



CISCO Firepower Management Center Remediation Module for ACI User Guide

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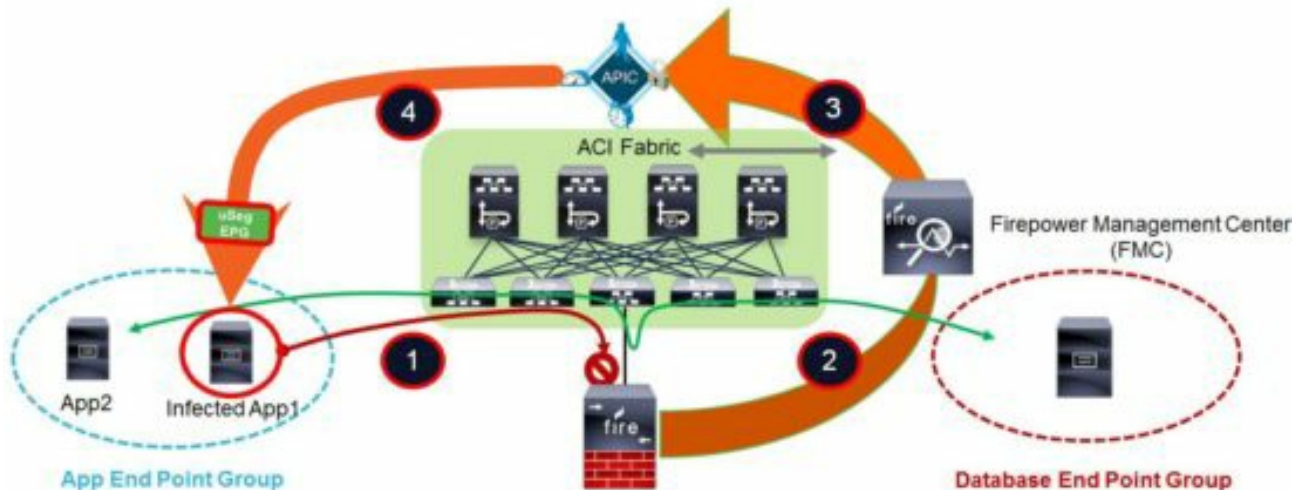
CISCO Firepower Management Center Remediation Module for ACI User Guide



1. About the Cisco Firepower Management Center Remediation Module for ACI

With the Cisco Firepower Management Center Remediation Module for ACI, when an attack on your network is detected by the Firepower Management Center, the offending endpoint can be completely quarantined in the Application Policy Infrastructure Controller (APIC) so that no further traffic is allowed to go in or out of that endpoint. The following illustration shows the relationship between the Firepower Management Center (FMC) and the APIC when the Remediation Module is installed:

FMC to APIC Rapid Threat Containment



The illustration above shows the following process of quarantining a network attack in the APIC:

- **Step 1:** An endpoint with an infected application in an endpoint group (EPG) launches an attack on your network. The attack is blocked inline by either a Cisco Firepower Next-Generation Firewall (physical or virtual), a Cisco ASA with FirePOWER Services, or a Cisco FirePOWER Appliance (physical or virtual).
- **Step 2:** An attack event is generated and sent to the FMC. The attack event includes information about the infected endpoint.
- **Step 3:** The attack event is configured to trigger the remediation module for APIC, which used the APIC northbound (NB) API to contain the infected endpoint in the ACI fabric.
- **Step 4:** The APIC quickly contains or quarantines the infected application workload into an isolated microsegment (uSeg) EPG.

Note Currently, this only works with east-west traffic, where the attacking host is deployed in the ACI and learned on the APIC. An attack from an external, outside source connected to the fabric by L3Out and its north-south traffic is not blocked.

Behavior Supported in Version 1.0.2

Note In VMware Distributed Virtual Switch (DVS) and Bare Metal deployments, not all switches can support uSeg quarantine functionality on the APIC. Contact your Cisco representative to determine which model(s) of the Cisco Nexus 9000 Series switches to order if you plan to use the uSeg quarantine feature in DVS and Bare Metal deployments.

