

Centralized Monitoring

Importance

VCF Operations collects data for the applications and services running in your virtual environment with Cloud Proxy and Telegraf agent.

As a VCF Operations administrator, you must understand the concepts of application monitoring and service discovery in VCF Operations. Then you must use these capabilities to ensure and optimize the performance of your environment.

Module Lessons

1. Infrastructure and Application Monitoring Overview
2. Service Discovery
3. Application Monitoring

Infrastructure and Application Monitoring Overview



Learner Objectives

- Describe the infrastructure services monitoring capabilities
- Describe the application monitoring capabilities
- Outline the requirements to enable service discovery
- Outline the requirements to enable application monitoring

Understanding Service and Application Discovery

You can discover services and applications using the Workload Operations capabilities in the VCF Operations console.

The screenshot shows the VMware Cloud Foundation Operations console interface. The left sidebar navigation includes Home, Inventory, Infrastructure Operations, Workload Operations (which is selected and highlighted in yellow), Business Applications, Applications, Fleet Management, Capacity, Security, License Management, Administration, and Developer Center. The Applications section is expanded, showing VCF Instances, EDU, and various service instances like sa-m01-vc01.vcf.sddc.local, EDU-dc01, EDU-cl01, and several ESXi hosts (esx-1.vcf.sddc.local, esx-2.vcf.sddc.local, etc.). A sub-menu under Applications Home includes Manage Telegraf Agents, Manage SDMP Services, and Manage Applications, with the latter being highlighted by an orange box. The main content area is titled 'Applications Home' and displays a table of discovered objects. The table has columns for Name, Source, and Object Type. The data includes:

Name	Source	Object Type
NSX-T-sa-m01-nsxt-vip.vcf.sddc.local	Infrastructure Health	NSX App
Operations-https://localhost/suite-api	Infrastructure Health	Operations App
SDDC-sa-m01-sddc01.vcf.sddc.local	Infrastructure Health	SDDC Manager App
vSAN-sa-wld01-vc01.vcf.sddc.local	Infrastructure Health	vSAN App
LifecycleManager-sa-m01-vcopsfm01.vcf.sddc.local	Infrastructure Health	LifecycleManager App
Logs-sa-m01-logs01.vcf.sddc.local	Infrastructure Health	Logs App
172.20.10.44	Infrastructure Health	Networks App
vCenter-sa-wld01-vc01.vcf.sddc.local	Infrastructure Health	vCenter App
vCenter-sa-m01-vc01.vcf.sddc.local	Infrastructure Health	vCenter App
VCF Operations Cluster-sa-m01-vcops01	VCF Operations Adapter	VCF Operations Cluster
vSAN-sa-m01-vc01.vcf.sddc.local	Infrastructure Health	vSAN App
NSX-T-sa-wld01-nsxt-vip.vcf.sddc.local	Infrastructure Health	NSX App

At the bottom right of the table, it says '1 - 12 of 12 items'. The top right of the screen includes a search bar, a help icon, a refresh icon, a bell icon, and a user profile icon.

Service Discovery Overview

Service discovery helps you discover services running in each VM and builds a relationship or dependency between the services from different VMs.

You can also use the service discovery dashboards and basic metrics to monitor the services.

Service discovery is agentless and relies on VMware Tools to gather data.

The screenshot shows the 'Manage SDMP Services' interface in the vSphere Web Client. On the left, a sidebar displays a tree view of VCF Instances, including EDU, sa-m01-vc01.vcf.sddc.lo..., and several host entries like esx-1.vcf.sddc.lo..., esx-2.vcf.sddc.lo..., and esx-3.vcf.sddc.lo... . The main pane is titled 'Manage SDMP Services' and lists three VMs with their discovered services:

VM Name	Operating System	Authentication Status	Power State	Collection State	Collection Status	vCenter Name
vrli-master	Other 3.x Linux (64-bit)	Unknown	Powered Off			sa-m01-vc01.vcf.s...
sa-m01-vcopsoc01	VMware Photon OS (64-bit)	Credential-less	Powered On			sa-m01-vc01.vcf.s...
sa-m01-vcops01	VMware Photon OS (64-bit)	Credential-less	Powered On			sa-m01-vc01.vcf.s...
sa-m01-vc01	VMware Photon OS (64-bit)	Common Credentials	Powered On			sa-m01-vc01.vcf.s...
vrni-collector	Ubuntu Linux (64-bit)	Common Credentials	Powered On			sa-m01-vc01.vcf.s...

Each VM entry includes a 'Services Discovered' section listing specific services and their counts. For example, the first VM has 2 services (Apache Tomcat), the second has 8 services (Apache HTTP, Apache Tomcat, VCF Operations Analytics, VCF Operations Collector, VCF Operations GemFire, VCF Operations Postgres Data, VCF Operations Postgres Repl, VCF Operations UI), and the third has 2 services (Nginx, VMware vCenter (Appliance)).

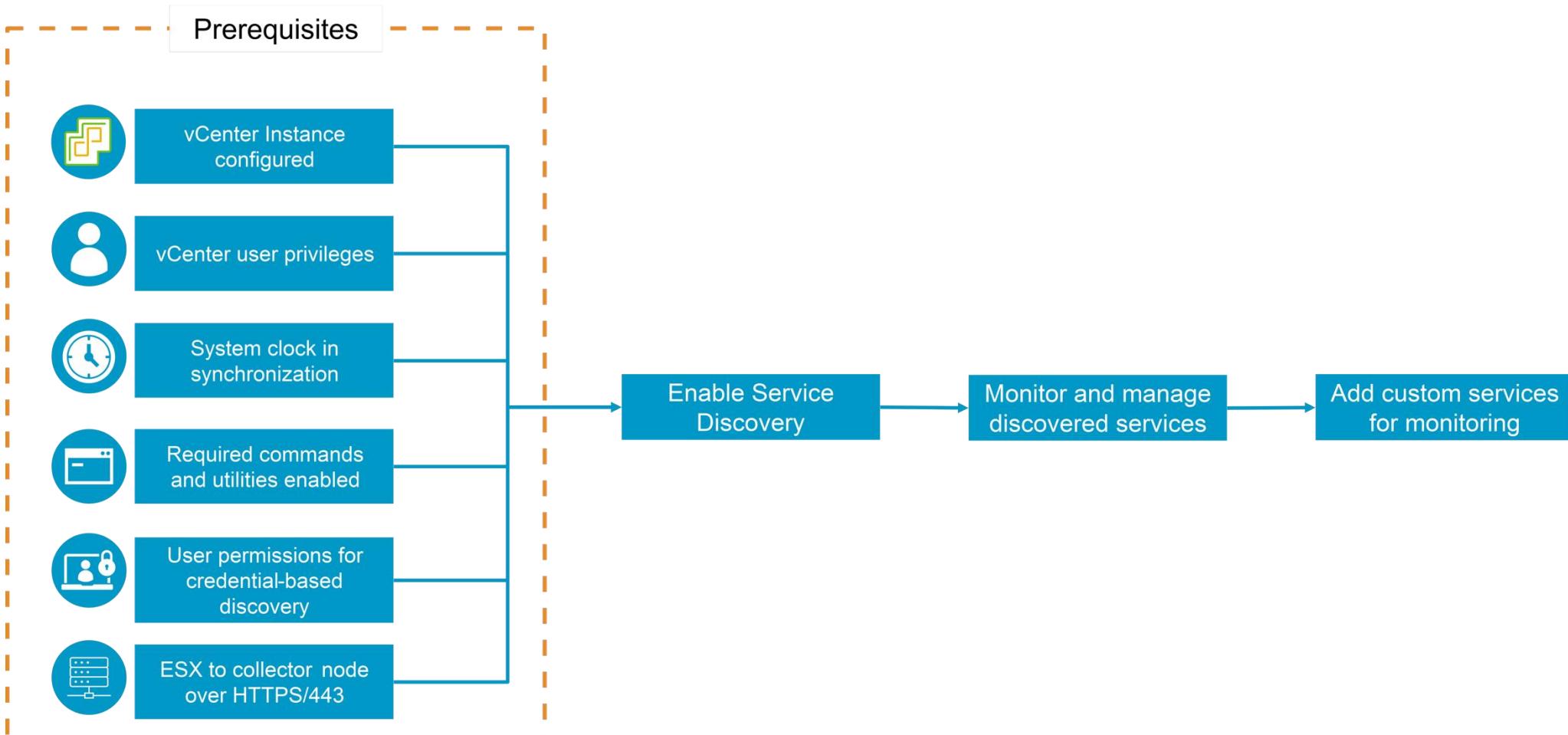
Supported Services

Service and application discovery supports several services that are supported in VCF Operations. The following list shows some supported services:

- Active Directory
- Apache HTTP and Apache Tomcat
- Cassandra
- Exchange Server
- MySQL DB
- Nginx
- RabbitMQ
- SharePoint
- vCenter

Service Discovery Prerequisites

To use the service discovery function in your environment, you must ensure that the prerequisites are fulfilled.



Application Monitoring Overview

Application and operating system monitoring enables virtual infrastructure administrators and application administrators to discover operating systems and applications at scale and collect run-time metrics for monitoring and troubleshooting.

You can monitor application services in the VCF Operations console. You can also manage the life cycle of Telegraf agent and application services on virtual machines.

