

The background is a vibrant, abstract graphic featuring a spectrum of colors from red and orange on the left to blue and green on the right. The colors are arranged in a series of overlapping, wavy bands that create a sense of movement and depth. A bright, white, starburst-like light source is positioned on the right side, from which rays of light emanate across the entire scene, enhancing the dynamic and energetic feel of the design.

cisco *Live!*

Let's go

#CiscoLive



The bridge to possible

Intersight API Snooping

for fun and profit

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DEVNET-1061



#CiscoLive



Cisco Webex App

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How

- 1 Find this session in the Cisco Live Mobile App
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- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until June 9, 2023.



<https://ciscolive.ciscoevents.com/ciscolivebot/#DEVNET-1061>

Agenda


- Introduction
- Demo
- Intersight APIs Explained
- Code syntax mapping
- Additional Resources



The Intersight web-based GUI uses the same APIs that you can use...

You can use the GUI, observe the API calls, and learn to automate Intersight.

Service

Intersight ▾

API Reference v1.0.11-11061 

 ntp/policies 

ntp/Policies ^

- POST** Create a 'ntp.Policy' resource.
- GET** Read a 'ntp.Policy' resource.
- GET** Read a 'ntp.Policy' resource.
- POST** Update a 'ntp.Policy' resource.
- PATCH** Update a 'ntp.Policy' resource.
- DELETE** Delete a 'ntp.Policy' resource.

ntp/Policies

Policy to configure the NTP Servers.

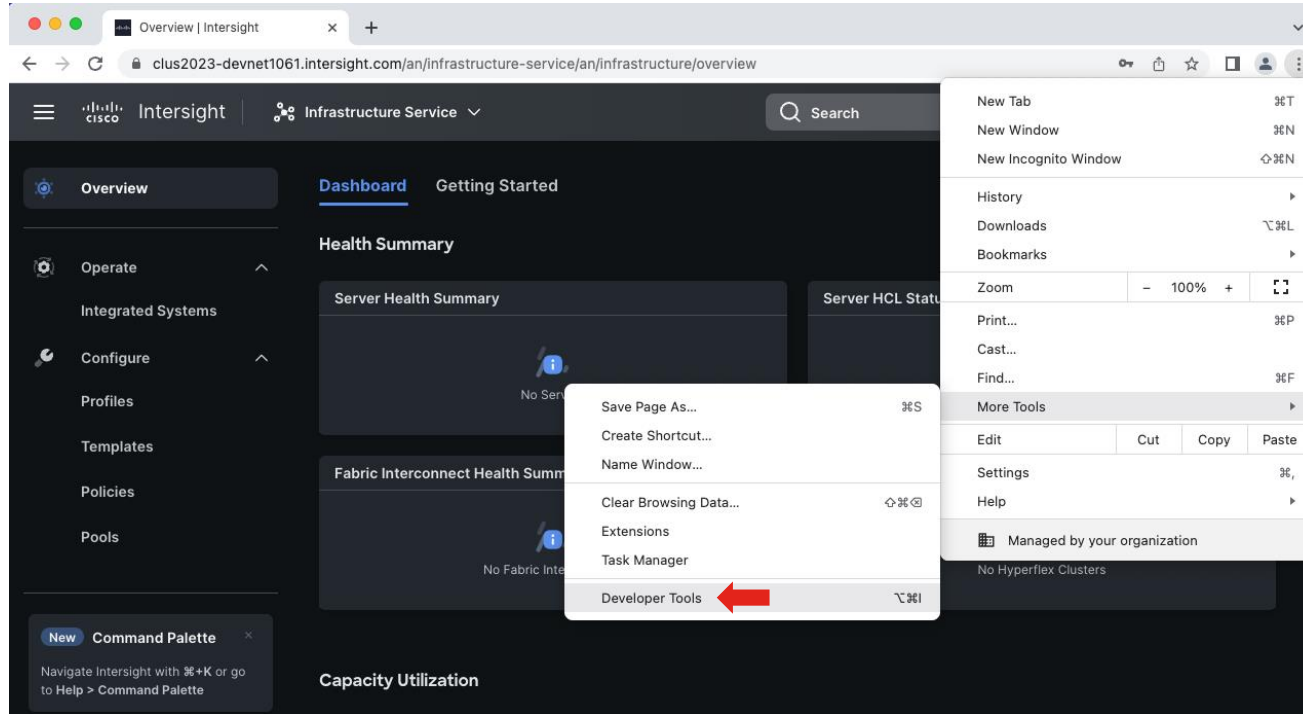
- ClassId:** **string** *The fully-qualified name of the instantiated, concrete type. This property is used as a discriminator to identify the type of the payload when marshaling and unmarshaling data.*
- ObjectType:** **string** *The fully-qualified name of the instantiated, concrete type. The value should be the same as the 'ClassId' property.*
- AccountMoid:** **string** (Read Only) *The Account ID for this managed object.*
- CreateTime:** **string** (Read Only) *The time when this managed object was created.*
- DomainGroupMoid:** **string** (Read Only) *The DomainGroup ID for this managed object.*
- ModTime:** **string** (Read Only) *The time when this managed object was last modified.*
- Moid:** **string** *The unique identifier of this Managed Object instance.*
- **Owners:** **array** *Array*

Intersight Demo in Chrome Browser with Developer Tools

Chrome Browser Developer Tools Configuration



Enable Developer Tools in your Browser



Choose 'Network' Tab and add Filter

The screenshot shows the Cisco Intersight web interface. The left sidebar contains navigation options: Overview, Operate, Integrated Systems, Configure, Profiles, Templates, Policies, and Pools. The main content area displays the 'Health Summary' section with three sub-sections: 'Server Health Summary', 'Server HCL Status Summary', and 'Fabric Interconnect Health Summary'. Each sub-section shows 'No Servers'.

