

# 4 Key Cloud Management Disciplines for Delivering a Modern Private Cloud

Transform your data center with VMware Cloud Foundation

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## Adapting to the challenges of cloud management

**How can you manage cloud infrastructure in a way that supports business decisions and helps the organization innovate faster?** That's the critical question today. With ever-changing complex cloud environments and spiraling cloud costs, you have to adapt to keep up.

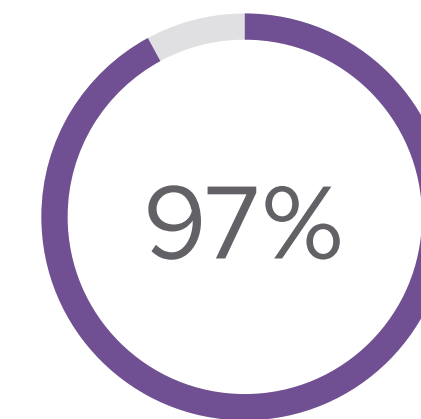
VMware Cloud Foundation™ provides the best possible infrastructure to support your application strategy. It does this by adding virtualization and cloud management software that provides an end-user interface similar to what you get with public cloud.

### The expectations for IT teams today

<b>Meeting SLAs</b>	Deliver performance and meet business needs, often with limited resources.
<b>Modernization</b>	Make better use of existing resources and spin up new data centers as needed.
<b>Full-stack visibility</b>	See across all IT environments for improved operational efficiency.
<b>Cost management</b>	Assure private cloud performance at minimal cost—now and in the future.
<b>Risk management</b>	Reduce risk and enforce regulatory standards with integrated compliance.

**Without the ability to see and manage infrastructure across the entire IT stack, it's impossible for IT teams to meet these expectations.** The volume of data collected alone is monumental. Customers, workforces, applications, clouds and infrastructure are widely distributed, while legacy monitoring and management tools are often siloed—resulting in inefficiencies, higher costs, poor compliance and greater risk.

Instead of accelerating innovation and optimizing your cloud management strategy with real-time insights, you're stuck manually deploying services and remediating issues you didn't see coming.



of organizations report challenges monitoring their cloud app environments.<sup>1</sup>



of IT professionals surveyed agree that observability would benefit their organization.<sup>1</sup>

