
Installation Guide

Advanced Authentication - Mac OS X Client

Version 6.0

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Our Viewpoint

Adapting to change and managing complexity and risk are nothing new

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

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About this Book

This Mac OS X Client Installation Guide is designed for all users and describes the system requirements and the installation procedure for Advanced Authentication Windows Client.

Intended Audience

This book provides information for individuals responsible for understanding administration concepts and implementing a secure, distributed administration model.

About Mac OS X Client

Mac OS X Client replaces standard way of log on to Apple Mac OS X by a more secure using the authentication chains configured in Advanced Authentication.

NOTE: Mac OS X Client supports offline logon (when the Advanced Authentication Server is not available) for non-local accounts for authentication chains that contain the following methods: LDAP Password, Password, HOTP, TOTP, Smartphone (offline mode), Card, FIDO U2F, and PKI.

In cases with fast user switching, the native authentication form is displayed.

1 System Requirements

IMPORTANT: Installing and removing Mac OS X Client requires root privileges.

The following system requirements should be fulfilled:

- ♦ Apple Mac OS 10.12 (Sierra), 10.13 (High Sierra).
- ♦ DNS is properly configured for Advanced Authentication Server discovery (see [How to Set a DNS for Server Discovery](#)) or a specific Advanced Authentication server must be specified in the [configuration file](#).
- ♦ It's recommended to have the recovery configured for the Mac. For more information, see [How To Configure Mac Recovery](#).

2 Preliminary configuration

The chapter contains articles about required pre-configuration.

- ♦ [“How to Set a DNS for Server Discovery” on page 11](#)
- ♦ [“How To Bind Mac To Active Directory” on page 14](#)
- ♦ [“How To Configure Mac Recovery” on page 15](#)
- ♦ [“Using a Specific Advanced Authentication Server” on page 16](#)
- ♦ [“Configuration Settings for Multitenancy” on page 16](#)
- ♦ [“Customizing a Logo” on page 16](#)
- ♦ [“Configuring Timeout for Card Waiting” on page 17](#)
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- ♦ [“Creating a Mobile Account” on page 18](#)
- ♦ [“Configuration for Verification of Server Certificates” on page 18](#)
- ♦ [“Configuration to Enable the Authentication Agent Chain” on page 19](#)

How to Set a DNS for Server Discovery

Question:

I would like to set DNS for server discovery. How can I do it and what is its workflow?

Answer:

To set a DNS for the Server Discovery, perform the following steps:

1. Open a DNS Manager. To open the DNS Manager, click **Start**, point to **Administrative Tools**, and click **DNS**.
2. Add Host A or AAAA record and PTR record:
 - a. In the console tree, right-click the forward lookup zone that includes your domain name and click **New Host (A or AAAA)**.
 - b. Specify a DNS name for the Advanced Authentication Server in **Name**.
 - c. Specify the IP address for the Advanced Authentication Server in **IP address**. You can specify the address in IP version 4 (IPv4) format (to add a host (A) resource record) or IP version 6 (IPv6) format (to add a host (AAAA) resource record).
 - d. Select **Create associated pointer (PTR) record** to create an additional pointer (PTR) resource record in a reverse zone for this host, based on the information that you provided in **Name** and **IP address**.
3. Add an SRV record:

NOTE: Ensure that the LDAP SRV record exists at DNS server. If the record is not available, you must add it manually.

For best load balancing, you need to perform the following actions only for Advanced Authentication web servers. You need not create the records for Global Master, DB Master, and DB servers.

- a. For Advanced Authentication servers from a primary Advanced Authentication site (a site with Global Master server):
 - i. In the console tree, locate **Forward Lookup Zones** and right-click on a node with domain name and click **Other New Records**.
 - ii. In the **Select a resource record type** list, click **Service Location (SRV)** and then click **Create Record**.
 - iii. Click **Service** and then specify **_aav6**.
 - iv. Click **Protocol** and then specify **_tcp**.
 - v. Click **Port Number** and then specify **443**.
 - vi. In **Host offering this service**, specify the FQDN of the server that is added. For example, `authsrv.mycompany.com`.
 - vii. Click **OK**.
- b. For Advanced Authentication servers from other Advanced Authentication sites:
 - i. In the console tree, locate **Forward Lookup Zones**, switch to a node with domain name then to **_sites** node, right-click on an appropriate site name and click **Other New Records**.
 - ii. In the **Select a resource record type** list, click **Service Location (SRV)** and then click **Create Record**.
 - iii. Click **Service** and then specify **_aav6**.
 - iv. Click **Protocol** and then specify **_tcp**.
 - v. Click **Port Number** and then specify **443**.
 - vi. In **Host offering this service**, specify the FQDN of the server that is added. For example, `authsrv.mycompany.com`.
 - vii. Click **OK**.