The screenshot shows the Applications Home page in the VCF Operations console. On the left, there is a sidebar with navigation links: Applications Home, Manage Telegraf Agents, Manage SDMP Services, Manage Applications, and icons for Home, Applications, Services, and Help. Below these are sections for VCF Instances, EDU, and a detailed tree view of a selected EDU instance named 'EDU'. This tree view includes nodes like 'sa-m01-vc01.vcf.sddc.local', 'EDU-dc01', 'EDU-cl01', and various service instances such as 'esx-1.vcf.sddc.local', 'esx-2.vcf.sddc.local', 'esx-3.vcf.sddc.local', and 'esx-4.vcf.sddc.local'. To the right is a main table titled 'Applications Home' with columns for Name, Source, and Object Type. The table lists 12 items, including NSX-T, Operations, SDDC, vSAN, LifecycleManager, Logs, Networks, vCenter, VCF Operations Cluster, vSAN, and NSX. The 'Logs-sa-m01-logs01.vcf.sddc.local' row is currently selected. A search bar at the top right says 'Type here to apply filters'.

Name	Source	Object Type
NSX-T-sa-m01-nsxt-vip.vcf.sddc.local	Infrastructure Health	NSX App
Operations-https://localhost/suite-api	Infrastructure Health	Operations App
SDDC-sa-m01-sddc01.vcf.sddc.local	Infrastructure Health	SDDC Manager App
vSAN-sa-wld01-vc01.vcf.sddc.local	Infrastructure Health	vSAN App
LifecycleManager-sa-m01-vcopsfm01.vcf.sddc.local	Infrastructure Health	LifecycleManager App
Logs-sa-m01-logs01.vcf.sddc.local	Infrastructure Health	Logs App
172.20.10.44	Infrastructure Health	Networks App
vCenter-sa-wld01-vc01.vcf.sddc.local	Infrastructure Health	vCenter App
vcCenter-sa-m01-vc01.vcf.sddc.local	Infrastructure Health	vCenter App
VCF Operations Cluster-sa-m01-vcops01	VCF Operations Adapter	VCF Operations Cluster
vSAN-sa-m01-vc01.vcf.sddc.local	Infrastructure Health	vSAN App
NSX-T-sa-wld01-nsxt-vip.vcf.sddc.local	Infrastructure Health	NSX App

Supported Application Services

OS and application monitoring can collect run-time metrics of the operating system and application for monitoring and troubleshooting respective entities.

The following list shows some supported application services:

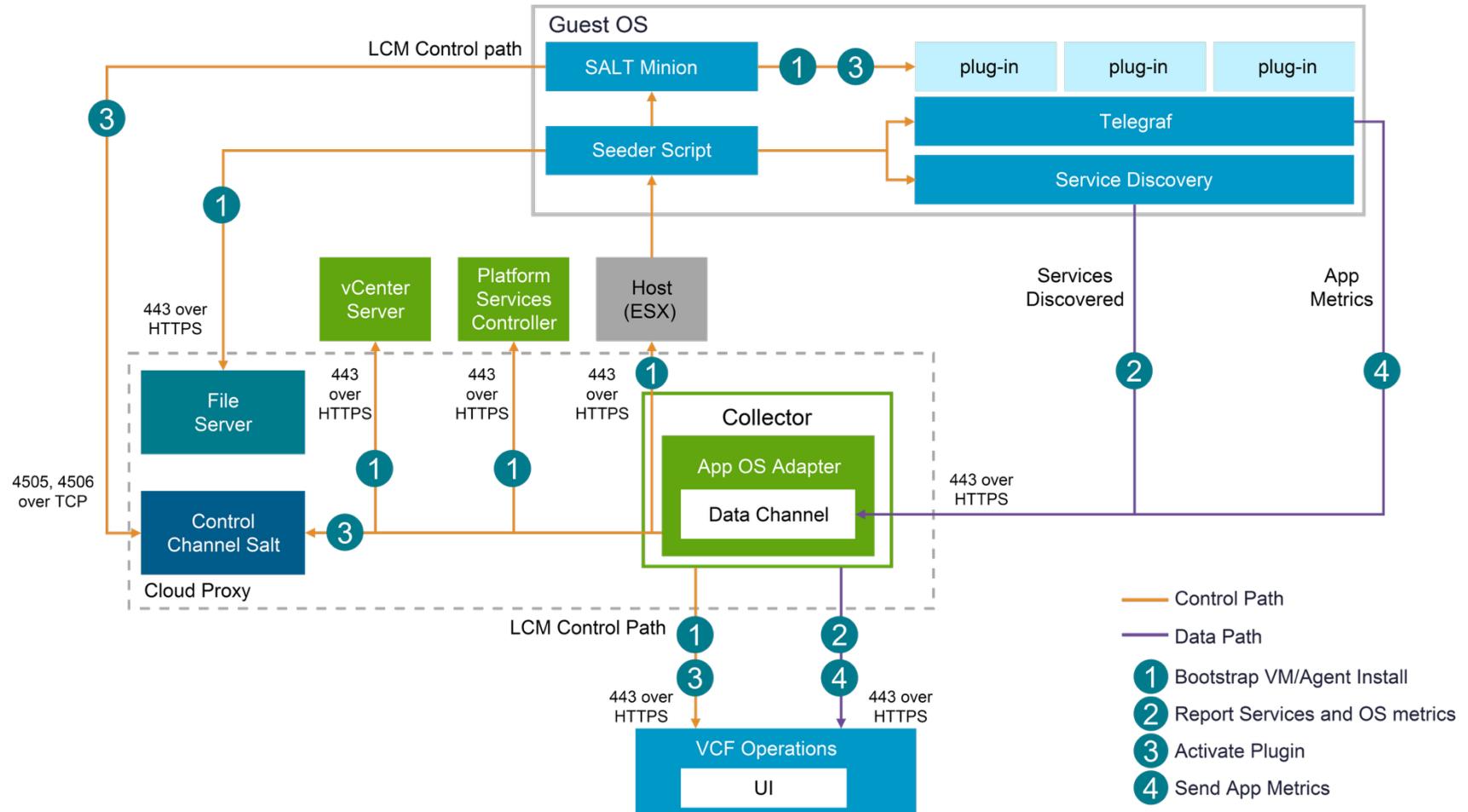
- Active Directory
- Apache HTTPD
- HyperV
- Java Application
- Mongo DB
- MS Exchange
- Oracle DB

The following list shows the supported VeloCloud application services:

- VeloCloud Orchestrator
- Nginx
- Clickhouse
- Network Time Protocol
- MySQL
- Redis
- Java Application
- VeloCloud Gateway

OS and Application Monitoring Prerequisites

A successful OS and application monitoring requires the completion of a series of prerequisites on ports, user permissions, and network communications.



About Cloud Proxies

Cloud Proxies can collect and monitor data from your remote data centers and public clouds by creating one-way communications between your environment and VCF Operations.

Deploy the Cloud Proxy appliance in the same vCenter instance as the VMs that you want to monitor. You can deploy multiple cloud proxies in your environment.

To view existing cloud proxies and deploy new ones, navigate to **Administration > Cloud Proxies**.

The screenshot shows the 'Cloud Proxies' section of the VMware vSphere interface. A single proxy entry is listed:

Name	IP	Status	Accounts	Type	Collector Group	Netwo...	Data Persistence...	Log Assist
sa-m01-vcopsoc01.vcf...	172.20.10.32	Online	2 accounts	Unified	-	-	-	-

A context menu is open over the first row, listing three options: 'Delete', 'Activate data persistence', and 'Activate Log Assist'. The entire context menu area is highlighted with a yellow box.

Review of Learner Objectives

- Describe the infrastructure services monitoring capabilities
- Describe the application monitoring capabilities
- Outline the requirements to enable service discovery
- Outline the requirements to enable application monitoring

