

Cloud-Native Architecture Definition

Cloud-native architecture is an approach to building applications explicitly designed for cloud environments, leveraging containerization, microservices, and orchestration (e.g., Kubernetes). Unlike traditional monolithic architectures — which integrate all functionalities into a single application — cloud-native applications consist of independent microservices that communicate through APIs.

Benefits:

1. Enhanced scalability
2. Improved resilience and fault isolation
3. Flexibility and agility
4. Easier continuous integration and delivery (CI/CD)

Application Architecture for Flight Booking Scenario

Given the scenario — a flight booking system with distinct airline payment requirements — a microservice-based architecture is recommended:

Frontend/UI Service: Unified interface adapting dynamically to airline-specific payment needs.

Payment Service: Flexible payment gateway integration:

Airline A: PayPal only

Airline B: Online payment disabled

Airline C: PayPal and debit cards

Customer Management Service: Manages customer information, accounts, and booking history.

Booking Service: Handles ticket reservations, seat inventory, and related logic.

Airline Configuration Service: Centralized management of airline-specific rules and payment options.

API Gateway: Single entry-point managing requests, routing, authentication, and security.

Reason for Microservices:

1. Easier to scale independently (especially Payment and Booking services)
2. Better adaptability to differing airline requirements
3. Improved fault isolation and system resilience