Amazon Web Services: Risk and Compliance

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(Consult http://aws.amazon.com/compliance/aws-whitepapers/

for the latest version of this paper)

This document is intended to provide information to assist AWS customers with integrating AWS into their existing control framework supporting their IT environment. This document includes a basic approach to evaluating AWS controls and provides information to assist customers with integrating control environments. This document also addresses AWS-specific information around general cloud computing compliance questions.

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Risk and Compliance Overview

AWS and its customers share control over the IT environment, both parties have responsibility for managing 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: https://aws.amazon.com/security/

For a more detailed description of AWS Compliance please see
AWS Compliance page: https://aws.amazon.com/compliance/

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 the AWS Certifications and Third-party Attestations section of this document) to perform their control evaluation and verification procedures as required.

The next section provides an approach on how AWS customers can evaluate and validate their distributed control environment effectively.

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 two ways:

1. **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. As discussed below, 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.

2. **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. As of this writing, there are twelve regions: 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).

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 Certifications, Programs, Reports, and Third-Party Attestations

AWS engages with external certifying bodies and independent auditors to provide customers with considerable information regarding the policies, processes, and controls established and operated by AWS.

CJIS

AWS complies with the FBI's Criminal Justice Information Services (CJIS) standard. We sign CJIS security agreements with our customers, including allowing or performing any required employee background checks according to the **CJIS Security Policy**.

Law enforcement customers (and partners who manage CJI) are taking advantage of AWS services to improve the security and protection of CJI data, using the advanced security services and features of AWS, such as activity logging (**AWS CloudTrail**), encryption of data in motion and at rest (S3's Server-Side Encryption with the option to bring your own key), comprehensive key management and protection (AWS **Key Management Service** and **CloudHSM**), and integrated permission management (IAM federated identity management, multi-factor authentication).

AWS has created a Criminal Justice Information Services (CJIS) **Workbook** in a security plan template format aligned to the CJIS Policy Areas. Additionally, a CJIS Whitepaper has been developed to help guide customers in their journey to cloud adoption.

Visit the CJIS Hub Page**: https://aws.amazon.com/compliance/cjis/**

CSA

In 2011, the Cloud Security Alliance (CSA) launched **STAR**, an initiative to encourage transparency of security practices within cloud providers. The **CSA Security, Trust & Assurance Registry** (STAR) is a free, publicly accessible registry that documents the security controls provided by various cloud computing offerings, thereby helping users assess the security of cloud providers they currently use or are considering contracting with. **AWS is a CSA STAR registrant** and has completed the Cloud Security Alliance (CSA) Consensus Assessments Initiative Questionnaire (CAIQ). This CAIQ published by the CSA provides a way to reference and

document what security controls exist in AWS' Infrastructure as a Service offerings. The CAIQ provides 298 questions a cloud consumer and cloud auditor may wish to ask of a cloud provider.

See: **Appendix A: CSA Consensus Assessments Initiative Questionnaire v3.0.1**

Cyber Essentials Plus

Cyber Essentials Plus is a UK Government-backed, industry-supported certification scheme introduced in the UK to help organizations demonstrate operational security against common cyber-attacks.

It demonstrates the baseline controls AWS implements to mitigate the risk from common Internet-based threats, within the context of the UK Government's "**10 Steps to Cyber Security**". It is backed by industry, including the Federation of Small Businesses, the Confederation of British Industry and a number of insurance organizations that offer incentives for businesses holding this certification.

Cyber Essentials sets out the necessary technical controls; the related assurance framework shows how the independent assurance process works for Cyber Essentials Plus certification through an annual external assessment conducted by an accredited assessor. Due to the regional nature of the certification, the certification scope is limited to EU (Ireland) region.

DoD SRG Levels 2 and 4

The Department of Defense (DoD) Cloud Security Model (SRG) provides a formalized assessment and authorization process for cloud service providers (CSPs) to gain a DoD Provisional Authorization, which can subsequently be leveraged by DoD customers. A Provisional Authorization under the SRG provides a reusable certification that attests to our compliance with DoD standards, reducing the time necessary for a DoD mission owner to assess and authorize one of their systems for operation on AWS. AWS currently holds provisional authorizations at Levels 2 and 4 of the SRG.

Additional information of the security control baselines defined for **Levels 2, 4, 5, and 6 can be found at: http://iase.disa.mil/cloud_security/Pages/index.aspx**.

Visit the DoD Hub Page**: https://aws.amazon.com/compliance/dod/**

FedRAMP SM

AWS is a Federal Risk and Authorization Management Program (FedRAMPsm) Compliant Cloud Service Provider. AWS has completed the testing performed by a FedRAMPsm accredited Third-Party Assessment Organization (3PAO) and has been granted two Agency Authority to Operate (ATOs) by the US Department of Health and Human Services (HHS) after demonstrating compliance with FedRAMPsm requirements at the Moderate impact level. All U.S. government agencies can leverage the AWS Agency ATO packages stored in the FedRAMPsm repository to evaluate AWS for their applications and workloads, provide authorizations to use AWS, and transition workloads into the AWS environment. The two FedRAMPsm Agency ATOs encompass all U.S. regions (the AWS GovCloud (US) region and the AWS US East/West regions).

The following services are in the accreditation boundary for the regions stated above:

- Amazon Redshift. Amazon Redshift is a fast, fully managed, petabyte-scale data warehouse service that makes it simple and cost-effective to efficiently analyze all your data using your existing business intelligence tools.
- Amazon Elastic Compute Cloud (Amazon EC2). Amazon EC2 provides resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers.
- Amazon Simple Storage Service (S3). Amazon S3 provides a simple web services interface that can be used to store and retrieve any amount of data, at any time, from anywhere on the web.
- Amazon Virtual Private Cloud (VPC). Amazon VPC provides the ability for you to provision a logically isolated section of AWS where you can launch AWS resources in a virtual network that you define.
- Amazon Elastic Block Store (EBS). Amazon EBS provides highly available, highly reliable, predictable storage volumes that can be attached to a running Amazon EC2 instance and exposed as a device within the instance.
- AWS Identity and Access Management (IAM). IAM enables you to securely control access to AWS services and resources for your users. Using IAM, you can create and manage AWS users and groups and use permissions to allow and deny their access to AWS resources.

For more information on AWS FedRAMP[sm] compliance please see the AWS FedRAMP[sm] FAQs at: https://aws.amazon.com/compliance/fedramp/

FERPA

The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's education records. These rights transfer to the student when he or she reaches the age of 18, or attends a school beyond the high school level. Students to whom the rights have transferred are "eligible students."

AWS enables covered entities and their business associates subject to FERPA to leverage the secure AWS environment to process, maintain, and store protected education information.

AWS also offers a **FERPA-focused whitepaper** for customers interested in learning more about how they can leverage AWS for the processing and storage of educational data.

The "**FERPA Compliance on AWS Whitepaper**" outlines how companies can use AWS to process systems that facilitate FERPA compliance: https://d0.awsstatic.com/whitepapers/compliance/AWS_FERPA_Whitepaper.pdf

FIPS 140-2

The Federal Information Processing Standard (FIPS) Publication 140-2 is a US government security standard that specifies the security requirements for cryptographic modules protecting sensitive information. To support customers with FIPS 140-2 requirements, SSL terminations in **AWS GovCloud (US)** operate using FIPS 140-2 validated hardware. AWS works with AWS GovCloud (US) customers to provide the information they need to help manage compliance when using the **AWS GovCloud (US) environment**.

FISMA and DIACAP

AWS enables US government agencies to achieve and sustain compliance with the Federal Information Security Management Act (**FISMA**). The AWS infrastructure has been evaluated by independent assessors for a variety of government systems as part of their system owners' approval process. Numerous Federal Civilian and Department of Defense (DoD) organizations have successfully achieved security authorizations for systems hosted on AWS in accordance with the Risk Management Framework (RMF) process defined in NIST 800-37 and DoD Information Assurance Certification and Accreditation Process (**DIACAP**).

GxP

GxP is an acronym that refers to the regulations and guidelines applicable to life sciences organizations that make food and medical products such as drugs, medical devices, and medical software applications. The overall intent of GxP requirements is to ensure that food and medical products are safe for consumers and to ensure the integrity of data used to make product-related safety decisions.

AWS offers a **GxP whitepaper** which details a comprehensive approach for using AWS for GxP systems. This whitepaper provides guidance for using **AWS Products in the context of GxP** and the content has been developed in conjunction with AWS pharmaceutical and medical device customers, as well as software partners, who are currently using AWS Products in their validated GxP systems.

For more information on the GxP on AWS **please contact AWS Sales and Business Development**.

