Hewlett Packard Enterprise

HPE Cray EX Series System Administration with HPE Performance Cluster Manager

Lab exercise monitor and logs

Contents

Inspect logs

1. Log in to the admin node.
2. Inspect the logs.
   - Become familiar with normal log entries.
   - Search for patterns in log entries, such as nodes that share a power distribution unit or nodes that use the same image image.
   - Search for anomalies.

   `/var/log/consoles/<node>`

   ```
   cd /var/log/consoles
   grep -i --text mce x* l*
   grep --text 'Hardware Error' x* l*
   grep --text 'OOM' x* l*
   grep --text "Link up" x* l*
   ```

   `/var/log/messages`

   `/var/log/cinstallman`

   `/var/log/switchconfig.log`

   `/var/log/dhcpd`

   `/var/log/<service>`

   `/opt/clmgr/log/cm.log`

   `/opt/clmgr/log/clmgr-power.log`

   `/opt/clmgr/log/*`

   `/var/log/cmcdetectd.log` ***The air-cooled training cluster does not have this log; review excerpt below from system that contains CMMs:

```
2021-12-13T15:51:31.853-0600 INFO cmcdetectd.main(): starting server
2021-12-13T15:51:31.855-0600 INFO cmcdetectd.run(): running command: /usr/sbin/tcpdump -i bond0 -x -s600 -nn -vv -e -t -l -p port 68 or port 67 and udp[247:4] = 0x63350101
2021-12-13T15:51:32.977-0600 INFO cmcdetectd.run(): found CMM with mac address=02:23:28:03:00:00, rack=9000, iru=3...
2021-12-13T15:51:33.732-0600 INFO switch_login.switch_login(): mgmtsw0 password not in DB, setting username/password...
2021-12-13T15:51:33.732-0600 INFO switch_login.switch_login(): mgmtsw0 working password different than DB password, updating password...
2021-12-13T15:51:34.122-0600 INFO cmcdetectd.mac_address(): searching all switches for mac-addresses ['02:23:28:03:00:00'], attempt 1/3...
2021-12-13T15:51:37.572-0600 INFO cmcdetectd.mac_address(): found mac-address ['02:23:28:03:00:00'] on switch mgmtsw0
2021-12-13T15:51:37.572-0600 INFO cmcdetectd.mac_address(): adding CMC to `/etc/cmc-switch-info.txt`: mac_address=02:23:28:03:00:00, mgmtsw=mgmtsw0, vlans=5, default_vlan=2001, bonding=manual, ports=1/1/1, redundant=yes, type=cmm, hostname=x9000c3
```

```
2021-12-13T15:51:37.572-0600 INFO cmcdetectd.add_cmc_to_config(): writing the following information to
config-file: /etc/cmc-switch-info.txt
2021-12-13T15:51:37.572-0600 INFO cmcdetectd.add_cmc_to_config(): mac_address=02:23:28:03:00:00,
mgmtsw=mgmtsw0, vlans=5, default_vlan=2001, bonding=manual, ports=1/1/1, redundant=yes, cmc_type=cmm,
cmc_hostname=x9000c3
2021-12-13T15:51:37.573-0600 INFO cmcdetectd.read_config_file(): reading the cmcdetectd switch
configuration file: /etc/cmc-switch-info.txt ...
2021-12-13T15:51:37.605-0600 INFO cmcdetectd.run_config_file(): running switchconfig for VLANs
2021-12-13T15:51:37.609-0600 INFO cmcdetectd.run_config_file(): network hostmgmt2001 does not exist in the
DB, creating...
2021-12-13T15:51:37.646-0600 INFO cmcdetectd.run_config_file(): successfully added network hostmgmt2001 to
the DB
2021-12-13T15:51:37.647-0600 INFO cmcdetectd.run_config_file(): configuring VLAN <text omitted>
```

