

Google PCNE - Objective Documentation Map

- **Section 1: Designing, planning, and prototyping a Google Cloud network (~26% of the exam)**
 - 1.1 Designing an overall network architecture.
 - Docs:
 - [Compute Engine IAM roles and permissions](#)
 - [Cloud CDN overview](#)
 - [Cloud NAT overview](#)
 - [Cloud Load Balancing overview](#)
 - [Product overview | Google Cloud Armor](#)
 - [Network Intelligence Center | Google Cloud](#)
 - 1.2 Designing Virtual Private Cloud (VPC) instances.
 - Docs:
 - [VPC networks | Google Cloud](#)
 - [VPC firewall rules | Cloud NGFW](#)
 - [Routes | VPC | Google Cloud](#)
 - [Shared VPC | Google Cloud](#)
 - [VPC Network Peering | Google Cloud](#)
 - [Choosing a Network Connectivity product | Google Cloud](#)
 - [Global Locations - Regions & Zones | Google Cloud](#)
 - [Regions and zones | Compute Engine Documentation | Google Cloud](#)
 - [Global, regional, and zonal resources | Compute Engine Documentation | Google Cloud](#)
 - [All networking pricing | Virtual Private Cloud](#)
 - [Compute Engine Service Level Agreement \(SLA\) | Google Cloud](#)
 - 1.3 Designing a hybrid and multi-cloud network.
 - Docs:
 - [Cloud VPN overview](#)
 - [Cloud Interconnect overview](#)
 - [Dedicated Interconnect overview | Google Cloud](#)
 - [Partner Interconnect overview | Google Cloud](#)
 - [Key terms | Cloud Interconnect](#)
 - [Cloud Interconnect pricing](#)
 - [Choosing a Network Connectivity product | Google Cloud](#)
 - 1.4 Designing an IP addressing plan for Google Kubernetes Engine.
 - Docs:
 - [About cluster configuration choices | Google Kubernetes Engine \(GKE\)](#)
 - [VPC-native clusters | Google Kubernetes Engine \(GKE\)](#)
 - [Create a VPC-native cluster | Google Kubernetes Engine \(GKE\)](#)
 - [Creating a routes-based cluster | Google Kubernetes Engine \(GKE\)](#)
 - [About private clusters | Google Kubernetes Engine \(GKE\)](#)
 - [Creating a private cluster | Google Kubernetes Engine \(GKE\)](#)
 - Fundamental Networking Resources by Google:
 - Coursera course with 25 hours that can be audited:
 - [The Bits and Bytes of Computer Networking | Coursera](#)

