

# Planning for Bare Metal Solution

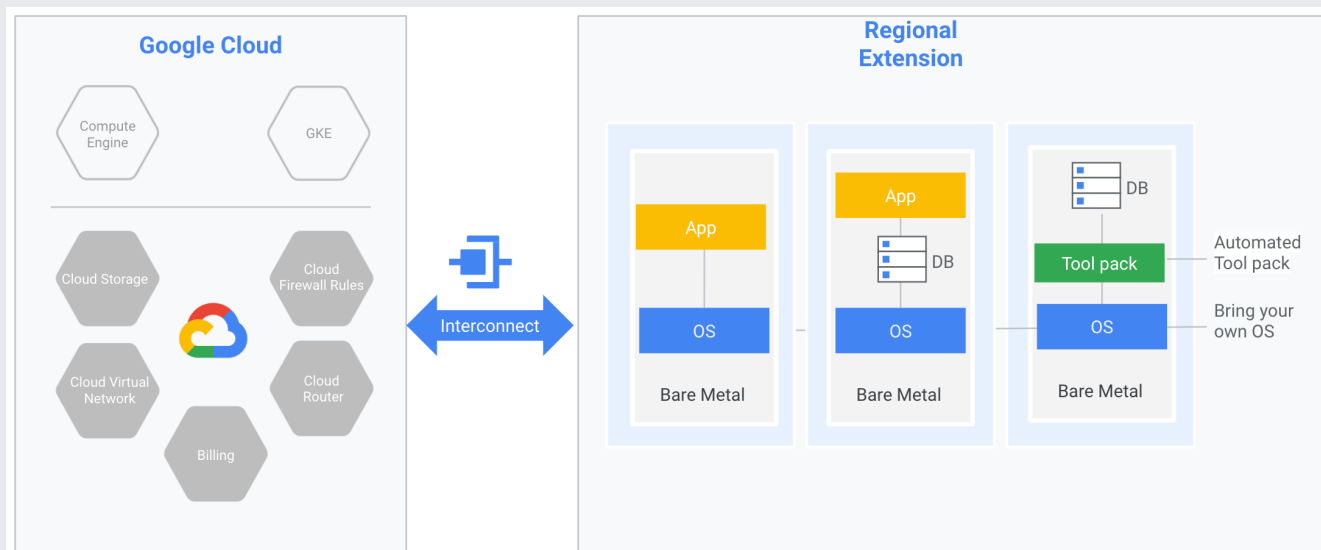
Bare Metal Solution provides a secure environment in which you can run your specialized workloads on high-performance, bare-metal machines.

Use Bare Metal Solution to run:

- Third-party virtualization software.
- Applications that require direct, low-level access to the server.

## What Bare Metal Solution provides

Bare Metal Solution is a managed solution that provides purpose-built HPE or Atos bare-metal machines in regional extensions that are connected to Google Cloud by a managed, dedicated, high-performance connection.