This release enables you to quarantine offending endpoints that are detected by the Firepower Management Center, using the APIC version 1.2(7). For version 1.0.2 of the Cisco Firepower Management Center Remediation Module for ACI, the supported behavior when endpoints are quarantined is described in the following table:

	Cisco Application Virtual Switch (AVS)	VMware Distributed Virtual Switch (DVS)	Bare Metal
Verified in IPS inline mode	Yes	Yes	Yes
EPG bridge mode	Yes	Yes	Yes
EPG routed mode	Yes	No	No
Multiple IP to one MAC checking	No	Yes	Yes
Create only an IP address filter uSeg attribute	Yes	No	No
Create both an IP address filter and a MAC address filter uSeg attribute	No	Yes	Yes

2. Deploy the Cisco Firepower Management Center Remediation Module for ACI

Download, Install, and Configure the Cisco Firepower Management Center Remediation Module for ACI

To download, install, and configure the Cisco Firepower Management Center Remediation Module for ACI, complete the following procedure:

Step 1 Download the remediation module.

a. Go to the software download page:

<https://software.cisco.com/download/home/286259687/type/286311510/release/ACI>

b. Download the Cisco Firepower Management Center Remediation Module for ACI.

Step 2 Install the remediation module.

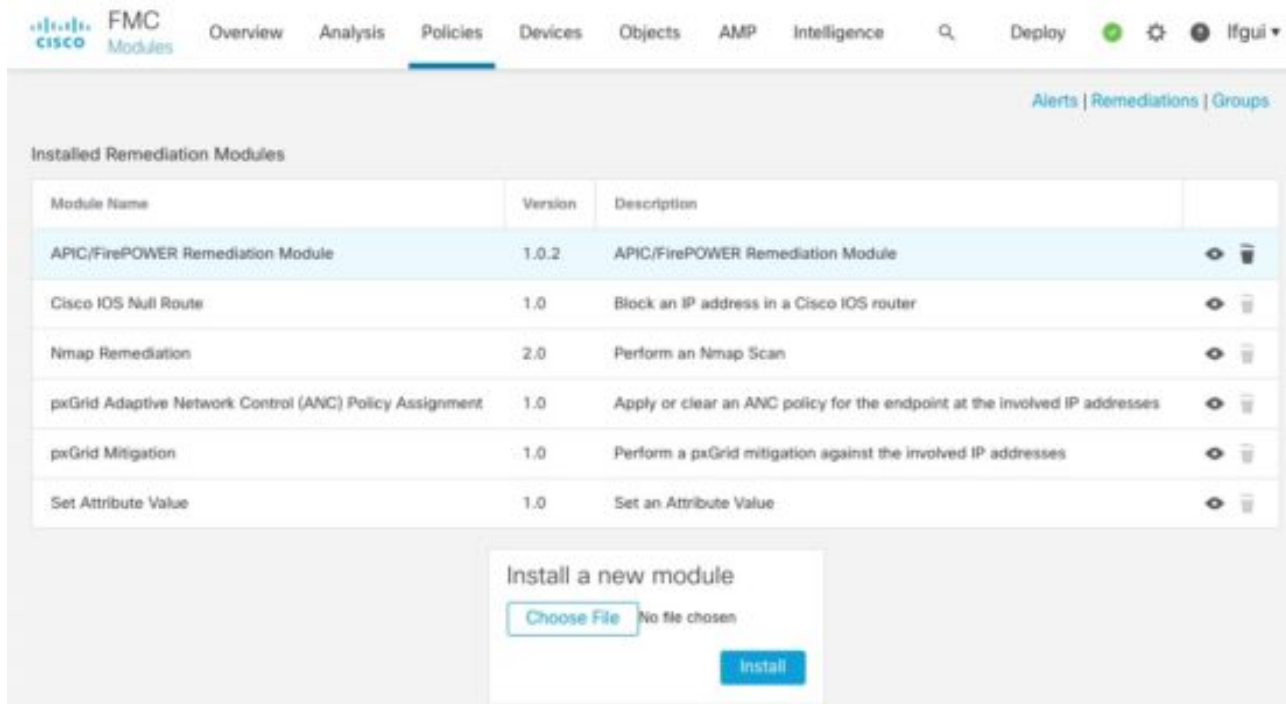
a. On the Policies tab of the FMC GUI, select the Actions > Modules sub-tab.

b. In the Install a New Module dialog box, click Choose File as shown below.

c. Select the file for the APIC/FMC Remediation Module.

d. Click Install.

