

Simplify the Move to Hybrid Cloud and Gain Business Agility

Some businesses fear the effort involved in migrating workloads to the cloud, but Intel and Google Cloud are making migration easy, quick and worry-free with Google Cloud VMware Engine.



Many enterprises have extensive VMware-based solutions running on-premises. They recognize the potential benefits of cloud computing, but IT can find it daunting to move many complex and diverse applications to the cloud. They don't have time to learn new tools and use separate management systems for separate on-premises and cloud-based workloads. Google Cloud VMware Engine solves these challenges by making the migration simple, using the familiar VMware stack. To better support customers' performance needs, the service runs on 2nd Generation Intel® Xeon® Scalable processors.

Challenge

- Seamlessly migrate existing VMware-based applications to Google Cloud without refactoring or rewriting.
- Lower the barrier to entry, by adopting tools that are familiar to the customer.
- Provide powerful performance, so customers experience the value of the cloud.

Solution

- Google Cloud VMware Engine is based on the same VMware software stack that enterprises use in their on-premises data centers.
- 2nd Generation Intel Xeon Scalable processors deliver the compute performance required for enterprise workloads (2.6 GHz normal, 3.9 GHz burst).¹
- The compute and storage infrastructure is single tenant—not shared by any other customer—providing enhanced security, privacy and predictable performance.
- The solution is verified and certified by VMware.

Results

- Extend or bring your on-premises workloads to Google Cloud without changes.
- Accelerate hybrid cloud adoption to increase scalability.
- On-demand, self-service model helps increase business agility and control costs.
- With Google Cloud VMware Engine, customers can modernize their infrastructure with latest-generation CPUs, high-throughput networking and all-flash Non-Volatile Memory Express (NVMe) storage. They can also modernize their workloads through the use of cloud service integrations and platforms such as Anthos.

