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# Micro Focus Security ArcSight SmartConnectors

## SmartConnector for Microsoft Azure Monitor Event Hub Configuration Guide

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# Contents

SmartConnector for Microsoft Azure Monitor Event Hub .....	5
Product Overview .....	6
Related Azure Services .....	6
Understanding Data Collection .....	8
Deploying the Connector .....	10
Prerequisites .....	10
Certified Platforms for Azure Event Hubs Deployment .....	10
Setting User Permissions in Azure .....	10
Permission Requirements .....	10
Opening Ports .....	11
Azure Datacenters with Stamps (Scale Units) without Premium V2 VMs .....	11
AppService Plan with Basic Pricing Tier Created on a Stamp That Does not Support Premium V2 VMs .....	12
Using a Private IP .....	12
Event Hubs and/or Storage Account. ....	12
Function Apps .....	12
Enabling Windows PowerShell to Run Scripts .....	13
Enabling On-premises Connectivity .....	14
Deploying the Connector .....	14
Verifying the Deployment in Azure .....	16
Post-Deployment Configurations .....	17
Additional Configurations for App Service Plan .....	17
Streaming Diagnostic Logs .....	18
Streaming Activity Logs and Active Directory Logs Manually .....	18
Updating Keystore Certificate .....	19
Sending Azure Security Center Events to Event Hub .....	19
Customizing the Connector .....	21
Scaling Performance .....	22
Configuring Load Balancer .....	22
Upgrading the Connector .....	23
Undeploying the Connector .....	23
Azure Event Log Categories .....	25
Creating Parser Files .....	25
To create a parser file: .....	26
Overriding Parser Files .....	28
Active Directory, Activity, Diagnostic and Security Center Categories .....	29
Active Directory Log Categories .....	29
Activity Log Categories .....	29

Table A-2 Diagnostic Log Categories .....	30
Table A-1 Security Center Log Categories .....	32
Security Tweaks .....	32
Adding Role Assignments .....	32
Firewall Settings for Azure Resources .....	33
Disabling FTP/FTPS when using function apps .....	34
Troubleshooting .....	35
Errors during Deployment .....	35
Connecting Errors .....	35
Parsing Errors .....	35
Sharing Logs for Troubleshooting .....	35
Send Documentation Feedback .....	37

## SmartConnector for Microsoft Azure Monitor Event Hub

The Azure Monitor Event Hub connector helps you monitor the activities on Microsoft Azure Cloud services.

This connector collects events and logs from Azure Active Directory and Azure Monitor, normalizes the events to Common Event Format (CEF), and then sends the them to either ArcSight Syslog NG Daemon SmartConnector (SmartConnector) or to ArcSight Load Balancer. If the events are sent to ArcSight Load Balancer, these, are consequently sent to Syslog NG Daemon SmartConnector.

# Product Overview

Microsoft Azure is an ever-expanding set of cloud services to help your organization meet your business challenges. It is the freedom to build, manage, and deploy applications on a massive, global network using your favorite tools and frameworks.

Cloud applications are complex with many moving parts. Logging data can provide insights about your applications and help you:

- Troubleshoot past problems or prevent potential ones
- Improve application performance or maintainability
- Automate actions that would otherwise require manual intervention

Azure logs are categorized into the following types:

- **Control/management logs** provide information about Azure Resource Manager CREATE, UPDATE, and DELETE operations. For more information, see [Azure Activity Logs](#).
- **Data plane logs** provide information about events raised as part of Azure resource usage. Examples of this type of log are the Windows event system, security, and application logs in a virtual machine (VM) and the [diagnostics logs](#) that are configured through Azure Monitor.
- **Processed events** provide information about analyzed events/alerts that have been processed on your behalf. Examples of this type are [Azure Security Center Alerts](#) where [Azure Security Center](#) has processed and analyzed your subscription and provides concise security alerts. For more information, see [Azure Security Logging and Auditing](#).

## Related Azure Services

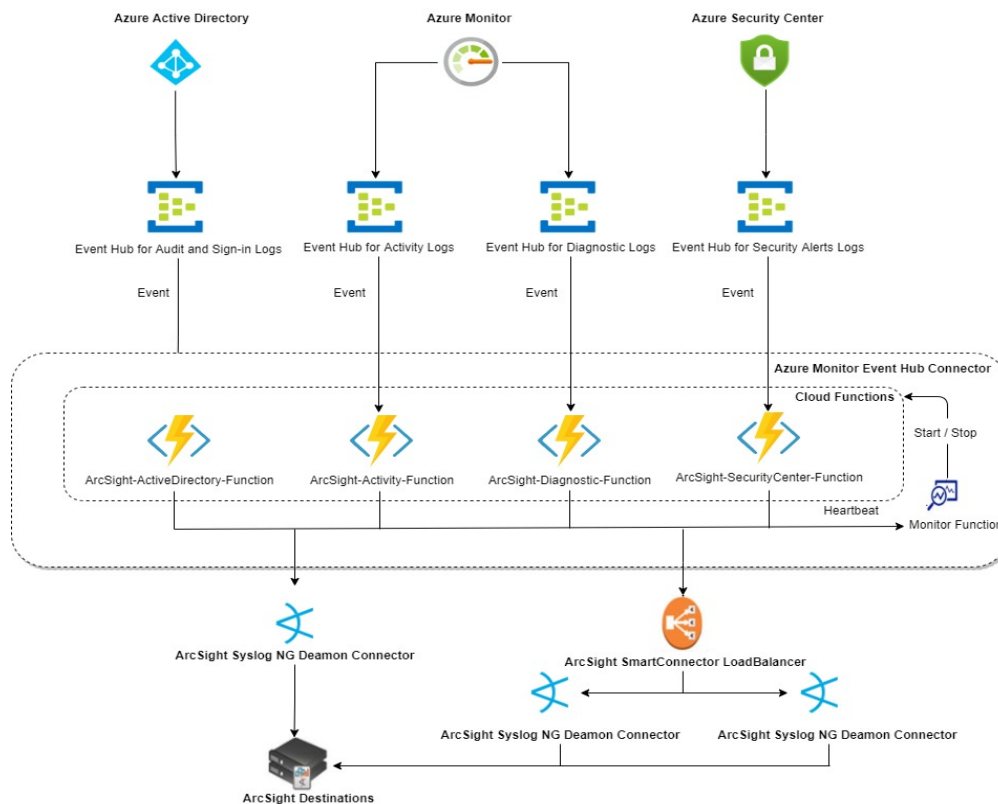
The following services are used when working with Azure Monitor Event Hub connector:

