

配置APIC从6.0(2H)自动升级

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简介

本文档介绍思科应用策略基础设施控制器(APIC)的自动升级功能的工作原理。

何时需要它？

在现有的流程中，无论何时通过退货授权(RMA)收到新的APIC或新采购的APIC，都必须运行与ACI交换矩阵中相同的APIC版本才能加入集群。这要求先升级新APIC以匹配现有集群的版本，然后再将其添加到交换矩阵，这非常耗时且需要手动操作。

当您需要此功能时，有两个使用案例。

1. 更换故障APIC (RMA APIC)
2. APIC集群扩展

先决条件

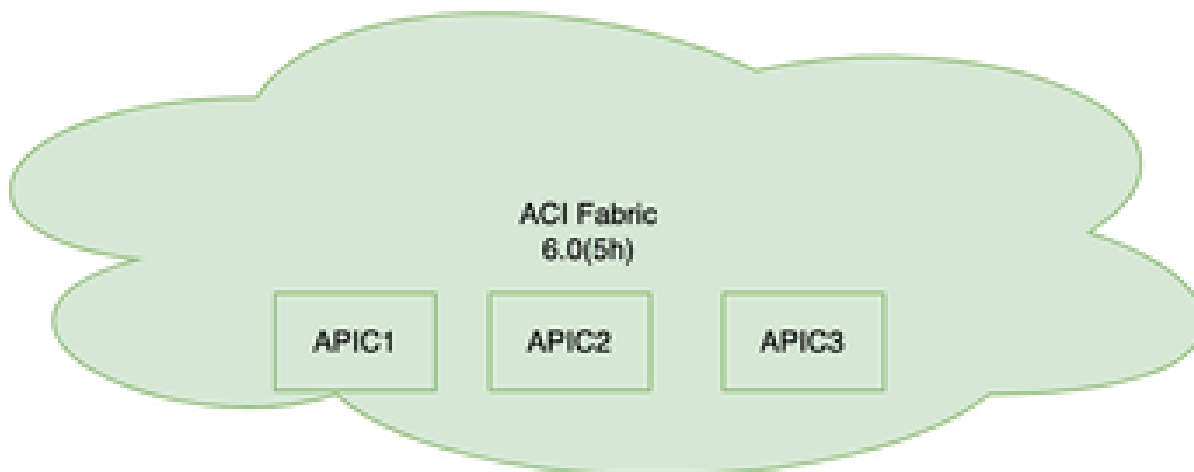
为了简化操作步骤并使其即插即用，从ACI版本6.0(2)及后续版本开始引入了APIC自动升级功能。

通过替换或添加将新APIC引入交换矩阵时，APIC软件必须与集群上运行的软件相匹配。这通常需要升级，升级过程需要花费额外时间才能完成，并且APIC需要花费额外时间才能加入交换矩阵

