BeyondTrust

Remote Support Middleware Engine Installation and Configuration

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BeyondTrust Remote Support Middleware Engine Installation and Configuration

The BeyondTrust Middleware Engine is a Windows service that is the backbone for integrations with BeyondTrust Remote Support. The BeyondTrust Middleware Engine provides a plugin integration architecture: a plugin can be developed and deployed to the product, and the product provides data and administrative services to the plugin.

This document provides general information on plugin deployment using the BeyondTrust Middleware Engine. Deployment of a specific plugin is beyond the scope of this document. For that information, please refer to documentation for the specific plugin.

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Install the BeyondTrust Remote Support Middleware Engine

Review Prerequisites

Before installing the software, please ensure your system meets the following hardware, software, and network requirements.

Confirm Remote Support Versions

- A currently supported version of BeyondTrust Remote Support. To confirm your version is supported, Contact Support or refer to the BeyondTrust End of Life Policy at https://www.beyondtrust.com/eos-eol.
- BeyondTrust Middleware Engine: 1.0.0.0 or later.

Open Network Ports

The following network communication channels must be open for the BeyondTrust Middleware Engine to work properly.

Outbound From	Inbound To	TCP Port #	Purpose
BeyondTrust Middleware Engine Server	BeyondTrust Appliance B Series	443	API calls from the BeyondTrust Middleware Engine server.
BeyondTrust Appliance B Series	BeyondTrust Middleware Engine Server	8180 (if using default configuration)	This is needed for plugins which integrate with BeyondTrust outbound events. Please check the documentation for all plugins used. If no plugins use outbound events, then this port does not need to be open.

Confirm Server Requirements

The BeyondTrust Middleware Engine requires installation on Windows Server 2016 or higher. See specific requirements below.

Component	Recommended
Processor	2GHz or faster
Memory	2GB RAM or greater
Available Disk Space	80GB or greater
OS	64-bit

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Review Other Requirements

Visual C++

Visual C++ Redistributable Package for Visual Studio 2015 or later is required by the BeyondTrust Middleware Engine. If not already present when the BeyondTrust Middleware Engine setup file is run, this package is installed automatically.

.NET 4.6.2

.NET 4.6.2 or later is required by BeyondTrust Middleware Engine. If not already present when the BeyondTrust Middleware Engine setup file is run, .NET 4.6.2 is installed automatically.

BeyondTrust Middleware Engine Installation

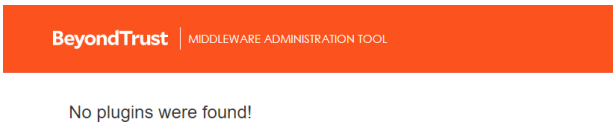
Run **bomgar-middleware-engine.exe**, following on-screen instructions. If either Visual C++ Redistributable Package for Visual Studio 2015 or .NET 4.6.2 are not already installed on the server, they are installed at this time.

Verify Installation

Follow the steps below to verify the installation.

1. Open the services management console by typing **services.msc** in the Windows **Run** dialog.
2. Locate the service **BeyondTrust Middleware Engine**.
3. Start the service.
4. Open a web browser on the server and go to **http://127.0.0.1:53231/**.

   The home screen of the BeyondTrust middleware administration tool opens. A *No plugins were found!* message is normal at this point, because no plugins have yet been deployed.



> ***Note:*** *This tool is accessible only from the server where the BeyondTrust Middleware Engine is installed. If necessary, the tool can run on a different port, and it can be turned on and off as desired. For details, please see "Configure the Middleware Administration Tool" on page 9.*

Deploy a New Plugin

Plugins are typically provided in a ZIP file. To install and enable a new plugin from the ZIP file:

1. Save the ZIP file to a folder on the host machine.
2. Extract the ZIP file to the same folder.
3. In the extracted contents, locate the folder with the plugin's name (for example, **BeyondTrustERSOtherVendorPlugin**).
4. Copy that folder and paste it into the Plugins folder, located in the directory where the BeyondTrust Middleware Engine is installed.

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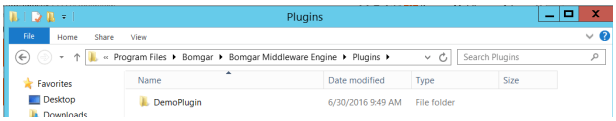
5. To enable the new plugin, the Middleware Engine service must be restarted. Repeat the steps above in "Verify Installation" on page 5 to restart the service.
6. The new plugin displays on the administration tool landing page.

