

# Ultra-M UCS 240M4单硬盘故障 — 热插拔程序 — CPAR

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## 简介

本文档介绍在Ultra-M设置中更换服务器中故障硬盘驱动器(HDD)所需的步骤。

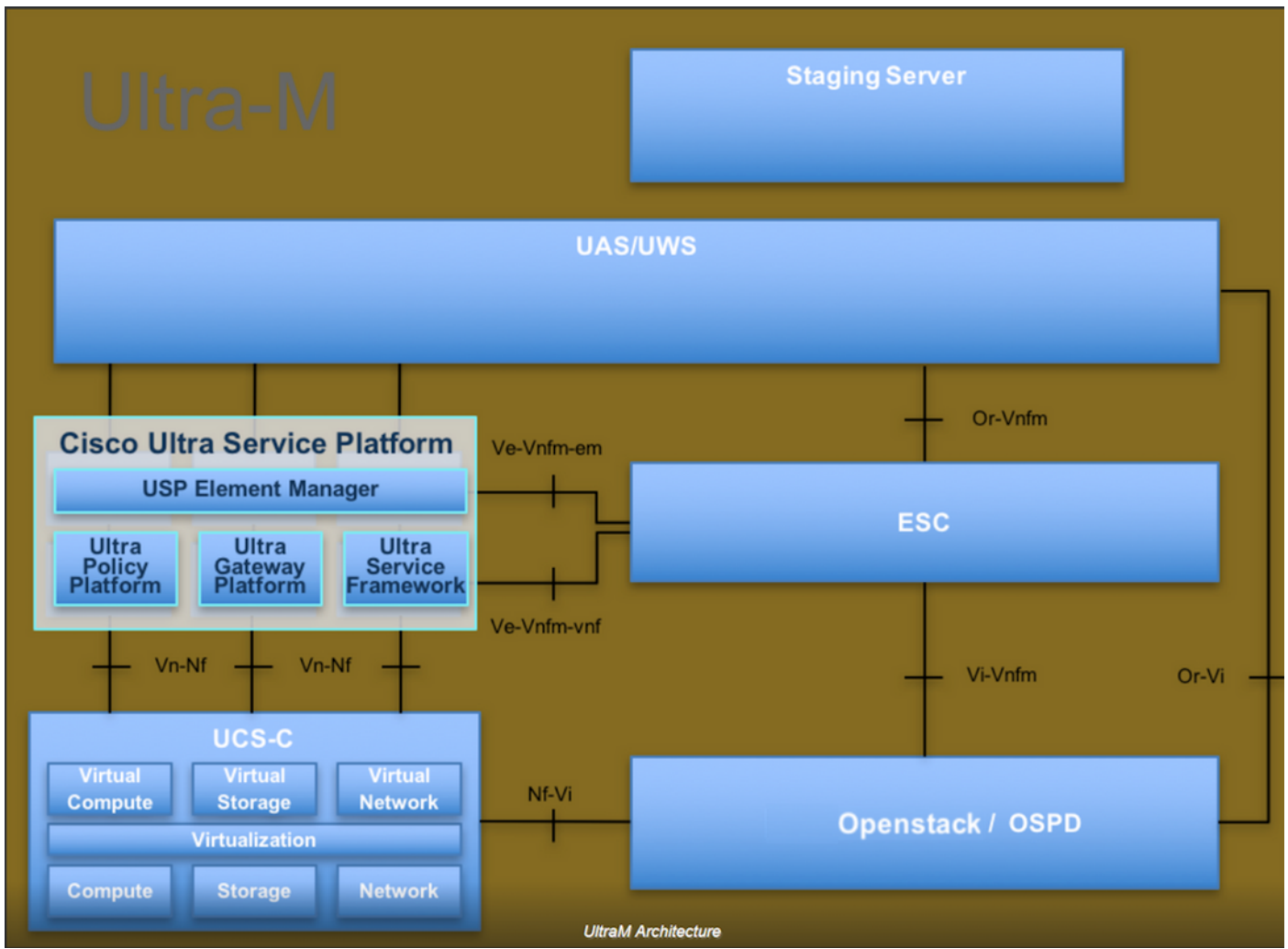
此过程适用于NEWTON版本的OpenStack环境，其中ESC不管理CPAR，CPAR直接安装在部署在OpenStack上的虚拟机(VM)上。

## 背景信息

Ultra-M是预打包和验证的虚拟化移动数据包核心解决方案，旨在简化虚拟网络功能(VNF)的部署。OpenStack是Ultra-M的虚拟基础设施管理器(VIM)，由以下节点类型组成：

