



# **Configure EMS event notifications with the CLI**

**ONTAP 9**

NetApp  
June 27, 2023

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# Configure EMS event notifications with the CLI

## EMS configuration workflow

You must configure important EMS event notifications to be sent either as email, forwarded to a syslog server, forwarded to an SNMP traphost, or forwarded to a webhook application. This helps you to avoid system disruptions by taking corrective actions in a timely manner.

### About this task

If your environment already contains a syslog server for aggregating the logged events from other systems, such as servers and applications, then it is easier to use that syslog server also for important event notifications from storage systems.

If your environment does not already contain a syslog server, then it is easier to use email for important event notifications.

If you already forward event notifications to an SNMP traphost, then you might want to monitor that traphost for important events.



### Choices

- Set EMS to send event notifications.

If you want...	Refer to this...

The EMS to send important event notifications to an email address	<a href="#">Configure important EMS events to send email notifications</a>
The EMS to forward important event notifications to a syslog server	<a href="#">Configure important EMS events to forward notifications to a syslog server</a>
If you want the EMS to forward event notifications to an SNMP trap host	<a href="#">Configure SNMP trap hosts to receive event notifications</a>
If you want the EMS to forward event notifications to a webhook application	<a href="#">Configure important EMS events to forward notifications to a webhook application</a>

## Configure important EMS events to send email notifications

To receive email notifications of the most important events, you must configure the EMS to send email messages for events that signal important activity.

### What you'll need

DNS must be configured on the cluster to resolve the email addresses.

### About this task

You can perform this task any time the cluster is running by entering the commands on the ONTAP command line.

### Steps

1. Configure the event SMTP mail server settings:

```
event config modify -mail-server mailhost.your_domain -mail-from
cluster_admin@your_domain
```

2. Create an email destination for event notifications:

```
event notification destination create -name storage-admins -email
your_email@your_domain
```

3. Configure the important events to send email notifications:

```
event notification create -filter-name important-events -destinations storage-
admins
```

## Configuring important EMS events to forward notifications to a syslog server

To log notifications of the most severe events on a syslog server, you must configure the EMS to forward notifications for events that signal important activity.

### What you'll need

DNS must be configured on the cluster to resolve the syslog server name.

### About this task

If your environment does not already contain a syslog server for event notifications, you must first create one. If your environment already contains a syslog server for logging events from other systems, then you might want to use that one for important event notifications.

You can perform this task any time the cluster is running by entering the commands on the ONTAP CLI.

Beginning with ONTAP 9.12.1, EMS events can be sent to a designated port on a remote syslog server via the Transport Layer Security (TLS) protocol. Two new parameters are available:

#### **tcp-encrypted**

When `tcp-encrypted` is specified for the `syslog-transport`, ONTAP verifies the identity of the destination host by validating its certificate. The default value is `udp-unencrypted`.

#### **syslog-port**

The default value `syslog-port` parameter depends on the setting for the `syslog-transport` parameter. If `syslog-transport` is set to `tcp-encrypted`, `syslog-port` has the default value 6514.

For details, see the `event notification destination create` man page.

### Steps

1. Create a syslog server destination for important events:

```
event notification destination create -name syslog-ems -syslog syslog-server-address -syslog-transport {udp-unencrypted|tcp-unencrypted|tcp-encrypted}
```

Beginning with ONTAP 9.12.1, the following values can be specified for `syslog-transport`:

- `udp-unencrypted` - User Datagram Protocol with no security
- `tcp-unencrypted` - Transmission Control Protocol with no security
- `tcp-encrypted` - Transmission Control Protocol with Transport Layer Security (TLS)

The default protocol is `udp-unencrypted`.

2. Configure the important events to forward notifications to the syslog server:

```
event notification create -filter-name important-events -destinations syslog-ems
```

## Configure SNMP traphosts to receive event notifications

To receive event notifications on an SNMP traphost, you must configure a traphost.

### What you'll need

- SNMP and SNMP traps must be enabled on the cluster.



SNMP and SNMP traps are enabled by default.

- DNS must be configured on the cluster to resolve the traphost names.

### About this task

If you do not already have an SNMP traphost configured to receive event notifications (SNMP traps), you must add one.

You can perform this task any time the cluster is running by entering the commands on the ONTAP command line.

### Step

1. If your environment does not already have an SNMP traphost configured to receive event notifications, add one:

```
system snmp traphost add -peer-address snmp_traphost_name
```

All event notifications that are supported by SNMP by default are forwarded to the SNMP traphost.

## Configure important EMS events to forward notifications to a webhook application

You can configure ONTAP to forward important event notifications to a webhook application. The configuration steps needed depend on the level of security you choose.

