Cluster Configuration Guide

AWS Elemental Conductor File

Version 2.17

AWS Elemental Conductor File: Cluster Configuration Guide

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This is version 2.17 of the AWS Elemental Conductor File documentation. This is the latest version. For prior versions, see the *Archive* section of AWS Elemental Conductor File and AWS Elemental Server Documentation.

About This Guide

This guide is intended for engineers who are performing the initial configuration on one or more AWS Elemental nodes that are in an AWS Elemental Conductor File cluster. In other words, this guide describes how to set up AWS Elemental Server nodes in a Conductor File cluster.

Phase 2 of Installation

This guide provides detailed information on phase 2 of installation, including:

- Configure all the nodes into a cluster so that they can be controlled by Elemental Conductor.
- Enable user authentication so that users must log in to use any product.
- Add users, if user authentication is enabled.
- Configure the time zone, DNS server, NTP servers, firewall, and alert notifications.
- Configure other Ethernet interfaces, as required.
- Configure routers and other input devices.

Prerequisite Knowledge

We assume that you know how to:

- Connect to the AWS Elemental Conductor File web interface using your web browser.
- Log in to a remote terminal (Linux) session in order to work via the command line interface.

> **Note**
>
> To receive assistance with your AWS Elemental appliances and software products, see the forums and other helpful tools on the AWS Elemental Support Center.

Getting Ready for Phase 2

Be aware of the following topics before starting phase 2 of installation.

Topics

General Information

CPU-only and GPU-enabled

There are two processing architectures for AWS Elemental Server: CPU-only and GPU-enabled.

In an AWS Elemental Conductor File cluster, the Conductor File nodes and the AWS Elemental Server nodes must be either all running CPU-only versions of software, or all running GPU-enabled versions of software. So both Conductor File and all AWS Elemental Server nodes must all be running CPU-only software versions, or all be running GPU-enabled software.

Redundancy and Non-Redundant Clusters

The AWS Elemental Conductor File cluster can be set up in a redundant or non-redundant Conductor configuration.

- A redundant configuration involves setting up two Conductor File nodes. Only one Conductor node controls the cluster at a time, but both are active and performing database replication.
- In a non-redundant configuration, there is only one Conductor node.

This table summarizes the available cluster options for AWS Elemental Conductor File:

Workers	Conductor
Non-redundant	Non-redundant (only one Conductor node)
Non-redundant	Redundant (two Conductor nodes)

This guide describes how to set-up all of these configurations.

Web Interface Access

Many of the steps in this procedure involve working in the web interface.

To display the web interface for the primary Conductor, enter the hostname or IP address of that node in a web browser.

If you answered Yes to the prompt “Do you wish to enable authentication”, then when you display the web interface, the Login screen will appear.

Log in to the web interface using the “admin” credentials you created via the configure script.

> **Important**
>
> You cannot log in using the *elemental* user credentials!

Where to Work: Configuration Screens

The procedures in this guide use one of three screens on the Conductor web interface. All work is done from the Conductor web interface; there is never a need to switch to the web interface for a worker.

The three screens are:

- The Node Configuration screen for a Conductor node.
- The Node Configuration screen for a worker node.
- The Conductor Configuration screen for a Conductor node.

These three screens cover slightly different configuration features, and are accessed in slightly different ways. The following tables provides more detail.

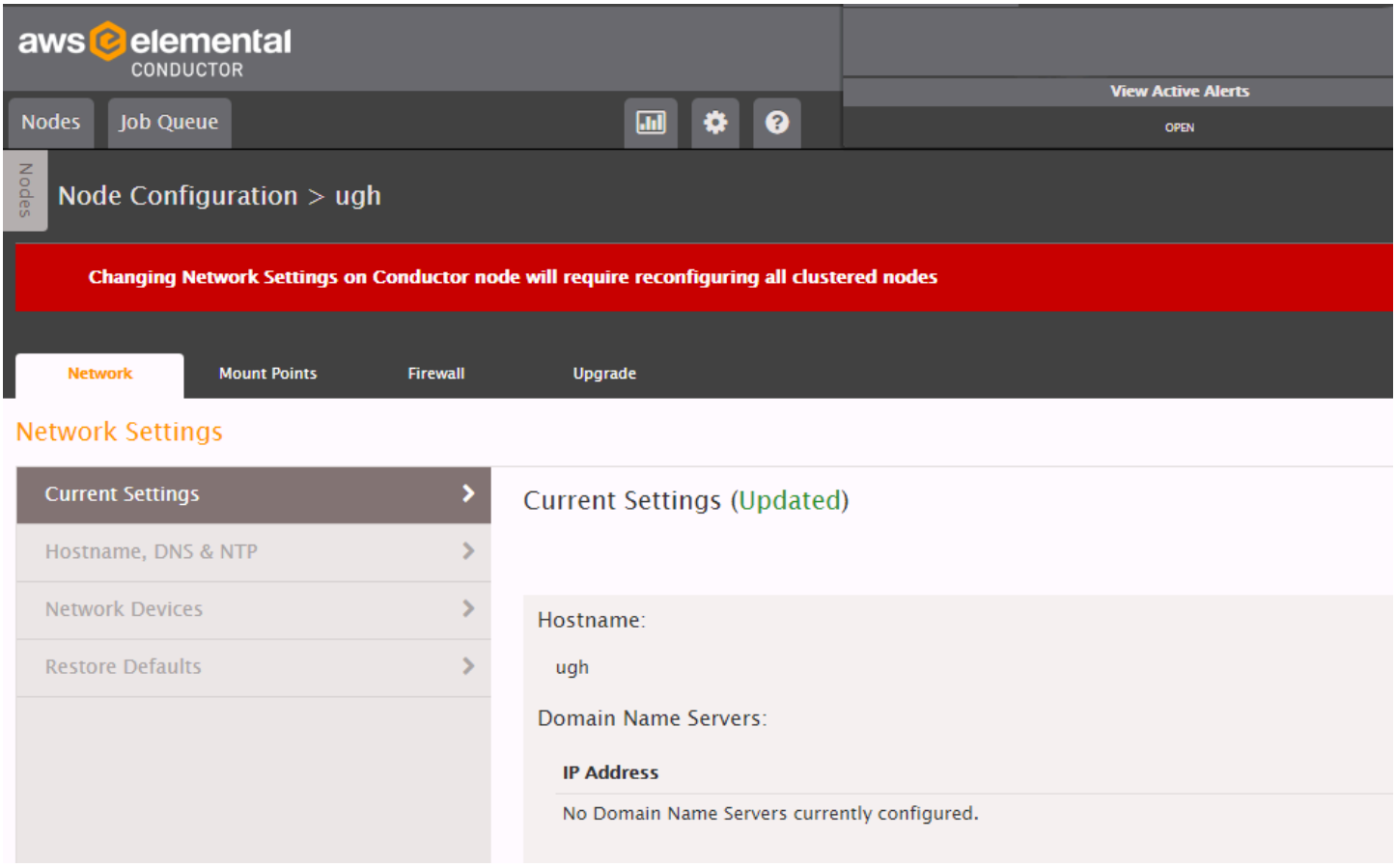
Screen	How to Navigate to this Screen	Purpose of this Screen
Node Configuration screen for Conductor	From the Conductor web interface: **Nodes** > **Edit** (wrench icon)	Configures the Conductor node as one of several nodes in the cluster. Includes network settings, mount points, and firewall for AWS Elemental Conductor File.
Node Configuration screen for worker	From the Conductor web interface: **Nodes** > **Edit** (wrench icon)	Configures the worker node as one of several nodes in the cluster. Include network settings, mount points, and firewall for AWS Elemental Server.
Conductor Configuration screen	From the Conductor web interface: Configuration (cog icon) in the main menu	Configures the Conductor in its special role as the manager of the cluster. Includes failover managemen t, authentication on the cluster, SNMP management, and so on.

