

Configure ISE Licensing Using Open API

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Background Information](#)

[Initial Steps](#)

[Enable Open API on ISE](#)

[Swagger UI](#)

[Configure Licensing using Open API](#)

[GET License Tier-State](#)

[GET Days Remaining for Evaluation License](#)

[Register License](#)

[Verify](#)

[GET Register License Information](#)

[GET Smart License Information](#)

[ISE GUI License Verification](#)

[Troubleshoot](#)

[Licensing](#)

[Open API](#)

[Related Information](#)

Introduction

This document describes how to configure Cisco Identity Service Engine 3.3 Licensing using Open API.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco ISE 3.3
- REST API
- Smart Software Licensing

Components Used

The information in this document is based on these software and hardware versions:

- Cisco ISE 3.3
- Insomnia REST API client.

The information in this document was created from the devices in a specific lab environment. All of the

devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

Cisco ISE licensing provides the ability to manage the application features and access, such as the number of concurrent active endpoints that can use Cisco ISE network resources at any time. Licensing in Cisco ISE is supplied as feature-based packages wherein different features are supported by each license type.

Cisco ISE is a subscription-based solution. Cisco ISE subscription licenses are nested, which means that the higher tier licenses include all the lower-tier features. For example, the ISE Premier license includes all the features that are mapped to the ISE Advantage and ISE Essentials licenses. Similarly, the ISE Advantage license includes all the features that are mapped to the ISE Essentials license. With this model, you can directly purchase Premier or Advantage licenses without the need for an Essentials license.

Initial Steps

Enable Open API on ISE

Open API is disabled by default on ISE. To enable it, navigate to **Administration > System > API Settings > API Service Settings**. Toggle the Open API options. Click **Save**.

The screenshot shows the Cisco Identity Services Engine (ISE) Administration console. The top navigation bar is blue and contains the Cisco logo, the text 'Identity Services Engine', and 'Administration / System'. Below this is a secondary navigation bar with tabs for 'Deployment', 'Licensing', 'Certificates', 'Logging', 'Maintenance', 'Upgrade', 'Health Checks', 'Backup & Restore', 'Admin Access', and 'Settings'. The 'Settings' tab is active. On the left, a sidebar menu lists various settings categories, with 'API Settings' highlighted. The main content area is titled 'API Settings' and has three sub-tabs: 'Overview', 'API Service Settings', and 'API Gateway Settings'. The 'API Service Settings' tab is active. It shows two sections: 'API Service Settings for Primary Administration Node' and 'API Service Setting for All Other Nodes'. The Primary Administration Node section has three toggle switches: 'ERS (Read/Write)' (disabled), 'Open API (Read/Write)' (enabled), and 'API Service Setting for All Other Nodes' (disabled). The All Other Nodes section has two toggle switches: 'ERS (Read)' (disabled) and 'Open API (Read)' (enabled). Below these are two radio button options for 'CSRF Check (only for ERS Settings)': 'Enable CSRF Check for Enhanced Security (Not compatible with pre ISE 2.3 Clients)' (disabled) and 'Disable CSRF For ERS Request (compatible with ERS clients older than ISE 2.3)' (selected). At the bottom right, there are 'Reset' and 'Save' buttons.

Open API settings

Swagger UI

To access all Open API definitions on ISE, navigate to **Administration > System > Settings > API Settings**. Click the link For more information on ISE Open API, please visit:.

The URLs for the definition use on this document is: <https://<ISE-PAN-IP>/api/swagger->

