

# Course 1 resources and citations

# **Module 1: Introduction to cloud computing**

#### Resources

Helpful resources and tips

- Google Docs Editors Help: Google Docs Help Center
- Google Docs Editors Help: Google Sheets Help Center
- Google Docs Editors Help: How to use Google Slides
- QWIKlabs Help: Common problems with labs/lab troubleshooting

# Google's trusted infrastructure

Google Cloud: Google Infrastructure Security Design Overview

#### Cloud benefits and limitations

Google Cloud: Advantages and Disadvantages of Cloud Computing

# Serverless computing

- Google Cloud: Serverless
- Journal of Cloud Computing: Serverless computing: a security perspective



#### **Citations**

#### Composition of the cloud

- Cloud Flare. (n.d.) What is latency? How to fix latency.
- Google Cloud. (n.d.). What is Cloud Storage? Retrieved January 18, 2024.
- Google Cloud. (2023, September 1) <u>Building blocks of reliability in Google Cloud.</u>
- Think with Google. (n.d.). <u>Consumer insights: Mobile site abandonment after delayed</u> <u>load time</u>. Google.

# Cloud deployment models

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- Google cloud. (n.d.) What is private cloud? Retrieved January 18, 2024.
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#### Google's trusted infrastructure

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#### Cloud benefits and considerations

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- Salesforce. (n.d.) <u>12 benefits of cloud computing</u>.

#### Cloud benefits and limitations

• Google Cloud. (n.d.). What is cloud computing?



#### Ephemerality and cloud resources

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- Google Cloud. (n.d.) <u>Best practices for operating containers.</u>
- IBM. (n.d.) What is cloud computing?

#### Virtualization and virtual machines

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- IBM. (n.d.) What is virtualization?
- Infosec Institute. (2012, December). Virtualization security.
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# Serverless computing

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- Docker. (n.d.) What is a container?
- Google Cloud. (n.d.) What are containers?
- Intel. (n.d.) Containers in the Cloud: An easier way to deploy workloads.



#### Cloud storage benefits

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- IBM. (n.d.) What is cloud storage?
- Jones, M. T. (2010). <u>Anatomy of a cloud storage infrastructure</u>. IBM developerWorks.
- Tahir, A., Chen, F., Khan, H. U., Ming, Z., Ahmad, A., Nazir, S., & Shafiq, M. (2020). <u>A</u>
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# Types of storage in the cloud

- Google Cloud. (n.d.) <u>Buckets</u>.
- Google Cloud. (n.d.) What is object storage?
- Harris, J. (2014, February 26). <u>Bridging the divide between unstructured and structured</u> <u>data</u>. Berkeley School of Information Blog.
- IBM. (n.d.) What is cloud storage?

#### Google's storage options

Google Cloud. (2024, January 17). <u>Storage classes</u>.



# Module 2: Security in the cloud

#### Resources

Controls that contribute to security depth

Google Cloud: NIST Cybersecurity Framework & Google Cloud

#### Platform as a service

Google Cloud: What is Platform as a Service (PaaS)?

Firewalls for network security

• Google Cloud: Network controls in GCP vs. on-premises: Not so different after all

# **Citations**

# Cloud defense in depth

- Envid, I., & Kiner, E. (2019, June 20). <u>Google Cloud networking in depth: Three</u> <u>defense-in-depth principles for securing your environment</u>. <u>Google Cloud Blog</u>.
- Google Cloud. (2023, August). Google security overview [Whitepaper].
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- Zhang, K., & Somani, Z. (2022, August 26). How to avoid cloud misconfigurations and move towards continuous compliance. Google Cloud Blog.

# Controls that contribute to security depth

 Google Cloud. (2020, April). <u>NIST Cybersecurity Framework & Google Cloud</u> [Whitepaper].



# The shared responsibility model

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- Google Cloud. (2023, August 21). Share responsibility and shared fate on Google Cloud.
- National Cyber Security Centre. (n.d.) <u>Cloud security guidance</u>.
- Oracle. (n.d.). What is cloud security?

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- Google Cloud. (2023, August 21). Share responsibility and shared fate on Google Cloud.
- Kaczorowski, M. (2019, March 29). <u>Exploring container security: The shared</u> responsibility model in GKE. Google Cloud Blog.

# Shared responsibility and cloud migration

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#### The shared fate model

- Chuvakin, A., & Rosenblatt, S. (2023, March 22). <u>Lessons from the future: Why shared</u> fate shows us a better cloud roadmap. Google Cloud Blog.
- Google Cloud. (2023, August 21). Share responsibility and shared fate on Google Cloud.
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#### An overview of laaS, PaaS, and SaaS

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- Google Cloud. (n.d.). <u>PaaS vs laaS: What's the difference?</u>
- Google Cloud. (n.d.). What is laaS?
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- National Cyber Security Centre. (n.d.). <u>Cloud security shared responsibility model</u>.

#### Infrastructure as a service

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- National Cyber Security Centre. (n.d.). <u>Cloud security shared responsibility model</u>.

