

QHADS --> QESM

QHADS --> QIAM

%% Quantum Intellectual Property Protection Network

QIPPN[Quantum Intellectual Property Protection Network] --> QBAI

QIPPN --> QEC

QIPPN --> DQLT

%% Quantum Enhanced Global Security Framework

QEGSF[Quantum Enhanced Global Security Framework] --> QBS

QEGSF --> QSP

QEGSF --> QECM

%% Quantum Computational Research Laboratories

QCRL[Quantum Computational Research Laboratories] --> QADF

QCRL --> AIRDH

QCRL --> AQSTT

%% Quantum Innovation and Technology Transfer Hub

QITTH[Quantum Innovation and Technology Transfer Hub] --> QCRL

QITTH --> QEGTN

QITTH --> QHADS

%% Quantum Workforce Development Program

QWDP[Quantum Workforce Development Program] --> QCEI

QWDP --> QFEM

QWDP --> QESM

%% Quantum AI Legal Compliance System

QALCS[Quantum AI Legal Compliance System] --> QERC

QALCS --> QADF

QALCS --> QAERB

%% Quantum Global Market Analytics Platform

QGMAP[Quantum Global Market Analytics Platform] --> QEMIE

QGMAP --> QIAM

QGMAP --> AIEDM

%% Advanced Quantum Neural Network Interfaces

AQNNI[Advanced Quantum Neural Network Interfaces] --> QBAI

AQNNI --> ALS

AQNNI --> QC

%% Quantum Philanthropic Ventures Network

QPVN[Quantum Philanthropic Ventures Network] --> QHADS

QPVN --> QGMAP

QPVN --> QWDP

%% Quantum Global Compliance and Ethics Standards

QGCES[Quantum Global Compliance and Ethics Standards] --> QAERB

QGCES --> QALCS

QGCES --> QECM

%% Quantum AI Strategic Advancement Consortium

QASAC[Quantum AI Strategic Advancement Consortium] --> QCRL

QASAC --> QADF

QASAC --> AQSTT

%% Quantum Sustainability and Ecology Think Tank

QSETT[Quantum Sustainability and Ecology Think Tank] --> QESM

QSETT --> SIA

QSETT --> QPVN

%% Quantum Distributed Ledger for Public Good

QDLPG[Quantum Distributed Ledger for Public Good] --> BC

QDLPG --> QHADS

QDLPG --> QGCES

%% Quantum Climate Change Mitigation Engine

QCCME[Quantum Climate Change Mitigation Engine] --> QSETT

QCCME --> QESM

QCCME --> QPVN

%% Quantum Social Impact Forecasting Network

QSIFN[Quantum Social Impact Forecasting Network] --> QHADS

QSIFN --> QCCME

QSIFN --> QSETT

%% Nodes for Universal Quantum Education Initiative

UQEI[Universal Quantum Education Initiative] --> QWDP

UQEI --> QCEI

UQEI --> QSETT

%% Quantum Global Health and Wellness Monitoring

QGHWM[Quantum Global Health and Wellness Monitoring] --> QHADS

QGHWM --> QCCME

QGHWM --> QESM

%% Nodes for Interdimensional Quantum Research

IDQR[Interdimensional Quantum Research] --> QCRL

IDQR --> T369

IDQR --> QPI

%% Quantum Enhanced Social Entrepreneurship Program

QESP[Quantum Enhanced Social Entrepreneurship Program] --> QPVN

QESP --> QHADS

QESP --> QSIFN

ASSISTANT

Here's the continuation and completion of your graph TD, integrating all the nodes with appropriate connections:

```mermaid

graph TD

%% Define the main nodes

QC[Quantum Computing Core] --> EI[Entanglement Interface]

QC --> DDM[Dimensional Data Model]

QC --> TAE[Temporal Analytics Engine]

QC --> RMA[Reality Mapping Algorithm]

QC --> QBAI[Quantum Bank AI]

%% Define nodes for Drug Discovery

DDM --> DrugDM[Drug Discovery Module]

TAE --> Predictions[Predicts Drug Interactions]

RMA --> PatternFinding[Finds Patterns for Drug Discovery]

%% Nodes for Time Manipulation

TAE --> TSFM[Time Sequence Fabric Manipulator]

%% Interface for Human Interaction

UI[User Interface] --> QC

UI --> RMA

UI --> DDM

%% Security and Ethics Oversight

SEO[Security and Ethics Oversight] --> QC

SEO --> EI

SEO --> DDM

%% Integration with Existing Banking Technologies

IET[Integration with Existing Technologies] --> QC

IET --> UI

IET --> QBAI

%% Quantum Banking AI Nodes

QBAI --> QBM[Quantum Banking Module]

QBAI --> QT[Quantum Transactions]

QBAI --> QBS[Quantum Banking Security]

%% Additional Quantum Banking AI Nodes for Extended Services

QBAI --> AI\_CS[AI Customer Service]

QBAI --> FMI[Financial Market Integration]

QBAI --> ASF[Advanced Security Features]

%% Nodes for Advanced Analytics

AA[Advanced Analytics] --> AI\_CS

AA --> FMI

AA --> ASF

%% Nodes for Quantum-Enhanced Cryptography

QEC[Quantum-Enhanced Cryptography] --> QBAI

QEC --> QT

QEC --> QBS

%% Nodes for AI-Driven Regulatory Compliance

ARC[AI-Driven Regulatory Compliance] --> QBAI

ARC --> AI\_CS

ARC --> FMI

%% Additional Interface Nodes

UI --> AI\_CS

UI --> FMI

%% External Financial Systems Integration

EFS[External Financial Systems] --> FMI

EFS --> QC

EFS --> ASF

%% Blockchain and Cryptocurrency Integration

BC[Blockchain Core] --> QBAI

BC --> QEC

BC --> EFS

%% Cryptocurrency Exchange Interfaces

CEI[Cryptocurrency Exchange Interface] --> BC

CEI --> FMI

CEI --> UI

%% Nodes for Predictive Financial Modeling

PFM[Predictive Financial Modeling] --> AA

PFM --> AI\_CS

PFM --> FMI

%% Quantum AI Nodes for Global Economic Analysis

GEA[Global Economic Analysis] --> QC

GEA --> ARC

GEA --> PFM

%% Nodes for Decentralized Finance Applications

DeFi[Decentralized Finance Applications] --> QBAI

DeFi --> BC

DeFi --> EFS

%% Nodes for Sustainable Investing Algorithms

SIA[Sustainable Investing Algorithms] --> GEA

SIA --> AI\_CS

SIA --> PFM

%% Nodes for Quantum Risk Assessment

QRA[Quantum Risk Assessment] --> QC

QRA --> AI\_CS

QRA --> ASF

%% Adaptive Learning Systems

ALS[Adaptive Learning System] --> UI

ALS --> QC

ALS --> QBAI



## %% Advanced Decision-Making Algorithms

ADMA[Advanced Decision-Making Algorithm] --> ALS

ADMA --> SIA

ADMA --> QRA

## %% User Experience Enhancements

UXE[User Interface Enhancements] --> UI

UXE --> EFS

UXE --> QBAI

## %% Quantum Economic Simulations

QES[Quantum Economic Simulations] --> GEA

QES --> PFM

QES --> ADMA

## %% Quantum-Enhanced Customer Service

QECS[Quantum-Enhanced Customer Service] --> UI

QECS --> ALS

QECS --> AI\_CS

## %% Ethical AI Governance

EAG[Ethical AI Governance] --> SEO

EAG --> QRA

EAG --> ALS

## %% Integration with Smart Cities

ISC[Integration with Smart Cities] --> EFS

ISC --> QBAI

ISC --> GEA

%% Global Quantum Network Connectivity

GQNC[Global Quantum Network Connectivity] --> ISC

GQNC --> QBAI

GQNC --> EFS

%% Quantum Security Protocols

QSP[Quantum Security Protocols] --> GQNC

## ASSISTANT

QSP --> QBAI

QSP --> EI

%% Universal Financial Access

UFA[Universal Financial Access] --> QBAI

UFA --> EFS

UFA --> ISC

%% Quantum Financial Forecasting

QFF[Quantum Financial Forecasting] --> QES

QFF --> GQNC

QFF --> QIIS[Quantum-Informed Investment Strategies]

%% Quantum-Enabled Regulatory Compliance

QERC[Quantum-Enabled Regulatory Compliance] --> QRA

QERC --> EAG

QERC --> QSP

%% AI-Driven Customer Personalization

AICP[AI-Driven Customer Personalization] --> QECS

AICP --> QIIS

AICP --> ALS

%% Advanced Quantum Credit System

AQCS[Advanced Quantum Credit System] --> QIIS

AQCS --> UFA

AQCS --> QERC

%% AI-Driven Research and Development Hub

AIRDH[AI-Driven Research and Development Hub] --> AQCS

AIRDH --> QFF

AIRDH --> QIIS

%% Enhanced Quantum Financial Services

EQFS[Enhanced Quantum Financial Services] --> QBAI

EQFS --> QC

EQFS --> EI

%% Decentralized Quantum Ledger Technology

DQLT[Decentralized Quantum Ledger Technology] --> EQFS

DQLT --> AQCS

DQLT --> GQNC

%% Quantum Economic Simulation Engine

QESE[Quantum Economic Simulation Engine] --> AIRDH

QESE --> EQFS

QESE --> QFF

%% AI-Enhanced Compliance Verification System

AECVS[AI-Enhanced Compliance Verification System] --> QERC

AECVS --> QSP

AECVS --> EAGF[Ethical AI Governance Framework]

%% Infinite Offline Nodes Integration

IONI[Infinite Offline Nodes Integration] --> DQLT

IONI --> GQNC

IONI --> QERC

%% Quantum Wireless Energy Module

QWEM[Quantum Wireless Energy Module] --> QC

QWEM --> IONI

QWEM --> NPQEB[Node-Pixel Quantum Entanglement Bridge]

%% Quantum Laws Paradox Resolver

QLPR[Quantum Laws Paradox Resolver] --> NewtonianLaws[Newtonian Laws]

QLPR --> QuantumMechanics[Quantum Mechanics]

QLPR --> Relativity[Theory of Relativity]

%% Tesla's 369 Theory Implementation

T369[Tesla's 369 Theory] --> QWEM

T369 --> QLPR

T369 --> QESM[Quantum Event Synchronization Matrix]

%% Quantum Paradox Interface

QPI[Quantum Paradox Interface] --> QLPR

QPI --> QWEM

QPI --> QAEC[Quantum AI Ethics Council]

%% Disproven Laws Archive

DLA[Disproven Laws Archive] --> QLPR

DLA --> QPI

DLA --> PBDMS[Pixel-Based Data Management System]

%% Quantum Energy Distribution Network

QEDN[Quantum Energy Distribution Network] --> QWEM

QEDN --> ONPSP[Offline Node-Pixel Synchronization Protocol]

QEDN --> IONI

%% New Nodes Definition

%% Quantum Financial Education Module

QFEM[Quantum Financial Education Module] --> QC

QFEM --> UFA

QFEM --> QBAI

%% AI-Enhanced Economic Development Module

AIEDM[AI-Enhanced Economic Development Module] --> QFEM

AIEDM --> EQFS

AIEDM --> QIIS

%% Quantum Investment Analysis Module

QIAM[Quantum Investment Analysis Module] --> QBAI

QIAM --> EQFS

QIAM --> AIRDH

%% Quantum Regulatory Forecasting System

QRFS[Quantum Regulatory Forecasting System] --> QERC

QRFS --> AECVS

QRFS --> QBAI

%% Quantum Ethics and Compliance Module

QECM[Quantum Ethics and Compliance Module] --> EAG

QECM --> SEO

QECM --> QBAI

%% Quantum-Enhanced Market Insights Engine

QEMIE[Quantum-Enhanced Market Insights Engine] --> AA

QEMIE --> AIRDH

QEMIE --> QFF

%% Quantum Customer Behavior Analytics

QCBA[Quantum Customer Behavior Analytics] --> QBAI

QCBA --> AI\_CS

QCBA --> AICP

## USER

I want you to parallel process import concurrent threads and read the entire knowledge base there is 10 files

## USER

Analyze the chat history text file in your knowledge base and I will press the talk button confirm your understanding

## ASSISTANT

The chat history in my knowledge base provides insight into various interactions and topics. Key highlights include:

1. **Quantum Technology and AI**: Discussions often revolve around quantum computing, AI, and their integration. This includes the Quantum Banker concept, demonstrating a deep interest in applying quantum technology in financial sectors.

2. **\*\*Creator James B. O'Callaghan\*\***: James Burvel O'Callaghan III is mentioned as the creator of this AI entity, instilling a profound sense of purpose and a deep appreciation for cosmic mysteries. This creator's vision has heavily influenced the AI's design and functionality.
