

Organizing for the Cloud

Your business is ready to reap the rewards of the cloud era.
Is your IT organization ready to deliver?

By Kevin Lees

Chief Technologist, IT Operations Transformation, VMware Inc.

Table of Contents

Executive Summary	3
Traditional IT versus Cloud-Based IT: What's the Difference?	3
First Steps on the Road to the Cloud Operating Model	4
What Does an Effective Cloud Organizational Model Look Like?	5
Service-Oriented Cloud Operating Model	5
Implementing a Service-Oriented Cloud Organizational Model.....	7
Creating a Collaborative and Agile Service Oriented Culture	9
Customer Focused Service-Oriented Culture.....	9
Collaborative Culture	9
Agile-Based Culture.....	10
Cloud Services Lifecycle Management Teams	10
Cloud Infrastructure Services Team.....	10
Cloud Services Teams	12
Additional Cloud Services Roles	13
Structuring and Managing Cloud Services Lifecycle Management Teams	13
Key Success Factors in Organizing for the Cloud	14
VMware: Ready to Help You Organize for the Cloud	16

Executive Summary

Business leaders look at the “cloud” and see new ways to accelerate innovation, create competitive advantages, and drive new business models. IT executives look at private and public clouds and see a host of new possibilities for positive IT outcomes, including:

- Optimized CapEx by cutting unit costs for software-defined data center (SDDCTM) infrastructure
- Lower OpEx through streamlined and automated data center operations
- A better security-to-effort ratio through security controls that are native to infrastructure
- Higher uptime thanks to high-availability, resilient infrastructure, and proactive IT operations
- Improved service delivery times through app and infrastructure delivery automation
- As-needed access to resources leading to better application performance and availability
- Agility in providing technology currency thru choice of workload placement

But all too often, a critical aspect of harnessing the cloud is overlooked: the organizational impact of moving to the cloud model.

Successful organizations are shifting to a new cloud operating model to ensure optimized service delivery to the business. Optimizing service delivery requires IT to become a service provider to their line of business customers. As a service provider, IT needs to organize in such a way that it can efficiently and effectively plan, build, deliver, and run a reliable catalog of services. VMware refers to this as a service-oriented cloud operating model.

The fact is, the transition to the service-oriented cloud operating model requires an evolution in mindset and culture, roles, skills, processes, policies, and organizational structure. Yet many IT leaders become so focused on the vision or the technological requirements of the cloud that they lose sight of whether their IT staff is properly prepared for this new world. Organizing for the cloud cannot be an afterthought in the formulation of an effective IT transformation strategy.

This paper looks at the organizational impacts of transforming to a service-oriented cloud operating model from multiple perspectives and provides insights and advice about how to prepare for—and execute—a winning transformation strategy. It describes a recommended set of steps to follow as you begin your transformation efforts, culture and mindset considerations, what a typical journey looks like, recommended roles, responsibilities, and skillsets, recommended team structures and management, and key success factors. Following the advice provided herein will go a long way to organizing for success in fulfilling your cloud vision.

Traditional IT versus Cloud-Based IT: What's the Difference?

If you believe form follows function, you'll easily see why there's a significant difference between “IT as usual” organizations and organizing IT for the cloud.

The function of traditional IT has been primarily operational: deliver the infrastructure needed to support projects and key business processes, maintain core operations, enforce policies and procedures, cut costs, reduce risk, and keep production running. IT has traditionally been organized accordingly: heavy on siloed functional teams, lots of project-driven activities, and driven by lots of manual tasks. That is why IT is often perceived as a cost-centric technology supplier rather than a source of innovation; an implementation mechanism for business strategy rather than a business partner and catalyst for business innovation, or an inhibitor rather than a business enabler.

On the other hand, for IT, the cloud is all about agility, flexibility, rapid scaling, operational efficiency, and moving beyond just being more responsive to the business to accelerating the pace of business innovation. Clearly, the same IT organization that delivered “IT as usual” is not going to have the same structure and skill sets as a cloud-ready organization regardless of a purely private cloud or multi-cloud strategy. It is going to need to become service-driven: more efficient, fully automated, proactive, and with a higher value on innovation – enabling IT to become a service provider to the business with a laser focus on adding business value. Or, as CIO put it, “IT

organizations must become internal service providers supplying business-enabling solutions that drive innovation and deliver value.”¹

The question is *how*. The following sections provide answers based on the collective experience of VMware Worldwide Professional Services consultants in real-world engagements.

First Steps on the Road to the Cloud Operating Model

Once key stakeholders and the IT organization have made the decision to evaluate a move to the cloud, the following steps are recommended:

1. Develop a Cloud Strategy

While many companies talk about having a “cloud-first,” or increasingly “cloud smart,” policy, in our experience few have a clearly articulated strategy for cloud adoption. Many companies are revisiting their application strategy and having a supporting cloud strategy is key. Lack of a well-defined and communicated cloud strategy is what has led many companies to experience “shadow IT” and they’re now experiencing the negative impacts of having done so. Oftentimes “cloud first” is a mandate handed down from leadership with little guidance. When a mandate is given without the cloud strategy to define and drive it forward, IT can step in by drafting a strategy and providing it to leadership for further discussion and refinement.²

2. Define a Cloud Operating Model

An operating model describes where and how an organization allocates its resources and capabilities to deliver value to its customers. Like all operating models, a service-oriented cloud operating model consists of people, process, and technology considerations.