3. Log into the compute node:

   ssh <node>

4. Inspect the logs.

   /var/log/messages

   /var/log/<*other logs*>

5. Exit the compute node session.

   exit

Identify monitoring services

1. On the admin node, run the following commands to check the status of monitoring services and review the services associated with each:

   cm monitoring alerta status

   cm monitoring elk status

   cm monitoring ganglia status

   cm monitoring kafka status

   cm monitoring nagios status

   cm monitoring native status

   cm monitoring native metrics show --all-nodes --all-sensors --stats

   cm sim status

2. List kafka topics

   kafka-topics --bootstrap-server admin:9092 --list | sort

   kafka-topics --bootstrap-server admin:9092 --list | grep cool

   kafka-topics --bootstrap-server admin:9092 --list | grep sling

3. Resize the terminal session to the full width of the lab desktop.
4. Show Elasticsearch indices to confirm that data is flowing into Elasticsearch.

   curl admin:9200/_cat/indices

Interrogate BMCs

In the following commands, select a flat compute or ICE compute node that you will work with. In the commands that contain <node>, replace <node> with the node name of the node you selected.
Over time, ipmiwrapper will be deprecated, and it does require that the node controller has IPMI support enabled.

1. Log into the admin node.
2. List the nodes in the cluster:

   ```
   cm node show
   ```

3. Print the node's system event log:

   ```
   ipmiwrapper <node> sel list
   ```

4. Print environment sensor details:

   ```
   ipmiwrapper <node> sensor
   ```

5. Ping the BMC:

   ```
   ping <node>-bmc
   ```

6. Reset the BMC:

   ```
   ipmiwrapper <node> mc reset cold
   ```

7. Wait for the BMC to complete reset, then confirm working state:

   ```
   ipmiwrapper <node> power status
   ```

Verify resources

1. On the admin node, determine slot layout:

   ```
   cadmin --show-root-labels
   ```

2. Verify that compute resources operate as expected; modify entries for your environment (for clusters with large compute count, recall time sensitive commands and the -f pdsh fanout option):

   ```
   pdsh -g compute uptime
   pdsh -g compute date
   pdsh -g compute grep –i memt /proc/meminfo | dshbak -c
   pdsh -g compute lscpu | grep name | dshbak -c
   pdsh -g compute lsscsi | dshbak -c
   pdsh -g compute ip a show dev bond0 | grep inet | grep bond0 | sort
   pdsh -g compute lspci | grep -iv intel | grep -iv amd | dshbak -c
   ```

   Which nodes are in the group compute?

   Rerun the commands above with "-w ^/root/host-cx6" replacing "-g compute".

Stop and restart udpcast flamethrower services

Some installations that use the udpcast (multicast) transport method have observed the client side waiting forever for a udp-receiver process to complete or by udp-receiver re-trying forever when provisioning a node. The systemimager-server-flamethrowerd service manages the udp-sender instances. To reset udpcast:

1. Login to the node that serves udpcast (the admin node serves compute and leader nodes.
2. Stop flamethrower services:

   ```
   systemctl stop systemimager-server-flamethrowerd
   ```

3. Check for udp-sender processes that did not die:

   ```
   ps -ef | grep udp-sender
   ```

4. Kill any udp-sender processes leftover with -9 (replace <pid> with the process ID of the udp-sender process; repeat the command for each process):

   ```
   kill -9 <pid>
   ```

5. Start flamethrower:

   ```
   systemctl start systemimager-server-flamethrowerd
   ```

   If you encounter issues with udpcast regularly, methods to change protocol and manage Ethernet switch settings exist. Refer to the *HPE Performance Cluster Manager Administration Guide*.

   The systemimager-server-netbootmond (systemd) and systemimager-server-rsyncd services also support node imaging.

Trigger a crash dump

1. Search HPCM release notes for kdump to review any known issues with crash dumps for your OS distribution.
2. From the admin node, connect to the console of a compute node.
3. Login to the node.
4. Ensure that you are on a compute node—check the node's prompt.
5. Crash the operating system of your node:

   ```
   x3019c0s##b0n#:~ # echo c > /proc/sysrq-trigger
   ```

6. Monitor console messages.
7. Exit and detach from the console session.
8. On nodes with local disk root file systems, login to the node, then locate the crash dump file under /var/crash/<IP-date-time>; on diskless nodes, locate the crash file on its leader node if present or the admin node under /var/crash/sgi_kdump/<IP-date-time>.

Start config_manager service

The configuration manager is an admin node service/daemon (config_manager) that distributes configuration updates to configuration.

