Substituição de PCRF do servidor controlador UCS C240 M4

Contents

Introduction

Este documento descreve as etapas necessárias para substituir um servidor controlador com falha em uma configuração Ultra-M que hospeda as Funções de Rede Virtual (VNFs) do CPS.

Prerequisites

Backup

Em caso de recuperação, a Cisco recomenda fazer um backup do banco de dados OSPD (DB) com o uso destas etapas:

```
[root@director ~]# mysqldump --opt --all-databases > /root/undercloud-all-databases.sql
[root@director ~]# tar --xattrs -czf undercloud-backup-`date +%F`.tar.gz /root/undercloud-all-
databases.sql
/etc/my.cnf.d/server.cnf /var/lib/glance/images /srv/node /home/stack
tar: Removing leading `/' from member names
```

Verificação de status preliminar

Éimportante verificar o status atual do ambiente e dos serviços do OpenStack e garantir que ele esteja saudável antes de prosseguir com o procedimento de substituição. Ele pode ajudar a evitar complicações no momento do processo de substituição do controlador.

Etapa 1. Verifique o status do OpenStack e a lista de nós:

```
[stack@director ~]$ source stackrc
[stack@director ~]$ openstack stack list --nested
[stack@director ~]$ ironic node-list
[stack@director ~]$ nova list
```

Etapa 2. Verifique o status do Pacemaker nos controladores.

Faça login em um dos controladores ativos e verifique o status do pacemaker. Todos os serviços devem estar em execução nos controladores disponíveis e parados no controlador com falha.

```
[stack@pod1-controller-0 ~]# pcs status

<snip>
Online: [ pod1-controller-0 pod1-controller-1 ]
OFFLINE: [ pod1-controller-2 ]
Full list of resources:
ip-11.120.0.109 (ocf::heartbeat:IPaddr2): Started pod1-controller-0
ip-172.25.22.109 (ocf::heartbeat:IPaddr2): Started pod1-controller-1
ip-192.200.0.107 (ocf::heartbeat:IPaddr2): Started pod1-controller-0

Clone Set: haproxy-clone [haproxy]
Started: [ pod1-controller-0 pod1-controller-1 ]
Stopped: [ pod1-controller-2 ]

Master/Slave Set: galera-master [galera]
Masters: [ pod1-controller-0 pod1-controller-1 ]
Stopped: [ pod1-controller-2 ]
ip-11.120.0.110 (ocf::heartbeat:IPaddr2): Started pod1-controller-0
ip-11.119.0.110 (ocf::heartbeat:IPaddr2): Started pod1-controller-1

Clone Set: rabbitmq-clone [rabbitmq]
Started: [ pod1-controller-0 pod1-controller-1 ]
Stopped: [ pod1-controller-2 ]

Master/Slave Set: redis-master [redis]
Masters: [ pod1-controller-0 ]
Slaves: [ pod1-controller-1 ]
Stopped: [ pod1-controller-2 ]

ip-11.118.0.104 (ocf::heartbeat:IPaddr2): Started pod1-controller-1
openstack-cinder-volume (systemd:openstack-cinder-volume): Started pod1-controller-0

my-ipmilan-for-controller-6 (stonith:fence_ipmilan): Started pod1-controller-1
my-ipmilan-for-controller-4 (stonith:fence_ipmilan): Started pod1-controller-0
my-ipmilan-for-controller-7 (stonith:fence_ipmilan): Started pod1-controller-0

Failed Actions:
Daemon Status:

corosync: active/enabled
pacemaker: active/enabled
pcsd: active/enabled
```

Neste exemplo, Controller-2 está offline. Por conseguinte, será substituído. O controlador 0 e o controlador 1 estão operacionais e executando os serviços de cluster.

Etapa 3. Verifique o status de MariaDB nos controladores ativos.

```
[stack@director] nova list | grep control
| 4361358a-922f-49b5-89d4-247a50722f6d | pod1-controller-0 | ACTIVE | - | Running |
ctlplane=192.200.0.102 |
| d0f57f27-93a8-414f-b4d8-957de0d785fc | pod1-controller-1 | ACTIVE | - | Running |
ctlplane=192.200.0.110 |

[stack@director ~]$ for i in 192.200.0.102 192.200.0.110 ; do echo "*** $i ***" ; ssh heat-
admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_state_comment'\" ; sudo mysql --
exec=\"SHOW STATUS LIKE 'wsrep_cluster_size'\""; done
*** 192.200.0.152 ***
Variable_name     Value
wsrep_local_state_comment  Synced
Variable_name     Value
wsrep_cluster_size         2
*** 192.200.0.154 ***
Variable_name     Value
wsrep_local_state_comment  Synced
Variable_name     Value
wsrep_cluster_size         2
```

Verifique se essas linhas estão presentes para cada controlador ativo:

wsrep_local_state_comment: Sincronizado

wsrep_cluster_size: 2

Etapa 4. Verifique o status do Rabbitmq nos controladores ativos. O controlador com falha não deve aparecer na lista dos nós que são executados.

```
[heat-admin@pod1-controller-0 ~] sudo rabbitmqctl cluster_status
Cluster status of node 'rabbit@pod1-controller-0' ...
[{nodes,[{disc,['rabbit@pod1-controller-0','rabbit@pod1-controller-1',
               'rabbit@pod1-controller-2']}]},
{running_nodes,['rabbit@pod1-controller-1',
                 'rabbit@pod1-controller-0']},
 {cluster_name,<<"rabbit@pod1-controller-2.localdomain">>},
 {partitions,[]},
 {alarms,[{'rabbit@pod1-controller-1',[]},
         {'rabbit@pod1-controller-0',[]}]}]


[heat-admin@pod1-controller-1 ~] sudo rabbitmqctl cluster_status
Cluster status of node 'rabbit@pod1-controller-1' ...
[{nodes,[{disc,['rabbit@pod1-controller-0','rabbit@pod1-controller-1',
               'rabbit@pod1-controller-2']}]},
 {running_nodes,['rabbit@pod1-controller-0',
                 'rabbit@pod1-controller-1']},
 {cluster_name,<<"rabbit@pod1-controller-2.localdomain">>},
 {partitions,[]},
 {alarms,[{'rabbit@pod1-controller-0',[]},
         {'rabbit@pod1-controller-1',[]}]}]
```

Etapa 5. Verifique se todos os serviços em nuvem estão no status carregado, ativo e em execução no nó OSP-D.

```
[stack@director ~]$ systemctl list-units "openstack*" "neutron*" "openvswitch*"

UNIT                                       LOAD   ACTIVE SUB     DESCRIPTION
```

```
neutron-dhcp-agent.service                 loaded active running OpenStack Neutron DHCP Agent
neutron-openvswitch-agent.service          loaded active running OpenStack Neutron Open vSwitch
Agent
neutron-ovs-cleanup.service                loaded active exited  OpenStack Neutron Open vSwitch
Cleanup Utility
neutron-server.service                     loaded active running OpenStack Neutron Server
openstack-aodh-evaluator.service           loaded active running OpenStack Alarm evaluator
service
openstack-aodh-listener.service            loaded active running OpenStack Alarm listener
service
openstack-aodh-notifier.service            loaded active running OpenStack Alarm notifier
service
openstack-ceilometer-central.service       loaded active running OpenStack ceilometer central
agent
openstack-ceilometer-collector.service     loaded active running OpenStack ceilometer collection
service
openstack-ceilometer-notification.service  loaded active running OpenStack ceilometer
notification agent
openstack-glance-api.service               loaded active running OpenStack Image Service (code-
named Glance) API server
openstack-glance-registry.service          loaded active running OpenStack Image Service (code-
named Glance) Registry server
openstack-heat-api-cfn.service             loaded active running Openstack Heat CFN-compatible
API Service
openstack-heat-api.service                 loaded active running OpenStack Heat API Service
openstack-heat-engine.service              loaded active running Openstack Heat Engine Service
openstack-ironic-api.service               loaded active running OpenStack Ironic API service
openstack-ironic-conductor.service         loaded active running OpenStack Ironic Conductor
service
openstack-ironic-inspector-dnsmasq.service loaded active running PXE boot dnsmasq service for
Ironic Inspector
openstack-ironic-inspector.service         loaded active running Hardware introspection service
for OpenStack Ironic
openstack-mistral-api.service              loaded active running Mistral API Server
openstack-mistral-engine.service           loaded active running Mistral Engine Server
openstack-mistral-executor.service         loaded active running Mistral Executor Server
openstack-nova-api.service                 loaded active running OpenStack Nova API Server
openstack-nova-cert.service                loaded active running OpenStack Nova Cert Server
openstack-nova-compute.service             loaded active running OpenStack Nova Compute Server
openstack-nova-conductor.service           loaded active running OpenStack Nova Conductor Server
openstack-nova-scheduler.service           loaded active running OpenStack Nova Scheduler Server
openstack-swift-account-reaper.service     loaded active running OpenStack Object Storage
(swift) - Account Reaper
openstack-swift-account.service            loaded active running OpenStack Object Storage
(swift) - Account Server
openstack-swift-container-updater.service  loaded active running OpenStack Object Storage
(swift) - Container Updater
openstack-swift-container.service          loaded active running OpenStack Object Storage
(swift) - Container Server
openstack-swift-object-updater.service     loaded active running OpenStack Object Storage
(swift) - Object Updater
openstack-swift-object.service             loaded active running OpenStack Object Storage
(swift) - Object Server
openstack-swift-proxy.service              loaded active running OpenStack Object Storage
(swift) - Proxy Server
openstack-zaqar.service                    loaded active running OpenStack Message Queuing
Service (code-named Zaqar) Server
openstack-zaqar@1.service                  loaded active running OpenStack Message Queuing
Service (code-named Zaqar) Server Instance 1
openvswitch.service                        loaded active exited  Open vSwitch

LOAD   = Reflects whether the unit definition was properly loaded.
ACTIVE = The high-level unit activation state, i.e. generalization of SUB.
SUB    = The low-level unit activation state, values depend on unit type.
```

```
37 loaded units listed. Pass --all to see loaded but inactive units, too.
To show all installed unit files use 'systemctl list-unit-files'.
```