When successfully installed, the Cisco Firepower Management Center Remediation Module for ACI is displayed in the list of installed remediation modules:



Step 3 Create an instance of the remediation module for each APIC server in your network.

- Click the edit icon for the remediation module in the list of installed remediation modules (on the Policies tab and Actions > Modules sub-tab, as shown above).
- Enter an Instance Name and optional Description.
- Enter the IP address, username, and password for the APIC server.
- Click Create.

The screenshot shows the 'Edit Instance' form for the APIC/FirePOWER Remediation Module. The form fields are as follows:

- Instance Name: RemIns102
- Module: APIC/FirePOWER Remediation Module(v1.0.2)
- Description: Quarantine a bad EP (End Point)
- APIC server username: admin
- APIC server password: (masked with dots)
- APIC server password (Retype to confirm): (masked with dots)
- APIC cluster instance 1 IP: 172.23.37.154
- APIC cluster instance 2 IP: (empty)
- APIC cluster instance 3 IP: (empty)
- APIC cluster instance 4 IP: (empty)
- APIC cluster instance 5 IP: (empty)

At the bottom right, there are 'Cancel' and 'Create' buttons. The 'Create' button is highlighted with a red circle.

Step 4 Create a Remediation Type for each instance of the APIC/FMC Remediation Module.

- On the Policies tab and Actions > Instances sub-tab, click the edit icon for the instance of the APIC/FMC Remediation Module that you just created.
- Select Quarantine an End Point on APIC.

- c. Click Add.
- d. Click Save.

Policies Devices Objects AMP Intelligence

Edit Instance

Instance Name Remins102

Module APIC/FirePOWER Remediation Module(v1.0.2)

