Exam content

Response types

There are two types of questions on the exam:

- **Multiple choice:** Has one correct response and three incorrect responses (distractors)
- **Multiple response:** Has two or more correct responses out of five or more response options

Select one or more responses that best complete the statement or answer the question. Distractors, or incorrect answers, are response options that a candidate with incomplete knowledge or skill might choose. Distractors are generally plausible responses that match the content area.

Unanswered questions are scored as incorrect; there is no penalty for guessing. The exam includes 65 questions that affect your score.

Exam results

The AWS Certified Solutions Architect - Professional (SAP-C02) exam has a pass or fail designation. The exam is scored against a minimum standard established by AWS professionals who follow certification industry best practices and guidelines.

Your results for the exam are reported as a scaled score of 100–1,000. The minimum passing score is 750. Your score shows how you performed on the exam as a whole and whether you passed. Scaled scoring models help equate scores across multiple exam forms that might have slightly different difficulty levels.

Your score report could contain a table of classifications of your performance at each section level. The exam uses a compensatory scoring model, which means that you do not need to achieve a passing score in each section. You need to pass only the overall exam.

Each section of the exam has a specific weighting, so some sections have more questions than other sections have. The table of classifications contains general information that highlights your strengths and weaknesses. Use caution when you interpret section-level feedback.

Content outline

This exam guide includes weightings, content domains, and task statements for the exam. This guide does not provide a comprehensive list of the content on the exam. However, additional context for each task statement is available to help you prepare for the exam.

The exam has the following content domains and weightings:

- Domain 1: Design Solutions for Organizational Complexity (26% of scored content)
- Domain 2: Design for New Solutions (29% of scored content)
- Domain 3: Continuous Improvement for Existing Solutions (25% of scored content)
- Domain 4: Accelerate Workload Migration and Modernization (20% of scored content)

Domain 1: Design Solutions for Organizational Complexity

Task Statement 1.1: Architect network connectivity strategies.

Knowledge of:

• AWS Global Infrastructure

• AWS networking concepts (for example, Amazon VPC, AWS Direct Connect, AWS VPN, transitive routing, AWS container services)

• Hybrid DNS concepts (for example, Amazon Route 53 Resolver, on-premises DNS integration)

• Network segmentation (for example, subnetting, IP addressing, connectivity among VPCs)

• Network traffic monitoring

Skills in:

• Evaluating connectivity options for multiple VPCs

• Evaluating connectivity options for on-premises, co-location, and cloud integration

• Selecting AWS Regions and Availability Zones based on network and latency requirements

• Troubleshooting traffic flows by using AWS tools

• Using service endpoints for service integrations

Task Statement 1.2: Prescribe security controls.

Knowledge of:

• AWS Identity and Access Management (IAM) and AWS IAM Identity Center (AWS Single Sign-On)

• Route tables, security groups, and network ACLs

• Encryption keys and certificate management (for example, AWS Key Management Service [AWS KMS], AWS Certificate Manager [ACM])

• AWS security, identity, and compliance tools (for example, AWS CloudTrail, AWS Identity and Access Management Access Analyzer, AWS Security Hub, Amazon Inspector)

Skills in:

• Evaluating cross-account access management

• Integrating with third-party identity providers

• Deploying encryption strategies for data at rest and data in transit

• Developing a strategy for centralized security event notifications and auditing

Task Statement 1.3: Design reliable and resilient architectures.

Knowledge of:

• Recovery time objectives (RTOs) and recovery point objectives (RPOs)

• Disaster recovery strategies (for example, using AWS Elastic Disaster Recovery, pilot light, warm standby, and multi-site)

• Data backup and restoration

Skills in:

• Designing disaster recovery solutions based on RTO and RPO requirements

• Implementing architectures to automatically recover from failure

• Developing the optimal architecture by considering scale-up and scale-out options

• Designing an effective backup and restoration strategy

Task Statement 1.4: Design a multi-account AWS environment.

Knowledge of:

• AWS Organizations and AWS Control Tower

• Multi-account event notifications

• AWS resource sharing across environments

Skills in:

• Evaluating the most appropriate account structure for organizational requirements

• Recommending a strategy for central logging and event notifications

• Developing a multi-account governance model

Task Statement 1.5: Determine cost optimization and visibility strategies.

Knowledge of:

• AWS cost and usage monitoring tools (for example, AWS Trusted Advisor, AWS Pricing Calculator, AWS Cost Explorer, AWS Budgets)

• AWS purchasing options (for example, Reserved Instances, Savings Plans, Spot Instances)

• AWS rightsizing visibility tools (for example, AWS Compute Optimizer, Amazon S3 Storage Lens)

Skills in:

• Monitoring cost and usage with AWS tools

• Developing an effective tagging strategy that maps costs to business units

• Understanding how purchasing options affect cost and performance

Domain 2: Design for New Solutions

Task Statement 2.1: Design a deployment strategy to meet business requirements.