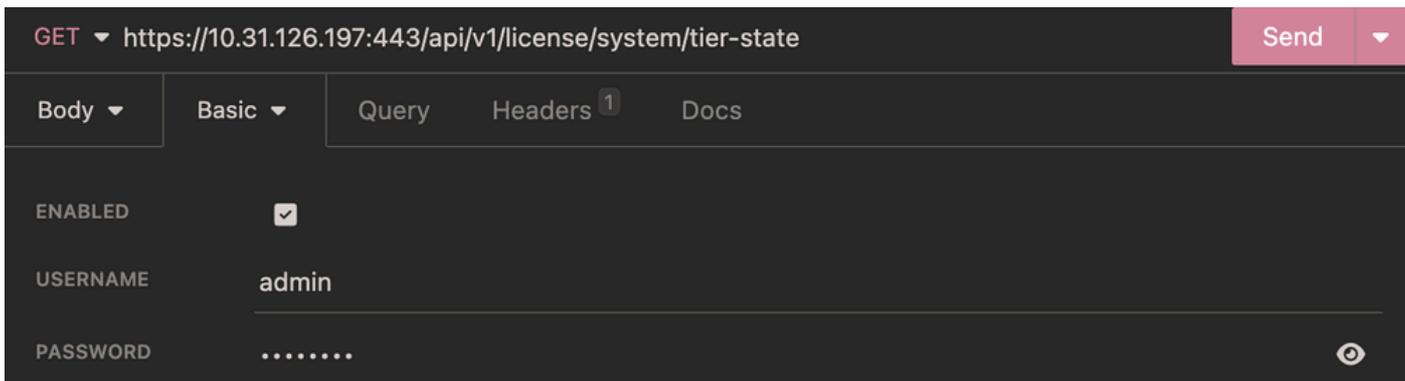
Configure Licensing using Open API

GET License Tier-State

In order to configure the license, the compliance attribute needs to be known using the tier-state as no License had been configure the compliance attribute can be set to Evaluation.

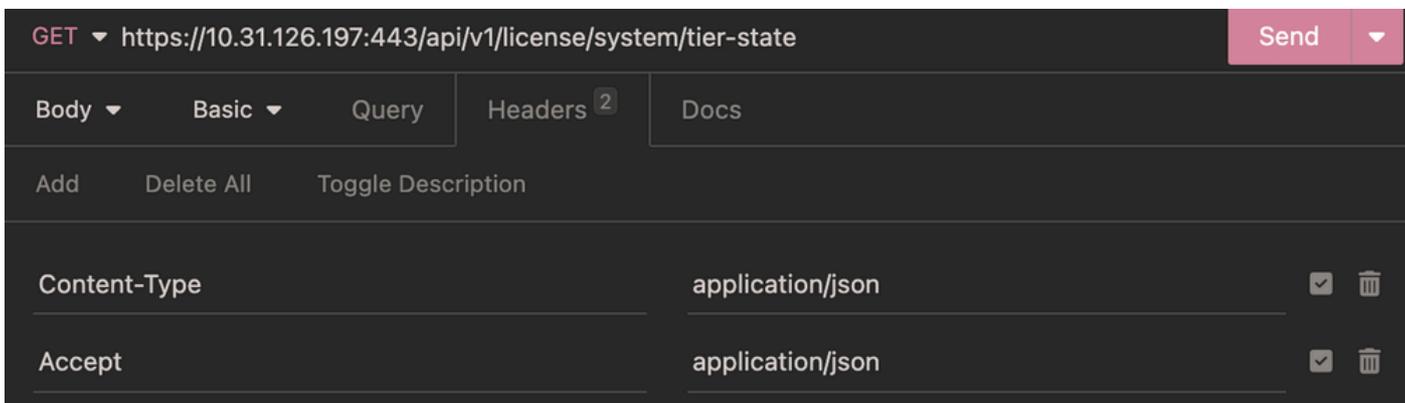
Method	GET
URL	https://<ISE-PAN-IP>:443/api/v1/license/system/tier-state
Authentication Type	Basic
Credentials	Use Open API account credentials
Headers	Accept:application/json Content-Type:application/json

Authentication



Tier-state Authentication

Headers



Tier-state Headers

Expected Output

```

200 OK 1.48 s 686 B 6 Minutes Ago
Preview Headers 20 Cookies 3 Timeline
1 [
2 {
3   "name": "ESSENTIAL",
4   "status": "ENABLED",
5   "compliance": "EVALUATION",
6   "consumptionCounter": 0,
7   "daysOutOfCompliance": "-",
8   "lastAuthorization": "-"
9 },
10 {
11   "name": "ADVANTAGE",
12   "status": "ENABLED",
13   "compliance": "EVALUATION",
14   "consumptionCounter": 0,
15   "daysOutOfCompliance": "-",
16   "lastAuthorization": "-"
17 },
18 {
19   "name": "PREMIER",
20   "status": "ENABLED",
21   "compliance": "EVALUATION",
22   "consumptionCounter": 0,
23   "daysOutOfCompliance": "-",
24   "lastAuthorization": "-"
25 },
26 {
27   "name": "DEVICEADMIN",
28   "status": "ENABLED",
29   "compliance": "EVALUATION",
30   "consumptionCounter": 0,
31   "daysOutOfCompliance": "-",
32   "lastAuthorization": "-"
33 }
34 ]

```

Tier-state Expected Output

GET Days Remaining for Evaluation License

In order to know the remaining days for evaluation license use this API call.

