure that the groups were configured correctly, see “Browsing the User Source” on page 33.

For LDAP, the Synchronization Agent will sync LDAP users within nested groups, where users may be members of a group that is a member of another group. The nested groups themselves are not synced, and their users do not retain group memberships in SAS by default. Group Sync Options allow retention of group membership attributes for users (see "Group Sync Options" on page 28 for more information).

SAS synchronizes users and groups that are visible in LDAP. SAS is not aware of trust relationships in Active Directory.

1. On the SAS Sync Agent **Configuration** tab, under **Groups for Synchronization**, click **Configure**.

![Configuration tab](image)

2. On the **Groups for Synchronization** window, do the following:
   a. To search for an available group, enter the first letters of the required group’s name in the **Available Groups** field.
   b. Use the arrow buttons to add or remove highlighted **Available Groups** to and from the **Synch Groups** list.
   c. When finished, click **OK**.
NOTE: Synchronization will take place only if the **Synch Groups** list contains at least one group. Keep in mind that groups will be synchronized even if they contain no users. For example, if a group had 20 users on a previous sync and those users were deleted from the group for some reason, the next sync of that group will still occur but all users will also be deleted in SAS for that group.

In the rare event that you wish to remove all users from SAS and, in essence, start from scratch, you can change your Synchronization Agent configuration to include one new empty group, remove the other groups, and then synchronize. SAS will be updated with just the one empty group. You can now reconfigure the Synchronization Agent to include the groups you would like, and on the next sync, SAS will be updated with those groups.

3. On the **Warning** message, click **Yes** to confirm your changes to the list of synchronized groups.

The groups selected for synchronization are displayed in the **Status** tab’s **Sync Groups** list.
Granting Agent Permissions in SAS

1. From the COMMS tab of your virtual server, click Authentication Processing > LDAP Sync Agent Hosts. The new Sync Agent Host is listed.

2. To enable sync permission for this host, click Change Permission.

3. Under Change Sync Agent Host Permission, select Allow, and then click Apply.

The Sync Agent Host is now shown as having sync permission.
Viewing Transaction and Last Sync Details

1. In the Synchronization Agent, click the **Status** tab.
2. Under **Last Sync Details**, the following options are available:

   - **Last Sync Time**—Displays the last synchronization attempt by the agent.
   - **Last Scan Duration**—Displays the amount of time required to scan all groups to retrieve user information.
   - **Users in Cache**—Displays the number of users held in the cache.
   - **Users in Source**—Displays the number of users in the source database.

Under **Transaction Details**, the following options are available:

   - **ID**—Displays the ID number of the current transaction record.
   - **Status**—Displays the status of the transaction.
   - **Scan Started**—Displays the start date and time of an LDAP Directory Server or SQL Server scan.
   - **Scan Ended**—Displays the end date and time of an LDAP Directory Server or SQL Server scan.
   - **Sent to SAS**—Displays the date and time the transaction was delivered to SAS.
   - **Refresh**—Refreshes the display.
   - **Second auto refresh**—How often a refresh is performed (seconds).
   - **Save As**—Saves all transaction details to a file.
   - **Clear**—Permanently deletes all transaction details from the display. To save the transaction details, click **Save As** and save the data before clicking **Clear**.
Viewing the LDAP Schema

In an LDAP directory server environment, you can view the LDAP schema settings.

NOTE: This is not relevant for SQL environments.

1. In the Synchronization Agent, click the Configuration tab.
2. Under LDAP Schema Configuration, click Configure.
   The LDAP Schema Management window is displayed with the mapping schema information.

   The LDAP user source is Active Directory check box allows the Synchronization Agent to determine if the custom schema is for an Active Directory (AD) implementation of LDAP. For these implementations only, the agent will not attempt to automatically determine the search scope by traversing the entire AD directory tree, but rather will always target all LDAP queries against the Base DN. This option is automatically enabled for the default Active Directory schema.

3. Click Cancel to close the window.

NOTE: A pre-configured LDAP schema has been provided for each of the supported LDAP Directory Servers. The default LDAP schema is in a read-only state, with all editing capabilities disabled. It is recommended that the default schemas be used if possible. However, to allow for customized schemas, you can use the Clone button to create an identical copy of the currently selected schema, and make changes to the cloned schema. Note that a customized schema is not applied until after it is reloaded by the configuration wizard.
Configuring Other Synchronization Options

1. In the Synchronization Agent, click the **Configuration** tab.
2. Under **Other Synchronization Options**, click **Configure**.

### Mobile Number Country Code

The **Country code to prepend** field is used as follows:

- If the Cell Number’s leading digits are **00**, the agent will remove the leading **00**, regardless of the content of the **Country code to prepend** field.
  
