HashiCorp
an IBM Company

Do cloud right

Redefining digital transformation with The Infrastructure Cloud

WHITE PAPER

Contents

Introduction

Organizations have heavily invested in cloud transformation to improve agility, scalability, and efficiency. However, only 20% have achieved full projected ROI due to cost inefficiencies, security risks, and operational complexity.

This white paper explores the persistent challenges in cloud adoption and how The Infrastructure Cloud from HashiCorp offers a unified, lifecycle-driven approach to optimize cloud operations, enhance security, and scale effectively.

> *According to PwC's 2024 Cloud Business Survey, 94% of organizations have adopted cloud across most or all parts of their business, yet only 20% report achieving full ROI from their cloud investments*

The cloud challenge: Unlocking full ROI

Despite widespread cloud adoption, many enterprises struggle to maximize their returns. While cloud enables rapid innovation, fragmented tools, lack of governance, and manual workflows lead to inefficiencies, increased costs, and security risks.

"Manually building and deploying all the infrastructure made lead time for new projects and new infrastructure very hard... Doing everything manually increased the risk of errors and challenged our ability to maintain compliance with stringent security and compliance standards."

John Weigand
Sr DevOps Engineer, Trimble

Key cloud challenges:

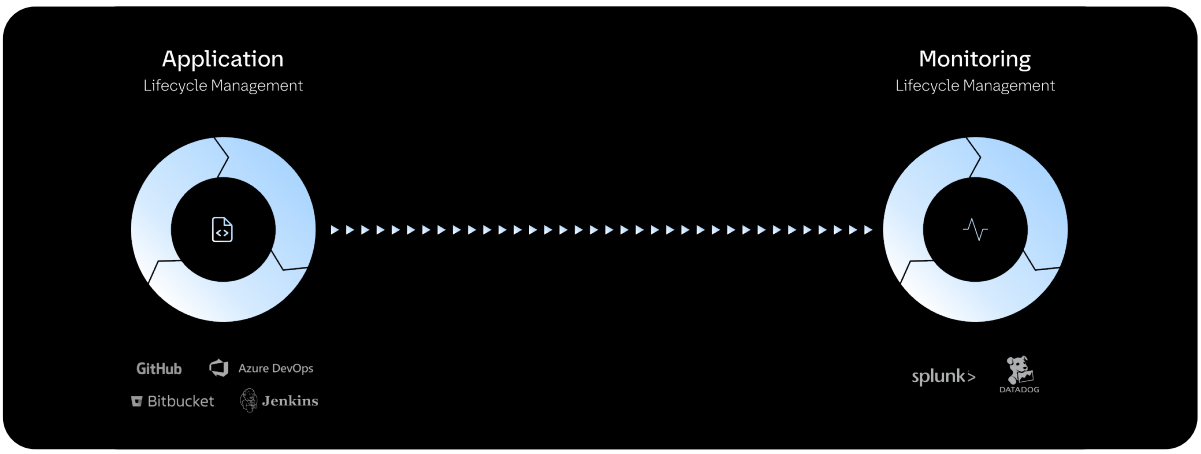
- **Operational inefficiencies:** 62% of enterprises struggle with fragmented tools and lack of automation, delaying critical projects. (Predictions 2024: Cloud Computing).
- **Security risks:** 75% of cloud breaches are caused by misconfigurations, with the average data breach costing $4.8M (Crowdstrike's Insider's Playbook: Defending Against Cloud Threats & IBM Cost of a Data Breach Report 2024).
- **Cloud waste:** 91% of organizations report overspending on cloud resources, with upwards of 32% wasted (HashiCorp State of Cloud Strategy Survey, 2024 & Techmonitor).

To overcome these challenges, organizations realized they needed to rethink their approach to cloud adoption and optimization.

Evolving the application value chain: Datacenters to cloud

Before cloud computing, organizations structured their application value chain around private data centers. Application Lifecycle Management (ALM) was the primary focus — building, testing, and deploying applications — while Monitoring Lifecycle Management ensured performance tracking. This approach worked when applications and infrastructure were tightly coupled within controlled environments.

