

# 在使用Rest API的FDM上配置基于时间的访问控制规则

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## 简介

本文档介绍如何在FDM使用Rest API管理的FTD上配置和验证基于时间的访问控制规则。

## 先决条件

### 要求

Cisco 建议您了解以下主题：

- 安全防火墙威胁防御(FTD)
- Firepower设备管理(FDM)
- 具象状态传输应用编程接口(REST API)知识
- 访问控制列表(ACL)

### 使用的组件

本文档中的信息基于FTD 7.1.0版。

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。

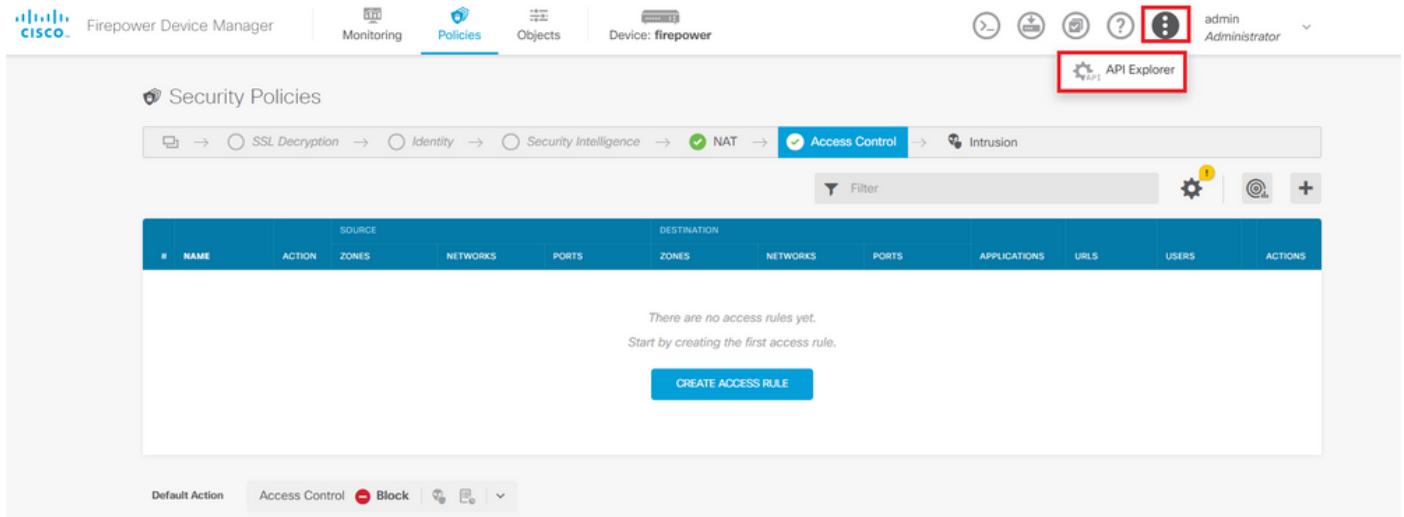
## 背景信息

FTD API版本6.6.0及更高版本支持基于时间限制的访问控制规则。

使用FTD API，您可以创建时间范围对象，指定一次性或循环时间范围，并将这些对象应用于访问控制规则。使用时间范围，您可以将访问控制规则应用于一天中的特定时间或特定时间段的流量，以便灵活使用网络。不能使用FDM创建或应用时间范围，如果访问控制规则应用了时间范围，FDM也不会显示您。