For additional information please see our GxP Compliance FAQs:
https://aws.amazon.com/compliance/gxp-part-11-annex-11/

HIPAA

AWS enables covered entities and their business associates subject to the U.S. Health Insurance Portability and Accountability Act (HIPAA) to leverage the secure AWS environment to process, maintain, and store protected health information and AWS will be signing business associate agreements with such customers. AWS also offers a HIPAA-focused whitepaper for customers interested in learning more about how they can leverage AWS for the processing and storage of health information. The Architecting for HIPAA Security and Compliance on Amazon Web Services whitepaper outlines how companies can use AWS to process systems that facilitate HIPAA and Health Information Technology for Economic and Clinical Health (HITECH) compliance.

Customers may use any AWS service in an account designated as a HIPAA account, but they should only process, store and transmit PHI in the HIPAA-eligible services defined in the BAA. There are nine HIPAA-eligible services today, including:

- Amazon DynamoDB
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Cloud Compute (EC2)
- Elastic Load Balancing (ELB)
- Amazon Elastic MapReduce (EMR)
- Amazon Glacier
- Amazon Redshift
- Amazon Relational Database Service (Amazon RDS) using only MySQL and Oracle engines
- Amazon Simple Storage Service (S3)

AWS follows a standards-based risk management program to ensure that the HIPAA-eligible services specifically support the security, control, and administrative processes required under HIPAA. Using these services to store and process PHI allows our customers and AWS to address the HIPAA requirements applicable to our utility-based operating model. AWS prioritizes and adds new eligible services based on customer demand.

For additional information please see our HIPAA Compliance FAQs:
https://aws.amazon.com/compliance/hipaa-compliance/

Architecting for HIPAA Security and Compliance on Amazon Web Services:
https://do.awsstatic.com/whitepapers/compliance/AWS_HIPAA_Compliance_Whitepaper.pdf

IRAP

The Information Security Registered Assessors Program (IRAP) enables Australian government customers to validate that appropriate controls are in place and determine the appropriate responsibility model for addressing the needs of the Australian Signals Directorate (ASD) Information Security Manual (ISM).

Amazon Web Services **has completed an independent assessmen**t that has determined all applicable ISM controls are in place relating to the processing, storage and transmission of Unclassified (DLM) for the AWS Sydney Region.

IRAP Compliance FAQs:
https://aws.amazon.com/compliance/irap/

For more information see: **Appendix B: AWS alignment with the Australian Signals Directorate (ASD) Cloud Computing Security Considerations**

ISO 9001

AWS has achieved ISO 9001 certification, AWS' ISO 9001 certification directly supports customers who develop, migrate and operate their quality-controlled IT systems in the AWS cloud. Customers can leverage AWS' compliance reports as evidence for their own ISO 9001 programs and industry-specific quality programs, such as GxP in life sciences, ISO 13485 in medical devices, AS9100 in aerospace, and ISO/TS 16949 in automotive. AWS customers who don't have quality system requirements will still benefit from the additional assurance and transparency that an ISO 9001 certification provides.
The ISO 9001 certification covers the quality management system over a specified scope of AWS services and Regions of operations (below) and services including:

- AWS CloudFormation
- AWS Cloud Hardware Security Model (HSM)
- Amazon CloudFront
- AWS CloudTrail
- AWS Direct Connect
- AWS Directory Service
- Amazon DynamoDB
- Amazon EC2 VM Import/Export
- AWS Elastic Beanstalk
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Cloud Compute (EC2)

- Amazon EC2 Container Service (ECS)
- Amazon Elastic File System (EFS)
- Elastic Load Balancing (ELB)
- Amazon Elastic MapReduce (EMR)
- Amazon ElastiCache
- Amazon Glacier
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- AWS Route 53
- Amazon SimpleDB
- Amazon Simple Email Service (SES)
- Amazon Simple Queue Service (SQS)
- Amazon Simple Storage Service (S3)
- AWS Storage Gateway
- Amazon Simple Workflow Service (SWF)
- Amazon Virtual Private Cloud (VPC)
- AWS WAF - Web Application Firewall
- Amazon WorkDocs
- Amazon WorkMail
- Amazon WorkSpaces
- The underlying physical infrastructure and the AWS Management Environment

AWS' ISO 9001 accreditation covers AWS Regions including US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US), South America (Sao Paulo), EU (Ireland), EU (Frankfurt) and Asia Pacific (Singapore), Asia Pacific (Sydney), and Asia Pacific (Tokyo).

ISO 9001:2008 is a global standard for managing the quality of products and services. The 9001 standard outlines a quality management system based on eight principles defined by the International Organization for Standardization (ISO) Technical Committee for Quality Management and Quality Assurance. They include:

- Customer focus
- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual Improvement
- Factual approach to decision-making
- Mutually beneficial supplier relationships

The AWS ISO 9001 certification can be downloaded at:
https://d0.awsstatic.com/certifications/iso_9001_certification.pdf

AWS provides additional information and frequently asked questions about its ISO 9001 certification at:
https://aws.amazon.com/compliance/iso-9001-faqs/

ISO 27001

AWS has achieved ISO 27001 certification of our Information Security Management System (ISMS) covering AWS infrastructure, data centers, and services including:

- AWS CloudFormation
- Amazon CloudFront
- AWS Cloudtrail
- AWS Directory Service
- Amazon DynamoDB
- AWS Elastic Beanstalk
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Cloud Compute (EC2)
- Amazon EC2 Container Service (ECS)
- AWS Direct Connect
- Amazon EC2 VM Import/Export
- AWS Cloud Hardware Security Model (HSM)
- Elastic Load Balancing (ELB)
- Amazon Elastic File System (EFS)
- Amazon Elastic MapReduce (EMR)
- Amazon ElastiCache
- Amazon Glacier
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- AWS Route 53
- Amazon SimpleDB
- Amazon Simple Email Service (SES)
- Amazon Simple Queue Service (SQS)
- Amazon Simple Storage Service (S3)
- Amazon Simple Workflow Service (SWF)
- AWS Storage Gateway
- Amazon Virtual Private Cloud (VPC)
- AWS WAF - Web Application Firewall
- Amazon WorkDocs
- Amazon WorkMail
- Amazon WorkSpaces
- The underlying physical infrastructure (including GovCloud) and the AWS Management Environment

ISO 27001/27002 is a widely-adopted global security standard that sets out requirements and best practices for a systematic approach to managing company and customer information that's based on periodic risk assessments appropriate to ever-changing threat scenarios. In order to achieve the certification, a company must show it has a systematic and ongoing approach to managing information security risks that affect the confidentiality, integrity, and availability of company and customer information. This certification reinforces Amazon's commitment to providing significant information regarding our security controls and practices.

AWS' ISO 27001 accreditation covers AWS Regions including US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US), South America (Sao Paulo), EU (Ireland), EU (Frankfurt), Asia Pacific (Singapore), Asia Pacific (Sydney), and Asia Pacific (Tokyo).

The AWS ISO 27001 certification can be downloaded at:
https://d0.awsstatic.com/certifications/iso_27001_global_certification.pdf

AWS provides additional information and frequently asked questions about its ISO 27001 certification at:
https://aws.amazon.com/compliance/iso-27001-faqs/

ISO 27017

ISO 27017 is the newest code of practice released by the International Organization for Standardization (ISO). It provides implementation guidance on information security controls that specifically relate to cloud services.

AWS has achieved ISO 27017 certification of our Information Security Management System (ISMS) covering AWS infrastructure, data centers, and services including:

- Amazon CloudFront
- Amazon DynamoDB
- Amazon EC2 Container Service (ECS)
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Compute Cloud (EC2)
- Amazon Elastic File System (EFS)
- Amazon Elastic MapReduce (EMR)
- Amazon ElastiCache
- Amazon Glacier
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- Amazon Route 53
- Amazon Simple Email Service (SES)
- Amazon Simple Queue Service (SQS)
- Amazon Simple Storage Service (S3)
- Amazon Simple Workflow Service (SWF)
- Amazon SimpleDB
- Amazon Virtual Private Cloud (VPC)
- Amazon WorkDocs
- Amazon WorkMail
- Amazon WorkSpaces
- AWS CloudFormation
- AWS CloudHSM
- AWS CloudTrail
- AWS Direct Connect
- AWS Directory Service
- AWS Elastic Beanstalk
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- AWS Storage Gateway
- AWS WAF (Web Application Firewall)
- Elastic Load Balancing
- VM Import/Export

The AWS ISO 27017 certification can be downloaded at:
https://d0.awsstatic.com/certifications/iso_27017_certification.pdf

AWS provides additional information and frequently asked questions about its ISO 27017 certification at:
https://aws.amazon.com/compliance/iso-27017-faqs/

ISO 27018

ISO 27018 is the first International code of practice that focuses on protection of personal data in the cloud. It is based on ISO information security standard 27002 and provides implementation guidance on ISO 27002 controls applicable to public cloud Personally Identifiable Information (PII). It also provides a set of additional controls and associated guidance intended to address public cloud PII protection requirements not addressed by the existing ISO 27002 control set.

