

ServiceNow Integration

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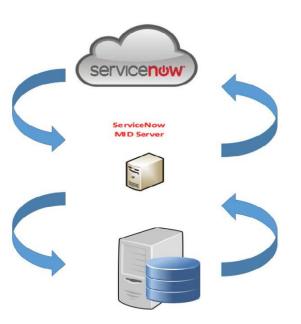
DCNM Integration with ServiceNow

ServiceNow offers applications for IT Service Management (ITSM) and IT Operations Management (ITOM). There are four primary modules - inventory discovery, incident management, event management & change management workflows. Starting from Cisco DCNM Release 11.3(1), we provide Cisco DCNM integration with ServiceNow. This enables you to integrate end-user IT data with the ServiceNow platform. The integration provides a default set of ServiceNow custom tables which are populated with configuration data.

To utilize this functionality, install the DCNM application in the ServiceNow customer instance and provide the DCNM mid-server details. Information or data regarding switch details, port details, and alarms, is retrieved to the ServiceNow Configuration Management Database (CMDB) tables. By default, data is retrieved every 15 minutes and displayed.

Details about the switches and ports of each switch are collected from the DCNM inventory. The alarms are collected by polling DCNM. Alarms are then filtered and categorized based on their type, such as, CPU, MEMORY, POWER, LINKSTATE, EXTERNAL, ICMP, SNMP, and SSH. The alarms are then stored in an Events table. These events are then used to generate incidents for the CPU, MEMORY, SNMP, and SSH categories. The source, description, severity and category of each alarm is stored. However, when an alarm ceases to exist in DCNM, the incident that was raised for it is not updated or cleared on the DCNM ServiceNow application. When polling of alarms is initiated for the first time, the alarms that were raised in the last seven days are pulled in from DCNM.

The DCNM application on ServiceNow runs scheduled scripts and connects with the mid-server which in turn connects with DCNM to retrieve data. DCNM sends the requested data to the mid-server which then passes on the data to the DCNM application on ServiceNow. The tables in the DCNM instance on ServiceNow are then populated with this retrieved data.



Guidelines and Limitations of DCNM Integration with ServiceNow

In the ServiceNow Cisco DCNM Application version 1.0, details about only one MID server can be
added in the Cisco DCNM>Properties table. Starting from Cisco DCNM Application version 1.1,
multiple MID servers can be added in the Cisco DCNM>Properties table. This means that data can be
retrieved from multiple DCNM setups at the same time. In the ServiceNow GUI, data from each DCNM
is distinguished by the DCNM IP address.

7	All			
22	Q	E DCNM IP Address	≡ MidServer Status	■ DCNM Connection Status
		Search	Search	Search
	(j)	10.106.177.145	• Up	Reachable
	(j)	10.106.228.223	• Up	Reachable
	(i)	10.106.228.226	• Up	Reachable
	Actions of	in selected rows \$		1 to 3 of 3 >>

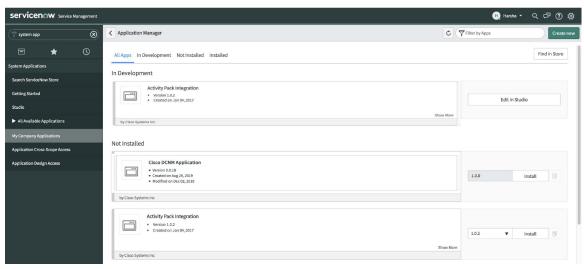
- Scheduled scripts to retrieve data are run only after insertion of a server record in the **Cisco DCNM>Properties** table.
- In case the mid-server IP Address and credentials in the Cisco DCNM>Properties table are changed, the data that was imported using the previous mid-server is deleted from the application scope tables. However, data that was imported to the ServiceNow CMDB (global scope) remains and is not deleted.
- To ensure optimal performance in the ServiceNow database, each entry is matched with the switch database ID and IP Address ensuring that there is no duplication of entries.
- Entries in the cmdb_ci_ip_switch table have to be manually deleted in case a new server is added in the **Cisco DCNM>Properties** table.

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Installing and Configuring the Cisco DCNM Application on ServiceNow

Procedure

 Step 1
 Log in to https://dcnm1.service-now.com. Select System Applications > Applications. Install the Cisco DCNM Application from the All Apps tab.