- **Azure Resource Manager:** Azure Resource Manager is the deployment and management service for Azure. It provides a management layer that enables you to create, update, and delete resources in your Azure subscription. You use management features, like access control, locks, and tags, to secure and organize your resources after deployment. For more information, see [Azure Resource Manager](#).
- **Azure App Service plan:** In App Service, an app runs in an App Service plan. An App Service plan defines a set of compute resources for a web app to run. These compute resources are analogous to the server farm in conventional web hosting. One or more apps can be configured to run on the same computing resources (or in the same App Service plan). For more information, see [Azure App Service Plan Overview](#).
- **Azure Functions:** Azure Functions allows you to run small pieces of code (called "functions") without worrying about application infrastructure. With Azure Functions, the cloud infrastructure provides all the up-to-date servers you need to keep your application running at scale. For more information, see [An introduction to Azure Functions](#).

- **Storage account:** An Azure storage account contains all of your Azure Storage data objects: blobs, files, queues, tables, and disks. The storage account provides a unique namespace for your Azure Storage data that is accessible from anywhere in the world over HTTP or HTTPS. Data in your Azure storage account is durable and highly available, secure, and massively scalable. For more information, see [Storage Account Overview](#).
- **Azure Event Hubs:** Azure Event Hubs is a big data streaming platform and event ingestion service. It can receive and process millions of events per second. Data sent to an event hub can be transformed and stored by using any real-time analytics provider or batching/storage adapters. For more information, see [Azure Event Hubs — A big data streaming platform and event ingestion service](#).

# Understanding Data Collection

The following diagram provides a high-level overview of how the Azure Monitor Event Hub connector collects and sends data to ArcSight's destinations.



The Azure Monitor Event Hub connector collects the following event logs from Active Directory, Azure Monitor, and Azure Security Center in Azure:

- **Active Directory Logs**

- **Audit logs:** Provides records of system activities for compliance.
- **Sign-in logs:** Provides information related to user logins.



**Note:** To export Active Directory sign-in logs, you must have one of P1 or P2 premium editions of Azure Active Directory.

- **Activity logs:** Provides data related to write operations that were performed on resources in your subscription.
- **Diagnostic logs:** Provides data related to operations performed by your resource.
- **Azure Security Center**
  - **Security alerts:** Provides data related to security actions performed on Azure Security Center in your subscription.
  - **Recommendation logs:** Provides data related to prevention recommendations provided for the resources in your subscription.



On installation, the connector first creates event hubs for Active Directory, Azure Monitor, and Azure Security Center. The connector then automatically configures the above mentioned log types to be forwarded to the following event hubs: Active Directory, Activity, and Diagnostics. For Azure Security Center, configure it by following the steps on the [Microsoft documentation](#).

For detailed information about event hubs, see the Azure documentation.

The Azure Event Processor collects logs in JSON format and then converts these to CEF format.

The Azure Event Processor then forwards these CEF events to an ArcSight Syslog NG Daemon SmartConnector or Load Balancer through a secured communication channel using TLS 1.2.

The connector establishes a TLS 1.2 connection by accepting a server certificate from ArcSight Syslog NG Daemon SmartConnector or ArcSight Load Balancer.

The Monitor App continuously monitors the heartbeat of the Syslog NG Daemon SmartConnector or Load Balancer to ensure that it is up and running to receive events. If the Syslog NG Daemon SmartConnector or Load Balancer is down due to an unexpected shutdown of the machine or network issues, this connector stops further processing of events from the event hub. The unprocessed events are sent back to the event hub to avoid data loss. Once the Syslog NG Daemon SmartConnector or Load Balancer is up and running, the connector continues to send the events to the Syslog NG Daemon SmartConnector. However, the Monitor App will not monitor Syslog NG Daemon SmartConnectors connected to the Load Balancer.

The Syslog NG Daemon SmartConnector then sends the events to the ArcSight destination.

# Deploying the Connector

This section provides information about deploying the connector to collect and forward events from Azure Cloud Services to a Syslog NG Daemon SmartConnector or to a Load Balancer, then the events can be sent to an ArcSight destination.

## Prerequisites

["Certified Platforms for Azure Event Hubs Deployment " below](#)

["Setting User Permissions in Azure " below](#)

["Opening Ports " on the next page](#)

["Azure Datacenters with Stamps \(Scale Units\) without Premium V2 VMs" on the next page](#)

["AppService Plan with Basic Pricing Tier Created on a Stamp That Does not Support Premium V2 VMs" on page 12](#)

["Using a Private IP " on page 12](#)

["Enabling Windows PowerShell to Run Scripts" on page 13](#)

["Enabling On-premises Connectivity" on page 14](#)

## Certified Platforms for Azure Event Hubs Deployment

- **Operating System:** : Microsoft Windows Server 2012 , 2016 and 2019 (in the cloud with Azure).



**Note:** Deploying/ undeploying the connector can be performed from any on-prem or any cloud hosted virtual machine with Powershell 5.0 and above.

## Setting User Permissions in Azure

In Azure, users must be associated with a subscription to provide them with access to resources such as virtual machine, storage account, virtual network, and so on. Therefore, you must determine the subscription you want to use for the connector and add users to the required subscription. You must also assign users to a role to define their permission to perform tasks.

### Permission Requirements

- **For deployment purposes:** The user must have at least a **Security Administrator IAM** role on the subscription.
- **For running and monitoring purposes:** The user must have at least a **Contributor IAM** role on the subscription.

## Opening Ports

You must ensure that the ports on the server on which you installed the Syslog NG Daemon SmartConnector is accessible from Azure. The procedure to open ports varies based on whether you have installed Syslog NG Daemon SmartConnector on a virtual machine or not.

### Opening Ports on a Non-Virtual Machine

If you installed Syslog NG Daemon SmartConnector on a physical, non-virtual machine, ensure that the ports on which you installed it are accessible to Azure.