Description

APIC server username

APIC server password
Retype to confirm

APIC cluster instance 1 IP



APIC cluster instance 2 IP

APIC cluster instance 3 IP

APIC cluster instance 4 IP

APIC cluster instance 5 IP

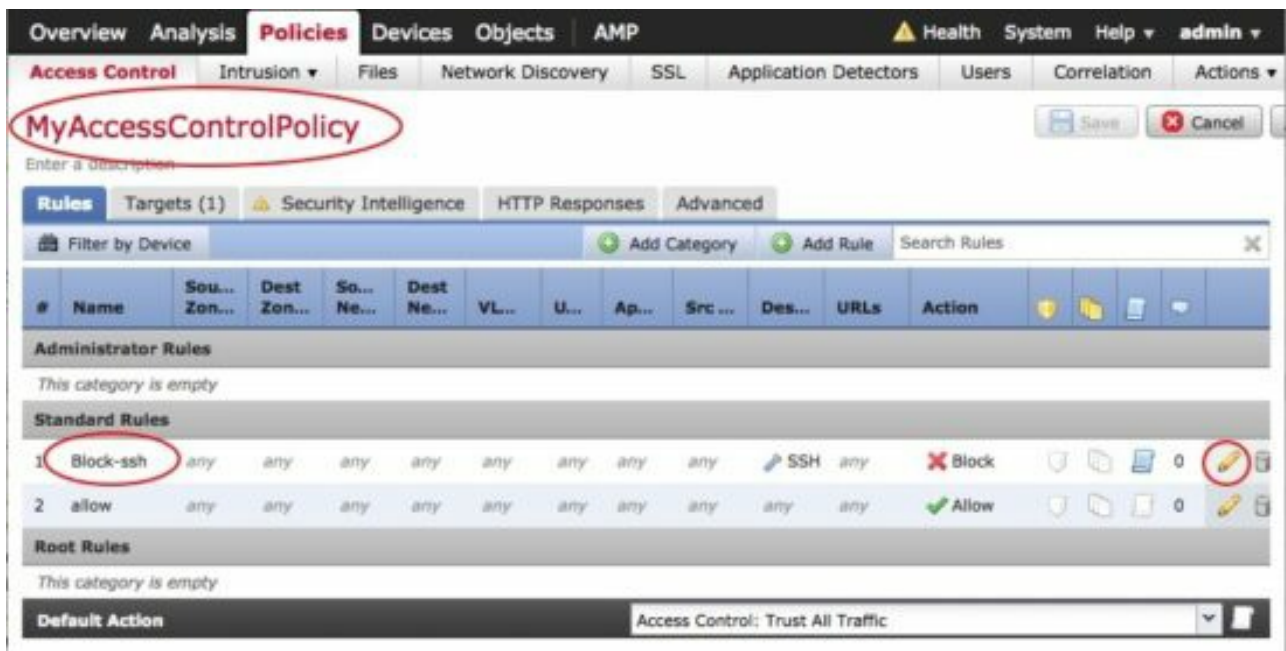
Configured Remediations

Remediation Name	Remediation Type	Description	
QuarantineBadEP	Quarantine an End Point on APIC		 

Add a new remediation of type

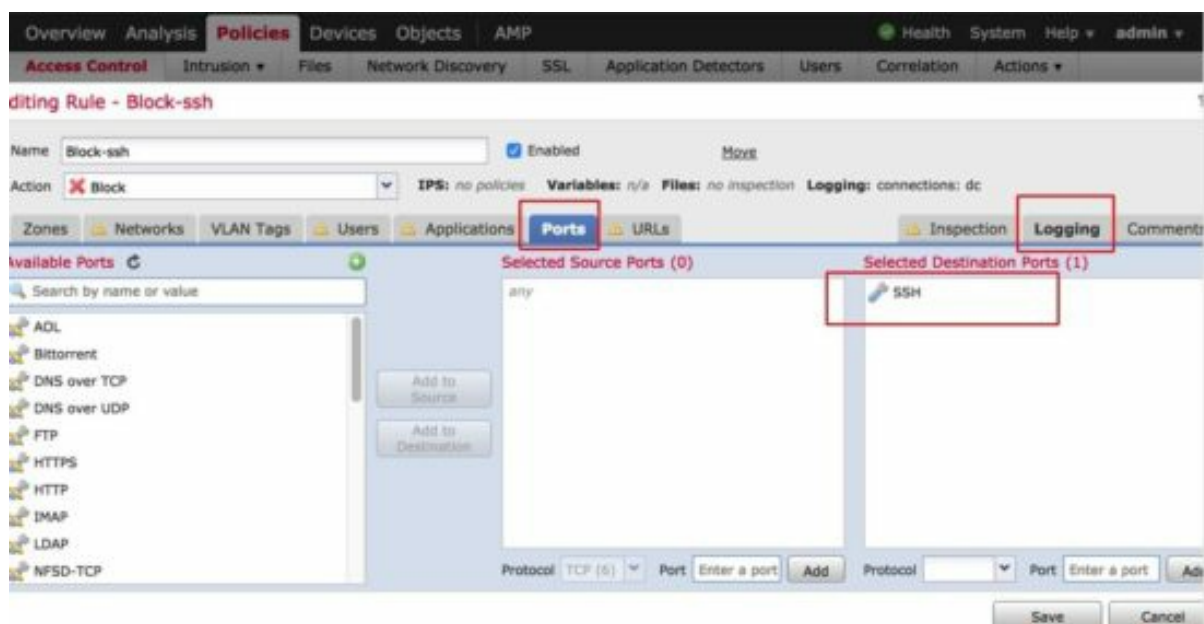
Step 5 Configure an access control policy.

- a. Navigate to Policies > Access Control > Rules to add a rule (for example, a Block-ssh rule).
- b. Click the Edit icon for the Standard Rules to configure a rule to block SSH.



c. Select **Block** for the **Action**.

