VCF Operations Overview

Importance

VMware Cloud Foundation (VCF) Operations encompasses the day-to-day management, monitoring, and life cycle tasks required to maintain a healthy and efficient private cloud infrastructure. Through AI-powered management capabilities and deep integrations into your existing VMware product suite, VCF Operations provides streamlined control over compute, storage, networking, and management services across the entire fleet.

You must understand the capabilities and use cases VCF Operations enables, which help IT teams to manage their entire infrastructure fleet with greater efficiency and reduced risk.

Module Lessons

1. Introduction to VCF
2. Introduction to VCF Operations
3. VCF Operations Architecture
4. VCF Operations Navigation

Introduction to VCF Operations

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Learner Objectives

- List the key features of VCF Operations
- Outline VCF Operations use cases

VCF Operations Overview

VCF Operations is the operations management platform that is a part of the VMware Cloud Foundation product suite.

VCF Operations delivers intelligent operations management with application-to-storage visibility across physical, virtual, and cloud infrastructures. It allows you to view and manage your entire fleet and all VCF deployments along with their associated management and workload domains in one place.

VCF Operations provides a more simplified and streamlined experience as organizations move to complex private, hybrid, and multi-cloud IT environments.

VCF Operations Features

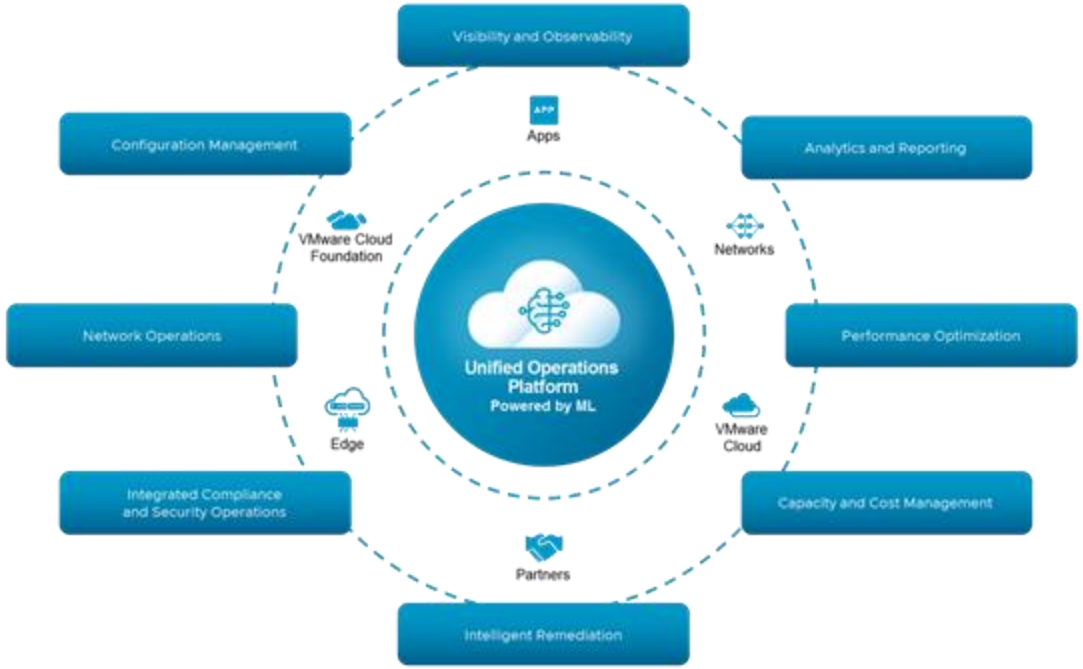
VCF Operations offers several key features:

- Comprehensive monitoring and management capabilities to support your entire fleet
- Predictive analytics for continuous operations management
- Continuous performance optimization and intelligent remediation capabilities
- Real-time, predictive capacity and cost analytics to proactively forecast demand and deliver actionable recommendations
- Cost transparency across private, hybrid, and public clouds to optimize planning
- Automation capabilities to support capacity planning, workload placement, and infrastructure optimization
- Integrated compliance features to reduce risks and ensure regulatory standards compliance
- Support for physical, virtual, and cloud infrastructure and container platforms

VCF Operations Use Cases

With 360-degree infrastructure management capabilities, VCF Operations helps organizations achieve mission-critical use cases:

- Visibility and Observability
- Analytics and Reporting
- Performance and Optimization
- Capacity and Cost Management
- Intelligent Remediation
- Integrated Compliance and Security Operations
- Network Operations
- Configuration Management

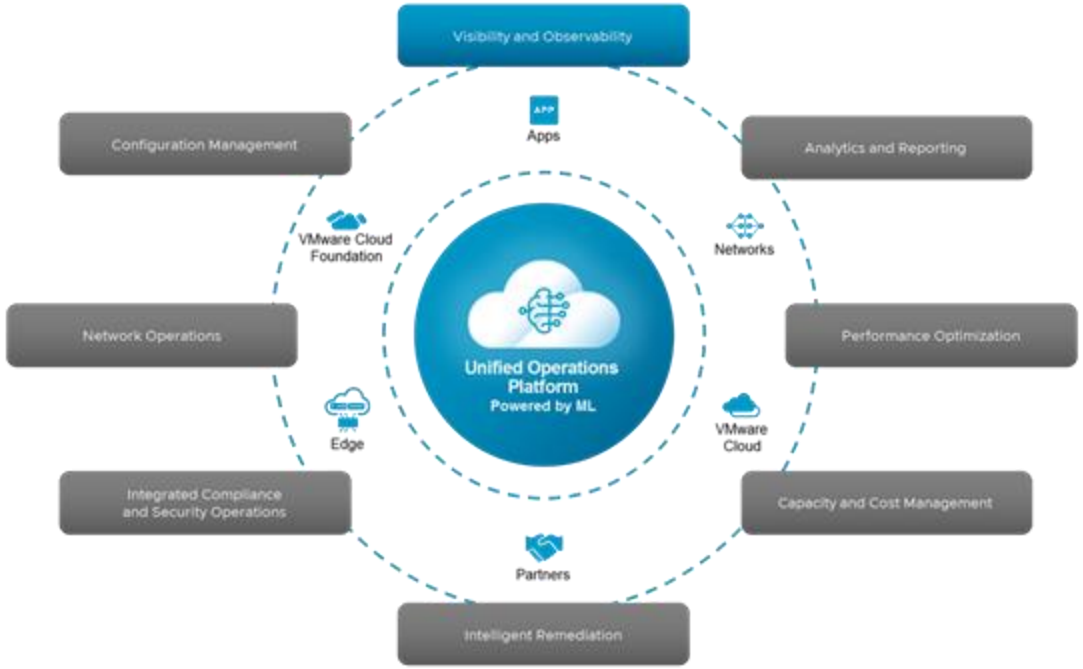


Visibility and Observability

VCF Operations integrates various infrastructure operations features to provide comprehensive visibility and observability into your entire fleet.

A wide range of data metrics are collected from infrastructure objects. These metrics are then used in visibility tools, such as Dashboards, Views, and Reports, to help organizations understand the status of their infrastructure.

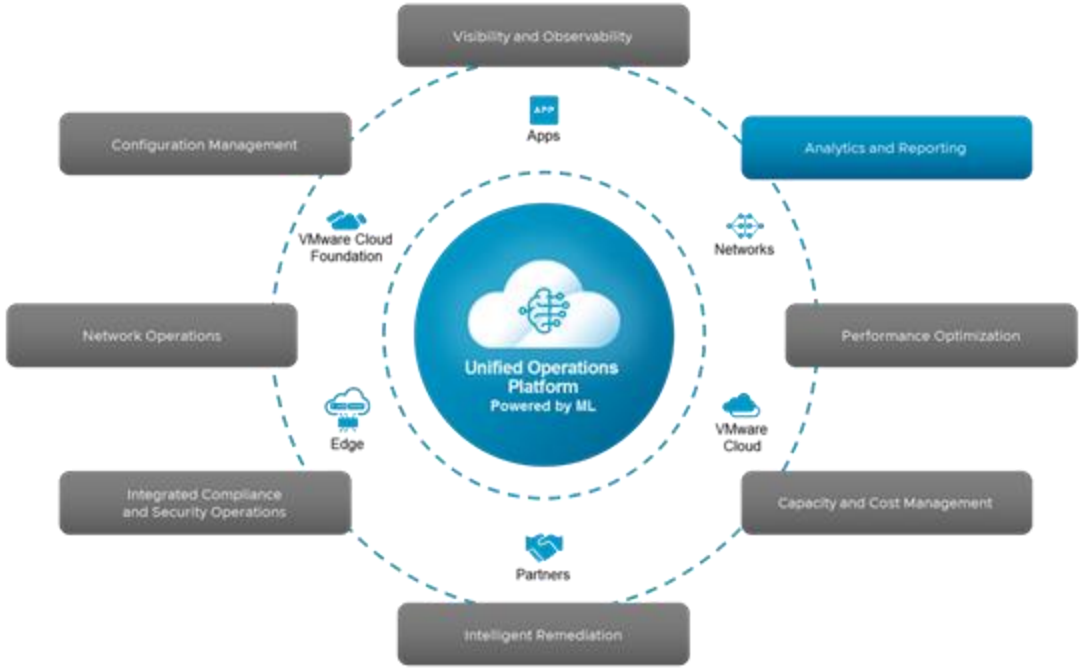
VCF Operations can also help organizations to monitor their Kubernetes deployment and Tanzu workloads from the VCF Operations console.



Analytics and Reporting

With the data and metrics collected from an organization's IT infrastructure, administrators can use the Alerts, Troubleshooting Workbench, and Log Analysis capabilities to remediate issues when they arise.

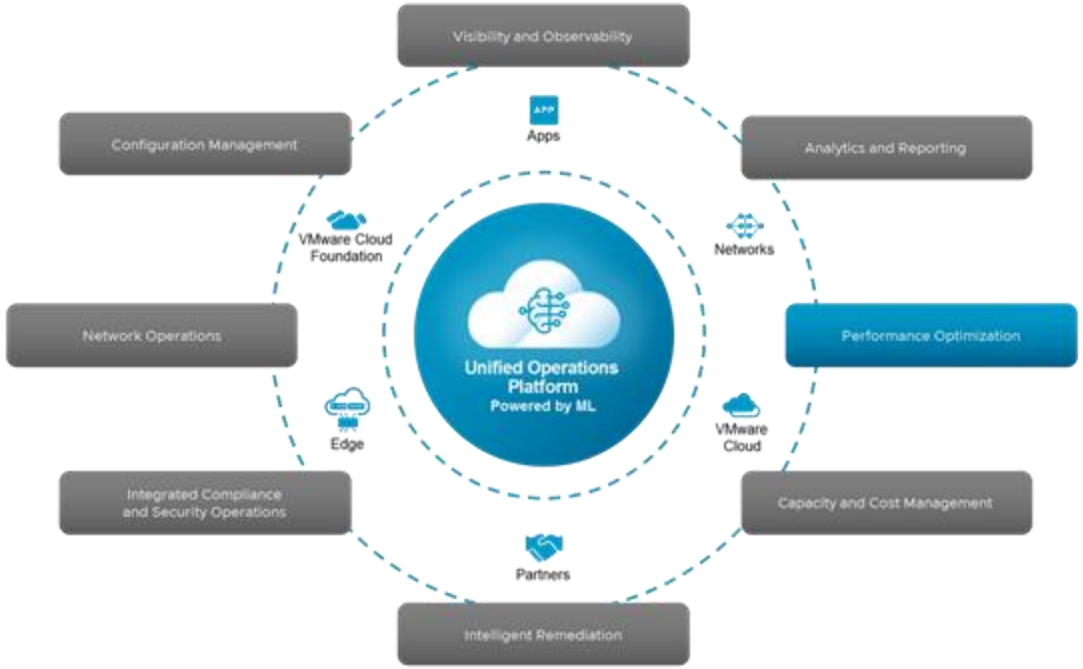
Troubleshooting Workbench enables you to perform advanced troubleshooting tasks on the alerts triggered on objects from your fleet. You can investigate both known and unknown issues in VCF Operations.



Performance and Optimization

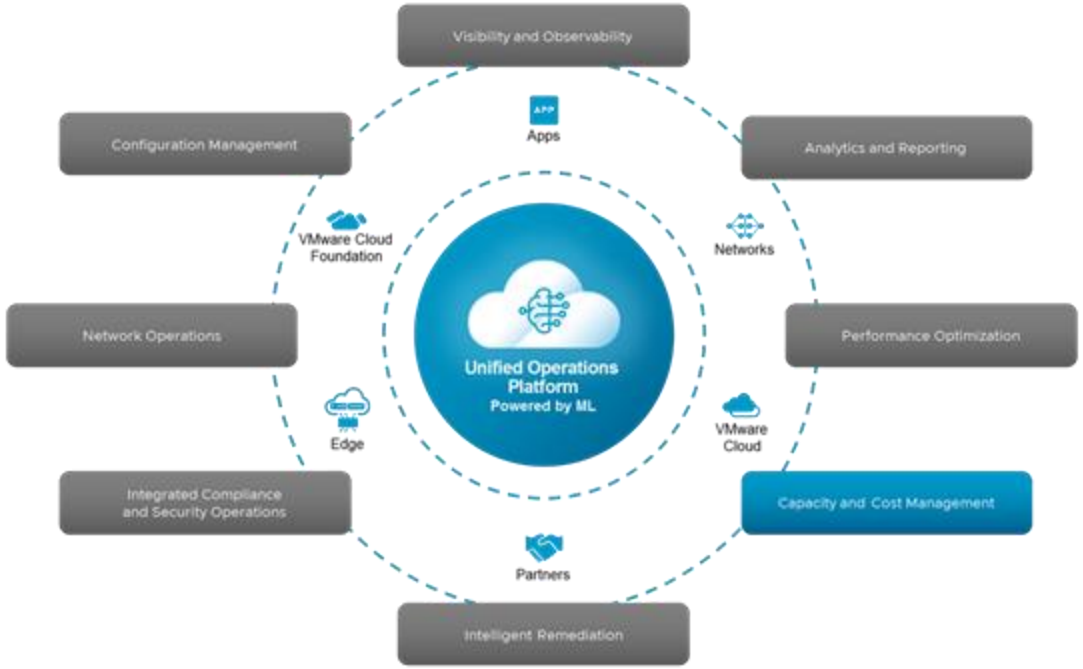
Organizations can use VCF Operations to ensure optimal performance across private cloud environments by leveraging real-time predictive analytics and Artificial Intelligence (AI)-driven insights.

By automatically balancing workloads and avoiding contention, organizations can continuously optimize hyperconverged infrastructure (HCI) and software-defined data center (SDDC) to meet operational and business objectives.



Capacity and Cost Management

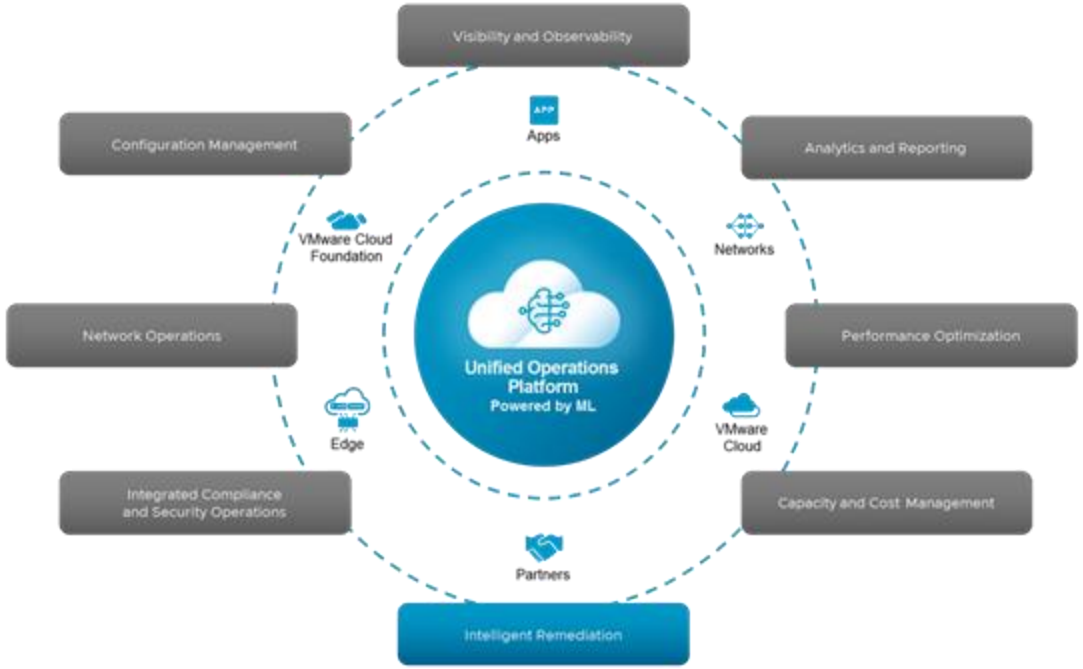
Organizations can reduce costs and improve efficiency through real-time, predictive capacity and cost analytics. By leveraging machine learning and AI, it accurately forecasts future demand, provides actionable recommendations, and automates resource reclamation and rightsizing, optimizing utilization and minimizing expenses across VMware Cloud Foundation.



Intelligent Remediation

VCF Operations enables proactive troubleshooting and remediation by correlating metrics, events, logs, troubleshooting workbench, and configuration data to detect anomalies across your private cloud.

