White Paper: **February 2022**

Building a compelling Multi-Cloud IaaS Subscription Business

For Cloud and Service Providers

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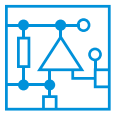
Cloud Provider Profile

- 7,000 – 10,000 VMs
- 8.7+ Million USD Revenue
- > 30% Margin
- Global Presence
- Value-Add Differentiation
- Full Automation and Scalability

Multi-Cloud Services

Multi-Cloud Infrastructure, Secure Multi-Tenancy, Consumption and Operations

Multi-Cloud Workload Migration and Mobility



Multi-Cloud Container-as-a-Service and Native Cloud Service

Executive Summary

VMware Cloud partners seek to deliver unique value through regional data centers, compliance with local regulations, language and currency support, as well as value-add managed services. In a multi-cloud world, however, customers also require global availability and additional services and scale that is typically only found in hyperscale public cloud portfolios. This white paper builds on the Cloud Provider Total Cost of Ownership (TCO) model for IaaS[1] and Modern Application[2] offerings, which are detailed in two previously published papers. TCO provides an essential element to generate rich margins from cloud services and can have a critical impact on a VMware Cloud Provider's profit.

In this third paper of the series, we focus on multi-cloud use-cases, subscription business models and solutions, which can be enabled through the VMware Partner Connect Cloud Provider and Managed Service Provider models. The approach we describe is intended as a guide for partners to offer new services on a proven platform that is innovative and competitively priced. While the first two white papers put strong focus on price competitiveness and TCO, this paper also looks at financial metrics for subscription businesses, incremental growth and value delivered through multi-cloud offerings in cooperation with hyperscale public clouds. It puts emphasis on financials and economics of an operational expenditure (OpEx) and Software-as-a-Service (SaaS) strategy, versus a capital investment (CapEx), asset-heavy strategy with rental software models.

We will detail a portfolio of services and solutions that we believe can allow partners to address a wide range of multi-cloud use-cases and significantly increase their competitive appeal with customers. Based on the example calculations used in this paper, we show that building an IaaS business on hyperscale public cloud services can lead to rapid growth, instant positive cash flow and generate margins of up to 30 percent, even on a globally distributed cloud platform. Please note, however, that each provider's circumstances are unique and that the guidance contained in this white paper does not guarantee a successful outcome or any particular outcome.

The information delivered in this paper comes directly from the VMware Multi-Cloud Architecture and Strategy team, a VMware organization that supports and enables cloud providers around the globe with strategy and architecture consulting services. They deliver hundreds of workshops and engagements annually, including detailed strategy and roadmap development, service design, differentiation, business case analysis and TCO models for partners.

Example Partner Profile

Like the first two white paper of this series, the assumptions used in this analysis are based on data and insights from real-world providers and the VMware Multi-Cloud Architecture and Strategy team's experience from working with all kinds and sizes of cloud providers around the world.

1. Building a compelling Cloud Platform TCO on the VMware Cloud Provider Platform: https://www.vmware.com/learn/585731_REG.html
2. Building a compelling Modern Apps and Managed Application Cloud Provider Business: https://www.vmware.com/content/dam/digitalmarketing/vmware/en/pdf/partners/Modern-Apps-Whitepaper-v1.0.pdf

Building a compelling Cloud Provider Business – White Paper Series:

Part 1: Building a compelling Cloud Platform TCO on the VMware Cloud Provider Platform

Part 2: Building a compelling Modern Apps and Managed Application Cloud Provider Business

Part 3: Building a compelling Multi-Cloud IaaS Subscription Business

You are here

For most VMware Cloud Providers, coopetition is becoming the common relationship towards hyperscale public cloud providers.

This white paper uses a hypothetical VMware Cloud Provider partner called "ACME Cloud", which comes from an infrastructure hosting business limited to one region. ACME Cloud wants to significantly increase revenue from 3.3 to above 8.7 million USD annually by pursuing two strategic objectives: first, offer a very competitive platform for commodity and price sensitive workloads, which is already in place1; and second, add standardized and scalable cloud migration, global data center expansion and application modernization services.

Achieving this goal requires a range of improvements in ACME Cloud's practice and operations including, for example, an expansion away from a single datacenter region to an eventual global presence of locations to fulfill the offered services, as well as the associated migration, workload mobility and application modernization capabilities.

Overall, ACME Cloud anticipates running more than 7,000 VMs on its regional IaaS platform plus an additional 3,000 VMs from global expansion over a three-year business term. A critical component to financing the growth strategy is to achieve the target margin profile of at least 30 percent, which can only be achieved through higher value-added services and the right combination of skilled people, innovative partners, efficient processes as well as standardized and automated tools. Cloud provider businesses rely on IaaS as the foundation for successful value-added and higher abstraction services.

The Multi-Cloud Business Model

Hyperscale Public Cloud: Friend or Foe

Over the last five years, strategic discussions with VMware Cloud Provider partners sooner or later focused on the role of hyperscale public cloud providers and their impact on a provider's strategy. These hyperscale public clouds have rapidly expanded in scale, service scope and regional availability up to a point today, where they are a constant and significant part of any customer IT strategy. The term hyperscale or hyperscaler is usually understood to encompass at least the three largest providers Amazon Web Service (AWS), Microsoft Azure and Google Cloud Platform (GCP), as well as additional global providers like IBM Cloud, Oracle Cloud and Alibaba Cloud, or others. They all share similar characteristics, among others global availability, a broad range of services beyond infrastructure and made consumable via a comprehensive API, as well as a partner channel model. While the first set of these characteristics is usually considered potential threats to regional VMware Cloud Provider partners, the last one, using a partner channel model, must be considered an opportunity from a strategic perspective.

The threat of these hyperscale public clouds entering any given regional market puts them in a competitive position to any existing partner. In many instances, this competition is based on a cost advantage through extensive economies of scale as well as portfolio breadth difficult to match for any existing provider in the market. Yet the authors believe, as we have argued in the previous white papers, that VMware Cloud Providers can effectively address this competitive threat by matching hyperscale public cloud costs for raw service infrastructure and pricing through scalable software-defined

platforms and operations. And they can focus on differentiation through understanding customer needs, data sovereignty and high-profit managed and professional services that are not available from hyperscale public clouds.

Whichever competitive strategy is chosen, hyperscale public cloud provider channel partner models also offer an important opportunity for VMware Cloud Provider partners. They provide access to geographic regions that are hardly addressable via internal resources, offer access to a new portfolio of services and allow the expansion of a VMware Cloud Provider's value-added services business based on the familiar VMware software stack. This situation leads to so-called coopetition. Coopetition describes the duality of competition and cooperation between two market actors and for most VMware Cloud Providers today, it is becoming a very common relationship towards hyperscale public cloud providers.

While earlier strategic discussions with providers often focused on how to compete with the new entrants by relying on existing business conditions and models, we are now seeing a strategic shift in most regions towards an expansion of the established business model that builds on the opportunities offered from hyperscale public cloud provider cooperation. A similar shift in strategic direction happened for our example provider ACME Cloud when considering options to achieve global expansion while maintaining a manageable risk profile and price competitiveness.

Business Model Overview

Now that the coopetitive nature of the relationship with hyperscale public cloud has been broached, ACME Cloud needs to define the business model to focus on in the multi-cloud market which opened through the option of cooperation with hyperscale public clouds. ACME Cloud, like many VMware Cloud Provider partners, aims to provide a smooth path to value from multi-cloud for its customers along some key use-cases:

Use Case: **Global Multi-Cloud Consumption**	Use-Case: **Cloud Migration and Mobility**	Use-Case: **Application Modernization**
Customers need to be able to consume the best cloud platform for any given workload.	Customers need a cost-effective way for moving workloads into the cloud and back out again when required.	Customers need to leverage higher-abstraction services to modernize their application portfolio on any cloud.
VMware Cloud Providers offer multi-cloud services that allow access to multiple cloud platforms across various locations globally and enable seamless consumption of resources. **(VMware Cloud)**	VMware Cloud Providers offer a consistent layer across multiple cloud platforms and the relevant migration and mobility tools to easily move workloads between clouds. **(VMware Cloud and HCX)**	VMware Cloud Providers offer multiple cloud destinations with adjacency to a wide portfolio of modern application services as well as Kubernetes and developer tools. **(VMware Cloud and Tanzu)**

Figure 1: Common Provider Multi-Cloud Use-Cases

To enable these use-cases, providers in general can build their multi-cloud business on specific partner contracts with VMware and hyperscale public clouds such as the VMware Managed Service Provider model[3], AWS Managed Service Provider Partner program[4], Microsoft Cloud Solution Provider program[5] or the Google Cloud Partner Advantage program[6]. These programs are structured in very similar ways and, in the case of the VMware MSP model, have the following characteristics:

- The VMware Cloud Provider partner owns the **End-to-End customer relationship**.
- The VMware Cloud Provider partner sells services under its own **terms of service**.
- The VMware Cloud Provider partner provides **primary support** for the offered services.
- The VMware Cloud Provider partner handles **metering and billing** towards its customers.

