SafeNet Authentication Service

INTEGRATION GUIDE: USING RADIUS PROTOCOL FOR ARRAY AG SSL VPN
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PREFACE

Third-Party Software Acknowledgement

This document is intended to help users of Gemalto products when working with third-party software, such as Array AG SSL VPN.

Material from third-party software is being used solely for the purpose of making instructions clear. Screen images and content obtained from third-party software will be acknowledged as such.

This document contains the following chapters:

> "Overview" on page 9
> "SafeNet Authentication Service Setup" on page 10
> "Array AG SSL VPN Setup" on page 13
> “Running the Solution” on page 20

Description

SafeNet Authentication Service (SAS) delivers a fully automated, versatile, and strong authentication-as-a-service solution.

With no infrastructure required, SafeNet Authentication Service provides smooth management processes and highly flexible security policies, token choice, and integration APIs.

Array AG SSL VPN appliances allow enterprises to consolidate remote access for employees, partners, guests and other communities of interest on a single platform to minimize potential attack vectors, improve operational efficiency and provide a superior end-user experience. Drive productivity enterprise-wide, while keeping cost and complexity at a minimum.

Array Networks AG SSL VPN provides control over access to applications, desktops, files, networks, and Web sites from a broad range of remote and mobile devices – providing secure connectivity, end-point and server-side security and application-level AAA policies on a per-user basis.

This document describes how to:

> Deploy multi-factor authentication (MFA) options in Array AG SSL VPN using SafeNet one-time password (OTP) authenticators managed by SafeNet Authentication Service.

> Configure Array AG SSL VPN to work with SafeNet Authentication Service in RADIUS mode.

It is assumed that the Array AG SSL VPN environment is already configured and working with static passwords prior to implementing the multi-factor authentication using SafeNet Authentication Service.

Array AG SSL VPN can be configured to support multi-factor authentication in several modes. The RADIUS protocol will be used for the purpose of working with SafeNet Authentication Service.
Applicability

The information in this document applies to:

> SafeNet Authentication Service (SAS)—SafeNet’s cloud-based authentication service

> SafeNet Authentication Service – Service Provider Edition (SAS-SPE)—A server version that is used by service providers to deploy instances of SafeNet Authentication Service

> SafeNet Authentication Service – Private Cloud Edition (SAS-PCE)—A server version that is used to deploy the solution on-premises in the organization

Environment

The integration environment that is used in this document is based on the following software versions:

> SafeNet Authentication Service – Private Cloud Edition (SAS-PCE)—only when using this version. For Cloud not necessary to fill in version number.

> Array AG SSL VPN—Version 9.4.0

RADIUS Prerequisites

To enable SafeNet Authentication Service (SAS) to receive RADIUS requests from Array AG SSL VPN, ensure the following:

> End users can authenticate from the Array AG SSL VPN with a static password before configuring the Array AG SSL VPN to use RADIUS authentication.

> Ports 1812/1813 are open to and from the Array AG SSL VPN.

A shared secret key has been selected. A shared secret key provides an added layer of security by supplying an indirect reference to a shared secret key. It is used by a mutual agreement between the RADIUS server and RADIUS client for encryption, decryption, and digital signatures.

Audience

This document is targeted to system administrators who are familiar with Array AG SSL VPN, and are interested in adding multi-factor authentication capabilities using SafeNet Authentication Service.

Support Contacts

If you encounter a problem while installing, registering, or operating this product, refer to the documentation. If you cannot resolve the issue, contact your supplier or Gemalto Customer Support.

Gemalto 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 Gemalto and your organization. Please consult this support plan for further information about your entitlements, including the hours when telephone support is available to you.
Customer Support Portal

The Customer Support Portal, at https://supportportal.gemalto.com, is a where you can find solutions for most common problems. The Customer Support Portal is a comprehensive, fully searchable database of support resources, including software and firmware downloads, release notes listing known problems and workarounds, a knowledge base, FAQs, product documentation, technical notes, and more. You can also use the portal to create and manage support cases.

NOTE: You require an account to access the Customer Support Portal. To create a new account, go to the portal and click on the REGISTER link.

Telephone Support

If you have an urgent problem, or cannot access the Customer Support Portal, you can contact Gemalto Customer Support by telephone at +1 410-931-7520. Additional local telephone support numbers are listed on the support portal.