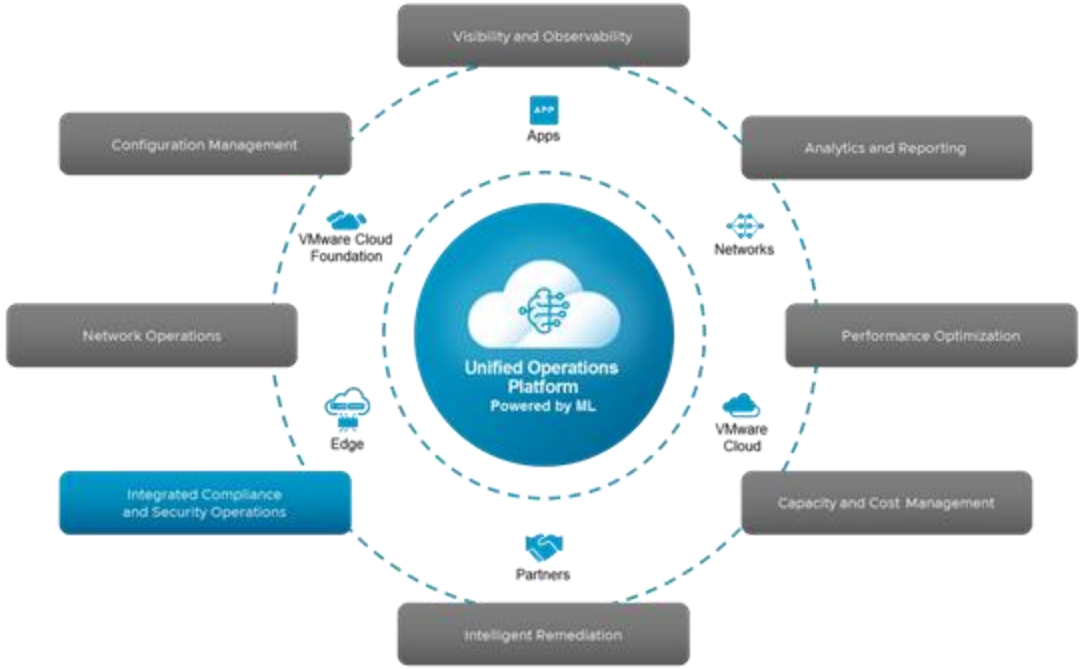
By providing actionable insights, VCF Operations accelerates problem resolution, enhances visibility, and centralizes IT operations management, ensuring smooth and uninterrupted operations.



Integrated Compliance and Security Operations

Organizations can also mitigate risks and ensure regulatory compliance with compliance features integrated with VCF Operations.

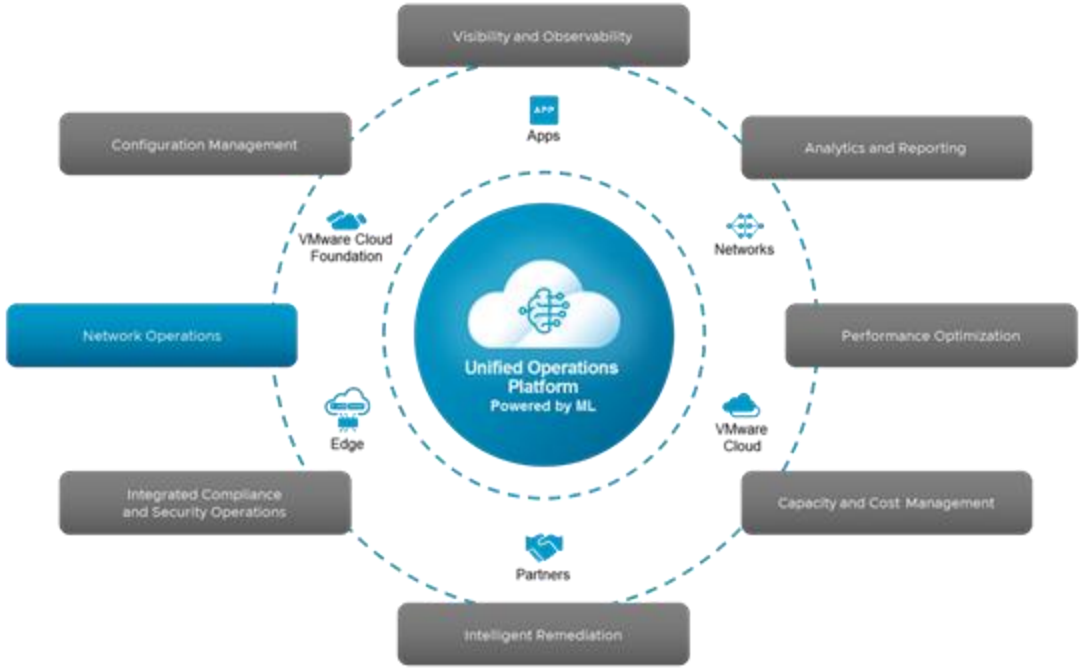
By automating drift remediation and enforcing IT regulatory standards (PCI, HIPAA, or custom standards), VCF Operations helps organizations reduce the likelihood of security breaches and compliance violations.



Network Operations

VCF Operations provides simple end-to-end Network Operations capabilities to troubleshoot and get best practices for their VCF network deployments. Administrators can use VCF Operations to gain visibility into both physical and virtual infrastructure with a comprehensive flow assessment.

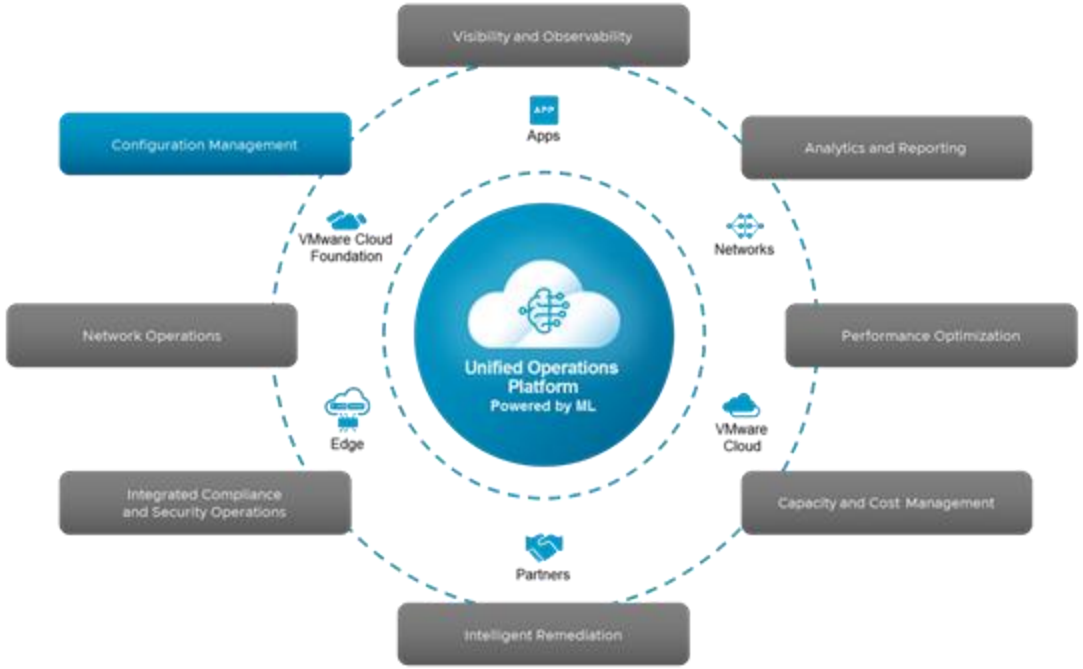
Organizations can also simplify NSX operations management with an intuitive UI and natural language search to quickly pinpoint network issues and troubleshoot, as well as get best practices deployment and compliance recommendations.



Configuration Management

VCF Operations provides Configuration Drift detection capability, enabling Admins to monitor and view vCenter configuration settings that have drifted from assigned templates without needing to track every change manually.

Configuration Drift detection reduces operational costs and complexity, and allows organizations to maintain strong compliance and security.



Review of Learner Objectives

- List the key features of VCF Operations
- Outline VCF Operations use cases

VCF Operations Architecture

Learner Objectives

- Identify the components of a VCF Operations node
- Describe the different roles of the node in a VCF Operations cluster

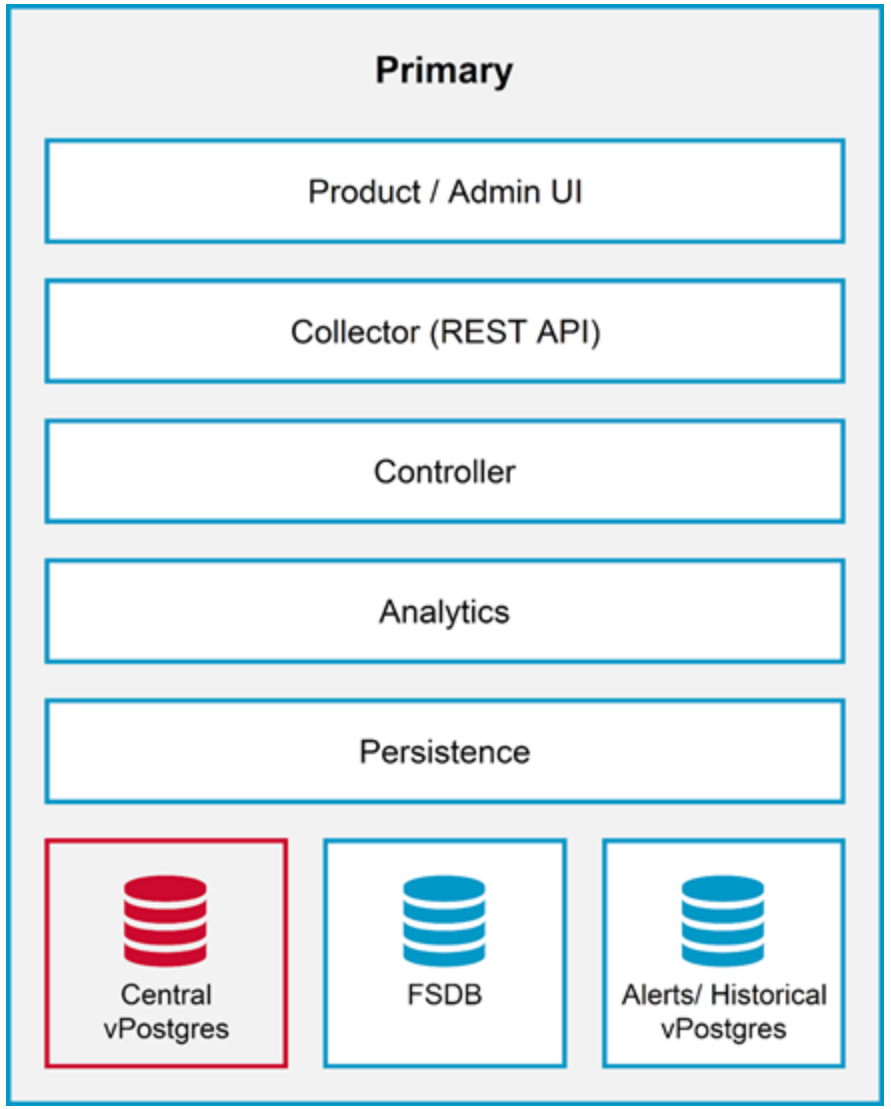
Understanding the Primary Node

A cluster can contain single or multiple VCF Operations nodes. The first VCF Operations node that you deploy is called the primary node.

The primary node is the required initial node in a VCF Operations cluster. It has the following functions and characteristics:

- Collects and processes incoming data and performs administration for the cluster
- Contains the central vPostgres database
- Can function as a network time protocol (NTP) server

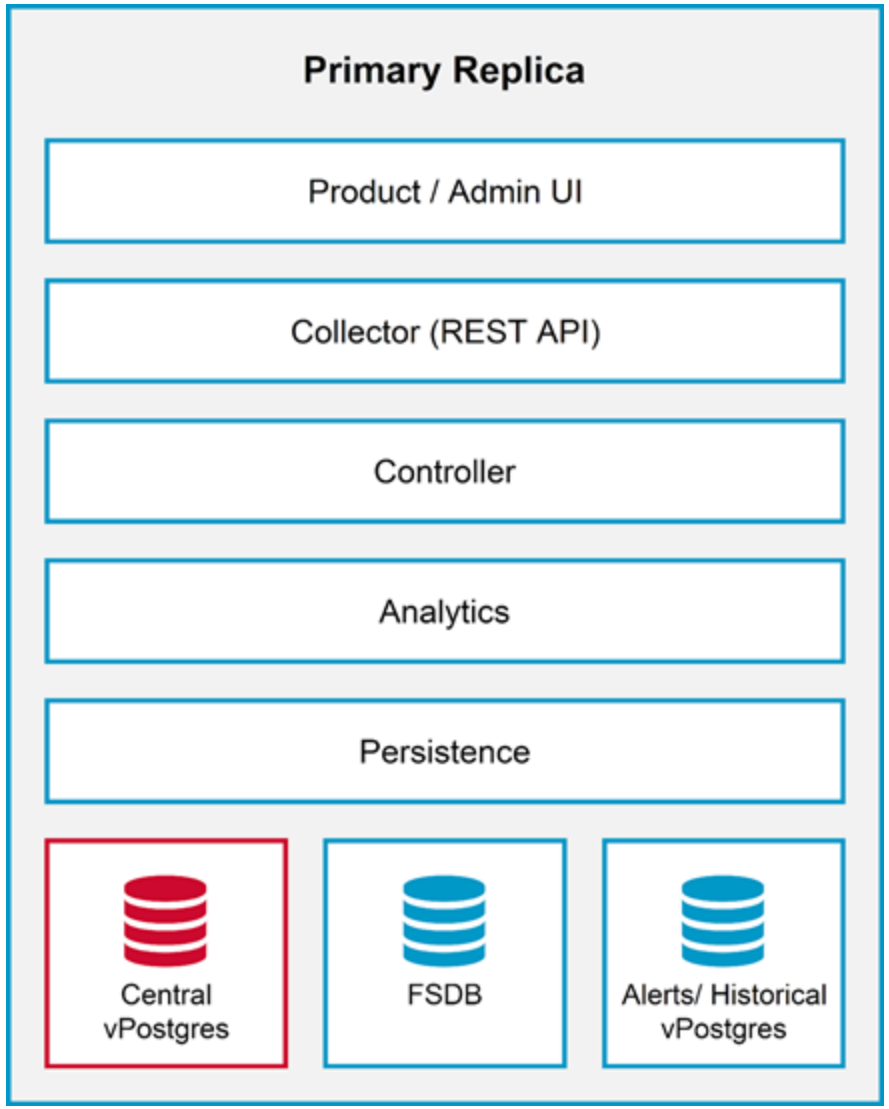
All the components of the VCF Operations software stack are implemented in the primary node. Additional node types have a subset of the components.



Understanding the Primary Replica Node Role

VCF Operations supports high availability by enabling a primary replica node for the VCF Operations primary node.

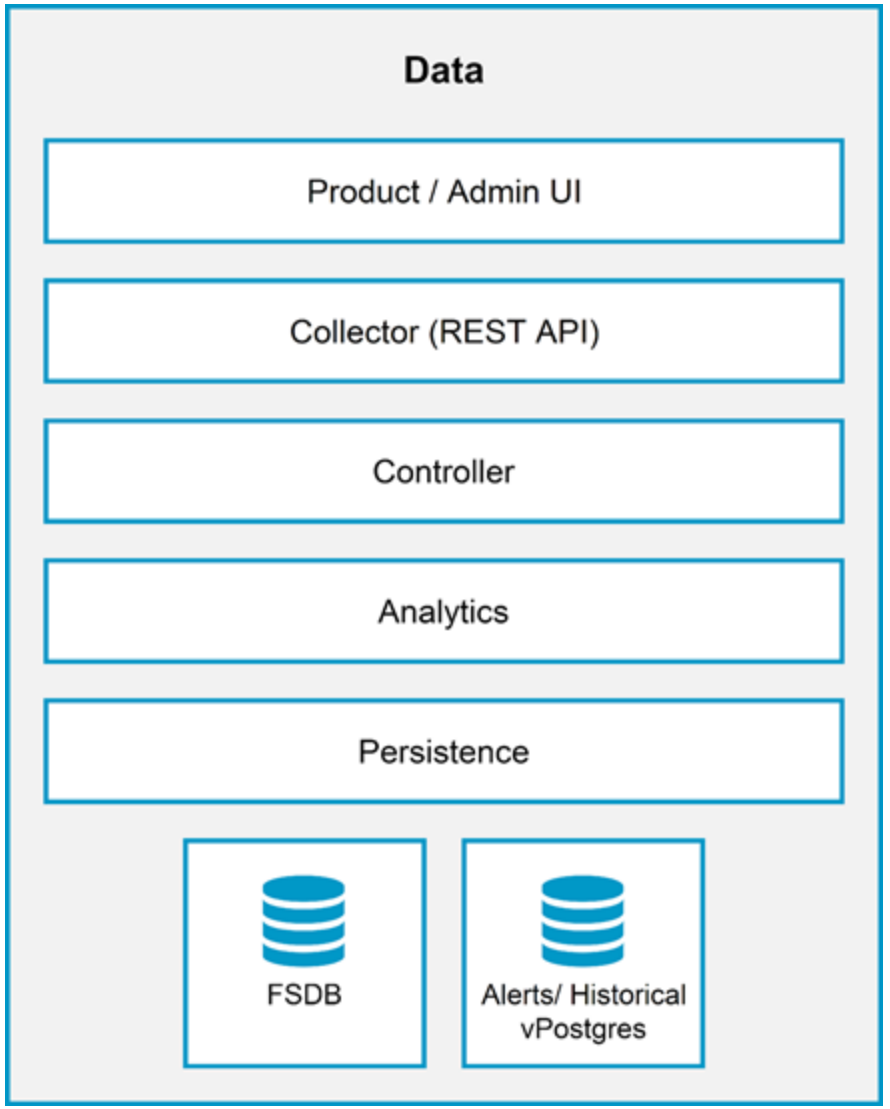
The primary replica node receives redundant copies of data from the primary node.