# 配置

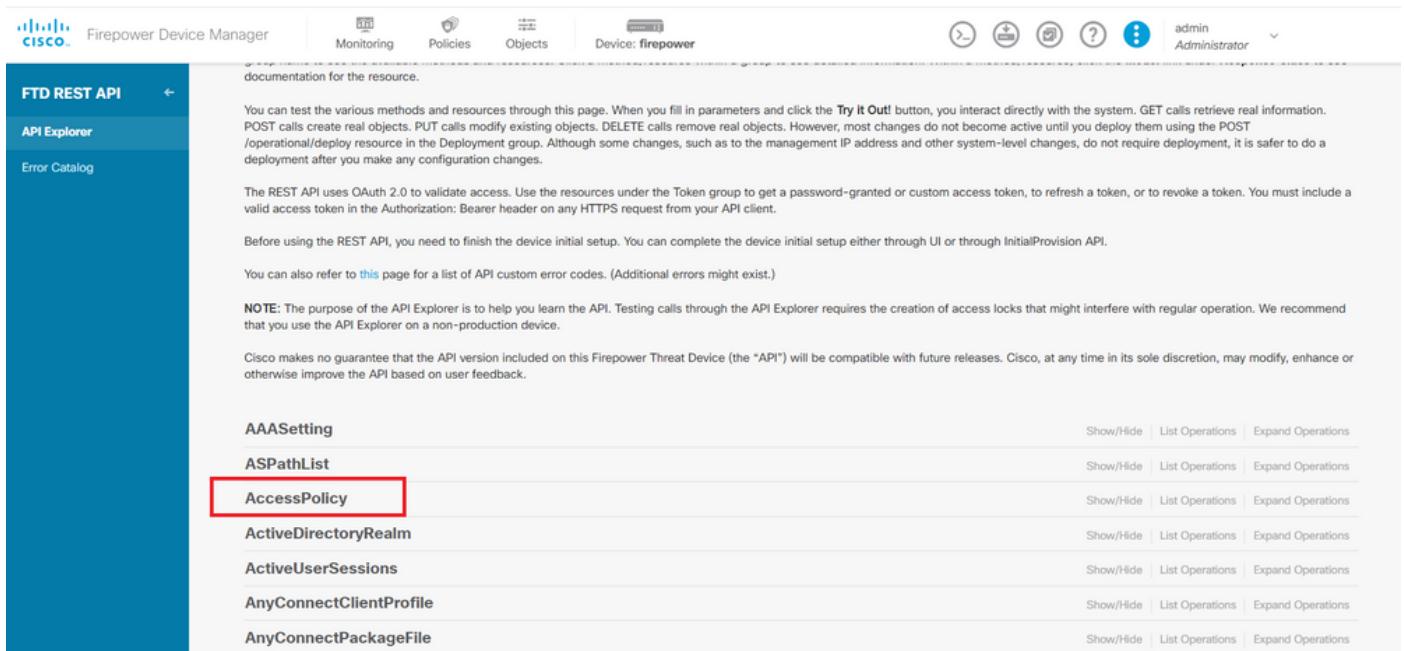
步骤1:单击高级选项(“kebab”菜单)以打开FDM API资源管理器。



The screenshot shows the Firepower Device Manager (FDM) web interface. At the top, there are tabs for Monitoring, Policies (which is currently selected), Objects, and Device: firepower. On the far right, there are user authentication details for 'admin' and a dropdown menu. Below the tabs, a breadcrumb navigation bar shows the current path: Security Policies > SSL Decryption > Identity > Security Intelligence > NAT > Access Control. To the right of the breadcrumb is a 'Filter' button and a gear icon. The main content area is titled 'Security Policies' and shows a table header for 'Access Control' with columns: #, NAME, ACTION, ZONES, NETWORKS, PORTS, DESTINATION, ZONES, NETWORKS, PORTS, APPLICATIONS, URLs, USERS, and ACTIONS. A message at the top of the table says 'There are no access rules yet. Start by creating the first access rule.' A blue 'CREATE ACCESS RULE' button is located below the table. At the bottom of the page, there are buttons for 'Default Action' and 'Access Control' with a 'Block' option.

图 1.FDM Web用户界面。

第二步：选择类别AccessPolicy以显示不同的API调用。



The screenshot shows the FTD REST API documentation page. On the left, a sidebar lists 'FTD REST API', 'API Explorer' (which is selected and highlighted in blue), and 'Error Catalog'. The main content area has a heading 'documentation for the resource.' followed by a detailed description of the REST API's capabilities and deployment requirements. Below this, there are sections for 'Before using the REST API', 'Testing the API', and 'Notes'. The 'AccessPolicy' item in the list of resources is highlighted with a red box. Other listed resources include AAASetting, ASPPathList, ActiveDirectoryRealm, ActiveUserSessions, AnyConnectClientProfile, and AnyConnectPackageFile. Each resource entry includes 'Show/Hide', 'List Operations', and 'Expand Operations' buttons.

图 2.API Explorer Web用户界面。

第三步：运行GET调用以获取访问策略ID。

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	
GET	/policy/accesspolicies/{objId}	

图 3. 访问策略类别。

第四步：您必须点击TRY IT OUT! 才能检索API响应。

The screenshot shows the Cisco Firepower Device Manager API Explorer. The left sidebar has 'FTD REST API' selected. In the main area, under the 'AccessPolicy' category, there is a 'TRY IT OUT!' button highlighted with a red box. Below it, there are two more endpoints: 'GET /policy/accesspolicies/{objId}' and 'PUT /policy/accesspolicies/{objId}'. The top right shows the device name 'firepower' and user 'admin Administrator'.