- [Google Cloud Architecture Framework](#)
- **Section 2: Implementing Virtual Private Cloud (VPC) instances (~21% of the exam)**
 - 2.1 Configuring VPCs.
 - Docs:
 - [VPC networks | Google Cloud](#)
 - [Quickstart: Create and use VPC networks | Google Cloud](#)
 - [VPC firewall rules | Cloud NGFW](#)
 - [Use VPC firewall rules | Cloud NGFW](#)
 - 2.2 Configuring routing.
 - Docs:
 - [Cloud VPN overview](#)
 - [Best practices for Cloud VPN](#)
 - [HA VPN topologies | Google Cloud](#)
 - [Classic VPN topologies | Google Cloud](#)
 - [Create an HA VPN gateway to a peer VPN gateway | Google Cloud](#)
 - [Create HA VPN gateways to connect VPC networks | Google Cloud](#)
 - [Create a Classic VPN gateway using static routing | Google Cloud](#)
 - [Networks and tunnel routing | Cloud VPN](#)
 - [Cloud Router overview](#)
 - [Routes | VPC | Google Cloud](#)
 - [Use routes | VPC | Google Cloud](#)
 - 2.3 Configuring and maintaining Google Kubernetes Engine clusters.
 - Docs:
 - [About cluster configuration choices | Google Kubernetes Engine \(GKE\)](#)
 - [VPC-native clusters | Google Kubernetes Engine \(GKE\)](#)
 - [Create a VPC-native cluster | Google Kubernetes Engine \(GKE\)](#)
 - [Configure maximum Pods per node | Google Kubernetes Engine \(GKE\)](#)
 - [Setting up clusters with Shared VPC | Google Kubernetes Engine \(GKE\)](#)
 - [Network overview | Google Kubernetes Engine \(GKE\)](#)
 - [GKE Ingress for Application Load Balancers | Google Kubernetes Engine \(GKE\)](#)
 - [Ingress configuration on Google Cloud | Google Kubernetes Engine \(GKE\)](#)
 - [Best practices for GKE networking | Google Kubernetes Engine \(GKE\)](#)
 - [Container-native load balancing | Google Kubernetes Engine \(GKE\)](#)
 - 2.4 Configuring and managing firewall rules.
 - Docs:
 - [VPC firewall rules | Cloud NGFW](#)
 - [Use VPC firewall rules | Cloud NGFW](#)
 - [Firewall Rules Logging | Cloud NGFW](#)
 - [Use Firewall Rules Logging | Cloud NGFW](#)
 - [View and understand Firewall Insights | Google Cloud](#)
 - [Firewall Insights overview | Google Cloud](#)
 - 2.5 Implementing VPC Service Controls.
 - Docs:
 - [Overview of VPC Service Controls | Google Cloud](#)

- [Service perimeter details and configuration | VPC Service Controls | Google Cloud](#)
- [Ingress and egress rules | VPC Service Controls | Google Cloud](#)
- [Sharing across perimeters with bridges | VPC Service Controls | Google Cloud](#)
- [Create a service perimeter | VPC Service Controls | Google Cloud](#)
- [Dry run mode for service perimeters | VPC Service Controls | Google Cloud](#)
- [Ingress and egress rules | VPC Service Controls | Google Cloud](#)
- [Sharing across perimeters with bridges | VPC Service Controls | Google Cloud](#)
- [Creating a perimeter bridge | VPC Service Controls | Google Cloud](#)
- [Secure data exchange with ingress and egress rules | VPC Service Controls | Google Cloud](#)
- [Context-aware access with ingress rules | VPC Service Controls | Google Cloud](#)
- [Access level attributes | Access Context Manager | Google Cloud](#)
- [Custom access level specification | Access Context Manager | Google Cloud](#)
- **Section 3: Configuring network services (~23% of the exam)**
 - 3.1 Configuring load balancing.
 - Docs:
 - [Cloud Load Balancing overview](#)
 - [Choose a load balancer](#)
 - [Load balancer feature comparison](#)
 - [External Application Load Balancer overview](#)
 - [Internal Application Load Balancer overview](#)
 - [Backend service-based external passthrough Network Load Balancer overview](#)
 - [Internal passthrough Network Load Balancer overview](#)
 - [External proxy Network Load Balancer overview](#)
 - [External proxy Network Load Balancer overview](#)
 - [Backend services overview | Load Balancing | Google Cloud](#)
 - [Forwarding rules overview | Load Balancing | Google Cloud](#)
 - [Instance groups | Compute Engine Documentation | Google Cloud](#)
 - [Basic scenarios for creating managed instance groups \(MIGs\) | Compute Engine Documentation | Google Cloud](#)
 - [Network endpoint groups overview | Load Balancing | Google Cloud](#)
 - [Zonal network endpoint groups overview | Load Balancing | Google Cloud](#)
 - [Internet network endpoint groups overview | Load Balancing | Google Cloud](#)
 - [Serverless network endpoint groups overview | Load Balancing | Google Cloud](#)
 - 3.2 Configuring Google Cloud Armor policies.
 - Docs:
 - [Security policy overview | Google Cloud Armor](#)
 - [Configure Google Cloud Armor security policies](#)

