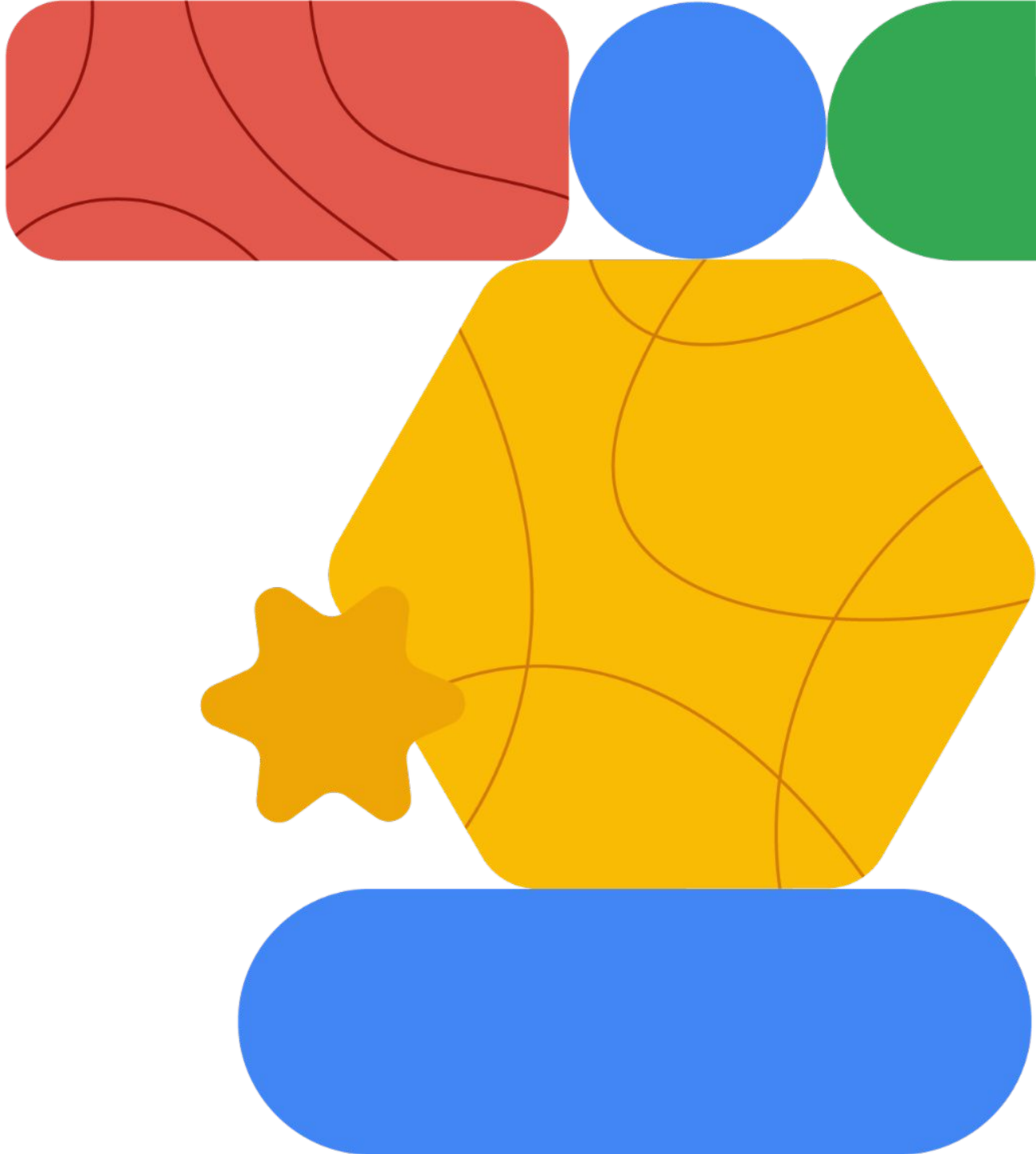
Google Cloud

Networking in Google Cloud

Introduction to Network Architecture



Today's agenda

01 Cloud network architecture overview

02 Getting started

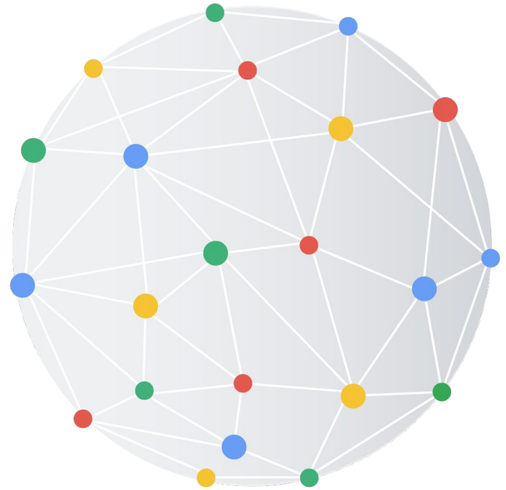
03 Quiz

What is network architecture?

01 It refers to the design of a virtual network in Google Cloud.

02 It defines how virtual machines and other resources connect and communicate.

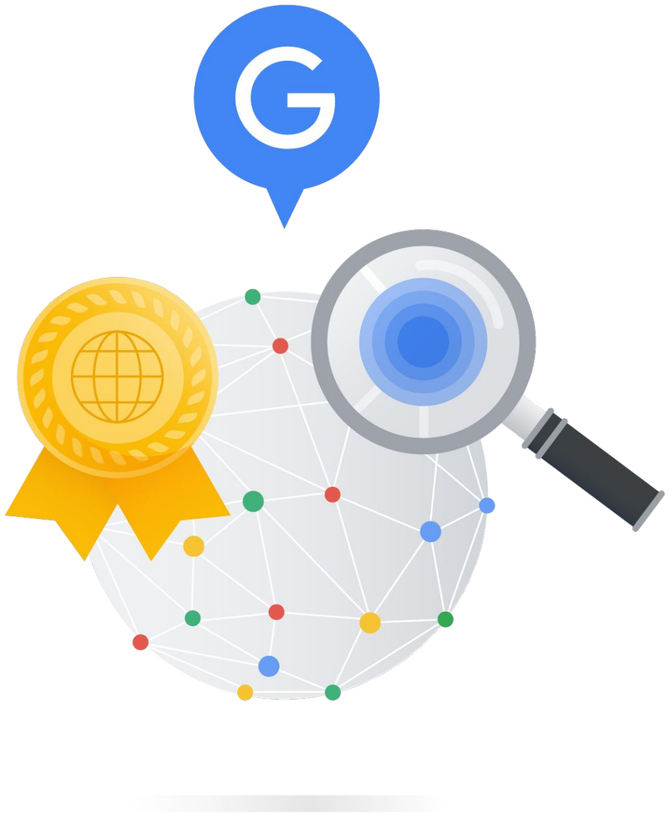
03 It includes software, protocols, and Google Cloud managed services.