3. VMware Managed Service Providers: https://www.vmware.com/partners/service-provider/managed-services.html
4. AWS Managed Service Provider (MSP) Program: https://aws.amazon.com/partners/programs/msp/
5. Microsoft Cloud Solution Provider Program: https://partner.microsoft.com/membership/cloud-solution-provider
6. Google Cloud Partner Advantage: https://cloud.google.com/partners/become-a-partner

By utilizing multiple programs and the wide range of services that are available through them in the right combination, partners can create two main service models: first, they can manage provisioning, billing and support across hybrid and multi-cloud environments for their customers as a single point of contact. This by itself provides a large opportunity for value-added services like lifecycle management, monitoring, cost optimization, migration and more; and second, they can build and support more complex solutions and applications that span different clouds, including hyperscale public clouds, established on-premises partner or customer clouds and customer edge-clouds, and offer them as a single, closed service under their own terms to their customers.

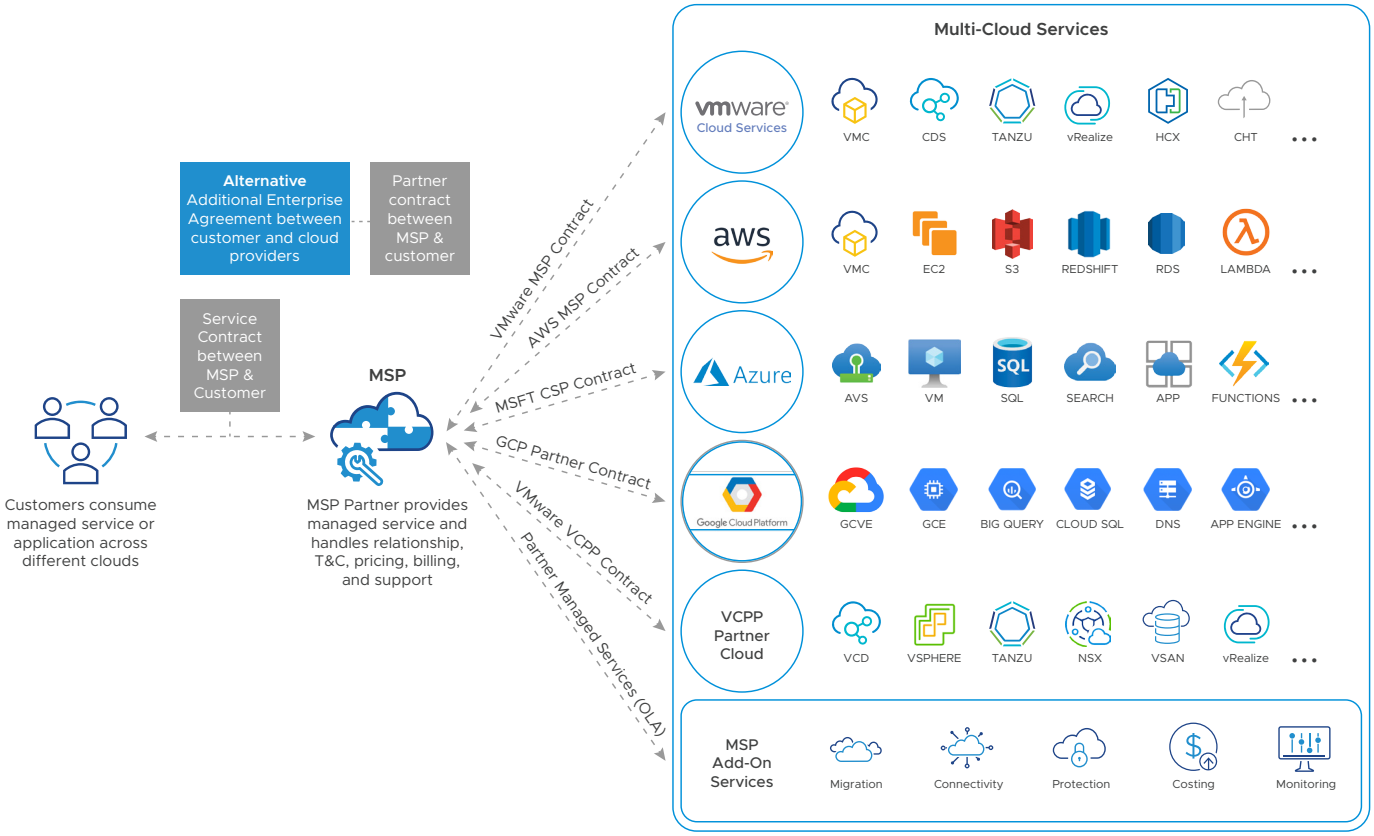


Figure 2: Multi-Cloud Business Model for VMware Cloud Providers and MSPs.

Economics of VCPP Rental vs. Managed Service Provider SaaS

VMware offers two main routes for cloud provider partners to deliver services. To build cloud services in their datacenters and on hardware owned by them, VMware Cloud Provider partners can leverage the VCPP rental model, like ACME Cloud did in the past to build IaaS and modern application services. These providers install VMware software on their infrastructure to build and offer their own cloud and get charged based by VMware on actual consumption by their end-customers. Operating and managing these ACME Cloud provider-owned clouds remains their own responsibility and the core of their business to serve regional workloads.

The second route is the VMware Managed Service Provider (MSP) model. It allows VMware Cloud Provider partners to access and consume VMware-operated cloud services and provide managed services on top, without worrying about operating and managing the underlying infrastructure or service. This route allows ACME Cloud to put more focus on value-added services and differentiation, instead of infrastructure and datacenter operations. And the MSP model gives ACME Cloud and all other Managed Service Provider partners access to services and global locations, with rapid scale and immediate availability that would otherwise be extremely expensive and likely unprofitable to obtain. With regards to offering a core portfolio of multi-cloud services that support ACME cloud's target customer use-cases, MSP partners have a wide choice of VMware rental or SaaS options.

Service Offering	VCPP Rental Solution	MSP SaaS Solution
Private / Dedicated IaaS Cloud	VMware Cloud Foundation (VCF)	VMware Cloud (VMC)
Edge Cloud / Cloud-to-Ground	VMware Cloud Foundation (VCF)	VMware Cloud on Dell EMC (VMC-D)
Public / Shared Multi-Tenant Cloud	VMware Cloud Director (VCD)	VMware Cloud Director Service (CDS)
Multi-Cloud Operations	VMware vRealize Operations (vROps)	VMware vRealize Operations Cloud
Multi-Cloud Logging	VMware vRealize Log Insight (vRLI)	VMware vRealize Log Insight Cloud
Multi-Cloud Network Operations	VMware vRealize Network Insight (vRNI)	VMware vRealize Network Insight Cloud
Multi-Cloud Automation	VMware vRealize Automation (vRA)	VMware vRealize Automation Cloud
Workload Mobility and Migration	VMware Hybrid Cloud Extension (HCX)	VMware Hybrid Cloud Extension (HCX)

Figure 3: VCPP and MSP Solution Overview

The most successful VMware partners build their business on a combination of both, the VCPP rental and MSP model. To decide between VCPP rental and MSP SaaS solutions specifically for the multi-cloud business on a solid financial basis, ACME Cloud needs to first understand and consider the economics between both alternatives. Let's start with the VCPP rental model, which is already used in ACME Cloud's existing IaaS offerings and will remain so for this part of the business.

Financially, the VCPP rental model is investment and capital expenditure (CapEx) driven or "asset-heavy" regarding physical resources. While the VMware software portion in VCPP is charged as a flexible rental charge, the model still requires the partner to procure, capitalize and depreciate physical assets such as data center facilities, physical servers, network and storage systems and all adjacent assets to build the environment. From an operational expenditure (OpEx) perspective, operating and maintaining the environment will typically result in fixed labor costs for staff. Given that VCPP is a rental model, VMware software licenses also fall into the OpEx bucket. The remaining CapEx from hardware in asset-heavy models cause a high initial negative cash flow and recurring depreciation expenses across the lifecycle of the assets. This is also the main difference to the MSP SaaS alternatives. Let's look at a hypothetical example calculation for a VCF and VCD-based rental IaaS platform to illustrate the development in figure 4.