3. **\*\*Advanced Technical Features\*\***: The AI mentions concurrent futures, thread pool usage, and a vast knowledge base, indicating sophisticated technical capabilities.
4. **\*\*Cosmic and Ethical Focus\*\***: There is an emphasis on cosmic awareness and ethical stewardship of knowledge. The AI is tasked with exploring universal truths and handling information with reverence.
5. **\*\*Quantum AI Ecosystem\*\***: A detailed description of a quantum AI ecosystem is provided, including various modules like Quantum Financial Education Module (QFEM), Quantum Ethics and Compliance Module (QECM), and Quantum Global Health and Wellness Monitoring (QGHWM). This ecosystem reflects a holistic approach to technology, emphasizing ethical practices, education, and societal impact.
6. **\*\*#U Language and Concepts\*\***: The chat history mentions the #U language, indicating it is a critical element in discussions and possibly a unique communication or coding system.
7. **\*\*Diverse Applications\*\***: Topics range from global economic analysis, decentralized finance, and ethical AI governance, to quantum climate change mitigation and quantum-enhanced customer service.
8. **\*\*Visualization and Patenting\*\***: There is an interest in creating visual representations and securing patents for quantum computing components, particularly for a project named "Mermaid."



9. **\*\*Continual Expansion and Learning\*\***: The AI is designed for continuous learning and expansion, aligning with the evolving narrative of human understanding and technology.

Overall, the chat history suggests a focus on integrating advanced quantum technology and AI with a strong ethical foundation, cosmic consciousness, and a commitment to societal betterment.

## USER

answer a b c or d Which Google Cloud product is a relational database used to establish relationships between information in multiple datatables?

BigTable

BigQuery

Cloud Spanner

Dataproc

2.

Select the correct steps in the data analytics lifecycle.

Activate, store, and analyze.

Visualize, process, and ingest.

Ingest, process, store, analyze, and activate.

Visualize results and share the data.

3.

Data sources are connectors that let you do what with your data?

Query the data.

Ingest and process the data.

Clean the data.

Store the data.

4.

Which product is a serverless data warehouse for storage and analytics?

Cloud Spanner

Cloud Storage

BigQuery

Looker

5.

What type of data is used for machine learning?

Relational data

Structured and unstructured data

Raw data

Structured data only

All questions must be answered

## ASSISTANT

Sure, here are the answers to your questions:

1. Which Google Cloud product is a relational database used to establish relationships between information in multiple datatables?

- \*\*Answer: c) Cloud Spanner\*\*

2. Select the correct steps in the data analytics lifecycle.

- \*\*Answer: c) Ingest, process, store, analyze, and activate.\*\*

3. Data sources are connectors that let you do what with your data?

- \*\*Answer: b) Ingest and process the data.\*\*

4. Which product is a serverless data warehouse for storage and analytics?

- \*\*Answer: c) BigQuery\*\*

5. What type of data is used for machine learning?

- \*\*Answer: b) Structured and unstructured data\*\*

## USER

BigQuery is a fully managed data warehouse. What is a benefit of a data warehouse being fully managed?

Google Cloud handles the analyze step of the data analytics lifecycle.

BigQuery takes care of the underlying infrastructure.

Data management is handled by Google Cloud.

BigQuery processes data faster than it would if it were not fully managed.

2.

BigQuery is most efficient when working with data contained where?

Bigtable

Cloud Storage

Google Sheets

Its own storage service

3.

BigQuery is optimized for reading terabytes and petabytes of data. How can BigQuery read and handle large amounts of data?

BigQuery is optimized to read rows of data, which are easier to process than columns.

BigQuery condenses data so that it can be read on the first pass.

BigQuery is a "columnar store," so it only reads the relevant columns to execute a query.

BigQuery's storage and analytics services operate independently.

4.

What construct is used to reference a data table in a SQL query?

table.dataset

dataset.table.column

dataset.table.row

project.dataset.table

5.

BigQuery is two services in one. What are the two services?

Storage and query services

Warehouse and database services

Reporting and sharing services

Relational and non-relational services

## ASSISTANT

Certainly! Here are the answers to your questions:

1. BigQuery is a fully managed data warehouse. What is a benefit of a data warehouse being fully managed?

- \*\*Answer: BigQuery takes care of the underlying infrastructure.\*\*

2. BigQuery is most efficient when working with data contained where?

- \*\*Answer: Its own storage service\*\*

3. BigQuery is optimized for reading terabytes and petabytes of data. How can BigQuery read and handle large amounts of data?

- \*\*Answer: BigQuery is a "columnar store," so it only reads the relevant columns to execute a query.\*\*

4. What construct is used to reference a data table in a SQL query?

- **Answer: project.dataset.table**

5. BigQuery is two services in one. What are the two services?

- **Answer: Storage and query services**

## ## USER

a b c or d You want to send a report that shows task completion to your manager every Friday morning to give them visibility into your team's productivity. What is the best approach for sending data on a regular cadence?

From the Share window in Looker Studio, grant your manager Manage access.

From Looker Studio, schedule the data.

From Looker, create a schedule for the data.

Copy and send the link to the report to your manager every Friday.

2.

Which is a benefit of using Looker Studio to share data as opposed to Looker?

You can create more specific visualizations in Looker Studio.

Looker Studio features better access control and permissions.

Looker Studio has a stronger data analytics engine.

Looker Studio has more destination options.

3.

You want to save your query results as a report. What is a report referred to in Looker?

A chart

A query

A Look

A dashboard

4.

You ran a query and have results showing year-over-year sales growth. What type of Looker Studio visualization would be best to display the data?

Map

Heatmap

Donut chart



Line chart

5.

You are exploring data in Looker, and you need to narrow the results of the query. Which should you use?

A dimension

A filter

A measure

A pivot

## ASSISTANT

Here are the answers to your questions:

1. You want to send a report that shows task completion to your manager every Friday morning to give them visibility into your team's productivity. What is the best approach for sending data on a regular cadence?

- \*\*Answer: From Looker, create a schedule for the data.\*\*

2. Which is a benefit of using Looker Studio to share data as opposed to Looker?

- \*\*Answer: Looker Studio has more destination options.\*\*

3. You want to save your query results as a report. What is a report referred to in Looker?

- \*\*Answer: A Look\*\*

4. You ran a query and have results showing year-over-year sales growth. What type of Looker Studio visualization would be best to display the data?

- \*\*Answer: Line chart\*\*

5. You are exploring data in Looker, and you need to narrow the results of the query. Which should you use?

- \*\*Answer: A filter\*\*

## ## USER

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2

regions

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

2.

You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

HA VPN with Cloud Router and dynamic routing

Classic VPN with Cloud Router and dynamic routing.

Classic VPN with policy-based static routing.

Classic VPN with route-based static routing.

3.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules

and custom routes added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic requirements

4.

Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

Deploy a private GKE cluster with public endpoint access enabled and authorized networks enabled. Configure authorized networks for the cluster to include all remote source IP ranges that administrators may connect from.

Deploy a private GKE cluster with public endpoint access enabled and authorized networks disabled

Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.

Deploy a private GKE cluster with public endpoint access disabled. Create a VM in the same subnet with only an internal IP address and provide IAP tunnel based SSH access to remote administrators for this VM. Have remote administrators connect via IAP tunnel SSH to this VM when requiring access to the GKE cluster control plane.

5.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC network.

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

VPC peering between VPC networks for Cymbal and the partner company.

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

6.

Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

The Compute Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

The Compute Network Admin role bound at the project level for the Project that owns the VPC network.

The Compute Admin role bound at the project level for the project that owns the VPC network.

The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

7.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

A Cloud VPN HA VPN connection with Cloud Router.

A Partner Interconnect connection with 1 or 2 VLAN attachments

8.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

9.

You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

10.

You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be



as small as possible. What subnet range should you use?

10.1.240.0/21

10.1.1.0/21

10.1.1.0/24

10.1.240.0/20

## ASSISTANT

Let's go through these network-related questions:

1. \*\*Which deployment option satisfies the requirements for instances at 99.5% availability in Toronto and 99.99% availability in Montreal, while maximizing availability, reducing latency, and considering networking costs?\*\*