On the right side, the 'Network' tab is selected in the top navigation bar. Below the tab, a filter is applied: 'api/v1 resource-type:fetch'. This filter is highlighted with a red box and a red arrow pointing to it. The filter is also repeated in a red box on the right side of the image.

Name	Status	Type	Initiator	Size	Time	Waterfall
------	--------	------	-----------	------	------	-----------

Key controls

The screenshot shows the Cisco Intersight web interface. The left sidebar contains navigation links: Overview, Operate, Integrated Systems, Configure, Profiles, Templates, Policies, and Pools. The main content area displays the 'Health Summary' section, which includes 'Server Health Summary', 'Server HCL Status Summary', and 'Fabric Interconnect Health Summary'. Each of these sections shows 'No Servers' with an information icon. A red box highlights the 'Start/Stop Recording' button in the top right corner of the main content area. A red arrow points from this button to the 'Clear the Recording' button, which is also highlighted with a red box. The 'Clear the Recording' button is located in the top right corner of the page, next to the 'Start/Stop Recording' button. The browser's developer tools are open on the right side of the screen, showing the 'Network' tab with a list of requests. The first request is 'api/v1 resource' with a status of '200 OK'.

Start/Stop Recording

Clear the Recording

Create Intersight NTP Policy



Create NTP Policy – Step 1

Create

1 General

2 Policy Details

General
Add a name, description and tag for the policy.

Organization * **CLUS** ← **Select an Organization**

Name * **FUN-and-PROFIT** ← **Enter a name**

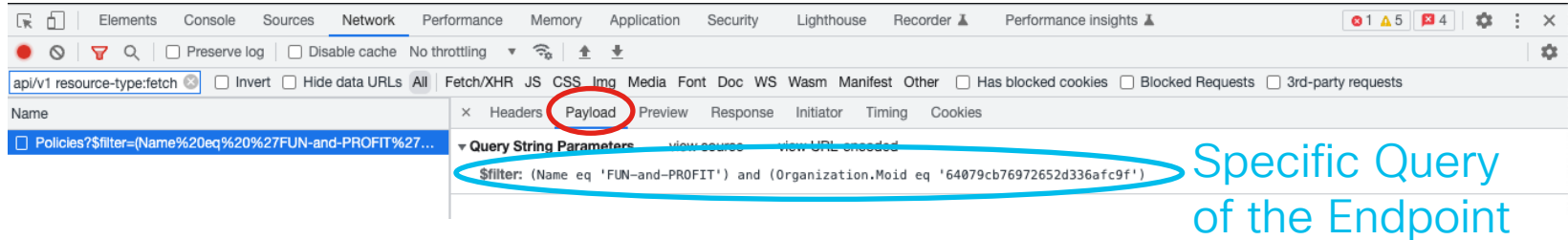
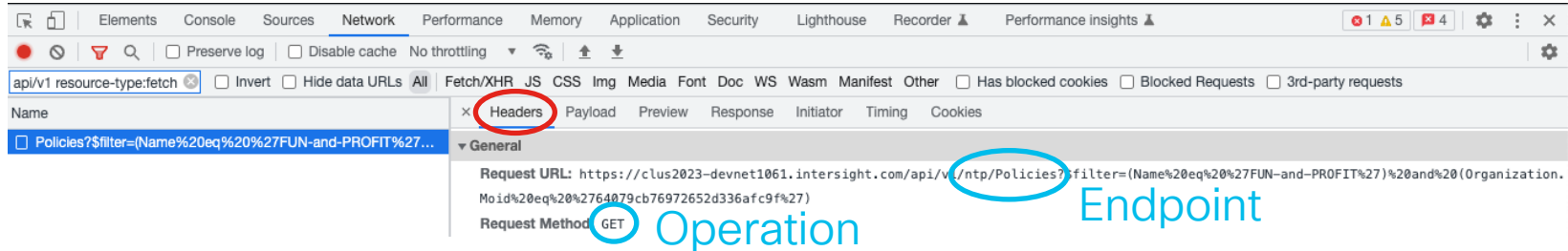
Set Tags
CLUS2023 DEVNET-1061 x Language GUI x ← **Add Tags**

Enter a tag in the key:value format.

Description
This is an NTP policy created from the GUI ← **Enter a description**

Click Next → **Next**

Create NTP Policy – Step 1



Empty “Results” means that it didn’t exist!

