Google

Google Compute Engine

For more information, visit
http://cloud.google.com/compute

Institute for Systems Biology
Revolutionizing Science. Enhancing Life.

"Until now, we haven't had a way to work with big data sets as effectively as with Google Compute Engine. Having a tool that lets researchers get answers fast will have a major impact on our work."
—Ilya Shmulevich, associate professor at the Institute for Systems Biology and a lead investigator for The Cancer Genome Atlas project

Google Compute Engine – computation in the cloud

Google Compute Engine lets you run large-scale computing workloads on the same infrastructure that runs Google Search, Gmail and Ads. You can launch virtual machines on-demand, manage network connectivity using a simple but flexible networking solution, and access a variety of data storage alternatives from your virtual machines. Google Compute Engine is in limited preview; please visit cloud.google.com to learn how to sign up.

Google Compute Engine provides the following features:

- **Full Virtual Machines** Kernel-hosted virtual machines running either Ubuntu or CentOs. Launch 1, 2, 4, or 8 virtual core instances with 3.75GB of memory per virtual core.

- **Flexible Storage** Google Compute Engine offers three different storage options to meet your varying needs:

  - **Ephemeral disk** A simple block device that is bound to the lifecycle of the virtual machine (VM). When you stop the VM, the data is lost. All data written to this device is encrypted to maintain strong data privacy.

  - **Persistent disk** A replicated, network-connected storage service that is comparable to the latency and performance of local disks. Data written to this device is replicated to multiple physical disks in a Google data center. You can also create snapshots of your disks for backup/restore purposes, and can mount these devices in a mode that allows multiple virtual machines to read from a single device. As with our ephemeral disk, all data is encrypted at rest.

  - **Google Cloud Storage** Easily access your Google Cloud Storage data buckets from inside a virtual machine. Our seamless authentication makes it easy to securely access your data without having to manage keys in your virtual machines.

- **Flexible networking** We offer a network solution that makes it easy for you to connect your virtual machines to each other and to the Internet.

  - **Isolation** Strong controls in our network stack protect our customers' network traffic from unauthorized access.

  - **External IP addresses** Connect your virtual machine to the Internet with either static IP addresses or ephemeral addresses that are assigned to your machines.

  - **Configurable firewall** Control who can talk to which virtual machine(s) with a simple firewall system.

- **Open tooling** We offer simple UI and command-line tooling to configure and launch your virtual machines.
  - **Open API** All of our tools are built on our open RESTful API, and we plan to release our tools as open source to allow others to create customized tools for specific needs.
  - **Open ecosystem** We are working with providers such as RightScale, Puppet Labs, and OpsCode to deliver high-quality, familiar tools that work well in our environment.

What You Get/How Companies Benefit

Scale
The service is optimized for scale and to run process-intensive workloads. You can quickly turn up and down large constellations of virtual machines.

Value
Google infrastructure has been refined over the years for scale and efficiency. With Google Compute Engine, you get up to 50% more compute for your money than other leading cloud providers.

Performance
Predictable performance is critical when designing real-world solutions. It's much easier to design applications when you can depend on the performance of your infrastructure. We have focused on isolating user workloads so that you'll experience the same level of performance regardless of what other users do. Our core technologies, such as our persistent block devices, are designed to be consistently fast and reliable.

Flexible and open environment
Configure full Linux virtual machines any way you like. We are also creating a strong ecosystem with partners to provide solutions that can help you manage your existing large-scale workloads.

Environmental impact
Run your workload in some of the world's most efficient data centers, which are up to 50 percent more efficient than traditional data centers. Google is the first major Internet company to earn external certification of our environmental standards.

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