Blocks Description

- Good to know
- Alternative

- Link to free resources
- Link to online courses

Microservices Roadmap 2025
by Anton Martyniuk - Microsoft MVP

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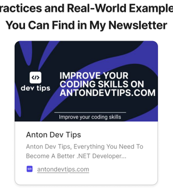
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Communication: REST
- Handling Child Resources
- Filtering
- Sorting
- Pagination
- Data Shaping
- REST Maturity Model
- REST Contraints
- HTTP Methods
- HTTP Status Codes
- HATEOAS
- API Documentation

Communication: gRPC
- gRPC Fundamentals
- Contracts and .proto files
- Protobuf
- Bidirectional communication
- Interceptors and middleware

Communication: GraphQL
- Queries
- Mutations
- Subscriptions
- Distributed Schema
- HotChocolate Fusion

Real-Time Communication
- WebSocket
- SignalR

Communication: Messsaging
- Message Queues
- Pub/Sub
- Event Cloud Specification
- Message idempotency
- Dead letter handling
- RabbitMQ
- Kafka
- Azure Service Bus
- AWS SQS / SNS
- Redis Pub/Sub
- Redis Streams

SQL Databases
- Postgres
- MS SQL Server
- SQLite
- MySQL
- Oracle
- MariaDB

NoSQL Databases
- MongoDB
- RavenDB
- Cassandra
- Azure Cosmos DB
- Dynamo DB

Database management
- Database per service
- Database schema per service
- Strong consistency
- Eventual consistency
- Caching

API Gateway
- Traefik
- Envoy
- YARP
- Nginx
- Service Discovery

Containerisation
- Docker
- Dccker Compose
- Container networking
- Environment variables
- Kubernetes
- Docker Swarm

Resilience and Observability
- Structured logging
  - Seq
  - ELK Stack
- Distributed Tracing
  - Jaeger
- Metrics and Alerts
  - Prometheus
  - Grafana
- Resilient Strategies: Polly
- Health Checks
- Load balancing
- Rate limiting

Patterns
- OutBox Pattern
- InBox Pattern
- Saga Pattern
- Event Sourcing
- CQRS
- Backend for Frontend Pattern
- Actor model
- SideCar Pattern

Security
- JWT and Refresh Tokens
- OAuth 2.0
- OpenID Connect
- Cookies
- Mutual TLS
- Secrets Management
  - Azure Key Vault
  - AWS Secrets Manager
  - HashiCorp Vault
- Database Security
  - TLS
  - Transparent Data Encryption
  - Always Encrypted

Deployment Strategies
- Rolling Deployment
- Canary Deployment
- Blue/Green Deployment
- Shadow Deployment
- Recreate Deployment

Caching
- StackExchange Redis
- OutputCache
- HybridCache
- FusionCache

Event Messaging
- MassTransit
- Dapr
- Rebus
- Wolverine
- NServiceBus

Event Streaming
- Redis Streams
- Kafka
- Azure Event Hubs
- AWS Event Bridge
- AWS Kinesis

CI/CD
- GitHub Actions
- GitLab CI
- TeamCity
- Jenkins
- Azure DevOps
- AWS CodePipeline

Infrastructure as Code
- Terraform
- Pulumi