配置软件

Cluster and storage switches

NetApp
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配置软件

NVIDIA SN2100交换机的软件安装工作流

要为NVIDIA SN2100交换机安装和配置软件、请执行以下步骤：

1. "在Cumulus模式下安装Cumulus Linux" 或 "在ONIE模式下安装Cumulus Linux"。

   当交换机运行的是Cumulus Linux或ONIE时、您可以安装Cumulus Linux (CL)操作系统。

2. "安装参考配置文件(Reference Configuration File、RCF)脚本"。

   有两个RCF脚本可用于集群和存储应用程序。每个的操作步骤 是相同的。

3. "为交换机日志收集配置SNMPv3"。

   此版本支持使用SNMPv3收集交换机日志和使用交换机运行状况监控(SHM)。

这些过程使用网络命令行实用程序(Network Command Line Utility、NCLU)、它是一个命令行界面、可确保所有用户均可完全访问Cumulus Linux。net命令是用于从终端执行操作的包装实用程序。

在Cumulus模式下安装Cumulus Linux

当交换机在Cumulus模式下运行时、请按照此操作步骤 安装Cumulus Linux (CL)操作系统。

> 可以在交换机运行Cumulus Linux或ONIE时安装Cumulus Linux (CL)操作系统(请参见 "在ONIE模式下安装"）。

您需要的内容

- 中级Linux知识。
- 熟悉基本文本编辑、UNIX文件权限和进程监控。预安装了各种文本编辑器、包括 `vi` 和 `nano`。
- 访问Linux或UNIX Shell。如果您运行的是Windows、请使用Linux环境作为命令行工具与Cumulus Linux进行交互。
- 对于NVIDIA SN2100交换机控制台访问、串行控制台交换机上的波特率要求设置为115200、如下所示：
  - 115200 波特
  - 8 个数据位
  - 1 个停止位
  - 奇偶校验：无
  - 流量控制：无

关于此任务

请注意以下事项：

每次安装Cumulus Linux时、都会擦除并重建整个文件系统结构。

累积用户帐户的默认密码为*累积用户*。首次登录到Cumulus Linux时、必须更改此默认密码。在安装新映像之前、请务必更新所有自动化脚本。Cumulus Linux提供了命令行选项、用于在安装过程中自动更改默认密码。

示例 **1.** 步骤

Cumulus Linux 4.4.3

1. 登录到交换机。

   首次登录到交换机时、需要使用的用户名/密码为*累积us*/累积**us** `sudo` 特权。

```
cumulus login: cumulus
Password: cumulus
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
```

2. 检查Cumulus Linux版本： `net show system`

```
cumulus@cumulus:mgmt:~$ net show system
Hostname......... cumulus
Build............ Cumulus Linux 4.4.3
Uptime........... 0:08:20.860000
Model............ Mlnx X86
CPU.............. x86_64 Intel Atom C2558 2.40GHz
Memory........... 8GB
Disk............. 14.7GB
ASIC............. Mellanox Spectrum MT52132
Ports............ 16 x 100G-QSFP28
Part Number...... MSN2100-CB2FC
Serial Number.... MT2105T05177
Platform Name.... x86_64-mlnx_x86-r0
Product Name..... MSN2100
ONIE Version..... 2019.11-5.2.0020-115200
Base MAC Address. 04:3F:72:43:92:80
Manufacturer..... Mellanox
```

3. 配置主机名、IP地址、子网掩码和默认网关。只有在重新启动控制台/SSH会话后、新主机名才会生效。

   一个Cumulus Linux交换机至少可提供一个名为`eth0`的专用以太网管理端口。此接口专用于带外管理。默认情况下、管理接口使用DHCPv4进行寻址。

   请勿在主机名中使用下划线(_)、撇号(')或非ASCII字符。

```
cumulus@cumulus:mgmt:~$ net add hostname sw1
cumulus@cumulus:mgmt:~$ net add interface eth0 ip address
10.233.204.71
cumulus@cumulus:mgmt:~$ net add interface eth0 ip gateway
10.233.204.1
cumulus@cumulus:mgmt:~$ net pending
cumulus@cumulus:mgmt:~$ net commit
```

此命令会同时修改`/etc/hostname`和`/etc/hosts`文件。

4. 确认主机名、IP地址、子网掩码和默认网关已更新。

```
cumulus@sw1:mgmt:~$ hostname sw1
cumulus@sw1:mgmt:~$ ifconfig eth0
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
inet 10.233.204.71  netmask 255.255.254.0  broadcast 10.233.205.255
inet6 fe80::bace:f6ff:fe19:1df6  prefixlen 64  scopeid 0x20<link>
ether b8:ce:f6:19:1d:f6  txqueuelen 1000  (Ethernet)
RX packets 75364  bytes 23013528 (21.9 MiB)
RX errors 0  dropped 7  overruns 0  frame 0
TX packets 4053  bytes 827280 (807.8 KiB)
TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0 device
memory 0xdfc00000-dfc1ffff

cumulus@sw1::mgmt:~$ ip route show vrf mgmt
default via 10.233.204.1 dev eth0
unreachable default metric 4278198272
10.233.204.0/23 dev eth0 proto kernel scope link src 10.233.204.71
127.0.0.0/8 dev mgmt proto kernel scope link src 127.0.0.1
```

5. 使用NTP交互模式配置时区。
   a. 在终端上、运行以下命令：

      ```
      cumulus@sw1:~$ sudo dpkg-reconfigure tzdata
      ```

   b. 按照屏幕上的菜单选项选择地理区域和区域。
   c. 要设置所有服务和守护进程的时区、请重新启动交换机。
   d. 验证交换机上的日期和时间是否正确、并在必要时进行更新。
6. 安装Cumulus Linux 4.5.3：

```
cumulus@sw1:mgmt:~$ sudo onie-install -a -i http://<web-server>/<path>/cumulus-linux-4.4.3-mlx-amd64.bin
```

安装程序将开始下载。出现提示时、键入*。

7. 重新启动NVIDIA SN2100交换机：

```
cumulus@sw1:mgmt:~$ sudo reboot
```

8. 安装将自动启动、并显示以下Grub屏幕选项。请勿*选择*。
   - Cumulus-Linux GNU/Linux
   - ONIE：安装操作系统
   - Cumulus-install
   - Cumulus-Linux GNU/Linux
9. 重复步骤1至4以登录。
10. 验证Cumulus Linux版本是否为4.5.3： `net show version`

```
cumulus@sw1:mgmt:~$ net show version
NCLU_VERSION=1.0-cl4.4.3u0
DISTRIB_ID="Cumulus Linux"
DISTRIB_RELEASE=4.4.3
DISTRIB_DESCRIPTION="Cumulus Linux 4.4.3"
```

11. 创建新用户并将此用户添加到 `sudo` 组。只有在重新启动控制台/SSH会话后、此用户才会生效。

```
sudo adduser --ingroup netedit admin
```

```
cumulus@sw1:mgmt:~$ sudo adduser --ingroup netedit admin
[sudo] password for cumulus:
Adding user 'admin' ...
Adding new user 'admin' (1001) with group `netedit' ...
Creating home directory '/home/admin' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

cumulus@sw1:mgmt:~$ sudo adduser admin sudo
[sudo] password for cumulus:
Adding user `admin' to group `sudo' ...
Adding user admin to group sudo
Done.
cumulus@sw1:mgmt:~$ exit
logout
Connection to 10.233.204.71 closed.

[admin@cycrh6svl01 ~]$ ssh admin@10.233.204.71
admin@10.233.204.71's password:
Linux sw1 4.19.0-cl-1-amd64 #1 SMP Cumulus 4.19.206-1+cl4.4.1u1
(2021-09-09) x86_64
Welcome to NVIDIA Cumulus (R) Linux (R)

For support and online technical documentation, visit
http://www.cumulusnetworks.com/support

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from LMI, the exclusive licensee of Linus Torvalds, owner of the
mark on a world-wide basis.
admin@sw1:mgmt:~$
```

Cumulus Linux 5.x

1. 登录到交换机。

   首次登录到交换机时、需要使用的用户名/密码为*累积us*/累积**us** `sudo` 特权。

```
cumulus login: cumulus
Password: cumulus
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
```

