

## AWS Certified Security - Specialty (SCS-C02) Exam Guide

### Introduction

The AWS Certified Security - Specialty (SCS-C02) exam is intended for individuals who perform a security role. The exam validates a candidate's ability to effectively demonstrate knowledge about securing AWS products and services.

The exam also validates whether a candidate has the following:

- An understanding of specialized data classifications and AWS data protection mechanisms
- An understanding of data-encryption methods and AWS mechanisms to implement them
- An understanding of secure internet protocols and AWS mechanisms to implement them
- A working knowledge of AWS security services and features of services to provide a secure production environment
- Competency from 2 or more years of production deployment experience in using AWS security services and features
- The ability to make tradeoff decisions regarding cost, security, and deployment complexity to meet a set of application requirements
- An understanding of security operations and risks

### Target candidate description

The target candidate should have the equivalent of 3–5 years of experience in designing and implementing security solutions. Additionally, the target candidate should have a minimum of 2 years of hands-on experience in securing AWS workloads.

## **Recommended AWS knowledge**

The target candidate should have the following knowledge:

- The AWS shared responsibility model and its application
- General knowledge of AWS services and deploying cloud solutions
- Security controls for AWS environments and workloads
- Logging and monitoring strategies
- Vulnerability management and security automation
- Ways to integrate AWS security services with third-party tools
- Disaster recovery controls, including backup strategies
- Cryptography and key management
- Identity access management
- Data retention and lifecycle management
- How to troubleshoot security issues
- Multi-account governance and organizational compliance
- Threat detection and incident response strategies

## **Job tasks that are out of scope for the target candidate**

The following list contains job tasks that the target candidate is not expected to be able to perform. This list is non-exhaustive. These tasks are out of scope for the exam:

- Develop software in a specific language (for example, Python, Java).
- Confirm regulatory compliance.
- Manage software development lifecycles.
- Design network topologies.
- Architect overall cloud deployments.
- Configure storage services based on data residency requirements (for example, General Data Protection Regulation [GDPR]).

Refer to the Appendix for a list of technologies and concepts that might appear on the exam, a list of in-scope AWS services and features, and a list of out-of-scope AWS services and features.

## 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 50 questions that affect your score.

### Unscored content

The exam includes 15 unscored questions that do not affect your score. AWS collects information about performance on these unscored questions to evaluate these questions for future use as scored questions. These unscored questions are not identified on the exam.

### Exam results

The AWS Certified Security - Specialty (SCS-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: Threat Detection and Incident Response (14% of scored content)
- Domain 2: Security Logging and Monitoring (18% of scored content)
- Domain 3: Infrastructure Security (20% of scored content)
- Domain 4: Identity and Access Management (16% of scored content)
- Domain 5: Data Protection (18% of scored content)
- Domain 6: Management and Security Governance (14% of scored content)

## **Domain 1: Threat Detection and Incident Response**

Task Statement 1.1: Design and implement an incident response plan.

Knowledge of:

- AWS best practices for incident response
- Cloud incidents
- Roles and responsibilities in the incident response plan
- AWS Security Finding Format (ASFF)

Skills in:

- Implementing credential invalidation and rotation strategies in response to compromises (for example, by using AWS Identity and Access Management [IAM] and AWS Secrets Manager)
- Isolating AWS resources
- Designing and implementing playbooks and runbooks for responses to security incidents
- Deploying security services (for example, AWS Security Hub, Amazon Macie, Amazon GuardDuty, Amazon Inspector, AWS Config, Amazon Detective, AWS Identity and Access Management Access Analyzer)
- Configuring integrations with native AWS services and third-party services (for example, by using Amazon EventBridge and the ASFF)

Task Statement 1.2: Detect security threats and anomalies by using AWS services.

Knowledge of:

- AWS managed security services that detect threats
- Anomaly and correlation techniques to join data across services
- Visualizations to identify anomalies
- Strategies to centralize security findings

Skills in:

- Evaluating findings from security services (for example, GuardDuty, Security Hub, Macie, AWS Config, IAM Access Analyzer)
- Searching and correlating security threats across AWS services (for example, by using Detective)
- Performing queries to validate security events (for example, by using Amazon Athena)
- Creating metric filters and dashboards to detect anomalous activity (for example, by using Amazon CloudWatch)

### Task Statement 1.3: Respond to compromised resources and workloads.

#### Knowledge of:

- AWS Security Incident Response Guide
- Resource isolation mechanisms
- Techniques for root cause analysis
- Data capture mechanisms
- Log analysis for event validation