Method	GET
URL	https://<ISE-PAN-IP>:443/api/v1/license/system/eval-license
Authentication Type	Basic
Credentials	Use Open API account credentials
Headers	Accept:application/json

	Content-Type:application/json
--	-------------------------------

Authentication

GET ▼ https://10.31.126.197:443/api/v1/license/system/eval-license Send ▼

Body ▼ Basic ▼ Query Headers ² Docs

ENABLED

USERNAME admin

PASSWORD

Evaluation License Authentication

Headers

GET ▼ https://10.31.126.197:443/api/v1/license/system/eval-license Send ▼

Body ▼ Basic ▼ Query Headers ² Docs

Add Delete All Toggle Description

Content-Type	application/json	<input checked="" type="checkbox"/>	
Accept	application/json	<input checked="" type="checkbox"/>	

Evaluation License Headers

Expected Output

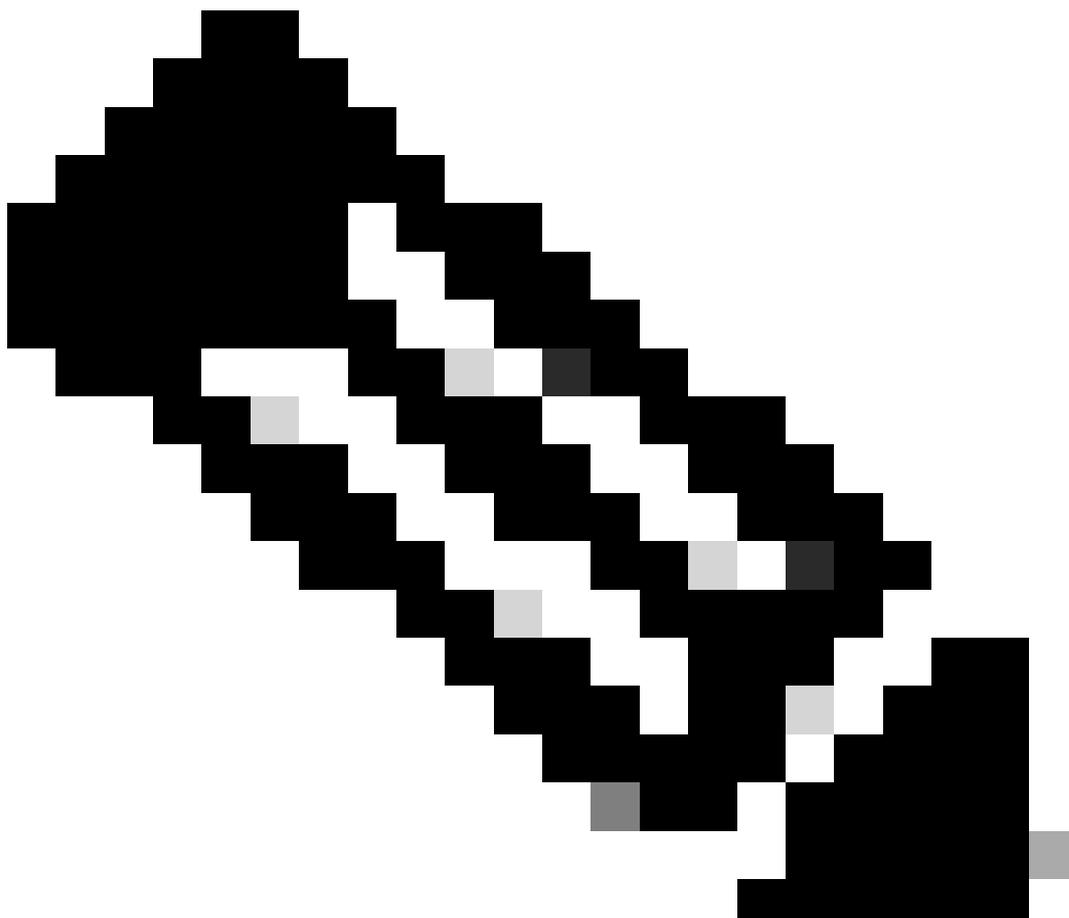
200 OK 167 ms 26 B 16 Hours Ago ▼

Preview ▼ Headers ¹⁷ Cookies Timeline

```
1 {
2   "daysRemaining": 89
3 }
```

Evaluation License Expected Output

Register License



Note: Smart Licensing token creation is out of the scope of this document.

