

# Local SSD

Local solid-state drive storage for virtual machine instances.

## High-performance, ephemeral storage

Local SSDs are physically attached to the server that hosts your VM instance. This tight coupling offers superior performance, very high input/output operations per second (IOPS), and very low latency compared to other block storage options. Local SSDs are designed for temporary storage use cases such as caches or scratch processing space. Which makes them suitable for workloads like media rendering, data analytics, or high-performance computing.

### ***Access our highest performance block storage***

Directly attaching a Local SSD on the server that hosts your VM instance enables the lowest latency and highest performance storage for temporary use cases like scratch data, caches, or for data replicated at higher layers.

### ***Support a range of workloads***

Different workloads require different VM shapes to achieve the best performance at the right price. Customize the VM shape to your workload or attach to predefined shapes that we offer for typical use cases like data analytics, media rendering, or gaming.

### ***Always encrypted***

Data stored on our infrastructure is automatically encrypted at rest. With Local SSDs, your data is always encrypted with an ephemeral encryption key. The SSDs manage and protect these device-level encryption keys.

## Features

### **Fast IOPS and high-speed throughput**

Choose Local SSDs when you need Google's highest speed ephemeral storage. Reach IOPS of 2,400,000 / 1,200,000 (read/write) and throughput up to 9,360 MB per second / 4,680 MB per second for 9 TB instances.

### **Scale as you need it**

Attach up to 24 Local SSD partitions for 9 TB of total Local SSD storage space per instance. Or you can format and mount multiple Local SSD partitions into a single logical volume.

## Customizable VM shapes

Depending on your workload, you may require specific memory-to-storage configuration to achieve the best performance at the right price. With Local SSDs, attach custom-sized disks to your VMs, allowing you to tailor your storage to your use case, needs, and budget.

## About local SSDs

Compute Engine offers [always-encrypted](#) local solid-state drive (SSD) block storage for virtual machine (VM) instances. Each local SSD is 375 GB in size, but you can attach a maximum of 24 local SSD partitions for [9 TB per instance](#). Optionally, you can [format and mount multiple local SSD partitions](#) into a single logical volume.

Unlike [Persistent Disks](#), Local SSDs are physically attached to the server that hosts your VM instance. This tight coupling offers superior performance, very high input/output operations per second (IOPS), and very low latency compared to persistent disks. See [Configure disks to meet performance requirements](#) for details.

**Warning:** The performance gains from local SSDs require certain trade-offs in availability, durability, and flexibility. Because of these trade-offs, Local SSD storage is **not** automatically replicated and **all data on the local SSD may be lost** if the instance stops for any reason. See [Local SSD data persistence](#) for details.

Local SSDs are suitable only for temporary storage such as caches, processing space, or low value data. To store data that is not temporary or ephemeral in nature, use one of our [durable storage options](#).

You cannot stop a VM with a local SSD via the gcloud CLI or the console. However, Compute Engine does not prevent you from shutting down a VM from inside the guest operating system (OS). If you do shut down a VM with a local SSD through the guest operating system, the data on the local SSD is lost. Make sure that you migrate your critical data from the local SSD to a persistent disk or to another VM before [deleting the VM](#).

If local SSDs do not meet your redundancy or flexibility requirements, you can use local SSDs in combination with other [storage options](#).