图 4.TRY IT OUT ! 运行API调用的按钮。

第五步：将数据从JSON响应正文复制到记事本。之后，您必须使用访问控制策略ID。

The screenshot shows the FTD REST API interface with the 'AccessPolicy' category selected. The 'TRY IT OUT!' button is visible. The JSON response for the GET /policy/accesspolicies/{objId} endpoint is shown in the 'Example Value' tab. The response includes fields like 'hitCount', 'sslPolicy', and 'certVisibilityEnabled'. A red box highlights the 'id' field in the response body, which is 'c78e66bc-cb57-43fe-bcbf-96b79b3475b3'. The top right shows the device name 'firepower' and user 'admin Administrator'.

图 5.访问策略的GET响应。

第六步：在API资源管理器上查找并打开TimeRange类别以显示不同的API调用。

The screenshot shows the Firepower Device Manager interface with the 'API Explorer' tab selected. On the left, a sidebar lists categories like 'StandardAccessList', 'StandardCommunityList', 'SyslogServer', etc., with 'TimeRange' highlighted by a red box. The main pane displays a table of operations for each category, with 'TimeRange' also highlighted by a red box. The table includes columns for 'Show/Hide', 'List Operations', and 'Expand Operations'.

Category	Show/Hide	List Operations	Expand Operations
StandardAccessList	Show/Hide	List Operations	Expand Operations
StandardCommunityList	Show/Hide	List Operations	Expand Operations
SyslogServer	Show/Hide	List Operations	Expand Operations
SystemInformation	Show/Hide	List Operations	Expand Operations
Telemetry	Show/Hide	List Operations	Expand Operations
TestDirectory	Show/Hide	List Operations	Expand Operations
TestIdentityServicesEngineConnectivity	Show/Hide	List Operations	Expand Operations
TestIdentitySource	Show/Hide	List Operations	Expand Operations
TimeRange	Show/Hide	List Operations	Expand Operations
TimeZoneObjects	Show/Hide	List Operations	Expand Operations
TimeZoneSettings	Show/Hide	List Operations	Expand Operations
TimeZones	Show/Hide	List Operations	Expand Operations
Token	Show/Hide	List Operations	Expand Operations
TrafficInterruptionReasons	Show/Hide	List Operations	Expand Operations
TrafficUser	Show/Hide	List Operations	Expand Operations
TrafficUserGroup	Show/Hide	List Operations	Expand Operations

图 6.时间范围类别。

步骤 7.使用POST API调用，创建任意多个TimeRange对象。

The screenshot shows the 'TimeRange' API details page. It features a 'Implementation Notes' section stating 'This API call is not allowed on the standby unit in an HA pair.' Below it is a 'Response Class (Status 200)' section. A 'Model' example value is provided in JSON format. The 'Parameters' section includes a 'body' parameter with a red box around its 'Value' field, which is described as '(required)'. To the right, there's a 'Data Type' section with a 'Model' example value.

```
Model Example Value
{
  "effectiveEndDate": "string",
  "recurrenceList": [
    {
      "days": [
        "MON"
      ],
      "recurrenceType": "DAILY_INTERVAL",
      "dailyStartTime": "string",
      "dailyEndTime": "string",
      "rangeStartDay": "MON",
      "rangeStartTime": "string",
      "rangeEndTime": "string"
    }
  ]
}

Response Content Type application/json

Parameters
Parameter Value Description Parameter Type Data Type
body (required) body Model Example Value
{
  "version": "string",
  ...
}
```

图 7.POST呼叫的时间范围。

在此处找到几个格式示JSON例，以创建两个不同的TimeRange对象。

对象1：

<#root>

{

```

"name": "range-obj-1",
",
"recurrenceList": [
{
  "days": [
    "MON",
    "TUE",
    "WED",
    "THU",
    "FRI"
  ],
  "recurrenceType": "DAILY_INTERVAL",
  "dailyStartTime": "00:00",
  "dailyEndTime": "23:50"
},
{
  "type": "recurrence"
}
],
"type": "timerangeobject"
}

```

对象2:

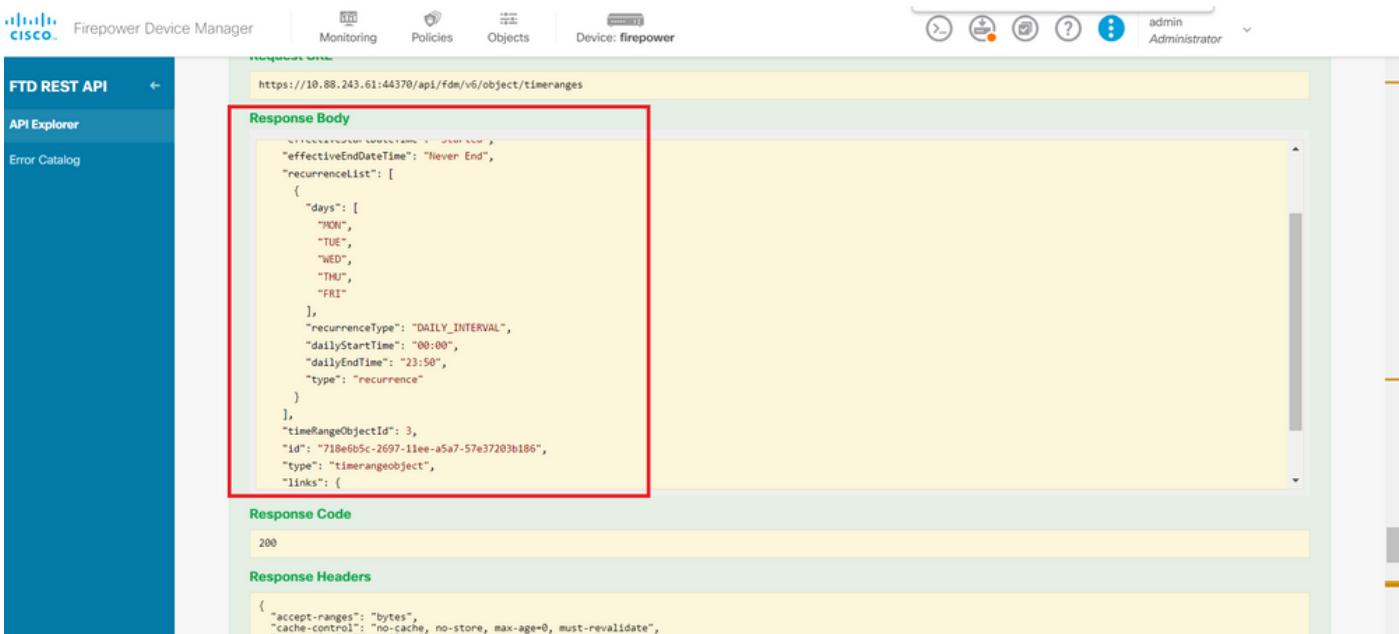
```

<#root>
{
  "name": "range-obj-2",
",
"recurrenceList": [
{
  "days": [
    "MON"
  ],
  "recurrenceType": "DAILY_INTERVAL",
  "dailyStartTime": "12:00",
  "dailyEndTime": "13:00"
},
{
  "type": "recurrence"
}
]
}
```

```
],
  "type": "timerangeobject",
}
```

 注：请记住，TRY IT OUT! 要执行API调用，请点击。

## 步骤 8运行调用GET，以获取TimeRange对象ID。



The screenshot shows the Firepower Device Manager interface with the FTD REST API selected. A red box highlights the 'Response Body' section, which contains the following JSON output:

```

{
  "id": "718e6b5c-2697-11ee-a5a7-57e37203b186",
  "type": "timerangeobject",
  "timeRangeObjectId": 3,
  "effectiveEndDateTime": "Never End",
  "recurrenceList": [
    {
      "days": [
        "MON",
        "TUE",
        "WED",
        "THU",
        "FRI"
      ],
      "recurrenceType": "DAILY_INTERVAL",
      "dailyStartTime": "00:00",
      "dailyEndTime": "23:50",
      "type": "recurrence"
    }
  ],
  "links": {
    ...
  }
}

```

Below the response body, the 'Response Code' is listed as 200, and the 'Response Headers' section shows:

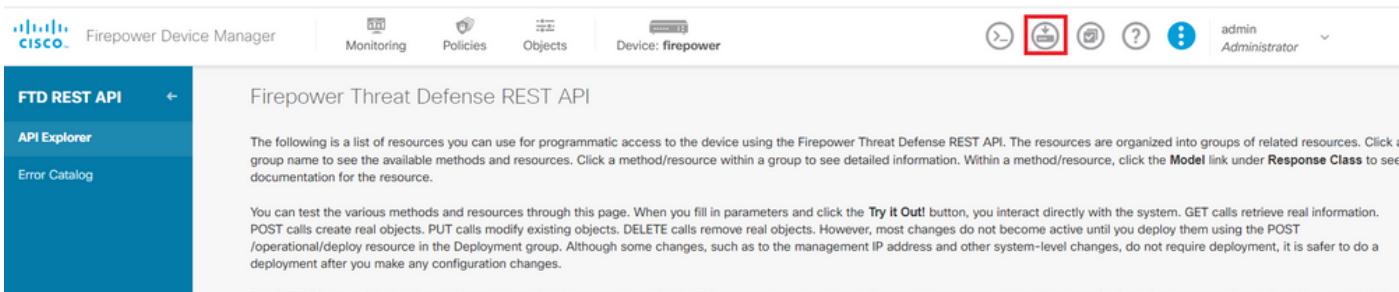
```

{
  "accept-ranges": "bytes",
  "cache-control": "no-cache, no-store, max-age=0, must-revalidate",
  ...
}

```

图 8.从时间范围获取GET响应。

## 步骤 9单击Deploy按钮以验证和应用更改。



The screenshot shows the Firepower Threat Defense REST API interface. The 'Deploy' button, located in the top right toolbar, is highlighted with a red box.