2. 检查Cumulus Linux版本： `nv show system`

```
cumulus@cumulus:mgmt:~$ nv show system
operational         applied              description
------------------- -------------------- ---------------------
hostname            cumulus              cumulus
build               Cumulus Linux 5.3.0  system build version
uptime              6 days, 8:37:36      system uptime
timezone            Etc/UTC              system time zone
```

3. 配置主机名、IP地址、子网掩码和默认网关。只有在重新启动控制台/SSH会话后、新主机名才会生效。

> 一个Cumulus Linux交换机至少可提供一个名为`eth0`的专用以太网管理端口。此接口专用于带外管理。默认情况下、管理接口使用DHCPv4进行寻址。

> 请勿在主机名中使用下划线(_)、撇号(')或非ASCII字符。

```
cumulus@cumulus:mgmt:~$ nv set system hostname sw1
cumulus@cumulus:mgmt:~$ nv set interface eth0 ip address
10.233.204.71/24
cumulus@cumulus:mgmt:~$ nv set interface eth0 ip gateway
10.233.204.1
cumulus@cumulus:mgmt:~$ nv config apply
cumulus@cumulus:mgmt:~$ nv config save
```

此命令会同时修改`/etc/hostname`和`/etc/hosts`文件。

4. 确认主机名、IP地址、子网掩码和默认网关已更新。

```
cumulus@sw1:mgmt:~$ hostname sw1
cumulus@sw1:mgmt:~$ ifconfig eth0
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
inet 10.233.204.71  netmask 255.255.254.0  broadcast 10.233.205.255
inet6 fe80::bace:f6ff:fe19:1df6  prefixlen 64  scopeid 0x20<link>
ether b8:ce:f6:19:1d:f6  txqueuelen 1000  (Ethernet)
RX packets 75364  bytes 23013528 (21.9 MiB)
RX errors 0  dropped 7  overruns 0  frame 0
TX packets 4053  bytes 827280 (807.8 KiB)
TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0 device
memory 0xdfc00000-dfc1ffff

cumulus@sw1::mgmt:~$ ip route show vrf mgmt
default via 10.233.204.1 dev eth0
unreachable default metric 4278198272
10.233.204.0/23 dev eth0 proto kernel scope link src 10.233.204.71
127.0.0.0/8 dev mgmt proto kernel scope link src 127.0.0.1
```

5. 使用NTP交互模式配置时区。
   a. 在终端上、运行以下命令：

      ```
      cumulus@sw1:~$ sudo dpkg-reconfigure tzdata
      ```

   b. 按照屏幕上的菜单选项选择地理区域和区域。
   c. 要设置所有服务和守护进程的时区、请重新启动交换机。
   d. 验证交换机上的日期和时间是否正确、并在必要时进行更新。
6. 安装Cumulus Linux 5.4：

   ```
   cumulus@sw1:mgmt:~$ sudo onie-install -a -i http://<web-server>/<path>/cumulus-linux-5.4-mlx-amd64.bin
   ```

   安装程序将开始下载。出现提示时、键入*。

7. 重新启动NVIDIA SN2100交换机：

   ```
   cumulus@sw1:mgmt:~$ sudo reboot
   ```

8. 安装将自动启动、并显示以下Grub屏幕选项。请勿*选择*。
   - Cumulus-Linux GNU/Linux
   - ONIE：安装操作系统

- Cumulus-install
- Cumulus-Linux GNU/Linux

9. 重复步骤1至4以登录。
10. 验证Cumulus Linux版本是否为5.4： `nv show system`

```
cumulus@cumulus:mgmt:~$ nv show system
operational         applied              description
------------------- -------------------- ---------------------
hostname            cumulus              cumulus
build               Cumulus Linux 5.4.0  system build version
uptime              6 days, 13:37:36     system uptime
timezone            Etc/UTC              system time zone
```

11. 验证每个节点是否都与每个交换机建立了连接：

```
cumulus@sw1:mgmt:~$ net show lldp

LocalPort  Speed  Mode        RemoteHost
RemotePort
---------  -----  ----------  ----------------------------------
-----------
eth0       100M   Mgmt        mgmt-sw1
Eth110/1/29
swp2s1     25G    Trunk/L2    node1
e0a
swp15      100G   BondMember  sw2
swp15
swp16      100G   BondMember  sw2
swp16
```

12. 创建新用户并将此用户添加到 `sudo` 组。只有在重新启动控制台/SSH会话后、此用户才会生效。

```
sudo adduser --ingroup netedit admin
```

```
cumulus@sw1:mgmt:~$ sudo adduser --ingroup netedit admin
[sudo] password for cumulus:
Adding user 'admin' ...
Adding new user 'admin' (1001) with group `netedit' ...
Creating home directory '/home/admin' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

cumulus@sw1:mgmt:~$ sudo adduser admin sudo
[sudo] password for cumulus:
Adding user `admin' to group `sudo' ...
Adding user admin to group sudo
Done.
cumulus@sw1:mgmt:~$ exit
logout
Connection to 10.233.204.71 closed.

[admin@cycrh6svl01 ~]$ ssh admin@10.233.204.71
admin@10.233.204.71's password:
Linux sw1 4.19.0-cl-1-amd64 #1 SMP Cumulus 4.19.206-1+cl4.4.1u1
(2021-09-09) x86_64
Welcome to NVIDIA Cumulus (R) Linux (R)

For support and online technical documentation, visit
http://www.cumulusnetworks.com/support

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from LMI, the exclusive licensee of Linus Torvalds, owner of the
mark on a world-wide basis.
admin@sw1:mgmt:~$
```

13. 添加供管理员用户访问的其他用户组 `nv` 命令：

```
cumulus@sw1:mgmt:~$ sudo adduser admin nvshow
     [sudo] password for cumulus:
     Adding user 'admin' to group 'nvshow' ...
     Adding user admin to group nvshow
     Done.
```

请参见 "NVIDIA用户帐户" 有关详细信息 ...

下一步是什么?

"安装参考配置文件(Reference Configuration File、RCF)脚本"。

在ONIE模式下安装Cumulus Linux

当交换机以ONIE模式运行时、请按照此操作步骤 安装Cumulus Linux (CL)操作系统。

> 在交换机运行ONIE或Cumulus Linux时、可以安装Cumulus Linux (CL)操作系统(请参见 "在Cumulus模式下安装"）。

关于此任务

您可以使用开放网络安装环境(Open Network Install Environment、ONIE)安装Cumulus Linux、以便自动发现网络安装程序映像。这有助于采用可选择的操作系统来保护交换机的系统模式、例如、Cumulus Linux。使用ONIE安装Cumulus Linux的最简单方法是使用本地HTTP发现。

> 如果主机已启用IPv6、请确保其运行的是Web服务器。如果主机启用了IPv4、请确保它除了运行Web服务器之外还运行DHCP。

此操作步骤 演示了管理员在ONIE中启动后如何升级Cumulus Linux。

示例 **2.** 步骤

Cumulus Linux 4.4.3

1. 将Cumulus Linux安装文件下载到Web服务器的根目录。将此文件重命名为： `onie-installer`。
2. 使用以太网缆线将主机连接到交换机的管理以太网端口。
3. 打开交换机电源。

   交换机将下载ONIE映像安装程序并启动。安装完成后、终端窗口将显示Cumulus Linux登录提示。

   > 每次安装Cumulus Linux时、都会擦除并重建整个文件系统结构。

4. 重新启动SN2100交换机：

   ```
   cumulus@cumulus:mgmt:~$ sudo reboot
   ```

5. 在GNU Grub屏幕上按* Esc 键以中断正常启动过程、选择 ONIE*、然后按* Enter键。
6. 在下一个屏幕上、选择*。onIE：install OS*。
7. ONIE安装程序发现过程将运行搜索自动安装。按*输入*以临时停止此过程。
8. 发现过程停止后：

   ```
   ONIE:/ # onie-stop
   discover: installer mode detected.
   Stopping: discover...start-stop-daemon: warning: killing process
   427:
   No such process done.
   ```

