Extract ACL from CSM in CSV Format through API Method

Contents

[Introduction](#)
[Prerequisites](#)
[Requirements](#)
[Components Used](#)
[Background Information](#)
[Network Diagram](#)
[CSM API License Installation/Verification](#)
[Configuration steps](#)
[Work with CSM API](#)
[Log in Method](#)
[Get ACL Rules](#)
[Verify](#)
[Troubleshoot](#)

Introduction

This document describes how to extract the Access Control Lists (ACL), in Comma-Separated Values (CSV) format, of a device managed by the Cisco Security Manager (CSM) through the CSM API Method.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Security Manager (CSM)
- CSM API
- API basic knowledge

Components Used

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

- CSM Server
- CSM API license
  ```
  Product Name: L-CSMPR-API
  Product Description: L-CSMPR-API : Cisco Security Manager Pro - License to enable API Access
  ```
- Adaptative Security Appliance (ASA) managed by CSM
- An API client. You can use cURL, Python, or Postman. This article demonstrates the whole

process with Postman. CSM client application must be closed. If a CSM client application is open, must be by a different user than the one who uses the API method. Otherwise, API returns an error. For additional prerequisites to use the API feature you can use the next guide. API Prerequisites

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 Security Manager (CSM) has some functionalities for the managed devices configuration which need to be implemented through API.

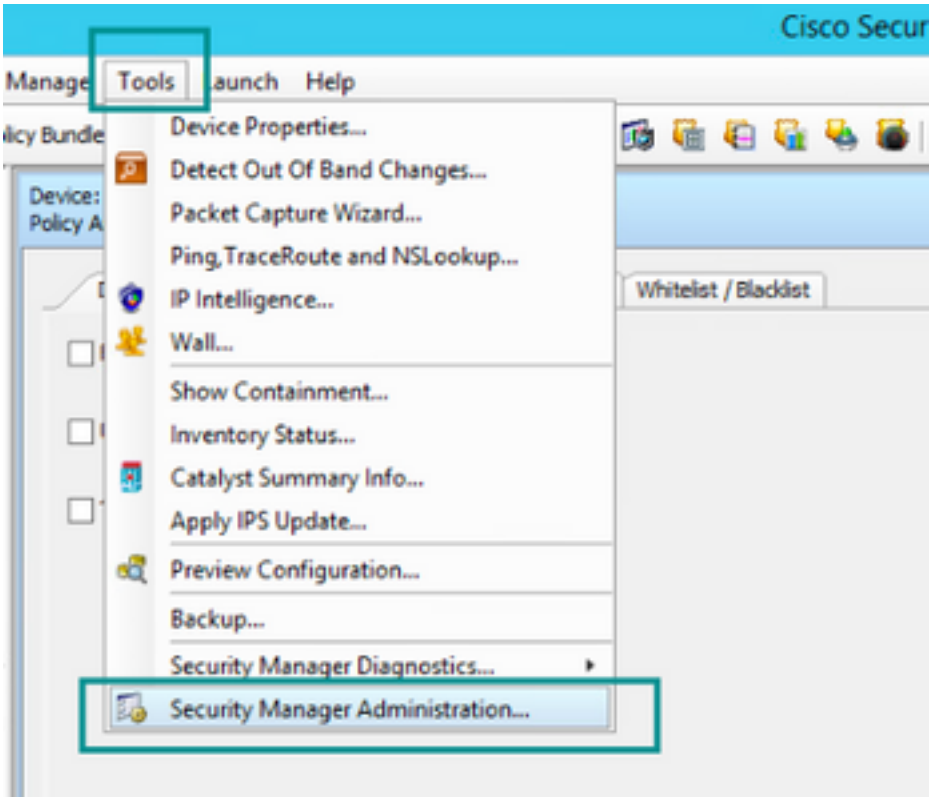
One of these configuration options is the method to extract a list of the Access Control List (ACL) configured in each device managed by CSM. The use of the CSM API is the only way to achieve this requirement so far.

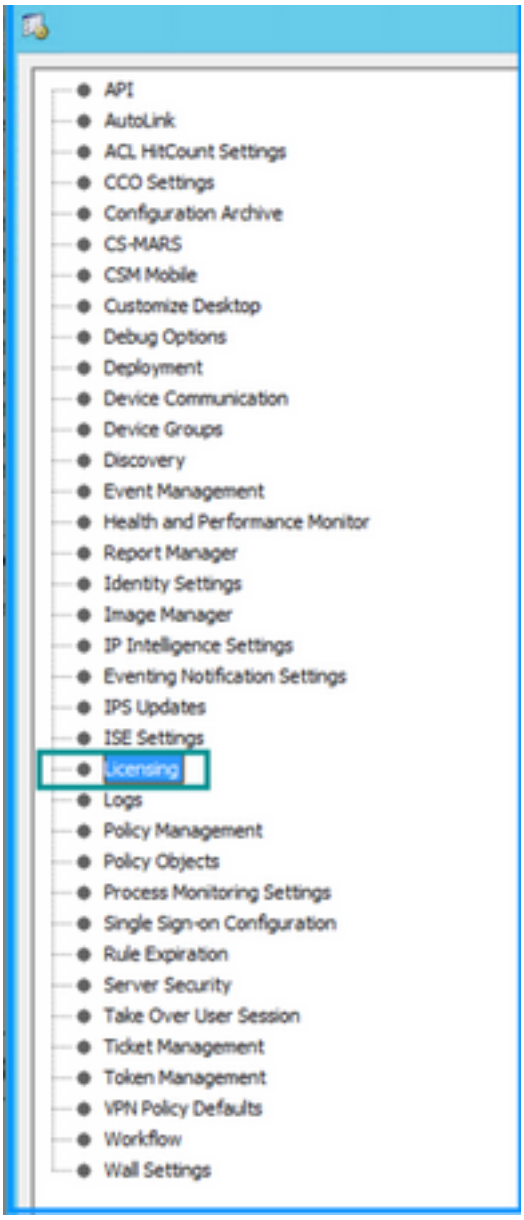
For these purposes, Postman used as the API Client and CSM version 4.19 SP1, ASA 5515 version 9.8(4).

