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Cisco HyperFlex Systems Administration Guide for Citrix Workspace Appliance, Release 5.0

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Americas Headquarters

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CHAPTER

Cisco HyperFlex Integration with Citrix Cloud and Citrix Workspace

- Overview, on page 1
- Components in Citrix Cloud Management, on page 3

Overview

The Cisco HyperFlex System supports the capability to connect to Citrix Workspaces and associated Citrix Cloud subscription services such as Citrix Virtual Apps and Desktops Services (formerly XenApp and XenDesktop services). You can register the Cisco HyperFlex environment as a Citrix resource location directly from the HyperFlex Connect GUI, and the automation built into Cisco HyperFlex management delivers hybrid-cloud flexibility without having to install, maintain, or upgrade the infrastructure.

The Citrix Ready HCI Workspace Appliance program enables a Cisco HyperFlex System deployed on Microsoft Hyper-V to connect to Citrix Cloud. In this application, the Cisco HyperFlex System operates as an integrated Citrix Workspace Appliance to automate the delivery of high-performance virtual applications and desktops to subscribers of Citrix Cloud services.

Citrix Virtual Apps and Desktops Services simplify the delivery of applications and desktops as a centrally managed cloud service by having the Citrix Cloud host these infrastructure components instead of those services being located on the on-premises data center. The Cisco HyperFlex System's ability to access the Citrix Cloud services enables subscribers to leverage Citrix Workspace subscription services while running their virtual application servers and virtual desktop workloads on-premises. This offloads management of the Virtual Desktop Infrastructure (VDI) process while maintaining control of where applications and data reside—on-premises and behind security layers.

The Citrix Ready HCI Workspace Appliance program requires two critical components to deliver high-performance virtual applications and desktops: the Citrix Cloud control plane and the on-premises Citrix Workspace Appliance. The Citrix Cloud Connector functions as a communications channel to connect the HyperFlex System and integrated Citrix Workspace Appliance as a resource location to the Citrix Cloud control plane. Installation of a Cloud Connector is mandatory at the on-premises side to act as a proxy and agent for communication between the Citrix Cloud control plane and the on-premises Citrix Workspace Appliance. Once the Cloud Connector is registered, the on-premises resource appears in the Citrix Cloud account as a registered resource location.

Based on the customer ID, client ID, and client secret obtained from a Citrix Cloud account, HyperFlex Connect initiates an installation sequence that automates the following Citrix Cloud Connector deployment sequence:

- 1. Exports the base VM by copying its contents.
- 2. Imports the copied base VM contents to create a new (cloned) connector VM. The connector agent is installed on the cloned connector VM.
- 3. Performs a series of networking configurations in the Microsoft Hyper-V cluster:
 - a. Attach the connector VM to a vSwitch in the HyperFlex System.
 - **b.** Join the connector VM to the Active Directory (AD) domain.
- 4. Registers the connector VM to the failover cluster.
- 5. Downloads the Citrix Cloud Connector.
- 6. Installs the Citrix Cloud Connector in the connector VM.

Figure 1: Overview of Citrix Cloud and Citrix Workspace Appliances Architecture





Figure 2: HyperFlex System and Citrix Cloud Integration

Components in Citrix Cloud Management

The following is a summary of the core components in a Citrix Cloud service deployment. Citrix manages these core components in Citrix Cloud.