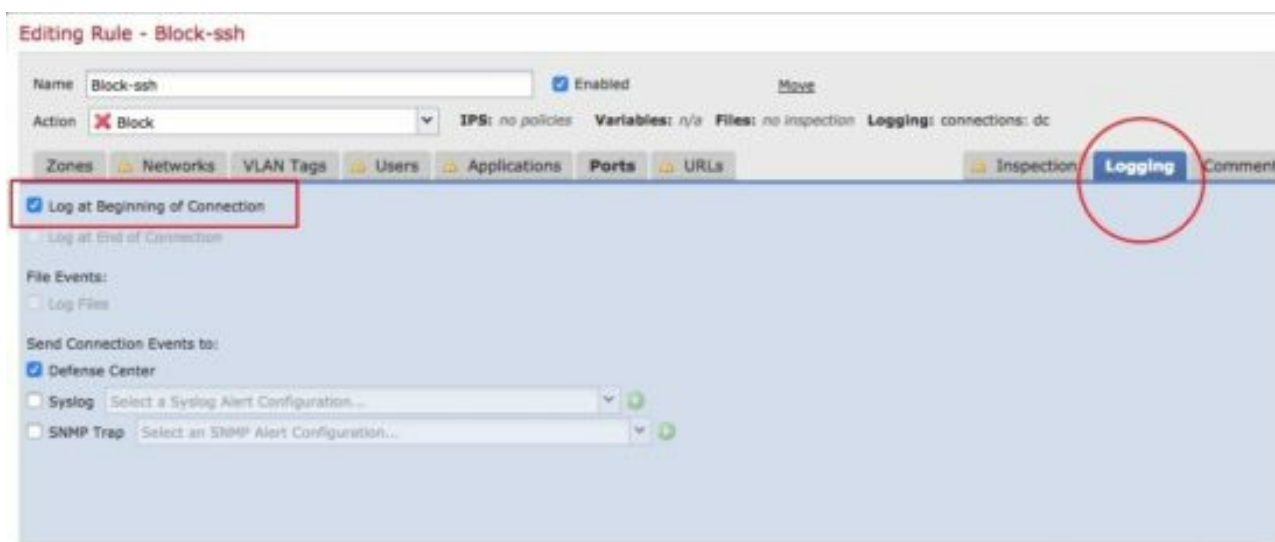
d. On the **Ports** tab, select **SSH** from the list of protocols for the Destination Port and click **Add**.



e. Click Save.

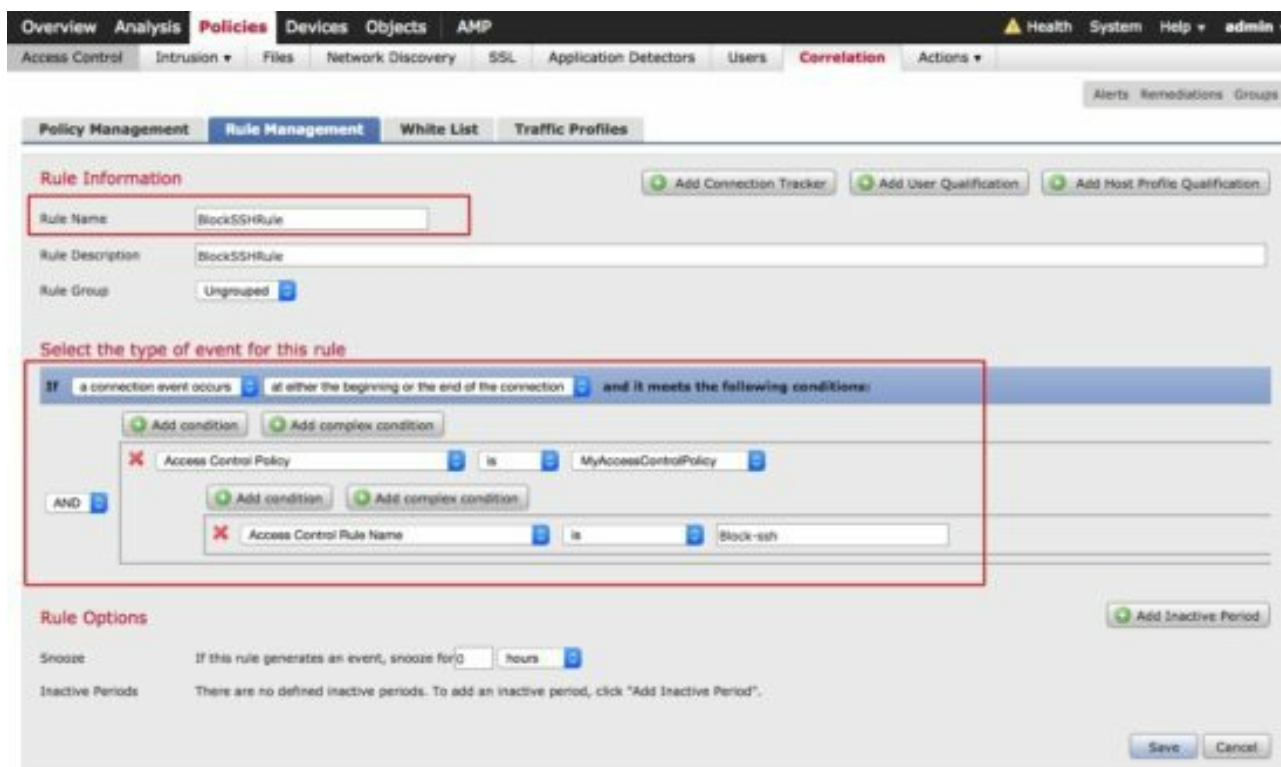
f. On the Logging tab, select Log at Beginning of Connection.