#### Skills in:

- Automating remediation by using AWS services (for example, AWS Lambda, AWS Step Functions, EventBridge, AWS Systems Manager runbooks, Security Hub, AWS Config)
- Responding to compromised resources (for example, by isolating Amazon EC2 instances)
- Investigating and analyzing to conduct root cause analysis (for example, by using Detective)
- Capturing relevant forensics data from a compromised resource (for example, Amazon Elastic Block Store [Amazon EBS] volume snapshots, memory dump)
- Querying logs in Amazon S3 for contextual information related to security events (for example, by using Athena)
- Protecting and preserving forensic artifacts (for example, by using S3 Object Lock, isolated forensic accounts, S3 Lifecycle, and S3 replication)
- Preparing services for incidents and recovering services after incidents

## Domain 2: Security Logging and Monitoring

### Task Statement 2.1: Design and implement monitoring and alerting to address security events.

#### Knowledge of:

- AWS services that monitor events and provide alarms (for example, CloudWatch, EventBridge)
- AWS services that automate alerting (for example, Lambda, Amazon Simple Notification Service [Amazon SNS], Security Hub)
- Tools that monitor metrics and baselines (for example, GuardDuty, Systems Manager)

Skills in:

- Analyzing architectures to identify monitoring requirements and sources of data for security monitoring
- Analyzing environments and workloads to determine monitoring requirements
- Designing environment monitoring and workload monitoring based on business and security requirements
- Setting up automated tools and scripts to perform regular audits (for example, by creating custom insights in Security Hub)
- Defining the metrics and thresholds that generate alerts

Task Statement 2.2: Troubleshoot security monitoring and alerting.

Knowledge of:

- Configuration of monitoring services (for example, Security Hub)
- Relevant data that indicates security events

Skills in:

- Analyzing the service functionality, permissions, and configuration of resources after an event that did not provide visibility or alerting
- Analyzing and remediating the configuration of a custom application that is not reporting its statistics
- Evaluating logging and monitoring services for alignment with security requirements

Task Statement 2.3: Design and implement a logging solution.

Knowledge of:

- AWS services and features that provide logging capabilities (for example, VPC Flow Logs, DNS logs, AWS CloudTrail, Amazon CloudWatch Logs)
- Attributes of logging capabilities (for example, log levels, type, verbosity)
- Log destinations and lifecycle management (for example, retention period)

Skills in:

- Configuring logging for services and applications
- Identifying logging requirements and sources for log ingestion
- Implementing log storage and lifecycle management according to AWS best practices and organizational requirements

#### Task Statement 2.4: Troubleshoot logging solutions.

##### Knowledge of:

- Capabilities and use cases of AWS services that provide data sources (for example, log level, type, verbosity, cadence, timeliness, immutability)
- AWS services and features that provide logging capabilities (for example, VPC Flow Logs, DNS logs, CloudTrail, CloudWatch Logs)
- Access permissions that are necessary for logging

##### Skills in:

- Identifying misconfiguration and determining remediation steps for absent access permissions that are necessary for logging (for example, by managing read/write permissions, S3 bucket permissions, public access, and integrity)
- Determining the cause of missing logs and performing remediation steps

#### Task Statement 2.5: Design a log analysis solution.

##### Knowledge of:

- Services and tools to analyze captured logs (for example, Athena, CloudWatch Logs filter)
- Log analysis features of AWS services (for example, CloudWatch Logs Insights, CloudTrail Insights, Security Hub insights)
- Log format and components (for example, CloudTrail logs)

##### Skills in:

- Identifying patterns in logs to indicate anomalies and known threats
- Normalizing, parsing, and correlating logs

### Domain 3: Infrastructure Security

#### Task Statement 3.1: Design and implement security controls for edge services.

##### Knowledge of:

- Security features on edge services (for example, AWS WAF, load balancers, Amazon Route 53, Amazon CloudFront, AWS Shield)
- Common attacks, threats, and exploits (for example, Open Web Application Security Project [OWASP] Top 10, DDoS)
- Layered web application architecture



Skills in:

- Defining edge security strategies for common use cases (for example, public website, serverless app, mobile app backend)
- Selecting appropriate edge services based on anticipated threats and attacks (for example, OWASP Top 10, DDoS)
- Selecting appropriate protections based on anticipated vulnerabilities and risks (for example, vulnerable software, applications, libraries)
- Defining layers of defense by combining edge security services (for example, CloudFront with AWS WAF and load balancers)
- Applying restrictions at the edge based on various criteria (for example, geography, geolocation, rate limit)
- Activating logs, metrics, and monitoring around edge services to indicate attacks

Task Statement 3.2: Design and implement network security controls.

