

演示通过Secure Firewall的API资源管理器导航

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简介

本文档介绍如何通过Cisco FMC和Cisco FDM的应用程序编程接口(API)资源管理器进行导航。

先决条件

对REST API的基本了解。

要求

此演示要求使用至少一个由此Firepower管理中心(FMC)管理的设备来访问Firepower管理中心(FMC) GUI。对于本演示的FDM部分，需要本地管理Firepower威胁防御(FTD)才能访问FDM GUI。

使用的组件

- FMCv
- FTDv
- FTDv本地管理

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始(默认)配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

通过FMC API Explorer查看导航

要访问FMC API资源管理器，请导航至下一个URL：

`https://<FMC_mgmt_IP>/api/api-explorer`

您必须使用用于FMC GUI的相同凭证登录。当您输入API资源管理器URL时，这些凭证会在一个类似于下一个凭证的窗口中输入。

Sign in to access this site

Authorization required by <https://10.88.243.36:43162>
Your connection to this site is not secure

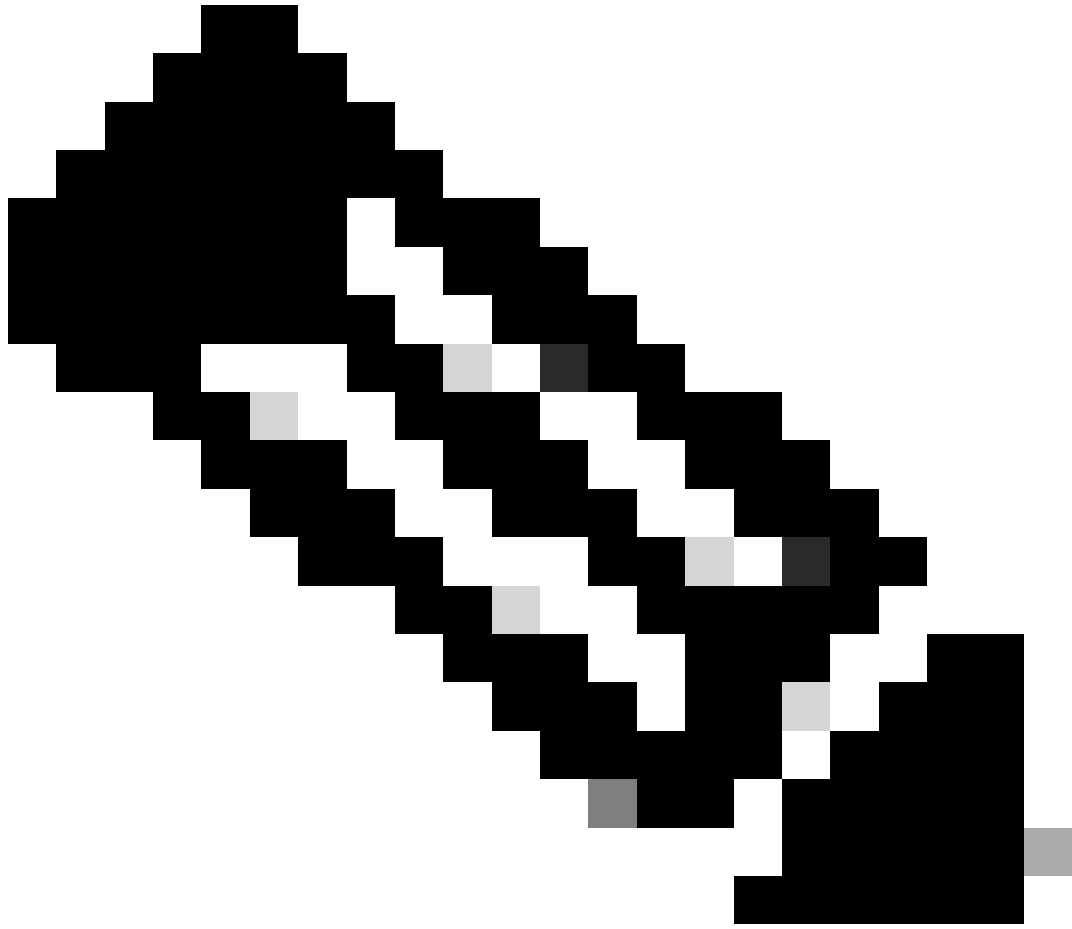
Username

Password