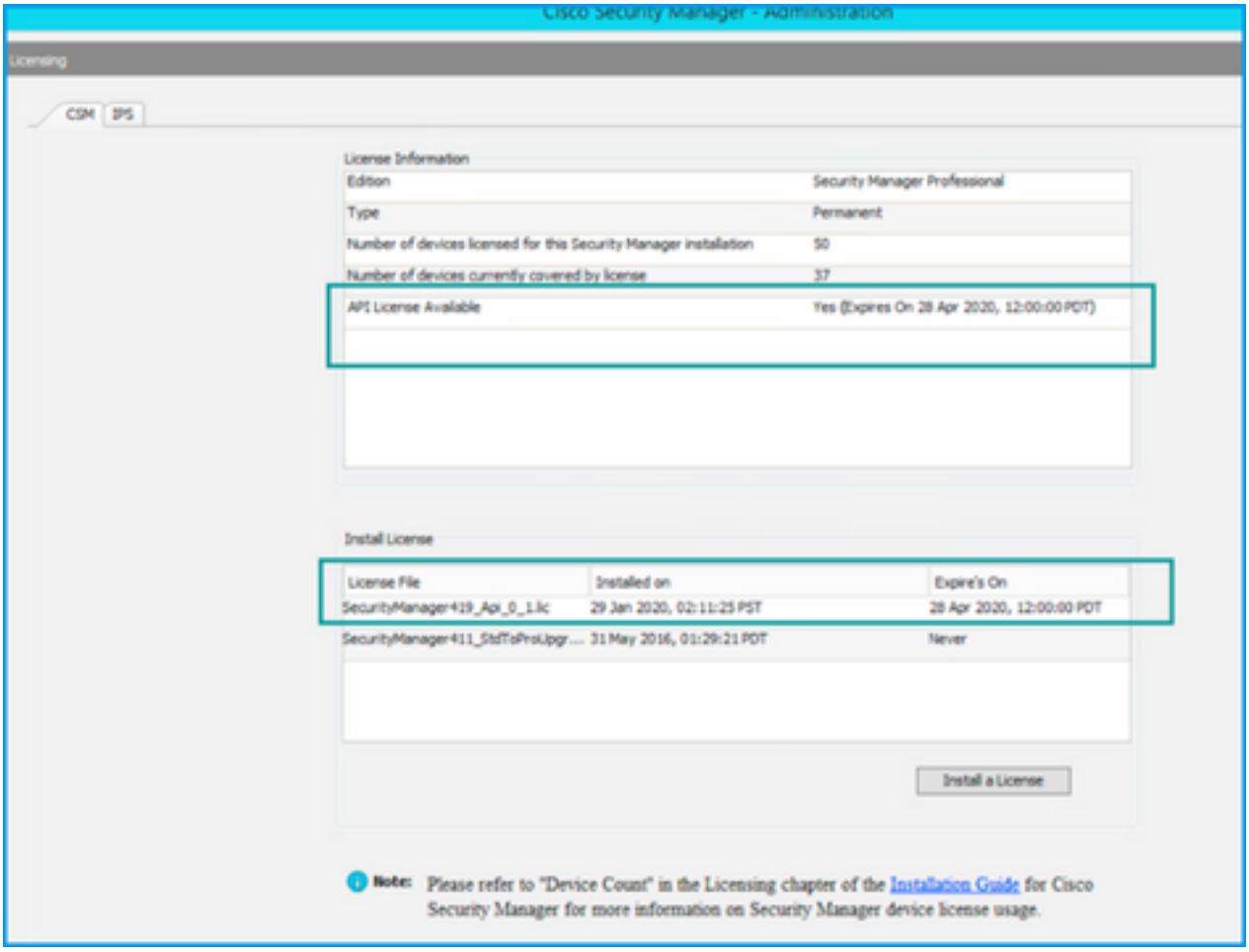
Network Diagram

CSM API License Installation/Verification

CSM API is a licensed feature, you can verify that the CSM has an API license, in the CSM client, navigate to **Tools > Security Manager Administration > Licensing page** to confirm that you have a license already installed.


Cisco Secur
Manage
Tools
Launch
Help
Device Properties...
Detect Out Of Band Changes...
Packet Capture Wizard...
Ping,TraceRoute and NSLookup...
IP Intelligence...
Wall...
Show Containment...
Inventory Status...
Catalyst Summary Info...
Apply IPS Update...
Preview Configuration...
Backup...
Security Manager Diagnostics...
Security Manager Administration...
Whitelist / Blacklist