Manually Locate Deployed Plugins

Each plugin is deployed into its own subfolder of the **Plugins** folder. The **Plugins** folder is in the directory where the BeyondTrust Middleware Engine is installed.

Once a plugin has been configured in the Middleware Engine, a file named **<plugin name>.config** is present. The plugin's folder might contain any number of other files and folders, depending on the plugin.



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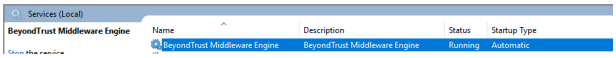
Configure the BeyondTrust Remote Support Middleware Engine

Start BeyondTrust Middleware Engine

The BeyondTrust Middleware Engine runs as a Windows service. This service must be restarted whenever a new plugin is deployed or a plugin is removed.



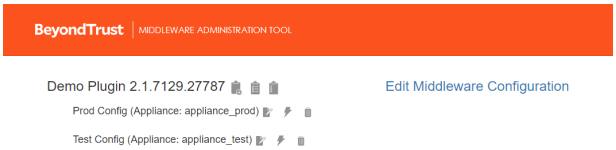
Launch the Middleware Administration Tool

Once the Windows service is running, the middleware administration tool can be launched. Open a web browser on the server and go to **http://127.0.0.1:53231/**. This tool is accessible only from the server where the BeyondTrust Middleware Engine is installed. If necessary, the tool can run on a different port, and it can be turned on/off as desired.

> *For more information, please see "Configure the Middleware Administration Tool" on page 9.*

Overview of the Middleware Administration Tool

The home page of the middleware administration tool displays all deployed plugins as well as each plugin's configuration(s). Multiple plugin configurations can be created. Creating multiple plugin configurations allows a single plugin to integrate with multiple systems, such as two different B Series Appliances.



Add and Edit Plugin Configurations

To add a new configuration for a deployed plugin, click the copy icon next to the plugin name. A window displays the copied configuration details, including connection information to a B Series Appliance and any plugin-specific settings.

This screen also includes an option to disable a plugin configuration.

For a specific plugin configuration, the following options are available:

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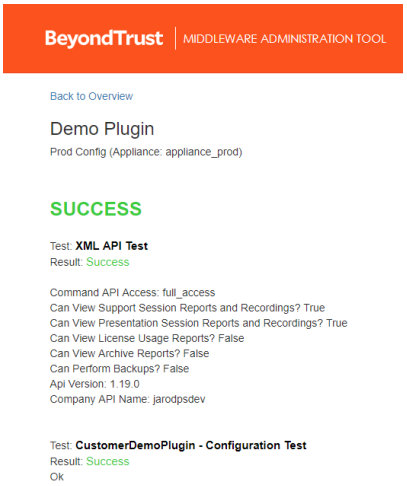
Edit the plugin configuration.

Test the plugin configuration. Testing confirms that the plugin is configured correctly and that network resources can be accessed.

Note: *Test output varies between plugins.*



Delete the plugin configuration.

IMPORTANT!

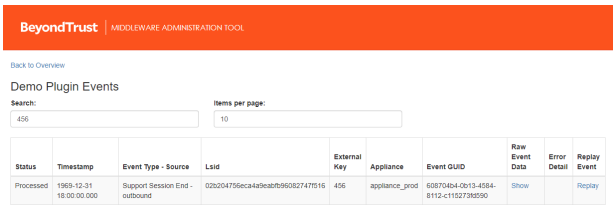
The configuration cannot be recovered after deletion.

Note: *Configuration changes made via the middleware administration tool are immediately effective. It is not necessary to restart the Windows service.*

View Plugin Event History

To view the event history for a plugin, click the history icon next to the plugin name. A page shows key details of each event the plugin has processed. The period history available depends on the event retention configured in the middleware administration tool. The default is seven days.

On the plugin events page, the following functionality is available:



- Page and filter text
- View raw event data
- View error data if event processing failed.
- Find the event GUID, an identifier attached to every log message for the event.
- Replay an event (i.e., sending the event to the plugin to reprocess). This can be useful for events that fail for transient reasons, such as a network issue.

