vFORUM 2019

Google Anthos 結合 VMware打造現代化混合雲應用服務

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Google Cloud

Enterprise IT landscape

Cloud is here to stay

73%

of organizations use cloud[1]

Hybrid is key Multi-cloud too

84%

of companies have multi-cloud plans[2]

Most apps remain on-prem

10%

Workloads have moved to cloud[3]

Cost and complexity

83%

increase in administration costs[4]

[1] IDG Cloud Insights survey, 2018 (N=550)
[2,3] Cloudability, State of Cloud 2018 report based on actual spend data
[4] IDC: study

Google Cloud

Different industries - Google Cloud Transformation

Leveraging powerful Google Cloud Services

Financial Services
Advanced data processing, algorithm models

Retail, industrial
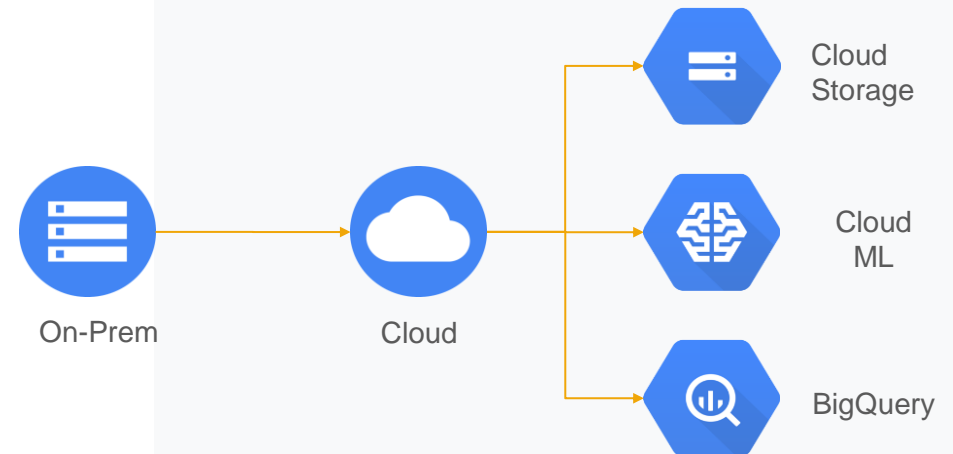Smart retail, use ML models trained in cloud

Healthcare
Healthcare: research data, in-hospital
communication, paging, speech recognition

Manufacturing
Factory quality control using data warehouse
and ML in cloud

**Transform and innovate with Google Cloud
services**

On-Prem

Cloud

Cloud
Storage

Cloud
ML

BigQuery

Google Cloud

Different industries - Common Problems

Unified services operations
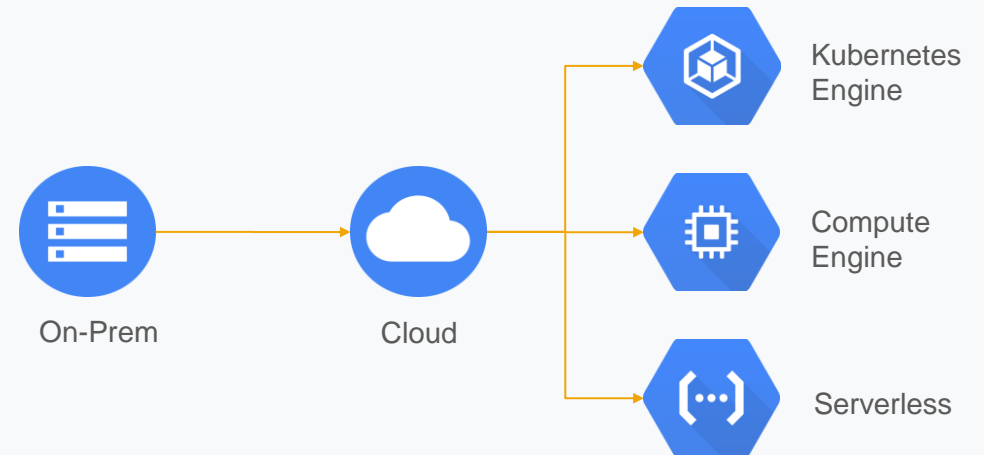
Financial Services, Healthcare
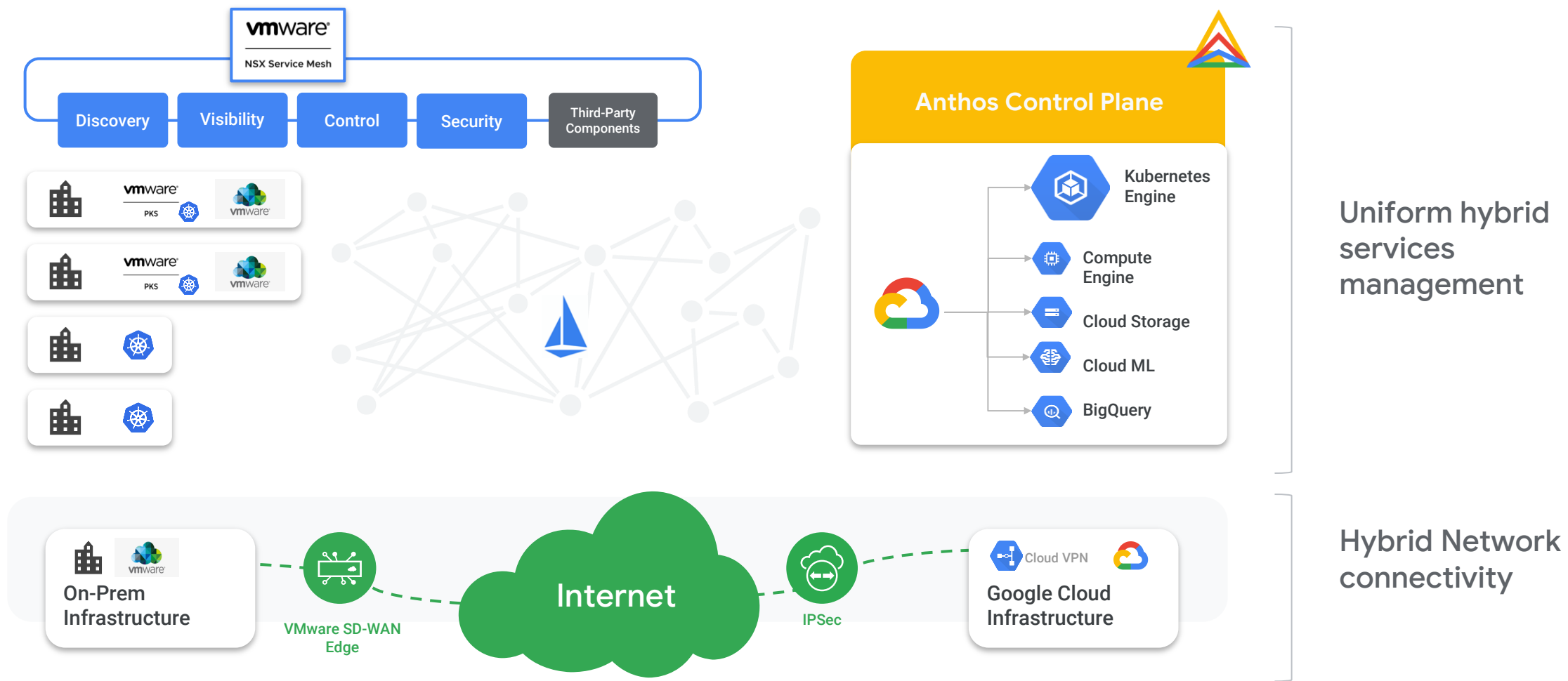CI/CD in cloud
On-prem regulatory data deployments