Understanding the Data Node Role

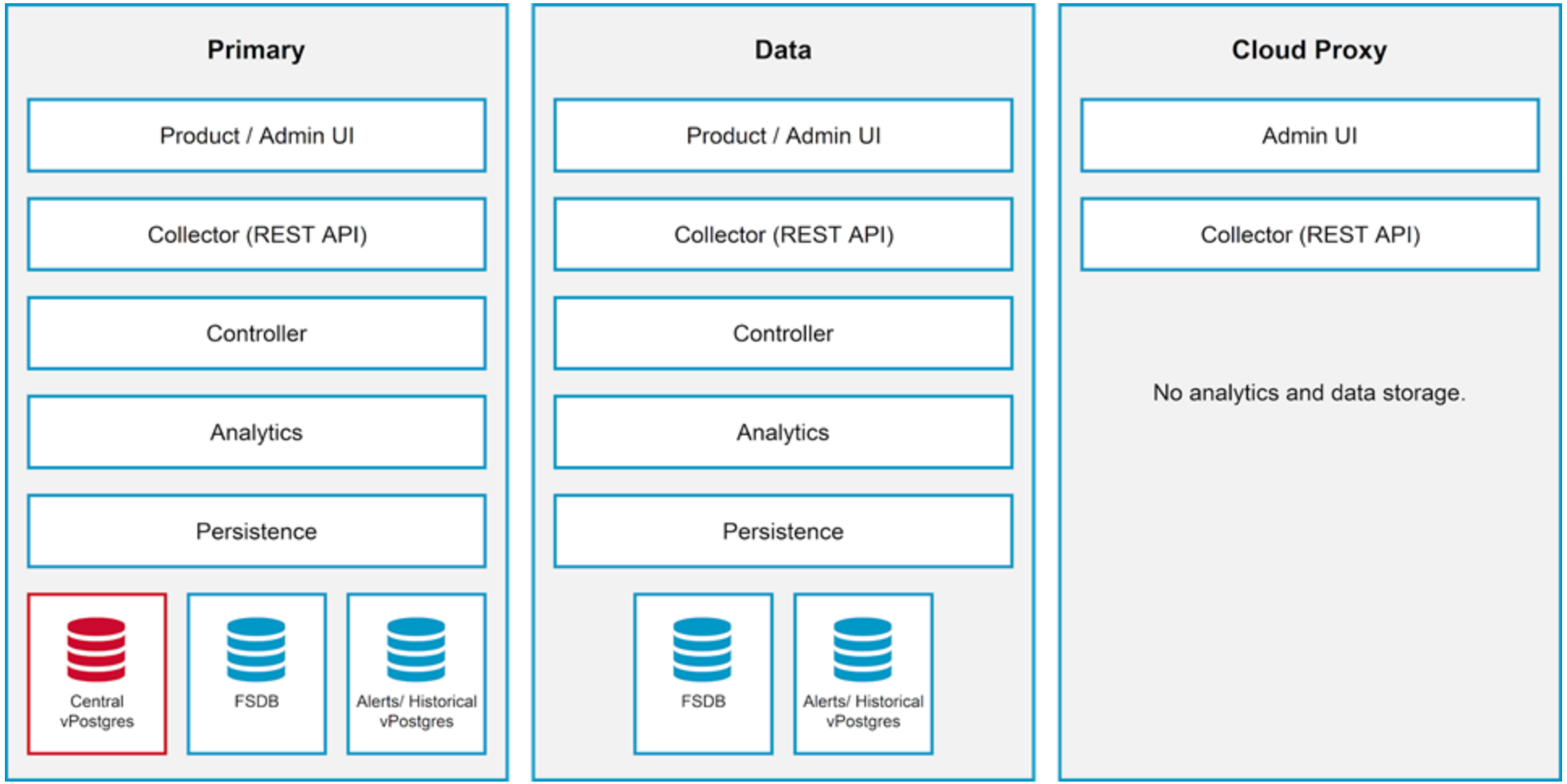
The data node has a similar architecture to the primary node and primary replica node. However, the data node does not have a central vPostgres database and cannot act as an NTP server.

The data node provides the core database functionality of collecting and processing the incoming data.



Understanding the Cloud Proxy Role

A Cloud Proxy node is an extra cluster node that allows VCF Operations to gather more objects in its inventory for monitoring.



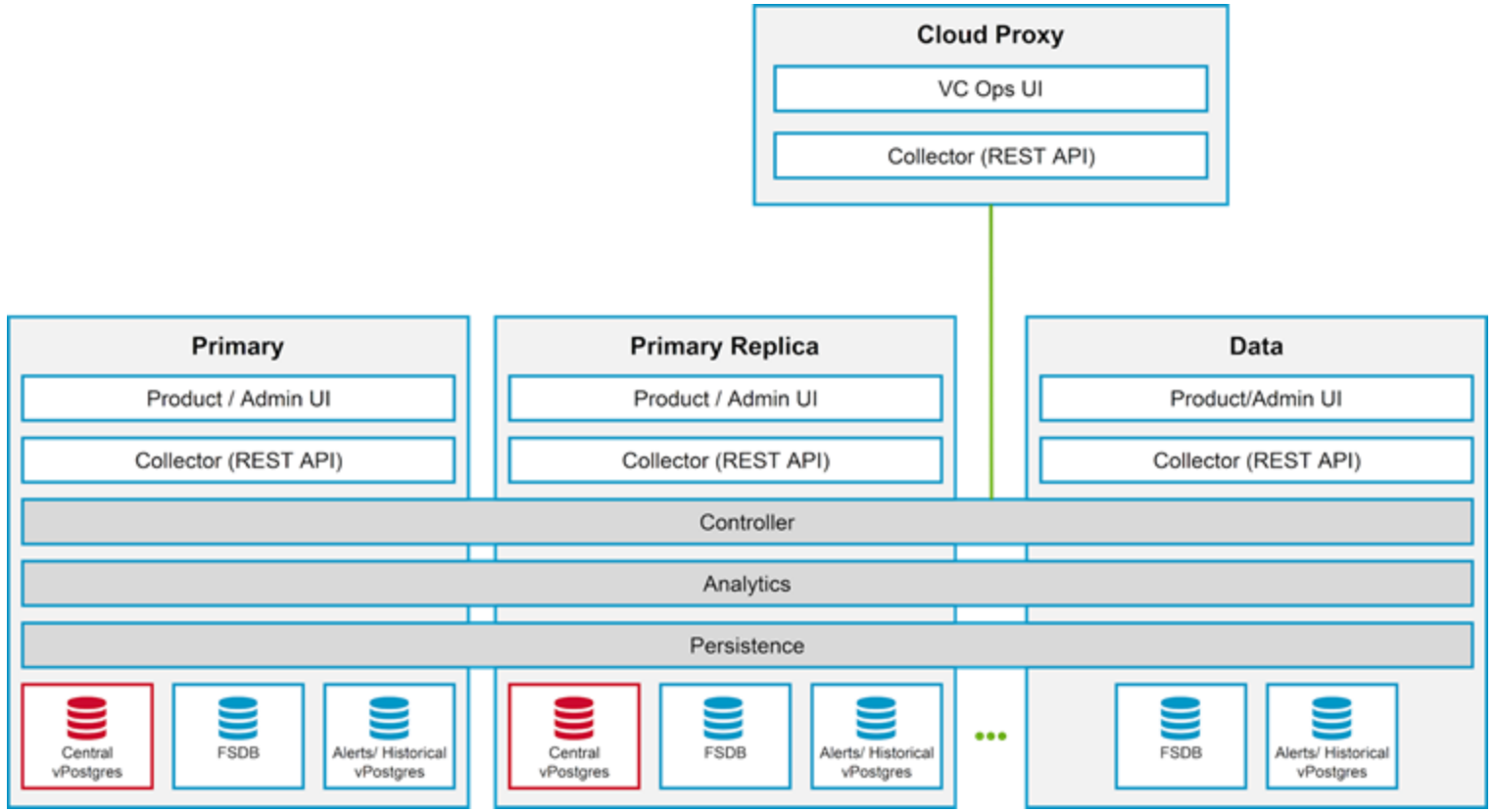
Understanding the Multinode Cluster

You can create a single-node or multiple node cluster depending on your environment.

Every node in the cluster is assigned one or more of these roles:

- Primary
- Primary Replica
- Data
- Cloud Proxy

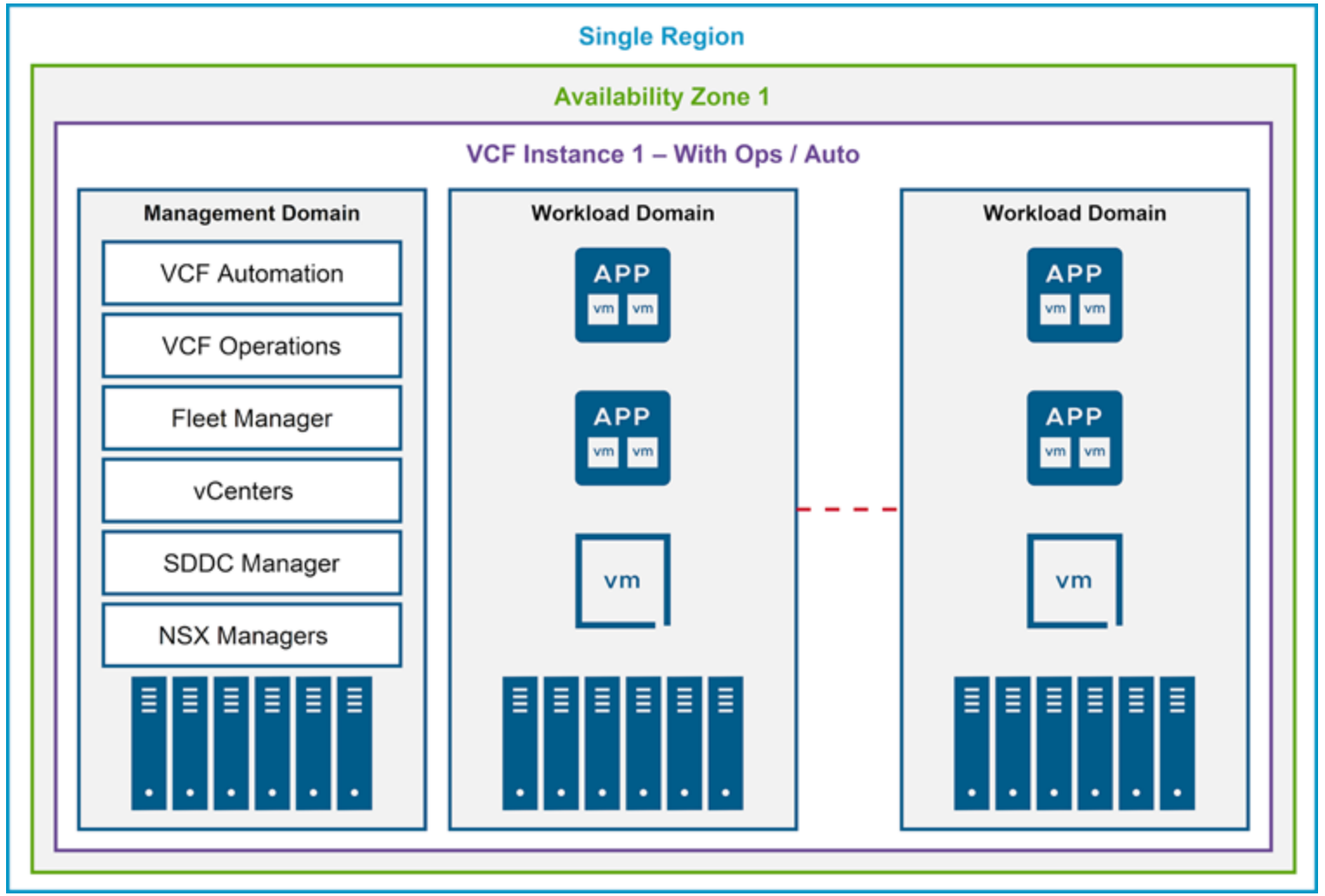
The primary, primary replica, and data nodes collectively called analytics nodes.



VCF Operations Design: Single Region - Single Availability Zone

In a single region - single availability zone (AZ):

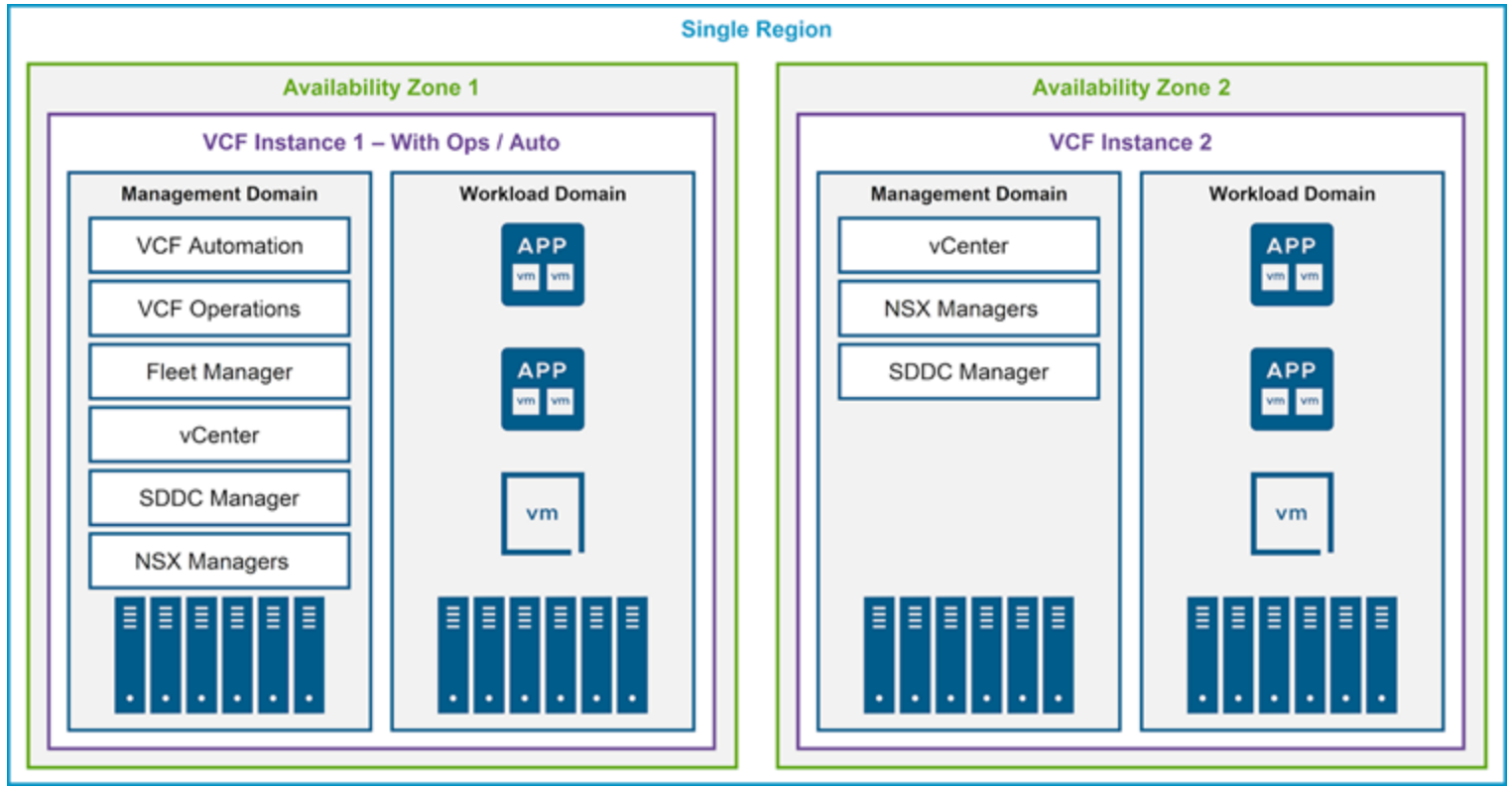
- A single VCF Operations instance is used for fleet management.
- A single VCF Automation instance is used to consume and automate private cloud resources across all VCF instances.
- VCF Operations and VCF Automation instances are deployed to the management domain of the initial VCF instance.



