

# **Configuring IOA Using Cisco DCNM-SAN**

This chapter describes how to configure I/O Accelerator (IOA) using Cisco DCNM-SAN.

This chapter contains the following sections:

- IOA Manager, on page 1
- Launching IOA Manager, on page 3
- Configuring Sites, on page 3
- Configuring Clusters, on page 8
- Configuring Interfaces, on page 12
- Configuring Flows, on page 14

## **IOA Manager**

The IOA Manager is a graphical user interface (GUI) for configuring and managing IOA. The IOA Manager user interface consists of a navigation pane on the left that displays a hierarchy and an information pane on the right that displays the contents of the item that you click in the navigation pane. The hierarchy is a tree structure that contains elements that you can configure with IOA Manager. It also consists of a toolbar for quick access to the most commonly used options and a Fabric drop-down list box. The Fabric drop-down list box allows you to directly access the fabrics managed by Cisco DCNM-SAN. The Fabric drop-down list box will be available only if more than one fabric is open.



Note

- Cisco DCNM-SAN Client standalone supports IOA Manager from Release 5.0(1a).
- When you perform some of the time-consuming configuration activities using IOA Manager, the progress bar indicates that the configuration actions are in progress. You need to wait until the action is complete. You can click Stop to cancel the action. However, stopping the action may not roll back the transactions that were executed.

Figure 1: IOA Manager Main Window, on page 2 shows the IOA Manager interface.

😻 IOA Manager		
a 🚳 🖶 🖬 🖬	Fabric: Fabric_sw-sme-n2	Sites
🗄 💑 🔜 Sites 🗄 🎲 Clusters	s	
Name Name		
rtp		
sjc		
		🚰 Apply

#### Figure 1: IOA Manager Main Window

## Toolbar

The IOA Manager main toolbar provides icons for accessing the most commonly used operations as shown in Table 1: I/O Accelerator Toolbar, on page 2.

Table 1: I/O Accelerator Toolbar

lcon	Description
	Applies the changes.
	Refreshes the window.
-	Adds a cluster or interface.
	Deletes an existing entry.
	Displays a real-time chart of the selected switch.

L

# Launching IOA Manager

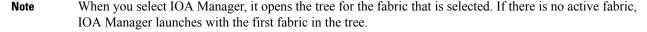
To launch IOA Manager, follow the below step:

Choose Tools > I/O Acceleration.

You see the Cisco DCNM-SAN main window as shown in Figure 2: Cisco DCNM-SAN Window, on page 3.

Figure 2: Cisco DCNM-SAN Window

🕽 IOA Manager		
	Fabric: Fabric_sw-sme-n2	Site
🗟 🛃 Sites	Sites	
- sic	Name	
🖯 🌐 Clusters	rtp	
	sk	
		Apply



# **Configuring Sites**

A site is described as a named set of switches. You can click the sites node to view the list of defined sites. There are two tables in the information pane: one for the assigned switches on the top and the another one for unassigned switches below the assigned switches table. You can click the name of the site to display the details in the information pane. Only active sites can be used for creating a clusters.

### Adding a New Site

To create a new site using IOA Manager, follow these steps:

#### **Step 1** Select Sites in the navigation pane.

You see the IOA Manager window as shown in Figure 3: IOA Manager, on page 4.

### Figure 3: IOA Manager

IOA Manager			
		Fabric: Fabric_sw-sme-n2	Sites
0 🛃 🔤 Add 0 🎯 Clusters	Sites		
- 😳 Ousters	Name		
	rtp		
	sjc		
	IL.		Apply

Step 2Click the Add icon on the toolbar.You see the site name dialog box as shown in Figure 4: Site Name Dialog Box, on page 4.Figure 4: Site Name Dialog Box

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- Step 3Enter the site name and then click OK.You see the select switch dialog box as shown in Figure 5: Select Switch Dialog Box, on page 4.Figure 5: Select Switch Dialog Box
  - ×
- **Step 4** Select a switch from the drop-down list box and then click OK.
- **Step 5** Click OK in the dialog box to confirm that you have successfuly created the site.

## **Removing a Site**

To remove a site using IOA Manager, follow these steps:

**Step 1** In the navigation pane, click the name of the site you want to delete.

You see the IOA Manager window as shown in Figure 6: IOA Manager Window, on page 5.

