Low-Maintenance Backend Architectures for Scalable Applications

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The Evolution of Backend

Complexity

• Monolithic to Cloud-Native

• Microservices, Real-time, Global Scale



WEB DEVELOPMENT

Modularity and Microservices

- Independent, Deployable Services
- Domain-Driven Design
- Avoid Over Complication



Managed Services and Serverless

- AWS, Google Cloud, Azure
- Abstract Infrastructure
- Serverless (AWS Lambda, Google Functions)



Event-Driven Architectures

- AsynchronousCommunication
- Kafka, EventBridge
- Back-pressure and Horizontal Scaling

Event-Driven Architecture



Designing for Scalability







Stateless Systems

Load Balancing

Auto-Scaling



Observability – Logging, Monitoring, Tracing

- ELK Stack, CloudWatch, Prometheus
- Distributed Tracing (Jaeger, OpenTelemetry)
- Smart Alerting (PagerDuty, Opsgenie)

Avoiding Common Pitfalls

Over-Engineering

Ignoring Legacy Systems

Lack of Documentation







Database Strategies for Scalability

- NoSQL (MongoDB, Cassandra)
- Relational (Postgres with JSON Support)
- Right Tool for the Right Job



Preparing for Inevitable Change

- Feature Flags
- API Versioning
- Continuous Refactoring



The Art of Invisible Infrastructure

- Modularity
- Automation
- Simplicity







Final Thoughts

- Focus on Value
- Technology Serves the
 - Business
 - Build for Resilience



ThankYou!

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