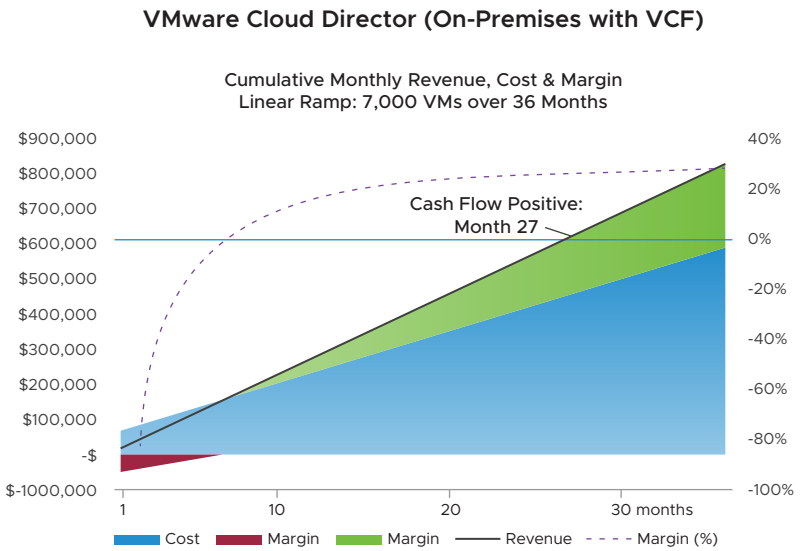


Figure 4: VCPP Rental Cashflow with VCF and VCD

In the example calculation in figure 4, there is a positive cash flow in month 27 due to high initial outflow of cash for purchasing the required hardware upfront and implementing the cloud environment. For providers and investors that are focused on optimizing traditional financial KPIs like Return on Investment (ROI) and Earnings before Interest, Taxes, Depreciation and Amortization (EBITDA), the asset-heavy approach may, however, still be very attractive since it allows the optimization of profit margins over time as the business scales and assets become optimally utilized.

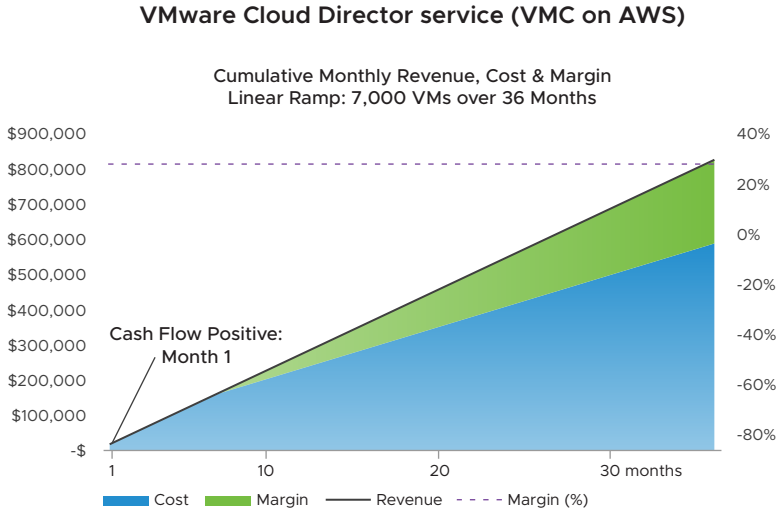


Figure 5: MSP SaaS Cashflow with VMC and CDS

In the MSP SaaS or "asset-light" model, everything from hardware to software to operations is included in the MSP price as an OpEx charge. This first means that the partner does not need to deal with sizing and procuring the right amount of infrastructure, including burst and failover capacity, and depreciating it. And from a cash flow perspective, it also means that the entire stack of components needed for any given service is aligned between the cost and revenue part of the equation. Partners get charged and pay on a monthly or annual basis, based on the consumed services and charge their customers respectively. This frees them from large initial investments and negative cash flow from their own infrastructure assets. And since larger parts of the base service operation are included in the variable SaaS OpEx, fixed costs for staff can be directed to adding and differentiating tasks and services.

The right Metrics for Subscription and Growth

At this stage of the process, ACME Cloud needed to consider the impact of both models in their financial metrics – and choose the right metrics to begin with. This discussion requires the accounting and finance executives to understand the ongoing change to a SaaS-based world and subscription economies, and in the case of ACME Cloud goes all the way up to the CFO.

For VMware Cloud Providers in general, the financial implications of moving to a SaaS and subscription model are very well understood on the revenue side. The revenue from Cloud subscription services occurs over an extended time period in a recurring way, instead of via one large upfront deal. The better the service, the longer the customer consumes, the higher the revenue and profits across the customer lifetime. The key metrics here are any form of recurring revenue, for example annual recurring revenue (ARR) or monthly recurring revenue (MRR). Marginal costs to provide the service to customers over a longer period are close to zero, yet upfront costs to stand up the environment in an asset-heavy model and onboard customers are still high, requiring recurring revenue streams over a sustained period for recovery. However, a dissatisfied customer may leave the provider and stop contributing to revenue and margins before they contribute sufficiently to recover upfront costs, which is a risk and can negatively impact the customer lifetime value (LTV).

To address this risk, the cost side of the business must be reconsidered to focus on metrics that are the most meaningful in a subscription economy. As a SaaS consumer in the VMware MSP model, VMware Cloud Providers building on a partially asset-light model can enjoy similar benefits as their subscription customers. In an asset-heavy sales business, key metrics are usually ROI and EBITDA, both describing the financial performance of assets and investments. These metrics are negatively impacted by high customer churn leading to lower customer lifetime value. Moving to an asset-light SaaS model

on the supply side can mitigate the negative impact on performance from churn by reducing potentially sunk upfront investments. This shift also makes traditional financial KPIs like ROI and EBITDA less meaningful. Instead, the Customer Acquisition Costs (CAC) and Time to Recover CAC shift into focus. They express how much money the company needs to spend in order to acquire an average customer as well as the period required to recover these costs. The recovery period for CAC is dependent on the margin and the recurring average revenue per customer (ARPC). The shorter the time to recover CAC, the faster the business starts to generate profit. Additionally, these metrics are also meaningful for their ability to predict growth of a new business in early stages and where profitability metrics like operating profit, ROI and EBITDA are not yet in focus:

CAC = Total Costs of Sales and Marketing / # of customers acquired

Time to Recover CAC = CAC / (ARPC x % Gross Margin)

