AWS Certified Solutions Architect – Associate (SAA-C03)

Quick Exam Refresher

*This is your high-impact, last-minute review guide for the AWS Certified Solutions Architect – Associate exam. Use it before test time to refresh the most essential concepts, services, and design best practices. I**t's built for fast recall.***

Solutions Architect Associate (SAA-C03) Domains

Expect scenario-driven questions tied closely to the AWS Well-Architected Framework pillars. Focus on making the best design decisions given constraints like cost, availability, security, or performance.

- **Domain 1:** Design Secure Architectures – 30%
- **Domain 2:** Design Resilient Architectures – 26%
- **Domain 3:** Design High-Performing Architectures – 24%
- **Domain 4:** Design Cost-Optimized Architectures – 20%

Quick Reminder: How the Exam Works

- **Number of Questions:** 65 total (50 scored + 15 unscored)
- **Format:** Multiple choice + multiple response
- **Time Limit:** 130 minutes
- **Passing Score:** 720/1000
- **Test Provider:** Pearson VUE (online proctored or in person)

Remember — You Don’t Need to Be Perfect to Pass

The passing score is **720/1000**, meaning you can miss **up to 15 scored questions** and still succeed. Expect real-world architecture scenarios that test your ability to choose the best solution — not memorize facts.

Domain 1: Design Secure Architectures (30%)

Shared Responsibility Model

- AWS secures infrastructure; you secure your configurations, data, and access.

IAM (Identity & Access Management)

- Users, groups, roles, policies.
- Roles for EC2, Lambda.
- Use MFA, enforce least privilege.
- IAM Identity Center (SSO) for multi-account access.
- Service Control Policies (SCPs) via AWS Organizations.

VPC Security

- Security Groups: Stateful firewall at instance level.
- Network ACLs: Stateless, subnet-level rules.
- NAT Gateway/Instance for outbound internet from private subnets.
- Use VPC Endpoints to access S3/DynamoDB without NAT.

Data Protection (Encryption)

- At rest: SSE-S3, SSE-KMS, SSE-C, client-side encryption.
- In transit: TLS with ACM.
- AWS KMS for key management: customer vs AWS managed.
- Secrets Manager and Parameter Store for managing secrets.

Monitoring and Auditing

- CloudTrail: API logs.
- AWS Config: Track resource config changes.
- CloudWatch: Logs, metrics, alarms.
- GuardDuty: Threat detection.
- Macie: Detect sensitive data in S3.
- AWS WAF + Shield: App-layer firewall and DDoS protection.

Application Security

- Amazon Cognito: Identity management for apps.
- API Gateway authorization: IAM, Lambda, Cognito.
- WAF rules: Protect against common attacks.

Domain 2: Design Resilient Architectures (26%)

High Availability (HA)

- Use Multi-AZ design.
- ALB/NLB to distribute traffic.
- RDS Multi-AZ for standby failover (not scaling).

Fault Tolerance and Auto Scaling

- Auto Scaling Group (ASG) replaces unhealthy EC2s.
- Health checks via ELB/EC2.
- CloudWatch alarms trigger replacements or actions.

Scaling Techniques

- Dynamic: Based on real-time metrics.
- Scheduled: Predefined time-based changes.
- Predictive: Forecast-based scaling (requires homogeneous instances).

Decoupling with Messaging

- SQS: Queues for decoupling services.
- SNS: Push messages to multiple subscribers.
- EventBridge: Event bus for event routing.

Serverless Resilience

- AWS Lambda: Stateless, automatic retries.
- API Gateway: Triggers Lambda.
- Fargate: Run containers without provisioning EC2.

Disaster Recovery (DR) Patterns

- Backup & Restore, Pilot Light, Warm Standby, Multi-site Active-Active.
- RTO: Acceptable downtime.
- RPO: Acceptable data loss.

Storage and Data Durability

- S3: 11 9s durability.
- EBS: Snapshots for backup.
- EFS: Multi-AZ file storage.
- DynamoDB: Multi-AZ by default, global tables for cross-region.