- 计算
- 对象存储磁盘 — 计算 ( OSD — 计算 )
- 控制器
- OpenStack平台 — 导向器(OSPD)

此图中描述了Ultra-M的高级体系结构和涉及的组件：



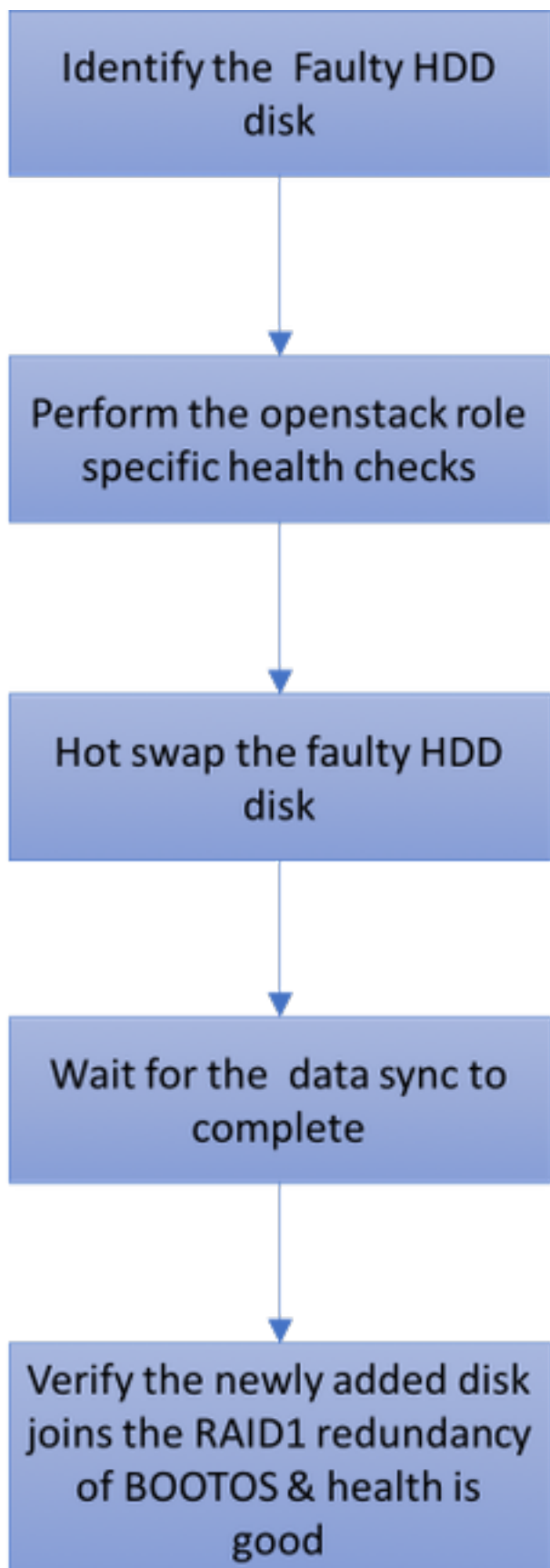
本文档面向熟悉Cisco Ultra-M平台的思科人员，并详细介绍在更换OSPD服务器时在OpenStack级别执行所需的步骤。

**注意：**为了定义本文档中的步骤，我们考虑了Ultra M 5.1.x版本。

## 缩写

VNF	虚拟网络功能
MoP	程序方法
OSD	对象存储磁盘
OSPD	OpenStack平台导向器
硬盘	硬盘驱动器
SSD	固态驱动器
VIM	虚拟基础设施管理器
虚拟机	虚拟机
EM	元素管理器
UAS	超自动化服务
UUID	通用唯一标识符

## MoP workflow



## 单硬盘故障

1. 每台裸机服务器都配置了两个HDD驱动器，以在Raid 1配置中充当BOOT DISK。在单个HDD发生故障时，由于存在RAID 1级冗余，故障HDD驱动器可以热插拔。
2. 有关更换UCS C240 M4服务器上故障组件的步骤，请参阅：[更换服务器组件](#)。

3. 如果单个HDD发生故障，则仅热交换故障HDD，因此更换新磁盘后无需BIOS升级过程。
4. 更换磁盘后，必须等待磁盘之间的数据同步。可能需要数小时才能完成。
5. 在基于OpenStack(Ultra-M)的解决方案中，UCS 240M4裸机服务器可以承担以下角色之一：计算、OSD — 计算、控制器和OSPD。在这些服务器角色中处理单个HDD故障所需的步骤相同，此部分介绍在热交换磁盘之前要执行的运行状况检查。