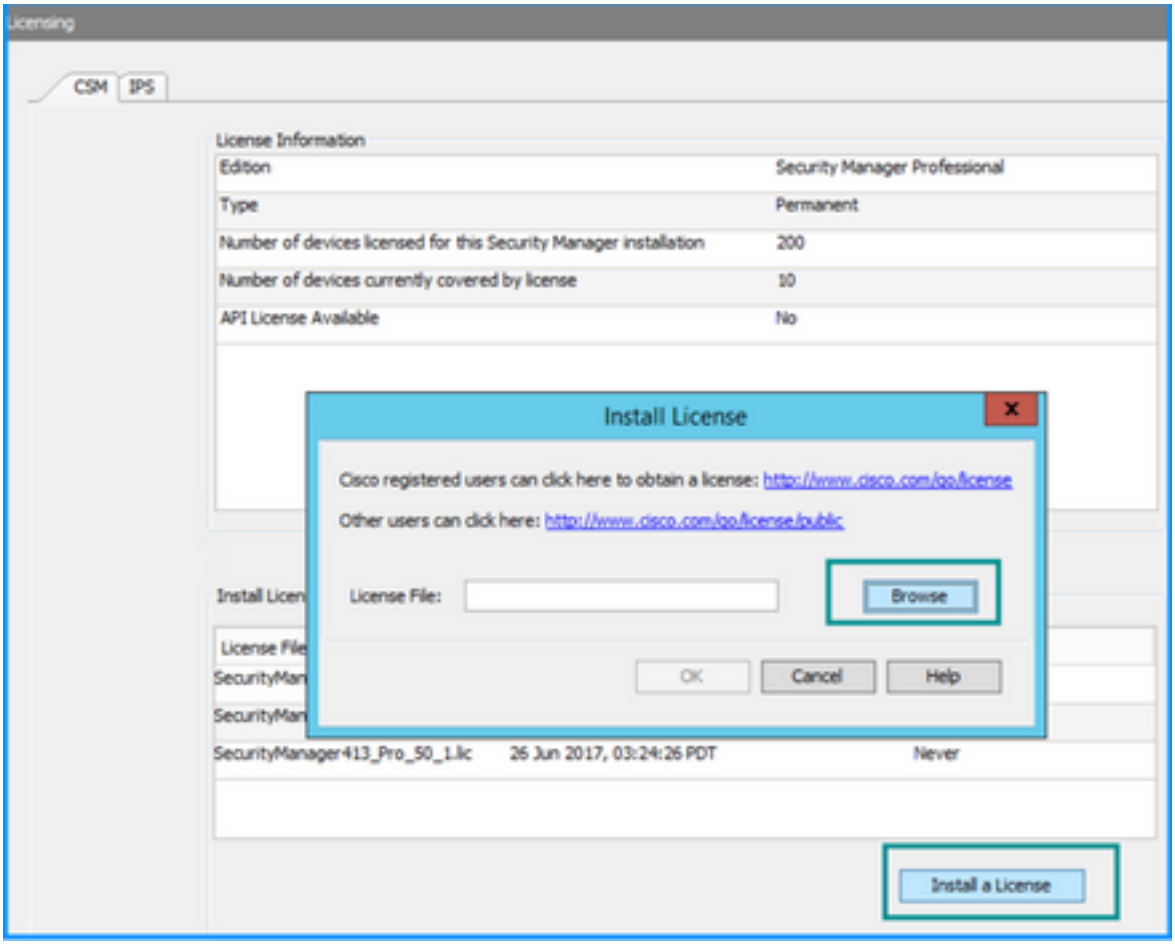

API
AutoLink
ACL HitCount Settings
CCO Settings
Configuration Archive
CS-MARS
CSM Mobile
Customize Desktop
Debug Options
Deployment
Device Communication
Device Groups
Discovery
Event Management
Health and Performance Monitor
Report Manager
Identity Settings
Image Manager
IP Intelligence Settings
Eventing Notification Settings
IPS Updates
ISE Settings
Licensing
Logs
Policy Management
Policy Objects
Process Monitoring Settings
Single Sign-on Configuration
Rule Expiration
Server Security
Take Over User Session
Ticket Management
Token Management
VPN Policy Defaults
Workflow
Wall Settings