Email Support

You can also contact technical support by email at technical.support@gemalto.com.
SafeNet Authentication Service communicates with a large number of VPN and access-gateway solutions using the RADIUS protocol.

The image below describes the data flow of a multi-factor authentication transaction for Array AG SSL VPN.

1. A user attempts to log on to Array AG SSL VPN using an OTP authenticator.
2. Array AG SSL VPN sends a RADIUS request with the user’s credentials to SafeNet Authentication Service (SAS) for validation.
3. The SAS authentication reply is sent back to the Array AG SSL VPN.
4. The user is granted or denied access to the Array AG SSL VPN based on the OTP value calculation results from SAS.

For SafeNet Authentication Service (Cloud), a RADIUS agent is already configured and can be used without any additional agent installation or configuration requirements.

For SafeNet Authentication Service (SPE and PCE), a RADIUS agent (SAS Agent for Microsoft IAS or NPS, and FreeRADIUS) needs to be configured in the customer’s environment.

For more information on how to install and configure the SAS Agent for Microsoft IAS, Microsoft NPS, and FreeRADIUS, refer to the Agent Documentation.
CHAPTER 2: SafeNet Authentication Service Setup

The deployment of multi-factor authentication using SafeNet Authentication Service (SAS) with Array AG SSL VPN using RADIUS protocol requires the following:

- Creating Users Stores, page 10
- Assigning an Authenticator, page 11
- Adding Array AG SSL VPN as an Authentication Node, page 11

Creating Users Stores

Before SafeNet Authentication Service (SAS) can authenticate any user in your organization, you need to create a user store in SAS that reflects the users that would need to use multi-factor authentication. User records are created in the SAS user store using one of the following methods:

- Manually, one user at a time, using the Create User shortcut
- Manually, by importing one or more user records via a flat file
- Automatically, by synchronizing with your Active Directory / LDAP server using the SAS Synchronization Agent

For additional details on importing users to SafeNet Authentication Service, refer to “Creating Users” in the “SafeNet Authentication Service Subscriber Account Operator Guide” available here.

All SafeNet Authentication Service documentation can be found on the SafeNet Knowledge Base site.
Assigning an Authenticator

SafeNet Authentication Service (SAS) supports a number of authentication methods that can be used as a second authentication factor for users who are authenticating through Array AG SSL VPN.

The following authenticators are supported:

- MobilePASS+
- GrIDsure

Authenticators can be assigned to users in two ways:

- **Manual provisioning**—Assign an authenticator to users one at a time.
- **Provisioning rules**—The administrator can set provisioning rules in SAS so that the rules will be triggered when group memberships and other user attributes change. An authenticator will be assigned automatically to the user.

Refer to “Provisioning Rules” in the “SafeNet Authentication Service Subscriber Account Operator Guide” (available [here](#)) to learn how to provision the different authentication methods to the users in the SAS user store.

Adding Array AG SSL VPN as an Authentication Node

Add a RADIUS entry in the SafeNet Authentication Service (SAS) **Auth Nodes** module to prepare it to receive RADIUS authentication requests from Array AG SSL VPN. You will need the IP address of Array AG SSL VPN and the shared secret to be used by both SAS and Array AG SSL VPN.

1. Log in to the SAS console with an Operator account, click the **COMMS** tab and then select **Auth Nodes**.
2. In the **Auth Nodes** module, click the **Auth Nodes** link.

![Auth Nodes Module](image)

**NOTE:** Before adding SafeNet Authentication Service (SAS) as a RADIUS server in Array AG SSL VPN, check its IP address (Primary RADIUS Server IP). The IP address will then be added to Array AG SSL VPN as a RADIUS server at a later stage.

3. Under **Auth Nodes**, click **Add**.
4. Under **Add Auth Nodes**, complete the following fields, and then click **Save**:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auth Node Name</td>
<td>Enter a name for the Auth node.</td>
</tr>
<tr>
<td>Host Name</td>
<td>Enter the name of the host that will authenticate with SAS.</td>
</tr>
<tr>
<td>Low IP Address In Range</td>
<td>Enter the IP address of the host or the lowest IP address in a range of addresses that will authenticate with SAS (in this case, a range of IP addresses is being used).</td>
</tr>
<tr>
<td>High IP Address In Range</td>
<td>Enter the highest IP address in a range of IP addresses that will authenticate with SAS (in this case, a range of IP addresses is being used).</td>
</tr>
<tr>
<td>Configure FreeRADIUS</td>
<td>Select this option.</td>
</tr>
<tr>
<td>Synchronization</td>
<td></td>
</tr>
<tr>
<td>Shared Secret</td>
<td>Enter the shared secret key.</td>
</tr>
<tr>
<td>Confirm Shared Secret</td>
<td>Re-enter the shared secret key.</td>
</tr>
</tbody>
</table>