Step 2 After installation is complete, verify that the Cisco DCNM Properties and Dashboard tabs are appearing in the application.

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(♥ dcnm		\otimes
1	*	©
Cisco DCNM		
Properties		
Dashboard		
► Tables		

- Step 3
- Choose **MID** Servers and click the MID Server that is used for DCNM integration.

servicen	○W . Service	Management											🕕 Harsha 👻	< 다 🥐 🅸
y mid serv			Ξ	MID Serve	ers [Discovery view	/] New Patte	rn Sync to Mid	Search Name	▼ [\$earch					1 to 1 of 1 🕨 🕨
٦	*	Clear	7	All										
		1	٢	Q	Name ▲	Host name	≡ Status	■ Validated	≡ Version	Last refreshed	Started	\equiv Stopped	Logged in user	Unresolved issues
Discovery				0			10.100		madrid-12-18-2018_patch7a-10-01-	2019-12-06 01:29:03	2019-11-20	2019-11-20	•	
MID Servers				(i)	midserverone	test	 Up 	Yes	2019_10	2019-12-06 01:29:03	16:42:53	16:38:37	dcnmmidserveruser	• 0
MID Server				Actions	on selected rows \$								44 4	1 to 1 of 1 🕨 🕨
Installation Instru	actions													đ

Step 4 Scroll down and click the **Properties** tab. Click **New** and add the property given below in the **MID** Server **Property New record** window. Click **Submit**.

I

Name	Туре	Value
glide.http.outbound.max_timeout.enabled	True/false	False
Servicenow. Service Management	·	(1) Harsha - Q 다 🥐 (중
∀ dcnm		
ID Server Properties allow administrators	to configure a MID Server with additional configuration parameters to alter any default behavior. <u>More in</u>	<u>fo</u>
Cisco DCNM Application	Global	0
Properties Name	glide.http.outbound.max_timeout.enabled	
Dashboard Value	false	
▼ Tables		
cisco_dcnm_abouts MID server	midserverone	Q 0
cisco_dcnm_events		
cisco_dcnm_switch_mappings		
cisco_dcnm_switch_details		¢
cisco_dcnm_switch_ports		

Step 5 Now, select the **Configuration Parameters** tab.

Servicenow Service Management	🕚 Harsha - Q ක් 🥐 s
Timid serv	✓
e ★ ()	MID Server Issues Configuration Parameters (11) Supported Applications (1) IP Ranges (1) Capabilities (1) Extension Contexts Logs (107) Threads (63) Properties Included in Clusters
Discovery	E Configuration Parameters New Search Parameter name ¥ Search
MID Servers	ID server = midserverone
MID Server	Ø Q ≡ Parameter name ≡ Value
Installation Instructions	i mid proxyuse proxy true
Downloads	(i) ud https://dcnml.service-now.com/
Dashboard	(i) mid.srcsy.cont 80
Servers	() mid.instance.username dcnmmidserveruser

Step 6 In the **Configuration Parameters** tab, click **New**. Enter the required details in the fields.

servicer	10W. Servic	e Management			📙 Harsha 👻	- Q	. ø	? 🕸
🖓 dcnm		8	< MID Server Configuration Para New record	neter		1	<u> </u>	Submit
۲	*	()	MID server	midserverone	Q	0		
Cisco DCNM			Parameter name	mid.disable_amb (Disable the AMB Client on the MID Server. Default: false)	\$			
Properties			Domain	global	٩			
Dashboard			Value	true				
► Tables			Submit					
								Ū.

- **Step 7** Click **Submit** to set up the MID Server.
- **Step 8** Choose **Cisco DCNM > Properties**. Click **New Server**. Enter the required parameters.

ure DCNM is NTP time sync				
* DCNM IP Address	172.28.11.96			
★ Username	admin			
* Password				
* Mid Server	midserverone Q	0		
MidServer Status	Up			
DCNM Connection Status				
dent Creation from the DCNM Alarms				
Create Incident				
* User	Cisco DCNM Q	0]	
dents will be created for the selected c	ategories that have "Critical" status from DCNM.			
* Category	۵			
ıbmit				

DCNM IP Address - IP Address of the DCNM.