Retail, industrial
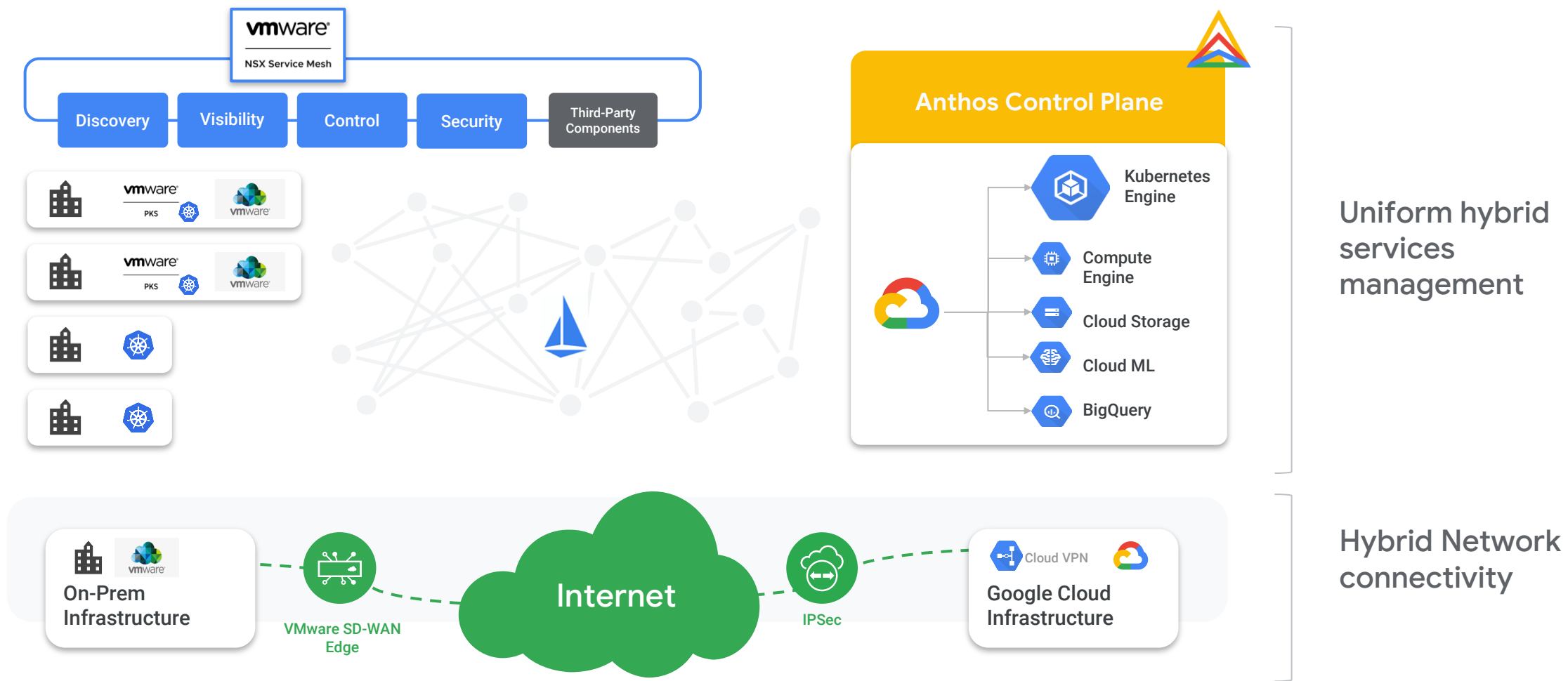Cross-site dependencies. e-commerce
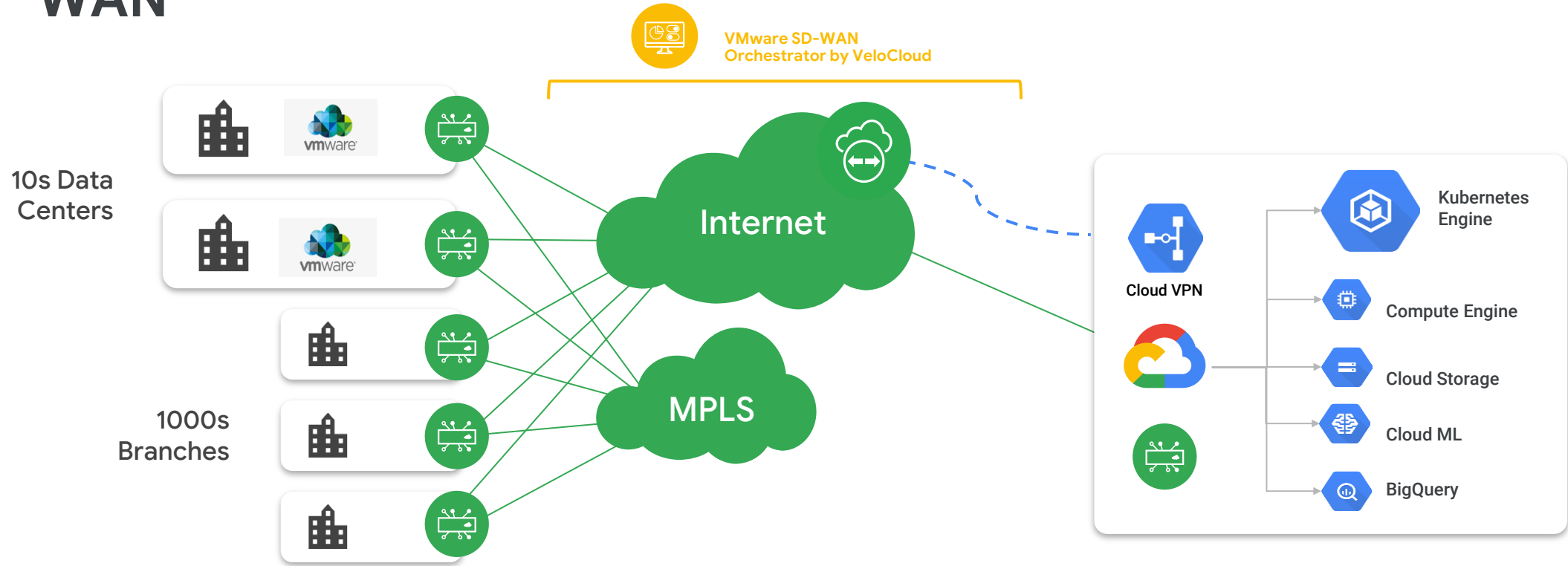site in cloud with on-prem inventory