Service Discovery

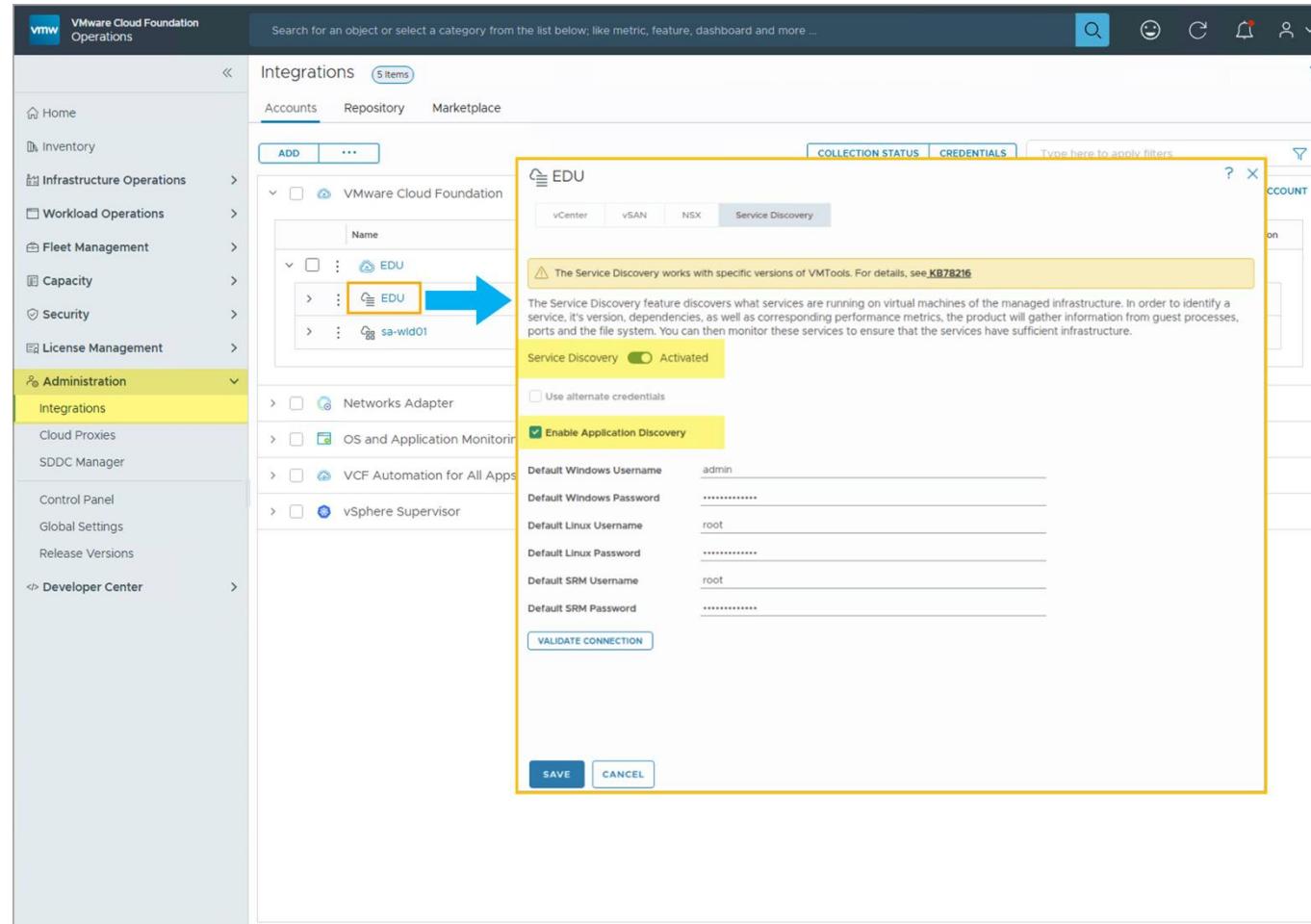


Learner Objectives

- Enable service discovery for a VCF deployment
- Perform actions enabled by the native service discovery
- Enable service monitoring
- Describe the different types of service metrics
- Use collected metrics to interpret the status of services

Activating Service Discovery in VCF Operations

To use Service Discovery in your VCF Operations console, you first need to enable and configure the Service Discovery settings.



Examining Service Discovery Collection Status

When the Service Discovery settings are activated and configured, a Service Discovery adapter instance is created.

You can monitor the collection status from the **Administrations > Integrations** page. You can use the management options to:

- **Edit:** Modify the Service Discovery adapter instance settings.
- **Delete:** Delete the Service Discovery adapter instance.
- **Start/Stop Collecting:** Start or stop the Service Discovery collection.
- **Go to Details:** View the details of the Service Discovery adapter instance.

The screenshot shows the 'Integrations' page with the 'Accounts' tab selected. There are 5 items listed. Under 'VMware Cloud Foundation', there is 1 Account named 'EDU'. The table shows the following data:

Name	Status	Description	Managed by VCF Operations	Collector	Version
EDU	Collecting	VMware Cloud Foundation Ad...		sa-m01-vcopso...	--
EDU	Collecting		Current instance	sa-m01-vco...	9.0.0
sa-m01-vc01.vcf.sddc.local - vSAN	Collecting			sa-m01-vcopso...	--
sa-m01-vc01.vcf.sddc.local - Service Discovery	Collecting			sa-m01-vcopso...	--
sa-m01-vc01.vcf.sddc.local	Collecting			sa-m01-vcopso...	--

A context menu is open over the 'sa-m01-vc01.vcf.sddc.local - Service Discovery' row, with the 'Edit' option highlighted by a yellow box. Other options in the menu include 'Delete', 'Stop Collecting', and 'Go to Details'.

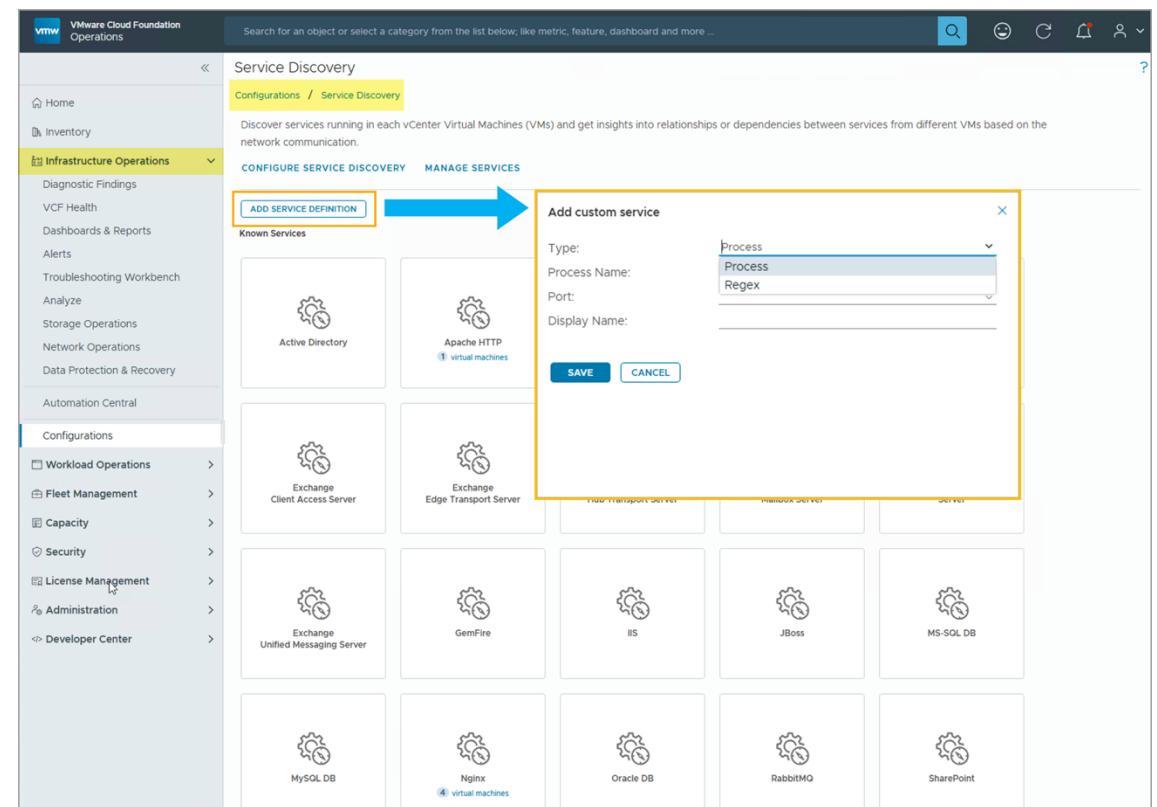
Below the main table, there are sections for 'Networks Adapter', 'OS and Application Monitoring', 'VCF Automation for All Apps Organization', and 'vSphere Supervisor', each showing 1 Account.

Adding Custom Service

You can add one or more custom services for monitoring. The custom services are evaluated against all virtual machines where service discovery is enabled.

To add a custom service, navigate to **Infrastructure Operations > Configurations** and click **Service Discovery**.

1. Click **Add Service Definition**.
2. Specify the process details (**Process**) or use a regular expression (**Regex**) to add the custom service.



Custom Services Defined by Process Details

When you create a custom service by providing process details, you must specify the process name, a port, and the custom service display name.

The screenshot shows the 'Service Discovery' configuration page. On the left, there's a grid of 'Known Services' including Active Directory, Apache HTTP, Apache Tomcat, Exchange Client Access Server, Exchange Edge Transport Server, Exchange Hub Transport Server, Exchange Unified Messaging Server, GemFire, and IIS. On the right, a modal window titled 'Add custom service' is open. It contains fields for 'Type' (set to 'Process'), 'Process Name' (set to 'ntpd'), 'Port' (set to '123'), and 'Display Name' (set to 'NTP Service'). At the bottom of the modal are 'SAVE' and 'CANCEL' buttons. A yellow box highlights the 'Add custom service' modal.

Service Discovery

Configurations / Service Discovery

Discover services running in each vCenter Virtual Machines (VMs) and get insights into relationships or dependencies between services from different VMs based on the network communication.

CONFIGURE SERVICE DISCOVERY MANAGE SERVICES

ADD SERVICE DEFINITION

Known Services

- Active Directory
- Apache HTTP (1 virtual machines)
- Apache Tomcat (2 virtual machines)
- Exchange Client Access Server
- Exchange Edge Transport Server
- Exchange Hub Transport Server
- Exchange Unified Messaging Server
- GemFire
- IIS

Add custom service

Type: Process

Process Name: ntpd

Port: 123

Display Name: NTP Service

SAVE CANCEL

Custom Services Defined by Regular Expression

Custom services defined by a regular expression are a great option in cases where the port bindings might be variable.

When choosing to add a custom service by regular expression, you use the regular expression corresponding to the name of the service that you see in the guest OS when you run the `ps` command in Linux or the `wmic` command in Windows.

The screenshot shows the 'Service Discovery' configuration page. At the top, there are tabs for 'CONFIGURE SERVICE DISCOVERY' and 'MANAGE SERVICES'. Below this, a section titled 'Known Services' lists several services with icons: Active Directory, Apache HTTP (with a note '1 virtual machines'), Apache Tomcat (with a note '2 virtual machines'), Exchange Client Access Server, Exchange Edge Transport Server, Exchange Hub Transport Server, Exchange Unified Messaging Server, GemFire, and IIS. To the right of this list, a modal window titled 'Add custom service' is open. It contains fields for 'Type:' (set to 'Regex'), 'Regex:' (containing the value '^*FNPLicensingService64.*'), and 'Display Name:' (containing 'FlexNet Licensing Service'). There are 'SAVE' and 'CANCEL' buttons at the bottom of the modal. A yellow box highlights the 'Add custom service' modal.

Troubleshooting Actions

Service discovery enables the following additional VM troubleshooting actions:

- **Execute Custom Script** enables you to run a script or a one-time command in the monitored VM's guest OS.
- **Get Top Processes** fetches the top processes from the monitored VM's guest OS.