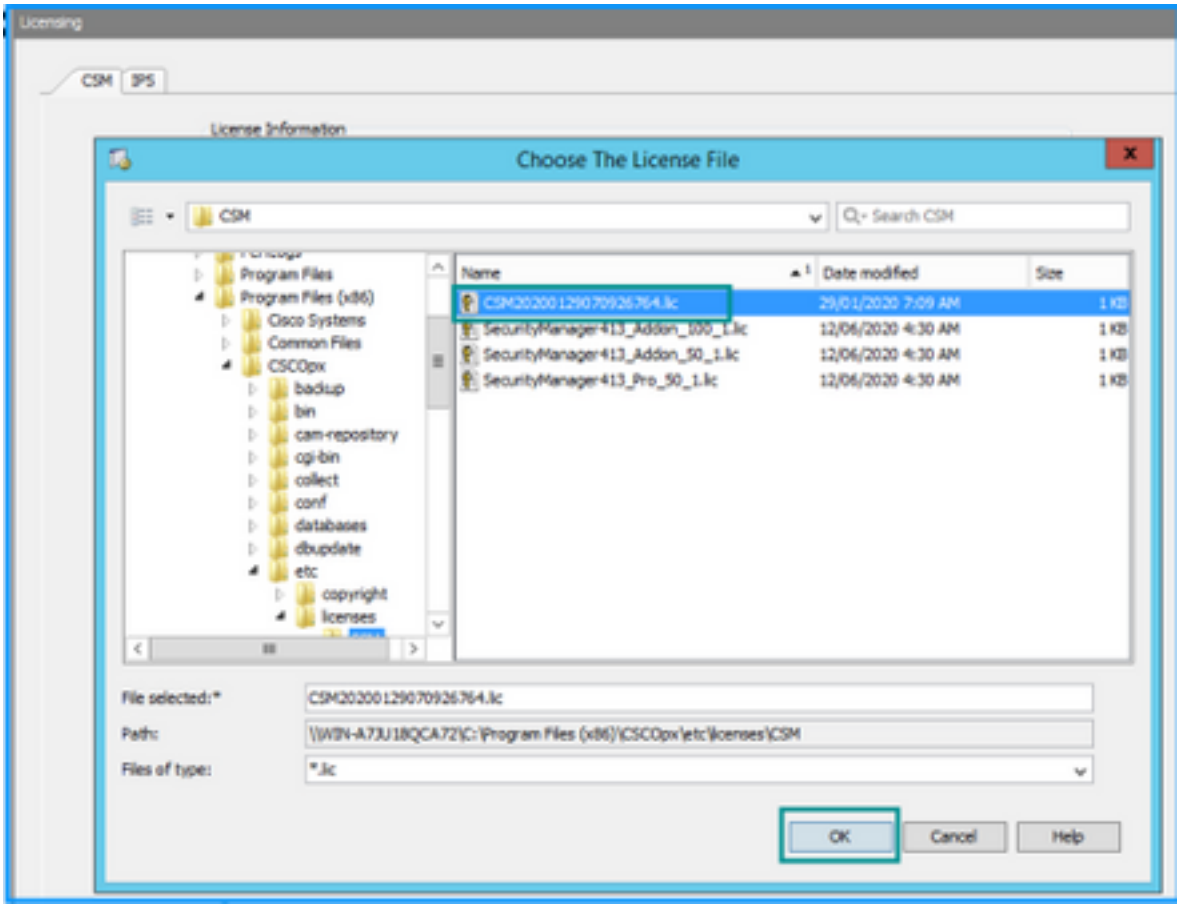


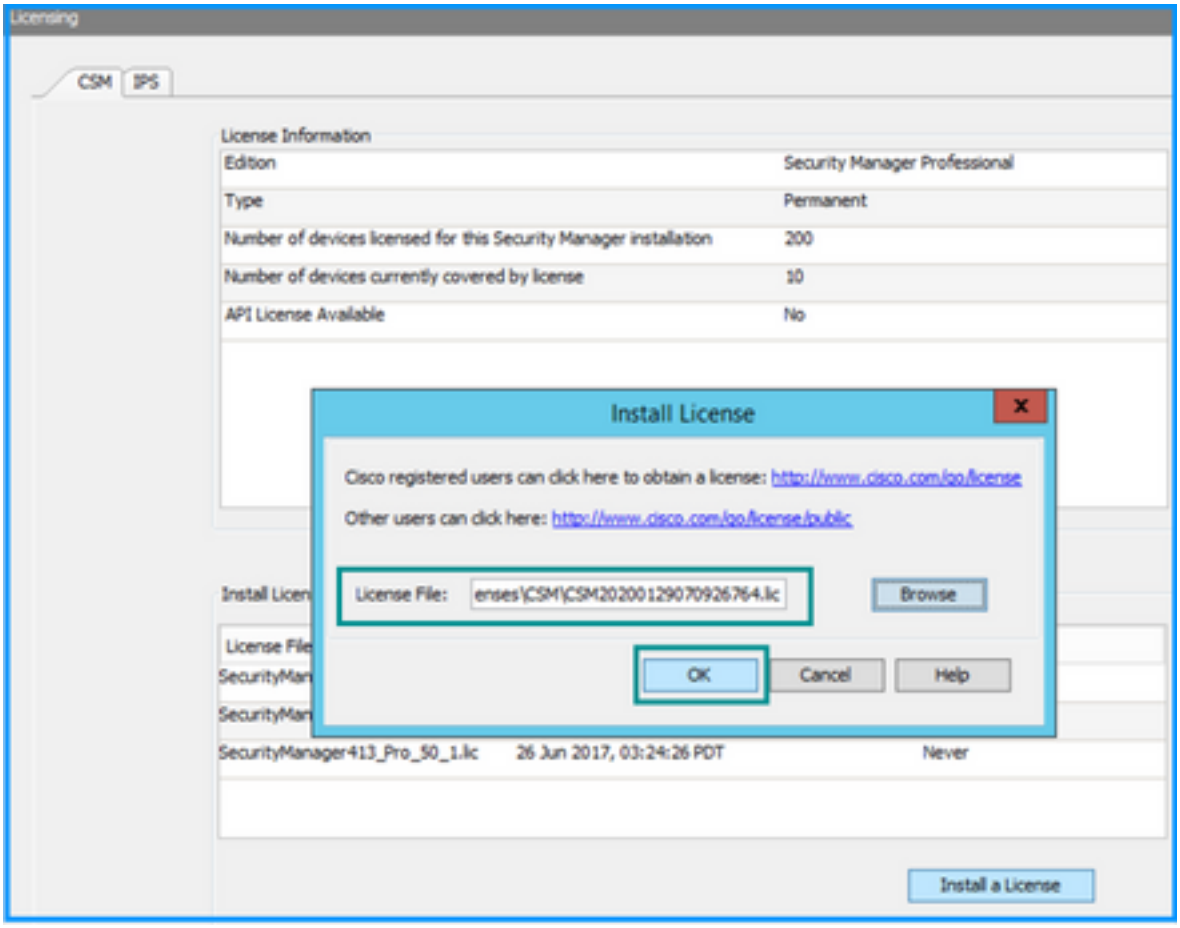
If there's no API license applied but you already have the .lic file you can install your license, click the **Install a License** button, you must store the license file under the same disk where the CSM server is located.

To install a newer Cisco Security Manager license follow these steps:

Step 1. Save the attached license file (.lic) from the email you received to your file system.
Step 2. Copy the saved license file to a known location on the Cisco Security Manager server file system.
Step 3. Launch the Cisco Security Manager Client.
Step 4. Navigate to **Tools->Security Manager Administration...**
Step 5. From the **Cisco Security Manager - Administration** window, select **Licensing**
Step 6. Click the **Install a License** button.
Step 7. From the **Install License** dialog, select the **Browse** button.
Step 8. Navigate to and select the saved license file on the Cisco Security Manager server file system and select the **OK** button.
Step 9. From the **Install License** dialog box, click the **OK** button.
Step 10. Confirm the License Summary information displayed and click the **Close** button.