Cross-environment deployment

On-Prem → Cloud → Kubernetes Engine

Compute Engine

Serverless

Google Cloud

Google Cloud's Hybrid architecture

Uniform hybrid services management

Hybrid Network connectivity

Google Cloud's Hybrid architecture

NSX Service Mesh
- Discovery
- Visibility
- Control
- Security
- Third-Party Components

Anthos Control Plane
- Kubernetes Engine
- Compute Engine
- Cloud Storage
- Cloud ML
- BigQuery

Uniform hybrid services management

On-Prem Infrastructure — VMware SD-WAN Edge — Internet — IPSec — Cloud VPN — Google Cloud Infrastructure

Hybrid Network connectivity

Google Cloud

Enterprise Onboarding to Google Cloud with VMware SD-WAN

VMware SD-WAN
Orchestrator by VeloCloud

10s Data Centers

vmware

vmware

1000s Branches

Internet

MPLS

Cloud VPN

Kubernetes Engine

Compute Engine

Cloud Storage

Cloud ML

BigQuery

Onboard: Integration with GCP, Single point of management, Application SLA

Operate: Constant monitoring and alerting, seamless config changes
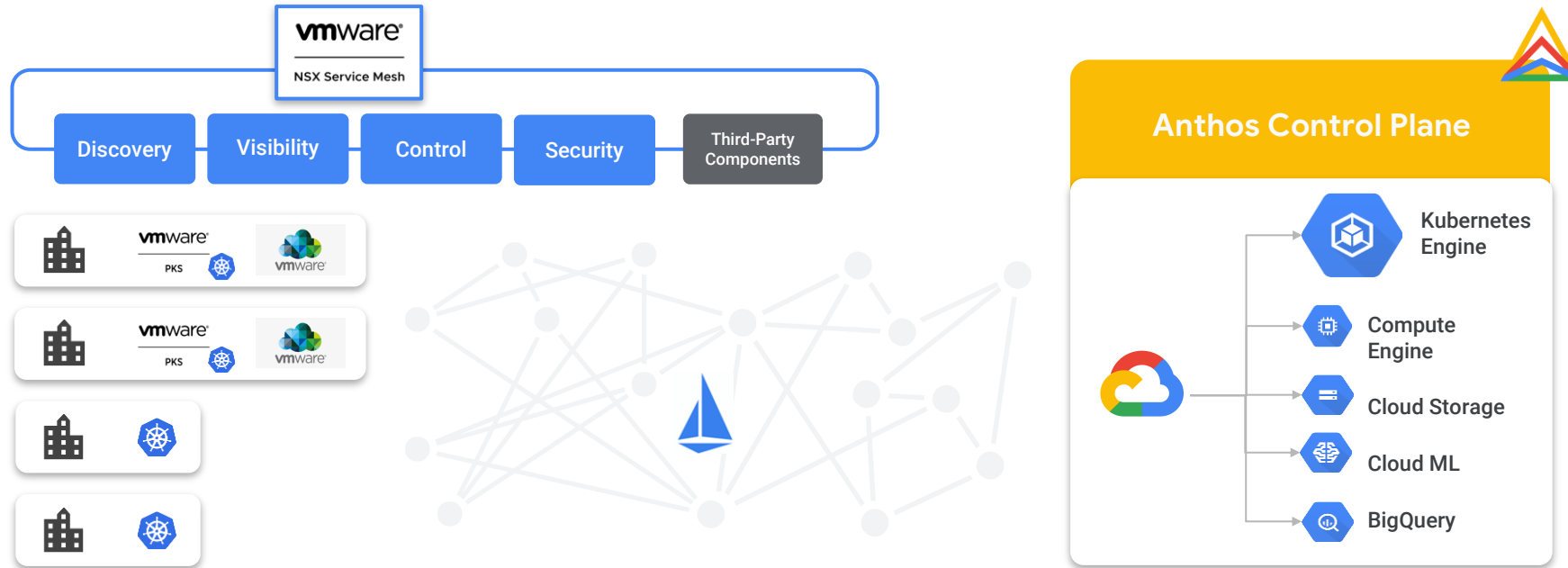
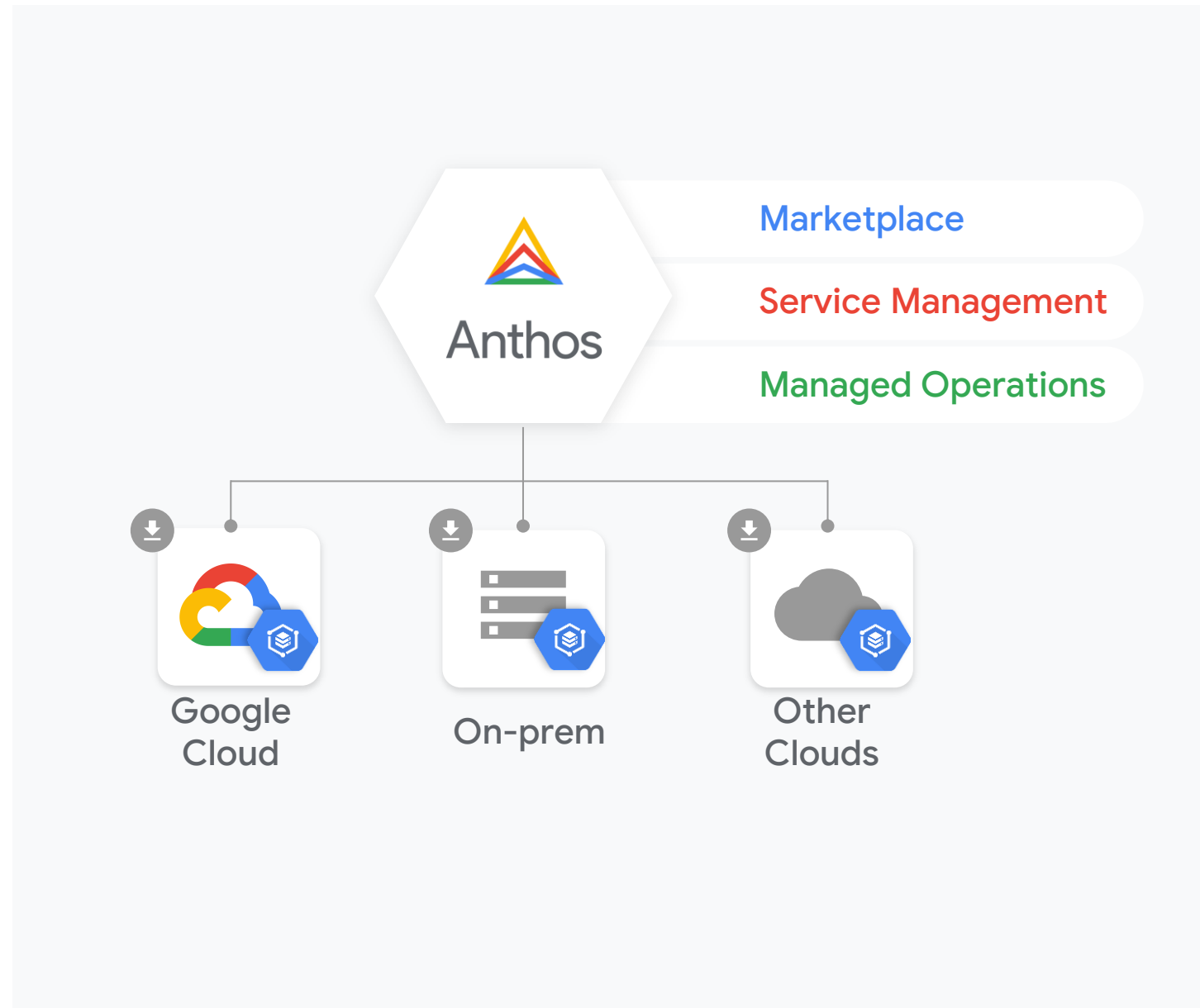Google Cloud

Hybrid service and network

- **Istio Service Mesh** allows to connect, control, and observe services.
- Services can communicate using **mTLS** in a more secured fashion.
- **Consistent policies** can be applied for access control.
- **Multiple dashboards** provide visibility into service integrations.

Google Cloud

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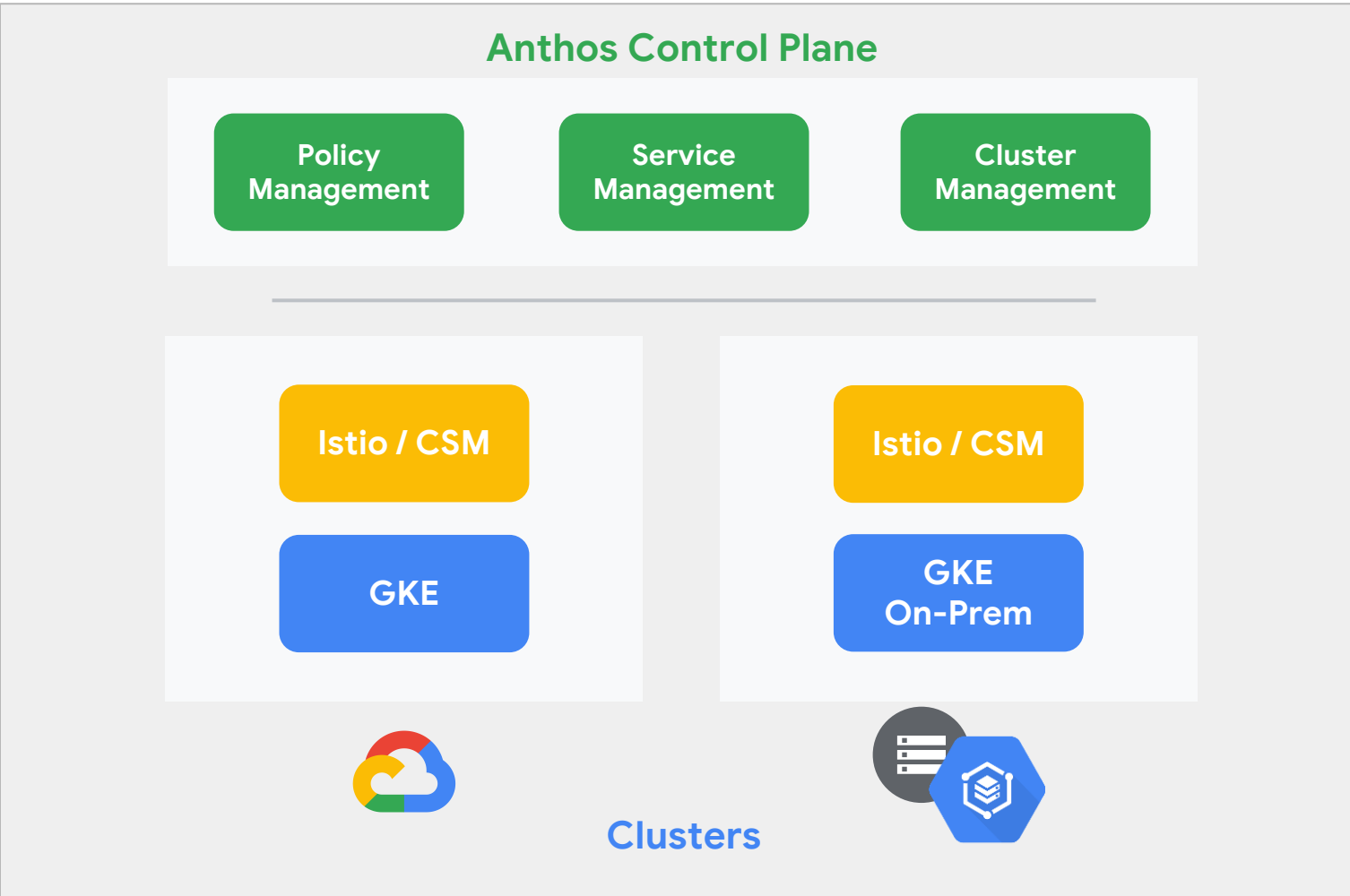- **Multiple dashboards** provide visibility into service integrations.

