AWS Certified Developer – Associate (DVA-C02)

Quick Exam Refresher

*This is your condensed, high-impact review guide for the AWS Certified Developer – Associate exam. Use it right before test time — not for deep study. It's **structured to help you remember the most tested facts, services, patterns, and practices**.*

Developer Associate (DVA-C02) Domains

Each domain is weighted differently.

- **Domain 1:** Development with AWS Services – 32%
- **Domain 2:** Security – 26%
- **Domain 3:** Deployment – 24%
- **Domain 4:** Troubleshooting and Optimization – 18%

Quick Reminder: How the Exam Works

- **Number of Questions:** 65
- **Format:** Multiple choice + multiple response
- **Time Limit:** 130 minutes
- **Passing Score:** 720/1000
- **Test Provider:** Pearson VUE (online or onsite)

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

The passing score is **720/1000**, meaning you can miss around **13-16 questions** and still pass. Focus on understanding core development concepts, AWS service integrations, IAM security patterns, CI/CD workflows, and how to match AWS tools to real-world scenarios.

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Domain 1: Development with AWS Services (32%)

1. AWS Lambda

- Stateless compute. Event-driven.
- Cold starts possible (especially in VPC).
- Triggers: API Gateway (sync), S3/SNS (async), SQS/Kinesis (poll-based).
- Concurrency: default limit, provisioned concurrency available.
- Handle retries, idempotency (e.g., using request IDs).
- /tmp = 512MB local storage.
- Deployment: .zip or container image.
- Permissions via execution role.

2. API Gateway

- REST APIs (more features), HTTP APIs (faster, cheaper).
- Stages = dev, test, prod. Supports stage variables.
- Authorizers: IAM, Cognito, Lambda.
- Caching supported (REST only).
- Supports request/response mapping.

3. SQS

- Queue-based decoupling.
- Standard = at-least-once, best-effort order. FIFO = exactly-once, ordered.
- Visibility timeout: time to process before reappears.
- DLQ: messages move after maxReceiveCount.
- Lambda can poll SQS (event source mapping).

4. SNS

- Pub/Sub. Fan-out to Lambda, SQS, HTTP endpoints.
- Filter policies = only deliver to subscribers matching attributes.
- No message persistence.

5. DynamoDB

- NoSQL, millisecond reads/writes.
- Partition key must be high-cardinality.
- GSI (global index) vs LSI (local index).
- Query (fast, by key) vs Scan (slow, all items).
- TTL for auto-expiry.
- Streams for Lambda triggers.
- Strongly consistent or eventual reads.
- Write throughput = WCU, read = RCU.

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6. EventBridge

- Advanced event routing (content-based filtering).
- Better than SNS for microservices.
- Default bus for AWS events, custom bus for app events.
- Targets: Lambda, Step Functions, SQS, etc.

7. Step Functions

- Workflow orchestration, JSON state machine.
- Retry, catch, wait, parallel.
- Use for complex sequencing and error handling.
- Express vs Standard: short-lived vs long-running.

8. Kinesis

- Data Streams = low-latency real-time processing.
- Lambda can consume from shards.
- Good for clickstreams, logs.
- Firehose auto-loads to S3, Redshift.

9. S3

- Object storage. Supports SSE-S3, SSE-KMS.
- Versioning and lifecycle rules.
- Triggers: Lambda, EventBridge.
- Consistency: read-after-write.
- Tiering: Standard, IA, One Zone, Glacier.

10. Architectural Patterns

- Loose coupling: SQS, SNS, EventBridge.
- Microservices: use APIs or messaging.
- Choreography (event-driven) vs orchestration (Step Functions).
- Idempotency = safe retries.
- Stateless services = easier to scale.

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Domain 2: Security (26%)

1. IAM

- Users, groups, roles. Use roles, not hardcoded credentials.
- Policies: identity-based (who can do what), resource-based (who can access resource).
- Least privilege = best practice.
- Trust policy = who can assume a role.
- STS = temporary creds.

2. Authentication

- Cognito User Pools = user management, JWTs.
- Cognito Identity Pools = get IAM creds via federated identities.
- OIDC/SAML = federated login (SSO).
- API Gateway can use Cognito or Lambda authorizer.

3. Authorization

- JWT = bearer token. Validate signature and claims.
- IAM policies with conditions.
- RBAC with Cognito groups.