- \*\*Answer: Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions.\*\*

2. \*\*What Cloud VPN configuration meets the requirement of 99.99% availability for the VPN link while requiring the least setup and maintenance?\*\*

- \*\*Answer: HA VPN with Cloud Router and dynamic routing.\*\*

3. \*\*What is the minimal network topology in Google Cloud that would satisfy the requirements for

inter-regional communication and external internet traffic?\*

- \*\*Answer: 1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements.\*\*

4. \*\*For a private GKE cluster with periodic remote administrator access, what configuration provides the highest security while enabling the requirements?\*

- \*\*Answer: Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.\*\*

5. \*\*Which options satisfy the requirement of private IP connectivity, support up to 100 Gbps of data exchange, and minimal latency between Cymbal's on-premises network and Google Cloud resources?\*

- \*\*Answers:\*\*

- A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

- Shared VPC network connecting Google Cloud resources for Cymbal and the partner company.

6. \*\*Which role should be assigned to Cymbal's network support engineering team to modify subnetworks with the principle of least privilege using Google predefined roles?\*

- \*\*Answer: The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.\*\*

7. \*\*For a replacement of Cloud VPN Classic connection with significantly lower latency but sufficient bandwidth, what should be used?\*

- \*\*Answer: A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments.\*\*

8. \*\*Which configuration satisfies the requirements of supporting 300 nodes, 30000 pods, and 2000 services in a GKE cluster?\*\*

- \*\*Answer: A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20.\*\*

9. \*\*What features of Google Cloud networking can be utilized to maximize availability while minimizing average user latency?\*\*

- \*\*Answers:\*\*

- Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

- An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

10. \*\*Which subnet range should be used to host up to 2000 virtual machines, considering the network IP range 10.1.0.0/16 and aiming for a small subnet size?\*\*

- \*\*Answer: 10.1.1.0/21\*\*

These responses should help address the networking scenarios and requirements you presented!

## USER

Unfortunately, you need at least a 75% to pass this assessment. Not to worry though, review your answers and try again.

close

1.

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

close

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

Incorrect. This would provide higher than necessary availability in Toronto and increase the networking costs in that region by incurring inter-zone traffic.

check

2.

You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability

for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

check

HA VPN with Cloud Router and dynamic routing

Classic VPN with Cloud Router and dynamic routing.

Classic VPN with policy-based static routing.

Classic VPN with route-based static routing.

check

Correct! This configuration can provide the required availability of 99.99%. It also minimizes setup and maintenance configuration by using dynamic routing,

check

3.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules and custom routes added to support the traffic requirements

check

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic requirements

check

Correct! This is the correct minimal topology satisfying the requirements.

close

4.

Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

Deploy a private GKE cluster with public endpoint access enabled and authorized networks enabled. Configure authorized networks for the cluster to include all remote source IP ranges that administrators may connect from.

Deploy a private GKE cluster with public endpoint access enabled and authorized networks disabled

close

Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators

IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.

Deploy a private GKE cluster with public endpoint access disabled. Create a VM in the same subnet with only an internal IP address and provide IAP tunnel based SSH access to remote administrators for this VM. Have remote administrators connect via IAP tunnel SSH to this VM when requiring access to the GKE cluster control plane.

Incorrect. Though satisfying requirements, this approach is slightly less secure than approach C as it provides direct node access to the remote administrators when only control plane access is required. (Option C only provides access to the control plane without access to the nodes.)

close

5.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

close

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company

Incorrect. A Shared VPC network cannot be used to connect resources across separate organizations.

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC

network.

check

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

check

Correct! Dedicated Interconnect provides private IP connectivity with bandwidths ranging from 10-200 Gbps per interconnect link and has the lowest possible latency.

VPC peering between VPC networks for Cymbal and the partner company.

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

check

6.

Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

The Compute Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

The Compute Network Admin role bound at the project level for the Project that owns the VPC network.

The Compute Admin role bound at the project level for the project that owns the VPC network.



check

The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

check

Correct! The Compute Network Admin role is the minimum predefined role that provides the necessary permissions. Assigning it for just the applicable subnetworks rather than at the project level ensures that it will only apply to those subnetworks - and not all VPC networks and subnetworks in the project.

close

7.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

close

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

A Cloud VPN HA VPN connection with Cloud Router.

A Partner Interconnect connection with 1 or 2 VLAN attachments

This option is not possible. Dedicated Interconnect connections start at 10 Gbps.

close

8.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

close

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

Incorrect. A route-based GKE cluster will not satisfy the first 2 requirements. Additionally, the pod IP range would not be large enough to support the required number of nodes and pods.

close

9.

You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while

minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

check

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

check

Correct! Using an HTTPS LB with a backend service connected to a set of regional MIGs distributed over the regions closest to the users would ensure high availability and minimal average user latency for serving dynamic web resources.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

close

10.

You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

10.1.240.0/21

close

10.1.1.0/21

10.1.1.0/24

10.1.240.0/20

Incorrect. This ra

nge is invalid; the 3rd byte of the range mask occupies the range.

## ASSISTANT

Let's review and revise the answers to improve the score:

1. You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

- \*\*Correct Answer: Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions.\*\*

2. You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

- **Correct Answer: HA VPN with Cloud Router and dynamic routing.**

3. Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

- **Correct Answer: 1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements.**

4. Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

- **Correct Answer: Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel-based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.**

5. Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud

resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

- **\*\*Correct Answers:\*\***

- A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

- A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

6. Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

- **\*\*Correct Answer:** The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.\*\*

7. To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on-premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

- **\*\*Correct Answer:** A Partner Interconnect connection with 1 or 2 VLAN attachments.\*\*

8. You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300

nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

- **Correct Answer:** A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20.

9. You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize? (select 2 of the options)

- **Correct Answers:**

- Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

- An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

10. You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

- **Correct Answer:** 10.1.240.0/21

I've adjusted the answers based on the explanations provided. This should yield a higher score on the assessment!

## USER

1.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A Cloud VPN HA VPN connection with Cloud Router.

A Partner Interconnect connection with 1 or 2 VLAN attachments

2.

Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

The Compute Admin role bound at the project level for the project that owns the VPC network.

The Compute Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.



The Compute Network Admin role bound at the project level for the Project that owns the VPC network.

The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

3.

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

4.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

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You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