1. VMware. The State of Observability 2022. 2022.

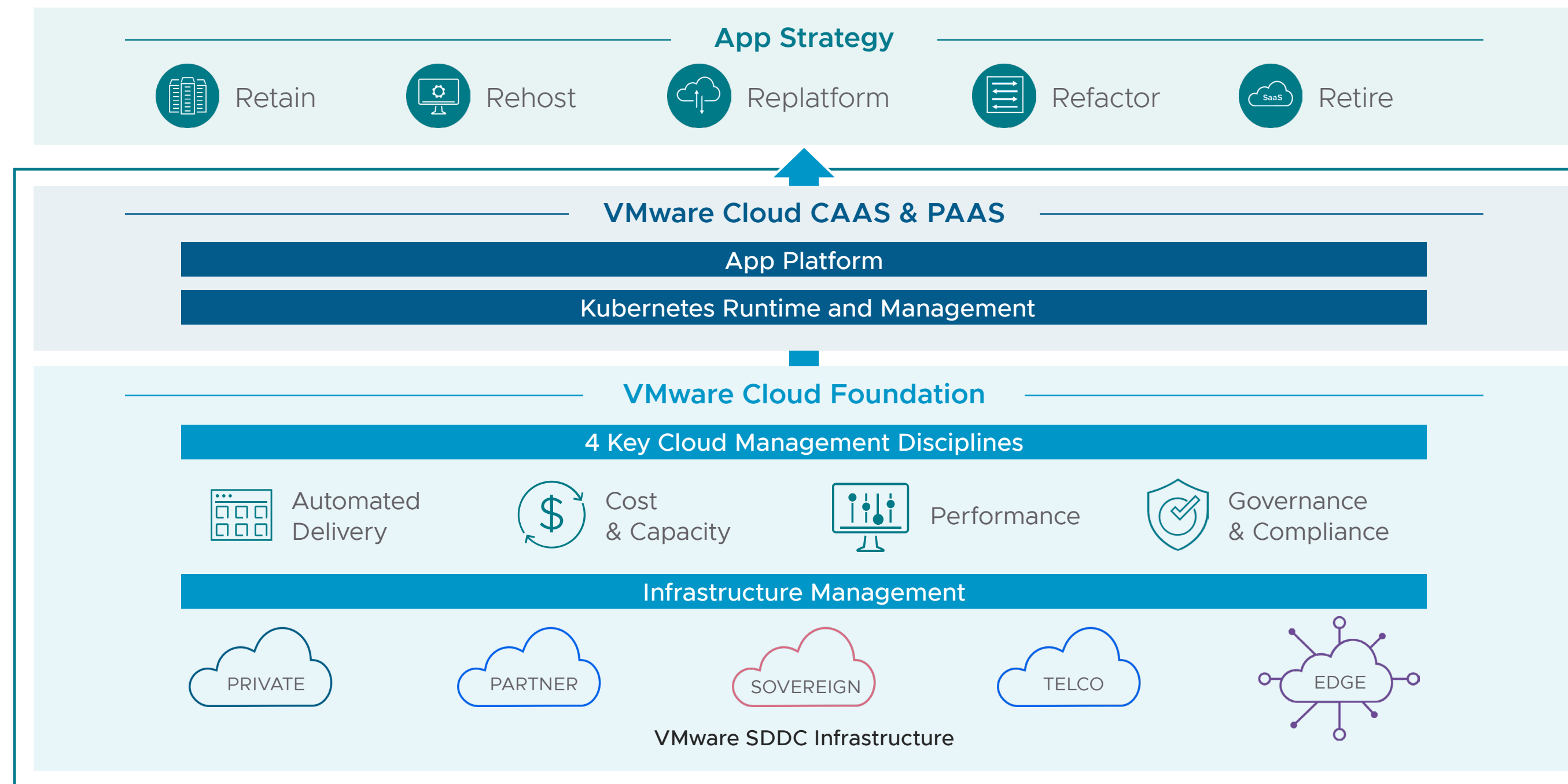
# Transforming your data center to drive better outcomes

To support your business's objectives and its underlying application strategy, you need an intelligent cloud management platform that provides infrastructure automation and visibility into infrastructure at all levels, from virtual machines (VMs) and containers all the way up to applications. In addition, you need automated capabilities for predictive, proactive operations.

**This is the path to continuous innovation, faster time to value, and predictable investments. This is where VMware Cloud Foundation, a full-stack private cloud solution that combines the scale and agility of the public cloud with the security and performance of the private cloud, and its management solutions can take you.**

## Did you know?

Kubernetes is integrated within VMware Cloud Foundation. That means you can deliver full-stack, developer-ready infrastructure while gaining observability and troubleshooting for Kubernetes workloads.



# The 4 key cloud management disciplines you need

VMware Cloud Foundation not only provides a future-ready infrastructure across all types of clouds. In one common control plane, it also provides the four disciplines required to effectively manage all your workloads and applications: automated delivery, cost and capacity, performance and troubleshooting, and governance and compliance.