Desative a cerca no cluster do controlador

```
[root@pod1-controller-0 ~]# sudo pcs property set stonith-enabled=false
[root@pod1-controller-0 ~]# pcs property show

Cluster Properties:
 cluster-infrastructure: corosync
 cluster-name: tripleo_cluster
 dc-version: 1.1.15-11.el7_3.4-e174ec8
 have-watchdog: false
 last-lrm-refresh: 1510809585
 maintenance-mode: false
 redis_REPL_INFO: pod1-controller-0
stonith-enabled: false

Node Attributes:
 pod1-controller-0: rmq-node-attr-last-known-rabbitmq=rabbit@pod1-controller-0
 pod1-controller-1: rmq-node-attr-last-known-rabbitmq=rabbit@pod1-controller-1
 pod1-controller-2: rmq-node-attr-last-known-rabbitmq=rabbit@pod1-controller-2
```

Instale o novo nó do controlador

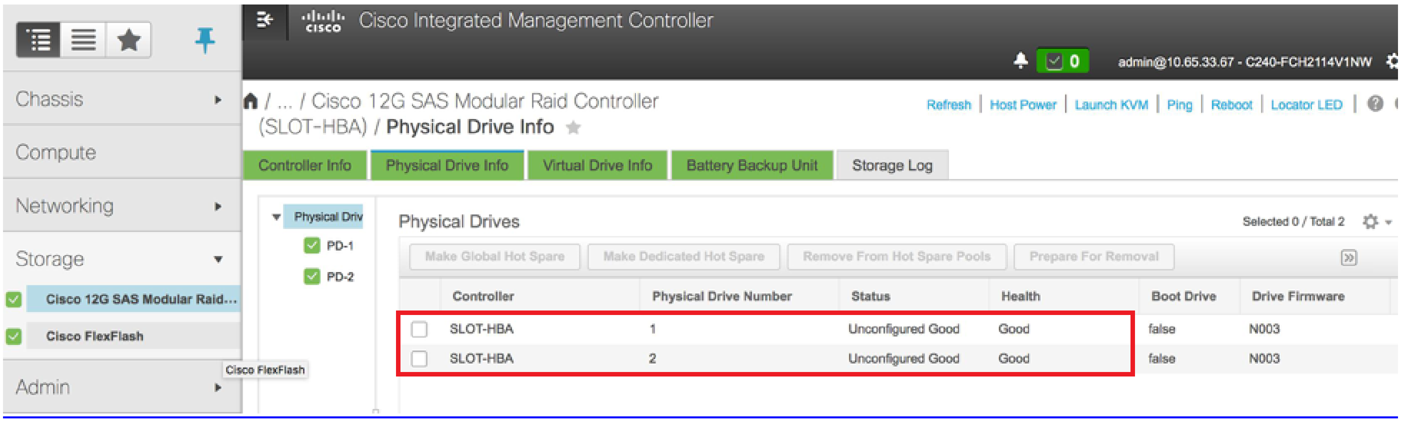
Etapa 1. As etapas para instalar um novo servidor UCS C240 M4 e as etapas de configuração inicial podem ser consultadas a partir do Guia de instalação e serviços do servidor Cisco UCS C240 M4

Etapa 2. Faça login no servidor usando o CIMC IP.

Etapa 3.Execute o upgrade do BIOS se o firmware não estiver de acordo com a versão recomendada usada anteriormente. As etapas para a atualização do BIOS são fornecidas aqui:

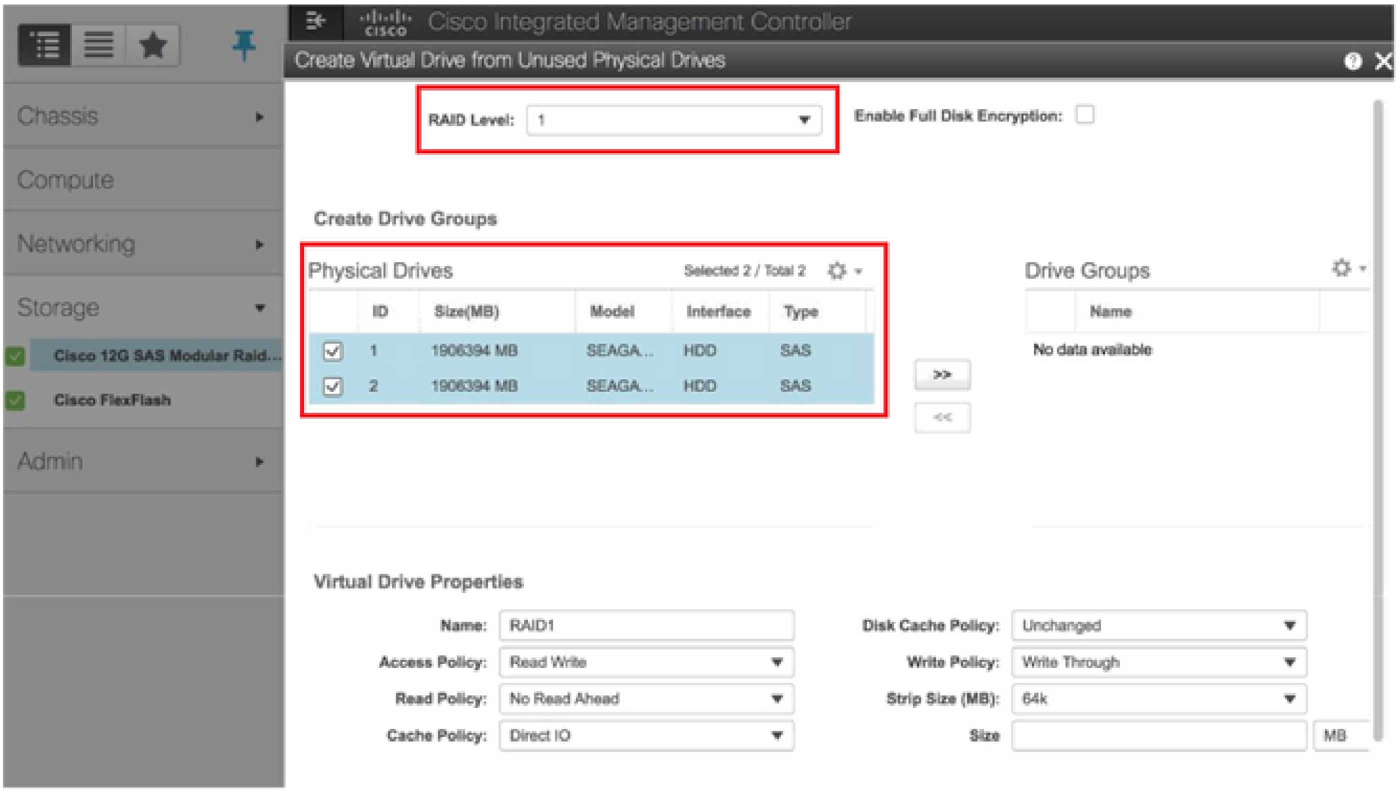
Guia de atualização do BIOS de servidor com montagem em rack Cisco UCS C-Series

Etapa 4.Verifique o status das unidades físicas. Ele deve ser **Não configurado como Bom**. Navegue até **Storage > Cisco 12G SAS Modular Raid Controller (SLOT-HBA) > Physical Drive Info (Armazenamento > Controlador RAID modular SAS Cisco 12G (SLOT-HBA) > Physical Drive Info (Informações da unidade física).**


Cisco Integrated Management Controller
0
admin@10.65.33.67 - C240-FCH2114V1NW
Chassis
Compute
Networking
Storage
Cisco 12G SAS Modular Raid...
Cisco FlexFlash
Admin
Cisco FlexFlash
/ ... / Cisco 12G SAS Modular Raid Controller (SLOT-HBA) / Physical Drive Info
Refresh | Host Power | Launch KVM | Ping | Reboot | Locator LED
Controller Info
Physical Drive Info
Virtual Drive Info
Battery Backup Unit
Storage Log
Physical Driv
PD-1
PD-2
Physical Drives
Selected 0 / Total 2
Make Global Hot Spare
Make Dedicated Hot Spare
Remove From Hot Spare Pools
Prepare For Removal

	Controller	Physical Drive Number	Status	Health	Boot Drive	Drive Firmware
□	SLOT-HBA	1	Unconfigured Good	Good	false	N003
□	SLOT-HBA	2	Unconfigured Good	Good	false	N003

Etapa 5. Para criar uma unidade virtual a partir das unidades físicas com RAID Nível 1: navegue para **Storage > Cisco 12G SAS Modular Raid Controller (SLOT-HBA) > Controller Info > Create Virtual Drive from Unused Physical Drives**, como mostrado na imagem.