这是不需要任何配置的自动功能。

拓扑

在此拓扑中，您有三个运行ACI版本6.0(5h)的APIC，APIC3出现故障并需要更换。



执行APIC自动升级的步骤

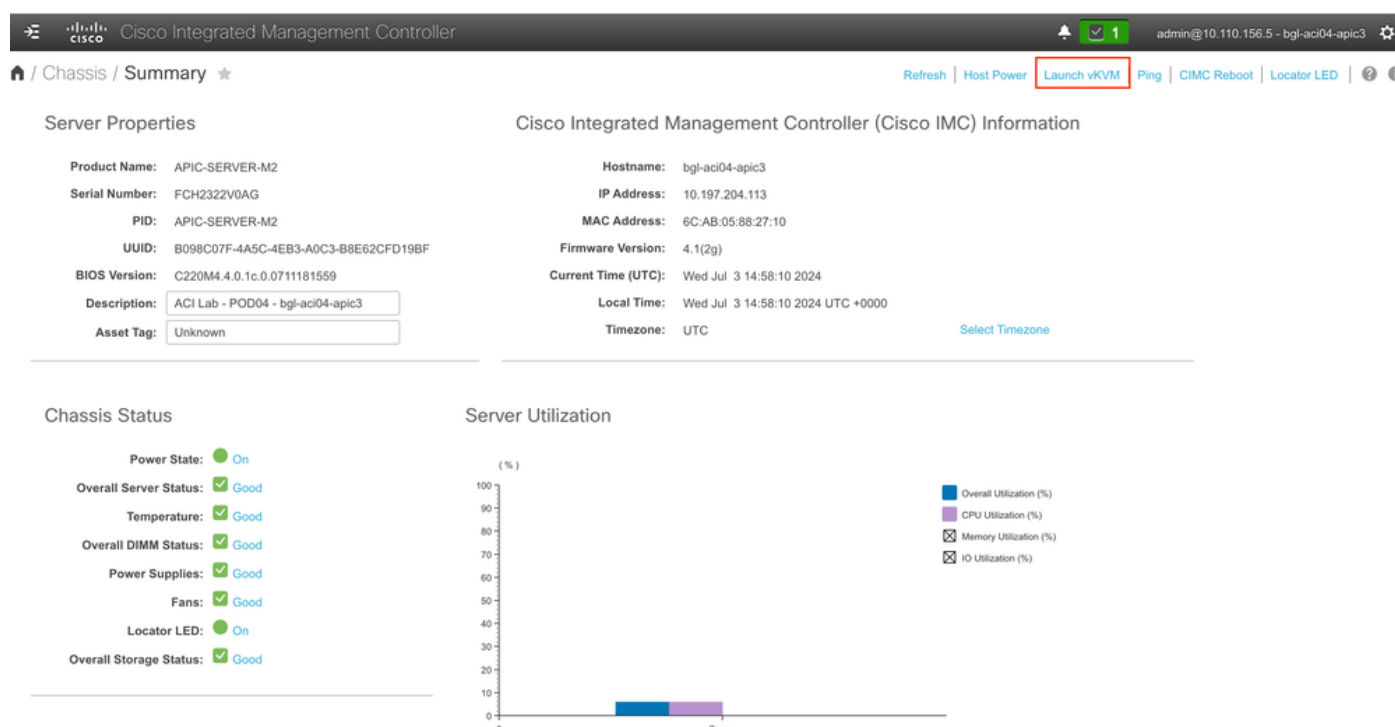
收到RMA APIC后，请配置思科集成管理控制器(CIMC) IP以匹配先前的CIMC地址。

步骤1: 登录CIMC GUI。

第二步：通过键盘、视频和鼠标KVM访问APIC。

导航到Launch vKVM > Click on it > One more window tab is going open > Click on hyperlink

<#root>





第三步：初始化新APIC以检查其运行的APIC版本（您可以使用任何虚拟交换矩阵发现参数，如交换矩阵名称、交换矩阵ID、TEP池等）

第四步：初始化新APIC后，请检查版本（您可以看到现有APIC版本为5.2.5c）

```
apic3# acidiag version <== To check the APIC version
5.2.5c
```

第五步：使用给定命令全新重新加载新APIC。

```
acidiag touch clean <== Commands to remove all configuration and reboot the devices
acidiag touch setup
acidiag reboot
```

第六步：收集 sam_exported.config从正在运行的APIC中获取此信息，以便在APIC初始化时使用。

```
apic1# cd /data/data_admin
apic1# pwd
/data/data_admin <=== Location of sam_exported.config file
apic1# ls -l | grep sam
-rw-r--r-- 1 root root 349 Jul  3 07:32 sam_exported.config
```

```
apic1# cat sam_exported.config
Setup for Active and Standby APIC
fabricDomain= bgl-aci04
fabricId= 1
systemName= bgl-aci04-apic1 <== APIC1 hostname , change based on APIC3
controllerID= 1
tepPool= 10.0.0.0/16
infraVlan= 3967
GIPo= 225.0.0.0/15
clusterSize= 5
standbyApic= NO
enableIPv4= Y
enableIPv6= N
firmwareVersion= 6.0(5h)
```

```
ifcIpAddr= 10.0.0.1
apicX= NO
podId= 1
standaloneApicCluster= no
oobIpAddr= 10.197.204.114/24 <== APIC1 OOB IP, Change based on APIC3
```