## Automated delivery:

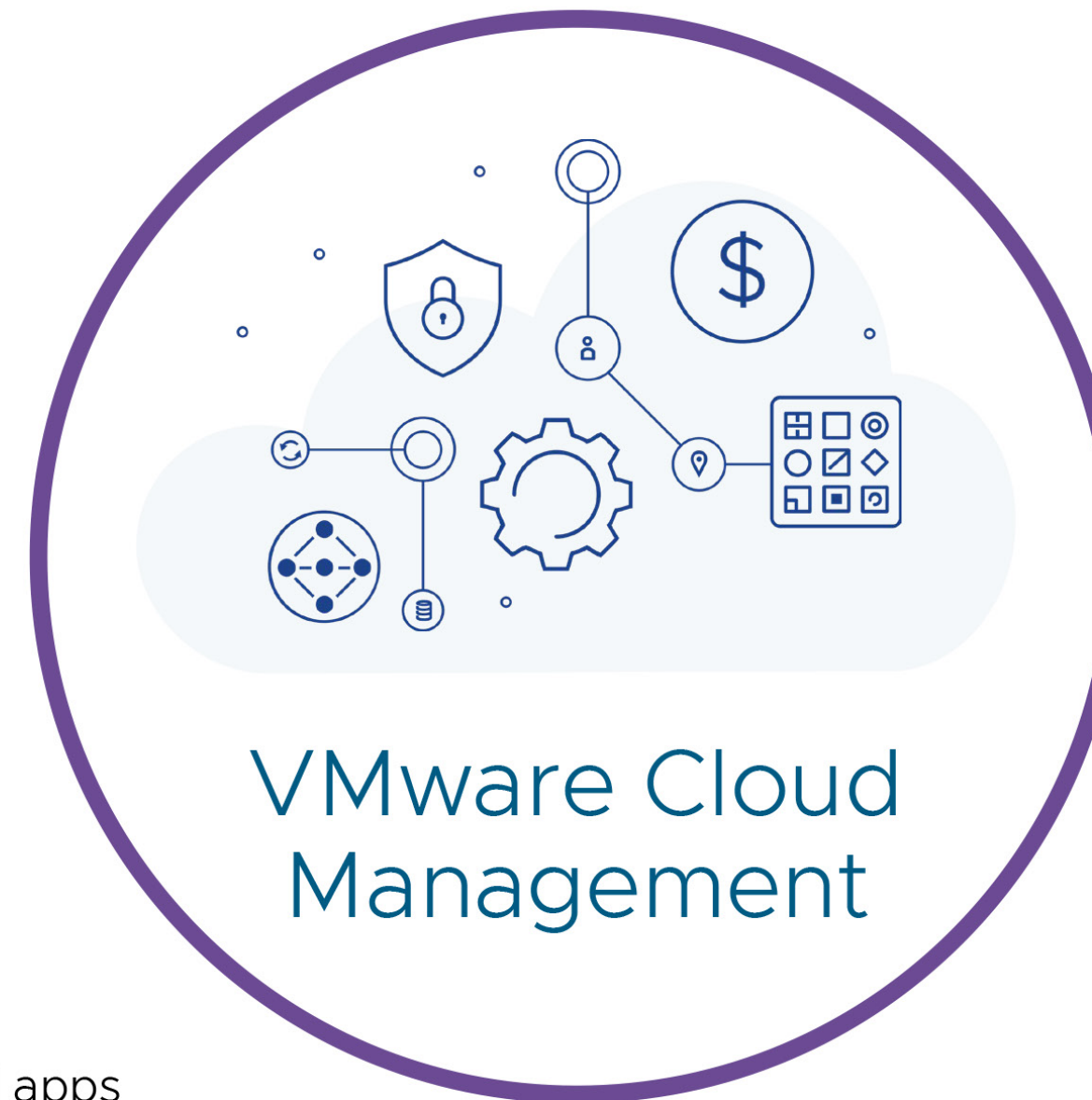
Self-service consumption for app/infra teams

Unlock innovation by speeding up the delivery of infrastructure, platform, and app services with a self-service consumption experience.

## Cost and capacity:

Maximize utilization at minimal cost

Manage the cost and capacity of infrastructure and apps by predicting future demand, leveraging recommendations, and automating reclamation and rightsizing.



## Performance and troubleshooting:

Maximize visibility into app and infra health

Monitor and manage with full-stack visibility and intelligent remediation to predict, prevent, and troubleshoot faster with actionable insights.