g. Click Save.



Step 6 Configure a correlation rule.

- Navigate to Policies > Correlation > Rule Management.
- Enter a Rule Name.
- In the "Select the type of event for this rule" section, select a connection event occurs and at either the beginning or the end of the connection.
- Click the drop-down icon and select Access Control Policy and the name of the access control policy that you previously configured in Step 5.
- Click Add condition and change the operator from OR to AND.
- Select Access Control Rule Name, select Is, and select the rule you created (such as Block-ssh in this example).
- Click Save.



Step 7 Associate the instance of the remediation module with a correlation rule as a response.

- Navigate to Policies > Correlation > Policy Management.
- Enter a Policy Name and optional Policy Description and Default Priority.
- Click Add Rules and select BlockSSHRule.
- Click Add and click on the red-colored Responses icon.
- Select QuarantineBadEP (Remediation) from the Unassigned Responses box to Assigned Responses box.
- Click Update and Save.

Overview Analysis **Policies** Devices Objects AMP Health System Help admin

Access Control Intrusion Files Network Discovery SSL Application Detectors Users **Correlation** Actions Alerts Remediations Groups

Policy Management Rule Management White List Traffic Profiles

Correlation Policy Information

Policy Name: BlockSSHPolicy

Policy Description: BlockSSHPolicy

Default Priority: None

Save Cancel

Policy Rules

Add Rules

Rule	Responses	Priority
BlockSSHRule	QuarantineBadEP (Remediation)	Default

Verify that the Remediation Executed Properly

Because remediations can fail for various reasons, complete the following steps to verify that no error messages are listed for the remediation status on the Cisco FMC.

Step 1 On the Analysis tab of the FMC GUI, select the Correlation > Status tab.

Step 2 In the Remediation Status table, find the row for your policy and view the result message.

Overview **Analysis** Policies Devices Objects AMP Health System Help admin

Context Explorer Connections Intrusions Files Hosts Users Vulnerabilities **Correlation > Status**

Bookmark This Page Report Designer View Bookmarks Search

Remediation Status

Table View of Remediations

2016-07-06 08:29:00 - 2016-07-07 08:22:15 Expanding

No Search Constraints (Edit Search)

Jump to...

	Time	Remediation Name	Policy	Rule	Result Message
	2016-07-06 10:34:45	QuarantineBadHost	BlockSSHPolicy	BlockSSHRule	Successful completion of remediation
	2016-07-06 08:37:14	QuarantineBadHost	BlockSSHPolicy	BlockSSHRule	Error with input provided to remediation exec program
	2016-07-06 08:33:39	QuarantineBadHost	BlockSSHPolicy	BlockSSHRule	Error with input provided to remediation exec program

< Page 1 of 1 > Displaying rows 1-3 of 3 rows

View Delete View All Delete All

Step 3 If the remediation was successful, continue to the next section.