步骤 7. 使用步骤6中收集的数据初始化新的APIC。

```
Press Enter at anytime to assume the default values. Use ctrl-d
at anytime to restart from the beginning.

Cluster configuration ...
Enter the fabric name [bgl-aci04]:
Enter the fabric ID (1-128) [1]:
Enter the number of active controllers in the fabric (1-9) [3]:
Is this a standby controller? [NO]:
Enter the controller ID (1-3) [3]:
Standalone APIC Cluster ? yes/no [no]:
Enter the POD ID (1-254) [1]:
Enter the controller name [bgl-aci04-apic3]:
Enter address pool for TEP addresses [10.0.0.0/16]:
Note: The infra VLAN ID should not be used elsewhere in your environment
      and should not overlap with any other reserved VLANs on other platforms.
Enter the VLAN ID for infra network (1-4094) [3967]:

Out-of-band management configuration ...
Enable IPv6 for Out of Band Mgmt Interface? [N]:
Enter the IPv4 address [10.197.204.116/24]:
Enter the IPv4 address of the default gateway [10.197.204.1]:
Enter the interface speed/duplex mode [auto]:
```

```
admin user configuration ...
The admin user configuration will be synchronized
from the first controller after this controller
joins the cluster.

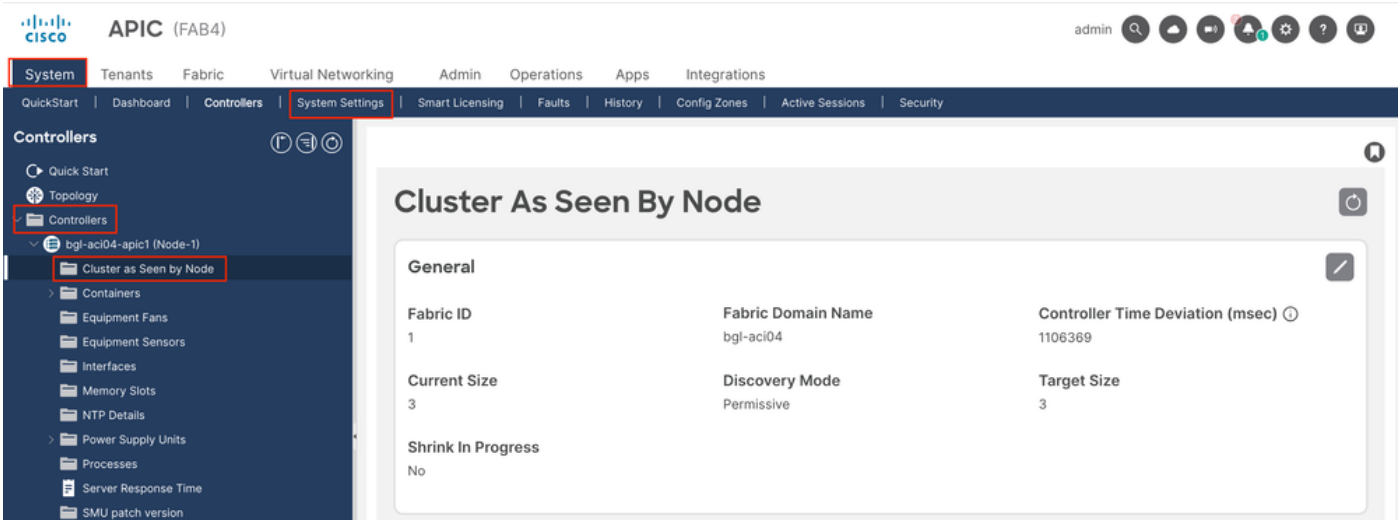
The above configuration will be applied ...

Warning: TEP address pool and Infra VLAN ID cannot be changed later,
these are permanent until the fabric is wiped.

Would you like to edit the configuration? (y/n) [n]:
```