- **Citrix Cloud**—Platform that hosts and administers all Citrix services. Citrix Cloud connects subscribers to their resources through the Citrix Cloud Connector that is installed on any cloud or infrastructure (on-premises, public cloud, private cloud, or hybrid cloud). Citrix Cloud enables IT administrators to create, manage, and deploy workspaces with apps and data to their subscribers from a single console. For background information, see Citrix Cloud.
- **Citrix Workspace**—Client software that provides seamless and secure access to everything a subscriber requires to get their work done. Each subscriber that is logged into Citrix Workspace can securely have instant access to all their applications, desktops, and data from any device, including smartphones, tablets, PCs, and Macs. Citrix Workspace Suite is a collection of Citrix products that deliver secure access to desktops, data, applications and services to subscribers on any device, and on any network. For background information, see Citrix Workspace Platform.
- **Citrix Cloud Connector**—Citrix component that operates as a channel for communication between Citrix Cloud and each subscriber's on-premises resource locations. The Cloud Connector provides simplified cloud management without requiring complex networking or infrastructure configurations such as VPNs or IPsec tunnels. You download the Cloud Connector software from Citrix Cloud, and you install the Cloud Connector on the machine running Windows Server 2016. This machine must be joined to your domain and able to communicate with the resources that you want to manage from Citrix Cloud. Connections from the Cloud Connector to Citrix Cloud use the standard HTTPS port (443) and TCP protocol. For background information, see Citrix Cloud Connector.
- **Resource Locations**—Contains machines and other resources that are required to deliver applications and desktops to subscribers. You manage these resources from Citrix Cloud. Resource locations contain

different resources depending on the Citrix Cloud services that are required by subscribers. Typical resources can include: Active Directory domains, Hypervisors or cloud services, Virtual Delivery Agents (VDAs), Citrix Gateway (formerly NetScaler Gateway), and Citrix StoreFront servers.

To communicate with Citrix Cloud, every resource location must contain a Citrix Cloud Connector and access to Microsoft Active Directory domains. In each resource location, you will need enough Cloud Connectors to support your required load, plus at least one more Cloud Connector to ensure high availability. Citrix recommends at least two Cloud Connectors in each resource location. For background information, see Resource Locations.

- Citrix Workspace Appliances—Simplify the configuration challenges a subscriber can encounter when
 connecting to the Citrix Cloud to deliver virtual applications and desktops by providing access to a secure
 and unified Citrix workspace. Citrix Workplace Appliance provides a direct connection between the
 Citrix Cloud and the subscriber's resource location to automate the deployment and management of
 applications, desktops, data, and devices.
- Citrix Virtual Apps and Desktops Service—Virtualization solution available from Citrix Cloud that
 provides secure access to virtual applications and desktops from on-premises and cloud-based deployments.
 Subscribers can use applications and desktops independently of the device's operating system and
 interface. You connect your resources to the Citrix Virtual Apps and Desktops Service through the Citrix
 Cloud Connector. For background information, see Citrix Virtual Apps and Desktops service.



Accessing the Citrix Workspace Appliance Page in HyperFlex Connect

Accessing the Citrix Workspace Appliance Page in HyperFlex Connect, on page 5

Accessing the Citrix Workspace Appliance Page in HyperFlex **Connect**

The following procedure details the steps that are required to access the Citrix Workspace Appliance page in the HyperFlex Connect GUI:

- Step 1 Navigate to https://<hyperflex cluster mgmt ip> using a supported web browser.
- Step 2 Log into HyperFlex Connect using an SSO account and password with administrative privileges (for example, hxadmin@domain.local).
- Step 3 In the upper right corner of HyperFlex Connect, click the Settings menu icon (represented by a Gear icon).

Figure 3: HyperFlex Connect Settings Menu

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Step 4 Under **Integrations**, click **Citrix**. The Citrix Workspace Appliance page appears.

Figure 4: Selecting Integrations > Citrix

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Figure 5: Citrix Workspace Appliance Page

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Step 5 Review the prerequisites that are outlined on the Citrix Workspace Appliance page and then click the check box. See Prerequisites, on page 9 for more details.