### Opening Ports on a Virtual Machine

If you have installed the Syslog NG Daemon SmartConnector on a virtual machine in Azure cloud, ensure that the ports on which you installed Syslog NG Daemon SmartConnector are open in both Azure and the virtual machine.

#### To open inbound ports on Azure:

1. Log in to Microsoft Azure as a user with administrator privileges.
2. Click Virtual Machines > Virtual machine name > Networking > Add inbound port.
3. Enter the same port or port range on which you installed the Syslog NG Daemon SmartConnector.
4. Update other fields and click Add.

#### To open ports in the virtual server:

1. Log in to the virtual Microsoft Windows Server machine.
2. Open Microsoft Windows Server Firewall.
3. Click Inbound Rules > New Rule > Port > Next > TCP > Specific local ports
4. Enter the same port or port range on which you installed the Syslog NG Daemon SmartConnector.
5. Click Next > Allow the connection > Next> Profile > Next.
6. Name the rule,
7. Click Finish.

## Azure Datacenters with Stamps (Scale Units) without Premium V2 VMs

Only applications running on stamps that support Premium V2 scale units, possess the hardware required to use the VNET Integration (preview) feature.

## AppService Plan with Basic Pricing Tier Created on a Stamp That Does not Support Premium V2 VMs

It is possible that your previous **AppService plan** (even for a basic tier) was created in a stamp that does support Premium V2, hence, it can use the VNET Integration feature. If the new version of your application was created in an AppService plan with a stamp that does not have Premium V2 VMs, you might not be able to see the VNET Integration feature.

### Workaround:

1. Ensure your **AppService plan** was created in a stamp that supports VNET Integration. It is recommended to initially create the AppService Plan as Premium V2 and once created, scale it back down to Standard and then, use the VNET Integration feature.
2. If your **AppService plan** does not show the feature to scale up to Premium V2, you might not be able to create a new AppService plan in the same Resource Group of the Premium V2 pricing Tier. This happens because the **Resource Group** sometimes, decides on a particular stamp and creates all resources in there. If you experience this issue, try creating the AppService plan in a different Resource Group

## Using a Private IP

You must upgrade to a Standard or Premium plan.

1. Add a new or an existing VNet to the following resources:

Event Hubs, Storage Account and Function Apps.

Event Hubs and/or Storage Account.

- a. From your **Event Hub** or **Storage Account**, click **Firewalls and Virtual Networks**
- b. Select **All Networks** or **Selected Networks** (in case you want limited networks to access your resource).
- c. Add the **Existing Virtual Network** or **Create New Virtual Network**.

Function Apps

- a. From **2 Function Apps < Networking, < VNet Integration**, add those to your VNet.
  - b. Add or remove network interfaces from your virtual machines, for more information, see [Add network interfaces to or remove network interfaces from virtual machines](#).
2. Enable the Service endpoints of the previously used subnets.
    - a. From **Virtual networks Service**, select your **VNet < Subnets**.
    - b. Open all the subnets.

- c. Select **All Service Endpoints** and save your changes.
3. Check if the Function Apps communicate to the destination (ArcSight Syslog NG Daemon, ArcSight Load Balancer, etc.) through the Private IP.
4. From **Development Tools < Console Tool**, execute the `tcpping` command to your VM via private IP.
 

```
tcpping host:port
host: private IP
port: you may use port 3389 or the port used in your Function Apps.
```
5. After successfully executing the command above, from **Function Apps < Application Settings**, check if the setting already exists or add a new one:
 

```
APP SETTING NAME: JAVA_OPTS
VALUE: -Djava.net.preferIPv4Stack=true
```
6. In the field **connectorhostname**, enter your Private IP.
7. Next, in the field **Port**, enter the port of your Private IP.
8. Restart **Function Apps**.



**Note:** The VNet integration preview is a preview, if it does not work, you can disable and enable the VNet integration or create another subnet

## Enabling Windows PowerShell to Run Scripts

To deploy the connector, you must run a script in Windows PowerShell. Ensure that Windows Powershell is enabled to run scripts on the machine where you want to deploy the connector. This procedure needs to be done only once on the machine.

PowerShell scripts are now signed in Azure Event Hub SmartConnectors. This allows users to run them in security-enabled environments with an execution policy set to either RemoteSigned or AllSigned. For more information, see [PowerShell Execution Policies](#).



**Note:** Signed scripts can still run in unrestricted environments.

### To enable Windows PowerShell to run scripts:

1. Upgrade the Windows PowerShell version to 5.0 or later.
2. Click Start and search for Windows PowerShell. Right-click Windows PowerShell and click Run as administrator.
3. Check the current script execution policy:
 

```
Get-ExecutionPolicy
```

4. If the current script execution policy is Restricted, change the script execution policy to Unrestricted

```
Set-ExecutionPolicy unrestricted
```

Enter Yes to All when prompted.

5. Run the Get-ExecutionPolicy command to ensure that PowerShell is now Unrestricted.

6. Install the Azure Resource Manager modules from the PowerShell Gallery:

```
Install-Module -Name Az -AllowClobber -Scope AllUsers
```

At the end of string, you can either use AllUsers or CurrentUser.

Since PowerShell does not support the Azure RM and Azure AZ modules simultaneously, uninstall Azure RM before installing and running Azure AZ.



**Note:** You can migrate Azure RM to Azure AZ by following the [Azure Documentation](#), but it is not recommended.

7. When prompted to install NuGet, enter Yes.
8. When prompted to install modules from the untrusted sites (PowerShell gallery), enter Yes to All.

You should now be able to run scripts in PowerShell.

## Enabling On-premises Connectivity

To connect from an on-premises network to an Azure Virtual Network (VNet), create an incoming port to allow the TCP port number (the default port is 1999) or a range of IP's between 0 and x.

From 00.000.0.000/00 (Azure cloud) to xx.xxx.xxx.xxx (on-premises Arcsight's Syslog SmartConnector).

## Deploying the Connector

Deploying the connector will automatically deploy and configure the required components in your Azure Cloud.

