



Professional Cloud Architect

Course description

Become a Google Cloud Professional Cloud Architect and validate your ability to design, develop, secure, and manage enterprise-grade cloud solutions on Google Cloud. This comprehensive instructor-led training prepares you for the Professional Cloud Architect certification through expert-led instruction, hands-on labs, architectural design exercises, real-world case studies, and exam-focused practice.

The Google Cloud Professional Cloud Architect Certification course is designed to help IT professionals master the principles of designing, planning, implementing, and managing cloud architectures on Google Cloud.

Participants will gain hands-on experience with Google Cloud's core infrastructure services, including Compute Engine, Virtual Private Cloud (VPC), Identity and Access Management (IAM), Cloud Storage, networking, monitoring, infrastructure automation using Terraform, managed services, and modern AI capabilities using Vertex AI.

The course also introduces Google Cloud's AI and Machine Learning ecosystem, enabling learners to understand how generative AI and Vertex AI integrate into enterprise cloud architectures. Through practical labs, architecture scenarios, and certification-focused exercises, participants develop the skills needed to design secure, scalable, resilient, and cost-effective cloud solutions while preparing for the Google Cloud Professional Cloud Architect certification exam.

- Course level: Professional
- Duration: 4 days
- Delivery format: Instructor-Led Training (ILT) / On-Demand

Activities

This course includes expert-led instruction, hands-on labs, architectural design exercises, real-world case studies, and exam-focused practice to reinforce learning.

Course objectives

After completing this course, students will be able to:

- Design scalable, secure, and highly available cloud architectures using Google Cloud.
- Build enterprise networking solutions using VPC, VPN, Shared VPC, Load Balancing, and Cloud Interconnect.
- Deploy and manage virtual machines using Compute Engine.
- Configure Identity and Access Management (IAM) for secure access control.
- Select and implement the appropriate Google Cloud storage and database services.
- Monitor, troubleshoot, and optimize cloud resources using Cloud Monitoring and Logging.
- Automate infrastructure deployment using Terraform and Google Cloud Marketplace.
- Design resilient and cost-optimized enterprise cloud environments.
- Integrate AI and Machine Learning services into cloud applications using Vertex AI.
- Understand Generative AI concepts, prompt engineering, and AI agent architectures.
- Apply Google Cloud architectural best practices to real-world business scenarios.
- Prepare confidently for the Google Cloud Professional Cloud Architect certification exam.

Key features

- **Google Cloud Fundamentals:** Navigate the Google Cloud Console and Cloud Shell, deploy solutions using Google Cloud Marketplace, and understand the Google Cloud resource hierarchy.
- **Cloud Infrastructure:** Deploy and manage Compute Engine virtual machines, configure Virtual Private Cloud (VPC) networks, and implement firewall rules and networking best practices.
- **Identity & Security:** Configure IAM roles and permissions, apply cloud security best practices, and manage secure access to cloud resources.

- **Storage & Databases:** Select appropriate storage solutions, implement Cloud Storage and Cloud SQL, and understand Google Cloud database offerings.
- **Networking:** Configure Cloud VPN and hybrid connectivity, implement Shared VPC and VPC Peering, configure Cloud Load Balancing, and design scalable network architectures.
- **Infrastructure Automation:** Automate deployments using Terraform and provision infrastructure using Infrastructure as Code (IaC).
- **Monitoring & Operations:** Monitor cloud resources, analyze logs and metrics, optimize cloud performance, and manage billing and quotas.
- **Artificial Intelligence:** Understand AI and ML services on Google Cloud, explore Vertex AI capabilities, learn Generative AI concepts, apply prompt engineering techniques, and understand AI agents and enterprise AI solutions.
- **Certification Preparation:** Analyze architecture case studies, solve scenario-based questions, apply Google Cloud best practices, and prepare for the Professional Cloud Architect certification exam.