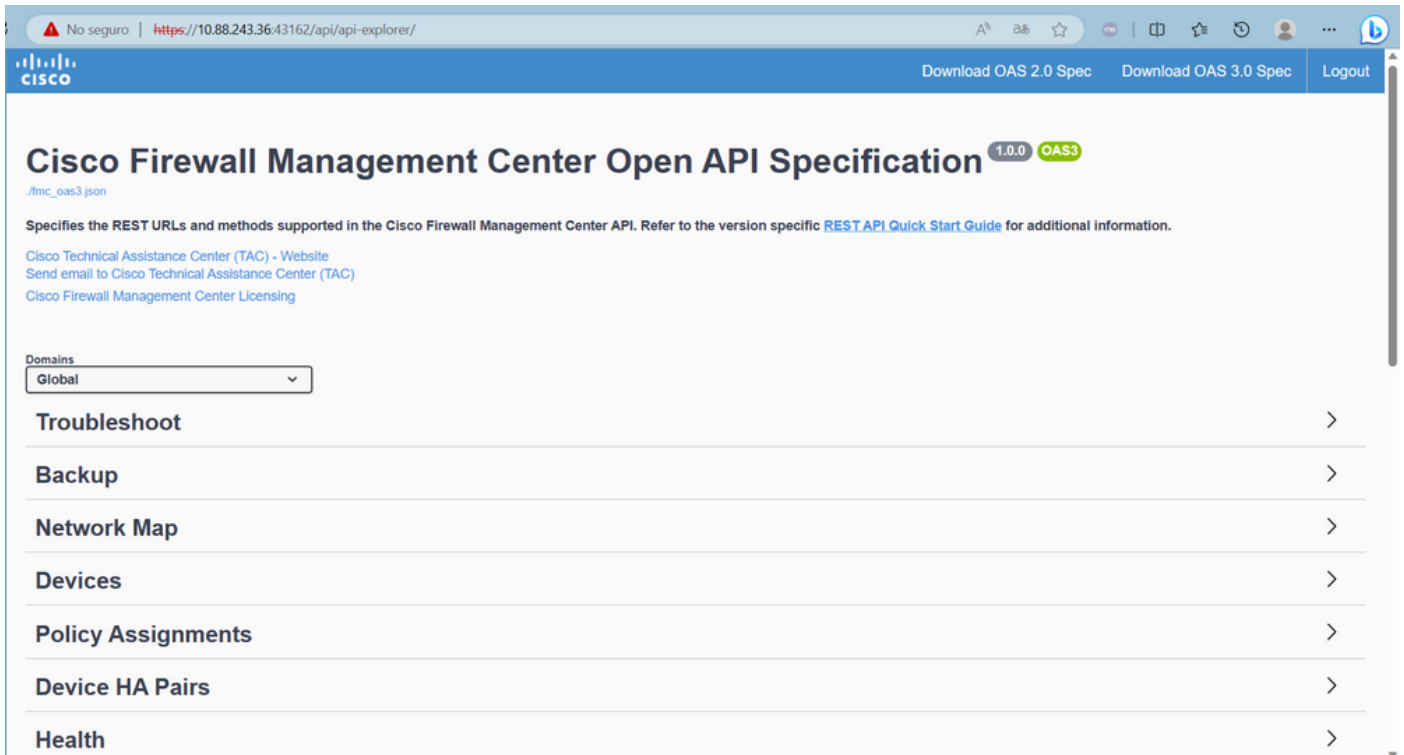
Sign in

Cancel

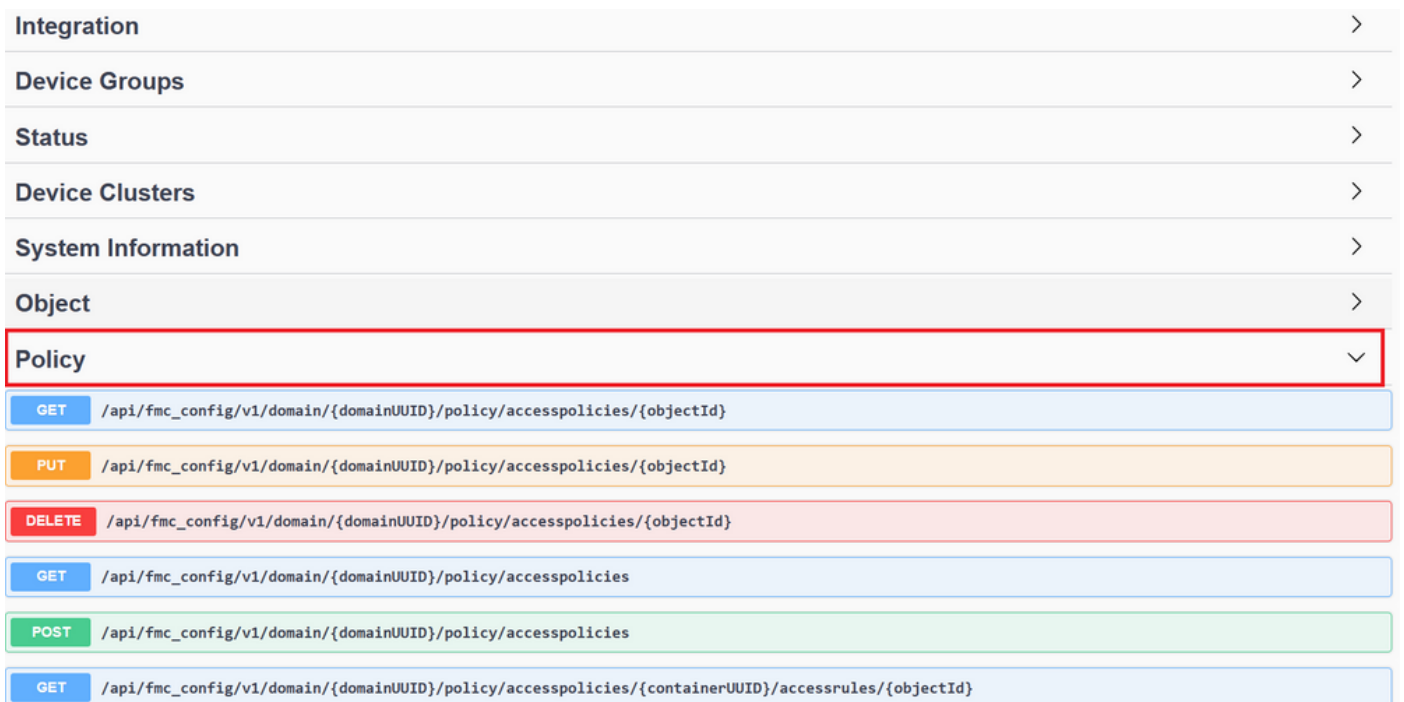
登录后，可以看到API查询按与您可以使用API进行的可能呼叫对应的类别划分。



注：并非所有可从GUI或CLI使用的配置功能都可以通过API使用。



单击某个类别时，该类别会展开，显示适用于该类别的不同呼叫。这些呼叫与其各自的REST方法和该呼叫的通用资源标识符(URI)一起显示。



在下一个示例中，您请求查看FMC中配置的访问策略。单击相应的方法将其展开，然后单击Try it out 按钮。

需要强调的是，您可以使用每个API调用中的可用参数来参数化查询。只有那些带有红色星号的密码是必需的，其他密码可以留空。

GET /api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies

Retrieves, deletes, creates, or modifies the access control policy associated with the specified ID. Also, retrieves list of all access control policies.

Parameters Try it out

Name	Description
name string (query)	If parameter is specified, only the policy matching with the specified name will be displayed. Cannot be used if object ID is specified in path. <input type="text" value="name - If parameter is specified, only the poli"/>
filter string (query)	Value is of format (including quotes): "locked:{true false}" locked query parameter when set to 'true' returns list of Access Policies which are locked and when set to 'false' returns policies which are unlocked. <input type="text" value="filter - Value is of format (including quotes): <"/>
offset integer(\$int32) (query)	Index of first item to return. <input type="text" value="offset - Index of first item to return."/>
limit integer(\$int32) (query)	Number of items to return. <input type="text" value="limit - Number of items to return."/>
expanded boolean (query)	If set to true, the GET response displays a list of objects with additional attributes. <input type="checkbox"/>