In order to register the license you need to enter the **connectionType**, **registrationType** and the **tier**.

Conection Types:

- HTTP_DIRECT
- PROXY
- SSM_ONPREM_SERVER If this attribute is selected you must diclare the **ssmOnPremServer** key and the value.
- TRANSPORT_GATEWAY

Registration Types:

- DEREGISTER
- REGISTER
- RENEW
- UPDATE

Tier:

- ADVANTAGE
- DEVICEADMIN
- ESSENTIAL
- PREMIER
- VM

Method	POST
URL	https://<ISE-PAN-IP>:443/api/v1/license/system/register
Authentication Type	Basic
Credentials	Use Open api account credentials
Headers	Accept:application/json Content-Type:application/json
Body	{ "connectionType": "PROXY", "registrationType": "REGISTER", "ssmOnPremServer": "CSSM28.demo.local", "tier": ["ADVANTAGE", "DEVICEADMIN", "ESSENTIAL", "PREMIER", "VM"], "token": "NzFjNjQyYWYtMjkyYS00OGJiLTkzNzYtNWY5Nzg5OTU4ZjhkLTE2MzE2MTM1%0AMTg4OD18QU0wdWUz" }

Body

POST https://10.31.126.197:443/api/v1/license/system/register

JSON Basic Query Headers 2 Docs

```

1 {
2   "connectionType": "PROXY",
3   "registrationType": "REGISTER",
4   "tier": [
5     "ADVANTAGE", "DEVICEADMIN", "ESSENTIAL", "PREMIER", "VM"
6   ],
7   "token": "N2Mw0TVk0DAhNzczYi00YzFhLTg3NjMtM2Fk0DM0GZhZDK1LTE20TY1MzEz%0ANDU1NDZ8
8   TjVqdTlBMmQ3WmpUMUFYZlNtYlRJS0lMWDlxSGFhY2lycWtGUVRK%0AN2tPcz0%3D%0A"
9 }

```

POST - Register License Body

Authentication

POST ▼ https://10.31.126.197:443/api/v1/license/system/register Send ▼

JSON ▼ Basic ▼ Query Headers ² Docs

ENABLED

USERNAME

PASSWORD 👁

POST - Register License Authentication

Headers

POST ▼ https://10.31.126.197:443/api/v1/license/system/register Send ▼

JSON ▼ Basic ▼ Query Headers ² Docs

Add Delete All Toggle Description

Content-Type	application/json	<input checked="" type="checkbox"/> 🗑
Accept	application/json	<input checked="" type="checkbox"/> 🗑

POST - Register License Headers

Expected Output

201 Created 1.03 m 41 B 4 Minutes Ago ▼

Preview ▼ Headers ²⁰ Cookies ³ Timeline

1 "Smart Licensing registered successfully"

POST - Register License Expected Output

Verify

GET Register License Information

In order to know the key-value pairs used to configure the registration use this API call.

Method	GET
URL	https://<ISE-PAN-IP>:443/api/v1/license/system/register
Authentication Type	Basic
Credentials	Use Open API account credentials

Headers	Accept:application/json Content-Type:application/json
---------	--

Authentication

GET ▼ https://10.31.126.197:443/api/v1/license/system/register Send ▼

JSON ▼ Basic ▼ Query Headers ² Docs

ENABLED

USERNAME admin

PASSWORD 👁

GET - Register License Authentication

Headers

GET ▼ https://10.31.126.197:443/api/v1/license/system/register Send ▼

JSON ▼ Basic ▼ Query Headers ² Docs

Add Delete All Toggle Description

Content-Type	application/json	<input checked="" type="checkbox"/>	🗑
Accept	application/json	<input checked="" type="checkbox"/>	🗑

GET - Register License Headers

Expected Output

```

200 OK 162 ms 217 B 36 Minutes Ago
Preview Headers 17 Cookies Timeline
1 {
2   "response": {
3     "tier": [
4       "ESSENTIAL",
5       "ADVANTAGE",
6       "PREMIER",
7       "DEVICEADMIN"
8     ],
9     "connectionType": "PROXY",
10    "registrationState": "REGISTERED",
11    "ssmOnPremServer": null
12  },
13  "version": "1.0.0"
14 }

```

GET - Register License Expected Output

GET Smart License Information

In order to know the state for the connection with Smart Licensig use this API call.