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For information on how to change this event retention setting, see "Configure the Middleware Administration Tool" on page 9.

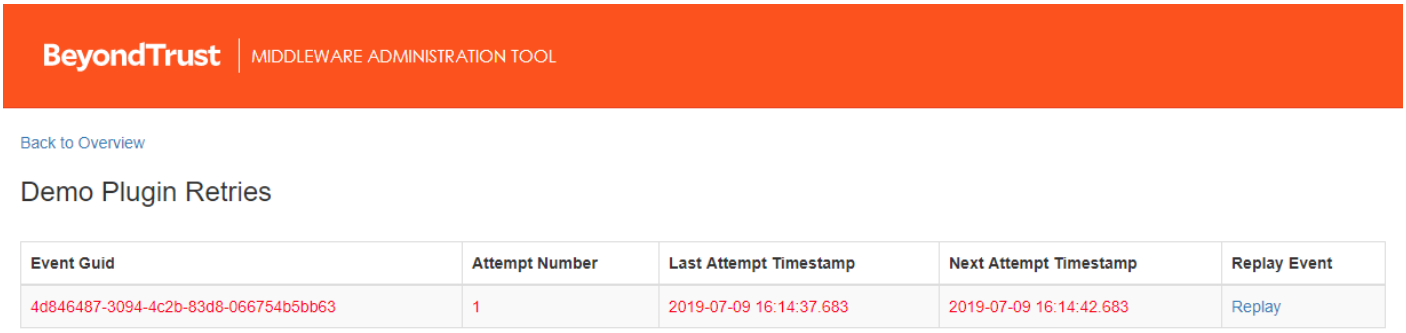
Work with the Event Retries for a Plugin

To view the active retries for a plugin, click the clipboard icon located next to the history icon. A page displays details about each retry.

The retry is removed from this page when the plugin:

- Successfully processes the event
- Reaches the retry limit

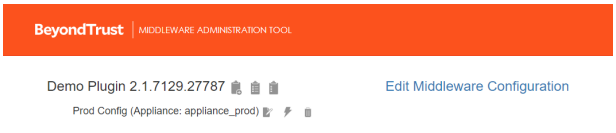
The retries are attempted using a Fibonacci backoff strategy. This strategy staggers the retries, with the first attempt taking place five seconds after the initial failure. The maximum number of retries is set in the plugin configuration. The **Retry Events** page provides the functionality required to replay the event before the next attempt time.

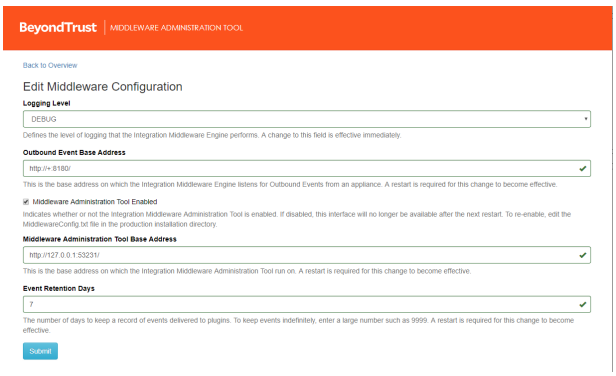


Configure the Middleware Administration Tool

You can modify the middleware administration tool to run on a different port, and you can turn it on or off as desired. You also can change the length of time that events are stored.

1. From the home page of the middleware administration tool, click the **Edit Middleware Configuration** link.
2. The following configuration options are available:
    - **Logging Level:** Defines the logging level for the BeyondTrust Middleware Engine. Modifications to this value take effect immediately. For maximum logging, select **DEBUG**. For minimum logging, select **ERROR**.
    - **Outbound Event Base Address:** The base address BeyondTrust Middleware Engine listens to for outbound events from a B Series Appliance. If this value is changed, the Windows service must be restarted.
    - **Middleware Administration Tool Enabled:** If disabled, the web-based tool is not available. If this value is changed, the Windows service must be restarted.
    - **Middleware Administration Tool Base Address:** The base address on which the administration tool runs. If this





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value is changed, the Windows service must be restarted.

- **Event Retention Days:** The number of days to keep a record of events delivered to plugins. If this value is changed, the Windows service must be restarted.