例如，domainUUID对于所有API调用都是必需的，但在API资源管理器上会自动填充该字段。

下一步是单击Execute进行此呼叫。

name string (query)	If parameter is specified, only the policy matching with the specified name will be displayed. Cannot be used if object ID is specified in path. <input type="text" value="name - If parameter is specified, only the poli"/>
filter string (query)	Value is of format (including quotes): "locked:{true false}" locked query parameter when set to 'true' returns list of Access Policies which are locked and when set to 'false' returns policies which are unlocked. <input type="text" value="filter - Value is of format (including quotes): <"/>
offset integer(\$int32) (query)	Index of first item to return. <input type="text" value="offset - Index of first item to return."/>
limit integer(\$int32) (query)	Number of items to return. <input type="text" value="limit - Number of items to return."/>
expanded boolean (query)	If set to true, the GET response displays a list of objects with additional attributes. <input type="checkbox"/>
domainUUID * required string (path)	Domain UUID <input type="text" value="e276abec-e0f2-11e3-8169-6d9ed49b625f"/>

Execute

在单击“执行”之前，您可以查看对呼叫的响应示例，以了解根据请求是否正确可以获得的可能响应

o

Execute

Responses

Code	Description	Links
200	OK	No links

Media type: application/json

Examples: Example 1: GET /fmc_config/v1/domain/DomainUUID/policy/accesspolicies (Test GET ALL Success of Acc

Controls Accept header.

Example Value | Schema

```

{
  "links": "/fmc_config/v1/domain/DomainUUID/policy/accesspolicies?offset=0&limit=2",
  "items": [
    {
      "type": "AccessPolicy",
      "name": "AccessPolicy1_updated",
      "description": "policy to test FMC implementation",
      "defaultAction": {
        "id": "id_of_default_action",
        "type": "AccessPolicyDefaultAction"
      }
    },
    {
      "type": "AccessPolicy",
      "name": "AccessPolicy2_updated",
      "description": "policy to test FMC implementation",
      "defaultAction": {
        "id": "id_of_default_action",
        "type": "AccessPolicyDefaultAction"
      }
    }
  ]
}

```

一旦执行API调用，您就可以连同响应负载一起获得响应代码。在本例中为200，对应于OK请求。您还将获得刚刚进行的呼叫的cURL和URL。如果要使用外部客户端/软件进行此呼叫，此信息非常有用。

获取的答案返回在FMC中配置的ACP及其对象ID。在这种情况下，您可以在下一幅图像的红色框中看到此信息：

Execute Clear

Responses

Curl

```

curl -X 'GET' \
  'https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies' \
  -H 'accept: application/json' \
  -H 'X-auth-access-token: d1594a50-3f98-4519-875b-50c70b454552'

```

Request URL

```

https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies

```

Server response

Code	Details
200	Response body

```

{
  "links": {
    "self": "https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies?offset=0&limit=25"
  },
  "items": [
    {
      "type": "AccessPolicy",
      "links": {
        "self": "https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies/00505683-186A-0ed3-0000-004294967299"
      },
      "name": "ACP_cchanes",
      "id": "00505683-186A-0ed3-0000-004294967299"
    }
  ],
  "paging": {
    "offset": 0,
    "limit": 25,
    "count": 1,
    "pages": 1
  }
}

```

Download

此objectID是您在需要引用此ACP的调用中输入的值。例如，在此ACP中创建规则。

包含大括号{}之间的值的URI是进行此呼叫所需的值。 请记住，domainUUID是唯一自动填充的值

o

GET	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules/{objectId}
PUT	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules/{objectId}
DELETE	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules/{objectId}
GET	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules
PUT	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules
POST	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules
DELETE	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules
GET	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/defaultactions/{objectId}
PUT	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/defaultactions/{objectId}
GET	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/loggingsettings/{objectId}
PUT	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/loggingsettings/{objectId}
GET	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/operational/hitcounts
PUT	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/operational/hitcounts
DELETE	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/operational/hitcounts

这些呼叫所需的值在呼叫描述中指定。要创建ACP的规则，您需要策略ID，如下一张图所示：

POST	/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules
Retrieves, deletes, creates, or modifies the access control rule associated with the specified policy ID and rule ID. If no ID is specified, retrieves list of all access rules associated with the specified policy ID . Check the response section for applicable examples (if any).	