Important

Take care to go to the correct screen! Do not confuse the Node Configuration screen with the Conductor Configuration screen.

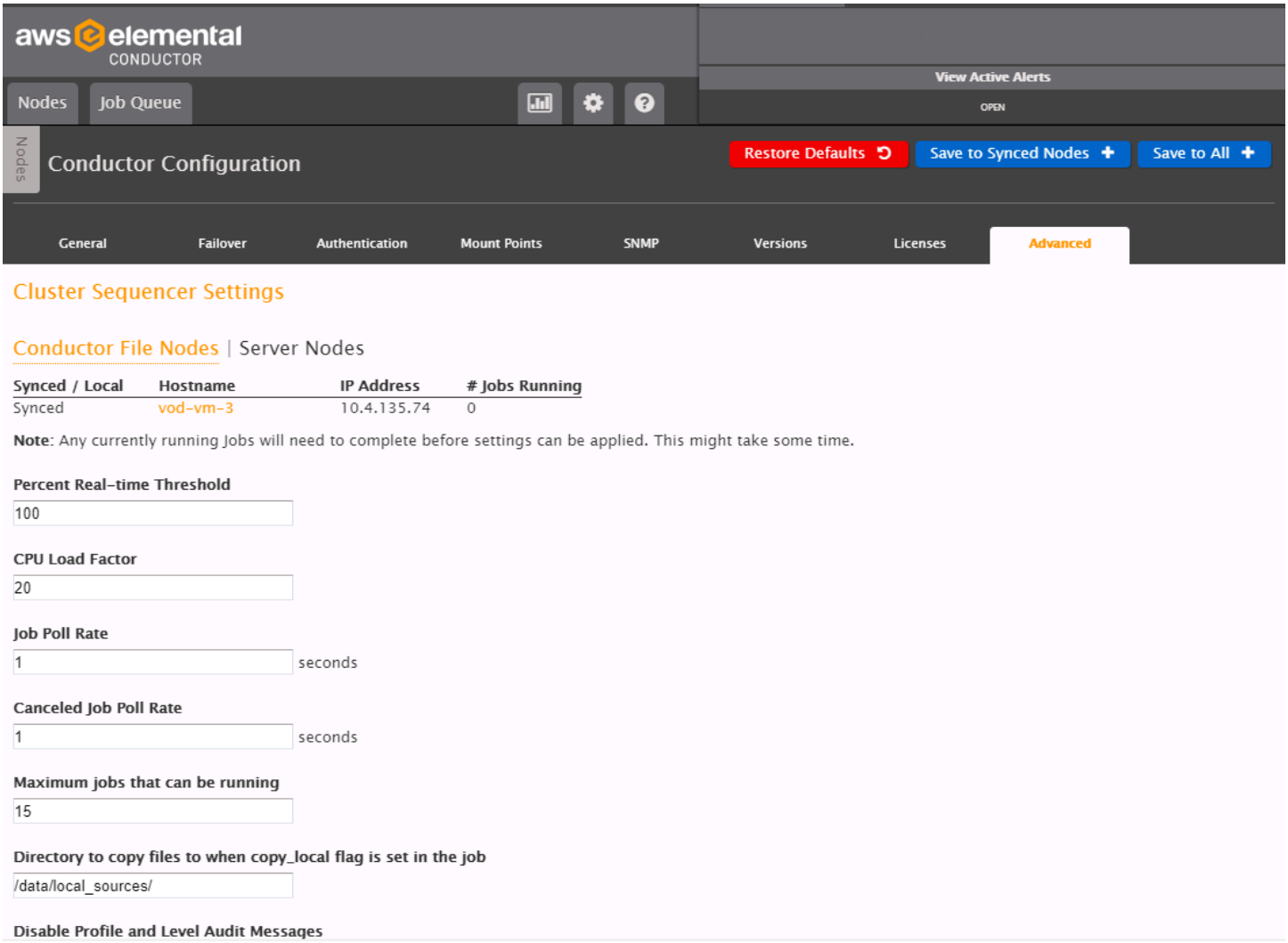
Node Configuration Screen

This example shows the Node Configuration screen for a Conductor node. The screen for a worker node is nearly identical.



