

Configure ISE 2.4 pxGrid IND 1.6.1 integration

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Configure](#)

[High Level Flow Diagram](#)

[Configurations](#)

[Step 1. Configure Endpoint Custom Attributes on ISE](#)

[Step 2. Configure Profiler Policy using Custom Attributes](#)

[Step 3. Enable Custom Attributes for Profiling Enforcement](#)

[Step 4. Export IND identity certificate](#)

[Step 5. Upload IND identity certificate to ISE Trusted Store](#)

[Step 6. Generate Certificate for IND](#)

[Step 7. Download certificate chain in PKCS12 format](#)

[Step 8. Upload certificate chain on IND](#)

[Step 9. Configure Policy Server on IND](#)

[Step 10. Configure pxGrid integration on IND](#)

[Step 11. Approve IND on ISE](#)

[Step 12. Activate pxGrid Service on IND](#)

[Verify](#)

[ISE Verification](#)

[IND Verification](#)

[Troubleshoot](#)

[Sync Status stuck in Out of Sync on IND](#)

[Not all endpoints are shared with ISE](#)

[assetTag and AssetGroup are not available on ISE](#)

Introduction

This document describes how to configure and troubleshoot Identity Services Engine (ISE) 2.4 and Industrial Network Director 1.6.1-4 integration over pxGrid (Platform Exchange Grid). Cisco IND is registered with pxGrid as a publisher and publishes information on endpoint attributes to ISE for IOTASSET Dictionary.

Prerequisites

Requirements

Cisco recommends that you have basic knowledge of these topics:

- Cisco Identity Service Engine
- Cisco Industrial Network Director

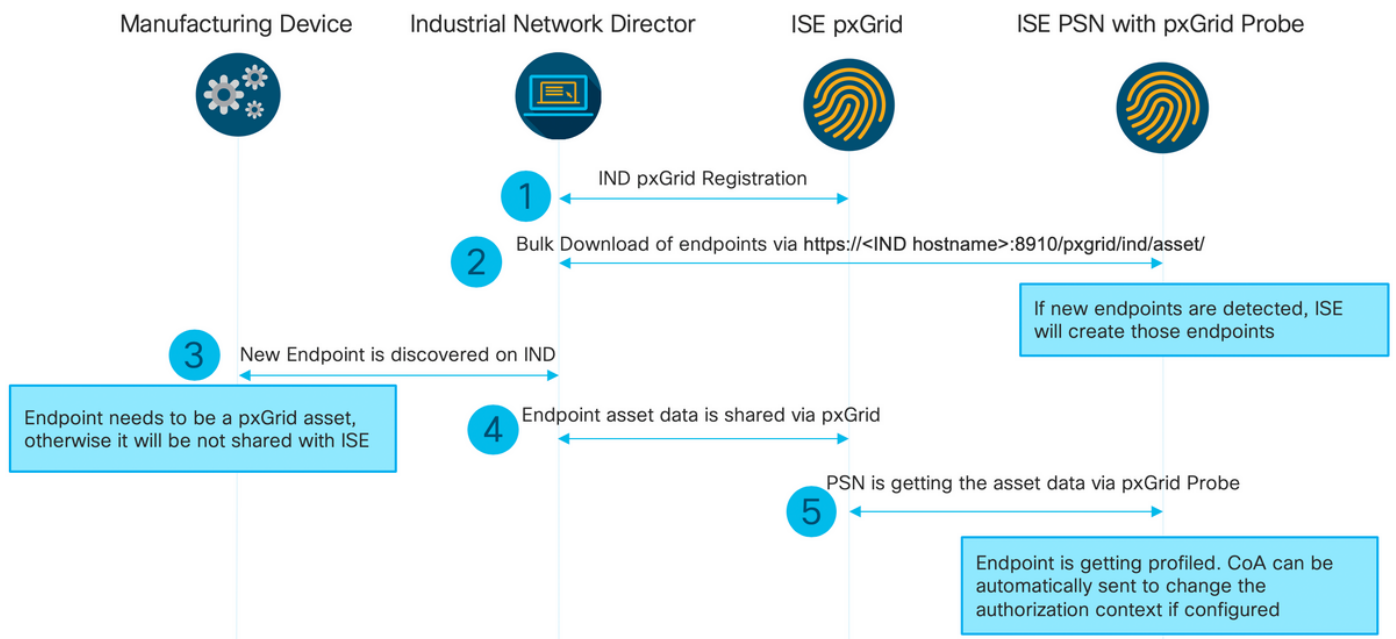
Components Used

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

- Cisco Identity Service Engine version 2.4 p6
- Industrial Network Director 1.6.1-4

Configure

High Level Flow Diagram



1. IND registers with ISE via pxGrid version 2 on ISE pxGrid node. Corresponding logs from IND (application.log):

```

2019-05-22 14:31:17,770:INFO:qtp281049997-52711:PxgridPublisher:: Connect start
2019-05-22 14:31:17,770:INFO:qtp281049997-52711:PxgridPublisher:: Hostname:WIN2012-AAA
IpAddress:10.62.145.130
2019-05-22 14:31:17,770:INFO:qtp281049997-52711:PxgridPublisher:: pxGrid
RestBaseUrl:https://WIN2012-AAA:8910/pxgrid/ind/asset/
2019-05-22 14:31:17,770:INFO:qtp281049997-52711:PxgridController:: Send Request ServiceRegister
invoked with pxGridServer(s) [ISE24-1ek.example.com]
2019-05-22 14:31:17,770:INFO:qtp281049997-52711:PxgridController:: Sending ServiceRegister
request to pxGridServer ISE24-1ek.example.com
2019-05-22 14:31:17,786:INFO:qtp281049997-52711:PxgridController::
Request={"name": "com.cisco.endpoint.asset", "properties": {"wsPubsubService": "com.cisco.ise.pubsub
", "restBaseUrl": "https://WIN2012-
AAA:8910/pxgrid/ind/asset/", "assetTopic": "/topic/com.cisco.endpoint.asset"}}
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController:: Response={"id": "76d4abaf-
9efd-4c68-a046-79e049564902", "reregisterTimeMillis": "300000"}
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController:: Send Request ServiceLookup
invoked with pxGridServer(s) [ISE24-1ek.example.com]