## 计算服务器上的单硬盘故障

1. 如果UCS 240M4 (充当计算节点) 中观察到HDD驱动器故障，请在执行故障磁盘热插拔之前执行此运行状况检查。
2. 确定在此服务器上运行的VM，并验证功能状态是否正常。

## 识别托管在计算节点中的虚拟机

确定托管在计算服务器上的VM，并验证它们是否处于活动状态并正在运行。

```
[stack@director ~]$ nova list
| 46b4b9eb-a1a6-425d-b886-a0ba760e6114 | AAA-CPAR-testing-instance | pod2-stack-compute-
4.localdomain |
```

## 运行状况检查

步骤1.在操作系统(OS)级别运行命令/opt/CSCOar/bin/arstatus。

```
[root@aaa04 ~]# /opt/CSCOar/bin/arstatus
Cisco Prime AR RADIUS server running      (pid: 24834)
Cisco Prime AR Server Agent running       (pid: 24821)
Cisco Prime AR MCD lock manager running   (pid: 24824)
Cisco Prime AR MCD server running         (pid: 24833)
Cisco Prime AR GUI running                (pid: 24836)
SNMP Master Agent running                 (pid: 24835)
[root@wscaaa04 ~]#
```

步骤2.在操作系统级别运行命令/opt/CSCOar/bin/aregcmd并输入管理员凭证。验证CPAR运行状况是10/10，并退出CPAR CLI。

```
[root@aaa02 logs]# /opt/CSCOar/bin/aregcmd
Cisco Prime Access Registrar 7.3.0.1 Configuration Utility
Copyright (C) 1995-2017 by Cisco Systems, Inc. All rights reserved.
Cluster:
User: admin
Passphrase:
Logging in to localhost
[ //localhost ]
```

```
LicenseInfo = PAR-NG-TPS 7.2(100TPS:)
PAR-ADD-TPS 7.2(2000TPS:)
PAR-RDDR-TRX 7.2()
```

```
Radius/
```

```
Administrators/
```

```
Server 'Radius' is Running, its health is 10 out of 10
```

```
--> exit
```

步骤3.运行命令netstat | grep diameter并验证是否已建立所有Diameter路由代理(DRA)连接。

此处提到的输出适用于需要Diameter链路的环境。如果显示的链路较少，则表示与需要分析的DRA断开。

```
[root@aa02 logs]# netstat | grep diameter
tcp        0      0  aaa02.aaa.epc.:77  mp1.dra01.d:diameter ESTABLISHED
tcp        0      0  aaa02.aaa.epc.:36  tsa6.dra01:diameter ESTABLISHED
tcp        0      0  aaa02.aaa.epc.:47  mp2.dra01.d:diameter ESTABLISHED
tcp        0      0  aaa02.aaa.epc.:07  tsa5.dra01:diameter ESTABLISHED
tcp        0      0  aaa02.aaa.epc.:08  np2.dra01.d:diameter ESTABLISHED
```

步骤4.检查TPS日志是否显示CPAR正在处理的请求。突出显示的值代表TPS，这些值是您需要注意的值。

TPS的值不得超过1500。

```
[root@wscaaa04 ~]# tail -f /opt/CSC0ar/logs/tps-11-21-2017.csv
11-21-2017,23:57:35,263,0
11-21-2017,23:57:50,237,0
11-21-2017,23:58:05,237,0
11-21-2017,23:58:20,257,0
11-21-2017,23:58:35,254,0
11-21-2017,23:58:50,248,0
11-21-2017,23:59:05,272,0
11-21-2017,23:59:20,243,0
11-21-2017,23:59:35,244,0
11-21-2017,23:59:50,233,0
```

步骤5.在name\_radius\_1\_log中查找任何“错误”或“警报”消息

```
[root@aaa02 logs]# grep -E "error|alarm" name_radius_1_log
```

步骤6.要验证CPAR进程使用的内存量，请运行以下命令：

```
top | grep radius
```

```
[root@sfraaa02 ~]# top | grep radius
27008 root      20    0 20.228g 2.413g 11408 S 128.3  7.7  1165:41 radius
```