#### Platform as a service

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- Google Cloud. (2023, August 21). Share responsibility and shared fate on Google Cloud.

# Software as a service

- Google Cloud. (n.d.). <u>Software as service (SaaS)</u>.
- Splunk. (2022, November 17) Shadow it.



# IAM policies provide security depth

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- Google Cloud. (2024, January 17). *Use IAM Securely*.
- Okta. (2023, September 15). What is LDAP & how does it work?
- Red hat. (2022, June 3). What is lightweight directory access protocol (LDAP)
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#### IAM in the cloud

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- Google Cloud. (n.d.). <u>Cloud Identity</u> [Whitepaper].
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- Google Cloud. (2024, January 17). <u>Cloud Load Balancing overview</u>.
- VMware. (n.d.). What is software-defined networking (Sdn)?



# Firewalls for network security

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- Palo Alto Networks. (n.d.) What is a firewall as a service?
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- IBM. (n.d.). What is a virtual private cloud (VPC)?.
- Kuehler, J & Mollison, G. (2018, October 3). <u>Network controls in GCP vs. on-premises:</u> Not so different after all. Google Cloud Blog.
- Palo Alto Networks. (n.d.). What is network segmentation?

# Module 3: The security lifecycle

#### Resources

Terraform as an IaC tool

• HashiCorp: Resource Blocks

#### **Citations**

#### An overview of DevSecOps

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   <u>DevSecOps tools & activities</u>.
- Sanders, G., Morrow, T., Richmond, N., & Woody, C. (2021, July). <u>Integrating zero trust</u>
   <u>and DevSecOps</u> [White paper]. Carnegie Mellon University.

# Software pipelines

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- Red Hat. (2022, May 11) What is a CI/CD pipeline?
- Synopsys Editorial Team. (2017, March 27). <u>Top 4 software development methodologies</u>.
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#### The CI/CD pipeline

- Amazon Web Services. (n.d.). What is continuous delivery?
- Gitlab. (n.d.) What is CI/CD?
- Google Cloud. (n.d.). <u>DevOps capabilities</u>.
- Palo Alto Networks. (n.d.) What is the CI/CD pipeline?
- Red Hat. (2022, May 11) What is a CI/CD pipeline?

# Software pipelines and Google's Cloud Build

Google Cloud. (2024, January 17). <u>Overview of Cloud Build</u>.



# Introduction to the software supply chain

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- Schmitt, J. (2023, June 26). <u>Software supply chain: What it is and how to keep it secure</u>.
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- Temple-Raston, D. (2021, April 16). <u>A "worst nightmare" cyberattack: The untold story of the solarwinds hack</u>. NPR.
- Williams, J. (2020, December 15). What you need to know about the solarwinds supply-chain attack. SANS Institute Blog.

#### Levels of the software supply chain

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# Strengthen the supply chain with Software Delivery Shield

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- Google Cloud. (2024, January 17). Overview of Assured Open Source Software.
- McGrath, M. (2022, October 11). <u>Software Delivery Shield protects the software supply</u> <u>chain</u>. Google Cloud Blog.



#### Infrastructure as code (IaC) in the cloud

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- Palo Alto. (n.d.) What is IaC security?

# An overview of policy as code

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- Palo Alto. (n.d.) What is Policy as Code?
- Synopsys. (n.d.). <u>Policy-as-code</u>.
- Zhang, X. (2023, April 7). <u>Realize policy-as-code with Pulumi through CrossGuard on Google Cloud</u>. Google Cloud Blog.

#### Terraform as an IaC tool

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- Hashicorp. (n.d.). What Is Infrastructure as Code with Terraform?



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- Red Hat. (2023, March 10). What is GitOps?
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# Module 4: Cloud security analyst roles and responsibilities

#### Resources

Useful Google Cloud tools

- Google Cloud: Cloud Functions documentation
- Google Cloud: Cloud Identity
- Google Cloud: Cloud Shell documentation
- Google Cloud: Compute Engine documentation
- Google Workspace: How teams of all sizes connect, create, and collaborate

# Introduction to artificial intelligence

- Google Cloud: Generative AI examples
- Google Cloud: Introduction to Generative Al

# Guide to Virtual Private Cloud (VPC)

• Google Cloud: gcloud compute networks



#### **Citations**

# Introduction to the cloud security analyst's role

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# Cloud security analyst job responsibilities

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# The security ecosystem

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#### Communicate with stakeholders

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- National Institute of Standards and Technology. (n.d.). <u>Stakeholder</u>. Computer Security Resource Center.



# Core skills for cloud cybersecurity analysts

 Cybersecurity Guide Contributors. (2023, October 23). <u>Become a security analyst: Skills</u> <u>and steps</u>. Cybersecurity guide.

# Common tools in the cloud analyst's toolkits

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- Hashicorp (n.d.). *Terraform*.
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- Google Cloud. (2024, January 18). gcloud CLI overview.



# Guide to Virtual Private Cloud (VPC)

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- Google Cloud. (2023, November). <u>Virtual Private Cloud (VPC) overview</u>.