When you deploy the connector against a subscription, you can monitor the events emitted from the services registered to the subscription. If you have multiple subscriptions and you want to monitor the services under all your subscriptions, you must deploy this connector against each of the subscriptions separately. The connector gets deployed directly into the Azure cloud and you do not need to set up a virtual machine in the cloud to deploy the connector.

**To deploy the connector:**

1. On the machine from where you want to deploy the connector, download the `arcsight-azure-monitor-eventhub-connector-x.x.x.zip`.
2. Extract the `arcsight-azure-monitor-eventhub-connector-x.x.x.zip` files to the desired location.
3. Configure the application properties of this connector:
  - a. Edit the `app.properties` file.
  - b. (Conditional) Modify the value of `FunctionAppName1` and `FunctionAppName2` to change the name of the Function Apps. The default names of the Function Apps are `arcsight-cloudfunctions` and `arcsight-monitor-functions`.
  - c. Specify the `connectorhostname` by entering the IP address or hostname of the Syslog NG Daemon SmartConnector or the Load Balancer.
  - d. Specify the `connectorport` of the Syslog NG Daemon SmartConnector or the Load Balancer.
  - e. Update the `keyStoreFileName` and `keyStorePassword` parameters with the keystore file name and password in the Syslog NG Daemon SmartConnector or Load Balancer. The `keyStoreFileName` and `keyStorePassword` are used by the event hub connector application running on Azure to establish a TLS connection over SSL with the client Syslog NG Daemon SmartConnector.



**Note:** Copy the keystore file from Syslog NG Daemon SmartConnector or the Load Balancer to the cloud. To access the keystore file, log in to Azure and click Storage Accounts > <storage account name> > Files > Storage container > <function app name> > `certs` folder.

After you deploy the connector, upload your keystore certificate. For more information about uploading your certificate, see “Updating Keystore Certificate”.



**Caution:** Do not use the existing resource groups in your Azure environment because this resource group will be deleted when you uninstall this connector.

- f. Specify a unique `storageaccountname`.
- g. Specify a unique `Eventhubnamespace`.
- h. Specify the Service Plan. You can specify either `Consumptionplan` or `Appserviceplan`.
  - A Consumption plan is a serverless plan and allows you to scale automatically.
  - An App Service plan handles a fixed event load.

Specify the following only if you are entering `Appserviceplan`:

servicePlanName as ArcSightPlan

servicePlanTier

servicePlanNumberOfWorkers

servicePlanWorkerSize

For more information about specifying the Service Plan, see Azure documentation.

- i. Specify the location based on the locale of the resources you want to monitor.
- j. Save the file.



**Note:** Back up the app.properties file because you would need to refer to these configurations during uninstallation.

4. The deployment script has an option to enable and disable event hubs for Active Directory, Azure Monitor and Azure Security Center.
5. Open Windows PowerShell as Administrator and run the following command:  
`<extracted path>\DeployFunction.ps1`
6. When prompted, log in to Microsoft Azure as a user with required privileges for the subscription you want to use with Azure.
7. Select the appropriate subscription from the list displayed and click **Yes**.



**Note:** Ignore warnings displayed while deploying the connector.

8. Verify the deployment as described in “Verifying the Deployment in Azure”.
9. Configure the Syslog NG Daemon SmartConnector or Load Balancer with an ArcSight destination to view and monitor events coming from Azure Cloud Services. For more information, see the ArcSight Syslog NG Daemon SmartConnector Load Balancer documentation.
10. Complete the procedures listed in “Post-Deployment Configurations”. For more information, see the ArcSight Syslog NG Daemon SmartConnector or Load Balancer documentation.
11. (Conditional) Configure the Load Balancer.

## Verifying the Deployment in Azure

Successful deployment of this connector does the following:

1. Installs two Azure functions in your Azure suscription: <arcsight cloud function app name> and <arcsight monitor app name>. These functions are used to collect events from Azure event hubs and monitor the health of the connection downstream. To view the functions in Azure, click Function Apps.



2. The install script automatically streams events from the audit logs, sign-in logs, and activity logs. For diagnostic logs, you must manually add diagnostic settings to configure streaming of these logs. For more information, see Step 7 in “Streaming Diagnostic Logs”.
3. Uploads the application settings listed in the app.properties file to Azure. This enables you to add or modify properties from Azure instead of modifying the app.properties file and redeploying the Connector. To view the properties in Azure, click Function Apps > <function app name> > Application Settings. For more information about modifying these properties, see “Customizing the Connector”.
4. Uploads the map files to Azure and the Azure Monitor Event Hub Connector can convert JSON events to a CEF format. To view the certificates in Azure, click Storage Accounts > <Storage account name> > Files > Storage container > <function app name> > certs folder. The default name of the storage account is emitterarcsightstorage.
5. Uploads the map files to Azure convert JSON events to CEF. To view these map files, click Storage Accounts > Storage account name> > Files > Storage container > function app name> maps folder.
6. Creates an Active Directory application called <arcsight monitor app name> and assigns the Azure Website Contributor role to this application
7. Creates a resource group called <arcsight functions group name>. This resource group manages the resources of this connector. The default name of the resource group is "arcsightfunctions-group".
8. Creates an Azure storage account called <storage account name>. This storage account stores the connector certificate, function logs, and the parser files.

## Post-Deployment Configurations

You must configure the connector after deployment. To configure, you must log in to Azure as a user with required privileges for the subscription you want to use with Azure and perform the following:

["Additional Configurations for App Service Plan" below](#)

["Streaming Diagnostic Logs" on the next page](#)

["Updating Keystore Certificate" on page 19](#)

["Sending Azure Security Center Events to Event Hub" on page 19](#)

## Additional Configurations for App Service Plan

On the App Service Plan, function apps are designed to go to an idle state after a default timeout period. Therefore, you must manually configure the function apps to stay connected even if events are not streamed during the timeout period.

**To configure the function apps to stay connected:**

1. Click **Function Apps**<**Function Name**< **Application Settings**< **General Settings**.
2. Update to: "**Always On**".

Ensure that you do this for both <arcsight cloud function app name> and <arcsight monitor function app name>.