- [Configure custom rules language attributes | Google Cloud Armor](#)
 - [Tune Google Cloud Armor preconfigured WAF rules](#)
- 3.3 Configuring Cloud CDN.
 - Docs:
 - [Cloud CDN overview](#)
 - [Choose a CDN product | Google Cloud](#)
 - [Content delivery best practices | Cloud CDN](#)
 - [Caching overview | Cloud CDN](#)
 - [Authenticate content | Cloud CDN](#)
 - [Use signed URLs | Cloud CDN](#)
 - [Use signed cookies | Cloud CDN](#)
 - [Cache invalidation overview | Cloud CDN](#)
 - [Invalidate cached content | Cloud CDN](#)
- 3.4 Configuring and maintaining Cloud DNS.
 - Docs:
 - [Cloud DNS overview](#)
 - [General DNS overview | Google Cloud](#)
 - [Best practices for Cloud DNS](#)
 - [Key terms | Cloud DNS](#)
 - [Create, modify, and delete zones | Cloud DNS](#)
 - [Add, modify, and delete records | Cloud DNS](#)
 - [DNS Security Extensions \(DNSSEC\) overview | Google Cloud](#)
 - [Name resolution order | Cloud DNS](#)
 - [DNS policies overview | Google Cloud](#)
 - [Create a zone with cross-project binding | Cloud DNS](#)
 - [DNS server policies | Google Cloud](#)
 - [Manage response policies and rules | Cloud DNS](#)
 - [Manage DNS routing policies and health checks | Google Cloud](#)
- 3.5 Configuring Cloud NAT.
 - Docs:
 - [Cloud NAT overview](#)
 - [IP addresses and ports | Cloud NAT](#)
 - [Quickstart: Set up and manage network address translation with Public NAT | Google Cloud](#)
 - [Use Public NAT with Compute Engine | Google Cloud](#)
 - [Set up and manage Cloud NAT rules](#)
- 3.6 Configuring network packet inspection.
 - Docs:
 - [Multiple network interfaces | VPC | Google Cloud](#)
 - [Create VMs with multiple network interfaces | VPC | Google Cloud](#)
 - [Internal passthrough Network Load Balancers as next hops](#)
 - [Set up internal passthrough Network Load Balancer for third-party appliances](#)
 - [Packet Mirroring | VPC | Google Cloud](#)
 - [Use Packet Mirroring | VPC | Google Cloud](#)
 - [Monitor Packet Mirroring | VPC | Google Cloud](#)
- **Section 4: Implementing hybrid interconnectivity (~14% of the exam)**

- 4.1 Configuring Cloud Interconnect.
 - Docs:
 - [Best practices for Cloud Interconnect](#)
 - [Key terms | Cloud Interconnect](#)
 - [Partner Interconnect overview | Google Cloud](#)
 - [Partner Interconnect provisioning overview | Google Cloud](#)
 - [Create VLAN attachments | Cloud Interconnect](#)
 - [Request connections | Cloud Interconnect](#)
 - [Activate connections | Cloud Interconnect](#)
 - [Configure on-premises routers | Cloud Interconnect](#)
 - [Create VLAN attachments | Cloud Interconnect](#)
 - [Create VLAN attachments | Cloud Interconnect](#)
 - Dedicated 4 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/dedicated-creating-9999-availability>
 - Partner 4 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-9999-availability>
 - Dedicated 3 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/dedicated-creating-999-availability>
 - Partner 3 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-999-availability>
- 4.2 Configuring a site-to-site IPsec VPN.
 - Docs:
 - [VPC Network Peering | Google Cloud](#)
 - [Shared VPC | Google Cloud](#)
 - [Options for connecting to multiple VPC networks | Cloud Interconnect](#)
 - [Cloud VPN overview](#)
 - [Create a Classic VPN gateway using static routing | Google Cloud](#)
 - [Networks and tunnel routing | Cloud VPN](#)
 - [HA VPN topologies | Google Cloud](#)
 - [Create an HA VPN gateway to a peer VPN gateway | Google Cloud](#)
- 4.3 Configuring Cloud Router.
 - Docs:
 - [Cloud Router overview](#)
 - [Create a Cloud Router to connect a VPC network to a peer network | Google Cloud](#)
 - [Establish BGP sessions | Cloud Router](#)
 - [Update the base route priority | Cloud Router](#)
 - [Custom advertised routes | Cloud Router](#)
 - [Advertise custom address ranges | Cloud Router](#)
 - [Advertise specific VPC subnets | Cloud Router](#)
 - [Create an HA VPN gateway to a peer VPN gateway | Google Cloud](#)
 - Dedicated 4 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/dedicated-creating-9999-availability>
 - Partner 4 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-9999-availability>
 - Dedicated 3 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/dedicated-creating-999-availability>