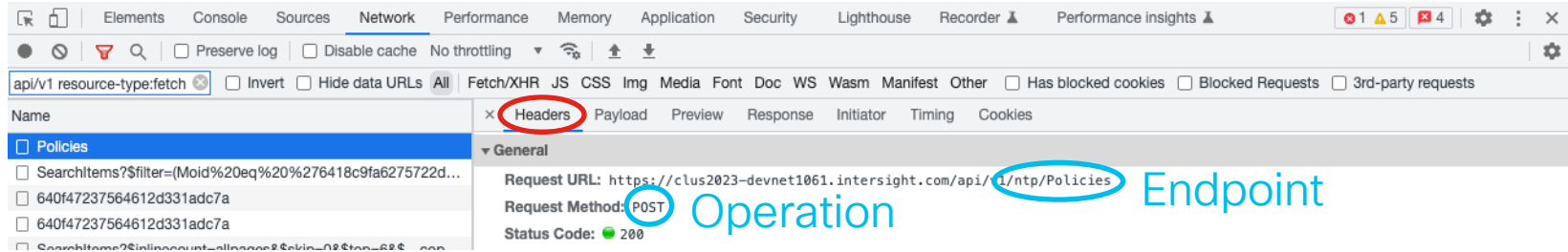
Create NTP Policy – Step 2

The screenshot displays the Cisco Intersight 'Create NTP Policy' interface. The sidebar on the left shows the navigation menu with 'Policies' selected. The main area is titled 'Create' and has two tabs: 'General' and 'Policy Details'. The 'Policy Details' tab is active, showing the following fields:

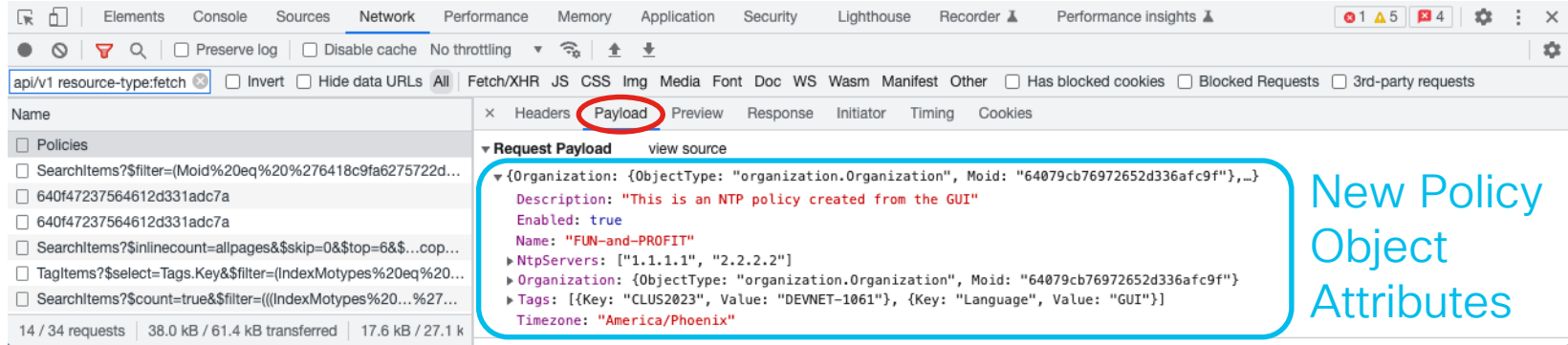
- Enable NTP:** A toggle switch that is currently turned on.
- NTP Servers:** A list of NTP servers. Two servers are added: '1.1.1.1' and '2.2.2.2'. Red arrows point to these entries with the text 'Add two NTP Servers'.
- Timezone:** A dropdown menu showing 'America/Phoenix'. A red arrow points to this field with the text 'Select a Timezone'.

At the bottom of the form, there are two buttons: 'Cancel' and 'Create'. A red arrow points to the 'Create' button with the text 'Click Create'.

Create NTP Policy – Step 2 – Request



The screenshot shows the Chrome DevTools Network tab with a request to `api/v1 resource-type:fetch` selected. The **Headers** tab is active, showing the **General** section. The **Request URL** is `https://clus2023-devnet1061.intersight.com/api/1/ntp/Policies`, with `1/ntp/Policies` circled in blue and labeled **Endpoint**. The **Request Method** is `POST`, circled in blue and labeled **Operation**. The **Status Code** is `200`.



The screenshot shows the Chrome DevTools Network tab with the same request selected. The **Payload** tab is active, showing the **Request Payload** section. The payload is a JSON object with the following attributes:

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64079cb76972652d336afc9f",
    "Description": "This is an NTP policy created from the GUI",
    "Enabled": true,
    "Name": "FUN-and-PROFIT",
    "NtpServers": ["1.1.1.1", "2.2.2.2"],
    "Organization": {
      "ObjectType": "organization.Organization",
      "Moid": "64079cb76972652d336afc9f"
    },
    "Tags": [
      {
        "Key": "CLUS2023",
        "Value": "DEVNET-1061"
      },
      {
        "Key": "Language",
        "Value": "GUI"
      }
    ],
    "Timezone": "America/Phoenix"
  }
}
```

The **Payload** tab is circled in red. The JSON object is highlighted with a blue box and labeled **New Policy Object Attributes**.

Create NTP Policy – Step 2 – Response

The screenshot shows the Chrome DevTools Network tab with the 'Response' sub-tab selected. The URL bar shows 'api/v1 resource-type:fetch'. The left sidebar lists various search items. The main pane displays the JSON response of the API call, which is a new NTP Policy Object. A blue circle highlights the 'New NTP Policy Object' section of the response, which includes details like 'Moid', 'ObjectType', 'ClassId', 'CreateTime', 'ModTime', 'Tags', 'Owners', 'SharedScope', 'AccountMoid', 'DomainGroupMoid', 'Ancestors', 'PermissionResources', 'Description', 'Name', 'AuthenticatedNtpServers', 'Enabled', 'NtpServers', 'Timezone', 'Organization', and 'Profiles'.