AWS has achieved ISO 27018 certification of our Information Security Management System (ISMS) covering AWS infrastructure, data centers, and services including:

- Amazon CloudFront
- Amazon DynamoDB
- Amazon EC2 Container Service (ECS)
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Compute Cloud (EC2)
- Amazon Elastic File System (EFS)
- Amazon Elastic MapReduce (EMR)
- Amazon ElastiCache
- Amazon Glacier
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- Amazon Route 53
- Amazon Simple Email Service (SES)
- Amazon Simple Queue Service (SQS)
- Amazon Simple Storage Service (S3)
- Amazon Simple Workflow Service (SWF)
- Amazon SimpleDB
- Amazon Virtual Private Cloud (VPC)
- Amazon WorkDocs
- Amazon WorkMail
- Amazon WorkSpaces
- AWS CloudFormation
- AWS CloudHSM
- AWS CloudTrail
- AWS Direct Connect
- AWS Directory Service
- AWS Elastic Beanstalk
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- AWS Storage Gateway
- AWS WAF (Web Application Firewall)
- Elastic Load Balancing
- VM Import/Export

The AWS ISO 27018 certification can be downloaded at:
https://do.awsstatic.com/certifications/iso_27018_certification.pdf

AWS provides additional information and frequently asked questions about its ISO 27018 certification at:
https://aws.amazon.com/compliance/iso-27018-faqs/

ITAR

The **AWS GovCloud (US)** region supports US International Traffic in Arms Regulations (**ITAR**) compliance. As a part of managing a comprehensive ITAR compliance program, companies subject to ITAR export regulations must control unintended exports by restricting access to protected data to US Persons and restricting physical location of that data to the US. AWS GovCloud (US) provides an environment physically located in the US and where access by AWS Personnel is limited to US Persons, thereby allowing qualified companies to transmit, process, and store protected articles and data subject to ITAR restrictions. The AWS GovCloud (US) environment has been audited by an independent third-party to validate the proper controls are in place to support customer export compliance programs for this requirement.

MPAA

The Motion Picture Association of America (MPAA) has established a set of best practices for securely storing, processing and delivering protected media and content (http://www.fightfilmtheft.org/facility-security-program.html). Media companies use these best practices as a way to assess risk and security of their content and infrastructure. AWS has demonstrated alignment with the MPAA best practices and the AWS infrastructure is compliant with all applicable MPAA infrastructure controls. While the MPAA does not offer a "certification," media industry customers can use the AWS MPAA documentation to augment their risk assessment and evaluation of MPAA-type content on AWS.

See the AWS Compliance MPAA hub page for additional details:
https://aws.amazon.com/compliance/mpaa/

MTCS Tier 3 Certification

The **Multi-Tier Cloud Security (MTCS)** is an operational Singapore security management Standard (SPRING SS 584:2013), based on ISO 27001/02 Information Security Management System (ISMS) standards. The certification assessment requires us to:

- Systematically evaluate our information security risks, taking into account the impact of company threats and vulnerabilities
- Design and implement a comprehensive suite of information security controls and other forms of risk management to address company and architecture security risks
- Adopt an overarching management process to ensure that the information security controls meet the our information security needs on an ongoing basis

View the MTCS Hub Page at:
https://aws.amazon.com/compliance/aws-multitiered-cloud-security-standard-certification/

NIST

In June 2015 The National Institute of Standards and Technology (NIST) released guidelines **800-171**, "Final Guidelines for Protecting Sensitive Government Information Held by Contractors". This guidance is applicable to the protection of Controlled Unclassified Information (CUI) on nonfederal systems.

AWS is already compliant with these guidelines, and customers can effectively comply with NIST 800-171 immediately. NIST 800-171 outlines a subset of the NIST 800-53 requirements, a guideline under which AWS has already been audited under the FedRAMP program. The FedRAMP Moderate security control baseline is more rigorous than the recommended requirements established in Chapter 3 of 800-171, and includes a significant number of security controls above and beyond those required of FISMA Moderate systems that

protect CUI data. A detailed mapping is available in the **NIST Special Publication 800-171**, starting on page D2 (which is page 37 in the PDF).

PCI DSS Level 1

AWS is Level 1 compliant under the Payment Card Industry (PCI) Data Security Standard (DSS). Customers can run applications on our PCI-compliant technology infrastructure for storing, processing, and transmitting credit card information in the cloud. In February 2013, the PCI Security Standards Council released PCI DSS Cloud Computing Guidelines. These guidelines provide customers who are managing a cardholder data environment with considerations for maintaining PCI DSS controls in the cloud. AWS has incorporated the PCI DSS Cloud Computing Guidelines into the AWS PCI Compliance Package for customers. The AWS PCI Compliance Package includes the AWS PCI Attestation of Compliance (AoC), which shows that AWS has been successfully validated against standards applicable to a Level 1 service provider under PCI DSS Version 3.1, and the AWS PCI Responsibility Summary, which explains how compliance responsibilities are shared between AWS and our customers in the cloud.

The following services are in scope for PCI DSS Level 1:

- Auto Scaling
- AWS CloudFormation
- Amazon CloudFront
- AWS CloudHSM
- AWS CloudTrail
- AWS Direct Connect
- Amazon DynamoDB
- AWS Elastic Beanstalk
- Amazon Elastic Block Store (EBS)
- Amazon Elastic Compute Cloud (EC2)
- Elastic Load Balancing (ELB)
- Amazon Elastic MapReduce (EMR)
- Amazon Glacier
- AWS Key Management Service (KMS)
- AWS Identity and Access Management (IAM)
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- Amazon Route 53
- Amazon SimpleDB
- Amazon Simple Storage Service (S3)
- Amazon Simple Queue Service (SQS)
- Amazon Simple Workflow Service SWF
- Amazon Virtual Private Cloud (VPC)
- The underlying physical infrastructure (including GovCloud) and the AWS Management Environment

The latest scope of services and regions for the AWS PCI DSS Level 1 certification can be found at: https://aws.amazon.com/compliance/pci-dss-level-1-faqs/

SOC 1/ISAE 3402

Amazon Web Services publishes a Service Organization Controls 1 (SOC 1), Type II report. The audit for this report is conducted in accordance with American Institute of Certified Public Accountants (AICPA): AT 801

(formerly SSAE 16) and the International Standards for Assurance Engagements No. 3402 (ISAE 3402). This dual-standard report is intended to meet a broad range of financial auditing requirements for U.S. and international auditing bodies. The SOC 1 report audit attests that AWS' control objectives are appropriately designed and that the individual controls defined to safeguard customer data are operating effectively. This report is the replacement of the Statement on Auditing Standards No. 70 (SAS 70) Type II Audit report.

The AWS SOC 1 control objectives are provided here. The report itself identifies the control activities that support each of these objectives and the independent auditor's results of their testing procedures of each control.

Objective Area	Objective Description
Security Organization	Controls provide reasonable assurance that information security policies have been implemented and communicated throughout the organization.
Employee User Access	Controls provide reasonable assurance that procedures have been established so that Amazon employee user accounts are added, modified and deleted in a timely manner and reviewed on a periodic basis.
Logical Security	Controls provide reasonable assurance that policies and mechanisms are in place to appropriately restrict unauthorized internal and external access to data and customer data is appropriately segregated from other customers.
Secure Data Handling	Controls provide reasonable assurance that data handling between the customer's point of initiation to an AWS storage location is secured and mapped accurately.
Physical Security and Environmental Protection	Controls provide reasonable assurance that physical access to data centers is restricted to authorized personnel and that mechanisms are in place to minimize the effect of a malfunction or physical disaster to data center facilities.
Change Management	Controls provide reasonable assurance that changes (including emergency / non-routine and configuration) to existing IT resources are logged, authorized, tested, approved and documented.
Data Integrity, Availability and Redundancy	Controls provide reasonable assurance that data integrity is maintained through all phases including transmission, storage and processing.
Incident Handling	Controls provide reasonable assurance that system incidents are recorded, analyzed, and resolved.

The SOC 1 reports are designed to focus on controls at a service organization that are likely to be relevant to an audit of a user entity's financial statements. As AWS' customer base is broad, and the use of AWS services is equally as broad, the applicability of controls to customer financial statements varies by customer. Therefore, the AWS SOC 1 report is designed to cover specific key controls likely to be required during a financial audit, as well as covering a broad range of IT general controls to accommodate a wide range of usage and audit scenarios. This allows customers to leverage the AWS infrastructure to store and process critical data, including that which is integral to the financial reporting process. AWS periodically reassesses the selection of these controls to consider customer feedback and usage of this important audit report.