## Streaming Diagnostic Logs

The install script automatically streams events from the audit logs, sign-in logs, and activity logs. For diagnostic logs, you must manually add diagnostic settings to configure streaming of these logs. For information about adding diagnostic settings, see Azure documentation. While you are adding diagnostic settings, perform the following:

**To stream diagnostic logs:**

1. Select Azure Home > Monitor > Diagnostic Settings.
2. Select the event hub (the default event hub name is: eh-emitter-arcsight).
3. When the list of configured diagnostics is displayed, click Edit on the desired diagnostic to be updated.
  - a. Click Add, to monitor a new resource.
4. From the Diagnostic settings window, mark the Stream to an event hub check box (if not marked) or select the event hub.
5. On the Select event hub window:
  - a. From the the Select event hub namespace drop-down list, specify <name of event hub namespace>.
  - b. From the Select event hub name drop-down list, select insights-diagnostics-logs.
  - c. From the Select event hub policy name drop-down list, select ArcSightAccessKey.
6. Click OK.
7. On the Diagnostic settings window, select the logs you want to stream.

## Streaming Activity Logs and Active Directory Logs Manually

You can manually stream activity logs as well as active directory logs.

To stream activity logs and active directory Logs:

1. Navigate to **Activity Logs** and or to **Active Directory> Monitoring > Diagnostic Settings**.
2. Add the setting by selecting the appropriate event hub and log categories to be monitored.

## Updating Keystore Certificate

The Syslog NG Daemon SmartConnector includes a default keystore. During deployment, this default keystore is associated with a newly created storage account. You must associate your keystore with the new storage account to prevent errors.

### To update keystore certificate:

1. Rename the desired keystore certificate as `remote_management.p12`, which is the file name of the default keystore certificate so that the Azure connector identifies the custom keystore.
2. Log in to Microsoft Azure as a user with required privileges for the subscription you want to use with Azure.
3. Select All Services > Storage Accounts.
4. In the Storage Accounts window, select <storage account name>.
5. In the Services tab, select Files.
6. Select the <storage container name> function.
7. Select the displayed folder.
8. In the fileshare of the storage account, select the certs folder. The default certificate, `remote_management.p12`, is displayed.
9. Delete this default certificate or overwrite the existing file.
10. Upload the certificate, `remote_management.12`.
  - a. Click Upload.
  - b. In the URL field, browse to the desired location and select `remote_management.p12`.
  - c. Click Upload.
11. Restart both the function apps:
  - a. Click Function Apps > <arcsight cloud function app name> > Restart.
  - b. Click Function Apps > <arcsight monitor app name> > Restart.



**Note:** After restarting the function apps, the Azure Connector is restarted along with the certificate uploaded. If you do not see the folder inside Storage Accounts, start the SyslogNG Connector and restart the `arcsight-monitor-functions` function.

## Sending Azure Security Center Events to Event Hub

To send Azure Security Center events to Event Hub, follow these steps:

1. From the Security Center sidebar, select **Pricing & Settings**.
2. Select the specific subscription to be used when configuring data export.
3. On the Subscription settings, go to the sidebar and select **Continuous Export**.
4. Select the data type to be exported and choose from the filters on each type.
5. From **Export target**, choose the current subscription. Event hub namespace and name are defined in the app.properties file when deploying.
6. Go to the Event hub and create a new policy if needed.
7. Save your changes.

# Customizing the Connector

You can customize the connector properties as required.

## To customize the connector:

1. Log in to Microsoft Azure as a user with required privileges for the subscription you want to use with Azure.
2. Click Function Apps > <arcsight cloud function app name> or <arcsight monitor function app name> > Platform Features > Application Settings.



**Important:** Do not modify any of the settings other than those listed in this procedure as this may cause unpredictable performance or even outages.

3. (Conditional) To modify the connector port and connector name of the Syslog NG Daemon SmartConnector or Load Balancer:
  - a. Update the Connector Port field.
  - b. Update the Connector Hostname field with the IP address or hostname.



**Note:** Ensure that you do this for both <arcsight cloud function app name> and <arcsight monitor function app name>.

4. (Conditional) You can send the connector logs to a storage account. However, this consumes cloud storage

In the logging.storage.enabled field, enter true. The connector now sends logs from the function app to the storage account every 15 minutes.

To stop sending logs to the storage account, enter false in the logging.storage.enabled field.

5. Click Save.

# Scaling Performance

You might need to modify your deployment or change certain configuration to improve the performance.

Your Azure pricing plan also affects performance scaling. A Consumption plan scales automatically and an App Service plan handles a fixed event load. A Consumption plan automatically creates Function App instances to scale up the load. For more information about the event load handled in a App Service plan, see the [Azure Documentation](#).

## Configuring Load Balancer

In environments where the event load is more than what can be handled by a single Syslog NG Daemon SmartConnector, you can configure Load Balancer to handle large event loads. For more information about configuring Load Balancer, see [ArcSight Load Balancer documentation](#).

# Upgrading the Connector

You can only do a binary upgrade of the connector. A binary upgrade of the connector upgrades the connector and also enables you to continue using the components created during deployment. You will not lose any custom settings.

## To upgrade the connector:

1. On the machine from where you want to upgrade the connector, download `arcsight-azure-monitor-eventhub-connector-8.2.0.zip`.
2. Extract the `arcsight-azure-monitor-eventhub-connector-8.2.0.zip` files to the desired location.
3. Configure the `app.properties` file. For more information, see Step 3 in “Deploying the Connector”. Ensure that you specify the same Function App names that you specified during deployment.

The deployment script has an option to enable/disable event hubs for Active Directory, Azure Monitor and Azure Security Center.

4. Open Windows PowerShell as Administrator and run the following command:  
`<extracted path>\DeployFunction.ps1`
5. When prompted, log in to Microsoft Azure as a user with required privileges for the subscription you want to use with Azure.
6. When prompted, select the required subscription.
7. When the script prompts you, select one of the following:

- Y to do a binary upgrade.

The script first checks whether there is an existing installation of the connector in the cloud and then upgrades only the binary files without affecting the configuration settings.

- N to do a fresh deployment of the connector.

The script deploys the connector and overrides all custom settings with default settings.

# Undeploying the Connector

Undeploying the connector deletes the Active Directory application created during deployment, deletes the resource group, and all the associated components such as storage account and event hubs created during deployment.