Cisco Integrated Management Controller
Chassis
Compute
Networking
Storage
Cisco 12G SAS Modular Raid...
Cisco FlexFlash
Admin
>>
<<

Create Virtual Drive from Unused Physical Drives

RAID Level: 1

Enable Full Disk Encryption: □

Create Drive Groups

Physical Drives — Selected 2 / Total 2

	ID	Size(MB)	Model	Interface	Type
☑	1	1906394 MB	SEAGA...	HDD	SAS
☑	2	1906394 MB	SEAGA...	HDD	SAS

Drive Groups

Name
No data available

Virtual Drive Properties

Name: RAID1

Access Policy: Read Write

Read Policy: No Read Ahead

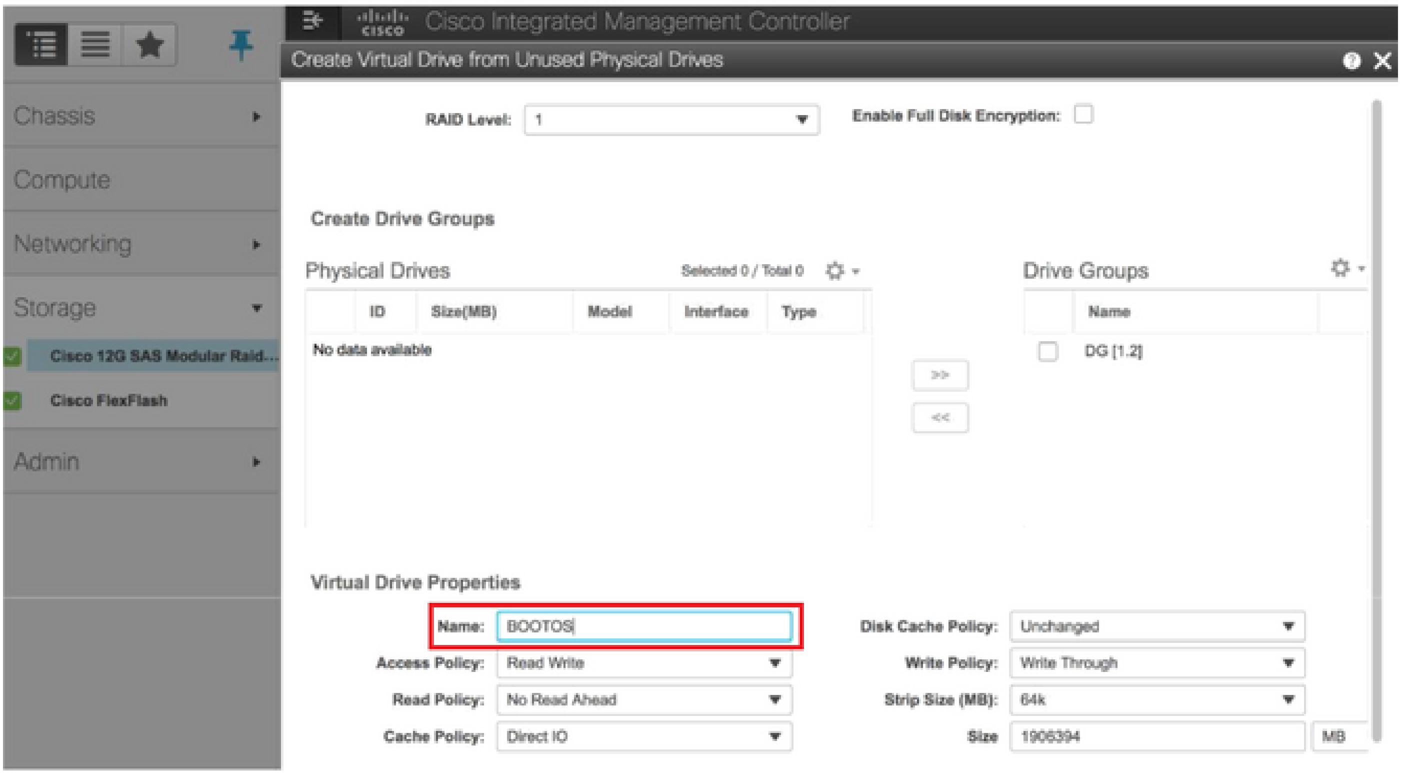
Cache Policy: Direct IO

Disk Cache Policy: Unchanged

Write Policy: Write Through

Strip Size (MB): 64k

Size: MB


Cisco Integrated Management Controller
Chassis
Compute
Networking
Storage
Cisco 12G SAS Modular Raid...
Cisco FlexFlash
Admin
>>
<<

Create Virtual Drive from Unused Physical Drives

RAID Level: 1

Enable Full Disk Encryption: □

Create Drive Groups

Physical Drives — Selected 0 / Total 0

ID	Size(MB)	Model	Interface	Type
No data available				

Drive Groups

	Name
□	DG [1.2]

Virtual Drive Properties

Name: BOOTOS

Access Policy: Read Write

Read Policy: No Read Ahead

Cache Policy: Direct IO

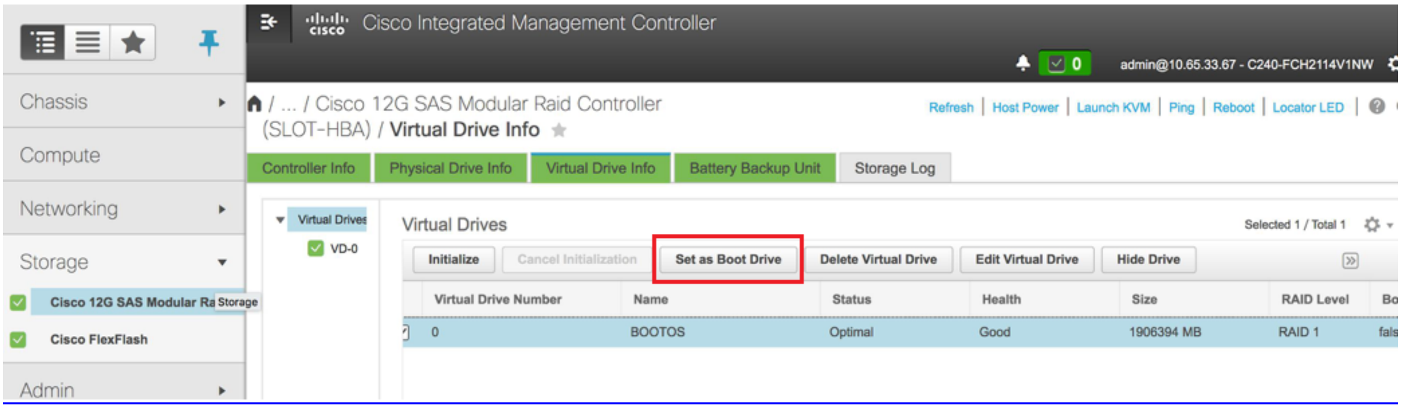
Disk Cache Policy: Unchanged

Write Policy: Write Through

Strip Size (MB): 64k

Size: 1906394 MB

- Selecione o VD e configure **Set as Boot Drive (Definir como unidade de inicialização):**

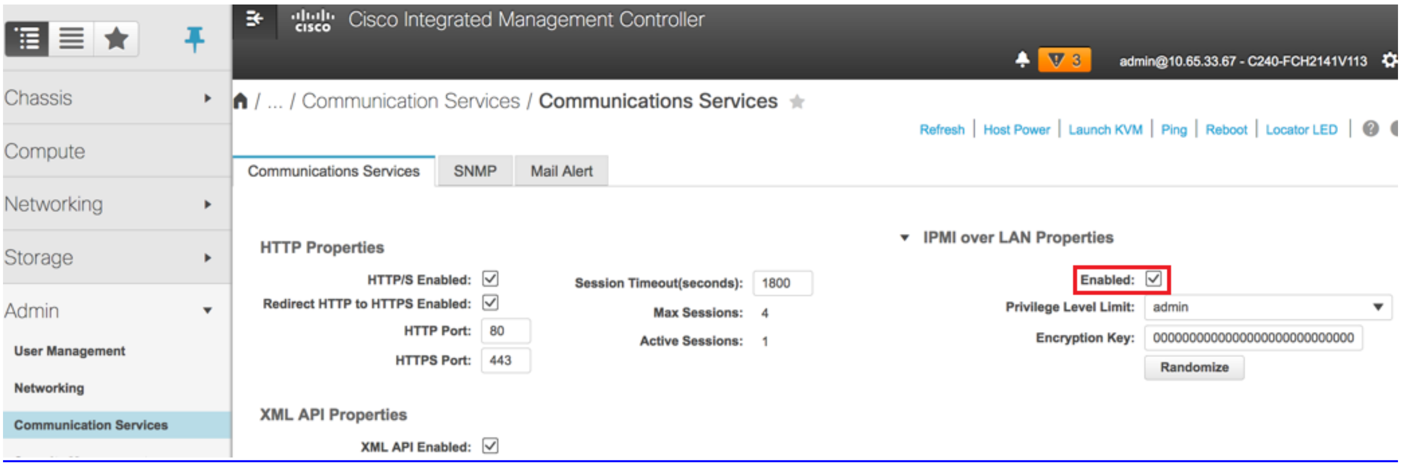


/ ... / Cisco 12G SAS Modular Raid Controller (SLOT-HBA) / Virtual Drive Info

Virtual Drives

Virtual Drive Number	Name	Status	Health	Size	RAID Level	Bo
0	BOOTOS	Optimal	Good	1906394 MB	RAID 1	fals

Etapa 6. Para habilitar o IPMI na LAN, navegue até **Admin > Communication Services > Communication Services**.