The importance of a good network architecture

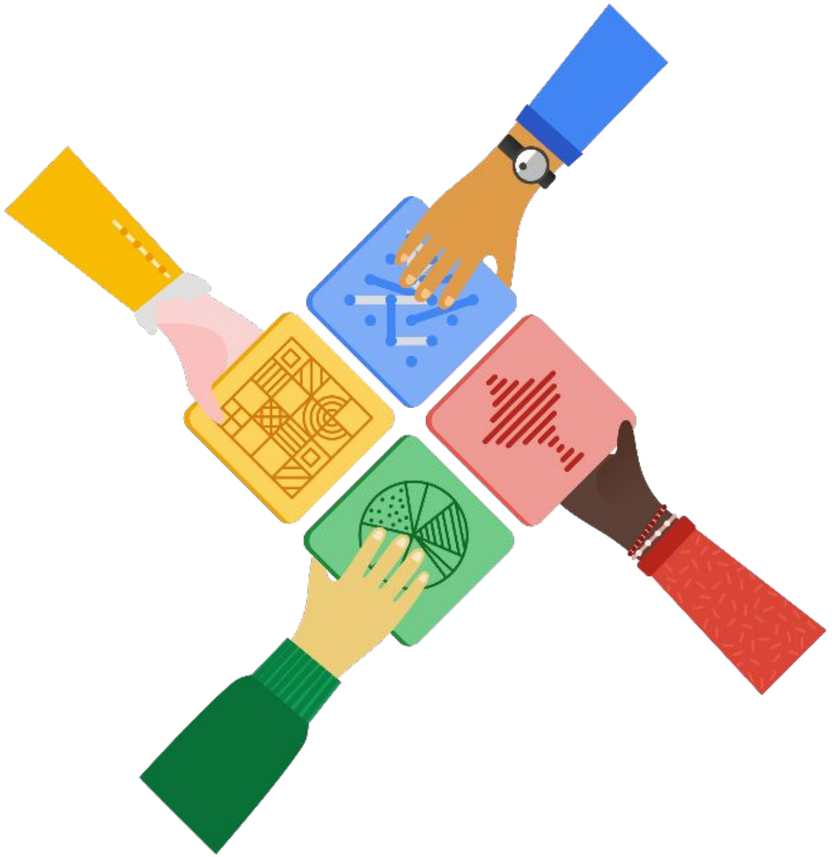
- The network design impacts the scalability, security, performance, and cost of your network.
- A well-designed network can support your business growth.
- A poorly designed network can lead to outages, security breaches, and slow performance.

Note:
Not all network designs are good for all situations.

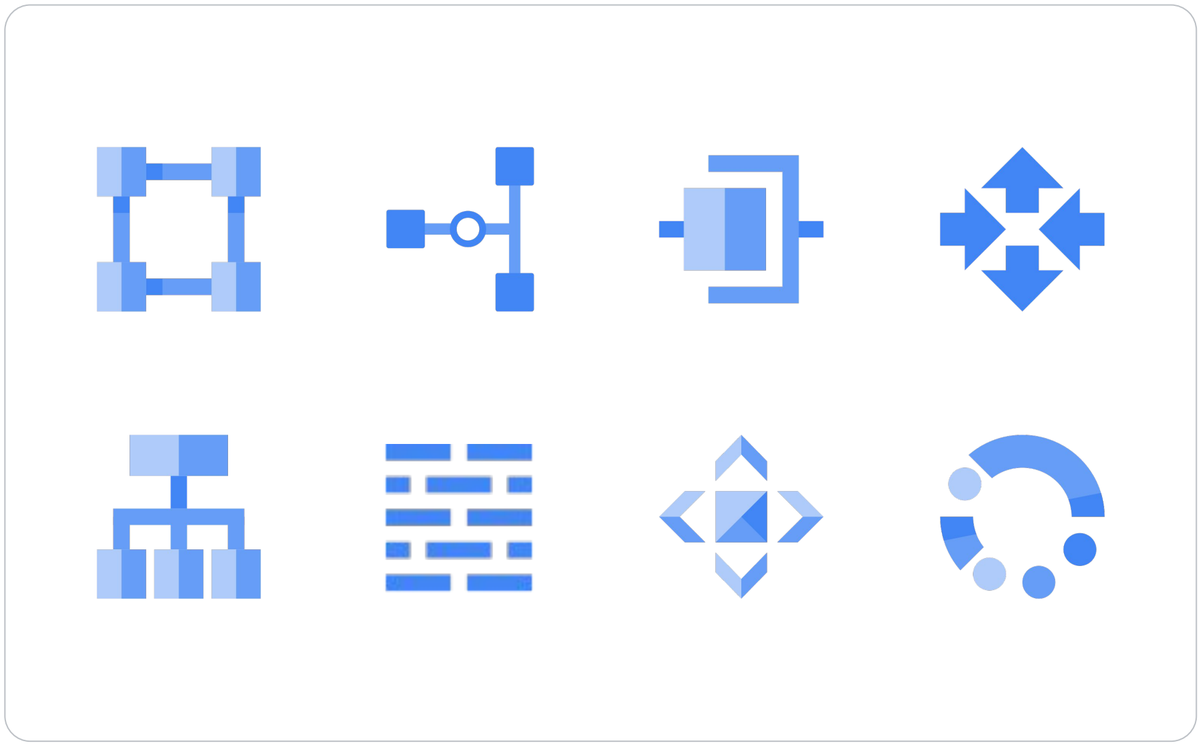


Designing a network for your organization

- Assess your organization's specific needs and requirements.
- Define metrics for scalability, security, performance, and cost efficiency.
- Choose the right Google Cloud networking services and tools based on your needs.
- Design a secure, scalable, and cost-effective architecture using best practices.