  For example: **0041-77889991111** becomes **4177889991111**

- If the Cell Number’s leading digit is **0**, the agent will remove the **0** and prepend the country code to it if **Country code to prepend** contains a numeric value.
  
  For example: When using **31** as the prepend country code, **0778-89991111** becomes **3177889991111**.

- If the Cell Number’s leading digit is between **1** and **9**, the agent will prepend the country code to it if **Country code to prepend** contains a numeric value.
  
  For example: When using **31** as the prepend country code, **778-89991111** becomes **3177889991111**.

---

**NOTE:** The Synchronization Agent automatically removes all non-numeric characters, except for the + symbol, from the data in the schema’s Cell Number mapping.

### Scan Interval

The **Scan Interval** determines how frequently the Synchronization Agent scans the LDAP directory server or SQL server for changes. The default interval is 20 minutes.
Group Sync Options

The **Group Sync Options** setting determines how groups are synchronized to SAS, and which group memberships users have in SAS. This setting does not affect which users are synchronized. With all options, all users in Synch Groups and any nested groups therein are synchronized.

In the **Groups to sync** field, select one of the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>This sync option will not send any groups to SAS. Group designations will not be synchronized, and thus group memberships will not be maintained. Users from Synch Groups or any nested groups therein are synced to a single, inclusive SAS users list.</td>
</tr>
<tr>
<td>Filter groups only</td>
<td>This sync option will send only filter groups to SAS. Groups that contain users from any Synch Groups or any nested groups therein are synchronized. The group memberships for all users are retained.</td>
</tr>
</tbody>
</table>
| Nested filter groups only | This sync option sends direct filter groups and all their nested groups to SAS.  
  - If User1 is a member of Group B which is nested in filter Group A, then Groups A and B will be synced to SAS.  
  - If User1 is also a member of Group C, which is not a filter group or nested into a filter group, then Group C will not be synced. |
| Groups with users only | This sync option builds a list of groups out of each user’s group membership. All groups that are found are sent to SAS. This can include direct filter groups and all their nested groups, as well as groups that are not nested below the configured filter groups. Groups that contain users from any Synch Groups or any nested groups therein are synchronized. The group memberships for all users are retained. |

**NOTE:** In SAS, the **Assignment** tab will display group membership attributes for a user’s parent group(s). However, auto-provisioning rules trigger only on “direct” group membership, which means that nested groups require their own auto-provisioning rules. For example, Group A contains Group B as a nested group, and User1 is a user in Group B. The **Assignment** tab will show that User1 is a member of Groups A and B; however, an auto-provisioning rule on Group A does not apply to User1 but an auto-provisioning rule on Group B will apply.

**NOTE:** The Synchronization Agent will report an error on each scan if a previously synced group is detected as empty. This is logged by the Synchronization Agent. Synchronization resumes when the group appears populated again, or is removed from the Synch Groups list in the Synchronization Agent configuration. To delete a populated synchronization group and its users in SAS, the group must be removed from the Synch Groups list. Nested groups, which are not explicitly configured in Synch Groups, are synchronized also when empty.
SafeNet Authentication Service Key Set
The value displayed in the SafeNet Authentication Service Key Set field must be identical to the Key Set value displayed on your virtual server Key Set field under COMMS > Authentication Processing > LDAP Sync Agent Settings. See the screen image in step 7 of “Installing the Synchronization Agent” on page 9.

Viewing SAS Server Details

1. In the Synchronization Agent, click the Configuration tab.
2. Under SafeNet Authentication Service Synchronization Server, click Details.
   - The Server Details window is displayed, showing the primary and secondary SAS server IP addresses and ports.

3. Click OK to close the window.
Configuring Notification Settings

The Synchronization Agent can be configured to send email alerts if it is unable to connect to SAS, or to the LDAP directory server or SQL server. An email alert can also be sent if an expected group is not found. The text can be customized for each alert.

NOTE: Email alerts may be configured only if the service status is stopped.

1. In the Synchronization Agent, click the Notification tab.

2. Under SMTP Configuration, click Configure.

3. The SMTP Configuration window is displayed. These settings define the mail server (SMTP) used by the SAS server to send out notifications to the operator/administrator who manages the Virtual Server, and provides LDAP sync process notifications (for example, failed or succeeded).