## To undeploy the connector:

1. Open Windows PowerShell as Administrator and run the following command:  
`<deployed path>\UndeployFunction.ps1`

2. When prompted, log in to Microsoft Azure as a user with required privileges for the subscription you want to use with Azure.

3. When prompted, select the required subscription.

The script displays the components that will be removed and prompts you for permission to undeploy the Azure connector.

4. Enter Yes when prompted.

The script undeploys the Azure connector.



# Azure Event Log Categories

Azure event logs such as activity logs and diagnostic logs are emitted in JSON format. The connector collects these event logs, converts these to CEF using mapping files, and sends these to Syslog NG Daemon SmartConnector or Load Balancer. Every JSON field is mapped to the appropriate CEF key. Each event log type has various categories and each log category has its own schema. Azure logs have schema for various log categories. With the help of these logs schema, the source fields (in JSON) are mapped to appropriate CEF keys.

The connector currently includes mapping files for several log categories of activity, audit, sign-in, and diagnostic logs. The Azure documents do not have the schemas for a few categories. Therefore, the mappings for these categories are not available in the connector. Such events are sent unparsed to the Syslog NG Daemon SmartConnector or to the Load Balancer, and then forwarded to the ArcSight destination.

Following tables list the categories for mappings supported by the Azure connector. The mappings are done using the schemas provided in the Azure documents.

This destination sends events in Common Event Format (CEF) through a Kafka broker to Microsoft Azure Event Hub (the Event Hub must enable a Kafka endpoint). For more information, see the *SmartConnector User's* guide.

## Creating Parser Files

### About

The attributes in parser files are used to map CEF fields. There are four types of logs:

- Active Directory
- Activity
- Diagnostic
- Security Center

Azure logs display the content as attribute-value pairs, separated by a comma. Attributes and values are separated by a colon.

The following examples illustrate the format of Azure logs:

Azure Activity log

"<attribute1>": "<value1>", "<attribute2>":

Azure Security Center log

JSON Event Field, CEF Field

TimeGenerated, rt

ProductName, cat  
 Description, cs5Label  
 ResourceIdentifiers, cs6Label  
 ExtendedProperties, cs1Label  
 RemediationSteps, cs2Label

## Procedure

To create a parser file:

1. Name your parser file, following the format below:  
`<log type>_<value of attribute "category" in the log file>.map`
2. Map the mandatory fields: "header.EventName", "header.DECID", "header.Severity".  
 The format is [category=<log type>:<attribute category>]  
 For example:  
 header.DECID, operationName  
 header.Severity, Level  
 header.EventName, operationName
3. Map the JSON Event fields with the corresponding CEF field. For more information about CEF fields, see the *Implementing ArcSight Common Event Format (CEF) guide*.  
 The format is JSON Event Field, CEF Field.  
 For example:  
 category, cat  
 properties/id, cs2Label



**Note:** JSON Event fields may contain a backslash or not. The attribute flags on the example above, are the main attributes, therefore, mapped without backslash. Sub attributes must be back slashed.

An Azure Event log looks like this:

```
{
  "records": [
    {
      "time": "2018-10-17T13:35:53.2803858Z",
      "resourceId":
        "/tenants/5178620e-2208-456f-a21a-41df534180fe/providers/Microsoft.aadiam",
      "operationName": "Delete user",
      "operationVersion": "1.0",
      "category": "AuditLogs",
      "tenantId": "5178620e-2208-456f-a21a-41df534180fe",
      "resultType": "Success",
      "resultSignature": "None",
      "durationMs": 0,
      "callerIpAddress": "<null>",
      "correlationId": "15235063-7ec4-4a09-bade-17e595251300",
      "level": "Informational",
      "properties": {}
    }
  ]
}
```

```
{ "id": "Directory_UFHU8_51444601", "category": "Core Directory" } ] ] }
```

An Azure Security Center log looks like this:

```
{ "VendorName": "Microsoft", "AlertType": "AKS_
ClusterAdminBinding", "ProductName": "Azure Security
Center", "StartTimeUtc": "2020-07-02T08:09:36.930274Z",
"EndTimeUtc": "2020-07-02T08:09:36.930274Z", "TimeGenerated": "2020-07-
02T09:01:11.9857424Z", "ProcessingEndTime": "2020-07-02T09:01:23.7138435Z",
"Severity": "Low", "Status": "New", "ProviderAlertStatus": null, "ConfidenceLeve
l": "Unknown", "ConfidenceScore": 0.0, "ConfidenceReasons": null,
"IsIncident": false, "SystemAlertId": "2518086234230697259_87d0d249-55e6-
410f-858c-2cb5bb7d8434", "CorrelationKey": null,
"Intent": "Persistence", "AzureResourceId": "/SUBSCRIPTIONS/AF379AE8-90B3-
4368-8FE7-B6A55AB17720/RESOURCEGROUPS/MAREK-RESOURCE-
GROUP/PROVIDERS/MICROSOFT.CONTAINERSERVICE/MANAGEDCLUSTERS/MAREK-DEMO-
AKS1",
"WorkspaceId": "69b3184b-3db8-4c98-a55a-
687e0deb26f8", "WorkspaceSubscriptionId": null, "WorkspaceResourceGroup": "",
"AgentId": "", "CompromisedEntity": "MAREK-DEMO-AKS1",
"AlertDisplayName": "Role binding to the cluster-admin role
detected", "Description": "Kubernetes audit log analysis detected a new
binding to the cluster-admin role which gives administrator
privileges.\r\nUnnecessary administrator privileges might cause privilege
escalation in the cluster.", "Entities": [ { "$id": "3", "HostName": "MAREK-DEMO-
AKS1", "AzureID": "/SUBSCRIPTIONS/AF379AE8-90B3-4368-8FE7-
B6A55AB17720/RESOURCEGROUPS/MAREK-RESOURCE-
GROUP/PROVIDERS/MICROSOFT.CONTAINERSERVICE/MANAGEDCLUSTERS/MAREK-DEMO-
AKS1", "OMSAgentID": "", "Type": "host" } ],
"ExtendedLinks": null, "RemediationSteps": [ "Review the user in the alert
details. If cluster-admin is unnecessary for this user, consider granting
lower privileges to the user." ], "ExtendedProperties": { "ClusterRoleBinding
name": "kubernetes-vault-role-cluster-admin-binding", "Subject
name": "kubernetes-vault", "Subject
kind": "ServiceAccount", "Username": "system:serviceaccount:core:cdf-
deployer", "resourceType": "Kubernetes Service" }, "ResourceIdentifiers":
[ { "$id": "2", "AzureResourceId": "/SUBSCRIPTIONS/AF379AE8-90B3-4368-8FE7-
B6A55AB17720/RESOURCEGROUPS/MAREK-RESOURCE-
GROUP/PROVIDERS/MICROSOFT.CONTAINERSERVICE/MANAGEDCLUSTERS/MAREK-DEMO-
AKS1", "Type": "AzureResource" } ], "AlertUri": "https://portal.azure.com/#blade
/Microsoft_Azure_Security/AlertBlade/alertId/2518086234230697259_87d0d249-
55e6-410f-858c-2cb5bb7d8434/subscriptionId/af379ae8-90b3-4368-8fe7-
b6a55ab17720/resourceGroup/MAREK-RESOURCE-
GROUP/referencedFrom/alertDeepLink/location/westeurope" }
```