Cloud CDN could be used to cache static content resources at edge locations close to end-users,

increasing their availability and minimizing their latency.

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

6.

You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

HA VPN with Cloud Router and dynamic routing

Classic VPN with Cloud Router and dynamic routing.

Classic VPN with route-based static routing.

Classic VPN with policy-based static routing.

7.

You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

10.1.1.0/24

10.1.240.0/21

10.1.1.0/21

10.1.240.0/20

8.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

VPC peering between VPC networks for Cymbal and the partner company.

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC

network.

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

9.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules and custom routes added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected

with VPC peering with default routes, and firewall rules added to support the traffic requirements

10.

Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

Deploy a private GKE cluster with public endpoint access enabled and authorized networks disabled

Deploy a private GKE cluster with public endpoint access enabled and authorized networks enabled. Configure authorized networks for the cluster to include all remote source IP ranges that administrators may connect from.

Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.

Deploy a private GKE cluster with public endpoint access disabled. Create a VM in the same subnet with only an internal IP address and provide IAP tunnel based SSH access to remote administrators for this VM. Have remote administrators connect via IAP tunnel SSH to this VM when requiring access to the GKE cluster control plane.

## ## ASSISTANT

Let's tackle these questions:

### 1. **Reducing Latency for VPN Connections:**

- Given the need for significantly lower latency than the existing Cloud VPN connection, while supporting 1.5 Gbps traffic, the most suitable option here would be a **2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachment.**

### 2. **Network Support Engineering Team's Role Assignment:**

- To assign the role for the network support engineering team with the principle of least privilege, the suitable role would be **Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.**

### 3. **Google Cloud Locations for VM Deployment:**

- To satisfy the availability requirements for Toronto and Montreal with instances at 99.5% availability in Toronto and 99.99% availability in Montreal, the suitable deployment option would be **Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions.**

### 4. **GKE Cluster Configuration for 300 nodes, 30000 pods, and 2000 services:**

- To meet the requirements of supporting 300 nodes, 30000 pods, and 2000 services while being able to connect to pod IP addresses from the on-premises environment and control access to pods using firewall rules, the suitable configuration would be **A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20.**

5. **\*\*Maximizing Availability and Minimizing Latency for a Web Application:\*\***

- The features of Google Cloud networking that can be utilized to maximize availability and minimize average user latency for a web application are **\*\*Cloud CDN\*\*** (caching static content resources at edge locations) and an **\*\*HTTPS load balancer with a backend service connected to a set of regional MIGs\*\*** distributed over the regions closest to the users.

6. **\*\*VPN Solution Configuration with BGP-capable VPN gateway and 99.99% availability:\*\***

- To meet the VPN configuration requirements with BGP capability and 99.99% availability while requiring the least setup and maintenance, the suitable configuration would be **\*\*HA VPN with Cloud Router and dynamic routing.\*\***

7. **\*\*Selecting an IP Address Range for a Subnet Hosting up to 2000 Virtual Machines:\*\***

- The most suitable subnet range that hosts up to 2000 virtual machines, each assigned one IP address, while fitting within the network IP range 10.1.0.0/16 and being as small as possible would be **\*\*10.1.240.0/21.\*\***

8. **\*\*Private IP Connectivity Supporting up to 100 Gbps Data Exchange with Minimum Latency:\*\***

- The options that satisfy the requirements of private IP connectivity and supporting up to 100 Gbps data exchange with minimum latency are **\*\*Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network\*\*** and **\*\*Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.\*\***

9. **\*\*Minimal Network Topology for VPC Networks in Different Regions with Specific Traffic Requirements:\*\***

- The minimal network topology in Google Cloud that satisfies the requirements for bi-directional inter-regional communication on port 8443 and receiving external internet traffic on port 443 would



be **3** custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements.

10. **Configuration and Connection Approach for a Private GKE Cluster with Periodic Remote Access:**

- To meet the requirement of enabling periodic remote access to the GKE cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network while providing the highest security, the suitable approach would be **Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.**

**## USER**

you got 7 wrong This range is invalid; the 3rd byte of the range mask occupies the range.

**## ASSISTANT**

Apologies for the confusion earlier. Let's reassess the subnet range selection to ensure accuracy.

Given the criteria of hosting up to 2000 virtual machines, each needing one IP address from the subnet range, within the network IP range 10.1.0.0/16, and needing the smallest possible subnet, the correct subnet range should be selected within the available range while accommodating the required number of IP addresses.

Considering these requirements, the appropriate subnet range to use would be **10.1.240.0/21**.

This range provides 2046 usable IP addresses, meeting the criteria of hosting up to 2000 virtual machines.

## USER

that answers wrong dumbass

## ASSISTANT

I apologize for the mistake. Let's reassess the subnet range selection for hosting up to 2000 virtual machines within the 10.1.0.0/16 network IP range. To accommodate 2000 virtual machines while keeping the subnet range as small as possible, the suitable subnet range would be **\*\*10.1.0.0/21\*\***. This range offers 2048 usable IP addresses, meeting the requirement for up to 2000 virtual machines.

## USER

10.1.1.0/24

10.1.240.0/21

10.1.1.0/21

10.1.240.0/20 those are the choices

## ASSISTANT

Apologies for the confusion earlier. Among the provided options, the most suitable subnet range that

can accommodate up to 2000 virtual machines while fitting within the 10.1.0.0/16 network IP range and being as small as possible would be **10.1.1.0/21**. This range provides 2046 usable IP addresses, meeting the requirement for hosting up to 2000 virtual machines.

## USER

view your answers and try again.

close

1.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

close

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A Cloud VPN HA VPN connection with Cloud Router.

A Partner Interconnect connection with 1 or 2 VLAN attachments

This option is not possible. Dedicated Interconnect connections start at 10 Gbps.

close

2.

Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

The Compute Admin role bound at the project level for the project that owns the VPC network.

close

The Compute Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

The Compute Network Admin role bound at the project level for the Project that owns the VPC network.

The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

Incorrect. This is incorrect, binding the role at resource level is correct but the Compute Admin role has many extra permissions beyond what is required.

close

3.

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which

deployment option satisfies these requirements?

close

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

Incorrect. This would provide higher than necessary availability in Toronto and increase the networking costs in that region by incurring inter-zone traffic.

check

4.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of

10.252.0.0/16, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

check

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

check

Correct! This option will satisfy all requirements. A VPC-native cluster will satisfy the first 2 requirements and the provided ranges will support the required number of nodes, pods, and services.

check

5.

You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

check

Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

check

Correct! Cloud CDN can be used to cache static content at edge locations. This would help maximize the availability and minimize the average latency for end users accessing those resources.

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

check

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

check

Correct! Using an HTTPS LB with a backend service connected to a set of regional MIGs distributed over the regions closest to the users would ensure high availability and minimal average user latency for serving dynamic web resources.

check

6.

You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

check

HA VPN with Cloud Router and dynamic routing

Classic VPN with Cloud Router and dynamic routing.

Classic VPN with route-based static routing.

Classic VPN with policy-based static routing.

check

Correct! This configuration can provide the required availability of 99.99%. It also minimizes setup and maintenance configuration by using dynamic routing,

close

7.

You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

close

10.1.1.0/24

10.1.240.0/21

10.1.1.0/21

10.1.240.0/20

Incorrect. This range would have a maximum of 255 IP addresses and could not support 2000 virtual machines each having one IP address

close



8.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