Conductor Configuration Screen

This example shows the Conductor configuration screen.


aws elemental
CONDUCTOR
View Active Alerts
OPEN
Nodes
Job Queue
Nodes
Conductor Configuration
Restore Defaults
Save to Synced Nodes
Save to All
General
Failover
Authentication
Mount Points
SNMP
Versions
Licenses
Advanced
Cluster Sequencer Settings
Conductor File Nodes | Server Nodes
Synced / Local
Hostname
IP Address
Jobs Running
Synced
vod-vm-3
10.4.135.74
0
Note: Any currently running Jobs will need to complete before settings can be applied. This might take some time.
Percent Real-time Threshold
100
CPU Load Factor
20
Job Poll Rate
1
seconds
Canceled Job Poll Rate
1
seconds
Maximum jobs that can be running
15
Directory to copy files to when copy_local flag is set in the job
/data/local_sources/
Disable Profile and Level Audit Messages

Configuring the AWS Elemental Conductor File Node

The procedures in this guide describe how to do the following:

> **Important**
>
> Perform these steps in the order that they are presented.

1. Perform the initial cluster setup via the remote console to configure two Conductor File nodes to be able to communicate with each other, and to enable user authentication (if you want this feature): Run the Configuration Script for AWS Elemental Conductor File
2. Enable various network features on the entire cluster. If you have two Conductor File nodes, these steps must be performed on each Conductor File node:
   - Configure Ethernet Devices on AWS Elemental Conductor File Nodes
   - Configure DNS and NTP Servers for the Cluster
   - Open Ports on the Firewall for AWS Elemental Conductor File Nodes
   - Add Mount Points to AWS Elemental Conductor File Nodes
3. Enable other optional features on the entire cluster. These steps need be performed only on one Conductor File node:
   - Work with Database Backups for AWS Elemental Conductor File
   - Add Users
4. Set the heartbeat for redundancy features: Set Failover Timing for the Cluster
5. Enable optional Conductor File redundancy: Configure Redundancy for AWS Elemental Conductor File Nodes

Run the Configuration Script for AWS Elemental Conductor File

Perform this procedure if one of these applies:

- You have two Conductor File nodes.
- You want to require users to enter login credentials when working with the cluster (user authentication).

Getting Ready

If you have a redundant Conductor File configuration, designate one of the nodes as the primary Conductor File node and the other as the secondary Conductor File node.

Configuring AWS Elemental Conductor File

If you have a redundant Conductor File configuration, perform this procedure on both nodes: first the primary, and then the secondary. If you have a non-redundant configuration, perform this procedure on the one Conductor File node.

1. From a Linux prompt, log in with the *elemental* user credentials. Once you're logged in, the initial directory is `/home/elemental`.
2. Change to the directory where the configuration script is located:

```
[elemental@hostname ~]$ cd /opt/elemental_se
```

3. Run the configuration script as follows:

```
[elemental@hostname elemental_se]$ sudo ./configure
```

4. The following prompts appear. Complete each prompt as follows.

Prompt	Action
`Enter this server's Hostname`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide. Change the value only if you realize that you have given the same hostname to more than one hardware unit in the cluster.
`Is eth0 a management interface?`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide.

Prompt	Action
`Does eth0 use DHCP to get its IP address?`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide.
`Enter eth0's IP address:`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide.
`Enter eth0's NETMASK:`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide.
`Enter eth0's Gateway (or type` **`none`**`):`	This is already set to the value that you entered or accepted during node installation. For more information, see AWS Elemental Server Configuration Guide.
`Keep this configured nameserver: 10.6.16.10?`	Skip; you will set up a nameserver on the web interface.
`Would you like to configure eth1?`	Skip; you will set up more Ethernet devices on the web interface.
`The firewall for this system is currently disabled. Would you like to enable it?`	Skip; you can set up the firewall on the web interface.
`Configure this node as the secondary node?`	See the following section *Configuring the Conductor Nodes*.
`Select time zone ('n' for more)`	Change the time zone as appropriate. This impacts only the web interface.

Prompt	Action
`Would you like to start the Elemental service now?`	Type **`Yes`**.

Configuring the Conductor File Nodes

Take the appropriate action:

- If you have a redundant configuration and the node that you are configuring is the primary Conductor File node, type **No**.
- If you have a redundant configuration and the node that you are configuring is the secondary Conductor File node, type **`Yes`**. At the next prompt, enter the IP address or hostname of the primary node.
- If you have a non-redundant configuration (only one Conductor File node), type **No**.

Configure Ethernet Devices on AWS Elemental Conductor File Nodes

When you installed each AWS Elemental product in the cluster, you configured eth0. You can now set up eth1 and any additional Ethernet devices. Optionally, you can also bond two devices that you have set up.

Topics

Add Ethernet Devices

1. On the AWS Elemental Conductor File web interface, choose **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
3. On the **Network Configuration** screen, choose **Network** > **Network Devices**.

> **Important**
>
> This screen has a warning in red. It does not apply the first time you set up network devices.