Example error message from a different cluster:

```
[root@admin1 ~]# cm node update config --sync -n "compute*"
Error: The config_manager service is not running. Configuration changes cannot be
applied
```

A different error:

```
ERROR: Socket failure connecting to configuration manager ('172.xx.xx.xx', 1030):
Connection refused
ERROR: Retrying in 0.500 seconds
ERROR: Socket failure connecting to configuration manager ('172.xx.xx.xx', 1030):
Connection refused
ERROR: Failed to contact configuration manager
```

1. Show the status of the config_manager service

   systemctl -l status config_manager

2. Start or restart the config_manager service.

   systemctl start config_manager

3. Show the status of the config_manager service.

   systemctl -l status config_manager

   Example output from cluster where config_manager service is inactive (dead):

```
[root@admin1 ~]# systemctl -l status config_manager
● config_manager.service - Configuration Manager
   Loaded: loaded (/usr/lib/systemd/system/config_manager.service; enabled;
vendor preset: disabled)
   Active: inactive (dead) (thawing) since Wed 2021-04-21 10:15:24 EDT; 32min ago
  Process: 854363 ExecStop=/opt/clmgr/bin/config_manager_init stop (code=exited,
status=0/SUCCESS)
  Process: 850943 ExecStart=/opt/clmgr/bin/config_manager_init start
(code=exited, status=0/SUCCESS)
 Main PID: 850946 (code=exited, status=0/SUCCESS)

Apr 21 09:52:55 admin1 systemd[1]: Starting Configuration Manager...
Apr 21 09:52:55 admin1 config_manager_init[850943]: Starting the Configuration
Manager: ok.
Apr 21 09:52:55 admin1 systemd[1]: config_manager.service: Can't open PID file
/var/run/clmgr/confi>
Apr 21 09:52:56 admin1 systemd[1]: Started Configuration Manager.
Apr 21 10:15:24 admin1 systemd[1]: Stopping Configuration Manager...
Apr 21 10:15:24 admin1 config_manager_init[854363]: Stopping the Configuration
Manager: ok.
Apr 21 10:15:24 admin1 systemd[1]: config_manager.service: Succeeded.
Apr 21 10:15:24 admin1 systemd[1]: Stopped Configuration Manager.
[root@admin1 ~]# systemctl start config_manager
[root@admin1 ~]# systemctl -l status config_manager
● config_manager.service - Configuration Manager
   Loaded: loaded (/usr/lib/systemd/system/config_manager.service; enabled;
vendor preset: disabled)
   Active: active (running) (thawing) since Wed 2021-04-21 10:48:18 EDT; 5s ago
```

```
  Process: 854363 ExecStop=/opt/clmgr/bin/config_manager_init stop (code=exited,
status=0/SUCCESS)
  Process: 859756 ExecStart=/opt/clmgr/bin/config_manager_init start
(code=exited, status=0/SUCCESS)
 Main PID: 859759 (config_manager)
    Tasks: 4
   Memory: 25.4M
   CGroup: /system.slice/config_manager.service
           └─859759 /usr/bin/python2 /opt/clmgr/bin/config_manager

Apr 21 10:48:18 admin1 systemd[1]: Starting Configuration Manager...
Apr 21 10:48:18 admin1 config_manager_init[859756]: Starting the Configuration
Manager: ok.
Apr 21 10:48:18 admin1 systemd[1]: config_manager.service: Can't open PID file
/var/run/clmgr/confi>
Apr 21 10:48:18 admin1 systemd[1]: Started Configuration Manager.
```

Check iLO firmware

View and compare BIOS settings and BIOS firmware versions across a set of chosen nodes. Confirm that your cluster is configured consistently. The following commands support compute nodes with iLO devices. Refer to the *HPE Performance Cluster Manager Administration Guide* for firmware update instructions.