Cisco Integrated Management Controller
admin@10.65.33.67 - C240-FCH2141V113
Chassis
Compute
Networking
Storage
Admin
User Management
Networking
Communication Services
Refresh | Host Power | Launch KVM | Ping | Reboot | Locator LED
Communications Services
SNMP
Mail Alert
Randomize

/ ... / Communication Services / Communications Services

HTTP Properties

HTTP/S Enabled: ☑
Redirect HTTP to HTTPS Enabled: ☑
HTTP Port: 80
HTTPS Port: 443

Session Timeout(seconds): 1800
Max Sessions: 4
Active Sessions: 1

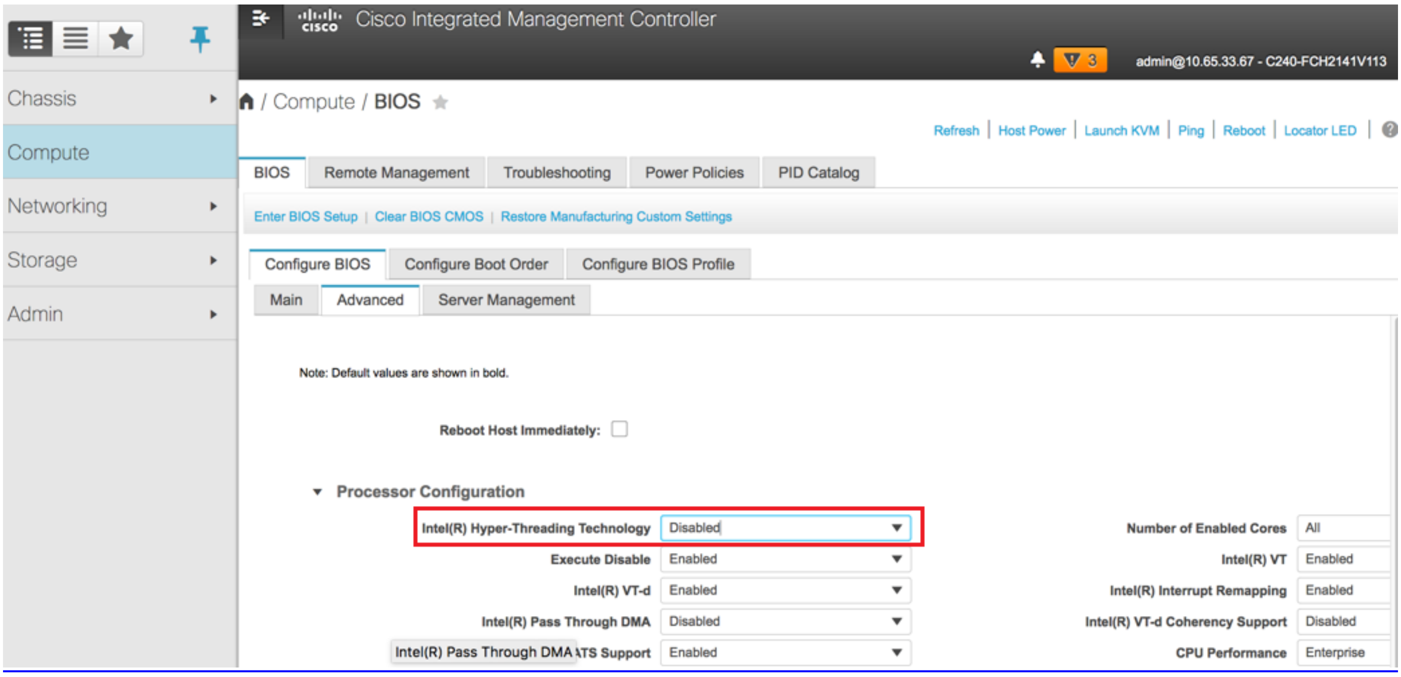
IPMI over LAN Properties

Enabled: ☑
Privilege Level Limit: admin
Encryption Key: 0000000000000000000000000000

XML API Properties

XML API Enabled: ☑

Passo 7. Para desabilitar o hyperthreading, navegue até **Compute > BIOS > Configure BIOS > Advanced > Processor Configuration**, como mostrado na imagem.


Cisco Integrated Management Controller
admin@10.65.33.67 - C240-FCH2141V113
Chassis
Compute
Networking
Storage
Admin
Refresh | Host Power | Launch KVM | Ping | Reboot | Locator LED
BIOS
Remote Management
Troubleshooting
Power Policies
PID Catalog
Enter BIOS Setup | Clear BIOS CMOS | Restore Manufacturing Custom Settings
Configure BIOS
Configure Boot Order
Configure BIOS Profile
Main
Advanced
Server Management

/ Compute / BIOS

Note: Default values are shown in bold.

Reboot Host Immediately: □

Processor Configuration

Intel(R) Hyper-Threading Technology: Disabled
Execute Disable: Enabled
Intel(R) VT-d: Enabled
Intel(R) Pass Through DMA: Disabled
Intel(R) Pass Through DMA ATS Support: Enabled

Number of Enabled Cores: All
Intel(R) VT: Enabled
Intel(R) Interrupt Remapping: Enabled
Intel(R) VT-d Coherency Support: Disabled
CPU Performance: Enterprise

Note: A imagem é mostrada aqui e as etapas de configuração mencionadas nesta seção referem-se à versão de firmware 3.0(3e) e pode haver pequenas variações se você trabalhar em outras versões.

Substituição do nó do controlador na nuvem

Esta seção aborda as etapas necessárias para substituir o controlador com falha pelo novo na nuvem. Para isso, o script **Deployment.sh** usado para ativar a pilha seria reutilizado. No momento da implantação, na fase ControllerNodesPostDeployment, a atualização falharia devido a algumas limitações nos módulos Puppet. A intervenção manual é necessária antes de reiniciar o script de implantação.

Prepare-se para remover o nó do controlador com falha

Etapa 1. Identifique o índice do controlador com falha. O índice é o sufixo numérico no nome do controlador na saída da lista do servidor OpenStack. Neste exemplo, o índice é 2:

```
[stack@director ~]$ nova list | grep controller
| 5813a47e-af27-4fb9-8560-75decd3347b4 | pod1-controller-0  | ACTIVE | -          | Running
| ctlplane=192.200.0.152 |
| 457f023f-d077-45c9-bbea-dd32017d9708 | pod1-controller-1  | ACTIVE | -          | Running
| ctlplane=192.200.0.154 |
| d13bb207-473a-4e42-a1e7-05316935ed65 | pod1-controller-2  | ACTIVE | -          | Running
| ctlplane=192.200.0.151 |
```

Etapa 2. Crie um arquivo Yaml **~templates/remove-controller.yaml** que defina o nó a ser excluído. Use o índice encontrado na etapa anterior para a entrada na lista de recursos.

```
[stack@director ~]$ cat templates/remove-controller.yaml

parameters:
 ControllerRemovalPolicies:
   [{'resource_list': [‘2’]}]

parameter_defaults:
 CorosyncSettleTries: 5
```

Etapa 3. Faça uma cópia do script de implantação usado para instalar a nuvem geral e insira uma linha para incluir o arquivo **remove-controller.yaml** criado anteriormente.

```
[stack@director ~]$ cp deploy.sh deploy-removeController.sh
[stack@director ~]$ cat deploy-removeController.sh
time openstack overcloud deploy --templates \
-r ~/custom-templates/custom-roles.yaml \
-e /home/stack/templates/remove-controller.yaml \
-e /usr/share/openstack-tripleo-heat-templates/environments/puppet-pacemaker.yaml \
-e /usr/share/openstack-tripleo-heat-templates/environments/network-isolation.yaml \
-e /usr/share/openstack-tripleo-heat-templates/environments/storage-environment.yaml \
-e /usr/share/openstack-tripleo-heat-templates/environments/neutron-sriov.yaml \
-e ~/custom-templates/network.yaml \
-e ~/custom-templates/ceph.yaml \
-e ~/custom-templates/compute.yaml \
-e ~/custom-templates/layout-removeController.yaml \
-e ~/custom-templates/rabbitmq.yaml \
--stack pod1 \
--debug \
--log-file overcloudDeploy_$(date +%m_%d_%y__%H_%M_%S).log \
--neutron-flat-networks phys_pcie1_0,phys_pcie1_1,phys_pcie4_0,phys_pcie4_1 \
--neutron-network-vlan-ranges datacentre:101:200 \
--neutron-disable-tunneling \
--verbose --timeout 180
```

Etapa 4. Identifique o ID do controlador a ser substituído, usando os comandos mencionados aqui e mova-o para o modo de manutenção.

```
[stack@director ~]$ nova list | grep controller

| 5813a47e-af27-4fb9-8560-75decd3347b4 | pod1-controller-0  | ACTIVE | -          | Running
| ctlplane=192.200.0.152 |

| 457f023f-d077-45c9-bbea-dd32017d9708 | pod1-controller-1  | ACTIVE | -          | Running
| ctlplane=192.200.0.154 |

| d13bb207-473a-4e42-a1e7-05316935ed65 | pod1-controller-2  | ACTIVE | -          | Running
| ctlplane=192.200.0.151 |


[stack@director ~]$ openstack baremetal node list | grep d13bb207-473a-4e42-a1e7-05316935ed65

| e7c32170-c7d1-4023-b356-e98564a9b85b | None | d13bb207-473a-4e42-a1e7-05316935ed65 | power
off   | active             | False       |


[stack@b10-ospd ~]$ openstack baremetal node maintenance set e7c32170-c7d1-4023-b356-
e98564a9b85b


[stack@director~]$ openstack baremetal node list | grep True

| e7c32170-c7d1-4023-b356-e98564a9b85b | None | d13bb207-473a-4e42-a1e7-05316935ed65 | power
off   | active             | True        |
```