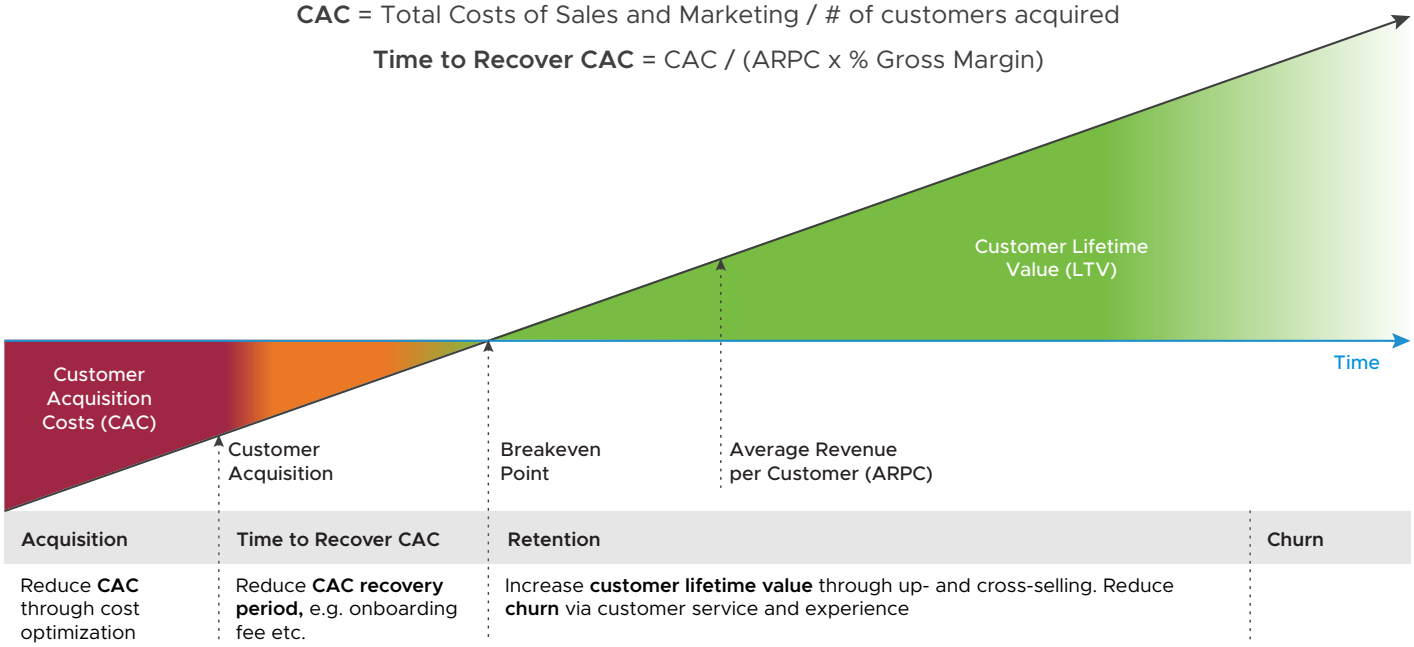


Figure 6: Subscription business metrics and relationships

In a nutshell, moving to a SaaS-based or asset-light supplier model helps free providers from focusing too much on traditional KPIs like margin, ROI or EBITDA. The cost structure moves from a CapEx to and OpEx model with less investment. CAC and Time to Recover CAC become more important and have a more direct relationship to growth KPIs like LTV, ARR/MRR or ARPC. The final important KPI from these insights is the LTV:CAC ratio. It expresses the overall health of a growing subscription business.

Multi-Cloud Services for VMware Cloud Providers

Operational Improvement with Cloud Partner Navigator

In their own cloud, built via the VCPP rental model, ACME naturally faces a certain degree of management complexity and operational overhead managing customer's workloads and service lifecycles. To scale globally, providers like ACME Cloud need a unified view of workloads, aggregated and filtered by customers, across all VMware-based clouds and services. They want to deliver a unified, self-service cloud experience to their customers across the global multi-cloud landscape. Without a common management platform or investing in expensive custom tooling, ACME Cloud struggles to simplify cloud and business operations across clouds with common contract management, customer usage, provider billing and support.

To address these issues, VMware Cloud Partner Navigator provides a unified SaaS partner platform for VMware Clouds and cloud services. Cloud Partner Navigator enables ACME Cloud to deliver multi-cloud services to customers worldwide and significantly simplifies business and customer operations. Cloud Partner Navigator comes at no additional cost to partners and helps improve ACME's cloud economics through key capabilities like global business expansion, simplified operation and enhanced customer experience.

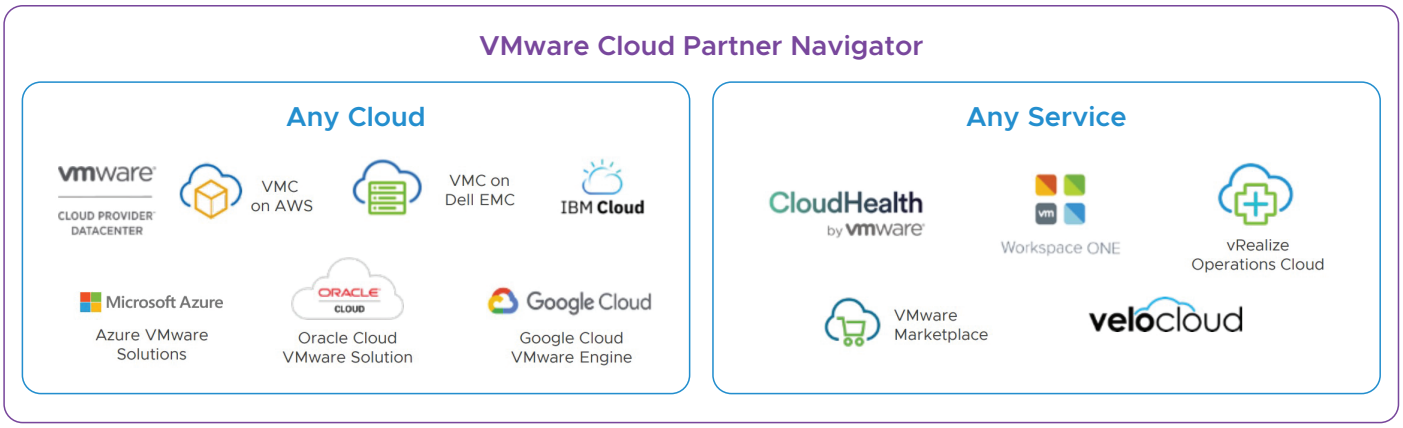


Figure 7: VMware Cloud Partner Navigator for MSPs and Cloud Providers

Global IaaS Expansion with VMware Hyperscale Solutions

The first core use-case for ACME to address is the global consumption of Infrastructure as a Service from its customers. This is the logical extension to ACME Cloud's existing on-premises IaaS business, which is hosted in ACME-owned datacenter facilities and allows them to serve customers and their users in geographically dispersed locations with the same quality and portfolio of value-added services. Beyond that, it enables ACME Cloud to enter these new regions and expand the overall customer base.

To expand the ACME Cloud IaaS footprint in an asset-light way, several major hyperscale public cloud providers offer the well-known and established VMware SDDC stack in their clouds.[7] These clouds include, for example, VMware Cloud on AWS (VMC), Azure VMware Solution (AVS), Google Cloud VMware Engine (GCVE), Oracle Cloud VMware Solution (OCVS), IBM Cloud for VMware Solution or Alibaba Cloud VMware Solution (ACVS) and others. For edge and cloud-to-ground deployments on customer premises with a truly managed cloud experience, VMware Cloud on Dell EMC expands the VMware Cloud model to these locations.

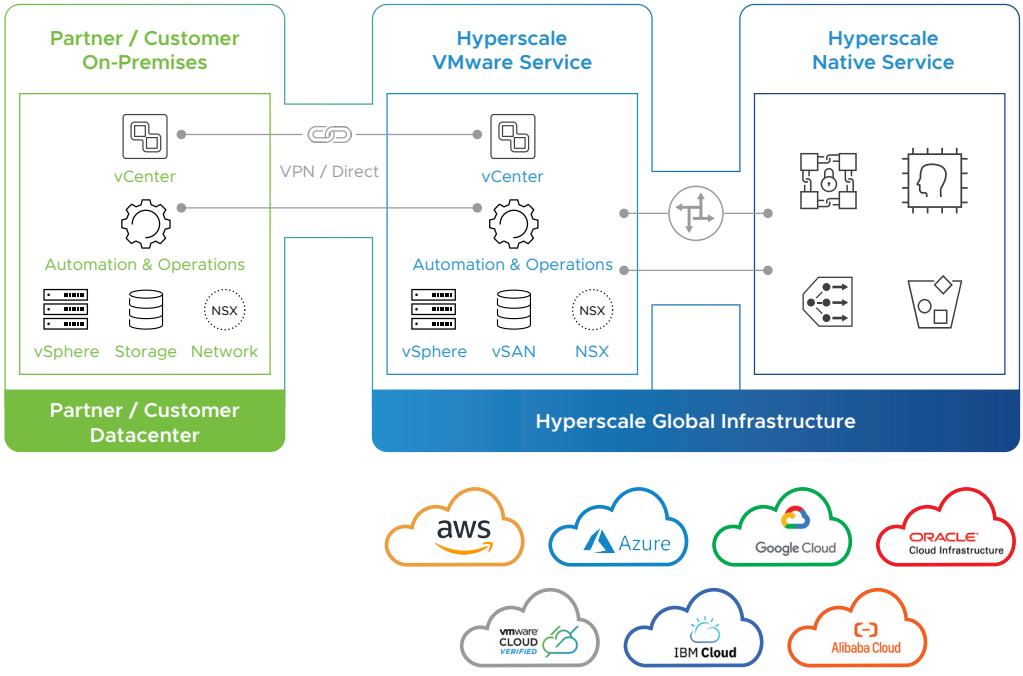


Figure 8: VMware Hyperscale Solution on Public Clouds

7. VMware Hyperscale Solutions and Partners: https://www.vmware.com/partners/work-with-partners/hyperscalers.html

While all options provide similar value in terms of rapid availability and scalability, adjacency to the native service portfolio of the respective public cloud provider and the reliable stack of VMware vSphere, NSX and vSAN, there are a couple of differences ACME Cloud had to consider when choosing its partners. In the initial approach, ACME conducted an overview across VMC on AWS, AVS and GCVE, representing the three largest hyperscale public clouds. The result is outlined in figure 9.