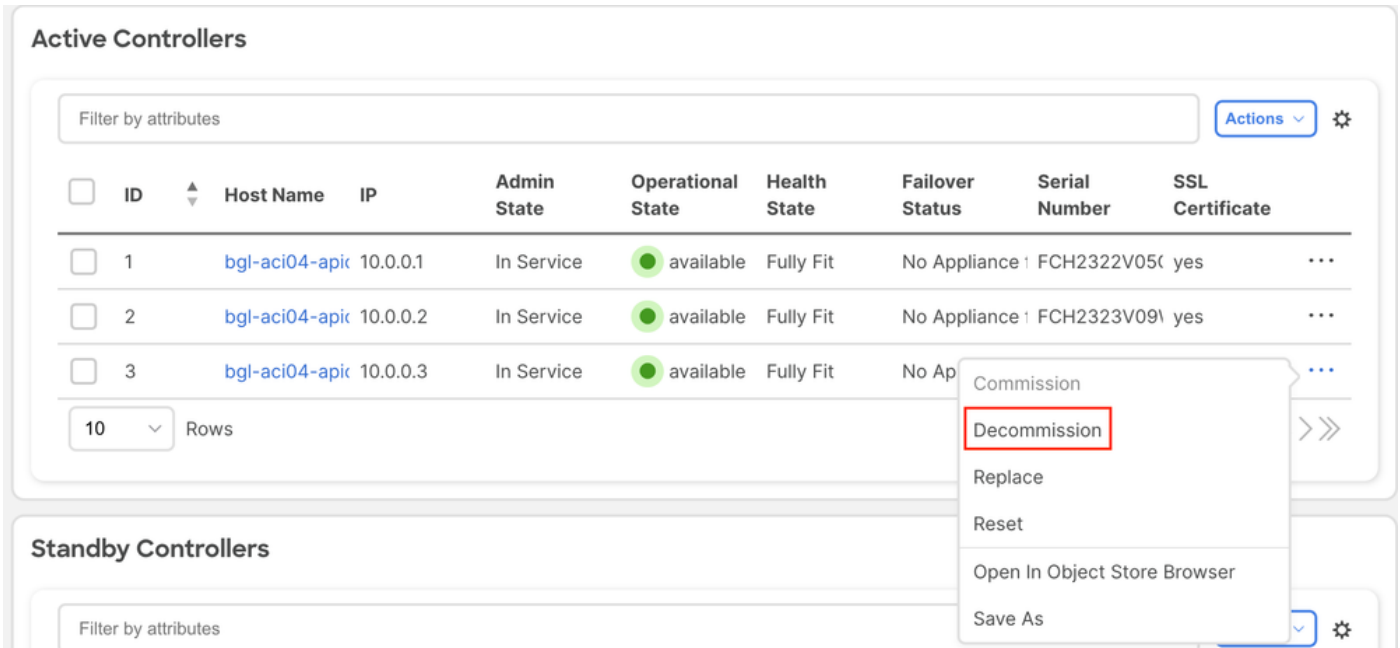
步骤 8 从APIC01 GUI停用故障APIC3

导航到System > System Settings > Controllers > Cluster as Seen by Node



单击设备右侧的三个点。点击Decommission

<#root>



步骤 9 验证节点的管理员状态，它显示为“停止服务”，并且停用选项呈灰色显示。

Cluster As Seen By Node

General

Fabric ID1Fabric Domain Namebgl-aci04Controller Time Deviation (msec) ⓘ1106369

Current Size3Discovery ModePermissiveTarget Size3

Shrink In ProgressNo

Active Controllers

Filter by attributes

☐	ID	Host Name	IP	Admin State	Operational State	Health State	Failover Status	Serial Number
☐	1	bgl-aci04-apic1	10.0.0.1	In Service	● available	Fully Fit	No Appliance failove	FCH2322V05G
☐	2	bgl-aci04-apic2	10.0.0.2	In Service	● available	Fully Fit	No Appliance failove	FCH2323V09W
☐	3	bgl-aci04-apic3	0.0.0.0	Out of Service	● unregistered	Unknown	No Appliance failove	

