

# Course : Architecting with Google Cloud: design and process

Official course, preparation for Google Cloud certification exams

*Practical course - 2d - 14h00 - Ref. AGZ*

*Price : 2030 € E.T.*

With this course, you'll learn how to create highly reliable and efficient solutions on Google Cloud Platform (GCP), using proven design patterns and Google Site Reliability Engineering (SRE) principles. Through extensive hands-on practice, you'll gain the skills you need to design highly reliable and secure GCP deployments; and operate Google Cloud Platform deployments in an available and cost-effective way.

## Teaching objectives

At the end of the training, the participant will be able to:

- ✓ Define services and performance indicators (SLO, SLA, SLI)
- ✓ Design the complete architecture: business logic, data and network
- ✓ Integrating resilience, scalability, security and disaster recovery
- ✓ Capacity planning and cost optimization
- ✓ Deploy, monitor and manage incidents

## Intended audience

Cloud Solutions Architects, Site Reliability Engineers, Systems Operations professionals, DevOps Engineers, IT managers.

## Prerequisites

Completion of "Architecting with Google Compute Engine" training or equivalent experience. Basic knowledge of Linux. Experience of systems operations.

## Certification

We recommend you take this course if you want to prepare for the [ Google Cloud Professional Cloud DevOps Engineer " or [ Professional Cloud Architect "

[Comment passer votre examen?](#)

### PARTICIPANTS

Cloud Solutions Architects, Site Reliability Engineers, Systems Operations professionals, DevOps Engineers, IT managers.

### PREREQUISITES

Completion of "Architecting with Google Compute Engine" training or equivalent experience. Basic knowledge of Linux. Experience of systems operations.

### TRAINER QUALIFICATIONS

The experts who lead the training courses are specialists in the subjects covered. They are approved by the publisher and certified for the course. They have also been validated by our teaching teams in terms of both professional knowledge and teaching skills for each course they teach. They have at least three to ten years of experience in their field and hold or have held positions of responsibility in companies.

### ASSESSMENT TERMS

Assessment of targeted skills prior to training.  
Assessment by the participant, at the end of the training course, of the skills acquired during the training course.

Validation by the trainer of the participant's learning outcomes, specifying the tools used: multiple-choice questions, role-playing exercises, etc.

At the end of each training course, ITTCERT provides participants with a course evaluation questionnaire, which is then analysed by our teaching teams. Participants also complete an official evaluation of the publisher.

An attendance sheet for each half-day of attendance is provided at the end of the training course, along with a certificate of completion if the participant has attended the entire session.

## Practical details

### Teaching methods

Training in French. Official course material in English.

## Course schedule

### 1 Service definition

- Describe users in terms of roles and personas.
- Writing qualitative requirements with user stories.
- Write quantitative requirements using key performance indicators (KPIs).
- Evaluate KPIs using SLO and SLI.
- Determine the quality of application requirements using SMART criteria.

### 2 Design and architecture of microservices

- Decompose monolithic applications into microservices.
- Recognize the appropriate limits of microservices.
- Design stateful and stateless services to optimize scalability and reliability.
- Implement services using 12-factor best practices.
- Create loosely coupled services using a well-designed REST architecture.
- Design standard, consistent RESTful service APIs.

### 3 DevOps automation

- Automate service deployment using CI/CD pipelines.
- Leverage Cloud Source Repositories for source and version control.
- Automate compilations with Cloud Build and compile triggers.
- Manage container images with Google Container Registry.
- Create an infrastructure with code using Deployment Manager and Terraform.

### 4 Choice of storage solutions

- Most appropriate storage service depending on use case, durability, availability...
- Store binary data with Cloud Storage.
- Store relational data using Cloud SQL and Spanner.
- Store NoSQL data using Firestore and Cloud Bigtable.
- Cache data for fast access using Memorystore.
- Create a data warehouse using BigQuery.

### 5 Google Cloud and hybrid network architecture

- Design VPC networks to optimize costs, security and performance.
- Configure global and regional load balancers to provide access to services.
- Leverage Cloud CDN to reduce latency and network egress.
- Evaluate network architecture using the Cloud Network Intelligence Center.
- Connect networks using peering and VPNs.
- Create hybrid networks between Google Cloud and on-premises data centers using Cloud Interconnect.

#### TEACHING AIDS AND TECHNICAL RESOURCES

The teaching resources used are the publisher's official materials and practical exercises.

#### TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training course.

#### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you have specific accessibility requirements? Contact Ms FOSSE, disability advisor, at the following address: [psh-accueil@orsys.fr](mailto:psh-accueil@orsys.fr) so that we can assess your request and its feasibility.

## 6 Application deployment on Google Cloud

- Choose the right Google Cloud deployment service for your applications.
- Set up a scalable and resilient infrastructure using templates and groups of instances.
- Orchestrate microservices deployments using Kubernetes and Google Kubernetes Engine (GKE).
- Leverage App Engine for a fully automated Platform as a Service (PaaS).
- Create serverless applications using Cloud Functions.

## 7 Reliable system design

- Design services to meet availability, durability and scalability requirements.
- Implement fault-tolerant systems by avoiding single, correlated and cascading points of failure.
- Avoid overload failures with circuit breaker and truncated exponential time delay design models.
- Design resilient data storage with lazy deletion.
- Analyze disaster scenarios and plan disaster recovery using cost/risk analysis.

## 8 Security

- Design secure systems using best practices such as separation of concerns.
- Use the Cloud Security Command Center to identify vulnerabilities.
- Simplify cloud governance with policies and organizational records.
- Secure people using IAM, Identity-Aware Proxy and Identity Platform roles.
- Manage access and authorization of resources by machines and processes using service accounts.
- Secure networks with private IP addresses, firewalls and private access to Google.
- Mitigate DDoS attacks by leveraging Cloud DNS and Cloud Armor.

## 9 Maintenance and monitoring

- Manage new service versions using progressive updates, blue/green rollouts, etc.
- Forecast, monitor and optimize service costs using the Google Cloud price calculator.
- Forecast and optimize service costs using the GCP pricing calculator and billing reports.
- Monitor and optimize service costs by analyzing billing data.
- Monitor whether your services are meeting their SLOs using Cloud Monitoring and dashboards.
- Check that your services have met their service level objectives (SLOs) using cloud dashboards.
- Use availability tests to determine service availability.
- Respond to service failures with Cloud Monitoring alerts.

## Dates and locations

2026 : 8 Dec.

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