4. On the **Network Devices** tab, choose **Add Network Device**.
5. In the **Add Network Device** dialog, select **eth** as the device type and choose **Save**.
6. In the **Edit a Network Device** dialog, complete the fields as follows:
   - **Device Name**: Specify "ethN" (for example, **eth1**).
   - **Management**: Leave unchecked. eth0 has already been set up as the management interface and you do not need more than one management interface in the cluster. The management interface is ideally connected to a network dedicated to communication between Conductor and its worker nodes.
   - **Description**: Optional.
   - **Address Mode**: Select **DHCP**, **Static**, or **None**. We recommend that you select **Static** if you plan to bond the two Conductor management interfaces.

     If you choose Static Routing, extra fields appear for you to configure the device: **IP Address**, **Netmask**, (optional) **Gateway**, and (optional) **Static Routes**.
7. Choose **Save**. The new device appears in the Network Devices list.
8. If there is another Conductor node in the cluster, repeat these steps on the web interface for that node.

Bond Ethernet Devices

You can bond Ethernet devices to suit your networking requirements. For example, you might set up two Ethernet devices as an active/redundant pair. Or, if you have two Conductor nodes, you might bond the management interfaces on the two nodes.

Bonding is a two-step process

- Step A: Create the Bond
- Step B: Assign the Devices

Important

We recommend that you set up both eth0 and eth1 with static IP addresses. Eth0, eth1 and bond0 should also all on the same subnet.

Prerequisites

Before you begin this process, make sure that you've done the following:

- Added to AWS Elemental Conductor File the Ethernet devices that you're bonding.

Step A: Create the Bond

1. Make sure that you have set up the two devices that you want to bond.
2. On the Conductor web interface, choose **Nodes** in the main menu.
3. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
4. On the **Node Configuration** screen, choose **Network** > **Network Devices**.
5. On the **Network Devices** tab, choose **Add Network Device**.
6. In the **Add Network Dialog** dialog, select **bond** as the device type. The dialog immediately expands to include more fields.
7. Complete the fields as follows:

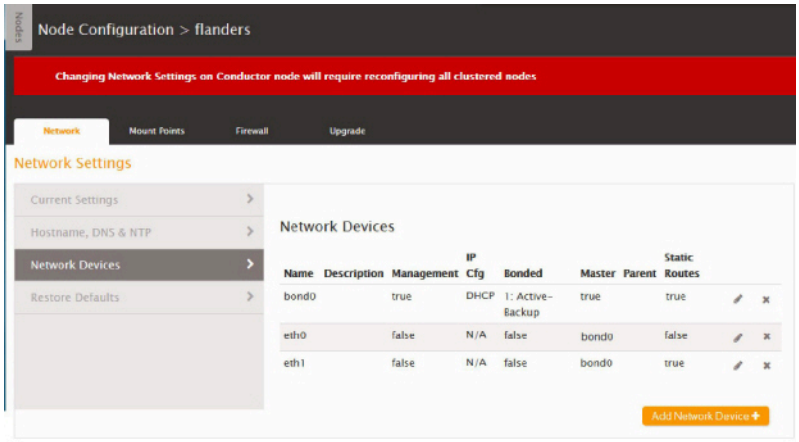
Prompt	Action
Bond ID	A number that is unique among your bonded interfaces.
Management	• Checked: if you are creating a bond in order to bond two management interface s. For example, if you want to set up both eth0 and eth1 as management interfaces, with eth1 as a backup in case eth0 fails. • Unchecked: if you are not bonding two management interfaces.

Prompt	Action
Description	Optional.
IP Address, **Netmask**, and **Gateway**	The fields appear only if you set Address Mode to Static. The eth0, eth1, and bond0 devices should all be on the same subnet.
Static Routes	Optional.
Mode	Choose the mode that meets your networkin g requirements.
More fields	Depending on the mode, more fields may appear. Complete them as required to meet your networking requirements.

8. Choose **Save**. The new device appears in the Network Devices list.
9. If you have a secondary Conductor node, switch to the web interface for that node and repeat these steps.

Step B: Assign the Devices

1. Revise the two regular Ethernet devices as follows:
   - **Management**: Always Unchecked. This indicates that whether the devices are management or not is defined in the bond, not in the individual devices.)
   - **Master Device**: Select the bond that you just created (for example, bond0).
2. Choose **Save**. The Network Devices list shows the two Ethernet devices and the bond, as displayed in this example:



3. If you have a secondary Conductor node, switch to the web interface for that node and repeat these steps.

Configure DNS and NTP Servers for the Cluster

You can configure servers in the following ways:

- Create a list of DNS servers for each node to use.
- Create a list of NTP servers for each node to use.

To configure servers

1. On the AWS Elemental Conductor File node, choose **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
3. On the The **Hostname, DNS & NTP** tab, choose **Network > Hostname, DNS & NTP**.

> **Important**
>
> This screen has a warning in red. It does not apply the first time you set up DNS and NTP servers.

4. Add servers as desired and choose **Save**.
5. If you have a secondary Conductor node, switch to the web interface for that node and repeat these steps.

Open Ports on the Firewall for AWS Elemental Conductor File Nodes

You can enable or disable the firewall. By default, the firewall is enabled.

The installer configures the ports on your firewall that must be open for incoming and outgoing traffic to and from each node. You can open more ports if required for any reason.

To open ports on the firewall

1. On the AWS Elemental Conductor File node, click **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
3. On the **Node Configuration** screen, choose **Firewall**.
4. Choose **Firewall On**. A list of ports appears.
5. In the list of ports, add or delete ports as desired.
6. If you have a secondary Conductor node, switch to the web interface for that node and repeat these steps.

