

# Use Catalyst Center Network Issue Monitor and Enrichment for ITSM

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## Introduction

This document describes the Network Issue Monitor use case of Catalyst Center and ITSM (ServiceNow) integration.

## Background Information

This document covers all the details pertaining to the Network Issue Monitor starting from components involved, pre-requisites, events flow, configurations, workflow execution and troubleshooting scenarios. It is relevant if Cisco DNA App is installed on the ServiceNow instance.

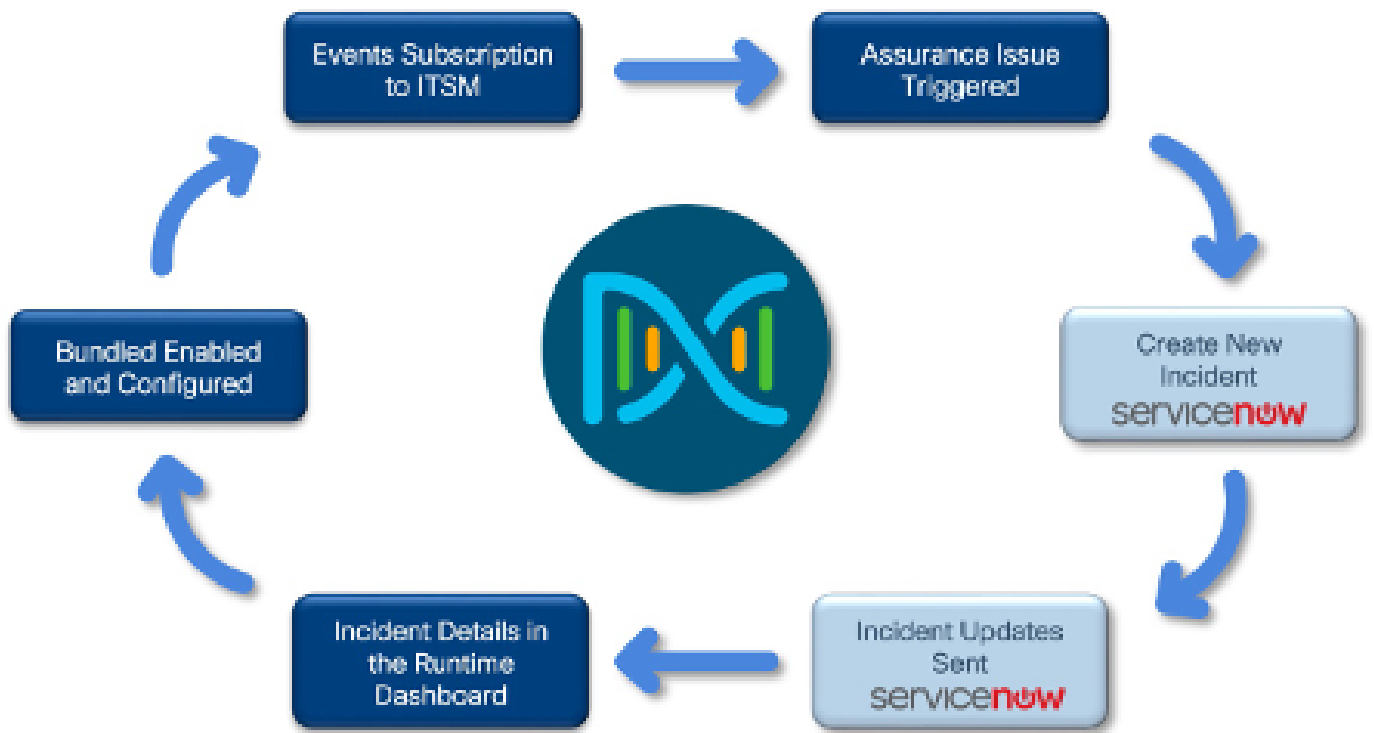
## Cisco Catalyst Center-ITSM (ServiceNow) Integration

Refer to this document for details on Catalyst Center-ITSM integration:

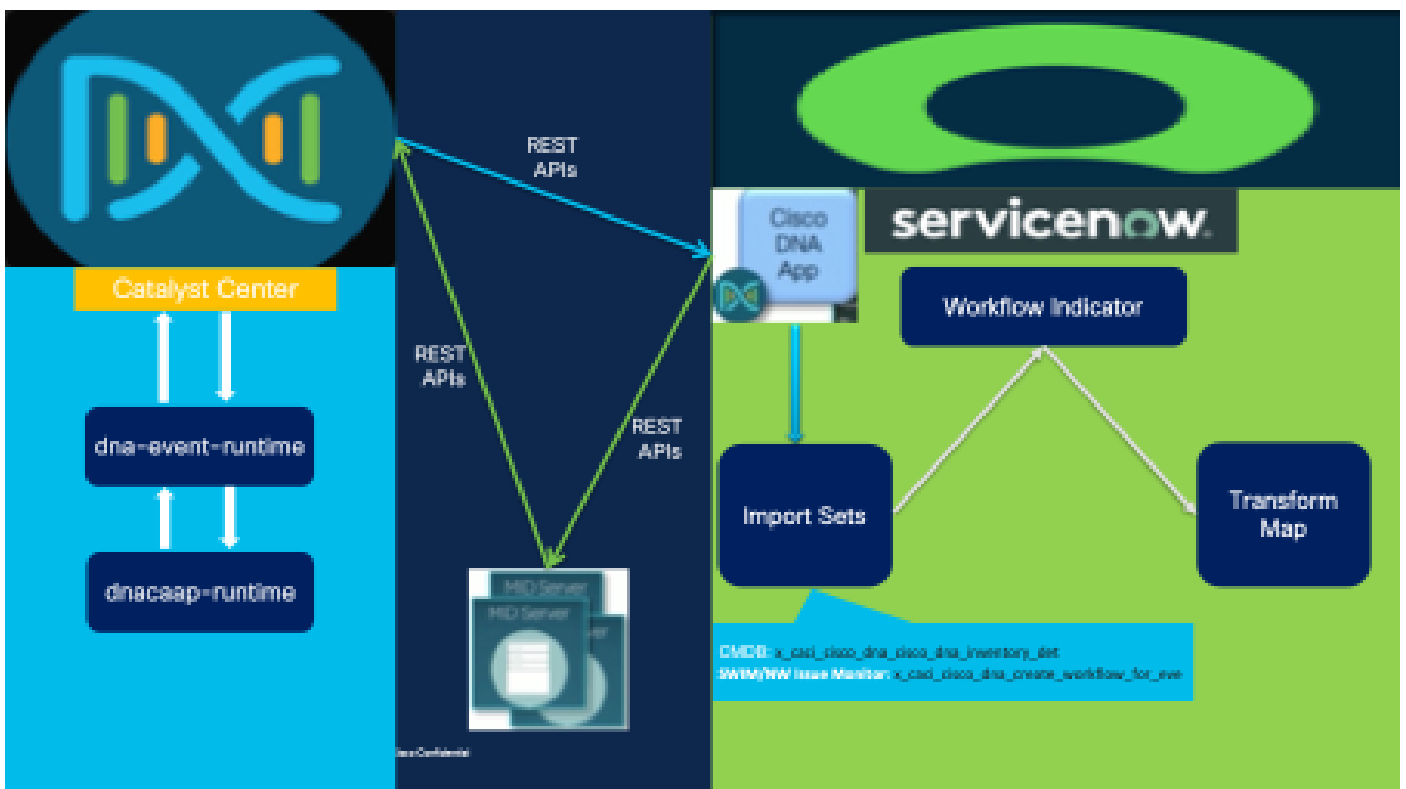
[Scope Underlying Concepts of Catalyst Center and ITSM Integration](#)

## Architecture: Network Issue Monitor

### Network Issue Monitor Workflow: High-Level Architecture



### Network Issue Monitor Workflow: Under the Hood



### Events Flow: Catalyst Center

- When a subscribed event is triggered in the network, the Assurance component of Catalyst Center lists that Issue on the Issues & Events dashboard and under Device 360 dashboard.
- The dna-event-runtime service of Catalyst Center receives the event and submits it to dnacaap-runtime service which then triggers the publishing of the event on Runtime dashboard.

