

Juniper NETWORKS Broadband Edge Event Collection and Visualization User Guide

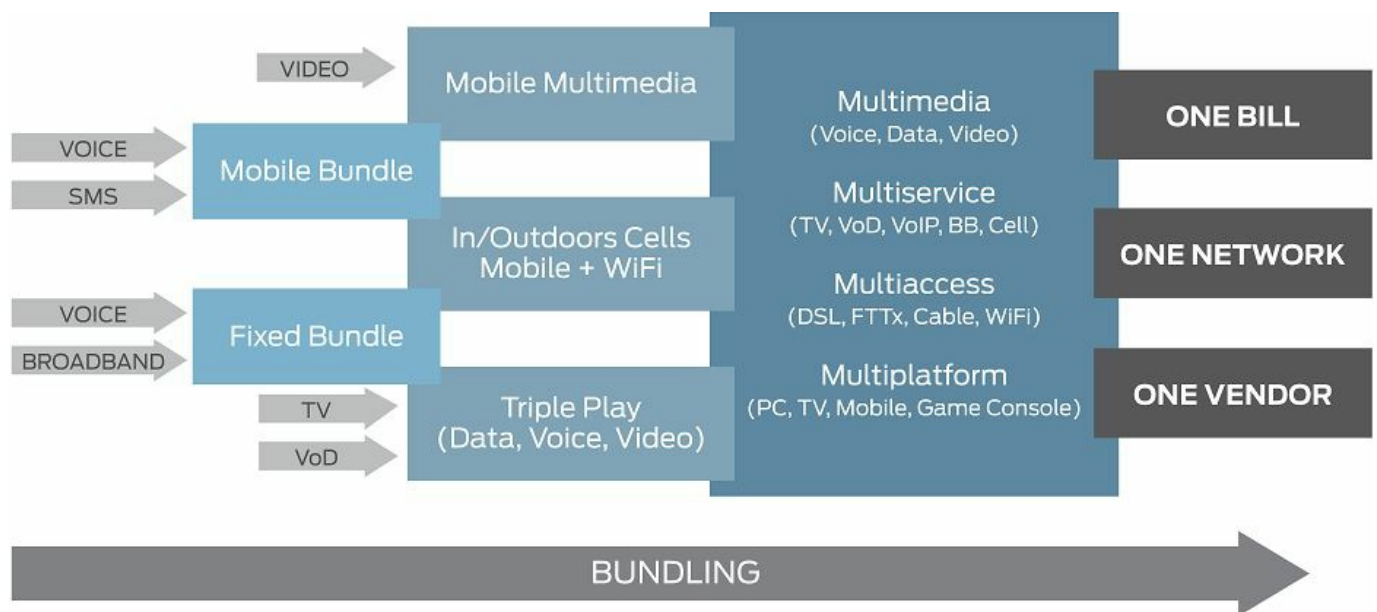
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Juniper NETWORKS Broadband Edge Event Collection and Visualization



About This Guide

Use this guide to install Broadband Edge Event Collection and Visualization.

Broadband Edge Event Collection and Visualization Installation

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Install Broadband Edge Event Collection and Visualization

SUMMARY

This section describes installation procedures and system requirements for Broadband Edge Event Collection and Visualization.

Broadband Edge (BBE) Event Collection and Visualization is an event collection application that is meant to operate with Juniper's BBE cloud applications, such as Juniper BNG CUPS Controller and Address Pool Manager (APM). BBE Event Collection and Visualization collects syslog events and records them in a time-series database. You can view the recorded events through the BBE Event Collection and Visualization Dashboard. The BBE Event Collection and Visualization Dashboard is a GUI-based visualization tool that enables you to view recorded events according to a defined filter, which can be within a specific time range. The Dashboard also provides powerful search and visualization tools through which you can correlate recorded events from multiple sources (for example, from APM or the Kubernetes cluster).