Target audience

This course is ideal for:

- Cloud Architects
- Solution Architects
- Enterprise Architects
- Cloud Engineers
- Infrastructure Engineers
- DevOps Engineers
- Site Reliability Engineers (SREs)
- Systems Administrators
- Network Engineers
- Security Engineers
- Technical Consultants
- IT Managers
- Software Engineers transitioning to cloud
- Professionals preparing for the Google Cloud Professional Cloud Architect certification

- Organizations adopting Google Cloud Platform

Prerequisites

For the best learning experience, participants are recommended to have completed the following courses:

- Google Cloud Fundamentals: Core Infrastructure
- Getting Started with Google Kubernetes Engine
- Getting Started with Terraform
- Architecting with Google Cloud: Design & Process

Recommended experience (for certification):

- 3+ years of industry experience, including one or more years designing and managing cloud solutions.
- Experience with Google Cloud is recommended for the certification exam but is not mandatory for attending the course.

Course outline

Course 1: Architecting with Google Compute Engine

Module 1: Introduction to Google Cloud

Lecture content

- Platform overview and interaction tools
- Interacting with the Google Cloud console and Cloud Shell
- Deploying solutions using Google Cloud Marketplace

Lab content

- Module quiz

Module 2: Virtual Networks

Lecture content

- VPC, firewalls, and networking basics
- Implementing VPC networks and firewall rules

Lab content

- Module quiz

Module 3: Virtual Machines

Lecture content

- Compute Engine instances and customization
- Creating and customizing VM instances using Compute Engine

Lab content

- Module quiz

Module 4: Identity and Access Management (IAM)

Lecture content

- Resource hierarchy and roles
- Administering Identity and Access Management for resources

Lab content

- Module quiz

Module 5: Data Storage Services

Lecture content

- Cloud Storage, Cloud SQL, and specialized databases
- Implementing data storage services in Google Cloud

Lab content

- Module quiz

Module 6: Resource Management

Lecture content

- Quotas, labels, and billing
- Managing and examining billing of Google Cloud resources

Lab content

- Module quiz

Module 7: Resource Monitoring

Lecture content

- Cloud Monitoring and logs
- Monitoring resources using Google Cloud services
- Debugger capabilities

Lab content

- Module quiz

Module 8: Interconnecting Networks

Lecture content

- HA VPN, Peering, and Interconnect
- Google Cloud interconnect and peering services available to connect infrastructure
- When to use Shared VPC and when to use VPC Network Peering

Lab content

- Lab: Virtual Private Networks (VPN)
- Module quiz

Module 9: Load Balancing and Autoscaling

Lecture content

- HTTP/Internal load balancers
- Various load balancing services
- Autoscaling behavior description

Lab content

- Lab: ILT Configure an HTTP Load Balancer with Autoscaling
- Lab: Configuring an Internal Load Balancer
- Module quiz

Module 10: Infrastructure Automation

Lecture content

- Terraform and Cloud Marketplace
- Automating the deployment of Google Cloud infrastructure services
- Google Cloud Marketplace outlines

Lab content

- Lab: Automating the Deployment of Infrastructure Using Terraform
- Module quiz

Module 11: Managed Services

Lecture content

- Overview of managed data processing services
- Leveraging managed services in Google Cloud

Lab content

- Module quiz

Course 2: Introduction to AI and Machine Learning on Google Cloud

Module 12: Course Introduction

Lecture content

- Course Introduction
- Course Objectives
- Learning Outcomes
- Course Structure and Roadmap
- Understanding the Data-to-AI Lifecycle

Lab content

- NA

Module 13: AI Foundations

Lecture content

- AI and Machine Learning on Google Cloud
- AI Infrastructure Overview
- AI Models and ML Concepts
- Data and ML Products on Google Cloud
- Introduction to BigQuery ML
- AI/ML Framework on Google Cloud
- Understanding AI Use Cases