Google Cloud
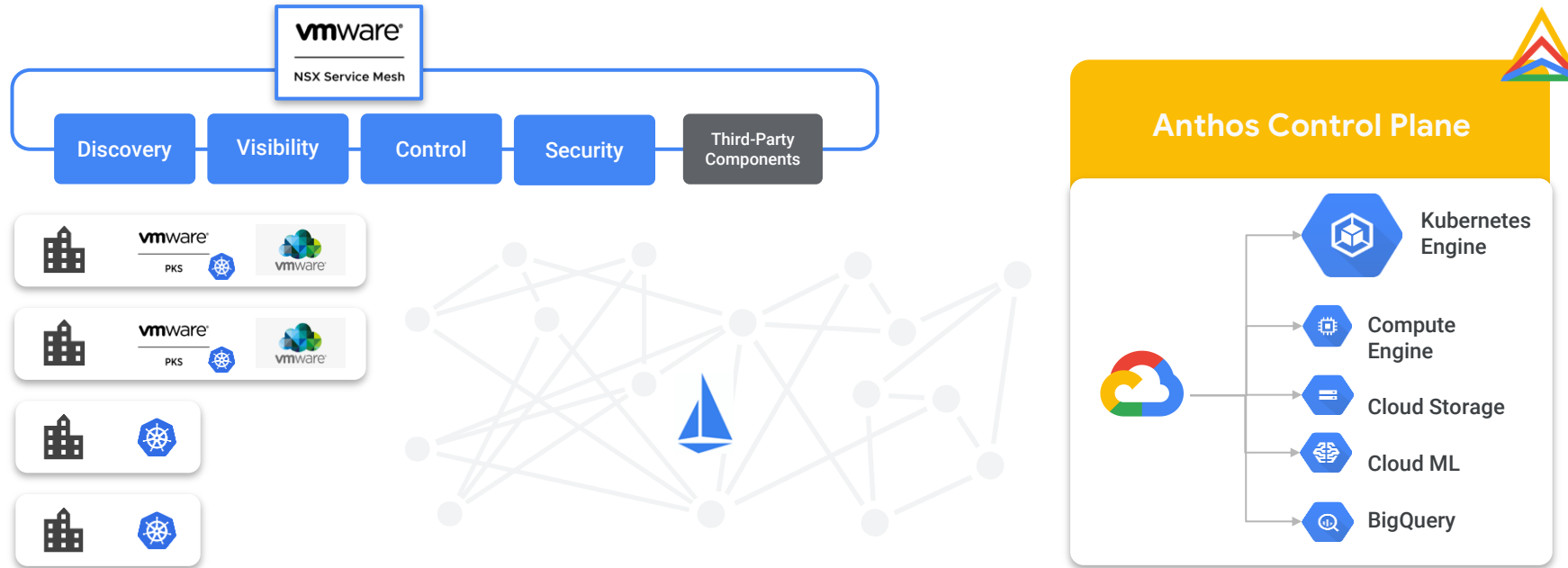
Anthos is our platform for application modernization

> " Anthos' multi-cloud capabilities are so far **unique** in the industry
>
> Forbes, April 2019

Google Cloud

Anthos

Marketplace

Service Management

Managed Operations

Google Cloud

On-prem

Other Clouds

GKE On-Prem Tech Stack

Anthos Control Plane

| Policy Management | Service Management | Cluster Management |

Istio / CSM

GKE

Istio / CSM

GKE On-Prem

Clusters

Google Cloud

- Run on-prem or in the cloud
- Manage from a single pane of glass
- Secure from the ground up