## Governance and compliance:


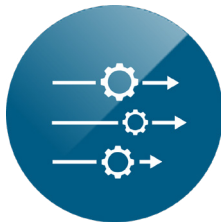

Ensure control and reduce risk through policy management

Define and enforce policies and automate remediation from compliance drifts across best practices, sustainability, network segmentation and regulatory requirements.

# Discipline 1: Automated delivery

**Move faster. Be more agile.**



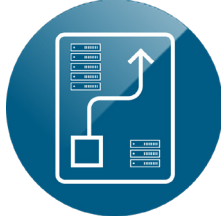

With VMware Cloud Foundation powered by VMware Aria Automation™, we open the door for your app and infrastructure teams to swiftly access and deploy the services they need—so you can transform your software-defined data center (SDDC) into a modern private cloud.

With...	You can...
 Self-service private cloud	Deliver a self-service private cloud environment with frictionless governance and resource lifecycle management. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Curated catalog for self-service provisioning</li><li>• Seamless policy enforcement</li><li>• Day 2 management</li></ul>
 DevOps for infrastructure	Embrace DevOps-powered infrastructure delivery and consumption in IT workflows for higher productivity and faster time to value. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Infrastructure-as-code to define machines, applications, and services</li><li>• Source control templates and scripts</li><li>• GitOps-based iterative development</li></ul>
 Kubernetes automation	Enable public cloud-like Kubernetes as a Service for VMware Cloud Foundation. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Self-service access to provision VMware Tanzu Kubernetes Grid clusters and Supervisor Namespaces</li><li>• Reusable YAML templates available via service catalog, with the option to add rules created by Tanzu Mission Control and lifecycle management</li><li>• Modern cloud consumption interface with a choice of K8s CLI, UI, and APIs</li></ul>

## Discipline 2: Cost and capacity

### How can you maximize your utilization at minimal cost?

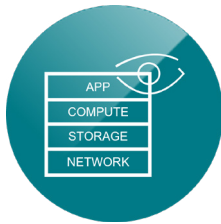


For efficient cost and capacity management, you need the information that enables optimal consolidation, proactive planning and smart procurement—which is what VMware Cloud Foundation’s management solutions provide.

With...	You can...
 <p>TCO with showback and chargeback</p>	<p>Show the costs associated with VMware Cloud infrastructure and resource allocation to individual lines of business (LOBs).</p> <p><b>Feature highlights:</b></p> <ul style="list-style-type: none"><li>• Holistic view of TCO with customizable cost drivers aligned to business expenses</li><li>• Mapping of LOB applications to cloud resources and costs</li><li>• Cost and price metric analysis and comparisons</li></ul>
 <p>Assess capacity and address shortfalls</p>	<p>Evaluate capacity requirements based on historical resource use and real-time predictive analytics.</p> <p><b>Feature highlights:</b></p> <ul style="list-style-type: none"><li>• Capacity visibility across cloud environments</li><li>• Assessments leveraging real-time statistical analyses</li><li>• Demand and allocation models for projections</li></ul>
 <p>Infrastructure and workload planning</p>	<p>Define scenarios to see if resources should be added or removed.</p> <p><b>Feature highlights:</b></p> <ul style="list-style-type: none"><li>• “What if” scenario planning for future capacity requirements</li><li>• Ability to combine multiple plans</li><li>• Visibility into cost implications and potential savings</li></ul>
 <p>Capacity reclamation and cost saving automation</p>	<p>Identify unused resources like idle VMs and orphaned disks and reclaim this space.</p> <p><b>Feature highlights:</b></p> <ul style="list-style-type: none"><li>• Identification of unused resources like powered off VMs, idle VMs, old snapshots and orphaned disks</li><li>• Cost savings measurement based on capacity waste</li><li>• Workflows to optimize cost and reclaim unused capacity</li></ul>

## Discipline 3: Performance and troubleshooting

Optimal application performance hinges on apps being able to access the resources they need.