Lab content

- Lab: Predict Visitor Purchases with BigQuery ML

Additional activities

- Quiz
- Reading Assignments

Module 14: Generative AI

Lecture content

- Introduction to Generative AI
- Generative AI on Google Cloud
- Foundation Models and LLM Concepts
- Idea-to-App Lifecycle
- Prompt Engineering Techniques
- Deployment and Model Tuning
- AI Agents and Agent Architectures
- Agent Building with Google Cloud
- Vertex AI Studio Overview

Lab content

- Lab: Get Started with Vertex AI Studio

Additional activities

- Quiz
- Reading Assignments

Module 15: AI Development Options

Lecture content

- AI Development Options on Google Cloud
- Vertex AI Overview
- AutoML and Low-Code AI Development
- Pre-trained APIs
- Custom Training Approaches
- Tool Selection Strategies
- AI Development Best Practices

Lab content

- Lab: Entity and Sentiment Analysis with Natural Language API

Additional activities

- Quiz
- Reading Assignments

Module 16: AI Development Workflow

Lecture content

- Machine Learning Workflow
- Data Preparation and Feature Engineering
- Model Development and Training
- Model Serving and Deployment
- MLOps and Workflow Automation
- Vertex AI Pipelines
- How Machine Learning Models Learn (Optional)
- ML Lifecycle Management

Lab content

- Lab: Vertex AI – Predict Loan Risk with AutoML

Additional activities

- Quiz
- Reading Assignments

Module 17: Course Summary

Lecture content

- Course Summary and Recap
- Review of AI and ML Concepts
- Google Cloud AI Products Overview
- Best Practices and Recommendations
- Career Learning Paths
- Final Discussion and Q&A

Lab content

- Final Discussion / Wrap-up

Additional activities

- Reading Assignments

Learning objectives

After completing this course, participants will be able to:

1. Explain the core concepts of Google Cloud and its global infrastructure.
2. Design and deploy scalable cloud infrastructure using Google Cloud compute and platform services.
3. Implement Identity and Access Management (IAM), security controls, and governance best practices.

4. Select and manage appropriate storage and database services based on business and technical requirements.
5. Design secure, reliable, and high-performance networking solutions using Google Cloud networking services.
6. Automate infrastructure provisioning and deployment using Infrastructure as Code (IaC) and Terraform.
7. Monitor, troubleshoot, and optimize cloud resources using Google Cloud Operations Suite and observability tools.
8. Design resilient, highly available, and cost-optimized cloud architectures for enterprise workloads.
9. Integrate Artificial Intelligence and Machine Learning capabilities using Vertex AI and other Google Cloud AI services.
10. Apply cloud architecture best practices to ensure scalability, security, performance, and operational excellence.
11. Evaluate and optimize cloud solutions for reliability, cost efficiency, and business continuity.
12. Successfully prepare for the Google Cloud Professional Cloud Architect certification exam.

Why choose CloudThat as your training partner?

- **Specialized GCP Focus:** CloudThat specializes in cloud technologies, offering focused and specialized training programs. We are Authorized Trainers for the Google Cloud Platform. This specialization ensures in-depth coverage of GCP services, use cases, best practices, and hands-on experience tailored specifically for GCP.
- **Industry-Recognized Trainers:** CloudThat has a strong pool of industry-recognized trainers certified by GCP. These trainers bring real-world experience and practical insights into the training sessions, comprehensively understanding how GCP is applied in different industries and scenarios.
- **Hands-On Learning Approach:** CloudThat emphasizes a hands-on learning approach. Learners can access practical labs, real-world projects, and case studies that simulate actual GCP environments. This approach allows learners to apply theoretical knowledge in practical scenarios, enhancing their understanding and skill set.
- **Customized Learning Paths:** CloudThat understands that learners have different levels of expertise and varied learning objectives. We offer customized learning paths, catering to beginners, intermediate learners, and professionals seeking

advanced GCP skills.