The main content area displays the following text:

The following is a list of resources you can use for programmatic access to the device using the Firepower 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.

图 9.可从API资源管理器中使用部署按钮。

## 步骤 10验证您刚刚创建的配置，然后单击 DEPLOY NOW.

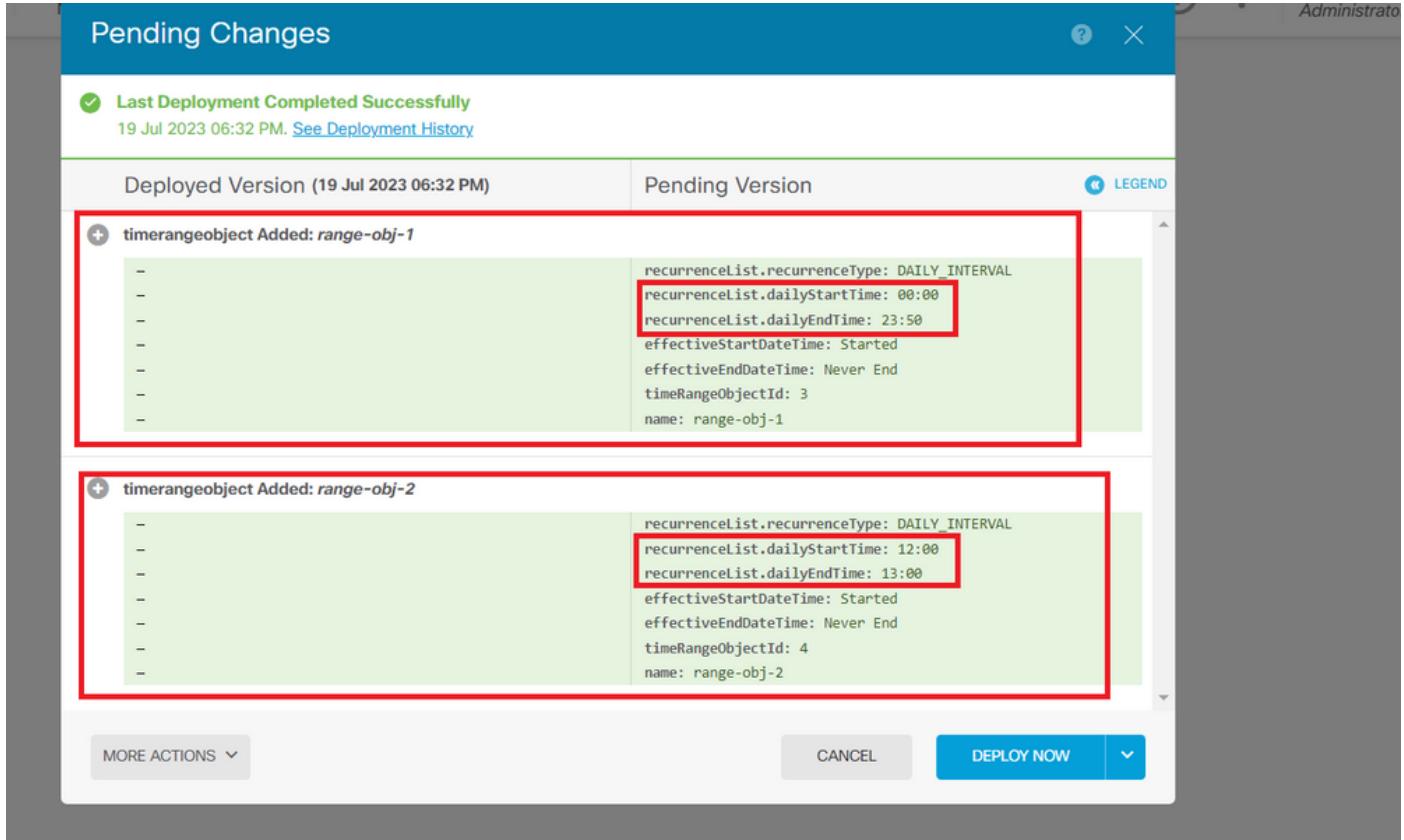


图 10.FDM挂起更改窗口。

步骤 11查找类别 AccessPolicy，然后打开POST呼叫，以便创建基于时间的访问控制规则。

AccessPolicy	
<a href="#">GET</a>	/policy/accesspolicies/{parentId}/accessrules
<a href="#">POST</a>	<a href="#">/policy/accesspolicies/{parentId}/accessrules</a>
<a href="#">DELETE</a>	/policy/accesspolicies/{parentId}/accessrules/{objId}
<a href="#">GET</a>	/policy/accesspolicies/{parentId}/accessrules/{objId}
<a href="#">PUT</a>	/policy/accesspolicies/{parentId}/accessrules/{objId}
<a href="#">GET</a>	/policy/accesspolicies/{objId}
<a href="#">PUT</a>	/policy/accesspolicies/{objId}

图 11.访问策略POST呼叫。

在此找到一个JSON格式示例，用于创建基于时间的ACL，允许流量从内部区域流向外部区域。

确保使用正确的时间范围对象ID。

<#root>

```

{
  "name": "test_time_range_2",
  "sourceZones": [
    {
      "name": "inside_zone",
      "id": "90c377e0-b3e5-11e5-8db8-651556da7898",
      "type": "securityzone"
    }
  ],
  "destinationZones": [
    {
      "name": "outside_zone",
      "id": "b1af33e1-b3e5-11e5-8db8-afdc0be5453e",
      "type": "securityzone"
    }
  ],
  "ruleAction": "PERMIT",
  "eventLogAction": ""

LOG_FLOW_END

",
  "timeRangeObjects": [
    {
      "id": "
718e6b5c-2697-11ee-a5a7-57e37203b186
",
      "type": "timerangeobject",
      "name": "Time-test2"
    }
  ],
  "type": "accessrule"
}