3. If desired, this configuration can be edited from a file, for example, when the administration tool is disabled.
    - Go to the directory where the BeyondTrust Middleware Engine is installed.
    - In a text editor, open **MiddlewareConfig.txt**.
    - Edit the file as needed. The file is in JSON format. Valid **LogLevel** values are **ERROR**, **INFO**, **WARN**, and **DEBUG**.

Note: *When changing the* ***LogLevel*** *from the text file, the change is not immediately effective. The log level can change dynamically only when it is changed from the administration tool user interface.*

Below is the default configuration:

```
{
    "LogLevel": "ERROR",
    "EngineBaseAddress": "http://+:8180/",
    "AdminToolEnabled": true,
    "AdminToolBaseAddress": "http://127.0.0.1:53231/",
    "EventRetentionDays": 7
                }
```

After making any changes, restart the Windows service.

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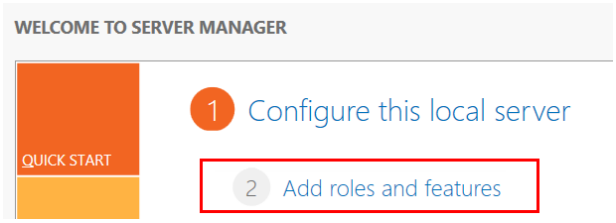
Use IIS as a Reverse Proxy for the BeyondTrust Middleware Engine

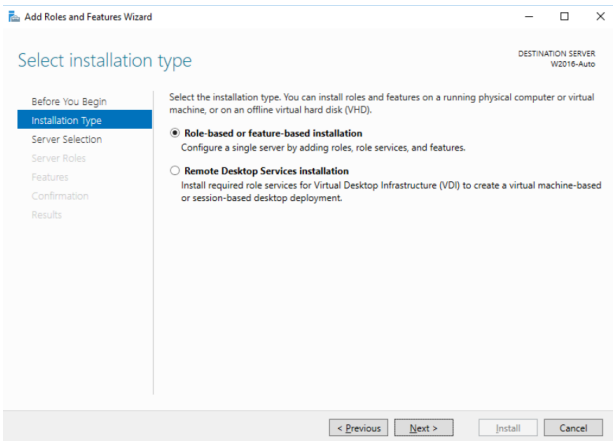
The following steps show you how to set up and configure IIS to work as a reverse proxy for the BeyondTrust Middleware Engine. This supports scenarios where outbound events from the B Series Appliance must go over port 443, such as outbound events from BeyondTrust Cloud.

> ***Note:*** *These instructions require that the outbound event setup for installing the middleware engine has been completed.*

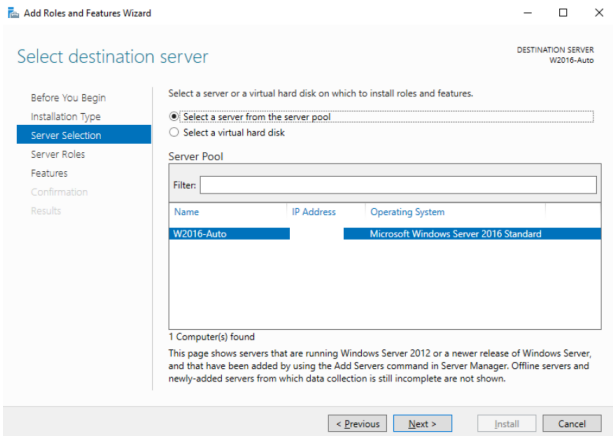
1. In the IIS **Server Manager** dashboard, click **Add roles and features.**
2. Click **Next** on the next screen.



3. Under **Select installation type**, select **Role-based or feature-based installation**. Click **Next**.



4. Under **Server Selection**, choose **Select a server from the server pool** and select the desired server. Click **Next**.