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CHAPTER J

Configuring Cisco HyperFlex as a Citrix Workspace Appliance

- Prerequisites, on page 9
- Creating a Secure Client in Citrix Cloud, on page 10
- Specifying Customer and Client Identifier Information, on page 11
- Configuring Resource Location and Cloud Connector VM, on page 14
- Verifying the Cloud Connector VM, on page 15

Prerequisites

The following prerequisites are required for Cisco HyperFlex to operate as a Citrix Workspace Appliance in a Citrix Cloud environment:

- Install and configure Cisco HyperFlex HX-Series nodes in a cluster with Microsoft Hyper-V Server 2016 running 3.5(2a) or later, see the Cisco HyperFlex Systems Installation Guide for Microsoft Hyper-V.
- Ensure that the Microsoft System Center Virtual Machine Manager (VMM) Console is installed on your server. See Microsoft System Center Virtual Machine Manager virtualization environments for background details.
- Create and deploy a virtual machine (VM) as the base VM used for the connector VM. Once deployed, use the Microsoft System Preparation (Sysprep) tool to prepare the base VM. Ensure that the base VM is in a power-off state.



Note We recommend that you configure the Sysprep tool to boot Windows to Out-of-Box Experience (OOBE). OOBE utilizes an OOBE.xml file that includes a set of specific default values. See OOBE.xml for details.

- Create a datastore on the HX Data Platform (see the Cisco HyperFlex Data Platform Administration Guide), and then deploy the base VM on that datastore.
- Confirm that you have a:
 - Citrix Cloud account. For detailed instructions, see Sign up for Citrix Cloud.

- Citrix Virtual Apps and Desktops Service subscription or trial on Citrix Cloud. For detailed instructions, see Citrix Cloud services subscriptions in the Citrix product documentation.
- Set up a resource location containing the resources that are required to deliver applications and desktops to subscribers. For detailed instructions, see Set up resource locations in the Citrix product documentation.



Note

For an overview on system requirements for Citrix Virtual Apps and Desktop Service, see System Requirements in the Citrix product documentation.

Creating a Secure Client in Citrix Cloud

The following procedure outlines how to create a secure client secret key from Citrix Cloud using API access:

Step 1 Enter your Citrix credentials (Citrix.com, My Citrix, or Citrix Cloud) to securely log in to your Citrix Cloud account. Be sure to sign in with the email address and password you provided when you signed up.

If your company allows you to sign-in to Citrix Cloud using their company credentials instead of a Citrix account, click **Sign in with my company credentials** and enter your company's sign in URL for your account.

Step 2 After signing in to the Citrix Cloud GUI, verify that there is an active Citrix Virtual Apps and Desktops Service subscription or trial on Citrix Cloud.

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Figure 6: Citrix Cloud

- **Step 3** Select **Identity and Access Management** from the menu in the Citrix Cloud GUI.
- **Step 4** On the Identity and Access Management page, click **API Access**. The API Access page appears.
- **Step 5** Enter your secure client secret in the Name Your Secure Client text box, and then click **Create Client**.

Figure 7: Identity and Access Management Page > API Access

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Step 6 Download the secure client CSV file containing the client ID and secret from the API Access page. It is named secureclient.csv.

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Figure 8: Secure Client CSV File Creation Confirmation Screen

Specifying Customer and Client Identifier Information

The following procedure outlines how to locate a customer ID and client ID from Citrix Cloud and enter this information (including the client secret) on the HyperFlex Connect GUI:

Step 1

In the Citrix Cloud GUI, on the API Access page of Identity and Access Management, copy the customer ID.
 Figure 9: Copying the Customer ID from the API Access Page (Citrix Cloud)

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Step 2 2. In the Cisco HyperFlex Connect GUI, paste the customer ID in the Customer ID text box of the Citrix Workspace Appliance page.

Figure 10: Pasting the Customer ID on the Citrix Workspace Appliance Page (HyperFlex Connect)

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Step 3 Click Choose File and navigate to the secure client CSV file containing the client ID and secret created in the Citrix Cloud GUI (see Creating a Secure Client in Citrix Cloud, on page 10).

Figure 11: Navigating to the Secure Client CSV File

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The Client ID and Client Secret fields are automatically populated with the client ID and secret from the secure client CSV file.