Repeat steps 2 to 3 for all the authentication servers. The Priority and Weight values for different servers may vary. For best load balancing, you need to have records only for Advanced Authentication web servers.

and you do not need to have the records for Global Master, DB Master, and DB servers.

DNS server contains SRV entries `_service._proto.name TTL class SRV priority weight port target`. The following descriptions define the elements present in the DNS server:

- ♦ **Service:** symbolic name of an applicable service
- ♦ **Proto:** transport protocol of an applicable service. Mostly, TCP or UDP.
- ♦ **Name:** domain name for which this record is valid. It ends with a dot.
- ♦ **TTL:** standard DNS time to live field.
- ♦ **Class:** standard DNS class field (this is always IN).
- ♦ **Priority:** priority of the target host. Lower value indicates that it is more preferable.
- ♦ **Weight:** a relative weight for records with the same priority. Higher value indicates that it is more preferable.

- ♦ **Port:** TCP or UDP port on which the service is located.
- ♦ **Target:** canonical host name of the machine providing the service. It ends with a dot.

Configuring Authentication Server Discovery on client side

You can use the following options for server discovery on the client side. You must add the parameters in the `config.properties` file.

- ♦ `discovery.Domain`: DNS name of the domain. For Windows Client, this value is used if workstation is not connected to the domain.
- ♦ `discovery.subDomains`: list of additional sub domains separated by a semicolon. You can use them on Mac OS X Client or Linux Client to list AD sites.
- ♦ `discovery.useOwnSite`: Set the value to `True` to use the local site (Windows Client only).
- ♦ `discovery.dnsTimeout`: Time out for the DNS queries. The default value is 3 seconds.
- ♦ `discovery.connectTimeout`: Time out for the Advanced Authentication server response. The default value is 2 seconds.
- ♦ `discovery.resolveAddr`: Set the value to `False` to skip resolving the DNS. By default the value is set to `False` for Windows and Linux Clients and `True` for Mac Client.
- ♦ `discovery.wakeupTimeout`: Timeout after the system starts or resumes from sleep. The default value is 10 seconds.

Authentication Server Discovery Flow

Windows Client

The features is not supported in Windows Client.