Figure 6: IOA Manager Window

<b>•</b>		Fabric: Fabri	ic_sw-sme-n2		Sites/sj		
Remove	gned Switches	1					
Name	IP Address	WWN	Sw Version	IOA License			
sw-sme-n	sw-sme-n1 172.23.144.95 20:00:00:0d:ec:3f:52 5.0(1) Eval License Grace Period: 27 days 14 hours 41 mins 2 s						
			# Add/R	emove			
	Unassigned Switches						
Name	IP /	Address	WWN	Sw Version	IOA License		

Step 2Click the Remove icon on the toolbar.You see the confirmation dialog box in as shown in Figure 7: Delete Confirmation Dialog Box, on page 5.Figure 7: Delete Confirmation Dialog Box

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**Step 3** Click **Yes** to confirm that you want to remove the site.

## **Viewing a Site**

To view a site using IOA Manager, follow these steps:

Step 1In the navigation pane, click Sites.You see the IOA Manager window as shown in Figure 8: Viewing Sites Using IOA Manager, on page 6.

#### Figure 8: Viewing Sites Using IOA Manager

👽 IOA Manager			
4 🕲 - H 🖿 🖻		Fabric: Fabric_sw-sme-n2	Sites
B Stes Gusters	Sites		
H Gusters	Name		
	rtp		
	sjc		
			g
			desda

- **Step 2** Expand the sites in the hierarchy.
- **Step 3** Click the name of the site to view the details in the information pane.

You see the site details as shown in Figure 9: Viewing Site Details Using IOA Manager, on page 6.

Figure 9: Viewing Site Details Using IOA Manager

@ -= 🖶 📰			Fabr	ic: Fabric_sw-sme-n2		Sites/rtp
Sites	Assig	ned Switches	1			
	Name	IP Address	WWN	Sw Version	IOA License	
Clusters	sw-sme-n2	172.23.144.96	20:00:00:0d:ec:	3f:05 5.0(1)	Eval License Grace Period:	27 days 22 hours 38 mins 23 se
				\$ Add/R	emove	
	Unas	signed Switch	nes	# Add/R	emove	
			nes Address	WWN	Sw Version	IOA License
	Unas					IOA License

## Adding Switches to a Site

To add a switch to a site, follow these steps:

- **Step 1** In the navigation pane, click **Sites**.
- **Step 2** Select the switches that you want to add from the Unassigned Switches table.
- **Step 3** Click **Add**, and then click **Apply**.

## **Removing Switches from a Site**

To remove a switch from a site, follow these steps:

**Step 1** In the navigation pane, click Sites.

You see the IOA Manager window as shown in Figure 10: Removing Switches from a Site Using IOA Manager, on page 7.

Figure 10: Removing Switches from a Site Using IOA Manager

Sites		ned Switches				
Clusters Clusters Interfaces Flows	Name	IP Address	WWN 20:00:00:0d:ec:3f:52	Sw Version		7 days 14 hours 41 mins 2 sec
⊢ <u>2</u> ¥ Plows		signed Switche		- Ren	nove	
	Name			WWN	Sw Version	IOA License

**Step 2** Click to select the switches you want to remove from Assigned Switches table.

**Step 3** Click Remove, and then click Apply.

# **Configuring Clusters**

You can select a cluster to see the details in the information pane. The upper table in the information pane displays the members of a named cluster, and the table below displays the statistical information about the cluster's active IOA interfaces.

## **Adding a New Cluster**

To create a new cluster using IOA Manager, follow these steps:

**Step 1** Select Cluster in the navigation pane and then click the **Add** icon on the toolbar.

You see the IOA Manager window as shown in Figure 11: IOA Manager - Add Clusters, on page 8.

#### Figure 11: IOA Manager - Add Clusters

		Fabric: Fal	oric_sw-sme-n2	1	Cluste
10	lusters				
Name	1	Status	Master IP	Sites	
ioa-1		online	172.23.144.95	sjc, rtp	

**Step 2** Enter the Cluster name, and then click **OK**.

You see the add Cluster name dialog box as shown in Figure 12: Add Cluster Name Dialog box, on page 8. Figure 12: Add Cluster Name Dialog box



**Step 3** Enter the Cluster name and then click OK.

You see the select switch dialog box as shown in Figure 13: Select Switch Dialog Box, on page 9.