Your applications serve your business—so when their performance isn't up to par, your business suffers. From full-stack visibility to performance optimization, VMware Cloud Foundation's management solutions provide what you need to keep those apps running at their best.

	With...	You can...
	Full-stack visibility	Get a unified view of your entire infrastructure (both virtual and physical) and the applications running on it. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Single view of all important performance data from virtual and physical infrastructure to apps</li><li>• Easily consumable dashboard alerts and reports</li><li>• Rich set of management packs to extend monitoring, troubleshooting and remediation capabilities</li></ul>
	Application monitoring	Ensure an application is running properly by monitoring its performance, availability and end-user experience. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Telegraf agents and custom script execution</li><li>• Native Service Discovery that shows impacts and the right escalation path</li><li>• Synthetic monitoring to identify issues from different end-user perspectives</li></ul>
	AI-driven troubleshooting and remediation	Achieve faster time to resolution to meet your service level agreements (SLAs) and realize better performance at lower costs. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Troubleshooting Workbench with AI-based analytics and metric correlation</li><li>• Highlight of notifications, events, property changes and anomalous metrics</li><li>• Tie-in for logs for last-mile root-cause analysis</li></ul>

## Discipline 4: Governance and compliance

Governance and compliance are critical aspects of running cloud infrastructure.

VMware Cloud Foundation's management solutions like VMware Aria Operations™ help customers maintain a consistent configuration across SDDC components, which helps ensure compliance and security while reducing overall complexity. They also help enterprises meet their Environmental, Social and Governance (ESG) commitments.

With...	You can...
 Compliance and best practices	Understand your compliance posture and improve it, reducing organizational and business risk. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Out-of-the-box compliance benchmarks for industry and best practice standards (for example, ISO, PCI, CIS, FISMA, HIPAA, DISA)</li><li>• Ability to create custom compliance benchmarks</li><li>• Remediation automation for many compliance issues</li></ul>
 Sustainability	Understand your sustainability posture across clouds and data centers so you can help ensure your business meets its ESG requirements. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Collection of hardware and workload metrics like efficiency and power sources</li><li>• Calculations of VMware Green Score, based on Clean Demand, Green Supply, and so on</li></ul>
 Infrastructure reporting & best practices	Provide inventory for review and identify possible problem areas based on versioning to reduce outage and failure. <b>Feature highlights:</b> <ul style="list-style-type: none"><li>• Proactive visibility into problem areas to ensure stability and reduction in Support Request</li><li>• Downtime reduction and optimized use of resources</li><li>• Inventory reporting automation with VMware Skyline</li></ul>



# The economic and operational benefits of better cloud management

What are the impacts of adopting cloud management solutions that transform your data center into a true cloud experience?

Forrester, Inc., conducted Total Economic Impact™ (TEI) studies for VMware Aria Automation,<sup>2</sup> VMware Aria Operations,<sup>3</sup> and VMware Aria Operations for Networks.<sup>4</sup>

The numbers speak for themselves.

## The three-year impacts

VMware Aria Automation	VMware Aria Operations	VMware Aria Operations for Networks
<ul style="list-style-type: none"><li>• <b>5-6 hours</b> Saved in IT labor, Day 2 activities, and retirement</li><li>• <b>15%</b> Increase in infrastructure resource utilization</li><li>• <b>5x</b> Increase in annual churn rate of unneeded VMs</li><li>• <b>1 week</b> Faster deployment for end users</li></ul>	<ul style="list-style-type: none"><li>• <b>99.9%</b> Uptime with VMware Aria Operations</li><li>• <b>20%</b> Reduction in MTTR workloads</li><li>• <b>77%</b> Average efficiency gain</li></ul>	<ul style="list-style-type: none"><li>• <b>90%</b> Increase in network mapping efficiency</li><li>• <b>50%</b> Decrease in network outages</li><li>• <b>80%</b> Reduction in time spent monitoring network</li></ul>

Looking for real-world customer case studies? Read on.