Add Mount Points to AWS Elemental Conductor File Nodes

You might want to specify files as the input sources for jobs. You might also have assets such as scripts and image files that you want to use in jobs that are stored in a folder on a remote server.

For Conductor or a worker node to access remote files, you must mount the remote server folder onto the node. The folder will become a “remote share”. The remote share is mounted to: `/data/mnt/`*`folder`*

where *`folder`* is a folder name that you specify and that is then created on the node.

To add mount points

1. On the AWS Elemental Conductor File node, click **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
3. On the **Node Configuration** screen, choose **Mount Points**.
4. On the **Mount Points** screen, complete the screen according to the following table and choose **Save**.

Field	Description
Type	Choose the type of remote server: • **CIFS**: Choose this for a Windows CIF server or for a Windows, Linux, or Mac SMB server. • **NFS**: Choose this for a Linux server. • **DAVFS**: Choose this for a DavFS server.
Server Share	The address of the folder on the remote computer that you want to make available on this node.
Mount Folder	The folder on the node where the remote folder is mounted. As shown, this folder must be under `/data/mnt` . You can specify a sub-subfolder; if that folder does not already exist, Conductor File automatic ally creates it.
Username	If the remote server folder is protected with a username/password, enter the username here.
Password	If the remote server folder is protected with a username/password, enter the password here.

5. Wait a few minutes. The newly mounted folder appears on the screen.
6. If you have a secondary Conductor node, switch to the web interface for that node and repeat these steps.

The folder on the remote server is now mounted on the Conductor nodes.

Work with Database Backups for AWS Elemental Conductor File

> **Important**
>
> To set up database backup for the entire cluster, you need perform this setup only on the Conductor node. If you have two Conductor nodes, you need perform this setup only on the primary Conductor node.

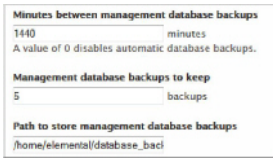
All nodes in the cluster – Conductor and worker nodes – share the same database. The AWS Elemental Conductor File node is automatically configured to back up the database to a local disk. The following sections describe how to work with the backup.

Topics

View Folder for Database Backups

1. On the primary Conductor web interface, choose **Configuration** (cog icon) on the main menu.
2. On the **Conductor Configuration** screen, review the management database fields.

   In the following example, the system creates backups every 24 hours and five consecutive backup files are saved. When the system creates the sixth backup, the it deletes the oldest file before saving the most recent backup.



Backup files are named in this format: `<yyyy-mm-dd_hh-mm-ss.tar.bz2>`

Important

Similar database fields also appear in the **Settings** > **General** screen on the worker nodes. When the workers are part of a cluster, the system ignores the values set on the worker nodes.

Change Folder for Database Backups

The default folder for backups is on the node at `/home/elemental/database_backups`.

We strongly advise that you mount a remote folder as the location for backups. In that way, if the hardware unit fails, you can restore the database from that remote folder.

To mount a remote folder

1. Choose a remote server in your organization and designate a folder for backups.
2. Mount that folder to the AWS Elemental Conductor File node, as described in Add Mount Points to AWS Elemental Conductor File Nodes.
3. In **Path to Store Management** in the Conductor File's settings, type the path to the mount folder. The path will always start with `/data/mnt/`. For example: `/data/mnt/conductor1_backup`

Restore a Database Backup

Follow this procedure if you ever need to restore a backed-up version of the database.

If you're restoring the Conductor database, restore to the primary Conductor node.

Note

This procedure describes how to restore the database on a Conductor node. You can use the same procedure to restore the database on worker nodes. Only the file name changes.

To restore the database

1. At your workstation, start a remote terminal session to the AWS Elemental Conductor File hardware unit. Log in with the elemental user credentials.

2. Type the following command to identify the version of AWS Elemental Conductor File that is currently installed.

```
[elemental@hostname ~]$ cat /opt/elemental_se/versions.txt
```

   Several lines of information appear, including the version number. For example: `AWS Elemental Conductor File (2.15.1.12345)`.

3. Run the install script with the restore option.

```
[elemental@hostname ~]$ sudo sh product
--restore-db-backup path backup-file --https
```

   where:

   - `product` is the product installer, including the version number that you obtained in the previous step: `elemental_production_conductor_file_2.15.1.12345.run`.
   - `path` is the path to the backup file. This path could simply be the remote folder where backups were originally stored.
   - `backup-file` is the file that you want to restore. The file is unzipped and copied to the appropriate folder. Do not unzip the file manually before restoring it!
   - `--https` keeps SSL enabled. If you omit this flag, SSL is disabled when you run the install script. If you don't have or don't want SSL, omit this flag.

Configure Authentication Settings

1. On the primary Conductor web interface, hover over **Configuration** (cog icon) on the main menu and choose **Authentication** from the drop-down menu.
2. On the Conductor Configuration screen, change the values to suit your preferences and choose **Save**.

> **Important**
>
> If the Authentication tab does not appear, you did not run the configure script correctly. To rerun the script, see Run the Configuration Script for AWS Elemental Conductor File.

Add Users

To set up users for the entire cluster, you need to perform this setup only on the Conductor node. If you have two Conductor nodes, you need to perform this setup only on the primary Conductor node.

If you answered Yes to the installer prompt “Do you wish to enable authentication”, then users must be set up on the node to access the AWS Elemental product from both interfaces as follows:

- The web interface: When the user goes to the web interface, a login page will appear.
- The REST API: REST commands must include additional HTTP headers that identify the user: X-Auth-User header, X-Auth-Expires header, X-Auth-Key header (which includes the API key that each user creates for themselves).

  For information on REST API access with user authentication, see the documentation on the REST API.