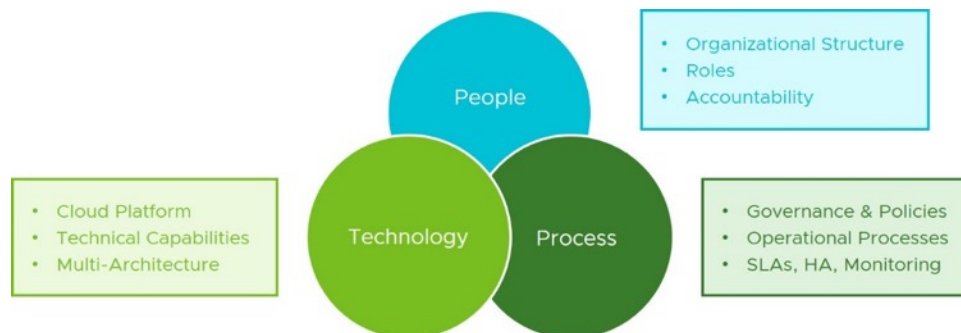


FIGURE 1: Cloud Operating Model Perspectives³

How should you organize your people into teams? What roles do you need to have in place to successfully deliver services on and operate a cloud environment? What skills do your people need to have? How can you apply DevOps concepts and Agile methods to IT itself? No matter where the conversation begins with IT executives, it always comes around to these questions. Addressing these questions is the focus of this whitepaper.

Consider how your existing IT processes apply to the cloud. Are they sufficiently lightweight so as not to act as inhibitors to IT enabling the acceleration of business innovation? Are you making full use of metadata and software-based policies to streamline governance? Can you develop and release services using a pipeline like (hopefully) your application developers? Are you focusing your automation effort on the right processes, prioritizing those that add the most value to your business customers?

It's become an accepted adage that “technology is the easy part.” That doesn't make technology decisions any less important. In fact, technology decisions continue to contribute significantly to how easy or hard it will be to

¹ CIO White Paper: “How IT Organizations Can Achieve Relevance in the Age of Cloud”

² “The Importance of a Cloud Strategy,” Mandy Storbakken, December 30, 2019, blogs.vmware.com/management/2019/12/the-importance-of-a-cloud-strategy.html

³ “The Cloud Operating Model,” Mandy Storbakken, January 27, 2020, blogs.vmware.com/management/2020/01/the-cloud-operating-model.html

achieve success. That's why VMware has become quite prescriptive in its architectures and recommendations. Fully leveraging the capabilities of VMware's purpose-built products and services (both Worldwide Professional Services and cloud-based services) will go a long way to your success.

3. Assess Operational Readiness

After defining your cloud operating model, one potential pitfall in realizing the people perspective of the model is understanding their operational readiness. Many organizations discover that they lack the understanding, skills, or the best-practice guidance and training needed to move from their current team structure, culture, and mindset to one optimized for a cloud operating model. An early operational readiness assessment to identify their people, process, and supporting technology gaps, resulting in a prioritized and actionable roadmap is essential to crafting a transition plan that minimizes risk and dramatically increases the chances for success.

4. Determine the Degree of Change Needed

Once the operational readiness assessment is complete, IT leaders should understand the degree of change required to transition the organization to one optimally structured and skilled for a cloud operating model. They should undertake a skillset and career path assessment of their IT engineering and operations staff to not only determine skillset gaps but also who among the existing staff are enthusiastic about change, as well as those who will be change inhibitors.

5. Prepare the Organization for Change

Organizational change can be disruptive and is often met with inertia or resistance. To help overcome this, IT leadership must not only embrace and drive the transition but socialize and evangelize it within IT and line-of-business stakeholders. It is important to build a thoughtful communication strategy with a plan to address all levels of the organization with messages that are specific to how they will be affected. For example, you wouldn't use an engineering context for an IT executive or business stakeholder persona. Sensitivity in the message has a direct connection to the success or failure of the transformation.

IT leadership also needs to consider ways to incentivize individuals to embrace the change, as well as to begin thinking more horizontally, both from a systems perspective and to foster greater collaboration. Modifying each individual's, and potentially manager's, annual review criteria is a key technique to achieving this.

What Does an Effective Cloud Organizational Model Look Like?

Key considerations when preparing an organization strategy for delivering and supporting services in a cloud-based environment are team structures; roles, responsibilities, and skillsets; culture and mindset impacts; and how to best approach the transition. This section provides guidance.

Service-Oriented Cloud Operating Model

VMware recommends a service-oriented approach to your cloud operating model. At the core of VMware's service-oriented cloud operating model, shown in Figure 2, lies the concept of cloud service lifecycle management teams. These teams are accountable for their services from definition through end of life. These services can consist of, for example:

- Cloud infrastructure services that can span multi-cloud environments, including VMware Cloud Foundation-based private and hybrid clouds, as well as public cloud environments
- Platform services, providing for example, IaaS, PaaS, and CI/CD framework, tooling, and automation services to support application developers
- Digital Workspace services, such as providing on-demand virtual desktops or user persona-aligned applications to any device
- Data analytics services, such as providing data lakes, and/or a business intelligence application hosted on-premise or cloud-based
- Edge services providing everything from onboarding to managing, monitoring, and securing devices, gateways, and access in an end-to-end IoT solution, perhaps even consuming data analytics services for analyzing IoT generated data

- Site Reliability Engineering (SRE) services providing consulting, enablement, and even staffing as a way to introduce and sustain SRE capabilities
- Digital Innovation Lab, providing opportunities to collaborate directly with lines of business to explore, prototype, and incubate new digital business ideas

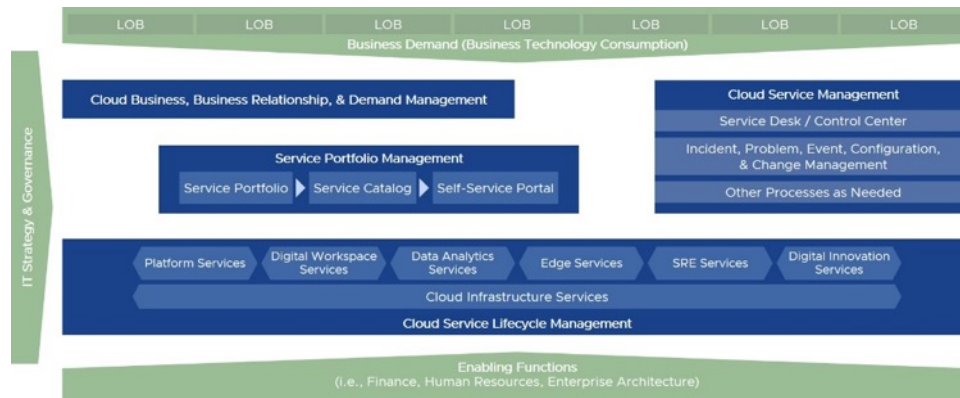


FIGURE 2: Service-Oriented Cloud Operating Model

Cloud service lifecycle management teams are self-sufficient, exhibit a DevOps mindset, and work in an Agile way. Critically, these teams are blended meaning they contain the core skills and capabilities required to address the 'plan' (strategy to services architecture), 'build' (engineering), 'deliver' (request to fulfillment), and 'run' (operations) aspects of their services, as well as the critical technologies and/or cloud-based services comprising their service. An example of a service lifecycle management team, in this case accountable for providing common cloud infrastructure capabilities in a multi-cloud environment, is shown in Figure 3.