9. 如果DHCP服务正在网络上运行、请验证是否已正确分配IP地址、子网掩码和默认网关：

   ```
   ifconfig eth0
   ```

```
ONIE:/ # ifconfig eth0
eth0   Link encap:Ethernet  HWaddr B8:CE:F6:19:1D:F6
       inet addr:10.233.204.71  Bcast:10.233.205.255
Mask:255.255.254.0
       inet6 addr: fe80::bace:f6ff:fe19:1df6/64 Scope:Link
       UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
       RX packets:21344 errors:0 dropped:2135 overruns:0 frame:0
       TX packets:3500 errors:0 dropped:0 overruns:0 carrier:0
       collisions:0 txqueuelen:1000
       RX bytes:6119398 (5.8 MiB)  TX bytes:472975 (461.8 KiB)
       Memory:dfc00000-dfc1ffff

ONIE:/ # route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref
Use Iface

default         10.233.204.1    0.0.0.0         UG    0      0
0   eth0
10.233.204.0    *               255.255.254.0   U     0      0
0   eth0
```

10. 如果手动定义了IP地址方案、请执行以下操作：

```
ONIE:/ # ifconfig eth0 10.233.204.71 netmask 255.255.254.0
ONIE:/ # route add default gw 10.233.204.1
```

11. 重复步骤9以验证是否正确输入了静态信息。
12. 安装Cumulus Linux：

```
# onie-nos-install http://<web-server>/<path>/cumulus-linux-4.4.3-
mlx-amd64.bin
```

```
ONIE:/ # route

  Kernel IP routing table

  ONIE:/ # onie-nos-install http://<web-server>/<path>/cumulus-
linux-4.4.3-mlx-amd64.bin

  Stopping: discover... done.
  Info: Attempting
http://10.60.132.97/x/eng/testbedN,svl/nic/files/cumulus-linux-
4.4.3-mlx-amd64.bin ...
  Connecting to 10.60.132.97 (10.60.132.97:80)
  installer            100% |*|   552M  0:00:00 ETA
  ...
  ...
```

13. 安装完成后、登录到交换机。

```
cumulus login: cumulus
Password: cumulus
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
```

14. 验证Cumulus Linux版本： `net show version`

```
cumulus@cumulus:mgmt:~$ net show version
NCLU_VERSION=1.0-cl4.4.3u4
DISTRIB_ID="Cumulus Linux"
DISTRIB_RELEASE=4.4.3
DISTRIB_DESCRIPTION="Cumulus Linux 4.4.3”
```

Cumulus Linux 5.x

1. 将Cumulus Linux安装文件下载到Web服务器的根目录。将此文件重命名为： `onie-installer`。
2. 使用以太网缆线将主机连接到交换机的管理以太网端口。
3. 打开交换机电源。

   交换机将下载ONIE映像安装程序并启动。安装完成后、终端窗口将显示Cumulus Linux登录提示。

每次安装Cumulus Linux时、都会擦除并重建整个文件系统结构。

4. 重新启动SN2100交换机：

```
cumulus@cumulus:mgmt:~$ sudo reboot
.
.
GNU GRUB version 2.06-3
+-----------------------------------------------------------------------
------+
| Cumulus-Linux GNU/Linux
|
| Advanced options for Cumulus-Linux GNU/Linux
|
| ONIE
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
|
+-----------------------------------------------------------------------
------+
```

5. 在GNU GRUB屏幕上按Esc键中断正常的引导过程，选择ONIE，然后按Enter键。

```
.
.
Loading ONIE ...

GNU GRUB version 2.02
+-----------------------------------------------------------------
------+
| ONIE: Install OS
|
| ONIE: Rescue
|
| ONIE: Uninstall OS
|
| ONIE: Update ONIE
|
| ONIE: Embed ONIE
|
|
|
|
|
|
|
|
|
|
+-----------------------------------------------------------------
------+
```

选择ONIE：安装操作系统。

6. ONIE安装程序发现过程将运行搜索自动安装。按*输入*以临时停止此过程。
7. 发现过程停止后：

```
ONIE:/ # onie-stop
discover: installer mode detected.
Stopping: discover...start-stop-daemon: warning: killing process
427:
No such process done.
```

8. 配置IP地址、子网掩码和默认网关：

```
ifconfig eth0
```

```
ONIE:/ # ifconfig eth0
eth0   Link encap:Ethernet  HWaddr B8:CE:F6:19:1D:F6
       inet addr:10.233.204.71  Bcast:10.233.205.255
Mask:255.255.254.0
       inet6 addr: fe80::bace:f6ff:fe19:1df6/64 Scope:Link
       UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
       RX packets:21344 errors:0 dropped:2135 overruns:0 frame:0
       TX packets:3500 errors:0 dropped:0 overruns:0 carrier:0
       collisions:0 txqueuelen:1000
       RX bytes:6119398 (5.8 MiB)  TX bytes:472975 (461.8 KiB)
       Memory:dfc00000-dfc1ffff
ONIE:/ #
ONIE:/ # ifconfig eth0 10.228.140.27 netmask 255.255.248.0
ONIE:/ # ifconfig eth0
eth0   Link encap:Ethernet HWaddr B8:CE:F6:5E:05:E6
       inet addr:10.228.140.27 Bcast:10.228.143.255
Mask:255.255.248.0
       inet6 addr: fd20:8b1e:b255:822b:bace:f6ff:fe5e:5e6/64
Scope:Global
       inet6 addr: fe80::bace:f6ff:fe5e:5e6/64 Scope:Link
       UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
       RX packets:18813 errors:0 dropped:1418 overruns:0 frame:0
       TX packets:491 errors:0 dropped:0 overruns:0 carrier:0
       collisions:0 txqueuelen:1000
       RX bytes:1339596 (1.2 MiB) TX bytes:49379 (48.2 KiB)
       Memory:dfc00000-dfc1ffff
ONIE:/ # route add default gw 10.228.136.1
ONIE:/ # route
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref
Use Iface

default         10.228.136.1    0.0.0.0         UG    0      0
0   eth0
10.228.136.1    *               255.255.248.0   U     0      0
0   eth0
```

9. 安装Cumulus Linux 5.4：

```
# onie-nos-install http://<web-server>/<path>/cumulus-linux-5.4-mlx-amd64.bin
```

```
ONIE:/ # route

  Kernel IP routing table

  ONIE:/ # onie-nos-install http://<web-server>/<path>/cumulus-
linux-5.4-mlx-amd64.bin

  Stopping: discover... done.
  Info: Attempting
http://10.60.132.97/x/eng/testbedN,svl/nic/files/cumulus-linux-5.4-
mlx-amd64.bin ...
  Connecting to 10.60.132.97 (10.60.132.97:80)
  installer            100% |*|   552M  0:00:00 ETA
  ...
  ...
```

10. 安装完成后、登录到交换机。

```
cumulus login: cumulus
Password: cumulus
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
```

11. 验证Cumulus Linux版本： `nv show system`

```
cumulus@cumulus:mgmt:~$ nv show system
operational         applied              description
------------------- -------------------- ---------------------
hostname            cumulus              cumulus
build               Cumulus Linux 5.4.0  system build version
uptime              6 days, 13:37:36     system uptime
timezone            Etc/UTC              system time zone
```

12. 创建新用户并将此用户添加到 `sudo` 组。只有在重新启动控制台/SSH会话后、此用户才会生效。

```
sudo adduser --ingroup netedit admin
```

```
cumulus@sw1:mgmt:~$ sudo adduser --ingroup netedit admin
[sudo] password for cumulus:
Adding user 'admin' ...
Adding new user 'admin' (1001) with group `netedit' ...
Creating home directory '/home/admin' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

cumulus@sw1:mgmt:~$ sudo adduser admin sudo
[sudo] password for cumulus:
Adding user `admin' to group `sudo' ...
Adding user admin to group sudo
Done.
cumulus@sw1:mgmt:~$ exit
logout
Connection to 10.233.204.71 closed.

[admin@cycrh6svl01 ~]$ ssh admin@10.233.204.71
admin@10.233.204.71's password:
Linux sw1 4.19.0-cl-1-amd64 #1 SMP Cumulus 4.19.206-1+cl4.4.1u1
(2021-09-09) x86_64
Welcome to NVIDIA Cumulus (R) Linux (R)

For support and online technical documentation, visit
http://www.cumulusnetworks.com/support

The registered trademark Linux (R) is used pursuant to a sublicense
from LMI, the exclusive licensee of Linus Torvalds, owner of the
mark on a world-wide basis.
admin@sw1:mgmt:~$
```

13. 添加供管理员用户访问的其他用户组 `nv` 命令：

```
cumulus@cumulus:mgmt:~$ sudo adduser admin nvshow
     [sudo] password for cumulus:
     Adding user `admin' to group `nvshow' ...
     Adding user admin to group nvshow
     Done.
```

请参见 "NVIDIA用户帐户" 有关详细信息 ...