AWS' commitment to the SOC 1 report is ongoing, and AWS will continue the process of periodic audits. The SOC 1 report scope covers:

- AWS CloudFormation
- AWS CloudHSM
- AWS CloudTrail

- AWS Direct Connect
- Amazon DynamoDB
- Amazon EC2 VM Import/Export
- Amazon Elastic Beanstalk
- Amazon Elastic Block Store (EBS)
- Amazon ElastiCache
- Amazon Elastic Compute Cloud (EC2)
- Amazon Elastic Load Balancing (ELB)
- Amazon Elastic MapReduce (EMR)
- Amazon Glacier
- AWS Identity and Access Management (IAM)
- AWS Key Management Service (KMS)
- Amazon Redshift
- Amazon Relational Database Service (RDS)
- Amazon Route 53
- Amazon SimpleDB
- Amazon Simple Email Service (SES)
- Amazon Simple Storage Service (S3)
- Amazon Simple Workflow (SWF)
- Amazon Simple Queue Service (SQS)
- AWS Storage Gateway
- Amazon Virtual Private Cloud (VPC)
- Amazon Workspaces

SOC 2

In addition to the SOC 1 report, AWS publishes a Service Organization Controls 2 (SOC 2), Type II report. Similar to the SOC 1 in the evaluation of controls, the SOC 2 report is an attestation report that expands the evaluation of controls to the criteria set forth by the American Institute of Certified Public Accountants (AICPA) Trust Services Principles. These principles define leading practice controls relevant to security, availability, processing integrity, confidentiality, and privacy applicable to service organizations such as AWS. The AWS SOC 2 is an evaluation of the design and operating effectiveness of controls that meet the criteria for the security and availability principles set forth in the AICPA's Trust Services Principles criteria. This report provides additional transparency into AWS security and availability based on a pre-defined industry standard of leading practices and further demonstrates AWS' commitment to protecting customer data. The SOC 2 report scope covers the same services covered in the SOC 1 report. See the SOC 1 description above for the in-scope services.

SOC 3

AWS publishes a Service Organization Controls 3 (SOC 3) report. The SOC 3 report is a publically-available summary of the AWS SOC 2 report. The report includes the external auditor's opinion of the operation of controls (based on the AICPA's Security Trust Principles included in the SOC 2 report), the assertion from AWS management regarding the effectiveness of controls, and an overview of AWS Infrastructure and Services. The AWS SOC 3 report includes all AWS data centers worldwide that support in-scope services. This is a great resource for customers to validate that AWS has obtained external auditor assurance without going through the process to request a SOC 2 report. The SOC 3 report scope covers the same services covered in the SOC 1 report. See the SOC 1 description above for the in-scope services. View the AWS SOC 3 report here.

Key Compliance Questions and AWS

This section addresses generic cloud computing compliance questions specifically for AWS. These common compliance questions listed may be of interest when evaluating and operating in a cloud computing environment and may assist in AWS customers' control management efforts.

Ref	Cloud Computing Question	AWS Information
1	Control ownership. Who owns which controls for cloud-deployed infrastructure?	For the portion deployed into AWS, AWS controls the physical components of that technology. The customer owns and controls everything else, including control over connection points and transmissions. To help customers better understand what controls we have in place and how effectively they are operating, we publish a SOC 1 Type II report with controls defined around EC2, S3 and VPC, as well as detailed physical security and environmental controls. These controls are defined at a high level of specificity that should meet most customer needs. AWS customers that have signed a non-disclosure agreement with AWS may request a copy of the SOC 1 Type II report.
2	Auditing IT. How can auditing of the cloud provider be accomplished?	Auditing for most layers and controls above the physical controls remains the responsibility of the customer. The definition of AWS-defined logical and physical controls is documented in the SOC 1 Type II report, and the report is available for review by audit and compliance teams. AWS ISO 27001 and other certifications are also available for auditors to review.
3	Sarbanes-Oxley compliance. How is SOX compliance achieved if in-scope systems are deployed in the cloud provider environment?	If a customer processes financial information in the AWS cloud, the customer's auditors may determine that some AWS systems come into scope for Sarbanes-Oxley (SOX) requirements. The customer's auditors must make their own determination regarding SOX applicability. Because most of the logical access controls are managed by customer, the customer is best positioned to determine if its control activities meet relevant standards. If the SOX auditors request specifics regarding AWS' physical controls, they can reference the AWS SOC 1 Type II report which details the controls that AWS provides.
4	HIPAA compliance. Is it possible to meet HIPAA compliance requirements while deployed in the cloud provider environment?	HIPAA requirements apply to and are controlled by the AWS customer. The AWS platform allows for the deployment of solutions that meet industry-specific certification requirements such as HIPAA. Customers can use AWS services to maintain a security level that is equivalent or greater than those required to protect electronic health records. Customers have built healthcare applications compliant with HIPAA's Security and Privacy Rules on AWS. AWS provides additional information about HIPAA compliance on its web site, including a whitepaper on this topic.
5	GLBA compliance. Is it possible to meet GLBA certification requirements while deployed in the cloud provider environment?	Most GLBA requirements are controlled by the AWS customer. AWS provides means for customers to protect data, manage permissions, and build GLBA-compliant applications on AWS infrastructure. If the customer requires specific assurance that physical security controls are operating effectively, they can reference the AWS SOC 1 Type II report as relevant.

Ref	Cloud Computing Question	AWS Information
6	Federal regulation compliance. Is it possible for a US Government agency to be compliant with security and privacy regulations while deployed in the cloud provider environment?	US Federal agencies can be compliant under a number of compliance standards, including the Federal Information Security Management Act (FISMA) of 2002, Federal Risk and Authorization Management Program (FedRAMP), the Federal Information Processing Standard (FIPS) Publication 140-2, and the International Traffic in Arms Regulations (ITAR). Compliance with other laws and statutes may also be accommodated depending on the requirements set forth in the applicable legislation.
7	Data location. Where does customer data reside?	AWS customers designate in which physical region their data and their servers will be located. Data replication for S3 data objects is done within the regional cluster in which the data is stored and is not replicated to other data center clusters in other regions. AWS customers designate in which physical region their data and their servers will be located. AWS will not move customers' content from the selected Regions without notifying the customer, unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: 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).
8	E-Discovery. Does the cloud provider meet the customer's needs to meet electronic discovery procedures and requirements?	AWS provides infrastructure, and customers manage everything else, including the operating system, the network configuration, and the installed applications. Customers are responsible for responding appropriately to legal procedures involving the identification, collection, processing, analysis, and production of electronic documents they store or process using AWS. Upon request, AWS may work with customers who require AWS' assistance in legal proceedings.
9	Data center tours. Are data center tours by customers allowed by the cloud provider?	No. Due to the fact that our data centers host multiple customers, AWS does not allow data center tours by customers, as this exposes a wide range of customers to physical access of a third party. To meet this customer need, an independent and competent auditor validates the presence and operation of controls as part of our SOC 1 Type II report. This broadly accepted third-party validation provides customers with the independent perspective of the effectiveness of controls in place. AWS customers that have signed a non-disclosure agreement with AWS may request a copy of the SOC 1 Type II report. Independent reviews of data center physical security is also a part of the ISO 27001 audit, the PCI assessment, ITAR audit, and the FedRAMP℠ testing programs.
10	Third-party access. Are third parties allowed access to the cloud provider data centers?	AWS strictly controls access to data centers, even for internal employees. Third parties are not provided access to AWS data centers except when explicitly approved by the appropriate AWS data center manager per the AWS access policy. See the SOC 1 Type II report for specific controls related to physical access, data center access authorization, and other related controls.