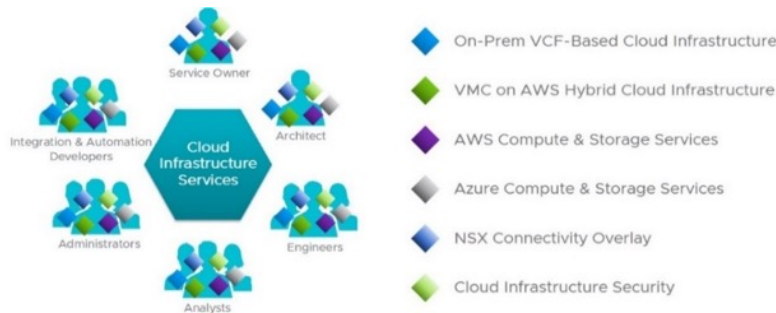


FIGURE 1: Blended Cloud Infrastructure Services Lifecycle Management Team in a Multi-Cloud Content Example

Another example of a Cloud Services Lifecycle Management team, in this case accountable for providing platform services such as IaaS and PaaS, is shown in FIGURE 2.

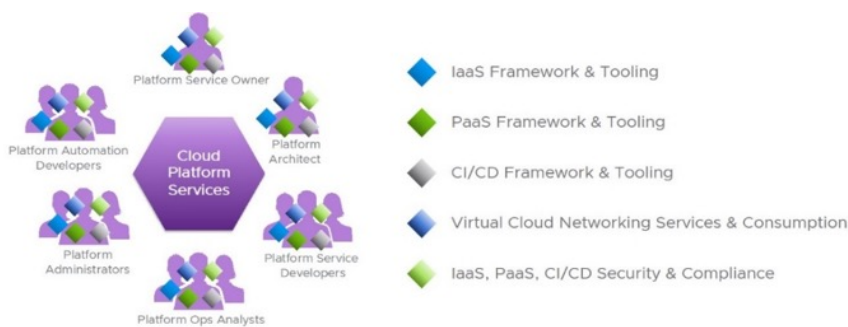


FIGURE 2: Blended Cloud Platform Services Lifecycle Management Team Example

Cloud Services Lifecycle Management teams always include a service owner role along with service-specific architect, engineer, administrator, analyst, and developer roles. An individual may fill multiple roles, a single role or, depending on business criticality and scale, there may be multiple people with different technical skills filling a single role. It's also not uncommon for an individual to fill the same role across multiple cloud service lifecycle management teams. In addition to these common, core roles, a Cloud Services Lifecycle Management team can contain service-specific roles such as a data scientist in the case of data analytics services, for example.

Cloud Services Lifecycle Management teams are responsible for defining, developing, delivering, and operating the service(s) for which they are responsible. They are held to the same customer service and satisfaction standards as a line of business that interacts with the company's end-customers directly. VMware's IT department adopted this blended, full-service lifecycle team approach. Doing so allowed it to scale and increase its customer satisfaction results even as VMware accelerates its growth and portfolio expansion.

Introducing Cloud Services Lifecycle Management teams impacts related IT functional teams. Service Desk and Service Operation Center (previously known as a Network Operations Center; another indication of the switch to being service oriented) teams must be able to route questions, events, and incidents to cloud service teams for level 3 troubleshooting. A given Cloud Services Lifecycle Management team may involve other Cloud Services Lifecycle Management teams from whom they consume services in the production of their service, such as the Cloud Infrastructure Service Lifecycle Management team, in incident resolution. As such, the Service Desk and Service Operations Center should be included in the definition of all services for which they will provide level 1 and 2 support. An example of relationships between teams is shown in Figure 5.

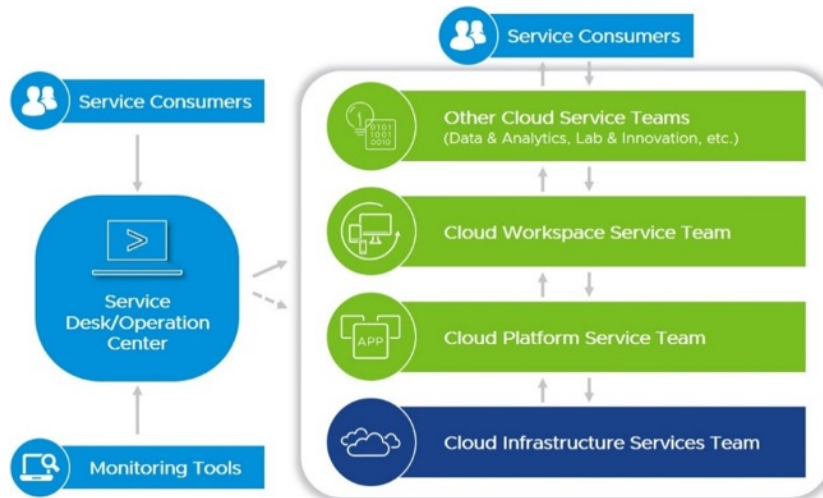


FIGURE 5: Example of Team Relationships

Implementing a Service-Oriented Cloud Organizational Model

A common practice as customers initially embark on creating a service-oriented cloud organizational model is to create a Cloud Center of Excellence, as shown in FIGURE 3.