#### 4. Map the CEF fields.



**Note:** The fields shown above are part of a sample list and likely to change based on the events generated. Adding more fields may be required.

## Overriding Parser Files

First, extract the new parser files from the AUP Extractor Tool:

### To extract parser files:

1. Download the **ArcSight-8.2.0xxxx.0-ConnectorParsers.aup** package from the ArcSight Marketplace.
2. To apply monthly parser updates to Cloud Connectors:
  - a. Download the **ArcSight-8.2.0xxxx.0-aup-extractor.jar** utility from the location where you have downloaded the connector.



**Note:** Your system must have Java 1.8.x or later version installed and Java available in the operating system's path to use the aup-extractor.jar utility

- b. Specify the following command to use the utility to extract parser files from the package:

```
java -jar aup-extractor.jar <AUP filename>
```

Examples:

- `java -jar aup-extractor.jar ArcSight-8.2.0xxxx.0-ConnectorParsers.aup` - When the **.aup** package is in the same directory where the JAR file is present.
- `java -jar aup-extractor.jar c:\MyFolder\ArcSight-8.2.0xxxx.0-ConnectorParsers.aup` - When the **.aup** package is present in other directory.

You can either provide one or both the parameters. If you do not provide any parameters, the utility picks up any available. aup file and creates a new folder named **output** in the directory from where the utility is run and uploads the output files.

The following folders will be extracted:

- **aws\_cloudwatch**: Contains security parser for AWS Cloudwatch.
  - **aws\_securityhub**: Contains security parser for AWS Security Hub.
  - **azure\_emitter**: Contains security parser for Azure emitter.
- c. Copy the parser files in the **output/azure\_emitter** folder and upload them to the Azure environment.

### To override parser files:

1. Stop the Cloud Function app and the Monitor Function app
2. Navigate to the location:  
**Cloud function app > App Service Editor (Preview)> Developer Tools**
3. Click **Go**.
4. Right-click the **Maps** folder and click **Upload**.
5. Select the parser files to be overridden and click **OK**.
6. Restart the function apps.
7. Refresh the page by restarting the **App Service Editor (Preview)**.

**To store and quick-view parser files:**

- Go to **Storage Accounts > Storage Account Name > File Shares > Storage Container > Function App Directory >Maps**.

## Active Directory, Activity, Diagnostic and Security Center Categories

### Active Directory Log Categories

**Table A-3 Active Directory Log Categories**

Categories	Resource Type	Certified
Signin		Yes
Audit		Yes

### Activity Log Categories

**Table A-2 Activity Log Categories**

Categories	Resource Type	Certified	Comments
Administrative		Yes	<p>These are the sub-categories:</p> <ol style="list-style-type: none"> <li>1. Action</li> <li>2. Write</li> <li>3. Delete</li> </ol> <p>For more information, see <a href="https://docs.microsoft.com/en-us/azure/azure-monitor/essentials/activity-log-schema">https://docs.microsoft.com/en-us/azure/azure-monitor/essentials/activity-log-schema</a></p>
Alert		Yes	Azure alerts
Recommendation		Yes	Recommendation events from Azure Advisor
Security		No	Same as Security Center events for Security Alert activity without remediation steps.
ServiceHealth		Yes	Service Health incidents occurred in Azure.

**Table A-2 Diagnostic Log Categories**

Categories	Resource Type	Certified
GatewayLogs	Microsoft.ApiManagement/service	Yes
JobLogs	Microsoft.Automation/automationAccounts JobStreams	No
JobStreams	Microsoft.Automation/automationAccount	No
CoreAnalytics	Microsoft.Cdn/profiles/endpoints	No
PipelineRuns	Microsoft.DataFactory/factories	No
TriggerRuns	Microsoft.DataFactory/factories	No
Audit	Microsoft.DataLakeAnalytics/accounts	No
Requests	Microsoft.DataLakeAnalytics/accounts	No
Audit	Microsoft.DataLakeStore/accounts	No
Requests	Microsoft.DataLakeStore/accounts	No
Connections	Microsoft.Devices/iotHubs	No
DeviceTelemetry	Microsoft.Devices/iotHubs	No