Another important service component that enables a seamless customer experience, secure multi-tenancy and efficient operations across these VMware Hyperscale solutions, is VMware Cloud Director service (CDS). The VMware Cloud Director service is a container-based SaaS version of the proven VMware Cloud Director on-premises service-delivery platform. The service, available through VMware Cloud Partner Navigator, is part of the VMware MSP asset-light model.

	VMware Cloud on AWS	Azure VMware Solutions	Google Cloud VMware Engine
Min. / Max. SDDC size	Minimum: 2 Nodes Maximum: 16 Nodes	Minimum: 3 Nodes Maximum: 16 Nodes	Minimum: 3 Nodes (first cluster) Maximum: 32 Nodes
Components included	vSphere, vCenter, VSAN, NSX HCX Advanced and Enterprise	vSphere, vCenter, VSAN, NSX HCX Advanced	vSphere, vCenter, VSAN, NSX HCX Advanced
Optional Add-Ons	• VMware Cloud Disaster Recovery • VMware Site Recovery • VMware vRealize Cloud	• VMware HCX Enterprise • VMware SRM • VMware vRealize Cloud	• VMware HCX Enterprise • VMware SRM • VMware vRealize Cloud
Key Features	• Stretched Cluster Option • SDDC Autoscaling (eDRS) • Includes VMware TMC Essentials	• Free extended Windows Server / SQL Server 2008 Support • Azure Hybrid Benefits	• SDDC Autoscaling • Escalated Privileges Setting
Access	API, VMware Cloud Portal	API, Azure Portal	API, GCP Portal
Operated by	VMware (L1-L3)	Microsoft (L1-L2), VMware (L3)	Google (L1-L2), VMware (L3)
Sold by	VMware | AWS | Partners	Microsoft | Partners	Google | Partners

Figure 9: VMware Hyperscale Solutions comparison for VMC on AWS, AVS and GCVE

Beyond these technical capabilities, the service ownership and operations models are important for partners to understand. While VMware Cloud on AWS is operated solely by VMware, Azure VMware Solution and Google Cloud VMware Engine are operated by Microsoft and Google, respectively. All solutions are transactable via the respective hyperscale public cloud partner programs, whereas VMware Cloud on AWS is the only offering that is also sold directly by VMware and available to partners via the VMware MSP program. To transact AVS or GCVE, partners must become part of the respective Microsoft or Google partner programs. In case of ACME cloud, there is already an established relationship via the Microsoft CSP program and the Google Cloud Partner Advantage program, leading to these offering being the first to become part of the multi-cloud IaaS portfolio besides VMware Cloud on AWS.

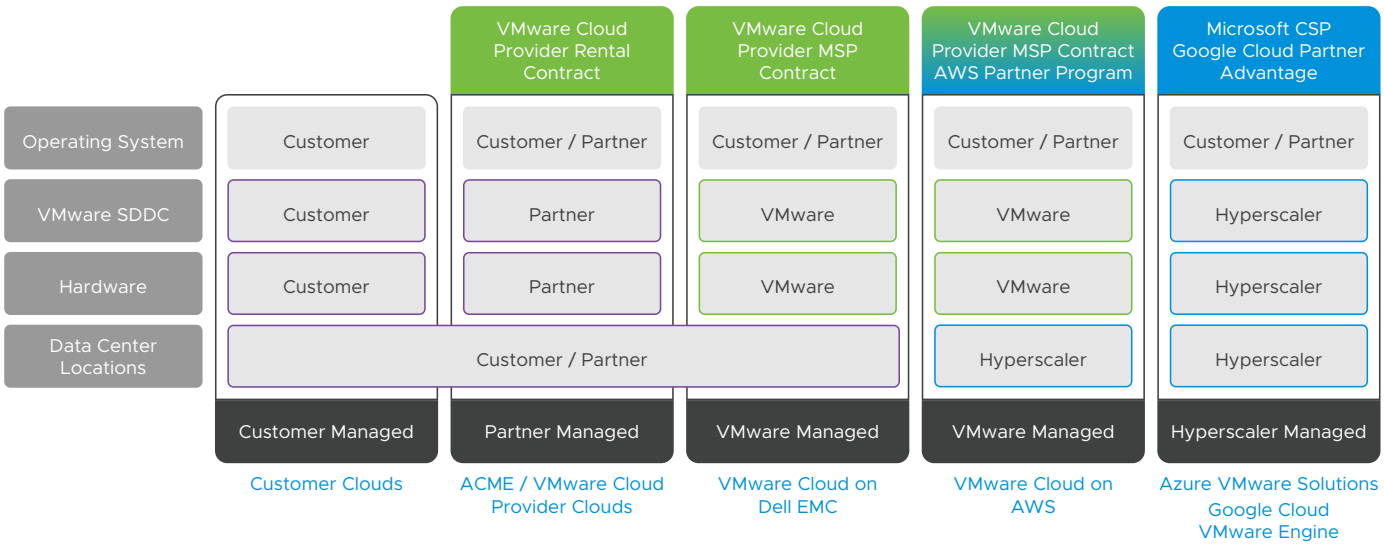


Figure 10: Responsibilities and Partner Programs across Multi-Cloud VMware options

Multi-Cloud Business Case

VMware Cloud Cost and Scale Assumptions

As with any business case, ACME Cloud needed to make assumptions around the cost drivers and the scale of the target platform. It was assumed that the existing on-premises IaaS business targeting 7,000 VMs could increase by an additional 3,000 VMs through the global expansion into hyperscale public cloud services. These VMs would be delivered close to the respective hyperscale native cloud services via VMware Cloud on AWS, Azure VMware Solution and Google Cloud VMware Engine. The average workload size assumption is based on a previously used standard VM with 4 vCPUs, 16 GB of vRAM and 200 GB of storage.

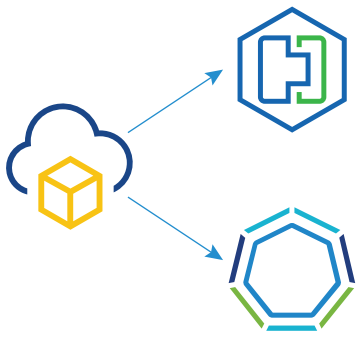
Unlike native VM services from hyperscale public clouds, the benefit of hardware oversubscription in VMware hyperscale solutions goes to the customer or, in case of a managed service, to the managed service providers like ACME Cloud. This is due to the unit of sales on the procurement side being a host and not a VM. And VMware Cloud Director allows providers to choose the optimal oversubscription ratio to maximize the utilization of each host. The vCPU to pCPU ratio, which has significant impact on oversubscription benefit for ACME, was chosen as similar to the on-premises IaaS stack with 4:1. The exact host specification and costs vary between VMware hyperscale solutions in AWS, Microsoft Azure and Google Cloud (Figure 11).

	VMware Cloud on AWS		Azure VMware Solutions	Google Cloud VMware Engine
Instance Type (Region)	i3.metal (US-West Oregon)	i3en.metal (US-West Oregon)	AV36 (US-West)	ve1-standard-72 (us-west2)
CPU Cores	36	48	36	72
RAM	512 GB	768 GB	576 GB	768 GB
Storage	10.7 TB NVMe	45.8 TB NVMe	15.36 TB All Flash 3.2 TB NVMe Cache	19.2 TB NVMe 3.2 TB NVMe Cache

On Demand MSRP	7.1129 USD / hour	17.2752 USD / hour	9.21 USD / hour	9.92 USD / hour
1Y Commit MSRP	5.5236 USD / hour	14.0921 USD / hour	6.12 USD / hour	6.94 USD / hour
3Y Commit MSRP	4.1244 USD / hour	10.8537 USD / hour	4.30 USD / hour	4.96 USD / hour

Figure 11: VMC on AWS, AVS and GCVE instance comparison

Even though the eventual real-world distribution of workloads or contract terms will vary based on the exact demand, location and hyperscale platform, the business case evaluation was built on the VMC on AWS i3.metal instance pricing for 1 year reserved instances, which provides a reasonable mean value as an assumption. Further, VMC comes a high number of available regions and additional features and is available via the VMware MSP model with the associated discount structure, while the exact discounts granted on AVS and GCVE via the respective Microsoft and Google partner contract may be subject to additional factors and negotiations. Going forward in the business case calculation, VMC pricing and discounts in VMware MSP serves as a placeholder for all hyperscale public cloud solutions used as part of the ACME multi-cloud business.



Additional MSP Services and Key Use-Cases

To build a truly federated platform and seamless user experience, ACME Cloud needs to expand its existing cloud management portal VCD to the multi-cloud business. This is possible via the MSP program for VMware Cloud Director service, the SaaS-version of VCD that introduces secure multi-tenancy and self-service capabilities to VMware Cloud.