Domain 3: Design High-Performing Architectures (24%)

Compute Choices and Optimization

- EC2 types: C = compute, R = memory, etc.
- Placement Groups: Cluster (low latency), Spread, Partition.
- Lambda: <15 minutes per execution, fast scaling.
- Fargate: Serverless containers.
- Use Auto Scaling for load.

Storage Performance

- S3: Multipart uploads, auto-partitioning.
- EBS: gp3 (general), io1/io2 (IOPS), st1/sc1 (throughput).
- EFS: Shared file system, bursting/provisioned throughput.
- FSx: Specialized workloads (Windows, Lustre).
- RAID 0 striping to boost IOPS for EBS.

Database Performance

- RDS Read Replicas: Scale read load.
- Aurora: Reader endpoint, low-latency, 15 replicas.
- Aurora Global DB: Multi-region support.
- DynamoDB: NoSQL, on-demand or provisioned.
- DAX: Caching for DynamoDB.
- ElastiCache (Redis): Query caching.
- Athena: Query S3 data.
- Redshift: Data warehouse.

Networking and Latency Optimization

- CloudFront: Global edge caching.
- Global Accelerator: Optimized TCP/UDP routing.
- Direct Connect: Dedicated low-latency link.
- Enhanced Networking (ENA) for EC2.
- Kinesis or MSK: High-throughput streaming ingestion.

Monitoring and Tuning

- CloudWatch: Metrics, logs, dashboards.
- X-Ray: Tracing application bottlenecks.
- Compute Optimizer: Rightsize recommendations.
- Identify CPU/memory/network bottlenecks.

Domain 4: Design Cost-Optimized Architectures (20%)

Cost Visibility and Management

- AWS Budgets: Alerts.
- Cost Explorer: Visual reports.
- CUR (Cost & Usage Report): Detailed, CSV in S3.
- Trusted Advisor: Unused resources, cost checks.
- Compute Optimizer: Cost savings suggestions.

Compute Cost Optimization

- On-Demand: Pay-as-you-go.
- Reserved Instances: 1/3-year commitment for savings.
- Savings Plans: Flexible, across EC2/Fargate/Lambda.
- Spot Instances: Up to 90% off, interruption risk.
- Use Auto Scaling to scale down during off-hours.
- Use Lambda/Fargate to avoid idle costs.

Storage Optimization

- S3 Classes: Standard, IA, One-Zone IA, Glacier, Deep Archive.
- Lifecycle rules to move/expire data.
- S3 Intelligent-Tiering for unknown access patterns.
- EFS Infrequent Access and lifecycle management.
- EBS: Delete unused volumes and snapshots.

Data Transfer Savings

- VPC Gateway Endpoints: Free, avoid NAT charges for S3/DynamoDB.
- NAT Gateway: Charges by GB – minimize use.
- Direct Connect for cheaper high-volume traffic.
- CloudFront reduces data egress.

Database and Backup Savings

- Aurora Serverless: Scales to zero when idle.
- DynamoDB On-Demand: Good for variable loads.
- Stop RDS when not in use (up to 7 days).
- Use AWS Backup with lifecycle rules.
- Clean up old snapshots and backups.

Core AWS Services You Must Know

(High Priority – Frequently Tested)

Service	What You Must Know
Amazon EC2	Instance types, launch options, placement groups, user data, roles, pricing models (On-Demand, Reserved, Spot), Auto Scaling.
Amazon S3	Object storage, durability (11 9s), storage classes, versioning, lifecycle rules, encryption (SSE-S3, SSE-KMS), static website hosting.
Amazon RDS	Managed SQL DB, Multi-AZ for HA, Read Replicas for scaling, snapshots, backups, Aurora specifics (Global DB, auto-scaling).
Amazon VPC	CIDR blocks, subnets, routing, internet gateways, NAT Gateway/Instance, security groups, NACLs, VPC Endpoints.
Elastic Load Balancing (ALB/NLB)	ALB: layer 7, path-based routing; NLB: layer 4, high throughput; both support health checks and HA.
AWS IAM	Users, roles, policies (JSON), MFA, IAM roles for services, identity federation, least privilege.
Amazon CloudWatch	Metrics, logs, alarms, dashboards; trigger scaling and notifications.
Amazon Route 53	DNS service; supports routing policies (latency, failover, weighted, geolocation), health checks.
AWS Lambda	Serverless compute, triggers (e.g., S3, API Gateway), concurrency limits, timeouts (15 min max), IAM roles.
Amazon DynamoDB	NoSQL key-value store, partition keys, on-demand vs provisioned throughput, global tables, DAX for caching.