Licensing
CSM
IPS
License Information
Edition
Security Manager Professional
Type
Permanent
Number of devices licensed for this Security Manager installation
200
Number of devices currently covered by license
10
API License Available
No
Install License
Cisco registered users can click here to obtain a license: http://www.cisco.com/go/license
Other users can click here: http://www.cisco.com/go/license/public
License File:
Browse
OK
Cancel
Help
SecurityManager413_Pro_50_1.lic
26 Jun 2017, 03:24:26 PDT
Never
Install a License


Licensing
CSM
IPS
License Information
Choose The License File
CSM
Search CSM
Program Files
Program Files (x86)
Cisco Systems
Common Files
CSCOpx
backup
bin
cam-repository
cgi-bin
collect
conf
databases
dbupdate
etc
copyright
licenses
Name
Date modified
Size
CSM20200129070926764.lic
29/01/2020 7:09 AM
1 KB
SecurityManager413_Addon_100_1.lic
12/06/2020 4:30 AM
1 KB
SecurityManager413_Addon_50_1.lic
12/06/2020 4:30 AM
1 KB
SecurityManager413_Pro_50_1.lic
12/06/2020 4:30 AM
1 KB
File selected:*
CSM20200129070926764.lic
Path:
\\WIN-A73J18QCA72\C:\Program Files (x86)\CSCOpx\etc\licenses\CSM
Files of type:
*.lic
OK
Cancel
Help



The API license can only be applied on a server licensed for the CSM professional edition. The license cannot be applied to CSM running a Standard edition of the license. API License Requirements

Configuration steps

API Client Settings

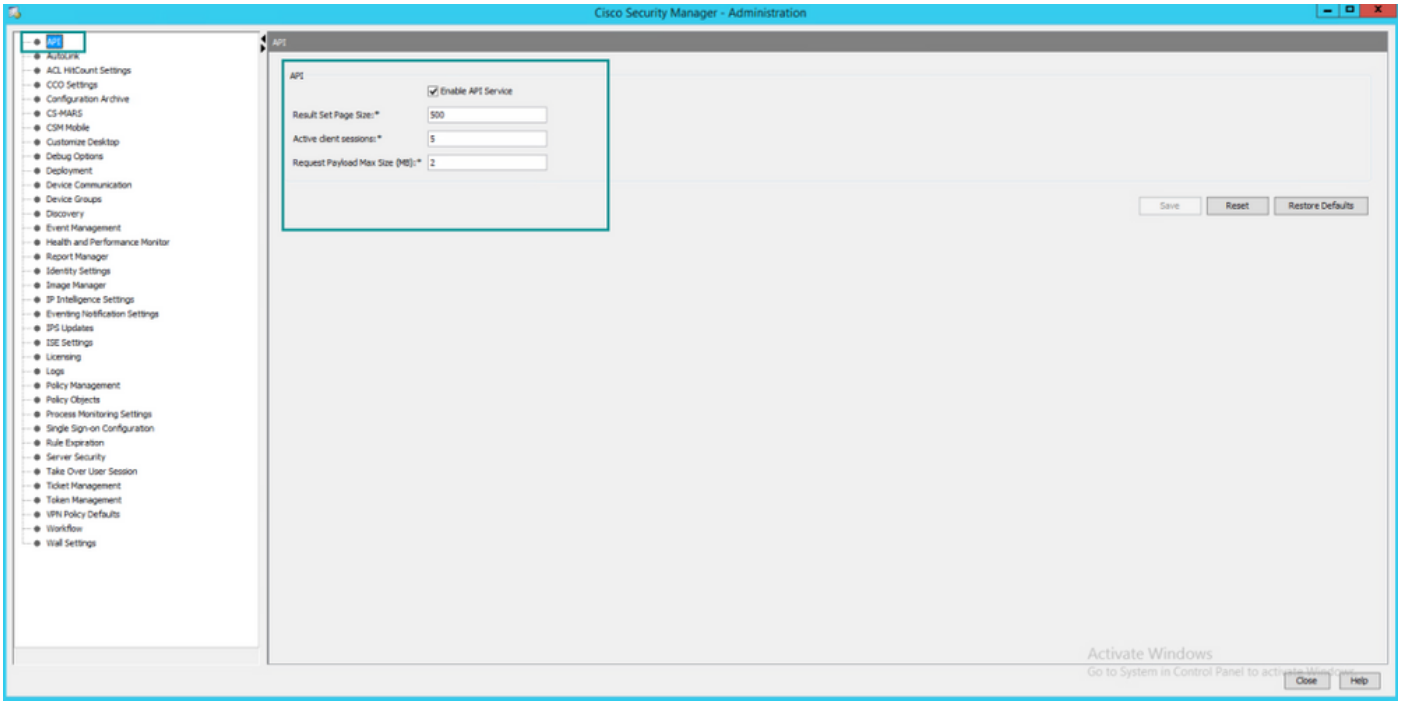
If you use Postman there are some settings you need to configure, it depends on each API client but must be similar.

- Proxy disabled
- SSL verification - OFF

CSM Settings

- Enabled API. Under **Tools > Security Manager Administration > API**

API Settings



Work with CSM API

You need to configure in the API client the below two calls:

1. Login Method

2. Get ACL values

For reference through the process:

CSM access details used in this lab:

CSM Hostname (IP Address): **192.168.66.116**. In the API we use the hostname in the URL.

User: **admin**

Password: **Admin123**

Log in Method

This method must be called prior to any other method called on other services.

CSM API Guide: Method Log in

Request

1. HTTP Method : **POST**

2. URL: https://<hostname>/nbi/**login**

3. Body:

```
<?xml version="1.0" encoding="UTF-8"?> <csm:loginRequest xmlns:csm="csm"
<protVersion>1.0</protVersion> <reqId>123</reqId> <username>admin</username>
<password>Admin123</password> <heartbeatRequested>true</heartbeatRequested>
<callbackUrl>https://192.168.66.116/nbi/login</callbackUrl> </csm:loginRequest>
```

Where:

Username: The CSM client username associated with the session

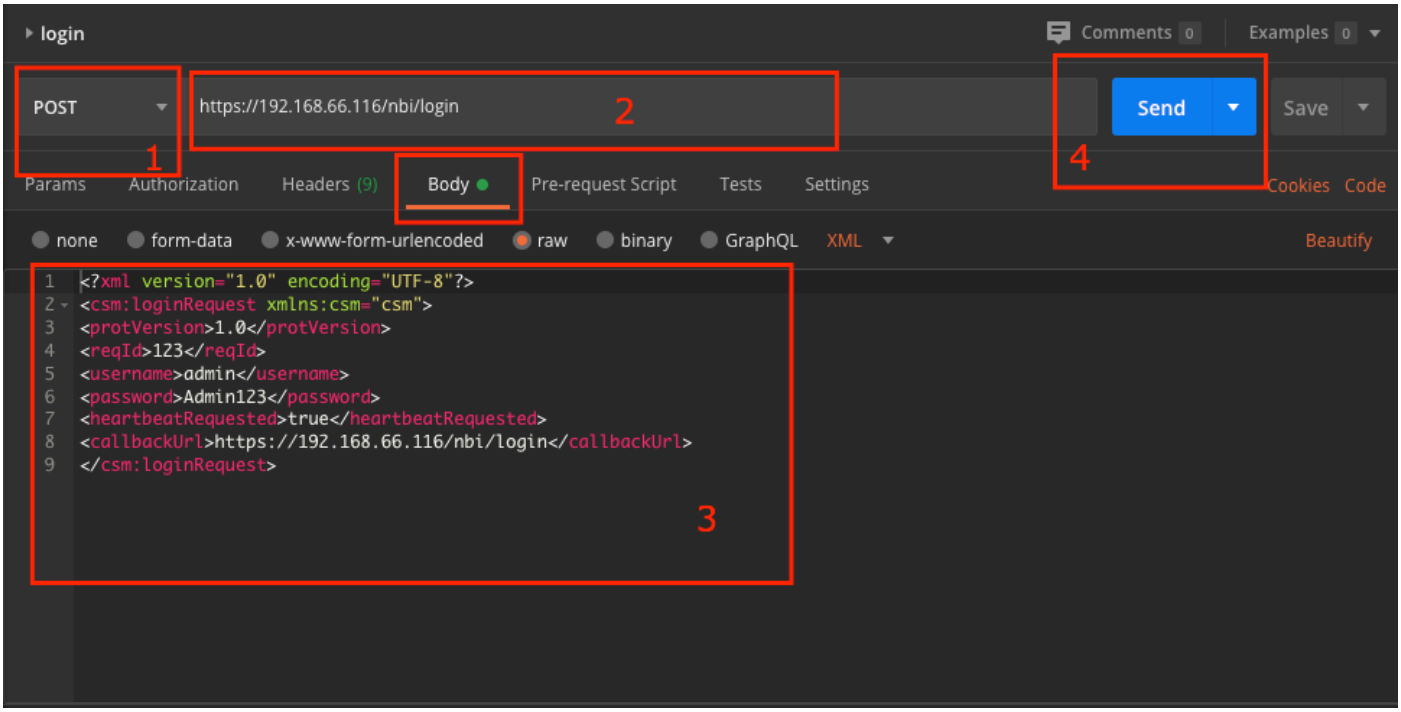
Password: The CSM client password associated with the session.

reqId: This attribute uniquely identifies a request done by the client, this value echoes by the CSM Server in the associated response. It can be set to anything the user wishes to use as an identifier.

heartbeatRequested: This attribute may be optionally defined. If the attribute is set to true, then the CSM client receives a heartbeat callback from the CSM server. The server tries to ping the client with a frequency close to (inactivity timeout) / 2minutes. If the client does not respond to the heartbeat, then the API retries the heartbeat during the next interval. If the heartbeat is successful, then the session inactivity timeout is reset.

callbackUrl: The URL at which the CSM server makes the callback. This needs to be specified if the heartbeatRequested is true. Only HTTPS based callback URLs are allowed

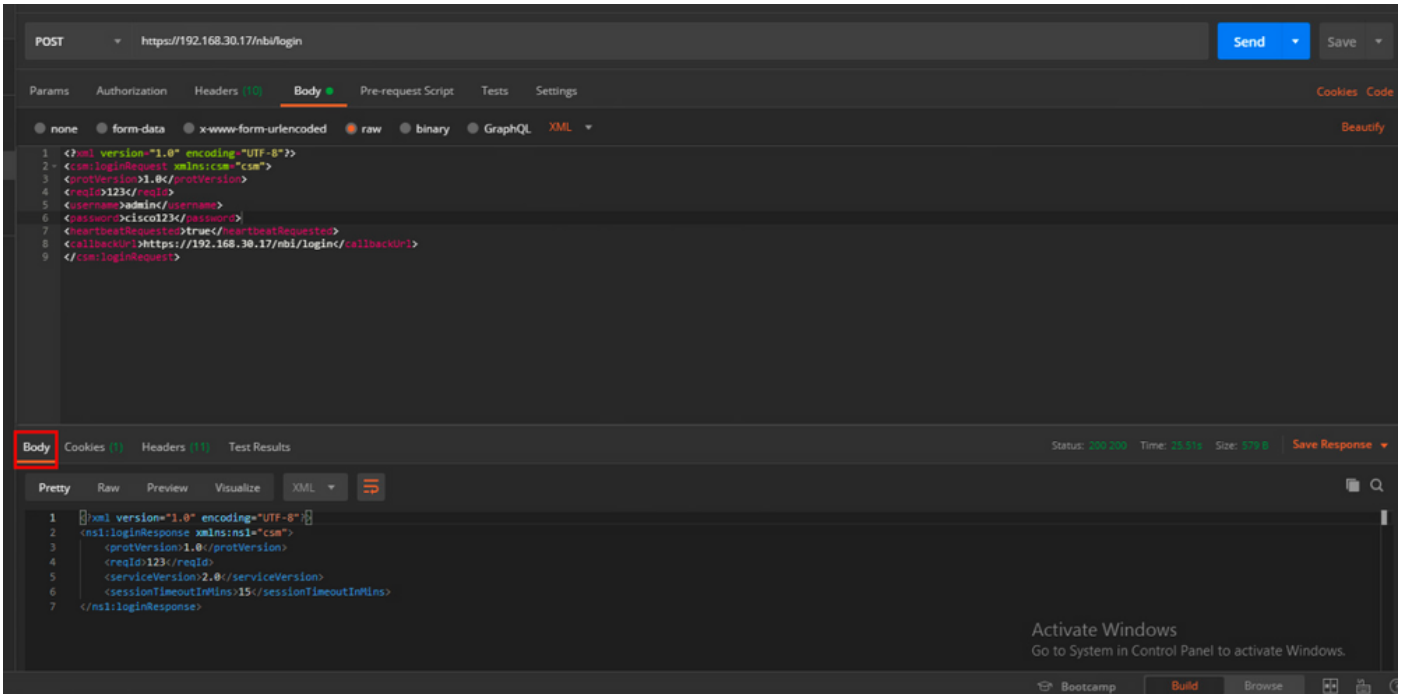
4. Send



Select raw option to see as in this example.

