

演示透過Secure Firewall的API-Explorer導航

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簡介

本檔案介紹透過Cisco FMC和Cisco FDM的應用程式設計介面(API)總管進行導航。

必要條件

對REST API的基本瞭解。

需求

本演示要求能夠訪問Firepower管理中心(FMC) GUI，其中至少有一個裝置由此Firepower管理中心(FMC)管理。對於本演示的FDM部分，需要本地管理Firepower威脅防禦(FTD)才能訪問FDM GUI。

採用元件

- FMCv
- FTDv
- FTDv本地管理

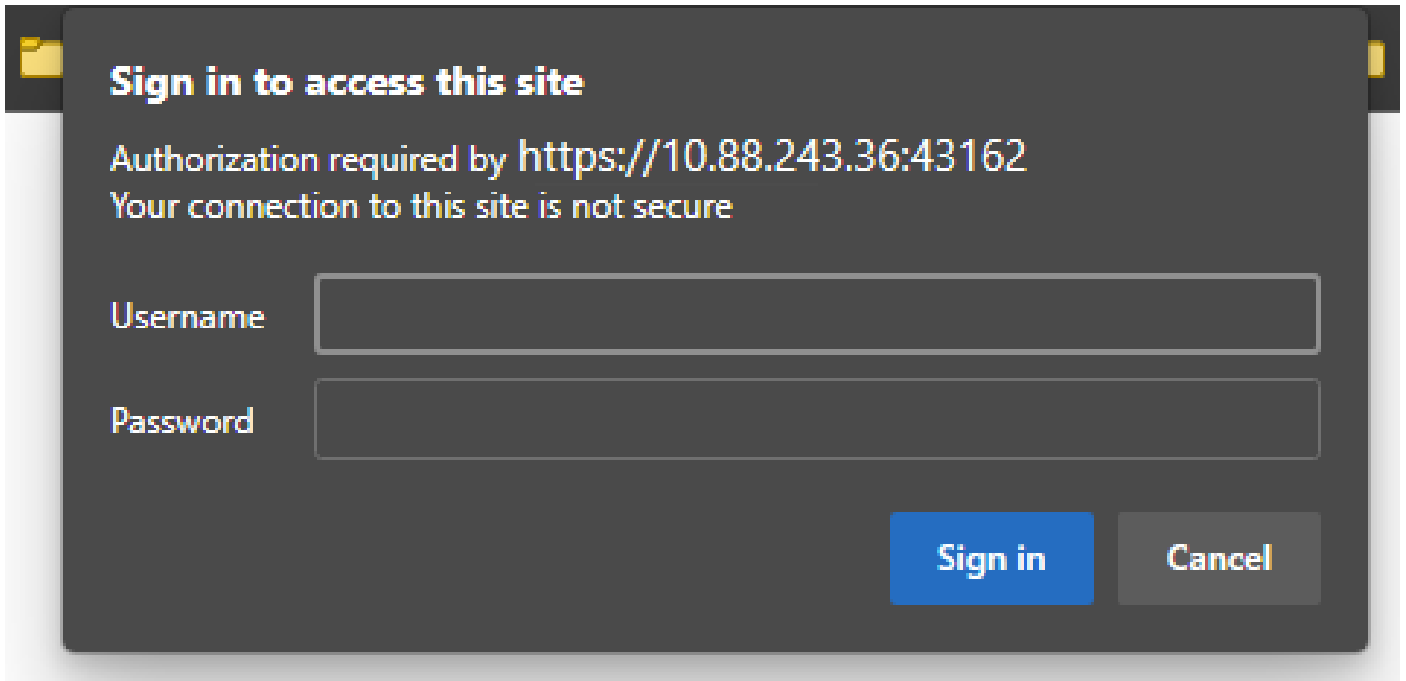
本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響。