```

```
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController:: Sending ServiceLookup request
to pxGridServer ISE24-1ek.example.com
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController::
Request={"name": "com.cisco.ise.pubsub"}
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController::
Response={"services": [{"name": "com.cisco.ise.pubsub", "nodeName": "ise-pubsub-ise24-
1ek", "properties": {"wsUrl": "wss://ISE24-1ek.example.com:8910/pxgrid/ise/pubsub"}}]}
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridPublisher:: wsUrl=wss://ISE24-
1ek.example.com:8910/pxgrid/ise/pubsub
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController:: Send Request AccessSecret
invoked with pxGridServer(s) [ISE24-1ek.example.com]
2019-05-22 14:31:17,911:INFO:qtp281049997-52711:PxgridController:: Sending AccessSecret request
to pxGridServer ISE24-1ek.example.com
2019-05-22 14:31:17,926:INFO:qtp281049997-52711:PxgridController:: Request={"peerNodeName": "ise-
pubsub-ise24-1ek"}
2019-05-22 14:31:17,926:INFO:qtp281049997-52711:PxgridController:: Access Secret recieved
2019-05-22 14:31:17,926:INFO:qtp281049997-52711:PxgridPublisher:: Client created
```

As seen in the logs, IND has registered for the assetTopic

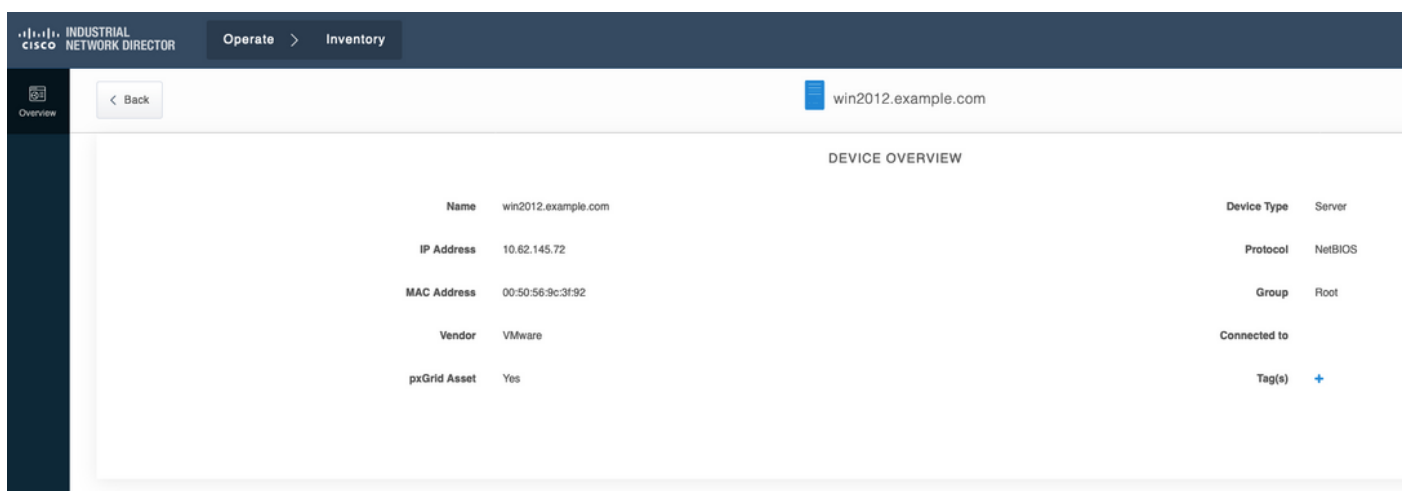
2. ISE PSN with pxgrid probe enabled does a bulk download of existing pxGrid Assets (profiler.log):

```
2019-05-22 14:39:25,817 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- New services are: [Service
[name=com.cisco.endpoint.asset, nodeName=ind2, properties={wsPubsubService=com.cisco.ise.pubsub,
restBaseUrl=https://WIN2012-AAA:8910/pxgrid/ind/asset/,
assetTopic=/topic/com.cisco.endpoint.asset}]]]
2019-05-22 14:39:26,011 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- NODENAME:ind2
2019-05-22 14:39:26,011 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- REQUEST
BODY{"offset": "0", "limit": "500"}
2019-05-22 14:39:26,046 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Response status={}200
2019-05-22 14:39:26,046 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Content: "OUT_OF_SYNC"
2019-05-22 14:39:26,047 INFO [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Status is "OUT_OF_SYNC"
2019-05-22 14:39:26,047 DEBUG [ProfilerINDSubscriberPoller-56-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Static set after adding new services:
[Service [name=com.cisco.endpoint.asset, nodeName=ind,
properties={wsPubsubService=com.cisco.ise.pubsub, restBaseUrl=https://WIN2012-
AAA:8910/pxgrid/ind/asset/, assetTopic=/topic/com.cisco.endpoint.asset}], Service
[name=com.cisco.endpoint.asset, nodeName=ind2, properties={wsPubsubService=com.cisco.ise.pubsub,
restBaseUrl=https://WIN2012-AAA:8910/pxgrid/ind/asset/,
assetTopic=/topic/com.cisco.endpoint.asset}]]]
2019-05-22 14:39:26,052 INFO [ProfilerINDSubscriberBulkRequestPool-80-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- NODENAME:ind2
2019-05-22 14:39:26,052 INFO [ProfilerINDSubscriberBulkRequestPool-80-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- REQUEST
BODY{"offset": "0", "limit": "500"}
2019-05-22 14:39:26,111 INFO [ProfilerINDSubscriberBulkRequestPool-80-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Response status={}200
2019-05-22 14:39:26,111 INFO [ProfilerINDSubscriberBulkRequestPool-80-thread-1][
cisco.profiler.infrastructure.probemgr.INDSsubscriber -::- Content:
{"assets": [{"assetId": "100", "assetName": "WIN2012-
CHILD", "assetIpAddress": "10.62.145.131", "assetMacAddress": "00:50:56:b6:46:87", "assetVendor": "VMw
are", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevisi
on": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttri
butes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": "SEC_TAG2"}]}, {"assetId": "
101", "assetName": "win2012.example.com", "assetIpAddress": "10.62.145.72", "assetMacAddress": "00:50:
```

```
56:9c:3f:92", "assetVendor": "VMware", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevision": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttributes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": ""}]]}]}
```

```
2019-05-22 14:39:26,111 DEBUG [ProfilerINDSubscriberBulkRequestPool-80-thread-1][[]]
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- Parsing bulk response
{"assets": [{"assetId": "100", "assetName": "WIN2012-CHILD", "assetIpAddress": "10.62.145.131", "assetMacAddress": "00:50:56:b6:46:87", "assetVendor": "VMware", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevision": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttributes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": "SEC_TAG2"}]}, {"assetId": "101", "assetName": "win2012.example.com", "assetIpAddress": "10.62.145.72", "assetMacAddress": "00:50:56:9c:3f:92", "assetVendor": "VMware", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevision": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttributes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": ""}]]}]}
```

3. New endpoint is discovered on IND (endpoint needs to be discovered with a protocol, otherwise endpoint is not identified as a pxGrid Asset and is not shared via pxGrid with ISE).