Knowledge of:

• Infrastructure as code (IaC) (for example, AWS CloudFormation)

• Continuous integration and continuous delivery (CI/CD)

• Change management processes

• Configuration management tools (for example, AWS Systems Manager)

Skills in:

• Determining an application or upgrade path for new services and features

• Selecting services to develop deployment strategies and implement appropriate rollback mechanisms

• Adopting managed services as needed to reduce infrastructure provisioning and patching overhead

• Making advanced technologies accessible by delegating complex development and deployment tasks to AWS

Task Statement 2.2: Design a solution to ensure business continuity.

Knowledge of:

• AWS Global Infrastructure

• AWS networking concepts (for example, Route 53, routing methods)

• RTOs and RPOs

• Disaster recovery scenarios (for example, backup and restore, pilot light, warm standby, multi-site) • Disaster recovery solutions on AWS

Skills in:

• Configuring disaster recovery solutions

• Configuring data and database replication

• Performing disaster recovery testing

• Architecting a backup solution that is automated, is cost-effective, and supports business continuity across multiple Availability Zones or Regions

• Designing an architecture that provides application and infrastructure availability in the event of a disruption

• Using processes and components for centralized monitoring to proactively recover from system failures

Task Statement 2.3: Determine security controls based on requirements.

Knowledge of:

• IAM

• Route tables, security groups, and network ACLs

• Encryption options for data at rest and data in transit

• AWS service endpoints

• Credential management services

• AWS managed security services (for example, AWS Shield, AWS WAF, Amazon GuardDuty, AWS Security Hub)

Skills in:

• Specifying IAM users and IAM roles that adhere to the principle of least privilege access

• Specifying inbound and outbound network flows by using security group rules and network ACL rules

• Developing attack mitigation strategies for large-scale web applications

• Developing encryption strategies for data at rest and data in transit

• Specifying service endpoints for service integrations

• Developing strategies for patch management to remain compliant with organizational standards

Task Statement 2.4: Design a strategy to meet reliability requirements.

Knowledge of:

• AWS Global Infrastructure

• AWS storage services and replication strategies (for example Amazon S3, Amazon RDS, Amazon ElastiCache)

• Multi-AZ and multi-Region architectures

• Auto scaling policies and events

• Application integration (for example, Amazon Simple Notification Service [Amazon SNS], Amazon Simple Queue Service [Amazon SQS], AWS Step Functions)

• Service quotas and limits

Skills in:

• Designing highly available application environments based on business requirements

• Using advanced techniques to design for failure and ensure seamless system recoverability

• Implementing loosely coupled dependencies

• Operating and maintaining high-availability architectures (for example, application failovers, database failovers)

• Using AWS managed services for high availability

• Implementing DNS routing policies (for example, Route 53 latency-based routing, geolocation routing, simple routing)

Task Statement 2.5: Design a solution to meet performance objectives.

Knowledge of:

• Performance monitoring technologies

• Storage options on AWS

• Instance families and use cases

• Purpose-built databases

Skills in:

• Designing large-scale application architectures for a variety of access patterns

• Designing an elastic architecture based on business objectives

• Applying design patterns to meet performance objectives with caching, buffering, and replicas

• Developing a process methodology for selecting purpose-built services for required tasks

• Designing a rightsizing strategy

Task Statement 2.6: Determine a cost optimization strategy to meet solution goals and objectives.

Knowledge of:

• AWS cost and usage monitoring tools (for example, Cost Explorer, Trusted Advisor, AWS Pricing Calculator)

• Pricing models (for example, Reserved Instances, Savings Plans)

• Storage tiering

• Data transfer costs

• AWS managed service offerings

Skills in:

• Identifying opportunities to select and rightsize infrastructure for cost-effective resources

• Identifying appropriate pricing models

• Performing data transfer modeling and selecting services to reduce data transfer costs

• Developing a strategy and implementing controls for expenditure and usage awareness

Domain 3: Continuous Improvement for Existing Solutions

Task Statement 3.1: Determine a strategy to improve overall operational excellence.

Knowledge of:

• Alerting and automatic remediation strategies

• Disaster recovery planning

• Monitoring and logging solutions (for example, Amazon CloudWatch)

• CI/CD pipelines and deployment strategies (for example, blue/green, all-at-once, rolling)

• Configuration management tools (for example, Systems Manager)

Skills in:

• Determining the most appropriate logging and monitoring strategy

• Evaluating current deployment processes for improvement opportunities

• Prioritizing opportunities for automation within a solution stack

• Recommending the appropriate AWS solution to enable configuration management automation

• Engineering failure scenario activities to support and exercise an understanding of recovery actions

Task Statement 3.2: Determine a strategy to improve security.

Knowledge of:

• Data retention, data sensitivity, and data regulatory requirements

• Automated monitoring and remediation strategies (for example, AWS Config rules)

• Secrets management (for example, Systems Manager, AWS Secrets Manager)

• Principle of least privilege access

• Security-specific AWS solutions

• Patching practices

• Backup practices and methods

Skills in:

• Evaluating a strategy for the secure management of secrets and credentials

• Auditing an environment for least privilege access

• Reviewing implemented solutions to ensure security at every layer

• Reviewing comprehensive traceability of users and services

• Prioritizing automated responses to the detection of vulnerabilities

• Designing and implementing a patch and update process

• Designing and implementing a backup process

• Employing remediation techniques

Task Statement 3.3: Determine a strategy to improve performance.