- Partner 3 nines: <https://cloud.google.com/network-connectivity/docs/interconnect/tutorials/partner-creating-999-availability>
- **Section 5: Managing, monitoring, and optimizing network operations (~16% of the exam)**
 - 5.1 Logging and monitoring with Google Cloud's operations suite.
 - Docs:
 - [Global external Application Load Balancer logging and monitoring](#)
 - [View logs and metrics | Cloud Router](#)
 - [Logs and metrics | Cloud NAT](#)
 - [View logs and metrics | Cloud VPN](#)
 - [VPC Service Controls audit logging | Google Cloud](#)
 - [Google Cloud Armor audit logging information](#)
 - [Use request logging | Google Cloud Armor](#)
 - [Monitor connections | Cloud Interconnect](#)
 - [Monitoring Google Cloud Armor security policies](#)
 - [Google Cloud metrics - Monitoring](#)
 - 5.2 Managing and maintaining security.
 - Docs:
 - [Firewall Rules Logging | Cloud NGFW](#)
 - [Use Firewall Rules Logging | Cloud NGFW](#)
 - [Firewall Insights overview | Google Cloud](#)
 - [Review and optimize firewall rules](#)
 - [Troubleshoot IAM permissions | Policy Intelligence | Google Cloud](#)
 - [Optimize IAM policies | IAM Documentation | Google Cloud](#)
 - [Analyze IAM policies | Policy Intelligence | Google Cloud](#)
 - [Policy Simulator for allow policies | Policy Intelligence | Google Cloud](#)
 - [Overview of role recommendations | Policy Intelligence | Google Cloud](#)
 - [Test permissions for custom user interfaces | IAM Documentation | Google Cloud](#)
 - 5.3 Maintaining and troubleshooting connectivity issues.
 - Docs:
 - [VPC Flow Logs | Google Cloud](#)
 - [Configure VPC Flow Logs | Google Cloud](#)
 - [View logs and metrics | Cloud VPN](#)
 - [Troubleshooting | Cloud VPN](#)
 - [View logs and metrics | Cloud Router](#)
 - [Troubleshoot BGP sessions | Cloud Router](#)
 - [Troubleshooting | Cloud Interconnect](#)
 - 5.4 Monitoring, maintaining, and troubleshooting latency and traffic flow.
 - Docs:
 - [Google Cloud Community | Network Throughput](#)
 - [Using netperf and ping to measure network latency | Google Cloud Blog](#)
 - [Performance Dashboard overview | Google Cloud](#)
 - [Network Topology metrics | Google Cloud](#)
 - [Google Cloud Performance Kit Benchmark](#)
 - [Routes | VPC | Google Cloud](#)
 - [Troubleshoot internal connectivity between VMs | VPC | Google Cloud](#)

- [Troubleshoot BGP sessions | Cloud Router](#)
- [Connectivity Tests overview | Google Cloud](#)
- [Performance Dashboard overview | Google Cloud](#)
- [Firewall Insights overview | Google Cloud](#)
- [Network Topology overview | Google Cloud](#)
- [Network Topology metrics | Google Cloud](#)
- [Connectivity Tests overview | Google Cloud](#)