However, as organizations moved to the cloud, they attempted to extend this model by treating Infrastructure Lifecycle Management (ILM) as a subset of ALM and Security Lifecycle Management (SLM) as an extension of Monitoring. Instead of recognizing ILM and SLM as foundational components of the application value chain, they were tacked on as afterthoughts, leading to fragmented operations, inefficiencies, and heightened security risks.



A new approach: Integrating ILM and SLM

To fully capitalize on cloud capabilities, organizations recognized the need for a new approach—one that integrates ILM and SLM as foundational elements of the application value chain. An integration that drives enhancements in security, automation, and scalability from the outset, laying the groundwork for doing cloud right.

How to do cloud right

Cloud transformation is more than just adopting new technologies, it requires strategic execution to unlock efficiency, security, and scalability. Many organizations struggle because they treat the cloud as an isolated initiative rather than an integrated system.

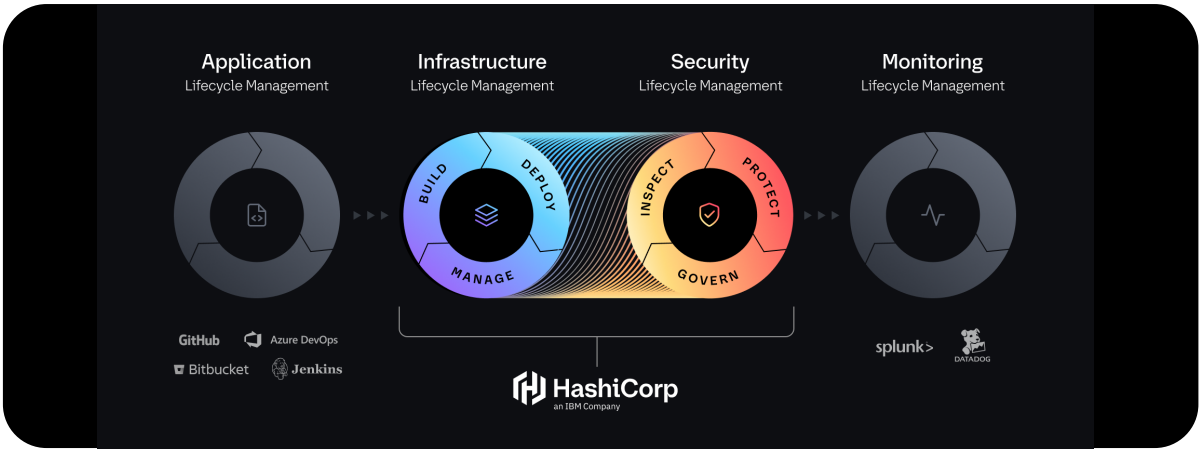
At HashiCorp, we've identified two key principles to doing cloud right:

1. **Standardized workflows that build consistency and break down silos**
   Organizations must connect infrastructure and security workflows into a seamless pipeline, ensuring that application development, deployment, and protection are aligned from the start. By automating provisioning, governance, and access controls, teams can eliminate inefficiencies and accelerate innovation.
2. **A unified platform that standardizes and automates cloud operations across teams**
   Teams must have a centralized platform for infrastructure and security lifecycle management. This solves the tooling and process fragmentation problem by uniting infrastructure and security team workflows on one platform. A platform helps teams share code, save time, and simplify security and compliance while providing a single source for audits and monitoring.

By consolidating infrastructure and security workflows, organizations can achieve:

- A single system of record for infrastructure and security lifecycle management
- Automated policy enforcement to ensure compliance and security by design
- Self-service capabilities for developers while maintaining governance

Integrating ILM and SLM as core components of the application value chain enables organizations to prioritize security, automation, and scalability from day zero. A successful cloud strategy must recognize ILM's role in provisioning and optimizing infrastructure, while SLM ensures security, compliance, and risk management across all environments.