```

---

 注意`eventLogAction`：必`LOG_FLOW_END`须在流程结束时记录事件，否则会出错。

---

步骤 12部署更改以应用新的基于时间的ACL。Pending Changes提示必须显示步骤10中所用的时间范围对象。

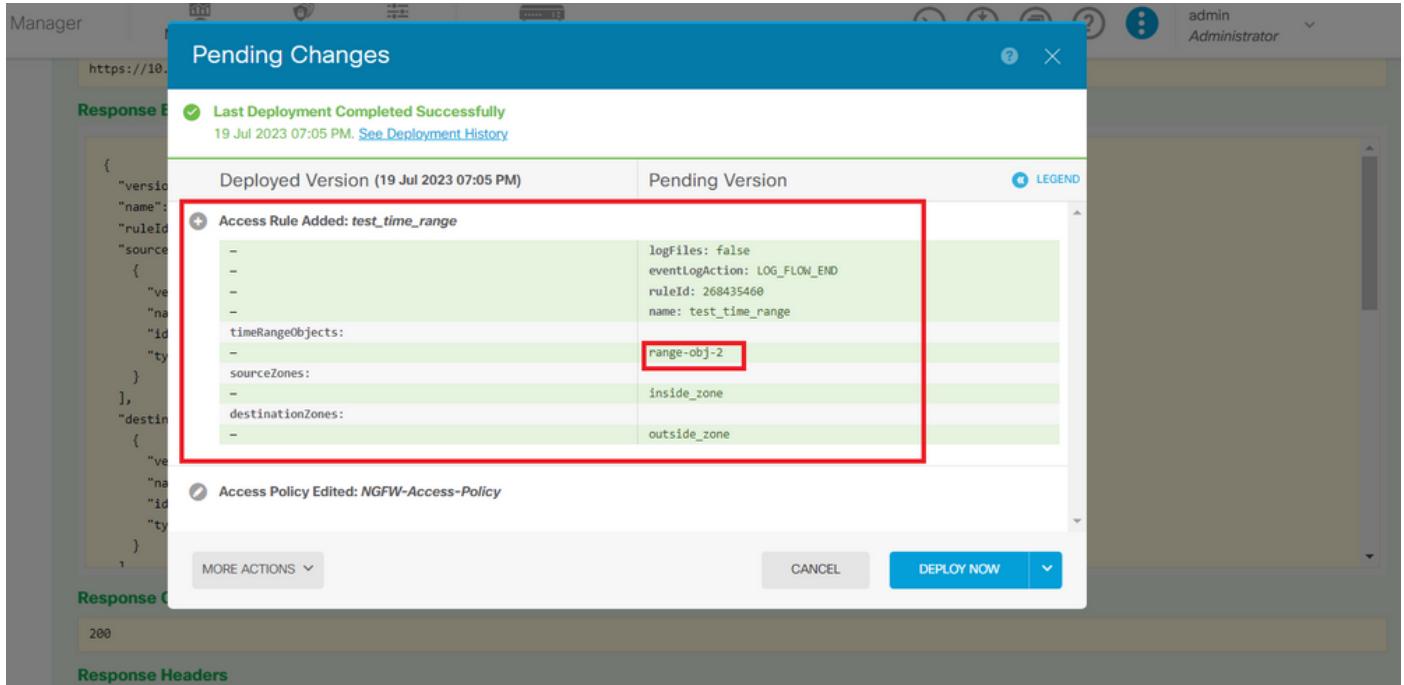


图 12.“FDM挂起更改”窗口将显示新规则。

**第 13 步（可选）：如果要编辑ACL，可以使用呼叫并PUT编辑时间范围ID。**

Parameter	Value	Description	Parameter Type	Data Type
parentId	(required)		path	string
objId	(required)		path	string

图 13.访问策略PUT呼叫。

在此找到格JSON式示例以编辑时间范围，这些时间范围ID可以通过使用调用进行收集GET。

<#root>

```
{
"version": "flya3jw7wvqg7",
"name": "test_time_range",
"ruleId": 268435460,
"sourceZones": [
{
"version": "lypkhscmwq4bq",
"name": "inside_zone",
"ruleId": 268435460
}
], "destinationZones": [
{
"version": "lypkhscmwq4bq",
"name": "outside_zone"
}
], "timeRangeObjects": [
{
"version": "lypkhscmwq4bq",
"name": "range-obj-2"
}
]
}
```

```
"id": "90c377e0-b3e5-11e5-8db8-651556da7898",
"type": "securityzone"
},
],
"destinationZones": [
{
"version": "pytctz6vvfb3i",
"name": "outside_zone",
"id": "b1af33e1-b3e5-11e5-8db8-afdc0be5453e",
"type": "securityzone"
}
],
"sourceNetworks": [],
"destinationNetworks": [],
"sourcePorts": [],
"destinationPorts": [],
"ruleAction": "PERMIT",
"eventLogAction": "LOG_FLOW_END",
"identitySources": [],
"users": [],
"embeddedAppFilter": null,
"urlFilter": null,
"intrusionPolicy": null,
"filePolicy": null,
"LogFile": false,
"syslogServer": null,
"destinationDynamicObjects": [],
"sourceDynamicObjects": [],
"timeRangeObjects": [
{
"version": "i3iohbd5iufol",
"name": "range-obj-1",
"id": "718e6b5c-2697-11ee-a5a7-57e37203b186
",
"type": "timerangeobject"
}
],
"id": "0f2e8f56-269b-11ee-a5a7-6f90451d6efd",
"type": "accessrule"
}
```