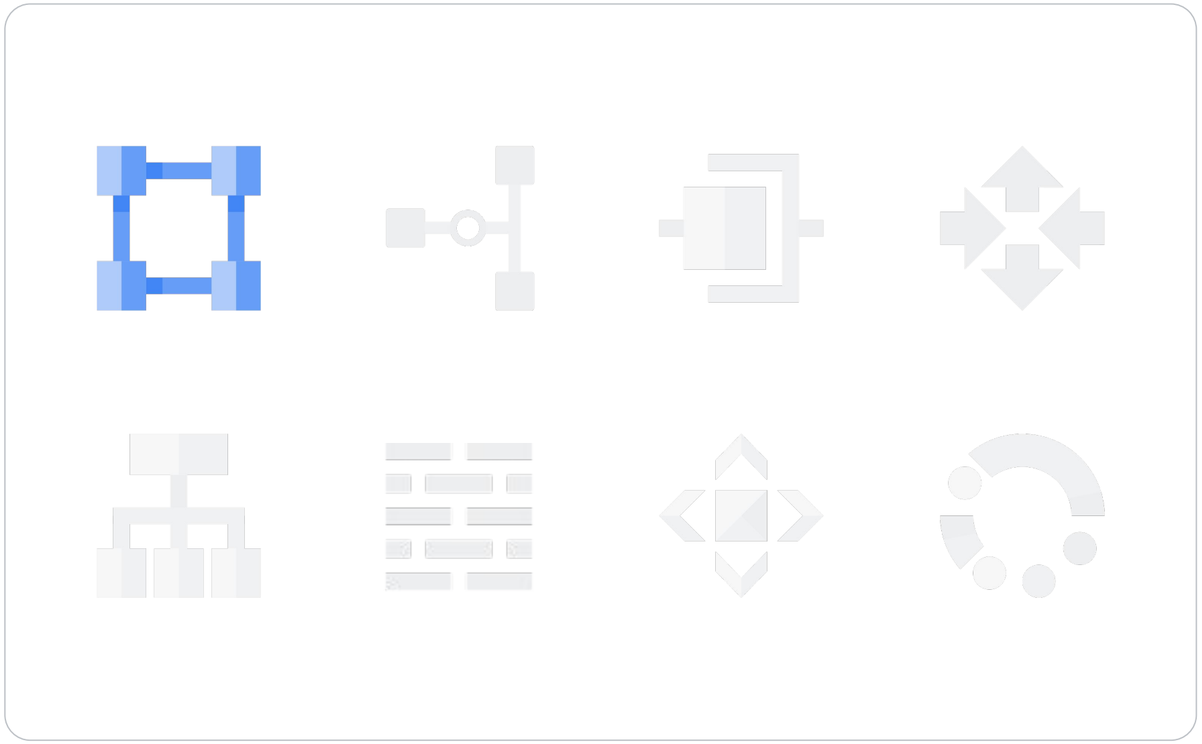


Google Cloud



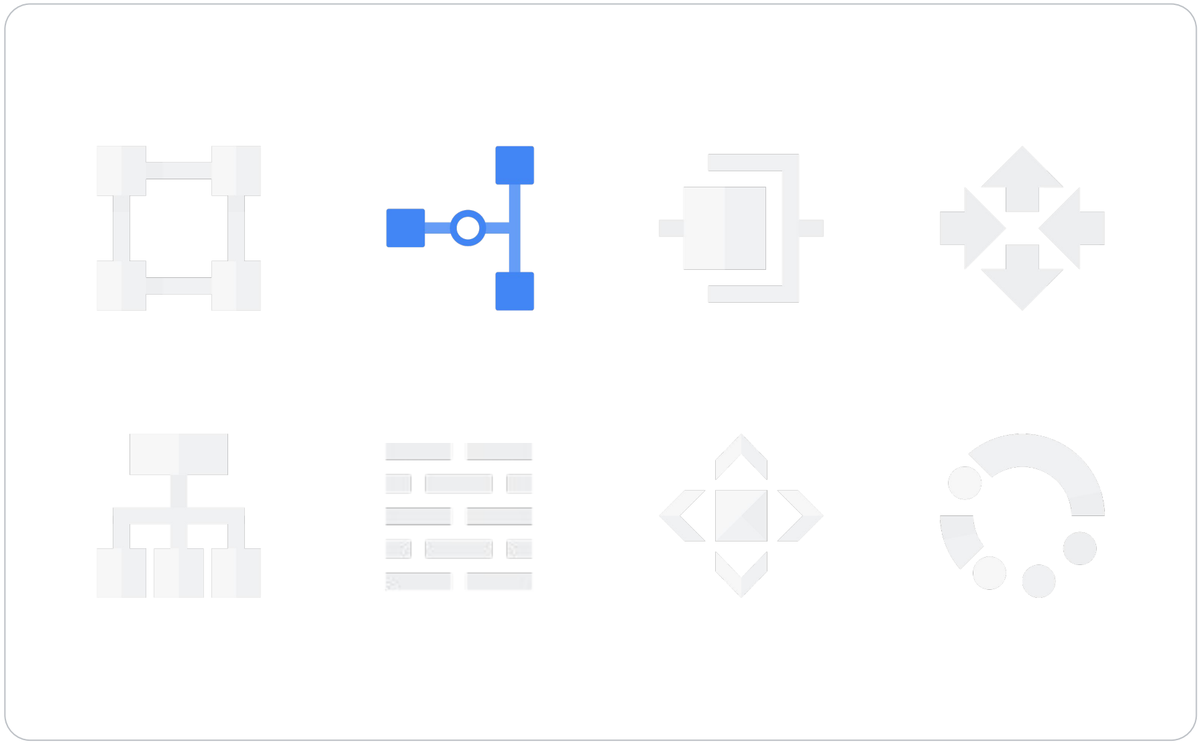
Network architecture components

VPC network: Creates isolated virtual networks for secure resource grouping.