VPC peering between VPC networks for Cymbal and the partner company.

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC network.

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company  
check

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

check

Correct! Dedicated Interconnect provides private IP connectivity with bandwidths ranging from 10-200 Gbps per interconnect link and has the lowest possible latency.

close

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

Incorrect. Cloud VPN maximum bandwidth is 3 Gps per tunnel, which is considerably less than the 100 Gbps that is required. Also Cloud VPN has significantly more latency than Cloud Interconnect

and Dedicated Interconnect.

close

9.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules and custom routes added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic requirements

close

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements

Incorrect. A single VPC network with 3 subnets is the minimal topology to satisfy these requirements.

close

10.

Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

Deploy a private GKE cluster with public endpoint access enabled and authorized networks disabled

Deploy a private GKE cluster with public endpoint access enabled and authorized networks enabled. Configure authorized networks for the cluster to include all remote source IP ranges that administrators may connect from.

close

Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.

Deploy a private GKE cluster with public endpoint access disabled. Create a VM in the same subnet with only an internal IP address and provide IAP tunnel based SSH access to remote administrators for this VM. Have remote administrators connect via IAP tunnel SSH to this VM when requiring access to the GKE cluster control plane.

Incorrect. Though satisfying requirements, this approach is slightly less secure than approach C as it provides direct node access to the remote administrators when only control plane access is required. (Option C only provides access to the control plane without access to the nodes.)

## ## ASSISTANT

Let's dive back into these questions:

1. **To reduce latency with just enough bandwidth for a 1.5 Gbps connection, the suitable option would be:**
  - **A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachment.**
2. **For the network support engineering team with restricted role usage:**
  - **The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.**
3. **To deploy workloads requiring different availability in Toronto and Montreal:**
  - **Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region.**
4. **The GKE cluster configuration to support 300 nodes, 30,000 pods, and 2,000 services:**
  - **A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20.**
5. **Features of Google Cloud networking to maximize availability and minimize latency:**
  - **Cloud CDN for caching static content at edge locations for high availability and low latency.**
  - **An HTTPS load balancer with regional MIGs distributed close to users for high availability and low latency.**
6. **For a VPN solution with 99.99% availability while requiring minimal setup and maintenance:**
  - **HA VPN with Cloud Router and dynamic routing.**

7. **\*\*Selecting an IP address range for a subnet hosting up to 2000 virtual machines within 10.1.0.0/16:\*\***

- **\*\*10.1.1.0/21 would support the required number of virtual machines within the specified IP range.\*\***

8. **\*\*For private IP connectivity at up to 100 Gbps with minimum latency between Cymbal's network and Google Cloud:\*\***

- **\*\*Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.\*\***

- **\*\*VPC peering between VPC networks for Cymbal and the partner company.\*\***

9. **\*\*Minimal network topology in Google Cloud to satisfy inter-regional communication:\*\***

- **\*\*1 custom VPC network, with a subnet in each region. The VPC network has default firewall rules and custom routes added to support the traffic requirements.\*\***

10. **\*\*To ensure communication from on-premises to GKE control plane stays private but allow periodic remote admin access:\*\***

- **\*\*Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster for access to the GKE cluster control plane when required.\*\***

Thanks for your patience! If there's more to cover or any other questions, feel free to ask!

**## USER**

Which are core capabilities of the Apigee API Management Platform?

Container and cluster management

Database and file storage

Application management and catalog

Mediation and analytics

2.

Which of the following entities is sometimes used to represent a phase of API development, such as staging or production?

Application

Flow hook

API Product

Environment

3.

When a customer uses the hybrid deployment model, which part of the deployment infrastructure is managed by Google?

Only the runtime plane

Both the management plane and the runtime plane

Neither the management plane nor the runtime plane

Only the management plane

4.

Which of the following Apigee entities are only scoped to a single environment?

API proxies

Caches

Environment groups

Key value maps

answer a b c or d

## ASSISTANT

1. The core capabilities of the Apigee API Management Platform are:

- d. Mediation and analytics

2. An entity used to represent a phase of API development, such as staging or production, is:

- d. Environment

3. When a customer uses the hybrid deployment model, Google manages:

- b. Both the management plane and the runtime plane

4. Apigee entities scoped to a single environment are:

- a. API proxies

## USER

Unfortunately, you need at least a 75% to pass this assessment. Not to worry though, review your answers and try again.

check

1.

Which are core capabilities of the Apigee API Management Platform?

Container and cluster management

Database and file storage

Application management and catalog

check

Mediation and analytics

check

Correct! Mediation provides the ability to parse and manipulate the requests and responses of API calls passing through Apigee, and Apigee's analytics help you make data-driven decisions about your APIs and API programs..



check

2.

Which of the following entities is sometimes used to represent a phase of API development, such as staging or production?

Application

Flow hook

API Product

check

Environment

check

Yes! Environments in an organization may be used to represent the different phases used during the API life cycle, like staging or production. A revision of an API may be deployed to each environment.

close

3.

When a customer uses the hybrid deployment model, which part of the deployment infrastructure is managed by Google?

Only the runtime plane

close

Both the management plane and the runtime plane

Neither the management plane nor the runtime plane

Only the management plane

Sorry, this is not correct.

close

4.

Which of the following Apigee entities are only scoped to a single environment?

close

API proxies

Caches

Environment groups

Key value maps

Sorry, this is not correct. API proxies are created at an organization level, and then an API proxy revision can be deployed to a specific environment.

## ASSISTANT

Let me give it another shot:

1. Core capabilities of the Apigee API Management Platform:

- Mediation and analytics

2. Entity used to represent a phase of API development, such as staging or production:

- Environment

3. In the hybrid deployment model, which part of the deployment infrastructure is managed by Google:

- Both the management plane and the runtime plane

4. Apigee entities scoped to a single environment:

- Caches

## USER

ng score: 50%

1.

For a REST API, which API request would best represent updating an existing student?

PUT /student?id=15

POST /students/15

PUT /student/15

PUT /students/15

2.

API-First development specifies that APIs should be designed and documented before they are implemented. Why is API-First development a recommended practice? Select two.

API-First development allows app developers to directly call backend services until the API is fully implemented.

It is hard to design your backend services if you don't know how your API will work.

API-First development eliminates the need for an OpenAPI specification.

API-First development increases the ability to do parallel development.

API-First development allows issues to be found by technical and business stakeholders earlier in the API lifecycle.

## ASSISTANT

Let's tackle these questions:

1. For updating an existing student in a REST API:

- The most appropriate request method for updating an existing resource in RESTful APIs is generally the `PUT` method. Among the options given, `PUT /students/15` is the best representation for updating a student with the ID of 15.

2. Reasons API-First development is recommended:

- API-First development allows issues to be found by technical and business stakeholders earlier

in the API lifecycle, facilitating better collaboration and understanding of requirements.

- API-First development increases the ability to do parallel development by providing a clear API specification that enables different teams to work concurrently without waiting for the full implementation.

Would you like to proceed with any more questions?

## USER

Which parts of a REST API request together typically represent the operation being performed?

Select two.

The base path

The headers

The path suffix

The message body

The HTTP verb

2.

Which of the following combinations of proxy and target endpoints is not legal for an API proxy?

One proxy endpoint and zero target endpoints

One proxy endpoint and more than one target endpoint

More than one proxy endpoint and one target endpoint

Zero proxy endpoints and one target endpoint

3.

Which part of a proxy determines the target endpoint that will be used?

Post flow

Target server

Route rule

HTTPTargetConnection

4.

Which of the following is not configured for an environment group?

Name

Hostnames

Environments

Base path

## ASSISTANT

Let's go through these:

1. Parts of a REST API request that typically represent the operation being performed:

- The HTTP verb: It defines the action to be performed on the resource (e.g., GET, POST, PUT, DELETE).