下一步是什么?

"安装参考配置文件(Reference Configuration File、RCF)脚本"。

安装参考配置文件(Reference Configuration File、RCF)脚本

按照此操作步骤 安装RCF脚本。

您需要的内容

在安装RCF脚本之前、请确保交换机上具有以下配置：

- 安装了Cumulus Linux。请参见 "Hardware Universe" 支持的版本。
- 通过DHCP定义或手动配置的IP地址、子网掩码和默认网关。

> 除了管理员用户之外、您还必须在RC框架 中指定一个用户、以专门用于收集日志。

当前**RCF**脚本版本

集群和存储应用程序可以使用两个RC框架 脚本。从下载RCF "此处"。每个的操作步骤 是相同的。

- 集群：* MSN2100-RCP-v1._x—cluster-HA-Breakout—LCDP*
- 存储：* MSN2100-RFP-v1.*x*-Storage*

关于示例

以下示例操作步骤 显示了如何下载并应用集群交换机的RCF脚本。

示例命令输出使用交换机管理IP地址10.233.204.71、网络掩码255.255.254.0和默认网关10.233.204.1。

示例 **3.** 步骤

Cumulus Linux 4.4.3

1. 显示SN2100交换机上的可用接口：

```
admin@sw1:mgmt:~$ net show interface all

State  Name   Spd  MTU    Mode         LLDP                Summary
-----  -----  ---  -----  -----------  ------------------
--------------
...
...
ADMDN  swp1   N/A  9216   NotConfigured
ADMDN  swp2   N/A  9216   NotConfigured
ADMDN  swp3   N/A  9216   NotConfigured
ADMDN  swp4   N/A  9216   NotConfigured
ADMDN  swp5   N/A  9216   NotConfigured
ADMDN  swp6   N/A  9216   NotConfigured
ADMDN  swp7   N/A  9216   NotConfigured
ADMDN  swp8   N/A  9216   NotConfigured
ADMDN  swp9   N/A  9216   NotConfigured
ADMDN  swp10  N/A  9216   NotConfigured
ADMDN  swp11  N/A  9216   NotConfigured
ADMDN  swp12  N/A  9216   NotConfigured
ADMDN  swp13  N/A  9216   NotConfigured
ADMDN  swp14  N/A  9216   NotConfigured
ADMDN  swp15  N/A  9216   NotConfigured
ADMDN  swp16  N/A  9216   NotConfigured
```

2. 将RCF python脚本复制到交换机。

```
admin@sw1:mgmt:~$ pwd
/home/cumulus
cumulus@cumulus:mgmt: /tmp$ scp <user>@<host:/<path>/MSN2100-RCF-
v1.x-Cluster-HA-Breakout-LLDP ./
ssologin@10.233.204.71's password:
MSN2100-RCF-v1.x-Cluster-HA-Breakout-LLDP         100% 8607
111.2KB/s         00:00
```

> 同时 `scp` 在本示例中、您可以使用首选的文件传输方法。

3. 应用RCF python脚本*MSN2100-RCP-v1.x-Cluster-HA-Breakout LCDP*。

```
cumulus@cumulus:mgmt:/tmp$ sudo python3 MSN2100-RCF-v1.x-Cluster-HA-
Breakout-LLDP
[sudo] password for cumulus:
...
Step 1: Creating the banner file
Step 2: Registering banner message
Step 3: Updating the MOTD file
Step 4: Ensuring passwordless use of cl-support command by admin
Step 5: Disabling apt-get
Step 6: Creating the interfaces
Step 7: Adding the interface config
Step 8: Disabling cdp
Step 9: Adding the lldp config
Step 10: Adding the RoCE base config
Step 11: Modifying RoCE Config
Step 12: Configure SNMP
Step 13: Reboot the switch
```

RCF脚本将完成上述示例中列出的步骤。

> 在步骤3*更新上面的MOTD文件*中，命令 `cat /etc/motd` 已运行。这样、您可以验证RCV文件名、RCV版本、要使用的端口以及RCV横幅中的其他重要信息。

> 对于无法更正的任何RCF python脚本问题、请联系 "NetApp 支持" 以获得帮助。

4. 重新启动后验证配置：

```
admin@sw1:mgmt:~$ net show interface all

State  Name       Spd   MTU    Mode        LLDP               Summary
-----  --------- ----  -----  ---------- ----------------- --------
...
...
DN     swp1s0     N/A   9216   Trunk/L2                      Master:
bridge(UP)
DN     swp1s1     N/A   9216   Trunk/L2                      Master:
bridge(UP)
DN     swp1s2     N/A   9216   Trunk/L2                      Master:
bridge(UP)
DN     swp1s3     N/A   9216   Trunk/L2                      Master:
bridge(UP)
DN     swp2s0     N/A   9216   Trunk/L2                      Master:
bridge(UP)
DN     swp2s1     N/A   9216   Trunk/L2                      Master:
```

```
bridge(UP)
DN     swp2s2    N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp2s3    N/A   9216   Trunk/L2                    Master:
bridge(UP)
UP     swp3      100G  9216   Trunk/L2                    Master:
bridge(UP)
UP     swp4      100G  9216   Trunk/L2                    Master:
bridge(UP)
DN     swp5      N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp6      N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp7      N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp8      N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp9      N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp10     N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp11     N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp12     N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp13     N/A   9216   Trunk/L2                    Master:
bridge(UP)
DN     swp14     N/A   9216   Trunk/L2                    Master:
bridge(UP)
UP     swp15     N/A   9216   BondMember                  Master:
bond_15_16(UP)
UP     swp16     N/A   9216   BondMember                  Master:
bond_15_16(UP)
...
...

admin@sw1:mgmt:~$ net show roce config
RoCE mode.......... lossless
Congestion Control:
  Enabled SPs.... 0 2 5
  Mode........... ECN
  Min Threshold.. 150 KB
  Max Threshold.. 1500 KB
PFC:
  Status......... enabled
  Enabled SPs.... 2 5
```

```
  Interfaces......... swp10-16,swp1s0-3,swp2s0-3,swp3-9

DSCP                      802.1p  switch-priority
------------------------  ------  ---------------
0 1 2 3 4 5 6 7                0                0
8 9 10 11 12 13 14 15          1                1
16 17 18 19 20 21 22 23        2                2
24 25 26 27 28 29 30 31        3                3
32 33 34 35 36 37 38 39        4                4
40 41 42 43 44 45 46 47        5                5
48 49 50 51 52 53 54 55        6                6
56 57 58 59 60 61 62 63        7                7

switch-priority  TC  ETS
---------------  --  --------
0 1 3 4 6 7       0  DWRR 28%
2                 2  DWRR 28%
5                 5  DWRR 43%
```

5. 验证接口中收发器的信息：

```
admin@sw1:mgmt:~$ net show interface pluggables
Interface  Identifier     Vendor Name  Vendor PN        Vendor SN
    Vendor Rev
---------  -------------  -----------  ---------------
--------------  ----------
swp3       0x11 (QSFP28)  Amphenol     112-00574
APF20379253516  B0
swp4       0x11 (QSFP28)  AVAGO        332-00440        AF1815GU05Z
    A0
swp15      0x11 (QSFP28)  Amphenol     112-00573
APF21109348001  B0
swp16      0x11 (QSFP28)  Amphenol     112-00573
APF21109347895  B0
```

6. 验证每个节点是否都与每个交换机建立了连接：

```
admin@sw1:mgmt:~$ net show lldp

LocalPort  Speed  Mode        RemoteHost               RemotePort
---------  -----  ----------  -----------------------  -----------
swp3       100G   Trunk/L2    sw1                      e3a
swp4       100G   Trunk/L2    sw2                      e3b
swp15      100G   BondMember  sw13                     swp15
swp16      100G   BondMember  sw14                     swp16
```