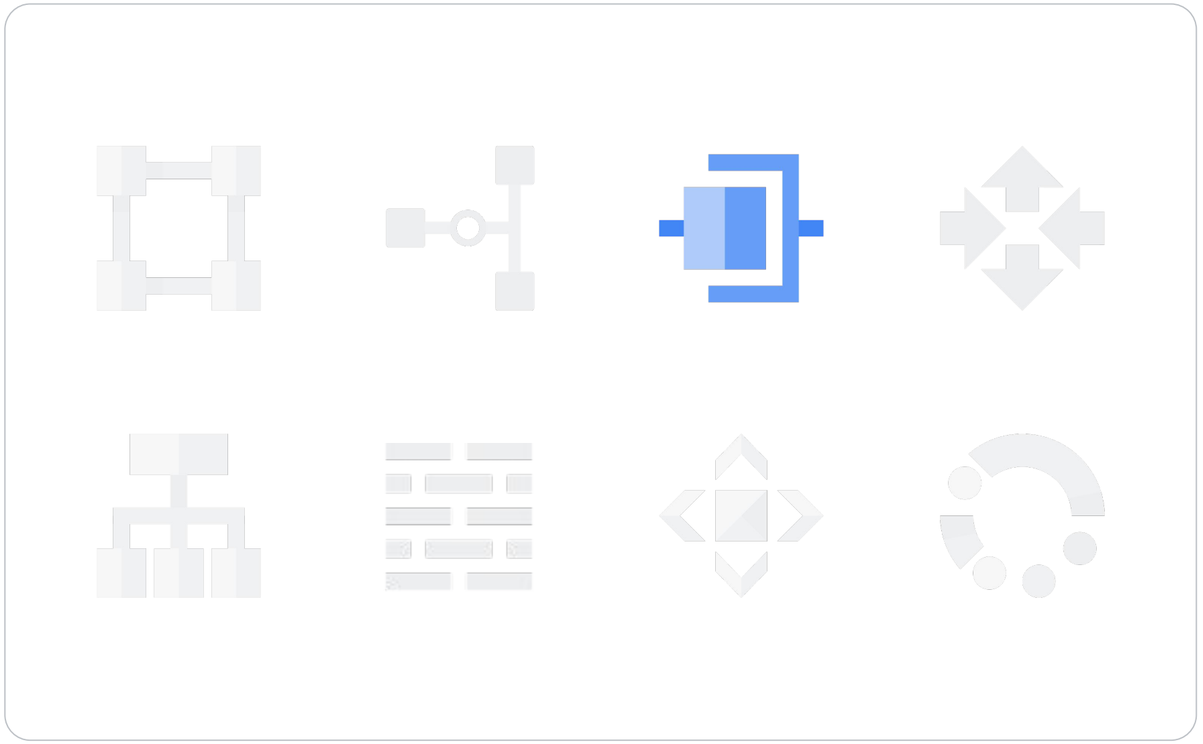
Network architecture components

Cloud VPN: Establishes secure connections between your on-premises network and Google Cloud.



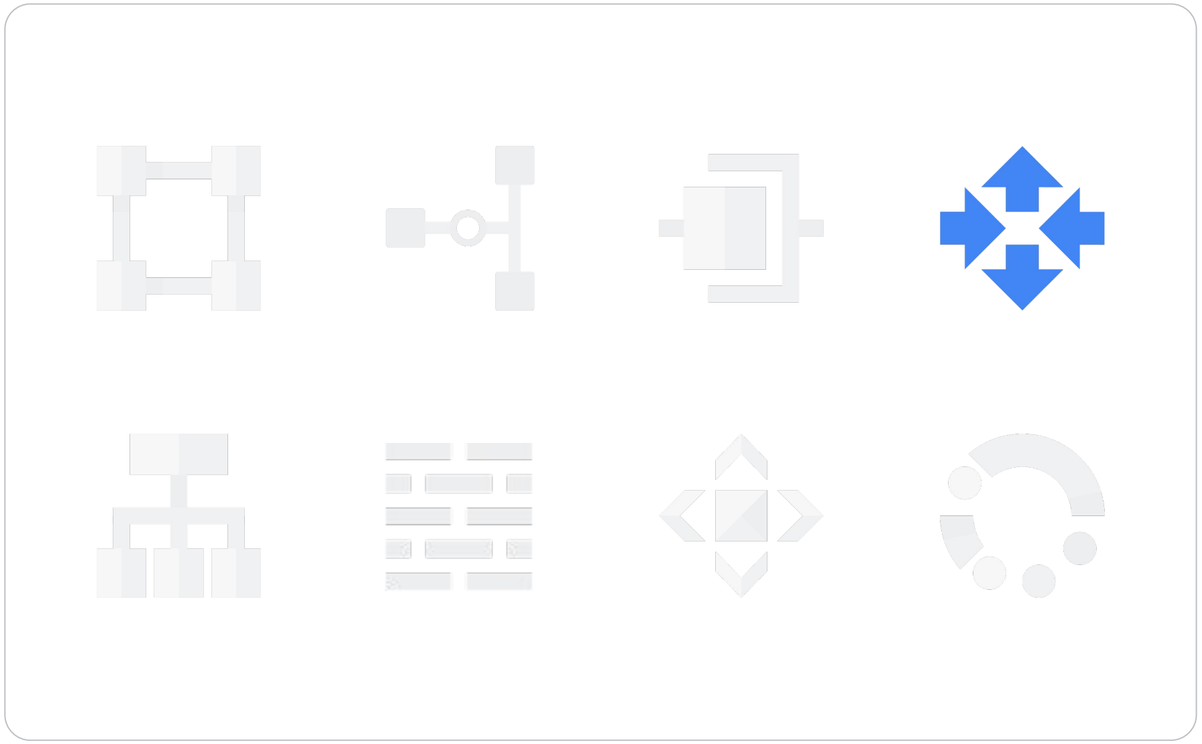
Network architecture components

Cloud Interconnect: Directly connects your on-premises network to Google Cloud for high-bandwidth, low-latency connections.