To add users

1. Make sure that you are logged into the Conductor web interface as the “admin” user you created via the configure script.
2. Hover over **Configuration** (cog icon) on the main menu and choose **Users** from the dropdown menu.
3. On the Conductor Configuration screen, choose **Settings** > **Users**.
4. On the Users screen, complete all fields and choose **Create**. Some notes:

   - **Expires**: If selected, the user will automatically expire after the specified period of time.
   - **Force Password Reset**: If checked, the user must reset their password the first time they login.
   - **Role**: Select a role: Admin, Manager, User, Viewer. For information about the actions allowed with each role, see the following section *user Roles*.
5. If your organization uses the REST API, make sure to tell each user to choose **Settings** > **User Profile** to make a note of their personal API key.

   This API key is randomly generated when the user is created. It cannot be created manually (meaning that you cannot specify a specific set of characters for the key).

User roles

This section describes the actions that each user role can perform.

- **Viewer**
  - Read-only access to AWS Elemental Conductor File and AWS Elemental Server
- **Operator**
  - Same access as Viewer
  - Control the state of a job (cancel, archive, etc)
- **Manager**
  - Same access as Viewer
  - Same access as Operator
  - Create and edit jobs
  - Create and edit presets
  - Create and edit profiles
  - Create and edit watch folders
- **Administrator**
  - Access to the entire AWS Elemental Conductor File and AWS Elemental Server systems, including all of the access provided by the other roles

Set Failover Timing for the Cluster

This section describes how to set the timeout rate for failover.

To set up failover timings for the entire cluster, you need to perform this setup only on the Conductor node. If you have two Conductor nodes, you need to perform this setup only on the primary Conductor node.

To set failover timing

1. Hover over **Configuration** (cog icon) on the main menu and choose **Authentication** from the drop-down menu.
2. On the Conductor Configuration screen, choose **Failover**.
3. On the Failover screen, complete the fields and choose **Save**.

The fields have the following implications on worker and Conductor nodes.

Worker Nodes

The primary Conductor node expects to receive a heartbeat from each worker node according to the frequency specified in **Heartbeat Frequency**. If it does not receive a heartbeat for more than the seconds specified in **Failover Threshold**, then the Conductor considers the worker node to have failed.

The Conductor node flags the worker node as failed.

Conductor Nodes

The settings on this screen have an effect only if you have set up for Conductor redundancy.

The secondary Conductor node expects to receive a heartbeat from the primary Conductor node according to the frequency specified in **Heartbeat Frequency**. If it does not receive a heartbeat for more than the seconds specified in **Failover Threshold**, then the secondary Conductor considers the primary node to have failed. It then flags itself as the primary Conductor node and flags the other node as the secondary, and takes over control of the cluster.

Configure Redundancy for AWS Elemental Conductor File Nodes

Read this section if you have two Conductor nodes.

This section describes how to set up the two Conductor nodes to work in a redundant fashion, so that if one node fails, the other node automatically takes control of the cluster, with no loss of data.

This procedure will likely require 1 hour to complete.

Summary

Step A: Get Ready

1. Identify the interface that you have configured as the management interface. Typically, this is one of the following:
   - eth0
   - bond0, if you bonded the management interfaces for the two Conductor nodes
2. Find the MAC addresses of the management interface for the primary and secondary Conductor nodes.

   If you bonded the management interfaces for the two Conductor nodes, use the `ifconfig` command to obtain the MAC addresses for bond0.

   ```
   [elemental@hostname ~]$ ifconfig
   ```
3. Decide on a virtual IP address that will be used by the management interfaces on both Conductor nodes. This address must meet the following criteria:
   - An address on your network that will never be allocated to any other host.
   - An address on the same subnet as the Conductor nodes.
4. Decide on the ID for a virtual router. The ID can be any arbitrary integer from 1-255. This ID must be unique on the subnet for each AWS Elemental cluster or any other keepalived-managed VIPs that are in the network.

Step B: Create a dprepl_config.yml File

1. Use a text editor to create a file called `dbrepl_config.yml` in the home/elemental directory.
2. Enter the following lines in the file. Make sure to enter values in single quotes.
   - **`primary_hostname`**: The hostname for the primary Conductor. Use one of the following:
     - The name that you assigned when you installed the Conductor software, regardless of whether you installed on a hardware unit or a VM. For example **`conductor_01`**.
     - The name that AWS Elemental assigned to an appliance: `ecle` or `ecfe` and the serial number (unless you changed this name at some point).
   - **`primary_ip`**
   - **`primary_mac`**: The MAC address of the management interface on the primary Conductor. You identified this address when getting ready in Step A.

- **secondary_hostname**: The hostname for the secondary Conductor, as described in primary_hostname.
- **secondary_ip**
- **secondary_mac**
- **virtual_ip**: You identified this address when getting ready in Step A.
- **virtual_router_id**: You identified this ID when getting ready in Step A.
- **virtual_ip_interface**: You identified this interface when getting ready in Step A.

Example

```
primary_hostname: 'cl_primary'
primary_ip: '10.4.138.230'
primary_mac: '00:50:56:AE:A5:5D'
secondary_hostname: 'cl_secondary'
secondary_ip: '10.4.138.231'
secondary_mac: '00:50:56:AE:A5:60'
virtual_ip: '10.4.138.232'
virtual_router_id: 42
virtual_ip_interface: 'eth0'
```

Step C: Run the Redundancy Install Script

This install script configures Conductor redundancy.

1. On the primary Conductor, enter the following command to run the database redundancy install script.

   ```
   [elemental@hostname ~]$ sudo /opt/elemental_se/.support_utils/dbrepl configure
    dbrepl_config.yml primary
   ```

   where <dbrepl_config> is the file that you created above.