2. Forrester Research. "[The Total Economic Impact™ of VMware vRealize Automation](#)," July 2019.

3. Forrester Research. "[The Total Economic Impact™ of VMware vRealize Operations](#)," September 2021.

4. Forrester Research. "[The Total Economic Impact™ of VMware Aria Operations for Networks](#)," March 2022.

## Automated delivery case study

# MB Bank: Laying a flexible, automated foundation for growth

MB Bank aims to be one of the top banks in Vietnam by winning over digital natives, but its infrastructure wasn't flexible enough to cater to fast-evolving customer demands. By applying VMware Cloud Foundation's Automated Delivery discipline powered by VMware Aria Automation, the bank transformed its on-premises data center infrastructure into an automated self-service private cloud.

### Needs

- Provide consumers with the best possible experience and keep up with changing needs.
- Deliver infrastructure services faster, so developers can make product changes quicker and the IT team is freed up for strategic and business-critical tasks.
- Ensure employees have secure access to corporate resources.

### Results

- Transformed its on-premises data center infrastructure into an automated, secure self-service private cloud.
- Reduced the time for resource provisioning from days to hours.
- Shortened the time to market for new financial products.

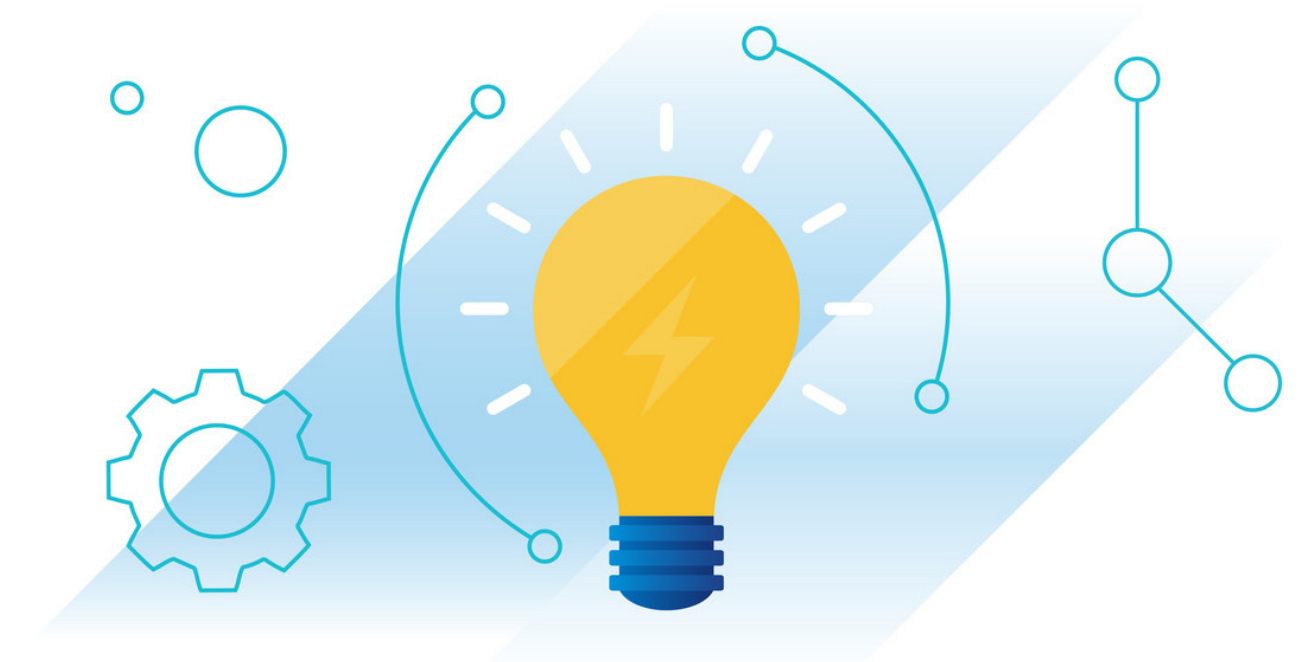
[See the full case study.](#)

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“The automation in VMware Cloud Foundation has enabled us to remove infrastructure hurdles and the human barrier, so that we can provide IT infrastructure as a service.”