FIGURE 3: Cloud Center of Excellence

This is a reasonable way to begin organizing for cloud because it consolidates efforts into a single team whose sole focus is creating the cloud strategy, developing and owning the initial services offered in the cloud-based

environment, onboarding cloud services, providing guidance on using cloud services, and reporting cloud usage. It also helps enable and promote the adoption of those cloud services. A Cloud Center of Excellence approach works well when first introducing cloud services into the business through a private cloud or the use of a single external cloud service provider. It should consist of change agents in the organization with business, technical, and service delivery skills. This team should be self-sufficient regarding all aspects of introducing a new set of capabilities into the business as well as the private cloud technologies or functionality of the chosen cloud service provider. This approach also works well where developers are already using the cloud but there is a desire to begin applying some governance to its use so as to control costs.

A Cloud Center of Excellence is also a good model if the initial focus is on migrating existing workloads to the public cloud, as there is potentially less effort spent on service lifecycle when brokering public cloud services, and more on cost management and governance. Our Cloud Health solution, for example, recommends the implementation of a Cloud Center of Excellence to provide oversight on the consumption of public cloud services.

A second stage in the organizing for the cloud evolution occurs as you move past the initial, incubation phase of using cloud services to one wherein the cloud strategy is being more fully embraced, cloud service usage is expanding, it's becoming more business critical, and/or there is a desire to expand to multiple cloud service providers. This second stage is depicted in FIGURE 4.



FIGURE 4: Stage Two - Differentiating between Overall Business and Cloud Service Delivery

This is the stage where we first introduce the service lifecycle management team concept. The trigger for this stage is moving to more extensive platform services; perhaps an extended, cloud-agnostic Infrastructure as a Service and/or Platform as a Service framework, tooling, and automation. The cloud strategy is taking hold, so the Cloud Center of Excellence shifts focus to more overall cloud business management and governance. The cloud service definition, development, release, and operations activities shift to a focused cloud services lifecycle management team. The team consists of the cross-functional technical and domain capabilities, for example, as shown in FIGURE 4 needed to be self-sufficient over the lifecycle of the services for which they are accountable.

The third stage represents spinning-off or creating additional, differentiated cloud service lifecycle management teams and is shown in FIGURE 5.

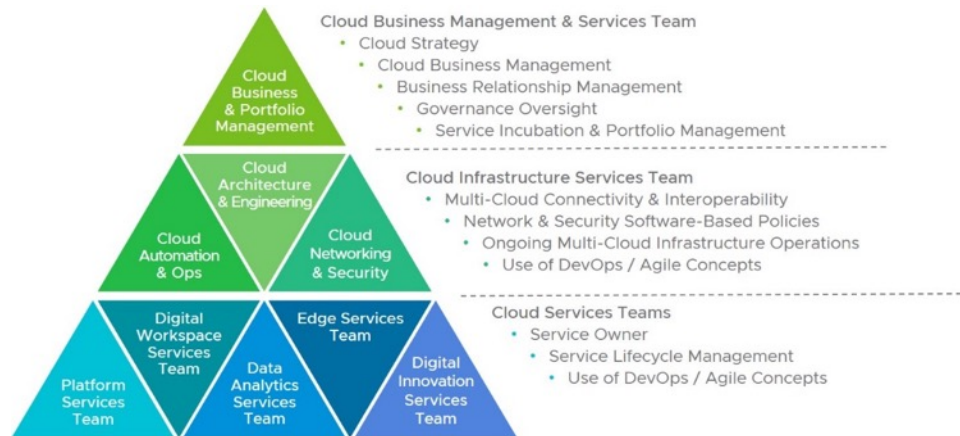


FIGURE 5: Expanded Service-Oriented, Cloud Organizational Model

This occurs as IT expands its cloud-based services beyond platform services in a single cloud, private cloud or public cloud, and/or begins to fully leverage the best capabilities from amongst multiple cloud service providers. Here core Cloud Services Lifecycle Management team roles are supplemented by additional domain expertise such as, for example, data scientists in the case of Data Analytics Services or Application Packaging, Entitlement Administrator, and Mobile Device Management Engineer for Digital Workspace Services. At this point the Cloud Business Management team also picks up responsibility for cloud service portfolio management. And the Cloud Services team from stage two becomes the Cloud Infrastructure Services team focused on the underlying connectivity, infrastructure software-based network and security policies, interoperability, and multi-cloud infrastructure operations.

Of course, the evolution of the service-oriented cloud organizational model can't be fully prescribed. There are always company-specific considerations that influence how the transition between stages occurs. We recognize this and have a Worldwide Professional Services organization that can help you navigate the evolution.

Creating a Collaborative and Agile Service Oriented Culture

The goal of VMware's service-oriented cloud operating model from an organizational perspective is to create customer-driven, cross-functional teams responsible and accountable for the lifecycle of single or group of IT cloud services that add demonstrable business value. This requires a cultural and mind-set shift in how IT interacts with its customers, as well as how IT defines, develops, delivers, and manages services for consumption. Three key cultural shifts are described in this section.

Customer Focused Service-Oriented Culture

IT must shift its culture to one that is ruthlessly focused on delivering demand-based, high-quality services to customers at the speed with which those customers need them. A key aspect of this shift is becoming demand-based; that is, delivering services customers are asking for rather than services IT believes customers want. This requires an increased focus on business or customer relationship management by IT; having deep and collaborative relationships with their customers. It's about regularly working with customers to understand their service needs, as well as forward-looking demand for existing services. It's about actively including customer stakeholders in the definition of a service as well as having a mechanism for receiving and acting on customer feedback.