2. You are prompted to restart the Conductor node.

   ```
   [elemental@hostname ~]$ sudo /etc/init.d/elemental_se restart
   ```

3. On the secondary Conductor, enter the following command to configure the secondary Conductor.

```
[elemental@hostname ~]$ sudo /opt/elemental_se/.support_utils/dbrepl configure
 dbrepl_config.yml secondary
```

where <dbrepl_config> is the file you created above.

4. You are prompted to restart the Conductor node.

```
[elemental@hostname ~]$ sudo /etc/init.d/elemental_se restart
```

Step D: Test Failover

1. Power off the primary Conductor.
2. Perform a ping to confirm that the virtual IP is still accessible.

Make sure you can access the Conductor web interface.

Configuring the Worker Node

Topics

Configure Ethernet Devices on AWS Elemental Server Nodes

When you installed each AWS Elemental product in the cluster, you configured eth0. You can now set up eth1 and any additional Ethernet devices. Optionally, you can also bond two devices that you have set up.

Topics

Add Ethernet Devices

1. On the AWS Elemental Conductor File web interface, choose **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
3. On the **Network Configuration** screen, choose **Network** > **Network Devices**.
4. On the **Network Devices** tab, choose **Add Network Device**.
5. In the **Add Network Device** dialog, select **eth** as the device type and choose **Save**.
6. In the **Edit a Network Device** dialog, complete the fields as follows:
   - **Device Name**: Specify "ethN" (for example, **`eth1`**).
   - **Management**: Leave unchecked. eth0 has already been set up as the management interface and you do not need more than one management interface in the cluster. The management interface is ideally connected to a network dedicated to communication between Conductor and its worker nodes.
   - **Description**: Optional.

- **Address Mode**: Select **DHCP**, **Static**, or **None**. We recommend that you select **Static** if you plan to bond the two Conductor management interfaces.

  If you choose Static Routing, extra fields appear for you to configure the device: **IP Address**, **Netmask**, (optional) **Gateway**, and (optional) **Static Routes**.

7. Choose **Save**. The new device appears in the Network Devices list.
8. Repeat these steps for each worker in the cluster.

Bond Ethernet Devices

You can bond Ethernet devices to suit your networking requirements. For example, you might set up two Ethernet devices as an active/redundant pair.

Bonding is a two-step process

- Step A: Create the Bond
- Step B: Assign the Devices

> **Important**
>
> We recommend that you set up both eth0 and eth1 with static IP addresses. Eth0, eth1 and bond0 should also all on the same subnet.

Prerequisites

Before you begin this process, make sure that you've done the following:

- Added to AWS Elemental Conductor File the Ethernet devices that you're bonding.

Step A: Create the Bond

1. Make sure that you have set up the two devices that you want to bond.
2. On the Conductor web interface, choose **Nodes** in the main menu.
3. On the **Nodes** screen, choose **Edit** (wrench icon) beside the primary Conductor node.
4. On the **Node Configuration** screen, choose **Network** > **Network Devices**.

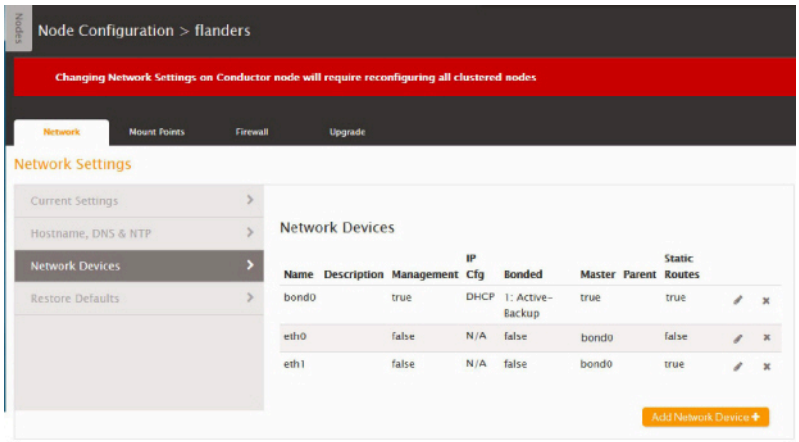
5. On the **Network Devices** tab, choose **Add Network Device**.
6. In the **Add Network Dialog** dialog, select **bond** as the device type. The dialog immediately expands to include more fields.
7. Complete the fields as follows:

Prompt	Action
Bond ID	A number that is unique among your bonded interfaces.
Management	• Checked: if you are creating a bond in order to bond two management interface s. For example, if you want to set up both eth0 and eth1 as management interfaces, with eth1 as a backup in case eth0 fails. • Unchecked: if you are not bonding two management interfaces.
Description	Optional.
IP Address, **Netmask**, and **Gateway**	The fields appear only if you set Address Mode to Static. The eth0, eth1, and bond0 devices should all be on the same subnet.
Static Routes	Optional.
Mode	Choose the mode that meets your networkin g requirements.
More fields	Depending on the mode, more fields may appear. Complete them as required to meet your networking requirements.

8. Choose **Save**. The new device appears in the Network Devices list.
9. If you have additional worker nodes, switch to the web interface for each node and repeat these steps.

Step B: Assign the Devices

1. Revise the two regular Ethernet devices as follows:
   - **Management**: Always Unchecked. This indicates that whether the devices are management or not is defined in the bond, not in the individual devices.)
   - **Master Device**: Select the bond that you just created (for example, bond0).
2. Choose **Save**. The Network Devices list shows the two Ethernet devices and the bond, as displayed in this example:



3. If you have additional worker nodes, switch to the web interface for each node and repeat these steps.

Add AWS Elemental Server Nodes to the Cluster

Add all of the worker nodes to the cluster so that they can be controlled by the Conductor node.