7. 验证集群上集群端口的运行状况。
   a. 验证集群中所有节点上的 e0d 端口是否均已启动且运行正常：

```
cluster1::*> network port show -role cluster

Node: node1

Ignore
                                                      Speed(Mbps)
Health   Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status   Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e3a       Cluster      Cluster          up   9000  auto/10000
healthy  false
e3b       Cluster      Cluster          up   9000  auto/10000
healthy  false

Node: node2

Ignore
                                                      Speed(Mbps)
Health   Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status   Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e3a       Cluster      Cluster          up   9000  auto/10000
healthy  false
e3b       Cluster      Cluster          up   9000  auto/10000
healthy  false
```

   b. 从集群验证交换机运行状况(此操作可能不会显示交换机SW2、因为LIF不驻留在e0d上)。

```
cluster1::*> network device-discovery show -protocol lldp
Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface Platform
----------- ------ ------------------------- --------- ----------
node1/lldp
            e3a    sw1 (b8:ce:f6:19:1a:7e)   swp3      -
            e3b    sw2 (b8:ce:f6:19:1b:96)   swp3      -

node2/lldp
            e3a    sw1 (b8:ce:f6:19:1a:7e)   swp4      -
            e3b    sw2 (b8:ce:f6:19:1b:96)   swp4      -


cluster1::*> system switch ethernet show -is-monitoring-enabled
-operational true
Switch                      Type               Address
Model
--------------------------- ------------------ ----------------
-----
sw1                         cluster-network    10.233.205.90
MSN2100-CB2RC
     Serial Number: MNXXXXXXGD
      Is Monitored: true
            Reason: None
  Software Version: Cumulus Linux version 4.4.3 running on
Mellanox
                    Technologies Ltd. MSN2100
    Version Source: LLDP

sw2                         cluster-network    10.233.205.91
MSN2100-CB2RC
     Serial Number: MNCXXXXXXGS
      Is Monitored: true
            Reason: None
  Software Version: Cumulus Linux version 4.4.3 running on
Mellanox
                    Technologies Ltd. MSN2100
    Version Source: LLDP
```

Cumulus Linux 5.x

1. 显示SN2100交换机上的可用接口：

```
admin@sw1:mgmt:~$ nv show interface
Interface     MTU   Speed State Remote Host         Remote Port-
Type      Summary
------------- ----- ----- ----- ------------------- ------------
--------- -------------
+ cluster_isl 9216  200G  up
bond
+ eth0        1500  100M  up    mgmt-sw1            Eth105/1/14
eth       IP Address: 10.231.80 206/22
  eth0
IP Address: fd20:8b1e:f6ff:fe31:4a0e/64
+ lo          65536       up
loopback  IP Address: 127.0.0.1/8
  lo
IP Address: ::1/128
+ swp1s0      9216 10G    up cluster01                e0b
swp
.
.
.
+ swp15      9216 100G    up sw2                      swp15
swp
+ swp16      9216 100G    up sw2                      swp16
swp
```

2. 将RCF python脚本复制到交换机。

```
admin@sw1:mgmt:~$ pwd
/home/cumulus
cumulus@cumulus:mgmt: /tmp$ scp <user>@<host:/<path>/MSN2100-RCF-
v1.x-Cluster-HA-Breakout-LLDP ./
ssologin@10.233.204.71's password:
MSN2100-RCF-v1.x-Cluster-HA-Breakout-LLDP          100% 8607
111.2KB/s         00:00
```

> 同时 `scp` 在本示例中、您可以使用首选的文件传输方法。

3. 应用RCF python脚本*MSN2100-RCP-v1.x-Cluster-HA-Breakout LCDP*。

```
cumulus@cumulus:mgmt:/tmp$ sudo python3 MSN2100-RCF-v1.x-Cluster-HA-
Breakout-LLDP
[sudo] password for cumulus:
.
.
Step 1: Creating the banner file
Step 2: Registering banner message
Step 3: Updating the MOTD file
Step 4: Ensuring passwordless use of cl-support command by admin
Step 5: Disabling apt-get
Step 6: Creating the interfaces
Step 7: Adding the interface config
Step 8: Disabling cdp
Step 9: Adding the lldp config
Step 10: Adding the RoCE base config
Step 11: Modifying RoCE Config
Step 12: Configure SNMP
Step 13: Reboot the switch
```

RCF脚本将完成上述示例中列出的步骤。

> 在步骤3*更新上面的MOTD文件*中，命令 `cat /etc/issue` 已运行。这样、您可以验证RCV文件名、RCV版本、要使用的端口以及RCV横幅中的其他重要信息。

例如：

```
admin@sw1:mgmt:~$ cat /etc/issue
*********************************************************************
**********
*
* NetApp Reference Configuration File (RCF)
* Switch       : Mellanox MSN2100
* Filename     : MSN2100-RCF-1.x-Cluster-HA-Breakout-LLDP
* Release Date : 13-02-2023
* Version      : 1.x-Cluster-HA-Breakout-LLDP
*
* Port Usage:
* Port 1      : 4x10G Breakout mode for Cluster+HA Ports, swp1s0-3
* Port 2      : 4x25G Breakout mode for Cluster+HA Ports, swp2s0-3
* Ports 3-14  : 40/100G for Cluster+HA Ports, swp3-14
* Ports 15-16 : 100G Cluster ISL Ports, swp15-16
*
* NOTE:
*   RCF manually sets swp1s0-3 link speed to 10000 and
*   auto-negotiation to off for Intel 10G
*   RCF manually sets swp2s0-3 link speed to 25000 and
*   auto-negotiation to off for Chelsio 25G
*
*
* IMPORTANT: Perform the following steps to ensure proper RCF
installation:
* - Copy the RCF file to /tmp
* - Ensure the file has execute permission
* - From /tmp run the file as sudo python3 <filename>
*
*********************************************************************
**********
```