Basic Fleet Management Design: Single Region - Multi AZ

In a single region - multi AZ:

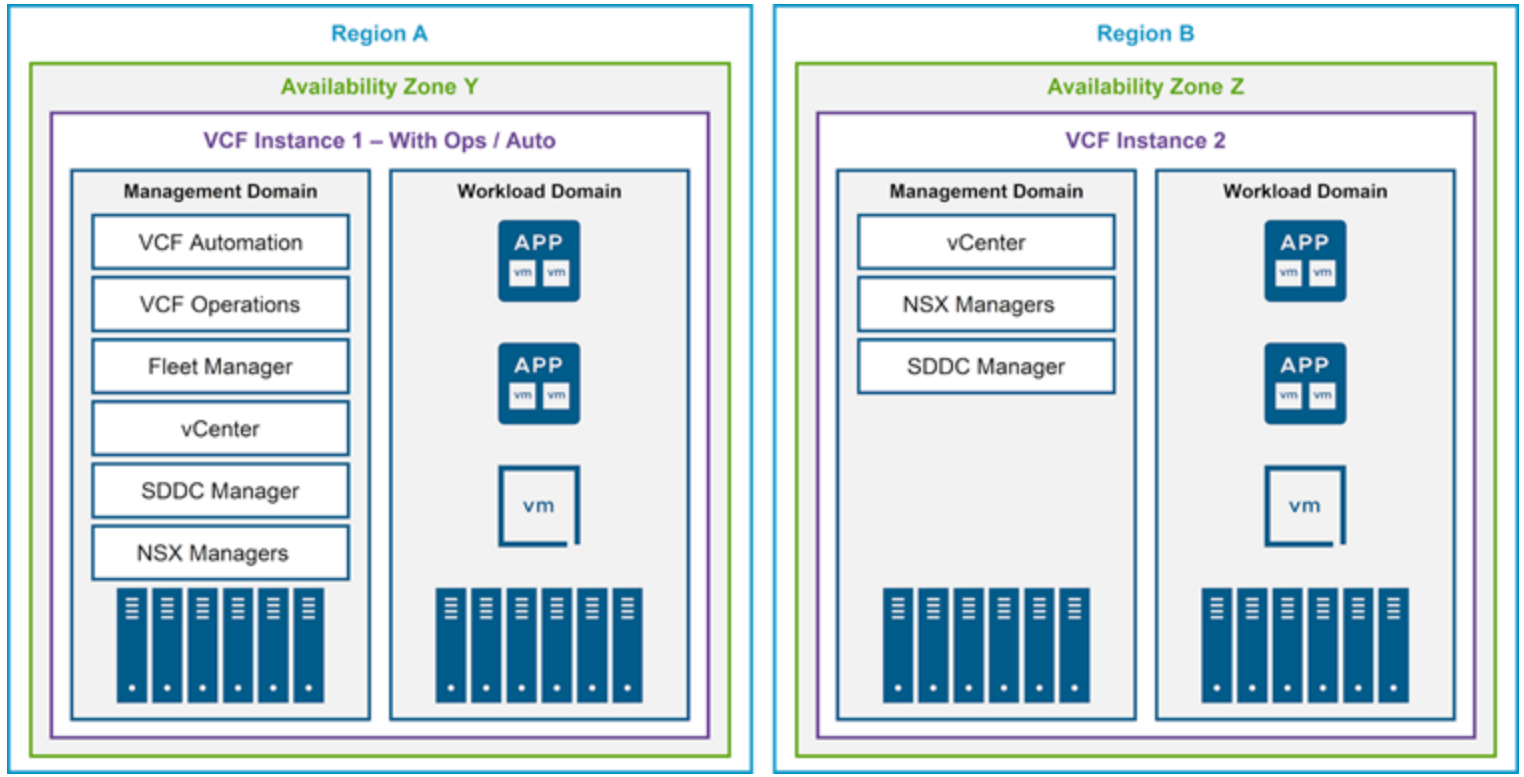
- A single VCF Operations and Automation instance manages the entire fleet.
- VCF Operations collector is deployed to VCF Instance 2 if network latency is above 500 ms.



Basic Fleet Management Design: Multi Region - Multi AZ

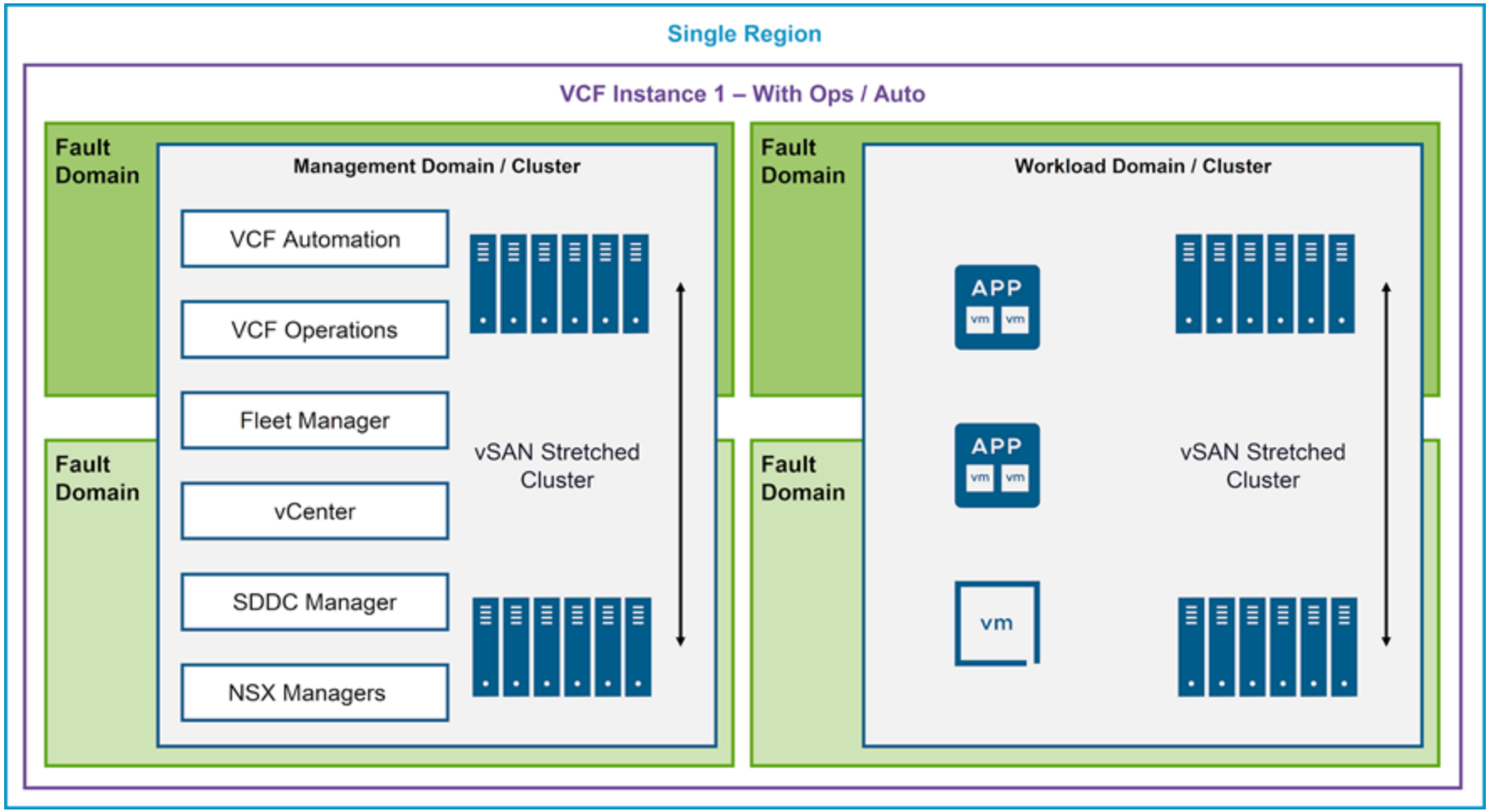
A single VCF Operations and Automation instance managing the entire fleet is not changed by extending to another region:

- Continue to maintain a single VCF Operations instance in region A.
- Add a VCF Operations collector instance to region B if network latency is above 500 ms.



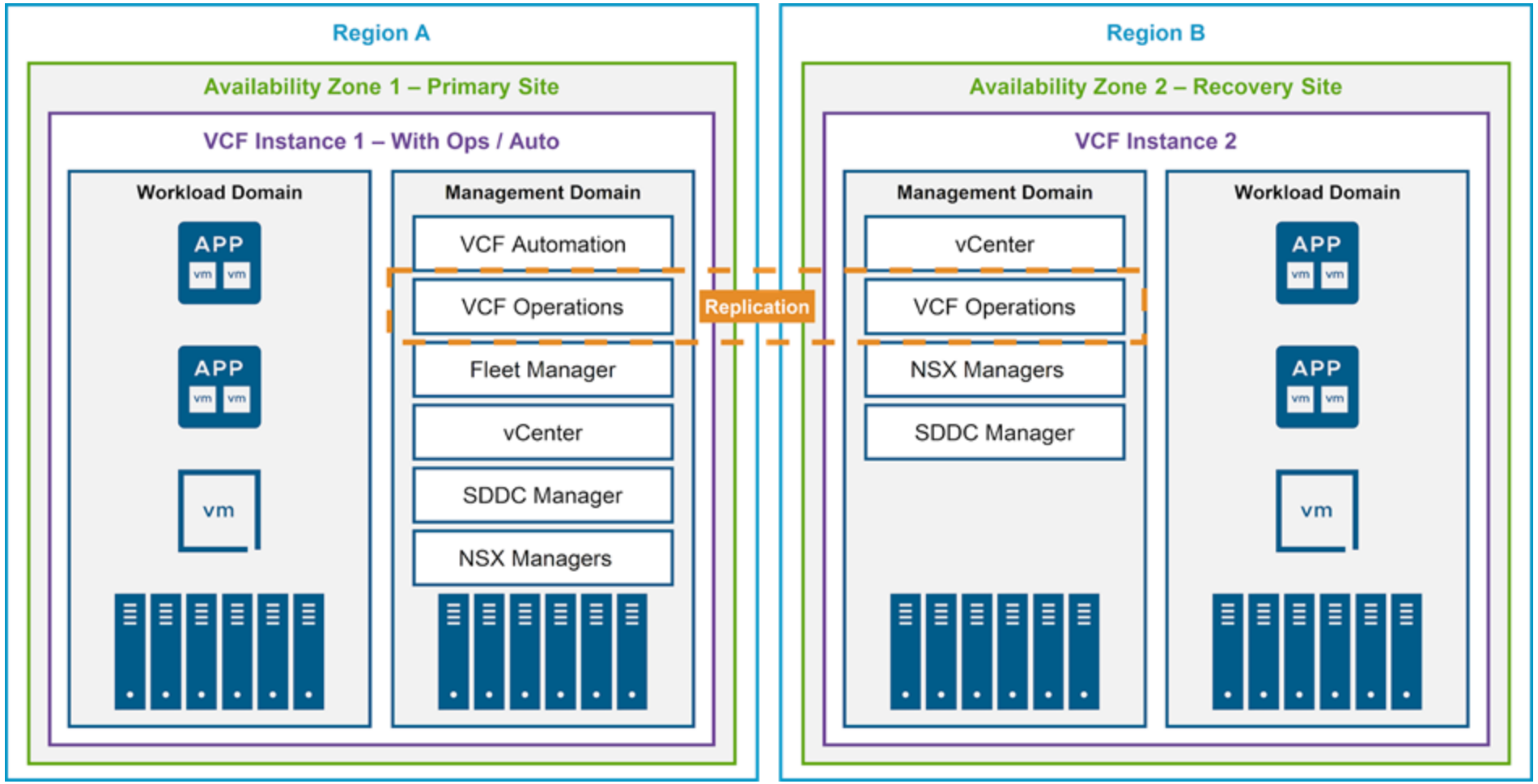
VCF Fleet with Fault Domains Design

A single VCF Operations and Automation instance manages the entire fleet.



Fleet with Disaster Recovery Management Design

For the design of a fleet with DR management, the guidance for VCF Operations remains unchanged from VCF 5.2.



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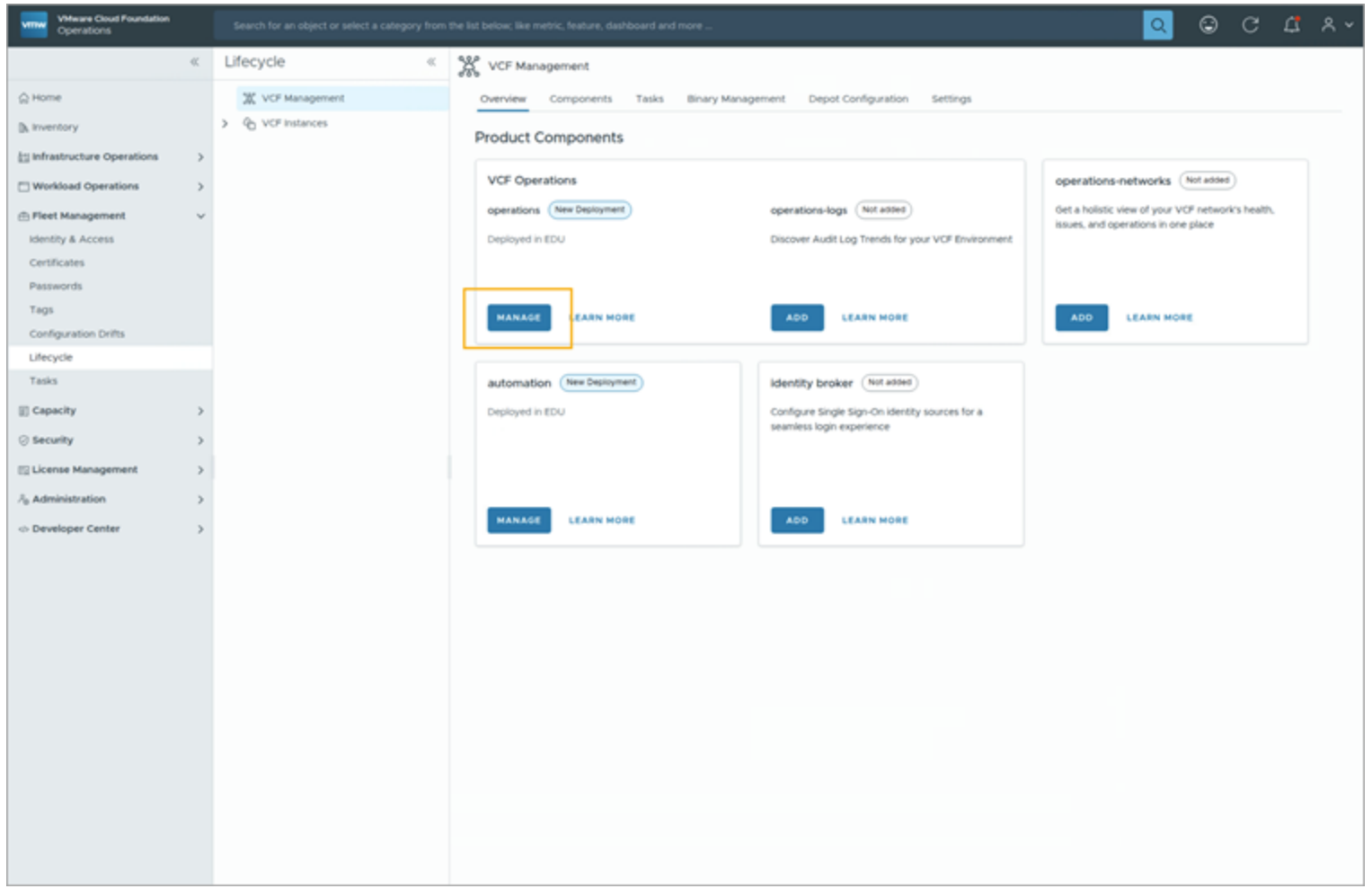
Examining a VCF Operations Cluster

You can examine and manage VCF Operations clusters in the VCF Operations console. To do so, navigate to **Fleet Management > Lifecycle** and click **Manage** under the VCF Operations cluster. You can then view the components, nodes, collector groups, and topology of the selected operations cluster.