Knowledge of:

- VPC security mechanisms (for example, security groups, network ACLs, AWS Network Firewall)
- Inter-VPC connectivity (for example, AWS Transit Gateway, VPC endpoints)
- Security telemetry sources (for example, Traffic Mirroring, VPC Flow Logs)
- VPN technology, terminology, and usage
- On-premises connectivity options (for example, AWS VPN, AWS Direct Connect)

Skills in:

- Implementing network segmentation based on security requirements (for example, public subnets, private subnets, sensitive VPCs, on-premises connectivity)
- Designing network controls to permit or prevent network traffic as required (for example, by using security groups, network ACLs, and Network Firewall)
- Designing network flows to keep data off the public internet (for example, by using Transit Gateway, VPC endpoints, and Lambda in VPCs)
- Determining which telemetry sources to monitor based on network design, threats, and attacks (for example, load balancer logs, VPC Flow Logs, Traffic Mirroring)

- Determining redundancy and security workload requirements for communication between on-premises environments and the AWS Cloud (for example, by using AWS VPN, AWS VPN over Direct Connect, and MACsec)
- Identifying and removing unnecessary network access
- Managing network configurations as requirements change (for example, by using AWS Firewall Manager)

Task Statement 3.3: Design and implement security controls for compute workloads.

Knowledge of:

- Provisioning and maintenance of EC2 instances (for example, patching, inspecting, creation of snapshots and AMIs, use of EC2 Image Builder)
- IAM instance roles and IAM service roles
- Services that scan for vulnerabilities in compute workloads (for example, Amazon Inspector, Amazon Elastic Container Registry [Amazon ECR])
- Host-based security (for example, firewalls, hardening)

Skills in:

- Creating hardened EC2 AMIs
- Applying instance roles and service roles as appropriate to authorize compute workloads
- Scanning EC2 instances and container images for known vulnerabilities
- Applying patches across a fleet of EC2 instances or container images
- Activating host-based security mechanisms (for example, host-based firewalls)
- Analyzing Amazon Inspector findings and determining appropriate mitigation techniques
- Passing secrets and credentials securely to compute workloads

### Task Statement 3.4: Troubleshoot network security.

#### Knowledge of:

- How to analyze reachability (for example, by using VPC Reachability Analyzer and Amazon Inspector)
- Fundamental TCP/IP networking concepts (for example, UDP compared with TCP, ports, Open Systems Interconnection [OSI] model, network operating system utilities)
- How to read relevant log sources (for example, Route 53 logs, AWS WAF logs, VPC Flow Logs)

#### Skills in:

- Identifying, interpreting, and prioritizing problems in network connectivity (for example, by using Amazon Inspector Network Reachability)
- Determining solutions to produce desired network behavior
- Analyzing log sources to identify problems
- Capturing traffic samples for problem analysis (for example, by using Traffic Mirroring)

## Domain 4: Identity and Access Management

### Task Statement 4.1: Design, implement, and troubleshoot authentication for AWS resources.

#### Knowledge of:

- Methods and services for creating and managing identities (for example, federation, identity providers, AWS IAM Identity Center [AWS Single Sign-On], Amazon Cognito)
- Long-term and temporary credentialing mechanisms
- How to troubleshoot authentication issues (for example, by using CloudTrail, IAM Access Advisor, and IAM policy simulator)

#### Skills in:

- Establishing identity through an authentication system, based on requirements
- Setting up multi-factor authentication (MFA)
- Determining when to use AWS Security Token Service (AWS STS) to issue temporary credentials

Task Statement 4.2: Design, implement, and troubleshoot authorization for AWS resources.

Knowledge of:

- Different IAM policies (for example, managed policies, inline policies, identity-based policies, resource-based policies, session control policies)
- Components and impact of a policy (for example, Principal, Action, Resource, Condition)
- How to troubleshoot authorization issues (for example, by using CloudTrail, IAM Access Advisor, and IAM policy simulator)

Skills in:

- Constructing attribute-based access control (ABAC) and role-based access control (RBAC) strategies
- Evaluating IAM policy types for given requirements and workloads
- Interpreting an IAM policy's effect on environments and workloads
- Applying the principle of least privilege across an environment
- Enforcing proper separation of duties
- Analyzing access or authorization errors to determine cause or effect
- Investigating unintended permissions, authorization, or privileges granted to a resource, service, or entity

## **Domain 5: Data Protection**

Task Statement 5.1: Design and implement controls that provide confidentiality and integrity for data in transit.