Etapa 5. Para garantir que o DB seja executado no momento do procedimento de substituição, remova o Galera do controle do marca-passo e execute esse comando em um dos controladores ativos.

```
[root@pod1-controller-0 ~]# sudo pcs resource unmanage galera
[root@pod1-controller-0 ~]# sudo pcs status

Cluster name: tripleo_cluster
Stack: corosync
Current DC: pod1-controller-0 (version 1.1.15-11.el7_3.4-e174ec8) - partition with quorum
Last updated: Thu Nov 16 16:51:18 2017                   Last change: Thu Nov 16 16:51:12 2017
by root via crm_resource on pod1-controller-0
3 nodes and 22 resources configured
Online: [ pod1-controller-0 pod1-controller-1 ]
OFFLINE: [ pod1-controller-2 ]

Full list of resources:

 ip-11.120.0.109          (ocf::heartbeat:IPaddr2):        Started pod1-controller-0
 ip-172.25.22.109        (ocf::heartbeat:IPaddr2):        Started pod1-controller-1
 ip-192.200.0.107        (ocf::heartbeat:IPaddr2):        Started pod1-controller-0

 Clone Set: haproxy-clone [haproxy]
    Started: [ pod1-controller-0 pod1-controller-1 ]
    Stopped: [ pod1-controller-2 ]

Master/Slave Set: galera-master [galera] (unmanaged)
    galera        (ocf::heartbeat:galera):          Master pod1-controller-0 (unmanaged)
    galera        (ocf::heartbeat:galera):          Master pod1-controller-1 (unmanaged)
    Stopped: [ pod1-controller-2 ]
 ip-11.120.0.110          (ocf::heartbeat:IPaddr2):        Started pod1-controller-0
 ip-11.119.0.110          (ocf::heartbeat:IPaddr2):        Started pod1-controller-1

<snip>
```

Prepare-se para adicionar um novo nó de controlador

Etapa 1. Crie um arquivo **controllerRMA.json** com apenas os novos detalhes do controlador. Verifique se o número de índice no novo controlador não foi usado antes. Normalmente, incremente para o próximo número de controlador mais alto.

Exemplo: O anterior mais alto foi o Controller-2, então crie o Controller-3.

> **Note**: Lembre-se do formato json.

```
[stack@director ~]$ cat controllerRMA.json
{
   "nodes": [
       {
           "mac": [
               <MAC_ADDRESS>
           ],
           "capabilities": "node:controller-3,boot_option:local",
           "cpu": "24",
           "memory": "256000",
           "disk": "3000",
           "arch": "x86_64",
           "pm_type": "pxe_ipmitool",
           "pm_user": "admin",
           "pm_password": "<PASSWORD>",
           "pm_addr": "<CIMC_IP>"
       }
   ]
}
```

Etapa 2. Importe o novo nó com o uso do arquivo json criado na etapa anterior.

```
[stack@director ~]$ openstack baremetal import --json controllerRMA.json

Started Mistral Workflow. Execution ID: 67989c8b-1225-48fe-ba52-3a45f366e7a0

Successfully registered node UUID 048ccb59-89df-4f40-82f5-3d90d37ac7dd

Started Mistral Workflow. Execution ID: c6711b5f-fa97-4c86-8de5-b6bc7013b398

Successfully set all nodes to available.

[stack@director ~]$ openstack baremetal node list | grep available

| 048ccb59-89df-4f40-82f5-3d90d37ac7dd | None | None                                 | power
off   | available          | False
```

Etapa 3. Defina o nó para gerenciar o estado.

```
[stack@director ~]$ openstack baremetal node manage 048ccb59-89df-4f40-82f5-3d90d37ac7dd
[stack@director ~]$ openstack baremetal node list | grep off
| 048ccb59-89df-4f40-82f5-3d90d37ac7dd | None | None | power off | manageable | False |
```

Etapa 4. Façam introspecção.

```
[stack@director ~]$ openstack overcloud node introspect 048ccb59-89df-4f40-82f5-3d90d37ac7dd --
provide
Started Mistral Workflow. Execution ID: f73fb275-c90e-45cc-952b-bfc25b9b5727
Waiting for introspection to finish...
Successfully introspected all nodes.
Introspection completed.
Started Mistral Workflow. Execution ID: a892b456-eb15-4c06-b37e-5bc3f6c37c65
Successfully set all nodes to available

[stack@director ~]$ openstack baremetal node list | grep available
| 048ccb59-89df-4f40-82f5-3d90d37ac7dd | None | None                                 | power
off   | available          | False       |
```

Etapa 5. Marque o nó disponível com as novas propriedades do controlador. Certifique-se de usar a ID da controladora designada para a nova controladora, conforme usada no arquivo **controllerRMA.json**.

```
[stack@director ~]$ openstack baremetal node set --property capabilities='node:controller-
3,profile:control,boot_option:local' 048ccb59-89df-4f40-82f5-3d90d37ac7dd
```

Etapa 6. No script de implantação, há um modelo personalizado chamado **layout.yaml** que, entre outras coisas, especifica quais endereços IP são atribuídos aos controladores para as várias interfaces. Em uma nova pilha, há 3 endereços definidos para Controller-0, Controller-1 e Controller-2. Ao adicionar um novo controlador, certifique-se de adicionar um próximo endereço IP em sequência para cada sub-rede.

```
ControllerIPs:
internal_api:
- 11.120.0.10
- 11.120.0.11
- 11.120.0.12
 - 11.120.0.13
tenant:
- 11.117.0.10
- 11.117.0.11
- 11.117.0.12
 - 11.117.0.13
storage:
- 11.118.0.10
- 11.118.0.11
- 11.118.0.12
 - 11.118.0.13
storage_mgmt:
- 11.119.0.10
- 11.119.0.11
- 11.119.0.12
 - 11.119.0.13
```

Passo 7. Agora execute o **comando** de **distribuição-remoção.sh** que foi criado anteriormente, para remover o nó antigo e adicionar o novo nó.

> **Note**: Espera-se que esta etapa falhe em ControllerNodesDeployment_Step1. Nesse ponto, é necessária uma intervenção manual.

```
[stack@b10-ospd ~]$ ./deploy-addController.sh
```

```
START with options: [u'overcloud', u'deploy', u'--templates', u'-r', u'/home/stack/custom-
templates/custom-roles.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/puppet-pacemaker.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/network-isolation.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/storage-environment.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/neutron-sriov.yaml', u'-e', u'/home/stack/custom-templates/network.yaml',
u'-e', u'/home/stack/custom-templates/ceph.yaml', u'-e', u'/home/stack/custom-
templates/compute.yaml', u'-e', u'/home/stack/custom-templates/layout-removeController.yaml',
u'-e', u'/home/stack/custom-templates/rabbitmq.yaml', u'--stack', u'newtonoc', u'--debug', u'--
log-file', u'overcloudDeploy_11_15_17__07_46_35.log', u'--neutron-flat-networks',
u'phys_pcie1_0,phys_pcie1_1,phys_pcie4_0,phys_pcie4_1', u'--neutron-network-vlan-ranges',
u'datacentre:101:200', u'--neutron-disable-tunneling', u'--verbose', u'--timeout', u'180']
 :
DeploymentError: Heat Stack update failed
END return value: 1

real     42m1.525s
user     0m3.043s
sys      0m0.614s
```

O progresso/status da implantação pode ser monitorado com estes comandos:

```
[stack@director~]$ openstack stack list --nested | grep -iv complete

+--------------------------------------+--------------------------------------------------------
------------------------------------------------------------------------------------------------
-----------------+-----------------+----------------------+----------------------+--------------
------------------------+

| ID                                   | Stack
Name
                                                                  | Stack Status    | Creation
Time        | Updated Time         | Parent                               |

+--------------------------------------+--------------------------------------------------------
------------------------------------------------------------------------------------------------
-----------------+-----------------+----------------------+----------------------+--------------
------------------------+

| c1e338f2-877e-4817-93b4-9a3f0c0b3d37 | pod1-AllNodesDeploySteps-5psegydpwxij-
ComputeDeployment_Step1-swnuzjixac43
                                                                        | UPDATE_FAILED   |
2017-10-08T14:06:07Z | 2017-11-16T18:09:43Z | e90f00ef-2499-4ec3-90b4-d7def6e97c47 |

| 1db4fef4-45d3-4125-bd96-2cc3297a69ff | pod1-AllNodesDeploySteps-5psegydpwxij-
ControllerDeployment_Step1-
hmn3hpruubcn
   | UPDATE_FAILED   | 2017-10-08T14:03:05Z | 2017-11-16T18:12:12Z | e90f00ef-2499-4ec3-90b4-
d7def6e97c47 |

| e90f00ef-2499-4ec3-90b4-d7def6e97c47 | pod1-AllNodesDeploySteps-
5psegydpwxij
                                           | UPDATE_FAILED   | 2017-10-08T13:59:25Z | 2017-11-
16T18:09:25Z | 6c4b604a-55a4-4a19-9141-28c844816c0d |

| 6c4b604a-55a4-4a19-9141-28c844816c0d |
pod1
                                                                  | UPDATE_FAILED   | 2017-10-
08T12:37:11Z | 2017-11-16T17:35:35Z | None                                 |

+--------------------------------------+--------------------------------------------------------
------------------------------------------------------------------------------------------------
-----------------+-----------------+----------------------+----------------------+--------------
```

```
-----------------------+
```