Amazon CloudFront	Global CDN, edge caching, origin configurations, signed URLs, integrates with S3 or ALB.
Amazon SQS	Decouples services, message durability, standard vs FIFO queues.
Amazon SNS	Pub/sub messaging, push to email, Lambda, SQS; fan-out architecture.
Amazon API Gateway	Fronts APIs, supports throttling, caching, Lambda integration, IAM/Cognito/Lambda auth.
AWS KMS	Central key management; used for encryption in S3, EBS, RDS, etc.; key policies and grants.
AWS Auto Scaling	Launch/terminate EC2s based on policies, scheduled and dynamic scaling.
Amazon EBS	Block storage for EC2, volume types (gp3, io1/io2, st1, sc1), snapshots, AZ-scoped.

Other AWS Services You Should Know

(Moderate Priority – Occasionally or Partially Tested)

Service	What You Must Know
Amazon EFS	Scalable, shared NFS file system, supports bursting/provisioned throughput, IA storage class.
Amazon Aurora	MySQL/PostgreSQL-compatible RDS engine, high performance, global DB, auto-scaling read replicas.
AWS Organizations	Consolidated billing, SCPs for permission guardrails across accounts.
AWS WAF	Web ACLs to block common attacks (SQLi, XSS); used with CloudFront, ALB, API Gateway.
AWS Shield	DDoS protection; Standard (free) and Advanced (paid with extra protections).
Amazon Cognito	User authentication, signup/signin, integrates with mobile/web apps and API Gateway.
AWS Secrets Manager	Securely stores, rotates, and retrieves secrets (e.g., DB credentials); encrypted via KMS.
AWS Systems Manager (SSM)	Parameter Store for secrets, automation, patching, remote shell to EC2, inventory.
Amazon GuardDuty	Threat detection service for accounts, identifies anomalies like crypto mining or port scans.
Amazon Macie	Uses ML to find sensitive data in S3 (e.g., PII); helps with compliance.
Amazon EventBridge	Event bus for routing events from AWS services and SaaS apps to targets like Lambda.
Amazon Step Functions	Workflow orchestration for serverless or microservices; supports retries, conditions.
Amazon ElastiCache	In-memory cache (Redis, Memcached); improves DB read performance.
Amazon FSx	Managed file systems (Windows FS, Lustre, NetApp); know when to use each.

AWS Global Accelerator	Global network routing service; improves performance and availability via AWS backbone.
AWS Direct Connect	Dedicated network connection to AWS; more consistent and lower latency than VPN.
AWS Backup	Central backup management for AWS services (EBS, RDS, DynamoDB, etc.), supports retention policies.
AWS Cost Explorer	Visual cost analysis tool; explore by service, time, or tag.
AWS Budgets	Set cost or usage thresholds and receive alerts.
AWS Trusted Advisor	Checks for cost savings, security, fault tolerance, and performance.
AWS Compute Optimizer	Recommends EC2 instance right-sizing based on historical usage.
AWS Cost & Usage Report (CUR)	Detailed billing report; delivered to S3, integrates with Athena/QuickSight.
Amazon Athena	Query S3 data using SQL; serverless, pay-per-query.
Amazon Redshift	Data warehouse, used for analytics workloads at scale.
Amazon QuickSight	BI tool; visualizes data from Redshift, Athena, S3, etc.
Amazon Kinesis	Real-time streaming data ingestion; know Data Streams, Firehose basics.
AWS Glue	ETL service; transform and move data between stores (e.g., S3 to Redshift).
AWS DataSync	Accelerated transfer between on-prem and AWS; good for migrations.
AWS Snowball	Physical device for transferring large data to AWS; know use cases.
Amazon MQ	Managed message broker for applications using AMQP/MQTT/STOMP.
Amazon OpenSearch Service	Managed Elasticsearch; useful for search and analytics.