此policyID在指定为containerUUID的字段中输入，POST方法的另一个必需字段是负载或请求正文。您可以使用给出的示例根据需要进行修改。

containerUUID * required
string
(path)
The container id under which this specific resource is contained.
005056B3-1B6A-0ed3-0000-004294967299

domainUUID * required
string
(path)
Domain UUID
e276abec-e0f2-11e3-8169-6d9ed49b625f

Request body required application/json

The input access control rule model.

Examples:
Example 1 : POST /fmc_config/v1/domain/DomainUUID/policy/accesspolicies/containerUUID/accessrules (Test POST of Access rule)

```
{
  "action": "ALLOW",
  "enabled": true,
  "type": "AccessRule",
  "name": "Rule1",
  "sendEventsToFMC": false,
  "logFiles": false,
  "logBegin": false,
  "logEnd": false,
  "variableSet": {
    "name": "Default Set",
    "id": "VariableSetUUID",
    "type": "VariableSet"
  },
  "vlanTags": {
    "objects": [
      {
        "type": "VlanTag",

```

修改后的负载示例：

```
{ "action": "ALLOW", "enabled": true, "type": "AccessRule", "name": "Testing API rule", "sendEventsToFMC": false, "logFiles": false,
"logBegin": false, "logEnd": false, "sourceZones": { "objects": [ { "name": "Inside_Zone", "id": "8c1c58ec-8d40-11ed-b39b-f2bc2b448f0d",
"type": "SecurityZone" } ] }, "destinationZones": { "objects": [ { "name": "Outside_Zone", "id": "c5e0a920-8d40-11ed-994a-900c72fc7112",
"type": "SecurityZone" } ] }, "newComments": [ "comment1", "comment2" ] }
```




注意：可使用下一个查询获得可用区域及其ID。

GET

`/api/fmc_config/v1/domain/{domainUUID}/object/securityzones`

执行上一个调用后，您会收到201响应代码，表明请求成功并导致了资源的创建。

Server response

Code	Details
201	Response body

```
{
  "metadata": {
    "ruleIndex": 6,
    "section": "Default",
    "category": "--Undefined--",
    "accessPolicy": {
      "name": "ACP_cchases",
      "id": "005056B3-1B6A-0ed3-0000-004294967299",
      "type": "AccessPolicy"
    }
  },
  "links": {
    "self": "https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies/005056B3-1B6A-0ed3-0000-004294967299/accessrules/005056B3-1B6A-0ed3-0000-000268435456"
  },
  "enabled": true,
  "action": "ALLOW",
  "name": "Testing API rule",
  "type": "AccessRule",
  "id": "005056B3-1B6A-0ed3-0000-000268435456",
  "variableSet": {
    "name": "Default Set",
    "id": "76fa83ea-c972-11e2-8be8-8e45bb1343c0",
    "type": "VariableSet"
  },
  "sourceZones": {
    "objects": [

```

最后，您必须进行部署，以使这些更改在修改了ACP的FTD中生效。

为此，您必须获取已准备好部署更改的设备列表。

GET /api/fmc_config/v1/domain/{domainUUID}/deployment/deployabledevices

Retrieves list of all devices with configuration changes, ready to be deployed.

本示例包含一对在高可用性中配置的设备。您必须获取此HA的ID，如果是独立设备，必须获取该设备的ID。

Responses

Curl

```
curl -X 'GET' \
  'https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/deployment/deployabledevices' \
  -H 'accept: application/json' \
  -H 'X-auth-access-token: 41f2e4aa-c681-4064-8cdc-6f734785dba9'
```

Request URL

```
https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/deployment/deployabledevices
```

Server response

Code	Details
200	Response body

```
{
  "links": {
    "self": "https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/deployment/deployabledevices?offset=0&limit=25"
  },
  "totalCount": 2,
  "items": [
    {
      "version": "1689794173607",
      "name": "HA_FTID72",
      "type": "DeployableDevice"
    }
  ],
  "paging": {
    "offset": 0,
    "limit": 25,
    "count": 1,
    "pages": 1
  }
}
```

获取HA的设备ID所需的查询如下：

GET /api/fmc_config/v1/domain/{domainUUID}/devicepairs/ftddevicepairs

Retrieves or modifies the Firewall Threat Defense HA record associated with the specified ID. Creates or breaks or deletes a Firewall Threat Defense HA pair. If no ID is specified for a GET, retrieves list of all Firewall Threat Defense HA pairs.