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>From e-mail address</td>
<td>Enter the email address from which notifications are sent.</td>
</tr>
<tr>
<td>Hostname/IP Address</td>
<td>Enter the IP address or host name of the SMTP server (mail server) used for sending out notifications.</td>
</tr>
<tr>
<td>Port</td>
<td>Enter the port used by the specific mail server to send and receive emails.</td>
</tr>
<tr>
<td>Username</td>
<td>If credentials are required to log on to the SMTP server, enter the username and password of the account from which the notifications are sent.</td>
</tr>
</tbody>
</table>
4. Click OK to close the window.

5. Under E-mail Test, in the Enter e-mail Address field, enter a recipient email address, and then click Test to test the SMTP configuration.

6. To customize the email alerts that are sent, under E-mail Message Templates, click Customize.

7. On the Email Templates window, enter the following information, and then click OK:

<table>
<thead>
<tr>
<th>Message</th>
<th>Select the message type:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• LDAP Connection Issues</td>
</tr>
<tr>
<td></td>
<td>• User Source Server Connection Issues</td>
</tr>
<tr>
<td></td>
<td>• Sync Server Connection Issues</td>
</tr>
<tr>
<td></td>
<td>• Missing Group</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject</th>
<th>Modify the <strong>Subject</strong> and <strong>Body</strong> content as required.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Body</strong></td>
<td></td>
</tr>
</tbody>
</table>

```plaintext
The Synchronization Agent that is on <hostname>/ is having a problem or lost a problem connecting to the LDAP/SQL server for organization <orgName>/.

No activity will be synchronized until LDAP/SQL can be contacted.
```
8. Under **Event Recipient Lists**, click **Add** to add an email address to which alerts are sent.

![Event Recipient Lists](image)

9. On the **Mailing List** window, enter the following information:

<table>
<thead>
<tr>
<th>List Name</th>
<th>Enter a name for the email list.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recipient E-mail</td>
<td>For each address to be added to the <strong>Recipient Email List</strong>, enter a valid email address into the <strong>Recipient Email</strong> field, and then click <strong>Add</strong>.</td>
</tr>
<tr>
<td>Recipient E-mail List</td>
<td></td>
</tr>
<tr>
<td>Events</td>
<td>Select the appropriate events for which the recipient will receive an alert:</td>
</tr>
<tr>
<td></td>
<td>• Sync Server Connection Issues</td>
</tr>
<tr>
<td></td>
<td>• User Source Connection Issues</td>
</tr>
<tr>
<td></td>
<td>• Missing Group</td>
</tr>
</tbody>
</table>

![Mailing List](image)

10. Click **OK** to close the window. The **List Name** is displayed in the **Event Recipient Lists** box.
Browsing the User Source

When a connection has been established between the Synchronization Agent and the organization’s LDAP directory server or SQL server, the Synchronization Agent queries the server for all users within the user groups that were selected for synchronization. The user information is transmitted and stored in the Synchronization Agent's user source.

The following may be viewed in the Synchronization Agent's user source:

- The list of groups selected for synchronization
- The details of the users stored in the user source (if available):
  - User name
  - First name
  - Last name
  - Email
  - Phone number
  - Cell number
  - List of LDAP or SQL user groups in which the user is a member

To browse the user source:

1. In the Synchronization Agent, click the **Browse User Source** tab.
2. Click the **Users** tab and then click **Search**. A list of the first 500 users is displayed.
3. To search the entire user source for a specific user, enter the first few letters of the required user name in the **User Name** box, and then click **Search**.

4. In the **User Name** list, select the required user. The details of the selected user are displayed in the **Details** box.

---

**NOTE:** An error message indicates that the schema was configured incorrectly.

---

5. To view a list of groups, click the **Groups** tab, and then click **Search**. A list of the first 500 groups is displayed.

6. To search the entire user source for a specific group, enter the first letters of the required group’s name in the **Group Name** box and then click **Search**.

7. In the **Group Name** list, click the required group. The names of users included in the selected group are displayed in the **Details** area.
Starting and Stopping the Synchronization Agent

1. In the Synchronization Agent, click the Status tab.
2. Under Service Status, click Start or Stop.

Back Up and Restore Synchronization Agent Configuration

You can back up the Synchronization Agent configurations of all your virtual servers, as well as restore any backed-up configuration.

Backing Up Synchronization Agent Configuration

1. In the SAS Sync Agent menu, click File > Backup All Configurations.
2. Select the location and name of the backup file.

Restoring Synchronization Agent Configuration

1. In the SAS Sync Agent menu, click File > Restore Configurations.
2. Select the location and name of the appropriate backup file.
   - If multiple virtual servers have been configured, a box is displayed listing all of them.
3. Select the virtual server(s) to be restored.
Setting the Log Level

1. In the **SAS Sync Agent** menu, click **File > Log Level**.
2. Adjust the log level for more or less logging. The default log level is **Info**.