Google Cloud VMware Engine

Understanding the total cost of ownership

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Executive summary

The complexity and high costs of owning and operating on-premises software applications are among the many reasons businesses are gravitating towards the cloud. In the past, moving, scaling, building, and deploying applications in the cloud proved to be costly roadblocks and detours for IT teams.

Today's cloud computing model reduces the cost and complexity of acquiring and maintaining infrastructure by eliminating the need for businesses to manage cloud infrastructure and solutions on their own. Cloud providers take responsibility over migration, storage, backup and disaster recovery, power and cooling, data center space, and various other support services.

Introducing Google Cloud VMware Engine

Google Cloud VMware Engine (VMware Engine) frees IT from the time and operational cost of migrating VMware components (e.g. vSphere, vCenter, VSAN, and NSX-T) and workloads to Google Cloud. Additionally, running VMware workloads natively in a dedicated, private cloud means you can use the same tools, processes, and policies you used on premises. This increases business agility without risk, app refactoring, or having to reskill your teams. You don't have to modify your applications or switch to new cloud-compatible applications, which helps keep your data protected and saves you time and costs that can be reallocated to application modernization efforts.

Notably, one of the major drivers of the infrastructure cost reduction is the substantial decline in provisioning excess 'capacity'. IT teams know that capacity can be increased (or decreased) on demand with Google Cloud Platform (GCP) without having to manage hardware infrastructure or deal with lengthy procurement cycles. Additionally, new technologies lower unit costs due to their scale and operational efficiency. It's no wonder IT teams are so keen to capture the benefits of cloud computing.

What remains a challenge for IT teams, however, is demonstrating the economic benefits of cloud computing to business executives – especially given the significant investments in existing infrastructure and legacy applications. Thankfully, in the context of VMware Engine, you can leverage the value of your existing investments in VMware tools while maintaining operational continuity and avoiding data center management, hardware refreshes, and procurement cycles.

Before making a case for adopting VMware Engine, you should perform a thorough total cost of ownership (TCO) comparative analysis, as it offers a more holistic and tangible assessment of the costs associated with deploying cloud-based versus on-premises technology solutions. This paper discusses how you can estimate the true TCO of VMware Engine versus your traditional on-premises data center.

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What is infrastructure TCO?

Infrastructure total cost of ownership is a holistic financial estimate that includes both direct and indirect costs associated with deploying and operating a product or service over the long term.

In relation to VMware Engine, TCO is an estimate of total infrastructure costs associated with running applications on VMware infrastructure in Google Cloud compared to an on-premises data center.

What is included in our estimate of infrastructure TCO?

As the provider, we are responsible for all the infrastructure required to run VMware Engine, such as servers, software, operating systems, databases, power and cooling, facility space, and associated internal and third-party personnel costs. The ability to package all of the application software, infrastructure, and services together in a cloud-based multi-tenant subscription model yields substantial economies of scale and skill, while minimizing variable costs for vendors. These cost savings allow us to lower customer TCO even further.

Our calculation of VMware Engine TCO comprises the following categories and components:

Server hardware
Upfront capital expenditure required to acquire server hardware

Storage hardware
Upfront capital expenditure required to acquire primary storage hardware for VMware virtual machines

Networking hardware
Networking equipment costs to provide Layer 2 connectivity to servers and network connectivity to storage (LAN or SAN)

Hardware vendor support costs (servers, storage and networking)
Annual support costs charged by hardware vendor

Network edge costs (gateway/router, VPN, firewall, Public IP)
Cost attribution of network edge services to the VMware environment – including gateway, VPN, DMZ environments, and firewall – plus network service provider costs, like public IP allocations

VMware licenses and support
License and subscription costs for vSphere, vSAN, NSX-T, and HCX

Data center facilities
Capacity, power, and cooling costs

Security and Compliance
Edge protection, such as DDoS and security monitoring, and compliance certification costs

VMware personnel
Personnel costs for VMware stack deployment, ESXi, SAN, networking infrastructure configuration, failure handling, and upgrades orpatch management

Data center personnel
Personnel costs for facilities maintenance, security, hardware rack-stack, and cabling

IT tools
Cost of ticketing and monitoring tools for hardware health (memory, fan, and disk failures)

Support
General help/triage, performance management, and troubleshooting for the VMware stack, networking, storage, and related infrastructure

Adding it all up

To effectively compare the total cost of ownership of your on-premises environment, you should add up the costs associated with these categories.

Make sure to take a holistic approach by determining the total cost of using and maintaining your on-premises IT infrastructure over time – not just the upfront cost. Your audit should give you a strong understanding of the network, storage, and database capacity needed to run the applications you're looking to migrate to the cloud.

While some believe there is a "crossover point" where legacy infrastructure becomes cheaper than the subscription-based cloud infrastructure, studies indicate otherwise. Research from PwC[1], for example, suggests businesses do not reach a breakeven point where their traditional on-premises environment has a lower TCO than SaaS-based cloud infrastructure.

