



# 配置交换机运行状况监控

## Cluster and storage switches

NetApp  
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# 配置交换机运行状况监控

## 配置概述

以太网交换机运行状况监控器(CSHM)负责确保集群和存储网络交换机的运行状况、并收集交换机日志以进行调试。

- "配置日志收集"
- "可选: 配置SNMPv3"

## 配置日志收集

以太网交换机运行状况监控器(CSHM)负责确保集群和存储网络交换机的运行状况、并收集交换机日志以进行调试。此过程将指导您完成设置收集、请求详细的\*Support\*日志以及启用每小时收集AutoSupport收集的\*定期\*数据的过程。

\*注: \*如果启用FIPS模式, 则必须完成以下操作:



1. 按照供应商说明在交换机上重新生成ssh密钥。
2. 使用在ONTAP端重新生成ssh密钥 `debug system regenerate-systemshell-key-pair`
3. 使用重新运行日志收集设置例程 `system switch ethernet log setup-password`

## 开始之前

- 用户必须能够访问交换机 `show` 命令。如果这些权限不可用、请创建一个新用户并向该用户授予必要的权限。
- 必须为交换机启用交换机运行状况监控。通过确保进行验证 `Is Monitored:` 字段在的输出中设置为\*TRUE\* `system switch ethernet show` 命令:
- 对于NVIDIA交换机、必须允许日志收集用户在不显示密码提示的情况下运行日志收集命令。要允许使用此命令、请运行以下命令: `echo '<username> ALL = NOPASSWD: /usr/cumulus/bin/cl-support, /usr/sbin/csmgrctl' | sudo EDITOR='tee -a' visudo -f /etc/sudoers.d/cumulus`

## 步骤

## ONTAP 9.14.1及更早版本

1. 要设置日志收集、请对每个交换机运行以下命令。系统会提示您输入交换机名称、用户名和密码以收集日志。

```
system switch ethernet log setup-password
```

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
cs1
cs2

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs1
Would you like to specify a user other than admin for log
collection? {y|n}: n

Enter the password: <enter switch password>
Enter the password again: <enter switch password>

cluster1::*> system switch ethernet log setup-password

Enter the switch name: cs2

Would you like to specify a user other than admin for log
collection? {y|n}: n

Enter the password: <enter switch password>
Enter the password again: <enter switch password>
```

2. 要请求支持日志收集并启用定期收集、请运行以下命令。此时将开始两种类型的日志收集：详细 Support 日志和每小时数据收集 Periodic。

```
system switch ethernet log modify -device <switch-name> -log-request
true
```

```
cluster1::*> system switch ethernet log modify -device cs1 -log  
-request true
```

```
Do you want to modify the cluster switch log collection  
configuration? {y|n}: [n] y
```

```
Enabling cluster switch log collection.
```

```
cluster1::*> system switch ethernet log modify -device cs2 -log  
-request true
```

```
Do you want to modify the cluster switch log collection  
configuration? {y|n}: [n] y
```

```
Enabling cluster switch log collection.
```

等待10分钟、然后检查日志收集是否完成:

```
system switch ethernet log show
```

#### **ONTAP 9.151及更高版本**

1. 要设置日志收集、请对每个交换机运行以下命令。系统会提示您输入交换机名称、用户名和密码以收集日志。

```
system switch ethernet log setup-password
```

```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: <return>
```

```
The switch name entered is not recognized.
```

```
Choose from the following list:
```

```
cs1
```

```
cs2
```

```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: cs1
```

```
Would you like to specify a user other than admin for log  
collection? {y|n}: n
```

```
Enter the password: <enter switch password>
```

```
Enter the password again: <enter switch password>
```

```
cluster1::*> system switch ethernet log setup-password
```

```
Enter the switch name: cs2
```

```
Would you like to specify a user other than admin for log  
collection? {y|n}: n
```

```
Enter the password: <enter switch password>
```

```
Enter the password again: <enter switch password>
```

## 2. 启用定期日志收集:

```
system switch ethernet log modify -device <switch-name> -periodic  
-enabled true
```

```
cluster1::*> system switch ethernet log modify -device cs1 -periodic
-enabled true
```

Do you want to modify the cluster switch log collection configuration? {y|n}: [n] **y**

**cs1:** Periodic log collection has been scheduled to run every hour.