- **Interactive Learning Experience:** CloudThat's training programs are designed to be interactive and engaging. We utilize various teaching methodologies like live sessions, group discussions, quizzes, and mentorship to keep learners engaged and motivated throughout the course.
- **Placement Assistance and Career Support:** CloudThat often provides placement assistance and career support services. This includes resume building, interview preparation, and connecting learners with job opportunities through our network of industry partners and companies looking for GCP-certified professionals.
- **Continuous Learning and Updates:** CloudThat ensures that our course content is regularly updated to reflect the latest trends, updates, and best practices within the GCP ecosystem. This commitment to keeping the content current enables learners to stay ahead in their GCP knowledge.
- **Positive Reviews and Testimonials:** Reviews and testimonials from past learners can strongly indicate the quality of training provided. You can check feedback and reviews about our GCP courses that can provide potential learners with insights into the effectiveness and value of the training.

Certification details

Upon completion of the course, participants will have developed skills aligned with the Google Cloud Professional Cloud Architect certification exam.

CloudThat Course Completion Certificate will be awarded to learners who successfully complete the training.

FAQs

1. Who is this course for?

This course is designed for cloud architects, solution architects, infrastructure engineers, DevOps engineers, system administrators, IT professionals, and anyone preparing for the Google Cloud Professional Cloud Architect certification.

2. What are the prerequisites?

Participants should have a basic understanding of cloud computing, networking, operating systems, virtualization, and infrastructure concepts. Prior experience with Google Cloud, AWS, or Azure is recommended but not mandatory.

3. Is prior Google Cloud experience required?

No. While prior Google Cloud experience is beneficial, professionals with experience in other cloud platforms or traditional infrastructure can successfully complete the course.

4. Does this course prepare me for the Professional Cloud Architect certification exam?

Yes. The curriculum is aligned with the Google Cloud Professional Cloud Architect certification objectives and includes architecture scenarios, hands-on labs, and exam-oriented discussions to help you prepare effectively.

5. Will there be hands-on labs?

Yes. The course includes practical labs covering Compute Engine, Virtual Private Cloud (VPC), IAM, Cloud Storage, networking, load balancing, Terraform, monitoring, and Vertex AI services.

6. What practical skills will I gain?

By the end of the course, you will be able to design enterprise cloud architectures, implement secure networking, manage cloud infrastructure, automate deployments, monitor cloud resources, optimize costs, and integrate AI capabilities into cloud solutions.

7. What Google Cloud services are covered?

The course covers major Google Cloud services including Compute Engine, Virtual Private Cloud (VPC), Cloud Storage, Cloud SQL, IAM, Cloud Monitoring, Cloud Logging, Cloud Load Balancing, Cloud VPN, Shared VPC, Terraform, Google Cloud Marketplace, BigQuery ML, Vertex AI, AutoML, and Generative AI services.

8. Is this course suitable for beginners?

This is a professional-level course. A basic understanding of cloud computing and IT infrastructure is recommended. Learners with foundational cloud knowledge can successfully complete the course.

9. Will I receive a certificate after completing the course?

Yes. Participants will receive a Course Completion Certificate upon successfully completing the training.

10. What is the delivery format?

The course is available as:

- Instructor-Led Classroom Training (ILT)
- Virtual Instructor-Led Training (VILT)
- Corporate On-site Training (on request)

11. How does this course help my career?

Earning the skills covered in this course and achieving the Google Cloud Professional Cloud Architect certification demonstrates your ability to design and manage enterprise cloud solutions, enhancing your credibility for roles such as Cloud Architect, Solutions Architect, Cloud Consultant, DevOps Engineer, and Infrastructure Architect.

12. Does the course include AI and Generative AI topics?

Yes. In addition to core cloud architecture concepts, the course introduces Google Cloud AI services, Vertex AI, Generative AI, prompt engineering, foundation models, AI agents, and enterprise AI development workflows to help learners understand how AI integrates into modern cloud architectures.