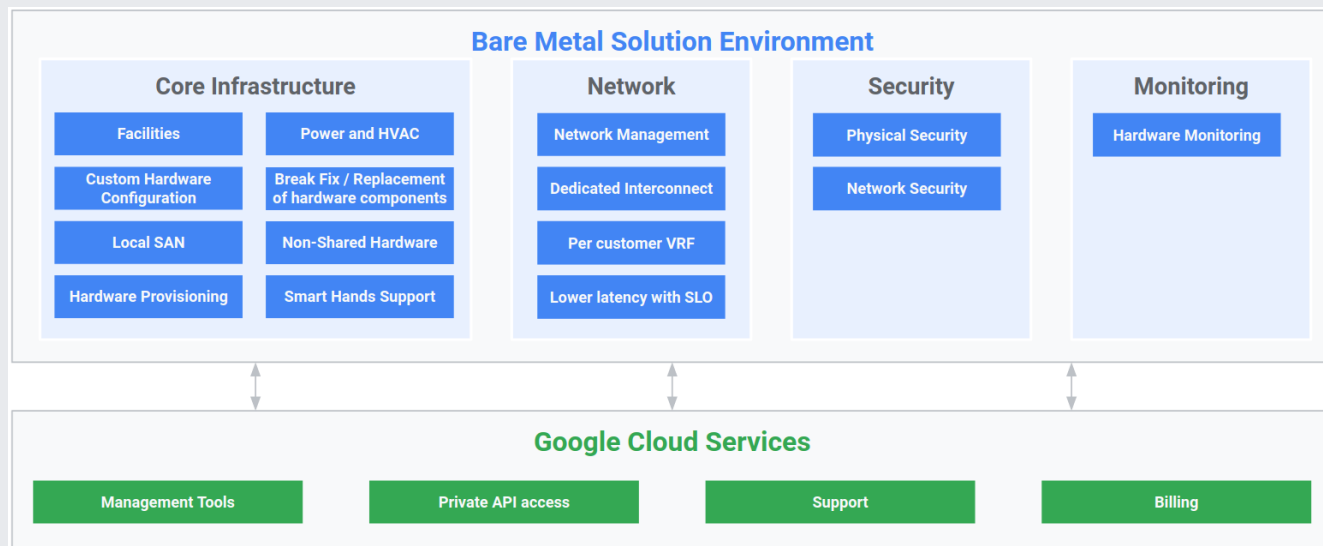


With Bare Metal Solution, Google Cloud provides and manages the core infrastructure, the network, the physical and network security, and hardware monitoring capabilities in an environment from which you can access all of the Google Cloud services. The core infrastructure includes secure, controlled-environment facilities, and power.

The Bare Metal Solution also includes the provisioning and maintenance of the custom, sole-tenancy hardware with local SAN, and smart hands support.

The managed network includes a Google Cloud managed Dedicated Interconnect (/network-connectivity/docs/interconnect/concepts/dedicated-overview) low-latency connection, and per-customer virtual routing and forwarding (VRF).

The available Google Cloud services include private API access, management tools, support, and billing.



## Your responsibilities in a Bare Metal Solution environment

After your Bare Metal Solution order is provisioned and handed over to you, consider the environment as an extension of your on premises environment, with a low-latency network fabric to workloads that are running in the same Google Cloud region.

You are responsible for the software, applications, and data that you use and store in the Bare Metal Solution environment. Your responsibility for the software, applications, and data includes:

- Licensing
- Security, including:
  - Application security
  - OS patching and security updates
  - Intra-VRF network transport encryption

- Application and OS logging and monitoring
- Application or workload maintenance
- Backups, including backup security encryption
- Support for your applications, as per your ISV agreements

You are responsible for the licensing of all of your software. Bare Metal Solution uses a bring-your-own-license (BYOL) model.

The operating system and any hypervisor software are included in the software that you are responsible for. The operating system or hypervisor is installed for you, but as soon as you receive control of the machines in your Bare Metal Solution environment, you assume all responsibility for them.

As a part of your responsibility for the security of your software and applications, you are responsible for applying the latest available security patches and software updates.

Finally, you need to design and implement your solutions for backup and recovery, high-availability, and disaster recovery.

## Regional availability

Bare Metal Solution is currently available in the following Google Cloud regions:

Region	Location
<code>australia-southeast1</code>	Sydney, Australia
<code>europa-west2</code>	London, England, UK
<code>europa-west3</code>	Frankfurt, Germany
<b>Coming soon:</b> <code>southamerica-east1</code>	Osasco (São Paulo), Brazil
<code>us-east4</code>	Ashburn, Northern Virginia, USA
<code>us-west2</code>	Los Angeles, California, USA

If you do not see the region that you need in the preceding table, contact [Google Cloud Sales](https://cloud.google.com/contact) (<https://cloud.google.com/contact>).

## Machine configurations

The Bare Metal Solution offers machines in pre-configured sizes, as shown in the following table, or you can order custom sizes.

Each bare-metal machine comes with 200 GB of network attached storage for the boot disk.

By default, CPU hyper-threading is disabled in Bare Metal Solution machines. If you need hyper-threading, let your sales representative know or, if you already have Bare Metal Solution, open a service request.

CPU cores	Sockets	RAM	CPU platform family	Ethernet ports
16	2	384 GB	Intel Xeon Gold, 6200 series, 3.2 GHz	4 port 25GbE NIC
24	2	768 GB	Intel Xeon Gold, 6200 series, 3.0 GHz	4 port 25GbE NIC
56	2	1,536 GB	Intel Xeon Platinum, 8200 series, 2.2 GHz	4 port 25GbE NIC
112	4	3,072 GB	Intel Xeon Platinum, 8200 series, 2.7 GHz	4 port 25GbE NIC

## Storage

Storage is provided by a fiber channel storage area network (FC SAN).

You can choose between the following storage options, which you order in 1 TB increments.

Storage type	Snapshot support	Common Workloads
All flash	Yes	Mission-critical production workloads
Standard disk	Yes	Local backups or archival workloads

## Operating systems

When you place an order for Bare Metal Solution, you can specify the operating system (OS) that you need installed on your machines.

You must obtain all necessary OS licenses from the OS vendor. Bare Metal Solution uses a bring-your-own-license (BYOL) licensing model.