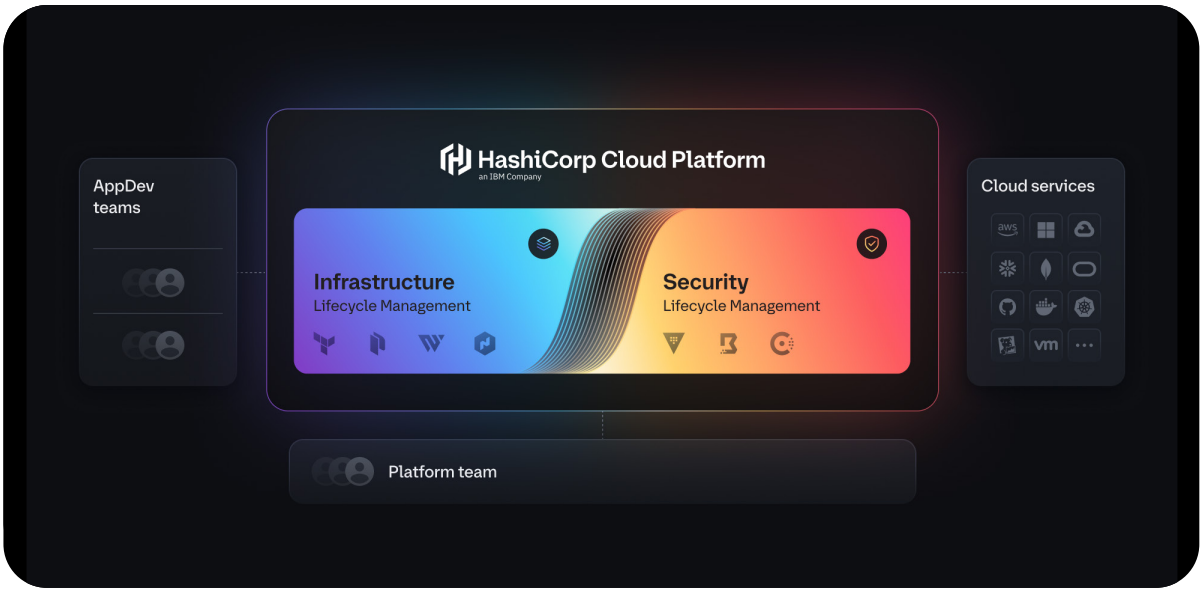
To successfully implement a unified cloud strategy, organizations must adopt a lifecycle-driven approach that ensures consistency across infrastructure, security, and applications. This approach includes four key lifecycle phases:

1. **Application Lifecycle Management (ALM)**: Accelerates application development and deployment through standardized workflows
2. **Infrastructure Lifecycle Management (ILM)**: Provides infrastructure as code workflows to build, deploy, and manage the lifecycle of infrastructure over time
3. **Security Lifecycle Management (SLM)**: Provides identity-based security workflows to inspect, protect, and continuously govern access to credentials and infrastructure
4. **Monitoring Lifecycle Management:** Ensures application and infrastructure health through proactive monitoring and analytics

The Infrastructure Cloud delivers this unified approach, helping organizations optimize their cloud strategy so they can accelerate innovation, reduce risk, and maximize their investments.

Introducing The Infrastructure Cloud

The Infrastructure Cloud unifies infrastructure and security management across hybrid, multi-cloud, and on-premises environments. By providing a single system of record, it centralizes workflows, governance, and automation, aligning teams through a shared platform that drives efficiency and security.



Organizations can consume The Infrastructure Cloud through HashiCorp's on-premises commercial software and as a SaaS solution via HashiCorp Cloud Platform (HCP).