4. IND publishes this information to ISE pxGrid node

5. PSN via pxGrid probe receives this data (profiler.log):

```
2019-05-22 15:20:40,616 DEBUG [Grizzly(2)][[]]
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- Parsing push notification response:
{"asset":{"assetId": "101", "assetName": "win2012.example.com", "assetIpAddress": "10.62.145.72", "assetMacAddress": "00:50:56:9c:3f:92", "assetVendor": "VMware", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevision": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttributes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": "SEC_TAG2"}]}, "opType": "UPDATE"}
2019-05-22 15:20:40,616 DEBUG [Grizzly(2)][[]]
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- sending endpoint to
forwarder{"assetId": "101", "assetName": "win2012.example.com", "assetIpAddress": "10.62.145.72", "assetMacAddress": "00:50:56:9c:3f:92", "assetVendor": "VMware", "assetProductId": "Unknown", "assetSerialNumber": "", "assetDeviceType": "Server", "assetSwRevision": "", "assetHwRevision": "", "assetProtocol": "NetBIOS", "assetConnectedLinks": [], "assetCustomAttributes": [{"key": "assetGroup", "value": "Root"}, {"key": "assetTag", "value": "SEC_TAG2"}]}
2019-05-22 15:20:40,617 INFO [Grizzly(2)][[]] cisco.profiler.infrastructure.probemgr.Forwarder -::- Forwarder Mac 00:50:56:9C:3F:92 MessageCode null epSource PXGRIDPROBE
2019-05-22 15:20:40,617 DEBUG [forwarder-2][[]]
cisco.profiler.infrastructure.probemgr.ForwarderHelper -:ProfilerCollection:- sequencing Radius message for mac = 00:50:56:9C:3F:92
2019-05-22 15:20:40,617 DEBUG [forwarder-2][[]] cisco.profiler.infrastructure.probemgr.Forwarder -:ProfilerCollection:- Processing endpoint:00:50:56:9C:3F:92
2019-05-22 15:20:40,618 DEBUG [forwarder-2][[]] com.cisco.profiler.im.EndPoint -
```

```
:ProfilerCollection:- filtered custom attributes are:{assetGroup=Root, assetTag=SEC_TAG2}
2019-05-22 15:20:40,618 DEBUG [forwarder-2][] cisco.profiler.infrastructure.probemgr.Forwarder -
:ProfilerCollection:- Filtering:00:50:56:9C:3F:92
2019-05-22 15:20:40,618 DEBUG [forwarder-2][] cisco.profiler.infrastructure.probemgr.Forwarder -
:ProfilerCollection:- Endpoint Attributes:EndPoint[id=<null>,name=<null>]
MAC: 00:50:56:9C:3F:92
Attribute:BYODRegistration value:Unknown
Attribute:DeviceRegistrationStatus value:NotRegistered
Attribute:EndPointProfilerServer value:ISE24-1ek.example.com
Attribute:EndPointSource value:PXGRIDPROBE
Attribute:MACAddress value:00:50:56:9C:3F:92
Attribute:NmapSubnetScanID value:0
Attribute:OUI value:VMware, Inc.
Attribute:PolicyVersion value:0
Attribute:PortalUser value:
Attribute:PostureApplicable value:Yes
Attribute:assetDeviceType value:Server
Attribute:assetGroup value:Root
Attribute:assetHwRevision value:
Attribute:assetId value:101
Attribute:assetIpAddress value:10.62.145.72
Attribute:assetMacAddress value:00:50:56:9c:3f:92
Attribute:assetName value:win2012.example.com
Attribute:assetProductId value:Unknown
Attribute:assetProtocol value:NetBIOS
Attribute:assetSerialNumber value:
Attribute:assetSwRevision value:
Attribute:assetTag value:SEC_TAG2
Attribute:assetVendor value:VMware
Attribute:b310a420-78a5-11e9-a189-9ac8f4107843 value:Root
Attribute:b8e73d50-78a5-11e9-a189-9ac8f4107843 value:SEC_TAG2
Attribute:ip value:10.62.145.72
Attribute:SkipProfiling value:false
```

6. Context Visibility is updated with correct data

00:50:56:9C:3F:92



MAC Address: 00:50:56:9C:3F:92
 Username:
 Endpoint Profile: IOT_DEVICE2
 Current IP Address: 10.62.145.72
 Location:

- Applications
- Attributes**
- Authentication
- Threats
- Vulnerabilities

General Attributes

Description

Static Assignment	false
Endpoint Policy	IOT_DEVICE2
Static Group Assignment	false
Identity Group Assignment	Profiled

Custom Attributes

Filter

	Attribute Name	Attribute Value
×	<input type="text" value="Attribute Name"/>	<input type="text" value="Attribute Value"/>
	assetGroup	Root
	LogicalProfile	
	assetTag	SEC_TAG2

Other Attributes

Configurations

Note: Steps 1 - 3 are required even if you wish to have just visibility of assetGroup and assetTag in Context Visibility

Step 1. Configure Endpoint Custom Attributes on ISE

Navigate to **Administration > Identity Management > Settings > Endpoint Custom Attributes**. Configure Custom Attributes (assetGroup and assetTag) according to the image below.

Identity Services Engine Home Context Visibility Operations Policy Administration Work Centers

System Identity Management Network Resources Device Portal Management pxGrid Services Feed Service Threat Centric NAC

Identities Groups External Identity Sources Identity Source Sequences Settings

- User Custom Attributes
- User Authentication Settings
- Endpoint Purge
- Endpoint Custom Attributes

Endpoint Custom Attributes

Endpoint Attributes (for reference)

Mandatory	Attribute Name	Data Type
	PostureApplicable	STRING
	EndPointPolicy	STRING
	AnomalousBehaviour	STRING
	OperatingSystem	STRING
	BYODRegistration	STRING
	PortalUser	STRING
	LastAUPAcceptanceHours	INT
	LogicalProfile	STRING

Endpoint Custom Attributes

Attribute name	Type
assetGroup	String -
assetTag	String - +

Reset Save

Step 2. Configure Profiler Policy using Custom Attributes

Navigate to **Work Centers > Profiler > Profiling Policies**. Click on **Add**. Configure Profiler Policy similar to the image below.