The authentication node is added to the system.
Perform the following steps to configure Array AG SSL VPN to use the RADIUS protocol as the authentication method:

1. In a web browser, open the following URL:

   https://<Array AG SSL VPN IP address>:<Port Number>

   Where,
   
   •  <AG SSL VPN IP address> is the IP address of Array AG SSL VPN.
   
   •  <Port Number> is the Web UI port number that you configured for Array AG SSL VPN.

2. On the Array AG SSL VPN login window, enter your administrator Username and Password, and click Log in.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
3. On the Array AG SSL VPN administrator dashboard, in the left pane, under **VIRTUAL SITES**, click **Virtual Sites**.

4. In the right pane, on the **Virtual Sites** tab, in the **Site Name** column, double-click on the virtual site name (for example, **example**) for which you would like to implement MFA.
5. In the left pane, perform the following steps:
   a. Under Mode, select the Config option.
   b. Under SITE CONFIGURATION, click AAA.

6. In the right pane, on the General tab, ensure that Enable AAA check box is selected.

7. On the Server tab, click the RADIUS tab.
8. On the **RADIUS** tab, under **SERVER LIST**, in the **Server Name** column, enter any name for the server (for example, **SAS**), and click **Add**.

![Server List](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

9. Under **SERVER LIST**, ensure that the server (for example, **SAS**) that you just added is listed. Double-click on the server name (**SAS**).

![Server List](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

10. Under **RADIUS SERVER CONFIGURATION**, click **Add RADIUS Server**.

![RADIUS Server Configuration](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
11. Under **ADD RADIUS SERVER**, complete the following fields, and click **Save**.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Server IP</strong></td>
<td>Enter the <strong>Primary RADIUS Server IP</strong> address that is available in the Auth Nodes module of the SAS server. Refer to step 4 of &quot;Adding Array AG SSL VPN as an Authentication Node&quot; on page 11.</td>
</tr>
<tr>
<td><strong>Server Port</strong></td>
<td>Enter 1812.</td>
</tr>
<tr>
<td><strong>Secret Password</strong></td>
<td>Enter the <strong>Shared Secret</strong> that you entered earlier in step 4 of Adding Array AG SSL VPN as an Authentication Node on page 11.</td>
</tr>
<tr>
<td><strong>Timeout</strong></td>
<td>Enter 60.</td>
</tr>
<tr>
<td><strong>Redundancy Order</strong></td>
<td>Enter 1.</td>
</tr>
<tr>
<td><strong>Retries</strong></td>
<td>Enter 5.</td>
</tr>
</tbody>
</table>

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

**NOTE:** RADIUS timeout must be minimum 60 seconds for the MobilePASS+ token.

**NOTE:** It is recommended to configure a secondary (failover) IP address for your Radius equipment to cover for authentication disruptions if the service provider supports it.
12. Under **RADIUS SERVER CONFIGURATION**, ensure that the new RADIUS server configured in the previous step is listed.

13. Click the **Method** tab.

14. On the **Method** tab, click **Add Method**.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
15. Under **ADD METHOD CONFIGURATION**, complete the following fields, and click **Save**.

<table>
<thead>
<tr>
<th>Method Name</th>
<th>Enter a name for the method (for example, <strong>SAS Method</strong>).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentication</td>
<td>Select the RADIUS server (for example, <strong>SAS</strong>) that you created in <strong>step 8</strong> of this section.</td>
</tr>
</tbody>
</table>

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

16. Ensure that the method you created in the previous step is listed under **Method**. Click **Save Configuration**.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

17. On the **SAVE CONFIGURATION** window, click **OK**.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

18. Customize the login page to use the Push OTP token in the Hybrid mode. Refer to the **Push OTP-Hybrid Mode** section of **Appendix A** on page 25.