```
cluster1::*> system switch ethernet log modify -device cs2 -periodic
-enabled true
```

Do you want to modify the cluster switch log collection configuration? {y|n}: [n] **y**

**cs2:** Periodic log collection has been scheduled to run every hour.

```
cluster1::*> system switch ethernet log show
```

	Periodic	Periodic
Support		
Switch	Log Enabled	Log State
Log State		
cs1	true	scheduled
never-run		
cs2	true	scheduled
never-run		

2 entries were displayed.

### 3. 请求支持日志收集:

```
system switch ethernet log collect-support-log -device <switch-name>
```

```
cluster1::*> system switch ethernet log collect-support-log -device
cs1
```

```
cs1: Waiting for the next Ethernet switch polling cycle to begin
support collection.
```

```
cluster1::*> system switch ethernet log collect-support-log -device
cs2
```

```
cs2: Waiting for the next Ethernet switch polling cycle to begin
support collection.
```

```
cluster1::*> *system switch ethernet log show
```

Support	Periodic	Periodic
Switch	Log Enabled	Log State
Log State		
cs1	false	halted
initiated		
cs2	true	scheduled
initiated		

2 entries were displayed.

4. 要查看日志收集的所有详细信息、包括启用、状态消息、定期收集的先前时间戳和文件名、请求状态、状态消息以及支持收集的先前时间戳和文件名、请使用以下命令：

```
system switch ethernet log show -instance
```



```
cluster1::*> system switch ethernet log show -instance

                Switch Name: cs1
                Periodic Log Enabled: true
                Periodic Log Status: Periodic log collection has been
scheduled to run every hour.
                Last Periodic Log Timestamp: 3/11/2024 11:02:59
                Periodic Log Filename: cluster1:/mroot/etc/log/shm-
cluster-info.tgz
                Support Log Requested: false
                Support Log Status: Successfully gathered support logs
- see filename for their location.
                Last Support Log Timestamp: 3/11/2024 11:14:20
                Support Log Filename: cluster1:/mroot/etc/log/shm-
cluster-log.tgz

                Switch Name: cs2
                Periodic Log Enabled: false
                Periodic Log Status: Periodic collection has been
halted.
                Last Periodic Log Timestamp: 3/11/2024 11:05:18
                Periodic Log Filename: cluster1:/mroot/etc/log/shm-
cluster-info.tgz
                Support Log Requested: false
                Support Log Status: Successfully gathered support logs
- see filename for their location.
                Last Support Log Timestamp: 3/11/2024 11:18:54
                Support Log Filename: cluster1:/mroot/etc/log/shm-
cluster-log.tgz
2 entries were displayed.
```



如果日志收集功能报告了任何错误状态(在的输出中可见 `system switch ethernet log show`), 请参见以了解更多详细信息。 ["对日志收集进行故障排除"](#)

下一步是什么?

["配置SNMPv3 \(可选\)"](#)(英文)

## 可选: 为交换机配置SNMPv3

SNMP用于监控交换机。以太网交换机运行状况监控器(CSHM)利用SNMP监控集群和存储交换机的运行状况和性能。默认情况下、SNMPv2c是通过参考配置文件(Reference Configuration File、RCF)自动配置的。

SNMPv3比SNMPv2更安全、因为它引入了身份验证、加密和消息完整性等强大的安全功能、可防止未经授权的访问、并确保数据在传输期间的机密性和完整性。



仅ONTAP 9.12.1及更高版本支持SNMPv3。

按照以下步骤为支持CSHM的特定交换机配置SNMPv3。

关于此任务

以下命令用于在\*Broadcom\*、\*Cisco\*和\*NVIDIA\*交换机上配置SNMPv3用户名：

## Broadcom交换机

在Broadcom BES-53248交换机上配置SNMPv3用户名network-operator。

- 对于\*no authentication (无身份验证)\*:

```
snmp-server user SNMPv3UserNoAuth NETWORK-OPERATOR noauth
```

- 对于\*MD5/SHA身份验证\*:

```
snmp-server user SNMPv3UserAuth NETWORK-OPERATOR [auth-md5|auth-sha]
```

- 对于采用AES/DES加密的\*MD5/SHA身份验证\*:

```
snmp-server user SNMPv3UserAuthEncrypt NETWORK-OPERATOR [auth-  
md5|auth-sha] [priv-aes128|priv-des]
```

以下命令在ONTAP端配置SNMPv3用户名:

```
security login create -user-or-group-name SNMPv3_USER -application snmp  
-authentication-method usm -remote-switch-ipaddress ADDRESS
```

以下命令将使用CSHM建立SNMPv3用户名:

```
cluster1::*> system switch ethernet modify -device DEVICE -snmp-version  
SNMPv3 -community-or-username SNMPv3_USER
```

## 步骤

1. 在交换机上设置SNMPv3用户以使用身份验证和加密:

```
show snmp status
```

```
(sw1) (Config)# snmp-server user <username> network-admin auth-md5
<password> priv-aes128 <password>
```

```
(cs1) (Config)# show snmp user snmp
```

Name	Group Name	Auth Meth	Priv Meth	Remote Engine ID
<username>	network-admin	MD5	AES128	8000113d03d8c497710bee

## 2. 在ONTAP 端设置SNMPv3用户:

```
security login create -user-or-group-name <username> -application
snmp -authentication-method usm -remote-switch-ipaddress
10.231.80.212
```

```
cluster1::*> security login create -user-or-group-name <username>
-application snmp -authentication-method usm -remote-switch
-ipaddress 10.231.80.212
```

Enter the authoritative entity's EngineID [remote EngineID]:

Which authentication protocol do you want to choose (none, md5, sha, sha2-256)

[none]: **md5**

Enter the authentication protocol password (minimum 8 characters long):

Enter the authentication protocol password again:

Which privacy protocol do you want to choose (none, des, aes128)

[none]: **aes128**

Enter privacy protocol password (minimum 8 characters long):

Enter privacy protocol password again:

## 3. 将CSHM配置为使用新SNMPv3用户进行监控:

```
system switch ethernet show-all -device "sw1" -instance
```

```

cluster1::*> system switch ethernet show-all -device "sw1
(b8:59:9f:09:7c:22)" -instance

Device Name: sw1
IP Address: 10.228.136.24
SNMP Version: SNMPv2c
Is Discovered: true
DEPRECATED-Community String or SNMPv3 Username: -
Community String or SNMPv3 Username: cshml!
Model Number: BES-53248
Switch Network: cluster-network
Software Version: 3.9.0.2
Reason For Not Monitoring: None <---- should
display this if SNMP settings are valid
Source Of Switch Version: CDP/ISDP
Is Monitored ?: true
Serial Number of the Device: QTFCU3826001C
RCF Version: v1.8X2 for

Cluster/HA/RDMA

cluster1::*>
cluster1::*> system switch ethernet modify -device "sw1" -snmp
-version SNMPv3 -community-or-username <username>

```

4. 确认要使用新创建的SNMPv3用户查询的序列号与CSHM轮询周期完成后上一步中详述的序列号相同。

```
system switch ethernet polling-interval show
```

```

cluster1::*> system switch ethernet polling-interval show
Polling Interval (in minutes): 5

cluster1::*> system switch ethernet show-all -device "sw1" -instance
Device Name: sw1
IP Address: 10.228.136.24
SNMP Version: SNMPv3
Is Discovered: true
DEPRECATED-Community String or SNMPv3 Username: -
Community String or SNMPv3 Username: <username>
Model Number: BES-53248
Switch Network: cluster-network
Software Version: 3.9.0.2
Reason For Not Monitoring: None <---- should
display this if SNMP settings are valid
Source Of Switch Version: CDP/ISDP
Is Monitored?: true
Serial Number of the Device: QTFCU3826001C
RCF Version: v1.8X2 for

Cluster/HA/RDMA

```

## Cisco交换机

在Cisco 9334c-966交换机上配置SNMPv3用户名SNMPv3\_user:

- 对于\*no authentication (无身份验证)\*:

```
snmp-server user SNMPv3_USER NoAuth
```

- 对于\*MD5/SHA身份验证\*:

```
snmp-server user SNMPv3_USER auth [md5|sha] AUTH-PASSWORD
```

- 对于采用AES/DES加密的\*MD5/SHA身份验证\*:

```
snmp-server user SNMPv3_USER AuthEncrypt auth [md5|sha] AUTH-
PASSWORD priv aes-128 PRIV-PASSWORD
```

以下命令在ONTAP端配置SNMPv3用户名:

```
security login create -user-or-group-name SNMPv3_USER -application snmp
-authentication-method usm -remote-switch-ipaddress ADDRESS
```

以下命令将使用CSHM建立SNMPv3用户名：

```
system switch ethernet modify -device DEVICE -snmp-version SNMPv3
-community-or-username SNMPv3_USER
```

步骤

1. 在交换机上设置SNMPv3用户以使用身份验证和加密：

```
show snmp user
```

```
(sw1) (Config) # snmp-server user SNMPv3User auth md5 <auth_password>
priv aes-128 <priv_password>
```

```
(sw1) (Config) # show snmp user
```

```
-----
-----
                                SNMP USERS
-----
-----
```

User	Auth	Priv(enforce)	Groups
acl_filter			
admin	md5	des(no)	network-admin
SNMPv3User	md5	aes-128(no)	network-operator

```
-----
-----
NOTIFICATION TARGET USERS (configured for sending V3 Inform)
-----
-----
```

User	Auth	Priv
------	------	------

```
(sw1) (Config) #
```

## 2. 在ONTAP 端设置SNMPv3用户:

```
security login create -user-or-group-name <username> -application  
snmp -authentication-method usm -remote-switch-ipaddress  
10.231.80.212
```

```
cluster1::*> system switch ethernet modify -device "sw1  
(b8:59:9f:09:7c:22)" -is-monitoring-enabled-admin true
```

```
cluster1::*> security login create -user-or-group-name <username>  
-application snmp -authentication-method usm -remote-switch  
-ipaddress 10.231.80.212
```

Enter the authoritative entity's EngineID [remote EngineID]:

Which authentication protocol do you want to choose (none, md5, sha,  
sha2-256)

[none]: **md5**

Enter the authentication protocol password (minimum 8 characters  
long):

Enter the authentication protocol password again:

Which privacy protocol do you want to choose (none, des, aes128)

[none]: **aes128**

Enter privacy protocol password (minimum 8 characters long):

Enter privacy protocol password again:

## 3. 将CSHM配置为使用新SNMPv3用户进行监控:

```
system switch ethernet show-all -device "sw1" -instance
```



```

cluster1::*> system switch ethernet show-all -device "sw1" -instance

                Device Name: sw1
                IP Address: 10.231.80.212
                SNMP Version: SNMPv2c
                Is Discovered: true
                SNMPv2c Community String or SNMPv3 Username: cshml!
                Model Number: N9K-C9336C-FX2
                Switch Network: cluster-network
                Software Version: Cisco Nexus
Operating System (NX-OS) Software, Version 9.3(7)
                Reason For Not Monitoring: None <---- displays
when SNMP settings are valid
                Source Of Switch Version: CDP/ISDP
                Is Monitored?: true
                Serial Number of the Device: QTFCU3826001C
                RCF Version: v1.8X2 for

Cluster/HA/RDMA

cluster1::*>
cluster1::*> system switch ethernet modify -device "sw1" -snmp
-version SNMPv3 -community-or-username <username>
cluster1::*>

```

4. 确认要使用新创建的SNMPv3用户查询的序列号与CSHM轮询周期完成后上一步中详述的序列号相同。

```

system switch ethernet polling-interval show

```

```

cluster1::*> system switch ethernet polling-interval show
                Polling Interval (in minutes): 5

cluster1::*> system switch ethernet show-all -device "sw1" -instance

                Device Name: sw1
                IP Address: 10.231.80.212
                SNMP Version: SNMPv3
                Is Discovered: true
                SNMPv2c Community String or SNMPv3 Username: SNMPv3User
                Model Number: N9K-C9336C-FX2
                Switch Network: cluster-network
                Software Version: Cisco Nexus
                Operating System (NX-OS) Software, Version 9.3(7)
                Reason For Not Monitoring: None <---- displays
when SNMP settings are valid
                Source Of Switch Version: CDP/ISDP
                Is Monitored?: true
                Serial Number of the Device: QTFCU3826001C
                RCF Version: v1.8X2 for

