

**SCOPED CERTIFIED APPLICATION
ADMINISTRATION GUIDE**

Illumio Application (1.4.0)

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1 Overview

The Illumio application for ServiceNow provides enriched workload collection on the PCE (Policy Compute Engine) instance using the database of workloads discovered by ServiceNow.

The application features allow you to use the ServiceNow tables as a customized source for workloads as well as synchronize the data to PCE both automatically and manually. Choose the source tables for workload discovery and fields for label mapping flexibly.

The application allows for the periodic discovery of workloads from ServiceNow to keep the data set updated. It sends the information about newly found workloads from ServiceNow to PCE and allows updates of the already known workloads with modified labels if required.

1.1 ServiceNow Integration

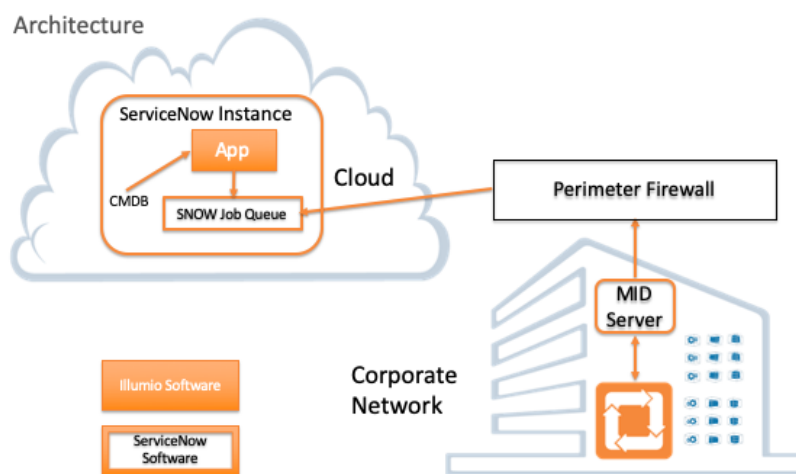


Figure 1. Integration of ServiceNow and Illumio Application

The architecture diagram in Figure 1 shows how the Illumio software components, the application inside the ServiceNow instance and PCE, are working with ServiceNow.

As a ServiceNow user, you know that the ServiceNow® CMDB (Configuration Management Database), when paired with ServiceNow Service Mapping, becomes service-aware, enabling your ServiceNow applications to be service-aware as well. The CMDB identifies managed and unmanaged workloads in a ServiceNow application. That CMDB workload data needs to become available in the Illumio PCE.

The PCE can ingest CMDB workload data by sending a request through the MID Server to pull data from the SN job queue. In the ServiceNow instance itself, the Illumio application directs the CMDB workload data to the SN job queue.

1.2 Data Flow Between the CMDB to PCE

The diagram in Figure 2 shows the flow of data between the CMDB to PCE:

Illumio App for ServiceNow Diagram

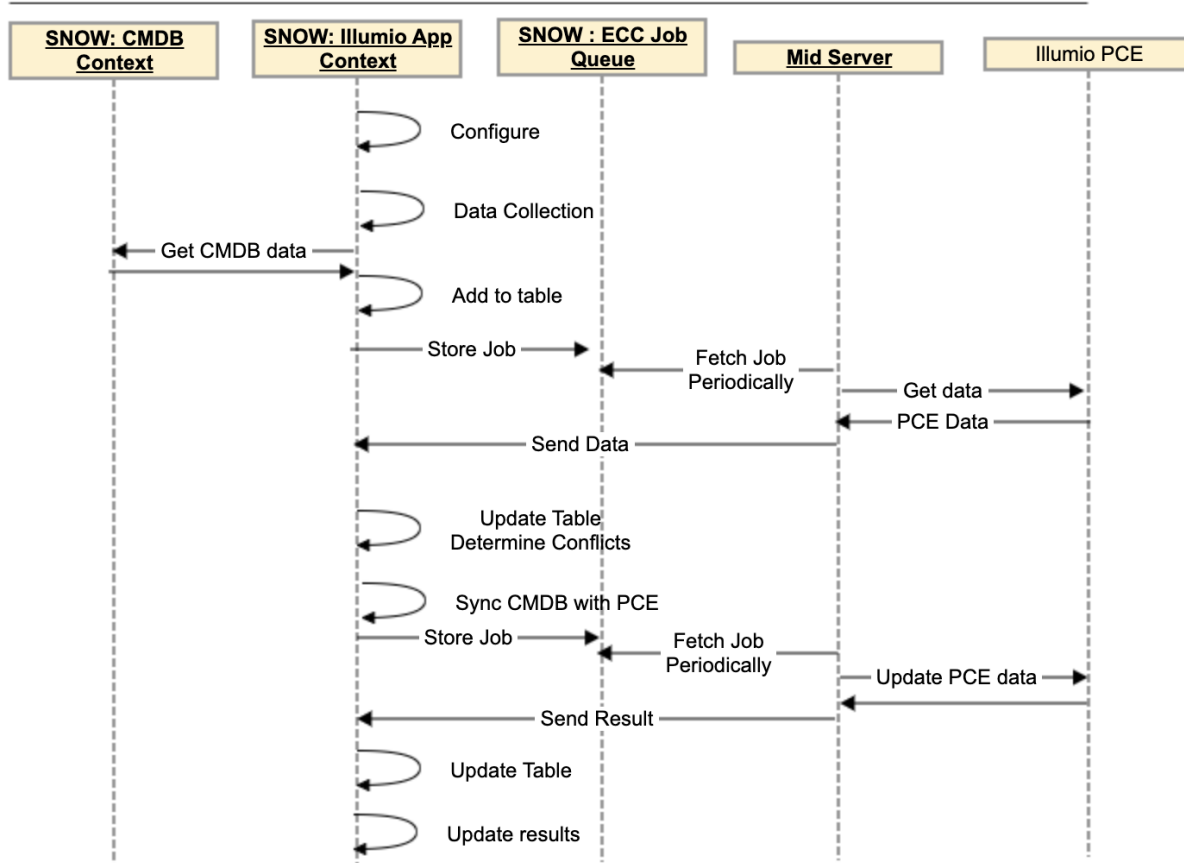


Figure 2. Diagram of ServiceNow and Illumio integration

1. **CMDB:** The workflow data from CMDB is drawn in the SN ECC job queue through the Illumio application.
2. **Illumio application:** The application collects and configures the data and adds it to a table. It also does the following:
 - Updates the tables to determine any conflicts
 - Syncs the data from CMDB with PCE
 - Stores the job in the ECC job queue after performing the updating and syncing.

In general, the Illumio application initially collects, configures, and adds the new job data to tables in the ECC job queue, and then also continuously updates these tables resolving conflicts and syncing it with PCE.

3. **ECC job queue:** Both the new job data coming from the Illumio application and the updated data coming from PCE gets stored in the ECC queue.

4. **MID Server:** The server fetches the new and updated job data periodically from the ECC queue and sends it to PCE. It also draws the data from the PCE and sends it directly to the Illumio application.
5. **PCE:** The engine forwards the data to the MID Server, which then can send it to the Illumio application on SN.

1.3 Illumio Application

The Illumio application has these features:

- Dashboard, used to view the CMDB data
- Configuration Screen
 - PCE API settings
 - Automatic sync job scheduler
 - Set Critical groups
 - Set Threshold limit
 - PCE Field Mapping Screen
 - ServiceNow CMDB table selection; mapping to PCE labels
 - Specify criteria to exclude CIs
- PCE Workloads table
 - Workload managed, unmanaged or unknown to PCE – used for creating unmanaged workloads
 - Label conflicts – used for updating PCE labels using the CMDB as source of truth.
- Scheduled jobs status
- Critical Label groups details
- Process Monitor

2 Installation

This section describes how to download/install the Illumio application from the store.

2.1 Supported Illumio Versions

The supported Illumio application versions:

- v19.3 (on-prem)
- v21.2 (on-prem)
- v21.5 (on-prem)
- v21.5 (SaaS)

2.2 Supported ServiceNow Versions

The ServiceNow versions compatible with the Illumio application:

- Paris
- Quebec
- Rome

2.3 Prerequisites

Provide the following prerequisites before installing the Illumio application:

2.3.1 Plugins

Activate the following plugins for the integration:

- Configuration Management (CMDB) (`com.snc.cmdb`)
- Text Index (`com.glide.text_index`)

To install the required plugins:

1. Log in to your instance with your HI credentials.
2. Verify you have the system administrator (admin) role.
3. Navigate to **System Definition > Plugins** in your instance.
4. Search and install the listed plugins.

2.3.2 Connectivity

- Connectivity to Illumio PCE via MID Server must be available.
- The Illumio application supports proxy on both sidee, Between MID server and ServiceNow as well as between MID server and Illumio PCE.
- Whether to use proxy between MID server and PCE is based on user's choice.

2.3.3 MID Server

Make sure the following prerequisites for discovering the PCE Workloads are in place:

- The MID Server is accessible from the ServiceNow instance.
- The MID Server can communicate with the ServiceNow instance directly or via a proxy.
- Proxies are correctly set.
- Illumio PCE is accessible from the MID Server.
- Illumio PCE is accessible through the proxy defined in the MID server (If the user wants to have proxy between PCE and MID server)
- Illumio PCE APIs are accessible from the MID Server.

2.4 Permissions and Roles

ServiceNow requires the listed roles and these roles need specific permissions to perform various activities:

- The system administrator (admin) can install the integration application plugins.
- Illumio Admin can configure the “PCE Configuration”, collect workloads from PCE, Sync workloads to PCE.
- Illumio User can sync workloads to PCE.

2.5 Application Download/Install

- Get the Illumio App from the ServiceNow Store to the ServiceNow instance.

Go to the following URL:

https://store.servicenow.com/sn_appstore_store.do#!/store/application/15314f1ddb882700dc9fab5ca961943/, click on “Get” and enter your HI Credentials to get the application for your instance.

1. Log to the instance to which you want to install the application.

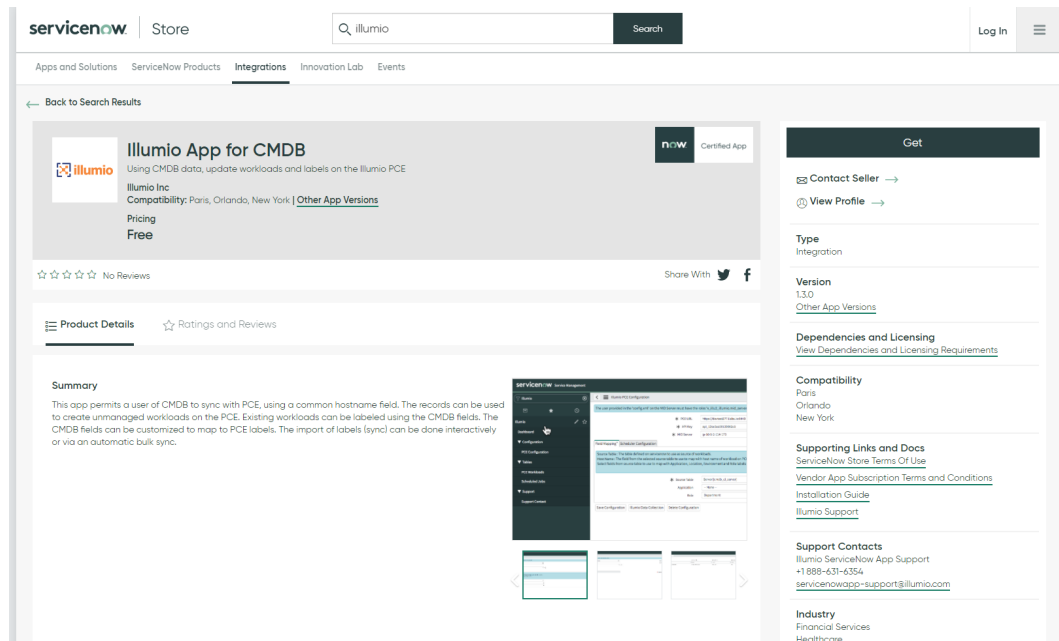
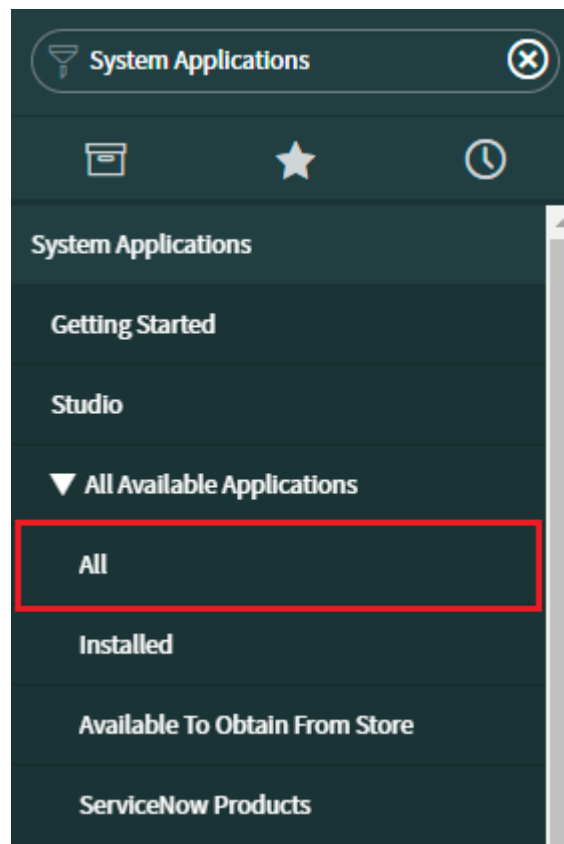


Figure 3. Illumio application on the ServiceNow store

- Navigate to “System Applications” -> “All Available Applications” -> “All”.



- Search for the Illumio App for CMDB application, select it, and click on “Install”.
- One progress bar will appear and after some time the application will be installed into your instance.

5. Your application is installed automatically onto your instance, and you can navigate to it by searching “Illumio” in the navigation bar, as shown below.

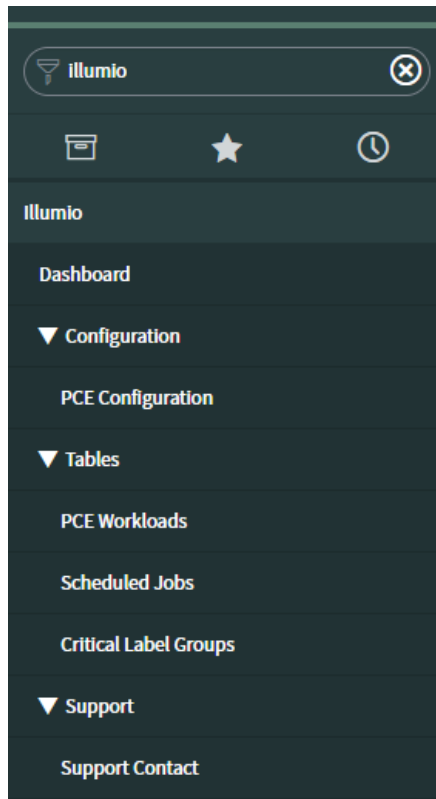


Figure 4. List of Illumio application modules

2.6 Upgrade Application

Steps to upgrade application from the store:

- Log in to the instance Navigate to **System Applications > All Available Applications > All**.
- Find the application with the filter criteria and search bar.
- Next to the application listing, select the version to install.
- Click **Install**.