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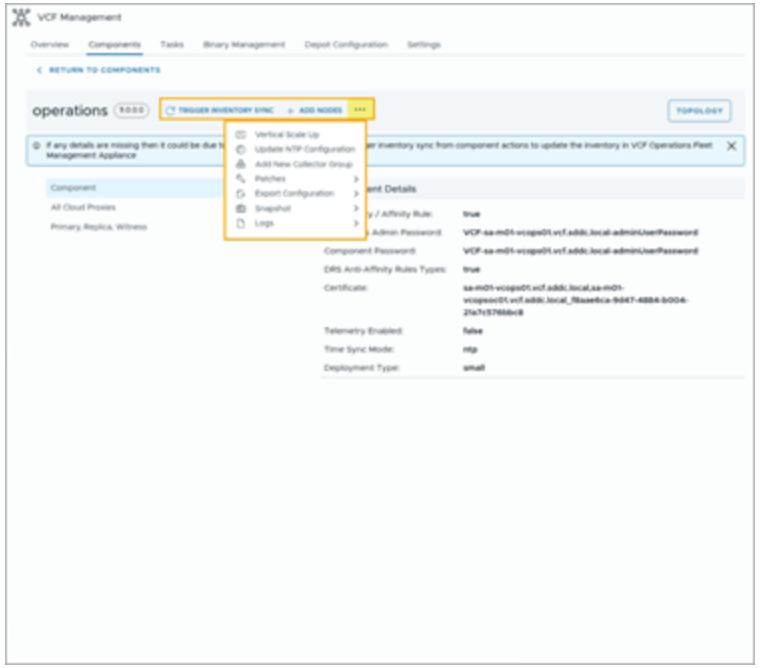
Managing a VCF Operations Cluster

You can manage an existing VCF Operations cluster:

- **Trigger Inventory Sync**: Allows you to sync all the components
- **Update NTP Configuration**
- **Add Nodes**: Allows you to add more nodes to this VCF Operations cluster
- **Add New Collector Group**
- **Patches**: Allows you to install patches and review patch history
- **Export Configuration**: Allows you to export the VCF Operations cluster configuration to a JSON file
- **Snapshot**: Allows you to create and manage snapshots of the VCF Operations cluster
- **Logs**: Allows you to generate, download, and delete logs for this cluster

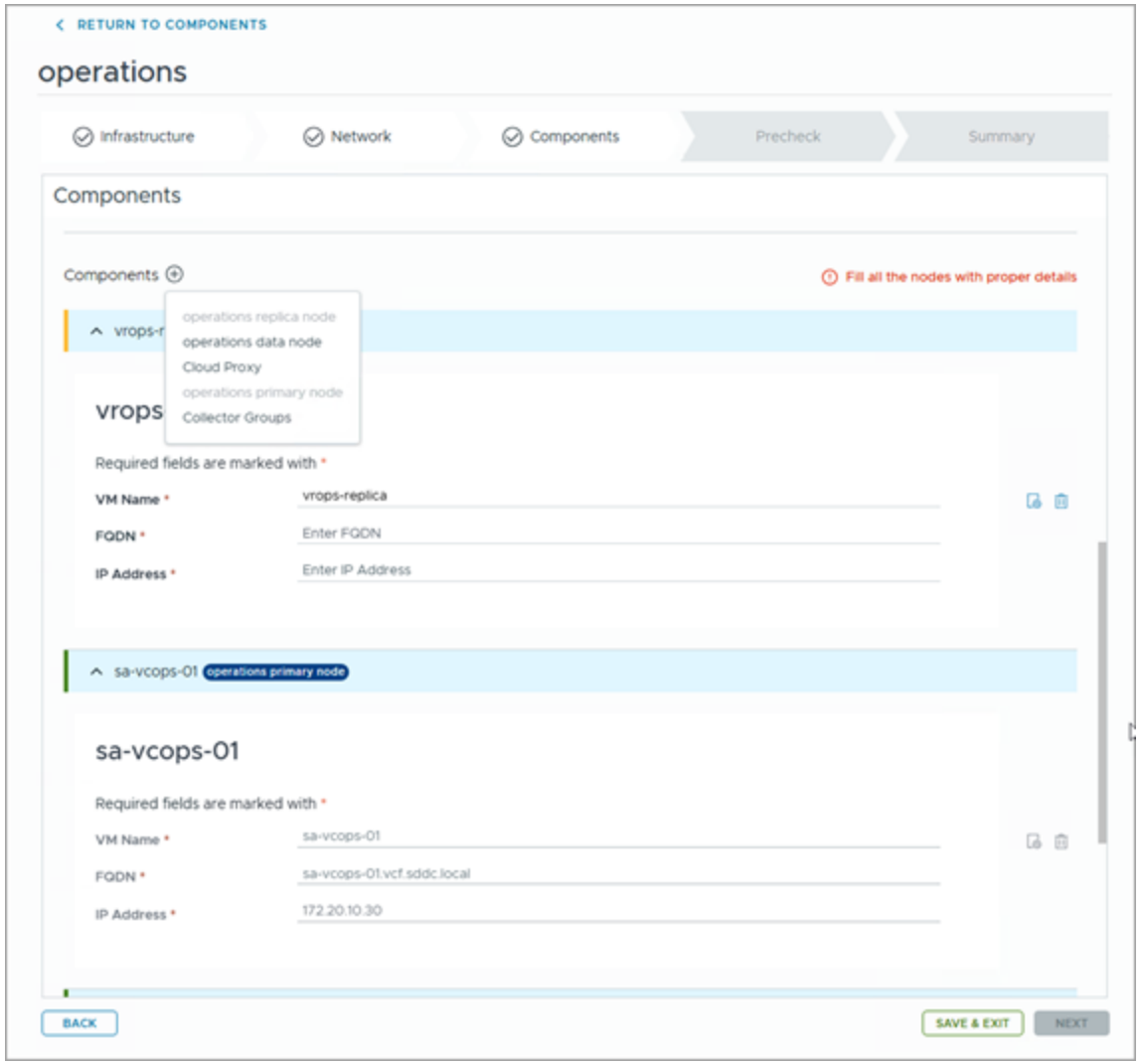


Adding Nodes to a VCF Operations Cluster

You can use the Add Nodes function to deploy more nodes to an existing VCF Operations cluster:

- **Primary replica**: You can add at most one primary replica node.
- **Data**: You can add more than one data node to a VCF Operations cluster.
- **Cloud Proxy**: You can add more than one cloud proxy to a VCF Operations cluster.
- **Collector Groups**: You can add more than one collector group to a VCF Operations cluster.

For each newly added node, you need to specify its VM name, FQDN, and IP address.



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Review of Learner Objectives

- Identify the components of a VCF Operations node
- Describe the different roles of the node in a VCF Operations cluster

VCF Operations Navigation

Learner Objectives

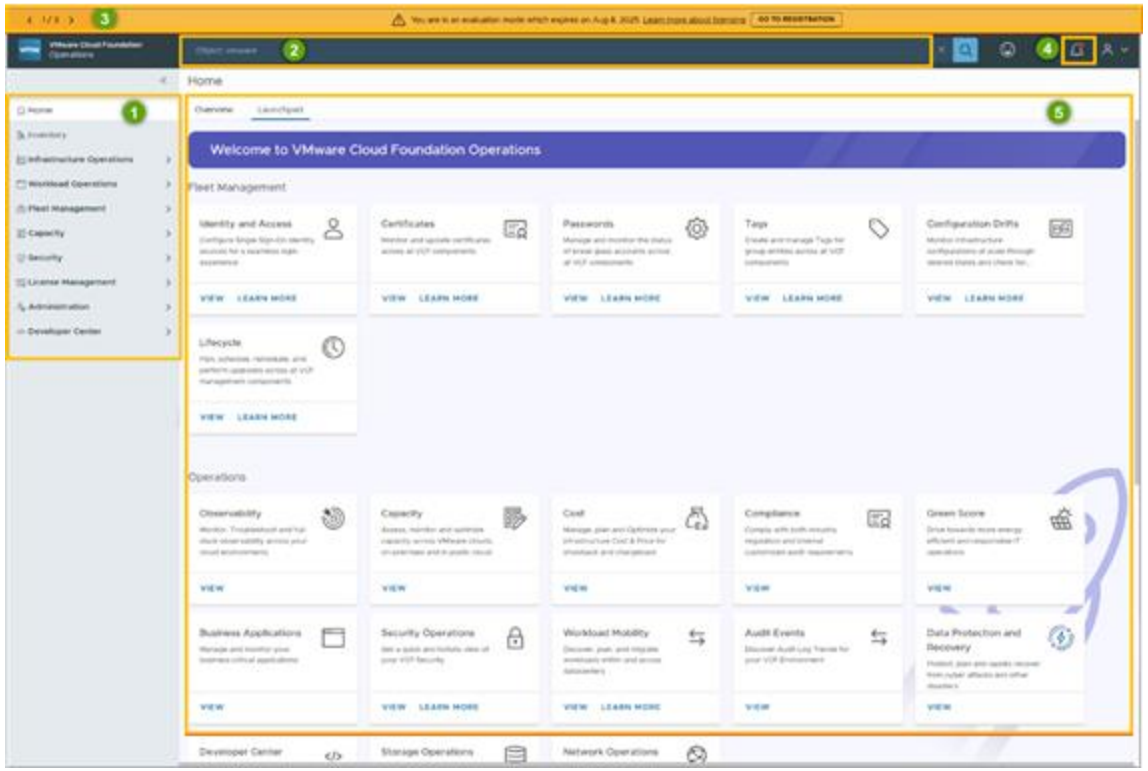
- Perform basic VCF Operations console navigation
- List the different management areas in the VCF Operations UI

VCF Operations Console Navigation

Administrators perform major day-to-day tasks in the VCF Operations console.

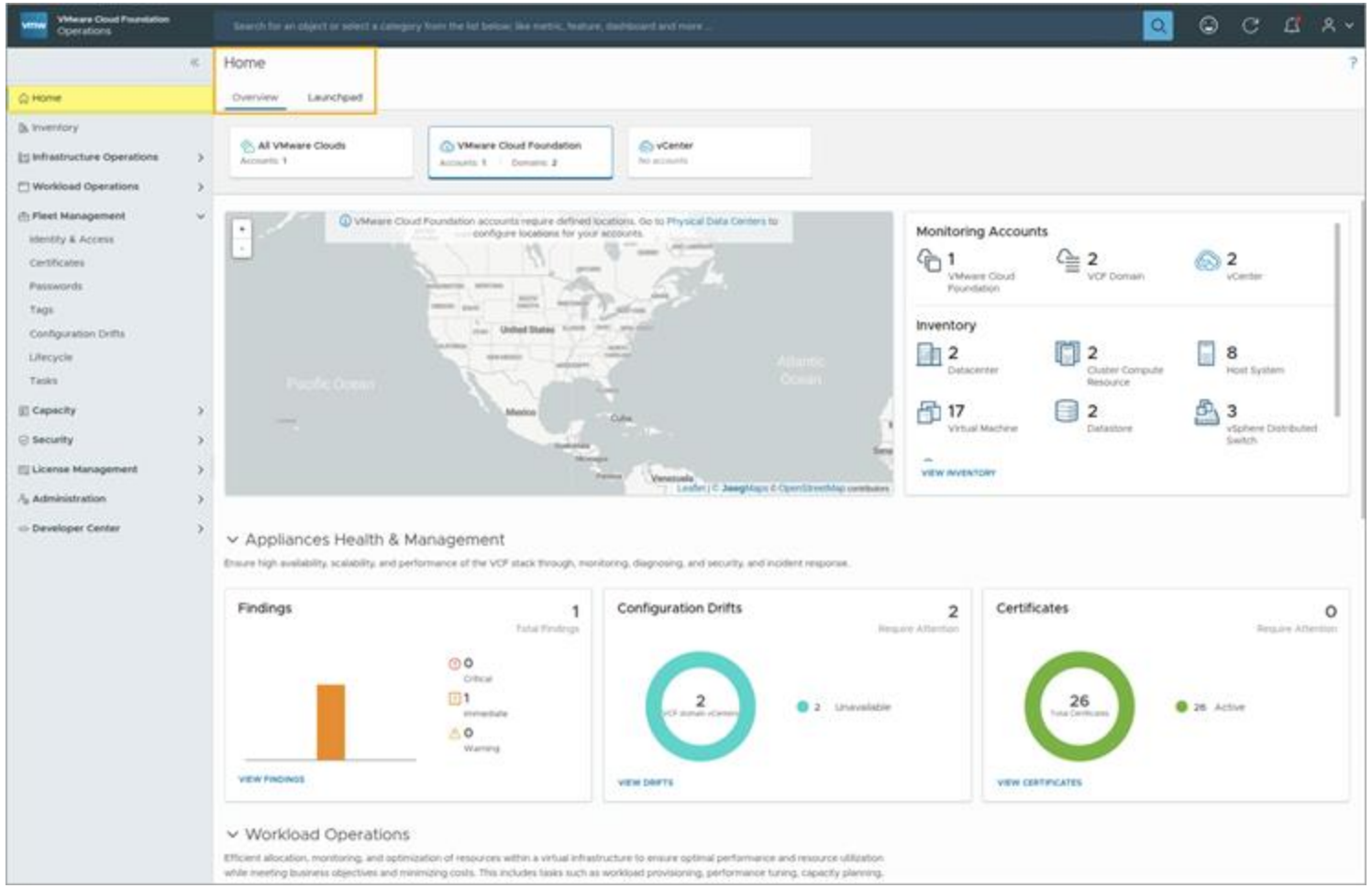
The console contains the following core elements:

1. Navigation menu: Allows you to navigate the different operations management domains.
2. Search bar: Allows you to easily find objects in your environment.
3. Warning message banner: Displays important and mission-critical messages.
4. Collection notifications: Allow you to monitor the status of data collection and adaptors.
5. Operations screen: Allows you to perform tasks, processes, and management.



VCF Operations Home Page

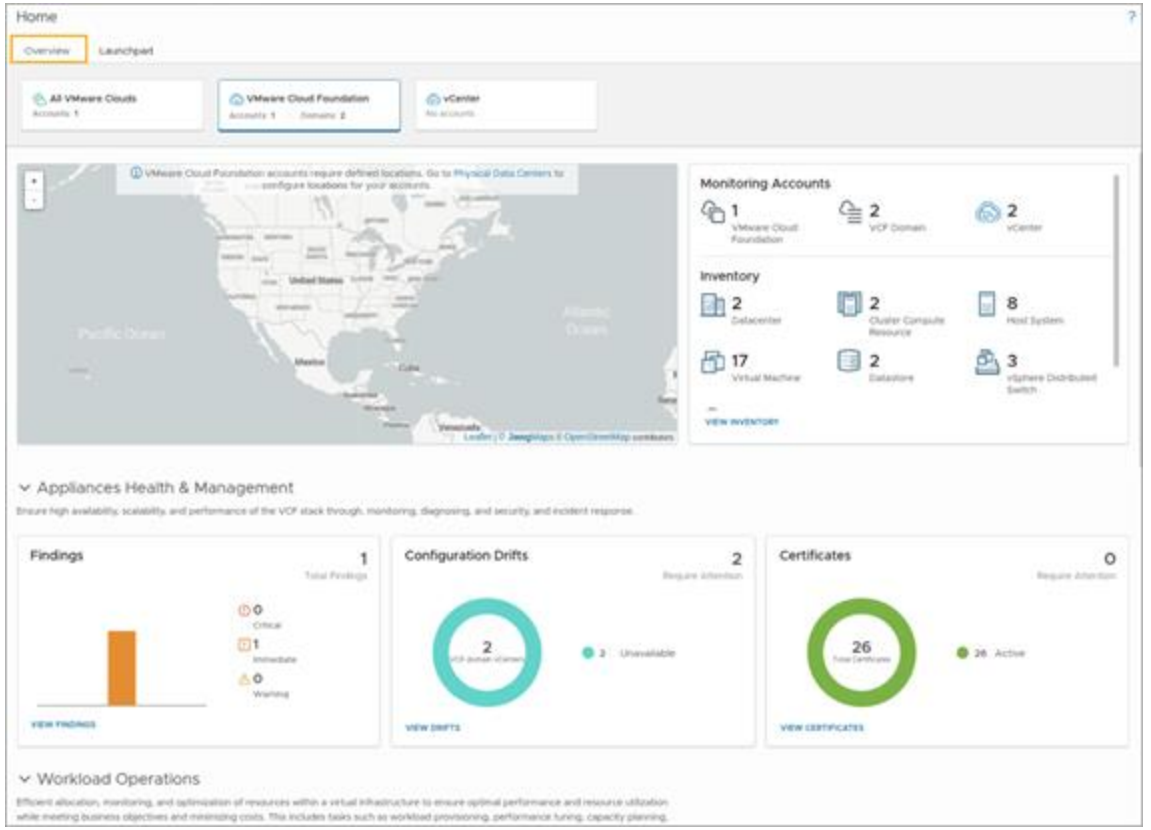
The **Home** page appears when you log in to the product UI for the first time. The **Home** page contains two tabs: **Overview** and **Launchpad**.