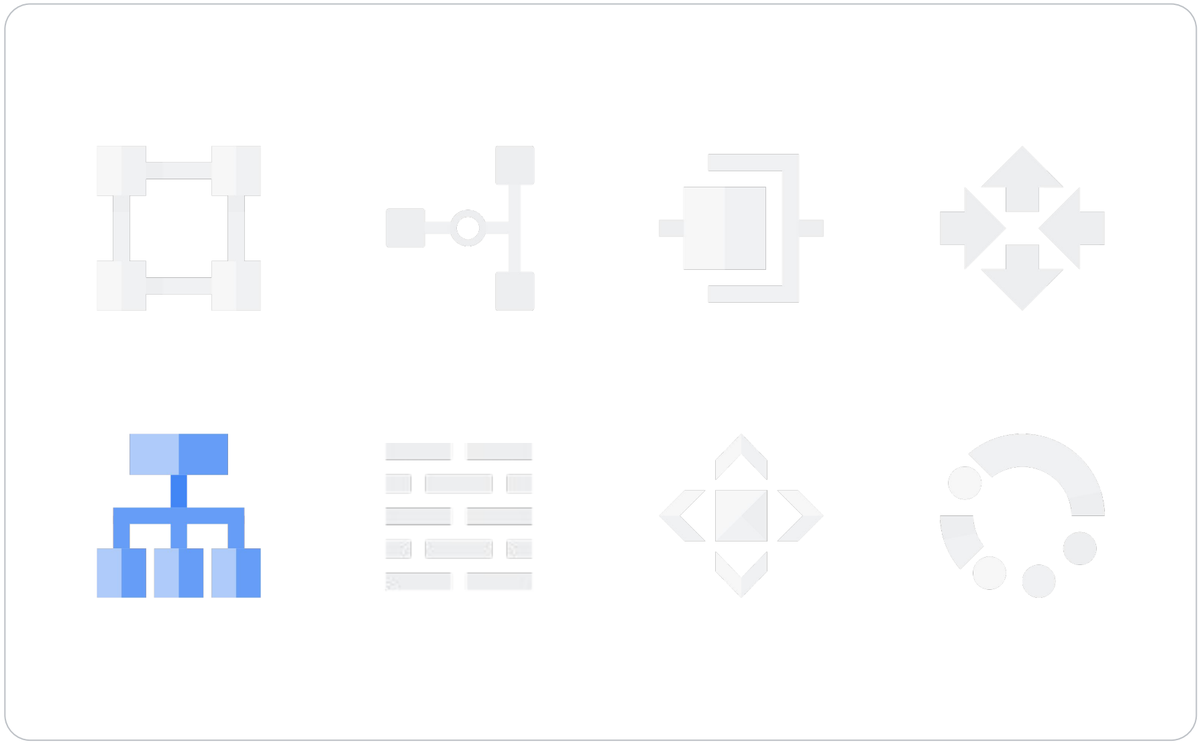
Network architecture components

Cloud Router: Dynamically exchanges routes between VPC networks and on-premises networks.



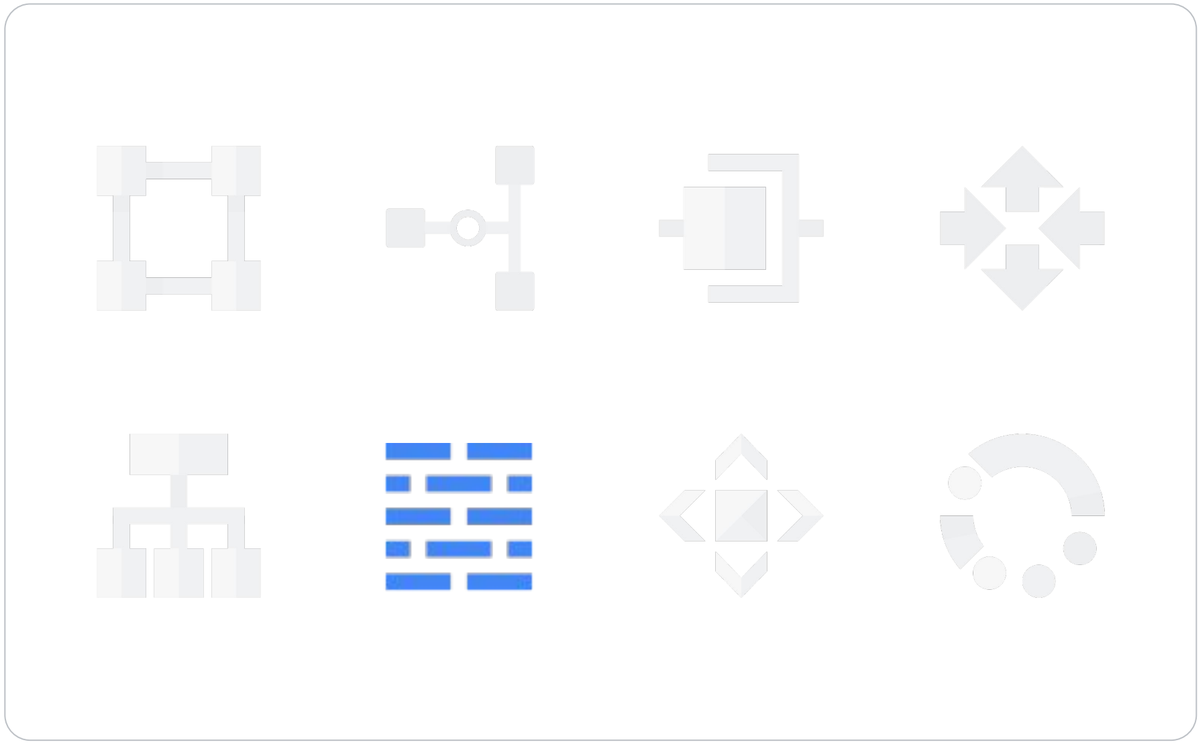
Network architecture components

Load balancers: Intelligently distributing incoming traffic across multiple backend servers or instances.