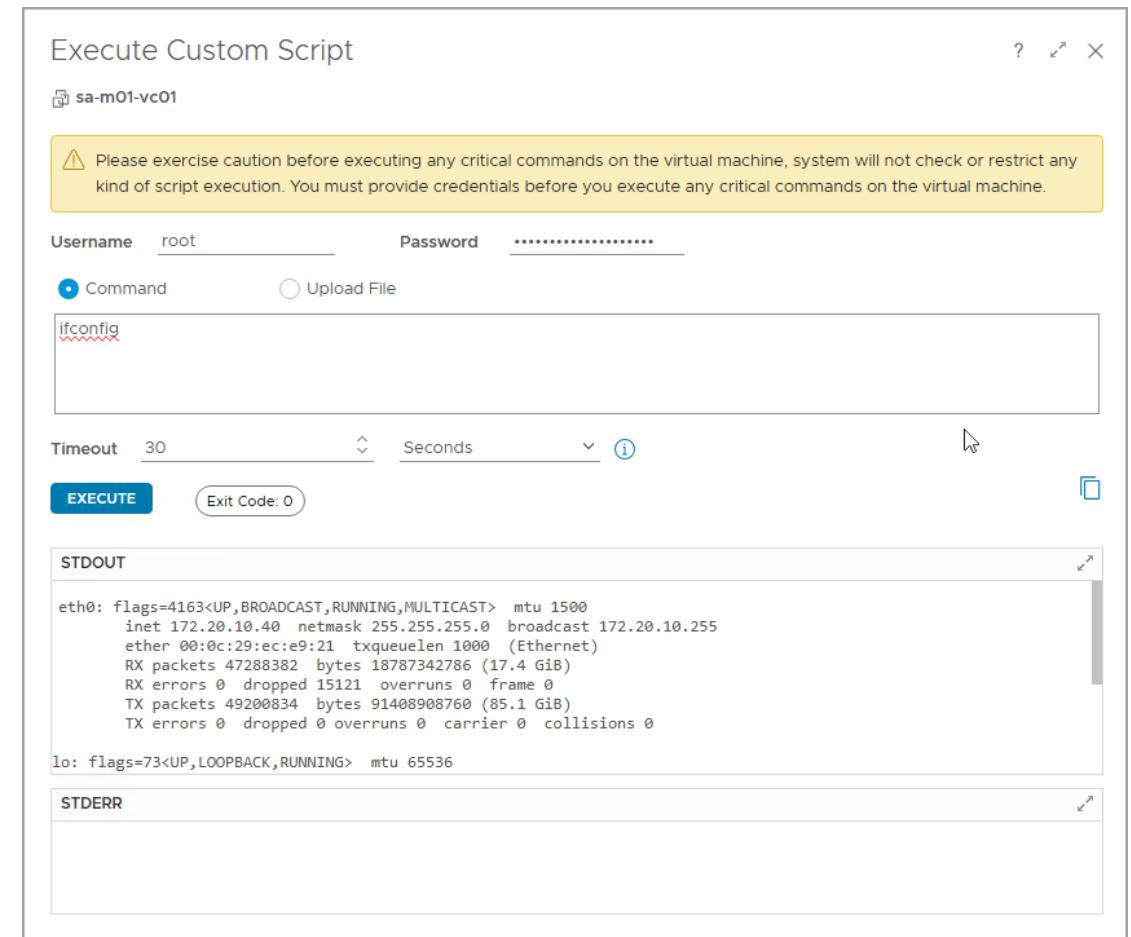
The screenshot shows the VMware Cloud Foundation Operations interface. On the left, the inventory tree displays various VCF instances, including EDU, sa-m01-vc01.vcf.sddc.local, and several ESXi hosts (esx-1, esx-2, esx-3, esx-4). A specific VM, 'sa-m01-en01', is selected in the tree. The main pane shows the VM's summary information: IP Address (172.20.10.54), Number of virtual CPUs (2), Memory (4 GB), Disk Space (197 GB), and VMware tools (Tools Version 12.1.5). The 'Actions' dropdown menu is open, listing various troubleshooting options. The 'TROUBLESHOOT' tab is selected. The menu includes: Delete Unused Snapshots for VM, Execute Custom Script (highlighted in yellow), Get Top Processes, Move VM, Power Off VM, Reboot Guest OS For VM, Set CPU Count and Memory for VM, Set CPU Count for VM, Set CPU Resources for VM, Set Memory Resources for VM, Set Memory for VM, Shut Down Guest OS for VM, and Suspend VM. Below the actions, there is a note about time remaining (> 1 Year) and sections for Utilization and Performance metrics. The 'Utilization' section includes CPU Usage (1.96 GHz), Free Memory (95.7 MB), Guest Page In Rate per second (35.8), Page Out Rate per second (620.73), Virtual Disk Total IOPS (64.07), and Virtual Disk Total Throughput (704.2 Kbps). The 'Performance' section includes CPU Queue (3.87), CPU Context Switch Rate (7,522.07), Disk Queue (2.67), CPU Ready (0.27 %), CPU Co-stop (0 %), Memory Contention (0 %), Virtual Disk Total Latency (5.73 ms), and Network Transmitted Packets Dropped (0). The 'Configuration' section lists Virtual Hardware (CPU: 2 (1 Socket x 2 vCores)), Resource Allocation (CPU: No Limit, No Reservation), Tools (Version: 12.1.5, Guest Tools ...), Network (IP Addresses: 172.20.10.54, ...), Guest OS Partition (/boot/efi: 498.98 MB Config...), and Virtual Disk (Hard disk 1: 197 GB). The 'Ping Statistics' section notes that ping monitoring is not activated for this Cloud Account.

Example: Execute Script Actions

The Execute Script action enables you to run a one-time script or command in a monitored virtual machine.

Execute Script provides the following features:

- Runs a script once in the monitored VM's guest OS
- Returns STDOUT, STDERR, and exit codes
- Variable timeout for long-running scripts



Example: Get Top Processes Actions

Get Top Processes retrieves the top process information such as process status, PID, and owner of the process from a monitored VM guest OS.

Get Top Processes provides the following features:

- Fetches top processes from the monitored VM's Windows or Linux guest OS.
- Supports Windows and Linux-native process reporting
- Shows the limit that you can set on the number of processes

The screenshot shows the 'Top Processes' interface for a VM named 'sa-m01-vc01'. At the top, it displays system statistics: 'top -: 17:09:42 up 1 day, 3:10, 0 user, load average: 8.78, 2.79, 1.49', 'Tasks: 427 total, 1 running, 426 sleeping, 0 stopped, 0 zombie', and CPU usage: '%Cpu0 : 19.0/9.5 29[||||] %Cpu1 : 10.0/10.0 20[|||] %Cpu2 : 0.0/0.0 0[] %Cpu3 : 9.5/38.1 48[|||||]'. Below this is a table of processes:

COMMAND	PID	CPU (%)	MEM (%)	USER	STATUS
z /usr/l+	4438	41.2	2.2	trustma+	S
z /usr/l+	2691	11.8	0.5	vmafdd-+	S
z /usr/j+	4456	11.8	4.8	sts	S
z /usr/l+	13169	5.9	2.6	content+	S
z /opt/l+	2601	5.9	0.1	root	S
+	3820	5.9	2.2	idmserv+	S
z /usr/l+	2747	5.9	0.3	vmdir	S
+	1404710	5.9	0	root	R
z /usr/l+	7043	0	2.8	vpxd	S
z /usr/sbin/+	1311	0	0	root	S

Viewing Discovered Services

To view all discovered services, navigate to **Workload Operations > Applications > Manage SDMP Services** and expand the VM to view the services discovered from the selected VM.

You can use the following management options:

- Access the VM Actions to manage the selected VM.
- Activate/deactivate service monitoring for the selected VM.
- Provide a password to the selected VM for credential-based service discovery.

VM Name	Operating System	Service Monitoring	Authentication Status	Power State	Collection State	Collection Status	vCenter Name
vml-master	Other 3.x Linux (64-bit)	Unknown	Unknown	Powered Off	Green	Green	sa-m01-vc01.vcf.s...
sa-m01-vcops01	VMware Photon OS (64-bit)	Credential-less	Powered On	Green	Green	Green	sa-m01-vc01.vcf.s...
sa-m01-vc01	VMware Photon OS (64-bit)	Credential-less	Powered On	Green	Green	Green	sa-m01-vc01.vcf.s...
vml-collector	Ubuntu Linux (64-bit)	Common Credentials	Powered On	Green	Green	Green	sa-m01-vc01.vcf.s...

Activating Service Monitoring

Activating Service Monitoring enables the VCF Operations Service Discovery adapter to provide performance and connectivity metrics and properties for the target services with a 5-minute collection cycle.

By default, Service Monitoring is disabled. To activate Service Monitoring, select the target services, click **More Options**, and select **Activate Service Monitoring**.

The screenshot shows the 'Manage SDMP Services' interface in a web-based management tool. On the left, a sidebar lists 'Applications' with 'Manage SDMP Services' selected. The main pane displays a table of VMs and their service monitoring status. A context menu is open over the row for 'sa-m01-vc01', with the 'Activate Service Monitoring' option highlighted by a yellow box. Other options in the menu are 'Deactivate Service Monitoring' and 'Provide Password'. The table includes columns for VM Name, Service Monitor Status, Authentication Status, Power State, Collection Status, Collection Status, and vCenter Name. Below the table, sections for 'Services Discovered' show metrics for various services like Apache HTTP, Apache Tomcat, and VCF Operations Collector. The bottom of the page shows pagination information: '1 - 15 of 15 items'.

Viewing VM and Services Relationship

When the service monitoring is activated, VCF Operations collects and displays services and service types in the VM topology.

Manage SDMP Services

VM ACTIONS ...