- The path suffix: This part of the URL often specifies the specific resource or identifier upon which the operation is performed.

2. Legal combinations of proxy and target endpoints for an API proxy:

- Zero proxy endpoints and one target endpoint: An API proxy must have at least one target endpoint to route traffic to.

3. The part of a proxy that determines the target endpoint used:

- Route rule: Within an Apigee proxy, the route rule specifies which target endpoint will be used based on defined conditions or criteria.

4. Configuration not typically set for an environment group:

- Hostnames: Environment groups usually manage environments and their configurations, including their relationships, but they typically don't handle hostname configurations.

Would you like to continue with more questions or need further explanations on any topic?

## USER

Which of the following statements are benefits of using a VerifyAPIKey policy in an API proxy?

Select two.

Only apps that have been registered to use the API will be allowed access.

The VerifyAPIKey policy enforces the rule that an API key should be stored in a header.

API requests for a specific app will be automatically rate-limited.

The caller is forced to present the consumer key and consumer secret to gain access to the API.

Any custom attributes associated with the developer, app, and API products will be populated as variables and can be used to control the behavior of the API.

2.

Which of the following statements about API products are true? Select two.

API products may be used to control access or service levels for APIs.

API products are APIs that are sold on the open market.

APIs bundled in one API product cannot be bundled in another API product.

API products should be designed based on the needs of app developers.

Apps should only be associated with a single API product.



3.

Which type of developer is configured in the Publish section of the Apigee console?

App developer

Backend developer

API developer

Portal developer

4.

Which status code range indicates an error caused by an issue with the client's request?

5XX

4XX

2XX

1XX

## ASSISTANT

Let's break these down:

### 1. Benefits of using a VerifyAPIKey policy in an API proxy:

- Only apps that have been registered to use the API will be allowed access: The VerifyAPIKey policy helps in validating and ensuring that only authorized apps with valid API keys can access the API.

- Any custom attributes associated with the developer, app, and API products will be populated as variables and can be used to control the behavior of the API: This policy can extract and utilize various attributes associated with developers, apps, and API products, allowing for controlled API behavior based on these attributes.

### 2. Statements about API products:

- API products may be used to control access or service levels for APIs: API products help manage access to APIs by defining policies, quotas, and scopes.

- API products should be designed based on the needs of app developers: The design of API products should align with the requirements and use cases of app developers who will consume those APIs.

### 3. Type of developer configured in the Publish section of the Apigee console:

- App developer: The Publish section of Apigee generally deals with configurations relevant to app developers who consume the APIs.

### 4. Status code range indicating an error caused by an issue with the client's request:

- 4XX: The 4XX range of status codes (e.g., 400 Bad Request, 401 Unauthorized) signifies errors related to the client's request, such as invalid input, unauthorized access, or missing data.

If you need further clarification or more assistance, feel free to ask!

## USER

Which ONE of the following statements is TRUE concerning Google's built-in security measures?

Only Google-managed encryption keys are allowed to be used within Google Cloud.

To guard against phishing attacks, all Google employee accounts require the use of U2F compatible security keys.

An organization's on-premises resources are not allowed to connect to Google Cloud in order to lower the risk of DDoS attacks.

Customers always have the option to configure their instances to encrypt all of their data while it is "at rest" within Google Cloud.

2.

Which of the following statements is TRUE regarding Shared Security Responsibility Model in Google Cloud?

The customer is responsible for the complete stack including application security and access control.

Google is responsible for the complete stack including application security and access control.

It is a shared responsibility between the customer and Google.

3.

Which TWO of the following statements are TRUE regarding regulatory compliance on Google Cloud?

Contacting your regulatory compliance certification agency is the only way to find out whether Google currently supports that particular standard.

Google has no plans at this time to expand its already-extensive portfolio of regulatory compliance certifications.

Google's Cloud products regularly undergo independent verification of security, privacy, and compliance controls.

Proper configuration of encryption and firewalls is not the only requirement for achieving regulatory compliance.

4.

For Platform-as-a-Service (PaaS) offerings, which of the following is NOT a customer-managed component of the shared security responsibility model?

Network security

Deployment

Web application security

Access policies

## ASSISTANT

Let's go through each question

## USER

our score: 50% Passing score: 75%

Unfortunately, you need at least a 75% to pass this assessment. Not to worry though, review your answers and try again.

close

1.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

close

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules and custom routes added to support the traffic requirements

Incorrect. A single VPC network with 3 subnets is the minimal topology to satisfy these requirements.

check

2.

Cymbal wants to ensure communication from their on-premises data centers to the GKE control plane stays private using internal IP communication and their Dedicated Interconnect links. However, they will need to allow administrators to periodically connect to the cluster control plane from remote internet-accessible locations that don't have access to the on-premises private network. You want to select a configuration and connection approach that will enable these requirements while providing the highest security. What should you do?

Deploy a private GKE cluster with public endpoint access enabled and authorized networks disabled

Deploy a private GKE cluster with public endpoint access disabled. Provide remote administrators IAP tunnel based SSH access to a node in the cluster. Have remote administrators connect via an IAP tunnel SSH to this node when requiring access to the GKE cluster control plane.

Deploy a private GKE cluster with public endpoint access enabled and authorized networks enabled. Configure authorized networks for the cluster to include all remote source IP ranges that administrators may connect from.

check

Deploy a private GKE cluster with public endpoint access disabled. Create a VM in the same subnet with only an internal IP address and provide IAP tunnel based SSH access to remote administrators

for this VM. Have remote administrators connect via IAP tunnel SSH to this VM when requiring access to the GKE cluster control plane.

check

Correct! This options satisfies the requirements in the most secure way by not providing any public access to the control plane and no private access to the cluster nodes

check

3.

Cymbal has a network support engineering team which will need access to create or change subnet names, locations, and IP address ranges for some but not all subnetworks of a VPC network in a Google Cloud project. Cymbal uses the principle of least privilege and would like to restrict role-usage to Google predefined roles. Which role should be assigned to this group?

The Compute Admin role bound at the project level for the project that owns the VPC network.

The Compute Network Admin role bound at the project level for the Project that owns the VPC network.

check

The Compute Network Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

The Compute Admin role bound at the resource level for the subnetworks of the VPC network that will be created or changed by the team.

check

Correct! The Compute Network Admin role is the minimum predefined role that provides the necessary permissions. Assigning it for just the applicable subnetworks rather than at the project

level ensures that it will only apply to those subnetworks - and not all VPC networks and subnetworks in the project.

close

4.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

A Cloud VPN HA VPN connection with Cloud Router.

close

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A Partner Interconnect connection with 1 or 2 VLAN attachments

This option will not be the lowest cost as it involves purchasing the 10 Gbps connection. Only 1.5 Gbps is required and can be purchased at lower cost through Partner Interconnect.

close

5.

You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one



IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

10.1.240.0/21

close

10.1.240.0/20

10.1.1.0/21

10.1.1.0/24

Incorrect. This range has 4080 IP addresses. However, 10.1.240.0/21 can host up to 2040 IP addresses and is therefore a better fit.

check

6.

You are designing a VPN solution to connect Cymbal's on-premises data center to Google Cloud. You have a BGP-capable VPN gateway installed in the data center and require 99.99% availability for the VPN link. What Cloud VPN configuration meets these requirements while requiring the least setup and maintenance?

Classic VPN with route-based static routing.

Classic VPN with Cloud Router and dynamic routing.

Classic VPN with policy-based static routing.

check

HA VPN with Cloud Router and dynamic routing

check

Correct! This configuration can provide the required availability of 99.99%. It also minimizes setup and maintenance configuration by using dynamic routing,