The business value of HashiCorp Cloud Platform

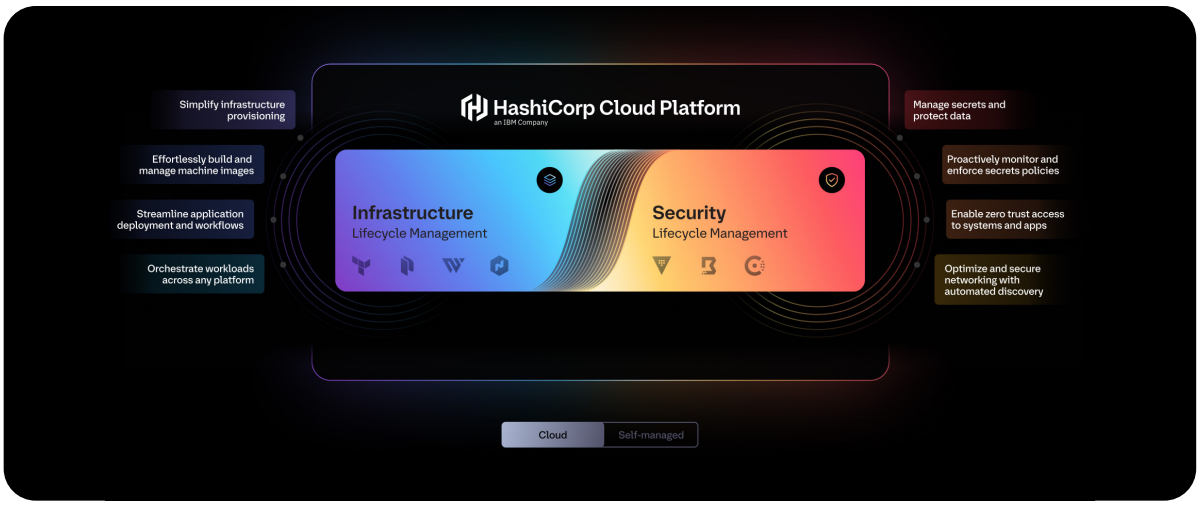
Organizations leveraging a unified cloud platform experience tangible business benefits:

- **Accelerated delivery and innovation:** Automating workflows, supporting developer self-service, and reducing operational overhead increases productivity. The Harvard Business Review reported that organizations saw an increase of 20% in operational efficiency.
- **Strengthened security and governance:** Enforcing policies and minimizing security risks leads to a more resilient cloud strategy. According to Forrester, organizations that implement a unified cloud platform achieve a 15% reduction in security incidents, mitigating actual and material risks across their hybrid cloud estate.
- **Optimized cloud operations and ROI:** Proactive cost management and governance drive significant financial benefits. According to IDC, companies implementing a unified platform strategy achieve 407% ROI over three years, with payback in under seven months.

By adopting a unified platform and a holistic approach to managing their application value chain, organizations move beyond fragmented tooling and manual administration, accelerating innovation while maintaining security and compliance at scale. HCP serves as the delivery mechanism for realizing the benefits of The Infrastructure Cloud, providing a fully managed platform that integrates infrastructure and security lifecycle management into a seamless experience.

How ILM and SLM work together in The Infrastructure Cloud

At this point, we have established that The Infrastructure Cloud eliminates silos by integrating ILM and SLM workflows. Now, let's explore how these lifecycle phases work together in real-world use cases to enhance operational efficiency, security, and scalability.



Infrastructure Lifecycle Management (ILM)

A well-architected cloud strategy relies on standardized infrastructure workflows that work efficiently across multiple cloud providers, services, and third-party applications. By adopting golden patterns across teams, organizations reduce complexity for development teams, ensuring they follow approved approaches with governance policies built-in. This standardization accelerates provisioning, enhances security, and improves operational efficiency, allowing organizations to scale seamlessly and bring products to market faster while maintaining compliance.

"With Terraform, [a service in HCP], everything is standardized, repeatable, and highly visible so we can rapidly implement new infrastructure in a fraction of the time and effort as before."

Jeff Garrett
Section Chief of Factory, California Department of Health Care Services

Core ILM capabilities supported by The Infrastructure Cloud include:

- **Simplify infrastructure provisioning:** Automates provisioning across hybrid and multi-cloud environments, reducing manual errors and increasing agility.
- **Effortlessly build and manage machine images:** Proactively manages security risks by automating image-based updates and remediations, reducing the likelihood of breaches.
- **Streamline application deployment and workflows:** Enables self-service access to pre-approved infrastructure, allowing developers to deploy resources faster while adhering to governance policies.
- **Orchestrate workloads across any platform:** Optimizes workload placement across cloud, edge, and on-prem environments, ensuring efficient use of compute resources.

With over a decade of solving infrastructure problems, HashiCorp's ILM solutions have evolved to support organizations with their critical infrastructure challenges:

- **HashiCorp Terraform for infrastructure as code provisioning:** Uses a single workflow to let organizations provision infrastructure across multiple cloud vendors and private datacenters. It acts as a platform for continuous management of infrastructure throughout its lifecycle.
- **HashiCorp Packer for image building and management:** Lets organizations use a single workflow to build cloud and private datacenter images, and continuously manage the lifecycle of images in provisioning pipelines.
- **HashiCorp Waypoint for creating automated developer services:** Enables platform teams to deliver golden patterns and workflows to manage applications at scale in any environment — abstracting away infrastructure and security practices.
- **HashiCorp Nomad for multi-tenant compute orchestration:** Brings modern application scheduling to any type of software. Manages containers, binaries, and virtual machines efficiently in the cloud, on-premises, and across edge environments.