	Figure 13: Seld	act Switch Dialog Box
	×	
Step 4	Select a sw	itch from the drop-down list, and then click <b>OK</b> .
	Note	You need to select a switch that you would like it to be the master switch as the seed switch when you create the IOA cluster. If you have multiple switches in a site, you may add all the switches in a site that you would like to manage from to the cluster before adding the switches from the remote site.
	You see a n	nessage box upon successfully creating a cluster as shown in Figure 14: Message Box, on page 9.
	Figure 14: Mes	ssage Box
	×	
Step 5	Click OK.	
	Note	If the master switch that you selected is not a member of the site, you may either need to add the switch to an existing site or to create a new site.

## **Removing a Cluster**

To remove a site using IOA Manager, follow these steps:

### **SUMMARY STEPS**

- 1. In the navigation pane, click the name of the cluster that you want to delete.
- 2. Click the **Remove** icon on the toolbar.
- 3. Click Yes to remove the cluster.

### **DETAILED STEPS**

**Step 1** In the navigation pane, click the name of the cluster that you want to delete.

You see the IOA Manager window as shown in Figure 15: Removing a Cluster Using IOA Manager, on page 10.

#### Figure 15: Removing a Cluster Using IOA Manager

Sites Remove rtp Sites rtp Clusters	Switch	IP Address				
I rtp Sic Clusters		IP Address				
Clusters			Site	Master	IOA License	
Interfaces	sw-sme-n1	172.23.144.95	sjc	yes	Eval License Grace Period: 27 days 14 hours 41 mins 2 second	onds
	sw-sme-n2	172.23.144.96	rtp	no	Eval License Grace Period: 27 days 22 hours 38 mins 23 se	conds
	and an	nce Statistics	orface	Device Packe	ts In/Out Device Bytes In/Out Compression Ratio	Errors

**Step 2** Click the **Remove** icon on the toolbar.

You see the Delete confirmation dialog box as shown in Figure 16: Remove Confirmation Dialog Box, on page 10. *Figure 16: Remove Confirmation Dialog Box* 

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**Step 3** Click **Yes** to remove the cluster.

## **Viewing Clusters**

To view a cluster using IOA Manager, follow these steps:

**Step 1** Click clusters in the navigation pane.

You see the IOA Manager window with clusters selected as shown in Figure 17: Viewing Clusters Using IOA Manager, on page 11.

@ # <b>*</b> Ø		Fabric: Fa	bric_sw-sme-n2	Chu	usters
🛃 Sites	Clusters				
rtp	Name	Status	Master IP	Sites	
Clusters	ioa-1	online	172.23.144.95	sjc, rtp	
Flows					

Figure 17: Viewing Clusters Using IOA Manager

- **Step 2** Expand the cluster in the hierarchy.
- **Step 3** Click the name of the cluster to view the details in the information pane.

You see the IOA Manager window with the cluster details as shown in Figure 18: Viewing Cluster Details, on page 11.

### Figure 18: Viewing Cluster Details

•			Fabric	: Fabric_sw-sme	-n2	Clust	ers/ioa
Sites	Cluster	r Members					
sic	Switch	IP Address	Site	Master	IOA License		
Clusters	sw-sme-n1	172.23.144.95	5 sjc	yes	Eval License Grace Period: 27 day	rs 14 hours 41 mins 2 se	conds
Interfaces	sw-sme-n2	172.23.144.96	i rtp	no	Eval License Grace Period: 27 day	rs 22 hours 38 mins 23 s	econds
	Interfa	ace Statistics					
	Interfa		nterface	Device Packet:	: In/Out Device Bytes In/Out	Compression Rabio	Error
	Interfa		Xerface	Device Packets	in/Out Device Bytes In/Out	Compression Rabio	Errors
	Interfa		nterface	Device Packet:	: In/Out Device Bytes In/Out	Compression Rabio	Error
	Interfa		nterface	Device Packet:	i In/Out Device Bytes In/Out	Compression Rabio	Error
	Interfa		nterface	Device Packet:	: In/Out Device Bytes In/Out	Compression Rabio	Errors

**Note** DCNM does not support configuration of multiple clusters with the same name in a fabric. This action is supported through CLI only.