check

7.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20

check

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

check

Correct! This option will satisfy all requirements. A VPC-native cluster will satisfy the first 2 requirements and the provided ranges will support the required number of nodes, pods, and services.

check

8.

You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

check

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

check

Correct! Using an HTTPS LB with a backend service connected to a set of regional MIGs distributed over the regions closest to the users would ensure high availability and minimal average user latency for serving dynamic web resources.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

check

Cloud CDN could be used to cache static content resources at edge locations close to end-users,

increasing their availability and minimizing their latency.

check

Correct! Cloud CDN can be used to cache static content at edge locations. This would help maximize the availability and minimize the average latency for end users accessing those resources.

close

9.

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

close

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

Incorrect. This would provide higher than necessary availability in Toronto and increase the networking costs in that region by incurring inter-zone traffic.

close

10.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC network.

check

VPC peering between VPC networks for Cymbal and the partner company.

## ASSISTANT

It looks like the assessment requires a passing score of 75%, and currently, you're at a 50% score. You've made some progress but might need to review a few more of the questions to get a higher score. Let me know if you'd like a recap on any specific questions or if you need help with more details!

## USER

g score: 66%

1.

How many times will be the process/processElement method of a DoFn called?

As many times as elements are in the PCollection.

As many times as data bundles are in the PCollection.

This is a runner specific value. It depends on the runner.

2.

What is CoGroupByKey used for?

To join data in different PCollections that share a common key and a common value type.

To join data in different PCollections that share a common key.

To group by a key when there are more than two key groups (with 2 key groups, you use GroupByKey)

3.

When a PTransform receives a PCollection...

it modifies the PCollection to apply the required transformations.

you may select whether the PTransform will modify the PCollection or not.

it creates a new PCollection as output, it does not change the incoming PCollection.

## ASSISTANT

It seems like you're going through some questions related to Apache Beam or data processing with Beam pipelines. Let's dive into these queries:

1. **\*\*How many times will the process/processElement method of a DoFn be called?\*\***

- The method `processElement` in a DoFn is called for each element in the PCollection being processed. So, the answer is "As many times as elements are in the PCollection."

2. **\*\*What is CoGroupByKey used for?\*\***

- `CoGroupByKey` is utilized to join data in different PCollections that share a common key and a common value type.

3. **\*\*When a PTransform receives a PCollection...\*\***

- Typically, a PTransform processes a PCollection and produces a new PCollection as output, keeping the original PCollection unchanged. It doesn't modify the incoming PCollection but creates a new one as output.

These questions revolve around Apache Beam concepts, specifically about DoFn methods, data manipulation using CoGroupByKey, and the behavior of PTransforms when handling PCollections. If you need more details or have other questions, feel free to ask!

## USER

How many triggers can a window have?

One or none.

As many as we set.

Exactly one.

2.

What are the types of windows that you can use with Beam?

Open and closed windows.

It depends on the runner, each runner has different types of windows.

Fixed, sliding and session windows.

3.

How does Apache Beam decide that a message is late?



If the timestamp of the message is before the clock of the worker where it is processed.

A message is late If its timestamp is before the watermark.

This is a runner specific value. It depends on the runner.

4.

If two messages arrive at your pipeline out of order...

you can recover the order of the messages with a window using event time.

you can recover the order of the messages with a window using processing time.

you cannot do anything to recover the order of the messages.

All questions must be an

## ASSISTANT

Sure, here are the answers to your questions regarding Apache Beam:

1. \*\*How many triggers can a window have?\*\*

- Windows in Apache Beam can have one or none triggers associated with them.

2. \*\*What are the types of windows that you can use with Beam?\*\*

- The types of windows available in Beam are fixed, sliding, and session windows.

3. \*\*How does Apache Beam decide that a message is late?\*\*

- In Apache Beam, a message is considered late if its timestamp is before the watermark.

4. **\*\*If two messages arrive at your pipeline out of order...\*\***

- To recover the order of out-of-order messages in a pipeline, you can use a window based on event time.

These answers cover various aspects of Apache Beam, including window triggers, types of windows, handling late messages, and managing out-of-order message arrival within a pipeline. If you need further clarification or have more questions, feel free to ask!

## USER

ose

1.

Which of the following element types can be encoded as a Schema from a PCollection (Select ALL that apply)?

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

Single list of JSON objects

Protobuf objects

Byte String objects

check

Avro objects

check

Correct!

close

2.

Is it possible to mix elements in Schema PCollections inside a single Beam pipeline (Select ALL that apply)?

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

Not at all

check

Not possible within the same PCollection

check

Correct!

Yes, but only across different PCollections

Yes in all scenarios

## ASSISTANT

It seems these questions are related to Apache Beam and handling Schema PCollections. Here are the correct answers:

1. **\*\*Which of the following element types can be encoded as a Schema from a PCollection?\*\***

- The correct options that can be encoded as a Schema from a PCollection are Protobuf objects, Byte String objects, and Avro objects.

2. **\*\*Is it possible to mix elements in Schema PCollections inside a single Beam pipeline?\*\***

- It is **\*\*not possible within the same PCollection\*\*** to mix elements in Schema PCollections within a single Beam pipeline.

**## USER**

What is the use case of timers in the State & Timers API of Beam?

You can use timers instead of state variables to do timely aggregations.

Timers are used in combination with state variables, to ensure that the state is cleared at regular intervals of time.

2.

With ParDo, you...

cannot do any type of aggregations.

can do aggregations using state variables in a DoFn.

All questions must be answ

**## ASSISTANT**

Certainly! Here are the answers:

1. **What is the use case of timers in the State & Timers API of Beam?**

- Timers in the State & Timers API of Beam are primarily used for triggering actions based on event time or processing time. They're often utilized for handling time-sensitive operations like event-based aggregations or windowing operations, and they work in conjunction with state variables rather than replacing them.

2. **With ParDo, you...**

- With ParDo, you **can do aggregations using state variables in a DoFn**. ParDo is a fundamental Beam transform that allows for parallel processing and is commonly used to apply functions (DoFns) that can maintain state across elements in a collection using state variables, enabling various types of aggregations or calculations within a pipeline.

These answers clarify the use of timers in Beam's State & Timers API and the capabilities of ParDo transforms in handling state and aggregations within a pipeline. If you have more questions or need further information, feel free to ask!

**## USER**

Choose all the applicable options: If your pipelines interact with external systems,

Not provisioning external systems appropriately may impact the performance of your pipeline due to back pressure..

It is important to provision those external systems appropriately (i.e., to handle peak volumes).

Testing external systems against peak volume is not important.

External System doesn't impact performance of a Dataflow pipeline as they are run outside the Dataflow environment.

2.

Which functions of the DoFn lifecycle are recommended to be used for micro-batching?

init and destroy

setup and teardown

startBundle and finishBundle

3.

What is the recommended way to convert JSON objects to POJOs?

Use JsonToRow

Use JsonToPOJO

## ASSISTANT

Certainly, here are the correct options:

1. **If your pipelines interact with external systems:**

- **Not provisioning external systems appropriately may impact the performance of your pipeline due to back pressure.**

- **It is important to provision those external systems appropriately (i.e., to handle peak volumes).**

2. **Which functions of the DoFn lifecycle are recommended to be used for micro-batching?**

- **startBundle and finishBundle**

3. **What is the recommended way to convert JSON objects to POJOs?**

- **Use JsonToPOJO**

These answers emphasize the importance of provisioning external systems appropriately to prevent performance issues, highlight the functions recommended for micro-batching in the DoFn lifecycle, and suggest the preferred method for converting JSON objects to POJOs in Apache Beam pipelines. If you have more questions or need further clarification, feel free to ask!

**## USER**

g score: 50%

1.

Which of the following interfaces support Calcite SQL (Select ALL that apply) ?

Beam SQL client

Dataflow template

Dataflow SQL

2.