4. Encryption

- At rest: SSE-S3, SSE-KMS, SSE-C, RDS encryption.
- In transit: TLS/SSL (HTTPS).
- KMS: customer-managed vs AWS-managed keys.
- Key rotation (customer-managed: 1 year, AWS-managed: auto every 3).
- CMK = customer master key.
- Envelope encryption: encrypt data key with CMK.
- Client-side encryption: You encrypt before uploading to AWS.

5. Secrets Management

- Secrets Manager: stores and rotates secrets.
- Parameter Store: secure strings, no auto-rotation.
- Avoid env vars for secrets unless encrypted.

6. Secure Practices

- No hardcoded creds or tokens.
- Audit IAM actions with CloudTrail.
- Use MFA, SCPs, permission boundaries (advanced).

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Domain 3: Deployment (24%)

1. CodePipeline

- Orchestration: source → build → test → deploy.
- Supports approvals, notifications.
- Triggered by repo push or manual.

2. CodeBuild

- Compiles, tests code.
- buildspec.yml defines build steps.
- Securely access env variables and secrets.

3. CodeDeploy

- Deployment to EC2, Lambda, ECS.
- In-place or blue/green.
- For Lambda: supports linear and canary.

4. Deployment Strategies

- All-at-once: fast, risky.
- Rolling: update in batches.
- Blue/green: parallel envs, switch traffic.
- Canary: test new version with % of users.
- Use stages (API Gateway), aliases (Lambda), stacks (CFN).

5. IaC Tools

- CloudFormation: declarative templates (YAML/JSON).
- AWS SAM: shorthand for Lambda + API Gateway + DynamoDB.
- CDK: write infra in Python, TypeScript, etc.
- Copilot: ECS/Fargate deployment.
- Amplify: frontend + backend CI/CD for web apps.

6. Artifact Repositories

- CodeArtifact: package manager (npm, Maven).
- ECR: Docker image storage.

7. Configuration Management

- AppConfig: dynamic config, feature flags.
- Parameter Store: config + secrets.
- Env vars: easy, but not secure for secrets.

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Domain 4: Troubleshooting and Optimization (18%)

1. Monitoring

- CloudWatch: metrics, alarms, dashboards.
- Custom metrics via PutMetricData or EMF.
- Logs: view logs from Lambda, ECS, EC2.

2. CloudWatch Logs Insights

- Search logs: filter, stats, fields.
- Great for pinpointing errors.

3. X-Ray

- Distributed tracing.
- Visualize latency across services.
- Service map and annotations.

4. Common Errors

- 4XX: client errors (403, 404, 429).
- 5XX: server errors (500, 502, 503).
- Lambda timeouts, out-of-memory, throttling.
- DynamoDB throughput exceeded = backoff.

5. Optimization

- Use cache (ElastiCache, DAX).
- Batch operations (SQS, DynamoDB).
- CloudFront for global content.
- API Gateway cache for REST APIs.

6. Concurrency

- Lambda scales automatically, but watch for concurrency limits.
- Provisioned concurrency reduces cold starts.

7. Profiling

- CodeGuru Profiler: find hotspots in code.
- Right-size memory/CPU for Lambda or EC2.

8. Debugging Tools

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- Logs + X-Ray = root cause.
- Use trace ID/correlation ID for tracking.

9. Notifications

- SNS for alerts.
- Alarms on errors, high latency, usage thresholds.

10. Service Quotas

- Know limits: Lambda timeout (15 min), SQS size (256KB), etc.
- Use Trusted Advisor or Service Quotas to check.

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Core AWS Services You Must Know

(High Priority – Frequently Tested)

Service	Key Information You Must Know
AWS Lambda	Serverless compute. Stateless. Handles synchronous (API Gateway) and async (S3/SNS). Permissions via IAM role. Watch for cold starts, retries, idempotency.
Amazon API Gateway	Fronts REST/HTTP APIs. Supports stages, caching, throttling. Can use Cognito, IAM, Lambda authorizers. Mapping templates.
Amazon S3	Object storage. Supports lifecycle policies, versioning, SSE encryption (SSE-S3, SSE-KMS). Can trigger Lambda.
Amazon DynamoDB	NoSQL key-value. Partition/sort key. GSI/LSI. Query vs Scan. Streams for Lambda. TTL and on-demand mode.
Amazon SQS	Queues for decoupling. Standard (at-least-once), FIFO (exact-once). Visibility timeout, DLQ. Lambda polling.
Amazon SNS	Pub/Sub messaging. Push-based. Supports filter policies. Used with Lambda, SQS, email. No persistence.
Amazon EventBridge	Event routing. AWS and custom events. Rule-based filtering. Targets: Lambda, SQS, Step Functions.
AWS Step Functions	Orchestrates workflows. JSON state machines. Retry, catch, wait, parallel. Used for sequencing Lambda or service actions.
Amazon CloudWatch	Monitoring. Logs, metrics, alarms, dashboards. Logs Insights for querying. Can trigger alarms.
AWS X-Ray	Distributed tracing. View service maps. Integrate with Lambda, API Gateway. Correlate with logs.