```
1 {
2   "Moid": "6418c9fa627522d31ca4631",
3   "ObjectType": "ntp.Policy",
4   "ClassId": "ntp.Policy",
5   "CreateTime": "2023-03-20T21:02:50.990175619Z",
6   "ModTime": "2023-03-20T21:02:50.990175619Z",
7   "Tags": [
8     {
9       "Key": "CLUS2023",
10      "Value": "DEVNET-1061"
11    },
12    {
13      "Key": "Language",
14      "Value": "GUI"
15    }
16  ],
17  "Owners": [
18    "64076ed77564612d332b785c"
19  ],
20  "SharedScope": "",
21  "AccountMoid": "64076ed77564612d332b785c",
22  "DomainGroupMoid": "64076ed77564612d332b785c",
23  "Ancestors": null,
24  "PermissionResources": [
25    {
26      "ObjectType": "organization.Organization",
27      "ClassId": "mo.MoRef",
28      "Moid": "64079cb76972652d336afc9f",
29      "Link": "https://www.intersight.com/api/v1/organization/Organizations/64079cb76972652d336afc9f"
30    }
31  ],
32  "Description": "This is an NTP policy created from the GUI",
33  "Name": "FUN-and-PROFIT",
34  "AuthenticatedNtpServers": [],
35  "Enabled": true,
36  "NtpServers": [
37    "1.1.1.1",
38    "2.2.2.2"
39  ],
40  "Timezone": "America/Phoenix",
41  "Organization": {
42    "ObjectType": "organization.Organization",
43    "ClassId": "mo.MoRef",
44    "Moid": "64079cb76972652d336afc9f",
45    "Link": "https://www.intersight.com/api/v1/organization/Organizations/64079cb76972652d336afc9f"
46  },
47  "Profiles": null
48 }
```

New NTP
Policy Object

The created NTP Policy



Elements of an NTP Policy JSON Object