Ref	Cloud Computing Question	AWS Information
11	Privileged actions. Are privileged actions monitored and controlled?	Controls in place limit access to systems and data and provide that access to systems or data is restricted and monitored. In addition, customer data is and server instances are logically isolated from other customers by default. Privileged user access control is reviewed by an independent auditor during the AWS SOC 1, ISO 27001, PCI, ITAR, and FedRAMPsm audits.
12	Insider access. Does the cloud provider address the threat of inappropriate insider access to customer data and applications?	AWS provides specific SOC 1 controls to address the threat of inappropriate insider access, and the public certification and compliance initiatives covered in this document address insider access. All certifications and third-party attestations evaluate logical access preventative and detective controls. In addition, periodic risk assessments focus on how insider access is controlled and monitored.
13	Multi-tenancy. Is customer segregation implemented securely?	The AWS environment is a virtualized, multi-tenant environment. AWS has implemented security management processes, PCI controls, and other security controls designed to isolate each customer from other customers. AWS systems are designed to prevent customers from accessing physical hosts or instances not assigned to them by filtering through the virtualization software. This architecture has been validated by an independent PCI Qualified Security Assessor (QSA) and was found to be in compliance with all requirements of PCI DSS version 3.1 published in April 2015. Note that AWS also has single-tenancy options. Dedicated Instances are Amazon EC2 instances launched within your Amazon Virtual Private Cloud (Amazon VPC) that run hardware dedicated to a single customer. Dedicated Instances let you take full advantage of the benefits of Amazon VPC and the AWS cloud while isolating your Amazon EC2 compute instances at the hardware level.
14	Hypervisor vulnerabilities. Has the cloud provider addressed known hypervisor vulnerabilities?	Amazon EC2 currently utilizes a highly customized version of the Xen hypervisor. The hypervisor is regularly assessed for new and existing vulnerabilities and attack vectors by internal and external penetration teams, and is well suited for maintaining strong isolation between guest virtual machines. The AWS Xen hypervisor security is regularly evaluated by independent auditors during assessments and audits. See the AWS security whitepaper for more information on the Xen hypervisor and instance isolation.
15	Vulnerability management. Are systems patched appropriately?	AWS is responsible for patching systems supporting the delivery of service to customers, such as the hypervisor and networking services. This is done as required per AWS policy and in accordance with ISO 27001, NIST, and PCI requirements. Customers control their own guest operating systems, software and applications and are therefore responsible for patching their own systems.
16	Encryption. Do the provided services support encryption?	Yes. AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS, SimpleDB, and EC2. IPSec tunnels to VPC are also encrypted. Amazon S3 also offers Server Side Encryption as an option for customers. Customers may also use third-party encryption technologies. Refer to the AWS Security white paper for more information.

Ref	Cloud Computing Question	AWS Information
17	Data ownership. What are the cloud provider's rights over customer data?	AWS customers retain control and ownership of their data. AWS errs on the side of protecting customer privacy and is vigilant in determining which law enforcement requests we must comply with. AWS does not hesitate to challenge orders from law enforcement if we think the orders lack a solid basis.
18	Data isolation. Does the cloud provider adequately isolate customer data?	All data stored by AWS on behalf of customers has strong tenant isolation security and control capabilities. Amazon S3 provides advanced data access controls. Please see the AWS security whitepaper for more information about specific data services' security.
19	Composite services. Does the cloud provider layer its service with other providers' cloud services?	AWS does not leverage any third-party cloud providers to deliver AWS services to customers.
20	Physical and environmental controls. Are these controls operated by the cloud provider specified?	Yes. These are specifically outlined in the SOC 1 Type II report. In addition, other certifications AWS supports such as ISO 27001 and FedRAMP[sm] require best practice physical and environmental controls.
21	Client-side protection. Does the cloud provider allow customers to secure and manage access from clients, such as PC and mobile devices?	Yes. AWS allows customers to manage client and mobile applications to their own requirements.
22	Server security. Does the cloud provider allow customers to secure their virtual servers?	Yes. AWS allows customers to implement their own security architecture. See the AWS security whitepaper for more details on server and network security.
23	Identity and Access Management. Does the service include IAM capabilities?	AWS has a suite of identity and access management offerings, allowing customers to manage user identities, assign security credentials, organize users in groups, and manage user permissions in a centralized way. Please see the AWS web site for more information.
24	Scheduled maintenance outages. Does the provider specify when systems will be brought down for maintenance?	AWS does not require systems to be brought offline to perform regular maintenance and system patching. AWS' own maintenance and system patching generally do not impact customers. Maintenance of instances themselves is controlled by the customer.
25	Capability to scale. Does the provider allow customers to scale beyond the original agreement?	The AWS cloud is distributed, highly secure and resilient, giving customers massive scale potential. Customers may scale up or down, paying for only what they use.
26	Service availability. Does the provider commit to a high level of availability?	AWS does commit to high levels of availability in its service level agreements (SLA). For example, Amazon EC2 commits to annual uptime percentage of at least 99.95% during the service year. Amazon S3 commits to monthly uptime percentage of at least 99.9%. Service credits are provided in the case these availability metrics are not met.

Ref	Cloud Computing Question	AWS Information
27	Distributed Denial Of Service (DDoS) attacks. How does the provider protect their service against DDoS attacks?	The AWS network provides significant protection against traditional network security issues and the customer can implement further protection. See the AWS Security Whitepaper for more information on this topic, including a discussion of DDoS attacks.
28	Data portability. Can the data stored with a service provider be exported by customer request?	AWS allows customers to move data as needed on and off AWS storage. AWS Import/Export service for S3 accelerates moving large amounts of data into and out of AWS using portable storage devices for transport.
29	Service provider business continuity. Does the service provider operate a business continuity program?	AWS does operate a business continuity program. Detailed information is provided in the AWS Security Whitepaper.
30	Customer business continuity. Does the service provider allow customers to implement a business continuity plan?	AWS provides customers with the capability to implement a robust continuity plan, including the utilization of frequent server instance back-ups, data redundancy replication, and multi-region/availability zone deployment architectures.
31	Data durability. Does the service specify data durability?	Amazon S3 provides a highly durable storage infrastructure. Objects are redundantly stored on multiple devices across multiple facilities in an Amazon S3 Region. Once stored, Amazon S3 maintains the durability of objects by quickly detecting and repairing any lost redundancy. Amazon S3 also regularly verifies the integrity of data stored using checksums. If corruption is detected, it is repaired using redundant data. Data stored in S3 is designed to provide 99.999999999% durability and 99.99% availability of objects over a given year.
32	Backups. Does the service provide backups to tapes?	AWS allows customers to perform their own backups to tapes using their own tape backup service provider. However, a tape backup is not a service provided by AWS. Amazon S3 service is designed to drive the likelihood of data loss to near zero percent and the durability equivalent of multi-site copies of data objects is achieved through data storage redundancy. For information on data durability and redundancy, please refer to the AWS web site.
33	Price increases. Will the service provider raise prices unexpectedly?	AWS has a history of frequently reducing prices as the cost to provide these services reduces over time. AWS has reduced prices consistently over the past several years.
34	Sustainability. Does the service provider company have long term sustainability potential?	AWS is a leading cloud provider and is a long-term business strategy of Amazon.com. AWS has very high long term sustainability potential.

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 awscompliance@amazon.com.

Appendix A: CSA Consensus Assessments Initiative Questionnaire v3.0.1

The Cloud Security Alliance (CSA) is a "not-for-profit organization with a mission to promote the use of best practices for providing security assurance within Cloud Computing, and to provide education on the uses of Cloud Computing to help secure all other forms of computing." [Reference **https://cloudsecurityalliance.org/about/**] A wide range of industry security practitioners, corporations, and associations participate in this organization to achieve its mission.

The CSA Consensus Assessments Initiative Questionnaire provides a set of questions the CSA anticipates a cloud consumer and/or a cloud auditor would ask of a cloud provider. It provides a series of security, control, and process questions which can then be used for a wide range of uses, including cloud provider selection and security evaluation. AWS has completed this questionnaire with the answers below.