— Nguyen Minh Hiep, deputy director, Service Operation Center, IT Division, MB

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## Cost and capacity case study

# Börse Stuttgart: Trading IT maintenance for innovation

Founded in 1860, Börse Stuttgart is the second largest stock exchange in Germany. As part of their cloud-first business strategy, the exchange implemented VMware Aria Operations to streamline its IT cloud operations.

### Needs

- Reduce IT staff time spent on manual maintenance and upgrade management.
- Boost security through fast discovery and remediation of vulnerabilities.
- Gain visibility to costs and compute contention issues via dashboards.
- Support a private cloud environment.
- Increase visibility into capacity.

### Results

- Gained 3–10 hours of IT time per month to redirect toward innovation.
- Automated, on-demand scale out of hardware and software.
- Simplified IT management with the ability to set up a cloud proxy in minutes.
- Increased proactive responsiveness with management reports and dashboards.
- Supplied instant support to remote workers with capacity rightsizing.

[See the full case study.](#)

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“VMware Aria Operations works smoothly, without my influence.  
I’m saving up to 10 hours a month on upgrades and troubleshooting.”

— Stephan Wiechert, IT system specialist, Börse Stuttgart

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## Performance and troubleshooting case study

# Denver Health: Streamlining access to critical apps

Almost every aspect of modern healthcare relies on IT, with medical teams depending on digital touchpoints on mobile devices. Recently, the Denver Health IT team implemented VMware products to streamline the delivery of critical applications and optimize performance. These products included VMware Aria Operations for Networks, VMware NSX®, VMware vSphere®, and VMware Skyline™.

### Needs

- Pioneer next-generation solutions to mitigate security challenges before the customer knows they exist.
- Be the first to market with thoroughly tested features that meet compliance.
- Gain access to cloud-first features and functionality to work across the private cloud.

### Results

- Gained complete visibility and minimized potential cyberattack points across all environments with consistent policy enforcement.
- Reduced the time for upgrade deployment from 3 days to 2 hours, with a seamless end user experience.
- Cut virtual lab environment replication time from days to hours.

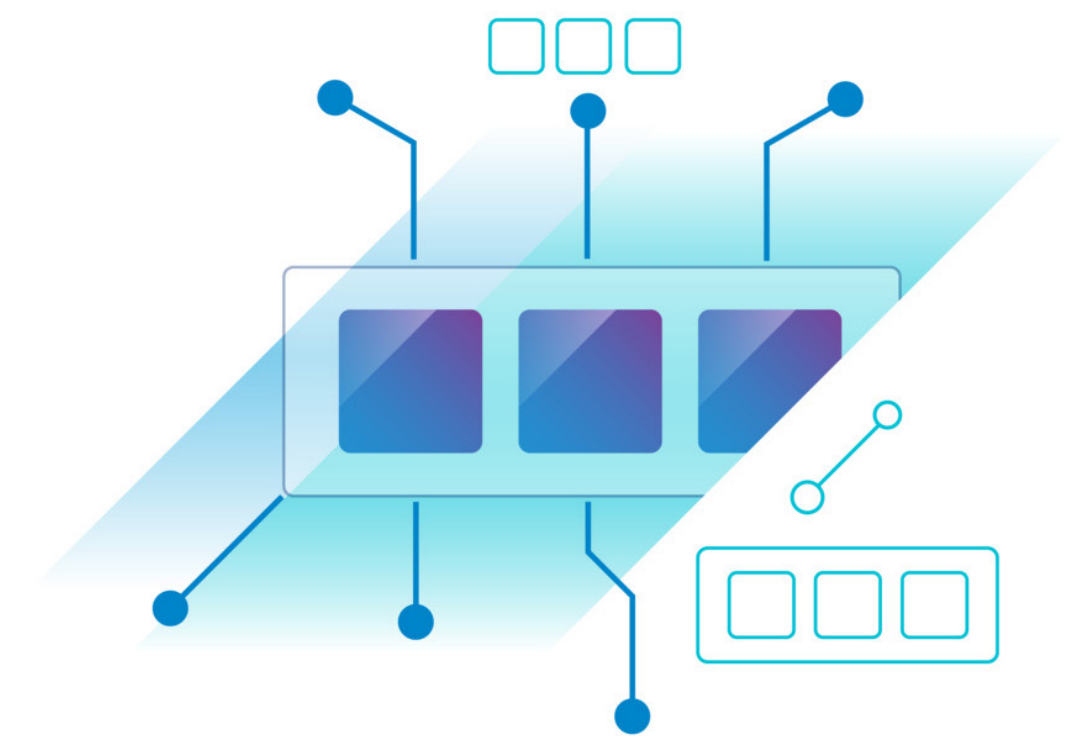
[See the full case study.](#)