```
{
  "AccountMoid": "64076ed77564612d332b785c",
  "Ancestors": [],
  "AuthenticatedNtpServers": [],
  "ClassId": "ntp.Policy",
  "CreateTime": "2023-03-20T21:02:50.99Z",
  "Description": "This is an NTP policy created from the GUI", ← Description of the object
  "DomainGroupMoid": "64076ed77564612d332b785e",
  "Enabled": true,
  "ModTime": "2023-03-20T21:02:50.99Z",
  "Moid": "6418c9fa6275722d31ca4631", ← Moid of the object
  "Name": "FUN-and-PROFIT", ← Name of the object
  "NtpServers": [
    "1.1.1.1", ← The NTP Servers that we added
    "2.2.2.2"
  ],
  "ObjectType": "ntp.Policy", ← Endpoint
  "Organization": {
    "ClassId": "mo.MoRef",
    "Moid": "64079cb76972652d336afc9f",
    "ObjectType": "organization.Organization",
    "link": "https://www.intersight.com/api/v1/organization/Organizations/64079cb76972652d336afc9f",
  },
  "Owners": ["64076ed77564612d332b785c"],
  "PermissionResources": [
    {
      "ClassId": "mo.MoRef",
      "Moid": "64079cb76972652d336afc9f",
      "ObjectType": "organization.Organization",
      "link": "https://www.intersight.com/api/v1/organization/Organizations/64079cb76972652d336afc9f"
    }
  ],
  "Profiles": [],
  "SharedScope": "",
  "Tags": [
    { "Key": "CLUS2023", "Value": "DEVNET-1061" },
    { "Key": "Language", "Value": "GUI" } ← The Tags that we added
  ],
  "Timezone": "America/Phoenix" ← The Timezone that we selected
}
```

Intersight API Basics Explained



Authentication

- API Keys are created by an Intersight user and inherit the user and role of the creator
- API Keys are used to sign the headers of requests
- There are differences in how keys can be provided between different SDKs or tools

<https://intersight.com/apidocs/introduction/security/>

ODATA Language

Intersight uses ODATA
for *most* API Endpoints

Among other things, this
provides a query language
that is somewhat like SQL

<https://intersight.com/apidocs/introduction/query/>

\$top to limit return count

\$skip to skip results for
pagination

\$filter to return only objects
that match

\$expand to provide related
object data instead of
links to related objects

\$select to limit attributes
returned in an object

\$orderby to sort returned
objects

ODATA Examples

`$top=1`

`$skip=10`

`$filter=Name eq 'FUN-and-PROFIT'`

`$expand=Organization`

`$select=Name,Timezone`

`$orderby=Name`

Logical Operators

`eq` = Equals

`ne` = Not Equals

`gt` = Greater Than

`lt` = Less Than

Managed Object ID or MOID or Moid

- The Managed Object IDs are a unique identifier for every object
- They serve a similar function to a key field in a SQL table
- While the Name of an object can be changed, the MOID will not change
- 12 bytes long
 - Twice the size of a MAC address
 - Smaller than an IPv6 address

References or MoRef or mo.MoRef

- Objects reference other objects
- Object references frequently need to be used when creating objects in Intersight to create valid objects (for example, Organization)
- Sometimes objects can be created and references to other objects can be added later

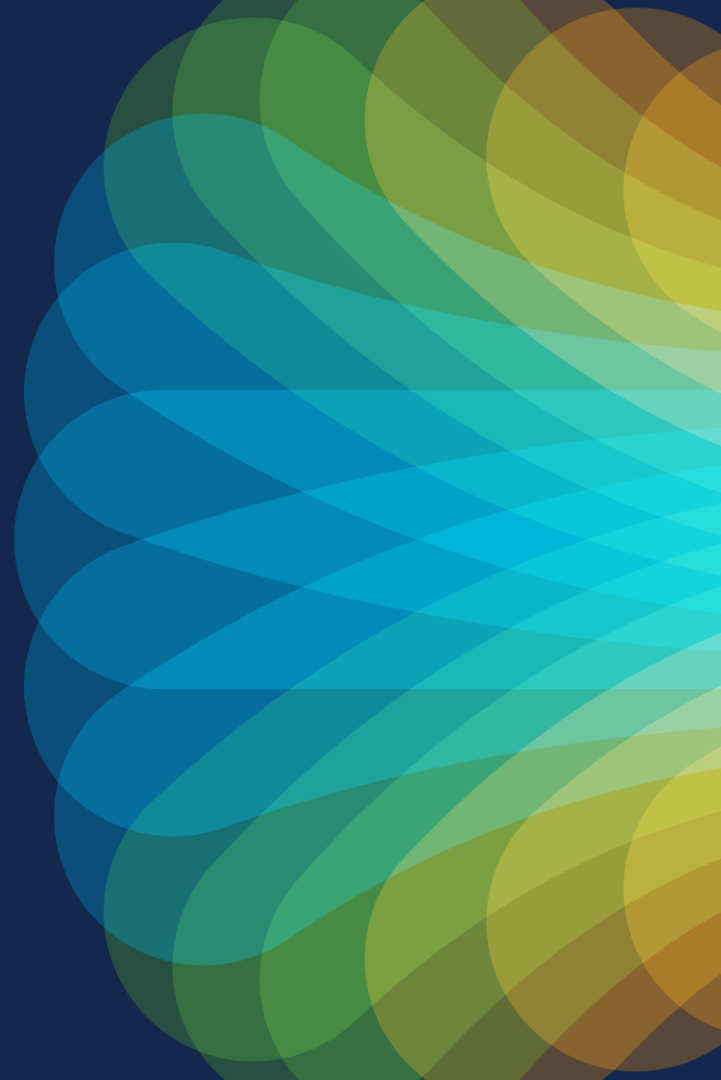
Uniqueness

- MOIDs are guaranteed to be unique for a particular Endpoint (not globally unique)
- Names must be unique within an Organization
 - Organization A and Organization B may each have unique NTP policies named 'East' with different NTP servers, for example
- Each tag Key may only be assigned once for a given object

Create an NTP Policy

<http://cs.co/CLUS2023-DEVNET1061>

CISCO *Live!*



Create an NTP Policy

POST ← HTTP Method

https://intersight.com/api/v1/ntp/Policies ← HTTP URL

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
  "Name": "FUN-and-PROFIT",
  "Tags": [
    {"Key": "CLUS2023", "Value": "DEVNET-1061"},
    {"Key": "Language", "Value": "GUI"}],
  "Description": "This is an NTP policy
created from the GUI",
  "Enabled": true,
  "NtpServers": [
    "1.1.1.1",
    "2.2.2.2"
  ],
  "Timezone": "America/Phoenix"
}
```