Before You Begin

Before you begin installing and running BBE Event Collection and Visualization, make sure you have the following:

- A juniper.net user account with permission to download the BBE Event Collection and Visualization software package.
- A Linux host (jump host) running Ubuntu 22.04 LTS (or later required) for running the installation.
- The jump host must have the following:
 - CPU cores—2
 - RAM—8 GB

- Disk space—128 GB of free disk storage
- Python 3 virtual environment installed
- A user login with access to the Kubernetes cluster
- External access to Docker Hub (docker.io) for pulling open-source container images needed for deploying BBE Event Collection and Visualization.
- The cluster must have at least three worker nodes (either virtual or physical machines). A node is a Linux system running Ubuntu 22.04 LTS (or later) that has a management address and a domain name. The nodes must meet the following system requirements:
- CPU cores—8 (hyperthreading preferred)
- RAM—64 GB
- Disk space—512 GB of free disk storage in the root partition

Install Broadband Edge Event Collection and Visualization SUMMARY

- Use this procedure to install BBE Event Collection and Visualization.
- Before you begin, confirm that you have met the requirements for the BBE Event Collection and Visualization installation.

NOTE: See the BBE Cloudsetup Installation Guide for instructions on installing BBE Cloudsetup facility and building the Kubernetes cluster. All the defaults align with BBE Cloudsetup if you use the `bbecloudsetup` option during each setup [`-bbecloudsetup`]. If you don't use the `bbecloudsetup` option with `setup`, then you need to have the following information when you start the BBE Event Collection and Visualization installation:

- Kubernetes registry location
- Registry name
- Registry port

Install the BBE Event Collection and Visualization Application

1. Download the BBE Event Collection and Visualization software package from the Juniper Networks software download page, and save it to the jump host.

BBE Event Collection and Visualization is available as a compressed tarball image (.tgz). The filename includes the release number as part of the name. The release number has the format:

<Major>.<Minor>.<Maintenance>

- major is the main release number of the product.
- minor is the minor release number of the product.
- maintenance is the revision number.

2. Unpack the BBE Event Collection and Visualization tarball (.tgz) file on the jump host by entering:

```
$ tar -zxvf bbe-ecav-m.m.m.tgz
```

NOTE: The BBE Event Collection and Visualization files are unpacked to the `bbe-ecav` directory.

3. Run the loader script after you unpack the tarball.

```
$ sudo ecav_loader
Creating ecav group... done.
Updating wrapper... done

Loading files... done.
Setting up utility script... done.
Successfully loaded: v1.x.x
```

4. Use the `sudo -E ecav link --context context-name --version ecav-version` command to link to the cluster. The `link` command associates the loaded BBE Event Collection and Visualization software package to the cluster in preparation for the setup.

```
$ sudo -E ecav link --context context-name --version ecav-version
Linking myContext to v1.x.x ... done.
Updating wrapper script... done.
Linking complete, please run ecav setup.
```

- `context-name`—The Kubernetes context name (cluster name).
 - `av-version`—The BBE Event Collection and Visualization software version.
5. If you are using a secure registry (for example, a cluster created by BBE Cloudsetup), authenticate with the registry by issuing a `docker login` as the system user (the system and user information supplied in the BBE Cloudsetup cluster configuration file) to the cluster's registry transport address (the FQDN supplied as the system address in the BBE Cloudsetup cluster configuration file).

```
docker login -u <system/user> <systemAddress>:<registryPort>
Password:
WARNING! Your password will be stored unencrypted in /home/user/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
```

6. Run `setup` to configure your installation. If you used BBE Cloudsetup to construct your cluster, you can add the `--bbecloudsetup` option to the `setup` command to accept the defaults for the registry, log stash service, and the OpenSearchDB replication count. You will need to enter the following information during setup:
 - A URL for the BBE Event Collection and Visualization dashboard access. Enter the DNS name for the system address used by BBE Cloudsetup.
 - An administrative password (must be a minimum of eight characters long and must contain at least one uppercase letter, one lowercase letter, one number, and one special character).

```
$ sudo -E ecav setup ---bbecloudsetup --context context-name
Validating registry... done.
Ingress URL > https://mySystemDnsAddress

New admin password required
Password:
Retype password:
Generating password hashes... done.
```