Intervenção manual

Etapa 1. No servidor OSP-D, execute o comando OpenStack server list para listar os controladores disponíveis. O controlador recém-adicionado deve aparecer na lista.

```
[stack@director ~]$ openstack server list | grep controller
| 3e6c3db8-ba24-48d9-b0e8-1e8a2eb8b5ff | pod1-controller-3  | ACTIVE | ctlplane=192.200.0.103 |
overcloud-full |
| 457f023f-d077-45c9-bbea-dd32017d9708 | pod1-controller-1  | ACTIVE | ctlplane=192.200.0.154 |
overcloud-full |
| 5813a47e-af27-4fb9-8560-75decd3347b4 | pod1-controller-0  | ACTIVE | ctlplane=192.200.0.152 |
overcloud-full |
```

Etapa 2. Conecte-se a um dos controladores ativos (não ao controlador recém-adicionado) e examine o arquivo **/etc/corosync/corosycn.conf**. Localize a **lista** que atribui um **nó** a cada controlador. Localize a entrada do nó com falha e anote seu **nó:**

```
[root@pod1-controller-0 ~]# cat /etc/corosync/corosync.conf
totem {
   version: 2
   secauth: off
   cluster_name: tripleo_cluster
   transport: udpu
   token: 10000
}

nodelist {
   node {
       ring0_addr: pod1-controller-0
       nodeid: 5
   }
   node {
       ring0_addr: pod1-controller-1
       nodeid: 7
   }
   node {
       ring0_addr: pod1-controller-2
       nodeid: 8
   }
}
```

Etapa 3. Faça login em cada um dos controladores ativos. Remova o nó com falha e reinicie o serviço. Nesse caso, remova **pod1-controller-2**. Não execute esta ação no controlador recém-adicionado.

```
[root@pod1-controller-0 ~]# sudo pcs cluster localnode remove pod1-controller-2
pod1-controller-2: successfully removed!
[root@pod1-controller-0 ~]# sudo pcs cluster reload corosync
Corosync reloaded

[root@pod1-controller-1 ~]# sudo pcs cluster localnode remove pod1-controller-2
pod1-controller-2: successfully removed!
[root@pod1-controller-1 ~]# sudo pcs cluster reload corosync
Corosync reloaded
```

Etapa 4. Execute esse comando de um dos controladores ativos para excluir o nó com falha do cluster.

```
[root@pod1-controller-0 ~]# sudo crm_node -R pod1-controller-2 --force
```

Etapa 5. Execute este comando de um dos controladores ativos para excluir o nó com falha do cluster **rabbitmq**.

```
[root@pod1-controller-0 ~]# sudo rabbitmqctl forget_cluster_node rabbit@pod1-controller-2
Removing node 'rabbit@newtonoc-controller-2' from cluster ...
```

Etapa 6. Exclua o nó com falha do MongoDB. Para fazer isso, você precisa encontrar o nó Mongo ativo. Use **netstat** para encontrar o endereço IP do host.

```
[root@pod1-controller-0 ~]# sudo netstat -tulnp | grep 27017
tcp        0      0 11.120.0.10:27017       0.0.0.0:*               LISTEN
219577/mongod
```

Passo 7. Faça login no nó e verifique se ele é o mestre com o uso do endereço IP e do número de porta do comando anterior.

```
[heat-admin@pod1-controller-0 ~]$ echo "db.isMaster()" | mongo --host 11.120.0.10:27017
MongoDB shell version: 2.6.11
connecting to: 11.120.0.10:27017/test
{
        "setName" : "tripleo",
        "setVersion" : 9,
        "ismaster" : true,
        "secondary" : false,
        "hosts" : [
                  "11.120.0.10:27017",
                  "11.120.0.12:27017",
                  "11.120.0.11:27017"
        ],
        "primary" : "11.120.0.10:27017",
        "me" : "11.120.0.10:27017",
        "electionId" : ObjectId("5a0d2661218cb0238b582fb1"),
        "maxBsonObjectSize" : 16777216,
        "maxMessageSizeBytes" : 48000000,
        "maxWriteBatchSize" : 1000,
        "localTime" : ISODate("2017-11-16T18:36:34.473Z"),
        "maxWireVersion" : 2,
        "minWireVersion" : 0,
        "ok" : 1
}
```

Se o nó não for o mestre, faça login no outro controlador ativo e execute a mesma etapa.

Etapa 8. Do mestre, liste os nós disponíveis com o uso do comando **rs.status()**. Localize o nó antigo/sem resposta e identifique o nome do nó mongo.

```
[root@pod1-controller-0 ~]# mongo --host 11.120.0.10
MongoDB shell version: 2.6.11
connecting to: 11.120.0.10:27017/test
<snip>
tripleo:PRIMARY> rs.status()
{
        "set" : "tripleo",
        "date" : ISODate("2017-11-14T13:27:14Z"),
        "myState" : 1,
        "members" : [
                 {
                          "_id" : 0,
                          "name" : "11.120.0.10:27017",
                          "health" : 1,
                          "state" : 1,
                          "stateStr" : "PRIMARY",
                          "uptime" : 418347,
                          "optime" : Timestamp(1510666033, 1),
                          "optimeDate" : ISODate("2017-11-14T13:27:13Z"),
                          "electionTime" : Timestamp(1510247693, 1),
                          "electionDate" : ISODate("2017-11-09T17:14:53Z"),
                          "self" : true
                 },
                 {
                          "_id" : 2,
                          "name" : "11.120.0.12:27017",
                          "health" : 1,
                          "state" : 2,
                          "stateStr" : "SECONDARY",
                          "uptime" : 418347,
                          "optime" : Timestamp(1510666033, 1),
                          "optimeDate" : ISODate("2017-11-14T13:27:13Z"),
                          "lastHeartbeat" : ISODate("2017-11-14T13:27:13Z"),
                          "lastHeartbeatRecv" : ISODate("2017-11-14T13:27:13Z"),
                          "pingMs" : 0,
                          "syncingTo" : "11.120.0.10:27017"
                 },
                 {
                          "_id" : 3,
                          "name" : "11.120.0.11:27017
                          "health" : 0,
                          "state" : 8,
                          "stateStr" : "(not reachable/healthy)",
                          "uptime" : 0,
                          "optime" : Timestamp(1510610580, 1),
                          "optimeDate" : ISODate("2017-11-13T22:03:00Z"),
                          "lastHeartbeat" : ISODate("2017-11-14T13:27:10Z"),
                          "lastHeartbeatRecv" : ISODate("2017-11-13T22:03:01Z"),
                          "pingMs" : 0,
                          "syncingTo" : "11.120.0.10:27017"
                 }
        ],
        "ok" : 1
}
```

Etapa 9. Do mestre, exclua o nó com falha com o uso do comando **rs.remove**. Alguns erros são vistos quando você executa este comando, mas verifique o status mais uma vez para descobrir que o nó foi removido:

```
[root@pod1-controller-0 ~]$ mongo --host 11.120.0.10
<snip>
tripleo:PRIMARY> rs.remove('11.120.0.12:27017')
2017-11-16T18:41:04.999+0000 DBClientCursor::init call() failed
2017-11-16T18:41:05.000+0000 Error: error doing query: failed at src/mongo/shell/query.js:81
2017-11-16T18:41:05.001+0000 trying reconnect to 11.120.0.10:27017 (11.120.0.10) failed
2017-11-16T18:41:05.003+0000 reconnect 11.120.0.10:27017 (11.120.0.10) ok

tripleo:PRIMARY> rs.status()
{
        "set" : "tripleo",
        "date" : ISODate("2017-11-16T18:44:11Z"),
        "myState" : 1,
        "members" : [
                 {
                          "_id" : 3,
                          "name" : "11.120.0.11:27017",
                          "health" : 1,
                          "state" : 2,
                          "stateStr" : "SECONDARY",
                          "uptime" : 187,
                          "optime" : Timestamp(1510857848, 3),
                          "optimeDate" : ISODate("2017-11-16T18:44:08Z"),
                          "lastHeartbeat" : ISODate("2017-11-16T18:44:11Z"),
                          "lastHeartbeatRecv" : ISODate("2017-11-16T18:44:09Z"),
                          "pingMs" : 0,
                          "syncingTo" : "11.120.0.10:27017"
                 },
                 {
                          "_id" : 4,
                          "name" : "11.120.0.10:27017",
                          "health" : 1,
                          "state" : 1,
                          "stateStr" : "PRIMARY",
                          "uptime" : 89820,
                          "optime" : Timestamp(1510857848, 3),
                          "optimeDate" : ISODate("2017-11-16T18:44:08Z"),
                          "electionTime" : Timestamp(1510811232, 1),
                          "electionDate" : ISODate("2017-11-16T05:47:12Z"),
                          "self" : true
                 }
        ],
        "ok" : 1
}
tripleo:PRIMARY> exit
bye
```

Etapa 10. Execute esse comando para atualizar a lista de nós de controlador ativos. Inclua o novo nó de controlador nesta lista.

```
[root@pod1-controller-0 ~]# sudo pcs resource update galera wsrep_cluster_address=gcomm://pod1-controller-0,pod1-controller-1,pod1-controller-2
```

