

# **DCNM Integration with ServiceNow**

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## **DCNM Integration with ServiceNow**

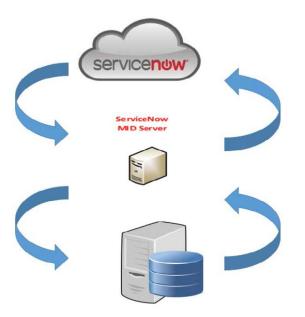
ServiceNow offers applications for IT Service Management (ITSM) and IT Operations Management (ITOM). There are four primary modules - inventory discovery, incident management, event management & change management workflows. Starting from Cisco DCNM Release 11.3(1), we provide Cisco DCNM integration with 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



### **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.

	All			
(j):	Q	DCNM IP Address	≡ MidServer Status	DCNM Connection Status
		Search	Search	Search
	í	10.106.177.145	• Up	Reachable
	í	10.106.228.223	• Up	Reachable
	(i)	10.106.228.226	• Up	Reachable
	Actions	on selected rows \$		1 to 3 of 3 >>

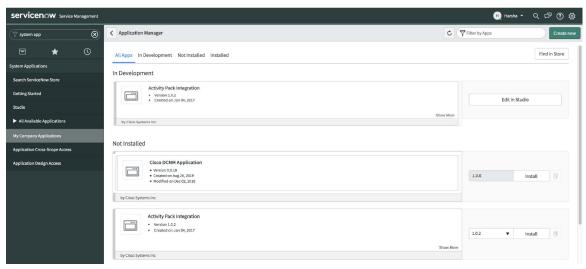
- Scheduled scripts to retrieve data are run only after insertion of a server record in the **Cisco DCNM>Properties** table.
- In case the mid-server IP Address and credentials in the Cisco DCNM>Properties table are changed, the data that was imported using the previous mid-server is deleted from the 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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Cy dcnm	$\otimes$	)
	<b>*</b> ©	
Cisco DCNM		
Properties		
Dashboard		
► Tables		

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

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Trid serv			Ξ	MID Serve	ers [Discovery view	/] New Patte	rn Sync to Mid	Search Name	▼ [\$earch					1 to 1 of 1 🕨 🕨
0	*	Clear	· ·	All										
		1		Q	■ Name ▲	■ Host name	≡ Status	Validated	≡ Version	Last refreshed	Started	$\equiv$ Stopped	Logged in user	Unresolved issues
Discovery			-	-					madrid-12-18-2018 patch7a-10-01-		2019-11-20	2019-11-20		
MID Servers				()	midserverone	test	<ul> <li>Up</li> </ul>	Yes	2019_10	2019-12-06 01:29:03	16:42:53	16:38:37	dcnmmidserveruser	• 0
MID Server				Actions	on selected rows \$									1 to 1 of 1 🕨 🕨
Installation Instru	ictions													Ċ

**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**.

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Name		Туре	Value	
glide.http.outbound.max_	timeout.enabled	True/false	False	
Servicenow Service Management			(H) Harsh	a• Q  ∰ &
(y denm	MID Server Property New record			🖉 👬 000 Submit
	erver Properties allow administrators to	o configure a MID Server with additional configuration parameters to alter any default behavior. <u>More Inf</u>	2	
Cisco DCNM	Application	Global		0
Properties	Name	glide.http.outbound.max_timeout.enabled		
Dashboard	Value	false		Ĩ
▼ Tables	L			
cisco_dcnm_abouts	MID server	midserverone	م	0
cisco_dcnm_events	nit			
cisco_dcnm_switch_mappings				
cisco_dcnm_switch_details				Φ
cisco_dcnm_switch_ports				

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

Servicenow Service Management	0) Hanha • Q 다 (夢 @
Timid serv	✓
e \star O	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	🗏 Configuration Parameters New Search Parameter name ¥ Search
MID Servers	ID server = midserverone
MID Server	(b)         Q         ≡ Parameter name         ≡ Value
Installation Instructions	i mid przywase, przy true
Downloads	with https://dcamil.service.now.com/
Dashboard	08 taa.,waxa,kim ()
Servers	() mid.instance.username dcnmmidserveruser

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

servicer	OW. Servic	e Management			Harsha 🥆	- c	λ 🖻	? 🌣	
🖓 dcnm		۲	K = MID Server Configuration Param	neter		1	÷ ••	• Submit	]
	*	O	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	Q	0			
Dashboard			Value	true					
► Tables			Submit						
								<i></i>	
								Ū	

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

< E DCNM Properties New record		Ø	ŧ	000	Submit
Ensure 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					
Incident Creation from the DCNM Alarms					
Create Incident					
* User	Cisco DCNM Q	0			
Incidents will be created for the selected ca	tegories that have 'Critical' status from DCNM.				
* Category					
Submit					
	(↑) Response time(ms): 1511, Network: 398, server	1029, br	owser: 84	R.	

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 Unlock Category	nave 'Critical' status from DCNM.
Category 🛆	

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,

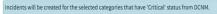
DEVICE\_ACCESS\_SNMP,DEVICE\_ACCESS\_SSH, and MEMORY. Refer the following table for more information on this.

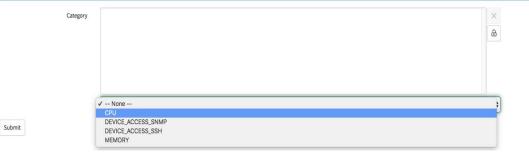
Incidents will be created for t

Submit

Category	Data Collection in ServiceNow	Incident Raised	Incident Rule	ServiceNow Incident details
СРU	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





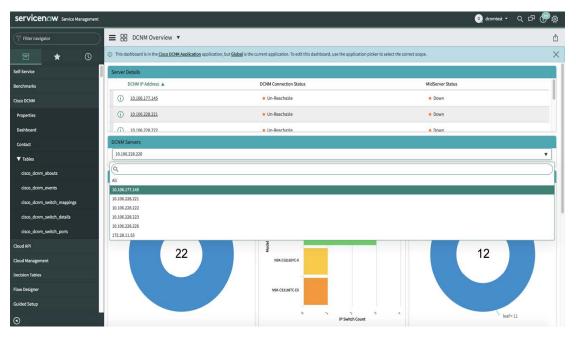
Now, click Submit.

### **Viewing the Dashboard**

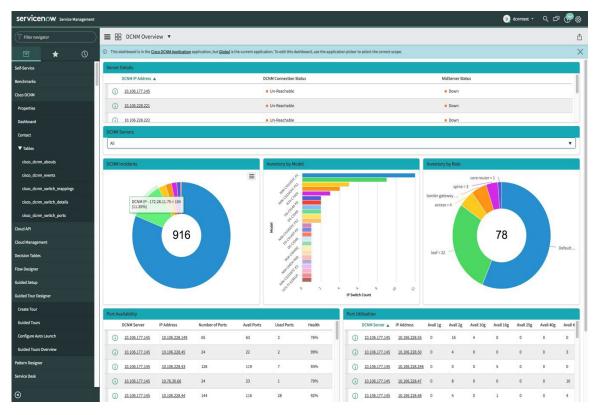
Choose **Cisco DCNM>Dashboard** to display the dashboard. The **DCNM IP Address**, the **DCNM Connection Status** and the **MidServer Status** are displayed at the top of the dashboard. 

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Filter navigator		rview 🔻													Ć
<b>□</b> ★ <b>(</b>	Server Details														
Self-Service	DCNM IP Addres	5 A		DCM	IM Connection Sta	itus				MidServ	ver Status				_
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														۳
Contact	DCNM Incidents				ventory by Mod	al			Inve	entory by I	Pole				
▼ Tables	Denni incidents				ventory by Mou	-				entory by	NULE				
cisco_dcnm_abouts					DS-C9148S-K9						leaf=1				
cisco_dcnm_events						_			_						
cisco_dcnm_switch_mappings					DS-C9706										
cisco_dcnm_switch_details				1	labox	-						~			
cisco_dcnm_switch_ports		1			N9K-C9272Q							8			
Cloud API						_									
Cloud Management					N9K-C93180YC-FX										
Decision Tables						_									
Flow Designer						0	IP Switch	Count	~				De	efault_SAN = 7	
Suided Setup															_
Suided Tour Designer	Port Availability DCNM Server	IP Address	Number of Ports	Avail Ports	Used Ports	Health	Port Uti	DCNM Server	IP Address	Avail 1g	Avail 2g	Avail 10g	Avail 16g	Avail 25g	Avail 40
Create Tour	(i) 10.106.228.223		75	69	6	79%	(i)	10.106.228.223	10.106.228.245	1	0	0	4	0	0
Guided Tours	(i) <u>10.106.228.223</u>		96	70	26	98%	<u>(</u> )	10.106.228.223	10.106.228.57		0	0	0	0	4
Configure Auto Launch															
	(i) <u>10.106.228.223</u>			33	21	98%	<u>(</u> )	10.106.228.223	10.106.228.251		0	3	17	0	0
0	i <u>10.106.228.223</u>	10.106.228.245	48	41	7	93%	i	10.106.228.223	10.106.228.244	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	<b>&gt; &gt;</b>
$\bigtriangledown$	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	<b>≡</b> Number	$\equiv$ Opened	$\equiv$ Short description	<b>≡</b> Caller	■ Priority	<b>≡</b> State	<b>≡</b> Category	■ Assignment group	$\equiv$ Assigned to	■ Updated ▼	<b>≡</b> 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_													<b>~</b>

**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

2 0	2	<b>≡</b> 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
	<b>(i)</b>	sw-91485-245	10.106.228.245	JAF17524XX9	DS-C9148S-K9	Operational		48 Installed		10.106.228.223	Loaded via DCN API
A	ctions on	selected 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.

	All > DCN	IM Server = 10.106.228.22	3 > DCNM Server is	not empty > Switch DB	ID Switch Role = leaf	> Switch DB ID Operationa	l Status = Operation	al				
<u>نې</u>	Q	DCNM Server	■ IP Address	E Switch DB ID	E Switch Role	$\equiv$ Number of Ports	■ Avail Ports	$\equiv$ Used Ports	≡ Peer	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 \$								44	1 d 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				oo Update	Delete 个	¥
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						
			Response time(ms): 1251, Network: 17,	', server: 1076, brows		
1					×	٤J.

**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			<i>P</i> ‡ ••••	Update Delete	r
Switch DB ID	60			1	
Avail 10g	0	Avail 16g	4	j	
Avail 1g	0	Avail 25g	0		
Avail 2g	0	Avail 32g	0		
Avail 4g	0	Avail 40g	0	j	
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:	: 1058, browser: 102	
1			•	v	

### **Contact Us**

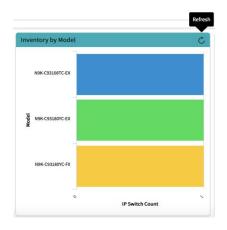
Choose **Cisco DCNM>Contact** to display an email address and a telephone number that can be used to contact Cisco Systems for any queries.

servicenow. Service Management	ව domitest - Q ක් ල මූ
Filter navigator	Cisco Data Center Network Manager
Self-Service Benchmarks Cisco DCNM	Contact Us: Email : tac@cisco.com Phone : +1408 526-7209
Properties Dashboard	👌 Begorat Entrophys 2007, Betravet: 200, server: 700, Increase: 200
Contact	

### 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.

DCNM Overview	•
New Dashboard	1.4
Duplicate Dashboard	
Copy Dashboard URL	
Launch Dependency Assessment	
Create Favorite	
Refresh Reset Filters	

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