透過FMC API Explorer檢視導航

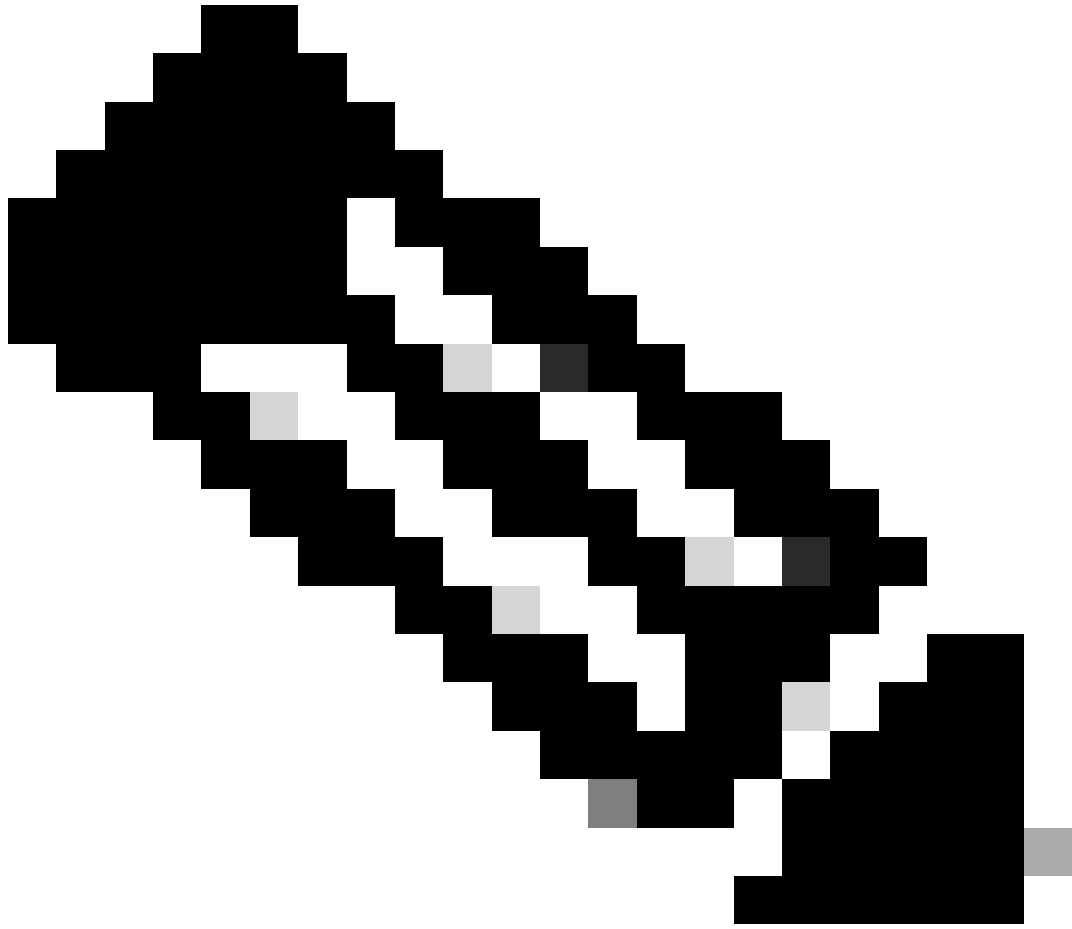
要訪問FMC API瀏覽器，請導航到下一個URL：

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

必須使用與FMC GUI相同的憑證登入。當您輸入API總管URL時，這些證明資料會輸入於類似下一個視窗的視窗中。



登入後，可以看到API查詢被劃分成與使用API可能進行的呼叫相對應的類別。



注意：並非所有可從GUI或CLI使用的配置功能都可以透過API使用。

The screenshot shows the Cisco Firewall Management Center Open API Specification page. The browser address bar shows the URL `https://10.88.243.36:43162/api/api-explorer/`. The page header includes the Cisco logo and links for 'Download OAS 2.0 Spec', 'Download OAS 3.0 Spec', and 'Logout'. The main heading is 'Cisco Firewall Management Center Open API Specification' with a '1.0.0 OAS3' badge. Below the heading, there is a description: 'Specifies the REST URLs and methods supported in the Cisco Firewall Management Center API. Refer to the version specific [REST API Quick Start Guide](#) for additional information.' There are also links for 'Cisco Technical Assistance Center (TAC) - Website', 'Send email to Cisco Technical Assistance Center (TAC)', and 'Cisco Firewall Management Center Licensing'. A 'Domains' dropdown menu is set to 'Global'. A list of categories is shown with right-pointing chevrons: Troubleshoot, Backup, Network Map, Devices, Policy Assignments, Device HA Pairs, and Health.