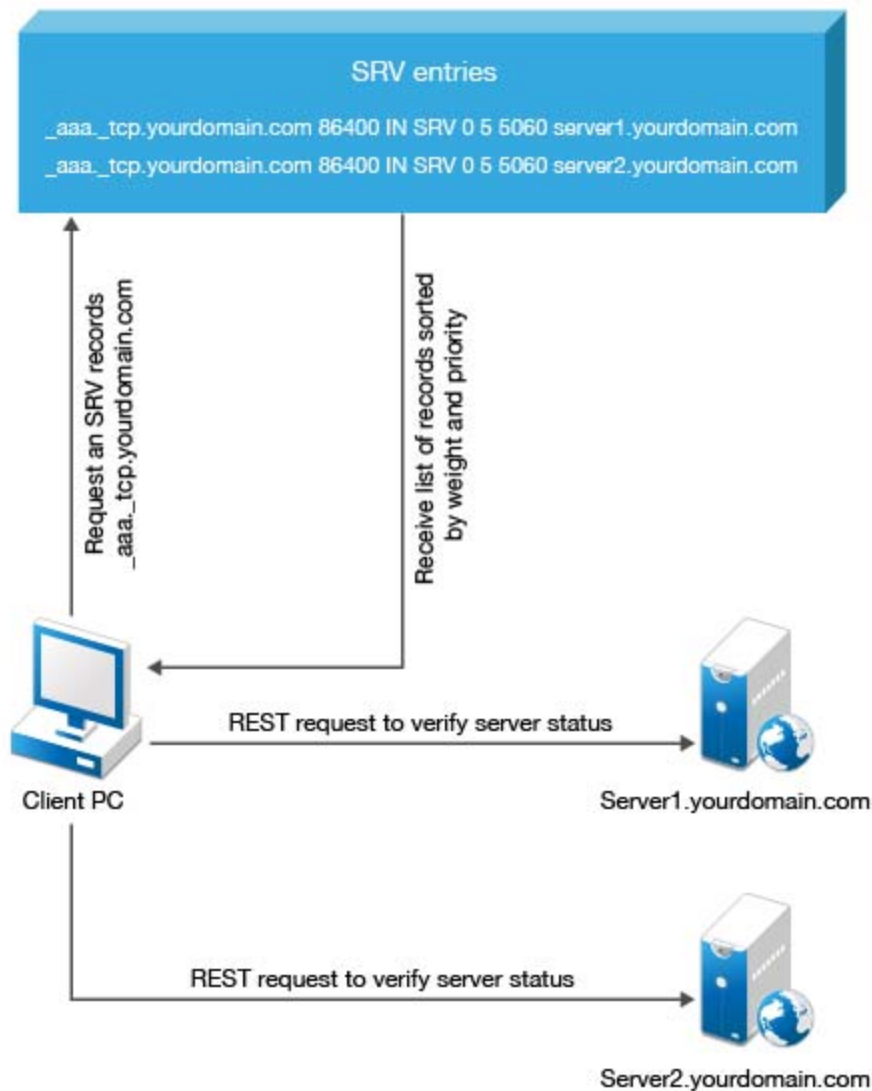
Mac OS X Client/ Linux PAM module

1. Get servers from the sub domains listed in `discovery.subDomain`.
2. Get servers from the domain specified in `discovery.Domain` (global list).

Path for the configuration file is as follows:

- ♦ **Mac OS X Client:** `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf`.
- ♦ **Linux PAM module:** `/opt/pam_aucore/etc/pam_aucore.conf`.

The following diagram illustrates the server discovery workflow graphically.



How To Bind Mac To Active Directory

Binding Mac to Active Directory is preliminary required to get the Advanced Authentication Client working. To do it follow the steps:

1. Click Apple icon in left top corner, select **System Preferences...**
2. Click Network icon.
3. Click **Advanced...** button.
4. Switch to **DNS** tab.
5. In **DNS Servers** section double click an existing record to edit it. If it's not possible click + button.
6. Enter IP address of your DNS server. E.g. 192.168.0.200.
7. Click + button in **Search Domains** section.
8. Enter FQDN of your domain. E.g. company.com.
9. Click **OK**.
10. Click **Apply** in Network window.

11. Switch back to the **System Preferences...** menu.
12. Click **Users & Groups** icon.
13. Select **Login Options** item.
14. Click lock icon in bottom part of the window to unlock making changes.
15. Enter local admin's **Username** and **Password** and click **Unlock**.
16. Click **Join...** next to the **Network Account Server** text.
17. In **Server** field enter the address of an Active Directory Domain. E.g. company.com.
18. Fill the **AD Admin User** and **AD Admin Password** fields.
19. Click **OK**.
20. In some seconds you will see a green icon near your domain name, next to the **Network Account Server** text.
21. Click **Edit...**
22. Click **Open Directory Utility...**
23. Click lock icon in bottom part of the **Directory Utility** window to unlock making changes.
24. Enter local admin's **Username** and **Password** and click **Modify Configuration**.
25. Double check the **Active Directory** item.
26. Expand **Show Advanced Options**.
27. Switch to **Administrative** tab.
28. Check the **Allow administration by** option.
29. Click **OK**.
30. Click lock icon in bottom part of the **Directory Utility** window to prevent further changes.
31. Close the **Directory Utility** and **Users & Groups** windows.

To check the binding follow the steps:

1. Run **Terminal**.
2. Execute the command: `login <UsernameOfActiveDirectoryUser>`. E.g. `login pjones`.
3. Enter the user's password. The console should switch to the user.
4. Execute the command: `exit`. Close the Terminal.
5. Click **Apple** icon in left top corner, select **Log Out <username>...**
6. In user selection screen you will see the **Other...** icon.
7. Click it and try to log on as the domain user.

How To Configure Mac Recovery

It's recommended to configure recovery for Mac before the installation of Advanced Authentication Mac OS X Client. To do it follow the steps:

1. Click the **Apple** icon in left top corner, select **System Preferences...**
2. Click **Sharing** icon.
3. Enable **Remote Login** option.
4. Remember the ssh login. It should be a string like: `pjones@192.168.0.112`.
5. Try to log on to the Mac using ssh.

Using a Specific Advanced Authentication Server

You can specify a certain Advanced Authentication server on a workstation that can be used when a workstation is joined to a domain, but user wants to force connection to a specific Advanced Authentication server and when a workstation with Mac OS X Client is not joined to a domain.