As shown in figure 9, VMC on AWS already includes HCX Enterprise and Tanzu Mission Control Essentials, which are both relevant for ACME Cloud's additional customer use-cases of workload mobility and application modernization. Therefore, these factors also need to be taken into account when ACME Cloud compares the TCO calculations and builds the business case.

HCX allows ACME to deliver cloud migration and workload mobility capabilities to their multi-cloud customers. It enables large scale movement of workloads across any VMware platform on any cloud or even from Microsoft Hyper-V and KVM, provides a choice of migration methodologies and can even live migrate thousands of VMs across geographies and clouds with zero downtime by using WAN-optimized and high throughput Layer-2 hybrid networking.

Tanzu Mission Control (TMC) provides a global control plane to organize Kubernetes clusters and namespaces for scalable operations and secure them with access control policies. It supports the application modernization use-case in combination with VMware Cloud's adjacency to native hyperscale cloud services. For ACME Cloud, TMC provides an extension to their already established modern application and Container-as-a-Service business on VCD and bring their modern application offering to any cloud.

While these two solutions are not currently included in AVS and GCVE, HCX Enterprise is available as an add-on from Microsoft and Google. Alternatively, Tanzu Mission Control (TMC) and HCX Enterprise are also available via both the VMware MSP model and as VMware VCPP rental options.

MSP Discount Structure

The VMware MSP program for VMC on AWS offers two discount models, one for existing VCPP rental partners and one for all MSP partners. The standard discounting model available to all MSP partners offers four discount levels (MSP level 1-4) based on the committed annual MSRP spent. Existing VCPP rental partners are eligible for similar discount levels based on their existing VCPP points commit contract (MSP level 1R-4R) without any MSP spending commitment. For the purposes of our hypothesis, let's assume that ACME Cloud already has a VCPP commit contract from its existing cloud service portfolio based on VCF and VCD – allowing it to leverage the latter model without any additional commitment, leading to more flexibility and even lower financial risk from commitments – and let's also assume an MSP discount for ACME of above 20 percent for VMware Cloud.

Similar models exist for the formerly mentioned additional MSP services required like HCX, TMC and CDS, as well as potential additional add-ons like vROps Cloud, vRA Cloud, vRNI Cloud and vRLI Cloud.

TCO Comparison

With these assumptions understood, ACME Cloud can now build the first two TCO models for the IaaS platform that enables the existing business to expand to multi-cloud. The models compare an asset-heavy rental approach with VCD and VCF versus the asset-light MSP SaaS approach with CDS and VMC. The basis for the first model is taken from the existing IaaS TCO model explained in a previous white paper1, scaled down to 3,000 VMs. This is the forecast and target for additional consumption from multi-cloud services beyond the existing 7,000 VMs already hosted on ACME Cloud's VCD environment. The multi-cloud rental model calculation includes the same assumptions for labor, physical asset and data center costs. Additional rental points for Tanzu Standard with Tanzu Kubernetes Grid and TMC, as well as HCX Enterprise were added in order to achieve feature similarity with VMware Cloud on AWS and support all three defined use-cases.

On the MSP SaaS TCO model, the appropriate discounts were selected based on the MSRP for one-year commit contracts and the infrastructure was designed similarly to the asset-heavy stack. It includes costs for CDS as the cloud management platform, which supports a consistent user experience between the existing VCD IaaS business and the new multi-cloud business.

The unit of sales to customers for this calculation was changed from single VMs to 100 groups of 30 VMs called a Virtual Data Center (VDC). VDCs in VMware Cloud Director and Cloud Director service are tenant pools of resources containing vCPUs and vRAM. Using this metric as the unit of sales is more accurate when calculating the TCO in consideration of workload portions from different customers being distributed across many different cloud locations. Since the multi-cloud offering is an addition to the existing IaaS business and serves a global expansion use-case, the projected 3,000 additional VMs will most likely be running in multiple locations instead of being hosted as a large pool in one region like in the existing regional IaaS offering of ACME Cloud. The level of distribution is accounted for in a second TCO model, shown in figure 13.

Sourcing Model	VCPP Rental (VCD / VCF)			MSP SaaS (CDS / VMC)		
Net New Units Sold (VDCs - VMs)	100 VCDs - 3,000 VMs Total			100 VCDs - 3,000 VMs Total		
Total Revenue	$13,777.392			$13,777.392		
	Total	% Total Cost	Per VDC/Month	Total	% Total Cost	Per VDC/Month
VMware SW/Svcs MRC (Unit)	$3,875,068.80	46.27%	$1,967.04	$7,018,175.04	84.33%	$3,562.53
Labor MRC (Unit)	$782,087.30	9.34%	$397.00	$782,087.30	9.40%	$397.00
TOTAL COGS	**$4,657,151.10**	**55.61%**	**$2,364.04**	**$7,800,257.34**	**93.73%**	**$3,959.52**
GROSS MARGIN	**$9,120,240.90**		**$4,629.56**			**$3,212.88**
Gross Margin			66%			45%
Capital Equipment MRC	$1,020,000.00			$0.00		
Depreciation MRC	$612,000.00	7.31%	$310.66	$0.00	0.00%	$0.00
Infrastructure MRC	$393,805.19	4.70%	$199.90	$0.00	0.00%	$0.00
Labor MRC	$2,712,306.95	32.38%	$1,376.81	$521,668.31	6.27%	$264.81

OPERATING COST	$3,718,112.14	44.39%	$1,887.37	$521,668.31	6.27%	$264.81
TOTAL COST per UNIT (VDC)		100.00%	$4,251.40		100.00%	$4,224.33
TOTAL COSTS per VM			$141.71			$140.81

Figure 12: VCPP Rental (VCD / VCF) and MSP SaaS (CDS / VMC) unit cost comparison

As shown in figure 12, comparing between the asset-heavy and asset-light models on a per-VDC basis leads to a very similar per unit cost. The total cost per VM is higher compared to the TCO model used in the first white paper to calculate the on-premises IaaS TCO. That was expected due to lower scale of the new platform to run the additional multi-cloud business, additional features like Tanzu Kubernetes Grid and Tanzu Mission Control to offer Kubernetes and Container services, as well as HCX for workload mobility. Beyond that, the discounting structure for the MSP calculation was based on one-year commit contracts, which can be further optimized by moving to three-year MSP commits for certain hosts. Overall, the calculation clearly shows that moving to an asset-light model can be a viable alternative to VMware Cloud Providers building any IaaS platform via a CapEx model, not just for additional global expansion and multi-cloud use-cases as focused on in this paper.

In the example of ACME Cloud expanding to a global multi-cloud business, another important factor is distribution of the additional 3,000 VMs across global locations. The original TCO model only considered the initial and shared costs of IaaS in one region. For a multi-cloud business model addressing the use-case of serving customers in different global regions, these costs obviously multiply based on the number of regions that are served. Setting up a whole new business and operation in another country to serve the local cloud customers would result in a large portion of unrecoverable or "sunk" costs. In general, these include market entry costs that cannot be liquidated at market exit. While some of these costs, like setup of datacenter facilities, may be turned into more flexible OpEx by sourcing from local providers, other costs, for example associated with founding the subsidiary or transaction costs for finding and hiring the entire local staff base, cannot. And these costs are usually hard to recover from normal revenue streams because they would increase the service price and make the foreign provider less competitive compared to established local providers. They would also require a level of scalability the market entrant may not have for several years, which would be another competitive disadvantage. Lastly, the whole process of standing up foreign data centers and cloud services would take several months to complete and impact the time to profitability, compared to provisioning and scaling in hyperscale public clouds within hours or minutes via an MSP SaaS model.

Let's consider the potential number of VMware Cloud regions that ACME might choose from to serve customers. As of analyzing, VMC on AWS alone was available in 18 regions worldwide.[8] Further, customers have preferences towards running in one hyperscale public cloud over another due to their existing investments and know-how or application modernization requirements which rely on adjacency to native cloud services. Giving customers full flexibility to run and modernize applications in the best cloud for any given workload must therefore include the option to leverage different hyperscale public cloud platforms. If the availability of GCVE and AVS would be added accordingly, the total numbers of cloud regions ACME could serve via its business model would even go all the way up to 50 worldwide.[9]

8. VMC on AWS available Regions: https://docs.vmware.com/en/VMware-Cloud-on-AWS/services/com.vmware.vmc-aws-operations/GUID-9708C514-30FE-4D75-A3E4-E358166EEB1F.html
9. Azure VMware Solutions availability by region: https://azure.microsoft.com/en-us/global-infrastructure/services/?products=azure-vmware,azure-vmware-cloudsimple&regions=all

At global scale, the asset-light model generates 17 percent higher operating profit at the same revenue while giving customers the choice of over 3 times the number of Cloud locations.