此突出显示值必须低于7Gb，这是应用级别允许的最大值。

步骤7.要验证磁盘利用率，请运行命令df -h。

```
[root@aaa02 ~]# df -h
Filesystem                Size      Used Avail Use% Mounted on
/dev/mapper/vg_arucsvm51-lv_root 26G       21G   4.1G  84% /
tmpfs                      1.9G       268K   1.9G   1% /dev/shm
/dev/sda1                  485M       37M   424M   8% /boot
```

```
/dev/mapper/vg_arucsvm51-lv_home 23G 4.3G 17G 21% /home
```

此总值必须低于80%，如果超过80%，则识别不必要的文件并进行清理。

步骤8. 检验是否未生成“核心”文件。

- 当CPAR无法处理异常时，在应用崩溃时生成核心文件，并在以下两个位置生成：

```
[root@aaa02 ~]# cd /cisco-ar/  
[root@aaa02 ~]# cd /cisco-ar/bin
```

这两个位置中不得有任何核心文件。如果找到，请提交Cisco TAC案例，以确定此类异常的根本原因，并附加核心文件进行调试。

- 如果运行状况检查正常，请继续执行故障磁盘热插拔过程，并等待数据同步，因为需要数小时才能完成。

### [更换服务器组件](#)

- 重复运行状况检查步骤，以确认托管在计算节点上的虚拟机的运行状况已恢复。

## 控制器服务器上的单硬盘故障

- 如果UCS 240M4（充当控制器节点）中观察到HDD驱动器故障，请在执行故障磁盘热插拔之前执行这些运行状况检查。
- 检查控制器上的Pacemaker状态。
- 登录到其中一个活动控制器并检查起搏器状态。所有服务必须在可用控制器上运行，并在故障控制器上停止。

```
[heat-admin@pod2-stack-controller-0 ~]$ sudo pcs status  
Cluster name: tripleo_cluster  
Stack: corosync  
Current DC: pod2-stack-controller-2 (version 1.1.15-11.e17_3.4-e174ec8) - partition with quorum  
Last updated: Tue Jul 10 10:04:15 2018 Last change: Fri Jul 6 09:03:35 2018 by root via  
crm_attribute on pod2-stack-controller-0
```

```
3 nodes and 19 resources configured
```

```
Online: [ pod2-stack-controller-0 pod2-stack-controller-1 pod2-stack-controller-2 ]
```

```
Full list of resources:
```

```
ip-11.120.0.49(ocf::heartbeat:IPaddr2):Started pod2-stack-controller-1  
Clone Set: haproxy-clone [haproxy]  
Started: [ pod2-stack-controller-0 pod2-stack-controller-1 pod2-stack-controller-2 ]  
Master/Slave Set: galera-master [galera]  
Masters: [ pod2-stack-controller-0 pod2-stack-controller-1 pod2-stack-controller-2 ]  
ip-192.200.0.110(ocf::heartbeat:IPaddr2):Started pod2-stack-controller-1  
ip-11.120.0.44(ocf::heartbeat:IPaddr2):Started pod2-stack-controller-2  
ip-11.118.0.49(ocf::heartbeat:IPaddr2):Started pod2-stack-controller-2  
Clone Set: rabbitmq-clone [rabbitmq]  
Started: [ pod2-stack-controller-0 pod2-stack-controller-1 pod2-stack-controller-2 ]  
ip-10.225.247.214(ocf::heartbeat:IPaddr2):Started pod2-stack-controller-1  
Master/Slave Set: redis-master [redis]  
Masters: [ pod2-stack-controller-2 ]
```

```
Slaves: [ pod2-stack-controller-0 pod2-stack-controller-1 ]
ip-11.119.0.49(ocf::heartbeat:IPAddr2):Started pod2-stack-controller-2
openstack-cinder-volume(systemd:openstack-cinder-volume):Started pod2-stack-controller-1
```

Daemon Status:

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

- 检查活动控制器中的MariaDB状态。

```
[stack@director ~]$ nova list | grep control
| b896c73f-d2c8-439c-bc02-7b0a2526dd70 | pod2-stack-controller-0 | ACTIVE | - | Running |
ctlplane=192.200.0.113 |
| 2519ce67-d836-4e5f-a672-1a915df75c7c | pod2-stack-controller-1 | ACTIVE | - | Running |
ctlplane=192.200.0.105 |
| e19b9625-5635-4a52-a369-44310f3e6a21 | pod2-stack-controller-2 | ACTIVE | - | Running |
ctlplane=192.200.0.120 |
```

```
[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 192.200.0.110 ; do echo "*** $i ***" ; ssh
heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_st5 192.200.0.110 ; do echo
*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_st ; do echo
*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_st3 ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_st ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_s1 ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local_9 ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_local2 ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_loca. ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_loc2 ; do
echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_lo0 ; do echo
*** $i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_l0 ; do echo "***
$i ***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep_. ; do echo "*** $i
***" ; ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsrep0 ; do echo "*** $i ***" ;
ssh heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsre. ; do echo "*** $i ***" ; ssh
heat-admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'wsr1 ; do echo "*** $i ***" ; ssh heat-
admin@$i "sudo mysql --exec=\"SHOW STATUS LIKE 'ws2 ; do echo "*** $i ***" ; ssh heat-admin@$i
"sudo mysql --exec=\"SHOW STATUS LIKE 'w0 ; do echo "*** $i ***" ; ssh heat-admin@$i "sudo mysql
--exec=\"SHOW STATUS LIKE '
```

```
*** 192.200.0.102 ***
Variable_nameValue
wsrep_local_state_commentSynced
Variable_nameValue
wsrep_cluster_size2
*** 192.200.0.110 ***
Variable_nameValue
wsrep_local_state_commentSynced
Variable_nameValue
wsrep_cluster_size2
```

- 验证每个活动控制器都存在以下线路：

```
wsrep_local_state_comment: Synced
```

```
wsrep_cluster_size: 2
```

- 在活动控制器中检查Rabbitmq状态。

```
[heat-admin@pod2-stack-controller-0 ~]$ sudo rabbitmqctl cluster_status
Cluster status of node 'rabbit@pod2-stack-controller-0' ...
[{nodes, [{disc, ['rabbit@pod2-stack-controller-0',
'rabbit@pod2-stack-controller-1',
'rabbit@pod2-stack-controller-2']}]},
{running_nodes, ['rabbit@pod2-stack-controller-1',
'rabbit@pod2-stack-controller-2',
'rabbit@pod2-stack-controller-0']},
{cluster_name, <<"rabbit@pod2-stack-controller-1.localdomain">>},
{partitions, []},
{alarms, [{'rabbit@pod2-stack-controller-1', []},
{'rabbit@pod2-stack-controller-2', []},
{'rabbit@pod2-stack-controller-0', []}]}}
```

- 如果运行状况检查正常，请继续执行故障磁盘热插拔过程，并等待数据同步，因为需要数小时才能完成。

### [更换服务器组件](#)

- 重复运行状况检查步骤，以确认控制器的运行状况已恢复。

## OSD-Compute服务器上的单硬盘故障

- 如果UCS 240M4 (充当OSD计算节点)中观察到HDD驱动器故障，请在执行故障磁盘热插拔之前执行运行状况检查。

1. 识别OSD计算节点中托管的虚拟机
2. 确定托管在计算服务器上的虚拟机

```
[stack@director ~]$ nova list
| 46b4b9eb-a1a6-425d-b886-a0ba760e6114 | AAA-CPAR-testing-instance | pod2-stack-compute-4.localdomain |
```

- CEPH进程在osd-compute服务器上处于活动状态。

```
[heat-admin@pod2-stack-osd-compute-1 ~]$ systemctl list-units *ceph*
```

```
UNIT LOAD ACTIVE SUB DESCRIPTION
var-lib-ceph-osd-ceph\x2d1.mount loaded active mounted /var/lib/ceph/osd/ceph-1
var-lib-ceph-osd-ceph\x2d10.mount loaded active mounted /var/lib/ceph/osd/ceph-10
var-lib-ceph-osd-ceph\x2d4.mount loaded active mounted /var/lib/ceph/osd/ceph-4
var-lib-ceph-osd-ceph\x2d7.mount loaded active mounted /var/lib/ceph/osd/ceph-7
ceph-osd@1.service loaded active running Ceph object storage daemon
ceph-osd@10.service loaded active running Ceph object storage daemon
ceph-osd@4.service loaded active running Ceph object storage daemon
ceph-osd@7.service loaded active running Ceph object storage daemon
system-ceph\x2ddisk.slice loaded active active system-ceph\x2ddisk.slice
system-ceph\x2dosd.slice loaded active active system-ceph\x2dosd.slice
ceph-mon.target loaded active active ceph target allowing to start/stop all ceph-mon@.service instances at once
ceph-osd.target loaded active active ceph target allowing to start/stop all ceph-osd@.service instances at once
ceph-radosgw.target loaded active active ceph target allowing to start/stop all ceph-radosgw@.service instances at once
ceph.target loaded active active ceph target allowing to start/stop all ceph*@.service instances at once
```



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.