In the `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf` file, configure `discovery.host = <IP_address|domain_name>`.

For example, `discovery.host = 192.168.20.40` or `discovery host = auth2.mycompany.local`.

You can specify a port number (optional parameter) for the client-server interaction: `discovery.port = <portnumber>`.

The Advanced Authentication server receives the client connections through the port 443 by default. However, if the port redirection is configured on the network between the client and server then you can customize the port number manually. In the `config.properties` file of the client, you must use `discovery.port` parameter to enable the client to discover and pair with the Advanced Authentication server.

NOTE: For **Mac OS logon** event, select the **OS Logon (local)** Event type if you want to use Mac OS X Client on non-domain joined workstations.

Configuration Settings for Multitenancy

If Multi-tenancy is enabled, you must add the parameter `tenant_name` with a used tenant name as value in the configuration file: `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf`. For example, specify `tenant_name=TOP` for the TOP tenant in the file. If the configuration file does not exist, you must create it.

NOTE: If you do not add the parameter `tenant_name`, you might get an error `Tenant not found`.

Customizing a Logo

You can customize the logo of Mac OS Client according to your requirement. The format of the logo must meet the following requirements:

- ♦ **Image format:** png, jpg, gif
- ♦ **Resolution:** 400x400px
- ♦ **Maximum file size:** 100Kb

To customize the logo, perform the following steps:

1. Open the configuration file `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf`.

If the file does not exist, create a new file.

2. Specify the path of the folder where the image file is stored, in the following format:

`logo_path: /Users/<username>/<path_of_the_file>/<file_name>.png`

3. Save the configuration file `aucore_login.conf`.
4. Restart the computer.

Configuring Timeout for Card Waiting

You can configure the time for which the card waiting dialog is displayed, when the user authenticates using the card method. If the user does not present the card for the timeout period, the `Hardware timeout` message is shown and then the card waiting dialog is closed and user login selection screen is displayed.

By default the card timeout is 60 seconds.

To configure the timeout for card waiting, perform the following steps:

1. Open the configuration file `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf` file.
If the file does not exist, create a new file
2. Enter `card.timeout: x` in the `config.properties` file. X is the timeout value in seconds.
3. Save the configuration file.
4. Restart the operating system.

Working in Offline Mode

To use Advanced Authentication in offline (cached) mode, mobile accounts has to be created. Perform the following steps to enable working in offline mode:

1. Click the **Apple** icon in left top corner, select **System Preferences...**
2. Click **Users & Groups** icon.
3. Select **Login Options** item.
4. Click **Lock** icon in bottom part of the window to unlock marking changes.
5. Enter local administrator's Username and Password and then click **Unlock**.
6. Click **Edit...** next to the **Network Account Server** text.
7. Click **Open Directory Utility...**
8. Click **Lock** icon in bottom part of the window to unlock marking changes.
9. Enter local administrator's Username and Password and then click **Unlock**.
10. Double click Active Directory.
11. Expand the hidden section of the window.
12. Select **Create mobile account at login** option.
13. Click **OK**.

Selecting an Event

By default Mac OS logon event is used. However, in some cases it is required to create a separate event. For example, when the predefined event is used for domain joined workstations, you can create a custom event with type `Generic` for the non-domain joined workstations. In this case you will need to point these [non-domain] workstations to the custom event using the following parameter in the `event_name: <CustomEventName>` configuration file:

```
/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/  
aucore_login.conf
```

How To Show Other User on Login Screen in Non-Domain Mode

To show **Other User** on login screen in non-domain mode, execute the following in Terminal:

```
sudo defaults write /Library/Preferences/com.apple.loginwindow  
SHOWOTHERUSERS_MANAGED -bool TRUE
```

Creating a Mobile Account

For offline login, it is required to create a mobile account for a domain user. To create mobile account for a domain user, perform following steps:

- 1 Login to domain user.



- 2 Click the Apple icon in the upper left corner and select **System Preferences**.
- 3 Click **Users & Group**.
- 4 Click **Click the lock to make changes**.
- 5 Select preferred domain user.
- 6 Select **Create Mobile Account for the User**.
- 7 Click **Create**.

The system gets logged off automatically.

Configuration for Verification of Server Certificates

You can secure connection between a workstation and Advanced Authentication Servers with a valid self-signed SSL certificate, thus preventing any attacks on the connection and ensuring safe authentication.