通过设备ID和部署版本号，您可以修改下一个呼叫示例的有效负载，以发出呼叫以执行此部署。

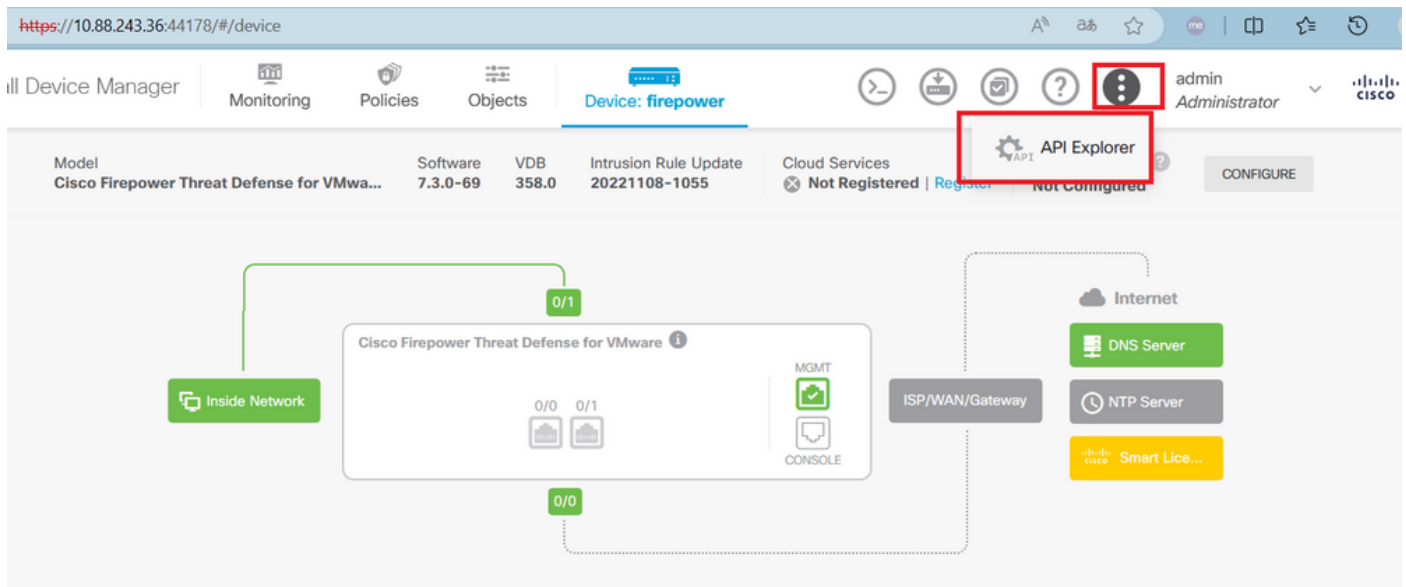
POST /api/fmc_config/v1/domain/{domainUUID}/deployment/deploymentrequests

Creates a request for deploying configuration changes to devices. Check the response section for applicable examples (if any).

执行此调用后，如果一切正确，您将收到代码为202的响应。

通过FDM API资源管理器查看导航

要访问FDM API资源管理器，可以使用FDM GUI上的按钮直接访问它，如下图所示：



进入API资源管理器后，您会注意到查询也分为多个类别。

The following is a list of resources you can use for programmatic access to the device using the Secure Firewall Threat Defense REST API. The resources are organized into groups of related resources. Click a group name to see the available methods and resources. Click a method/resource within a group to see detailed information. Within a method/resource, click the **Model** link under **Response Class** to see documentation for the resource.

You can test the various methods and resources through this page. When you fill in parameters and click the **Try it Out!** button, you interact directly with the system. GET calls retrieve real information. POST calls create real objects. PUT calls modify existing objects. DELETE calls remove real objects. However, most changes do not become active until you deploy them using the POST /operational/deploy resource in the Deployment group. Although some changes, such as to the management IP address and other system-level changes, do not require deployment, it is safer to do a deployment after you make any configuration changes.

The REST API uses OAuth 2.0 to validate access. Use the resources under the Token group to get a password-granted or custom access token, to refresh a token, or to revoke a token. You must include a valid access token in the Authorization: Bearer header on any HTTPS request from your API client.

Before using the REST API, you need to finish the device initial setup. You can complete the device initial setup either through UI or through InitialProvision API.