Etapa 11. Copie esses arquivos de um controlador que já existe para o novo controlador:

/etc/sysconfig/clustercheck

/root/.my.cnf

```
On existing controller:

[root@pod1-controller-0 ~]# scp /etc/sysconfig/clustercheck stack@192.200.0.1:/tmp/.
[root@pod1-controller-0 ~]# scp /root/.my.cnf stack@192.200.0.1:/tmp/my.cnf

On new controller:

[root@pod1-controller-3 ~]# cd /etc/sysconfig

[root@pod1-controller-3 sysconfig]# scp stack@192.200.0.1:/tmp/clustercheck .

[root@pod1-controller-3 sysconfig]# cd /root

[root@pod1-controller-3 ~]# scp stack@192.200.0.1:/tmp/my.cnf .my.cnf
```

Etapa 12. Execute o comando **cluster node add** de um dos controladores já existentes.

```
[root@pod1-controller-1 ~]# sudo pcs cluster node add pod1-controller-3

Disabling SBD service...
pod1-controller-3: sbd disabled
pod1-controller-0: Corosync updated
pod1-controller-1: Corosync updated

Setting up corosync...
pod1-controller-3: Succeeded
Synchronizing pcsd certificates on nodes pod1-controller-3...
pod1-controller-3: Success

Restarting pcsd on the nodes in order to reload the certificates...
pod1-controller-3: Success
```

Etapa 13. Faça login em cada controlador e visualize o arquivo **/etc/corosync/corosync.conf**. Verifique se o novo controlador está listado e se o **nó** atribuído a esse controlador é o próximo número na sequência que não foi usado anteriormente. Assegure-se de que essa alteração seja feita em todos os três controladores.

```
[root@pod1-controller-1 ~]# cat /etc/corosync/corosync.conf
totem {
   version: 2
   secauth: off
   cluster_name: tripleo_cluster
   transport: udpu
   token: 10000
}
nodelist {
   node {
       ring0_addr: pod1-controller-0
       nodeid: 5
   }
   node {
       ring0_addr: pod1-controller-1
       nodeid: 7
   }
   node {
       ring0_addr: pod1-controller-3
        nodeid: 6
   }
}
quorum {
   provider: corosync_votequorum
}
logging {
   to_logfile: yes
   logfile: /var/log/cluster/corosync.log
   to_syslog: yes
}
```

Por exemplo, **/etc/corosync/corosync.conf** após modificação:

```
totem {
version: 2
secauth: off
cluster_name: tripleo_cluster
transport: udpu
token: 10000
}
nodelist {
   node {
       ring0_addr: pod1-controller-0
       nodeid: 5
   }
   node {
       ring0_addr: pod1-controller-1
       nodeid: 7
   }
   node {
       ring0_addr: pod1-controller-3
       nodeid: 9
   }
}
quorum {
   provider: corosync_votequorum
}
logging {
   to_logfile: yes
   logfile: /var/log/cluster/corosync.log
   to_syslog: yes
}
```

Etapa 14. Reinicie a **sincronização corporativa** nos controladores ativos. Não inicie a **sincronização corporativa** no novo controlador.

```
[root@pod1-controller-0 ~]# sudo pcs cluster reload corosync
[root@pod1-controller-1 ~]# sudo pcs cluster reload corosync
```

Etapa 15. Inicie o novo nó controlador a partir de um dos controladores em ação.

```
[root@pod1-controller-1 ~]# sudo pcs cluster start pod1-controller-3
```

Etapa 16. Reinicie Galera de um dos controladores.

```
[root@pod1-controller-1 ~]#  sudo pcs cluster start pod1-controller-3

pod1-controller-0: Starting Cluster...

[root@pod1-controller-1 ~]# sudo pcs resource cleanup galera
Cleaning up galera:0 on pod1-controller-0, removing fail-count-galera
Cleaning up galera:0 on pod1-controller-1, removing fail-count-galera
Cleaning up galera:0 on pod1-controller-3, removing fail-count-galera
 * The configuration prevents the cluster from stopping or starting 'galera-master' (unmanaged)

Waiting for 3 replies from the CRMd... OK

[root@pod1-controller-1 ~]#
[root@pod1-controller-1 ~]# sudo pcs resource manage galera
```

Etapa 17. O cluster está no modo de manutenção. Desative o modo de manutenção para que os serviços sejam iniciados.

```
[root@pod1-controller-2 ~]# sudo pcs property set maintenance-mode=false --wait
```

Etapa 18. Verifique o status dos PCs do Galera até que todos os 3 controladores sejam listados como mestres no Galera.

Note: Para configurações grandes, pode levar algum tempo para sincronizar DBs.

```
[root@pod1-controller-1 ~]# sudo pcs status | grep galera -A1

Master/Slave Set: galera-master [galera]
     Masters: [ pod1-controller-0 pod1-controller-1 pod1-controller-3 ]
```

Etapa 19. Mude o cluster para o modo de manutenção.

```
[root@pod1-controller-1~]# sudo pcs property set maintenance-mode=true --wait

[root@pod1-controller-1 ~]# pcs cluster status
Cluster Status:
 Stack: corosync
 Current DC: pod1-controller-0 (version 1.1.15-11.el7_3.4-e174ec8) - partition with quorum
 Last updated: Thu Nov 16 19:17:01 2017                 Last change: Thu Nov 16 19:16:48 2017
by root via cibadmin on pod1-controller-1
              *** Resource management is DISABLED ***
  The cluster will not attempt to start, stop or recover services

PCSD Status:
 pod1-controller-3: Online
 pod1-controller-0: Online
 pod1-controller-1: Online
```

Etapa 20. Execute novamente o script de implantação executado anteriormente. Desta vez, deve ser bem sucedido.

```
[stack@director ~]$ ./deploy-addController.sh
START with options: [u'overcloud', u'deploy', u'--templates', u'-r', u'/home/stack/custom-
templates/custom-roles.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/puppet-pacemaker.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/network-isolation.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/storage-environment.yaml', u'-e', u'/usr/share/openstack-tripleo-heat-
templates/environments/neutron-sriov.yaml', u'-e', u'/home/stack/custom-templates/network.yaml',
u'-e', u'/home/stack/custom-templates/ceph.yaml', u'-e', u'/home/stack/custom-
templates/compute.yaml', u'-e', u'/home/stack/custom-templates/layout-removeController.yaml',
u'--stack', u'newtonoc', u'--debug', u'--log-file', u'overcloudDeploy_11_14_17__13_53_12.log',
u'--neutron-flat-networks', u'phys_pcie1_0,phys_pcie1_1,phys_pcie4_0,phys_pcie4_1', u'--neutron-
network-vlan-ranges', u'datacentre:101:200', u'--neutron-disable-tunneling', u'--verbose', u'--
timeout', u'180']
options: Namespace(access_key='', access_secret='***', access_token='***',
access_token_endpoint='', access_token_type='', aodh_endpoint='', auth_type='',
auth_url='https://192.200.0.2:13000/v2.0', authorization_code='', cacert=None, cert='',
client_id='', client_secret='***', cloud='', consumer_key='', consumer_secret='***', debug=True,
default_domain='default', default_domain_id='', default_domain_name='', deferred_help=False,
discovery_endpoint='', domain_id='', domain_name='', endpoint='', identity_provider='',
identity_provider_url='', insecure=None, inspector_api_version='1', inspector_url=None,
interface='', key='', log_file=u'overcloudDeploy_11_14_17__13_53_12.log', murano_url='',
old_profile=None, openid_scope='', os_alarming_api_version='2',
os_application_catalog_api_version='1', os_baremetal_api_version='1.15', os_beta_command=False,
os_compute_api_version='', os_container_infra_api_version='1',
os_data_processing_api_version='1.1', os_data_processing_url='', os_dns_api_version='2',
os_identity_api_version='', os_image_api_version='1', os_key_manager_api_version='1',
os_metrics_api_version='1', os_network_api_version='', os_object_api_version='',
os_orchestration_api_version='1', os_project_id=None, os_project_name=None,
os_queues_api_version='2', os_tripleoclient_api_version='1', os_volume_api_version='',
os_workflow_api_version='2', passcode='', password='***', profile=None, project_domain_id='',
project_domain_name='', project_id='', project_name='admin', protocol='', redirect_uri='',
region_name='', roles='', timing=False, token='***', trust_id='', url='', user='',
user_domain_id='', user_domain_name='', user_id='', username='admin', verbose_level=3,
verify=None)
Auth plugin password selected

Starting new HTTPS connection (1): 192.200.0.2
"POST /v2/action_executions HTTP/1.1" 201 1696
HTTP POST https://192.200.0.2:13989/v2/action_executions 201
Overcloud Endpoint: http://172.25.22.109:5000/v2.0
Overcloud Deployed
clean_up DeployOvercloud:
END return value: 0

real     54m17.197s
user     0m3.421s
sys       0m0.670s
```

Verifique os serviços em nuvem no controlador

Verifique se todos os serviços gerenciados são executados corretamente nos nós do controlador.

```
[heat-admin@pod1-controller-2 ~]$ sudo pcs status
```

Finalizar os roteadores do agente L3

Verifique os roteadores para garantir que os agentes L3 estejam hospedados corretamente. Certifique-se de originar o arquivo overcloudrc ao executar essa verificação.