# **Configuring Interfaces**

You can select the interfaces in a named cluster to see the details in the information pane. The upper table in the information pane displays information about active and configured IOA interface pairs associated with the cluster. The lower table in the information pane displays information about IOA interface candidates that are ready for use in the cluster.

### **Assigning Interfaces to a Cluster**

To add a new interface to a cluster using IOA Manager, follow these steps:

### **Step 1** Expand the cluster node in the navigation pane and click **Interfaces**.

You see the IOA Manager window as shown in Figure 19: Adding Interfaces Using IOA Manager, on page 12. *Figure 19: Adding Interfaces Using IOA Manager* 

sjc Clusters sjc sw-sme-n1 172.23.144.95 ioa 1 / 1 up Administratively up up	Implementation   Site   Switch   IP Address   Interface   Status Oper   Status Reason   Status Admin     Site   Switch   IP Address   Interface   Status Oper   Status Reason   Status Admin     Site   Switch   IP Address   Interface   Status Oper   Status Reason   Status Admin     Site   Switch   IP Address   Interface   Administratively up   up     The Switch Status   Interfaces   Interface   Add/Remove     Unassigned Interfaces   Unassigned Interfaces   Interfaces				Fabric: Fabric_s	w-sme-n2		Cluster	rs/ioa-1/Interfa
Site   Switch   IP Address   Interface   Status Oper   Status Reason   Status Administratively up     Custers   Site   Switch   IP Address   Interface   Status Oper   Status Reason   Status Administratively up   up     Interfaces   Interfaces   Interfaces   Interfaces   Interfaces   Interfaces     Interfaces   Interfaces   Interfaces   Interfaces   Interfaces	Site Switch IP Address Interface Status Oper Status Reason Status Admin Site Switch IP Address Interface Status Oper Status Reason Status Admin Site Switch IP Address Interface Status Oper Status Reason Status Admin Site Switch IP Address Interface Status Oper Status Reason Status Admin provide Status Administratively up up Administratively up up		As	signed Interfa	ces				
Custers ioa-1	Custers ios-1 interfaces Sic sw-sme-n1 172.23.144.95 ioa 1 / 1 up Administratively up up rtp sw-sme-n2 172.23.144.96 ioa 1 / 1 up Administratively up up # Addi/Remove Unassigned Interfaces		Site	Switch	IP Address	Interface	Status Oper	Status Reason	Status Admin
Interfaces Add/Remove  Unassigned Interfaces	Add/Remove	Clusters	sjc	sw-sme-n1	172.23.144.95	ioa 1 / 1	up	Administratively up	up
Add(Remove  Unassigned Interfaces	Add(Remove  Unassigned Interfaces		rtp	sw-sme-n2	172.23.144.96	ioa 1 / 1	up	Administratively up	up
							dd/Damou a		
				assigned Inter	faces	\$ A	dd/Remove		
			Un	11 TO 1				Status Oper 5	Status Reason

The information pane displays the Assigned Interfaces and Unassigned Interfaces tabs.

**Step 2** Select one or more interfaces from the Unassigned Interfaces table in the information pane and then click Add.

**Step 3** Click **Apply** to apply changes.

Note

- You can change the administrative status of an assigned interface by selecting up or down from the admin status drop-down list box and then click **Apply**.
- Cisco DCNM-SAN denotes all the candidate service engines that are not currently provisioned for any service as unconfigured in the unassigned interfaces table. When you select these interfaces, it will automatically provision these service engines for IOA, and configure them as a part of this IOA cluster.

## **Removing Interfaces from a Cluster**

To remove an interface from a cluster, follow these steps:

**Step 1** Expand the cluster node in the navigation pane and click **Interfaces**.

You see the IOA Manager window as shown in Figure 20: Removing Interfaces Using IOA Manager, on page 13.

Figure 20: Removing Interfaces Using IOA Manager

🤝 IOA Manager							
			Fabric: Fabric_s	w-sme-n2		Cluster	s/ioa-1/Interfaces
🛞 🛃 Sites	Ass	igned Interfac	es				
Gusters B III ioa-1	Site	Switch	IP Address	Interface	Status Oper	Status Reason	Status Admin
- MInterfaces	sjc	sw-sme-n1	172.23.144.95	ioa 1 / 1	up	Administratively up	up
Flows	rtp	sw-sme-n2	172.23.144.96	ioa 1 / 1	up	Administratively up	up
	1	assigned Interf	aces		Remove erface		
	Site	SWICH	IF Addre	59 JUN	eriace :	status Oper S	Ratus Reason
	1.16						Apply

- **Step 2** Select the switches from the Assigned Interfaces table that you want to remove.
- **Step 3** Click **Remove** to move the switches to Unassigned Interfaces table.
- Step 4 Click Apply.