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

- 验证OSD ( 硬盘 ) 到日志(SSD)的映射是否正常。

```
[heat-admin@pod2-stack-osd-compute-1 ~]$ sudo ceph-disk list
/dev/sda :
/dev/sda1 other, iso9660
/dev/sda2 other, xfs, mounted on /
/dev/sdb :
/dev/sdb1 ceph journal, for /dev/sdc1
/dev/sdb3 ceph journal, for /dev/sdd1
/dev/sdb2 ceph journal, for /dev/sde1
/dev/sdb4 ceph journal, for /dev/sdf1
/dev/sdc :
/dev/sdc1 ceph data, active, cluster ceph, osd.1, journal /dev/sdb1
/dev/sdd :
/dev/sdd1 ceph data, active, cluster ceph, osd.7, journal /dev/sdb3
/dev/sde :
/dev/sde1 ceph data, active, cluster ceph, osd.4, journal /dev/sdb2
/dev/sdf :
/dev/sdf1 ceph data, active, cluster ceph, osd.10, journal /dev/sdb4
```

- 验证CEPH运行状况和OSD树映射是否正常。

```
[heat-admin@pod2-stack-osd-compute-1 ~]$ sudo ceph -s
cluster eb2bb192-b1c9-11e6-9205-525400330666
health HEALTH_OK
monmap e1: 3 mons at {pod2-stack-controller-0=11.118.0.10:6789/0,pod2-stack-controller-1=11.118.0.11:6789/0,pod2-stack-controller-2=11.118.0.12:6789/0}
election epoch 10, quorum 0,1,2 pod2-stack-controller-0,pod2-stack-controller-1,pod2-stack-controller-2
osdmap e81: 12 osds: 12 up, 12 in
flags sortbitwise,require_jewel_osds
pgmap v23095222: 704 pgs, 6 pools, 809 GB data, 424 kobjects
2418 GB used, 10974 GB / 13393 GB avail
704 active+clean
client io 1329 kB/s wr, 0 op/s rd, 122 op/s wr
```

```
[heat-admin@pod2-stack-osd-compute-1 ~]$ sudo ceph osd tree
ID WEIGHT TYPE NAME UP/DOWN REWEIGHT PRIMARY-AFFINITY
-1 13.07996 root default
-2 4.35999 host pod2-stack-osd-compute-0
0 1.09000 osd.0 up 1.00000 1.00000
3 1.09000 osd.3 up 1.00000 1.00000
6 1.09000 osd.6 up 1.00000 1.00000
9 1.09000 osd.9 up 1.00000 1.00000
-3 4.35999 host pod2-stack-osd-compute-1
1 1.09000 osd.1 up 1.00000 1.00000
4 1.09000 osd.4 up 1.00000 1.00000
7 1.09000 osd.7 up 1.00000 1.00000
10 1.09000 osd.10 up 1.00000 1.00000
-4 4.35999 host pod2-stack-osd-compute-2
2 1.09000 osd.2 up 1.00000 1.00000
5 1.09000 osd.5 up 1.00000 1.00000
8 1.09000 osd.8 up 1.00000 1.00000
```

11 1.09000 osd.11 up 1.00000 1.00000

- 如果运行状况检查正常，请继续执行故障磁盘热插拔过程，并等待数据同步，因为它需要数小时才能完成。

### [更换服务器组件](#)

- 重复运行状况检查步骤，以确认托管在OSD-Compute节点上的虚拟机的运行状况已恢复。

## OSPD服务器上的单硬盘故障

- 如果UCS 240M4 (充当OSPD节点) 中观察到HDD驱动器故障，请在执行故障磁盘热插拔之前执行运行状况检查。
- 检查openstack堆栈和节点列表的状态。

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

- 检查所有下云服务是否都处于从OSP-D节点加载、活动和运行状态。

```
[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-metadata-agent.service loaded active running OpenStack Neutron Metadata Agent
neutron-openvswitch-agent.service loaded active running OpenStack Neutron Open vSwitch Agent
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.

lines 1-43

lines 2-44 37 loaded units listed. Pass --all to see loaded but inactive units, too.

To show all installed unit files use 'systemctl list-unit-files'.

lines 4-46/46 (END) lines 4-46/46 (END) lines 4-46/46 (END) lines 4-46/46 (END) lines 4-46/46 (END)

- 如果运行状况检查正常，请继续执行故障磁盘热插拔过程，并等待数据同步，因为它需要数小时才能完成。

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- 重复运行状况检查步骤，以确认OSPD节点的运行状况已恢复。