Method	GET
URL	https://<ISE-PAN-IP>:443/api/v1/license/system/register
Authentication Type	Basic
Credentials	Use Open API account credentials
Headers	Accept:application/json Content-Type:application/json

Authentication

GET https://10.31.126.197:443/api/v1/license/system/smart-state Send

Body Basic Query Headers 2 Docs

ENABLED

USERNAME admin

PASSWORD

Smart Licensing Information Authentication

Headers

The screenshot shows a REST client interface with the following details:

- Method: GET
- URL: `https://10.31.126.197:443/api/v1/license/system/smart-state`
- Buttons: Send, Body, Basic, Query, Headers (2), Docs
- Actions: Add, Delete All, Toggle Description
- Header List:

Header Name	Value	Checkmark	Delete
Content-Type	application/json	<input checked="" type="checkbox"/>	
Accept	application/json	<input checked="" type="checkbox"/>	

Smart Licensing Information Headers

Expected Output

The screenshot shows a REST client interface displaying the response of a GET request:

- Status: 200 OK
- Time: 163 ms
- Size: 103 B
- Time: 18 Minutes Ago
- Preview: Headers (17), Cookies, Timeline
- Response Body:

```
1 {
2   "response": {
3     "connectionType": "PROXY",
4     "state": "ENABLED"
5   },
6   "version": "1.0.0"
7 }
```

Smart Licensing Information Expected Output

ISE GUI License Verification

In order to verify the proper installation on the GUI, navigate to **Administration > System > Licensing > Licenses**.

- Bookmarks
- Dashboard
- Context Visibility
- Operations
- Policy
- Administration**
- Work Centers
- Interactive Help

- Deployment
- Licensing**
- Certificates
- Logging
- Maintenance
- Upgrade
- Health Checks
- Backup

Click here to do visibility setup [Do not show this again.](#)

Reservation to enable all Cisco ISE licenses. Enter the required details to enable Cisco ISE licenses. When you click Register, you agree to the terms and conditions detailed in [Smart Licensing Resources](#).

- Smart Licensing Registration
- Permanent License Reservation
- Specific License Reservation

[Registration Details](#)