Figure 12: Client ID and Client Secret in the Citrix Workspace Appliance Page (HyperFlex Connect)

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	Client ID	NUMBER AND ADDRESS OF	
	Client Secret	849-0246031010000000	
		Connect	
		Select a Resource Location	
		Select a Base VM *	



Configuring Resource Location and Cloud Connector VM

The following procedure outlines how to specify information such as the resource location, VM base template, and Cloud Connector VM name in the HyperFlex Connect GUI:

- **Step 1** On the Citrix Workspace Appliance page, under Configure Resource Location & Connector VM, specify the following information:
 - **Resource Location**—Previously created resource location for the Cloud Connector see Prerequisites, on page 9 for more details. Existing resource locations that are created in Citrix Cloud appear in the drop-down list.
 - VM Base Template—The VM base image available on the Cisco HyperFlex cluster. This selection is the previously created Sysprep VM.
 - Base VM Admin Username—Administrative account username for logging into the base VM.
 - Base VM Admin Password—Administrative account password for logging into the base VM.
 - Connector VM Name-Name for the Citrix Connector VM to be created.
 - **High Availability (HA)**—(Optional) By default, the High Availability check box is enabled and two connector nodes are automatically created. Uncheck the High Availability check box if you want to disable high availability for the connector nodes.

Figure 13: Configure Resource Location & Connector VM of Citrix Workspace Appliance Page

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Step 2 Click **Connect**. This action initiates the automatic installation sequence that comprises of the following workflow until the installation process successfully completes. The installation process can take approximately 2 to 3 minutes to complete.

The steps in the installation process include:

- Export Base VM
- · Import Base VM
- Attach vSwitch to Citrix Cloud Connector VM.
- Add Citrix Cloud Connector VM to Domain (Domain Join).
- Install Citrix Connector at the on-premises side (resource location).
- Step 3
 Click Activity to access the Activity page. You can view the installation sequence from the Activity page.

 Figure 14: Activity Page—Cloud Connector Installation Sequence

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Verifying the Cloud Connector VM

The following procedure outlines how to connect to the new Citrix Cloud Connector VM using Hyper-V Manager and confirm that it has been properly installed. This procedure uses the Microsoft Remote Desktop Protocol (RDP) to establish a connection to the Hyper-V instance and launch Hyper-V Manager to perform the verification.

- **Step 1** Log in to the Hyper-V instance using a Remote Desktop connection.
- **Step 2** Launch the Hyper-V Manager from the Microsoft Windows Server.
- **Step 3** Verify that the installed Citrix Cloud Connector VM appears in the list of Virtual Machines in the HX cluster along with the original base VM.

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Figure 15: Hyper-V Manager with Installed Citrix Cloud Connector VM

Step 4 If desired, you can verify the options of the newly created Citrix Cloud Connector VM.



Figure 16: Verifying Citrix Cloud Connector VM Settings in Hyper-V Manager—Example 1

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Connector VM Maintenance

• Deleting the Connector VM, on page 19

Deleting the Connector VM

There may be instances where you need to delete the connector VM from Microsoft Hyper-V Server 2016. For example, you may need to change the resource location or you wish to use a different base VM as the template for the connector VM. This procedure outlines how to delete the connector VM from the Hyper-V Manager, and how to perform a clean-up of entries from Hyper-V. This procedure also covers how to remove the Citrix Cloud Connector for the connector VM.

- **Step 1** Log in to the Hyper-V instance using a Remote Desktop connection and then launch the Hyper-V Manager from the Microsoft Windows Server.
- **Step 2** From Hyper-V Manager, locate the installed Citrix Cloud Connector VM in the list of Virtual Machines in the HX cluster along with the original base VM.
- **Step 3** Select the Citrix Cloud Connector VM, then right-click and select **Turn Off** from the menu. Confirm the action from the Turn Off Machine dialog box.