You can also refer to [this](#) page for a list of API custom error codes. (Additional errors might exist.)

NOTE: The purpose of the API Explorer is to help you learn the API. Testing calls through the API Explorer requires the creation of access locks that might interfere with regular operation. We recommend that you use the API Explorer on a non-production device.

Cisco makes no guarantee that the API version included on this Firepower Threat Device (the "API") will be compatible with future releases. Cisco, at any time in its sole discretion, may modify, enhance or otherwise improve the API based on user feedback.

AAASetting	Show/Hide	List Operations	Expand Operations
ASPathList	Show/Hide	List Operations	Expand Operations
AccessPolicy	Show/Hide	List Operations	Expand Operations

要展开某个类别，必须单击该类别，然后可以单击其中任意一项来展开每项操作。在每个操作中找到的第一个内容是此呼叫的OK响应示例。

AccessPolicy Show/Hide List Operations Expand Operations

GET	/policy/accesspolicies/{parentId}/accessrules
POST	/policy/accesspolicies/{parentId}/accessrules
DELETE	/policy/accesspolicies/{parentId}/accessrules/{objId}
GET	/policy/accesspolicies/{parentId}/accessrules/{objId}
PUT	/policy/accesspolicies/{parentId}/accessrules/{objId}
GET	/policy/accesspolicies

Response Class (Status 200)

Model	Example Value
	<pre>{ "items": [{ "version": "string", "name": "string", "defaultAction": { "action": "PERMIT", "eventLogAction": "LOG_FLOW_START", "intrusionPolicy": { "id": "string", "name": "string" } } }] }</pre>

接下来，您将看到可用于限制所发出呼叫响应的参数。请记住，只有标记为“必需”的字段才是进行此类呼叫的必填字段。

Response Content Type

Parameters

Parameter	Value	Description	Parameter Type	Data Type
offset	<input type="text"/>	An integer representing the index of the first requested object. Index starts from 0. If not specified, the returned objects will start from index 0	query	integer
limit	<input type="text"/>	An integer representing the maximum amount of objects to return. If not specified, the maximum amount is 10	query	integer
sort	<input type="text"/>	The field used to sort the requested object list	query	string
filter	<input type="text"/>	The criteria used to filter the models you are requesting. It should have the following format: {key}{operator}{value}; {key}{operator}{value}. Supported operators are: "!=" (not equals), "=" (equals), "~" (similar). Supported keys are: "name", "fts". The "fts" filter cannot be used with other filters.	query	string

最后，您会找到此呼叫可以返回的可能响应代码。

Response Messages

HTTP Status Code	Reason	Response Model	Headers				
401		<table border="1"><thead><tr><th>Model</th><th>Example Value</th></tr></thead><tbody><tr><td></td><td><pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre></td></tr></tbody></table>	Model	Example Value		<pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre>	
Model	Example Value						
	<pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre>						
403		<table border="1"><thead><tr><th>Model</th><th>Example Value</th></tr></thead><tbody><tr><td></td><td><pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre></td></tr></tbody></table>	Model	Example Value		<pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre>	
Model	Example Value						
	<pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre>						

如果您想要进行此呼叫，则必须单击**Try It Out**。要找到此按钮，您必须向下滚动直至找到此按钮，因为它位于每个呼叫的底部。

520

Model	Example Value
	<pre>{ "status_code": 0, "message": "string", "internal_error_code": 0 }</pre>

TRY IT OUT!

点击Try It Out按钮后，如果呼叫不需要更多字段，则会立即执行并做出响应。

TRY IT OUT! Hide Response

Curl

```
curl -X GET --header 'Accept: application/json' 'https://10.88.243.36:44178/api/fdm/v6/policy/accesspolicies'
```