Home Page: Overview

The **Overview** tab on the **Home** page gives you a high-level summary of your entire infrastructure. You can view high-level information about the following categories:

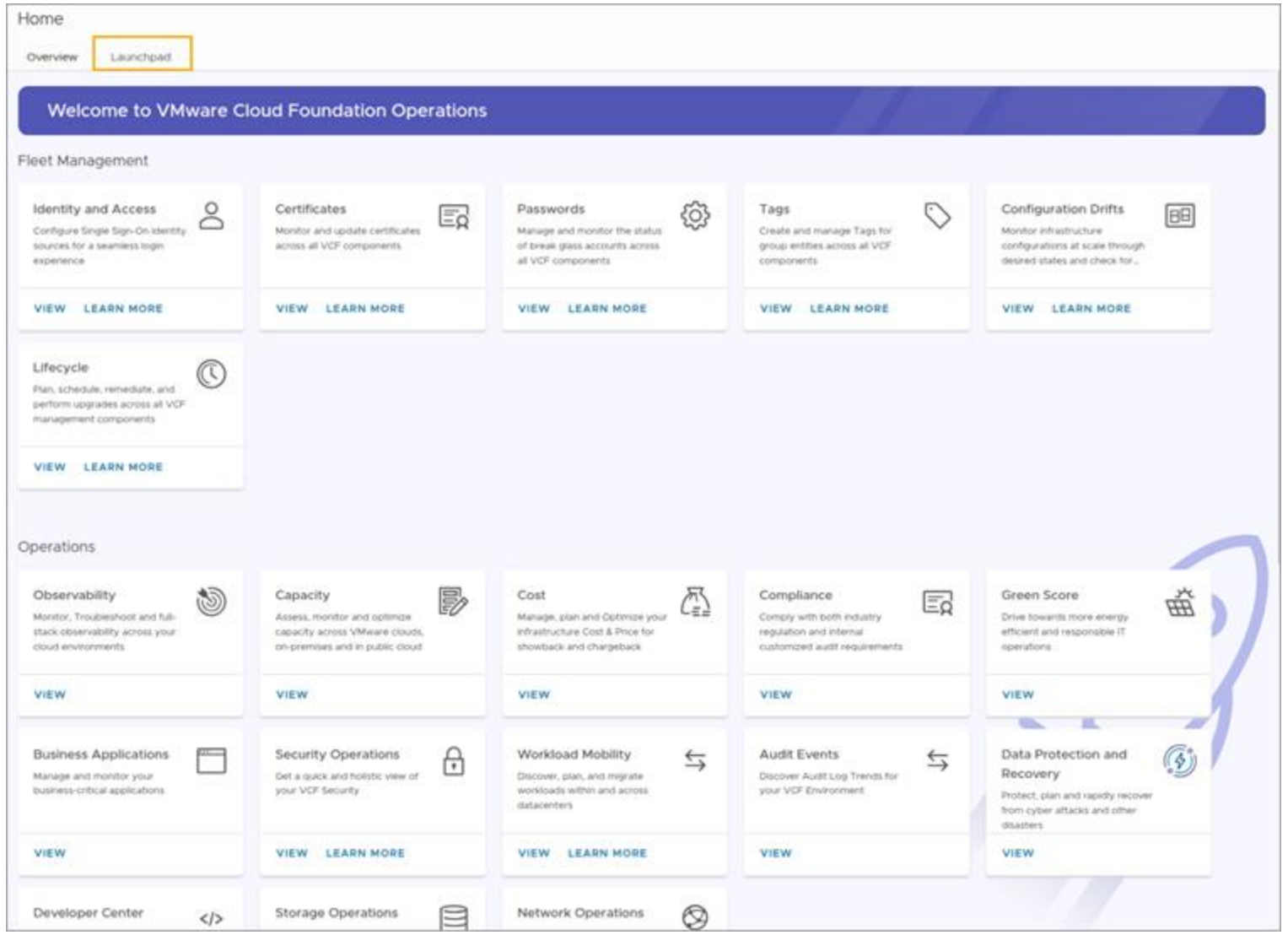
- VCF deployment and domain
- Configuration drifts
- Certificates
- Workload operations
- Alerts
- Cost and capacity
- Compliance



Home Page: Launchpad

The **Launchpad** tab on the **Home** page allows you to quickly access the various pillars of operations.

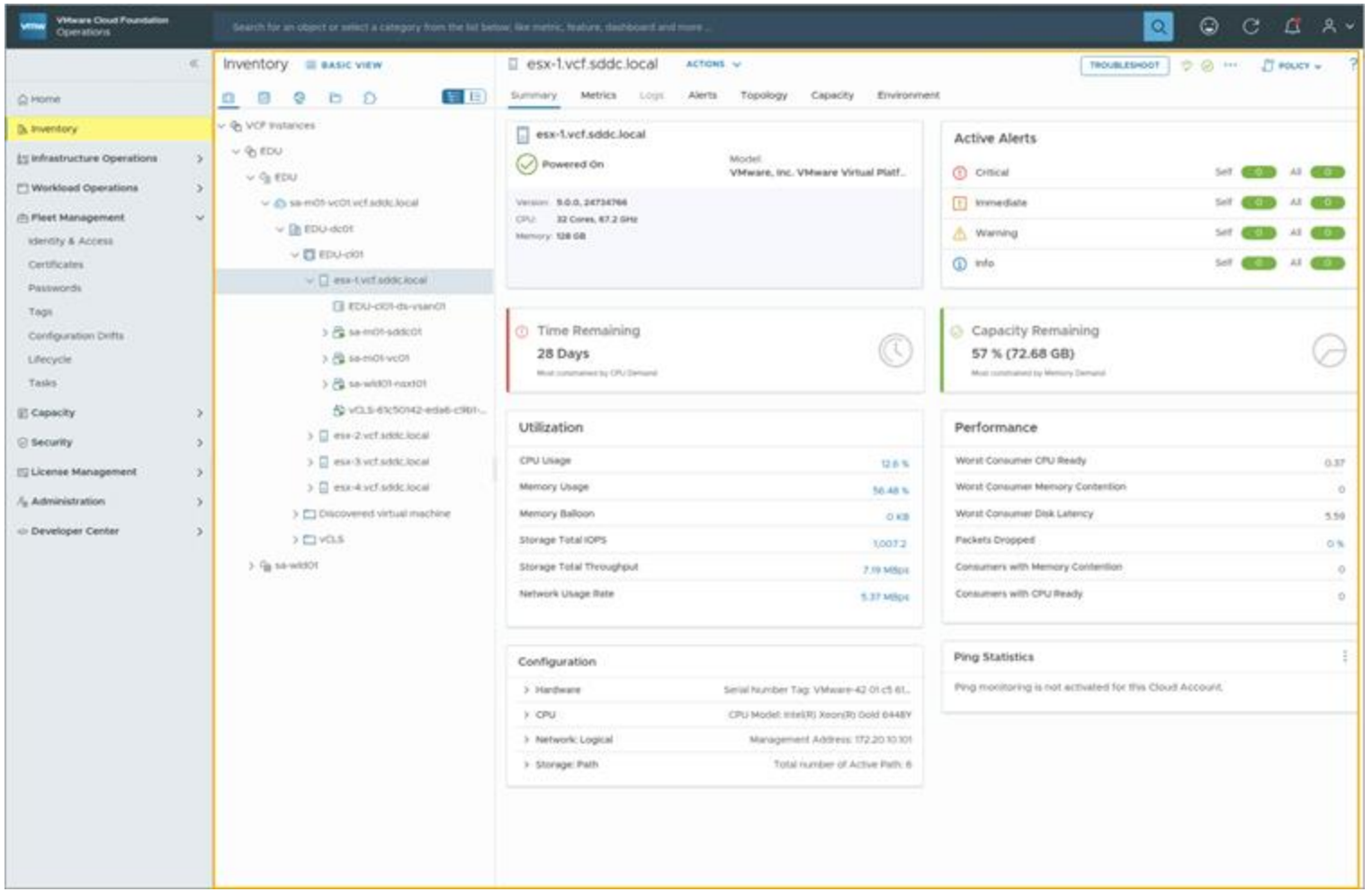
The capabilities of VCF Operations are categorized into separate pillars of operations. These pillars enable you to manage configurations, optimize performance, optimize capacity, and troubleshoot issues.



Inventory Page

The **Inventory** page allows you to view objects in your entire fleet and infrastructure, such as domains, VMs, data stores, networks, and groups.

You can view and interact with the metrics, alerts, topology, and logs associated with each object.



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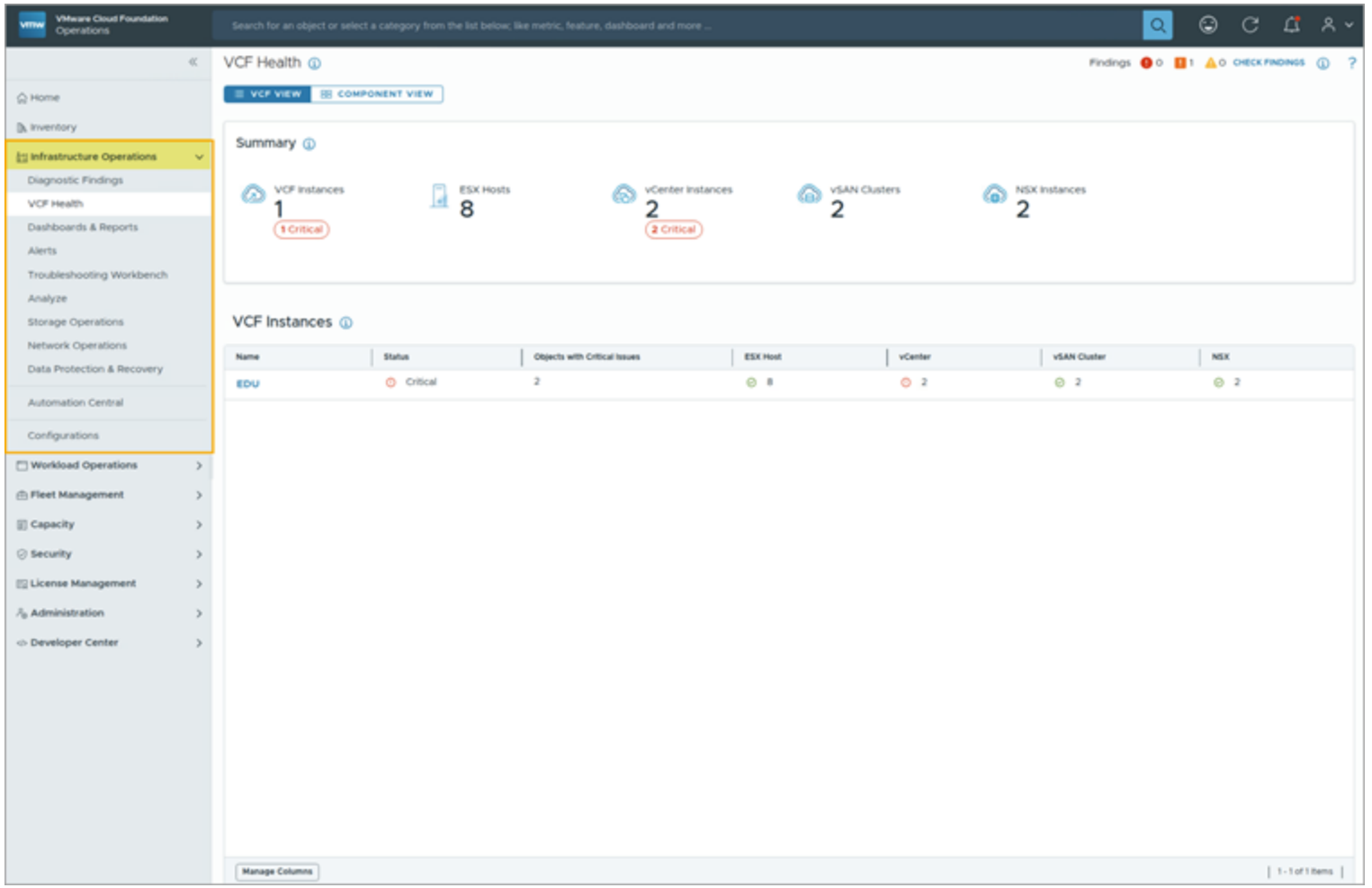
Infrastructure Operations

The **Infrastructure Operations** page allows you to monitor the entire infrastructure, including VMs, storage, network, licenses, and more.

You can set up dashboards and reports to display the data you deem important to infrastructure health and resources optimization.

You can also activate alerts to capture specific issues or irregular symptoms and use troubleshooting benchmarks to help resolve outstanding issues.



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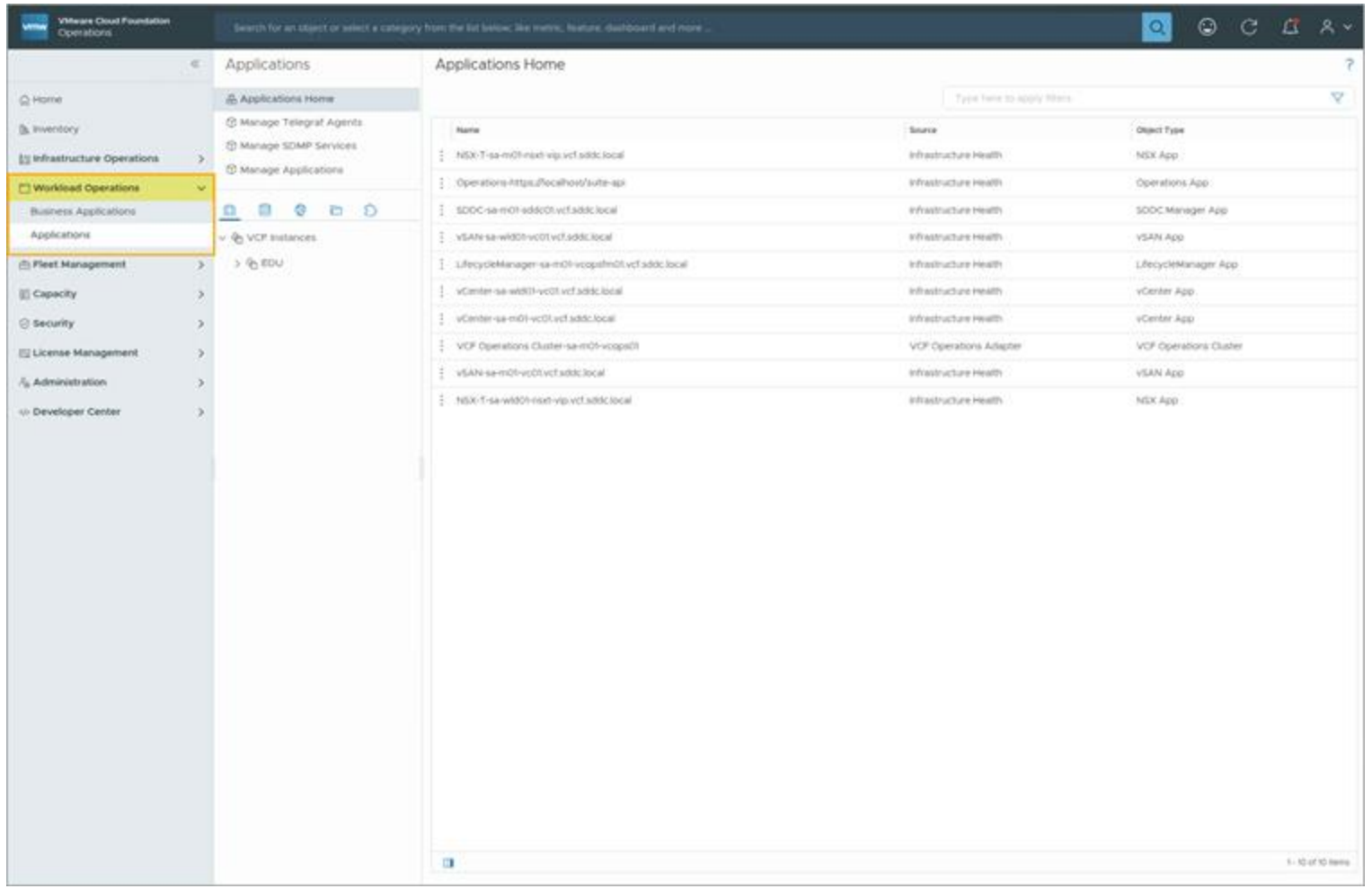
Workload Operations

The **Workload Operations** page allows you to monitor the status of applications, services running in provisioned guest operations systems, and services running in your virtual environment.

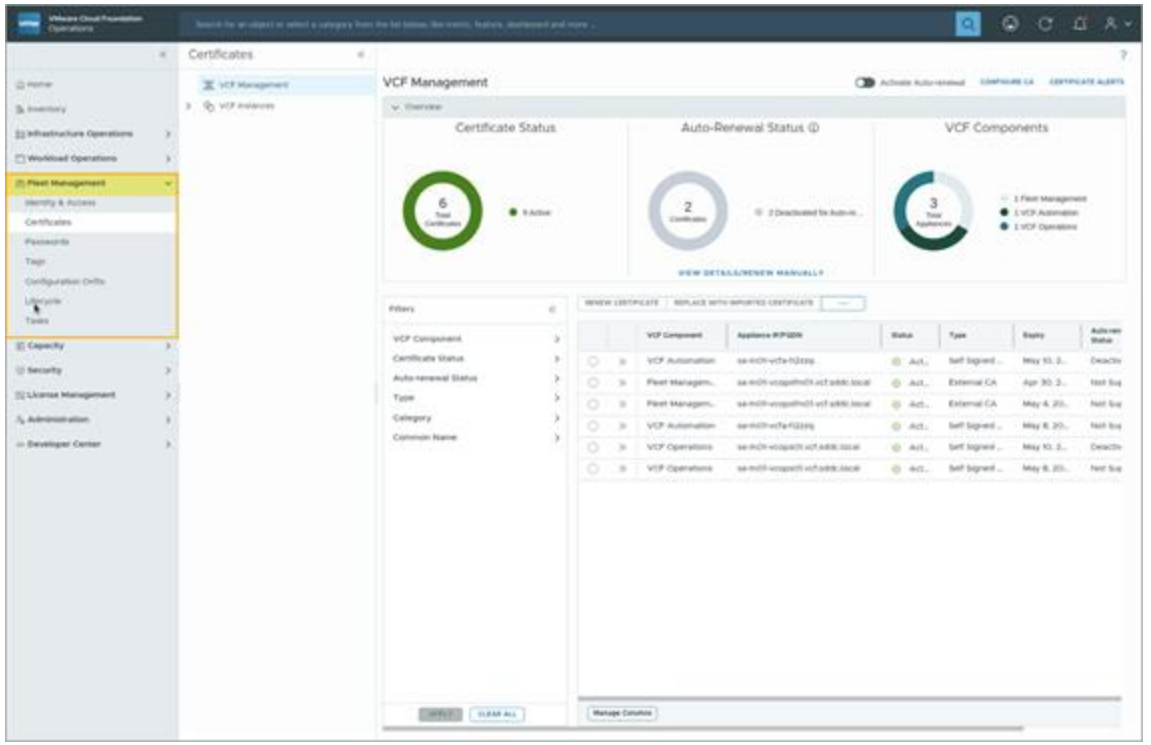
Some application monitoring is achieved through the Telegraf agent. You can use options in the **Workload Operations** menus to deploy the Telegraf agents to the target virtual machines.