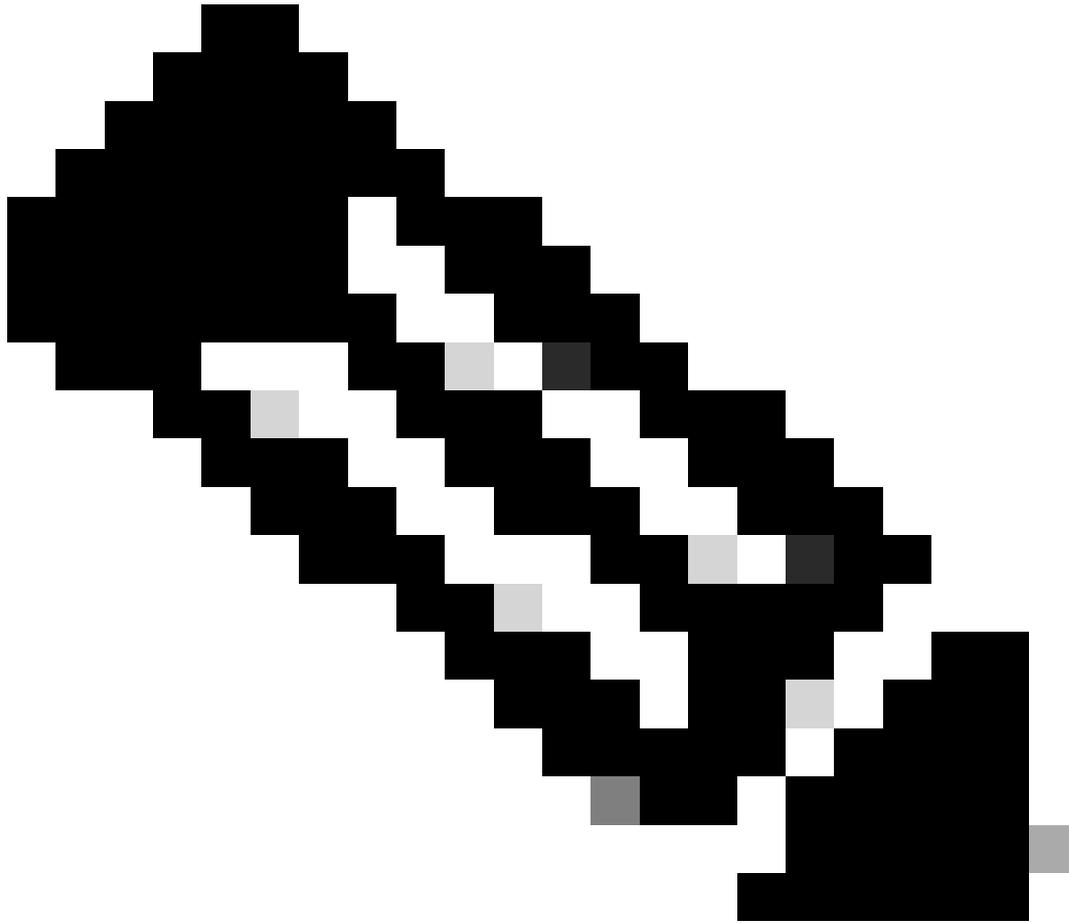
Licenses

Select relevant licenses and click Enable to acquire the pre-purchased license's entitlements. Select relevant licenses and click Disable to release unused entitlements. Click Refresh to reauthorize the enabled licenses.

[Enable](#) [Disable](#) [Refresh](#)

License	Status	Compliance	Consumption	Days Out of Compliance	Last Authorization
▼ Tier					
<input type="checkbox"/> Essential	Enabled	Released Entitlement	0	-	-
<input type="checkbox"/> Advantage	Enabled	Released Entitlement	0	-	-
<input type="checkbox"/> Premier	Enabled	Released Entitlement	0	-	-
<input type="checkbox"/> Device Admin	Enabled	Released Entitlement	0	-	-
▼ Virtual Appliance					
ISE VM License	Enabled	In Compliance	1	-	Oct 04,2023 19:42:44 PM

Smart Licensing GUI Verification

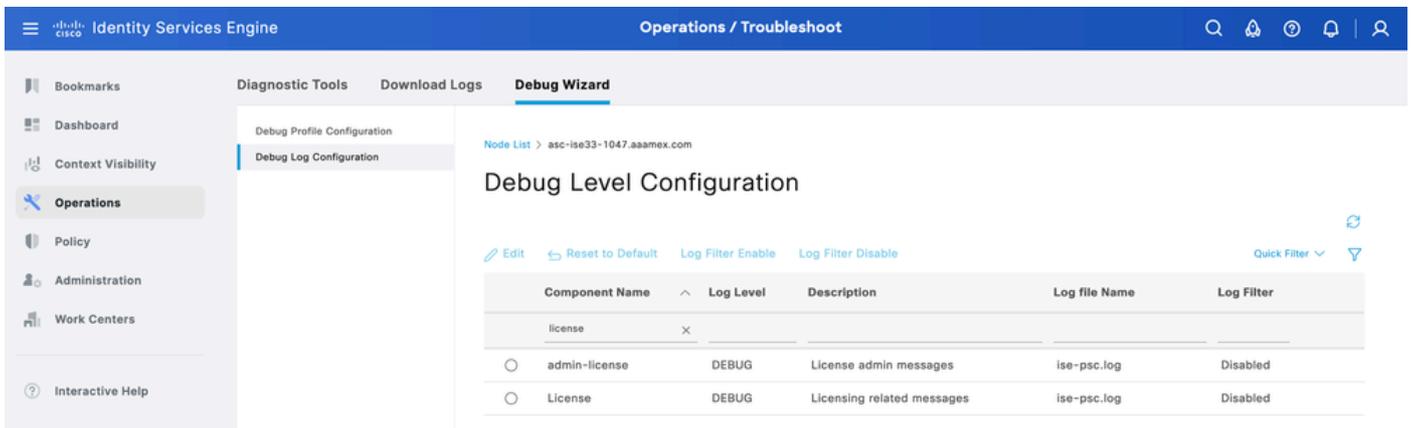


Note: Released Entitlement means the licenses have been purchased and released for use, but none have been consumed so far in this Cisco ISE deployment. In such a scenario, the Consumption Count for the license is 0. The licenses can change to Compliance once the Consumption Count change from 0