Hyper-V Manager	Virtual Machin	es		Actions			
0C3004	Name	State	CPUUkana	Arrighted Memory	Untima	UCS804	-
	CWA-2	Running	0 %	4096 MB 4096 MB	1.01:01:24 3.17:58:34	New Import Virtual Machine	'
	Master potter-1 potter-2 StCilVM	Settinos Turoff Snut Down Save Pause	X. X. X.	4096 MB 4096 MB 79672 MB	3.17:27:33 3.17:25:37 3.19:39:13	Hyper-V Settings Virtual Switch Manager Virtual SAN Manager Edit Disk Inspect Disk Stop Service	
	Checkpoint	Reset Checkpoint Move Export Rename	achine has n	o checkpoints.		Remove Server Refresh View Help CWA1-1	
		Enable Replication				Image: Settings Image: Setimes Settings	
	CWA1-1					II Pause	
		Created: Configuration Version Generation: Notes:	11/16/2018 5:03:2 # 8.0 1 None	1/16/2018 5:03:27 PM Clustered: No .0 Heartbeat: OK (Appli Healthy) ione		Reset Checkpoint Move Export Export	
						-rename	

Figure 17: Turning Off the Citrix Cloud Connector VM

Step 4 Select the VM, then select **Delete** from the list of actions. Confirm the deletion action from the Delete dialog box. The selected VM is deleted from the list of virtual machines in the HX cluster.

er inter inter inter	Man Market and							
Virtual Machines					UCS804			
Name CWA-2 Master potter-1 potter-2 StCdVM	State Running Off Running Running Running	0% 0% 0% 0%	Assigned Memory 4096 MB 4096 MB 4096 MB 79672 MB	Uptime 1.01:01:29 3.17:27:39 3.17:25:42 3.19:39:18	New Import Virtual Machine. Hyper-V Settings Virtual Switch Manager Kittual SAN Manager Kittual SAN Manager Stop Service Remove Server Remove Server Refresh			
CWA1-1	The selected viri	tual machine has no	checkpoints.		View View Help CWA1-1 Connect Settings Settings Checkpoint Nove Export			
Summary Memory N	eated: nfiguration Version: meration: tes: letworking Replication	11/16/2018 5:03:2 8.0 1 None	7 PM Clustered: N	D	Relete			

Figure 18: Deleting the Citrix Cloud Connector VM

Step 5 OpenWindows Explorer and navigate to the location of the cluster SMB share and datastore folder in Hyper-V Manager on which the base VM is running (for example, \\ucs804smb.cloud.local\ds1).

Figure 19: Navigating to the SMB Folder

Hyper-V Manager						- 🗆 X
File Action View Help						
💠 🧼 🙇 🖬 📓 🖬						
Hyper-V Manager	Victual Machine					Actions
UCS804	Virtual machine		Charles Children Andread Martine		II. Constant	UCS804
	Name	State	CPU Usage	Assigned Memory	Uptime 1.01.01.57	New 🕨
	Master	Running	0%	4096 MB	1.01:01:57	Import Virtual Machine
	master	Running	0 %	4096 MB	3.17:28:04	Hyper-V Settings
Best match		Running	0%	4096 MB	3.17:26:07	Virtual Switch Manager
-		Running	0 %	79872 MB	3.19.39:44	J Virtual SAN Manager
\\ucs804smb.clo	ud.local\ds					Edit Diek
Snare						E lement Disk
						Stop Service
						X Remove Server
		_				C Refresh
		The selected	l virtual machine has n	View 🕨		
				🛿 Help		
						CWA-2
						📲 Connect
						P Settings
						Turn Off
						Shut Down
						Save
						II Pause
						IÞ Reset
		ted:	11/19/2018 10:00	35 AM Clustered:	No OK (Application	Checkpoint
		guración versio		Treatment	Healthy)	Hove
		ration:	1			Export
		s:	None			= Rename
						Enable Replication
🖻 🚳 🗅 I		working Replicat	ion			Help
					>	
\\ucs804smb.cloud.loca	Nds					

Step 6 Locate the Citrix Cloud Connector VM folder. Right-click the folder and select **Delete** to remove the folder and all stale entries that are contained in the folder.