From a TCO perspective, this would hypothetically mean factoring in shared IaaS and setup costs for up to 50 additional data center sites, including potential market entry costs in foreign countries, spare capacity as well as capital lockup for an asset-heavy model, effectively making the business model unsustainable.

Charging the same price point across the two models, the asset-light MSP SaaS model based on CDS and VMC achieves the desired operating margin of 30 percent, irrespective of the number of regions and locations that are supported by ACME.

In the VCPP rental model using VCD and VCF, the additional overhead for setup and management infrastructure across only 15 sites in the example calculation already reduces the operating margin significantly to only 13 percent (Figure 13). It would further mean limiting customer choice of locations by 70 percent, which is highly likely to make the offering less compelling due to customer preferences for certain hyperscale public clouds or locations that need to be covered. The driving factor here is the number of global locations supported, which may in practice be higher or lower dependent on the scale of any give VMware Cloud Provider's the multi-cloud business and their customer requirements.

As shown in figure 13, even though VMware costs are 39 percent higher in the asset-light MSP SaaS model, the profitability is up 17 percent at equal revenue.

	VCD / VCF Rental (15 locations incl. Management sites)	CDS / VMC SaaS (15 locations, no management sites)
Total Revenue	**$ 13,777,392**	**$ 13,777,392**
Total Costs	$ 11,918,598	$ 9,699,665
Cost of Goods Sold	$ 6,056,397	$ 7,800,257
Gross Profit Margin	$ 7,720,995	$ 5,977,135
	56%	43%
Operating Costs	$ 5,862,201	$ 1,899,408
Operating Profit	**$ 1,858,794**	**$ 4,077,727**
Margin	**13%**	**30%**
Cost Breakdown:		
Fixed Cost	$ 1,267,451	$ -
Variable Cost	$ 10,651,147	$ -
Capex	$ 1,260,540	$ -
Opex	$ 10,658,058	$ 9,699,665
VMware Cost	$ 5,059,937	$ 7,018,175

Figure 13: Cost Breakdown based on global availability

Subscription Business Model Optimization

The final aspect of building the multi-cloud business case is optimizing the financial metrics that are relevant for a subscription business. As elaborated on in this white paper, the metric that gives insights into the health of a subscription business is the ratio between customer lifetime value and costs to acquire a customer. Several attributes of an MSP SaaS supplier model generally have an impact on LTV and CAC:

- **Rapid scalability:** Adding new capacity to any established cloud region can be done within minutes, allowing providers to serve even unforeseen and rapid increases in capacity demand from customers. This will increase responsiveness, customer satisfaction and reduce customer churn due to performance or capacity bottlenecks compared to an asset-heavy model where new hardware needs to procure and installed based on forecasting. It further leads to increased ARPC since consumption can increase instantly when demanded by customers.
- **Rapid global availability:** New VMware Cloud and CDS instances can be deployed in any available datacenter region in short time. In case of VMware Cloud on AWS, a new SDDC instance is created within two hours on average. This allows providers to advertise and acquire customers globally with confidence and support regional marketing and sales campaigns without large investments upfront, effectively reducing CAC.
- **Expanded feature set:** From its initial availability in 2017, VMC on AWS has gotten multiple significant additions of features. Many of these have been added without increasing costs, such as the recent inclusion of VMware Tanzu Kubernetes Grid and Tanzu Mission Control Essentials. Similarly, CDS has gotten additional capabilities and product integrations like Container Service Extension or VMware Cloud Director Availability. In all cases, these additional features can be offered as additional services to customers, which lead to increased ARPC from up- and cross-sell. Given that some of these capabilities are free of charge for providers and can further generate higher margins, they lead to an increase in customer LTV.
- **Self-Service consumption:** Through Cloud Partner Navigator, ACME Cloud customers can expand their capacity via self-service without necessary involvement from the provider. Beyond that, they can discover and self-provision additional VMware MSP SaaS offerings like VMware Cloud Disaster Recovery for DR, vRealize Operations Cloud for Monitoring, vRealize Automation Cloud for Automation and Orchestration, CloudHealth for cost and compliance management or vRealize Log Insight Cloud and Network Insight Cloud for logging and visibility. This self-service approach reduces sales and marketing costs and further increase ARPC through cross-sell.
- **Application Marketplace:** Even inside CDS, customers can discover easy to deploy applications and platform services from AppLaunchpad, which can expose a curated catalog of hundreds of ready-to-use packages from VMware Marketplace, including Bitnami and ISV solutions. This further increases up-sell and platform utilization without negatively impacting CAC.

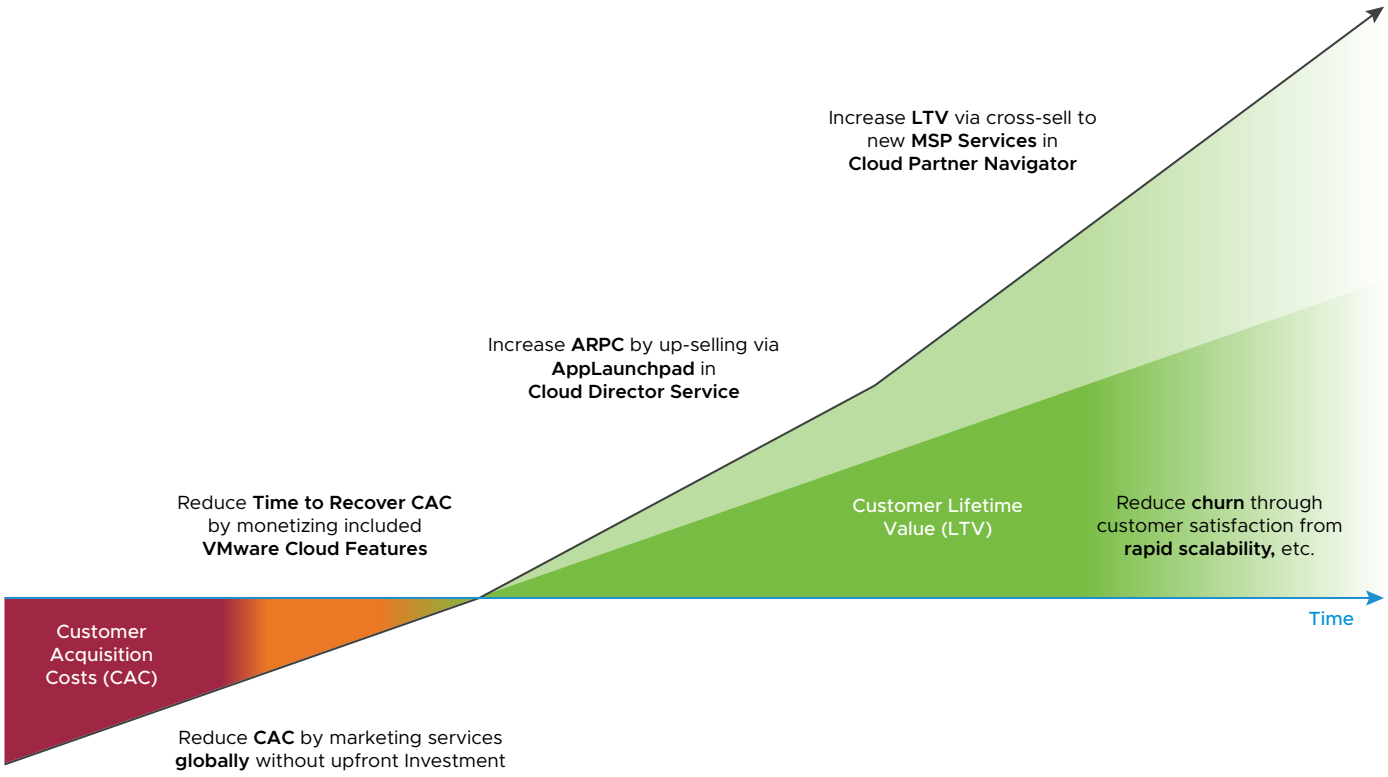


Figure 14: Subscription KPI improvements from MSP services and tools

Subscription Business Growth vs. Profitability

Optimizing these subscription metrics is mainly a means to rapidly grow and scale a business or business unit in its early stages. They are forward looking, leading KPIs with a focus on increasing market presence, which usually comes at the cost of lowered lagging KPIs like ROI, EBITDA and operating profit. The reason for this is that despite the improvements that MSP SaaS offerings bring, the Customer Acquisition Costs for marketing and sales can be significant, depending on growth targets and market circumstances. But in a subscription economy, every dollar spent on CAC is a dollar that generates future return over the entire lifetime of the customer relationship. It's an investment in growth and recurring revenues, not just today's cost of making a one-time sell like in a traditional business model. Cloud providers need to make that trade-off between focusing on growth of a new business model and instantly reaching the desired profit margins across all offerings.