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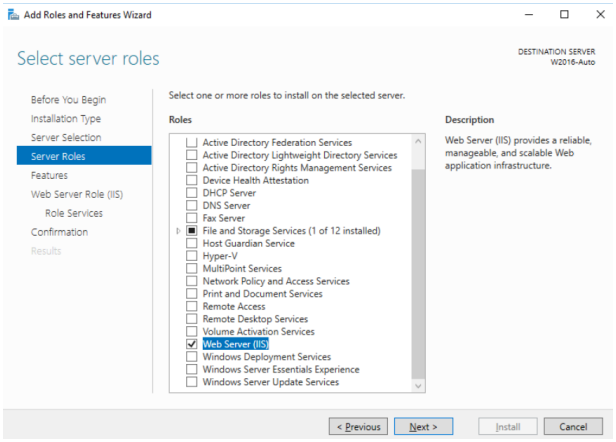
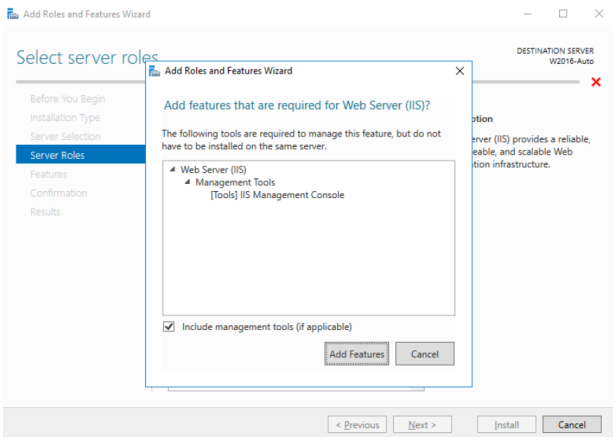
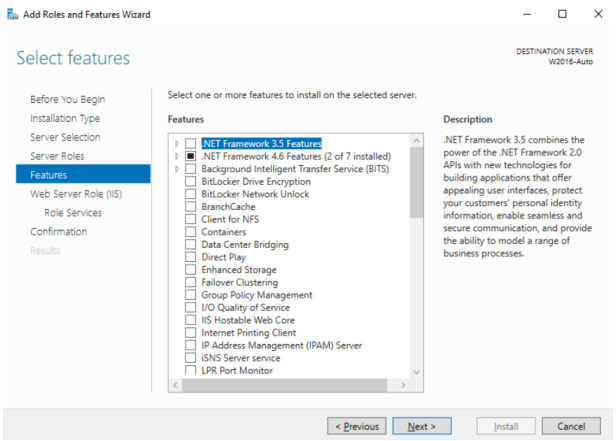
5. Under **Server Roles**, select **Web Server (IIS)**. Click **Next**.



6. When you select **Web Server (IIS)**, you are prompted to add IIS management tools. Click **Add Features**.



7. Make sure that **.NET Framework 4.6 Features** is checked, and then click **Next**. You do not need to select any additional features.



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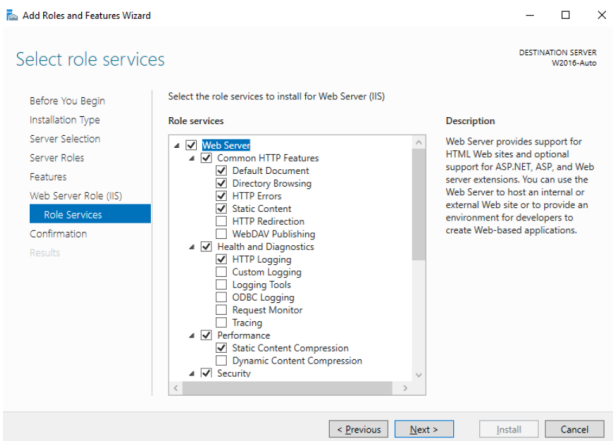
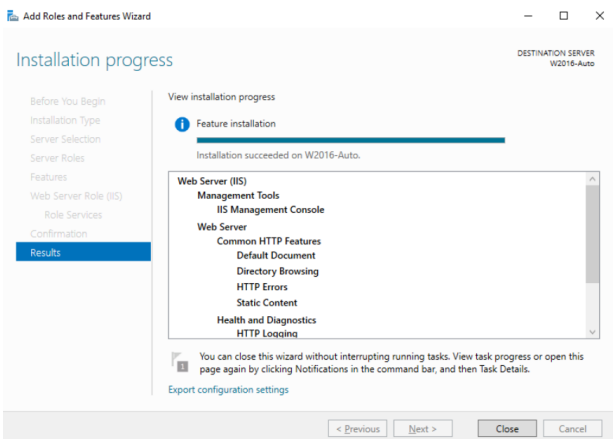
8. Under **Web Server Role (IIS)**, click **Role Services** on the left menu. Check that the necessary default values are checked.
9. Click **Next**, then **Install**.