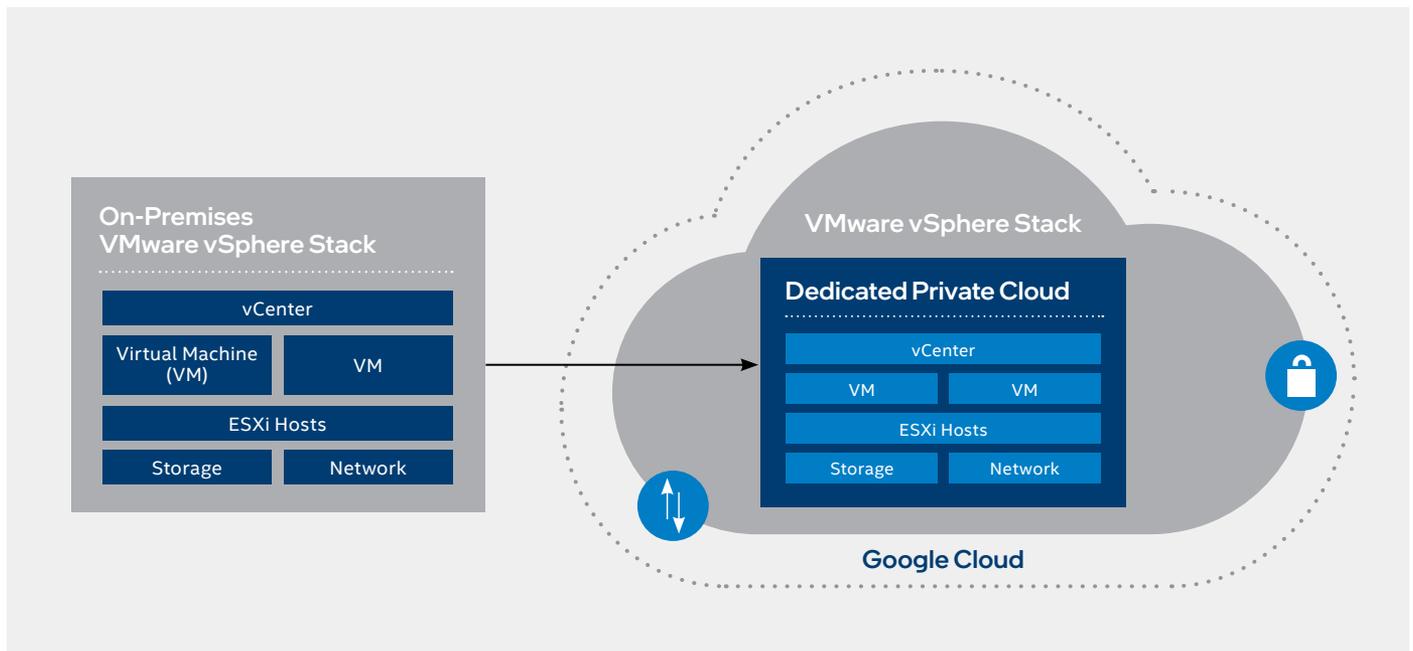


Figure 1. Google Cloud VMware Engine enables enterprises to seamlessly build, run, and scale with VMware on Google Cloud.

- Mitel reports that by running its workloads on Google Cloud VMware Engine, they see a 4x improvement in the units of work completed over time.²
- Differentiated features of the service help customers simplify and accelerate their move to the cloud.

Wanted: An Easy On-Ramp to the Cloud

Google Cloud estimates that Google can reduce your VMware environment total cost of ownership (TCO) by 25 percent or more.³ Other benefits the cloud offers include scalability and business agility. But as tantalizing as cloud-based benefits are, many enterprises have been slow to migrate their VMware-based workloads to the cloud. One of the primary barriers to cloud adoption is concern about manageability and refactoring applications for a virtual machine (VM) or container environment. The standard data center VMware environment includes a diverse number of applications. These applications can include large databases, middleware, 3-tier apps, data warehouses, and business apps for areas such as supply chain, human resources and financial planning. These workloads are often interdependent and difficult to re-architect to be cloud-native. Also, it is often thought that IT must use separate tools to manage on-premises and cloud-based workloads, further slowing down cloud adoption.

To address these concerns, Google Cloud launched Google Cloud VMware Engine. This service enables IT to seamlessly migrate VMware-based workloads to the cloud, and continue using the exact same management tools they already know and love, without any need for code refactoring. With VMware workloads running in the cloud, enterprises can scale up (or down) on demand depending on business needs, and pay only for the resources they use. For example, if an online retailer sees a sudden spike in traffic due to holiday sales or product demand, more VMs can be quickly added. If traffic slows, those VMs can be taken down. Using Google Cloud VMware Engine, enterprises can be agile in delivering value to customers.

Solution Details

Google Cloud VMware Engine delivers a fully managed VMware Cloud Foundation hybrid cloud platform, including VMware vSphere, vCenter, vSAN, NSX-T, and HCX. All this runs in a dedicated environment on Google Cloud's high-performance infrastructure, to support enterprise production workloads. Enterprises can extend or bring their on-premises workloads to Google Cloud in minutes by connecting to a dedicated VMware environment (see Figure 1). What's more, nothing about the workload needs to change: storage, IP addressing, networking, and CPU configurations all stay the same as long as they are compatible with Google Cloud VMware Engine infrastructure. With Google Cloud VMware Engine, Google Cloud meets enterprises where they are today to minimize change and disruption and let them adopt the goodness of the cloud at their own pace.

All it takes to launch a fully functional instance of Google Cloud VMware Engine is four clicks from the Google Cloud Console.⁴ The instances run on high-performance, reliable and high-capacity infrastructure, characterized by the following:

- 2nd Generation Intel Xeon Scalable processors that support up to 72 vCPUs
- Fully redundant and dedicated 100 Gbps networking
- Hyperconverged storage using vSAN with modern NVME-based solid-state drives (SSDs)
- Ample memory and raw data capacity per node (see Table 1)

The powerful Intel® Xeon® Scalable processors underlying Google Cloud VMware Engine provide several specific technologies that contribute to high performance:

- Intel Mesh Architecture delivers lower TCO with improvement in average performance and enables more VMs per server over previous generation.

Component	Details
Processor	2x Intel® Xeon® Scalable Gold 6240 processor (2.6 GHz default, 3.9 GHz Turbo, 36 cores, 72 threads)
Memory	768 GB
Storage	~20 TB all-flash Non-Volatile Memory Express (NVMe) distributed vSAN
Network	100 Gbps, non-oversubscribed, fully redundant network design

Table 1. Technical components of Google Cloud VMware Engine.