2.6.1 After upgrading the application older than 1.3.1 to 1.4.0 version

- When System Administrator upgrades the Illumio application from the older version than 1.3.1 to the 1.4.0 version, System Administrator needs to run the following fixed script in the Background script of ServiceNow instance in order to fill the required data in the PCE workloads.
- Please note that if the user is not running data collection after upgrading from an older version than 1.3.1 to the 1.4.0 version, then and only then the System Administrator needs to run the below script.
- If a user is running the Illumio data collection after upgrading from an older version then there is no need to run the following script.
- Steps to run the script:
 1. The admin role is required to run the below script.
 2. Go to System Definition - > Script – Background. Select global from the scope.

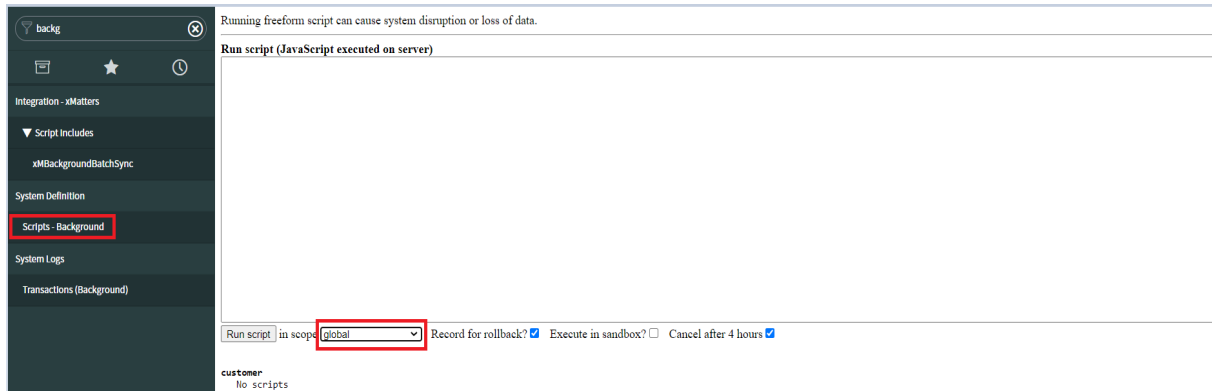


Figure 5. Run background script after app upgrade

3. Copy the following script and add it in the Run script.

```
// Fetching workloads from the table
var grWorkload = new
GlideRecord('x_illu2_illumio_illumio_servicenow_servers');
grWorkload.query();

if (!grWorkload.hasNext()) {
    // No workloads found in the table
    gs.info("No workloads found in the table. Hence skipping the record
updates")
} else {
    gs.info("Started updating the workloads");

    while (grWorkload.next()) {
        // Updating the workloads
        grWorkload.servicenow_cmdb_identifiers_list =
grWorkload.getValue('cmdb_reference_field');
        if (!grWorkload.update()) {
            gs.error("Error while updating the record having sys_id: " +
grWorkload.sys_id);
        }
    }
    gs.info("Successfully updated the workloads");
}
```

4. Click on **Run script** to run the script.

3 Configuration

This section lists the required configuration steps for the Illumio application.

3.1 Configure the MID Server

You need to install the MID Server to communicate with Illumio PCE and ServiceNow. Deploy the MID Server in the local network and install its agent in the same network with the product with which you want to communicate.

3.1.1 The required role

System Administrator (admin)

3.1.2 Pre-requisites

The MID Server user configured on the agent should have these roles:

- mid_server
- Illumio MID Server User (x_illu2_illumio.mid_server_user)

Details on How to Configure MID Server are also provided in https://docs.servicenow.com/?context=CSHelp:MID_Server

3.1.3 Sizing Considerations

In addition to the ServiceNow [MID server system requirements](#), it is recommended to scale the MID server's heap size based on CMDB CI and PCE workload counts. See the [Known Scenarios](#) section below for details.

3.1.4 Configuration steps

Follow these steps:

1. Set up a host within the local network as a MID Server agent.
2. In the left navigation pane, type **mid server** in the search box and select **Servers** in the "MID Server" section.

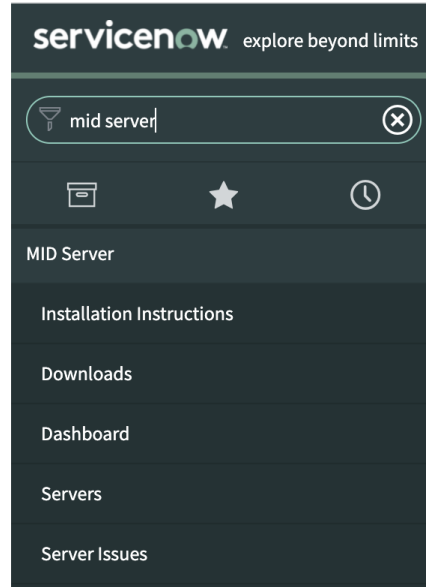


Figure 6. MID Server module in the navigation menu

3. The VM/mid-server details will automatically show in the list of MID Servers.

Name	Host name	Status	Validated	Version	Last refreshed	Started	Stopped	Router	Logged in user
Illumio Mid Server	crest	Down	Yes	london-06-27-2018_patch6-02-06-2019_02-...	2019-06-17 17:54:06	2019-06-11 17:08:19	2019-06-11 11:02:08		mid_user
Illumio_Madrid_MidServer	crest	Up	Yes	madrid-12-18-2018_patch3-04-24-2019_05-...	2019-07-07 23:44:02	2019-06-24 12:27:22	2019-06-24 12:27:12		Illumio_mid_...

Figure 7. List view of the available MID Servers

4. The form view of the MID Server record shows the current status of the MID server.

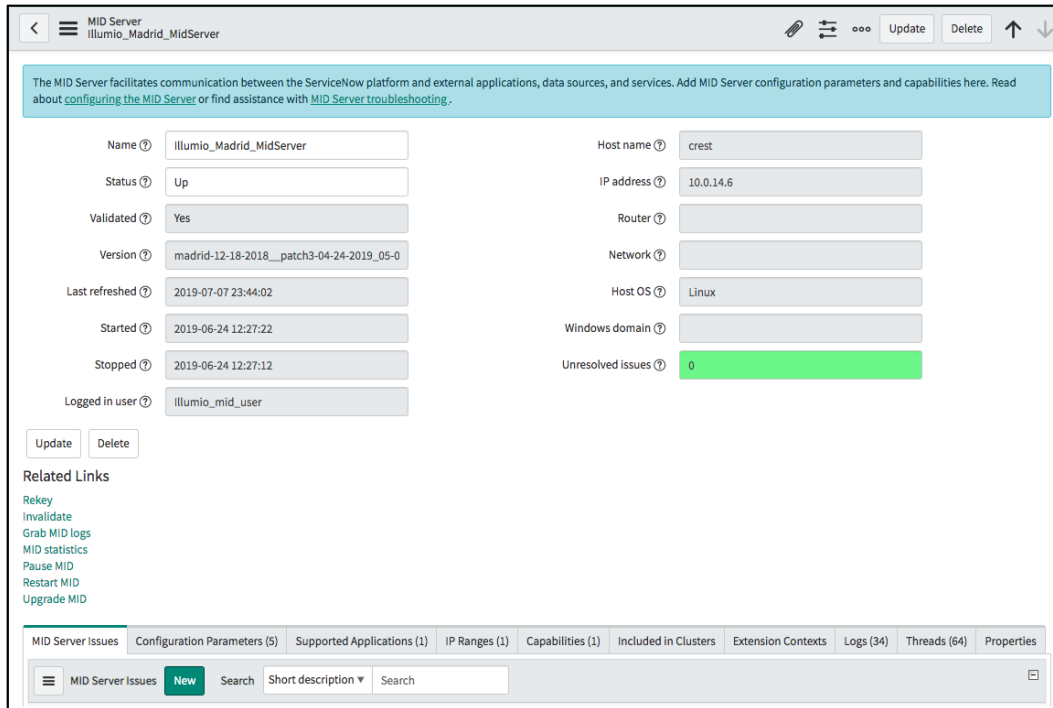


Figure 8. Form view of the MID Server record

5. You can validate the MID Server using the links in the Related Links section.

3.2 Configure User Roles

The Illumio application comes with two custom roles out of the box. As a one time configuration, you must add the required system roles to these two custom roles.

3.2.1 The required role

System Administrator (admin)

Below are the roles you need to add to each custom role:

Custom Role	System Roles to be added
Illumio Application Admin (x_illu2_illumio.illumio_admin)	x_illu2_illumio.illumio_user, export_set_scheduler, cmdb_read
Illumio Application User (x_illu2_illumio.illumio_user)	cmdb_read

3.2.2 Procedure

1. Navigate to “System Roles” and filter a custom role.

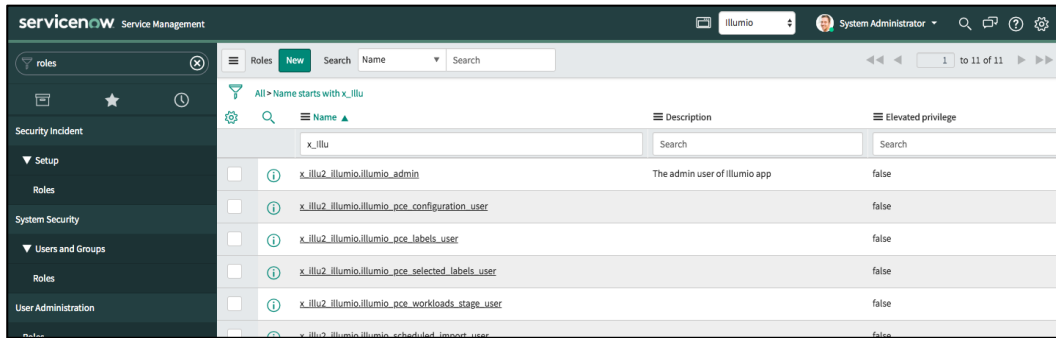


Figure 9. List view of the ServiceNow custom roles

2. Select the custom role for which you want to add the system roles.

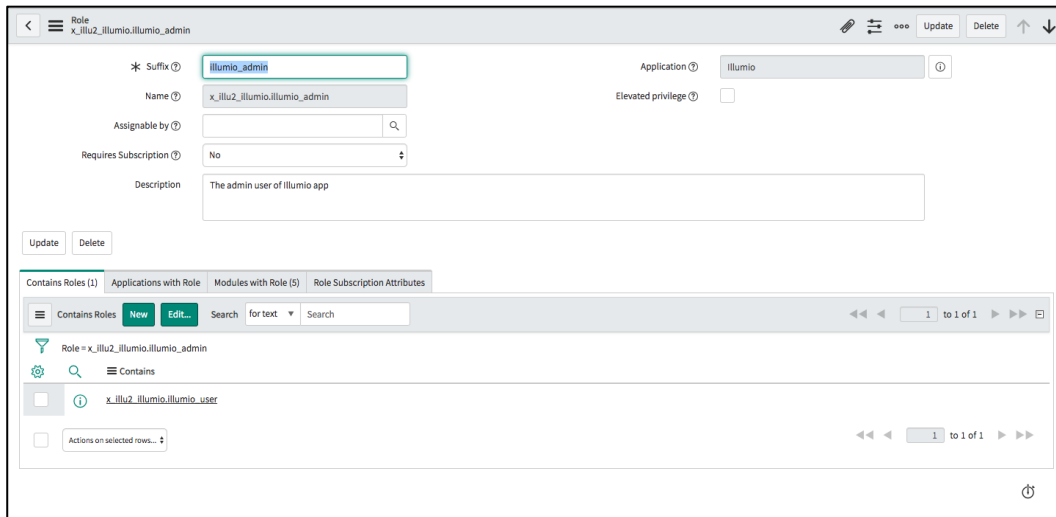


Figure 10. Form view of the custom role's record

3. Assign the system roles mentioned in the table by clicking **Edit** under the tab "Contains Roles".

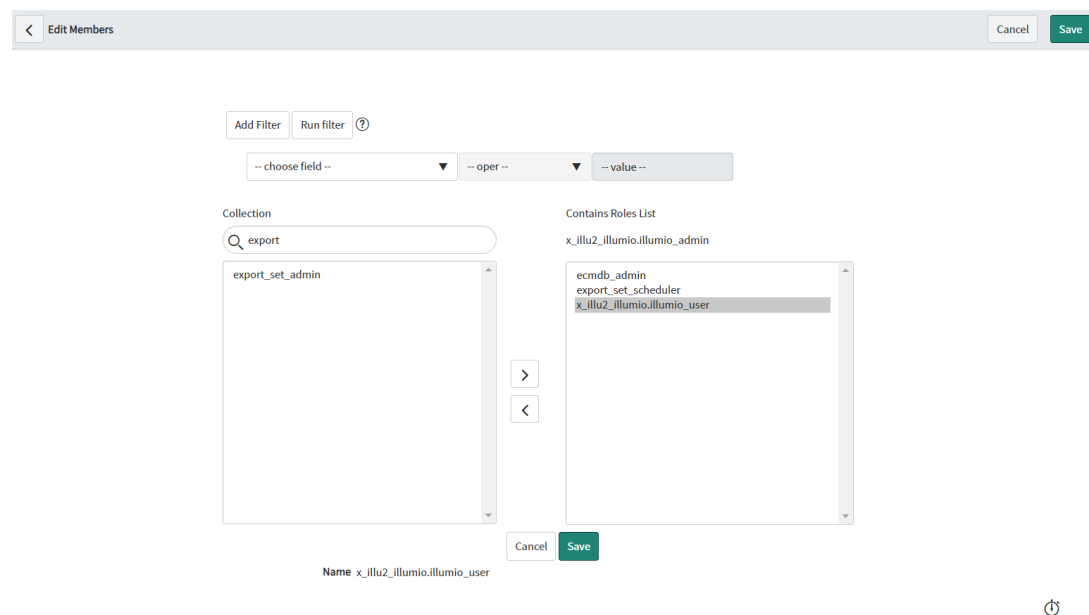


Figure 11. Multi-select OOB Role window to add the custom role

4. Select the desired roles from the Collection list and move them between the lists Collection and Contains Roles.

3.3 Create Illumio Admin

The NOW platform admin creates an Illumio application Admin user, which can configure the application that sets up Illumio configurations in ServiceNow.