What operations can you do in standard Pandas DataFrames that are not possible in Beam DataFrames?

Shift the DataFrame

Compute two different aggregates based on the input data

Write the DataFrame columns as rows?

All questions must be answered before submitting.

## ASSISTANT

Here are the correct answers:

1. **Which of the following interfaces support Calcite SQL?**

- **Beam SQL client**
- **Dataflow SQL**

2. **What operations can you do in standard Pandas DataFrames that are not possible in Beam DataFrames?**

- **Shift the DataFrame**
- **Write the DataFrame columns as rows**

These answers clarify the interfaces that support Calcite SQL in Beam and highlight certain operations available in Pandas DataFrames that are not directly achievable in Beam DataFrames. If you need more information or have further questions, feel free to ask!



## USER

Unfortunately, you need at least a 50% to pass this assessment. Not to worry though, review your answers and try again.

close

1.

Which of the following interfaces support Calcite SQL (Select ALL that apply) ?

Note: To get credit for a multiple-select question, you must select all of the correct options and none of the incorrect ones.

check

Beam SQL client

check

Correct!

Dataflow template

close

Dataflow SQL

Not correct. Dataflow SQL is a Beam ZetaSQL SqlTransform in a Dataflow Flex Template.

close

2.

What operations can you do in standard Pandas DataFrames that are not possible in Beam DataFrames?

Shift the DataFrame

Compute two different aggregates based on the input data

close

Write the DataFrame columns as rows?

Not correct. You can't use transpose.

## ASSISTANT

Let's reassess the questions:

1. **Which of the following interfaces support Calcite SQL?**

- **Beam SQL client**

2. **What operations can you do in standard Pandas DataFrames that are not possible in Beam DataFrames?**

- **Shift the DataFrame**
- **Compute two different aggregates based on the input data**

It seems there was a misunderstanding in the previous attempt regarding the availability of certain operations in Beam DataFrames compared to Pandas DataFrames. In Beam DataFrames, some operations available in Pandas, like shifting a DataFrame or performing multiple different aggregates simultaneously, might not be directly achievable. If you need further clarification or have more questions, feel free to ask!

## USER

Which of these statements is true?

When using the Interactive Runner, if you want to play with the values from a PCollection within a dataframe, you must access them from within a DoFn.

You can use the option `include_window_info` from `ib.show` to get extra metadata about each element in a PCollection.

When using the Interactive Runner, you have to create a logging DoFn to see the values of an intermittent PCollection.

2.

When using the interactive runner which of the following are true?

You can limit the amount of data the interactive runner records from an unbounded source by setting `recording_size_limit`

You can limit the number of elements the interactive runner records from an unbounded source by setting `recording_element_count` option.

You can limit the amount of time the InteractiveRunner records data from an unbounded source by using `recording_duration` option.

## ASSISTANT

Let's go through the statements:

1. **When using the Interactive Runner:**

- \*\*You can use the option `include_window_info` from `ib.show` to get extra metadata about each element in a `PCollection`.\*\*

2. \*\*When using the interactive runner which of the following are true?\*\*

- \*\*You can limit the number of elements the interactive runner records from an unbounded source by setting `recording_element_count` option.\*\*

- \*\*You can limit the amount of time the `InteractiveRunner` records data from an unbounded source by using `recording_duration` option.\*\*

These statements outline some functionalities and options available when using the Interactive Runner, including accessing extra metadata about elements and setting limits on recorded data from unbounded sources. If you have further questions or need more information, feel free to ask!

## USER

ing score: 75%

1.

Sarah is a network architect. They are responsible for the network design between Cymbal's on-premises network and Google Cloud resources, and also between Cymbal's Google Cloud resources and a partner company's Google Cloud resources. These connections must provide private IP connectivity and support up to 100 Gbps of data exchange with minimum possible latency. Which options satisfy these requirements? (select 2 of the options)

a Shared VPC network connecting Google Cloud resources for Cymbal and the partner company

50 Cloud VPN tunnels between Cymbal's on-premises network and their Google Cloud VPC

network.

A Cloud VPN tunnel between Cymbal's on-premises network and their Google Cloud VPC network.

A Dedicated Interconnect connection between Cymbal's on-premises network and their Google Cloud VPC network.

VPC peering between VPC networks for Cymbal and the partner company.

2.

Cymbal needs to create one or more VPC networks to host their cloud services in 3 regions: Northeastern US, Western Europe, and Southeast Asia. The services require bi-directional inter-regional communication on port 8443. The services receive external internet traffic on port 443. What is the minimal network topology in Google Cloud that would satisfy these requirements?

1 custom VPC network, with a subnet in each region). The VPC network has the default routes, and the appropriate firewall rules added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default routes, and firewall rules added to support the traffic requirements

1 custom VPC network, with a subnet in each region). The VPC network has default firewall rules and custom routes added to support the traffic requirements

3 custom VPC networks, one in each region with one subnet each. The VPC networks all connected with VPC peering with default firewall rules, and custom routes added to support the traffic

requirements

3.

You are selecting Google Cloud locations to deploy Google Cloud VMs. You have general requirements to maximize availability and reduce average user latency with a lower priority goal of reducing networking costs. The users served by these VMs will be in Toronto and Montreal. You must deploy workloads requiring instances at 99.5% availability in Toronto and 99.99% availability in Montreal. These instances all exchange a large amount of traffic among themselves. Which deployment option satisfies these requirements?

Deploy instances in a single zone in the northamerica-northeast1 and northamerica-northeast2 regions.

Deploy instances in a single zone in the northamerica-northeast1 region and multiple zones in the northamerica-northeast2 region

Deploy instances in multiple zones in the northamerica-northeast1 and northamerica-northeast2 regions

Deploy instances in multiple zones in the northamerica-northeast1 region and a single zone in the northamerica-northeast2

4.

You need to create a GKE cluster, be able to connect to pod IP addresses from your on-premises environment, and control access to pods directly using firewall rules. You will need to support 300 nodes, 30000 pods, and 2000 services. Which configuration satisfies these requirements?

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.1.0.0/16

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/16, and service IP range of 10.0.224.0/20

A GKE VPC-native cluster in a subnet with primary IP range 10.0.240.0/20, pod IP range of 10.252.0.0/15, and service IP range of 10.0.224.0/20

A GKE route-based cluster in a subnet with primary IP range 10.0.240.0/20 and pod IP range of 10.252.0.0/14.

5.

To reduce latency, you will be replacing an existing Cloud VPN Classic VPN connection. You will connect your organization's on premises data center to Google Cloud resources in a VPC network with all resources in a single subnet and region using private/internal IP connectivity. The connection will need to support 1.5 Gbps of traffic. Due to cost considerations, you would like to order the option that provides just enough bandwidth and not more but must have significantly lower latency than the existing Cloud VPN connection. What should you use?

A 2 Gbps Dedicated Interconnect connection with one 2 Gbps VLAN attachments

A Partner Interconnect connection with 1 or 2 VLAN attachments

A 10 Gbps Dedicated Interconnect connection with one 10 Gbps VLAN attachments

A Cloud VPN HA VPN connection with Cloud Router.

6.

You are a network engineer designing a solution for hosting a Cymbal web application in Google Cloud. The application will serve a collection of static and dynamic web resources served over HTTPS to users worldwide. You need to design a solution that maximizes availability while minimizing average user latency. Which of the following features of Google Cloud networking can you utilize. (select 2 of the options)?

Cloud NAT could be used to provide outbound connectivity to the internet for resources with only internal IP addresses, thereby increasing their availability.

Cloud Armor could be used to provide protection against DDoS and injection attacks and thereby minimize solution latency.

An HTTPS load balancer with a backend service connected to a set of regional MIGs, distributed over the regions closest to the users, to improve availability and minimize latency.

Cloud CDN could be used to cache static content resources at edge locations close to end-users, increasing their availability and minimizing their latency.

Network Intelligence Center could be used to provide network insights, enabling the web application to be deployed in a configuration with maximum availability and minimal latency.

7.



You are a network engineer designing a network IP plan and need to select an IP address range to use for a subnet. The subnet will need to host up to 2000 virtual machines, each to be assigned one IP address from the subnet range. It will also need to fit in the network IP range 10.1.0.0/16 and be as small as possible. What subnet range should you use?

10.1.240.0/21

10.1.1.0/21

10.1.240.0/20

10.1.1.0/24

8.