对于无法更正的任何RCF python脚本问题、请联系 "NetApp 支持" 以获得帮助。

4. 重新启动后验证配置：

```
admin@sw1:mgmt:~$ nv show interface
Interface   MTU   Speed State Remote Host Remote Port Type Summary
----------- ----- ----- ----- ----------- ----------- ----
-------------
+ cluster_isl 9216 200G up bond
+ eth0 1500 100M up RTP-LF01-410G38.rtp.eng.netapp.com Eth105/1/14
eth IP Address: 10.231.80.206/22
eth0 IP Address: fd20:8b1e:b255:85a0:bace:f6ff:fe31:4a0e/64
```

```
+ lo 65536 up loopback IP Address: 127.0.0.1/8
lo IP Address: ::1/128
+ swp1s0 9216 10G up cumulus1 e0b swp
.
.
.
+ swp15 9216 100G up cumulus swp15 swp

admin@sw1:mgmt:~$ nv show interface
Interface     MTU   Speed State Remote Host         Remote Port-
Type      Summary
------------- ----- ----- ----- ------------------- ------------
--------- -------------
+ cluster_isl 9216  200G  up
bond
+ eth0        1500  100M  up    mgmt-sw1            Eth105/1/14
eth       IP Address: 10.231.80 206/22
  eth0
IP Address: fd20:8b1e:f6ff:fe31:4a0e/64
+ lo          65536       up
loopback  IP Address: 127.0.0.1/8
  lo
IP Address: ::1/128
+ swp1s0      9216 10G    up cluster01                e0b
swp
.
.
.
+ swp15      9216 100G    up sw2                      swp15
swp
+ swp16      9216 100G    up sw2                      swp16
swp

admin@sw1:mgmt:~$ nv show qos roce
                   operational  applied   description
----------------  -----------  ---------
----------------------------------------
enable             on                     Turn feature 'on' or
'off'. This feature is disabled by default.
mode               lossless     lossless  Roce Mode
congestion-control
  congestion-mode   ECN,RED                Congestion config mode
  enabled-tc        0,2,5                  Congestion config enabled
Traffic Class
  max-threshold     195.31 KB              Congestion config max-
threshold
```

```
  min-threshold     39.06 KB               Congestion config min-
threshold
  probability       100
lldp-app-tlv
  priority          3                      switch-priority of roce
  protocol-id       4791                   L4 port number
  selector          UDP                    L4 protocol
pfc
  pfc-priority      2, 5                   switch-prio on which PFC
is enabled
  rx-enabled        enabled                PFC Rx Enabled status
  tx-enabled        enabled                PFC Tx Enabled status
trust
  trust-mode        pcp,dscp               Trust Setting on the port
for packet classification

RoCE PCP/DSCP->SP mapping configurations
========================================
        pcp  dscp                      switch-prio
    --  ---  -----------------------   -----------
    0   0    0,1,2,3,4,5,6,7           0
    1   1    8,9,10,11,12,13,14,15     1
    2   2    16,17,18,19,20,21,22,23   2
    3   3    24,25,26,27,28,29,30,31   3
    4   4    32,33,34,35,36,37,38,39   4
    5   5    40,41,42,43,44,45,46,47   5
    6   6    48,49,50,51,52,53,54,55   6
    7   7    56,57,58,59,60,61,62,63   7

RoCE SP->TC mapping and ETS configurations
==========================================
        switch-prio  traffic-class  scheduler-weight
    --  -----------  -------------  ----------------
    0   0            0              DWRR-28%
    1   1            0              DWRR-28%
    2   2            2              DWRR-28%
    3   3            0              DWRR-28%
    4   4            0              DWRR-28%
    5   5            5              DWRR-43%
    6   6            0              DWRR-28%
    7   7            0              DWRR-28%

RoCE pool config
================
        name                    mode     size  switch-priorities
traffic-class
```

```
    --  ---------------------  -------  ----  -----------------
-------------
    0   lossy-default-ingress  Dynamic  50%   0,1,3,4,6,7        -
    1   roce-reserved-ingress  Dynamic  50%   2,5                -
    2   lossy-default-egress   Dynamic  50%   -                  0
    3   roce-reserved-egress   Dynamic  inf   -                  2,5

Exception List
=================
        description
    --
-------------------------------------------------------------------
---…
    1   RoCE PFC Priority Mismatch.Expected pfc-priority: 3.
    2   Congestion Config TC Mismatch.Expected enabled-tc: 0,3.
    3   Congestion Config mode Mismatch.Expected congestion-mode:
ECN.
    4   Congestion Config min-threshold Mismatch.Expected min-
threshold: 150000.
    5   Congestion Config max-threshold Mismatch.Expected max-
threshold:
        1500000.
    6   Scheduler config mismatch for traffic-class mapped to
switch-prio0.
        Expected scheduler-weight: DWRR-50%.
    7   Scheduler config mismatch for traffic-class mapped to
switch-prio1.
        Expected scheduler-weight: DWRR-50%.
    8   Scheduler config mismatch for traffic-class mapped to
switch-prio2.
        Expected scheduler-weight: DWRR-50%.
    9   Scheduler config mismatch for traffic-class mapped to
switch-prio3.
        Expected scheduler-weight: DWRR-50%.
    10  Scheduler config mismatch for traffic-class mapped to
switch-prio4.
        Expected scheduler-weight: DWRR-50%.
    11  Scheduler config mismatch for traffic-class mapped to
switch-prio5.
        Expected scheduler-weight: DWRR-50%.
    12  Scheduler config mismatch for traffic-class mapped to
switch-prio6.
        Expected scheduler-weight: strict-priority.
    13  Scheduler config mismatch for traffic-class mapped to
switch-prio7.
        Expected scheduler-weight: DWRR-50%.
```

```
    14  Invalid reserved config for ePort.TC[2].Expected 0 Got 1024
    15  Invalid reserved config for ePort.TC[5].Expected 0 Got 1024
    16  Invalid traffic-class mapping for switch-priority 2.Expected
0 Got 2
    17  Invalid traffic-class mapping for switch-priority 3.Expected
3 Got 0
    18  Invalid traffic-class mapping for switch-priority 5.Expected
0 Got 5
    19  Invalid traffic-class mapping for switch-priority 6.Expected
6 Got 0
Incomplete Command: set interface swp3-16 link fast-linkupp3-16 link
fast-linkup
Incomplete Command: set interface swp3-16 link fast-linkupp3-16 link
fast-linkup
Incomplete Command: set interface swp3-16 link fast-linkupp3-16 link
fast-linkup
```

列出的例外不会影响性能、可以放心地忽略。

5. 验证接口中收发器的信息：

```
admin@sw1:mgmt:~$ nv show interface --view=pluggables
Interface  Identifier     Vendor Name  Vendor PN        Vendor
SN       Vendor Rev
---------  -------------  -----------  ---------------
--------------  ----------
swp1s0     0x00 None
swp1s1     0x00 None
swp1s2     0x00 None
swp1s3     0x00 None
swp2s0     0x11 (QSFP28)  CISCO-LEONI  L45593-D278-D20
LCC2321GTTJ     00
swp2s1     0x11 (QSFP28)  CISCO-LEONI  L45593-D278-D20
LCC2321GTTJ     00
swp2s2     0x11 (QSFP28)  CISCO-LEONI  L45593-D278-D20
LCC2321GTTJ     00
swp2s3     0x11 (QSFP28)  CISCO-LEONI  L45593-D278-D20
LCC2321GTTJ     00
swp3       0x00 None
swp4       0x00 None
swp5       0x00 None
swp6       0x00 None
.
.
.
swp15      0x11 (QSFP28)  Amphenol     112-00595
APF20279210117  B0
swp16      0x11 (QSFP28)  Amphenol     112-00595
APF20279210166  B0
```

6. 验证每个节点是否都与每个交换机建立了连接：

```
admin@sw1:mgmt:~$ nv show interface --view=lldp

LocalPort  Speed  Mode        RemoteHost                RemotePort
---------  -----  ----------  ------------------------  -----------
eth0       100M   Mgmt        mgmt-sw1                  Eth110/1/29
swp2s1     25G    Trunk/L2    node1                     e0a
swp15      100G   BondMember  sw2                       swp15
swp16      100G   BondMember  sw2                       swp16
```

7. 验证集群上集群端口的运行状况。
   a. 验证集群中所有节点上的 e0d 端口是否均已启动且运行正常：

```
cluster1::*> network port show -role cluster

Node: node1

Ignore
                                                        Speed(Mbps)
Health   Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status   Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e3a       Cluster      Cluster          up   9000  auto/10000
healthy  false
e3b       Cluster      Cluster          up   9000  auto/10000
healthy  false

Node: node2

Ignore
                                                        Speed(Mbps)
Health   Health
Port      IPspace      Broadcast Domain Link MTU  Admin/Oper
Status   Status
--------- ------------ ---------------- ---- ---- -----------
-------- ------
e3a       Cluster      Cluster          up   9000  auto/10000
healthy  false
e3b       Cluster      Cluster          up   9000  auto/10000
healthy  false
```

b. 从集群验证交换机运行状况(此操作可能不会显示交换机SW2、因为LIF不驻留在e0d上)。

```
cluster1::*> network device-discovery show -protocol lldp
Node/       Local  Discovered
Protocol    Port   Device (LLDP: ChassisID)  Interface Platform
----------- ------ ------------------------- --------- ----------
node1/lldp
            e3a    sw1 (b8:ce:f6:19:1a:7e)   swp3      -
            e3b    sw2 (b8:ce:f6:19:1b:96)   swp3      -

node2/lldp
            e3a    sw1 (b8:ce:f6:19:1a:7e)   swp4      -
            e3b    sw2 (b8:ce:f6:19:1b:96)   swp4      -


cluster1::*> system switch ethernet show -is-monitoring-enabled
-operational true
Switch                      Type               Address
Model
--------------------------- ------------------ ----------------
-----
sw1                         cluster-network    10.233.205.90
MSN2100-CB2RC
     Serial Number: MNXXXXXXGD
      Is Monitored: true
            Reason: None
  Software Version: Cumulus Linux version 5.4.0 running on
Mellanox
                    Technologies Ltd. MSN2100
    Version Source: LLDP

sw2                         cluster-network    10.233.205.91
MSN2100-CB2RC
     Serial Number: MNCXXXXXXGS
      Is Monitored: true
            Reason: None
  Software Version: Cumulus Linux version 5.4.0 running on
Mellanox
                    Technologies Ltd. MSN2100
    Version Source: LLDP
```