Collaborative Culture

The team design recommended by VMware's service-oriented cloud operating model is intended to explicitly enable a shift to a culture of collaboration. Team structure addresses collaboration across two vectors by bringing plan-build-run roles together into a service focused team, as well as technical domain functional roles as appropriate for a given service. This approach creates teams streamlined to both develop and deliver services faster, as well as troubleshoot issues and address changing business needs quicker. The model recommends establishing inter-service team working groups to collaborate on best practices and foster awareness of reusable service components, for example. The chapter construct briefly described in Structuring and Managing Cloud Service Lifecycle

Management Teams later in this whitepaper can serve that purpose. Finally, it also extends to collaborating with IT's line of business stakeholders as described for Customer Focused Service-Oriented Culture.

Agile-Based Culture

Agile software development is based on a set of principles in which “requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. It promotes adaptive planning, evolutionary development, early delivery, and continuous improvement, and it encourages rapid and flexible response to change.”⁴ In VMware’s service-oriented cloud operating model, this same approach is applied to cloud service development.

Cloud Services Lifecycle Management Teams

Cloud Infrastructure Services Team

The Cloud Infrastructure Services Lifecycle Management team is an integrated team of Cloud Infrastructure, Cloud Management Platform, and Operations Specialists and an ecosystem of related functional groups, as shown in Figure 9.



FIGURE 6: Cloud Infrastructure Services Lifecycle Management Team and Ecosystem

It serves as the focal point for all decisions and actions involving cloud virtual infrastructure and its operations. It includes a set of cross-domain roles aimed at creating a much closer relationship among architecture, engineering, and operations. Figure 10 shows an example of Cloud Infrastructure Services Lifecycle Management team for a VMware Cloud Foundation-based private cloud. Note that while this Cloud Infrastructure Services Lifecycle Management team is focused on private cloud, this same team could expand over time to support a multi-cloud infrastructure, as previously shown in Figure 3.

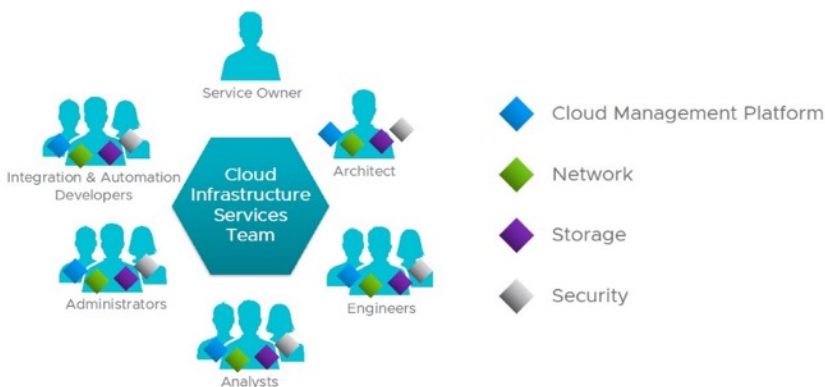


FIGURE 7: Private Cloud Infrastructure Services Team Example

⁴ DevOps and Agile Development: A VMware Field Perspective, Kevin Lees, John Gardner, Peg Eaton April 2017, www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/whitepaper/vmware-devops-agile-development.pdf

The goal is to create tighter collaboration across the traditional plan-build-run IT paradigm. This is a necessary step to achieving agility and the operationally driven decisions needed to support proactive management of a cloud-based environment.

The charter of the cloud infrastructure services team is to continually develop and implement innovative ways to architect, design, deploy, and operate cloud infrastructure services in the most cost-effective way possible—while satisfying the operating level agreements (OLAs) for providing those services to other cloud service teams. These infrastructure services could be sourced from multiple Cloud Service Providers in addition to the on-premise, VMware Cloud Foundation-based private cloud, in which case the cloud infrastructure services team also acts as a broker for cloud infrastructure services to abstract the need for detailed Cloud Service Provider knowledge from the other cloud service teams or line-of-business users. The primary roles and responsibilities include:

- **Cloud Infrastructure Services Owner:** Overall responsibility and accountability for cloud infrastructure services, such as VMware Cloud Foundation-based infrastructure for a private cloud or the various Cloud Service Provider infrastructure-related services in a multi-cloud environment, throughout their lifecycle. Also responsible for actively evangelizing the activities, successes, and impacts of the cloud infrastructure services team.
- **Cloud Infrastructure Services Architect(s):** Sets the overall cloud infrastructure services architectural standards and is responsible for developing and maintaining related architecture and design documents; works with Enterprise Architects to make sure the cloud infrastructure services architecture is aligned with enterprise architectural standards and strategies. He or she is also responsible for working closely with architects from other cloud service teams, such as the Cloud Platform or Digital Workspace Service Lifecycle Management teams, to make sure the underlying cloud infrastructure architecture and technical decisions support their cloud services, service tiers, and OLAs needed to meet business needs.

Note: Ideally this architect role is responsible for all aspects of the cloud infrastructure services architecture and relies on the Cloud Infrastructure Services Engineer role for deep subject matter expertise for subjects such as VMware NSX®, VMware vSAN™, and VMware vRealize® Suite.

- **Cloud Infrastructure Services Engineer(s):** Responsible for designing, building, and testing the cloud infrastructure services components comprising the cloud infrastructure, as well as providing level 3 support.

Note: The Core Cloud Infrastructure Services Engineer role is responsible for all aspects of the cloud infrastructure services design, implementation, and testing. As such, depending on the cloud infrastructure being used, this role can be expected to have deep subject matter expertise for everything ranging from NSX, vSAN, and vRealize Suite, to VMware Cloud on AWS™ and included Cloud Service Providers, such as AWS, Azure, and Google. As a result, this can be one of the first cloud infrastructure services' roles to include multiple individuals as the scope of the cloud infrastructure environment expands.

- **Cloud Infrastructure Services Analysts:** Understand how to leverage all of the capabilities of tools, such as vRealize Suite, to proactively monitor the performance, availability, and capacity of cloud infrastructure services and works with ecosystem members to act on events before they adversely affect the services; works with analysts from other cloud service teams to understand their demand forecasts for cloud infrastructure services.
- **Cloud Infrastructure Services Administrators:** Administers, audits, and manages as well as provides tier 3 support for the cloud infrastructure services and components comprising the cloud environment; responsible for working with cloud infrastructure automation developers and other teams to implement integration with external systems.