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	Victual Machines			Action	5	t] *** START Exports
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	File Home Share V	New				
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	A Quick access	me	Date modified	Туре	Size	
	Desktop 💉	CWA1 Open	2018 5:03 PM	File folder		
	- Downloads 🖈	CWA- Open in new window	2018 10:00	Filefolder		
	🗄 Documents 🖈	potter Pin to Quick access	2018 5:33 PM	File folder		
	📰 Pictures 🖃	potter Restore previous versions	2018 5:33 PM	File folder		
	This PC	Pin to Start				
		Send to	>			
	CO Drive (Ht)	Cut				
	Network	Copy				
		Create shortcut				
		Delete				
		h Rename				
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	5 items 1 item selected					
	5 items 1 item selected	NUCE. IVER		≡Į R	ename	ocal"}
	5 items 1 item selected	NOCEN INCO		≔∏ Ra 118 Er	ename nable Replication	ocal"} CWA] Starting cloud

Figure 20: Deleting the Citrix Cloud Connector VM Folder

Step 7 Enter your Citrix credentials (Citrix.com, My Citrix, or Citrix Cloud) to securely log in to your Citrix Cloud account. Be sure to sign in with the email address and password you provided when you signed up.

If your company allows you to sign-in to Citrix Cloud using their company credentials instead of a Citrix account, click **Sign in with my company credentials** and enter your company's sign in URL for your account.

Step 8 After signing in to the Citrix Cloud GUI, click **Resource Location** to access the Resource Locations page.

Figure 21: Citrix Cloud

≡	Citrix Cloud				- + 0	
		Library Offerings Resou View Library Edit	2 Domains rce Location Domains rAdd New Add New	Image: Constructions Image: Construction of the second s) 	
	My Services (1)					
	Smart Tools smore Operant effective or permis- and in the could	Virtual Apps and Desktops Deliver situal apps and desktops on any dence.				
	Manage Lashinge	Manage				
	Available Services (12)					
	Access Control Security controls for Earl and internet.	Analytics Secury performance and coape response	Application Delivery Management Application Delivery Management for Battowy on overnets and cloud	Content Collaboration Secure data access on any device.	Endpoint Management Endle subschen Stude corporate or SHD devors	

Step 9 From the Resource Locations page, click **Refresh All** to see the Citrix Cloud Connectors.

Figure 22: Resource Locations Page

≡	Citrix Cloud	Ģ	*	٠	•	~
6	Resource Locations					
	+ Resource Location C Refresh All					
	My Resource Location					
	2 Cloud Connectors					

- **Step 10** Click **Cloud Connection** to view the available Citrix Cloud Connectors for the resource location.
- **Step 11** Select the Citrix Cloud Connector that you want to delete from the Cloud Connections page, and then right-click and select **Remove Connector** from the menu.

Figure 23: Cloud Connections Page

≡	Citrix Cloud	P	→ ◆ ●
4	Cloud Connectors		
	+ Connector C Refresh All	Resource Lo	ocation My Resource Location V
	cwa-2.cloud.local		>
	cwa1-1.cloud.local		see >
			Remove Connector
			ab market

The Citrix Cloud Connector is removed from the Cloud Connections page of Resource Locations.

Figure 24: Cloud Connections Page with Removed Citrix Cloud Connector

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← Close	ud Conn	ectors														
+ Co	onnector	C Refresh All							Re	ource Loca	ation	My Re	source L	ocation	~	
	🛕 To mai	ntain high availabilit	, we recommend ins	stalling at least	ast two con	nnectors in	in the Active	Directory for	rest that ti	nis domain	is a me	mber of.		>	<	
	cwa-2.clou	d.local													>	
																4

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At this point, you can restart the sequence in configuring the Cisco HyperFlex system to connect to Citrix Cloud as outlined in this chapter.