Cluster/HA/RDMA

cluster1::*>

```

## NVIDIA - CLI 5.4

在运行CLI 5.4的NVIDIA SN2100交换机上配置SNMPv3用户名SNMPv3\_user:

- 对于\*no authentication (无身份验证)\*:

```
net add snmp-server username SNMPv3_USER auth-none
```

- 对于\*MD5/SHA身份验证\*:

```
net add snmp-server username SNMPv3_USER [auth-md5|auth-sha] AUTH-
PASSWORD
```

- 对于采用AES/DES加密的\*MD5/SHA身份验证\*:

```
net add snmp-server username SNMPv3_USER [auth-md5|auth-sha] AUTH-
PASSWORD [encrypt-aes|encrypt-des] PRIV-PASSWORD
```

以下命令在ONTAP端配置SNMPv3用户名：

```
security login create -user-or-group-name SNMPv3_USER -application snmp
-authentication-method usm -remote-switch-ipaddress ADDRESS
```

以下命令将使用CSHM建立SNMPv3用户名：

```
system switch ethernet modify -device DEVICE -snmp-version SNMPv3
-community-or-username SNMPv3_USER
```

## 步骤

1. 在交换机上设置SNMPv3用户以使用身份验证和加密：

```
net show snmp status
```

```
cumulus@sw1:~$ net show snmp status
Simple Network Management Protocol (SNMP) Daemon.
-----
Current Status          active (running)
Reload Status           enabled
Listening IP Addresses  all vrf mgmt
Main snmpd PID          4318
Version 1 and 2c Community String Configured
Version 3 Usernames     Not Configured
-----

cumulus@sw1:~$
cumulus@sw1:~$ net add snmp-server username SNMPv3User auth-md5
<password> encrypt-aes <password>
cumulus@sw1:~$ net commit
--- /etc/snmp/snmpd.conf      2020-08-02 21:09:34.686949282 +0000
+++ /run/nclu/snmp/snmpd.conf 2020-08-11 00:13:51.826126655 +0000
@@ -1,26 +1,28 @@
# Auto-generated config file: do not edit. #
agentaddress udp:@mgmt:161
agentxperms 777 777 snmp snmp
agentxsocket /var/agentx/master
createuser _snmptrapusernameX
+createuser SNMPv3User MD5 <password> AES <password>
ifmib_max_num_ifaces 500
iquerysecname _snmptrapusernameX
master agentx
monitor -r 60 -o laNames -o laErrorMessage "laTable" laErrorFlag != 0
```

```

pass -p 10 1.3.6.1.2.1.1.1 /usr/share/snmp/sysDescr_pass.py
pass_persist 1.2.840.10006.300.43
/usr/share/snmp/ieee8023_lag_pp.py
pass_persist 1.3.6.1.2.1.17 /usr/share/snmp/bridge_pp.py
pass_persist 1.3.6.1.2.1.31.1.1.1.18
/usr/share/snmp/snmpifAlias_pp.py
pass_persist 1.3.6.1.2.1.47 /usr/share/snmp/entity_pp.py
pass_persist 1.3.6.1.2.1.99 /usr/share/snmp/entity_sensor_pp.py
pass_persist 1.3.6.1.4.1.40310.1 /usr/share/snmp/resq_pp.py
pass_persist 1.3.6.1.4.1.40310.2
/usr/share/snmp/cl_drop_cntrs_pp.py
pass_persist 1.3.6.1.4.1.40310.3 /usr/share/snmp/cl_poe_pp.py
pass_persist 1.3.6.1.4.1.40310.4 /usr/share/snmp/bgpun_pp.py
pass_persist 1.3.6.1.4.1.40310.5 /usr/share/snmp/cumulus-status.py
pass_persist 1.3.6.1.4.1.40310.6 /usr/share/snmp/cumulus-sensor.py
pass_persist 1.3.6.1.4.1.40310.7 /usr/share/snmp/vrf_bgpun_pp.py
+rocommunity cshml! default
rouser _snmptrapusernameX
+rouser SNMPv3User priv
sysobjectid 1.3.6.1.4.1.40310
syssservices 72
-rocommunity cshml! default

```

net add/del commands since the last "net commit"

User	Timestamp	Command
SNMPv3User	2020-08-11 00:13:51.826987	net add snmp-server username SNMPv3User auth-md5 <password> encrypt-aes <password>