10. A progress bar indicates that the installation is taking place. When the installation is complete, click **Close**.



Install additional IIS Modules

If not already installed:

- Download and install the Microsoft IIS URL Rewrite module from: https://www.iis.net/downloads/microsoft/url-rewrite.
- Download and install the Microsoft IIS Application Request Routing module from: https://www.iis.net/downloads/microsoft/application-request-routing.
- Restart the World Wide Web Publishing Service.

Set Up SSL

1. Open the IIS Manager application, and then click the server name on the left pane.
2. Click **Server Certificates**.
3. In the **Actions** menu, choose to **Import** your certificate. If a CA certificate is not available, or the configuration is for a development or testing site, you can select **Create a Self-Signed Certificate**.
4. On the right panel, under **Sites**, select the **Default Web Site**.
5. From the **Actions** menu, click **Bindings**.

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6. Add a binding and choose type **https.**
7. Choose the SSL certificate you imported or created in the previous step.

Configure the Reverse Proxy

1. On the right panel, under **Sites**, select **Default Web Site**.
2. Double-click **URL Rewrite**.
3. Click **Add Rule(s)...**
4. Select **Reverse Proxy**. If prompted to enable proxy functionality, click **OK**.
5. Enter *127.0.0.1:8180* as the server name and leave other options as default.
6. Restart the **Default Web Site**.

Set Up Optional BeyondTrust Outbound Event to Validate the Certificate

If desired, you may set up the B Series Appliance to validate the server certificate when sending an outbound event.

> ***Note:*** *You must have a valid CA certificate in IIS for this setting to work.*

1. In the B Series Appliance, navigate to **Management > Outbound Events**.
2. Edit the desired outbound event.
3. Enable the **CA Certificate** option. Click **Choose File** and select your CA certificate.

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BeyondTrust Remote Support Middleware Engine Troubleshooting

Issue/Symptom	Possible Causes	Resolution
BeyondTrust Middleware Engine Windows service fails to start.	Installation prerequisites have not been met. Invalid configuration in **<install_ dir>\MiddlewareConfig.txt**. *For information, please see "Install the BeyondTrust Remote Support Middleware Engine" on page 4.*	*For additional troubleshooting information, open the Windows Event Viewer and look for any messages in the application log with a source of MiddlewareEngineService or BeyondTrustMiddlewareEngine.* Additional error messages can be found in **\Logs\BomgarMiddlewareEngineService.log**, where the BeyondTrust Middleware Engine is installed. If this is a new installation, the BeyondTrust Middleware Engine can be uninstalled and reinstalled from Windows Programs and Features. If the service no longer starts after the **MiddlewareConfig.txt** file has been modified, either resolve any issues with the **MiddlewareConfig.txt** file and try again or delete the **MiddlewareConfig.txt** file and start the service. The BeyondTrust Middleware Engine uses the default values for configuration. The service should now start, and the admin tool can be used to modify the configuration.
Events are not being delivered to a plugin as expected.	Invalid configuration of the plugin. Invalid API configuration on the B Series Appliance (e.g., the API account not having proper privileges or incorrect outbound event configuration). Invalid network configuration.	Enable **DEBUG** logging by opening the administration tool, clicking **Edit Middleware Configuration**, changing the log level, and saving. Run a test on the plugin configuration in the middleware administration tool. Read the documentation for the specific plugin and ensure the configuration is correct.
An event is delivered to a plugin but is failing.	Invalid configuration of the plugin. Invalid network configuration. Other issues.	Enable **DEBUG** logging by opening the administration tool, clicking **Edit Middleware Configuration**, changing the log level, and saving. Run a test on the plugin configuration in the middleware administration tool. Read the documentation for the specific plugin and ensure the configuration is correct. In the administration tool, click the history icon next to the plugin. View the list of events and find the one that is failing. Click the link to view the error detail. If the error detail is not enough to diagnose the issue, note the **Event GUID** for the event, navigate to the logs under **<install_dir>\Logs**, and find the log message for the event. All log messages for the event contain the event GUID.

If unable to resolve an issue, please contact BeyondTrust Support at https://www.beyondtrust.com/docs/index.htm.

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