Fleet Management

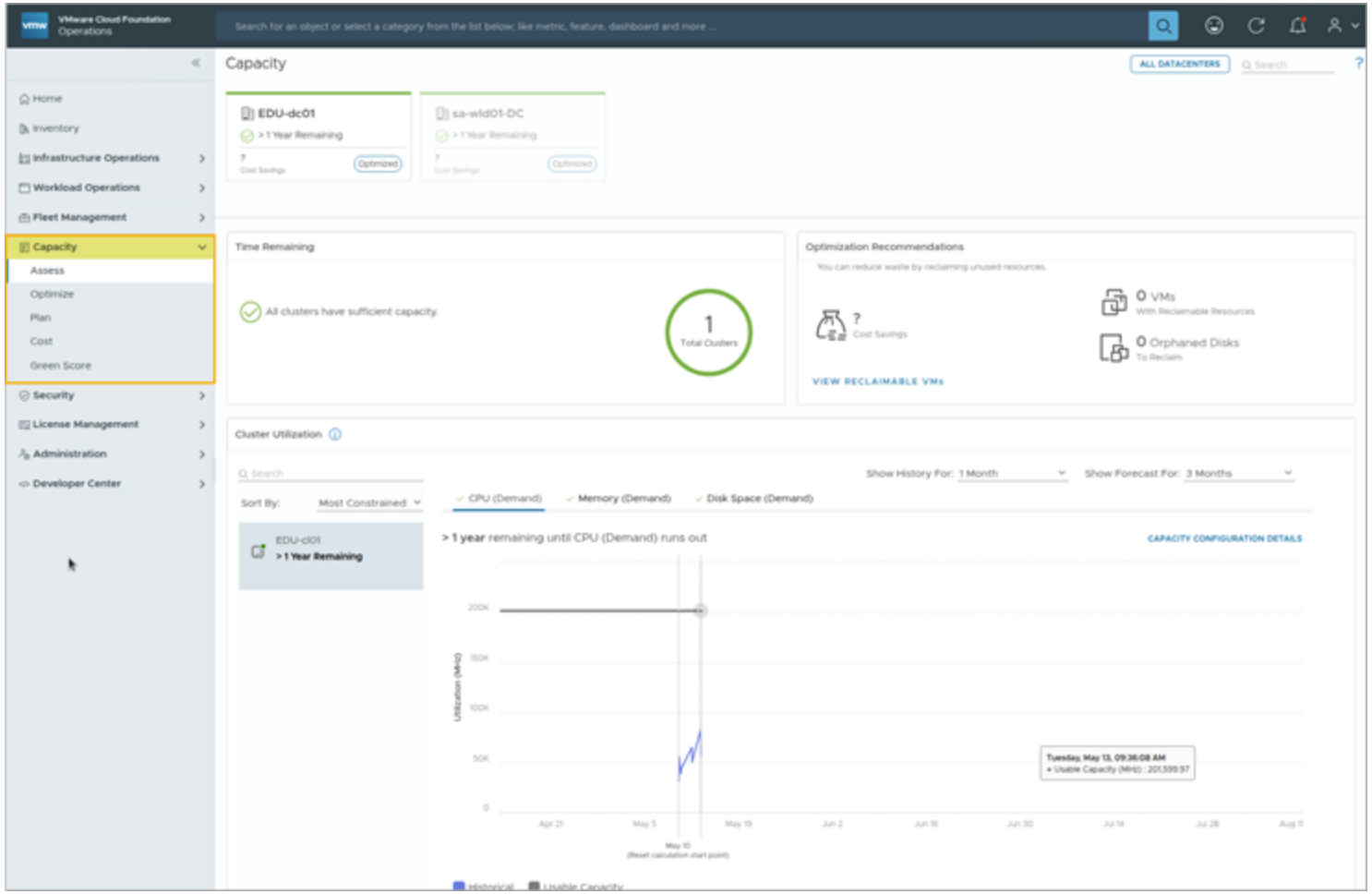
The **Fleet Management** page allows you to manage your VCF deployment and your VCF Operations nodes with the following capabilities:

- **Identity & Access**
- **Certificates**
- **Passwords**
- **Tags**
- **Configuration Drifts**
- **Lifecycle**
- **Tasks**



Capacity Page

The **Capacity** page allows you to monitor resource utilization, plan for growth, achieve cost efficiency, and maintain performance in a virtualized environment.



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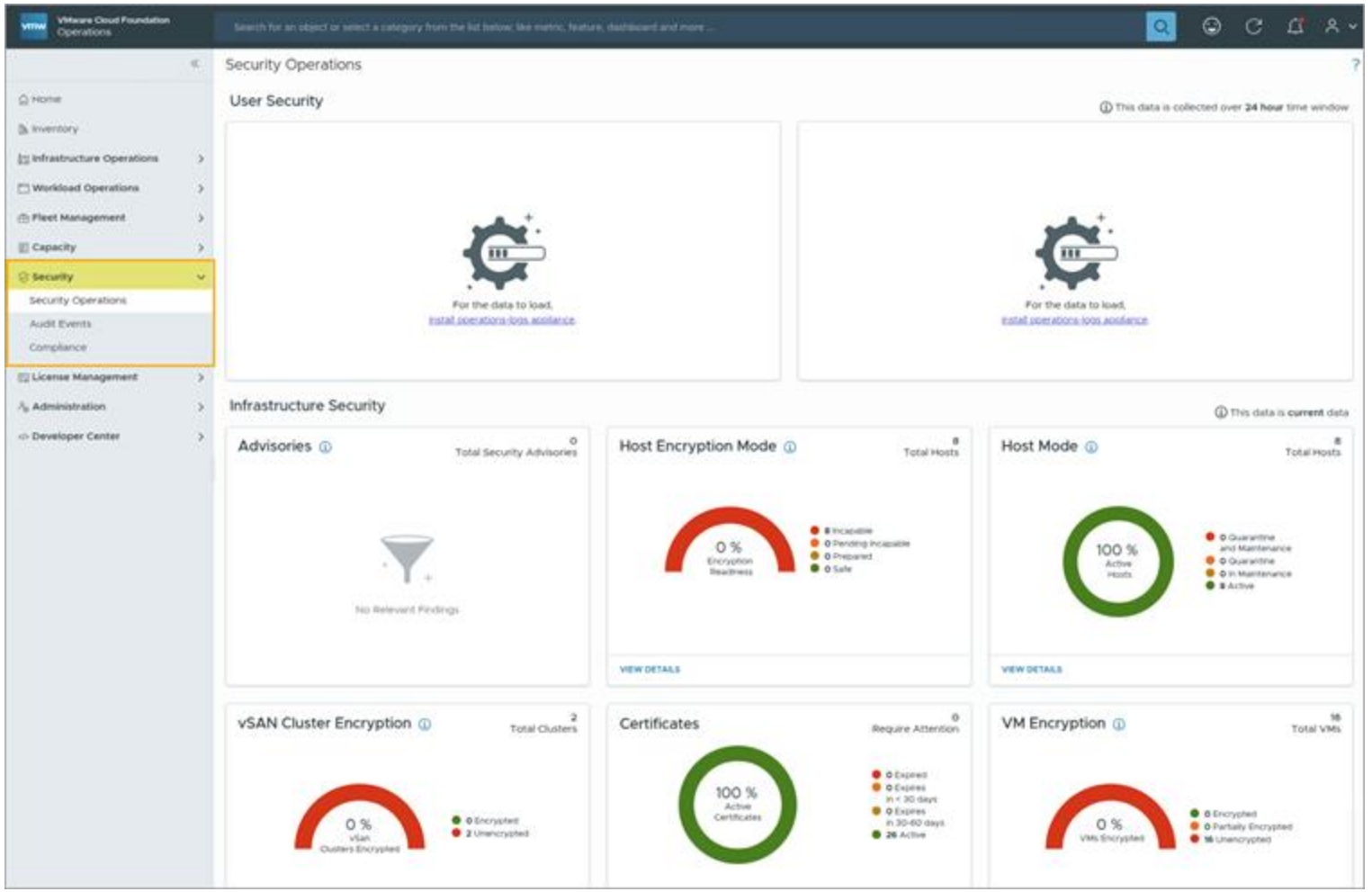
Security Page

The **Security** page allows you to gain insights into Security Operations and Audit Events.

You can also enable various VMware predefined benchmarks and regulatory benchmarks to enforce compliance monitoring.



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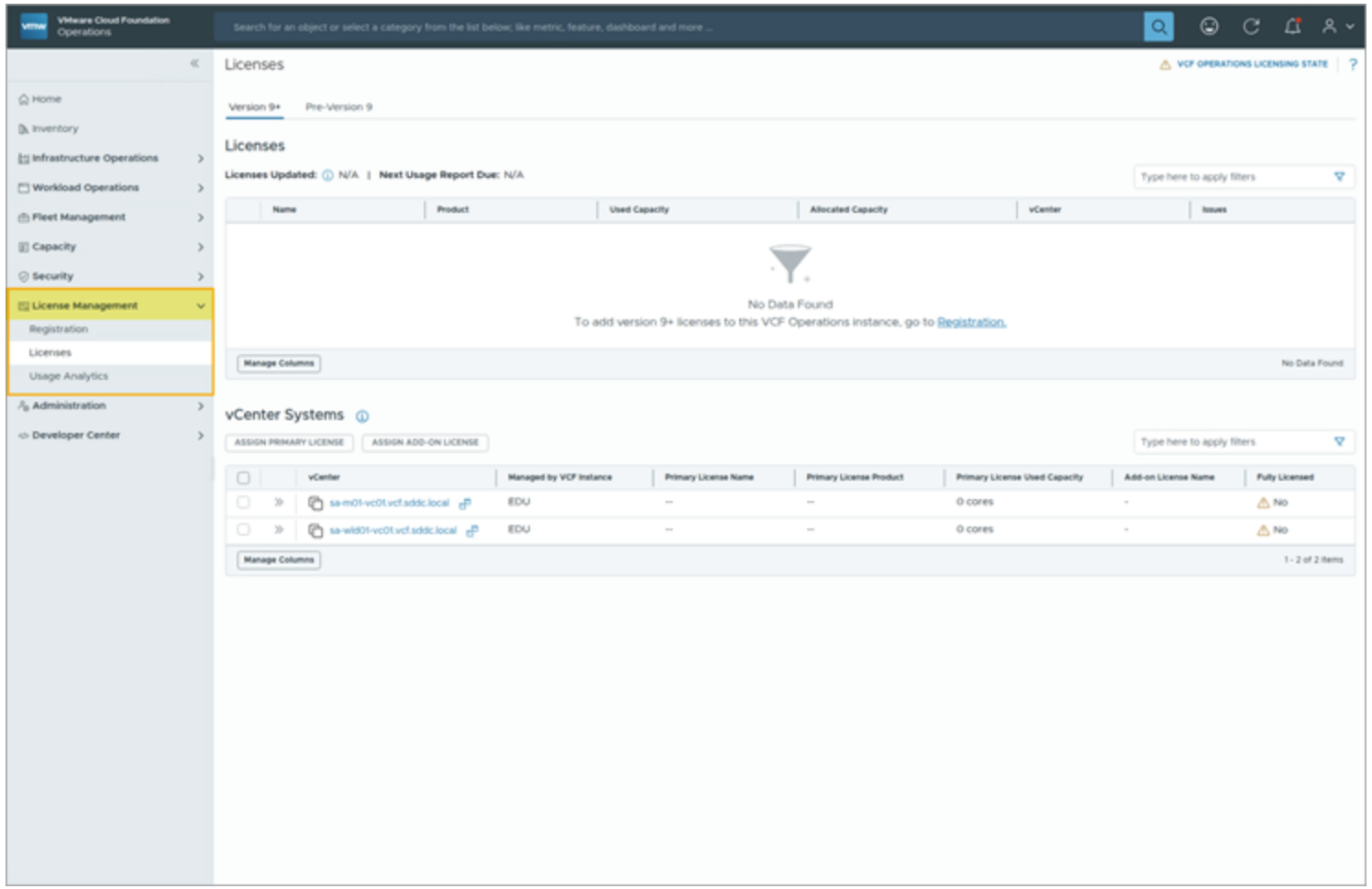
License Management

The **License Management** page allows you to manage the VCF product registrations and licenses for your organization, and monitor product and license usage.



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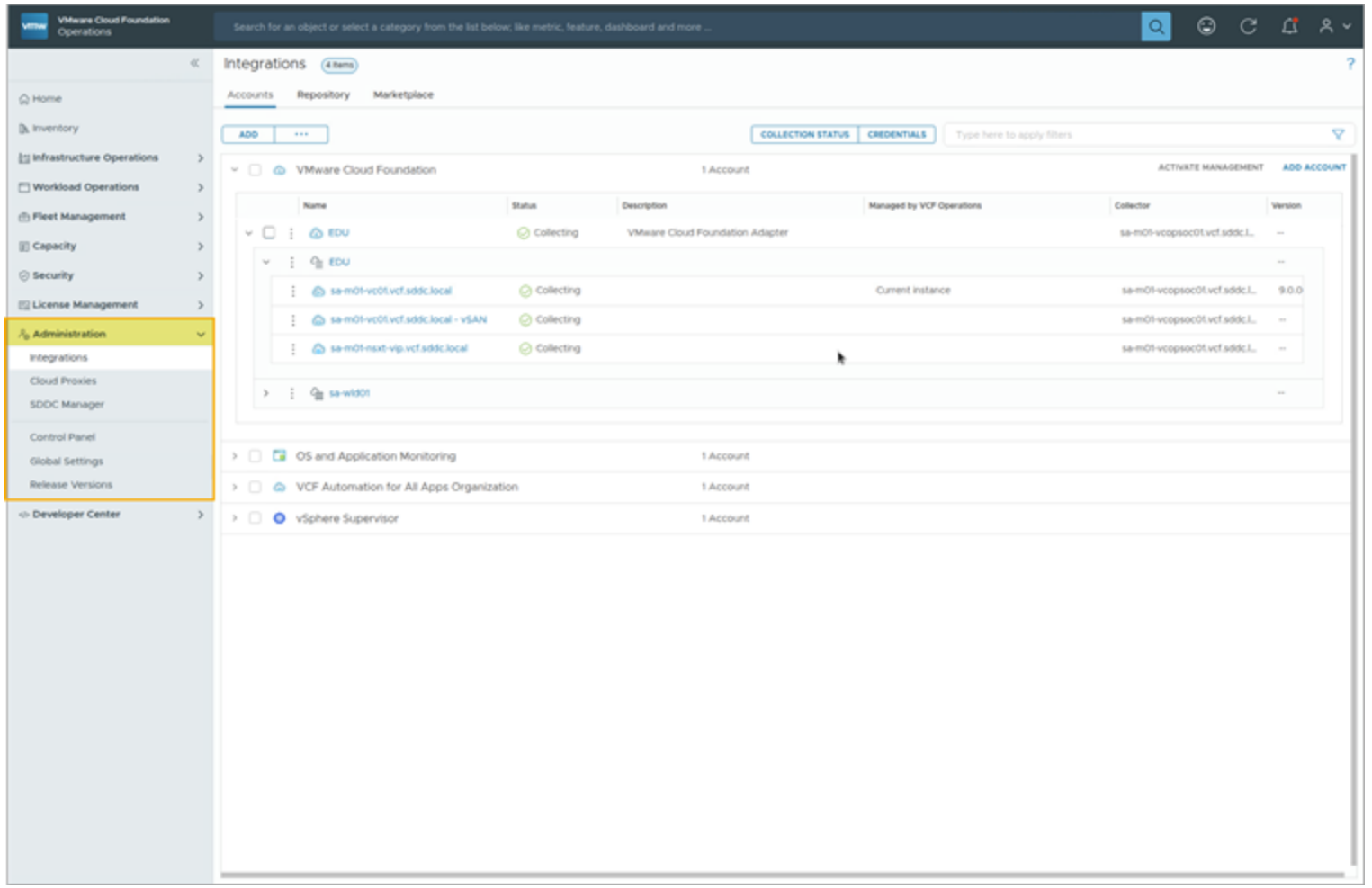
Administration Page

The **Administration** page allows you configure and manage integration accounts, cloud proxies, and collector groups.