Profiler Policy

* Name: IOT_DEVICE1 Description: [Empty]

Policy Enabled:

* Minimum Certainty Factor: 20 (Valid Range 1 to 65535)

* Exception Action: NONE

* Network Scan (NMAP) Action: NONE

Create an Identity Group for the policy: Yes, create matching Identity Group
 No, use existing Identity Group hierarchy

* Parent Policy: NONE

* Associated CoA Type: Global Settings

System Type: Administrator Created

Rules

If Condition: CUSTOMATTRIBUTE_assetTag_EQUALS... Then: Certainty Factor Increases 20

Condition Name: [Empty] Expression: CUSTOMATTRIB... EQUALS SEC_TAG1

Step 3. Enable Custom Attributes for Profiling Enforcement

Navigate to **Work Centers > Profiler > Settings > Profiler Settings**. Ensure **Enable Custom Attribute for Profiling Enforcement** checkbox is checked.

Profiler Configuration

* CoA Type: Reauth

Current custom SNMP community strings: ***** (Show)

Change custom SNMP community strings: [Empty] (For NMAP, comma separated. Field will be cleared on successful saved change.)

Confirm changed custom SNMP community strings: [Empty] (For NMAP, comma separated. Field will be cleared on successful saved change.)

EndPoint Attribute Filter: Enabled (i)

Enable Anomalous Behaviour Detection: Enabled (i)

Enable Anomalous Behaviour Enforcement: Enabled

Enable Custom Attribute for Profiling Enforcement: Enabled

Save Reset

Step 4. Export IND identity certificate

Navigate to **Settings > pxGrid**. Click on **Download .pem IND certificate**. This certificate is used during pxGrid registration, so ISE should trust it.

pxGrid

Download .pem IND certificate

Step 5. Upload IND identity certificate to ISE Trusted Store

Navigate to **Administration > Certificates > Certificate Management > Trusted Certificates**. Click on **Import**. Click on **Browse** and select IND certificate from Step 3. Click **Submit**.

The screenshot shows the Cisco Identity Services Engine (ISE) Administration console. The navigation path is: Administration > Certificates > Trusted Certificates > Import. The form is titled "Import a new Certificate into the Certificate Store".

Fields and options in the form:

- * Certificate File: ind(1).pem
- Friendly Name:
- Trusted For: Trust for authentication within ISE
 - Trust for client authentication and Syslog
 - Trust for authentication of Cisco Services
 - Validate Certificate Extensions
- Description:
- Buttons:

Step 6. Generate Certificate for IND

IND does not use client certificate which ISE CA issues. Instead the goal is to populate IND trusted store, so when ISE sends it's pxGrid certificate (during TLS exchange), it is trusted by IND.

Navigate to **Administration > pxGrid Services > Certificates**. Populate fields according to the image below. CN field is mandatory since the goal of ISE CA is to issue identity certificate. Ideally you should enter the FQDN of IND, but since identity certificate is not used by IND, CN field value is not critical.

Identity Services Engine Home Context Visibility Operations Policy Administration Work Centers

System Identity Management Network Resources Device Portal Management pxGrid Services Feed Service Threat Centric NAC

All Clients Web Clients Capabilities Live Log Settings Certificates Permissions

Generate pxGrid Certificates

I want to *

Common Name (CN) *

Description

Certificate Template [PxGrid_Certificate_Template](#) ⓘ

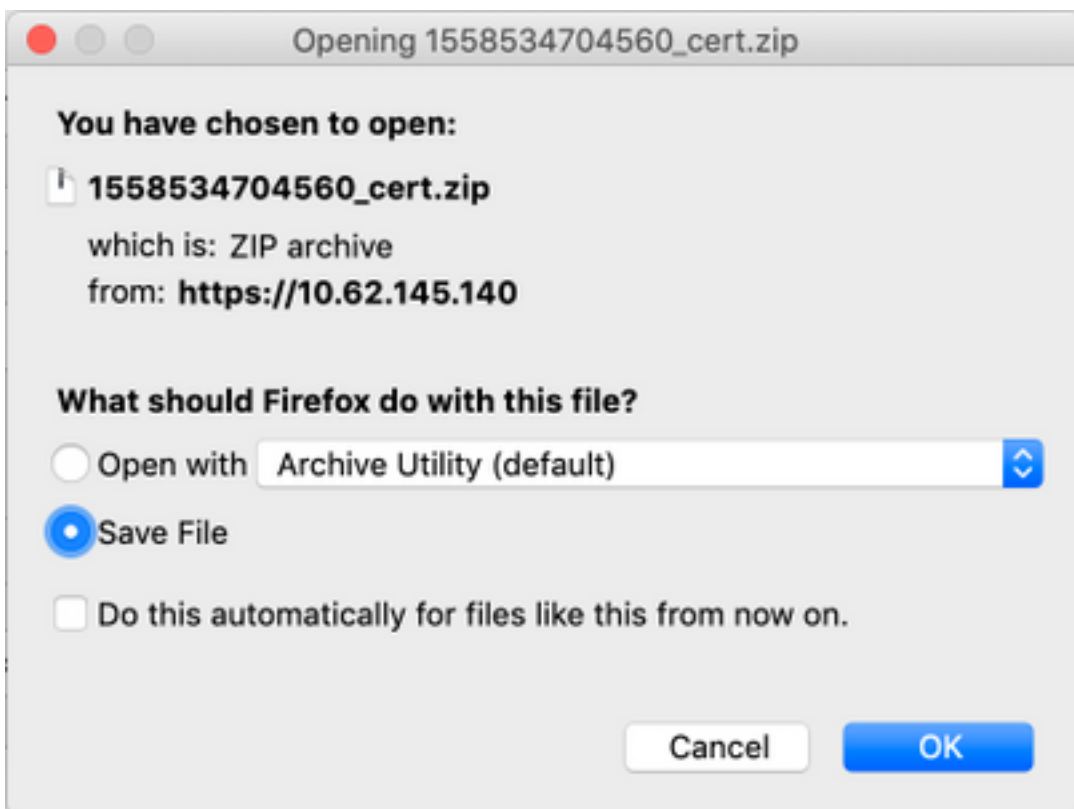
Subject Alternative Name (SAN) - +

Certificate Download Format * ⓘ

Certificate Password * ⓘ

Confirm Password *

Step 7. Download certificate chain in PKCS12 format



Step 8. Upload certificate chain on IND

Navigate to **Settings > pxGrid > Trusted Certificates**. Click on **New**. Enter the Name (chain will be seen with this name on IND). Password is the one from Step 1.

Upload Trusted Certificate
✕

Name *

Password

Certificate * Browse ▲ ✕

Upload
Cancel

Step 9. Configure Policy Server on IND

Navigate to **Settings > Policy Servers**, click on **New**. Enter ISE FQDN and ip address of ISE pxGrid Node.