Page Size: 50 Type here to apply filters

Activate Service Monitoring

Provide Password

Go to Details

Services Discovered (8)

- Apache HTTP
- Apache Tomcat
- VCF Operations Analytics
- VCF Operations Collector
- VCF Operations GemFire
- VCF Operations Postgres Data
- VCF Operations Postgres Repl
- VCF Operations UI

VMs (13)

- sa-m01-vcopsc01 VMware Photon O... Credential-less Power... sa-m01-vc...
- ubuntu-01a Ubuntu Common Cred Power... sa-m01-vc...
- sa-wld01-vc01 VMware Photon O... Common Cred Power... sa-m01-vc...
- ubuntu-02a Ubuntu Common Cred Power... sa-m01-vc...
- centOS-01a CentOS Linux Common Cred Power... sa-m01-vc...
- photon-01a VMware Photon O... Common Cred Power... sa-m01-vc...
- sa-m01-vc01 VMware Photon O... Common Cred Power... sa-m01-vc...

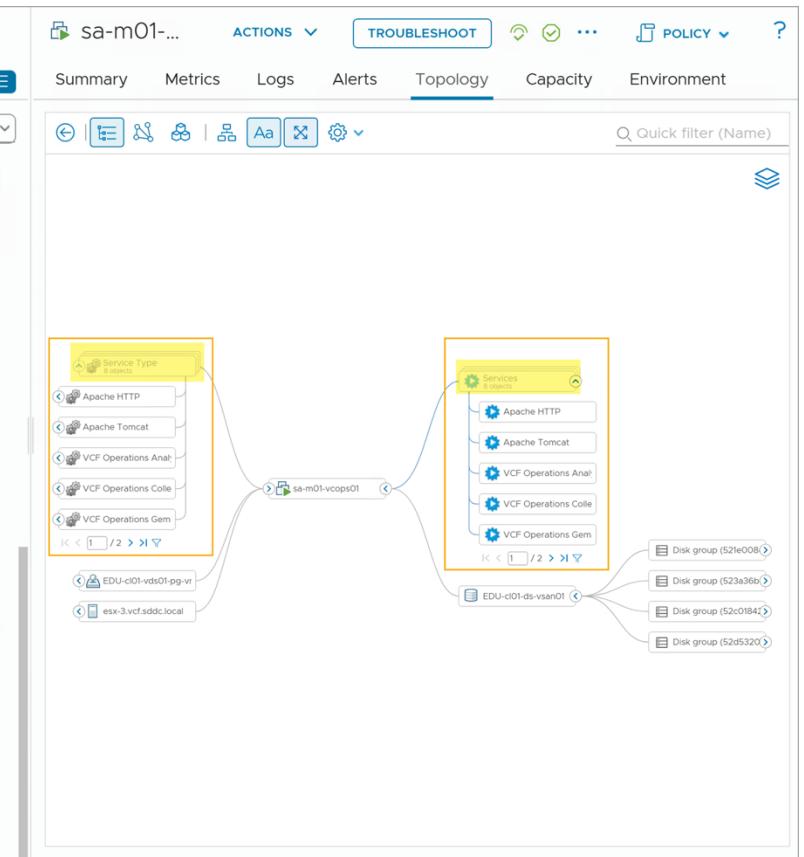
1 - 13 of 13 items

Inventory BASIC VIEW

All Objects Levels: 7

- vSAN Cluster
- Environment
- VMware Cloud Foundation
- Cluster Compute Resource
- vSAN World
- vSphere Distributed Switch
- NSX
- Service Type
- Transport Zones
- Virtual Machine
- Cache Disk
- Services
- vSAN Disk Group
- Capacity Disk
- Datastore

Virtual Machine: sa-m01-vcops01



Understanding Service Discovery Metrics

When Service Discovery is activated, VCF Operations discovers and collects service-related metrics from the eligible VMs, including:

- Virtual Machine metrics
- Service Summary metrics
- Service Performance metrics
- Service Type metrics

It also discovers CPU and memory metrics for discovered services.

The screenshot displays the VCF Operations UI interface, specifically the 'Manage SDMP Services' section and the main dashboard.

Manage SDMP Services: This section shows a table of VMs and their status. A yellow box highlights the 'Activate Service Monitoring' and 'Provide Password' options for a selected VM, with a blue arrow pointing down to the main dashboard.

VM Name	Operating System	Service Monitoring	Authentication Status	Power State	Collection Status	Collection Status	vCenter Name
vrni-master	Other 3.x Linux (64-bit)	Unknown	Powered ...	Powered ...	Powered ...	Powered ...	sa-m01-vc01.V...
vrni-collector	Ubuntu Photon OS (64-bit)	Credential-less	Powered ...	Powered ...	Powered ...	Powered ...	sa-m01-vc01.V...
sa-wld01-vc01	Ubuntu Photon OS (64-bit)	Credential-less	Powered ...	Powered ...	Powered ...	Powered ...	sa-m01-vc01.V...

Main Dashboard: The main area shows various monitoring and alerting components. A large green circle indicates 1 object. The 'Metrics' tab is selected, showing a chart with no results found. The 'Alerts' tab shows no alerts found. The 'Logs' and 'Topology' tabs are also visible.

Virtual Machine Metrics

Service Discovery discovers the following Guest OS Services metrics for virtual machines:

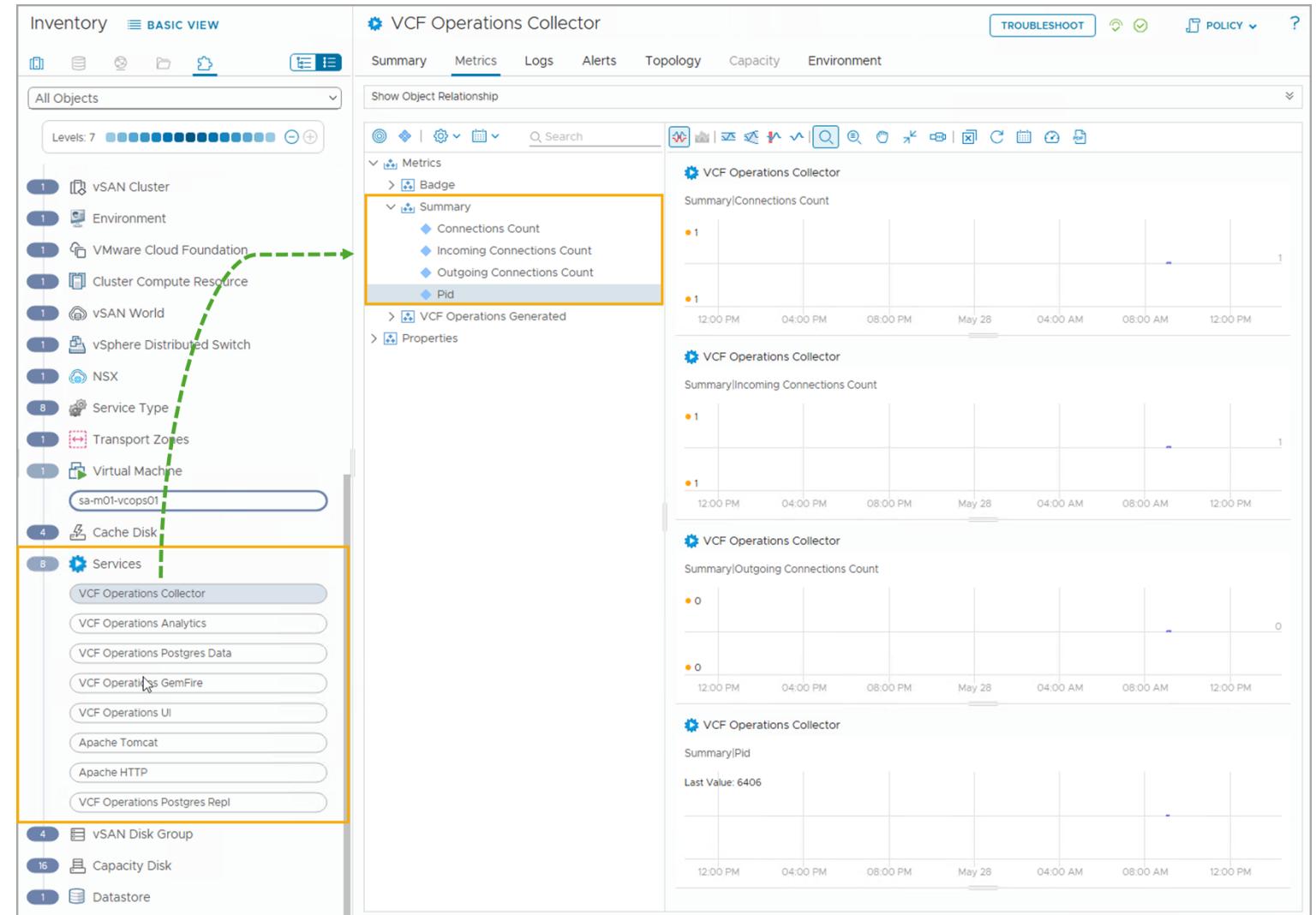
- Total Number of Services
- Number of User Defined Services
- Number of OOTB Services
- Number of Outgoing Connections
- Number of Incoming Connections

The screenshot shows the vSphere Web Client interface. On the left, the Inventory pane displays a tree of objects, with the 'Virtual Machine' node expanded. A specific virtual machine, 'sa-m01-vcops01', is selected and highlighted with an orange box. A dashed green arrow points from this selection to the 'Metrics' tab in the top navigation bar of the main content area. The 'Metrics' tab is active, showing a list of metrics under the 'Guest OS Services' category, which is also highlighted with a yellow box. The metrics listed are: Number of Incoming Connections, Number of OOTB Services, Number of Outgoing Connections, Number of User Defined Services, and Total Number of Services. To the right of this list are four line charts for each metric over time, all showing constant values (9 for incoming connections, 8 for OOTB services, 10 for outgoing connections, and 0 for user-defined services). The top navigation bar also includes tabs for Summary, Logs, Alerts, Topology, Capacity, and Environment, along with various action buttons.