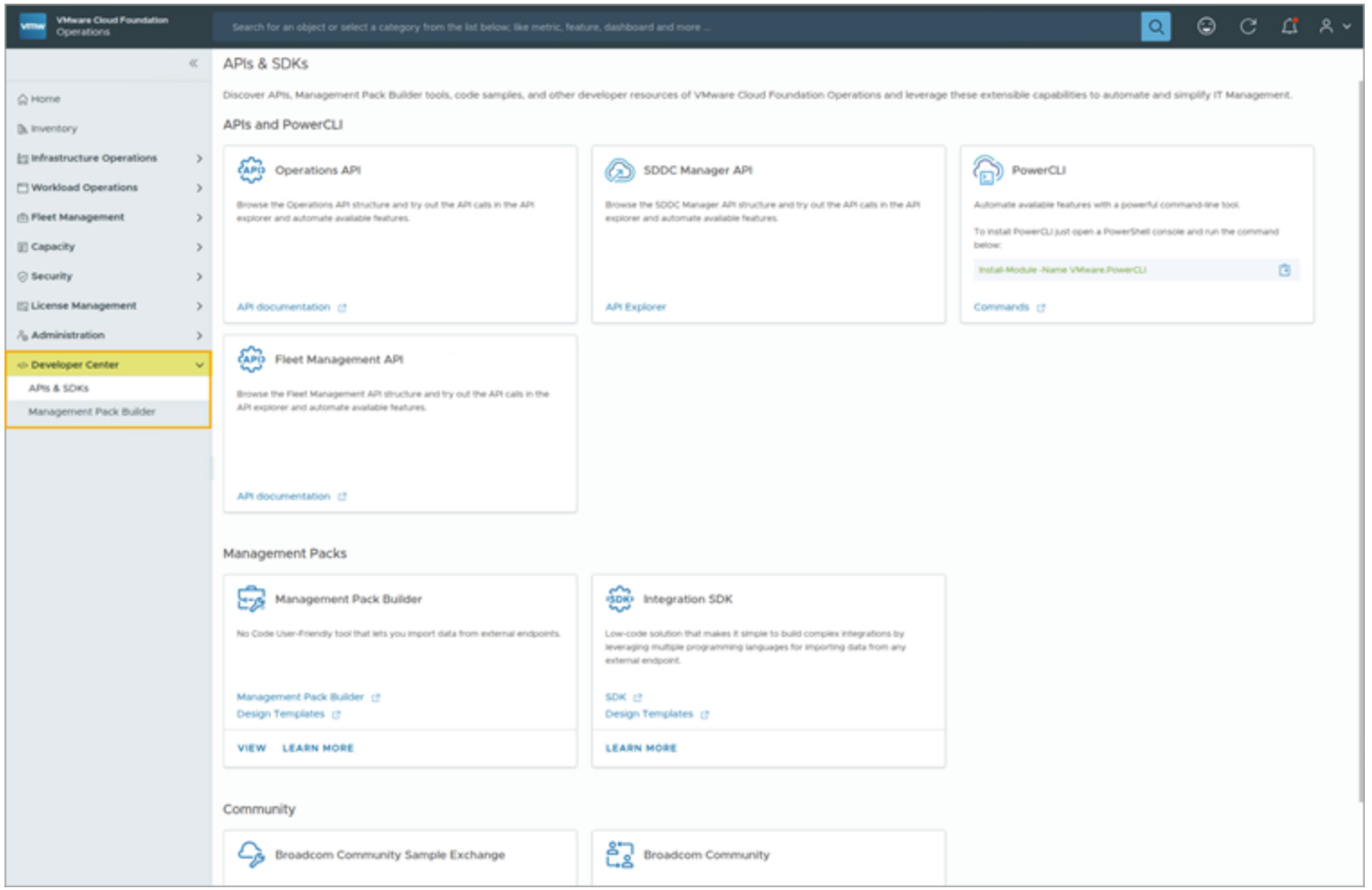
You can configure Global Settings for your VCF Operations console, such as data retention history, cost/price unit, session timeout, and more.



Developer Center

The **Developer Center** page allows you to access useful product APIs and CLI libraries to enable more ways of infrastructure operations and management.

You can also build custom management packs using Management Pack Builder, which is a no-code and user-friendly tool, to help you construct the data sources connectivity and API commands to achieve the desired outcomes.



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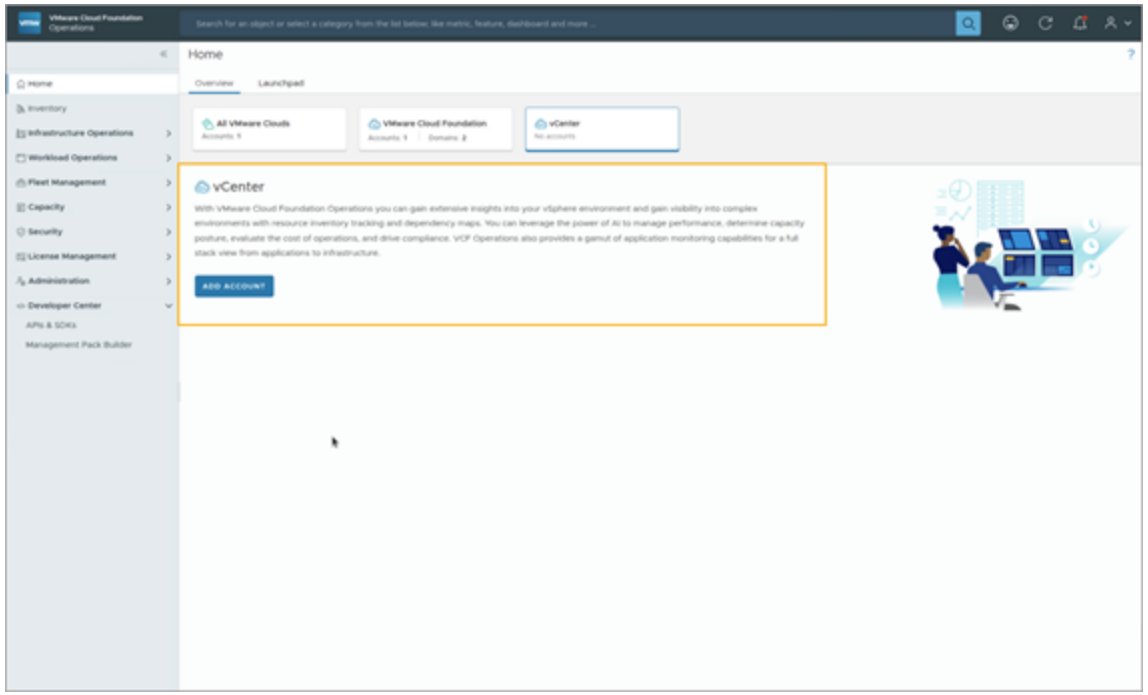
Example: Using the VCF Operations Console

You use VCF Operations to connect and analyze data from other VMware data sources, such as vCenter.

From your VCF Operations console **Home** page, click **Overview**, select **vCenter**, and click **ADD ACCOUNT** to configure your vCenter environment as a data source. After adding the vCenter account, your VCF Operations console begins to display data, such as inventory list, gathered from your vCenter environment.

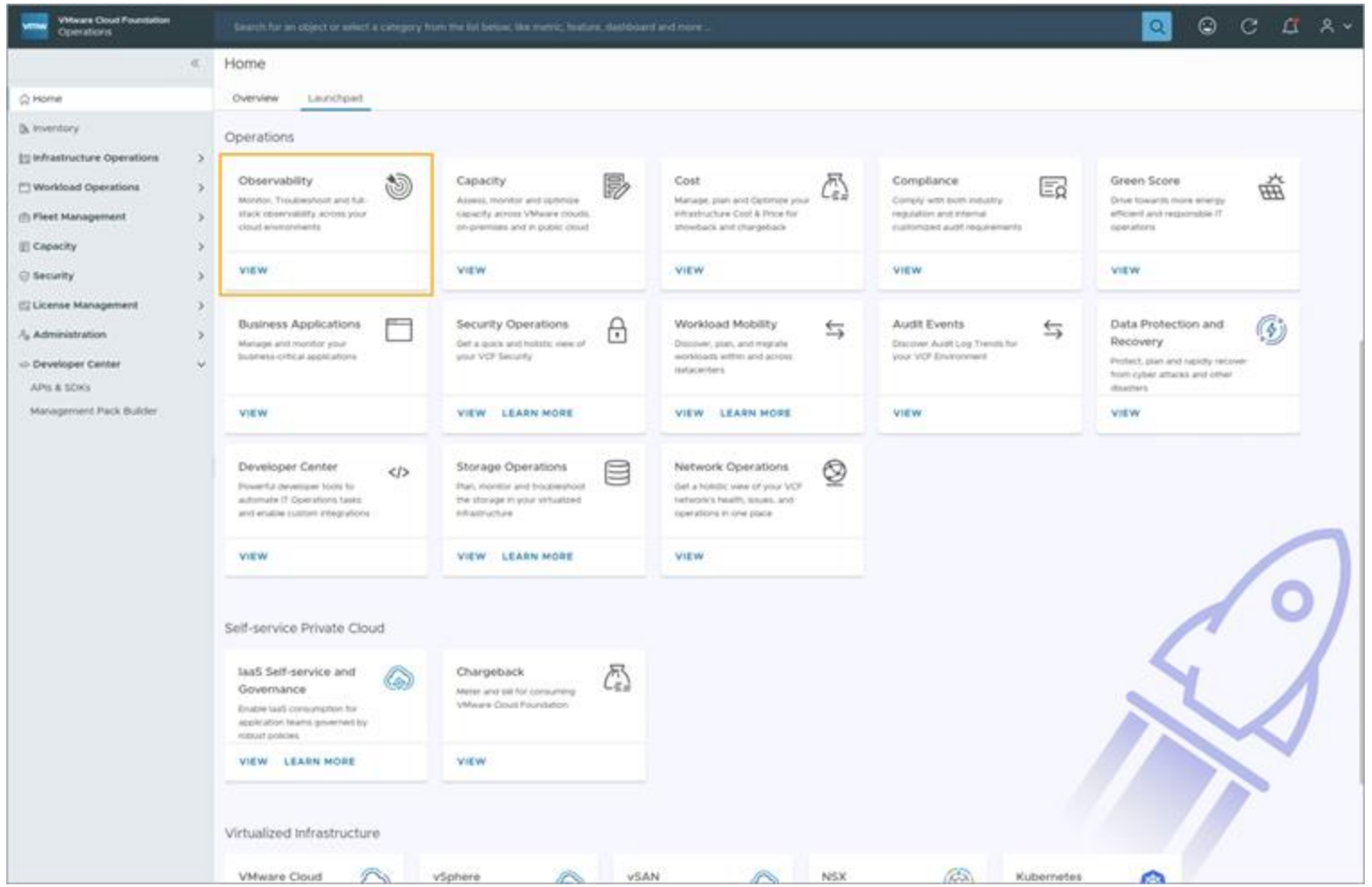
You can also add more accounts through **Administration > Integrations** on the left side of the VCF Operations navigation menu.



Example: Using the Observability Function Pillar

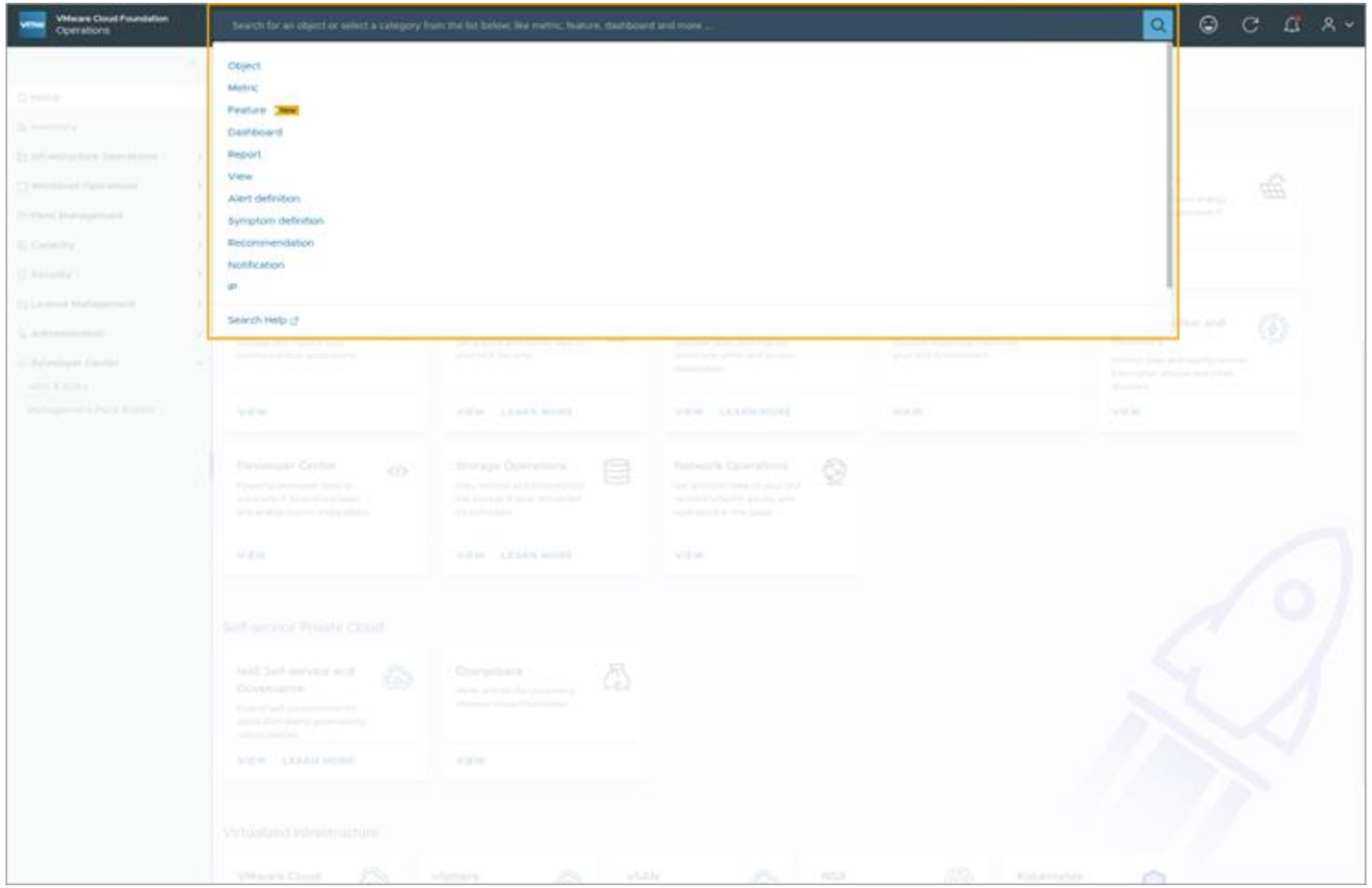
The **Observability** function pillar provides quick access to the monitoring and troubleshooting options available in VCF Operations. You can click **Observability** on the **Launchpad** tab to access the observability functions.

You can also access the same options through the **Infrastructure Operations** on the left side of the VCF Operations navigation menu.



Understanding the Search Function

With the Search function, you can enter one of the listed categories and then search for objects in the category.

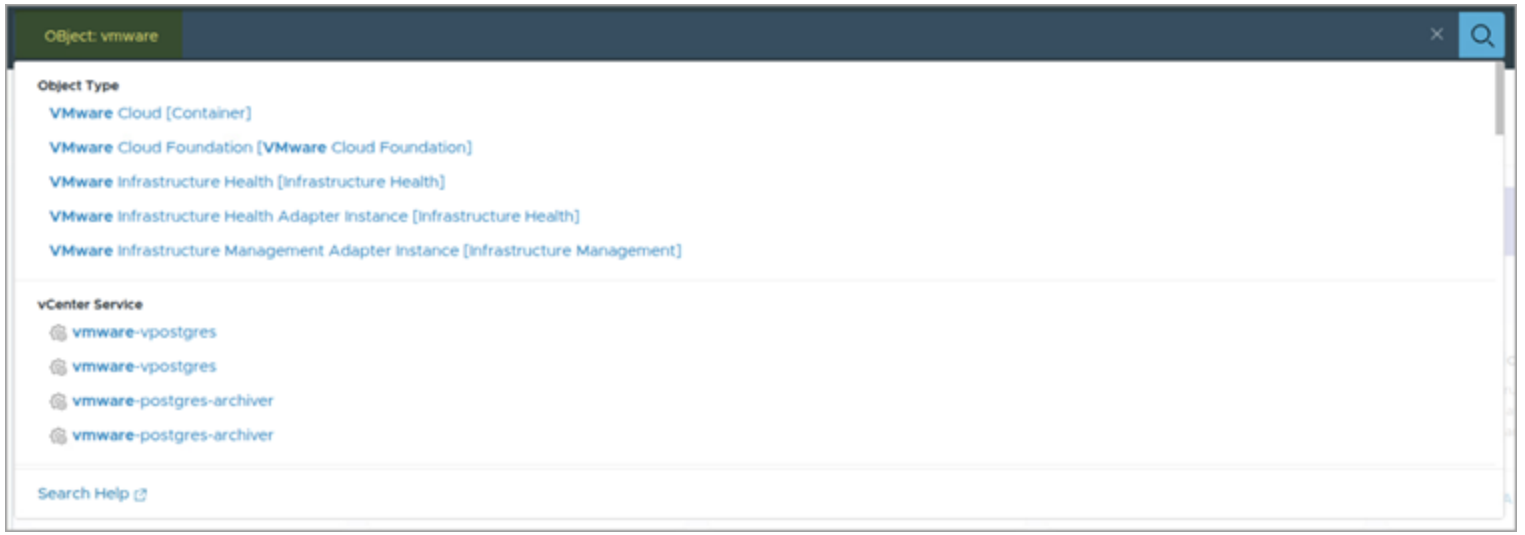


Example: Using the Search Function

In this example, the user searches for an object with `vmware` in its name.

From the returned list of suggestions, you can click directly on one of the links.

Clicking the link opens the object's summary page.



Lab: Navigating VCF Operations UI

Access your lab environment and review a deployed VCF Operations instance:

1. Log In to the VCF Operations Administration UI
2. Navigate Pages in the VCF Operations Product UI
3. Use the Search Functionality to Find Objects
4. Use Dashboards and Topology to Navigate the Environment

Review of Learner Objectives

- Perform basic VCF Operations console navigation
- List the different management areas in the VCF Operations UI