> **Important**
>
> If this is your first time adding worker nodes to a cluster you must add worker nodes to the Conductor File cluster via the CLI. Using the Conductor File web interface to discover the worker node and add to the cluster causes the worker node to go into a failed state.

To add worker nodes to the cluster via the CLI

1. On the worker node, enter the following command to change the directory:

   ```
   cd /opt/elemental_se
   ```

2. Enter the following command to start the configurations script on the worker node:

```
sudo ./configure
```

3. After being prompted to add the worker node to the Conductor File cluster, you are asked to trust the public key from the conductor node(s). You must accept this for the Conductor File node to control the worker node.
4. After trusting the public key, continue through the configuration prompts as normal.

> **Note**
>
> After you run the configuration script on the worker node, you can add or remove any future nodes using the Conductor File web interface. EXCEPTION: If you kickstart the worker node after you added it to the Conductor File cluster, you must add it back into the cluster via the CLI again.

To add worker nodes to the cluster

1. On the primary Conductor web interface, choose **Nodes**.
2. On the **Nodes** screen, scroll down to the list of nodes.
3. Choose **All Nodes** to display a list of all the Conductor and worker nodes in the network. If a given node does not appear in the list, you must force discovery, as described in the next section.
4. Select the nodes to add to the cluster or use the checkbox to select all nodes, and choose **Add to Cluster** (+ icon).
5. Wait a few minutes and then select the **Cluster** tab to view all of the nodes in the cluster.

Discover Nodes

If a node did not appear in the list of all nodes, you can force its discovery.

> **Note**
>
> If this is your first time discovering or add node to a Conductor File cluster, you must add the nodes via the CLI prior to using the web interface for any operations.

To force discovery

1. On the primary Conductor web interface, hover over **Nodes** and select Discover Node.
2. On the **Discover Node** screen, type the hostname or IP address of the node and choose **Discover Node**.

The node appears in the **All Nodes** tab on the **Nodes** screen.

Open Ports on the Firewall for AWS Elemental Server Nodes

The procedure for opening ports on the firewall for AWS Elemental Server nodes is the same as for AWS Elemental Conductor File nodes.

You can enable or disable the firewall. By default, the firewall is enabled.

The installer configures the ports on your firewall that must be open for incoming and outgoing traffic to and from each node. You can open more ports if required for any reason.

To open ports on the firewall

1. On the AWS Elemental Conductor File node, click **Nodes** in the main menu.
2. On the **Nodes** screen, choose **Edit** (wrench icon) beside a worker node node.
3. On the **Node Configuration** screen, choose **Firewall**.
4. Choose **Firewall On**. A list of ports appears.
5. In the list of ports, add or delete ports as desired.
6. Repeat on all worker nodes in the cluster.

Add Mount Points to AWS Elemental Server Nodes

If you have mounted remote shares on the Conductor node or nodes, we strongly recommend that you mount the same shares on all worker nodes.

To add mount points

1. On the Conductor web interface, hover over **Configuration** (cog icon) on the main menu and choose **Mount Point** from the dropdown menu.

The **Conductor Configuration** screen appears showing the **Cluster Mount Point Settings** tab.

> **Important**
>
> This screen has the same fields as the Mount Points screen (where you mounted remote shares for the Conductor nodes). But it is not the same screen!

2. Complete the screen with the same information as you entered on the Mount Points screen.

The folder on the remote server will now be mounted on the worker nodes.

Working with Users in the Cluster

The following sections describe configurations that you can change on existing users.

Topics

View User Information

Each user can log in to the web interface and view their own profile. Go to **Settings** > **User Profile**. The following information is displayed:

- The features and controls of AWS Elemental Server that the user is allowed to use.
- The user's API key.

Change and Delete Users

To change or delete a user

1. Log in to the AWS Elemental Conductor File web interface using administrator credentials.
2. Hover over **Settings** and choose **Users**.
3. On the **Users** screen, perform the following actions as needed:

   - To change the existing information for a user, choose **Edit** (pencil icon).
   - To reset a forgotten password, edit the user and enter a new password.
   - To force a user to reset their password the next time they log in, edit the user, and select **Force Password Reset**.
   - To reactivate a deactivated user, edit the user by extending the length of time that user password is in effect. In **Password Expires**, change **Expired** to another option.
   - To reset the API key for a user, choose **Reset API Key** (key icon). A new key is created. The user can view this key in the User Profile screen (**Settings** > **User Profile**).

- To deactivate a user, choose **Deactivate** (banned icon).
- To delete a user, choose **Delete** (X icon).

Create New User Types

The policies determine what actions a user can perform on the node. AWS Elemental Conductor File comes with administrator, manager, operator, and viewer default policies. You can't edit these default policies, but you can create new ones if the defaults don't meet your requirements.

To create new user roles

1. Log in to the AWS Elemental Conductor File web interface using administrator credentials.
2. Hover over **Settings** and choose **Roles**.
3. On the **Roles** screen, assign a name to the new user role, select the actions to include, and choose **Create**. The new role appears in the list.

Manage Global Access Features

You can set some access features that apply globally to all users on the node.

To manage access

1. Log in to the AWS Elemental Conductor File web interface using administrator credentials.
2. Go to the **Settings** page and choose **Authentication**.
3. Review the current values for the fields. Make any changes and choose **Save**.

Document History for Configuration Guide

The following table describes the documentation for this release of AWS Elemental Conductor File.

- **API version:** 2.17
- **Release notes:** AWS Elemental Conductor File Release Notes

The following table describes the documentation for this release of AWS Elemental Conductor File. For notification about updates to this documentation, you can subscribe to an RSS feed.

Change	Description	Date
Version 2.17 release	Changes to support the 2.17 software release.	January 2, 2020