Control Group	CID	Consensus Assessment Questions	AWS Response
Application & Interface Security *Application Security*	AIS-01.1	Do you use industry standards (Build Security in Maturity Model [BSIMM] benchmarks, Open Group ACS Trusted Technology Provider Framework, NIST, etc.) to build in security for your Systems/Software Development Lifecycle (SDLC)?	The AWS system development lifecycle incorporates industry best practices which include formal design reviews by the AWS Security Team, threat modeling and completion of a risk assessment. Refer to the AWS Overview of Security Processes for further details. AWS has in place procedures to manage new development of resources. Refer to ISO 27001 standard, Annex A, domain 14 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	AIS-01.2	Do you use an automated source code analysis tool to detect security defects in code prior to production?	
	AIS-01.3	Do you use manual source-code analysis to detect security defects in code prior to production?	
	AIS-01.4	Do you verify that all of your software suppliers adhere to industry standards for Systems/Software Development Lifecycle (SDLC) security?	
	AIS-01.5	(SaaS only) Do you review your applications for security vulnerabilities and address any issues prior to deployment to production?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Application & Interface Security *Customer Access Requirements*	AIS-02.1	Are all identified security, contractual and regulatory requirements for customer access contractually addressed and remediated prior to granting customers access to data, assets and information systems?	AWS Customers retain responsibility to ensure their usage of AWS is in compliance with applicable laws and regulations. AWS communicates its security and control environment to customers through industry certifications and third-party attestations, white papers (available at http://aws.amazon.com/compliance) and providing certifications, reports and other relevant documentation directly to AWS Customers.
	AIS-02.2	Are all requirements and trust levels for customers' access defined and documented?	
Application & Interface Security *Data Integrity*	AIS-03.1	Are data input and output integrity routines (i.e., reconciliation and edit checks) implemented for application interfaces and databases to prevent manual or systematic processing errors or corruption of data?	AWS data integrity controls as described in AWS SOC reports illustrates the data integrity controls maintained through all phases including transmission, storage and processing. In addition, refer to ISO 27001 standard, Annex A, domain 14 for further information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Application & Interface Security *Data Security / Integrity*	AIS-04.1	Is your Data Security Architecture designed using an industry standard (e.g., CDSA, MULITSAFE, CSA Trusted Cloud Architectural Standard, FedRAMP, CAESARS)?	AWS Data Security Architecture was designed to incorporate industry leading practices. Refer to AWS Certifications, reports and whitepapers for additional details on the various leading practices that AWS adheres to (available at http://aws.amazon.com/compliance).
Audit Assurance & Compliance *Audit Planning*	AAC-01.1	Do you produce audit assertions using a structured, industry accepted format (e.g., CloudAudit/A6 URI Ontology, CloudTrust, SCAP/CYBEX, GRC XML, ISACA's Cloud Computing Management Audit/Assurance Program, etc.)?	AWS obtains certain industry certifications and independent third-party attestations and provides certain certifications, reports and other relevant documentation directly to AWS Customers.
Audit Assurance & Compliance *Independent Audits*	AAC-02.1	Do you allow tenants to view your SOC2/ISO 27001 or similar third-party audit or certification reports?	AWS provides third-party attestations, certifications, Service Organization Controls (SOC) reports and other relevant compliance reports directly to our customers under NDA. The AWS ISO 27001 certification can be downloaded here: http://do.awsstatic.com/certifications/iso_27001_global_certification.pdf. The AWS SOC 3 report can be downloaded here: https://do.awsstatic.com/whitepapers/compliance/soc3_amazon_web_services.pdf. 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
	AAC-02.2	Do you conduct network penetration tests of your cloud service infrastructure regularly as prescribed by industry best practices and guidance?	
	AAC-02.3	Do you conduct application penetration tests of your cloud infrastructure regularly as prescribed by industry best practices and guidance?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	AAC-02.4	Do you conduct internal audits regularly as prescribed by industry best practices and guidance?	assessments are performed regularly by independent security firms. Findings and recommendations resulting from these assessments are categorized and delivered to AWS leadership. In addition, the AWS control environment is subject to regular internal and external audits and risk assessments. AWS engages with external certifying bodies and independent auditors to review and test the AWS overall control environment.
	AAC-02.5	Do you conduct external audits regularly as prescribed by industry best practices and guidance?	
	AAC-02.6	Are the results of the penetration tests available to tenants at their request?	
	AAC-02.7	Are the results of internal and external audits available to tenants at their request?	
	AAC-02.8	Do you have an internal audit program that allows for cross-functional audit of assessments?	
Audit Assurance & Compliance *Information System Regulatory Mapping*	AAC-03.1	Do you have the ability to logically segment or encrypt customer data such that data may be produced for a single tenant only, without inadvertently accessing another tenant's data?	All data stored by AWS on behalf of customers has strong tenant isolation security and control capabilities. Customers retain control and ownership of their data, thus it is their responsibility to choose to encrypt the data. AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS, SimpleDB and EC2. IPSec tunnels to VPC are also encrypted. In addition, customers can leverage AWS Key Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security AWS allows customers to perform their own backups to tapes using their own tape backup service provider. However, a tape backup is not a service provided by AWS. Amazon S3 and Glacier services are designed to drive the likelihood of data loss to near zero percent and the durability equivalent of multi-site copies of data objects is achieved through data storage redundancy. For information on data durability and redundancy, please refer to the AWS website.
	AAC-03.2	Do you have capability to recover data for a specific customer in the case of a failure or data loss?	
	AAC-03.3	Do you have the capability to restrict the storage of customer data to specific countries or geographic locations?	AWS Customers designate in which physical region their content will be located. AWS will not move customers' content from the selected regions without notifying the customer, unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US)(Oregon), EU (Ireland), EU (Frankfurt), Asia Pacific (Seoul), Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing) Region, and South America (Sao Paulo).

Control Group	CID	Consensus Assessment Questions	AWS Response
	AAC-03.4	Do you have a program in place that includes the ability to monitor changes to the regulatory requirements in relevant jurisdictions, adjust your security program for changes to legal requirements, and ensure compliance with relevant regulatory requirements?	AWS monitors relevant legal and regulatory requirements. Refer to ISO 27001 standard Annex 18 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Business Continuity Management & Operational Resilience *Business Continuity Planning*	BCR-01.1	Do you provide tenants with geographically resilient hosting options?	Data centers are built in clusters in various global regions. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Customers should architect their AWS usage to take advantage of multiple Regions and Availability Zones. Refer to AWS Overview of Cloud Security whitepaper for additional details - available at http://aws.amazon.com/security.
	BCR-01.2	Do you provide tenants with infrastructure service failover capability to other providers?	
Business Continuity Management & Operational Resilience *Business Continuity Testing*	BCR-02.1	Are business continuity plans subject to test at planned intervals or upon significant organizational or environmental changes to ensure continuing effectiveness?	AWS Business Continuity Policies and Plans have been developed and tested in alignment with ISO 27001 standards. Refer to ISO 27001 standard, annex A domain 17 for further details on AWS and business continuity.
Business Continuity Management & Operational Resilience *Power / Telecommunications*	BCR-03.1	Do you provide tenants with documentation showing the transport route of their data between your systems?	AWS Customers designate in which physical region their data and servers will be located. AWS will not move customers' content from the selected regions without notifying the customer, unless required to comply with the law or requests of governmental entities. AWS SOC reports provides additional details. Customers can also choose their network path to AWS facilities, including over dedicated, private networks where the customer controls the traffic routing.
	BCR-03.2	Can tenants define how their data is transported and through which legal jurisdictions?	
Business Continuity Management & Operational Resilience Documentation	BCR-04.1	Are information system documents (e.g., administrator and user guides, architecture diagrams, etc.) made available to authorized personnel to ensure configuration, installation and operation of the information system?	Information System Documentation is made available internally to AWS personnel through the use of Amazon's Intranet site. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security/. Refer to ISO 27001 Appendix A Domain 12.
Business Continuity Management & Operational Resilience *Environmental Risks*	BCR-05.1	Is physical protection against damage (e.g., natural causes, natural disasters, deliberate attacks) anticipated and designed with countermeasures applied?	AWS data centers incorporate physical protection against environmental risks. AWS' physical protection against environmental risks has been validated by an independent auditor and has been certified as being in alignment with ISO 27002 best practices. Refer to ISO 27001 standard, Annex A domain 11.

Control Group	CID	Consensus Assessment Questions	AWS Response
Business Continuity Management & Operational Resilience *Equipment Location*	BCR -06.1	Are any of your data centers located in places that have a high probability/occurrence of high-impact environmental risks (floods, tornadoes, earthquakes, hurricanes, etc.)?	AWS data centers incorporate physical protection against environmental risks. AWS' physical protection against environmental risks has been validated by an independent auditor and has been certified as being in alignment with ISO 27002 best practices. Refer to ISO 27001 standard, Annex A domain 11.
Business Continuity Management & Operational Resilience *Equipment Maintenance*	BCR -07.1	If using virtual infrastructure, does your cloud solution include independent hardware restore and recovery capabilities?	EBS Snapshot functionality allows customers to capture and restore virtual machine images at any time. Customers can export their AMIs and use them on premise or at another provider (subject to software licensing restrictions). Refer to the AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
	BCR - 07.2	If using virtual infrastructure, do you provide tenants with a capability to restore a Virtual Machine to a previous state in time?	
	BCR - 07.3	If using virtual infrastructure, do you allow virtual machine images to be downloaded and ported to a new cloud provider?	
	BCR - 07.4	If using virtual infrastructure, are machine images made available to the customer in a way that would allow the customer to replicate those images in their own off-site storage location?	
	BCR -07.5	Does your cloud solution include software/provider independent restore and recovery capabilities?	
Business Continuity Management & Operational Resilience *Equipment Power Failures*	BCR -08.1	Are security mechanisms and redundancies implemented to protect equipment from utility service outages (e.g., power failures, network disruptions, etc.)?	AWS equipment is protected from utility service outages in alignment with ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. AWS SOC reports provides additional details on controls in place to minimize the effect of a malfunction or physical disaster to the computer and data center facilities. In addition, refer to the AWS Cloud Security Whitepaper - available at http://aws.amazon.com/security.