Troubleshoot

Licensing

From ISE navigate to **Operation > Troubleshoot > Debug Wizard > Debug Log Configuration**. Select your Primary Admin Node (PAN) and click **Edit**. Filter the **Component Name** by License and admin-license then select the Log Level need it. Click **Save**.



Debug Level Configuration Licensing

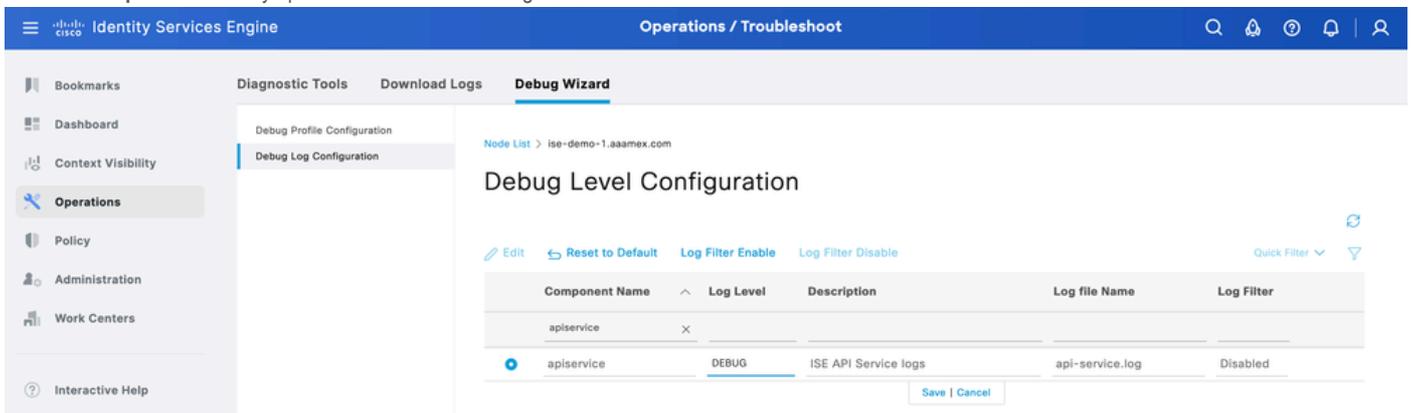
- On ISE PAN CLI the logs are found at:

```
admin#show logging application ise-psc.log
```

- On ISE GUI navigate to **Operations > Troubleshoot > Download Logs > Select ISE PAN > Debug log > Debug Log Type > Application Logs**. Download the zip files for ise-psc.log.

Open API

From ISE navigate to **Operation > Troubleshoot > Debug Wizard > Debug Log Configuration**. Select your Primary Admin Node (PAN) and click **Edit**. Filter the **Component Name** by apiservice and select the Log Level need it. Click **Save**.



Debug Level Configuration Open API

- On ISE PAN CLI the logs are found at:

```
admin#show logging application api-service.log
```

- On ISE GUI navigate to **Operations > Troubleshoot > Download Logs > Select ISE PAN > Debug log > Debug Log Type > Application Logs**. Download the zip files for api-service.log.
- API response codes and their possible meanings:
 - 200 (OK): Indicates the Open API successfully carried out the desired action.
 - 201 (Created): Indicates the resource was created and the request was successful.

- 400 (Bad Request): Server not able to process the request. Recognize client error due to malformed request syntax, invalid parameters and so on. Read the message details if available.
- 401 (Unauthorised): This indicates that the action was undertaken with wrong credentials, no credentials or the account is not authorized to perform this action.
- 403 (Forbidden): This indicates the server is capable to understand the request but is not authorized.
- 404 (Not Found): This indicates the server is not able to find the requested resource.
- 500 (Internal Server Error): Indicates an issue on the server side. Logs on ISE can help understand the cause.

Related Information

- [Cisco Technical Support & Downloads](#)