Request URL

```
https://10.88.243.36:44178/api/fdm/v6/policy/accesspolicies
```

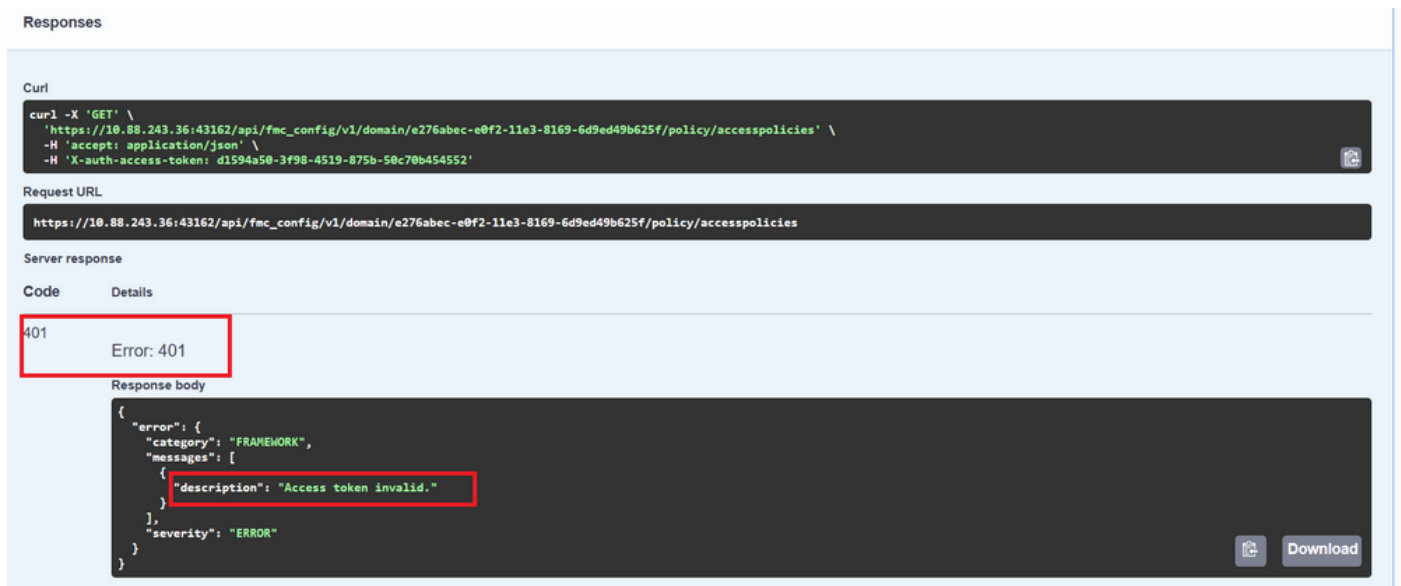
Response Body

```
{
  "items": [
    {
      "version": "ka4esjod4iebr",
      "name": "NGFW-Access-Policy",
      "defaultAction": {
        "action": "DENY",
        "eventLogAction": "LOG_NONE",
        "intrusionPolicy": null,
        "syslogServer": null,
        "hitCount": {
          "hitCount": 0,
          "firstHitTimeStamp": "",
          "lastHitTimeStamp": "",
          "lastFetchTimeStamp": ""
        }
      }
    }
  ]
}
```

故障排除

每个调用都会生成一个HTTP响应代码和响应正文。这有助于您识别错误的位置。

下一个是当会话过期时出现的常见错误，表示令牌已过期，因此无效。



The screenshot displays a REST client interface with the following sections:

- Responses**: The main header.
- Curl**: A terminal window showing the command: `curl -X 'GET' \ 'https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies' \ -H 'accept: application/json' \ -H 'X-auth-access-token: d1594a50-3f98-4519-875b-50c70b454552'`
- Request URL**: `https://10.88.243.36:43162/api/fmc_config/v1/domain/e276abec-e0f2-11e3-8169-6d9ed49b625f/policy/accesspolicies`
- Server response**: A table with two columns: **Code** and **Details**. The first row shows **401** and **Error: 401**, both highlighted with a red box.
- Response body**: A JSON object: `{ "error": { "category": "FRAMEWORK", "messages": [{ "description": "Access token invalid." }] }, "severity": "ERROR" }`. The `"description": "Access token invalid."` field is highlighted with a red box.

下面是调用可以返回的HTTP响应代码示例：

- 2xx系列：成功。状态代码有多种：200（GET和PUT）、201（POST）、202、204（DELETE）。它们表示API调用成功。
- 30x系列：重定向。当客户端最初使用HTTP并被重定向到HTTPS时可以使用。
- 4xx系列：从客户端发送到服务器的API调用中的客户端故障。两个示例包括401状态代码和403代码，前者表示会话未经身份验证，后者表示禁止访问尝试。
- 5xx系列：服务器、设备或服务端故障。这可能是设备API服务被禁用或通过IP网络无法访问的结果

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