INDUSTRIAL NETWORK DIRECTOR
Settings > Policy Servers
🔔 0 📄

< Back to Servers
New Server

Protocols *

RADIUS pxGrid

Host Name *	IP Address	Description
ISE24-1ek.example.com	10.62.145.140	

Cancel
Save

Step 10. Configure pxGrid integration on IND

Navigate to **Settings > pxGrid** and enable pxGrid integration. Click on toggle button. Enter the Node Name, this Host Name is the name of pxGrid client on ISE. Select the ISE configured earlier from the drop down menu in Server 1 field. Click on **Register**.

INDUSTRIAL NETWORK DIRECTOR
Settings > pxGrid
🔔 0 📄 🌐 👤

pxGrid

Enable pxGrid- Settings

Download .pem IND certificate

Connect Using the Existing Node

Register a New Node

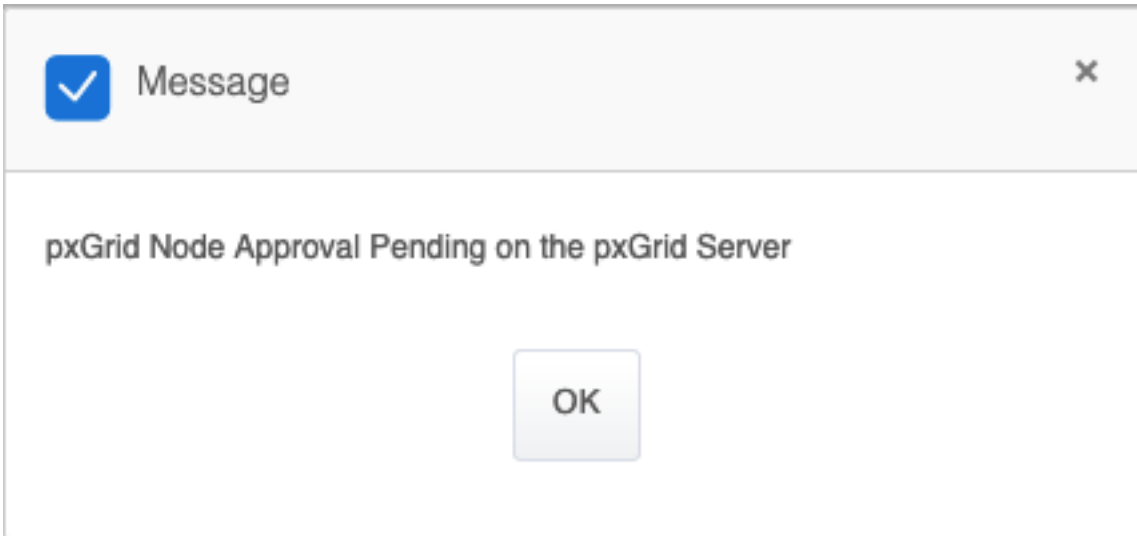
ISE Server

Node Name *	Server 1 *	Server 2
IND	ISE24-1ek.example.com	Select a server

Cancel
Register

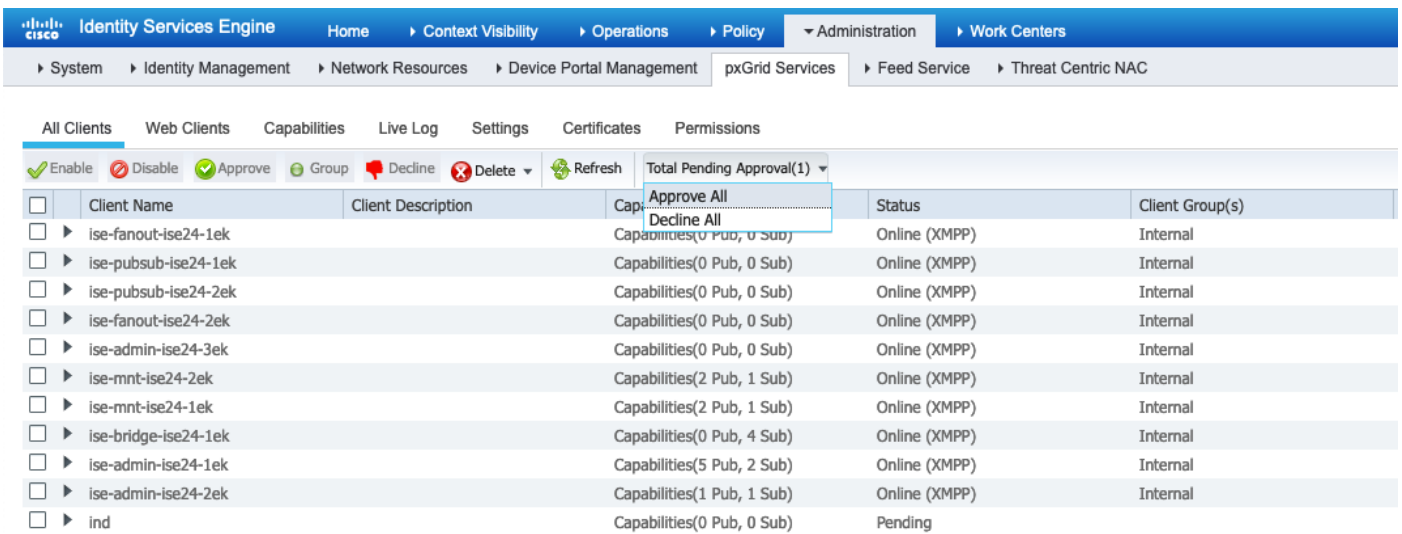
Note: Steps 11 - 12 might be ignored if Automatically approve new certificate-based accounts setting is enabled on ISE.

The following message is displayed on IND upon successful Registration:



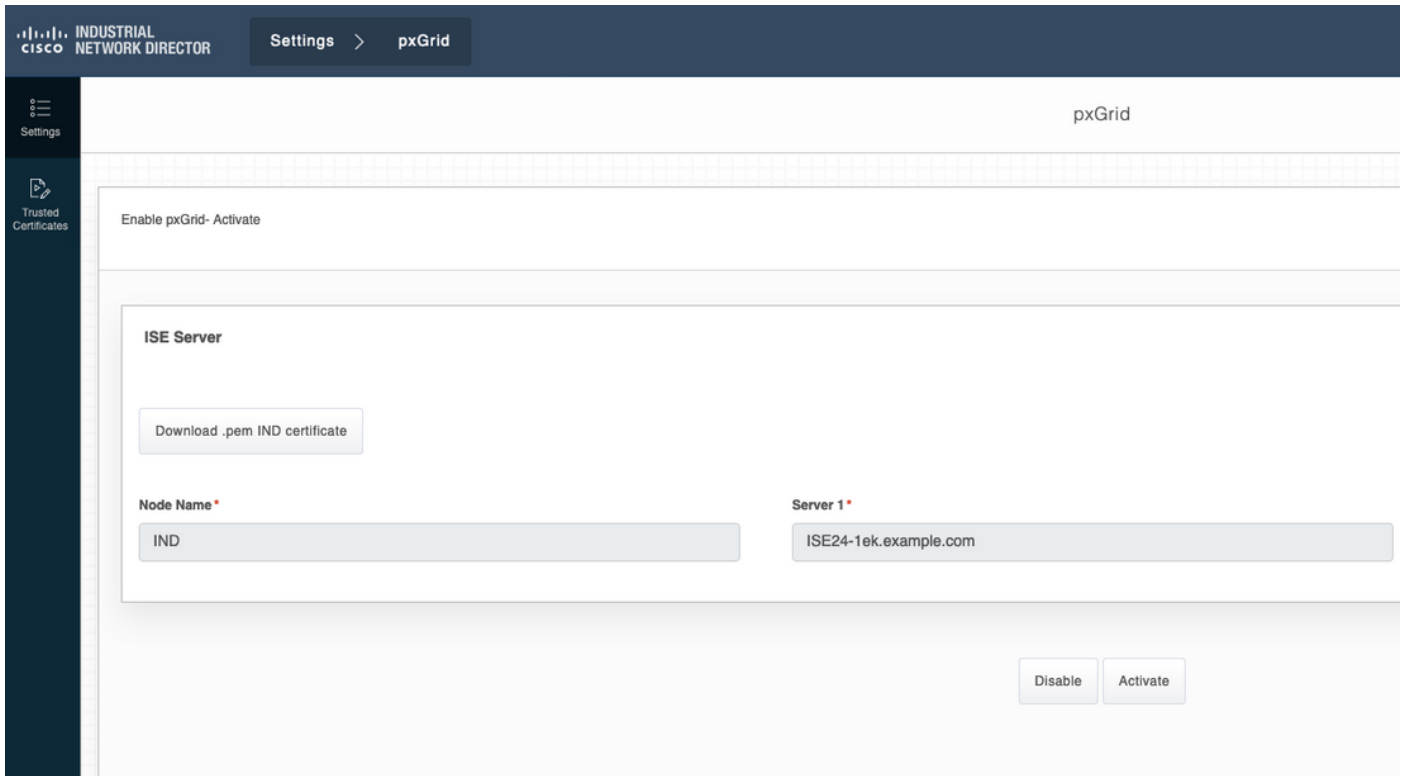
Step 11. Approve IND on ISE

Navigate to **Administration > pxGrid Services > All Clients**. Open Total Pending Approval(1) drop down menu. Click **Approve All**.

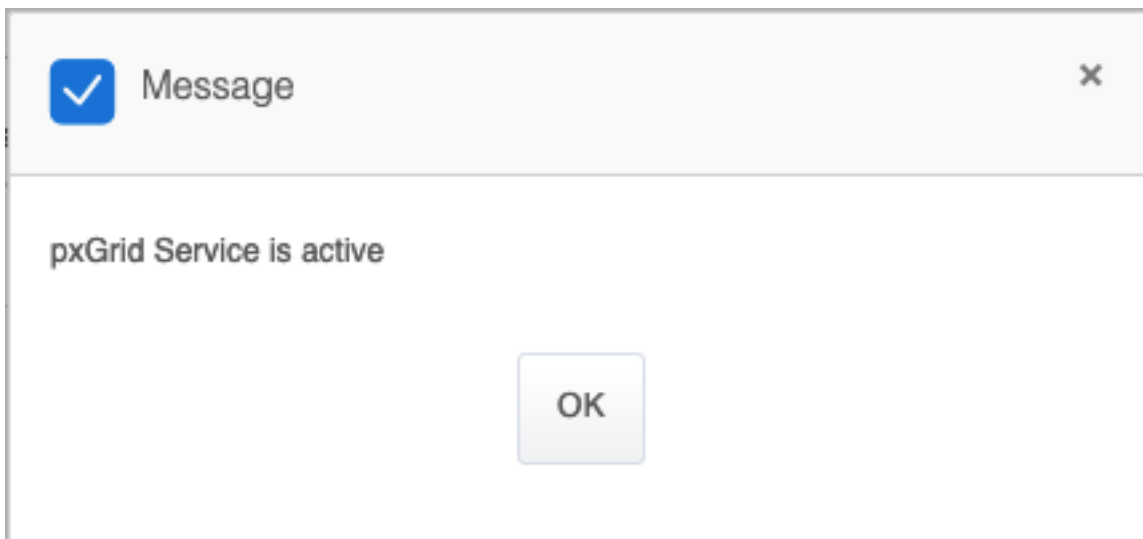


Step 12. Activate pxGrid Service on IND

Navigate to **Settings > pxGrid**. Click on **Activate**.



The following message is displayed on IND upon successful Activation:



Verify

ISE Verification

Navigate to **Administration > pxGrid Services > All Clients**. It is expected to see IND client as Offline (XMPP) in All Clients, IND uses pxGrid version 2.

Cisco Identity Services Engine						
Home		Context Visibility	Operations	Policy	Administration	Work Centers
System		Identity Management	Network Resources	Device Portal Management	pxGrid Services	Feed Service Threat Centric NAC
All Clients Web Clients Capabilities Live Log Settings Certificates Permissions						
<input checked="" type="checkbox"/> Enable	<input checked="" type="checkbox"/> Disable	<input checked="" type="checkbox"/> Approve	<input checked="" type="checkbox"/> Group	<input checked="" type="checkbox"/> Decline	<input checked="" type="checkbox"/> Delete	<input checked="" type="checkbox"/> Refresh
Total Pending Approval(0)						
Client Name	Client Description	Capabilities	Status	Client Group(s)		
ise-fanout-ise24-1ek		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal		
ise-pubsub-ise24-1ek	Client Name: Not Sortable	Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal		
ise-pubsub-ise24-2ek		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal		
ise-fanout-ise24-2ek		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal		
ise-admin-ise24-3ek		Capabilities(0 Pub, 0 Sub)	Online (XMPP)	Internal		
ise-mnt-ise24-2ek		Capabilities(2 Pub, 1 Sub)	Online (XMPP)	Internal		
ise-mnt-ise24-1ek		Capabilities(2 Pub, 1 Sub)	Online (XMPP)	Internal		
ise-bridge-ise24-1ek		Capabilities(0 Pub, 4 Sub)	Online (XMPP)	Internal		
ise-admin-ise24-1ek		Capabilities(5 Pub, 2 Sub)	Online (XMPP)	Internal		
ise-admin-ise24-2ek		Capabilities(1 Pub, 1 Sub)	Online (XMPP)	Internal		
ind		Capabilities(0 Pub, 0 Sub)	Offline (XMPP)			

Click on **Web Clients**, confirm that IND client has a status ON, and that /topic/com.cisco.endoint.asset is part of Subscriptions.