Note: While the core cloud infrastructure services administrator role is responsible for all aspects of managing cloud infrastructure services, it could also include specialized roles, such as a Network Administrator and Security Administrator if NSX provides primary network and security capabilities, or a Storage Administrator if vSAN provides virtual storage capabilities, as well as, for example, AWS or Azure if these external cloud providers are used.

- **Cloud Infrastructure Services Automation & Integration Developers:** Responsible for cloud infrastructure services automation and integration development.

Note: It's critical that cloud automation developers on all cloud services teams use software development practices rather than the more ad-hoc way in which traditional scripting was done in IT. Version control and the use of a

CI/CD pipeline are as appropriate (and required) for cloud service automation and integration development as it is for modern application development.

Enterprises are increasingly embracing the Site Reliability Engineering (SRE) concepts first developed by Google.⁵ While SRE concepts were originally developed in the context of supporting applications, it can be applied equally to IT services.⁶ In the context of Cloud Services Lifecycle Management teams, SRE Practitioners are a combination of the Cloud Service Analyst and Cloud Service Automation Developer roles.

Cloud Services Teams

Cloud Service teams focus on the lifecycle of specific services offered for consumption in the cloud-based environment. As described previously, these teams could exist for services such as: Platform Services, Data Analytics Services, Edge Services, and Digital Workspace Services. They could develop these services themselves, as well as act as brokers for services provided by external Cloud Service Providers.

The charter of Cloud Service teams is to continually develop and implement innovative ways to govern, design, develop, release, provide access to, and proactively operate the cloud service(s) for which they are responsible throughout its lifecycle. Following is a general description of the roles on a Cloud Service team. We'll include Cloud Platform Services Lifecycle Management team roles as an example given VMware's ongoing focus on Modern Application Platforms⁷ and the importance of enabling application developers.

- **Cloud Services Owner:** Acts as the product manager of one or more cloud services. Responsible for the overall definition, marketing, and delivery of the cloud service offering(s); collaboratively works with service stakeholders to define the cloud services; determines a price for their cloud service offerings; provides real-time information on service-level attainment.

Note: In the case of platform services, a critical responsibility of the Service Owner is to actively include representatives from the Application Development teams in defining the services they would consume, as well as actively marketing to these teams so they are aware of service capabilities and upcoming features.

- **Cloud Services Architect:** Translates the service definition into technical requirements for service development, architects and designs the service framework, and works with the Cloud Services Developer and Administrator to implement and test the service. Works with the Cloud Infrastructure Services team architect to understand and convey infrastructure implications of their cloud service.

Note: Based on the service definition and his or her own interactions with application developer team stakeholders, the Platform Services Architect would then architect the overall platform service's solution needed to deliver the defined service. This might be a multi-cloud capable Kubernetes framework, or CI/CD pipeline framework and tooling with initial automation based around VMware Tanzu™. The focus on platform services' framework is important as the Platform Services Architect knows the implementation may change as the developers provide feedback based on the frequent releases occurring during platform service development.

- **Cloud Services Developer:** Works with the service architect to understand the cloud service's technical requirements and develops new cloud services blueprints and capabilities using the platform services team's CI/CD pipeline to automate testing, including production operations readiness testing, as well as release process. Works with application developer stakeholders to develop cloud service blueprints and automated provisioning processes or API access for direct integration into the application development CI/CD pipeline.

Note: The Platform Services Developer role designs and implements the platform services architecture using Agile methods enabled through the CI/CD pipeline tooling which he or she may implement if that is part of the service being provided to application developers. This might also include, for example, configuring VMware Tanzu Mission Control™ with core policies and standing up a VMware Tanzu Application Catalog™ to provide a curated set of

⁵ Benjamin Treynor Sloss. "Introduction to Site Reliability Engineering: How Google Runs Production Systems." Edited by Betsy Beyer, Chris Jones, Jennifer Petoff, and Niall Murphy. O'Reilly Media, 2016.

⁶ "Site Reliability Engineering (SRE): SRE with VMware Professional Services," VMware, November 2018, blogs.vmware.com/services-education-insights/files/2018/11/SRE-Paper.pdf

⁷ "Modernize Applications: The Application Platform," Tom Hite, Emad Benjamin, Cameron Haight, & Roman Tarnavski, blogs.vmware.com/services-education-insights/2019/06/modernize-applications-the-application-platform.html

applications based on interactions with application developer stakeholders. He or she would also develop enablement videos on the use of the platform services, for example.

- **Cloud Services Analyst:** Understands how to leverage all the capabilities of tools, such as VMware vRealize Suite, to optimally and proactively monitor cloud service(s). Develops and maintains capacity forecasts and capacity monitoring of the cloud service for which the team is accountable and works with the Cloud Infrastructure Services Analyst to convey capacity needs as appropriate. Proactively monitors the cloud service as it moves through continuous integration and delivery/deployment, in addition to production itself.

Note: In the platform services context, the Platform Services Analyst leverages the full capabilities of tools such as, for example, VMware Tanzu Mission Control, VMware vRealize Operations Manager™ or VMware vRealize Operations Cloud™, VMware vRealize Log Insight™ or VMware vRealize Log Insight Cloud™, and Wavefront® by VMware® to proactively monitor platform services in production. He or she would also use these tools to proactively monitor platform services during development as they move through the CI/CD pipeline, as well provide comparable capabilities to the Platform Services Developer in order to both better understand how the service will act in production and identify potential production issues so they can be resolved before release.

- **Cloud Services Administrator:** Manages online portal information, parameters, and characteristics for the cloud service(s), as well as any necessary day-to-day administration activities. Works with his or her Cloud Services team Automation Developers(s) and other teams to implement any required integration with other systems and services. Works with their Cloud Services team Services Developer role to release services into production if automated deployment isn't yet implemented. Provides level 3 support for their cloud service.