下一步是什么？

"配置交换机日志收集"。

以太网交换机运行状况监控日志收集

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。此操作步骤将引导您完成设置和开始从交换机收集详细的*Support*日志的过程，并开始每小时收集由AutoSupport收集的*定期*数据。

开始之前

- 应用参考配置文件(Reference Configuration File、RCF)时、必须指定用于收集日志的用户。默认情况下、此用户设置为"admin"。如果要使用其他用户、则必须在RC框架 的*# SHM用户部分中指定此用户。
- 用户必须有权访问*nv show*命令。可通过运行来添加此配置 `sudo adduser USER nv show` 并将user替换为user以收集日志。
- 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：

步骤

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。

   `s`系统交换机以太网日志设置密码

显示示例

```
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. 要开始收集日志、请运行以下命令、将device替换为上一命令中使用的交换机。此时将启动两种类型的日志收集：详细日志 `Support` 日志和每小时收集 `Periodic` 数据。

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

显示示例

```
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
```

> 如果其中任一命令返回错误或日志收集未完成、请联系NetApp支持部门。

故障排除

如果遇到日志收集功能报告的以下任一错误状态(在的输出中可见) `system switch ethernet log show`)、请尝试相应的调试步骤：

日志收集错误状态	分辨率
RSA密钥不存在	重新生成ONTAP SSH密钥。请联系NetApp支持部门。
交换机密码错误	验证凭据、测试SSH连接并重新生成ONTAP SSH密钥。查看交换机文档或联系NetApp支持部门以获取相关说明。
对于**FIPS**，ECDSA密钥不存在	如果启用了FIPS模式、则需要在重试之前在交换机上生成ECDSA密钥。
已找到已有日志	删除上一个日志收集目录和位于的".tar"文件 `/tmp/shm_log` 在交换机上。

交换机转储日志错误	确保交换机用户具有日志收集权限。请参阅上述前提条件。

配置SNMPv3

按照此操作步骤配置SNMPv3、此SNMPv3支持以太网交换机运行状况监控(CSHM)。

关于此任务

以下命令用于在NVIDIA SN2100交换机上配置SNMPv3用户名：

- 对于*无身份验证*：`net add snmp-server username` *SNMPv3*用户 `auth-none`
- 对于* MD5/SHA身份验证*：`net add snmp-server username` *SNMPv3*用户`[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*用户`[auth-md5_auth-sha]`*AUTH-password*`[encrypt-AES_encrypt-des]`*PRIV-password*

以下命令会在ONTAP 端配置SNMPv3用户名：`cluster1：：：*> security login create -user-or-group-name` *SNMPv3*用户`-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：

   ```
   net show snmp status
   ```

显示示例

```
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 laErrMessage "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 cshm1! default
 rouser _snmptrapusernameX
+rouser SNMPv3User priv
 sysobjectid 1.3.6.1.4.1.40310
 sysservices 72
-rocommunity cshm1! 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
```

显示示例

```
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
```

显示示例

```
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: cshm1!
                                  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. 确认在CSHM轮询周期完成后、使用新创建的SNMPv3用户查询的序列号与上一步中详述的序列号相同。

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

显示示例

```
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
```

升级Cumulus Linux版本

完成以下操作步骤 以根据需要升级您的Cumulus Linux版本。

您需要的内容

- 中级Linux知识。
- 熟悉基本文本编辑、UNIX文件权限和进程监控。预安装了各种文本编辑器、包括 `vi` 和 `nano`。
- 访问Linux或UNIX Shell。如果您运行的是Windows、请使用Linux环境作为命令行工具与Cumulus Linux进行交互。
- 对于NVIDIA SN2100交换机控制台访问、串行控制台交换机上的波特率要求设置为115200、如下所示：
  - 115200 波特
  - 8 个数据位
  - 1 个停止位
  - 奇偶校验：无

- 流量控制：无

关于此任务

请注意以下事项：

> 每次升级Cumulus Linux时、都会擦除并重建整个文件系统结构。现有配置将被擦除。在更新Cumulus Linux之前、您必须保存并记录交换机配置。

> 累积用户帐户的默认密码为*累积用户*。首次登录到Cumulus Linux时、必须更改此默认密码。在安装新映像之前、您必须更新所有自动化脚本。Cumulus Linux提供了命令行选项、用于在安装过程中自动更改默认密码。

示例 **4.** 步骤

从**Cumulus Linux 4.4.x**到**Cumulus Linux 5.x**

1. 检查当前的Cumulus Linux版本和连接的端口：

```
admin@sw1:mgmt:~$ net show system
Hostname......... cumulus
Build............ Cumulus Linux 4.4.3
Uptime........... 0:08:20.860000
Model............ Mlnx X86
CPU.............. x86_64 Intel Atom C2558 2.40GHz
Memory........... 8GB
Disk............. 14.7GB
ASIC............. Mellanox Spectrum MT52132
Ports............ 16 x 100G-QSFP28
Part Number...... MSN2100-CB2FC
Serial Number.... MT2105T05177
Platform Name.... x86_64-mlnx_x86-r0
Product Name..... MSN2100
ONIE Version..... 2019.11-5.2.0020-115200
Base MAC Address. 04:3F:72:43:92:80
Manufacturer..... Mellanox

admin@sw1:mgmt:~$ net show interface

State  Name    Spd   MTU    Mode        LLDP
Summary
-----  ------  ----  -----  ----------  ----------------------
--------------------
.
.
UP     swp1    100G  9216   Trunk/L2    node1 (e5b)
Master: bridge(UP)
UP     swp2    100G  9216   Trunk/L2    node2 (e5b)
Master: bridge(UP)
UP     swp3    100G  9216   Trunk/L2    SHFFG1826000112 (e0b)
Master: bridge(UP)
UP     swp4    100G  9216   Trunk/L2    SHFFG1826000112 (e0b)
Master: bridge(UP)
UP     swp5    100G  9216   Trunk/L2    SHFFG1826000102 (e0b)
Master: bridge(UP)
UP     swp6    100G  9216   Trunk/L2    SHFFG1826000102 (e0b)
Master: bridge(UP))
.
.
```

2. 下载Cumulux Linux 5.x映像：

```
admin@sw1:mgmt:~$ sudo onie-install -a -i
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin/
[sudo] password for cumulus:
Fetching installer:
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin
Downloading URL:
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin
# 100.0%
Success: HTTP download complete.
EFI variables are not supported on this system
Warning: SecureBoot is not available.
Image is signed.
.
.
.
Staging installer image...done.
WARNING:
WARNING: Activating staged installer requested.
WARNING: This action will wipe out all system data.
WARNING: Make sure to back up your data.
WARNING:
Are you sure (y/N)? y
Activating staged installer...done.
Reboot required to take effect.
```

3. 重新启动交换机：

```
admin@sw1:mgmt:~$ sudo onie-install -a -i
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin/
 sudo reboot
```

4. 更改密码：

```
cumulus login: cumulus
Password:
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
Linux cumulus 5.10.0-cl-1-amd64 #1 SMP Debian 5.10.162-1+cl5.4.0u1
(2023-01-20) x86_64

Welcome to NVIDIA Cumulus (R) Linux (R)

ZTP in progress. To disable, do 'ztp -d'
```

5. 检查Cumulus Linux版本： `nv show system`

```
cumulus@cumulus:mgmt:~$ nv show system
           operational    applied
---------- -------------- ----------
hostname   cumulus        cumulus
build      Cumulus Linux 5.4.0
uptime     14:07:08
timezone   Etc/UTC
```

6. 更改主机名：

```
cumulus@cumulus:mgmt:~$ nv set system hostname sw1
cumulus@cumulus:mgmt:~$ nv config apply
Warning: The following files have been changed since the last save,
and they WILL be overwritten.
- /etc/nsswitch.conf
- /etc/synced/synced.conf
.
.
```