- `context-name`—The Kubernetes context name (cluster name).
 - `bbecloudsetup`—Uses the default values used when BBE Cloudsetup created the Kubernetes cluster. The `setup` command collects information about the cluster environment such as; the location of the container registry, ingress URL, OpenSearch replication count, and so on.
7. Verify the BBE Event Collection and Visualization installation can version `--context context-name --detail`.

```
$ ecav version --detail --context <myContext> Broadband Edge Event Collection & Visualization
versions:
Microservice      Release      (version)
ecav:             v1.0.0
kubernetes-event-exporter: v1.0.0 (1.4.0)
logstash:         v1.0.0 (8.5.1)
opensearch:       v1.0.0 (2.9.0)
opensearch-dashboards: v1.0.0 (2.9.0)
Available releases for Broadband Edge Event Collection & Visualization:
v1.0.0
  contexts:  myContext
  components: ecav      opensearch-dashboards opensearch logstash kubernetes-event-
exporter
```

- context-name—The Kubernetes context name (cluster name).

Start Broadband Edge Event Collection and Visualization

SUMMARY

Use this procedure to start BBE Event Collection and Visualization.

Enter rollout to start the BBE Event Collection and Visualization installation. The BBE Event Collection and Visualization utility allows you to roll out different software versions for all microservices that are part of BBE Event Collection and Visualization. You need to use the rollout command with sudo as root. The rollout command also validates that all the values needed for the new releases are present and loads the new release container images to the registry. Use `sudo -E ecav rollout --context contextName [--version software-release]` to start BBE Event Collection and Visualization services. For example:

```
$ sudo -E ecav rollout --context context-name
Load container images to registry...
Loaded container images to registry.
Rollout Broadband Edge Event Collection & Visualization... done.
```

- context-name—The Kubernetes context (cluster name).
- Enter each status `--detail --context context-name` to verify that the BBE Event Collection and Visualization services are up and running. For example:

```
$ ecav status --detail --context context-name
```

MICROSERVICE	POD	STATE	RESTARTS
bbe-ecav	jnpr-bbe-ecav-kubernetes-event-exporter-66577976dc-xwj8	Running	0
0:05:30.099226	xxxx-xx-xx-x.xxx.juniper.net		
bbe-ecav	jnpr-bbe-ecav-logstash-0	Running	0
0:04:49.099264	xxxx-xx-xx-x.xxx.juniper.net		
bbe-ecav	jnpr-bbe-ecav-opensearch-dashboards-69b7c689b4-67mgw	Running	0
0:05:30.099286	xxxx-xx-xx-x.xxx.juniper.net		
bbe-ecav	opensearch-cluster-master-0	Running	0
0:05:21.099305	xxxx-xx-xx-x.xxx.juniper.net		

- context-name—The Kubernetes context (cluster name).

NOTE: Collect the logs for service and contact the Juniper Networks Technical Assistance Center (JTAC) when either of the following occurs:

- The service is not running.
- The service's uptime compared with other services indicates that it has restarted.

Using the Broadband Edge Event Collection and Visualization Dashboard

You can use the BBE Event Collection and Visualization dashboard to search for logs or generate reports. The reports are useful for generating problem reports and general debugging.

For detailed information about the Broadband Edge Event Collection and Visualization Dashboard, see the OpenSearch documentation, <https://opensearch.org/docs/2.9/dashboards/quickstart/>.

Establish an Index Pattern To Display

To get started with the BBE Event Collection and Visualization dashboard, you must first establish an index pattern for the dashboard to display.

To establish an index pattern, perform the following:

1. Log into the URL for the BBE Event Collection and Visualization dashboard access that you set up during the BBE Event Collection and Visualization installation process. To log in, use the administration username and password you provided during the BBE Event Collection and Visualization setup.
2. Establish an index pattern for the dashboard to display.

NOTE: We recommend that you install and roll out a BBE application first so that the index pattern has events to match. You can only create the index pattern if there is at least one index to match.