To enable verification of the server certificates, perform the following steps:

- 1 Navigate to `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/` and open `aucore_login.conf` file.
If the configuration file does not exist, create a new file.
- 2 Specify `verifyServerCertificate=true` in the configuration file.
- 3 Place the server certificate in the **Keychain**.

NOTE: Ensure that the server certificate is in .p12 format.

You must upload the SSL certificate in the [Administration portal > Server Options](#). The SSL certificate provides high level of encryption, security, and trust. For more information about how to upload the SSL certificate, see [Uploading the SSL Certificate](#).

Configuration to Enable the Authentication Agent Chain

The Authentication Agent allows you to authenticate on one computer where all the devices required for authentication are connected to get authorized access to another computer or z/OS mainframe, where one of the following condition is true:

- ♦ It is not possible to redirect the authentication devices.
- ♦ It does not support the devices used for authentication.

The Authentication Agent can be installed only on the Windows computer.

You must select **Authentication Agent** in the Chains list of Mac Client to initiate the authentication process on Windows computer where the Authentication Agent is installed.

To enable the Authentication Agent chain in the Mac Client, perform the following steps:

- 1 Navigate to the path `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/` and open `aucore_login.conf` file.
If the configuration file does not exist, create a new file.
- 2 Specify `authentication_agent_enabled=true` in the configuration file.
- 3 Click **Save**.
- 4 Restart your computer.

An Example Scenario of Using the Authentication Agent

This scenario describes how you can perform authentication on Windows computer and auto-sign in to Mac computer using the Authentication Agent.

Amrita wants to log in to Mac computer using the Fingerprint authentication method. However, she cannot get authenticated to Mac computer because the fingerprint reader is not supported and cannot redirect the authentication device. In this case, Amrita can use the Authentication Agent to perform authentication on Windows computer and get authorized access to Mac computer.

The following sequence describes the authentication process using the Authentication Agent:

- 1 Specify user name and the chain number corresponding to the Authentication Agent chain in Mac computer.
- 2 The Authentication Agent on Windows computer launches a restricted browser.
- 3 Select the preferred chain to log in to Mac computer in the restricted browser.
- 4 Perform the authentication using the Fingerprint reader in the restricted browser.
Amrita is logged in to Mac computer automatically.

3 Installing and Uninstalling Mac OS X Client

In this chapter:

- ♦ [Installing Mac OS X Client](#)
- ♦ [Uninstalling Mac OS X Client](#)

NOTE: To view the version of Mac OS X Client installed, open the text file `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/Resources/etc/version`.

You can find the Mac OS X Client in the Advanced Authentication Enterprise Edition distributive package.

IMPORTANT: After upgrading the Mac OS X, you may have to reinstall the NetIQ Mac OS X Client.

Installing Mac OS X Client

1. Double click the file `naaf-macclient-macos-release-<version>.dmg`.

The `naaf-macclient.pkg` and `uninstall` files are displayed.

2. Double click the file `naaf-macclient.pkg`.
3. Click **Continue**.
4. Read and accept the License Agreement.
5. Select the disk where you want to install the Mac OS Client and click **Continue**.
6. Click **Install**.
A window is displayed to specify the local administrator credentials to install the software.
7. Specify **Username** and **Password**.
8. Click **Install Software**.
9. Click **Close**.

NOTE: After the Mac OS X client is installed, ensure to [create a mobile account for domain user](#) on the Mac OS X Client.

IMPORTANT: You must set **Require admin password to register endpoint/workstation** to **OFF** in the Endpoint management options on the Advanced Authentication Administrative Portal. Otherwise the required endpoint is not created. For more information, see [Endpoint Management Options](#) in the [Sever Administrator guide](#).

Upgrading Mac OS X Client from Version 5 to Version 6

To upgrade Mac OS X Client from version 5 to version 6, perform the following steps:

- 1 Run `sudo /Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/Resources/bin/uninstall` in the terminal.
- 2 Reboot Mac OS X Client.
- 3 Delete `aucore_login.bundle` from the `/Library/Security/SecurityAgentPlugins` folder.
- 4 Reboot Mac OS X Client.
- 5 Delete the endpoint in the Advanced Authentication Administration portal.
- 6 Install 6.0 Mac OS X Client.

NOTE: Post Mac OS X Client 6.0, to upgrade you must run the installer of the new Mac OS X Client version.