按一下某個類別時，它會展開，顯示此類別的可用呼叫。這些呼叫會與其各自的REST方法和該呼叫的通用資源識別符號(URI)一起顯示。

The screenshot shows the API Explorer interface with the 'Policy' category expanded. The expanded list includes the following endpoints:

- GET** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{objectId}`
- PUT** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{objectId}`
- DELETE** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{objectId}`
- GET** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies`
- POST** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies`
- GET** `/api/fmc_config/v1/domain/{domainUUID}/policy/accesspolicies/{containerUUID}/accessrules/{objectId}`

在下一個示例中，您請求檢視FMC中配置的訪問策略。按一下相應的方法將其展開，然後按一下 Try it out 按鈕。

需要強調的是，您可以使用每個API呼叫中的可用引數來引數化查詢。只有帶有紅色星號的那些是必需的，其它的則可以留空。

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	If set to true, the GET response displays a list of objects with additional attributes. <input type="checkbox"/>

例如，對於所有API呼叫，domainUUID都是必需的，但在API Explorer上，會自動填充該值。

下一步是按一下Execute進行此呼叫。

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

按一下「執行」之前，您可以檢視呼叫回應的範例，瞭解根據要求是否正確，您可以取得哪些可能的回應。

Execute

Responses

Code	Description	Links
200	OK	No links

Media type: 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"
      }
    }
  ]
}

```

執行API呼叫後，您將獲得響應代碼以及響應負載。在此例中為200，對應於OK請求。您還會獲取剛剛進行的呼叫的cURL和URL。如果您要透過外部客戶端/軟體進行此呼叫，此資訊將非常有用。

所獲得的答案會傳回FMC中設定的ACP及其objectID。在此情況下，您可以在下一個影像的紅色方塊中看到此資訊：

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是您在需要參照此ACP的呼叫中輸入的值。例如，在此ACP內建立規則。

包含大括弧{}之間值的URI是進行此呼叫所需的值。請記住，domainUUID是唯一自動填充的值。

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

這些呼叫所需的值在呼叫描述中指定。若要建立ACP的規則，您需要原則ID，如下圖所示：

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在指定為containerUUID的欄位中輸入，POST方法的另一個必需欄位是負載或請求正文。您可以使用提供的範例來根據您的需求進行修改。

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

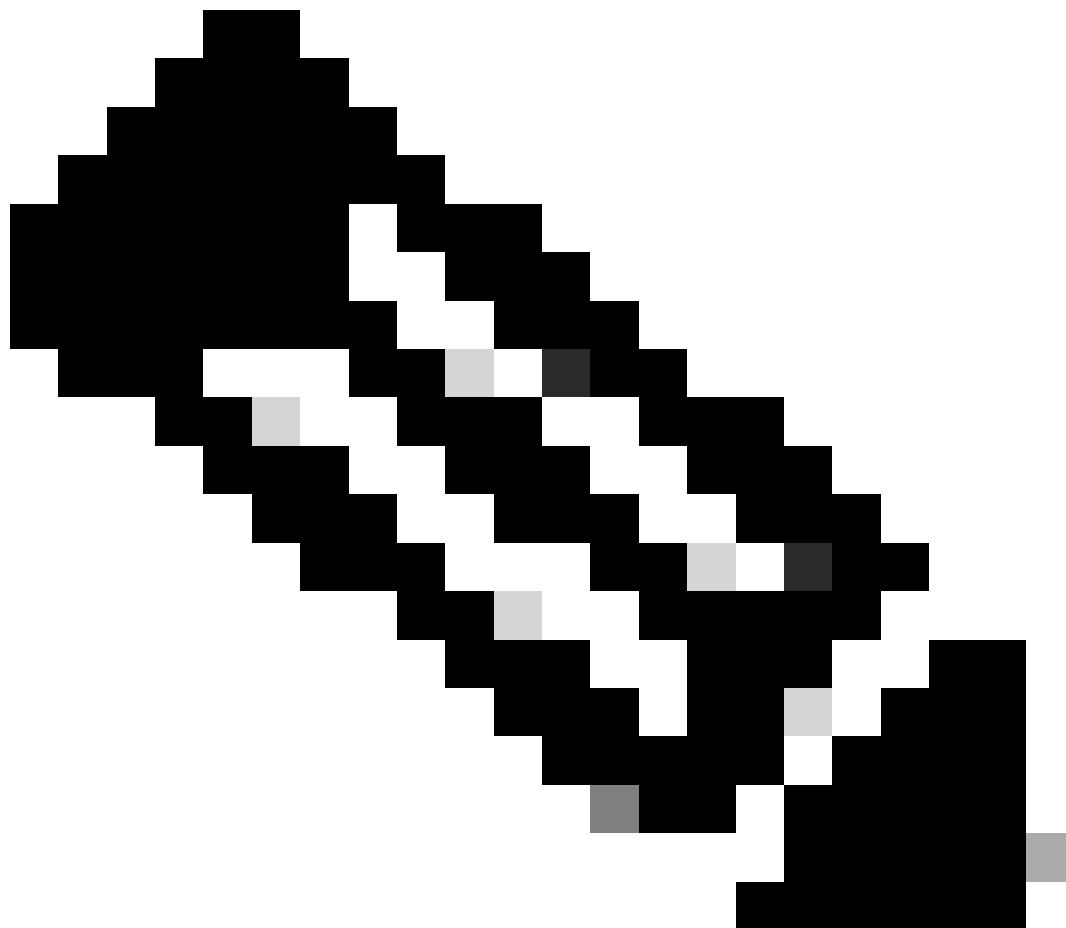
The input access control rule model.

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",
        ...
      }
    ]
  }
}
```