3.3.1 The required role

System Administrator (admin)

3.3.2 Procedure

1. Navigate to **Organization > Users**.
2. Click the **Users** module.

	User ID	Name	Email	Active	Created	Updated	Enable Multifactor Authentication	SSO Source
<input type="checkbox"/>	luclus.bagnoli	Luclus Bagnoli	luclus.bagnoli@example.com	true	2012-02-17 19:04:49	2019-04-18 00:10:32	true	
<input type="checkbox"/>	dhaval	dhaval khemani	dhaval.khemani@crestdatasys.com	true	2019-04-18 00:10:05	2019-05-08 03:22:13	true	
<input type="checkbox"/>	dhaval.khemani			true	2019-04-18 01:50:47	2019-04-18 01:51:15	true	
<input type="checkbox"/>	soap.guest	SOAP Guest		true	2009-03-17 09:49:55	2019-02-04 23:51:22	false	
<input type="checkbox"/>	srk	abc drf	srk@gmail.com	true	2019-04-18 00:52:09	2019-04-18 00:52:09	false	
<input type="checkbox"/>	mid_user			true	2019-06-06 23:25:28	2019-06-23 23:46:54	false	
<input type="checkbox"/>	instance-sec-user	Performance Analytics Security Center User		true	2019-06-19 06:09:33	2019-06-19 06:09:33	false	
<input type="checkbox"/>	illumio_mid_user			true	2019-06-23 23:51:35	2019-06-23 23:54:03	false	
<input type="checkbox"/>	illumio User			true	2019-06-06 23:22:48	2019-06-11 03:38:21	false	
<input type="checkbox"/>	admin	System Administrator	admin@example.com	true	2007-07-03 11:48:47	2019-07-07 23:41:57	false	
<input type="checkbox"/>	employee	Joe Employee	employee@example.com	true	2004-07-03 11:26:05	2019-02-04 23:51:27	false	
<input type="checkbox"/>				true	2019-06-06 23:24:02	2019-06-11 03:38:52	false	

Figure 12. List view of the USER table

3. On the Users list that is displayed, click **New**. A new user form is displayed.

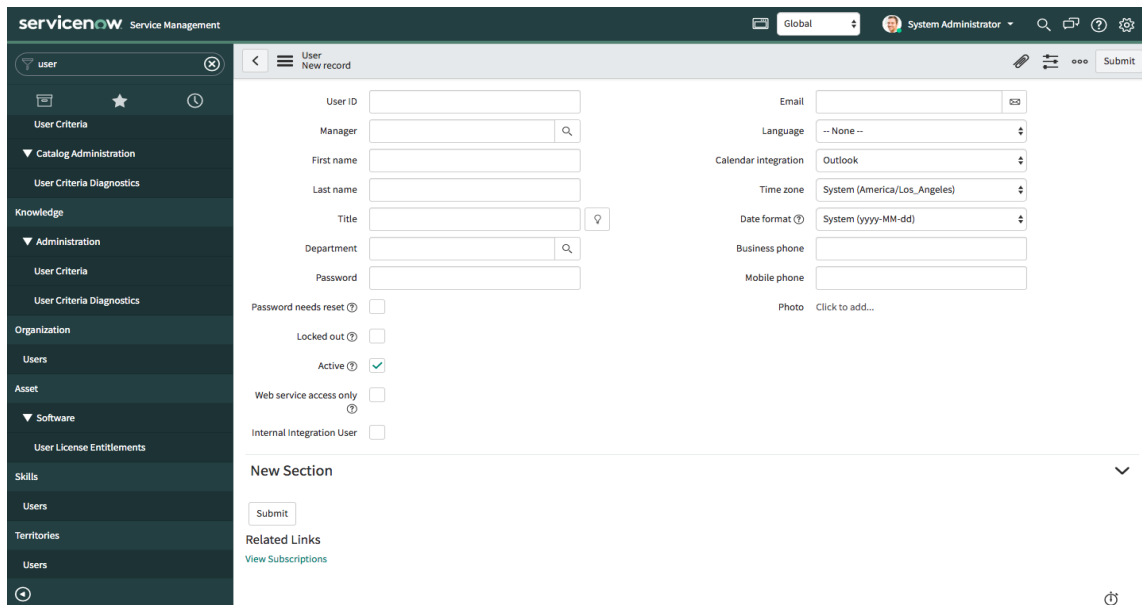


Figure 13. Form view of the new user record

4. Fill out the form.

Note: The values for User ID title and email address shown in the following table and figure are example values.

Field	Description
User ID	A unique User ID for the role in your Now Platform instance, such as <code>illumio_admin</code> .
First Name	The first name of the user you are assigning to be an Illumio application Admin user
Last Name	The last name of the user you are assigning to be an Illumio application Admin user
Title	The job title of the user, such as Illumio Admin.
Password	A unique password created for this role.
Email	A unique email address of the Illumio application Admin user

Figure 14. An example of a filled form

5. Click **Submit**.

Once the form is submitted, you can assign the role.

6. On the Users list in the User ID column, click on the name of the new user you created, for example: **illumio_admin**.
7. Once the record is open, go to the Roles section and click **Edit**.
8. On the Edit Members form that is displayed, enter **x_illu2_illumio.illumio_admin** in the Collection field.
9. In the Collection column, select and move **x_illu2_illumio.illumio_admin** to the Roles List.

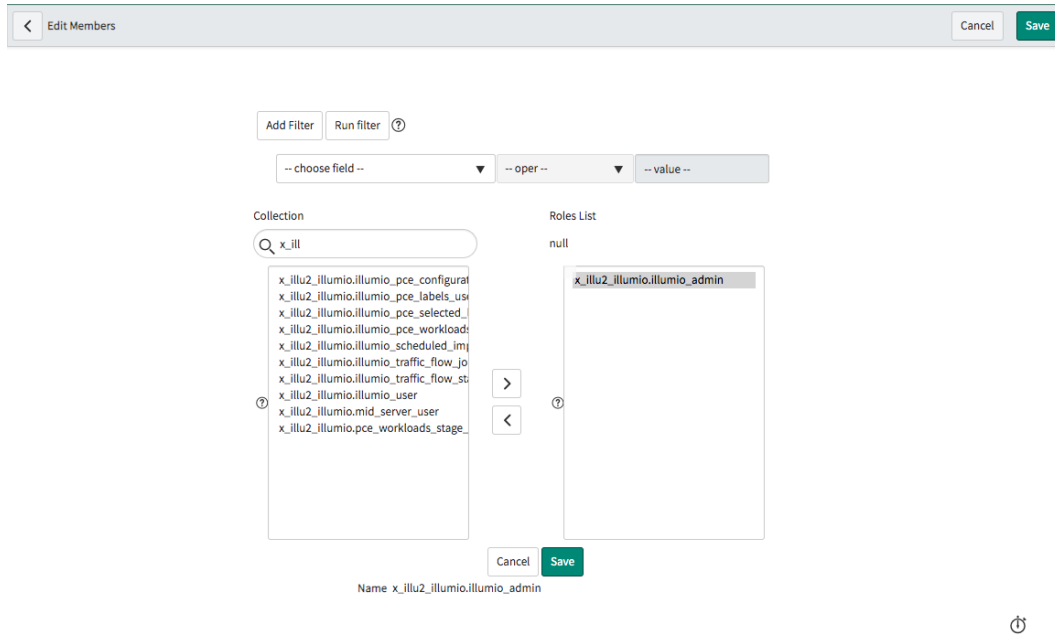


Figure 15. Multi-select window to select a role

10. Click **Save**

3.4 Configure Illumio PCE

The PCE Configuration runs the discovery and pulls existing workloads from the PCE populating the fetched data into the Illumio PCE Workloads table.

3.4.1 The required Role

x_illu2_illumio.illumio_admin

3.4.2 Configure PCE

1. Login to the ServiceNow instance.
2. In the search menu in the top left-hand corner, enter **Illumio**.
The Illumio application menu opens
3. In the navigation menu, click on “Configuration” → “PCE Configuration”

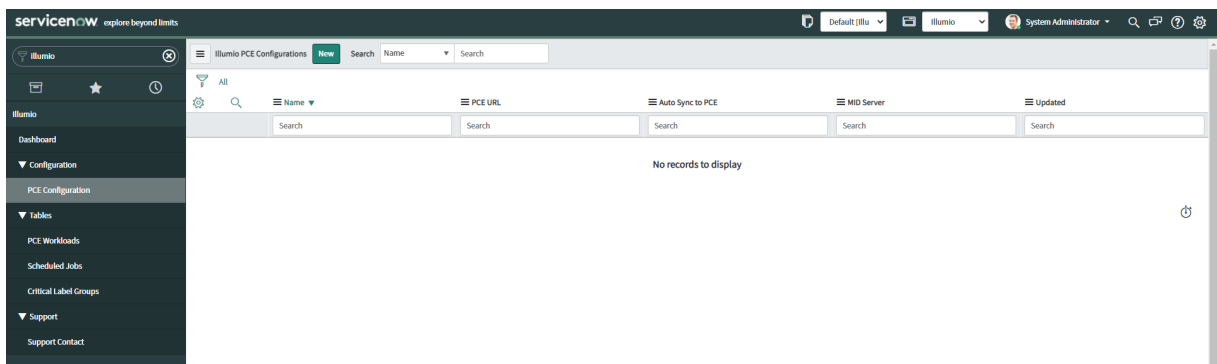


Figure 16. List view of the PCE Configuration

4. Click on **Configuration** → **PCE Configuration**.
5. Click on the **New** button on the top. The configuration form is displayed.

Figure 17. Form view of the Illumio Configuration

6. Fill the form and click **Save Configuration**.

Field	Description
PCE URL	URL of the Illumio PCE workload instance from which to fetch the workload
API Key	Unique API ID for authentication
MID Server	The MID Server is a ServiceNow component installed between the cloud and the data center.
Organization ID	Unique Illumio ID for your Organization
API Secret	API secret key for authentication

3.4.3 PCE Field mapping

1. Login to the ServiceNow instance.
2. In the search menu in the top left-hand corner, enter **Illumio**.
The Illumio application menu opens
3. In the navigation menu, click on **Configuration** → **PCE Configuration**
4. Open the PCE configuration record which is already added.

Figure 18. Form view of the Illumio Configuration

5. In the related list, click on the **New** button of the PCE Field mapping list.

- **Source Table:** ServiceNow CMDB table to use as source for workloads.
- **Host Name:** Field from the source table to join with the workload hostname on the PCE. If it is matching, the FQDN domain is ignored. For example, the Illumio PCE workload with "computer1" host name matches the CMDB record with "computer1.company.com" FQDN.
- Select fields from the CMDB table that map to the PCE labels of Role, Application, Environment, or Location type. If the data is not available, select None.
- Excluded workload may be skipped by specifying a filter condition.

Note: Multiple filter conditions will slow down the process.

Figure 19. Form view of the PCE Field mapping

6. Fill the form and click **Save**.
7. In case a user has multiple source tables, then follow the same steps as mentioned above for another table.

Note:

1. In certain cases, the custom tables (which extends the cmdb_ci table) might not be visible in the choice list. Ensure that the read access control of the custom table has the application role (x_illu2_illumio.illumio_admin) added to the required roles.
2. Users can add multiple source tables as per their need but he/she cannot map the same label twice (Role, Application, Environment, Location, IP address, IP address 2, IP Address 3). And once all PCE labels are mapped then the user cannot create new field mapping configuration.

Field	Description
Source Table	ServiceNow system table to be mapped with PCE workloads
Host Name	The field of Source table to be mapped with the Host Name of PCE Workloads
Role	The field of Source table to be mapped with the Role Label of PCE Workloads
Application	The field of Source table to be mapped with the Application Label of PCE Workloads
Environment	The field of Source table to be mapped with the Environment Label of PCE Workloads
Location	The field of Source table to be mapped with the Location Label of PCE Workloads
IP address	The field of Source table to be mapped with the IP Address of PCE Workloads
IP address 2 to IP address 32	The field of Source table to be mapped with one of the interface for PCE Workloads. This field is only applicable while creating unmanaged workloads from ServiceNow.
User Configurable sort order	This is a checkbox, if the user wants to define a configurable sort order before selecting a primary workload
Order	This is an option field, user can select ascending or descending based on their choice.
Order by column name	The field that will be used to order records while querying
Conditions for Deleting	In the case the source table contains some workloads that need to be deleted from the PCE,

workloads	user has to specify the condition which can filter these workloads and delete from PCE.
Conditions for Excluding Workloads	In case the source table contains the unwanted CIs and user wants to ignore those CIs for Illumio data collection and sync, user has to specify the conditions which can filter the CIs from source table. For example: "Status" = "Retired" OR "Operational Status" = "Non-Operational" Note: Adding more complex conditions may slow down the performance of data collection.

3.5 Configure Critical Label Groups

This feature prevents Label Changes to defined Core Service or Critical labels. If a user has configured the critical label group for a particular label, then the app will fetch all the labels which are available under that label group. And while syncing the workloads to PCE if any of the CMDB labels is overwriting the critical label then the entire workload would be skipped from sync.

3.5.1 The required Role

x_illu2_illumio.illumio_admin

3.5.2 Configure Critical Label Groups

1. Login to the ServiceNow instance.
2. In the search menu in the top left-hand corner, enter **Illumio**.

The Illumio application menu opens

3. In the navigation menu, click on "Configuration" → "PCE Configuration"
4. Open the PCE configuration record which is already added.

The user provided in the 'config.xml' on the MID Server must have the roles 'x_illu2_illumio.mid_server_user' and 'mid_server'

* PCE URL: Organization ID:

* API Key: * Secret Key:

* MID Server: 🔍 ⓘ

Scheduler | **Critical Label Groups** | Threshold Limit

Application: Environment:

Location: Role:

Critical Label Groups:

- Critical label groups are configured on the PCE for each label type.
- Labels in a critical label group are not overwritten for a workload. The entire workload record is skipped.
- If critical label groups are not specified, any label on the PCE can be modified.

Save Configuration | Illumio Data Collection | Delete Configuration

Figure 20. Form view of the Critical label groups configuration

5. Click on the "Critical Label Groups" tab.
6. Fill the label groups name and click **Save**.

Note: When a user enters the Critical label group name in ServiceNow then the app will only consider the labels of that group as critical. Application will ignore the subgroups and labels of the subgroups.

Field	Description
Application	Provide a Critical Label Group name for the Application label.
Location	Provide a Critical Label Group name for the Location label.
Environment	Provide a Critical Label Group name for the Environment label.
Role	Provide a Critical Label Group name for the Role label.

3.6 Configure Threshold Limit

This feature limits the number of changes to be applied for each sync, either manual sync or auto-sync. If any of the configured limits exceeds then entire sync would be prevented.

3.6.1 The required Role

x_illu2_illumio.illumio_admin

3.6.2 Configure Critical Label Groups

1. Login to the ServiceNow instance.
2. In the search menu in the top left-hand corner, enter **Illumio**.

The Illumio application menu opens

3. In the navigation menu, click on “Configuration” → “PCE Configuration”
4. Open the PCE configuration record which is already added.

Figure 21. Form view of the Threshold limit configuration

5. Mark checked the “Enable Limit” checkbox to enable the threshold limit feature.

6. If “Enable Limit” is unchecked it will not consider any threshold limit configured in fields.
7. Select the checkboxes for which user wants to set the limit and then specify the limits in respective text boxes and click on **Save**.

Field	Description
Enable Limit on New Label Creation	Mark checked this field and define numbers or percentages in “New Label Creation Limit” field to set a limit on creation of new labels in each sync.
Enable Limit on Workload Modifications	Mark checked this field and define numbers or percentages in “Workload Modifications Limit” field to set a limit on the number of workloads to be modified in each sync.
Create Unmanaged workloads on PCE from CMDB records	Mark checked this field and define numbers or percentages in “Unmanaged Workloads Creation Limit” field to set a limit on how much workload can be created in each sync.
Enable limit on workload deletion	Mark checked this field and define numbers or percentages in “Workload Deletion Limit” field to set a limit on how much workload can be deleted in each sync.

Note:

1. Users are allowed to set limits in numbers or percentages. For example a user wants to set a limit in numbers then he/she needs to specify the value in a textbox with integer format Like 90. And in case of percentage, users can specify the value like 50%.
2. If any of the limit exceeds during synchronization of workloads to PCE then the entire sync process would be prevented.
3. Label creation and workload modifications limit will be counted after filtering out the workloads which has critical labels as conflict.

4 Illumio Dashboard

Use the Illumio dashboard to manage the Illumio application.