endpoint

Organization Reference

Tags

Create an NTP Policy in Powershell

POST

https://intersight.com/api/v1/ntp/Policies

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
```

```
$theOrg = Get-
```

```
IntersightOrganizationOrganization `
-Name CLUS
```

```
$theCLUStag = Initialize-IntersightMoTag `
```

```
-Key "CLUS2023" -Value "Devnet-1061"
```

```
$theLangtag = Initialize-IntersightMoTag `
```

```
-Key "Language" -Value "Powershell"
```

```
New-IntersightNtpPolicy `
```

```
-Name "powershell" `
```

```
-Description "This is an NTP policy
created with Powershell" `
```

```
-Organization $theOrg `
```

```
-Enabled $true `
```

```
-NtpServers @("1.1.1.1", "2.2.2.2") `
```

```
-Tags @($theCLUStag, $theLangtag) `
```

```
-Timezone AmericaPhoenix
```

Create an NTP Policy in Powershell

POST

https://intersight.com/api/v1/ntp/Policies

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

\$theOrg = Get-

IntersightOrganizationOrganization
-Name CLUS

\$theCLUSTag = Initialize-IntersightMoTag

-Key "CLUS2023" -Value "Devnet-1061"

\$theLangtag = Initialize-IntersightMoTag

-Key "Language" -Value "Powershell"

New-IntersightNtpPolicy

-Name "powershell"

-Description "This is an NTP policy created with Powershell"

-Organization \$theOrg

-Enabled \$true

-NtpServers @("1.1.1.1", "2.2.2.2")

-Tags @(\$theCLUSTag, \$theLangtag)

-Timezone AmericaPhoenix

Powershell Tips

- HTTP Method to Powershell Cmdlet prefix mapping

Post = `New-Intersight*`

Get = `Get-Intersight*`

Patch = `Set-Intersight*`

Delete = `Remove-Intersight*`

- Use `Initialize-Intersight*` to build complex objects
- Use pipe to Patch and Delete

```
Get-IntersightNtpPolicy -Name Example | Set-IntersightNtpPolicy -Name Changed
```

```
Get-IntersightNtpPolicy -Name Example | Remove-IntersightNtpPolicy
```

Create an NTP Policy in Python SDK

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
    created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

```
org =
org_api_instance.get_organization_organization_list(
filter="Name eq 'CLUS'").results[0]

theOrgReference = OrganizationOrganizationRelationship(
class_id="mo.MoRef",
object_type=org.object_type,
moid=org.moid,
)

theNtpPolicy = NtpPolicy()
theNtpPolicy.name = "python_sdk"
theNtpPolicy.description = "This is an NTP policy
created with Python SDK"
theNtpPolicy.organization = theOrgReference
theNtpPolicy.enabled = True
theNtpPolicy.ntp_servers = ["1.1.1.1", "2.2.2.2"]
theNtpPolicy.tags = [
dict(key="CLUS2023", value="Devnet-1061"),
dict(key="Language", value="Python SDK"),
]
theNtpPolicy.timezone = "America/Phoenix"

ntp_response =
ntp_api_instance.create_ntp_policy(theNtpPolicy)
```


Create an NTP Policy in Python SDK

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

```
org =
org_api_instance.get_organization_organization_list(
filter="Name eq 'CLUS'").results[0]

theOrgReference = OrganizationOrganizationRelationship(
class_id="mo.MoRef",
object_type=org.object_type,
moid=org.moid,
)

theNtpPolicy = NtpPolicy()
theNtpPolicy.name = "python_sdk"
theNtpPolicy.description = "This is an NTP policy created with Python SDK"
theNtpPolicy.organization = theOrgReference
theNtpPolicy.enabled = True
theNtpPolicy.ntp_servers = ["1.1.1.1", "2.2.2.2"]
theNtpPolicy.tags = [
dict(key="CLUS2023", value="Devnet-1061"),
dict(key="Language", value="Python SDK"),
]
theNtpPolicy.timezone = "America/Phoenix"

ntp_response =
ntp_api_instance.create_ntp_policy(theNtpPolicy)
```

Python SDK Tips

- HTTP Method to Python SDK Method prefix mapping

Post = `create_*`

Get = `get_*`

Patch = `update_*`

Delete = `delete_*`

- Use model object classes to build complex objects
- Be careful with snake case conversion
- SDK `get_*` methods return a results list, so always check `*.results[0]` when you `get_*` something

Create an NTP Policy in Python Requests

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
```

```
filter= urllib.parse.quote("Name eq 'CLUS'")
org = session.get(
f"https://intersight.com/api/v1/organization/Organizatio
ns?$filter={filter}").json()["Results"][0]
```

```
theNTPPolicy = {
  "Name": "python_requests",
  "Description": "This is an NTP policy created with
Python SDK",
  "Organization": {
    "ObjectType": org["ObjectType"],
    "Moid": org["Moid"]},
  "Enabled": True,
  "NtpServers": ["1.1.1.1", "2.2.2.2"],
  "Tags": [
    {"Key": "CLUS2023", "Value": "Devnet-1061"},
    {"Key": "Language", "Value": "Python Requests"}],
  ],
  "Timezone": "America/Phoenix",
}
ntp_response = session.post(
  "https://intersight.com/api/v1/ntp/Policies",
  json=theNTPPolicy
)
```

Create an NTP Policy in Python Requests

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f3",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

```
filter= urllib.parse.quote("Name eq 'CLUS'")
org = session.get(
f"https://intersight.com/api/v1/organization/Organizations?$filter={filter}").json()[0]
```

```
theNTPPolicy = {
  "Name": "python_requests",
  "Description": "This is an NTP policy created with Python SDK",
  "Organization": {
    "ObjectType": org["ObjectType"],
    "Moid": org["Moid"]},
  "Enabled": True,
  "NtpServers": ["1.1.1.1", "2.2.2.2"],
  "Tags": [
    {"Key": "CLUS2023", "Value": "Devnet-1061"},
    {"Key": "Language", "Value": "Python Requests"}],
  "Timezone": "America/Phoenix",
}
ntp_response = session.post(
"https://intersight.com/api/v1/ntp/Policies",
json=theNTPPolicy
)
```

Python Requests Tips

- Differences compared with Python SDK...
 - You must build your own URLs with the ODATA parameters you need
 - Be sure to URL quote your ODATA parameter values
 - No more conversion back and forth from camel case to snake case
- You probably want to build a helper class for yourself