[1] Source: "The future of software pricing excellence: SaaS pricing" report by PwC

How does VMware Engine TCO compare to on-premises TCO?

In an on-premises data center, IT typically has to purchase, configure, and operate VMware infrastructure months in advance in anticipation of expanding workloads and compute or storage failures. As existing systems often don't run at full capacity, there is excess capacity sitting idle on each server or node, making it an unnecessary expense for businesses.

With VMware Engine, you can spin up new VMware capacity in minutes – you never have to buy or support more infrastructure than you need. The cost of acquiring an additional unit of compute, network, or storage is much lower in GCP than in your on-premises data center. Additionally, GCP allows you to transition from a fixed IT cost model to a variable one and, depending on your accounting methods, move expenses from CAPEX to OPEX.

A review conducted by Google, in partnership with industry analysts and consultants, discovered that enterprise virtual environments running on hyper-converged architecture are typically constrained by available memory or computing resources. For this reason, Google Cloud VMware Engine comprises newer processors, more memory per host (768 GB/node), and more total storage (22.4 TB). As you can run more VMs per node, you end up with a lower TCO for every virtual machine.

Why is VMware Engine TCO lower?

There's a combination of factors making it possible to offer VMware Engine at attractive prices and deliver compelling TCO savings to businesses.

Some of the key factors are:

Software-driven operations management

The entire lifecycle management of hardware and VMware software in VMware Engine is driven by custom-developed intelligent software. The operating platform automates many of the repetitive, manual tasks that would previously take days or weeks to perform, such as implementing firewall rules or providing a public IP address. Additionally, it provides features that are optimized for the VMware stack, such as fast provisioning and fast node replacement.

VMware Engine can provision a new instance in as little as 30 minutes and add capacity in approximately 15 minutes, enabling your organization to scale without having to plan, procure, and provision new hardware.

Economies of scale at Google

Google Cloud Platform pools the resource requirements of its customer base when purchasing equipment. This scale of operations is very difficult to match by businesses that purchase equipment for their own use. By buying hardware in bulk, GCP receives volume discounts from its suppliers and the savings ultimately are passed on to customers.

Higher utilization of hardware

VMware Engine enables you to purchase and provision nodes on demand (hourly or with commit). This eliminates the need for you to maintain spare capacity for sudden peaks in demand and for replacement nodes after failures.

It's important to note that you're not purchasing virtual machines in the cloud. Instead, you're buying an entire infrastructure stack – that is, a high-performance, hyperconverged stack consisting of compute, memory, and storage that runs on VMware natively. Simply put, you're purchasing nodes, with each node supporting a number of virtual machines. Additionally, you operate these nodes the same way you would on premises. By overprovisioning the CPUs and thin-provisioning the storage, you optimize the efficiency of your environment.

Potential to lower TCO further by leveraging GCP services

Cloud technologies are 'elastic', meaning you can increase and decrease capacity quickly and easily, rather than hoard capacity. Infrastructure TCO can be further decreased by using lower-cost bulk cloud storage services for static data, like backups.

Additional benefits of VMware Engine

The business case for cloud migration needs to address questions beyond cost. For example, how will VMware Engine enable innovation, increase agility, and reduce time to market for new products and services?

There are a number of benefits that VMware Engine can deliver to businesses outside of cost reduction, including:

Agile infrastructure

You can add or remove capacity from an existing VMware environment in just minutes, enabling business agility.

Hybrid application architectures

Applications running in VMware Engine can be enhanced or modified to take full advantage of Google Cloud Platform resources. This creates hybrid architectures that unlock cloud benefits while using legacy applications. For example, data stored in virtual machines in VMware Engine can be consumed by GCP data management services, such as BigQuery.

Rapid insights-driven innovation

By leveraging a complete suite of serverless data analytics and machine learning tools, you can derive valuable insights from your data and make those insights understandable, actionable, and accessible to decision makers in your business. These Google Cloud native tools can be used to uncover new opportunities, drive innovation, and increase speed-to-market for new products and services.

VMware partner ecosystem services

VMware Engine provides access to the entire vSphere ecosystem of third-party IT management tools, as well as the complete core vSphere platform and its default interface, vCenter. You can leverage a wide range of capabilities – including provisioning, monitoring, support, inventory management, backup and disaster recovery, security, network and IP address management, identity management, and ticketing – all managed through a single pane of glass.

Take the next step

Whether your business is seeking long-term cost reduction through consolidation and optimization or needs a significant increase in compute capacity to enable a major growth initiative, adopting VMware Engine is ultimately a business decision – not a technology one. It must align with goals, needs, and objectives of the business. So, tell us what you're solving for and one of our experts will help you find the best solution.

Visit cloud.google.com/vmware-engine

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