# **Configuring Flows**

You can select the flows in a named cluster to see the details in the information pane. The upper table in the information pane displays information on active IOA flows. The lower table in the information pane displays information on candidate IOA flows.

## **Adding a Flow**

To add a flow in the cluster using IOA Manager, follow these steps:

**Step 1** Expand the Cluster node in the navigation pane and then click **Flows**.

You see the IOA Manager window displaying the Assigned Flows and Unassigned Flows as shown in Figure 21: Adding Flows Using IOA Manager, on page 14.

Figure 21: Adding Flows Using IOA Manager

💐 IOA Manager								
4 🖸 -= = 🖬		Fabric: Fabric_sw	-sme-n2		Clu	isters	/ioa-	1/Flows
🗷 💑 Sites	Assigned Flows	(1)						
Clusters	Vsan	Initiator	Target	FlowGroup	Compression	WA	TA	Status
Interfaces	IVR(VSAN100:VSAN2	10:00:00:00:00:00:00	10:00:00:00:00:00:00	flow-1	no	yes	yes	ONLINE
	A.Y.		Add/Remove	]				
	Unassigned Flow	rs (0)						
	Vsan	🖌 Initia	stor	1	arget			
	Show All Zoned Flow	/ Candidates						
	Show all possible :	zoned end device pairs					-	Apply

- **Note** If IVR zoneset is activated, Cisco DCNM-SAN will automatically consider the IVR zoneset and list the candidate IVR flows in the Unassigned flows section.
- Step 2 Check the Click Show All Zoned Flow Candidates check box to display all the zoned members.
- **Step 3** Select one or more switches from the Unassigned Flows in the information pane and then click Add.

You see the Add Flows dialog box as shown in Figure 22: Flow Configuration Dialog Box, on page 15.

#### Figure 22: Flow Configuration Dialog Box

Add Flow	
-Flow Configuration	
Flow Group Name:	
Enable Compression	
Enable Tape Acceleration	
	Add Flow Cancel

- **Step 4** Enter a flow group name.
- Step 5 Check the Enable Compression check box to enable compression.
- **Step 6** Check the **Enable Tape Acceleration** check box to enable tape acceleration.
  - **Note** Write accleration is enabled by default.

### Figure 23: Configure Flow Dialog Box

🗬 Configure Flow	×
Both devices in this flow can act as an Initiator or T Please select which direction traffic should flow by	
	<b>marystg</b> 06:04:8a:cc:d1:f9:51
🔽 Use this direction for the rest of the Flow Grou	p
	Ok
	C C C C C C C C C C C C C C C C C C C

- **Step 7** Click the arrow icon to configure the flow in this direction.
- **Step 8** (Optional) Check the **Use this directon for the rest of the Flow group** check box to apply the same direction to rest of the flow group.
  - **Note** You may use this step only if some of the N ports are registered as both initiators and targets, especially in cases of remote replication flow.
- **Step 9** Click **Add** and then click **Apply**.

## **Removing a Flow**

To add a flow in the cluster using IOA Manager, follow these steps:

**Step 1** Expand the Cluster node in the navigation pane and then click **Flows**.

You see the IOA Manager window displaying the Assigned Flows and Unassigned Flows as shown in Figure 24: Removing Flows Using IOA Manager, on page 16.

Figure 24: Removing Flows Using IOA Manager

Sites Clusters Site 100-1	Assigned Flows ()	Fabric: Fabric_sw-	-sme-n2		Clu	sters	/ioa-:	1/Flow
Olusters	1	0						
	a Transaction							
	Vsan	Initiator	Target	FlowGroup	Compression	WA	TA	Status
Interfaces	IVR(V5AN100:V5AN2 1	0:00:00:00:00:00:00	10:00:00:00:00:00:00	flow-1	no	yes	yes	ONLINE
		(0)	F Remove					
	Unassigned Flows			1175				
	Vsan	🖌 Initia	stor	T	arget			

Step 2 Select one or more switches from the Assigned Flows in the information pane and then click Remove.Step 3 Click Apply.