修改後的負載示例：

```
{ "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：可用區域及其ID可以使用下一個查詢獲得。

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

執行上一個呼叫後，您將收到201響應代碼，表明請求已成功建立資源。

```
Server response
Code    Details
201
Response body
{
  "metadata": {
    "ruleIndex": 6,
    "section": "Default",
    "category": "--Undefined--",
    "accessPolicy": {
      "name": "ACP_echanes",
      "id": "00505683-186A-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/00505683-186A-0ed3-0000-004294967299/accessrules/00505683-186A-0ed3-0000-000268435456"
  },
  "enabled": true,
  "action": "ALLOW",
  "name": "Testing API rule",
  "type": "AccessRule",
  "id": "00505683-186A-0ed3-0000-000268435456",
  "variableSet": {
    "name": "Default Set",
    "id": "76fa83ea-c972-11e2-8be8-8e45bb1343c0",
    "type": "VariableSet"
  },
  "sourceZones": {
    "objects": [

```

最後，您必須進行部署，這些變更才會在ACP已修改的FTD中生效。

為此，您必須獲取已準備好部署更改的裝置清單。

```
GET /api/fmc_config/v1/domain/{domainUUID}/deployment/deployabledevices
Retrieves list of all devices with configuration changes, ready to be deployed.
```

該示例包含一對在高可用性中配置的裝置。您必須取得此HA的ID，如果是獨立裝置，您必須取得該裝置的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"
  },
  "items": [
    {
      "version": "1689794173607",
      "name": "HA_FT072",
      "type": "DeployableDevice"
    }
  ],
  "paging": {
    "offset": 0,
    "limit": 25,
    "count": 1,
    "pages": 1
  }
}
```

獲取HA的裝置ID所需的查詢如下：

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.