- After logging in, you will see the Start by adding your data page appears. On the Start by adding your data page, select Explore on my own.
- In the Select your Tenant page, select the Private radio button and click Confirm. The BBE Event Collection and Visualization dashboard appears.
- From the pulldown menu (the three horizontal lines in the top left of the dashboard window), select Management > Dashboard Management. The Dashboard Management page appears.
- On the Dashboard Management page, select Index Patterns. The Index patterns page appears.
- On the Index Patterns page, click the Create Index Pattern button located on the right side of the page.

- In Step 1: Define an index pattern page, enter the string logstash-bbe-ecav* in the Index pattern name box and click the Next step button.

NOTE: The asterisk (*) wild card enables you to match multiple days of index patterns.

- In Step 2: Configure settings page, select @timestamp in the Time field pulldown box and click the Create index pattern button.
- Using the pulldown menu, navigate back to the Discover page. All generated logs for your BBE applications are displayed.

NOTE: You can create the index pattern only if there is at least one index that matches.

How to Change the Time Range

You can change the time range of the information that you want displayed in the Discover page. The Discover page is where the log information is displayed.

To change the time range of the event information displayed:

1. On the BBE Event Collection and Visualization dashboard click Discover, the Discover page appears.
2. On the Discover page, click the calendar icon located at the top right of the page. The Time range selector box appears.
3. In the Time range selector box, choose a time range to show information for and click Apply. The information for the time range that you selected is displayed in the Discover page.

How to Customize Event Output

You can customize the information that you want displayed in the Discover page. The Discover page is where the log information is displayed. To customize event output:

1. On the BBE Event Collection and Visualization dashboard click Discover, and the Discover page appears.
2. On the left side of the Discover page, all the available fields are listed under the Available fields field.
3. To display the information in the Discover page, click the plus icon next to the field that you want to add.

The field is added to the Discover page along with the corresponding information for the field.

NOTE: We recommend that you start by adding the following fields:

- Time
- host. hostname
- process. name
- message

How to Create a Report

You can save and then download the information that appears in the Discover page. The Discover page is where the log information is displayed.

To create a report:

1. On the BBE Event Collection and Visualization dashboard click Discover, and the Discover page appears.
2. On the Discover page, click Save located in the top menu. The Save search dialog box appears.
3. In the Title field, enter a name for the saved search and click Save. The name of the saved search appears in the Discover page (top left).
4. After the search has been saved, in the top menu, click Reporting. The Generate and Download dialog box appears.
5. Select Generate CSV. The report is downloaded as a CSV file.

How to Search for Events Using DQL Search

In the BBE Event Collection and Visualization dashboard, you can use the Dashboard Query Language (DQL) to search for events. You can use wild cards and create filters to search for specific event information.

For detailed information about using DQL, see the OpenSearch documentation,

<https://opensearch.org/docs/2.9/dashboards/discover/dql/>.

To search for event information using the DQL search:

1. On the BBE Event Collection and Visualization dashboard click Discover, the Discover page appears.
2. On the Discover page, enter the information you are looking for into the DQL Search field (located at the top left of the page). Make sure that DQL is selected for the search field.
3. If desired, you can also create filters to use in searching for the information that you are looking for. Select Add filter. The Edit Filter dialog box appears.
4. Use the Edit Filter dialogue box to customize your filter and click Save. The Discover page displays your information according to the DQL search.

How to Use the Broadband Edge Event Collection and Visualization Utility Commands

SUMMARY

After you have installed Broadband Edge Event Collection and Visualization, you can perform numerous administrative functions.

Access Broadband Edge Event Collection and Visualization Utility Commands

You can use the Broadband Edge Event Collection and Visualization utility script (ecav) to administer the application and to access the CLI that you use for configuring operations. The Broadband Edge Event Collection and Visualization installation places the utility script in /usr/local/bin.

The ecav utility script performs the tasks you need to do to manage Broadband Edge Event Collection and Visualization but masks the complexity of the kubectl command. This masking of the kubectl commands simplifies your administrative duties.