4.1.1 The required role

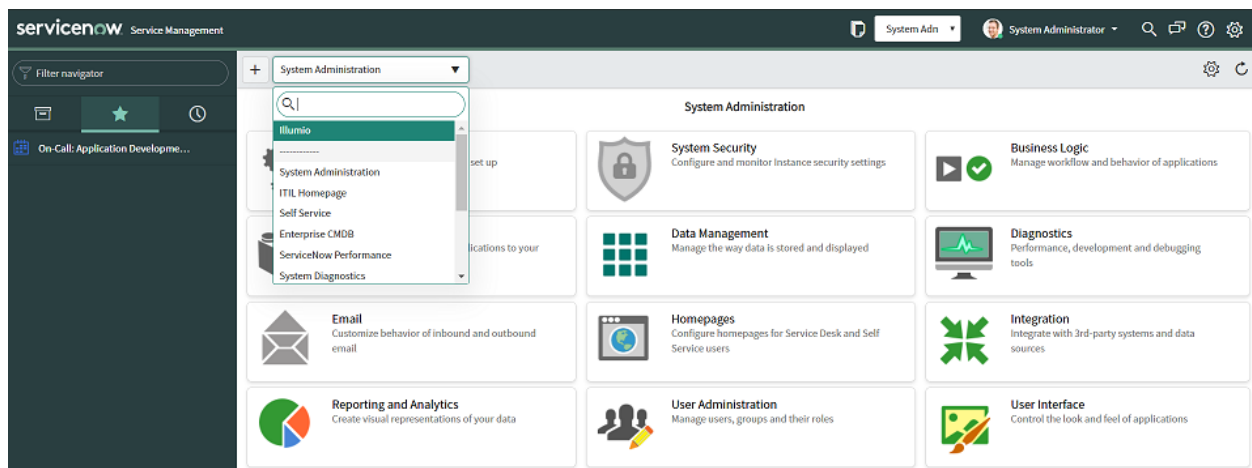
These two users are permitted to work with the Illumio dashboard:

- x_illu2_illumio.illumio_admin, or
- x_illu2_illumio.illumio_user

4.1.2 Access the Illumio dashboard

To access the Illumio dashboard, do the following:

1. Log in to a ServiceNow instance.



2. To see the Illumio application, select “Illumio” in the search field in the upper-left corner. The Illumio application’s dashboard shows up. It provides a graphical presentation of the synchronization state between the CMDB and PCE.

4.1.3 Dashboard home page

When you open the Illumio dashboard, it shows up in the default admin view.

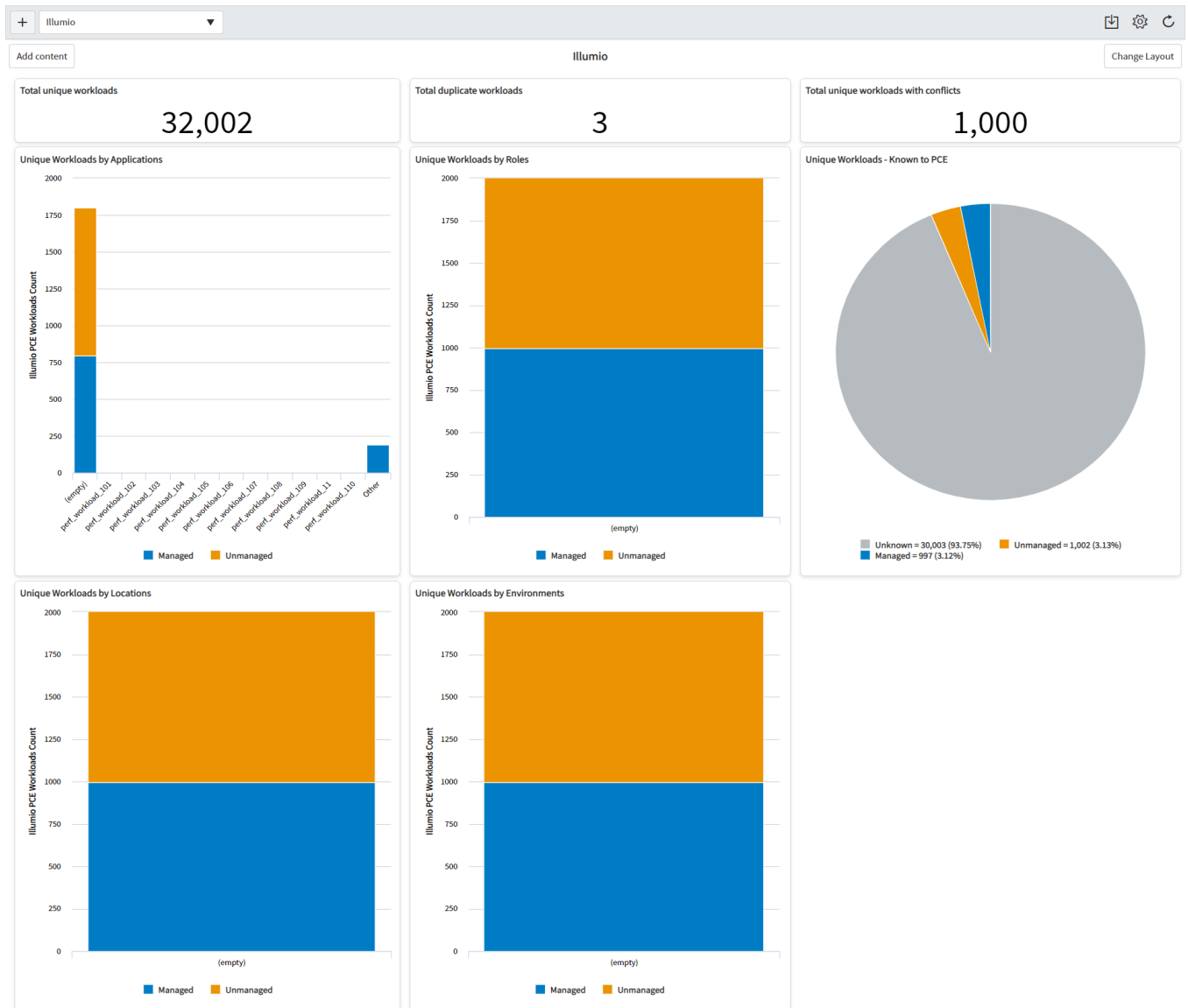


Figure 22. Illumio dashboard

4.1.4 Default dashboard fields

The Illumio dashboard opens with a default set of fields, which you can expand as needed.

The dashboard fields you can reach from the menu are:

The default dashboard fields are as follows:

1. Total unique Workloads: Number of unique workloads on the PCE Workloads table
2. Total duplicate workloads: Number of duplicate workloads on the PCE Workloads table
3. Total unique Workloads with conflicts: Number of unique workloads with conflicts(Label conflicts)

4. Unique Workloads by Applications
5. Unique Workloads by Roles
6. Unique Workloads by Environments
7. Unique Workloads by Locations
8. Unique Workloads – Known to PCE

4.1.5 Configuration

- PCE Configuration is a list of current configurations, with the following fields:
 - Name, such as Illumio PCE Configuration
 - PCE URL
 - Auto Sync to PCE, whether it is allowed or not (true or false)
 - MID Server, such as ip-10-1-1-10
 - Updated, a time stamp
- PCE field mappings:
 - Source table
 - Host Name, such as host_name

4.1.6 Tables


- PCE Workloads is a list of current managed and unmanaged workloads, with the following fields:
 - Hostname, such as IP999999
 - ServiceNow Record Identifiers, source of CMDB records (in related list)
 - Known to PCE, which is defined as Unmanaged, Managed or Unknown
 - Duplicate, true(Duplicate CMDB record based on hostname matching) or false
 - Primary workload, which reflects the associated primary workload (If Duplicate is true) or empty
 - Label Conflicts, true (with RAEL conflicts) or false
 - CMDB Role
 - PCE Role
 - CMDB Application
 - PCE Application
 - CMDB Environment
 - PCE Environment
 - CMDB Location
 - PCE Location
 - CMDB IP Address

- PCE Public IP Address
- CMDB IP Address 2 to CMDB IP Address 32
- PCE IP Address 2 to PCE IP Address 32
- PCE Workload href
- Updated, a time stamp
- Scheduled Jobs:
 - Job type, such as Data collection or Data sync
 - Current Operation, such as Completed discovery
 - Job Status, such as completed
 - Job Started, a time stamp
 - Job Completed, a time stamp
 - Logs

4.1.7 Support: Contact for Illumio

Website: <https://www.illumio.com/support>

E-mail: servicenowapp-support@illumio.com

To see the details, click on the details icon :

4.1.8 Additional dashboard fields

You can add more fields to the dashboard by clicking **Add Content** in the upper-left corner. The additional fields are:

- Reports
- Performance analytics
- Interactive filters
- Gadgets
- Knowledge base
- Labels
- System applications
- World clocks

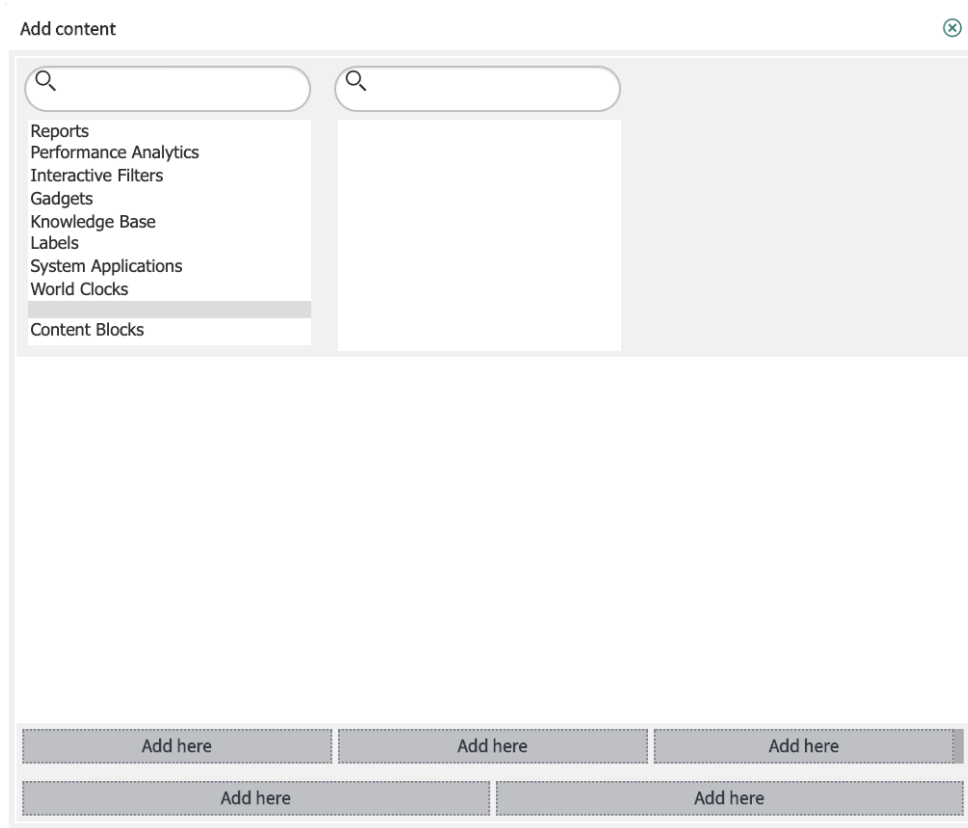


Figure 23. **Add new field to the dashboard**

The buttons on the bottom of the dialogue point where in the dashboard to add the new field.

5 Workflow and User Action

This section describes different use cases of the Illumio integration with ServiceNow.

5.1 Illumio Discovery

The Illumio Discovery application pulls a PCE workload from a PCE instance and maps it with a ServiceNow CMDB table you select.

5.1.1 The required role

x_illu2_illumio.illumio_admin

5.1.2 Procedure

1. Log into a ServiceNow instance.
2. In the navigation menu, select **PCE Configuration**.
3. Click on the existing configuration or click **New** to create a new configuration (refer to the section for creating a new configuration: [Configure Illumio PCE](#)).