Service Summary Metrics

Service Discovery discovers the following additional Summary metrics for virtual machines:

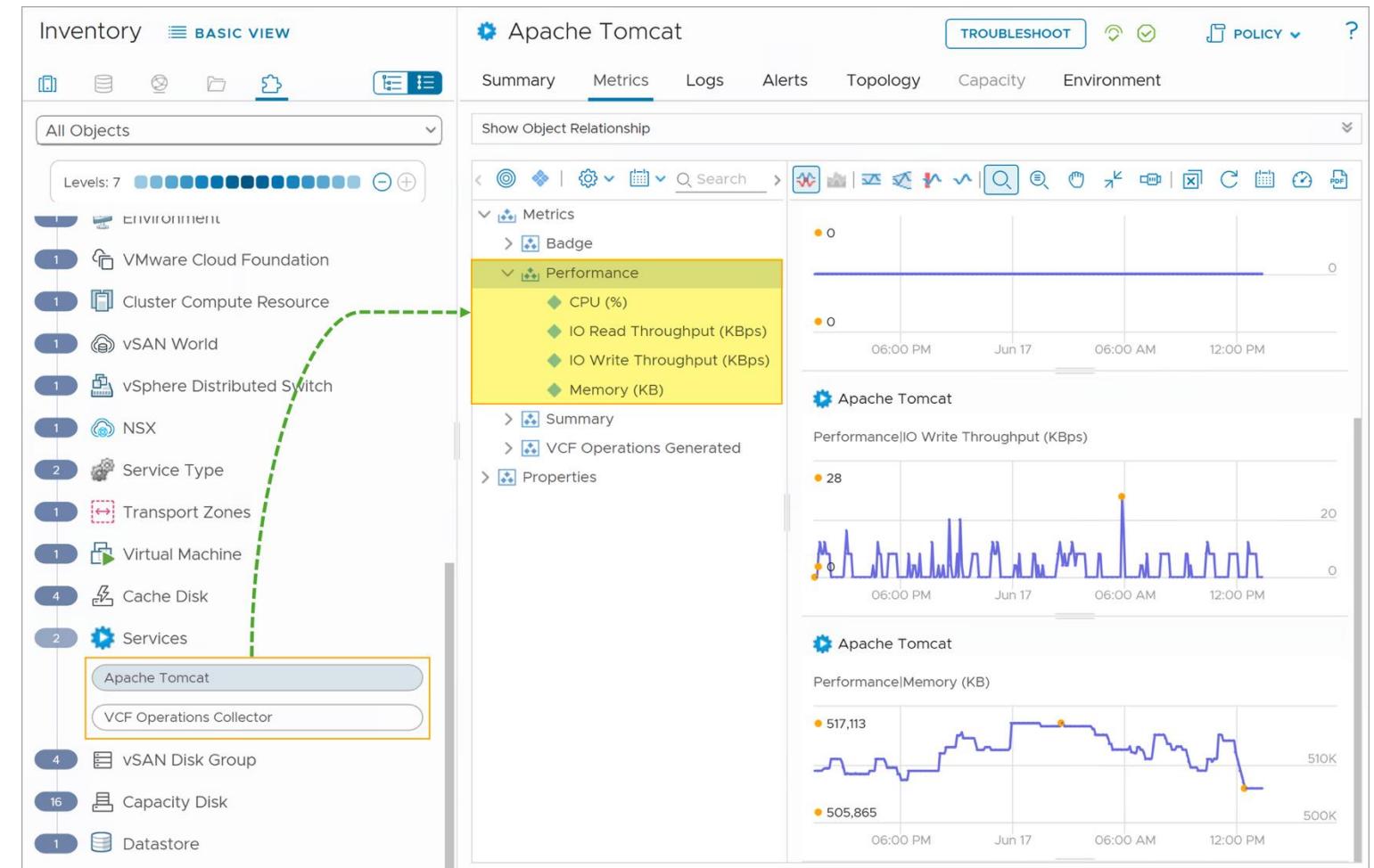
- Incoming Connections Count: Number of incoming connections.
- Outgoing Connections Count: Number of outgoing connections.
- Connections Count: Number of incoming and outgoing connections.
- Pid: Process ID.



Service Performance Metrics

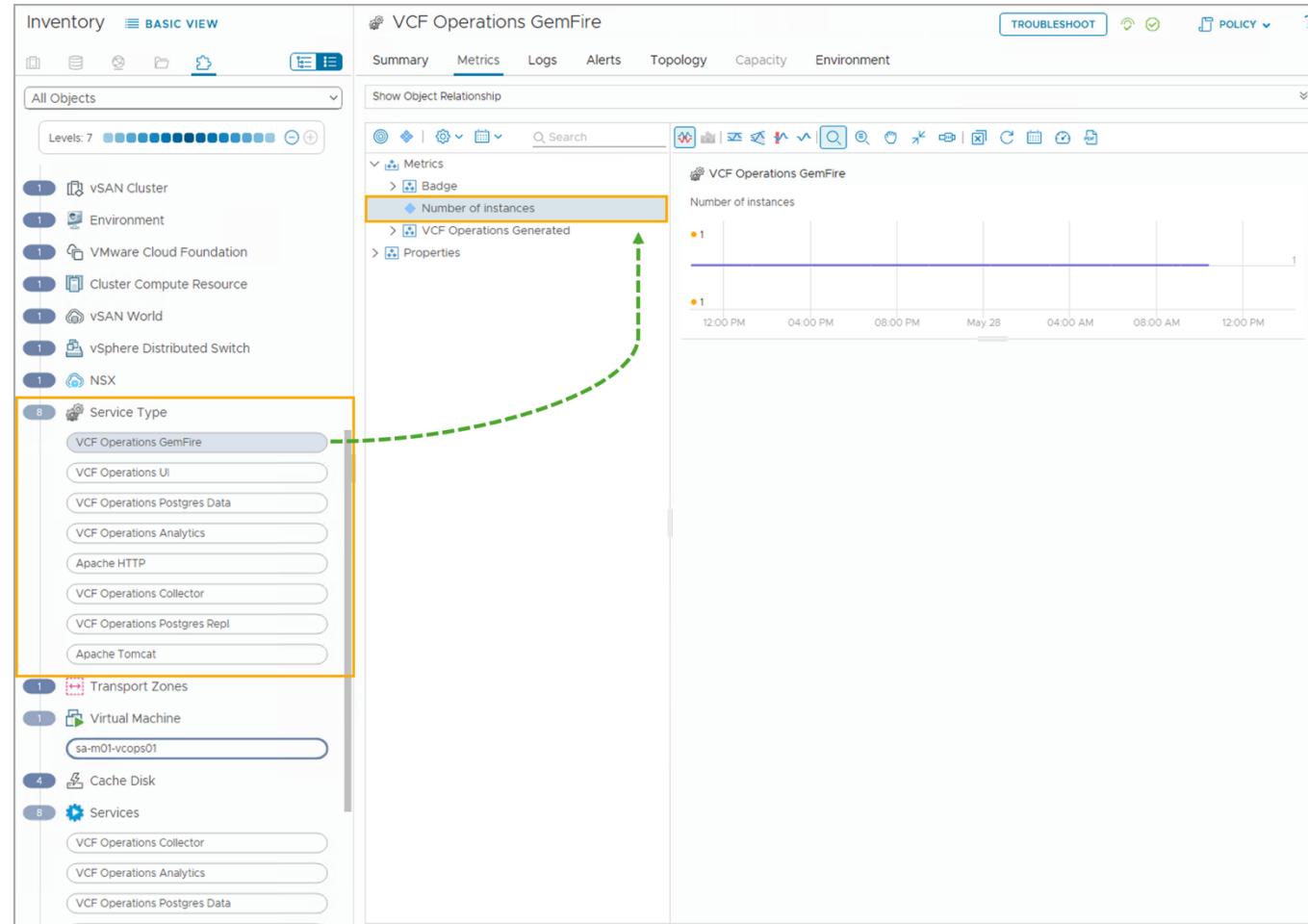
Service Discovery discovers the following additional performance metrics for the services discovered from the target virtual machines:

- CPU: CPU usage in percentage.
- Memory: Memory usage in KB.
- IO Read Throughput: I/O read throughput in KBps.
- IO Write Throughput: I/O write throughput in KBps.



Service Type Metrics

Service Discovery can discover a Service Type metric called Number of Instances. This metric records the number of instances of this service type.