Step 4 If an error is shown, the end point may still be quarantined if subsequent remediation events are successful. When you see an error, go the next section to verify that the quarantine happened.

If the quarantine of the end point was eventually successful, you can ignore all of its error messages.

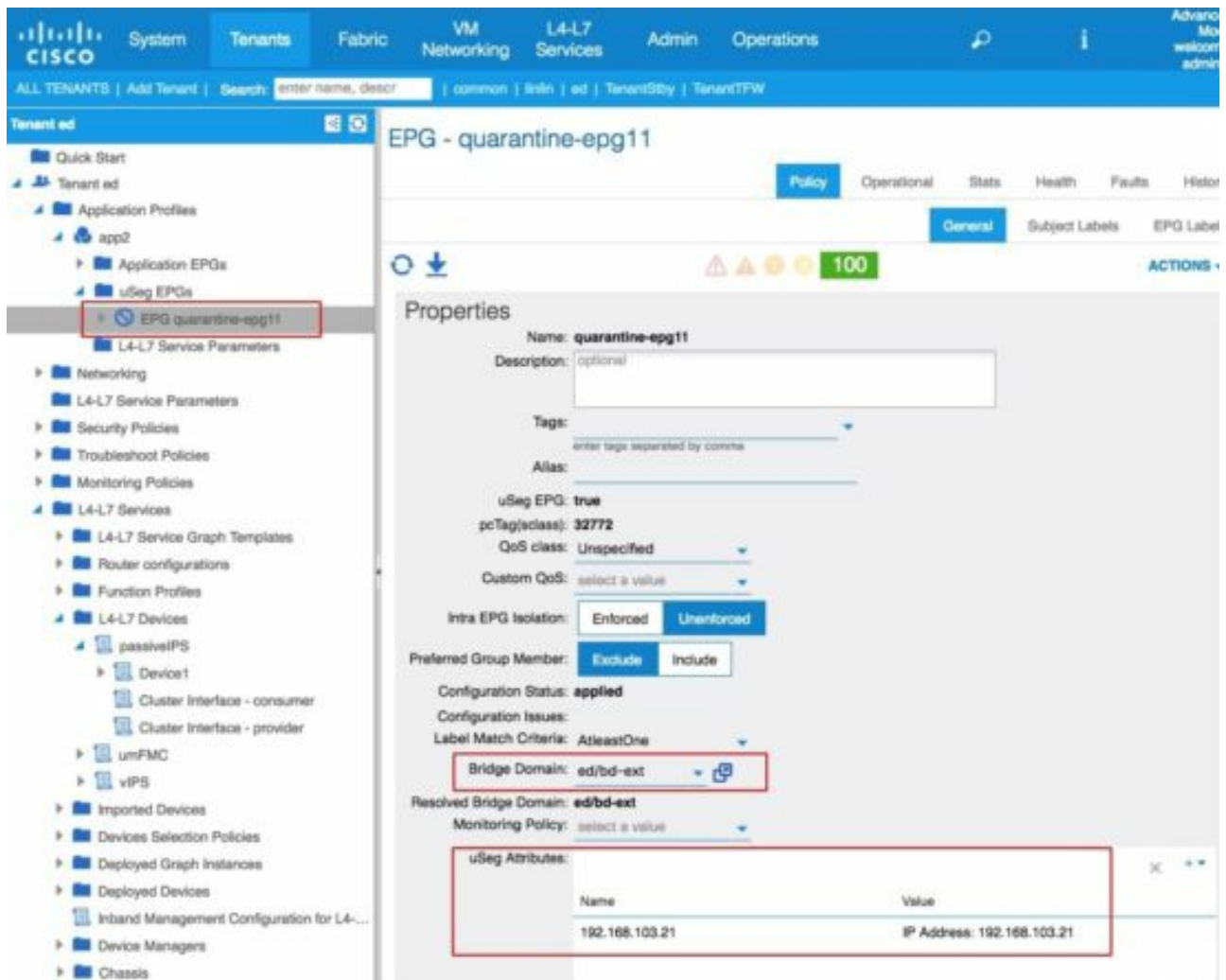
Check the Result of the Quarantine

Note In DVS and Bare Metal deployments, not all switches can support uSeg quarantine functionality on the APIC. If the quarantine fails, contact your Cisco representative to determine which model(s) of the Cisco Nexus 9000 Series switches you must use.