透過裝置ID和部署版本號，您可以修改下一個呼叫示例的有效負載，以發出呼叫來執行此部署。

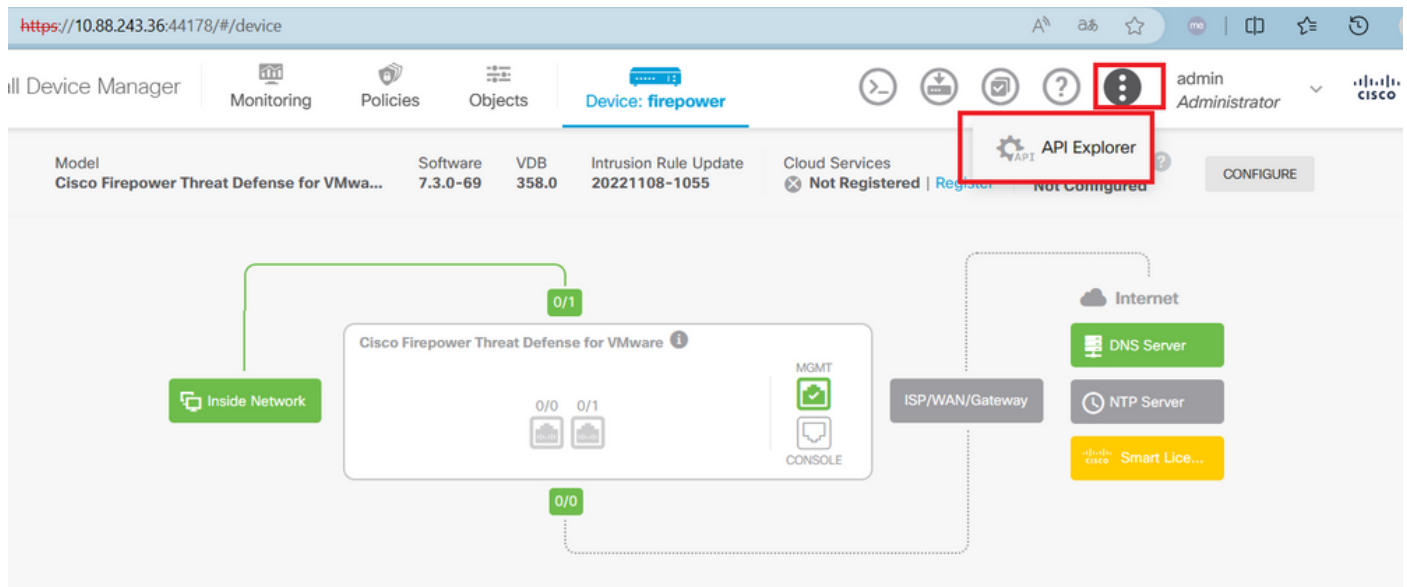
POST /api/fmc_config/v1/domain/{domainUUID}/deployment/deploymentrequests

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

一旦執行此呼叫，如果一切正確，您會收到代碼為202的響應。

透過FDM API Explorer檢視導覽

若要存取FDM API Explorer，可以使用FDM GUI上的按鈕直接移至該瀏覽器，如下圖所示：



在API Explorer中，您會發現查詢也分為不同的類別。

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

若要展開類別，您必須按一下該類別，然後您可以按一下其中任何一項來展開各項作業。在每項操作中找到的第一件事就是此呼叫的 OK 響應示例。

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>

您接下來看到的的就是可用於限制呼叫響應的引數。請記住，只有標籤為必填的欄位才能進行此類呼叫。

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

最後，您會找到此呼叫可返回的可能響應代碼。

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>						

如果要進行此呼叫，必須按一下 **Try It Out**。要找到此按鈕，您必須向下滾動直至找到此按鈕，因為它位於每個呼叫的底部。

The screenshot shows an API testing tool interface. On the left, the status code '520' is displayed. The main area is divided into two tabs: 'Model' and 'Example Value'. The 'Example Value' tab is active, showing a JSON object:

```
{
  "status_code": 0,
  "message": "string",
  "internal_error_code": 0
}
```

. At the bottom left, a blue button labeled 'TRY IT OUT' is highlighted with a red rectangular border.