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IAM	Identity management. Roles, policies (identity-based, resource-based). Least privilege. STS for temporary creds.
Amazon Cognito	User pools for auth (JWTs), identity pools for AWS access. Federation via OIDC/SAML. Integrates with API Gateway.
CodePipeline	CI/CD orchestration. Source → Build → Deploy. Supports approvals and notifications.
CodeBuild	Builds source code. Uses buildspec.yml. Can run unit tests and build Docker images.
CodeDeploy	Deploys to EC2, Lambda, ECS. Supports in-place, blue/green, canary. Uses AppSpec.
AWS KMS	Key management. Encrypts S3, RDS, Lambda, DynamoDB, Secrets. Customer-managed vs AWS-managed.
AWS Secrets Manager	Stores and rotates secrets. Supports KMS encryption. Access via SDK.
AWS Parameter Store	Stores config and secrets (no auto-rotation). Secure strings encrypted with KMS.
Amazon CloudFront	CDN. Caches content. Useful for API Gateway, S3. Vary caching by headers. Reduces latency.

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Other AWS Services You Should Know

(Moderate Priority – Occasionally or Partially Tested)

Service	Key Information You Must Know
AWS AppConfig	Manages runtime app configuration and feature flags. Supports validation and deployment strategies.
AWS CDK	Define infrastructure in code (Python, TypeScript, etc.). Synthesizes CloudFormation templates.
AWS SAM (Serverless Application Model)	Simplifies defining serverless applications (Lambda, API Gateway, DynamoDB). CLI supports local testing.
AWS CloudFormation	Infrastructure as Code using YAML/JSON. Manages full stack deployments.
AWS Amplify	Frontend and mobile app development. Connects to backend resources. Git-based CI/CD hosting.
AWS Copilot	CLI tool for ECS/Fargate app deployment. Sets up CI/CD, load balancer, logs.
Amazon ECR	Private Docker registry. Used to store images for ECS, Lambda, CodeBuild.
Amazon ECS (Fargate)	Container orchestration. May appear in deployment scenarios. Know Fargate = serverless containers.
Amazon RDS/Aurora	Managed relational DBs. Use IAM auth, SSL. Multi-AZ, Read Replicas. Aurora supports Data API.
Amazon ElastiCache (Redis)	In-memory caching. Reduces DB load. Supports TTL, write-through, lazy loading patterns.

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DynamoDB Accelerator (DAX)	In-memory cache for DynamoDB. Microsecond reads. Used for high-read, eventually consistent workloads.
Amazon Kinesis (Data Streams)	Real-time data streaming. Partitioned via shards. Consumed by Lambda or apps.
AWS CodeArtifact	Stores build artifacts and package dependencies. Supports npm, Maven, PyPI.
Amazon Cloud9	Web-based IDE. Supports debugging, terminal, real-time collaboration.
Amazon AppSync	GraphQL API service. Uses resolvers to access DynamoDB, Lambda, etc. Less common but may appear.
AWS Certificate Manager (ACM)	Issues and manages TLS/SSL certs. Used in ALB, API Gateway, CloudFront.
AWS STS	Security Token Service. Issues temporary creds. Used in IAM roles, Cognito Identity Pools.
AWS CodeGuru	Reviewer (static analysis) and Profiler (runtime performance). Used to optimize app code.
Amazon CloudTrail	Records AWS API calls and IAM events. Used for auditing and debugging IAM issues.
Amazon S3 Glacier	Archive storage. Long-term data retention. Use lifecycle rules to transition objects.
Trusted Advisor	Checks for cost optimization, security, performance. Alerts for limits and misconfigs.
AWS Quotas (Service Limits)	View and request limit increases. Essential for scaling and deployment planning.

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