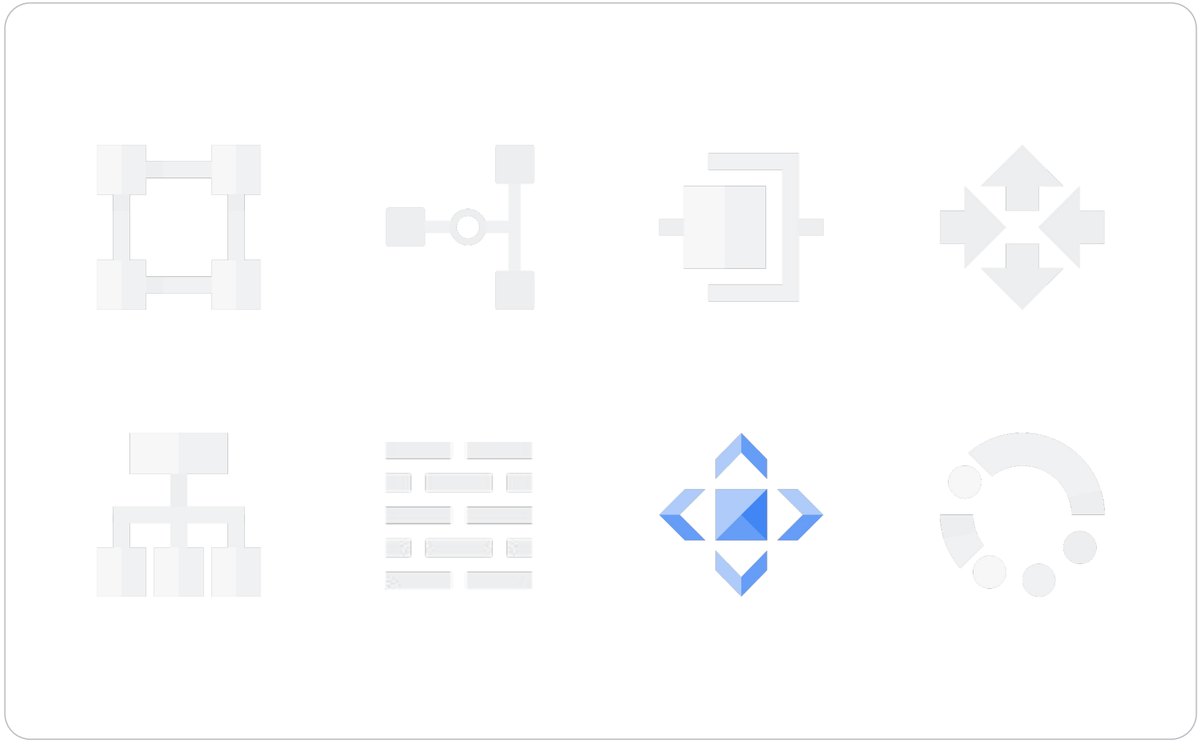
Network architecture components

Firewall rules: Provide granular access control, which is critical in protecting your VPC network.



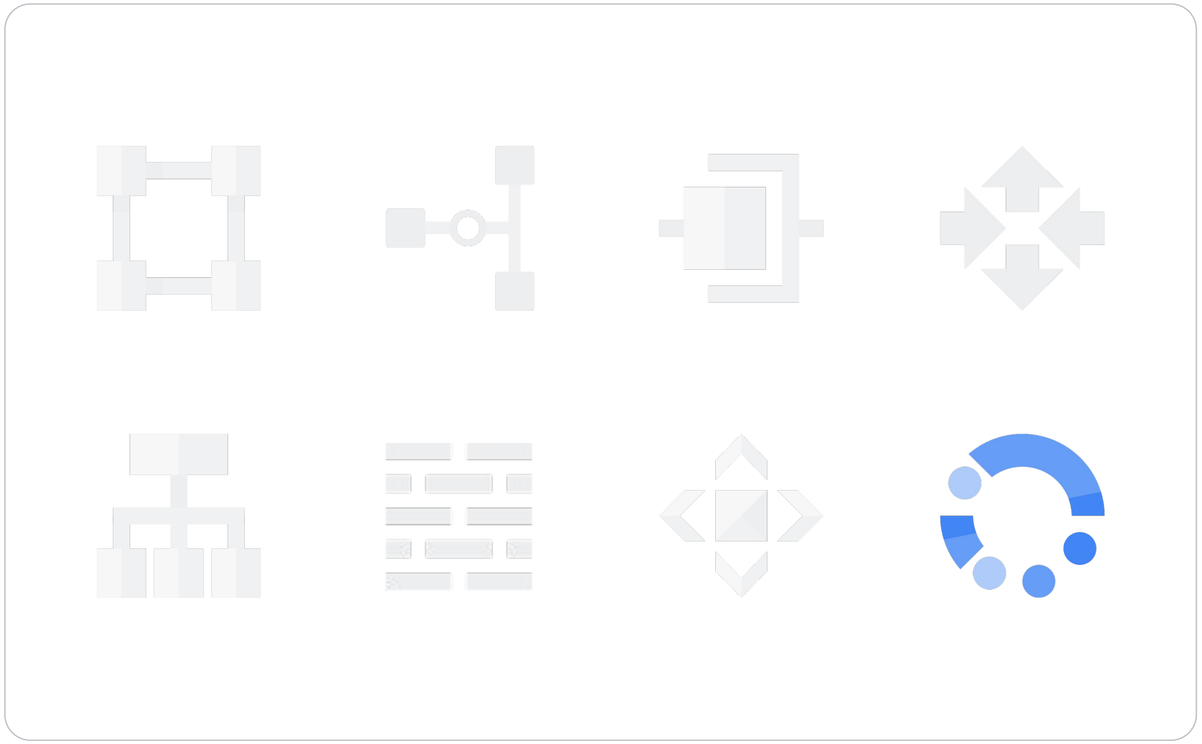
Network architecture components

Cloud CDN: Cache content using Google's global edge network, accelerating web applications.



Network architecture components

Network Service Tiers: Optimizes network performance and cost based on traffic requirements.