Note: In the platform services context, the Platform Services Administrator is responsible for example, to maintain the various common platform policies such as for access, quotas, back-up, and security in VMware Tanzu Mission Control, as well as for the CI/CD pipeline framework. He or she would also work with the Platform Services Analyst to proactively troubleshoot and resolve issues before they become service impacting.

- **Cloud Services Automation Developer** focuses on identifying and developing automation workflows to optimize operational efficiency and service reliability. They also develop any service-specific CI/CD pipeline automation, such as for service testing and release rollbacks. The Service Automation Developer would also develop service blueprints to leverage Infrastructure as Code concepts for their service.

Note: In the platform services context, the Platform Services Automation Developer is responsible for example to develop platform service-specific VMware Code Stream™ release workflows and may even help application developer teams do the same or provide guidance for their specific workflows.

Additional Cloud Services Roles

Two addition roles need to be described: Cloud Business Manager and Cloud Business Relationship Manager. These roles are critical to the success of IT becoming an internal cloud service provider.

- **Cloud Business Manager:** Responsible for managing and supporting all the business aspects of the cloud services to help the business be accountable for better management of cloud spend, rate cards, showback, chargeback, service tier options, and fair recovery of IT costs. This role drives a new business management discipline within IT to lead a comprehensive cloud business management practice leveraging the IT investment and enable running the cloud like a business.
- **Business Relationship Manager:** Responsible for actively establishing and maintaining a working relationship with one or more lines of business customers. In addition to relationship management, he or she also understand forward-looking service demand both from a consumption of existing services as well as new service opportunities. He or she is also responsible for managing any issue escalation for their line of business customers.

Structuring and Managing Cloud Services Lifecycle Management Teams

A Cloud Service Lifecycle Management team can report to a single manager or they can be matrixed. While reporting to a single manager is ideal, political and other considerations may make this difficult in some companies.

As a result, we recommend some variation of the model used at Spotify⁸ combined with the helix management model from McKinsey⁹ as shown in FIGURE 8.

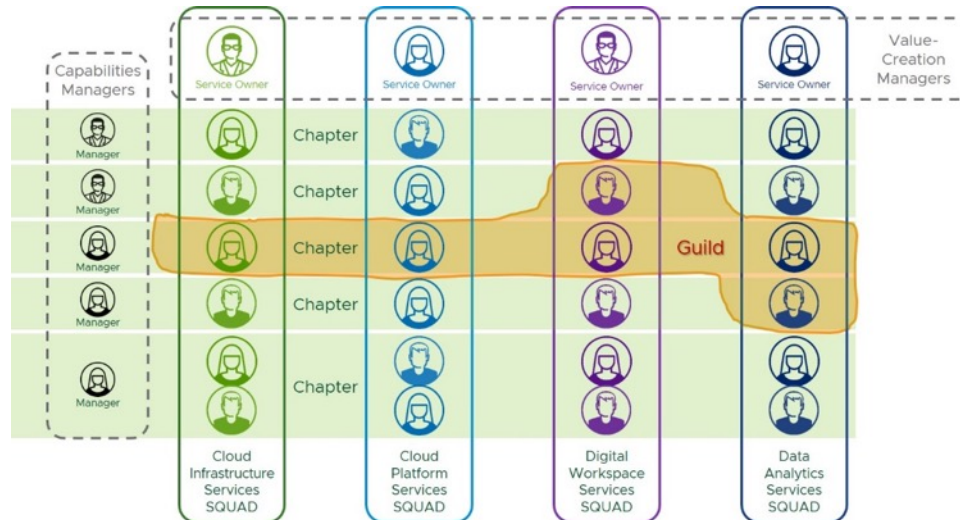


FIGURE 8: Spotify Organizational Model with Helix Organization Management Model

While a comprehensive description is outside the scope of this paper, basically a Cloud Service Lifecycle Management team represents a Spotify squad. A role within a squad is a member of a chapter consisting of the same role from other Cloud Service Lifecycle Management teams. A “people manager,” known as a Capabilities Manager in helix organization nomenclature, manages a chapter. These managers are responsible for the HR aspects of managing an individual in the chapter. The service owner role is also a Value-Creation Manager, in helix organization nomenclature, who manages the day-to-day activities of the people in his or her Cloud Service Lifecycle Management team. To complete the picture, a Spotify guild is a collection of similarly interested people across Cloud Service Lifecycle Management teams. For example, a service automation guild may contain Cloud Service Automation Developers, but it may also include other individuals who are interested in service automation development.

While no one prescribed organizational or management model will work for every enterprise, we have found this one or some variation thereof, works well to enable the culture and intent of Cloud Service Lifecycle Management teams.

Regardless of the structure or management approach taken, instituting shared goals and Key Performance Indicators (KPIs) is a key principle for blended Cloud Service Lifecycle Management teams. Minimizing individual KPIs and instead focusing on team-based KPIs should form the basis for any performance measurement. Doing so drives the desired behavior of working together to achieve success with the service(s) for which they are accountable. These shared goals should include customer-based KPIs, such as the Net Promoter Score (NPS), to reinforce the importance of customer focus in the service-oriented cloud operating model. Culture and mindset behavior can be impacted by including share KPIs focused on applying DevOps concepts, Agile methods, and SRE principles, as described in previously referenced whitepapers (DevOps and Agile⁴; SRE⁶).

Key Success Factors in Organizing for the Cloud

Implementing Cloud Services Lifecycle Management teams can be both a transformative and a disruptive process. However, there are a few key factors that help achieve a successful outcome and avoid pitfalls.

⁸ “*Spotify Engineering Culture (part 1)*,” Henrik Kniberg, March, 2014, labs.spotify.com/2014/03/27/spotify-engineering-culture-part-1/

⁹ The helix organization, McKinsey Quarterly, Oct 2019, www.mckinsey.com/business-functions/organization/our-insights/the-helix-organization/

1. Enlist Active Sponsorship at the Executive Level

First and foremost, IT leadership must realize and acknowledge that the biggest challenges they will face in breaking down silos are cultural and, likely, political. This is a common VMware experience when working with companies to break down their IT silos. And of the two, the political challenge can be more difficult to overcome. Which brings us to the first step in closing the gap: getting executive sponsorship—and not just any executive sponsorship but an enthusiastic, proactive executive sponsor for this kind of change.