The ecav utility script uses the Kubernetes kubectl utility commands to do the following:

- Create and delete objects.
- Provide log access.
- Conduct interactive sessions with pod containers.
- Display the status of the Broadband Edge Event Collection and Visualization objects.

Table 1 on page 12 lists the commands that you can invoke with the ecav utility script and describes the

action that each command initiates.

Table 1: Broadband Edge Event Collection and Visualization Utility Script Commands

Command Name	Action
<code>ecav clean [--release <i>release-number</i>][--docker] [--dry-run][--uninstall]</code>	<p>Removes unused software releases and you can use it to uninstall the application. This command offers the following options:</p> <ul style="list-style-type: none">• <code>release <i>number</i></code>—The release numbers that you want to clean up (remove). The default is to remove unused releases. Specify the desired release numbers.• <code>docker</code>—Cleans the local docker cache.• <code>dry-run</code>—Lists the releases or containers that will be removed by the command.• <code>uninstall</code>—Uninstalls all software releases and removes BBE Edge Event Collection and Visualization from the system.
<code>sudo -E can cluster- rename --context <i>context-name</i> --new-name <i>new-name</i></code>	<p>Renames a cluster to which Broadband Edge Event Collection and Visualization is connected. Renaming the cluster does not impact the Broadband Edge Event Collection and Visualization service. To run this command, you need sudo root privileges.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none">• <code>context <i>context-name</i></code>—The old Kubernetes cluster name to rename. Specify the name of the cluster.• <code>new-name <i>new-name</i></code>—The new name of the Kubernetes cluster. Specify a new name.
<code>av ip --context <i>context-name</i> [-o] -- output json] [--detail]</code>	<p>Displays the IP addresses of every service with an external IP address. This command offers the following options:</p> <ul style="list-style-type: none">• <code>context <i>context-name</i></code>—The Kubernetes cluster name. Specify the name of the cluster.• <code>Output JSON</code>—Allows you to request the output in JSON format.• <code>detail</code>—Displays detailed IP information.

Command Name	Action
<p>sudo -E can link — version <i>software-release</i> —context <i>context-name</i></p>	<p>Links a cluster to a specific software version. To run this command, you need sudo root privileges.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none"> • version <i>software release</i>—Specify the software release to link to the cluster-specific repository. • context <i>context-name</i>—The Kubernetes cluster name to link to the software release. Specify the name of the cluster.
<p>sudo -E can rollout — context <i>context-name</i> — version <i>software-release</i></p>	<p>Upgrade a Broadband Edge Event Collection and Visualization service. To run this command, you need sudo root privileges.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none"> • context <i>context-name</i>—The Kubernetes cluster name on which to roll out the new software version. Specify the name of the cluster. • version <i>software release</i>—The software release to roll out. Specify the software release number.
<p>sudo -E can setup — context <i>context-name</i> [– default] [–update]</p>	<p>Sets up the Broadband Edge Event Collection and Visualization application as part of the installation process. To run this command, you need sudo root privileges.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none"> • context <i>context-name</i>—The Kubernetes cluster name on which to run startup. Specify the name of the cluster. • default—Setup uses the default values that were entered when BBE Cloudsetup created the cluster. • update—You will only be prompted for missing values during setup.

Command Name	Action
<p>sudo -E can start — context <i>context-name</i></p>	<p>Starts a specific Broadband Edge Event Collection and Visualization service. To run this command, you need sudo root privileges.</p> <p>This command offers the following option:</p> <ul style="list-style-type: none"> • context <i>context-name</i>—The Kubernetes cluster name on which to start a Broadband Edge Event Collection and Visualization. Specify the name of the cluster.
<p>ecav status —context <i>context-name</i> [-o —output json]</p>	<p>Displays the current status of the Broadband Edge Event Collection and Visualization services.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none"> • context <i>context name</i>—The Kubernetes cluster name. Specify the name of the cluster. • output—Allows you to request the output in JSON format.
<p>sudo -E can stop — context <i>context-name</i> -now</p>	<p>Stop all Broadband Edge Event Collection and Visualization services. To run this command, you need sudo root privileges.</p> <p>This command offers the following option:</p> <ul style="list-style-type: none"> • context <i>context-name</i>—The Kubernetes cluster name on which to stop Broadband Edge Event Collection and Visualization. Specify the name of the cluster. • now—If this optional command is not entered, the stop will begin after two minutes.
<p>sudo -E can unlink — context <i>context-name</i></p>	<p>Unlink components associated with the cluster. To run this command, you need sudo root privileges.</p> <p>This command offers the following options:</p> <ul style="list-style-type: none"> • context <i>context-name</i>—The Kubernetes cluster name to uninstall. Specify the name of the cluster.