Knowledge of:

- TLS concepts
- VPN concepts (for example, IPsec)
- Secure remote access methods (for example, SSH, RDP over Systems Manager Session Manager)
- Systems Manager Session Manager concepts
- How TLS certificates work with various network services and resources (for example, CloudFront, load balancers)

Skills in:

- Designing secure connectivity between AWS and on-premises networks (for example, by using Direct Connect and VPN gateways)
- Designing mechanisms to require encryption when connecting to resources (for example, Amazon RDS, Amazon Redshift, CloudFront, Amazon S3, Amazon DynamoDB, load balancers, Amazon Elastic File System [Amazon EFS], Amazon API Gateway)
- Requiring TLS for AWS API calls (for example, with Amazon S3)
- Designing mechanisms to forward traffic over secure connections (for example, by using Systems Manager and EC2 Instance Connect)
- Designing cross-Region networking by using private VIFs and public VIFs

Task Statement 5.2: Design and implement controls that provide confidentiality and integrity for data at rest.

Knowledge of:

- Encryption technique selection (for example, client-side, server-side, symmetric, asymmetric)
- Integrity-checking techniques (for example, hashing algorithms, digital signatures)
- Resource policies (for example, for DynamoDB, Amazon S3, and AWS Key Management Service [AWS KMS])
- IAM roles and policies

Skills in:

- Designing resource policies to restrict access to authorized users (for example, S3 bucket policies, DynamoDB policies)
- Designing mechanisms to prevent unauthorized public access (for example, S3 Block Public Access, prevention of public snapshots and public AMIs)
- Configuring services to activate encryption of data at rest (for example, Amazon S3, Amazon RDS, DynamoDB, Amazon Simple Queue Service [Amazon SQS], Amazon EBS, Amazon EFS)
- Designing mechanisms to protect data integrity by preventing modifications (for example, by using S3 Object Lock, KMS key policies, S3 Glacier Vault Lock, and AWS Backup Vault Lock)

- Designing encryption at rest by using AWS CloudHSM for relational databases (for example, Amazon RDS, RDS Custom, databases on EC2 instances)
- Choosing encryption techniques based on business requirements

Task Statement 5.3: Design and implement controls to manage the lifecycle of data at rest.

Knowledge of:

- Lifecycle policies
- Data retention standards

Skills in:

- Designing S3 Lifecycle mechanisms to retain data for required retention periods (for example, S3 Object Lock, S3 Glacier Vault Lock, S3 Lifecycle policy)
- Designing automatic lifecycle management for AWS services and resources (for example, Amazon S3, EBS volume snapshots, RDS volume snapshots, AMIs, container images, CloudWatch log groups, Amazon Data Lifecycle Manager)
- Establishing schedules and retention for AWS Backup across AWS services

Task Statement 5.4: Design and implement controls to protect credentials, secrets, and cryptographic key materials.

Knowledge of:

- Secrets Manager
- Systems Manager Parameter Store
- Usage and management of symmetric keys and asymmetric keys (for example, AWS KMS)

Skills in:

- Designing management and rotation of secrets for workloads (for example, database access credentials, API keys, IAM access keys, AWS KMS customer managed keys)
- Designing KMS key policies to limit key usage to authorized users
- Establishing mechanisms to import and remove customer-provided key material

## Domain 6: Management and Security Governance

Task Statement 6.1: Develop a strategy to centrally deploy and manage AWS accounts.

Knowledge of:

- Multi-account strategies
- Managed services that allow delegated administration
- Policy-defined guardrails
- Root account best practices
- Cross-account roles

Skills in:

- Deploying and configuring AWS Organizations
- Determining when and how to deploy AWS Control Tower (for example, which services must be deactivated for successful deployment)
- Implementing SCPs as a technical solution to enforce a policy (for example, limitations on the use of a root account, implementation of controls in AWS Control Tower)
- Centrally managing security services and aggregating findings (for example, by using delegated administration and AWS Config aggregators)
- Securing AWS account root user credentials

Task Statement 6.2: Implement a secure and consistent deployment strategy for cloud resources.