10Rows

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Commission

Decommission

Replace

Reset

Open In Object Store Browser

Save As

- 步骤 10 从机架中移除有故障的APIC3，然后在机架中安装新的APIC3。
- 步骤 11 将新APIC安装到机架中后，接通新APIC3的电源并连接电缆。电缆包括交换矩阵上行链路和管理端口。
- 步骤 12 等待10-15分钟，以便新APIC可以通电。通过CIMC KVM验证新APIC是否已通电且我们可以看到登录提示。（登录仅适用于rescue-user）
- 步骤 13 从APIC01 GUI委托APIC03。
- 导航到System > System Settings > Controllers > Cluster as Seen by Node
- 点击设备右侧的三个点>点击Commission

<#root>

Cluster As Seen By Node

General

Fabric ID
1

Fabric Domain Name
bgl-aci04

Controller Time Deviation (msec) ⓘ
1106369

Current Size
3

Discovery Mode
Permissive

Target Size
3

Shrink In Progress
No

Active Controllers

Filter by attributes

☐	ID	Host Name	IP	Admin State	Operational State	Health State	Failover Status	Serial Number
☐	1	bgl-aci04-apic1	10.0.0.1	In Service	● available	Fully Fit	No Appliance failove	FCH2322V05G
☐	2	bgl-aci04-apic2	10.0.0.2	In Service	● available	Fully Fit	No Appliance failove	FCH2323V09W
☐	3	bgl-aci04-apic3	0.0.0.0	Out of Service	● unregistered	Unknown	No Appliance failove	

10 Rows

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Commission

Decommission

Replace

Reset

Open In Object Store Browser

Save As

第14步：添加在故障/旧的APIC中使用的CIMC IP地址、用户名、密码，我们将替换这些地址。点击 Validate。一旦验证成功。

输入APIC名称、管理密码（交换矩阵中使用的当前密码）、POD ID、带外管理地址和IPV4网关，然后点击Apply。（所有这些参数在更换时均属于旧的APIC）。

Commission



Controller Type

Controller Type

Physical

Virtual

Connectivity Type

CIMC

OOB

IPv6

☐ Enabled

CIMC Details

IP Address *

10.197.204.113

Username *

admin

Password *

.....



Cancel

Apply

CIMC Details

IP Address *

10.197.204.113

Username *

admin

Password *



Validation Success

Commission



General

Name *

bgl-aci04-apic3

Admin Password *



Controller ID *

3

Pod ID *

1



Serial Number

FCH2322V0AG

Commission

.....

Controller ID *

3

Pod ID *

1

Serial Number

FCH2322V0AG

Out Of Band Network

IPv4 Address *

10.197.204.116/24

IPv4 Gateway *

10.197.204.1

Cancel

Apply

步骤 15 现在等待10-15分钟，以便使用5.2(5c) APIC版本将新APIC添加到交换矩阵。

```
apic1# acidiag avread

Local appliance ID=1 ADDRESS=10.0.0.1 TEP ADDRESS=10.0.0.0/16 ROUTABLE IP ADDRESS=0.0.0.0 CHASSIS_ID=8c
Cluster of 3 lm(t):1(2024-07-03T07:52:20.791+00:00) appliances (out of targeted 3 lm(t):3(2024-07-03T09
    appliance id=1 address=10.0.0.1 lm(t):1(2024-07-03T07:33:50.078+00:00) tep address=10.0.0.0/16
    appliance id=2 address=10.0.0.2 lm(t):3(2024-07-03T12:40:59.116+00:00) tep address=10.0.0.0/16
    appliance id=3 address=10.0.0.3 lm(t):101(2024-07-03T13:18:17.965+00:00) tep address=10.0.0.0/16
```