### Prepare to configure EMS event forwarding

There are several concepts and requirements you should consider before configuring ONTAP to forward event notifications to a webhook application.

#### Webhook application

You need a webhook application capable of receiving the ONTAP event notifications. A webhook is a user-defined callback routine that extends the capability of the remote application or server where it runs. Webhooks are called or activated by the client (in this case ONTAP) by sending an HTTP request to the destination URL. Specifically, ONTAP sends an HTTP POST request to the server hosting the webhook application along with the event notification details formatted in XML.

#### Security options

There are several security options available depending on how the Transport Layer Security (TLS) protocol is used. The option you choose determines the required ONTAP configuration.



TLS is a cryptographic protocol that is widely used on the internet. It provides privacy as well as data integrity and authentication using one or more public key certificates. The certificates are issued by trusted certificate authorities.

#### HTTP

You can use HTTP to transport the event notifications. With this configuration, the connection is not secure. The identities of the ONTAP client and webhook application are not verified. Further, the network traffic is not encrypted or protected. See [Configure a webhook destination to use HTTP](#) for the configuration details.

## HTTPS

For additional security, you can install a certificate at the server hosting the webhook routine. The HTTPS protocol is used by ONTAP to verify the identity of the webhook application server as well as by both parties to ensure the privacy and integrity of the network traffic. See [Configure a webhook destination to use HTTPS](#) for the configuration details.

### HTTPS with mutual authentication

You can further enhance the HTTPS security by installing a client certificate at the ONTAP system issuing the webhook requests. In addition to ONTAP verifying the identity of the webhook application server and protecting the network traffic, the webhook application verifies the identity of the ONTAP client. This two-way peer authentication is known as *Mutual TLS*. See [Configure a webhook destination to use HTTPS with mutual authentication](#) for the configuration details.

### Related information

- [The Transport Layer Security \(TLS\) Protocol Version 1.3](#)

## Configure a webhook destination to use HTTP

You can configure ONTAP to forward event notifications to a webhook application using HTTP. This is the least secure option but the simplest to set up.

### Steps

1. Create a new destination `restapi-ems` to receive the events:

```
event notification destination create -name restapi-ems -rest-api-url  
http://<webhook-application>
```

In the above command, you must use the **HTTP** scheme for the destination.

2. Create a notification linking the `important-events` filter with the `restapi-ems` destination:

```
event notification create -filter-name important-events -destinations restapi-  
ems
```

## Configure a webhook destination to use HTTPS

You can configure ONTAP to forward event notifications to a webhook application using HTTPS. ONTAP uses the server certificate to confirm the identity of the webhook application as well as secure the network traffic.

### Before you begin

- Generate a private key and certificate for the webhook application server
- Have the root certificate available to install in ONTAP

### Steps

1. Install the appropriate server private key and certificates at the server hosting your webhook application. The specific configuration steps are dependent on the server.
2. Install the server root certificate in ONTAP:

```
security certificate install -type server-ca
```

The command will ask for the certificate.

3. Create the `restapi-ems` destination to receive the events:

```
event notification destination create -name restapi-ems -rest-api-url
https://<webhook-application>
```

In the above command, you must use the **HTTPS** scheme for the destination.

4. Create the notification that links the `important-events` filter with the new `restapi-ems` destination:

```
event notification create -filter-name important-events -destinations restapi-
ems
```

## Configure a webhook destination to use HTTPS with mutual authentication

You can configure ONTAP to forward event notifications to a webhook application using HTTPS with mutual authentication. With this configuration there are two certificates. ONTAP uses the server certificate to confirm the identity of the webhook application and secure the network traffic. In addition, the application hosting the webhook uses the client certificate to confirm the identity of the ONTAP client.

### Before you begin

You must do the following before configuring ONTAP:

- Generate a private key and certificate for the webhook application server
- Have the root certificate available to install in ONTAP
- Generate a private key and certificate for the ONTAP client

### Steps

1. Perform the first two steps in the task [Configure a webhook destination to use HTTPS](#) to install the server certificate so that ONTAP can verify the identity of the server.
2. Install the appropriate root and intermediate certificates at the webhook application to validate the client certificate.
3. Install the client certificate in ONTAP:

```
security certificate install -type client
```

The command will ask for the private key and certificate.

4. Create the `restapi-ems` destination to receive the events:

```
event notification destination create -name restapi-ems -rest-api-url
https://<webhook-application> -certificate-authority <issuer of the client
certificate> -certificate-serial <serial of the client certificate>
```

In the above command, you must use the **HTTPS** scheme for destination.

5. Create the notification that links the `important-events` filter with the new `restapi-ems` destination:

```
event notification create -filter-name important-events -destinations restapi-
ems
```



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