Create an NTP Policy in Terraform

POST
<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
    created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
```

```
data "intersight_organization_organization" "CLUS" {
  name = "CLUS"
}

resource "intersight_ntp_policy" "us_ntp" {
  name = "terraform"
  tags {
    key = "CLUS2023"
    value = "Devnet-1061"
  }
  tags {
    key = "Language"
    value = "Terraform"
  }
  organization {
    moid = data.intersight_organization_organization.
      CLUS.results[0].moid
  }
  enabled = true
  ntp_servers = [
    "1.1.1.1",
    "2.2.2.2",
  ]
  timezone = "America/Phoenix"
}
```

Create an NTP Policy in Terraform

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

```
data "intersight_organization_organization" "CLUS" {
  name = "CLUS"
}

resource "intersight_ntp_policy" "us_ntp" {
  name = "terraform"
  tags {
    key = "CLUS2023"
    value = "Devnet-1061"
  }
  tags {
    key = "Language"
    value = "Terraform"
  }
  organization {
    moid = data.intersight_organization_organization.
      CLUS.results[0].moid
  }
  enabled = true
  ntp_servers = [
    "1.1.1.1",
    "2.2.2.2",
  ]
  timezone = "America/Phoenix"
}
```

Terraform Tips

- Terraform is declarative so there is no separate code for create, update, and delete operations... `resource` blocks do it all
- Use Data sources to read data from Intersight
 - Don't forget that data sources return a list of results, so use `data.intersight_type.name.results[0].attribute` to get a value from the first result
- If there are errors on plan or apply that mentions `additional_properties` being required, it's probably something using argument syntax where block syntax is needed

Create an NTP Policy in Ansible

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
  "Name": "FUN-and-PROFIT",
  "Tags": [
    {"Key": "CLUS2023", "Value": "DEVNET-1061"},
    {"Key": "Language", "Value": "GUI"}],
  "Description": "This is an NTP policy
created from the GUI",
  "Enabled": true,
  "NtpServers": [
    "1.1.1.1",
    "2.2.2.2"
  ],
  "Timezone": "America/Phoenix"
}
```

tasks:

```
- name: Configure NTP Policy via Ansible
  intersight_ntp_policy:
    name: ansible
    description: This is an NTP policy c...
    organization: CLUS
    enable: true
    ntp_servers:
      - 1.1.1.1
      - 2.2.2.2
    tags:
      - Key: CLUS2023
        Value: Devnet-1061
      - Key: Language
        Value: Ansible
    timezone: America/Phoenix
```

Create an NTP Policy in Ansible

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8",
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
    created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
}
```

tasks:

```
name: Configure NTP Policy via Ansible
intersight_ntp_policy:
  name: ansible
  description: This is an NTP policy c...
  organization: CLUS ?!
  enable: true
  ntp_servers:
    - 1.1.1.1
    - 2.2.2.2
  tags:
    - Key: CLUS2023
      Value: Devnet-1061
    - Key: Language
      Value: Ansible
  timezone: America/Phoenix
```

Create an NTP Policy in Ansible – Alternative

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
```

tasks:

```
- name: 'Get CLUS Organization via Ansible'
  intersight_rest_api:
    resource_path: /organization/Organizations
    query_params: $filter: "Name eq 'CLUS'"
    register: clus_org

- name: Configure NTP Policy via Ansible REST
  intersight_rest_api:
    resource_path: /ntp/Policies
    api_body: {
      'Organization': { 'Moid':
        '{{ clus_org.api_response.Moid }}' },
      'Name': 'ansible-rest',
      'Tags': [
        { 'Key': 'CLUS2023',
          'Value': 'DEVNET-1061' },
        { 'Key': 'Language',
          'Value': 'Ansible' }],
      'Description': 'This is an NTP policy...',
      'Enabled': true,
      'NtpServers': ['1.1.1.1', '2.2.2.2'],
      'Timezone': 'America/Phoenix'
    }
```

Ansible Tips

- The default `state: present` will cause resources to be created if needed, but Ansible isn't declarative, so `state: absent` must be used to delete resources that are no longer needed
- Use `cisco.intersight.intersight_info` to gather inventory from Intersight (see [update_all_inventory.yml](#) as an example)
- Use object type specific modules where they are available... but often you'll need to use the `intersight_rest_api` module.

More examples are available in the [intersight-ansible repo](#)

Create an NTP Policy in isctl

POST

<https://intersight.com/api/v1/ntp/Policies>

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
  "Name": "FUN-and-PROFIT",
  "Tags": [
    {"Key": "CLUS2023", "Value": "DEVNET-1061"},
    {"Key": "Language", "Value": "GUI"}],
  "Description": "This is an NTP policy
created from the GUI",
  "Enabled": true,
  "NtpServers": [
    "1.1.1.1",
    "2.2.2.2"
  ],
  "Timezone": "America/Phoenix"
}
```