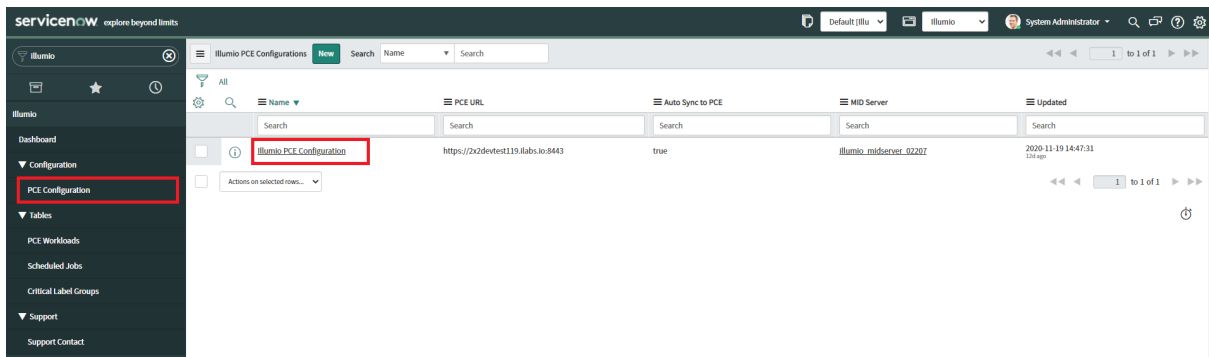


Figure 24. Illumio configuration record to run discovery

4. Click **Illumio Data Collection** to start Illumio Discovery.

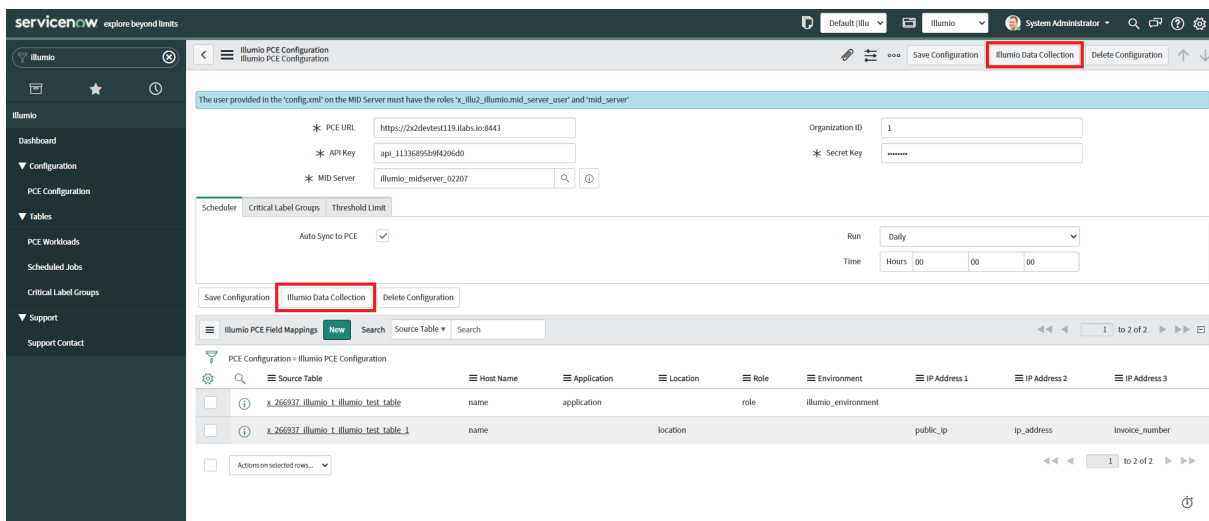


Figure 25. Form view of the Illumio configuration record

5. Schedule discovery by filling the required data in the Scheduler tab.

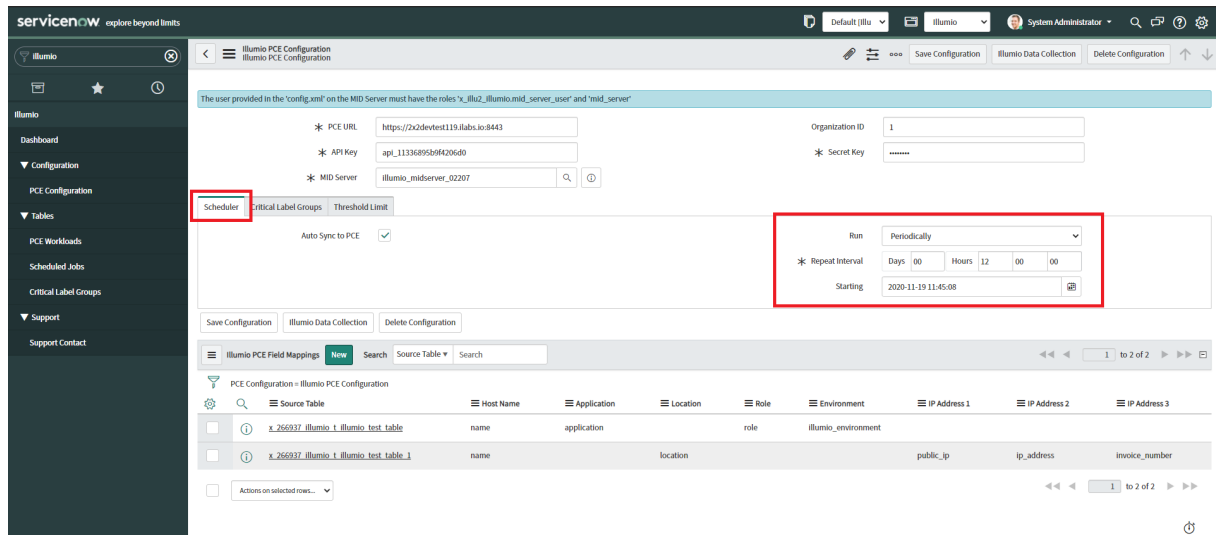


Figure 26. The “Scheduler” tab for PCE configuration

6. Select Scheduled Jobs to check the discovery status.

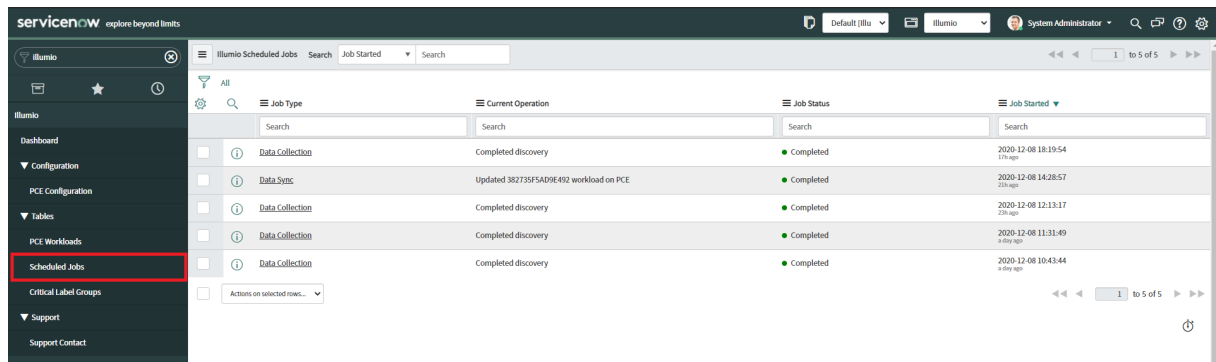


Figure 27. List view of the Scheduled Jobs

7. Check the logs to monitor the status of discovery.

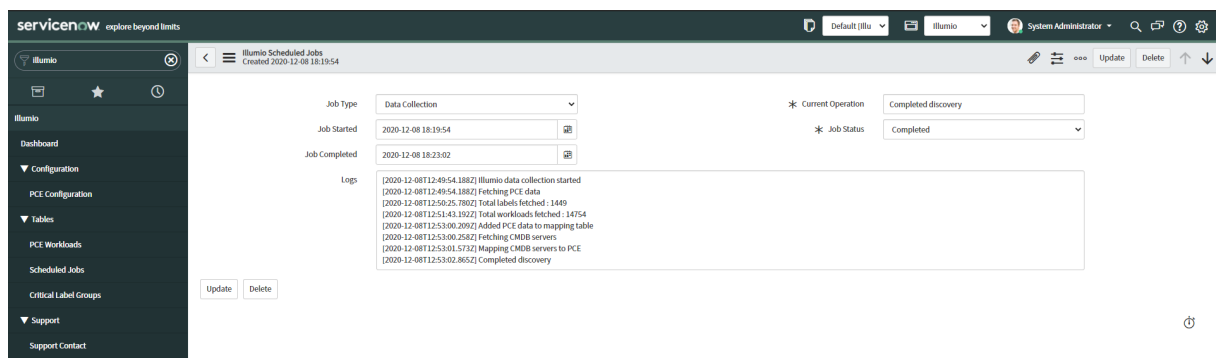


Figure 28. Form view of the Scheduled Jobs

8. Once the discovery is completed, verify the workloads in the Illumio PCE Workloads table.

Hostname	Duplicate	Known to PCE	Label Conflicts	CMDB Role	PCE Role	CMDB Application	PCE Application	CMDB Environment	PCE Environment	CMDB Location	PCE Location
Shape Explorer Help	false	Unmanaged	true	2020-05-27 05:40:29	2020-05-27 05:40:29	testing	testing14	Hardware	Hardware		
Sx270-039923	false	Unmanaged	true	2020-05-27 05:40:29	2020-05-27 05:40:29	testing	testing15	Hardware	Hardware		
Video Cd Player	false	Unmanaged	true	2020-05-27 05:40:28	2020-05-27 05:40:28	testing	testing16	Hardware	Hardware		
YScanner	false	Unmanaged	false	2020-05-27 05:40:28	2020-05-27 05:40:28	testing	testing	Hardware	Hardware		
Sx270-040120	false	Unmanaged	false	2020-05-27 05:40:28	2020-05-27 05:40:28	testing	testing	Hardware	Hardware		
SFB	false	Unmanaged	false	2020-05-27 05:40:29	2020-05-27 05:40:29	testing	testing	Hardware	Hardware		
VPN	false	Unmanaged	false	2020-05-27 05:40:28	2020-05-27 05:40:28	testing	testing	Hardware	Hardware		

Figure 29. Illumio PCE Workload table with the populated data

5.2 Sync to PCE

5.2.1 The required role

- x_illu2_illumio.illumio_admin or
- x_illu2_illumio.illumio_user

5.2.2 Procedure

1. Log in to a ServiceNow instance.
2. Sync to PCE in one of these three ways:
 - [Configure Auto “Sync to PCE”](#)
 - [UI action from the workload’s Form view](#)
 - [UI action from the PCE workload table list view](#)

5.2.2.1 Configure Auto “Sync to PCE”

1. In the navigation menu select **PCE Configuration**

Name	PCE URL	Auto Sync to PCE	MID Server	Updated
Illumio PCE Configuration	https://2x2d4vteet119.illu.io/8443	true	illumio_midserver_02207	2020-11-19 14:47:31 13d ago

Figure 30. Illumio configuration record list view

2. Select the “Auto Sync to PCE” checkbox.

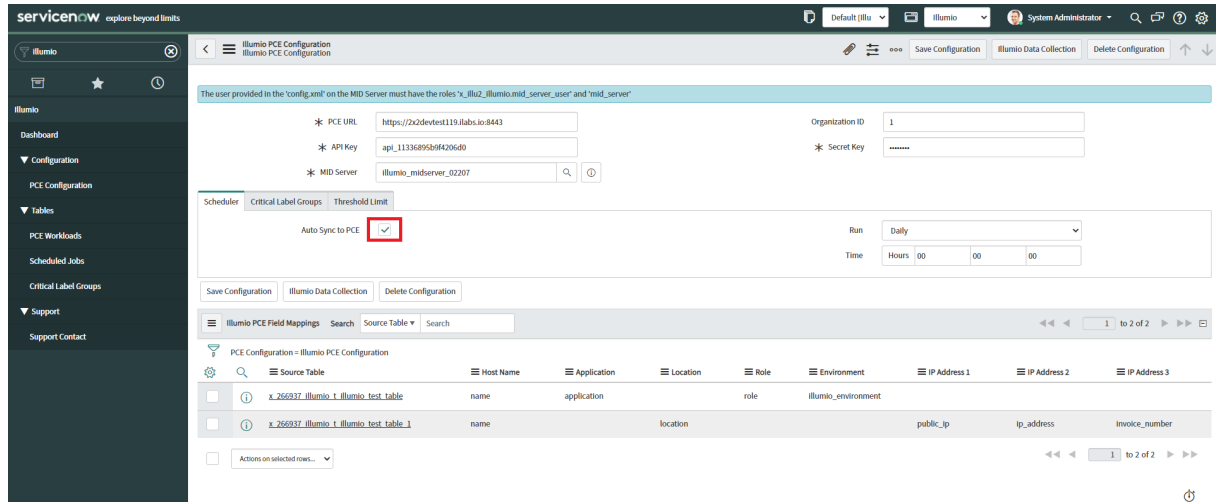
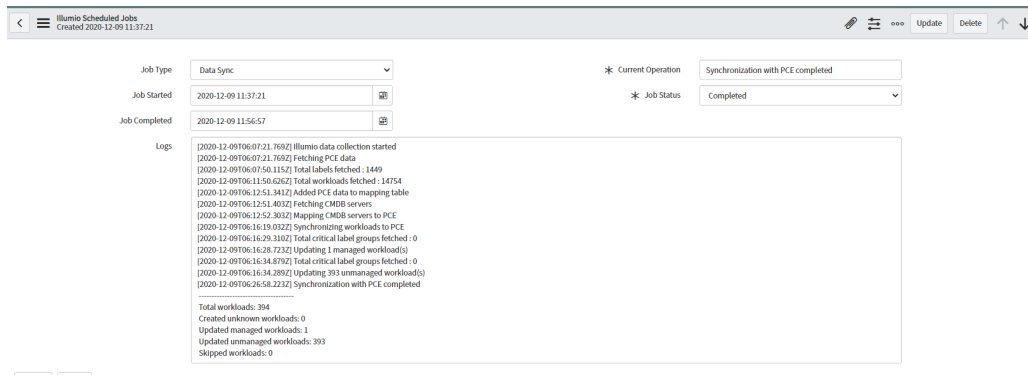


Figure 31. "Scheduler Configuration" tab of PCE Configuration

This configuration syncs all the non-duplicate known Managed and Unmanaged workloads and creates Unknown workloads to PCE automatically.

- The Job Type of discovery process is changed to "Data Collection" → "Data Sync" after the auto sync process starts. Check the logs to get statistics of the sync process.



5.2.2.2 UI action from the workload's Form view (Update workload on PCE)

- Select the Illumio PCE Workloads table.
- Click on any managed/unmanaged workload that has a flag in the Label Conflicts column as "true". (Note: Only non-duplicate workloads can be synced to PCE)

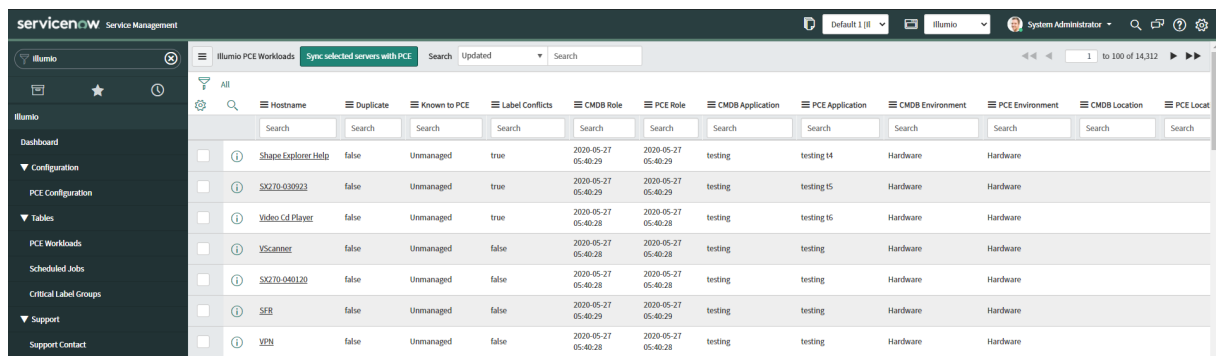


Figure 32. PCE workload table with populated data

3. Click **Sync Server to PCE** to update the label information of this particular workload.

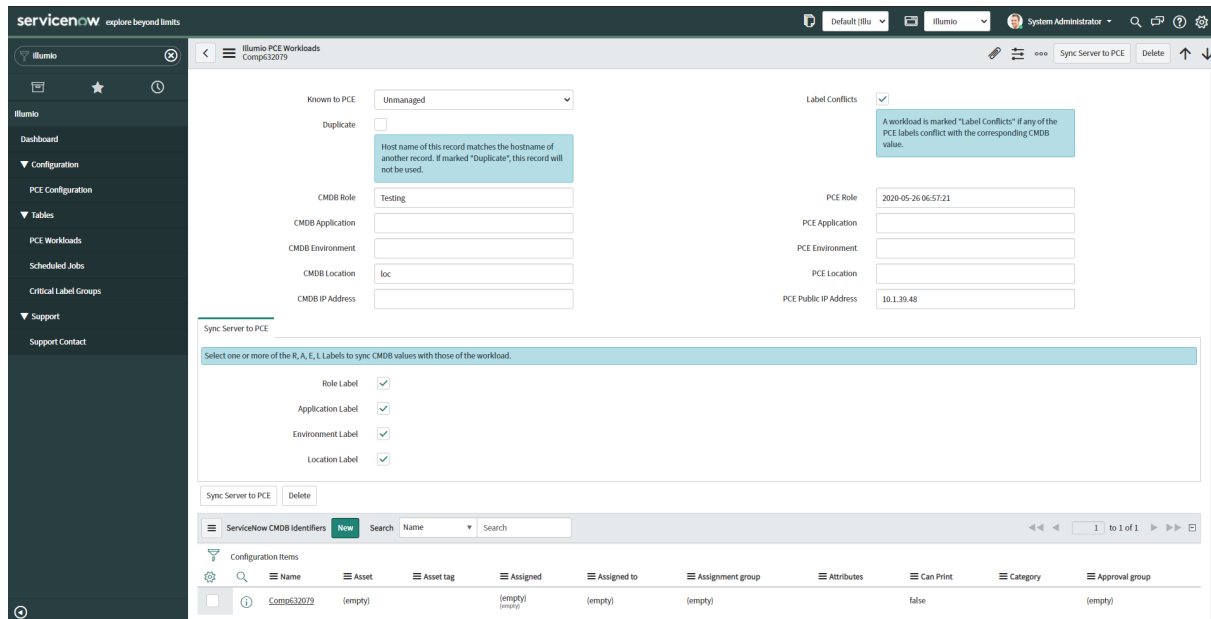


Figure 33. Form view of the managed/unmanaged workload record

5.2.2.3 UI action from the workload’s Form view (Create workload on PCE)

1. Select the Illumio PCE Workloads table.
2. Click on any unknown workload. (Note: Only non-duplicate workloads can be synced to PCE)

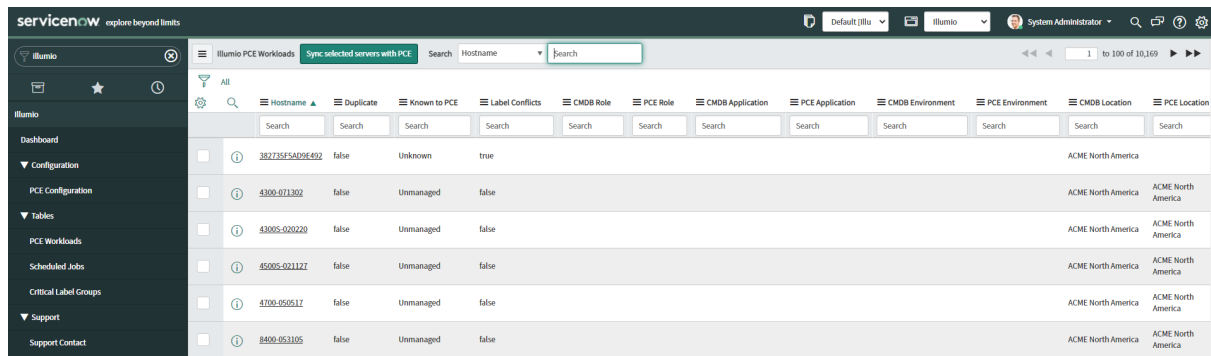


Figure 34. PCE workload table with populated data

3. Click **Sync to PCE** to create the particular workload as an unmanaged workload on PCE with given labels information.