After your Bare Metal Solution environment is delivered to you, you are responsible for the configuration and management of your OSs, including applying updates and security patches and obtaining support.

### Linux

You can request the installation of any of the following Linux OS vendor versions on your Bare Metal Solution machines:

- Oracle Enterprise Linux (OEL)
  - 7 (latest update)
- Red Hat Enterprise Linux (RHEL)
  - 7 (latest release)
  - 8 (latest release)
- SUSE Linux Enterprise Server (SLES)
  - Coming soon: 15 (latest service pack release)

### Windows

You can request the installation of any of the following versions of Microsoft Windows Server on your Bare Metal Solution machines:

- Coming soon: Windows Server 2016 Enterprise
- Coming soon: Windows Server 2019 Enterprise

## Hypervisors

When you place an order for Bare Metal Solution, you can request that a hypervisor be installed on your machines. If you request a hypervisor, you must install any operating system yourself.

You must obtain all necessary licenses from the vendor of the hypervisor. Bare Metal Solution uses a bring-your-own-license (BYOL) licensing model.

After your Bare Metal Solution environment is delivered to you, you are responsible for maintaining your hypervisor by applying updates and security patches.

You can request the following hypervisor:

- Oracle VM
  - 3.4 (latest release)

## Networking

A Bare Metal Solution environment in a given Google Cloud region resides in a secure extension of the region that is connected by a [Dedicated Interconnect](/network-connectivity/docs/interconnect/concepts/dedicated-overview) connection that is managed by Google Cloud.

Google Cloud monitors round-trip latencies between VM instances in Compute Engine zones and the Bare Metal Solution environment in the same region. For Google Cloud locations in Los Angeles, Ashburn, and London, median round-trip latencies are regularly measured at 0.6 ms to 1 ms.

Your Bare Metal Solution environment is in its own Google Cloud project with its own VPC network, both of which are managed by Google Cloud.

## VPC peering

You connect to your Bare Metal Solution environment by peering a VPC network that you create on Google Cloud with the managed VPC network of your Bare Metal Solution environment. [VPC network peering](/vpc/docs/vpc-peering) (/vpc/docs/vpc-peering) enables private RFC 1918 connectivity between your VPC network and your Bare Metal Solution environment.

If you have bare-metal machines in multiple regions, you need to peer with the Bare Metal Solution environment in each region separately.

Peering between your VPC network and the VPC network of your Bare Metal Solution environment is subject to all of the requirements and restriction that are documented in the VPC documentation. For more information, see [Restrictions](/vpc/docs/vpc-peering#restrictions) (/vpc/docs/vpc-peering#restrictions).

## Defining your own IP address spaces

Bare Metal Solution enables you to bring your own IP subnets for use in the bare-metal environment. This enables you to fit your Bare Metal Solution into any existing IP address schema that your enterprise might have.

When you place an order for Bare Metal Solution, you provide the internal IP address range that you want to use in the Bare Metal Solution environment. Google Cloud configures your machines with IP addresses from this range and uses the range to configure back-end routing.

To avoid addressing conflicts with the IP address range, reserve the IP address range in your VPC network on Google Cloud.

For information about how to reserve an IP address range, see [Reserve the IP address range for your Bare Metal Solution environment](/bare-metal/docs/bms-setup#bms-reserve-ip-range) (/bare-metal/docs/bms-setup#bms-reserve-ip-range).

## Advertising routes to your Bare Metal Solution environment

The routes that you expose to your Bare Metal Solution environment are determined by networks and services in your Google Cloud or on-premises environments that need access to the devices or applications in your Bare Metal Solution environment and vice-versa.

Some services that might require routes include NTP servers, DNS servers, LDAP servers, logging services, monitoring services, and so forth, as well as any other workloads and applications that need to communicate with the Bare Metal Solution environment.

Bare Metal Solution does not come with internet access. If you need to, you can setup routing to access the internet through any existing internet gateways that you have, either on Google Cloud or on premises.

## Required networking information for your Bare Metal Solution order

When you submit a Bare Metal Solution order, include the following networking information:

- The name of the VPC network that you are using to peer with the Bare Metal Solution environment.
- The Google Cloud project ID that you are using with your Bare Metal Solution environment.
- The IP range(s) that you intend to use in your Bare Metal Solution environment. If you will use an existing VPC network with Bare Metal Solution, make sure that no existing IP addresses in the network conflict with this IP range. use with Bare Metal Solution.
- The number of VLANs you need in your Bare Metal Solution environment.
- The bandwidth, in 1 Gb increments, that you need between your Google Cloud environment and your Bare Metal Solution environment.

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