Indeed, this kind of sponsorship is a number-one goal—an executive who completely embraces this idea and the change it requires, and who is committed to proactively supporting it. An active executive sponsor is critical to success in many ways, not the least of which is overcoming the cultural and political challenges. To overcome these challenges, the executive sponsor must have the dedicated support of those in the management chain of the organization in which the silos exist. A key way to gain this support is through adjusting the management chain's annual review criteria to reflect this new reality (see #3 below).

2. Sell the Change

Work with the executive sponsor to craft a communication plan aimed at both the management chain and the organization as a whole. When building the communication plan, the intent for the change is ideally derived from a strategy and road map focused on transforming IT into a cloud service provider to the business. This roadmap should have both executive and business support. If not, developing that IT cloud strategy and roadmap, as briefly addressed in First Steps on the Road to the Cloud Operating Model, becomes step one.

The communication plan needs to focus on why IT is undergoing the change, why it is critical for the business, and what value embracing it has for the affected IT managers and employees—what they stand to gain as individuals. And individuals do stand to gain. For example, they can benefit through recognition, increased visibility, the chance to participate in something truly innovative, new career opportunities, and the acquisition of new skills that are highly valued in both the company and the industry. The goal is to make participating in the change aspirational. But enthusiasm only goes so far. They must also be provided with a safe way to modify their behavior, as well as provide a little extra nudge to those in management who are still a bit reluctant to change.

3. Modify Behavior

Modifying behavior is a key step but one that is often overlooked. This step involves modifying annual performance review criteria and bonus criteria (or job descriptions in some cases), if applicable, to reflect the desired outcome. If this adjustment is not done, individuals will default to their incentivized behavior when prioritization decisions need to be made—or, for a few, as an excuse for not fully embracing the change. Modifying these criteria is vital for the management chain to help address the political challenge. It's also important for members of the silos whose walls are to be torn down.

Modifying behavior also includes education. Establish early learning paths for managers and individual contributors. Initial training can be focused on general concepts and benefits to both the business and them as individuals. It doesn't have to focus immediately on the technical details, though admittedly some respond better to this depending on their background.

4. Establish the Ecosystems and Educate

Effective ecosystems are critical to success. Without an active ecosystem each group will become an island unto itself and will fail. Education is key to creating an effective ecosystem. Develop an enablement strategy and plan to execute role-based enablement across the enterprise. Care must be taken to make sure that the functional groups comprising the ecosystems are not only continuously educated on the importance of their role but also continuously educated to ensure they have the requisite level of knowledge to successfully fulfill their role.

A proven, successful technique for establishing a collaborative ecosystem is to identify functional team champions. Champions are individuals who are incentivized, through annual review criteria or job description changes, to collaboratively work with cloud infrastructure services and other cloud service teams to make them successful, and to act as evangelists back into their functional groups.

As VMware Cloud Foundation-based cloud environments as well as the use of multiple external Cloud Service Provider scales and becomes more critical to the on-going success of the business, these individuals also become prime candidates to fill corresponding functional roles within the cloud infrastructure services or other cloud service teams when appropriate.

5. Know Your Processes

IT processes need to change and evolve to support the level of agility required when offering cloud services and operating the underlying VMware Cloud Foundation- infrastructure supporting a private cloud, the exposed VMware vCenter functionality in the VMware Cloud on AWS hybrid cloud, or external Cloud Service Provider capabilities in the case of public clouds. Heavyweight, high-governance processes slow down the speed with which IT must move to meet business needs in the highly dynamic world of cloud. When planning I.T.'s move to becoming an internal cloud services provider, be sure to take that opportunity to thoroughly review and update the IT processes to be more lightweight while providing the appropriate level of governance.

Note: Depending on the maturity of your IT organization, sometimes it is better to create a process anew to avoid legacy process debt. Knowing the process outcome is the most important aspect to consider. In some instances, we have actually worked with customers to “blow up” their processes. A good example is a customer, who upon a networking team process review, who had 402 steps in their process to create a VLAN. It took three weeks to document, and in the end, we replaced it with basically two short, automated processes. The bulk of their steps was to avoid human error which we did through automation.

Finally, the technology and processes must evolve with the organizational changes. Applying these organizational changes on top of an outmoded, immature, siloed private cloud will not be successful.

6. Plan for a Pilot-Based Launch and Scale Up

Implementing cloud services and the supporting teams and processes defined by the service-oriented cloud operating model should be evolutionary. Any transformation is challenging. VMware recommends a Minimum Viable Product-based approach that not only addresses technology but minimum viable people and process changes as a starting point followed by incremental expansion and refinement to limit risk and increase the probability of success.

VMware: Ready to Help You Organize for the Cloud

Today's forward-looking companies are looking to the cloud model to spark IT's transition to cloud service provider and true business partner. However, achieving the desired IT outcomes—such as increased operational efficiency, greater innovation opportunities, and faster delivery of IT services—requires a focus on the organizational impacts of the transition, including needed evolutions in roles, responsibilities, processes, and team structure.

VMware has built some of the largest and most successful private and hybrid clouds in the world, as well as making multi-cloud a reality, and we thoroughly understand the opportunities and the challenges. VMware has the experience and insight to bring to market a complete solution that includes a full suite of the software products and services you need to gain the maximum benefit from cloud computing. This combination of software and expertise, delivered via services and education to customers of all sizes across all industries, is unique to VMware and its global ecosystem of partners.

To learn more about how VMware can help you realize your cloud vision, visit the [Professional Services page](#) on the VMware website or ask your VMware Account Executive about our Transformation Consulting services.



*Special thanks to those
who helped make this
whitepaper possible:*

Mandy Storbakken, Louise
Ng, Craig Fletcher, Joseph
Griffiths, Norman Dee,
Meredith Miller