

# Course : Cloud-native applications, challenges and prospects

*Seminar - 2d - 14h00 - Ref. CLN*

*Price : 1850 € E.T.*

★★★★☆ 4,4 / 5

This seminar reviews the components of the native cloud ecosystem, with the aim of understanding and manipulating the architecture models common to cloud applications. A wide range of real-life case studies are also used to highlight the benefits and target the classic mistakes.

## Teaching objectives

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

- ✓ Understand the steps involved in developing a cloud-native application
- ✓ Understand the different technical solutions, products and services underlying native clouds
- ✓ Know the main security procedures for native cloud applications
- ✓ Understand the importance of DevOps culture and its impact on team reorganization

## Intended audience

CIOs, project managers, development team managers or members, infrastructure team managers or members.

## Prerequisites

No special knowledge required.

## Practical details

### Demonstration

Demonstrations of cloud services and native cloud software components, presenting the benefits and limitations of each technology and architecture.

## Course schedule

### PARTICIPANTS

CIOs, project managers, development team managers or members, infrastructure team managers or members.

### PREREQUISITES

No special knowledge required.

### TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

### ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more. Participants also complete a placement test before and after the course to measure the skills they've developed.

## 1 Introduction: cloud-native culture

- From design to production: from software development to application execution.
- Distributed systems and stateless architecture.
- Principles of the 12 factors.
- Controllers and orchestration.
- MultiTenancy: region, AZ, mail order.
- Key players in the ecosystem: Hyper Scalars and publishers.

## 2 Cloud-native application foundations

- Principles of microservices.
- From VMs to containers.
- Kubernetes: container orchestration.
- The cloud-native landscape according to the CNCF.
- Serverless, CaaS, PaaS and functions: event-driven execution (Heroku, Platform.sh, AWS Lambda...).

## 3 Building cloud-native applications

- Fundamental needs: operational excellence, resilience, security, scalability and cost management.
- Functions and services.
- Level of abstraction: design and life cycle of APIs (REST, gRPC, swagger...).
- Inter-message communication: queue, message broker, deserialization, request/response, publisher/subscriber.
- Which middleware technologies should you adopt? In which cases?
- Synchronous and asynchronous communication.

## 4 Distributed data management

- Block (EBS, VSAN...) and object (S3, R2...) storage, file servers (SMB, NFS), blockchain.
- Databases, key/value storage: MongoDB, PostgreSQL, Redis, Cockroach.
- DB as a Service: Aurora, DynamoDB, Google Cloud SQL OVH Cloud Databases...
- How do you choose the right datastore?
- Message queues and streams: RabbitMQ, Kafka...
- Scalable data storage (sharding, CDN, cache).
- Data analysis: Data Lake, distributed query engine.
- Storage in Kubernetes.

### Demonstration

Illustration of a message-oriented middleware solution with a real-life architecture.

## 5 Securing network exchanges

- Service Proxy, Service Mesh.
- Egress, Gateways.
- Partitioning.
- Transport data encryption.
- Links between the cloud and traditional networks.

### Demonstration

Network filtering and on-the-fly encryption

### TEACHING AIDS AND TECHNICAL RESOURCES

- The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
- At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
- A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

### TERMS AND DEADLINES

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

### ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at [psh-accueil@orsys.fr](mailto:psh-accueil@orsys.fr) to review your request and its feasibility.

## 6 DevOps teams and COE (Center of Operational Excellence)

- Definitions and principles, the end of silos.
- Development and testing tools and environment.
- Continuous integration pipeline, continuous deployment (CI/CD).
- Site Reliability Engineers (SRE).
- The 3 pillars of observability: metrics, traceability, log.

### Demonstration

CI/CD pipeline presentation, observability with Prometheus, Grafana...

## 7 Best practices

- Migration to native cloud.
- Ensure resilience (region, zone of availability).
- Ensure security (IAM, encryption in transport and at rest, network filtering, etc.).
- Performance measurement and scaling.
- Feedback on functions.
- Kubernetes cluster governance.
- Cloud-native maturity matrix.

## 8 Conclusion

- Benefits and limitations of the hybrid cloud.
- Future trends.

## Dates and locations

### REMOTE CLASS

2026 : 10 Mar., 21 May, 13 Oct., 8 Dec.

### PARIS LA DÉFENSE

2026 : 10 Mar., 21 May, 13 Oct., 8 Dec.