Cisco Identity Services Engine										
Home		Context Visibility	Operations	Policy	Administration	Work Centers				
System		Identity Management	Network Resources	Device Portal Management	pxGrid Services	Feed Service	Threat Centric NAC			
All Clients Web Clients Capabilities Live Log Settings Certificates Permissions										
Refresh										
Rows/Page 25 1 / 1 Go 12 Total Rows										
Client Name	Connect To	Session Id	Certificate	Subscriptions	Publications	IP Address	Status	Start time		
IND	ISE24-1ek	ISE24-1ek:181	CN=WIN2012-AAA, ...			10.62.145.130	ON	2019-05-23 08:27		
ise-mnt-ise24-1ek	ISE24-1ek	ISE24-1ek:182	CN=ISE24-1ek.exe ...	/topic/com.cisco.ise.session.internal		10.62.145.140	ON	2019-05-23 08:28		
ise-fanout-ise24-1ek	ISE24-1ek	ISE24-1ek:183	CN=ISE24-1ek.exe ...	/topic/distributed	/topic/distributed	10.62.145.140	ON	2019-05-23 08:28		
ise-admin-ise24-1ek	ISE24-1ek	ISE24-1ek:184	CN=ISE24-1ek.exe ...	/topic/com.cisco.endpoint.asset		10.62.145.140	OFF	2019-05-23 08:28		
ise-mnt-ise24-2ek	ISE24-1ek	ISE24-1ek:185	No Certificate	/topic/com.cisco.ise.session.internal	/topic/com.cisco.ise.session.internal	10.62.145.141	OFF	2019-05-23 08:59		
ise-admin-ise24-2ek	ISE24-1ek	ISE24-1ek:188	No Certificate			10.62.145.141	ON	2019-05-23 09:30		
ise-bridge-ise24-1ek	ISE24-1ek	ISE24-1ek:189	CN=ISE24-1ek.exe ...			127.0.0.1	OFF	2019-05-23 09:30		
ise-fanout-ise24-1ek	ISE24-1ek	ISE24-1ek:190	CN=ISE24-1ek.exe ...	/topic/wildcard		127.0.0.1	ON	2019-05-23 09:30		
ise-mnt-ise24-2ek	ISE24-1ek	ISE24-1ek:191	No Certificate	/topic/com.cisco.ise.session.internal	/topic/com.cisco.ise.session.internal	10.62.145.141	ON	2019-05-23 09:43		
ise-admin-ise24-1ek	ISE24-1ek	ISE24-1ek:192	CN=ISE24-1ek.exe ...	/topic/com.cisco.endpoint.asset		10.62.145.140	ON	2019-05-23 09:43		
ise-bridge-ise24-1ek	ISE24-1ek	ISE24-1ek:193	CN=ISE24-1ek.exe ...			127.0.0.1	OFF	2019-05-23 10:04		
ise-bridge-ise24-1ek	ISE24-1ek	ISE24-1ek:194	CN=ISE24-1ek.exe ...			127.0.0.1	ON	2019-05-23 10:09		

IND Verification

IND should transition to In Sync status. It is done if bulk download is successful on ISE, if it is not the case IND will stuck in Out of Sync state.

Cisco Platform Exchange Grid (pxGrid) is an open, scalable data-sharing and threat control platform that allows seamless integration between multivendor identity, network, security and asset management systems. Enabling the feature below activates the sharing of endpoint assets discovered by this system with a Cisco Identity Services Engine (ISE) pxGrid controller. This information can then be leveraged by upstream security systems to monitor security, detect threats, and set network policy. Learn more [here](#).

Download .pem IND certificate

ISE Server

Node Name*

Server 1*

Server 2

Statistics

	Sync. Status	In Sync	Last Sync. Status Probe Time
Number of Assets Shared via Last Bulk Request	2		2019-05-23 10:19:16
Last Update Operation	Update		Last Bulk Request Time 2019-05-23 08:29:14
Total pxGrid Asset Count	2		Last Update Time 2019-05-22 20:17:36

Troubleshoot

Sync Status stuck in Out of Sync on IND

Transition from Out of Sync to In Sync happens if bulk download is successful on ISE. IND application.log below.

```
2019-05-22 22:09:06,902:INFO:qtp281049997-53444:PxgridConfigMgr:: Pxgrid Statistics Start:: Bulk Request : bulkReqAssetCount:2 add: false
2019-05-22 22:09:06,902:INFO:qtp281049997-53444:PxgridConfigMgr:: Pxgrid Statistics updated:: Bulk Request : AssetCount:2
2019-05-22 22:09:06,902:INFO:qtp281049997-53444:PxgridConfigMgr:: Sync Status transition to IN_SYNC
2019-05-22 22:09:06,918:INFO:qtp281049997-53444:PxGridServiceRestController:: getAssets Completed
```