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“With VMware Aria Operations for Networks, we are able to look at our existing traffic. The solution allows business continuity without impacting those end users: the doctors, nurses and people on the floor.”

— Erik Warnken, systems administrator, Denver Health

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## Governance and compliance case study

# Tufin: Improving IT infrastructure and enterprise security

Enterprise security can be complex, and it's been made more so with the rise of cloud platforms and IoT. Tufin, which provides security policy management for some of the world's largest companies, uses VMware Aria Automation and VMware Aria Operations to integrate its business with its customers and be poised to address new security vulnerabilities.

### Needs

- Pioneer next-generation solutions to mitigate security challenges before the customer knows they exist.
- Be the first to market with thoroughly tested features that meet compliance.
- Gain access to cloud-first features and functionality to work across the private cloud.

### Results

- Reduced infrastructure management time from hours to minutes with a menu of self-service templates.
- Streamlined and simplified security maintenance and updates.
- Strengthened compliance with certified templates.
- Gained the ability to oversee platform activity and inform continuous refinement.

[See the full case study.](#)

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“For enterprise organizations, the cloud is not a strategic choice anymore, it's an imperative. We need the freedom to work in any cloud. The range of cloud-first features and functionality VMware is developing will enable us to work across a multi-cloud reality, today and into the future.”

— Raj Motwane, senior vice president, Global Services and Operations, Tufin

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## Your next step for success in the cloud

Ready to move from reactive, siloed IT struggles to proactive cloud management that supports agility and innovation? VMware Cloud Foundation and its management solutions are here to help you transform your data center.

### VMware Cloud Foundation



Efficiently manage VM and container workloads. Deliver cloud benefits to on-premises, full-stack HCI deployments.

### VMware Aria Automation



Improve IT productivity and efficiency to prepare for the future. Simplify your cloud experience with private cloud infrastructure automation.

### VMware Aria Operations



Simplify cloud operations management with continuous performance optimization, efficient cost and capacity management, intelligent and app-aware remediation, and integrated compliance.

### VMware Aria Operations for Integrations



Monitor heterogeneous environments with a unified data analytics platform, accelerate root-cause analysis and get end-to-end visibility from the data center to applications.

### VMware Aria Operations for Logs



Rapidly analyze, troubleshoot and identify anomalies across infrastructure and apps, accelerate log management to meet the needs of DevOps and build a high-performance index for scalable analytics.

### VMware Aria Operations for Networks



Monitor, discover and analyze networks and applications to build an optimized, highly available and secure network infrastructure across clouds.

### VMware Skyline



Avoid issues before they occur with proactive Findings and recommendations, reduce costly IT downtime, and reduce case resolution by 17X with Log Assist.

Get started today

## Explore Cloud Management for VMware Cloud Foundation

Join us online:

