

# **SWIM Closed Loop Automation**

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### **About SWIM Closed Loop Automation**

This release supports closed loop automation for software image management (SWIM) between Cisco DNA Center and ServiceNow. Closed-loop automation consists of a user configuring the provisioning of software device images in Cisco DNA Center. This configuration information is then communicated directly from Cisco DNA Center to ServiceNow as an immediate or scheduled change request. The ServiceNow administrator reviews the change request and either approves or rejects it in ServiceNow. The change request acceptance or rejection is then communicated back to Cisco DNA Center.

After receipt of an approved change request from ServiceNow, Cisco DNA Center performs the software update at that time (immediately) or at its scheduled future time.

After Cisco DNA Center successfully performs the software update, a notification (task completed) is sent back to ServiceNow. If the software update fails, then this is also communicated back to ServiceNow (task fail), so that the user can then manually perform the software update in Cisco DNA Center.



Note

If the SWIM provisioning is stopped by the user in Cisco DNA Center during this process, a task termination notification is sent to ServiceNow.

Ensure that the Cisco DNA app (version 2.2.0) is installed within the ServiceNow instance and perform the following procedures to enable SWIM closed loop automation between Cisco DNA Center and ServiceNow:

- 1. Review the requirements to ensure that the prerequisites for this feature have been met. See SWIM Closed Loop Automation Requirements, on page 2.
- 2. Review the SWIM closed loop automation workflow to ensure that the required Cisco DNA Center admin and ServiceNow admin tasks are performed for this feature. See SWIM Closed Loop Automation Workflow, on page 2.

# **SWIM Closed Loop Automation Requirements**

The following table lists the requirements for SWIM closed loop automation.

#### Table 1: SWIM Closed Loop Automation Requirements

Software Product, App, or Procedure	Requirement
Cisco DNA Center	The latest Cisco DNA Center release.
Service Now	Any compatible version of ServiceNow mentioned on the ServiceNow Store website.
	Click the following link to access the ServiceNow Store website:
	https://store.servicenow.com/sn_appstore_store.do#!/store/application/ 03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0
Cisco DNA Center app	Cisco DNA app (version 2.2.0)
	This app is available through the ServiceNow website located at:
	https://store.servicenow.com/sn_appstore_store.do#!/store/application/ 03eb0f4ddbf6ba00f27978b5ae96197b/2.2.0
	The Cisco DNA app must be installed in your ServiceNow instance by a ServiceNow administrator. The Cisco DNA app versions 2.1.1 and 2.0.1 are compatible with the Tokyo and Utah releases of ServiceNow. If you want to use the Vancouver release of ServiceNow, you must first upgrade the Cisco DNA app to the latest version, 2.2.0.
Cisco DNA Center-to-ServiceNow ITSM integration	See Cisco DNA Center Integration with ServiceNow Using the Cisco DNA App.

## **SWIM Closed Loop Automation Workflow**

The following table describes the SWIM closed loop automation workflow between Cisco DNA Center and ServiceNow.

#### Table 2: SWIM Closed Loop Automation Workflow

Step	Description	1
Step 1	The Cisco I in the netw	DNA Center admin configures the Image Repository to prepare for the provisioning of devices ork.
	Note	See the Manage Software Images chapter in the <i>Cisco DNA Center User Guide</i> for information about setting up the Image Repository, as well as to review the software image provisioning process.

Step	Description											
Step 2	The Cisco DNA Center admin distributes the software image to a device or schedules this activity for a later time.	e or device	s at the present ti									
	NoteBefore this step is done, ensure that the Cisco DNA Center Automation events for IT (ServiceNow) bundle is configured and activated.											
	• From the Cisco DNA Center home page, the admin clicks <b>Provision</b> > <b>Inventory</b> .											
	• From the <b>Focus</b> drop-down list, the admin chooses <b>Software Imag</b> the image to upgrade.	ges and sel	ects the device w									
	• From the <b>Actions</b> drop-down list, the admin chooses <b>Software Ima</b> the following:	ages > Upo	date Image and									
	• <b>Distribute</b> : Clicks <b>Now</b> to start the distribution immediately o distribution at a specific time.	r clicks La	ter to schedule									
	• Clicks <b>Next</b> .											
	A director Clicks Norr to start the extinction immediately or al	iales Tatam	to ask dula the									
	<ul> <li>Activate: Clicks Now to start the activation immediately or clactivation at a specific time.</li> <li>Confirm: Clicks Confirm to confirm the update.</li> <li><i>Figure 1: Cisco DNA Assurance Provision</i></li> </ul>	icks <b>Later</b>	to schedule the									
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	activation at a specific time. • Confirm: Clicks Confirm to confirm the update. Figure 1: Cisco DNA Assurance Provision vertex y Plag and Play vertex (second provided (seco	Last updated: 9:1	<b>E</b> 14									
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	activation at a specific time. • Confirm: Clicks Confirm to confirm the update. Figure 1: Cisco DNA Assurance Provision Very Plag and Play Very	Last updated: 3:17 Device Role Image 9 DISTRBUTION 15.0(1 9 ACCESS 8.8.12 9 ACCESS 8.8.12 9 ACCESS 8.8.97 9 ACCESS 8.5.97	Image: Second Condition         Image: Second									
	activation at a specific time. • Confirm: Clicks Confirm to confirm the update. Figure 1: Cisco DNA Assurance Provision Very Value Assurance Provision Ver	Last updated: 3:13 <b>Device Rels</b> Integr 0 DISTINGUIDON 15:0(1 0 ACCESS 8:8:17 0 ACCESS 8:5:97 0 ACCESS 8:5:97 0 ACCESS 8:5:97	E         2-           0 PM         Export         C Referent           Version         Q persone         I           15%4         2 999 days 20 hm 3         I           10         65 days 02 hm 3         I           101         96 days 02 hm 34         I           1131         96 days 01 hm 34         I           1281         96 days 01 hm 34         I									
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15 16 16 16 16 16 16 16 16 16 16 16 16 16	o 4	In the <b>Change</b> open and revier request. For ex Management' fr request with in <i>Figure 3: Change R</i>	Requests tal w its status a ample, the ac for the Assign formation in request ( = moderne care backgroup	notes, the Servic nd data. In the lmin can char <b>ment group</b> the <b>Short De</b>	eNove Servage th The scrip	v admi viceNov e <b>State</b> Service <b>tion</b> fie	n clicks the w GUI, the e from 'Nev eNow adm eld.	e change e Servicel w' to 'Sch in can al nore - nore - nore - nore - s. Harring	request Now ad leduled' so ident controction controction controlocity	min can edit the and enter 'Char ify the SWIM c					
Watch list (a) (b) (b) (b) (b) (b) (b) (b) (b) (b) (b	p 4	In the <b>Change</b> open and revier request. For ex Management' fr request with in <i>Figure 3: Change R</i>	Requests tal w its status a ample, the ac for the Assign formation in request ( = moderne care backgroup	notes, the Servic nd data. In the lmin can char <b>ment group</b> the <b>Short De</b>	eNove Servage th The scrip	v admir viceNov e <b>State</b> Service <b>tion</b> fie	n clicks the w GUI, the e from 'Nev eNow adm eld.	e change e Servicel w' to 'Sch in can al nore - nore - nore - nore - s. Harring	request Now ad leduled' so ident controction controction controlocity	min can edit the and enter 'Char ify the SWIM c					
	р4	In the <b>Change</b> open and revier request. For ex Management' fr request with in <i>Figure 3: Change R</i>	Requests tal w its status a ample, the ac for the Assign formation in request ( = moments Computed	Incollipse Incollipse Cinco Employee 1001 Incollipse Cinco Employee 1001 Incollipse Cinco Employee 1001 Incollipse Cinco Employee 1001 Incollipse Cinco Employee 1001 Incollipse Cinco Employee 1001	eNove Servage th The scrip	v admir viceNov e <b>State</b> Service <b>tion</b> fie	n clicks the w GUI, the e from 'Nev eNow adm eld.	e change e Servicel w' to 'Sch in can al nore - nore - nore - nore - s. Harring	request Now ad leduled' so ident controction controction controlocity	min can edit the and enter 'Char ify the SWIM c					
	p 4	In the <b>Change</b> open and revier request. For ex Management' fr request with in <i>Figure 3: Change R</i>	Requests tal w its status a ample, the ac for the Assign formation in request ( = more clear biotecost Compute time * Short decrypton biotecost Compute time * Short decrypton biotecost Compute time	Inconsists Deternament SELECTOR And A Service Inconsists Deternament SELECTOR And A Service Deternament SELECTOR And A Service Incomplete 1001 Deternament SELE	eNove Servage th The scrip	v admir viceNov e <b>State</b> Service <b>tion</b> fie	n clicks the w GUI, the e from 'Nev eNow adm eld.	e change e Servicel w' to 'Sch in can al normality norma	request Now ad leduled' so ident controction controction controlocities controloc	min can edit the and enter 'Char ify the SWIM c					

Step	Description										
Step 5		clicks the <b>Cisco DNA</b> tab in the ch VA Center to ServiceNow can be vi	ange request. Important additional data ewed in this tab.								
			ن و و و و و و و و و و و و و و و و و و								
	Filter navAgator	● √ 芒 …	Follow - Update Create Cisco DNA Change Request Resolve Delete								
	A Home	NC0011945 Contact type Clisco Emoloyee1001 Q, PG Q State	- None - •								
	K Caller     Category     Category	Cisco Employee1001 Q, et C Inquiry/Help • Impact	4 · ·								
	Events - All Subcategory	- None • Utgency	4								
	Alerts - All     Configuration item	Q         Priority           Q         B           Q         B           Q         B	S-Planning								
	i Incidents - All import Sets	Assigned to									
	* Short description	Device name 'CSR_REG_4.cisco.com' at site 'Global/Bangalom/Electronic city' - BGP peering with neighbor '1.1.1.1' failed due to J	utonomous System (AS) Number m 🛛 🖗								
		Related Search Results >									
	Notes Related Records Closure Informatio	n Cisco DNA									
	Cisco DNA Network Userid										
	Cisco DNA Event Domain Cisco 360 Wew	None	<ul> <li>▼</li> <li>B</li> </ul>								
	•										
Step 6	The ServiceNow admin now	either approves or rejects the change	e request ticket in the ServiceNow GUI.								
Step 0			•								
	· · · · · · · · · · · · · · · · · · ·		l Status field and clicks either Approved								
	to approve the request or <b>Re</b>	jected to reject the request.									
		ge request is executed, it must be ap riceNow will the change request be	pproved in ServiceNow. Only after an executed in Cisco DNA Center.								
	Figure 5: Cisco DNA Approval Statu	s Field									
	(Titler navigator Change Request CH60030377		🔗 🔨 💳 640 Follow - Review Update Deleter								
	Planning Schedule Conflicts Not	es Closure Information Cisco DNA									
	Self-Service Cisco DNA Network Userid										
	Homepage Clisco 360 View Clisco DNA Network Details	image Details:	۵								
	Business Applications Dashboards	a) Running Image Name: csr2000-universalik/16.06.04.5PA.bin Uulii: 4b42ac14-bdbl-488e-a29d-d6342d90057c									
	Service Catalog	Version: 16.6.4 Size in Bytes: 44692391 Di Gidden: Image									
	Knowledge	Name: CSR1000/[16.03.06] Ukud: undefined Version: 16.03.06									
	Visual Task Boards	Size in Bytes: undefined									
	Connect Chat Clisco DNA Event Domain										
	Incidents Cisco DNA Event Details and Suggested Actions	Event Details Device Upgrade Status: OUTDATED									
	Watched Incluents My Requests	Suggested Actions Action: undefined									
	Requested items Class DNA Event Id	cb068873-756-447e-a245_18c8d8dc4b08									
	Watched Requested Items Cloco Unix Events to My Connected Apps	CDV8887.8-788-4474-245-36CD080C4D08									
	Approval Status	✓ None Apptoved Rejected									
	Ny Tagged Documents Related Links										
	Ny Tags Calculate Risk Ma Knowleden Anticlae										
	Workflow Context	Approvers Change Tasks (2) Problems Incidents Fixed By Change Incidents Caused By Change									
	Principal La Princ										
	Metted Ca impacted Services/Cbi Approvers Change Table [2] Problems incidents Failed by Change incidents Caused by Change										
Step 7	After the ServiceNow admir	approves the ticket and the status of	of the change request is changed to								
Step 7		approves the ticket and the status of sent to Cisco DNA Center. In case t									
Step 7	Implement, a notification is a		he ticket is rejected, the update is sent to								

