AWS Risk and Compliance Overview

January 2017

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Abstract

This paper provides information to help customers integrate AWS into their existing control framework, including a basic approach for evaluating AWS controls.

Introduction

AWS and its customers share control over the IT environment. AWS' part in this shared responsibility includes providing its services on a highly secure and controlled platform and providing a wide array of security features customers can use. The customers' responsibility includes configuring their IT environments in a secure and controlled manner for their purposes. While customers don't communicate their use and configurations to AWS, AWS does communicate its security and control environment relevant to customers. AWS does this by doing the following:

- Obtaining industry certifications and independent third-party attestations described in this document
- Publishing information about the AWS security and control practices in whitepapers and web site content
- Providing certificates, reports, and other documentation directly to AWS customers under NDA (as required)

For a more detailed description of AWS security please see AWS Security Center.

For a more detailed description of AWS Compliance please see AWS Compliance page.

Additionally, the AWS Overview of Security Processes whitepaper covers AWS' general security controls and service-specific security.

Shared Responsibility Environment

Moving IT infrastructure to AWS services creates a model of shared responsibility between the customer and AWS. This shared model can help relieve customer's operational burden as AWS operates, manages and controls the components from the host operating system and virtualization layer down to the physical security of the facilities in which the service operates. The customer assumes responsibility and management of the guest operating system (including updates and security patches), other associated application software as well as the configuration of the AWS provided security group firewall. Customers should carefully consider the services they choose as their responsibilities vary depending on the services used, the integration of those

services into their IT environment, and applicable laws and regulations. It is possible for customers to enhance security and/or meet their more stringent compliance requirements by leveraging technology such as host based firewalls, host based intrusion detection/prevention, encryption and key management. The nature of this shared responsibility also provides the flexibility and customer control that permits the deployment of solutions that meet industry-specific certification requirements.

This customer/AWS shared responsibility model also extends to IT controls. Just as the responsibility to operate the IT environment is shared between AWS and its customers, so is the management, operation and verification of IT controls shared. AWS can help relieve customer burden of operating controls by managing those controls associated with the physical infrastructure deployed in the AWS environment that may previously have been managed by the customer. As every customer is deployed differently in AWS, customers can take advantage of shifting management of certain IT controls to AWS which results in a (new) distributed control environment. Customers can then use the AWS control and compliance documentation available to them (described in AWS Certifications and Third-party Attestations) to perform their control evaluation and verification procedures as required.

Strong Compliance Governance

As always, AWS customers are required to continue to maintain adequate governance over the entire IT control environment regardless of how IT is deployed. Leading practices include an understanding of required compliance objectives and requirements (from relevant sources), establishment of a control environment that meets those objectives and requirements, an understanding of the validation required based on the organization's risk tolerance, and verification of the operating effectiveness of their control environment. Deployment in the AWS cloud gives enterprises different options to apply various types of controls and various verification methods.

Strong customer compliance and governance might include the following basic approach:

1. Review information available from AWS together with other information to understand as much of the entire IT environment as possible, and then document all compliance requirements.

2. Design and implement control objectives to meet the enterprise compliance requirements.
3. Identify and document controls owned by outside parties.
4. Verify that all control objectives are met and all key controls are designed and operating effectively.

Approaching compliance governance in this manner will help companies gain a better understanding of their control environment and will help clearly delineate the verification activities to be performed.

Evaluating and Integrating AWS Controls

AWS provides a wide range of information regarding its IT control environment to customers through white papers, reports, certifications, and other third-party attestations. This documentation assists customers in understanding the controls in place relevant to the AWS services they use and how those controls have been validated. This information also assists customers in their efforts to account for and to validate that controls in their extended IT environment are operating effectively.

Traditionally, the design and operating effectiveness of control objectives and controls are validated by internal and/or external auditors via process walkthroughs and evidence evaluation. Direct observation/verification, by the customer or customer's external auditor, is generally performed to validate controls. In the case where service providers, such as AWS, are used, companies request and evaluate third-party attestations and certifications in order to gain reasonable assurance of the design and operating effectiveness of control objective and controls. As a result, although customer's key controls may be managed by AWS, the control environment can still be a unified framework where all controls are accounted for and are verified as operating effectively. Third-party attestations and certifications of AWS can not only provide a higher level of validation of the control environment, but may relieve customers of the requirement to perform certain validation work themselves for their IT environment in the AWS cloud.

AWS IT Control Information

AWS provides IT control information to customers in the following ways:

Specific control definition. AWS customers are able to identify key controls managed by AWS. Key controls are critical to the customer's control environment and require an external attestation of the operating effectiveness of these key controls in order to comply with compliance requirements—such as the annual financial audit. For this purpose, AWS publishes a wide range of specific IT controls in its Service Organization Controls 1 (SOC 1) Type II report. The SOC 1 report, formerly the Statement on Auditing Standards (SAS) No. 70, Service Organizations report, is a widely recognized auditing standard developed by the American Institute of Certified Public Accountants (AICPA). The SOC 1 audit is an in-depth audit of both the design and operating effectiveness of AWS' defined control objectives and control activities (which include control objectives and control activities over the part of the infrastructure AWS manages). "Type II" refers to the fact that each of the controls described in the report are not only evaluated for adequacy of design, but are also tested for operating effectiveness by the external auditor. Because of the independence and competence of AWS' external auditor, controls identified in the report should provide customers with a high level of confidence in AWS' control environment. AWS' controls can be considered designed and operating effectively for many compliance purposes, including Sarbanes-Oxley (SOX) Section 404 financial statement audits. Leveraging SOC 1 Type II reports is also generally permitted by other external certifying bodies (e.g., ISO 27001 auditors may request a SOC 1 Type II report in order to complete their evaluations for customers).