Control Group	CID	Consensus Assessment Questions	AWS Response
Business Continuity Management & Operational Resilience *Impact Analysis*	BCR -09.1	Do you provide tenants with ongoing visibility and reporting of your operational Service Level Agreement (SLA) performance?	AWS CloudWatch provides monitoring for AWS cloud resources and the applications customers run on AWS. Refer to aws.amazon.com/cloudwatch for additional details. AWS also publishes our most up-to-the-minute information on service availability on the Service Health Dashboard. Refer to status.aws.amazon.com.
	BCR - 09.2	Do you make standards-based information security metrics (CSA, CAMM, etc.) available to your tenants?	
	BCR - 09.3	Do you provide customers with ongoing visibility and reporting of your SLA performance?	
Business Continuity Management & Operational Resilience *Policy*	BCR -10.1	Are policies and procedures established and made available for all personnel to adequately support services operations' roles?	Policies and Procedures have been established through AWS Security framework based upon NIST 800-53, ISO 27001, ISO 27017, ISO 27018, ISO 9001 standard and the PCI DSS requirements. Refer to AWS Risk and Compliance Whitepaper for additional details - available at http://aws.amazon.com/compliance.
Business Continuity Management & Operational Resilience *Retention Policy*	BCR -11.1	Do you have technical control capabilities to enforce tenant data retention policies?	AWS provide customers with the ability to delete their data. However, AWS Customers retain control and ownership of their data so it is the customer's responsibility to manage data retention to their own requirements. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security. AWS errs on the side of protecting customer privacy and is vigilant in determining which law enforcement requests we must comply with. AWS does not hesitate to challenge orders from law enforcement if we think the orders lack a solid basis. For additional information refer to https://aws.amazon.com/compliance/data-privacy-faq/.
	BCR -11.2	Do you have a documented procedure for responding to requests for tenant data from governments or third parties?	
	BCR -11.4	Have you implemented backup or redundancy mechanisms to ensure compliance with regulatory, statutory, contractual or business requirements?	AWS backup and redundancy mechanisms have been developed and tested in alignment with ISO 27001 standards. Refer to ISO 27001 standard, annex A domain 12 and the AWS SOC 2 report for additional information on AWS backup and redundancy mechanisms.
	BCR -11.5	Do you test your backup or redundancy mechanisms at least annually?	
Change Control & Configuration Management *New Development / Acquisition*	CCC-01.1	Are policies and procedures established for management authorization for development or acquisition of new applications, systems, databases, infrastructure, services, operations and facilities?	Policies and Procedures have been established through AWS Security framework based upon NIST 800-53, ISO 27001, ISO 27017, ISO 27018, ISO 9001 standard and the PCI DSS requirements. Whether a customer is new to AWS or an advanced user, useful information about the services, ranging from introductions to advanced features, can be found on the AWS Documentation section of our website at https://aws.amazon.com/documentation/.
	CCC-01.2	Is documentation available that describes the installation, configuration and use of products/services/features?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Change Control & Configuration Management *Outsourced Development*	CCC-02.1	Do you have controls in place to ensure that standards of quality are being met for all software development?	AWS does not generally outsource development of software. AWS incorporates standards of quality as part of the system development lifecycle (SDLC) processes. Refer to ISO 27001 standard, Annex A, domain 14 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	CCC-02.2	Do you have controls in place to detect source code security defects for any outsourced software development activities?	
Change Control & Configuration Management *Management Quality Testing*	CCC-03.1	Do you provide your tenants with documentation that describes your quality assurance process?	AWS maintains an ISO 9001 certification. This is an independent validation of AWS quality system and determined that AWS activities comply with ISO 9001 requirements. AWS Security Bulletins notify customers of security and privacy events. Customers can subscribe to the AWS Security Bulletin RSS feed on our website. Refer to aws.amazon.com/security/security-bulletins/. AWS also publishes our most up-to-the-minute information on service availability on the Service Health Dashboard. Refer to status.aws.amazon.com. The AWS system development lifecycle (SDLC) incorporates industry best practices which include formal design reviews by the AWS Security Team, threat modeling and completion of a risk assessment. Refer to the AWS Overview of Security Processes for further details. In addition, refer to ISO 27001 standard, Annex A, domain 14 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	CCC-03.2	Is documentation describing known issues with certain products/services available?	
	CCC-03.3	Are there policies and procedures in place to triage and remedy reported bugs and security vulnerabilities for product and service offerings?	
	CCC-03.4	Are mechanisms in place to ensure that all debugging and test code elements are removed from released software versions?	
Change Control & Configuration Management *Unauthorized Software Installations*	CCC-04.1	Do you have controls in place to restrict and monitor the installation of unauthorized software onto your systems?	AWS' program, processes and procedures for managing malicious software is in alignment with ISO 27001 standards. Refer to ISO 27001 standard, Annex A, domain 12 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Change Control & Configuration Management *Production Changes*	CCC-05.1	Do you provide tenants with documentation that describes your production change management procedures and their roles / rights / responsibilities within it?	AWS SOC reports provides an overview of the controls in place to manage change management in the AWS environment. In addition, refer to ISO 27001 standard, Annex A, domain 12 for further details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.

Control Group	CID	Consensus Assessment Questions	AWS Response
Data Security & Information Lifecycle Management *Classification*	DSI-01.1	Do you provide a capability to identify virtual machines via policy tags/metadata (e.g., tags can be used to limit guest operating systems from booting/instantiating/transporting data in the wrong country)?	Virtual Machines are assigned to customers as a part of the EC2 service. Customers retain control over what resources are being used and where resources reside. Refer to the AWS website for additional details - http://aws.amazon.com.
	DSI-01.2	Do you provide a capability to identify hardware via policy tags/metadata/hardware tags (e.g., TXT/TPM, VN-Tag, etc.)?	AWS provides the ability to tag EC2 resources. A form of metadata, EC2 tags can be used to create user-friendly names, enhance searchability, and improve coordination between multiple users. The AWS Management Console has also supports tagging.
	DSI-01.3	Do you have a capability to use system geographic location as an authentication factor?	AWS provides the capability of conditional user access based on IP address. Customers can add conditions to control how users can use AWS, such as time of day, their originating IP address, or whether they are using SSL.
	DSI-01.4	Can you provide the physical location/geography of storage of a tenant's data upon request?	AWS provides customers the flexibility to place instances and store data within multiple geographic Regions. AWS Customers designate in which physical region their data and their servers will be located. AWS will not move customers' content from the selected Regions without notifying the customer, unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US) (Oregon), EU (Ireland), EU (Frankfurt), Asia Pacific (Seoul), Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing) Region and South America (Sao Paulo).
	DSI-01.5	Can you provide the physical location/geography of storage of a tenant's data in advance?	
	DSI-01.6	Do you follow a structured data-labeling standard (e.g., ISO 15489, Oasis XML Catalog Specification, CSA data type guidance)?	AWS Customers retain control and ownership of their data and may implement a structured data-labeling standard to meet their requirements.
	DSI-01.7	Do you allow tenants to define acceptable geographical locations for data routing or resource instantiation?	AWS provides customers the flexibility to place instances and store data within multiple geographic regions. AWS Customers designate in which physical region their data and their servers will be located. AWS will not move customers' content from the selected Regions without notifying the customer, unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US) (Oregon), EU (Ireland), EU (Frankfurt), Asia Pacific (Seoul), Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing) Region and South America (Sao Paulo).
Data Security & Information Lifecycle Management *Data Inventory / Flows*	DSI-02.1	Do you inventory, document, and maintain data flows for data that is resident (permanent or temporary) within the services' applications and infrastructure network and systems?	AWS Customers designate in which physical region their content will be located. AWS will not move customers' content from the selected regions without notifying the customer, unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US)(Oregon), EU (Ireland), EU (Frankfurt), Asia Pacific (Seoul), Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing) Region, and South America (Sao Paulo).

Control Group	CID	Consensus Assessment Questions	AWS Response
	DSI-02.2	Can you ensure that data does not migrate beyond a defined geographical residency?	
Data Security & Information Lifecycle Management *eCommerce Transactions*	DSI-03.1	Do you provide open encryption methodologies (3.4ES, AES, etc.) to tenants in order for them to protect their data if it is required to move through public networks (e.g., the Internet)?	All of the AWS APIs are available via SSH-protected endpoints which provide server authentication. AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS, SimpleDB and EC2. IPSec tunnels to VPC are also encrypted. In addition, customers can leverage AWS Key Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Customers may also use third-party encryption technologies. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
	DSI-03.2	Do you utilize open encryption methodologies any time your infrastructure components need to communicate with each other via public networks (e.g., Internet-based replication of data from one environment to another)?	
Data Security & Information Lifecycle Management *Handling / Labeling / Security Policy*	DSI-04.1	Are policies and procedures established for labeling, handling and the security of data and objects that contain data?	AWS Customers retain control and ownership of their data and may implement a labeling and handling policy and procedures to meet their requirements.
	DSI-04.2	Are mechanisms for label inheritance implemented for objects that act as aggregate containers for data?	
Data Security & Information Lifecycle Management *Nonproduction Data*	DSI-05.1	Do you have procedures in place to ensure production data shall not be replicated or used in non-production environments?	AWS Customers retain control and ownership of their own data. AWS provides customers the ability to maintain and develop production and non-production environments. It is the responsibility of the customer to ensure that their production data is not replicated to non-production environments.
Data Security & Information Lifecycle Management *Ownership / Stewardship*	DSI-06.1	Are the responsibilities regarding data stewardship defined, assigned, documented and communicated?	AWS Customers retain control and ownership of their own data. Refer to the AWS Customer Agreement for additional information.
Data Security & Information Lifecycle Management *Secure Disposal*	DSI-07.1	Do you support secure deletion (e.g., degaussing/cryptographic wiping) of archived and backed-up data as determined by the tenant?	When a storage device has reached the end of its useful life, AWS procedures include a decommissioning process that is designed to prevent customer data from being exposed to unauthorized individuals. AWS uses the techniques detailed in DoD 5220.22-M ("National Industrial Security Program Operating Manual ") or NIST 800-88 ("Guidelines for Media Sanitization") to destroy data as part of the decommissioning process. If a hardware device is unable to be