Step 1 On the Tenants tab of the APIC GUI, expand the infected application in the left panel, expand uSeg EPGs, and select the EPG quarantine for the offending end point.

Step 2 In the right panel, select the Policies tab and the General sub-tab.

Step 3 Verify that one or more uSeg attributes were created on the APIC server.



Note For VMware DVS and Bare Metal (in bridged mode), two attributes (filters) are automatically created when an endpoint is quarantined, one attribute for the IP address and one attribute for the MAC address. Therefore, to remove the quarantine, you must delete both attributes.

Step 4 If the quarantine was not successful (no uSeg attributes were created), you can manually quarantine the IP address, as described in the next section.

Manually Quarantine an IP Address

If the quarantine was unsuccessful, optionally complete the following steps to manually quarantine the IP address.

Step 1 Identify the IP address of the end point that you want to quarantine.

a. On the Analysis tab on the FMC GUI, select the Correlation > Status sub-tab.

b. On the Remediation Status page, find the time stamp of entry for the unsuccessful quarantine and make note of the source IP address.

- c. On the Operations tab, select EP Tracker, enter the IP address, and press Enter.
- d. If no information is displayed, the end point cannot be quarantined. If more than one IP address is displayed, look for the one in the offending tenant.

Step 2 If you can identify the EPG of the end point that you want to quarantine, create a uSeg EPG attribute corresponding to this end point.

- a. On the Tenants tab of the APIC GUI, use the information from Step 1 to find the EPG and make note of the bridge domain.
- b. Expand the EPG and make note of the domain profile name.
- c. On the Tenants tab, expand the Application Profiles, and right-click uSeg EPG.
- d. Enter a name for the uSeg EPG, in this format: "quarantine-EPG_name_of_the_EP."
- e. Select the bridge domain of the EPG from Step 2a.
- f. Add an IP filter attribute by clicking the plus sign on lower right and entering the IP address for the name and filter.
- g. Click Next Step and select the same domain profile from Step 2b.
- h. Set the Deployment Immediacy to Immediate.
- i. Click Update and then click Finish.

- j. For DVS and Bare Metal, in addition to creating an IP address filter attribute, you must also create a MAC address filter attribute.

For IP filter, use the IP address as the name. For MAC filter, use the IP address plus an underscore and the last three octets of the MAC address as a name.

To find the MAC address, go to the APIC Object Store Browser by navigating to:

https://apic_IP_address/visore.html. Use the IP address of the endpoint to run a query and display the MAC address.

APIC Object Store Browser

Filter

Class or DN: fvCEp

Property: ip Op: == Val1: 192.168.103.21 Val2:

Run Query

[Display URI of last query](#)

[Display last response](#)

fvCEp	
childAction	
contName	
dn	uni/tn-cd/ap-app2/epg-quarantine-epg11/cep-00:50:56:81:7F:A9
encap	vlan-176
id	0
idepdn	
ip	192.168.103.21
lcC	learned,vmm
lcOwn	local
mac	00:50:56:81:7F:A9

- k. Right-click on Domains (VMs and Bare Metals) under the newly created uSeg EPG, and add a domain association with the same name and Domain Type as the original EPG.

I. For Bare Metal, right-click on Static Leafs, and select Statically Link With Node.

Step 3 Verify that no traffic can go into or out from this endpoint.

For example, after an IP address is quarantined, pinging it should fail.

3. Related Documentation

For additional information about the Cisco Firepower Management Center, see the Configuration Guide for the appropriate version.

For additional information about the Cisco APIC and ACI, see APIC Documentation and Cisco Application Centric Infrastructure Security Solution.

4. Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation at:

<http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>.

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