按一下「Try It Out (試用)」按鈕後，如果呼叫不需要更多欄位，則呼叫會立即執行並做出響應。

The screenshot shows the 'Request URL' and 'Response Body' sections of an API testing tool. At the top left, there is a blue 'TRY IT OUT' button and a 'Hide Response' link. Below the button, the 'Curl' section shows the command:

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

. The 'Request URL' section shows:

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

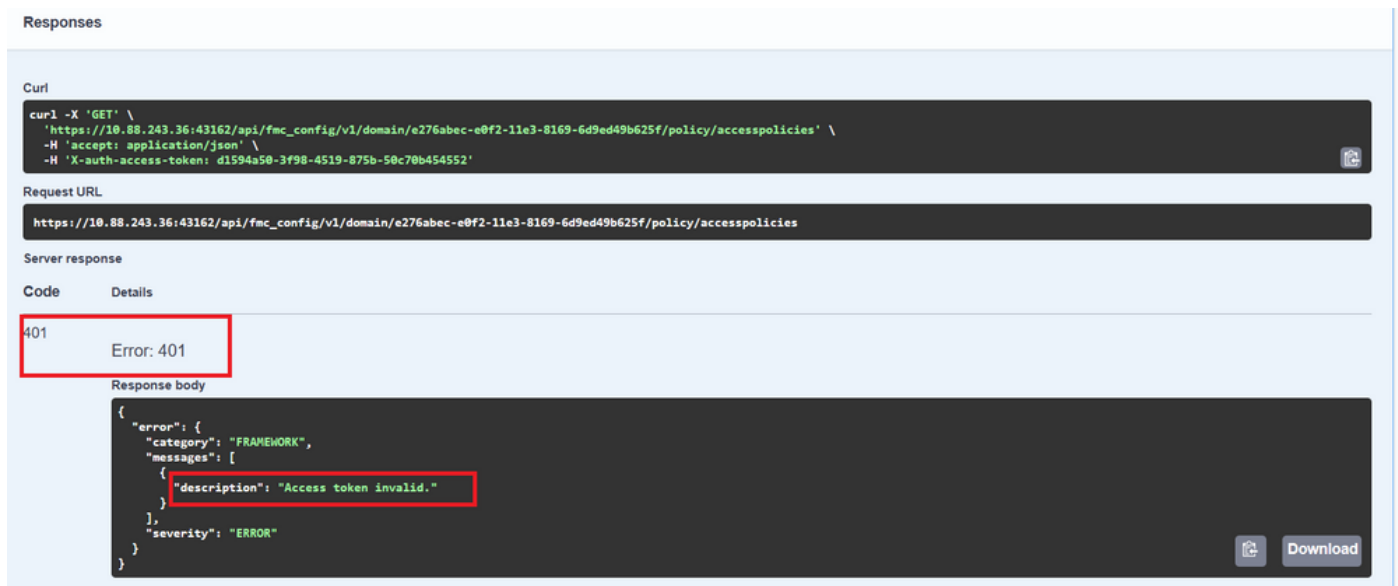
. The 'Response Body' section shows a JSON array of objects:

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

疑難排解

每個呼叫都會生成一個HTTP響應代碼和響應正文。這可協助您辨識錯誤的位置。

下一個是當作業階段過期時發生的常見錯誤，指出權杖因為過期而無效。



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.
- Download**: A button to download the response body.

下面是呼叫可以返回的HTTP響應代碼的示例：

- 2xx系列：成功。狀態碼有好幾種：200 (GET和PUT)、201 (POST)、202、204 (DELETE)。它們表示API呼叫成功。
- 30x系列：重新導向。可用於客戶端最初使用HTTP並被重定向到HTTPS時。
- 4xx系列：從客戶端傳送到伺服器的API呼叫中的客戶端故障。兩個示例包括表示會話未經身份驗證的401狀態代碼和表示禁止訪問嘗試的403代碼。
- 5xx系列：伺服器、裝置或服務端故障。這可能是由於裝置API服務被停用或無法通過IP網路訪問而導致的結果

關於此翻譯

思科已使用電腦和人工技術翻譯本文件，讓全世界的使用者能夠以自己的語言理解支援內容。請注意，即使是最佳機器翻譯，也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準確度概不負責，並建議一律查看原始英文文件（提供連結）。