步骤 16 现有APIC会自动将此新APIC升级到6.0(5h)，并将它添加到集群中。您可以让其继续运行30分钟，并再次检查以前的avread输出。

```
apic1# acidiag avread
```

```
Local appliance ID=1 ADDRESS=10.0.0.1 TEP ADDRESS=10.0.0.0/16 ROUTABLE IP ADDRESS=0.0.0.0 CHASSIS_ID=8c
```

```
Cluster of 3 lm(t):1(2024-07-03T07:52:20.791+00:00) appliances (out of targeted 3 lm(t):3(2024-07-03T13
```

```
    appliance id=1  address=10.0.0.1 lm(t):1(2024-07-03T07:33:50.078+00:00) tep address=10.0.0.0/16
```

```
    appliance id=2  address=10.0.0.2 lm(t):3(2024-07-03T13:24:30.725+00:00) tep address=10.0.0.0/16
```

```
    appliance id=3  address=10.0.0.3 lm(t):102(2024-07-03T13:42:57.550+00:00) tep address=10.0.0.0/
```

要验证自动升级运行是否顺利，并且没有错误，请检查负责升级新增APIC的现有APIC上的
svc_ifc_appliancedirector.bin.log文件。

位置：/var/log/dme/log

```
svc_ifc_appliancedirector.bin.log | grep "ApplianceAutoUpgrade.cpp"
```

```
4411||2024-07-03T13:03:02.014060877+00:00||appliance_director||DBG4|||# Registered APICs:3|../applian
```

```
4411||2024-07-03T13:03:02.014069812+00:00||appliance_director||DBG4|||# APICs its version is same clus
```

```
4411||2024-07-03T13:03:02.014078887+00:00||appliance_director||DBG4|||# APICs its version is different
```

```
4442||2024-07-03T13:04:02.025327143+00:00||appliance_director||DBG4|||Try to upgrade Appliance3|../ap
```

```
4442||2024-07-03T13:04:02.025434226+00:00||appliance_director||DBG4|||ImageFile: /firmware/fwrepos/fwre
```

```
4442||2024-07-03T13:04:02.025661541+00:00||appliance_director||DBG4|||Running rsync -8 -avzk --timeout
```

```
4442||2024-07-03T13:04:03.001492232+00:00||appliance_director||DBG4|||Done: Copy auto_upgrade script t
```

```
4442||2024-07-03T13:04:03.001598593+00:00||appliance_director||DBG4|||Running rsync -8 -avzk --timeout
```

```
4442||2024-07-03T13:13:59.287332478+00:00||appliance_director||DBG4|||Done: Copy iimage file to remote
```

```
4442||2024-07-03T13:13:59.287418460+00:00||appliance_director||DBG4|||Running ssh -p 1022 -i /secureda
```

```
4442||2024-07-03T13:17:55.430111171+00:00||appliance_director||DBG4|||Run remote upgrade done|../appl
```

```
4442||2024-07-03T13:17:55.430203755+00:00||appliance_director||DBG4|||Decommissioning Appliance 3|../
```

```
4442||2024-07-03T13:20:25.430436301+00:00||appliance_director||DBG4|||Commissioning Appliance 3|../ap
```

步骤 17 如果自动APIC升级失败，则随后发生故障。

步骤 18. 对于失败的情况，您可以执行全新重新加载并将新APIC添加回ACI交换矩阵以进行发现，从而始终重新触发自动APIC升级。

如果这些步骤无法解决问题，请收集Techsupport日志并联系思科TAC以获得进一步帮助。

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