Lab: Configuring Service Discovery

Configure and use the Service Discovery feature to monitor services:

1. Configure Service Discovery
2. Add a Custom Service for Discovery
3. Activate Service Monitoring

Review of Learner Objectives

- Enable service discovery for a VCF deployment
- Perform actions enabled by the native service discovery
- Enable service monitoring
- Describe the different types of service metrics
- Use collected metrics to interpret the status of services

Application Monitoring

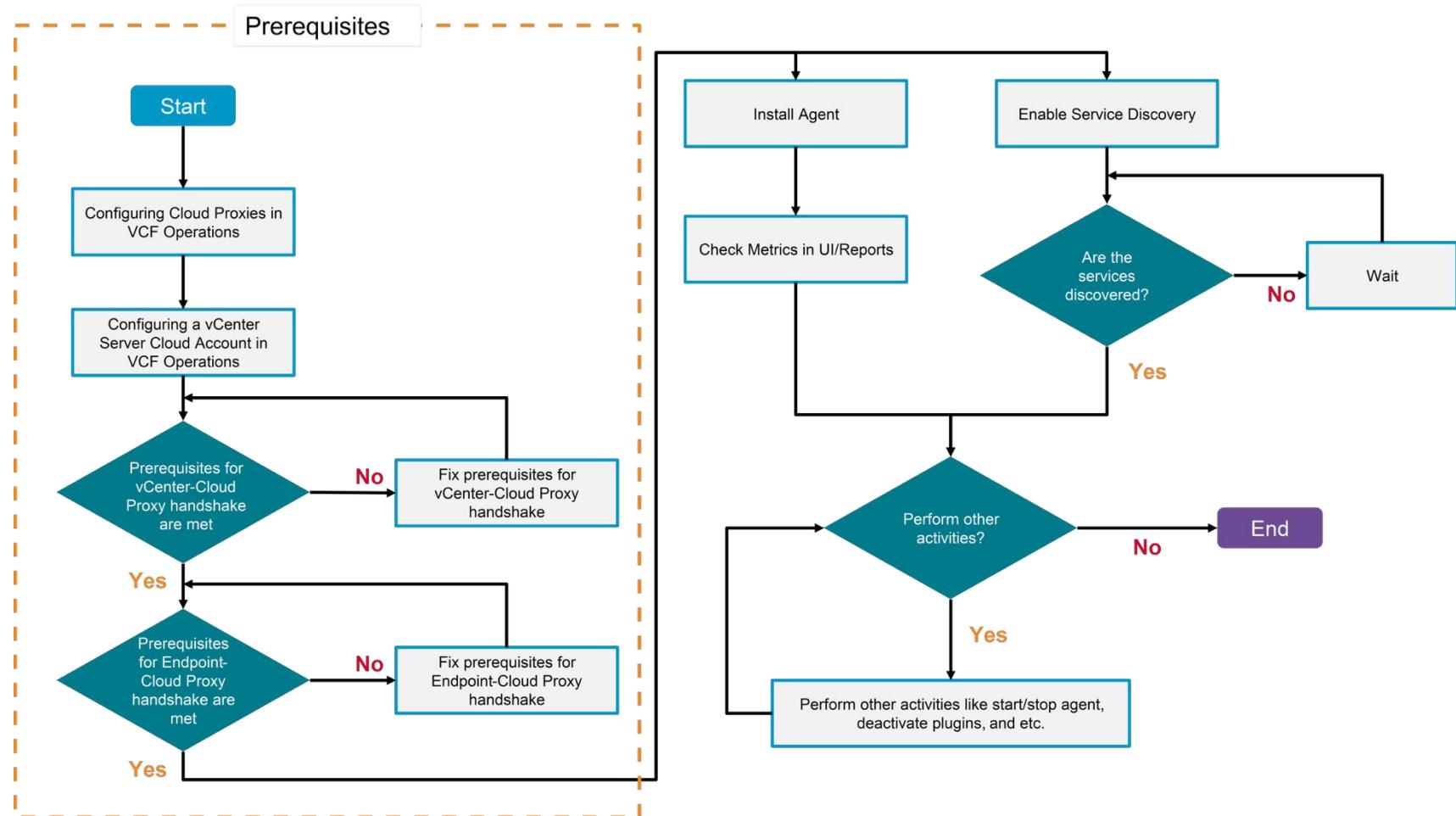


Learner Objectives

- Install Telegraf agents to target VMs
- Enable application service monitoring
- Describe the different types of application metrics
- Examine OS and application status from collected metrics

Steps to Monitor Applications

To monitor applications with VCF Operations, you must complete the prerequisites and Telegraf agent installation.



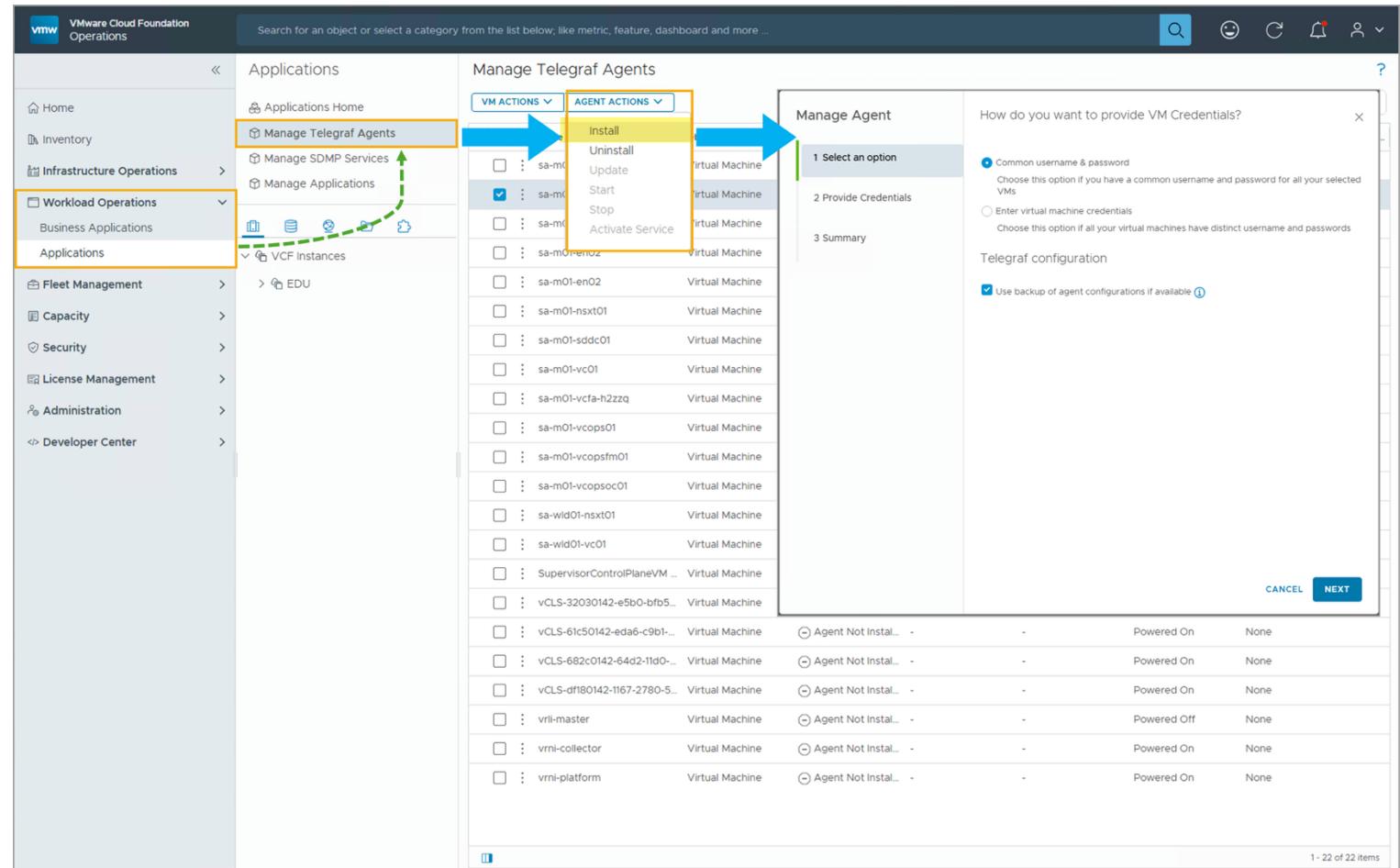
Installing Telegraf Agents for VMs

To install the Telegraf agent:

1. Select the cloud proxy (without HA) or cloud proxy group (with HA).
2. Provide the install credentials.

You can either use a common user name and password for all selected VMs or choose to provide distinct user names and passwords for each VM.

3. Complete the Telegraf agent installation.



Managing Telegraf Agents on VMs

To view the available agent management options, first select a Telegraf agent-installed VM and click either **Agent Actions** or the vertical ellipsis icon.

You can perform the following additional management actions:

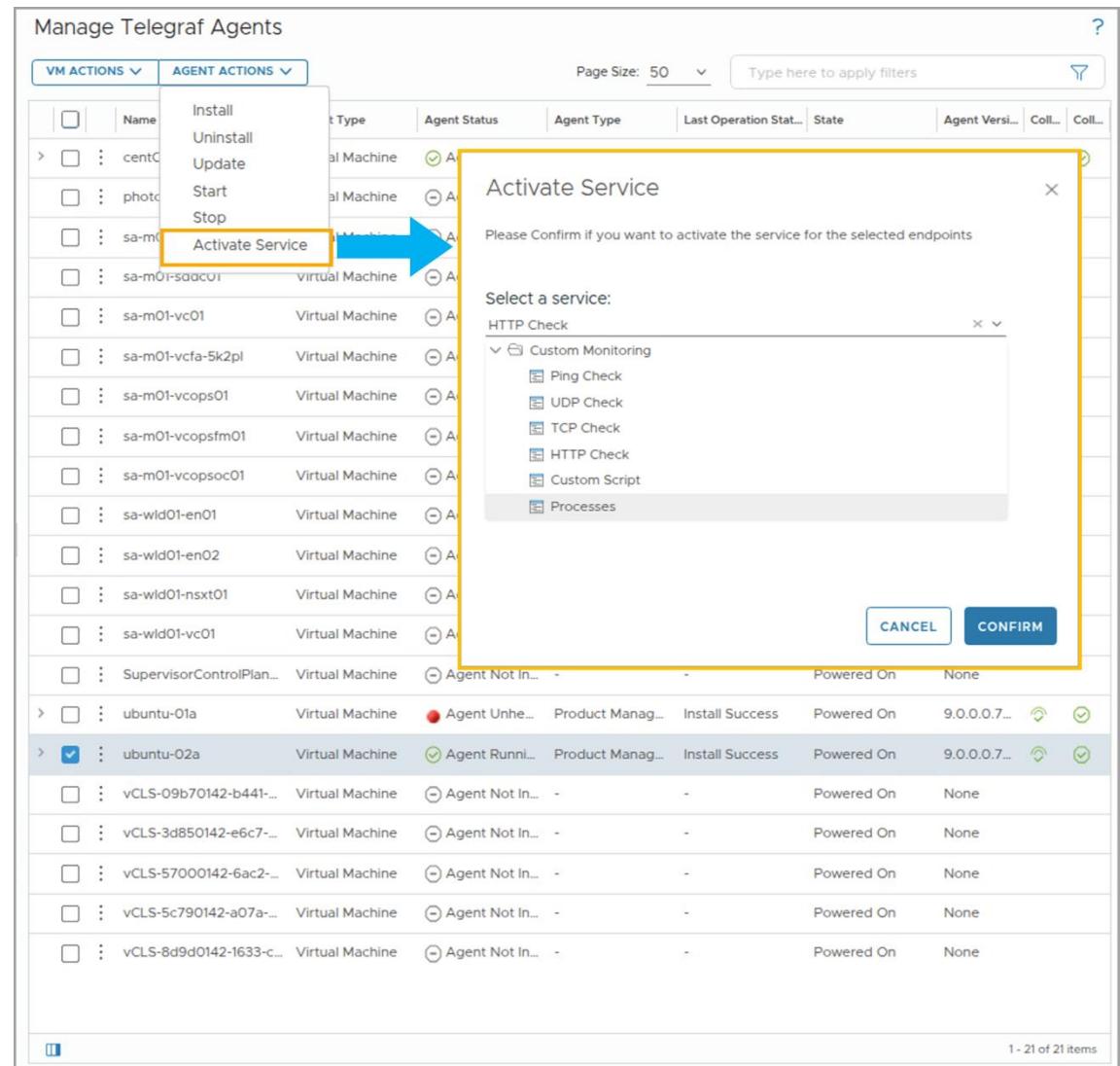
- **Install**
- **Uninstall**
- **Update**
- **Stop**
- **Start**
- Additionally, you can use the **Filter** options to only view VMs that meet your defined criteria.