## dna-event-runtime Logs Snippet:

```
{"instant":{"epochSecond":1722414310,"nanoOfSecond":301000000},"thread":"dna-event-akka.actor.default-dispatcher-4","level":"INFO","loggerName":"com.cisco.dna.event.runtime.datapath.pipeline.actors.flow.sinks.RestSink","message":"RestSink submitting event [eventId:NETWORK-NON-FABRIC_WIRED-1-251 instanceId:a257cc99-07b1-443a-8e15-5d744bcdd530] request to URL http://dnacaap-runtime.dnacaap.svc.cluster.local:8095/dnacaap/core/v1/aes","endOfBatch":false,"loggerFqn":"org.apache.logging.slf4j.Log4jLogger","threadId":36,"threadPriority":5,"tenantId":"nobody","requestId":"None","userId":"nobody","userName":"nobody","asctime":"2024-07-31 08:25:10,301","timeMillis":"1722414310301"}

{"instant":{"epochSecond":1722414310,"nanoOfSecond":358000000},"thread":"OkHttp http://dnacaap-runtime.dnacaap.svc.cluster.local:8095/...", "level":"INFO","loggerName":"com.cisco.dna.event.runtime.datapath.pipeline.actors.flow.sinks.RestSink","message":"RestSink is SUCCESS for eventId:NETWORK-NON-FABRIC_WIRED-1-251 instanceId:a257cc99-07b1-443a-8e15-5d744bcdd530 subId:nesNew subName:null responseCode:202 responseBody:okhttp3.internal.http.RealResponseBody@49cc90d7 responseMessage:", "endOfBatch":false,"loggerFqn":"org.apache.logging.slf4j.Log4jLogger","threadId":6228,"threadPriority":5,"tenantId":"nobody","requestId":"None","userId":"nobody","userName":"nobody","asctime":"2024-07-31 08:25:10,358","timeMillis":"1722414310358"}
```

## dnacaap-runtime Logs Snippet:

```
{"instant":{"epochSecond":1722414720,"nanoOfSecond":508000000},"thread":"dnacaap-runtime-akka.actor.default-dispatcher-6237","level":"INFO","loggerName":"com.cisco.dnacaap.flow.storage.BapiExecutionIgniteStore","message":"Creating Ignite Cache : bapiExecutionId: 740b2263-ab8b-44eb-ad98-833e5f395dc0, storageKey: issue_details_arr","endOfBatch":false,"loggerFqn":"org.apache.logging.slf4j.Log4jLogger","threadId":50390,"threadPriority":5,"tenantId":"nobody","correlationId":"None","userId":"nobody","userName":"nobody","asctime":"2024-07-31T08:32:00.508Z","timeMillis":"1722414720508"}

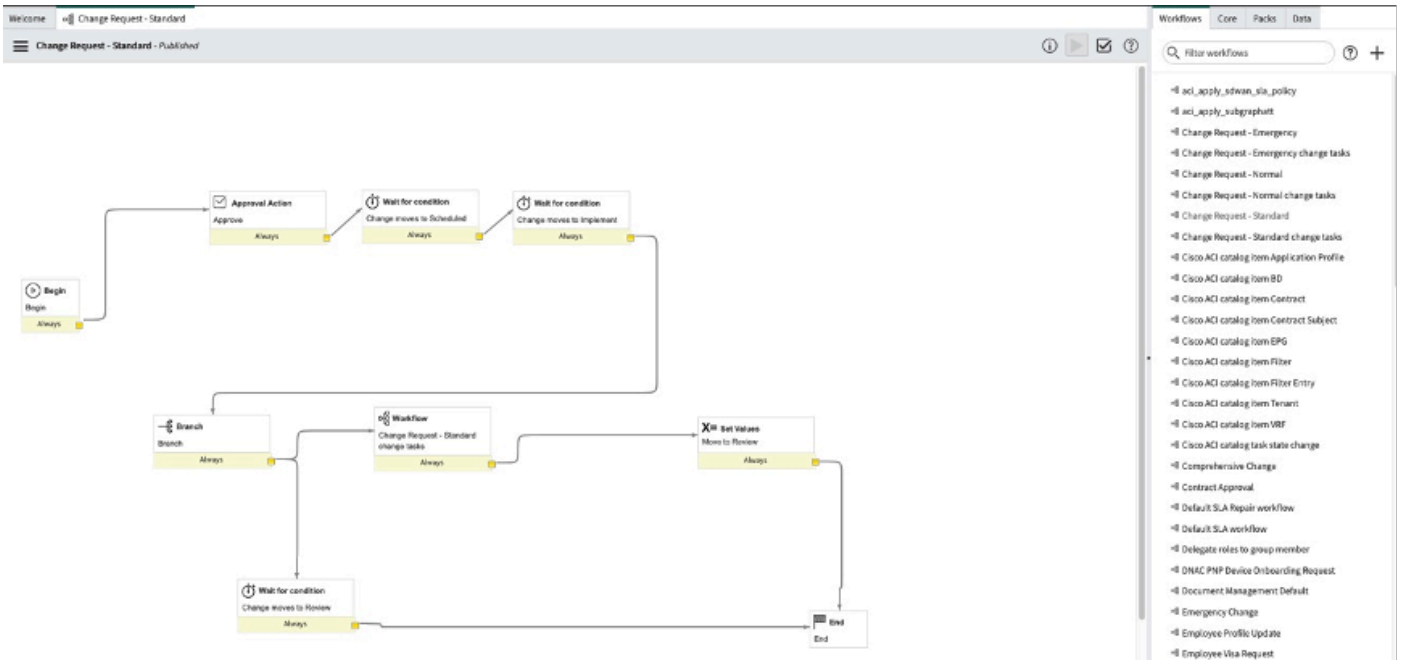
{"instant":{"epochSecond":1722414720,"nanoOfSecond":625000000},"thread":"dnacaap-runtime-akka.actor.default-dispatcher-6236","level":"INFO","loggerName":"com.cisco.dnacaap.flow.storage.BapiExecutionIgniteStore","message":"Creating Ignite Cache : bapiExecutionId: 3c0a2789-e5db-4ebf-aaa8-b7a0be4b299f, storageKey: issue_details_arr","endOfBatch":false,"loggerFqn":"org.apache.logging.slf4j.Log4jLogger","threadId":50389,"threadPriority":5,"tenantId":"TNT0","correlationId":"None","userId":"dna-event-runtime","userName":"dna-event-runtime","asctime":"2024-07-31T08:32:00.625Z","timeMillis":"1722414720625"}
```