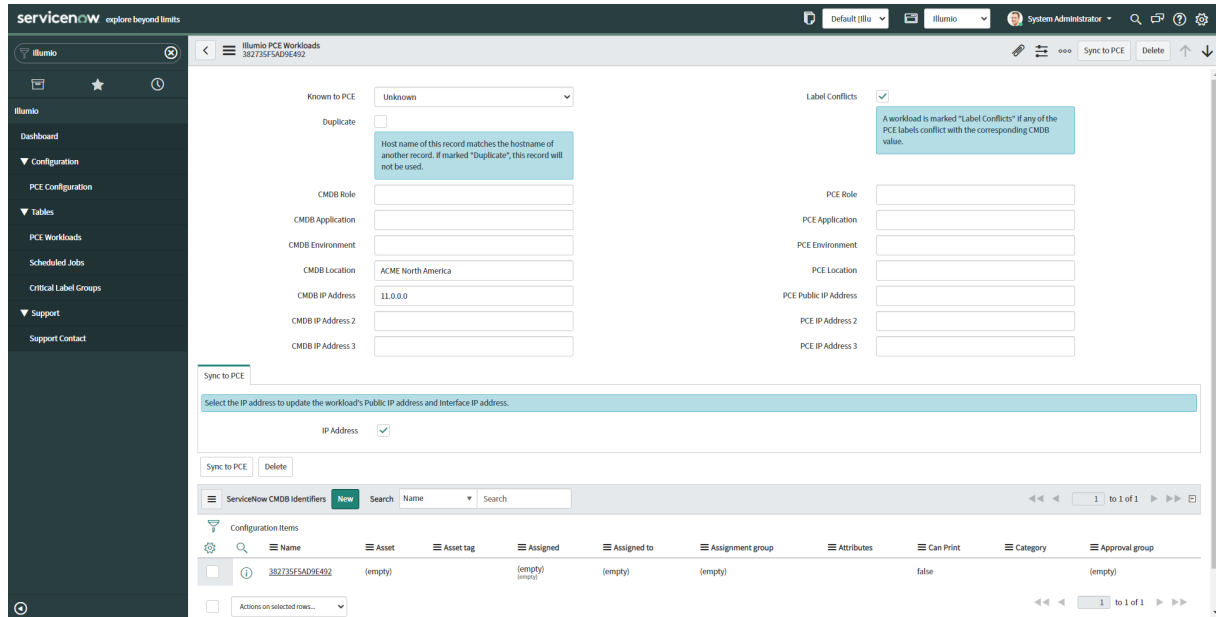


Figure 35. Form view of the unknown workload record

5.2.2.4 UI action from the PCE workload table list view

1. Select the Illumio PCE Workloads table.
2. Select a workload from the list view and click **Sync selected servers with PCE** to update all the selected workload labels/IP on the PCE. (Note: Only non-duplicate workloads can be synced to PCE)
3. In case of unmanaged workload, we can append upto 32 ip addresses in PCE ip addresses. Same ip address which is present in the PCE ip address list will be ignored. PCE public ip address will always be replaced with CMDB ip address if it has value.

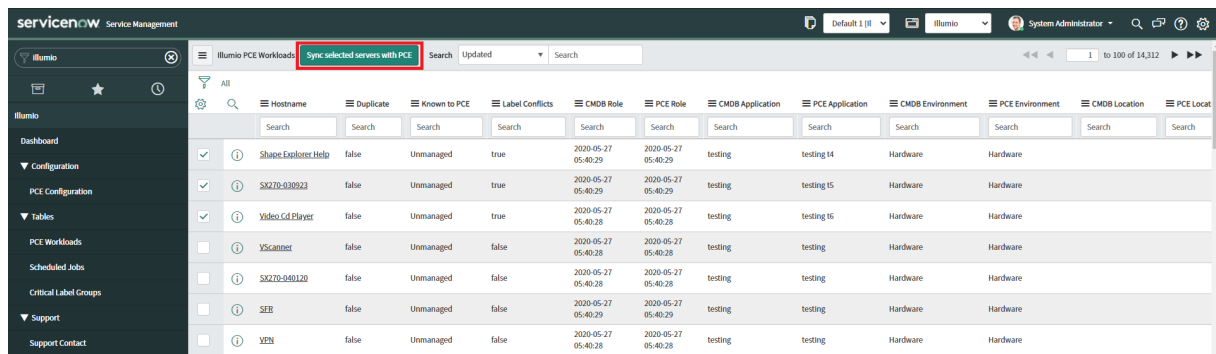


Figure 36. Manual Sync multiple records

5.3 Sync IP addresses for workloads

1. We can sync upto 32 CMDB IP addresses to PCE IP addresses using **Auto Sync**, **Sync To PCE** and **Sync Selected Server to PCE** functionality.
2. We can view CMDB IP addresses and PCE IP addresses in the workload as follows.

Figure 39. CMDB and PCE IP addresses listing

- After syncing CMDB IP addresses we can view IP addresses as shown in the following figure. Public IP addresses will always get replaced with PCE public IP addresses.

Figure 40. CMDB and PCE IP addresses sync

- In case of **Unmanaged workload** , we can append upto 32 CMDB IP addresses into PCE IP addresses. The CMDB IP addresses which are already present in the PCE will be ignored.

5.4 Check PCE Configuration

- To check end-to-end connectivity between ServiceNow , **MID server** and **PCE** , click on **Check PCE Configuration** in PCE configuration.

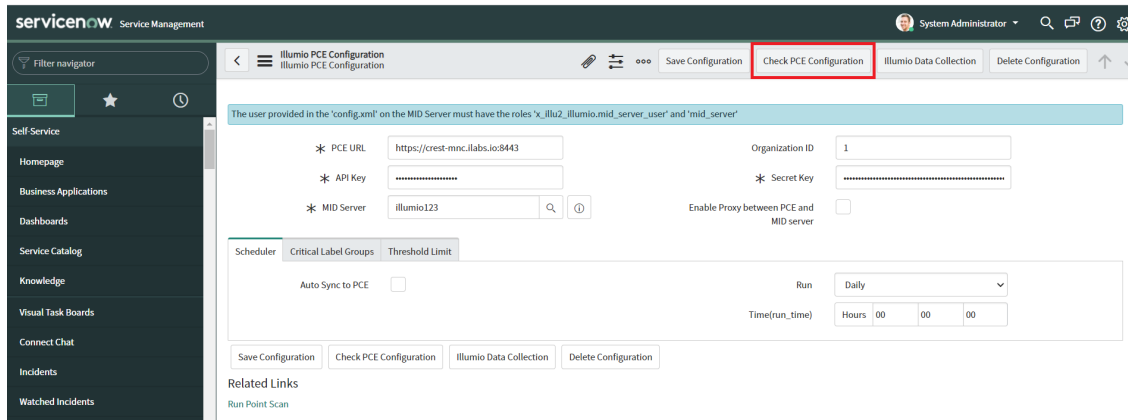


Figure 41. Check PCE configuration

- The status of the connectivity can be seen in the Schedule jobs.

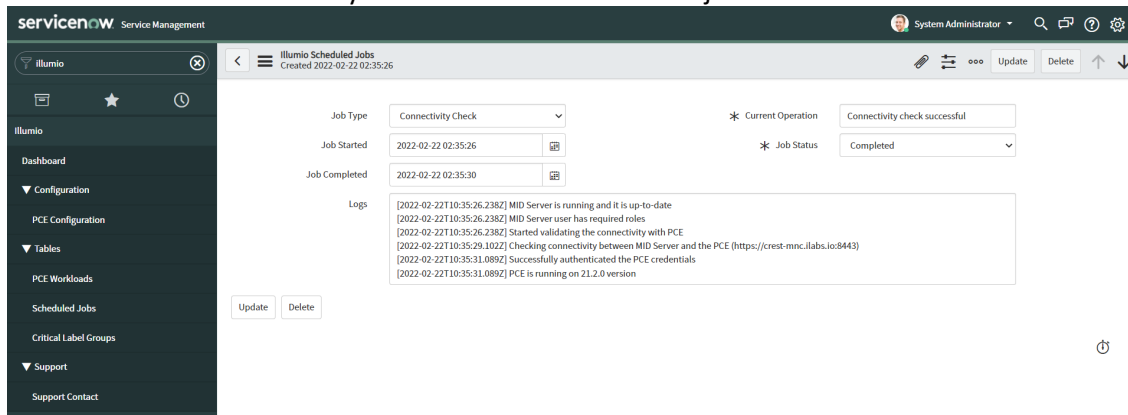


Figure 42. Check PCE Configuration status

5.5 Configure sort order for duplicate workloads (with same hostname)

- In Illumio PCE field mapping , the **User Configurable Sort Order** checkbox is available for sorting workloads.
- To enable sorting select the **User Configurable Sort Order** checkbox.
- Select **Ascending** or **Descending** to sort in ascending and descending order respectively.
- Select the field name in **Order by Column Name** to sort workloads according to this field.

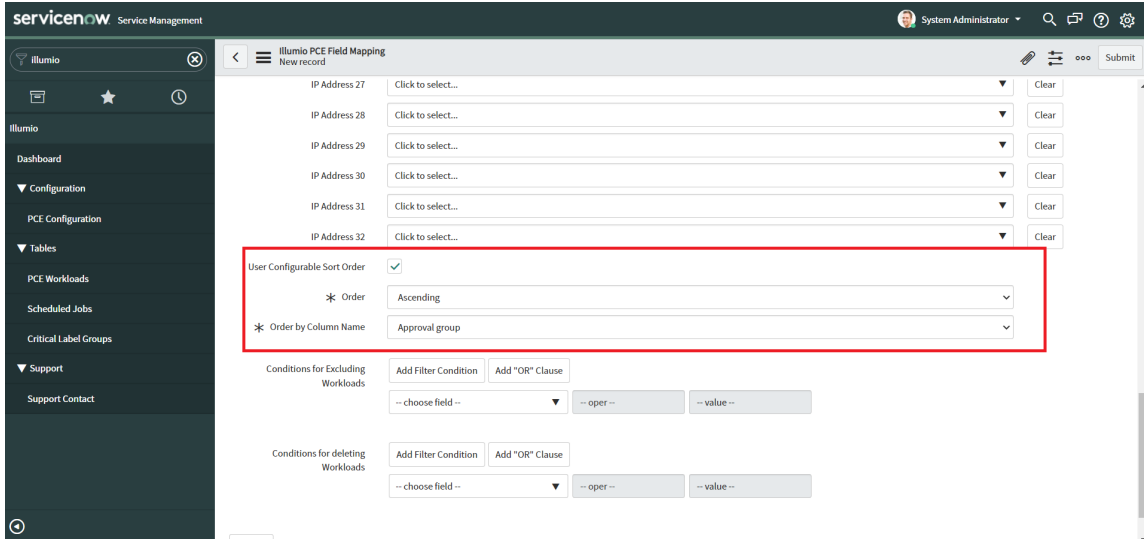


Figure 43. Sorting workload

5.6 Dot walking for easier field mapping

1. While mapping fields in Configuration, we can also get fields of the reference table to easily map fields of reference tables.

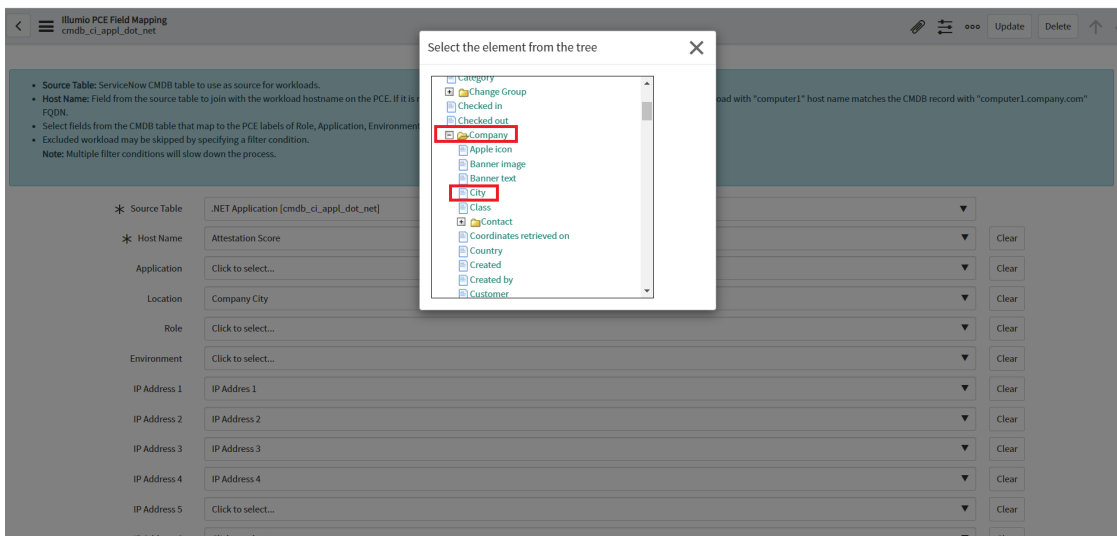


Figure 44. Dot walking for field selection in field mapping

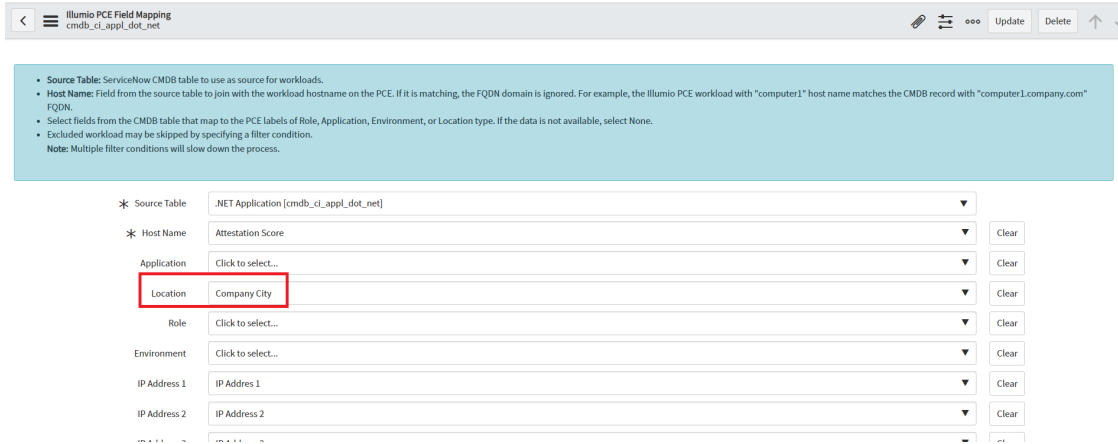


Figure 45. Selection of other table field in mapping

5.7 Add proxy between ServiceNow ↔ MID server and MID server ↔ PCE

1. In the Configuration, select the checkbox named **Enable proxy between MID server and PCE** to enable proxy for connection between ServiceNow and MID server / MID server and PCE.
2. Proxy server information should be stored in the MID server config file.