7. 注销并再次登录到交换机、以便在提示符处查看更新后的交换机名称：

```
cumulus@cumulus:mgmt:~$ exit
logout

Debian GNU/Linux 10 cumulus ttyS0

cumulus login: cumulus
Password:
Last login: Tue Dec 15 21:43:13 UTC 2020 on ttyS0
Linux cumulus 5.10.0-cl-1-amd64 #1 SMP Debian 5.10.162-1+cl5.4.0u1
(2023-01-20) x86_64

Welcome to NVIDIA Cumulus (R) Linux (R)


ZTP in progress. To disable, do 'ztp -d'

cumulus@sw1:mgmt:~$
```

8. 设置IP地址：

```
cumulus@sw1:mgmt:~$ nv set interface eth0 ip address 10.231.80.206
cumulus@sw1:mgmt:~$ nv set interface eth0 ip gateway 10.231.80.1
cumulus@sw1:mgmt:~$ nv config apply
applied [rev_id: 2]
cumulus@sw1:mgmt:~$ ip route show vrf mgmt
default via 10.231.80.1 dev eth0 proto kernel
unreachable default metric 4278198272
10.231.80.0/22 dev eth0 proto kernel scope link src 10.231.80.206
127.0.0.0/8 dev mgmt proto kernel scope link src 127.0.0.1
```

9. 创建新用户并将此用户添加到 `sudo` 组。只有在重新启动控制台/SSH会话后、此用户才会生效。

```
sudo adduser --ingroup netedit admin
```

```
cumulus@sw1:mgmt:~$ sudo adduser --ingroup netedit admin
[sudo] password for cumulus:
Adding user 'admin' ...
Adding new user 'admin' (1001) with group `netedit' ...
Creating home directory '/home/admin' ...
Copying files from '/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

cumulus@sw1:mgmt:~$ sudo adduser admin sudo
[sudo] password for cumulus:
Adding user `admin' to group `sudo' ...
Adding user admin to group sudo
Done.
cumulus@sw1:mgmt:~$ exit
logout
Connection to 10.233.204.71 closed.

[admin@cycrh6svl01 ~]$ ssh admin@10.233.204.71
admin@10.233.204.71's password:
Linux sw1 4.19.0-cl-1-amd64 #1 SMP Cumulus 4.19.206-1+cl4.4.1u1
(2021-09-09) x86_64
Welcome to NVIDIA Cumulus (R) Linux (R)

For support and online technical documentation, visit
http://www.cumulusnetworks.com/support

The registered trademark Linux (R) is used pursuant to a sublicense
from LMI, the exclusive licensee of Linus Torvalds, owner of the
mark on a world-wide basis.
admin@sw1:mgmt:~$
```

10. 添加供管理员用户访问的其他用户组 `nv` 命令：

```
cumulus@sw1:mgmt:~$ sudo adduser admin nvshow
     [sudo] password for cumulus:
     Adding user `admin' to group `nvshow' ...
     Adding user admin to group nvshow
     Done.
```

请参见 "NVIDIA用户帐户" 有关详细信息 ...

从Cumulus Linux 5.x到Cumulus Linux 5.x

1. 检查当前的Cumulus Linux版本和连接的端口：

```
admin@sw1:mgmt:~$ nv show system
                    operational          applied
------------------- -------------------- -----------------
hostname            cumulus              cumulus
build               Cumulus Linux 5.3.0
uptime              6 days, 8:37:36
timezone            Etc/UTC

admin@sw1:mgmt:~$ nv show interface
Interface     MTU   Speed State Remote Host         Remote Port-
Type      Summary
------------- ----- ----- ----- ------------------- ------------
--------- -------------
+ cluster_isl 9216  200G  up
bond
+ eth0        1500  100M  up    mgmt-sw1            Eth105/1/14
eth       IP Address: 10.231.80 206/22
  eth0
IP Address: fd20:8b1e:f6ff:fe31:4a0e/64
+ lo          65536       up
loopback  IP Address: 127.0.0.1/8
  lo
IP Address: ::1/128
+ swp1s0      9216 10G    up cluster01                e0b
swp
.
.
.
+ swp15      9216 100G    up sw2                      swp15
swp
+ swp16      9216 100G    up sw2                      swp16
swp
```

2. 下载Cumulux Linux 5.4.0映像：

```
admin@sw1:mgmt:~$ sudo onie-install -a -i
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin/
[sudo] password for cumulus:
Fetching installer:
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin
Downloading URL:
http://10.60.132.97/x/eng/testbedN,svl/nic/files/NVIDIA/cumulus-
linux-5.4.0-mlx-amd64.bin
# 100.0%
Success: HTTP download complete.
EFI variables are not supported on this system
Warning: SecureBoot is not available.
Image is signed.
.
.
.
Staging installer image...done.
WARNING:
WARNING: Activating staged installer requested.
WARNING: This action will wipe out all system data.
WARNING: Make sure to back up your data.
WARNING:
Are you sure (y/N)? y
Activating staged installer...done.
Reboot required to take effect.
```

3. 重新启动交换机：

```
admin@sw1:mgmt:~$ sudo reboot
```

4. 更改密码：

```
cumulus login: cumulus
Password:
You are required to change your password immediately (administrator
enforced)
Changing password for cumulus.
Current password: cumulus
New password: <new_password>
Retype new password: <new_password>
Linux cumulus 5.10.0-cl-1-amd64 #1 SMP Debian 5.10.162-1+cl5.4.0u1
(2023-01-20) x86_64

Welcome to NVIDIA Cumulus (R) Linux (R)

ZTP in progress. To disable, do 'ztp -d'
```

5. 检查Cumulus Linux版本： `nv show system`

```
cumulus@cumulus:mgmt:~$ nv show system
operational    applied
-------------- ----------------
hostname       cumulus cumulus
build          Cumulus Linux 5.4.0
uptime         14:07:08
timezone       Etc/UTC
```

6. 更改主机名：

```
cumulus@cumulus:mgmt:~$ nv set system hostname sw1
cumulus@cumulus:mgmt:~$ nv config apply
Warning: The following files have been changed since the last save,
and they WILL be overwritten.
- /etc/nsswitch.conf
- /etc/synced/synced.conf
.
.
```

7. 注销并重新登录到交换机、以便在提示符处查看更新后的交换机名称：

```
cumulus@cumulus:mgmt:~$ exit
logout

Debian GNU/Linux 10 cumulus ttyS0

cumulus login: cumulus
Password:
Last login: Tue Dec 15 21:43:13 UTC 2020 on ttyS0
Linux cumulus 5.10.0-cl-1-amd64 #1 SMP Debian 5.10.162-1+cl5.4.0u1
(2023-01-20) x86_64

Welcome to NVIDIA Cumulus (R) Linux (R)


ZTP in progress. To disable, do 'ztp -d'

cumulus@sw1:mgmt:~$
```

8. 设置IP地址：

```
cumulus@sw1:mgmt:~$ nv set interface eth0 ip address 10.231.80.206
cumulus@sw1:mgmt:~$ nv set interface eth0 ip gateway 10.231.80.1
cumulus@sw1:mgmt:~$ nv config apply
applied [rev_id: 2]
cumulus@sw1:mgmt:~$ ip route show vrf mgmt
default via 10.231.80.1 dev eth0 proto kernel
unreachable default metric 4278198272
10.231.80.0/22 dev eth0 proto kernel scope link src 10.231.80.206
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Creating home directory '/home/admin' ...
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New password:
Retype new password:
passwd: password updated successfully
Changing the user information for admin
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y

cumulus@sw1:mgmt:~$ sudo adduser admin sudo
[sudo] password for cumulus:
Adding user `admin' to group `sudo' ...
Adding user admin to group sudo
Done.
cumulus@sw1:mgmt:~$ exit
logout
Connection to 10.233.204.71 closed.

[admin@cycrh6svl01 ~]$ ssh admin@10.233.204.71
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admin@sw1:mgmt:~$
```

10. 添加供管理员用户访问的其他用户组 `nv` 命令：

```
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     [sudo] password for cumulus:
     Adding user `admin' to group `nvshow' ...
     Adding user admin to group nvshow
     Done.
```

请参见 "NVIDIA用户帐户" 有关详细信息 ...

下一步是什么?

"安装参考配置文件(Reference Configuration File、RCF)脚本"。