I

Step	Description								
Step 8	After a successful software image update in Cisco DNA Center, a notification (task completed) is sent back to ServiceNow. ServiceNow then closes the change request ticket. The change request ticket closur is done through the use of APIs from the Cisco DNA app.								
	<b>Note</b> For a failed software update, ServiceNow reports the failure so that the ServiceNow admin can manually take action on the change request ticket. For a terminated software update, the change request ticket is canceled in ServiceNow. The reporting of both a failed software image update and a terminated software image update are also done through the use of APIs from the Cisco DNA app.								
Step 9	The Cisco DNA Center admin can review the SWIM event by choosing <b>Runtime Dashboard</b> > <b>Event Summary</b> .								
	Note       By clicking the individual events in the GUI window, the admin accesses additional GUI windows that permit direct access to the event in ServiceNow.         Figure 6: Event Summary								
	Runtime Dashboard								
	API Summary 0 Event Summary 0								
	Call Status								
	12 <sup>V</sup> Filter EQ Field								
	Total API's Domain * Event Name Count 0								
	Know Your Vetwork BSP Turnel Connectivity 6 DNA Event Severity Count Know Your Vetwork Islenger Darks Connectivity (SSP Educency Failure 6								
	Completed Call Performance 1 0 API Name Vencio Aversoe Low Hab 2 12								
	No data to display Low Input 2 0 0 No data to display 4 0 5 0 Showing 2 of 2								
	Integration Flow Summary 0								
	REST-Busied (0) 1.0 Failed Schedule-Based (0) 1.0 Failed								