Username - Enter the username used to log in to DCNM.

Password - Enter the password used to log in to DCNM.

Note Access should be provided only for DCNM admins.

Mid server - Specify the name of the mid server to be used. The name is auto-populated as you type. You can also click the search icon next to this field to bring the MID Servers window. You can then select a MID Server from the list that is displayed.

MidServer Status - Indicates whether the MID server is up or down.

DCNM Connection Status - Indicates whether the DCNM IP address that has been provided is reachable or not to retrieve data. This status field is populated when you click **Submit** after you have entered the required information. **Reachable** is displayed on successful communication with DCNM, and **Unreachable**, in case the connection is unsuccessful.

Create Incident - Select this checkbox in case you need incidents to be raised automatically for alarm events.

User - Create a new user and add the user name in this field. The Caller field in the incidents that are created is populated with this user name. This field is auto-populated as you type. You can also click the search icon next to this field to bring the Users window. You can then select a user from the list that is displayed.

Category - Click the lock icon by to create incidents automatically for specific categories only.

Incidents will be created for the selec	ck Category nave "Critical" status from DCNM.
Category	۵

Select the required category for which incidents have to be created from the drop-down list below the **Category** window. The available categories for creation of incidents are CPU,

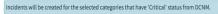
DEVICE_ACCESS_SNMP,DEVICE_ACCESS_SSH, and MEMORY. Refer the following table for more information on this.

Incidents will be created for t

Submit

Category	Data Collection in ServiceNow	Incident Raised	Incident Rule	ServiceNow Incident details
СРИ	Yes	Yes	DCNM Alarm severity = 'Critical'	Priority = 2 Urgency = 2 Impact = 2
Memory	Yes	Yes	DCNM Alarm severity = 'Critical'	Priority = 2 Urgency = 2 Impact = 2
Power	Yes	No	NA	NA
Linkstate	Yes	No	NA	NA
ICMP	Yes	No	NA	NA
SNMP	Yes	Yes	DCNM Alarm severity = 'Critical'	Priority = 2 Urgency = 2 Impact = 2
SSH	Yes	Yes	DCNM Alarm severity = 'Critical'	Priority = 2 Urgency = 2 Impact = 2

Table 1: Events & Incidents





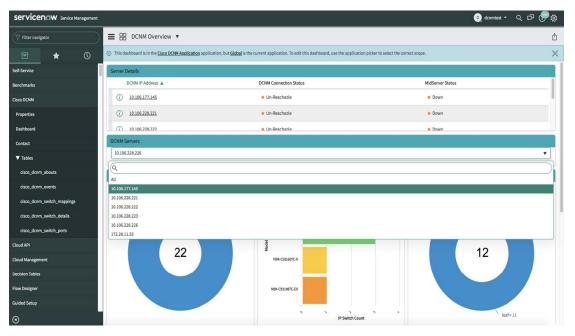
Now, click Submit.

Viewing the Dashboard

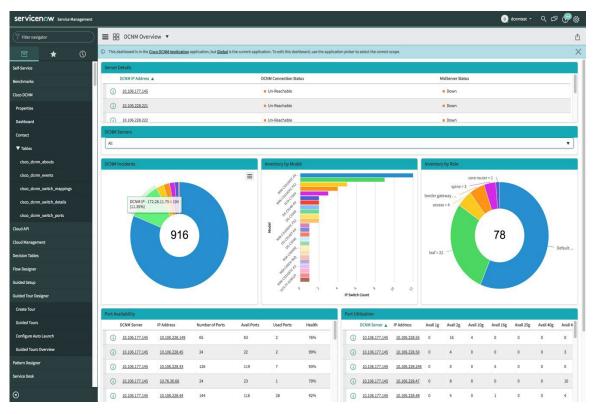
Choose **Cisco DCNM>Dashboard** to display the dashboard. The **DCNM IP Address**, the **DCNM Connection Status** and the **MidServer Status** are displayed at the top of the dashboard.