Uninstalling Mac OS X Client

You can uninstall Mac OS X client in two ways:

- ♦ [Using Uninstall Script](#) (recommended)
- ♦ [Manual](#)

Using Uninstall Script

- 1 Double click the file `naaf-macclient-macos-release-<version>.dmg`.
The `naaf-macclient.pkg` and `uninstall` files are displayed.
- 2 Click the `uninstall` file.
- 3 Specify sudo password.

Manual

- 1 Open the **Terminal** application.
- 2 Run the command `cd /Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/Resources/bin/` to navigate to the directory.
- 3 Run the command `sudo ./uninstall`.
- 4 Reboot Mac OS X client.
- 5 Delete the file `aucore_login.bundle` from the path `/Library/Security/SecurityAgentPlugins`.
- 6 Reboot Mac OS X client.

NOTE: When you uninstall Mac OS X client in the Manual way, ensure to remove the corresponding endpoint manually on Advanced Authentication server. We recommend you to uninstall Mac OS X client using the `uninstall` script that performs complete uninstallation.

4 Troubleshooting

This chapter contains following topics:

- ♦ [“Collecting Debug Logs” on page 23](#)
- ♦ [“Endpoint Not Found” on page 24](#)

Collecting Debug Logs

Advanced Authentication provides a Diagnostic Tool that allows you to collect the debug logs for Mac OS X Client and Device Service. The Debug logs helps the Support team with the following:

- ♦ Investigate issues with Mac OS X Client and Device Service.
- ♦ Verify connection issues between a Mac OS X Client and DNS server.
- ♦ Identify a list of the Advanced Authentication servers on the domain.

You can collect the debug logs in two ways:

- ♦ [Using Diagnostic Tool](#)
- ♦ [Manual](#)

Using Diagnostic Tool

To collect the debug logs using the Diagnostic Tool, perform the following steps:

- 1 Run the file `DiagTool.app` and click **Enable**.

NOTE: After you enable or disable the logs, it is recommended to restart your system.

- 2 Repeat the scenario.
- 3 Run the file `DiagTool.app` again.
All logs are displayed.
- 4 Click **Save** in the **Debug logs** tab.

A file that contain all logs is saved in the `logs-year-month-date-hour:minute:seconds.zip` format in the `/tmp` directory.

For example, logs file is saved as `logs-2017-10-23-15:30:20.zip`.

- 5 Click **Save**.

You can perform the following actions in the **Debug logs** tab:

- ♦ Use **Disable** to disable the logging.
- ♦ Use **Refresh** to update the logs list.
- ♦ Use **Open** to open any specific log.
- ♦ Use **Clear All** to delete the existing logs.

To identify the Advanced Authentication servers on the domain, perform the following steps:

- 1 Run the file `DiagTool.app`.
- 2 Click **Servers**.
- 3 Specify **DNS Server** and **Domain**.
- 4 Select **Use v6 DNS lookup** to allow the Diagnostic Tool to find the Advanced Authentication server using `_aav6` records.
You can clear Use v6 DNS lookup, if you want to find the Advanced Authentication server using `_aaa` records.
- 5 Click **Search**.
A list of servers is displayed, if the IP is either IPv4 or IPv6.

NOTE: If you configure IP address of the Advanced Authentication server in DNS service record, the Diagnostic tool cannot find and retrieve the respective record. Ensure that you configure the DNS service record with Fully Qualified Domain Name (FQDN) to enable the Diagnostic tool to find and retrieve the respective record.

Manual

If you do not have the Diagnostic Tool, you can collect the debug logs manually. To collect the debug logs manually, perform the following steps:

- 1 Create a text file `config.properties` in the `/Library/Logs/NetIQ/` directory.
- 2 Add a string to the `config.properties` file: `logEnabled=True` that ends with a line break.
- 3 Create a directory named `Logs` in the `/Library/Logs/NetIQ/` directory.
- 4 Restart the system.
- 5 Repeat the scenario.
- 6 Compress the logs located in `/Library/Logs/NetIQ/Logs/` directory to a `.zip` format.

Endpoint Not Found

Issue

After installing the client component and rebooting, the client reports `Endpoint not found` error and it is not possible to login.

Reason

An endpoint for the client already exists on server or in configuration file on the client.

Solution

1. Remove the endpoint for the client on the server in Administrative Portal - Endpoints section (if it exists).
2. Boot in Safe mode and remove `endpoint_id`, `endpoint_name` and `endpoint_secret` parameters from `/Library/Security/SecurityAgentPlugins/aucore_login.bundle/Contents/etc/aucore_login.conf`
3. Reboot.