19. Customize the login page to use the GridSure token in the Hybrid mode. Refer to the **GridSure-Hybrid Mode** section of **Appendix A**, on page 31.
For this integration, the following tokens are configured for authentication with the SafeNet Authentication Service (SAS):

- MobilePASS+ (or MobilePASS)
- GrIdSure

**Using MobilePASS+ (or MobilePASS)**

The assigned applications can be accessed using the MobilePASS+ (or MobilePASS) token through the *Simple* or *Hybrid* mode.

**Simple Mode**

Perform the following steps to access the assigned applications through the simple mode:

1. In a web browser, open the virtual site.
   
   https://<Virtual Site URL>

   Where, `<Virtual Site URL>` is the URL or the IP address that you configured in Array AG SSL VPN.

2. On the Login window, perform the following steps:
   a. In the Username field, enter the username.
   b. Click Sign In.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
3. On the registered mobile device, tap **APPROVE** to accept the OTP request.

![MobilePASS+ screen](image)

4. On the **TOKEN AUTHENTICATION** screen, enter the token PIN, and tap **Continue** to send the approval with OTP to SAS.

A success message is displayed on the mobile device.

![Success message](image)

After successful authentication, you will be able to access the assigned applications.

![Array Networks screen](image)

*The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.*

**Hybrid Mode**

1. In a web browser, open the virtual site.

   ![Virtual site URL](image)

   Where, `<Virtual Site URL>` is the URL or the IP address that you configured in Array AG SSL VPN.
2. On the login window, perform the following steps:
   a. In the **Username** field, enter the username.
   b. Select any of the following options and click **Sign In**:
      - Enter passcode manually
      - Use my mobile to autosend passcode

   **NOTE:** In this scenario, the **Use my mobile to autosend passcode** option is selected.

3. On the registered mobile device, tap **APPROVE** to accept the OTP request.
4. On the **TOKEN AUTHENTICATION** screen, enter **Token PIN**, and tap **CONTINUE** to send the approval with OTP to SAS.

A success message is displayed on the mobile device.

![Autosend passcode was successful.](image)

After successful authentication, you will be able to access the assigned applications.

![Array Networks](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

**Using GrIDsure**

For this integration, GrIDsure token is configured for authentication with the SAS solution. Perform the following steps to access the assigned applications:

1. In a web browser, open the virtual site.
   
   https://<Virtual Site URL>

   Where, `<Virtual Site URL>` is the URL or the IP address that you configured in Array AG SSL VPN.
2. On the login window, perform the following steps:
   a. In the **Username** field, enter the username.
   b. Click **Get Grid**.
   c. In the **Password** field, enter the grid combination.
   d. Click **Sign In**.

   (The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

After successful authentication, you will be able to access the assigned applications.

   (The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
APPENDIX A: Customizing the Login Page

The Login page can be customized for the Push OTP-Hybrid and GridSure-Hybrid modes.

Push OTP-Hybrid Mode

Perform the following steps to customize the login page for the Push OTP-Hybrid mode:

1. In a web browser, open the following URL:
   
   https://<AG SSL VPN IP address>:<Port Number>
   
   Where,
   
   •  <AG SSL VPN IP address> is the IP address of Array AG SSL VPN.
   •  <Port Number> is the Web UI port number that you configured for Array AG SSL VPN.

2. On the AG SSL VPN login window, enter your administrator Username and Password, and click Log in.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
3. On the Array AG SSL VPN administrator dashboard, in the left pane, under **VIRTUAL SITES**, click **Virtual Sites**.

![Array AG SSL VPN Administrator Dashboard](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

4. In the right pane, on the **Virtual Sites** tab, under **VIRTUAL SITES**, in the **Site Name** column, double-click on the virtual site name (for example, **example**) for which you would like to implement MFA.

![Array AG SSL VPN Virtual Sites Tab](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
In the left pane, perform the following steps:

- **Under Mode**, select the **Config** option.
- **Under SITE CONFIGURATION**, click **AAA**.

In the right pane, click the **Themes** tab.

On the **Themes** tab, click **Import Template**.
8. Under THEMES, in the Theme Name column, double-click default_theme.

![Image of THEMES]

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)


![Image of THEME OBJECTS]

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

10. Under OBJECT RESOURCES, ensure that Enable Rewrite check box is not selected and in the table, for the index.html resource, click Edit.