Servicenow. Service Management					D denmtest 🕶 📿 🗗 🥐 🕸
Filter navigator	E B DCNM Overview V				ĉ
🖻 ★ 🕓	Server Details				
Self-Service	DCNM IP Address 🔺	DCNM Connection S	tatus	MidServer Status	1
Benchmarks	(i) <u>10.106.177.145</u>	Reachable		• Up	
Cisco DCNM	(i) <u>10.106.228.223</u>	Reachable		 Up 	
Properties	DCNM Servers				
Dashboard	10.106.228.223				•
Contact	DCNM Incidents	Inventory by Mo	del	Inventory by Role	
▼ Tables					
cisco_dcnm_abouts		DS-C91485-+	9	leaf=1	
cisco_dcnm_events			-		
cisco_dcnm_switch_mappings		DS-C970	6		
cisco_dcnm_switch_details		Model	-		
cisco_dcnm_switch_ports	1	N9K-C9272	Q		8
Cloud API			-		
Cloud Management		N9K-C93180YC-F	x		
Decision Tables					
Flow Designer			© IP Switch Count	5	Default_SAN = 7
Guided Setup					
Guided Tour Designer	Port Availability DCNM Server IP Address N	umber of Ports Avail Ports Used Ports	Health DCNM Server	IP Address Avail 1g Avail 2g	Avail 10g Avail 16g Avail 25g Avail 40
Create Tour		75 69 6	79% (i) <u>10.106.228.22</u>		
Guided Tours		96 70 26	98% (i) 10.106.228.22		0 0 0 4
Configure Auto Launch					
	(i) <u>10.106.228.223</u> <u>10.106.228.251</u>	54 33 21	98% (i) <u>10.106.228.22</u>	<u>3 10.106.228.251</u> 0 0	3 17 0 0
0	i <u>10.106.228.223</u> <u>10.106.228.245</u>	48 41 7	93% (i) <u>10.106.228.22</u>	<u>3 10.106.228.244</u> 0 0	0 21 0 0

The **DCNM Servers** section displays the IP address of the DCNM server from which the data is being retrieved and displayed. Click the dropdown list to select any other DCNM server as per your requirement.



Click **All** to retrieve and display data from all the DCNM Servers that are displayed in the dropdown list. When the **All** option is selected, the number of incidents that are displayed in the DCNM Incidents donut are color-coded and displayed based on the different DCNM server IP addresses. The Inventory by Model and



Inventory by Role donuts also display data from all the DCNM servers. The Port Availability and Port Utilization donuts display data along with the DCNM Server that each IP address belongs to.

DCNM Incidents - This displays the number of incidents that have been raised based on the alarms retrieved from DCNM. Click the donut for more details about the

	Incidents	New Search Upd	lated 🔻	Search							√ ≪ ≪	1 to 1 of 1	> >
\bigtriangledown	All>DCN	M IP Address = 10.106.228.	.223 > Active = true	> DCNM IP Addre	ss is not empty .or. Correlati	ion display start	s with DCNM > Co	orrelation displ	ay = DCNM IP - 10.1	06.228.223			
203		E DCNM IP Address	≡ Number	\equiv Opened	\equiv Short description	≡ Caller	■ Priority	≡ State	≡ Category	■ Assignment group	\equiv Assigned to	■ Updated ▼	≡ Update
	i	10.106.228.223	INC0011103	2020-04-01 05:40:16	DCNM Server Alert	Cisco DCNM	• 2 - High	New	Inquiry / Help	(empty)	(empty)	2020-04-01 05:40:16	system
	Actions of	on selected rows \$									44 4	1 to 1 of 1	• ••
										Response time(mage)	i): 1700, Network: 5, serve	r: 958, browser: 737	
1_													~

Inventory by Model - This displays the number and type of switches present in DCNM. Each band represents a device model. Click a band for more

3	୍ ≡	■ Name	≡ IP Address	≡ Serial number	■ Model number ▲	\equiv Operational status	≡ Ports	≡ Status		■ DCNM IP Address	≡ Comments
		Search	Search	Search	=DS-C9148S-K9	=1	Search	Search	Search	=10.106.228.223	Search
	(i) <u>sv</u>	w-9148S-245	10.106.228.245	JAF17524XX9	DS-C9148S-K9	Operational		48 Installed		10.106.228.223	Loaded via DCN API
	Actions on sel	elected rows \$								44 4 1	to 1 of 1 🕨 🕨

Inventory by Role - This displays the number and types of switch roles present in DCNM. Click the required section to display the number of roles that are operational and click on that pictorial representation to display more details about the roles.