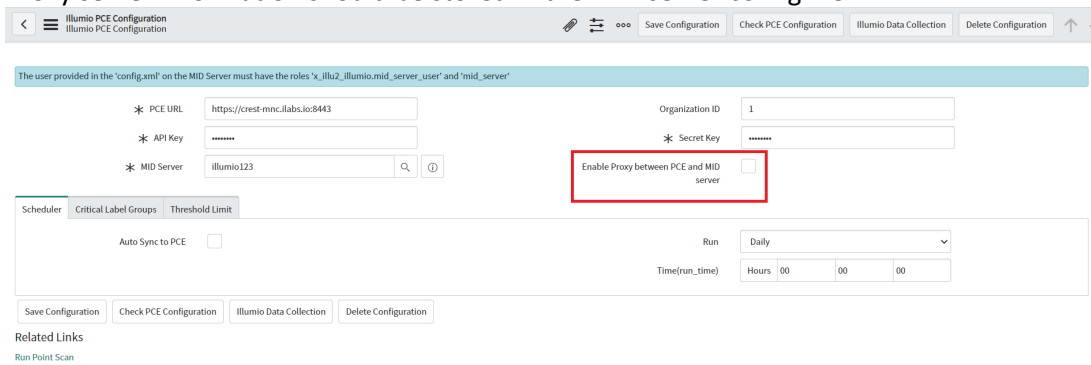


Figure 46. Enable proxy server

5.8 Delete unmanaged workload :

1. In the Configuration field mapping, set conditions for workloads which we want to delete.

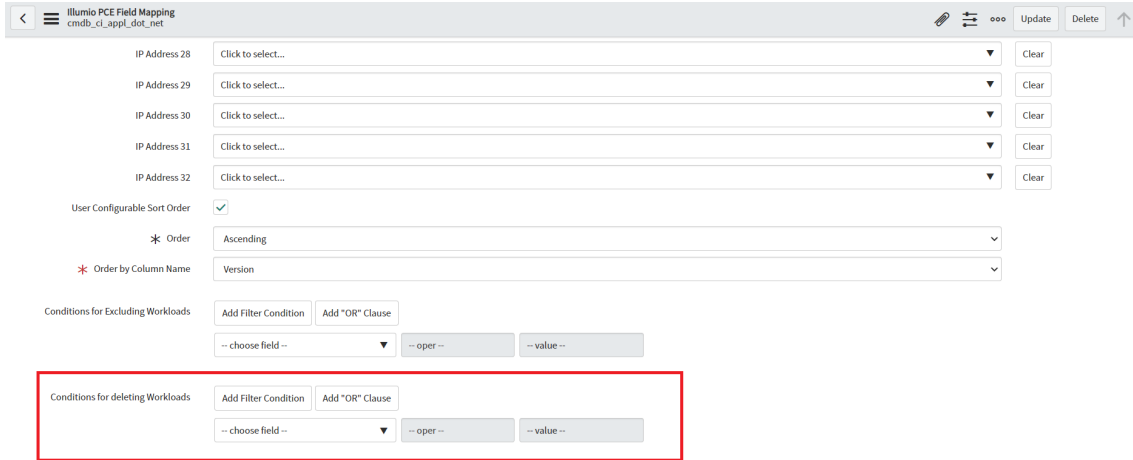


Figure 47. Enable condition for deletion

2. In the Configuration, under the **Threshold** tab we can set the limit of workload deletion by selecting the checkbox named **Enable limit on workload deletion** and provide the limit value. (limit value should be in integer or percentage).

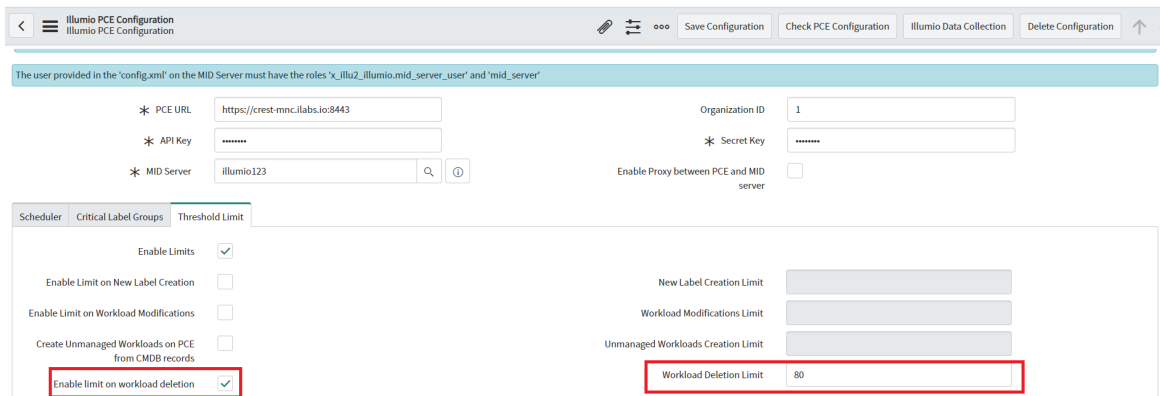


Figure 48. Limit of record deletion

3. In the auto sync process , workloads which match the condition for deletion will be marked as **Retired** workloads and that workloads will be deleted.
4. If the **Enable limit on workload deletion** limit exceeds then the sync process will be stopped.

6 Upgrade

The ServiceNow application gets upgraded on occasion, and this change affects the Illumio application as well.

Upgrading is similar to installation, and the Illumio application should function normally after the ServiceNow upgrade.

Keep the following steps in consideration while upgrading:

- Verify the upgrade steps so that they do not impact working integration with the Illumio application.
- Connect the test instance of ServiceNow to the test instance of PCE.
- Run the Discovery once before performing any actions as there might be changes in field choice values and some new fields may be added.
- Update the application on the ServiceNow instance and perform manual sync of labels to one or two workloads. If these tests are successful, you can put the application in production.
- If you upgrade a version of ServiceNow supported by the Illumio application, such as New York or Orlando or Paris, the application continues to function with no additional changes.
- The PCE versions supported by the Illumio application are also published. Upgrading of the PCE to a version supported by the application is transparent to you as a customer.
- If you upgrade ServiceNow to a version that the Illumio application does not support, there is no guarantee that the application will function properly.
As a practice the Illumio application is updated soon after every ServiceNow release and it is recommended to upgrade your ServiceNow version to the one for which the Illumio application is tested and certified.
- While upgrading the application please make sure there is no job in the running state to avoid unexpected results.

7 Uninstallation

To uninstall the Illumio Application from the ServiceNow UI:

1. In the navigation menu, go to **System Applications -> All Available Applications -> Installed**.

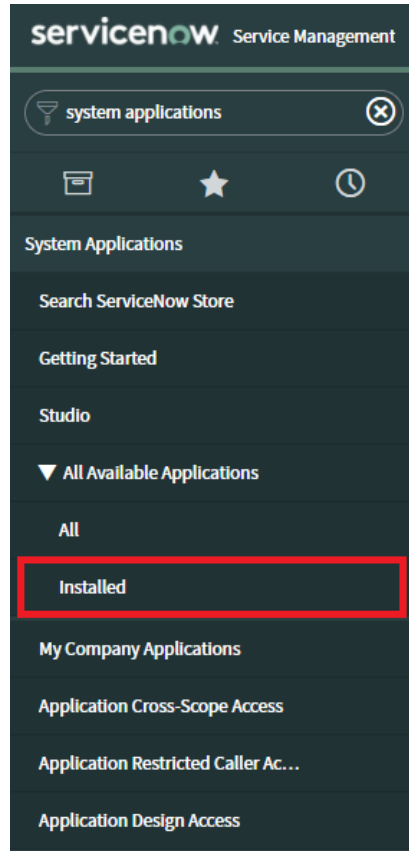


Figure 49. Navigation menu

2. On the Application Manager screen, select **Installed**.

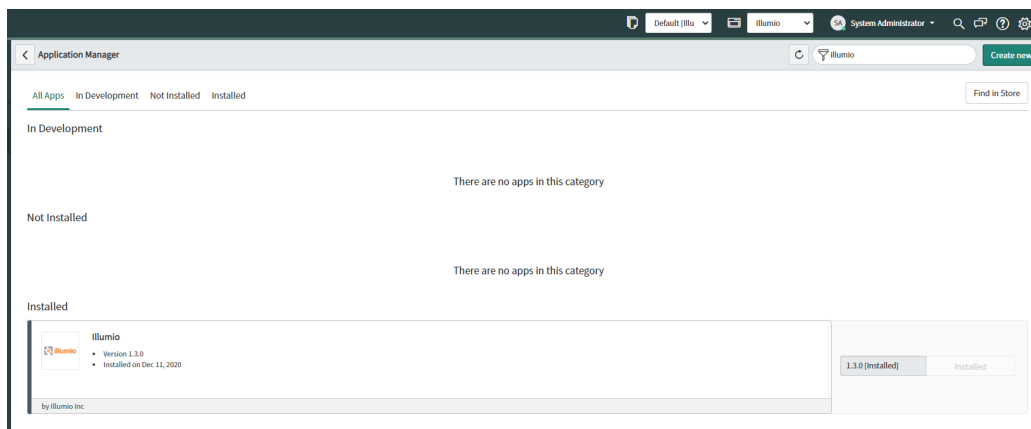


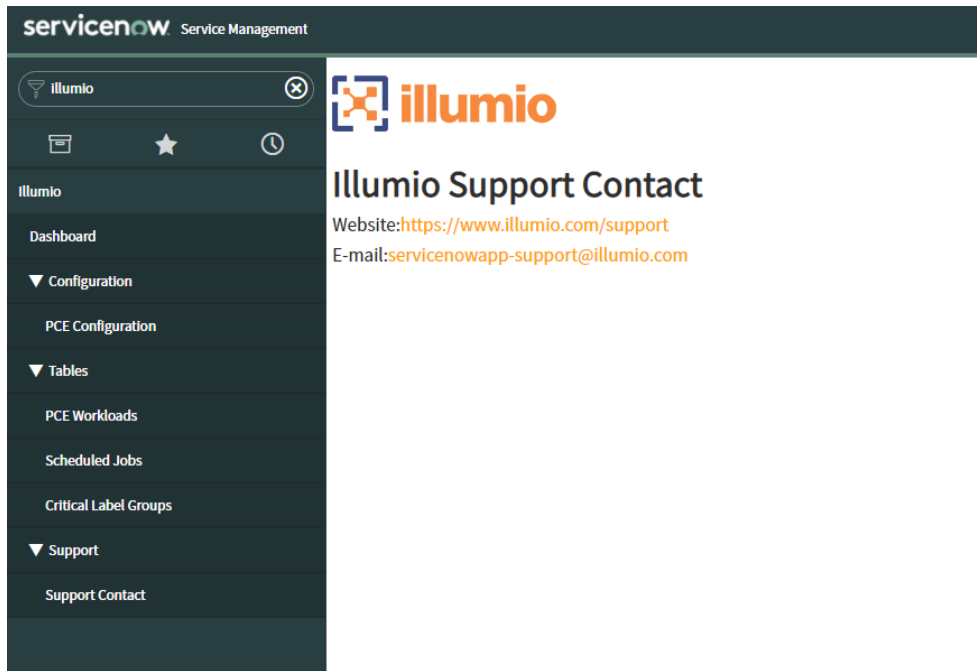
Figure 50. Uninstall an application

3. Select the application and click **Uninstall**.

8 Support & Troubleshooting

8.1 Support

- Contact details for Illumio Support: <https://www.illumio.com/support>



8.2 Troubleshooting

8.2.1 Check ServiceNow logs

To print error messages use the following methods: `gr.warn()` and `gs.error()`.

To print information messages use `gs.info()`.

The application logs under the system logs contain all the logs for the application.

Note: Keep in mind that the critical error messages are listed as “Error”, and debug statements are listed as “Information”.

8.2.2 Check MID Server Logs

The error logs are populated in the file `Agent0.log` on the MIDServer under

```
/servicenow/<mid server name>/agent_folder/logs/agent0.log.0
```

Logs are also available from the ServiceNow instance. To view the logs:

1. Go to **MID Server -> Server -> [Specific Record] MID Server**.
2. Click **Grab MID Logs** under the Related Links.
3. Open a record with name `agent.log0.0`
4. View the attachment **payload.txt**.

8.2.3 Illumio PCE discovery cannot execute

If data is not populated or the PCE discovery is failing:

1. Check whether the MID Server is up-and-running.
2. Check if the proper roles are assigned to the configured users.
3. Check the status of the PCE discovery.
 - a) Navigate to “Scheduled Jobs” and verify the discovery status.
 - b) If the discovery status failed or is in error state, check the MID Server logs for that time.
4. Check if the integration is configured with the proper credentials;
 - a) Navigate to **Illumio** > **PCE Configurations**.
 - b) Check the API Key and Secret.

8.2.4 Application modules are not visible

1. If a user is unable to find the application-related modules from the navigation bar.

Check the roles available to the ServiceNow user:

- The Illumio Admin has access to all modules
- The Illumio User does not have access to configuration modules.

2. How to check the user role.

The ServiceNow platform administrator can check the user role by navigating to **System** → **Users**. Select the user from the list and check the granted roles from the Roles tab.

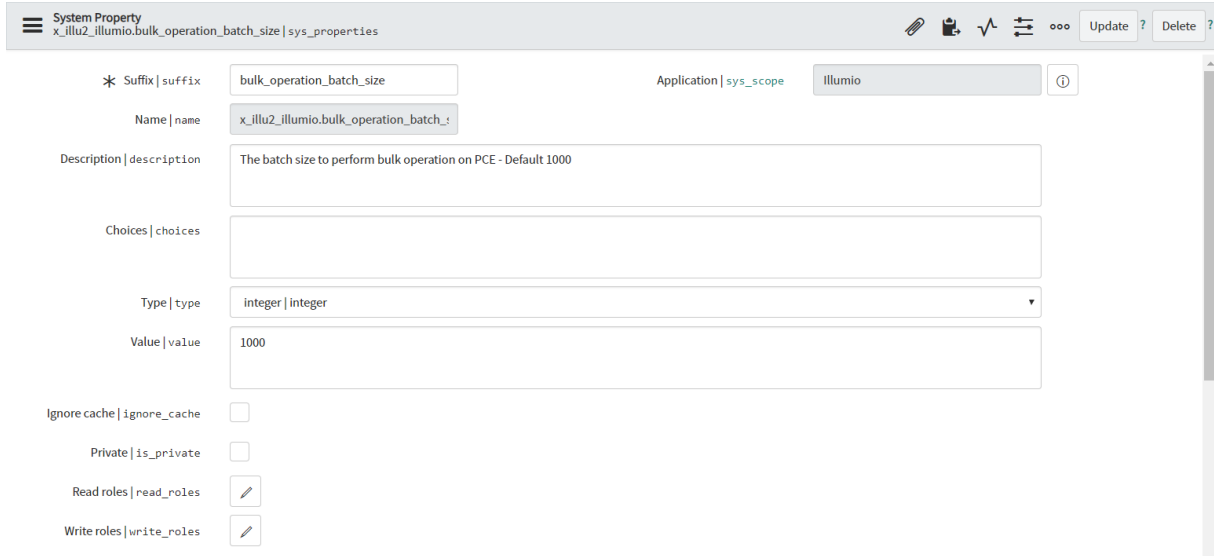
8.2.5 Workloads skipped while updating on PCE

While performing auto-sync if the workloads are not updated on PCE and all are marked as skipped, there is a possibility that the number of workloads to be sent for sync has exceeded the maximum limit defined in API schema. Change the batch size property to create smaller batches of workloads while creating payload for updating workloads on PCE.