![Image of OBJECT RESOURCES]

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

11. Under EDIT OBJECT RESOURCES, perform the following steps:
   a. Search for the following content:

   ```html
   <td align=left><input type="submit" name="submitbutton" value="Login"><input type="submit" name="changepassbutton" value="ChangePass"></td>
   </tr>
   ```

   ```html
   <input type="submit" name="changepassbutton" value="ChangePass"></td>
   ```
b. Enter the following content below the content searched in previous step:

```html
<tr>
<td>
<div>
<input type="radio" id="rdoPassword" name="rdoPassword" onClick='pushOTP(true);' checked>
 Enter passcode manually</input>
<br>
<input type="radio" id="rdoPassword" name="rdoPassword" onClick='pushOTP(false);'> Use my mobile to autosend passcode </input>
</div>
</td>
</tr>
```

c. Search for the following content:

```html
<div id="vpn_hardwareid_div"></div>
</form>
```

d. Enter the following content below the content searched in the previous step:

```javascript
function pushOTP(value)
{
 if(value != true)
 {
   document.getElementById("pwd_content").style.display = "none";
 }
 else
 {
   document.getElementById("pwd_content").style.display = "";
 }
}
</script>
```
e. Click Save.

![HTML code]

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

12. Click Back to top.

![Resource list]

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
13. On the Themes tab, click the default_theme and click Activate Theme.

![Themes tab](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

### GridSure-Hybrid Mode

1. In a web browser, open the following URL:

   https://<AG SSL VPN IP address>:<Port Number>

   Where,
   - <AG SSL VPN IP address> is the IP address of Array AG SSL VPN.
   - <Port Number> is the Web UI port number that you configured for Array AG SSL VPN.

2. On the AG SSL VPN login window, enter your administrator Username and Password, and click Log in.

![Login window](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
3. On the Array AG SSL VPN administrator dashboard, in the left pane, under **VIRTUAL SITES**, click **Virtual Sites**.

![Array AG SSL VPN dashboard](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

4. In the right pane, on the **Virtual Sites** tab, under **VIRTUAL SITES**, in the **Site Name** column, double-click on the virtual site name (for example, **example**) for which you would like to implement MFA.

![Array AG SSL VPN Virtual Sites](image)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
5. In the left pane, perform the following steps:
   a. Under Mode, select the Config option.
   b. Under SITE CONFIGURATION, click AAA.

6. In the right pane, click the Themes tab.

7. On the Themes tab, click Import Template.
8. Under THEMES, in the Theme Name column, double-click default_theme.


10. Under OBJECT RESOURCES, ensure that Enable Rewrite option is not selected and in the table, for the index.html resource, click Edit.

11. Under EDIT OBJECT RESOURCES, perform the following steps:
   a. Search for the following content:

   ```
   <td align=left><input type="submit" name="submitbutton" value="Login"><input type="submit" name="changepassbutton" value="ChangePass"></td>
   </tr>
   ```
b. Enter the following content, below the content searched in the previous step:

```html
<tr>
  <td></td>
  <td align=left><input type="button" name="gridButton" value='Get Grid' title='Get Grid'
    onclick="grid()"></td>
</tr>
<tr>
  <td><div id="challengeImageDiv" style="visibility:hidden; display:none;">
    <img id="challengeImage" src="/"></div></td>
</tr>
```

c. Search for the following content:

```html
<div id="vpn_hardwareid_div"></div>
</form>
```

d. Enter the following content, below the content searched the previous step:

```javascript
<script language="JavaScript">
function grid()
{
    var BlackShieldServerLocation = "Change to Org’s Unique Self-Service URL that you will get from SAS";
    // BlackShieldServerLocation URL might look like the following:
    var usrName = document.all.uname.value;
    var challengeImg = document.getElementById("challengeImage");
    challengeImg.src = BlackShieldServerLocation + "?getChallengeImage=true&userName=" + usrName + "&noCache=" + new Date().toString();
    var challengeDiv = document.getElementById("challengeImageDiv");
    challengeDiv.style.display="block";
    challengeDiv.style.visibility="visible";
}
</script>
```
e. Click Save.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)

12. Click Back to top.

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)
13. On the **Themes** tab, click **default_theme** and click **Activate Theme**.

![Themes Tab Screenshot](image-url)

(The screen image above is from Array AG SSL VPN. Trademarks are the property of their respective owners.)