- Catalyst Center then makes REST API call to the Cisco DNA Application installed on ServiceNow Instance.
- Cisco DNA App automatically triggers problem, incident, and change workflows for network events published by Cisco DNA Center.

## Events Flow: ITSM (ServiceNow)

- The Network Events that occur in the network and are notified are picked from Cisco Catalyst Center and pushed to ServiceNow using ServiceNow Import Set APIs, or Scripted REST APIs, or Generic REST API endpoints in ServiceNow. The Import Set Table to which the data is posted to is `x_caci_cisco_dna_create_workflow_for_eve`.

- Based on the Workflow Indicator value set in the event configuration, an Incident/problem ticket is created in ServiceNow based on transform scripts.
- Every Issue event record from DNA has an associated Workflow Indicator that determines what kind of workflow the event goes through in ServiceNow. This snippet is an example of Workflow Indicator.



- Based on workflow indicator decision, one of the transform maps gets executed and the data in the staging table is parsed and mapped to the appropriate target table that is an incident in case of a Network Issue event.

servicenow All Favorites History Workspaces Admin Table Transform Maps

Table Transform Maps

All > Source table contains: dna > Name > Incident CommandOutputUpdate

Name	Source table	Target table
<a href="#">Incident CommandOutputUpdate</a>	Incident CommandOutputUpdate [x_caci_cisco_dna_incident_commandoutput]	Incident [incident]
<a href="#">Incident DNA Transform</a>	Incident DNA Import [x_caci_cisco_dna_incident_dna_import]	Incident [incident]
<a href="#">Incident Status Update</a>	Ticket Status Update [x_caci_cisco_dna_ticket_status_update]	Incident [incident]

- Cisco DNA App in the target artifacts enriches ITSM tickets with network details from Cisco Catalyst Center. The Cisco DNA app makes REST API calls into Cisco Catalyst Center for fetching enrichment information of various types such as device, issue, user, and client for a user created ticket.

## Network Issue Monitor Bundle Configuration

The Network Issue Monitor and Enrichment for ITSM (ServiceNow) bundle retrieves events from Cisco Catalyst Center for any assurance and maintenance issues. The bundle then publishes the event data on a recurring schedule to an ITSM (ServiceNow) system.

This bundle also contains APIs that extract rich network context data. If your network devices have not yet been synchronized between Cisco Catalyst Center and the ITSM (ServiceNow CMDB) system, then it is recommended to activate the Basic ServiceNow CMDB synchronization bundle before activating this bundle. However, it is not mandatory to run CMDB synchronization as long as the CI entry is available in ServiceNow CMDB.

