INFOSOFT IT SOLUTIONS

Training | Projects | Placements

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Cloud-Native Application Architecture

Introduction to Cloud-Native Architecture

- Evolution from traditional to cloud-native applications
- Characteristics and principles of cloud-native applications
- Benefits and challenges of cloud-native architecture

Microservices Architecture

- Fundamentals of microservices
- Advantages over monolithic architectures
- Design principles (bounded contexts, autonomy, etc.)
- Patterns (API Gateway, Circuit Breaker, etc.)

Containerization Technologies

- Introduction to containers (Docker, Kubernetes, etc.)
- Benefits of containerization in cloud-native applications
- Container orchestration and management (Kubernetes, Docker Swarm)
- Docker basics: images, containers, registries

DevOps and CI/CD for Cloud-Native Applications

- DevOps principles and culture

- Continuous Integration (CI) and Continuous Delivery/Continuous Deployment (CD)
- Tools and practices (Git, Jenkins, Travis CI, etc.)
- Automation in building, testing, and deploying cloud-native applications

Cloud-Native Application Development

- Designing for scalability and resilience
- Cloud-native patterns (e.g., Sidecar, Strangler Fig, etc.)
- Infrastructure as Code (IaC) and configuration management
- Serverless computing concepts and use cases (AWS Lambda, Azure Functions, etc.)

Cloud-Native Data Management

- Challenges in data management for cloud-native applications
- Database technologies (SQL, NoSQL, NewSQL)
- Data caching and synchronization strategies
- Event-driven architecture and messaging patterns (Kafka, RabbitMQ, etc.)

Security and Compliance in Cloud-Native Applications

- Security challenges in cloud-native environments
- Identity and access management (IAM) in the cloud
- Data encryption and secure communication
- Compliance requirements (GDPR, HIPAA, etc.)

Monitoring and Observability

- Importance of monitoring and observability in cloud-native applications
- Tools and techniques for logging, monitoring, and tracing (Prometheus, ELK stack, etc.)

- Metrics, logs, and distributed tracing for troubleshooting

Deployment Strategies and Practices

- Deployment strategies (Blue-Green, Canary, Rolling updates)
- A/B testing and feature toggles
- Infrastructure scaling and auto-scaling strategies

Performance Optimization and Testing

- Performance considerations in cloud-native applications
- Load testing and stress testing
- Performance tuning techniques

Governance and Cost Management

- Cost optimization strategies in the cloud
- Resource tagging and cost allocation
- Governance policies and practices

Case Studies and Real-world Applications

- Implementing cloud-native architecture in practical scenarios
- Case studies of successful cloud-native applications
- Challenges faced and lessons learned

Future Trends in Cloud-Native Architecture

- Emerging technologies and trends (e.g., service mesh, edge computing)
- Impact of AI/ML on cloud-native applications
- Predictions for the future of cloud-native architecture

Additional Resources