Other specific control activities relate to AWS' Payment Card Industry (PCI) and Federal Information Security Management Act (FISMA) compliance. AWS is compliant with FISMA Moderate standards and with the PCI Data Security Standard. These PCI and FISMA standards are very prescriptive and require independent validation that AWS adheres to the published standard.

General control standard compliance. If an AWS customer requires a broad set of control objectives to be met, evaluation of AWS' industry certifications may be performed. With the AWS ISO 27001 certification, AWS complies with a broad, comprehensive security standard and follows best practices in maintaining a secure environment. With the PCI Data Security Standard (PCI DSS), AWS complies with a set of controls important to companies that handle credit card information. With AWS'

compliance with the FISMA standards, AWS complies with a wide range of specific controls required by US government agencies. Compliance with these general standards provides customers with in-depth information on the comprehensive nature of the controls and security processes in place and can be considered when managing compliance.

AWS Global Regions

Data centers are built in clusters in various global regions, including: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US) (Oregon), EU (Frankfurt), EU (Ireland), Asia Pacific (Seoul) Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing), and South America (Sao Paulo).

For a complete list of regions, see the AWS Global Infrastructure page.

AWS Risk and Compliance Program

AWS provides information about its risk and compliance program to enable customers to incorporate AWS controls into their governance framework. This information can assist customers in documenting a complete control and governance framework with AWS included as an important part of that framework.

Risk Management

AWS management has developed a strategic business plan which includes risk identification and the implementation of controls to mitigate or manage risks. AWS management re-evaluates the strategic business plan at least biannually. This process requires management to identify risks within its areas of responsibility and to implement appropriate measures designed to address those risks.

In addition, the AWS control environment is subject to various internal and external risk assessments. AWS' Compliance and Security teams have established an information security framework and policies based on the Control Objectives for Information and related Technology (COBIT) framework and have effectively integrated the ISO 27001 certifiable framework based on ISO 27002 controls, American Institute of Certified Public Accountants (AICPA) Trust Services Principles, the PCI DSS v3.1, and the National Institute of

Standards and Technology (NIST) Publication 800-53 Rev 3 (Recommended Security Controls for Federal Information Systems). AWS maintains the security policy, provides security training to employees, and performs application security reviews. These reviews assess the confidentiality, integrity, and availability of data, as well as conformance to the information security policy.

AWS Security regularly scans all Internet facing service endpoint IP addresses for vulnerabilities (these scans do not include customer instances). AWS Security notifies the appropriate parties to remediate any identified vulnerabilities. In addition, external vulnerability threat assessments are performed regularly by independent security firms. Findings and recommendations resulting from these assessments are categorized and delivered to AWS leadership. These scans are done in a manner for the health and viability of the underlying AWS infrastructure and are not meant to replace the customer's own vulnerability scans required to meet their specific compliance requirements. Customers can request permission to conduct scans of their cloud infrastructure as long as they are limited to the customer's instances and do not violate the AWS Acceptable Use Policy. Advance approval for these types of scans can be initiated by submitting a request via the AWS Vulnerability / Penetration Testing Request Form.

Control Environment

AWS manages a comprehensive control environment that includes policies, processes and control activities that leverage various aspects of Amazon's overall control environment. This control environment is in place for the secure delivery of AWS' service offerings. The collective control environment encompasses the people, processes, and technology necessary to establish and maintain an environment that supports the operating effectiveness of AWS' control framework. AWS has integrated applicable cloud-specific controls identified by leading cloud computing industry bodies into the AWS control framework. AWS continues to monitor these industry groups for ideas on which leading practices can be implemented to better assist customers with managing their control environment.

The control environment at Amazon begins at the highest level of the Company. Executive and senior leadership play important roles in establishing the Company's tone and core values. Every employee is provided with the Company's Code of Business Conduct and Ethics and completes periodic

training. Compliance audits are performed so that employees understand and follow the established policies.

The AWS organizational structure provides a framework for planning, executing and controlling business operations. The organizational structure assigns roles and responsibilities to provide for adequate staffing, efficiency of operations, and the segregation of duties. Management has also established authority and appropriate lines of reporting for key personnel. Included as part of the Company's hiring verification processes are education, previous employment, and, in some cases, background checks as permitted by law and regulation for employees commensurate with the employee's position and level of access to AWS facilities. The Company follows a structured on-boarding process to familiarize new employees with Amazon tools, processes, systems, policies and procedures.

Information Security

AWS has implemented a formal information security program designed to protect the confidentiality, integrity, and availability of customers' systems and data. AWS publishes a security whitepaper that is available on the public website that addresses how AWS can help customers secure their data.

AWS Contact

Customers can request the reports and certifications produced by our third-party auditors or can request more information about AWS Compliance by contacting AWS Sales and Business Development. The representative will route customers to the proper team depending on nature of the inquiry. For additional information on AWS Compliance, see the AWS Compliance site or send questions directly to mailto:awscompliance@amazon.com.

Further Reading

For additional information, see the following sources:

- CSA Consensus Assessments Initiative Questionnaire
- AWS Certifications, Programs, Reports, and Third-Party Attestations
- AWS Answers to Key Compliance Questions

Document Revisions

Date	Description
January 2017	Migrate to new template.
January 2016	First publication