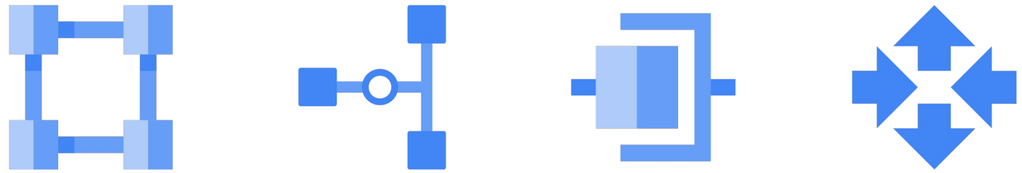


Shared VPC

VPC Peering

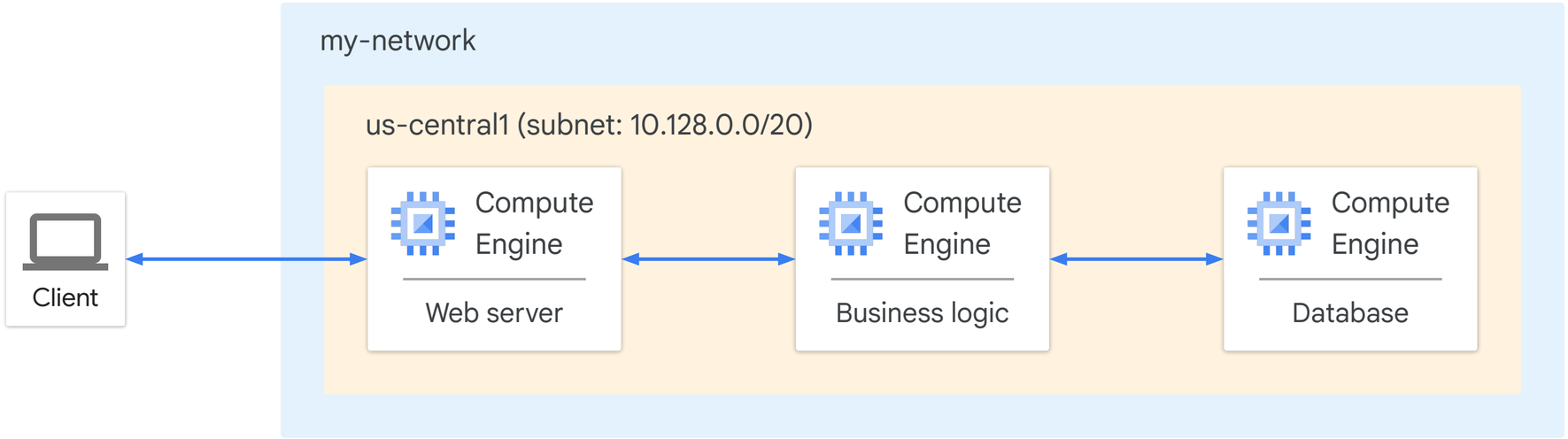
Centralized network appliances

NCC

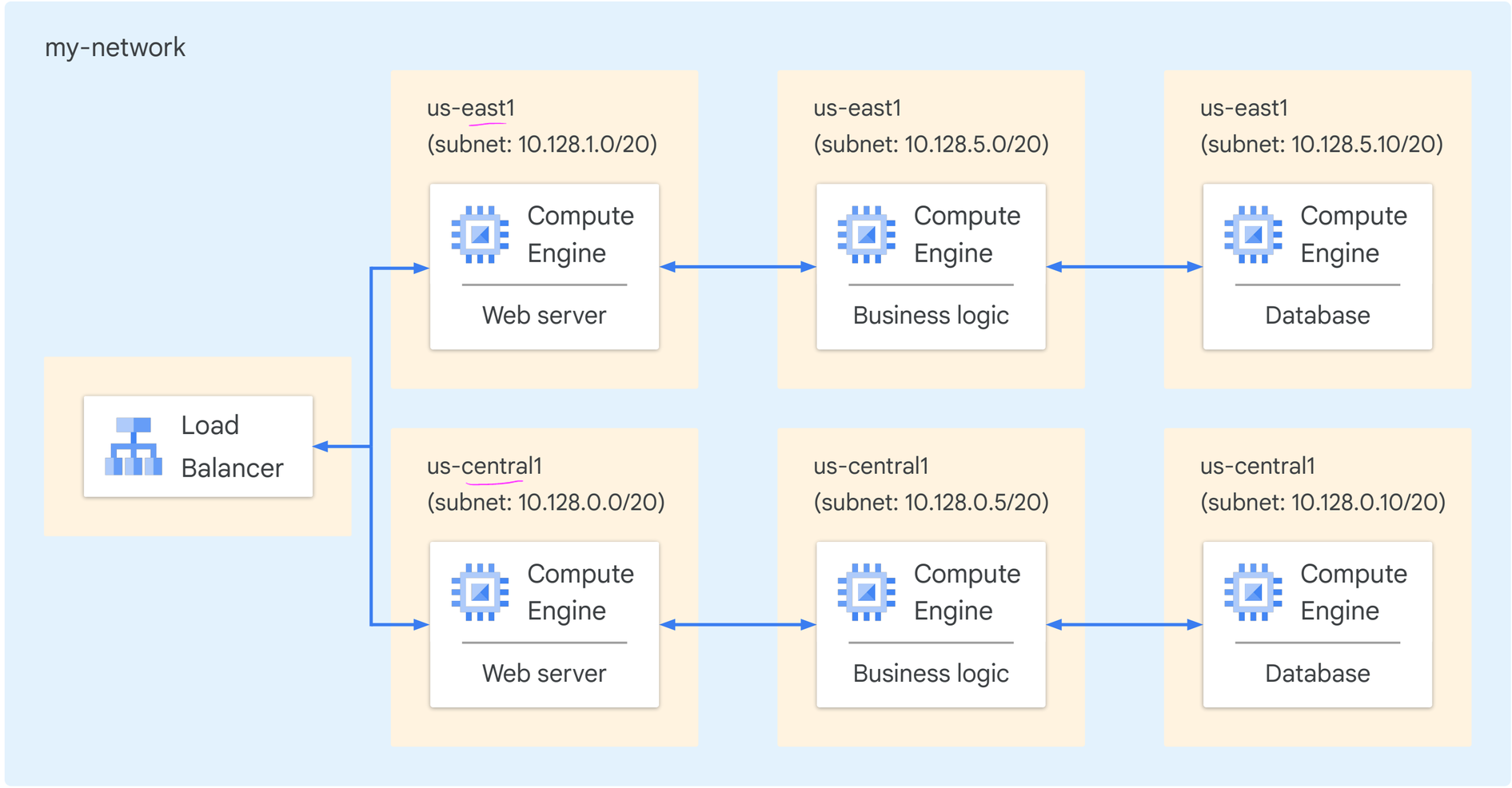


Inefficient network design

- Cymbal Bank acquired a small subsidiary with a banking application on three servers in one subnet.
- Cymbal Bank wants to improve the design—for security and to avoid bottlenecks.