Knowledge of:

• High-performing systems architectures (for example, auto scaling, instance fleets, placement groups)

• Global service offerings (for example, AWS Global Accelerator, Amazon CloudFront, edge computing services)

• Monitoring tool sets and services (for example, CloudWatch)

• Service level agreements (SLAs) and key performance indicators (KPIs)

Skills in:

• Translating business requirements to measurable metrics

• Testing potential remediation solutions and making recommendations

• Proposing opportunities for the adoption of new technologies and managed services

• Assessing solutions and applying rightsizing based on requirements

• Identifying and examining performance bottlenecks

Task Statement 3.4: Determine a strategy to improve reliability.

Knowledge of:

• AWS Global Infrastructure

• Data replication methods

• Scaling methodologies (for example, load balancing, auto scaling)

• High availability and resiliency

• Disaster recovery methods and tools

• Service quotas and limits

Skills in:

• Understanding application growth and usage trends

• Evaluating existing architecture to determine areas that are not sufficiently reliable

• Remediating single points of failure

• Enabling data replication, self-healing, and elastic features and services

Task Statement 3.5: Identify opportunities for cost optimizations.

Knowledge of:

• Cost-conscious architecture choices (for example, using Spot Instances, scaling policies, and rightsizing resources)

• Price model adoptions (for example, Reserved Instances, Savings Plans)

• Networking and data transfer costs

• Cost management, alerting, and reporting

Skills in:

• Analyzing usage reports to identify underutilized and overutilized resources

• Using AWS solutions to identify unused resources

• Designing billing alarms based on expected usage patterns

• Investigating AWS Cost and Usage Reports at a granular level

• Using tagging for cost allocation and reporting Domain 4: Accelerate Workload Migration and Modernization

Task Statement 4.1: Select existing workloads and processes for potential migration.

Knowledge of:

• Migration assessment and tracking tools (for example, AWS Migration Hub)

• Portfolio assessment

• Asset planning

• Prioritization and migration of workloads (for example, wave planning)

Skills in:

• Completing an application migration assessment

• Evaluating applications according to the seven common migration strategies (7Rs)

• Evaluating total cost of ownership (TCO)

Task Statement 4.2: Determine the optimal migration approach for existing workloads.

Knowledge of:

• Data migration options and tools (for example, AWS DataSync, AWS Transfer Family, AWS Snow Family, S3 Transfer Acceleration)

• Application migration tools (for example, AWS Application Discovery Service, AWS Application Migration Service)

• AWS networking services and DNS (for example, Direct Connect, AWS Site-to-Site VPN, Route 53)

• Identity services (for example, IAM Identity Center, AWS Directory Service)

• Database migration tools (for example, AWS Database Migration Service [AWS DMS], AWS Schema Conversion Tool [AWS SCT])

• Governance tools (for example, AWS Control Tower, Organizations)

Skills in:

• Selecting the appropriate database transfer mechanism

• Selecting the appropriate application transfer mechanism

• Selecting the appropriate data transfer service and migration strategy

• Applying the appropriate security methods to migration tools

• Selecting the appropriate governance model

Task Statement 4.3: Determine a new architecture for existing workloads.

Knowledge of:

• Compute services (for example, Amazon EC2, AWS Elastic Beanstalk)

• Containers (for example, Amazon Elastic Container Service [Amazon ECS], Amazon Elastic Kubernetes Service [Amazon EKS], AWS Fargate, Amazon Elastic Container Registry [Amazon ECR])

• AWS storage services (for example, Amazon Elastic Block Store [Amazon EBS], Amazon Elastic File System [Amazon EFS], Amazon FSx, Amazon S3, Volume Gateway)

• Databases (for example, Amazon DynamoDB, Amazon OpenSearch Service, Amazon RDS, self-managed databases on Amazon EC2)

Skills in:

• Selecting the appropriate compute platform

• Selecting the appropriate container hosting platform

• Selecting the appropriate storage service

• Selecting the appropriate database platform

Task Statement 4.4: Determine opportunities for modernization and enhancements.

Knowledge of:

• Serverless compute offerings (for example, AWS Lambda)

• Containers (for example, Amazon ECS, Amazon EKS, Fargate)

• AWS storage services (for example, Amazon S3, Amazon EFS)

• Purpose-built databases (for example, DynamoDB, Amazon Aurora Serverless, ElastiCache)

• Integration services (for example, Amazon SQS, Amazon SNS, Amazon EventBridge, Step Functions)

Skills in:

• Identifying opportunities to decouple application components

• Identifying opportunities for serverless solutions

• Selecting the appropriate service for containers

• Identifying opportunities for purpose-built databases

• Selecting the appropriate application integration service