cm node firmware -h

cm node firmware show -h

cm node firmware status -h

cm node firmware show -b -t system compute

cm node firmware show -s -t system compute

cm node firmware show -b -n <node>

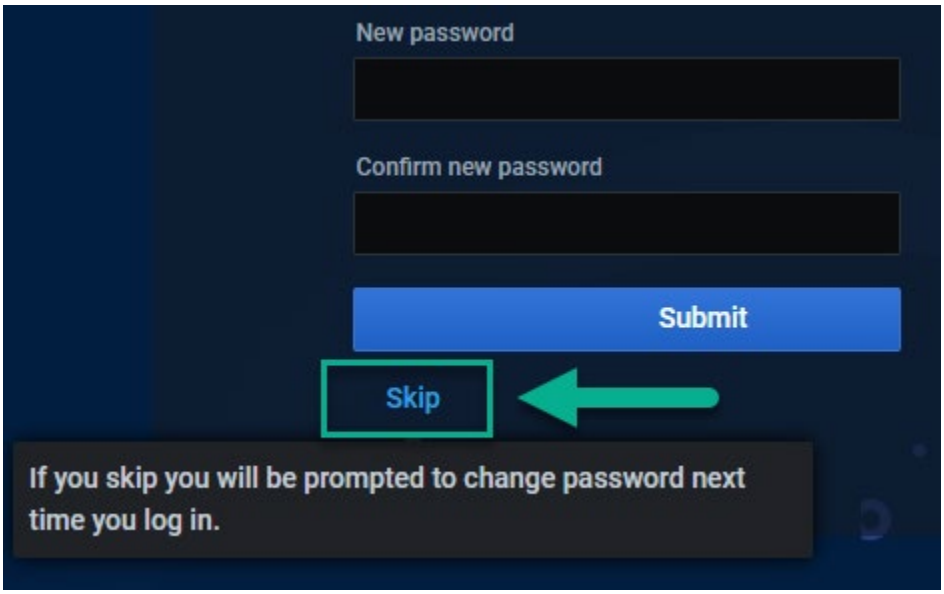
Explore the cluster Grafana configuration

Grafana is an open source tool that enables you to visualize and analyze cluster data. With Grafana, you can visualize, query, and explore cluster data regardless of where that data resides. Grafana creates graphical representations from the information within the cluster manager.

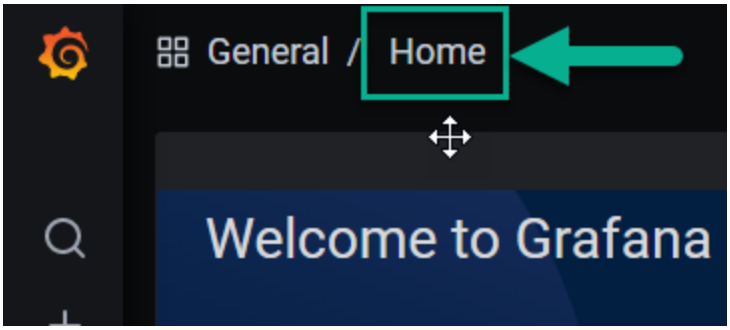
1. In the web browser URL box, enter the *<IP address of your admin node>*/grafana.:

   https://192.168.235.98/grafana

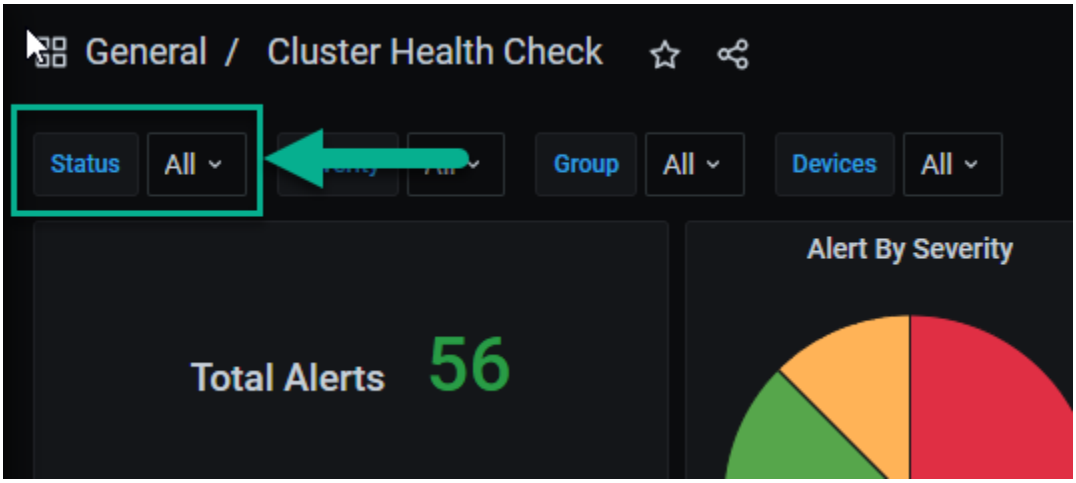
2. Enter the admin account in the Email or username box.
3. Enter admin in the password box.
4. Click Log In.
5. In the Change Password screen, click Skip (below the Submit button):