Optimized network design



Note:
Optimized for one VPC environment may not be optimal for another VPC environment.

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Key network architecture considerations

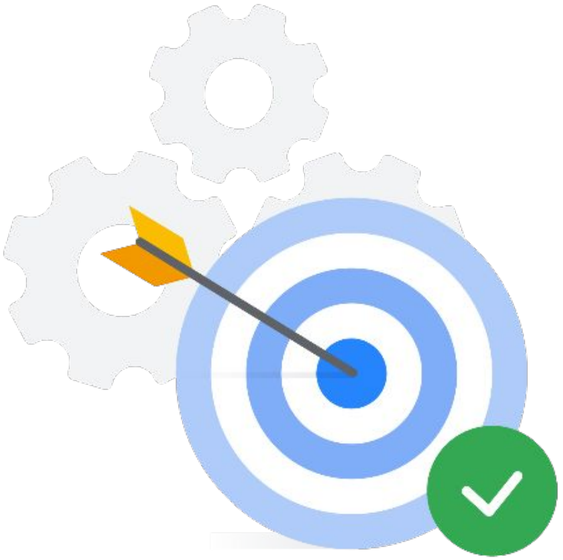
- Scalability
- Security and compliance
- Performance
- Cost efficiency

Identify stakeholders, requirements, and decision makers

- Identify the stakeholders.
- Gather business and technical requirements, as well as operational expenditure (OpEx) data.
- Build a high level and a low level design, including NW topology, landing zones, choosing regions and zones, IP address planning, connectivity, etc.
- Build a BoM (Bill of Materials) and calculate the cost.

Understand the overall project and environment

- Clearly define the project's objectives and timeline to guide network design decisions.
- Assess any existing on-premises or cloud infrastructure that the VPC network needs to integrate with. For example:
  - Existing VPCs networks and subnets
  - Cloud IAM, network policies, security configurations



Define technical considerations and constraints

Research and understand any relevant security or data privacy regulations your organization needs to comply with.

Consider cost-saving strategies like right-sizing resources, utilizing committed use discounts, and exploring managed services where feasible.

Plan for scaling, ongoing network management, monitoring, and incident response procedures.

Let’s ask Gemini

What does "serverless architecture" mean in Google Cloud?

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Quiz | Question 1

Question

Which of the following practices is LEAST likely to improve network security in Google Cloud?

A. Implementing network firewall rules to control traffic.

B. Regularly reviewing and updating IAM (Identity and Access Management) permissions.

C. Assigning public IP addresses to all virtual machines in a VPC.

D. Enabling VPC flow logs to monitor network traffic.

Quiz | Question 1

Answer

Which of the following practices is LEAST likely to improve network security in Google Cloud?

A. Implementing network firewall rules to control traffic.

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Quiz | Question 2

Question

You are designing a new network infrastructure in Google Cloud to support a global e-commerce application. Which *two* of the following are key considerations you should prioritize in your network design?

A. To create a detailed project timeline.

B. To justify the need for a new network.

C. To inform and guide design choices, ensuring the network aligns with organizational goals and constraints.

D. To ensure high availability and disaster recovery capabilities for the network.

Quiz | Question 2

Answer

You are designing a new network infrastructure in Google Cloud to support a global e-commerce application. Which *two* of the following are key considerations you should prioritize in your network design?

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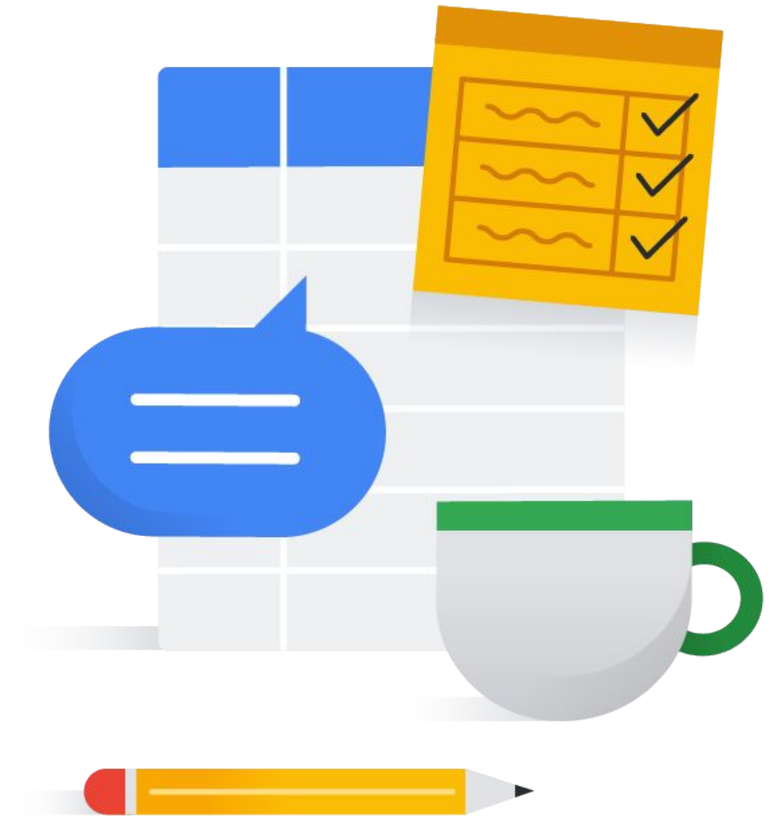
Debrief



Thank you.