Knowledge of:

- Deployment best practices with infrastructure as code (IaC) (for example, AWS CloudFormation template hardening and drift detection)
- Best practices for tagging
- Centralized management, deployment, and versioning of AWS services
- Visibility and control over AWS infrastructure

Skills in:

- Using CloudFormation to deploy cloud resources consistently and securely
- Implementing and enforcing multi-account tagging strategies
- Configuring and deploying portfolios of approved AWS services (for example, by using AWS Service Catalog)
- Organizing AWS resources into different groups for management
- Deploying Firewall Manager to enforce policies
- Securely sharing resources across AWS accounts (for example, by using AWS Resource Access Manager [AWS RAM])

Task Statement 6.3: Evaluate the compliance of AWS resources.

Knowledge of:

- Data classification by using AWS services
- How to assess, audit, and evaluate the configurations of AWS resources (for example, by using AWS Config)

Skills in:

- Identifying sensitive data by using Macie
- Creating AWS Config rules for detection of noncompliant AWS resources
- Collecting and organizing evidence by using Security Hub and AWS Audit Manager

Task Statement 6.4: Identify security gaps through architectural reviews and cost analysis.

Knowledge of:

- AWS cost and usage for anomaly identification
- Strategies to reduce attack surfaces
- AWS Well-Architected Framework

Skills in:

- Identifying anomalies based on resource utilization and trends
- Identifying unused resources by using AWS services and tools (for example, AWS Trusted Advisor, AWS Cost Explorer)
- Using the AWS Well-Architected Tool to identify security gaps



## Appendix

### Technologies and concepts that might appear on the exam

The following list contains technologies and concepts that might appear on the exam. This list is non-exhaustive and is subject to change. The order and placement of the items in this list is no indication of their relative weight or importance on the exam:

- AWS CLI
- AWS SDKs
- AWS Management Console
- Secure remote access
- Certificate management
- Infrastructure as code (IaC)

### In-scope AWS services and features

*Note: Security affects all AWS services. Many services do not appear in this list because the overall service is out of scope, but the security aspects of the service are in scope. For example, a candidate for this exam would not be asked about the steps to set up replication for an S3 bucket. However, the candidate might be asked about configuring an S3 bucket policy.*

The following list contains AWS services and features that are in scope for the exam. This list is non-exhaustive and is subject to change. AWS offerings appear in categories that align with the offerings' primary functions:

#### Management and Governance:

- AWS CloudTrail
- Amazon CloudWatch
- AWS Config
- AWS Organizations
- AWS Systems Manager
- AWS Trusted Advisor

### Networking and Content Delivery:

- Amazon VPC
  - Network Access Analyzer
  - Network ACLs
  - Security groups
  - VPC endpoints

### Security, Identity, and Compliance:

- AWS Audit Manager
- AWS Certificate Manager (ACM)
- AWS CloudHSM
- Amazon Detective
- AWS Directory Service
- AWS Firewall Manager
- Amazon GuardDuty
- AWS IAM Identity Center (AWS Single Sign-On)
- AWS Identity and Access Management (IAM)
- Amazon Inspector
- AWS Key Management Service (AWS KMS)
- Amazon Macie
- AWS Network Firewall
- AWS Security Hub
- AWS Shield
- AWS WAF

### Out-of-scope AWS services and features

The following list contains AWS services and features that are out of scope for the exam. This list is non-exhaustive and is subject to change. AWS offerings that are entirely unrelated to the target job roles for the exam are excluded from this list:

#### Blockchain:

- Amazon Managed Blockchain
- Amazon Quantum Ledger Database (Amazon QLDB)

#### Business Applications:

- Alexa for Business
- Amazon Chime
- Amazon Chime SDK
- Amazon Connect
- Amazon Honeycode
- Amazon Pinpoint
- AWS Supply Chain
- AWS Wickr
- Amazon WorkDocs

#### End User Computing:

- Amazon AppStream 2.0

#### Media Services:

- Amazon Elastic Transcoder
- AWS Elemental Appliances and Software
- AWS Elemental MediaConnect
- AWS Elemental MediaConvert
- AWS Elemental MediaLive
- AWS Elemental MediaPackage
- AWS Elemental MediaStore
- AWS Elemental MediaTailor
- Amazon Interactive Video Service (Amazon IVS)
- Amazon Kinesis Video Streams
- Amazon Nimble Studio

#### Migration and Transfer:

- AWS Application Discovery Service
- AWS Application Migration Service
- AWS Database Migration Service (AWS DMS)
- Migration Evaluator
- AWS Migration Hub
- AWS Transfer Family

#### Quantum Technologies:

- Amazon Braket

#### Robotics:

- AWS RoboMaker

#### Satellite:

- AWS Ground Station

#### Survey

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