Response

The Login API validates the user credentials and returns a session token as a secure cookie. The session value is stored under the **asCookie** key, you must save this **asCookie value**.



Get ACL Rules

Method execDeviceReadOnlyCLICmds. The set of commands that can be executed by this method is read-only commands such as statistics, monitoring commands that provide additional information about the operation of the particular device.

Method details from the CSM API User Guide

Request

1. HTTP Method: **POST**

2. URL: https://hostname/nbi/**utilservice/execDeviceReadOnlyCLICmds**

3. HTTP Header: The cookie returned by the login method that identifies the authentication session.

Input **asCookie** value obtained previously from Method Login.

Key: Input “asCookie”

Value: Input value obtained.

Click on checkbox to enable it.

4. Body:

```
<?xml version="1.0" encoding="UTF-8"?> <csm:execDeviceReadOnlyCLICmdsRequest xmlns:csm="csm">
<protVersion>1.0</protVersion> <reqId>123</reqId> <deviceReadOnlyCLICmd>
<deviceIP>192.168.66.1</deviceIP> <cmd>show</cmd> <argument>access-list</argument>
</deviceReadOnlyCLICmd> </csm:execDeviceReadOnlyCLICmdsRequest>
```

Note: The XML body above can be used to execute any "show" command, for example: "show run all", "show run object", "show run nat", etc.

The XML "<deviceReadOnlyCLICmd>" element denotes that the command specified within "<cmd>" and "<argument>" MUST be read only.

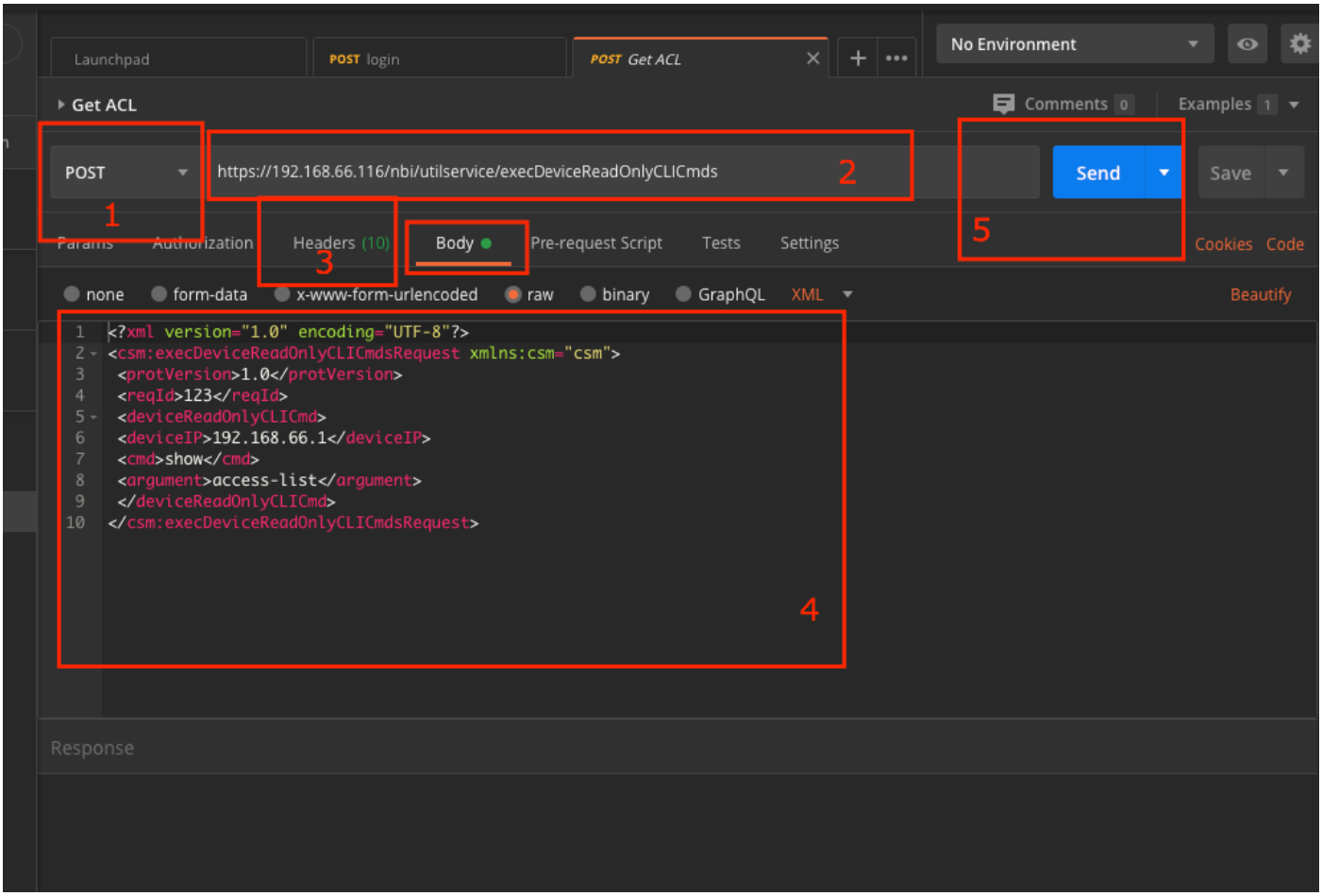
Where:

deviceIP: The device IP address that the command must be executed against.

cmd: Fixed command **"show".** The regex allows mixed case [sS][hH][oO][wW]

argument: The show command arguments. Like "run" to show the running config of the device or **"access-list"** to show the access list details.