Role Required: System Administrator

Procedure:

1. Navigate to System Properties -> “bulk_operation_batch_size”
2. Change the batch limit to required number



8.2.6 Data collection failed

The data collection might fail when there is a large amount of data in the CMDB table to map with the PCE workloads data, and the MID Server logs contain transaction canceled message as shown below:

```

root@evrnt:~/illumio_79560/agent/logs
09/30/19 19:04:51 (763) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: HTTP GET call completed. Status: 200
09/30/19 19:04:51 (770) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: illumioManageAsyncJobs - Job status: done
09/30/19 19:04:51 (771) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> INFO: illumioLogs: illumioManageAsyncJobs - Getting async job results
09/30/19 19:04:51 (771) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: APICALL: GEThttps://x2devtest59.llnws.io:6443/api/v2/orgs/11/da
tafiles/61e4e40-c584-4037-2ab7-0a32fc364c6d
09/30/19 19:04:56 (371) LogStatusMonitor:60 stats threads: 60, memory max: 910.0Mb, allocated: 500.0Mb, used: 40.0Mb, standard.queued: 0 probes, standard.processing: 1 probe, expedited.que
ued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes
09/30/19 19:04:57 (864) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: HTTP GET call completed. Status: 200
09/30/19 19:05:04 (926) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: illumioManageAsyncJobs - Total records : 5623
09/30/19 19:05:34 (870) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: SNOW HTTP POST call completed. Status: 201
09/30/19 19:05:36 (113) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> INFO: illumioLogs: illumioManageAsyncJobs - Posted all records to SNOW
09/30/19 19:05:56 (372) LogStatusMonitor:60 stats threads: 60, memory max: 910.0Mb, allocated: 474.0Mb, used: 34.0Mb, standard.queued: 0 probes, standard.processing: 1 probe, expedited.que
ued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes
09/30/19 19:06:37 (001) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: SNOW HTTP PUT call completed. Status: 500
09/30/19 19:06:37 (002) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: SNOW PUT URL:::: https://dev79560.servicenow.com/api/now/table
/x_11102_illumio_pce_async_jobs/1e396fc4db5400109add1b1ca961963
09/30/19 19:06:37 (002) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 *** Script: >>> DEBUG: illumioLogs: Issue in SNOW PUT request: [{"error":{"detail":"Transaction cancel
led: maximum execution time exceeded Check logs for error trace or enable glide.rest.debug property to verify REST request processing","message":"com.glide.sys.TransactionCancelledExceptio
n": "Transaction cancelled: maximum execution time exceeded"},"status":"failure"}]
09/30/19 19:06:37 (009) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 Enqueuing: /home/illumio_79560/agent/work/monitors/ECCSender/output_2/ecc_queue_d170afc4db5400109add
1b1ca961963.xml
09/30/19 19:06:37 (009) Worker-Standard:JavascrptProbe-d170afc4db5400109add1b1ca961963 Worker completed: JavascrptProbe time: 0:01:146.572
09/30/19 19:06:37 (033) ECCSender_1 Sending ecc_queue_d170afc4db5400109add1b1ca961963.xml
09/30/19 19:06:56 (297) LogStatusMonitor:60 stats threads: 60, memory max: 910.0Mb, allocated: 474.0Mb, used: 31.0Mb, standard.queued: 0 probes, standard.processing: 0 probes, expedited.que
ued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes
09/30/19 19:07:56 (841) LogStatusMonitor:60 stats threads: 60, memory max: 910.0Mb, allocated: 474.0Mb, used: 29.0Mb, standard.queued: 0 probes, standard.processing: 0 probes, expedited.que
ued: 0 probes, expedited.processing: 0 probes, interactive.queued: 0 probes, interactive.processing: 0 probes
09/30/19 19:09:02 (097) Worker-Interactive:HeartbeatProbe-72616748db5400109add1b1ca961945 Worker starting: HeartbeatProbe
09/30/19 19:09:02 (097) Worker-Interactive:HeartbeatProbe-72616748db5400109add1b1ca961945 Probing heartbeatprobe
09/30/19 19:09:02 (097) Worker-Interactive:HeartbeatProbe-72616748db5400109add1b1ca961945 Finished firing the heartbeatprobe
09/30/19 19:09:02 (150) Worker-Interactive:HeartbeatProbe-72616748db5400109add1b1ca961945 Enqueuing: /home/illumio_79560/agent/work/monitors/ECCSender/output_0/ecc_queue_72616748db5400109a
dd1b1ca961945.xml
09/30/19 19:09:02 (151) Worker-Interactive:HeartbeatProbe-72616748db5400109add1b1ca961945 Worker completed: HeartbeatProbe time: 0:00:00.001
09/30/19 19:09:02 (487) ECCSender_1 Sending ecc_queue_72616748db5400109add1b1ca961945.xml
09/30/19 19:09:06 (091) AutoUpgrade_3600 AutoUpgrade.run(), MID server Operational State=UP
09/30/19 19:09:06 (091) AutoUpgrade_3600 Checking to see if MID server needs to be upgraded.
09/30/19 19:09:07 (584) AutoUpgrade_3600 Packages refreshed.
09/30/19 19:09:07 (585) AutoUpgrade_3600 Current packages:
09/30/19 19:09:07 (585) AutoUpgrade_3600 Installed: [mid-core.london-06-27-2018_patch8-hotfix2-05-21-2019_05-22-2019_1149.universal.universal.zip, mid-jre.london-06-27-2018_patch8-hotfi
x2-05-21-2019_05-22-2019_1149.universal.universal.zip]
09/30/19 19:09:07 (585) AutoUpgrade_3600 Assigned: [mid-upgrade.london-06-27-2018_patch8-hotfix2-05-21-2019_05-22-2019_1149.universal.universal.zip, mid-core.london-06-27-2018_patch8-ho
tfix2-05-21-2019_05-22-2019_1149.universal.universal.zip]
09/30/19 19:09:07 (585) AutoUpgrade_3600 Missing: []
09/30/19 19:09:07 (585) AutoUpgrade_3600 Downloaded: []
09/30/19 19:09:07 (585) AutoUpgrade_3600 Installed packages are up-to-date.
09/30/19 19:09:24 (191) LogStatusMonitor:60 stats threads: 46, memory max: 140.0Mb, allocated: 140.0Mb, used: 29.0Mb, standard.queued: 0 probes, standard.processing: 0 probes, expedited.que

```

Figure 51. Data collection failed

In this case, you need to change ServiceNow’s “Transaction Quota Rule”, the “REST Table API request timeout” and “REST and JSON Catch All”.

Role Required: System Administrator

Procedure:

1. Navigate to **System Definition -> Transaction Quota Rules**.

2. Click “REST Table API request timeout” and “REST and JSON Catch All”.

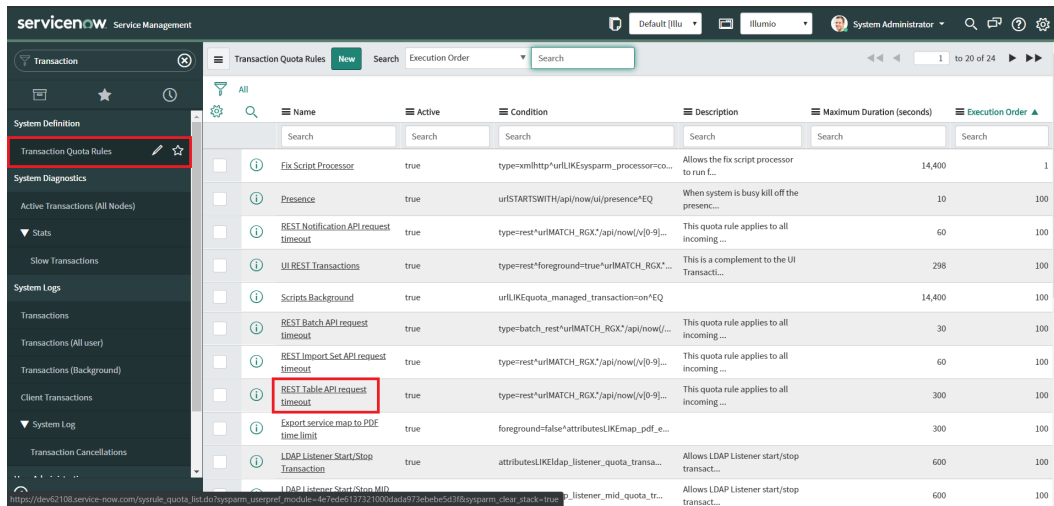


Figure 52. REST Table API request

3. Change the Maximum Duration (seconds) to 120 or higher, depending on the transaction duration.

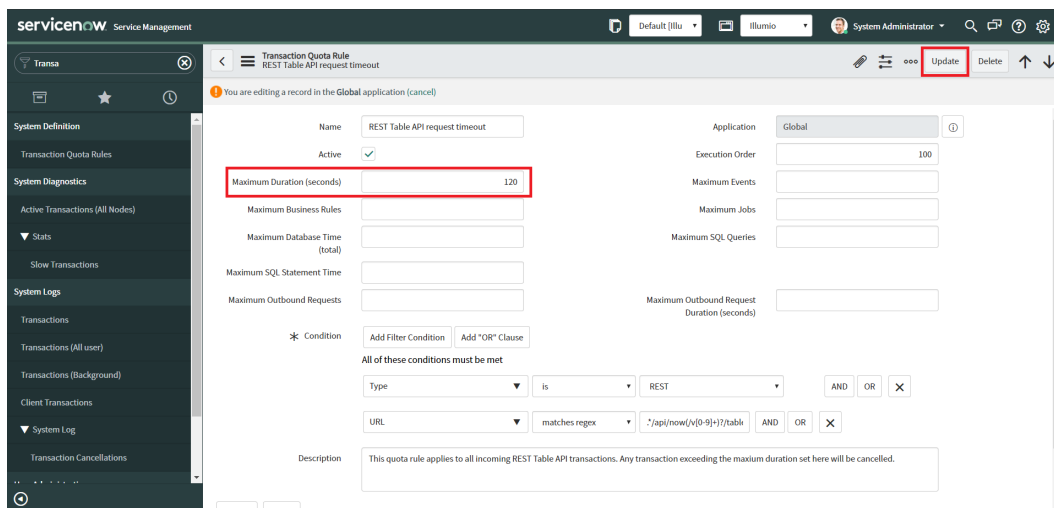


Figure 53. Update Maximum Duration record

4. Click **Update**.

8.2.7 Check PCE Connectivity

User can go to the PCE configuration and click on the Check PCE configuration button to check if there is any issue in connectivity between ServiceNow and PCE.

1. To check end-to-end connectivity between ServiceNow , **MID server** and **PCE** , click on **Check PCE Configuration** in PCE configuration.

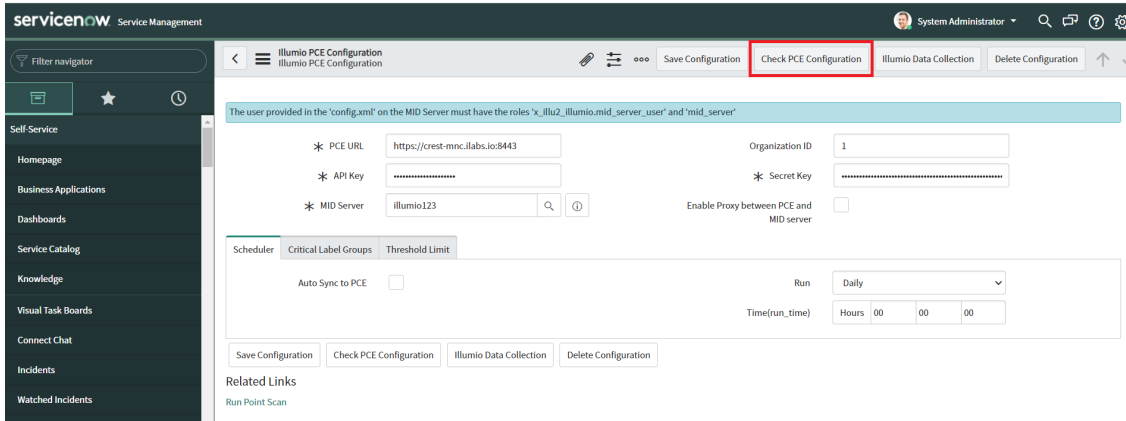


Figure 54. Check PCE configuration

2. The status of the connectivity can be seen in the Schedule jobs.

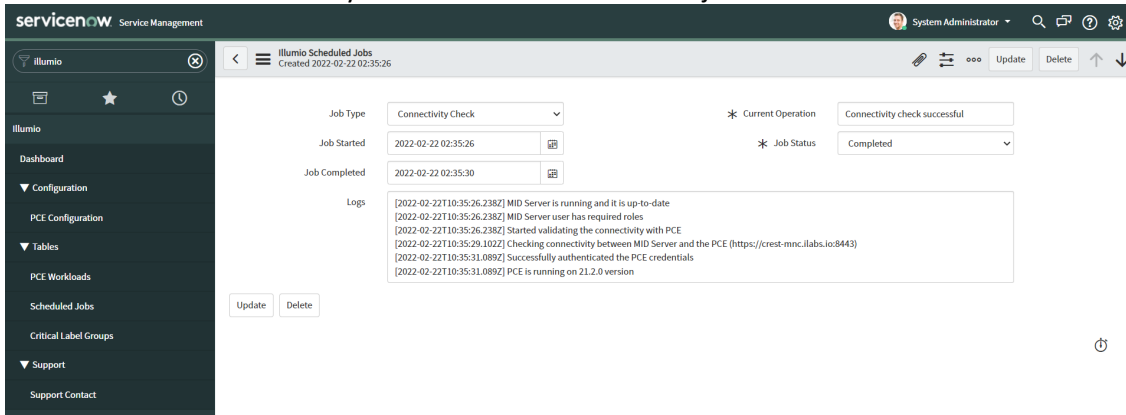


Figure 55. Check PCE Configuration status

Note: If the connectivity check is successful, do check the organization id once, and change it if it is wrong in the configuration.

8.3 Known Scenarios

These are some known scenarios based on

- Number of workloads
- Number of CI records
- Heap memory

Scenario 1 (100K Workloads):

- Recommended heap memory size of MID server : 8 GB

Heap Memory	Workloads on PCE	New CIs on ServiceNow	Data Collection time	Data Sync time
5 GB	25841	75000	39 min 40 sec	18 h 42 min 31 sec

Scenario 2 (50K Workloads):

- Recommended heap memory size of MID server : 6 GB

Heap Memory	Workloads on PCE	New CIs on ServiceNow	Data Collection time	Data Sync time
3 GB	25841	25000	28 min 41 sec	7 h 9 min 21 sec