It is critical for ISE to be able to resolve IND hostname which is shared by IND. Otherwise ISE can't do bulk download and IND will never transition to In Sync state. You can see the following exception in profiler.log if bulk download fails (WIN2012-AAA was not resolvable by ISE). To trigger bulk download you can uncheck and check the pxGrid probe on PSN.

```
2019-04-30 13:59:50,708 INFO [ProfilerINDSubscriberPoller-60-thread-1] []
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- New services are: []
2019-04-30 13:59:50,714 INFO [ProfilerINDSubscriberPoller-60-thread-1] []
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- NODENAME:ind
2019-04-30 13:59:50,714 INFO [ProfilerINDSubscriberPoller-60-thread-1] []
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- REQUEST
BODY{"offset": "0", "limit": "500"}
2019-04-30 13:59:50,716 ERROR [ProfilerINDSubscriberPoller-60-thread-1] []
cisco.profiler.infrastructure.probemgr.INDSubscriber -::- Unable to get sync statusWIN2012-AAA:WIN2012-AAA
java.net.UnknownHostException: WIN2012-AAA
at java.net.AbstractPlainSocketImpl.connect (AbstractPlainSocketImpl.java:184)
at java.net.SocksSocketImpl.connect (SocksSocketImpl.java:392)
at java.net.Socket.connect (Socket.java:589)
at sun.security.ssl.SSLSocketImpl.connect (SSLSocketImpl.java:673)
at sun.security.ssl.BaseSSLSocketImpl.connect (BaseSSLSocketImpl.java:173)
```

```

at sun.net.NetworkClient.doConnect (NetworkClient.java:180)
at sun.net.www.http.HttpClient.openServer (HttpClient.java:463)
at sun.net.www.http.HttpClient.openServer (HttpClient.java:558)
at sun.net.www.protocol.https.HttpsClient.<init> (HttpsClient.java:264)
at sun.net.www.protocol.https.HttpsClient.New (HttpsClient.java:367)
at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.getNewHttpClient (AbstractDelegateH
ttpsURLConnection.java:191)
at sun.net.www.protocol.http.HttpURLConnection.plainConnect0 (HttpURLConnection.java:1156)
at sun.net.www.protocol.http.HttpURLConnection.plainConnect (HttpURLConnection.java:1050)
at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.connect (AbstractDelegateHttpsURLCo
nnection.java:177)
at sun.net.www.protocol.http.HttpURLConnection.getOutputStream0 (HttpURLConnection.java:1334)
at sun.net.www.protocol.http.HttpURLConnection.getOutputStream (HttpURLConnection.java:1309)
at
sun.net.www.protocol.https.HttpURLConnectionImpl.getOutputStream (HttpsURLConnectionImpl.java:25
9)
at com.cisco.profiler.infrastructure.probemgr.INDSsubscriber.getRequest (INDSubscriber.java:362)
at com.cisco.profiler.infrastructure.probemgr.INDSsubscriber.isInSync (INDSubscriber.java:500)
at
com.cisco.profiler.infrastructure.probemgr.INDSsubscriber.populateIOTServiceList (INDSubscriber.ja
va:462)
at
com.cisco.profiler.infrastructure.probemgr.INDSsubscriber$WorkerThread.run (INDSubscriber.java:441
)
at java.util.concurrent.Executors$RunnableAdapter.call (Executors.java:511)
at java.util.concurrent.FutureTask.runAndReset (FutureTask.java:308)
at
java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.access$301 (ScheduledThreadP
oolExecutor.java:180)
at
java.util.concurrent.ScheduledThreadPoolExecutor$ScheduledFutureTask.run (ScheduledThreadPoolExec
utor.java:294)
at java.util.concurrent.ThreadPoolExecutor.runWorker (ThreadPoolExecutor.java:1149)
at java.util.concurrent.ThreadPoolExecutor$Worker.run (ThreadPoolExecutor.java:624)
at java.lang.Thread.run (Thread.java:748)

```

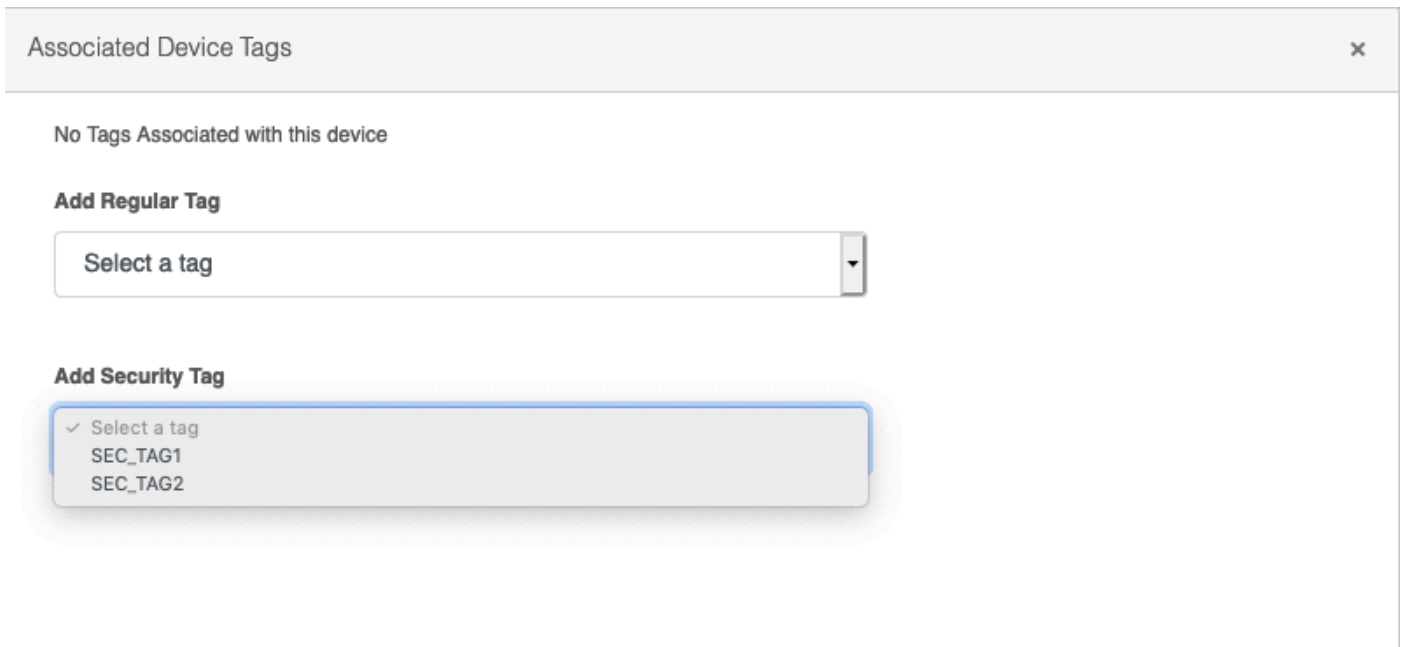
Not all endpoints are shared with ISE

Endpoints on IND are shared with ISE only if pxGrid Asset flag is Yes, MAC address should be also available, otherwise ISE has not enough data to create an endpoint.

Name		Device Type	Server
Name	WIN2012-CHILD	Device Type	Server
IP Address	10.62.145.131	Protocol	NetBIOS
MAC Address	00:50:56:b6:46:87	Group	Root
Vendor	VMware	Connected to	
pxGrid Asset	Yes	Tag(s)	SEC_TAG2

assetTag and AssetGroup are not available on ISE

If assetTag only is not available it can be the case when wrong TAG type used. You need to use Security Tag (not Regular Tag) when you update the endpoint.



If both AssetTag and AssetGroup are not available, there can be multiple reasons behind

1. Profiling policy is not configured using Custom Attributes (See Step 1-3 in Configurations part of the document)
2. Due to defect [CSCvn66106](#) EndPoint Attribute Filter: should be disabled. Otherwise it filters custom attributes from the classifier. The following log can be seen in profiler.log.

```
2019-05-22 11:20:11,796 DEBUG [PersistentWorker-8-18-thread-1][] com.cisco.profiler.im.EndPoint
-:Profiling:- filtered custom attributes are:{assetGroup=Root, assetTag=SEC_TAG2, b310a420-78a5-
11e9-a189-9ac8f4107843=Root, b8e73d50-78a5-11e9-a189-9ac8f4107843=SEC_TAG2}
```