Note

The number that is displayed in the Inventory by Role donut does not change in case switches are removed from DCNM. The switches that are removed are displayed as Non Operational and there is no change in the number that is displayed in the donut.

\mathbf{P}	All > DCM	IM Server = 10.106.228.22	23 > DCNM Server is	not empty > Switch DB	ID Switch Role = leaf	Switch DB ID Operationa	l Status = Operation	al				
(j):	Q	DCNM Server	≡ IP Address	Switch DB ID	≡ Switch Role	\equiv Number of Ports	■ Avail Ports	\equiv Used Ports	≡ Peer	E Peer Switch DB ID	■ VPC Domain	E License Detai
		Search	Search	Search	Search	Search	Search	Search	Search	Search	Search	Search
	i	10.106.228.223	10.106.228.57	44520	leaf	75	71	4		0	0	Permanent
	Actions	on selected rows \$									1 🚽 1 to	1 of 1 🕨 🕨

Port Availability - This displays information about port availability. The DCNM server and IP address along with the total number of ports, available ports, used ports and health of the switch is displayed. Click an IP address to display more

< = cisco_dcnm_switch_details 44520			@ # 000 U	pdate Delete 🛧 🗸
Number of Ports	75	Peer		
Switch DB ID	44520	Peer Switch DB ID	0	
Avail Ports	71	Switch Role	leaf	
Health	79%	Used Ports	4	
License Detail	Permanent	VPC Domain	0	
IP Address	10.106.228.57			
DCNM Server	10.106.228.223			
Comments				
Update Delete				
1			Response time(ms): 1251, Network: 17, server: 1	076, browser: 158

Port Utilization - This displays information about port utilization based on each IP address. The number of ports having 1G, 2G, 4G, 8G, 10G, 16G, 25G, 32G, 40G, and 100G availability, are displayed. Click an IP

address to display	more			
< cisco_dcnm_switch_port 60			1 200 1	Ipdate Delete 🛧 🗸
Switch DB ID	60			
Avail 10g	0	Avail 16g	4	
Avail 1g	0	Avail 25g	0	
Avail 2g	0	Avail 32g	0	
Avail 4g	0	Avail 40g	0	
Avail 8g	3	Avail na	0	
Avail 100g	0	Health	94%	
DCNM Server	10.106.228.223			
Comments				
Update Delete				
			Response time(ms): 1166, Network: 6, server: 1	058, browser: 102
1				v

Contact Us

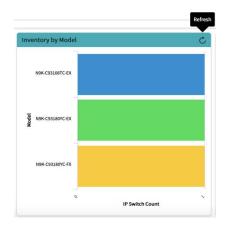
Choose **Cisco DCNM>Contact** to display an email address and a telephone number that can be used to contact Cisco Systems for any queries.

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Filter navigator	Cisco Data Center Network Manager
Self-Service Benchmarks Cisco DCNM	Contact Us: Email: tac@cisco.com Phone: 1408-556-7209
Properties Dashboard Contact	👌 Begona diminju) 101, katovik 284, anver 304, broastr 30

Troubleshooting DCNM Integration with ServiceNow

In case data is not being retrieved in the ServiceNow table:

- Check if the MID server is up or down.
- Check for information entries in system logs with the source "x_caci_cisco_dcnm".
- · Check the login credentials added in Cisco DCNM Properties.
- Consider a scenario in which data is being displayed on the ServiceNow dashboard for the selected DCNM server and then you want to display data for another DCNM server. In such a scenario, the ServiceNow dashboard may take some time to load data from the other DCNM server due to a delay in refreshing the cache. To refresh the data manually, click the **Refresh** icon that appears on the top right corner of the individual tiles when you hover the cursor over the tiles.



You can also refresh the whole dashboard by clicking on the **Dashboard Controls** icon \blacksquare and then clicking **Refresh** to load the reports correctly.

Ξ	DCNM Overview 🔻
Е	New Dashboard
Г	Duplicate Dashboard
	Copy Dashboard URL
	Launch Dependency Assessment
	Create Favorite
0	Refresh Reset Filters

For more information on DCNM application integration with ServiceNow, click here.