AWS Certified Solutions Architect - Associate Cheat Sheet

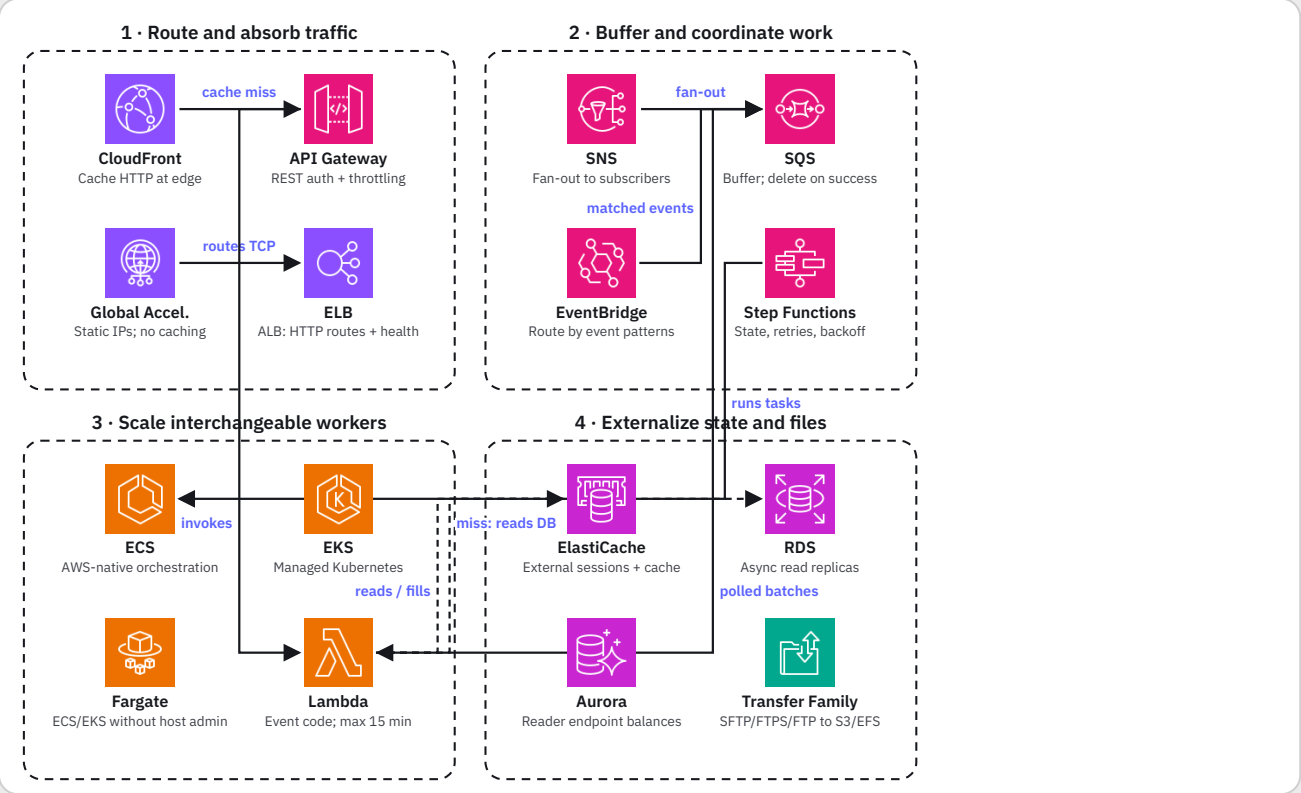
SAA-C03 · Domain 2 of 4

BlowStack

DOMAIN 2 · DESIGN RESILIENT ARCHITECTURES · 26% OF THE EXAM · TASK STATEMENT 2.1

Design scalable and loosely coupled architectures

Route, decouple, scale, externalize



1 Route and absorb traffic

Choose CloudFront for **cacheable HTTP content**; Global Accelerator improves TCP/UDP paths without caching. API Gateway manages APIs; ALB routes HTTP requests to healthy targets.

2 Buffer and coordinate work

Use **one queue per consumer** for independent fan-out and retries. SQS absorbs bursts; SNS broadcasts; EventBridge filters events. Step Functions coordinates dependent steps with configured retries and error handling.

3 Scale interchangeable workers

Use **stateless workers** for horizontal scaling. ECS/EKS orchestrate containers; Fargate removes host management, not scaling-policy configuration. Lambda scales event invocations within concurrency and downstream limits.

4 Externalize state and files

Cache-aside fills on read misses; write-through updates cache on writes. Both need freshness policies. AWS Secrets Manager stores credentials and supports configured rotation; credentials stay outside images.

Exam traps

- **SQS Standard is at-least-once**, not exactly-once processing. Visibility timeout hides messages temporarily; failed processing can cause redelivery. Consumers need idempotent side effects.
- **Read replicas scale reads**, not writes; asynchronous replication permits stale results. An RDS Multi-AZ DB instance standby provides failover, not read serving.
- **Load balancing does not add workers**; configure compute scaling separately. Sticky sessions do not preserve local session state when a target fails; externalize state for interchangeable workers.