The events data can be published to the Event table in ServiceNow. If you do not have the Event Management plugin in your ServiceNow instance, then the bundle can be configured to receive events in any generic REST end-point in ServiceNow.

For Network Issue Monitor and Enrichment bundle configuration, Refer to section Configure the Network Issue Monitor and Enrichment for ITSM (ServiceNow) Bundle of Cisco DNA Center ITSM Integration Guide ([Cisco DNA Center ITSM Integration Guide, Release 2.3.5](#))

## Network Issue Monitor Workflow Execution

### Catalyst Center

1. Assurance dashboard lists the Issues reported in the network and these issues are posted on Runtime Dashboard.



- ii. The corresponding Issue gets listed as an Event on Platform Runtime dashboard of Catalyst Center.

### Event Summary 📄

**72**  
Events published

DNA Event Severity	Count
1	72
2	0
3	0
4	0
5	0

🔽 Filter 🔍 Find

Domain	Event Name	Count
Connectivity	Interface Connecting Network Devices is Down	72

**Event History** - a15847e1-13c6-401f-a450-22b8926be740 Last Updated: a few seconds ago 🔄 Refresh

🔽 Filter 🔍 Find

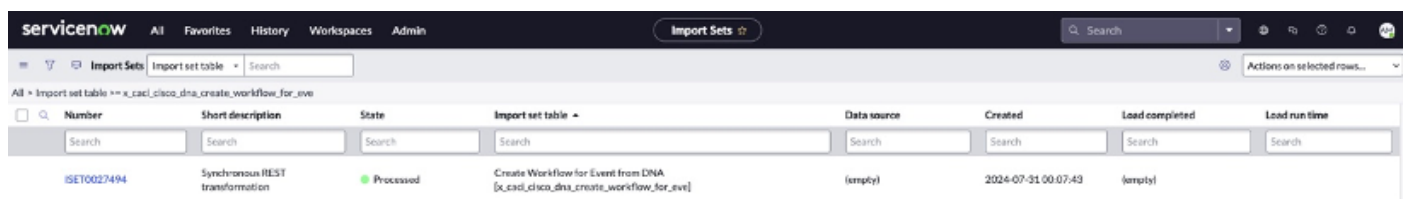
Source	Destination	IP Src	IP Dest	IP Src AS	IP Src AS Org	IP Src Last SystemFlow	IP Src Entry (Security/Priority)	DNA Event Severity
ServiceNow	Cisco DNA Center	Incident	Resolved	INC0214839	<a href="https://www.cisco.com/c/en/us/solutions/cisco-dna-center/centralized-incident.html">https://www.cisco.com/c/en/us/solutions/cisco-dna-center/centralized-incident.html</a>	August 06, 2024, 11:01:07 am	1 - Critical	1
Cisco DNA Center	ServiceNow	Incident	New	NA	NA	July 01st 2024, 12:17:42 pm	NA	1

## ITSM-ServiceNow

The Alerts events from Cisco Catalyst Center are received by Import Set Table of ServiceNow. The data is pushed to ServiceNow using ServiceNow Import Set APIs or Scripted REST APIs or Generic REST API endpoints in ServiceNow.

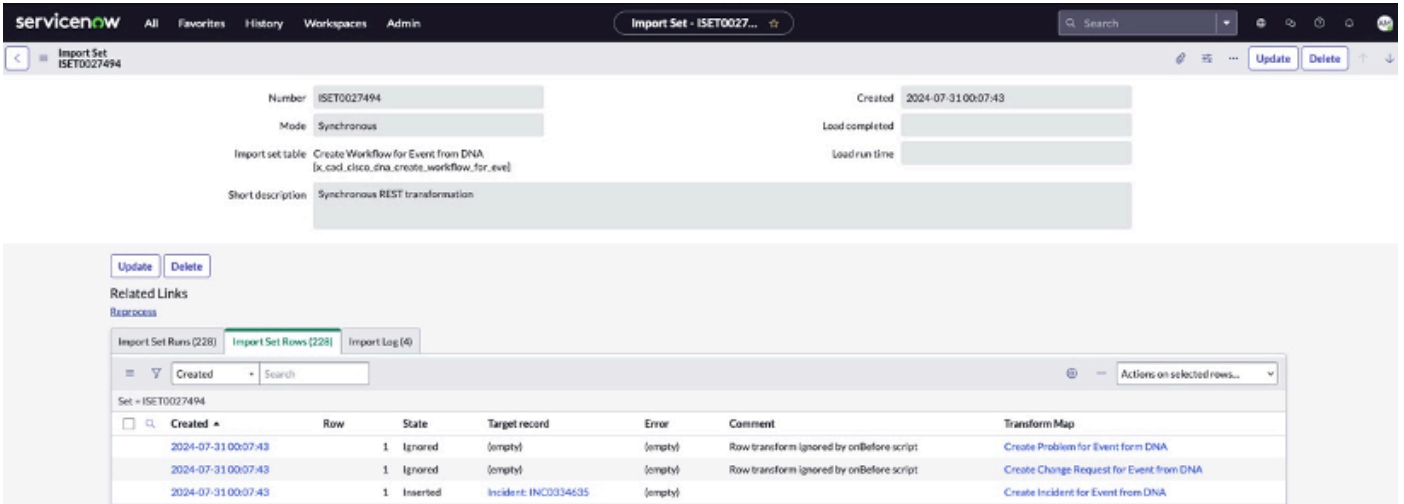
- To check the data posted to ServiceNow from Cisco Catalyst Center navigate to Import Sets and look for the Import Set Entry for the table: **x\_caci\_cisco\_dna\_cisco\_dna\_inventory\_det**

- Filter out the Import Set entry from the Import Set dashboard for the table **x\_caci\_cisco\_dna\_cisco\_dna\_inventory\_det**.



Number	Short description	State	Import set table	Data source	Created	Load completed	Load run time
ISET0027494	Synchronous REST transformation	Processed	Create Workflow for Event from DNA [x_caci_cisco_dna_create_workflow_for_eve]	(empty)	2024-07-31 00:07:43	(empty)	

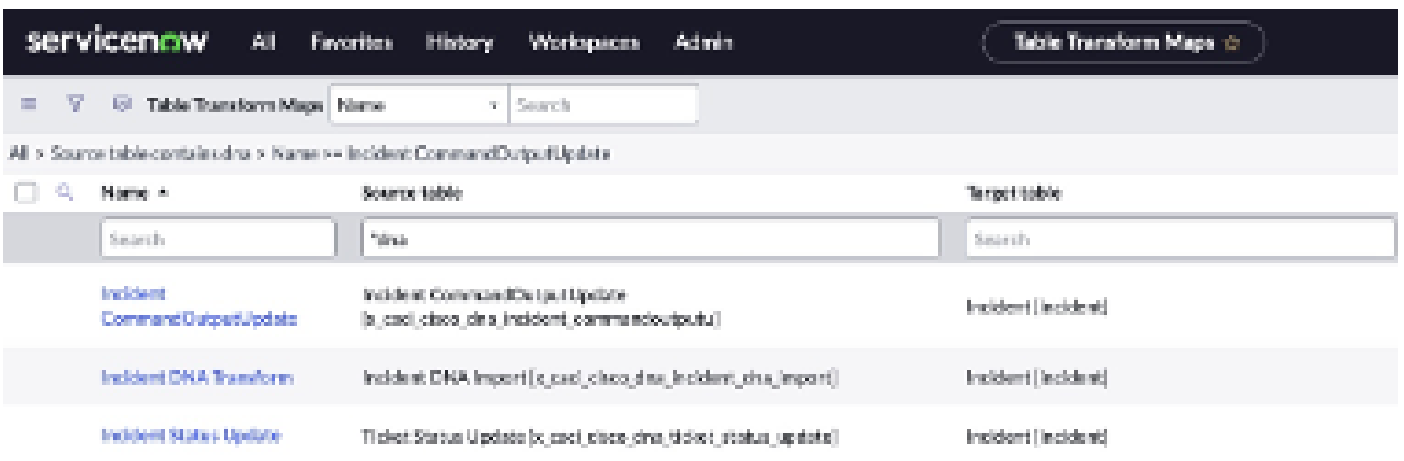
- Check the details of Import Set and check the Import Set Rows for the respective Incident number.



iii. Workflow Indicator determines the kind of workflow the event has to go through in ServiceNow; based on the workflow indicator decision, one of the transform maps gets executed.

iv. To check the details of Transform Map, click **Hyperlink** in **Transform Map Column** of **Import Set Rows**.