Security Lifecycle Management (SLM)

A well architected approach to SLM strengthens security by reducing your attack surface associated with access and time to live for infrastructure resources and credentials. SLM requires a centralized and automated approach to ensure security policy is enforced consistently across a hybrid environment, reducing risk and speeding up audit and development time.

Customer spotlight:

OXY

Built a unified cloud platform to facilitate their digital transformation journey, uplevel their developers, and automate their slow, manual processes with HashiCorp products.

The platform improved developer productivity by 90%, reduced resolution time by 98%, and trimmed legacy resource provisioning time down to <15 minutes.

athenahealth

"Vault has proven to be a great equalizer for us, helping find the balance between ensuring the security and protection of our sensitive data and minimizing the amount of time and effort it takes."

Ganapathysaran Nambirajan
Senior Engineering Manager, Platform Services, athenahealth

Key SLM capabilities supported by The Infrastructure Cloud:

- **Machine identity and trust:** Replaces human tasks with centralized, automated credential and identity management to reduce risk and streamline operations.
- **Secrets discovery & remediation:** Identifies exposed secrets and automatically mitigates security risks across cloud environments.
- **Secure remote access:** Provides just-in-time access to infrastructure and applications, eliminating persistent credentials and reducing attack surfaces.
- **Dynamic secret, certificate, and key management:** Manages the lifecycle of sensitive data by automating the creation and revocation of keys and certifications, eliminating the well-known risks of long-lived credentials.
- **Encryption as a service:** Protects data at rest and in transit with automated encryption frameworks, ensuring compliance with security standards.

HashiCorps SLM solutions provide a robust security foundation for modern cloud environments:

- **HashiCorp Vault for machine identity management:** Provides an identity-based approach to security that automatically authenticates and authorizes access to secrets and other sensitive data. Vault also generates and manages short-lived dynamic secrets to minimize the effects of credential theft.
- **HashiCorp Boundary for secure remote access:** Built for the cloud, Boundary's modern approach to privileged access management (PAM) uses identity-driven controls to secure user access across dynamic environments.
- **HashiCorp Consul for service networking:** Offers an identity-based approach to service networking for service discovery, secure communication, and network automation across multiple cloud and runtime environments.

ManTech

Customer spotlight:

ManTech

This provider of technology solutions to the federal government accelerated security setup and service delivery from several months to 2-3 weeks.

HashiCorp's SLM products reduced the number of human touchpoints and interventions across security workflows to lower the risk of security incidents and other reputation-harming occurrences.

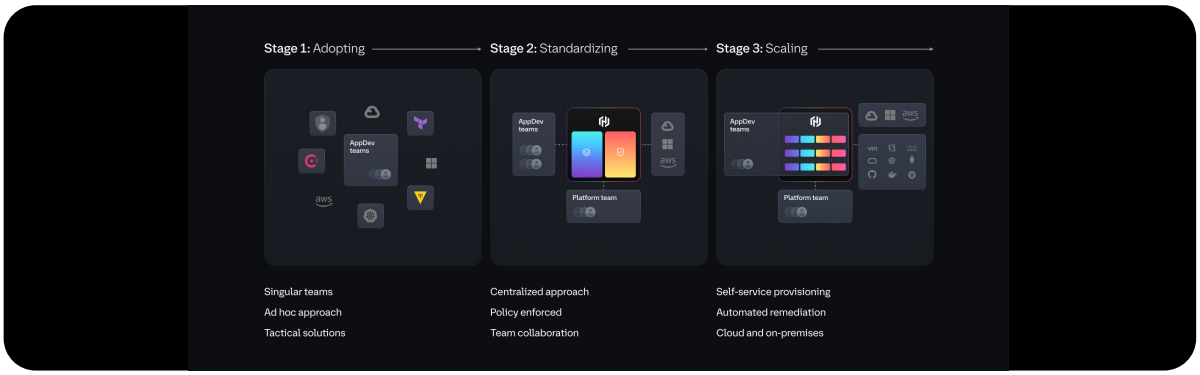
Aligning infrastructure and security management enables organizations to create a resilient cloud operating model that drives automation, enhances security, and optimizes costs. This structured and scalable approach eliminates redundant workflows, reduces risk, and lays the foundation for long-term cloud success.

pandora®

"Every feature in each HashiCorp product leverages the others to create a complete ecosystem for our team to build from."