Etapa 1. Localize o nome do roteador.

```
[stack@director~]$ source corerc
[stack@director ~]$ neutron router-list

+--------------------------------------+------+------------------------------------------------
------------------+-------------+------+

| id                                   | name |
external_gateway_info                                                | distributed | ha   |

+--------------------------------------+------+------------------------------------------------
------------------+-------------+------+

| d814dc9d-2b2f-496f-8c25-24911e464d02 | main | {"network_id": "18c4250c-e402-428c-87d6-
a955157d50b5",            | False       | True |
```

Neste exemplo, o nome do roteador é main.

Etapa 2. Liste todos os agentes L3 para localizar o UUID do nó com falha e o novo nó.

```
[stack@director ~]$ neutron agent-list | grep "neutron-l3-agent"

| 70242f5c-43ab-4355-abd6-9277f92e4ce6 | L3 agent           | pod1-controller-0.localdomain  |
nova               | :-)   | True           | neutron-l3-agent          |
| 8d2ffbcb-b6ff-42cd-b5b8-da31d8da8a40 | L3 agent           | pod1-controller-2.localdomain  |
nova               | xxx   | True           | neutron-l3-agent          |
| a410a491-e271-4938-8a43-458084ffe15d | L3 agent           | pod1-controller-3.localdomain  |
nova               | :-)   | True           | neutron-l3-agent          |
| cb4bc1ad-ac50-42e9-ae69-8a256d375136 | L3 agent           | pod1-controller-1.localdomain  |
nova              | :-)   | True           | neutron-l3-agent          |
```

Etapa 3. Neste exemplo, o agente L3 que corresponde a **pod1-controller-2.localdomain** deve ser removido do roteador e o que corresponde a **pod1-controller-3.localdomain** deve ser adicionado ao roteador.

```
[stack@director ~]$ neutron l3-agent-router-remove 8d2ffbcb-b6ff-42cd-b5b8-da31d8da8a40  main

Removed router main from L3 agent

[stack@director ~]$ neutron l3-agent-router-add a410a491-e271-4938-8a43-458084ffe15d main

Added router main to L3 agent
```

Etapa 4. Verifique a lista atualizada de agentes L3.

```
[stack@director ~]$ neutron l3-agent-list-hosting-router main

+--------------------------------------+-------------------------------+----------------+---
----+----------+
| id                                   | host                          | admin_state_up |
alive | ha_state |
+--------------------------------------+-------------------------------+----------------+---
----+----------+

| 70242f5c-43ab-4355-abd6-9277f92e4ce6 | pod1-controller-0.localdomain | True           | :-)
| standby  |
| a410a491-e271-4938-8a43-458084ffe15d | pod1-controller-3.localdomain | True           | :-)
| standby  |
| cb4bc1ad-ac50-42e9-ae69-8a256d375136 | pod1-controller-1.localdomain | True           | :-)
| active   |
+--------------------------------------+-------------------------------+----------------+---
----+----------+
```

Etapa 5. Liste todos os serviços que são executados no nó do controlador removido e remova-os.

```
[stack@director ~]$ neutron  agent-list | grep controller-2

| 877314c2-3c8d-4666-a6ec-69513e83042d | Metadata agent     | pod1-controller-2.localdomain
|                   | xxx   | True           | neutron-metadata-agent    |
| 8d2ffbcb-b6ff-42cd-b5b8-da31d8da8a40 | L3 agent           | pod1-controller-2.localdomain  |
nova              | xxx   | True           | neutron-l3-agent          |
| 911c43a5-df3a-49ec-99ed-1d722821ec20 | DHCP agent         | pod1-controller-2.localdomain  |
nova              | xxx   | True           | neutron-dhcp-agent        |
| a58a3dd3-4cdc-48d4-ab34-612a6cd72768 | Open vSwitch agent | pod1-controller-2.localdomain
|                   | xxx   | True           | neutron-openvswitch-agent |

[stack@director ~]$ neutron agent-delete 877314c2-3c8d-4666-a6ec-69513e83042d
Deleted agent(s): 877314c2-3c8d-4666-a6ec-69513e83042d
[stack@director ~]$ neutron agent-delete 8d2ffbcb-b6ff-42cd-b5b8-da31d8da8a40
Deleted agent(s): 8d2ffbcb-b6ff-42cd-b5b8-da31d8da8a40
[stack@director ~]$ neutron agent-delete 911c43a5-df3a-49ec-99ed-1d722821ec20
Deleted agent(s): 911c43a5-df3a-49ec-99ed-1d722821ec20
[stack@director ~]$ neutron agent-delete a58a3dd3-4cdc-48d4-ab34-612a6cd72768
Deleted agent(s): a58a3dd3-4cdc-48d4-ab34-612a6cd72768

[stack@director ~]$ neutron agent-list | grep controller-2
[stack@director ~]$
```

Finalizar serviços de computação

Etapa 1. Verifique os itens **da nova lista de serviços** deixados do nó removido e exclua-os.

```
[stack@director ~]$ nova service-list | grep controller-2

| 615 | nova-consoleauth | pod1-controller-2.localdomain  | internal          | enabled | down
| 2017-11-16T16:08:14.000000 | -               |
| 618 | nova-scheduler   | pod1-controller-2.localdomain  | internal          | enabled | down
| 2017-11-16T16:08:13.000000 | -               |
| 621 | nova-conductor   | pod1-controller-2.localdomain  | internal          | enabled | down
| 2017-11-16T16:08:14.000000 | -

[stack@director ~]$ nova service-delete 615
[stack@director ~]$ nova service-delete 618
[stack@director ~]$ nova service-delete 621

stack@director ~]$ nova service-list | grep controller-2
```

Etapa 2. Certifique-se de que o processo de **console** seja executado em todos os controladores ou reinicie-o com o uso deste comando: **reinicialização do recurso pcs openstack-nova-consoleauth:**

```
[stack@director ~]$ nova service-list | grep consoleauth

| 601 | nova-consoleauth | pod1-controller-0.localdomain  | internal          | enabled | up
| 2017-11-16T21:00:10.000000 | -               |
| 608 | nova-consoleauth | pod1-controller-1.localdomain  | internal          | enabled | up
| 2017-11-16T21:00:13.000000 | -               |
| 622 | nova-consoleauth | pod1-controller-3.localdomain  | internal          | enabled | up
| 2017-11-16T21:00:13.000000 | -
```

Reinicie a cerca nos nós da controladora

Etapa 1. Verifique todos os controladores da rota IP para a nuvem inferior 192.0.0.0/8

```
[root@pod1-controller-3 ~]# ip route
default via 172.25.22.1 dev vlan101
11.117.0.0/24 dev vlan17  proto kernel  scope link  src 11.117.0.12
11.118.0.0/24 dev vlan18  proto kernel  scope link  src 11.118.0.12
11.119.0.0/24 dev vlan19  proto kernel  scope link  src 11.119.0.12
11.120.0.0/24 dev vlan20  proto kernel  scope link  src 11.120.0.12
169.254.169.254 via 192.200.0.1 dev eno1
172.25.22.0/24 dev vlan101  proto kernel  scope link  src 172.25.22.102
192.0.0.0/8 dev eno1  proto kernel  scope link  src 192.200.0.103
```

Etapa 2. Verifique a configuração **contínua** atual. Remova qualquer referência ao nó antigo do controlador.

```
[root@pod1-controller-3 ~]# sudo pcs stonith show --full
 Resource: my-ipmilan-for-controller-6 (class=stonith type=fence_ipmilan)
 Attributes: pcmk_host_list=pod1-controller-1 ipaddr=192.100.0.1 login=admin
passwd=Csco@123Starent lanplus=1
 Operations: monitor interval=60s (my-ipmilan-for-controller-6-monitor-interval-60s)
 Resource: my-ipmilan-for-controller-4 (class=stonith type=fence_ipmilan)
 Attributes: pcmk_host_list=pod1-controller-0 ipaddr=192.100.0.14 login=admin
passwd=Csco@123Starent lanplus=1
 Operations: monitor interval=60s (my-ipmilan-for-controller-4-monitor-interval-60s)
Resource: my-ipmilan-for-controller-7 (class=stonith type=fence_ipmilan)
 Attributes: pcmk_host_list=pod1-controller-2 ipaddr=192.100.0.15 login=admin
```

```
passwd=Csco@123Starent lanplus=1
 Operations: monitor interval=60s (my-ipmilan-for-controller-7-monitor-interval-60s)

[root@pod1-controller-3 ~]# pcs stonith delete my-ipmilan-for-controller-7
Attempting to stop: my-ipmilan-for-controller-7...Stopped
```

Etapa 3. Adicione a configuração confiável para um novo controlador.

```
[root@pod1-controller-3 ~]sudo pcs stonith create my-ipmilan-for-controller-8 fence_ipmilan
pcmk_host_list=pod1-controller-3 ipaddr=<CIMC_IP> login=admin passwd=<PASSWORD> lanplus=1 op
monitor interval=60s
```

Etapa 4. Reinicie a vedação de qualquer controlador e verifique o status.

```
[root@pod1-controller-1 ~]# sudo pcs property set stonith-enabled=true
[root@pod1-controller-3 ~]# pcs status

<snip>
my-ipmilan-for-controller-1 (stonith:fence_ipmilan): Started pod1-controller-3
my-ipmilan-for-controller-0 (stonith:fence_ipmilan): Started pod1-controller-3
my-ipmilan-for-controller-3 (stonith:fence_ipmilan): Started pod1-controller-3
```