5. Send

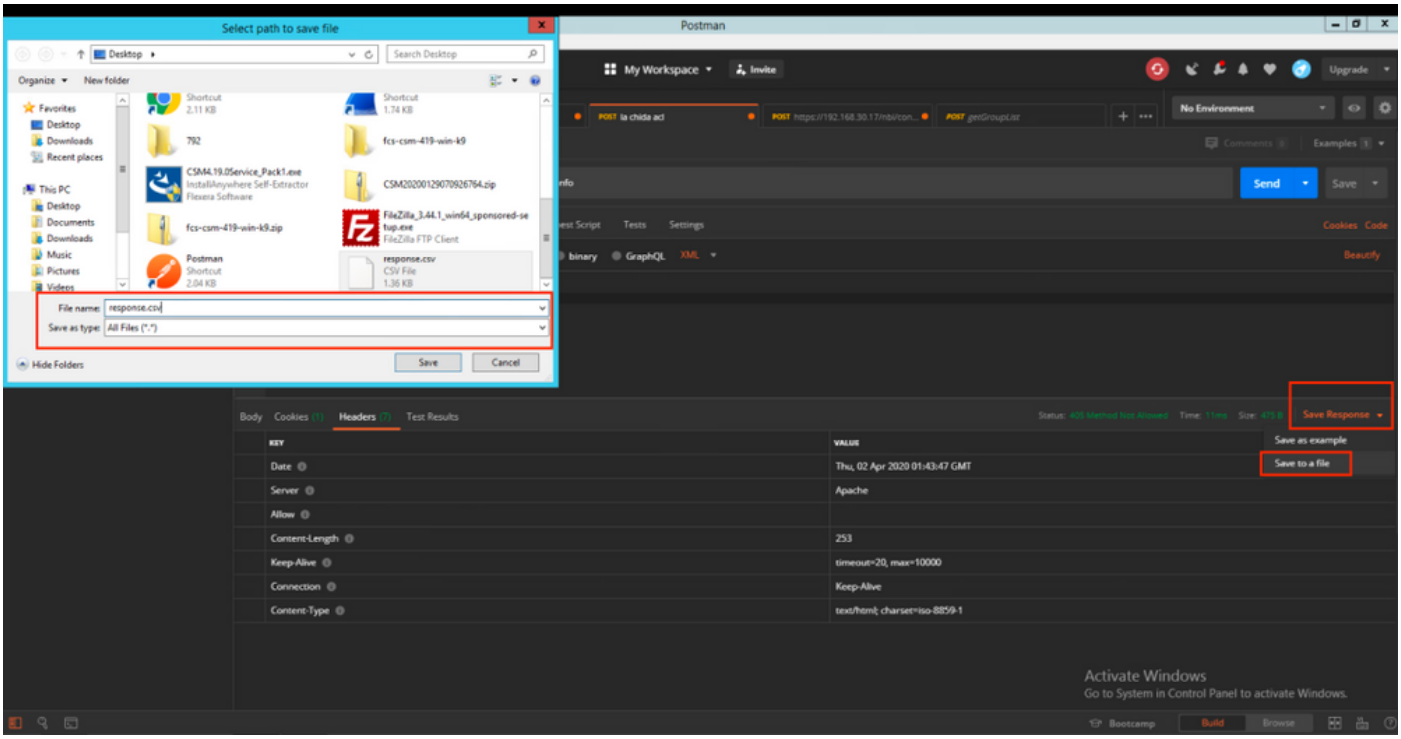


Response

```
<?xml version="1.0" encoding="UTF-8"?>
<ns1:execDeviceReadOnlyCLICmdsResponse xmlns:ns1="csm">
    <protVersion>1.0</protVersion>
    <reqId>123</reqId>
    <deviceCmdResult>
        <deviceIP>192.168.30.2</deviceIP>
        <deviceGID>00000000-0000-0000-0005-360119185746</deviceGID>
        <deviceName>asa.cisco.com</deviceName>
        <result>ok</result>
        <resultContent>access-list cached ACL log flows: total0, denied 0 (deny-flow-max 4096) alert-interval 300 access-list inside; 1 elements; name hash: 0x45467dcb access-list
            inside line 1 extended permit ip any any (hitcnt=8114506) 0x062c4905 access-list backbone; 1 elements;...</resultContent>
    </deviceCmdResult>
</ns1:execDeviceReadOnlyCLICmdsResponse>
```

Verify

You have the option to Save Response as a File. Navigate to **Save Response > Save to a file.** Then select the file location and save it as a .csv type.



Then you must be able to open this .csv file with Excel Application, for example. From the .csv file type, you can save the output as other file types, such as PDF, TXT, etc.

Troubleshoot

Possible failure responses using API.

1. No API License Installed.

Cause: API License expired, not installed, or not enabled.

Possible solution: Verify license's expiration date, under **Tools > Security Manager Administration > Licensing page**

Verify API feature is enabled under **Tools > Security Manager Administration > API**

Confirm settings of the **CSM API License Installation/Verification** section above of this guide.

2. Bad CSM IP Address use for the API login.

Cause: IP Address of the CSM Server is wrong in the URL of the API call.

Possible solution: Verify in the URL of the API client that the hostname is the right IP Address of the CSM server.

URL: https://**<hostname>**/nbi/login

3. Wrong ASA IP Address.

Cause: The IP address defined on the Body between the <deviceIP></deviceIP> tags must not be the right one.

Possible solution: Confirm the right device IP address is defined within the Body Syntax.

4. No connection to the firewall.

Cause: The device has no connection with the CSM

Possible solution: Run a Test Connectivity from the CSM server and troubleshoot further connectivity to the device.

For further Error Codes and Description find further details in the Cisco Security Manager API Specification Guide in the next link.