Command Name	Action
<p>av version [<i>--context context-name</i>] [<i>-o</i> <i>output</i>] [<i>--detail</i>]</p>	<p>Displays the version of the following:</p> <ul style="list-style-type: none"> • Every running microservice in the Broadband Edge Event Collection and Visualization instance. • The Broadband Edge Event Collection and Visualization utility. • All available Broadband Edge Event Collection and Visualization software releases on the system. <p>This command offers the following options:</p> <ul style="list-style-type: none"> • <i>context context-name</i>—The Kubernetes cluster name. Specify the name of the cluster. • <i>output</i>—Allows you to request the output in JSON format. • <i>detail</i>—Displays all available software versions.

Use the following general syntax to issue a command

- For a short option:

```
$ ecav command-name -option
```

- For a long option:

```
$ ecav command-name --option
```

- To display a list of available commands with a brief description, use either the *h* or *help* option:

```
$ ecav -h
```

```
$ ecav -help
```

- To display the options for a specific command:

```
$ ecav command-name -h
```

Start Broadband Edge Event Collection and Visualization Services

- Use the local utility script to start all BBE Event Collection and Visualization services.
- Execute this command to start all BBE Event Collection and Visualization services:

```
$ sudo -E ecav start
```

NOTE: We do not recommend that you stop the BBE Event Collection and Visualization services.

Check the Status of the Broadband Edge Event Collection and Visualization Service

- Use the ecav status utility script to check the status of the BBE Event Collection and Visualization service. The status can show whether or not the service is running.
- To check detailed information about the service, run the following command:

```
$ ecav status --detail
```

For example

```
user@host $ ecav status --detail
MICROSERVICE  POD                                STATE  RESTARTS
UPTIME         NODE
bbe-ecav       jnpr-bbe-ecav-kubernetes-event-exporter-66577976dc-xwjm8 Running  0
0:05:30.099226 xxxx-xx-xx-x.xxx.juniper.net
bbe-ecav       jnpr-bbe-ecav-logstash-0           Running  0
0:04:49.099264 xxxx-xx-xx-x.xxx.juniper.net
bbe-ecav       jnpr-bbe-ecav-opensearch-dashboards-69b7c689b4-67mgw Running  0
0:05:30.099286 xxxx-xx-xx-x.xxx.juniper.net
bbe-ecav       opensearch-cluster-master-0       Running  0
0:05:21.099305 xxxx-xx-xx-x.xxx.juniper.net
```

Uninstall and Remove Broadband Edge Event Collection and Visualization

Use the ecav utility script to uninstall the BBE Event Collection and Visualization configuration. The clean command uninstalls and removes all BBE Event Collection and Visualization versions from your system. To uninstall BBE Event Collection and Visualization:

1. On the jump host where you installed BBE Event Collection and Visualization, run the stop command.

```
$ sudo -E ecav stop --context context-name
```

2. Run the unlink command.

```
$ sudo -E ecav unlink --context context-nameapt remove ecav
```

3. Run the clean command.

```
$ sudo -E ecav clean --uninstall
```

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THE YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.









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Documents / Resources

	<p>Juniper NETWORKS Broadband Edge Event Collection and Visualization [pdf] User Guide Broadband Edge Event Collection and Visualization, Broadband Edge, Event Collection and Visualization, Collection and Visualization</p>
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References

-  [Juniper Networks – Leader in AI Networking, Cloud, & Connected Security Solutions](#)
-  [process.name](#)
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-  [OpenSearch](#)
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