	Descript	ion											
Step 10	The Cisc	The Cisco DNA Center admin clicks an event name (link) to view additional detailed data.											
	Figure 7: E	Figure 7: Event History											
	BGP Tunne	el Connec	tivity (6)										
	Last 6 hours ∨								v seconds ago 📿 Refres				
	<i>∀∀</i> Filter							ΞQ	Find				
	Event Id	Source	Event Flow Destination	ITSM	ITSM Status	ITSM Id	ITSM Link	ITSM Last UpdatedTime 👻	ITSM Entity Severity/Priority				
	ecf17b41- 4148-45a3- b777- 630effbe8623	ServiceNow	DNACP	Incident	In Progress	INC0011945	https://ven02561.service-now.com/nav_to uri=incident.do? sys_id=6321ee6bdba44c506415f482ba96	.do? October 23rd 2019, 9:32:34	5 - Planning				
	697d3d6a- 64d-4617- a596- 5bb84d075830	ServiceNow	DNACP	Incident	Resolved	INC0011943	https://ven02561.service-now.com/nav_to uri=incident.do? sys_id=45dbd263dbs44c506415f482ba96	2019, 9:00:39	5 - Planning				
	c668fc12- 04be-45a8- a034- 9891ee4a24af	ServiceNow	DNACP	Problem	Closed/Resolved	PR80040050	https://ven02561.service-now.com/nav_to uri=problem.do? sys_id=f8c89a63dba44c506415f482ba961	2019, 8:39:13	4 - Low				
	667d5d31- 5d88-4e7d- bdc7- a9b5d9b172ae	ServiceNow	DNACP	RFC	Scheduled	CHG0030363	https://ven02561.service-now.com/nav_to uri=change_request.do? sys_id=4418cae7db68c850475a5ad3ca961	2019, 7:31:23	4 - Low				
	21d6464e- 8a60-4e4b- 963e- 1551a423bfb3	ServiceNow	DNACP	Incident	Resolved	INC0011941	https://ven02561.service-now.com/nav_to uri=incident.do? sys_id=a4d68a27db68c850475a5ad3ca96	2019, 7:20:14	5 - Planning				
	84edad3b-						https://ven02561.service-now.com/nav_to	do? October 23rd					
Step 11	Figure 8: E	event.		r admin	i clicks ar	i event II	D number (link) to	o view only	data assoc				
	< BGP Tunnel Conn Event Histo		7b41-414	8-45a3-	b777-630eff	be8623		Last Updated: a few	v seconds ago O Refres				
		ory - ecf1	7b41-414	8-45a3-	b777-630eff	be8623							
	Event Histo V Filter Last In-Ev	ory - ecf1	7b41-414 	17014	b777-630eff		ПЭМ Орда	ΞQ	Find DNA Event				
	Event Histo Filter Last In-Ev Source	Dry - ecf1	ITSM	ITSM Status	ITSM Id ITSM INC0011945 urfeir		Upda now.com/nav_to.do? Octob 2019,	EQ Last ITSM Entity	Find DNA Event Severity				
	Event Histo Filter Last In-Ev Source	Dry - ecf1 ent Flow Destination	ITSM Workflow	ITSM Status In Progress	ITSM Id ITSM INCO011945 Intos INCO011945 Intos INCO01945 Intos	Link ://ven02561.service-r cident.do?	Updar now.com/nav_to.do? Octob 2019, 06415/482ba9619fe am now.com/nav_to.do? Octob 2019, 2019, 2019,	EQ Last ITSM Entity tedTime • Severity/Pr	Find MA Event g 2				

Step	Description									
Step 12	The Cisco DNA Center admin clicks the ITSM Link to return to the ServiceNow Service Mana GUI and specific incident.									
	Figure 9: ServiceNow Inci	ident								
	servicenow Service Management					Cisco Employ	ee 1001 - Q 🗗 🕐 🚳			
	( Filter navigator	ut 11945			<i>₽</i> ∧ ≟ …	Follow • Update Create Cisco DNA	Change Request Resolve Delete			
	🖻 📩 🕓	Number	INC0011945		Contact type	- None	•			
	🔝 Home	* Caller	Cisco Employee 1001	Q 14 0	State	In Progress	•			
	E DNA App Log	Category	Inquiry / Help	•	Impact	4	•			
	Problems - All	Subcategory	None	*	Urgency	4	*			
	Events - All	Business service		Q	Priority	S - Planning				
	Alerts - All	Configuration item		9 ā 0	Assignment group		۹.			
	E Incidents - All				Assigned to		۹.			
		* Short description	Device name/CSR_REG_4.cisco.com' at site	'Global/Bangalore/Electronic cit	y' - BGP peering with neighbor '1.1.1.1' failed due to A	Autonomous System (AS) Number m	₽			
	Change - All	Description								
				Relat	ted Search Results 🗲					
	Notes Related R	Notes Related Records Closure Information Closo DNA								
		Watch list	8		Work notes list	â 2				
		Work notes	Work notes				-			
	•									