## **Viewing Interface Statistics**

To view real-time charts using IOA Manager, follow these steps:

**Step 1** Expand the Cluster node in the navigation pane and click the name of the cluster.

**Step 2** Select a switch from the Interfaces Statistics table in the information pane.

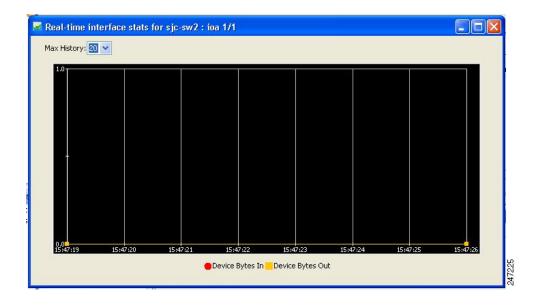
You will see the IOA Manager window as shown in Figure 25: Select IOA Manager Real-time Chart, on page 17.

Figure 25: Select IOA Manager Real-time Chart

Custers   Switch   IP Address   Site   Master   IOA License     Switch   IP Address   Site   Yes   Eval License Grace Period: 27 days 14 hours 41 mins 2 seconds     Switch   Interfaces   Tr2.23.144.96   rtp   no   Eval License Grace Period: 27 days 22 hours 38 mins 23 seconds	Chart			Fabric	Fabric_sw-sme-	n2		Clust	ers/ioa
Switch   IP Address   Site   Master   IOA License     Interfaces   sw-sme-n1   172.23.144.95   sjc.   yes   Eval License Grace Period: 27 days 14 hours 41 mins 2 seconds     Switch   IP Address   site   rtp   no   Eval License Grace Period: 27 days 14 hours 41 mins 2 seconds     Interface   Switch   rtp   no   Eval License Grace Period: 27 days 22 hours 38 mins 23 seconds     Interface   Statistics   Switch   IP Address   Interface     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio	JACO	Cluste	r Members						
Interfaces   sw-sme-n1   172.23.144.95   sjc   yes   Eval License Grace Period: 27 days 14 hours 41 mins 2 seconds     Sw-sme-n2   172.23.144.96   rtp   no   Eval License Grace Period: 27 days 22 hours 38 mins 23 seconds     Interface   Switch   Interface   Statistics     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio     Switch   IP Address   Interface   Device Packets In/Out   Device Bytes In/Out   Compression Ratio		Switch	IP Address	Site	Master	IOA Licen	nse		
Interface Statistics Switch IP Address Interface Device Packets In/Out Device Bytes In/Out Compression Ratio Error sw-sme-n1 172.23.144.95 ioa 1/1 5/4 546 / 520 N/A 4		sw-sme-n1	172.23.144.9	15 sjc	yes	Eval Licens	se Grace Period: 27 day	s 14 hours 41 mins 2 se	conds
Interface Statistics       Switch     IP Address     Interface     Device Packets In/Out     Device Bytes In/Out     Compression Ratio     Error       swi-sme-n1     172.23.144.95     loa 1/1     5 / 4     546 / 520     N/A     4	Flows	sw-sme-n2	172.23.144.9	76 rtp	no	Eval Licens	e Grace Period: 27 day	s 22 hours 38 mins 23 s	econds
sw-sme-n1 172.23.144.95 loa 1/1 5 / 4 546 / 520 N/A 4									
		and the second s	ace Statistics	1					
sw-sme-n2 172.23.144.96  oa 1/1   4 / 3   444 / 498   N/A   4		Interf		Interface	Device Packet	ts In/Out	Device Bytes In/Out	Compression Ratio	Error
		Interf	IP Address						
		Interf Switch sw-sme-n1	IP Address 172.23.144.95	ioa 1/1	5/4		546 / 520	N/A	4
		Interf Switch sw-sme-n1	IP Address 172.23.144.95	ioa 1/1	5/4		546 / 520	N/A	4

**Step 3** Click the chart icon on the toolbar to monitor real-time charts.

You see the chart as shown in Figure 26: IOA Manager Real-time Chart, on page 17. *Figure 26: IOA Manager Real-time Chart* 



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