```

cumulus@sw1:~$
cumulus@sw1:~$ net show snmp status
Simple Network Management Protocol (SNMP) Daemon.
-----
Current Status          active (running)
Reload Status           enabled
Listening IP Addresses  all vrf mgmt
Main snmpd PID          24253
Version 1 and 2c Community String Configured
Version 3 Usernames     Configured      <---- Configured
here
-----

```

```

cumulus@sw1:~$

```

## 2. 在ONTAP 端设置SNMPv3用户:

```
security login create -user-or-group-name SNMPv3User -application  
snmp -authentication-method usm -remote-switch-ipaddress  
10.231.80.212
```

```
cluster1::*> security login create -user-or-group-name SNMPv3User  
-application snmp -authentication-method usm -remote-switch  
-ipaddress 10.231.80.212
```

Enter the authoritative entity's EngineID [remote EngineID]:

Which authentication protocol do you want to choose (none, md5, sha,  
sha2-256)

[none]: **md5**

Enter the authentication protocol password (minimum 8 characters  
long):

Enter the authentication protocol password again:

Which privacy protocol do you want to choose (none, des, aes128)

[none]: **aes128**

Enter privacy protocol password (minimum 8 characters long):

Enter privacy protocol password again:

## 3. 将CSHM配置为使用新SNMPv3用户进行监控:

```
system switch ethernet show-all -device "sw1 (b8:59:9f:09:7c:22)"  
-instance
```

```

cluster1::*> system switch ethernet show-all -device "sw1
(b8:59:9f:09:7c:22)" -instance
                                     Device Name: sw1
(b8:59:9f:09:7c:22)
                                     IP Address: 10.231.80.212
                                     SNMP Version: SNMPv2c
                                     Is Discovered: true
DEPRECATED-Community String or SNMPv3 Username: -
      Community String or SNMPv3 Username: cshml!
                                     Model Number: MSN2100-CB2FC
                                     Switch Network: cluster-network
                                     Software Version: Cumulus Linux
version 4.4.3 running on Mellanox Technologies Ltd. MSN2100
      Reason For Not Monitoring: None
      Source Of Switch Version: LLDP
      Is Monitored?: true
      Serial Number of the Device: MT2110X06399 <----
serial number to check
                                     RCF Version: MSN2100-RCF-v1.9X6-
Cluster-LLDP Aug-18-2022

cluster1::*>
cluster1::*> system switch ethernet modify -device "sw1
(b8:59:9f:09:7c:22)" -snmp-version SNMPv3 -community-or-username
SNMPv3User

```

4. 确认要使用新创建的SNMPv3用户查询的序列号与CSHM轮询周期完成后上一步中详述的序列号相同。

```
system switch ethernet polling-interval show
```

```
cluster1::*> system switch ethernet polling-interval show
Polling Interval (in minutes): 5

cluster1::*> system switch ethernet show-all -device "sw1
(b8:59:9f:09:7c:22)" -instance
Device Name: sw1
(b8:59:9f:09:7c:22)
IP Address: 10.231.80.212
SNMP Version: SNMPv3
Is Discovered: true
DEPRECATED-Community String or SNMPv3 Username: -
Community String or SNMPv3 Username: SNMPv3User
Model Number: MSN2100-CB2FC
Switch Network: cluster-network
Software Version: Cumulus Linux
version 4.4.3 running on Mellanox Technologies Ltd. MSN2100
Reason For Not Monitoring: None
Source Of Switch Version: LLDP
Is Monitored?: true
Serial Number of the Device: MT2110X06399 <----
serial number to check
RCF Version: MSN2100-RCF-v1.9X6-
Cluster-LLDP Aug-18-2022
```

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