步骤 14部署和验证更改。

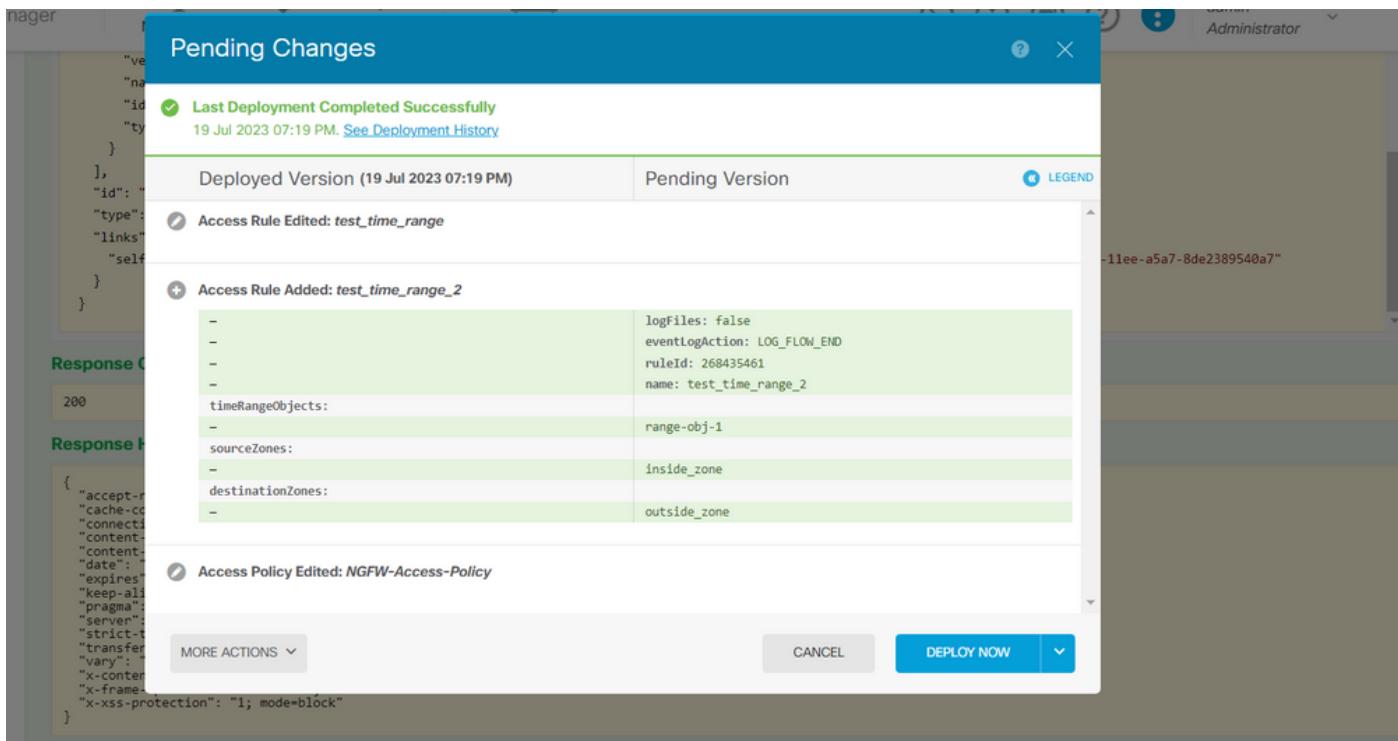


图 14.“FDM挂起更改”(FDM Pending Changes)窗口显示对象的更改。

## 验证

1.运行命令 show time-range , 以验证时间范围对象的状态。

```
<#root>
>
show time-range

time-range entry:
range-obj-1
(
active
)
    periodic weekdays 0:00 to 23:50
time-range entry:
range-obj-2
(
inactive
)
    periodic Monday 12:00 to 13:00
```

2.使用 show access-control-config 命令验证访问控制规则配置。

```
<#root>
>
show access-control-config

=====*[ NGFW-Access-Policy ]=====
Description :
=====*[ Default Action ]=====
Default Action : Block
Logging Configuration
DC : Enabled
Beginning : Disabled
End : Disabled
Rule Hits : 0
Variable Set : Object missing: 76fa83ea-c972-11e2-8be8-8e45bb1343c0

===[ Security Intelligence - Network Whitelist ]===
===[ Security Intelligence - Network Blacklist ]===
Logging Configuration : Disabled
DC : Disabled

===[ Security Intelligence - URL Whitelist ]===
===[ Security Intelligence - URL Blacklist ]===
Logging Configuration : Disabled
DC : Disabled

=====*[ Rule Set: admin_category (Built-in) ]=====
=====*[ Rule Set: standard_category (Built-in) ]=====

-----*[ Rule: test_time_range ]-----
Action :
Allow

Source ISE Metadata :

Source Zones : inside_zone
Destination Zones : outside_zone
Users
URLs
Logging Configuration
DC : Enabled
Beginning : Disabled
End : Enabled
Files : Disabled
Safe Search : No
Rule Hits : 0
Variable Set : Object missing: 76fa83ea-c972-11e2-8be8-8e45bb1343c0
Time Range :

range-obj-1

Daily Interval
StartTime : 00:00
EndTime : 23:50
Days : Monday,Tuesday,Wednesday,Thursday,Friday
```

### 3.运行调试System Support Trace，以确认流量符合正确的规则。

```
<#root>

> system support trace

Enable firewall-engine-debug too? [n]: y
Please specify an IP protocol: tcp
Please specify a client IP address:
Please specify a client port:
Please specify a server IP address:
Please specify a server port: 443
Monitoring packet tracer and firewall debug messages

10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 New firewall session
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 app event with app id no change, url no change
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Starting with minimum 1, 'test_time_range', a
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1

match rule order 1, 'test_time_range', action Allow

10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 MidRecovery data sent for rule id: 268435460,
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1

allow action

10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Packet 1930048: TCP *****S*, 07/20-18:05:06.
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Session: new snort session
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 AppID: service: (0), client: (0), payload: (0)
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Firewall: starting rule matching, zone 2 -> 1
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1

Firewall: allow rule, 'test_time_range', allow

10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Policies: Network 0, Inspection 0, Detection 0
10.10.10.3 62360 -> Destination IP 443 6 AS=0 ID=3 GR=1-1 Verdict:

pass
```

## 关于此翻译

思科采用人工翻译与机器翻译相结合的方式将此文档翻译成不同语言，希望全球的用户都能通过各自的语言得到支持性的内容。

请注意：即使是最好的机器翻译，其准确度也不及专业翻译人员的水平。

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