```
isctl create ntp policy \
--Name isctl \
--Description "This is an NTP policy..." \
--Organization CLUS \
--Enabled true \
--NtpServers 1.1.1.1,2.2.2.2 \
--Tags '[{"Key":"CLUS2023",\
          "Value":"Devnet-1061"},\
          {"Key":"Language",\
          "Value":"isctl"}]' \
--Timezone America/Phoenix
```

Create an NTP Policy in isctl

POST

https://intersight.com/api/v1/ntp/Policies

```
{
  "Organization": {
    "ObjectType": "organization.Organization",
    "Moid": "64076eda6972652d336287f8"},
    "Name": "FUN-and-PROFIT",
    "Tags": [
      {"Key": "CLUS2023", "Value": "DEVNET-1061"},
      {"Key": "Language", "Value": "GUI"}],
    "Description": "This is an NTP policy
    created from the GUI",
    "Enabled": true,
    "NtpServers": [
      "1.1.1.1",
      "2.2.2.2"
    ],
    "Timezone": "America/Phoenix"
  }
```

```
isctl create ntp policy \
--Name isctl \
--Description "This is an NTP policy..." \
--Organization CLUS \
--Enabled true \
--NtpServers 1.1.1.1,2.2.2.2 \
--Tags '[{"Key": "CLUS2023", \
        "Value": "Devnet-1061"}, \
        {"Key": "Language", \
        "Value": "isctl"}]' \
--Timezone America/Phoenix
```

isctl Tips

- HTTP Method to isctl command mapping
 - Post = `create`
 - Get = `get`
 - Patch = `update`
 - Delete = `delete`
- There are lots of useful output options
 - Add `--output json` to get commands to output JSON format that you can pipe to `jq` or other CLI tools
 - Add `--output csv` to get commands to output a CSV format that you can redirect to a file... see the documentation for more details

Additional Resources



If you're looking for a deep dive into Intersight...

<https://www.ciscopress.com/store/cisco-intersight-a-handbook-for-intelligent-cloud-operations-9780137937288>

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Cisco Intersight

A Handbook for
Intelligent Cloud Operations

ciscopress.com

Matthew Baker | Brandon Beck
Doron Chosnek | Jason McGee | Sean McKeown
Bradley TerEick | Mohit Vaswani

Additional Useful Links

- All of the code from this session

<https://github.com/jerewill-cisco/clus2023-devnet1061>

- Intersight API Documentation

<https://intersight.com/apidocs/>

- Intersight MoBrowser

<https://intersight.com/mobrowser/>

- Intersight OpenAPI Documents

<https://intersight.com/apidocs/downloads/>

- Intersight ServiceNow ITSM Plugin

https://store.servicenow.com/sn_appstore_store.do#!/store/application/baef2ff5db132300d7b59235ca9619e3/

- Intersight Splunk Add-On

<https://splunkbase.splunk.com/app/6482>

Links to Intersight language enablers

- Terraform Provider
<https://registry.terraform.io/providers/CiscoDevNet/intersight/latest>
- Ansible Collection
<https://docs.ansible.com/ansible/latest/collections/cisco/intersight/index.html>
- Python SDK
<https://pypi.org/project/intersight/>
- Python Requests Module
<https://pypi.org/project/intersight-auth/>
- Powershell
<https://www.powershellgallery.com/packages/Intersight.PowerShell/>
- Isctl CLI
<https://github.com/cgascoig/isctl>
- Go
<https://github.com/ciscodevnet/intersight-go>

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The bridge to possible

Thank you

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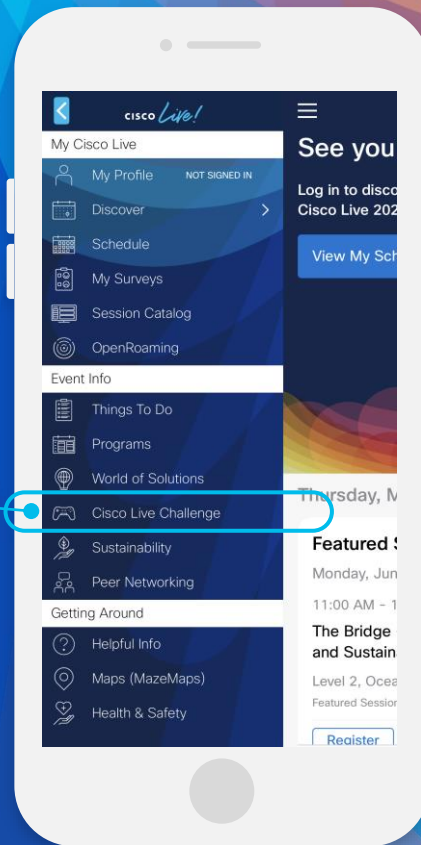
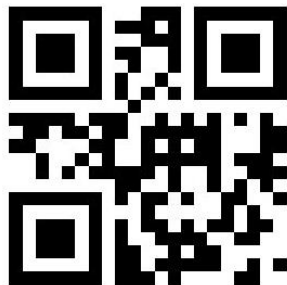
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The background is a vibrant, abstract graphic. It features a central bright white light source from which numerous colorful rays emanate, creating a sunburst or starburst effect. The rays transition through a spectrum of colors including yellow, orange, red, and various shades of blue and green. Overlaid on this are several large, semi-transparent, wavy shapes in similar color tones, giving the overall image a sense of motion and energy.

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