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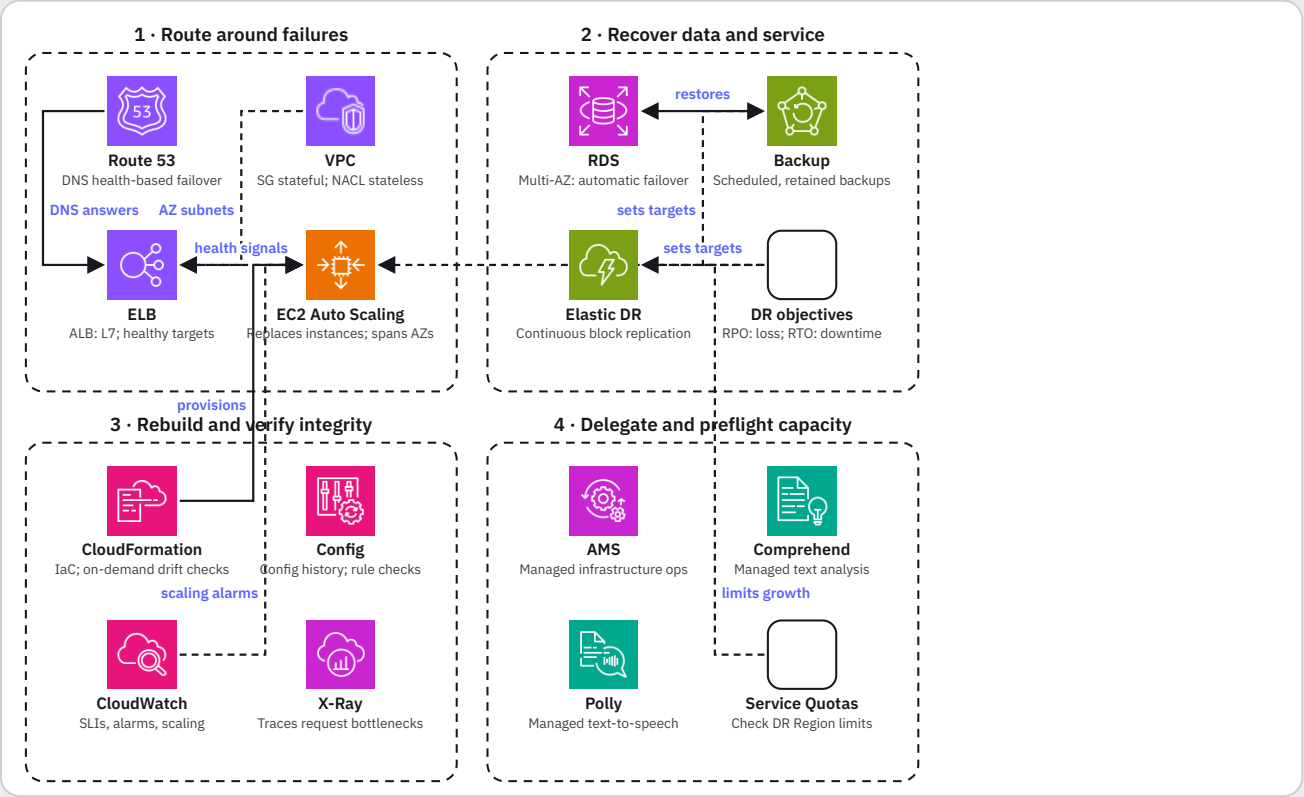
SAA-C03 · Domain 2 of 4

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DOMAIN 2 · DESIGN RESILIENT ARCHITECTURES · TASK STATEMENT 2.2

Design highly available and/or fault-tolerant architectures

Isolate, recover, automate, delegate



1 Route around failures

Use **multiple AZs** for fault isolation. Load balancing routes traffic; scaling replaces capacity. Enable ELB health checks for instance replacement. Routes and zonal dependencies must survive an AZ loss.

2 Recover data and service

For generally tighter **RTO/RPO**, increasing readiness and cost: backup/restore → pilot light → warm standby → active-active. Pilot light starts application capacity; warm standby scales running capacity. Test recovery.

3 Rebuild and verify integrity

Choose **immutable replacement** over in-place changes; blue-green enables traffic rollback when data remains compatible. Drift detection does not repair drift. Business SLOs determine availability and latency alarms.

4 Delegate and preflight capacity

AMS operates infrastructure; purpose-built APIs supply application capabilities. Before **standby failover**, request needed quota increases and verify capacity. Throttled requests need bounded exponential backoff with jitter.

Exam traps

- **Multi-AZ is not read scaling**: an Amazon RDS Multi-AZ DB instance standby cannot serve reads. Read replicas serve reads; promotion is not the same as automatic Multi-AZ failover.
- **DNS failover is not instant**: cached answers can persist until TTL expiry. Session affinity also does not preserve a failed target's local session state.
- **Replication is not backup**: deletion or corruption can propagate to replicas. Retained recovery points and tested restores protect historical data; durability alone does not guarantee availability.

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DOMAIN 2 · DESIGN RESILIENT ARCHITECTURES · WHAT TO REMEMBER

Concepts and services of Design Resilient Architectures

Concepts to know

High availability

Redundant components across isolated failure domains reduce downtime. Choose **multiple Availability Zones** for AZ failures; include healthy-target routing, automatic recovery, and enough surviving capacity.

Loose Coupling

Components communicate through contracts without requiring simultaneous availability. Choose **queues to buffer work** and publish-subscribe messaging for independent consumers; make processing idempotent because messages can be delivered more than once.

Disaster recovery

Recovery restores workloads after disruption. Choose a strategy by **RPO and RTO**: tolerated data loss and downtime. Backup and restore, pilot light, warm standby, and active-active generally trade increasing cost for faster recovery.

Core services

Elastic Load Balancing (ELB)

Distributes traffic to healthy targets across enabled Availability Zones. Choose **ALB for HTTP path/host routing**; choose NLB for TCP/UDP or static IP addresses. Scaling requires additional capacity.

Amazon Simple Queue Service (Amazon SQS)

Buffers work so producers and consumers scale independently. Choose **Standard for high throughput**; FIFO for ordered processing within message groups. Delete messages only after successful processing.

Amazon RDS

Choose **Multi-AZ DB instances for automatic failover**, not read scaling. Choose read replicas to offload reads; asynchronous replication can return stale data, and promotion is separate from replication.

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