Manage Telegraf Agents									
VM ACTIONS		AGENT ACTIONS		VM Details					
	Name	Object Type	Agent Status	Agent Type	Last Operation Stat...	State	Agent Versi...	Coll...	Coll...
>	centOS-01a	Virtual Machine	Agent Runn...	Product Manag...	Install Success	Powered On	9.0.0.0.7...	?	?
	photon-01a	Virtual Machine	Agent Not In...	-	Install Failed	Powered On	None		
	sa-m01-nsxt01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-sddc01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-vc01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-vcfa-5k2pl	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-vcops01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-vcopsfm01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-m01-vcopspoc01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-wld01-en01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-wld01-en02	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-wld01-nsxt01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	sa-wld01-vc01	Virtual Machine	Agent Not In...	-	-	Powered On	None		
	...	Install	Agent Not In...	-	-	Powered On	None		
	...	Uninstall	Agent Unhe...	Product Manag...	Install Success	Powered On	9.0.0.0.7...	?	?
	...	Update	Agent Runn...	Product Manag...	Install Success	Powered On	9.0.0.0.7...	?	?
	...	Start	Agent Not In...	-	-	Powered On	None		
	...	Stop	Agent Not In...	-	-	Powered On	None		
	...	Go to Details	Agent Not In...	-	-	Powered On	None		

Activating an Application Service

After successfully installing the Telegraf agent on a target VM, you can activate plug-ins to monitor application services on Telegraf agent-installed VMs. To activate application service monitoring:

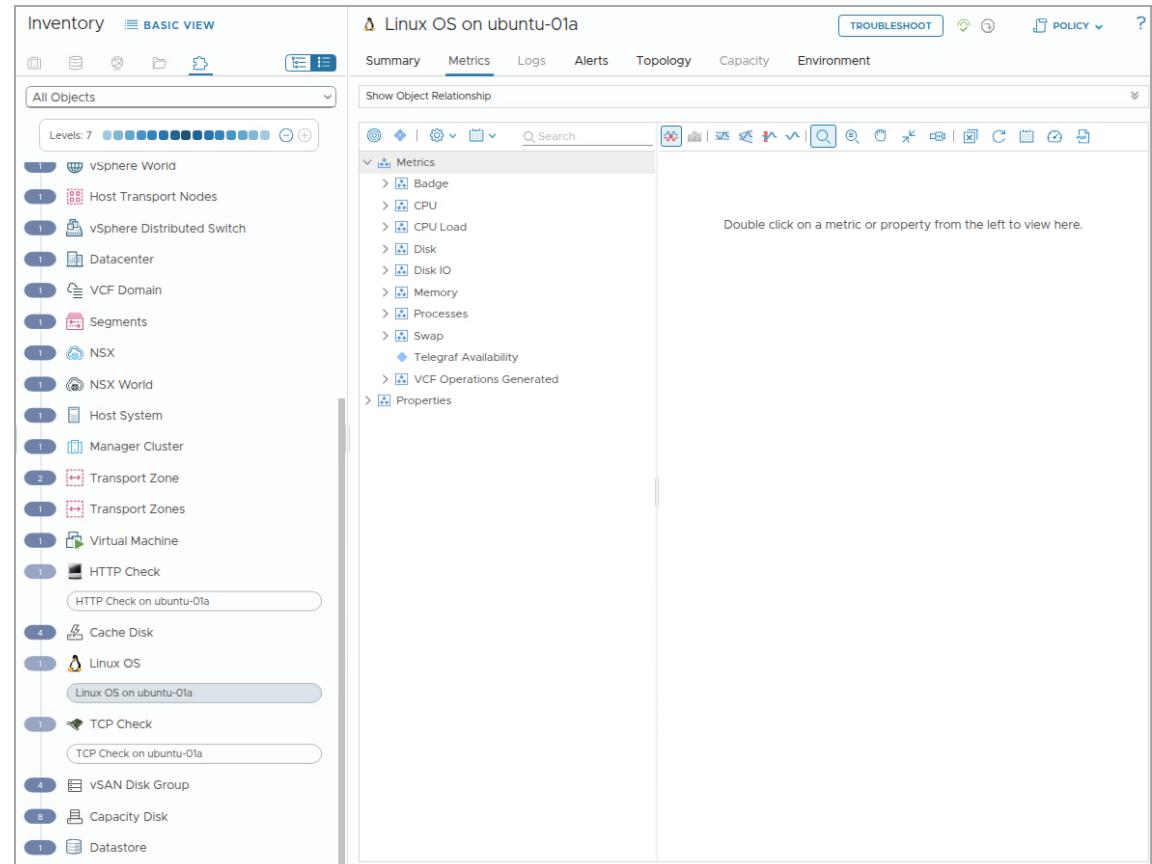
1. Add a **Filter by Agent Status > Agent Running** to only view the VMs where Telegraf agents are installed and running.
2. Select a Telegraf agent-installed VM, click **Agent Actions**, and select **Activate Service**.
3. Select the service to monitor and click **Confirm**.



Understanding Applications Metric Collection

With the OS and Application Monitoring capability, VCF Operations can collect the following types of metrics from the target VMs:

- Operation System metrics: Are collected for Linux and Windows operating systems.
- Application Service metrics: Are collected for 23 application services to help understand the application performance and runtime status.
- Remote Check metrics: Are collected for object types such as HTTP, ICMP, TCP, and UDP.
- Linux Process metrics: Are collected for Linux services.
- Windows Service metrics: Are collected for Windows services.



Operating System Metrics

VCF Operations can collect additional metrics on the operating system level from Telegraf agent-installed VMs.

The following metrics are collected for Linux operating systems:

- <instance name> | Usage Guest (%)
- <instance name> | Usage Active (%)
- <instance name> | Read Time
- <instance name> | Write Time
- <instance name> | Disk Used (%)
- Running (Processes)
- Telegraf Availability

The following metrics are collected for Windows operating systems:

- Usage Guest
- Usage System
- Disk Read Time
- Disk Write Time
- IO Read Bytes persec
- IO Write Bytes persec
- Telegraf Availability

Application Service Metrics

VCF Operations can collect metrics for the following application services:

- Active Directory
- ActiveMQ
- Apache HTTPD
- Apache Tomcat
- Microsoft IIS
- Java Application
- JBoss Server
- HyperV
- Oracle DB
- Cassandra
- MongoDB
- MS Exchange
- Microsoft SQL Server
- MySQL
- NGINX
- Network Time Protocol
- Oracle WebLogic Server
- Pivotal TC Server
- PostgreSQL
- RabbitMQ
- Riak KV
- SharePoint
- WebSphere

Remote Check Metrics

VCF Operations can collect the following Remote Check metrics:

- HTTP Metrics:
 - Availability
 - Content Length
 - Response Code
 - Response Time
 - Result Code
- TCP Metrics:
 - Availability
 - Result Code
 - Response Time
- ICMP Metrics:
 - Availability
 - Average Response Time
 - Packet Loss (%)
 - Packets Received
 - Packets Transmitted
 - Result Code
- UDP Metrics:
 - Availability
 - Response Time
 - Result Code

Linux Process and Windows Service Metrics

VCF Operations can collect several Linux processes and Windows service metrics.

Metric Name	Category	KPI
Linux		
Availability Resource Availability	Processes	False
Utilization Memory Usage (%)	Processes	False
Utilization CPU Usage (%)	Processes	False
Utilization Number of Processes	Processes	False
Windows		
Availability Resource Availability	Services	False
Utilization Memory Usage (%)	Services	False
Utilization CPU Usage (%)	Services	False

Lab: Configuring Application Monitoring

Install agents to a target VM to monitor applications and services:

1. Verify the Cloud Proxy Details
2. (Optional) Install an Agent
3. Configure a Custom Remote Check

Review of Learner Objectives

- Install Telegraf agents to target VMs
- Enable application service monitoring
- Describe the different types of application metrics
- Examine OS and application status from collected metrics