- Vector Byte Manipulation Instructions (VBMI) help lower latency and improve throughput.
- Data Plane Development Kit (DPDK) includes libraries used with NSX-T that support line-rate stateful services (such as load balancers and network address translation).
- VMware vSphere vMotion lets customers seamlessly migrate VMs based on Intel® architecture between on-premises and Google Cloud VMware Engine.
- Google Cloud VMware Engine with Intel architecture enables IT organizations to manage workloads for increased agility, capacity, transparency, visibility and resilience. The result is optimal virtual desktop infrastructure (VDI) performance and a better experience for end users using remote desktops.

“Google Cloud and Intel are continuously working collaboratively to optimize innovation solutions such as Google Cloud VMware Engine. These efforts will help our customers accelerate their journey to the cloud.”

— **Manoj Sharma**
Google Cloud VMware Product Manager

Google Cloud VMware Engine customers have access to the full suite of VMware management tools, such as VMware vRealize Suite and VMware Horizon View. In addition, customers have direct, high-speed access to all the native services available on Google Cloud, such as BigQuery, Anthos, AutoML, and artificial intelligence services. Other differentiating aspects of Google Cloud VMware Engine include the following:

- Customers can deploy a wide choice of third-party tools.
- Highly available infrastructure delivers four-nines availability.⁵
- The compute and storage infrastructure is single-tenant, which improves privacy, security and predictability.
- Global routing enables geographically separated data centers to communicate without using a gateway or virtual private network (VPN).

- Google Cloud VMware Engine is verified and certified by VMware and includes end-to-end Google Cloud support.

Intel and Google: Working Together to Support Customers

Intel and Google have been collaborating and co-innovating to support customers for almost a decade. The two companies share a vision for creating a software-defined and hyper-converged cloud infrastructure. As such, it was natural that the two companies worked together to design Google Cloud VMware Engine to best meet customers' performance requirements. Joint engineering efforts have resulted in optimized VMware vSAN arrays and other optimizations that help customers get the performance they need. Intel and Google Cloud also engage in co-marketing activities, and Google Cloud is a member of the Intel® Cloud Insider Program, which provides a focal point for the cloud ecosystem.

Business Results

Google Cloud VMware Engine, running on Intel® hardware, simplifies migration to the cloud and provides access to the latest innovations in compute, storage, network and application services. Companies can seamlessly shift workloads from an on-premises data center to the cloud. By improving VM density through over-provisioning, hyper-threading and other techniques, enterprises can lower total costs. The pay-as-you-go model provides an affordable way to expand capacity in under 40 minutes.⁶ By taking advantage of the relationship between Google Cloud, Intel, and VMware, customers can reap the business agility and cost advantages of Google Cloud without worrying about complexity, reskilling or manageability.

About Google Cloud

Google Cloud provides organizations with leading infrastructure, platform capabilities, and industry solutions. It delivers enterprise-grade cloud solutions that take advantage of Google's cutting-edge technology to help companies operate more efficiently and adapt to changing needs, giving customers a foundation for the future. Customers in more than 150 countries turn to Google Cloud as their trusted partner to solve their most critical business problems.

Learn More

You may find the following resources helpful:

- **Intel® Xeon® Scalable processors**
- **Google Cloud Platform**
- **Intel and VMware Partnership**

Find the solution that is right for your organization. Contact your Intel representative or **visit the website to learn more.**



¹ <https://ark.intel.com/content/www/us/en/ark/products/192443/intel-xeon-gold-6240-processor-24-75m-cache-2-60-ghz.html>

² <https://www.vmworld.com/en/video-library/video-landing.html?sessionId=1597771074119001Ucel>

³ <https://cloudonair.withgoogle.com/events/emea-vmwareaas-launch>

⁴ <https://cloud.google.com/blog/topics/hybrid-cloud/google-cloud-vmware-engine-is-generally-available>

⁵ <https://cloud.google.com/blog/topics/hybrid-cloud/google-cloud-vmware-engine-is-generally-available>

⁶ <https://youtu.be/NZj7hn2JHs8?t=26>

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