Transform Map Tables for Incident event:

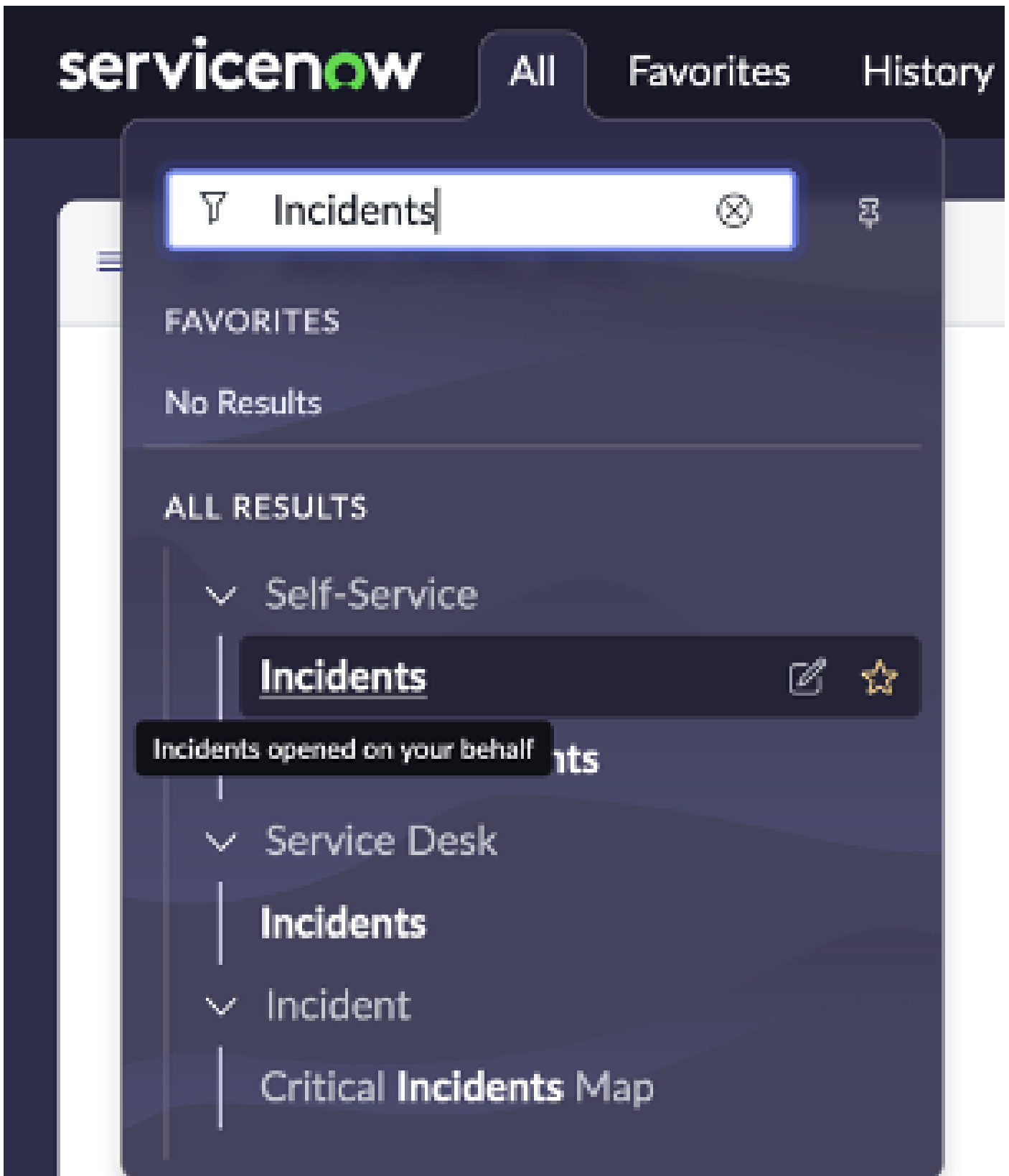


## Network Issue Monitor Workflow Execution Validation

- Once the workflow is executed successfully, the Incident ticket can get created with the Issue details of the device for which the issue was reported.

1. **Global Search > Service Desk > Incidents.**





ii. Filter out the **Incident** ticket from the **Incident tickets** dashboard.