Chris Cook
Director, Systems Engineering, Pandora

Patterns and practices: A blueprint for cloud success



The shift to cloud-first operations requires not just technology, but also new ways of working. Similar to how DevOps transformed collaboration between development and operations teams, we are now in a DevSecOps moment—where infrastructure, security, and application development must align under a common framework to drive efficiency, security, and scalability.

A key aspect of this transformation is the role of the Platform Engineering Team, which enables organizations to operationalize the cloud blueprint by bridging infrastructure strategy, security, and application development. By implementing standardized workflows and policies, platform engineering ensures that teams can execute the three-stage cloud maturity model efficiently, embedding security and compliance at every stage—rather than treating them as afterthoughts.

HashiCorp supports this shift by enabling organizations to implement the three-stage blueprint for cloud success. By embedding automation, security, and governance into every phase, HashiCorp helps teams move from fragmented operations to a structured, policy-driven cloud strategy that scales efficiently.

Adopting — Tactical

Organizations begin their cloud journey by enabling teams to experiment and build in the cloud, often working independently. This phase allows for rapid innovation, but can lead to siloed workflows and inconsistent security and cost controls. HashiCorp helps organizations establish a strong foundation for scalability by introducing infrastructure as code, standardized workflows, and governance policies that enable immediate productivity without sacrificing control.

Standardizing — Strategic

As cloud adoption grows, organizations recognize the need for consistency. They begin implementing best practices by centralizing infrastructure and security management, improving governance, and streamlining workflows. A unified platform approach reduces complexity, enhances collaboration, and improves security across teams. HashiCorp provides the tools, automation, and policy frameworks to help organizations transition from ad hoc cloud operations to a structured, efficient cloud strategy.

Scaling — Transformative

At this stage, organizations fully embrace automation, security enforcement, and cloud governance at scale. Workflows extend across the entire digital estate, spanning multiple clouds, SaaS applications, and on-premises infrastructure. There's also a greater focus on the entire management lifecycle, not just Day 1 provisioning speed. Advanced capabilities, such as auto-remediation, self-service provisioning, and proactive security, become integral to operations. HashiCorp enables enterprises to maximize their cloud investments while maintaining agility, resilience, and security at scale.

GitHub

"We knew we absolutely wanted infrastructure, discovery, and secrets management tools that could basically run themselves, with robust automation features and easy set up and configuration... HashiCorp solutions are intuitive, easy to use, and just continue to work on their own after the initial set up, which frees us to focus on higher value strategies and activities."

Scott Sanders
VP of Infrastructure , GitHub

Are you ready to do cloud right?

Achieving long-term success in the cloud requires more than adoption — it requires a strategic approach to automation, security, and governance. By unifying infrastructure and security lifecycle management, organizations can build a resilient, scalable cloud foundation that drives innovation while optimizing operational efficiency.

The Infrastructure Cloud from HashiCorp provides the framework and solutions organizations need to accelerate innovation, strengthen security, and optimize ROI. Built on over a decade of industry-leading automation expertise, HashiCorp works with the world's leading cloud providers and supports many of the world's largest organizations across all industries, helping them advance their cloud maturity and digital transformation.

It's time to take control of your cloud strategy

Do cloud right with HashiCorp

https://www.hashicorp.com/en/infrastructure-cloud

About HashiCorp

HashiCorp is The Infrastructure Cloud™ Company, helping organizations automate multi-cloud and hybrid environments with Infrastructure Lifecycle Management (ILM) and Security Lifecycle Management (SLM). HashiCorp offers The Infrastructure Cloud on the HashiCorp Cloud Platform (HCP) for managed cloud services, as well as self-hosted enterprise offerings and community source-available products. The company is headquartered in San Francisco, California.

For more information visit hashicorp.com