Google Cloud

Anthos GKE On-Prem

- **Automated deploy on top of vSphere shipped as a virtual appliance**

- **Admin cluster provides local CRUD operations:**

  - Faster, higher reliability, easier to manage from cloud

  - Independent failure domain

- **Approach extensible to other IaaS**
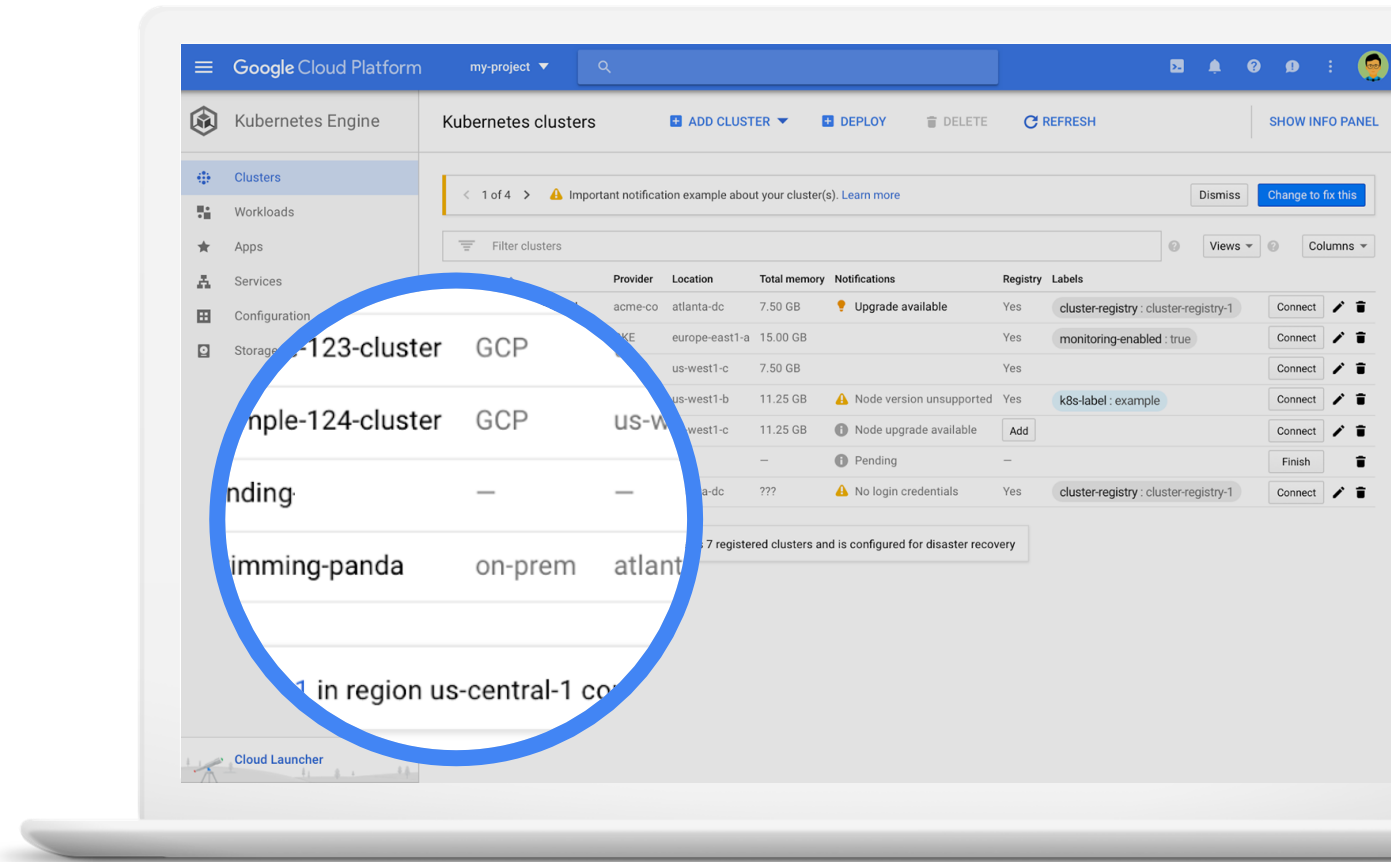
Google Cloud
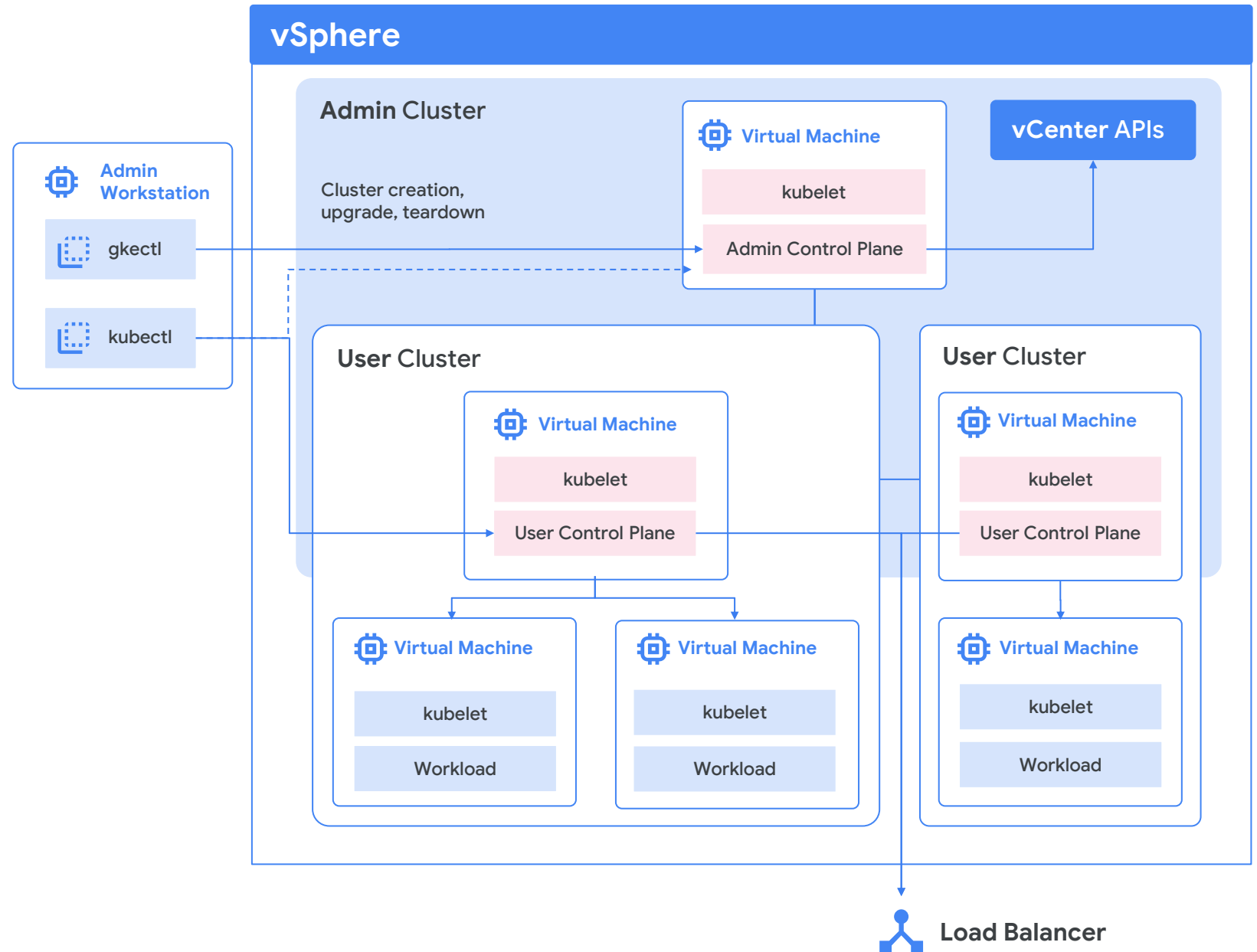
Single pane of glass across GCP & on-prem

"What's running on my fleet?"

Orchestrate and manage on-prem containers just like GKE in the cloud

Single UI for GKE clusters, no matter where


Google Cloud

vSphere Cloud Provider and Anthos GKE On-Prem

vSphere Cloud Provider (VCP) for Kubernetes is leveraged by Anthos GKE On-Prem to provision storage.

For Persistent Volumes (PVs), **VCP** is able to dynamically provision VMDKs to be attached to VMs via Persistent Volume Claims (PVC).
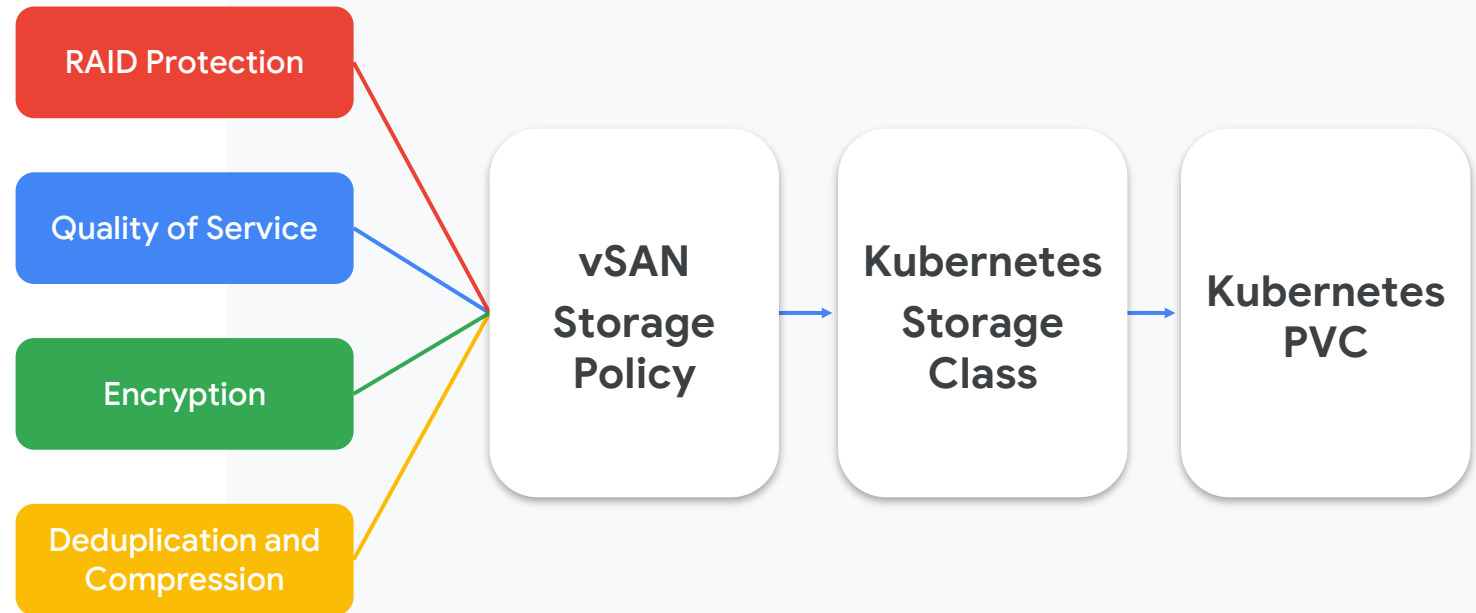
VCP with Anthos simplifies the install and operation of GKE On-Prem and the Kubernetes workloads that run upon it.

Google Cloud
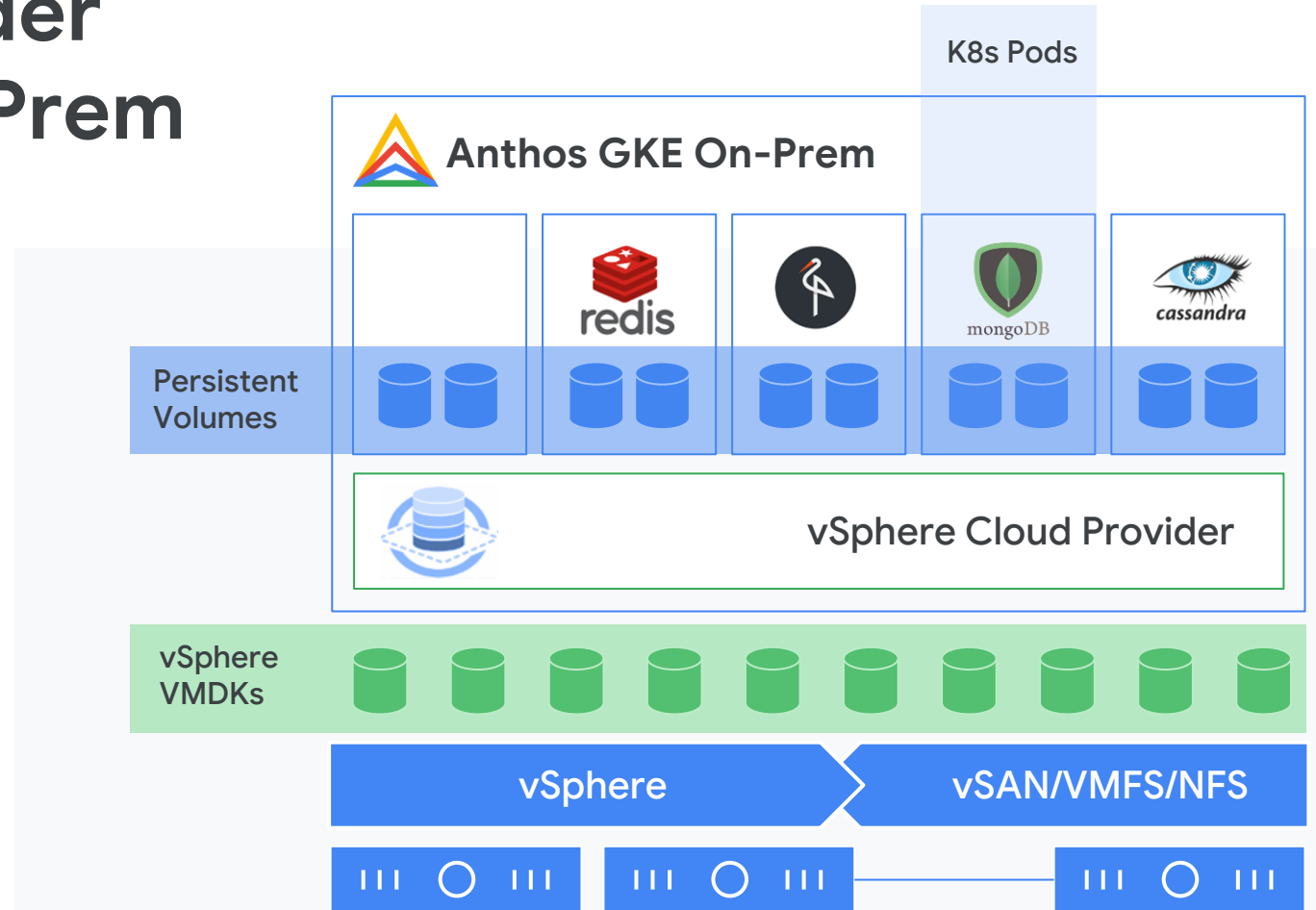
Managing Persistent Volume Capabilities with vSAN Storage Policy Based Management

vSAN Storage Policies are used to define and manage key characteristics of the storage.

The vSAN Storage Policy is used within a Kubernetes Storageclass. When a PVC is made, VCP will create a VMDK within the vSAN storage which adheres to the characteristics defined in the vSAN Storage Policy

RAID Protection

Quality of Service

Encryption

Deduplication and Compression

vSAN Storage Policy → Kubernetes Storage Class → Kubernetes PVC

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VMware NSX Service Mesh integration with Anthos

Architectural View
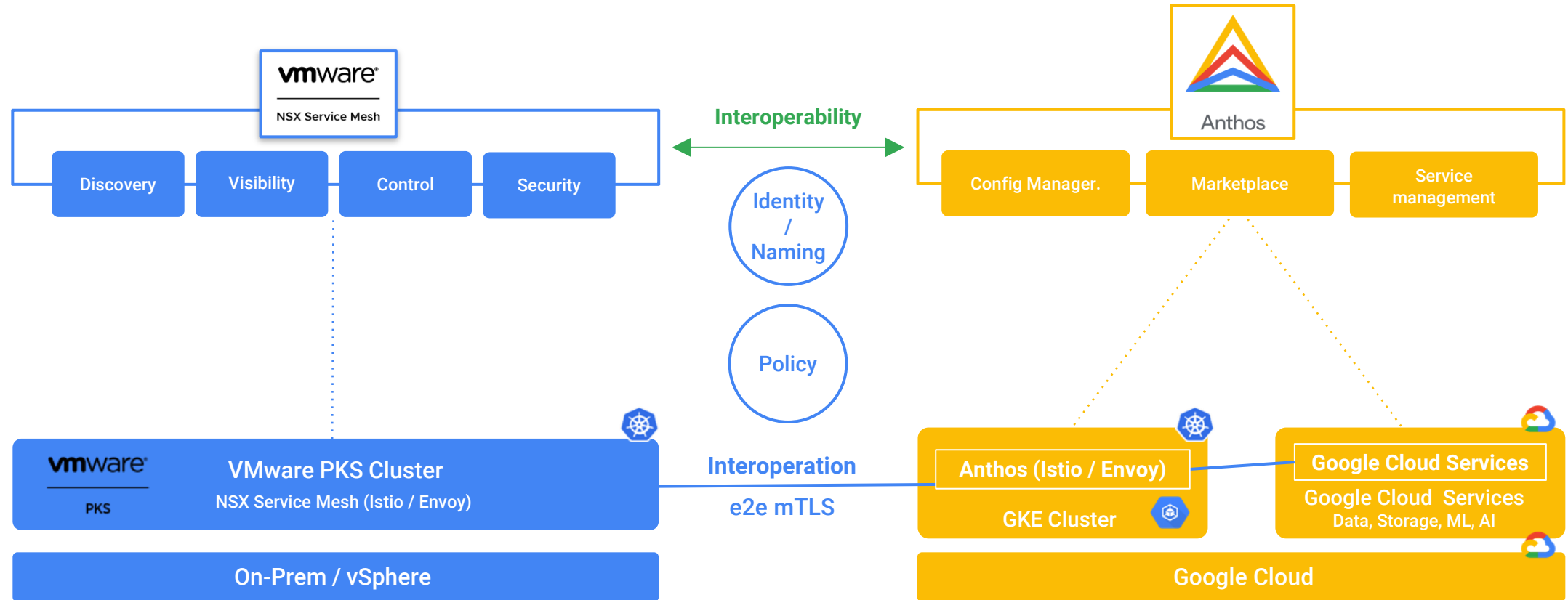
Hybrid Cloud Solution with VMware and Anthos

Connectivity

Simplified connectivity with QoS and security segmentation

Service Management

Discovery, visibility, control, and security for microservice applications.

Innovation

Innovate and extract intelligence from the data with BigQuery and AI.

Enterprise Class

Focus on enterprise-class capabilities: e2e operations, from troubleshooting to consistent policies

Google Cloud