Number	Opened	Short description	Caller	Priority	State	Category	Assignment group	Assigned to	Updated	Updated by
INC0334653	2024-07-31 01:25:23	Interface TenGigabitEthernet1/0/5 (Interface description: →) connecting the following two network devices is down: Local Node: BR-ThorC9500-2.thor.com (C9500-	Akinchan Mishra	1 - Critical	Resolved	Inquiry/Help	(empty)	(empty)	2024-08-01 00:43:53	akimishr



### iii. Incident Ticket Details

a. Open the **Incident ticket** to see the details.

The screenshot shows the ServiceNow interface for an incident ticket. The header includes the ServiceNow logo, navigation tabs (All, Favorites, History, Workspaces, Admin), and the incident ID 'Incident - INC0334635'. Below the header, there are buttons for 'Discuss', 'Follow', 'Update', 'Create Cisco DNA Change Request', 'Resolve', and 'Delete'. The main form contains the following fields:

- Number: INC0334635
- Caller: Akshayan Mishra
- Category: Inquiry/Help
- Subcategory: --None--
- Service: [Empty]
- Service offering: [Empty]
- Configuration item: ThorC9200L-Access.thor.com
- Channel: --None--
- State: New
- Impact: 1-High
- Urgency: 1-High
- Priority: 1-Critical
- Assignment group: [Empty]
- Assigned to: [Empty]
- Short description: Interface GigabitEthernet1/0/5 (Interface description: --) connecting the following two network devices is down: Local Node: ThorC9200L-Access.thor.com (C9200L)
- Description: [Empty]

b. Cisco DNA tab of Incident Ticket has multiple sections and one is Device Enrichment information.

The screenshot shows the 'Cisco DNA' tab selected in the incident ticket. It contains the following sections:

- Cisco DNA Center IP Address: 10.78.9.11
- Cisco DNA Event Domain: --None--
- Cisco 360 View: <https://10.78.9.11/dna/assurance/device/details?id=79dbbab0-9a11-46dc-add3-437d11a2982b>
- Cisco DNA Network Details: Connected Device: 1
  - Device Id: 79dbbab0-9a11-46dc-add3-437d11a2982b
  - Model: C9200L-48P-4X
  - IP Address: 172.19.100.39
  - Host Name: ThorC9200L-Access.thor.com
  - Device Software Version: 17.9.5
  - MAC Address: 78-bc-1a0d61b0

c. Cisco DNA Event details and Suggested Actions is another section.

The screenshot shows the 'Cisco DNA Event Details and Suggested Actions' section. It contains the following information:

- Issue Details: 1
  - ID: e15647e1-13c6-401f-a450-22b69268e740
  - Category: Connectivity
  - Summary: Interface "GigabitEthernet1/0/5" (Interface description: --) is down on network device "ThorC9200L-Access.thor.com"
  - Time Stamp: 1722409650384
  - Priority: P1
  - Device id: 79dbbab0-9a11-46dc-add3-437d11a2982b
  - Host Name: ThorC9200L-Access.thor.com
  - Event Link: <https://10.78.9.11/dna/assurance/issueDetails?issueId=e15647e1-13c6-401f-a450-22b69268e740>
  - Health Score: 1
- Suggested Actions:
  - Action: 1
    - Action Description: Ensure the link speed, duplex, auto-negotiation and media type are supported and match on both sides of link
  - Step: 1
    - Entity Id: 79dbbab0-9a11-46dc-add3-437d11a2982b
    - Step Description: Check the errors and link information of the affected interface on Local Node
    - Command: show interface GigabitEthernet1/0/5
  - Step: 2
    - Entity Id: 4af9d8ba-069f-4d81-bfdc-0b9c97c5b10
    - Step Description: Check the errors and link information of the affected interface on Peer Node
- Cisco DNA Suggested Actions Commands Output: [Empty]
- Cisco DNA Event Id: e15647e1-13c6-401f-a450-22b69268e740

At the bottom, there are buttons for 'Update', 'Create Cisco DNA Change Request', 'Resolve', and 'Delete'.

## Related Information

- [Scope Underlying Concepts of Catalyst Center and ITSM Integration](#)
- [Synchronize Catalyst Center Inventory with ServiceNow CMDB System](#)
- [Monitor Catalyst Center Automation \(SWIM\) Events for ITSM](#)