Nominee: Google

Nomination title: Google Compute Engine

Developers want to get their apps in the hands of users quickly, and to have the freedom to scale as quickly as demand grows without having to worry about infrastructure. Google Compute Engine allows developers to build on the same infrastructure that allows Google to return billions of search results in milliseconds, serve 6 billion hours of YouTube video per month and provide storage for 425 million Gmail users.

Google Compute Engine gives developers the flexibility to scale and use resources on-demand while having complete control over the Virtual Machine building blocks. Freed from the complexities of planning, operating and maintaining physical infrastructure and data centers, developers can focus on building the next big thing.

Google Compute Engine empowers developers with the following unique features:

- Google was the first cloud provider to combine live migration technology with data center innovations to implement "transparent migration", delivering higher reliability for virtual machines without user-impacting maintenance events.

- Compute Engine Linux VMs are consistently performant, scalable, highly secure and reliable. Supported distros include Debian and CentOS. Choose from micro-VMs at about a penny an hour to large instances with up to 32 cores and 208 gigs of memory.

- Large compute clusters that benefit from strong and consistent cross-machine bandwidth connect to machines in other data centers and to other Google services using Google's private global fiber network. Advanced Routing and global networking give you control and flexibility in the network layer.

- Preemptible VMs enable Compute Engine customers to save up to 70% on compute-intensive workloads, including financial, big data, insurance, manufacturing, life sciences and engineering workloads, compared to our already industry-leading prices for regular VMs whether you need 50 cores or 50,000.

- Minute-level billing increments (with a 10-minute minimum charge) prevent developers from paying for unused computing time. Sustained use discounts automatically give developers discounted prices for long-running workloads with no complicated planning, sign-up or up-front commitment.

- Ability to spread incoming network traffic across a pool of instances allows users to achieve maximum performance, throughput and availability at low cost.

- Deployment of large clusters of virtual machines can be done quickly and with intuitive tools including a RESTful API, command-line interface and web-based Console. Users can also use tools such as RightScale and Scalr to automatically manage your deployment. Spin up 1000+ node clusters in less than five minutes, making scaling a breeze.

- Platform security features include logging, data encryption, a secure global network, intrusion detection, security scanning, and compliance and certifications. All data written to disk in Compute Engine is encrypted at rest using the AES-128-CBC algorithm. Compute Engine has completed ISO 27001, SSAE-16, SOC 1, SOC 2, and SOC 3 certifications, demonstrating our commitment to information security.

- Google set the standard for container based computing in the cloud with a deep partnership with Docker and stewarding the Kubernetes project.

As a result, Google Compute Engine has enabled a plethora of customers to scale and innovate in their respective industries. MapR, for example, used off-the-shelf Compute Engine Virtual Machines to process 1.5TB of data in 1 minute (the "minute sort" record) - making Compute Engine the first virtual environment to achieve this distinction. Another example is mobile manufacturer HTC, who created a faster, more reliable mobile app experience with Cloud Platform.

To help improve the reliability and reduce bandwidth, HTC built a new mobile app framework on Google Cloud Platform that will allow them to build more apps in the future, faster. A combination of tools — from Google Compute Engine and Google Cloud Storage to Google Cloud Datastore — allows HTC to create a better user experience and free up developers' time to build better features.

To address the issue of disconnectivity and bandwidth usage, HTC relied on Cloud Datastore's data synchronization feature, which allows users to continue updating or editing content (like photos, for example) seamlessly as they venture in and out of connectivity. Once the users regain connectivity, the app will simply fetch the latest changes.

Since Google's backend is stable, our developers can devote their energy to building better features rather than fixing bugs due to low latency. HTC's backend has had zero downtime since it's adopted Cloud Platform. As it builds more apps and increases its customer base, HTC doesn't have to worry about partitioning data or adding more databases because Compute Engine auto-scales.

The company says it's saved 40 percent in IT costs by using Compute Engine and Cloud Platform alone. HTC claims it's also saving money by using Google Cloud Messaging for Android and Google BigQuery. After considering building tools internally, the company is grateful for the time, money and resources saved by using Compute Engine and Cloud Platform.

Another example is Broad Institute, which is a biomedical and genomic research center working in conjunction with MIT and Harvard. Through Cycle Computing's integration with Cloud Platform, Broad Institute recently ran a 50,000+ core workload using CycleCloud with Compute Engine's Preemptible VMs, allowing Broad Institute to perform three decades of cancer research computations in an afternoon. Over the past decade, the Broad Institute has collected and either sequenced or genotyped the equivalent of more than 1.4 million biological samples. They're a pioneer in genomics research to benefit human health. This new data suite is designed to be affordably re-run as new experimental data becomes available, and Preemptible VMs enable that affordability and flexibility to help further the Broad Institute mission.

These are just two ways Compute Engine and Cloud Platform are helping customers achieve unmatched scalability with limited resources. Fueled by Google's technology, both HTC and Broad Institute are able to make a significant impact on their respective industries.

Why nominee should win

- Allows developers to build on the same infrastructure that allows Google to return billions of search results in milliseconds, serve 6 billion hours of YouTube video per month and provide storage for 425 million Gmail users without the complexities of planning and maintaining physical hardware.

- Google was the first to combine live migration technology with data center innovations to implement "transparent maintenance", delivering higher reliability and non-disruptive maintenance.

- Encryption at rest and five completed certifications demonstrate Google's commitment to security.

- Set the standard for container based computing in the cloud with Docker partnership and stewarding the kubernetes project.