6. In the upper left corner, click the Home link.

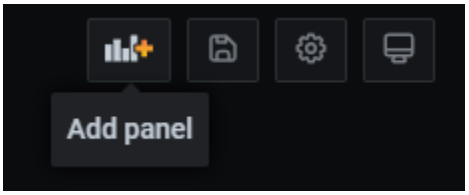


7. Click Cluster Health Check dashboard.
8. Click the Status dropdown to view options.

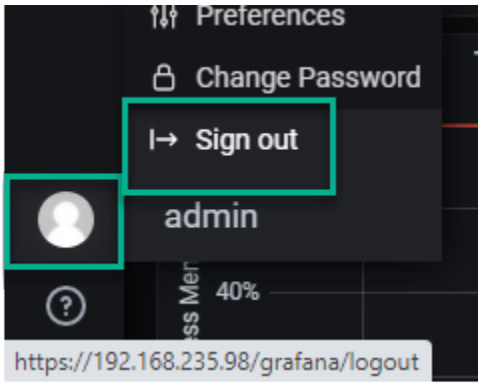


9. Click the Severity dropdown to view options.

10. Click the Group dropdown to view options.
11. Click the Devices dropdown to view options.
12. In the upper right corner, hover the mouse over the buttons until you see the description.



13. In the bottom left corner, Sign out.



14. Close the web browser.

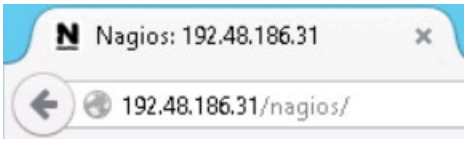
Explore the cluster Nagios configuration

Nagios is a web-based system monitoring tool for networks and clusters.

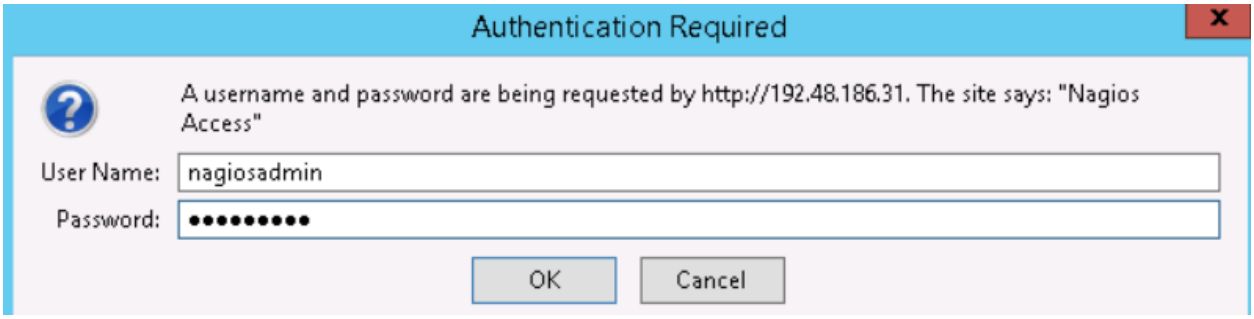
Nagios is installed on admin nodes. To monitor the entire cluster, access Nagios on the admin node.

1. In the web browser URL box, enter the https:// *<IP address of your admin node>*/nagios.

   http://192.168.235.98/nagios/



2. Enter the nagiosadmin account in the User Name box.



3. Enter **cmdefault** in the Password box.
4. Click **OK**.
5. In the left menu, click **Hosts**.
6. In the left navigation column, click **Map**.
7. In the left navigation column, click **Services**.