Categories	Resource Type	Certified
C2DCommands	Microsoft.Devices/IotHubs	No
DeviceIdentityOperations	Microsoft.Devices/IotHubs	No
FileUploadOperations	Microsoft.Devices/IotHubs	No
Routes	Microsoft.Devices/IotHubs	No
D2CTwinOperations	Microsoft.Devices/IotHubs	No
C2DTwinOperations	Microsoft.Devices/IotHubs	No
TwinQueries	Microsoft.Devices/IotHubs	No
JobsOperations	Microsoft.Devices/IotHubs	No
DirectMethods	Microsoft.Devices/IotHubs	No
DataPlaneRequests	Microsoft.DocumentDB/databaseAccounts	No
ArchiveLogs	Microsoft.EventHub/namespaces	No
OperationalLogs	Microsoft.EventHub/namespaces	No
AuditEvent	Microsoft.KeyVault/vaults	No
WorkflowRuntime	Microsoft.Logic/workflows	No
NetworkSecurityGroupEvent	Microsoft.Network/networksecuritygroups	Yes
NetworkSecurityGroupRuleCounter	Microsoft.Network/networksecuritygroups	Yes
LoadBalancerAlertEvent	Microsoft.Network/loadBalancers	No
LoadBalancerProbeHealthStatus	Microsoft.Network/loadBalancers	No
ApplicationGatewayAccessLog	Microsoft.Network/applicationGateways	No
ApplicationGatewayPerformanceLog	Microsoft.Network/applicationGateways	No
ApplicationGatewayFirewallLog	Microsoft.Network/applicationGateways	No
OperationalLogs	Microsoft.ServiceBus/namespaces	No
QueryStoreRuntimeStatistics	Microsoft.Sql/servers/databases	No
QueryStoreWaitStatistics	Microsoft.Sql/servers/databases	No
Errors	Microsoft.Sql/servers/databases	No
DatabaseWaitStatistics	Microsoft.Sql/servers/databases	No
Timeouts	Microsoft.Sql/servers/databases	No
Blocks	Microsoft.Sql/servers/databases	No
Audit	Microsoft.Sql/servers/databases	No

Categories	Resource Type	Certified
Execution	Microsoft.StreamAnalytics/streamingjobs	No
Authoring	Microsoft.StreamAnalytics/streamingjobs	No
AzureFirewallApplicationRule	Microsoft.Network/AzureFirewalls	Yes
AzureFirewallNetworkRule	Microsoft.Network/AzureFirewalls	Yes

**Table A-1 Security Center Log Categories**

Categories	Resource Type	Certified
Securityalerts	All resources	Yes
SecurityRecommendations	All resources	Yes

## Security Tweaks

This section has the following information:

### Adding Role Assignments

Make sure you have:

Microsoft.Authorization/roleAssignments/write and  
Microsoft.Authorization/roleAssignments/delete permissions, such as User Access Administrator or Owner.

To add a role assignment:

1. Sign into the **Azure** portal.
2. From the search box, search for the **Resource Group** you want to assign roles to.
3. Click the **Resource Group** and navigate to the **Access Control (IAM)** page.
4. Click the **Role Assignments** tab to view the role assignments at this scope.
5. Click **Add > Add Role Assignment**.

The **Add Role Assignment** pane opens.



**Note:** If you do not have permissions to assign roles, the **Add Role Assignment** option is disabled.



6. From the role list, search or scroll to find the role that you want to assign and click to select it.
7. Go to the **Assign Access To** list and click to select the type of security principle to assign access to.  
These principles generally are **User**, **Group** or **Service**.
8. If you selected a user-assigned managed identity or a system-assigned managed identity, select the subscription where the managed identity is located.
9. From the **Select** section, search for the security principle by entering a string or scrolling through the list.
10. To assign the role, click **Save**.
11. From the **Role Assignments** tab, confirm that you see the role assignment in the list.

To remove existing role assignments:

1. Open **Access control (IAM)** at a specific scope, such as management group, subscription, resource group, or resource, where you want to remove access.
2. Click the **Role Assignments** tab to view all the role assignments at the scope.
3. From **Role Assignments**, add a check mark next to the security principle with the role assignment you want to remove.
4. Click **Remove**.
5. A message is displayed, click **Yes** to confirm the changes.

## Firewall Settings for Azure Resources

1. Sign into the **Azure** portal.
2. Navigate to the **Azure Resource** that needs to be monitored.
3. Go to **Networking**.
4. Select **Allow Access from Selected Networks**.
5. Add a new virtual network or select an existing network.
6. Under Firewall, enter the IP Address Range that needs to be allowed.  
Additionally, you can select your client's IP address as well.
7. Select the **Resource Type** and the Instance name as **All in this Resource Group**.
8. Under **Exceptions**, check the option **Allow trusted Microsoft services to access this storage account**.
9. Verify if the Network Routing field shows **Microsoft Network Routing** as the default one.
10. Save the changes and refresh the resource modified.
11. Restart the function apps.

## Disabling FTP/FTPS when using function apps

TLS communication should be enabled when using function apps.

### To disable FTP/FTPS:

1. Go to the **Cloud Function App**.
2. Navigate to **Configuration > General Settings > Platform Settings**.
3. On the **FTP State** field, select **Disabled**.
4. Save the changes and restart the function app.
5. Perform the same steps on the Monitor function app and save changes.

# Troubleshooting

## Errors during Deployment

If you receive an error message prompting you to register the subscription <subscription id> with Microsoft.Insights, register the microsoft.insights provider.

**To register the resource provider:**

1. Log in to Microsoft Azure as a user with administrator privileges.
2. Click **All Services < Subscriptions**.
3. Select the subscription you want for this connector.
4. Select **Resource Providers**.
5. Click **Register**.

## Connecting Errors

Connection errors are displayed when:

The Syslog NG Daemon SmartConnector hostname and port are not reachable from Azure cloud. Ensure that the Syslog NG Daemon SmartConnector host and port are reachable from Azure cloud. Open the relevant ports. The certificate file is overridden during the deployment of the connector. Replace the remote connection management file in Azure with your remote connection management file. Click Storage Accounts > <Storage account name> > Files > Storage container > <function app name> > certs folder. Replace the remote\_management.p12 file with your <customname>.p12 file.

## Parsing Errors

Parsing errors are displayed if the event log categories are not supported by the connector. For a list of the supported categories, see Appendix A, "Azure Event Log Categories".

You can contact technical support in the following scenarios:

- If you want to change the default mappings.
- If you want to add a new log type.
- See parsing errors.

## Sharing Logs for Troubleshooting

You may want to share logs with technical support for troubleshooting.

To share logs:

1. Log in to Microsoft Azure as a user with security reader privileges or contributor privileges.
2. From the **Development Tools** menu, click **App Service Editor**.
3. Click **Go**.
4. On the new App Service Editor tab, select **Open Kudo Console** from the top drop down menu.
5. On the new tab, go to: **site > wwwroot > logs**.
6. Download the function logs and send them to technical support.

# Send Documentation Feedback

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## **Feedback on Configuration Guide (SmartConnectors 8.2.0)**

Just add your feedback to the email and click send.

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