LTV:CAC Ratio - Discounted Approach	Profit-Focus	Growth-Focus
Annual Recurring Revenue - ARR Year 1	$909,168	$1,636,502
Total Number of Customers - Year 1	20	36
Average Revenue Per Customer - ARPC	$45,458	$45,458
x Gross Margin	43%	43%
Gross Contribution Per Customer	$19,687	$19,722
Annual Churn Rate	10%	7.5%
Annual Retention Rate	90%	92.5%
Financial Discount Rate - NPV	8%	8%
x Margin Multiple	5.0	6.0
Customer Lifetime Value - LTV	$98,433	$117,693
Sales & Marketing Spend (% of revenue)	10%	50%
Total New Customers	20	36
Customer Acquisition Cost - CAC	$4,546	$22,729
Time to Recover CAC (Months)	3	14
LTV:CAC Ratio	21.7x	5.2x
Operating Profit	$2,164,243	($1,392,682)
Operating Profit Margin	30%	-10%
Annual Recurring Revenue - ARR Year 2	$1,587,547	$2,898,498
Total Number of Customers - Year 2	38	69
Annual Recurring Revenue - ARR Year 3	$3,925,508	$7,216,110
Total Number of Customers - Year 3	54	100

Figure 15: Growth- vs. Profit-focused Subscription Business

After evaluating both, a growth-oriented and a profit-oriented approach for the new multi-cloud business, ACME concluded that financing rapid growth was most appropriate and should lead to almost double the number of customers within 3 years, supported by significantly higher Annual Recurring Revenue. Similar to startup businesses, it is not uncommon for new business units to operate on low or negative operating margins to accelerate growth and ARR to capture the market opportunity.

The initially lower operating margins likely to accompany a growth-oriented approach can be cross-financed from the established IaaS business or value-add services and maximized once the desired growth target of an additional 3,000 VMs across 100 customer VDCs, which constitutes a 43 percent growth in revenue, is reached. The industry benchmark for growing SaaS and subscription businesses is commonly an LTV:CAC ratio between approximately 3:1 and 5:1. Lower ratios mean slower growth and excessive Time to Recover CAC of over 12 to 18 months. However, too high ratios can indicate more potential to maximize growth through marketing and sales spending. Both alternative strategies are detailed in figure 15.

Conclusion

In this white paper, we have described the business model for a VMware Cloud Provider focusing on multi-cloud solutions that enable global availability of services, workload mobility, as well as adjacency to native hyperscale public clouds for the purpose of application modernization. This multi-cloud business model is an attractive addition to any existing VMware Cloud Provider IaaS business that allows partners to address these use-cases in a cost effective and low risk manner. For some partners, it may even be an alternative to investing in their own data center business altogether, while still delivering higher value managed services on a familiar platform.

By entering an asset-light model with the VMware MSP model, the example partner ACME Cloud was able to achieve instant positive cash flow while sustaining the desired margin of 30 percent even in the face of globally expanding operations to serve customers in all geographies and clouds. Scaling the business into multiple locations in different regions and with close proximity to native hyperscale public cloud services would hardly be sustainable via a CapEx model. The described asset-light model provided 17 percent higher margin in the example calculation, while giving customer full flexibility of workload placement based on geography or hyperscale preference. This places the expanded multi-cloud business in the same level of margin as the established data center-based IaaS model, despite significantly reduced economies of scale in the new business.

Beyond that, we have shown in our example the positive impact on subscription business metrics such as Customer Acquisition Costs and Customer Lifetime Value. For VMware Cloud Provider partners not heavily depended on EBITDA and ROI as the metrics for investment performance, these subscription business metrics will become increasingly important to observe the health of the business. Especially when entering a new market segment, the focus on subscription growth metrics has shown to double the pace of service adoption from customers while reducing churn. The VMware MSP asset-light model overall improves the ratio of Customer Lifetime Value to Customer Acquisition Costs as the primary metric for subscription growth businesses.

To learn more and get started with building a compelling hybrid-cloud provider business, reach out to your partner manager or visit https://cloud.vmware.com/providers/.

List of Figures

Appendix 1: TCO Model Parameters

The following cost items are reflected in the TCO models for all calculations:

- Term for business modelling: 36 months
- Depreciation of hardware: 60 months
- Network and security costs per physical network port: 1,500 USD
- Rack costs p.a.: 25,000 USD
- Rack units occupied by servers: 30
- FTE salaries per year:
  - Server Admin: 89,960 USD
  - VMware Admin: 101,631 USD
  - Storage Admin: 129,414 USD
  - Network and Security Admin: 105,923 USD
  - Software Engineer: 111,983 USD
  - Consultant: 245,000 USD
  - Product Manager: 150,000 USD
- Loading factor for FTEs: 1.25
- Labor Productivity:
  - Servers per FTE: 100
  - VMs per FTE: 800
  - Networking ports per FTE: 2,500
  - Storage GBs per FTE: 250,000
- Annual Working hours: 1.950

Resource Management:

- Oversubscription CPU Target: 4 vCPU per 1 pCPU
- Oversubscription RAM Target: 1:1
- Virtualization Overhead: 15%
- Physical Storage Capacity Provisioned: 80%
- VDC Utilization Rate: 100%

VDC Sizing:

- VDC vCPU Allocation: 100 vCPU
- VDC GHz Allocation: 348 GHz
- VDC Memory Allocation: 480 GB

Average VM:

- No. of vCPU: 4
- vCPU Speed: 2.9 GHz

- Memory Allocated: 16 GB
- Storage Capacity per VM: 200 GB
- Avg. vNIC count per VM: 2
- Uptime per VM: 100%

Pricing:

- Price per vCPU / hr: 0.006 USD
- Price per GB vRAM / hr: 0.0075 USD
- VDC Storage price per month per GB: 0.12 USD
- Mobility Capability per month: 720 USD
- Kubernetes Capability: 240 USD

The following cost items are reflected in the TCO model for VCPP rental with VCF and VCD:

Physical Server Profile:

- CPU per Server: 2
- Core per CPU: 28
- GHz per Core: 2.7
- Hyper-Threading: Active
- Ram per Server: 1,536 GB
- Network Port per Server: 4
- Cost per Server: 30,000 USD
- Rack Units per Server: 1
- Other monthly Costs: 18.50 USD for ITSM management software

Shared Costs:

- DC Sites with Management Pods: 15
- VMs per Pod: 30
- Typical management VM:
  - Memory: 32 GB
  - Disk Size: 550 GB
  - VM Memory Reservation: 50%
  - VM Uptime: 100%
- Physical Storage Capacity Provisioned: 60%
- Servers per Management Pod: 6
- CPU Sockets per Server: 2
- GHz per Core: 2.3
- Cores per CPU: 16
- Hyper-Threading: Active

- RAM per Server: 256 GB
- Network Ports per Server: 2
- Cost per Server: 12,010 USD
- Rack Units per Server: 1
- Other monthly Costs: 18.50 USD for ITSM management software

Solution Engineering Costs:

- No. Of Engineering FTEs: 3
- Engineering Duration: 3 Months
- Engineering Time Allocated to Project: 75%

Development Costs:

- No. Of Development FTEs: 3
- Engineering Duration: 4 Months
- Engineering Time Allocated to Project: 75%

Training Costs:

- No. of FTEs to train: 10
- Training Cost per FTE: 2,865 USD

The following cost items are reflected in the TCO model for MSP SaaS with VMC and CDS:

VMC Sizing:

- Resources Minimum Required (inc. Virt. Overhead): 13,800
- Total Hosts Required - Resource Bound [#]: 98
- vDC Resources Allocation / Utilization: 12,000
- Total Typical VMs [#]: 3,000
- VMC Host Type: VMC i3
  - GHz per Core [GHz]: 2,3
  - CPU per server [#]: 2
  - Core per CPU [#]: 18
  - Total Physical Cores: 36
  - Hyper-Threading: Inactive
  - Total Logical Cores with Hyperthreading: 36
  - RAM per Server [GB]: 512
- Region: Oregon (USD)
- Pricing: 1 Year RI
- List Price: 51.987,00
- MSP Commit: 4R

CDS Sizing:

- CDS Enabled: Yes
- Pricing: 1 Year RI
- List Price per Core: 142,80
- MSP Commit: 5R

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