Control Group	CID	Consensus Assessment Questions	AWS Response
	DSI-07.2	Can you provide a published procedure for exiting the service arrangement, including assurance to sanitize all computing resources of tenant data once a customer has exited your environment or has vacated a resource?	decommissioned using these procedures, the device will be degaussed or physically destroyed in accordance with industry-standard practices. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security. Amazon EBS volumes are presented to you as raw unformatted block devices that have been wiped prior to being made available for use. Wiping occurs immediately before reuse so that you can be assured that the wipe process completed. If you have procedures requiring that all data be wiped via a specific method, such as those detailed in DoD 5220.22-M ("National Industrial Security Program Operating Manual ") or NIST 800-88 ("Guidelines for Media Sanitization"), you have the ability to do so on Amazon EBS. You should conduct a specialized wipe procedure prior to deleting the volume for compliance with your established requirements. Encryption of sensitive data is generally a good security practice, and AWS provides the ability to encrypt EBS volumes and their snapshots with AES-256. The encryption occurs on the servers that host the EC2 instances, providing encryption of data as it moves between EC2 instances and EBS storage. In order to be able to do this efficiently and with low latency, the EBS encryption feature is only available on EC2's more powerful instance types (e.g., M3, C3, R3, G2).
Datacenter Security *Asset Management*	DCS-01.1	Do you maintain a complete inventory of all of your critical assets that includes ownership of the asset?	In alignment with ISO 27001 standards, AWS Hardware assets are assigned an owner, tracked and monitored by the AWS personnel with AWS proprietary inventory management tools. AWS procurement and supply chain team maintain relationships with all AWS suppliers. Refer to ISO 27001 standards; Annex A, domain 8 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	DCS-01.2	Do you maintain a complete inventory of all of your critical supplier relationships?	
Datacenter Security *Controlled Access Points*	DCS-02.1	Are physical security perimeters (e.g., fences, walls, barriers, guards, gates, electronic surveillance, physical authentication mechanisms, reception desks and security patrols) implemented?	Physical security controls include but are not limited to perimeter controls such as fencing, walls, security staff, video surveillance, intrusion detection systems and other electronic means. The AWS SOC reports provides additional details on the specific control activities executed by AWS. Refer to ISO 27001 standards; Annex A, domain 11 for further information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Datacenter Security *Equipment Identification*	DCS-03.1	Is automated equipment identification used as a method to validate connection authentication integrity based on known equipment location?	AWS manages equipment identification in alignment with ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.

Control Group	CID	Consensus Assessment Questions	AWS Response
Datacenter Security *Offsite Authorization*	DCS -04.1	Do you provide tenants with documentation that describes scenarios in which data may be moved from one physical location to another? (e.g., offsite backups, business continuity failovers, replication)	AWS Customers can designate which physical region their data will be located. AWS will not move customers' content from the selected Regions without notifying the customer unless required to comply with the law or requests of governmental entities. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
Datacenter Security *Offsite equipment*	DCS -05.1	Can you provide tenants with evidence documenting your policies and procedures governing asset management and repurposing of equipment?	In alignment with ISO 27001 standards, when a storage device has reached the end of its useful life, AWS procedures include a decommissioning process that is designed to prevent customer data from being exposed to unauthorized individuals. AWS uses the techniques detailed in DoD 5220.22-M ("National Industrial Security Program Operating Manual ") or NIST 800-88 ("Guidelines for Media Sanitization") to destroy data as part of the decommissioning process. If a hardware device is unable to be decommissioned using these procedures, the device will be degaussed or physically destroyed in accordance with industry-standard practices. Refer to ISO 27001 standards; Annex A, domain 8 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Datacenter Security *Policy*	DCS -06.1	Can you provide evidence that policies, standards and procedures have been established for maintaining a safe and secure working environment in offices, rooms, facilities and secure areas?	AWS engages with external certifying bodies and independent auditors to review and validate our compliance with compliance frameworks. AWS SOC reports provides additional details on the specific physical security control activities executed by AWS. Refer to ISO 27001 standards; Annex A, domain 11 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	DCS - 06.2	Can you provide evidence that your personnel and involved third parties have been trained regarding your documented policies, standards and procedures?	In alignment with ISO 27001 standard, all AWS employees complete periodic Information Security training which requires an acknowledgement to complete. Compliance audits are periodically performed to validate that employees understand and follow the established policies. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification. In addition AWS SOC 1 and SOC 2 reports provides further information.
Datacenter Security *Secure Area Authorization*	DCS -07.1	Do you allow tenants to specify which of your geographic locations their data is allowed to move into/out of (to address legal jurisdictional considerations based on where data is stored vs. accessed)?	AWS Customers designate which physical region their data will be located. AWS will not move customers' content from the selected Regions without notifying the customer unless required to comply with the law or requests of governmental entities. As of this writing, there are twelve regions: US East (Northern Virginia), US West (Oregon), US West (Northern California), AWS GovCloud (US)(Oregon), EU (Ireland), EU (Frankfurt), Asia Pacific (Seoul), Asia Pacific (Singapore), Asia Pacific (Tokyo), Asia Pacific (Sydney), China (Beijing) Region, and South America (Sao Paulo).

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Datacenter Security *Unauthorized Persons Entry*	DCS -08.1	Are ingress and egress points, such as service areas and other points where unauthorized personnel may enter the premises, monitored, controlled and isolated from data storage and process?	Physical access is strictly controlled both at the perimeter and at building ingress points and includes, but is not limited to, professional security staff utilizing video surveillance, intrusion detection systems, and other electronic means. Authorized staff must pass two-factor authentication a minimum of two times to access data center floors. Physical access points to server locations are recorded by closed circuit television camera (CCTV) as defined in the AWS Data Center Physical Security Policy. AWS Physical Security Mechanisms are reviewed by independent external auditors during audits for our SOC, PCI DSS, ISO 27001 and FedRAMP compliance.
Datacenter Security *User Access*	DCS -09.1	Do you restrict physical access to information assets and functions by users and support personnel?	
Encryption & Key Management *Entitlement*	EKM -01.1	Do you have key management policies binding keys to identifiable owners?	AWS provides customers the ability to use their own encryption mechanism for nearly all services including S3, EBS and EC2. VPC sessions are also encrypted. In addition, customers can leverage AWS Key Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Internally, AWS establishes and manages cryptographic keys for required cryptography employed within the AWS infrastructure. An AWS developed secure key and credential manager is used to create, protect and distribute symmetric keys and is used to secure and distribute: AWS credentials needed on hosts, RSA public/private keys and X.509 Certifications. AWS cryptographic processes are reviewed by independent third party auditors for our continued compliance with SOC, PCI DSS, ISO 27001 and FedRAMP.
Encryption & Key Management *Key Generation*	EKM -02.1	Do you have a capability to allow creation of unique encryption keys per tenant?	AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS and EC2. IPSec tunnels to VPC are also encrypted. In addition, customers can leverage AWS Key Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Refer to AWS SOC reports for more details on KMS. In addition, refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security. Internally, AWS establishes and manages cryptographic keys for required cryptography employed within the AWS infrastructure. AWS produces, controls and distributes symmetric cryptographic keys using NIST approved key management technology and processes in the AWS information system. An AWS developed secure key and credential manager is used to create, protect and distribute symmetric keys and is used to secure and distribute: AWS credentials needed on hosts, RSA public/private keys and X.509 Certifications. AWS cryptographic processes are reviewed by independent third party auditors for our continued compliance with SOC, PCI DSS, ISO 27001 and FedRAMP.
	EKM -02.2	Do you have a capability to manage encryption keys on behalf of tenants?	
	EKM -02.3	Do you maintain key management procedures?	
	EKM -02.4	Do you have documented ownership for each stage of the lifecycle of encryption keys?	
	EKM -02.5	Do you utilize any third party/open source/proprietary frameworks to manage encryption keys?	
Encryption & Key	EKM -03.1	Do you encrypt tenant data at rest (on disk/storage) within your environment?	AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS and EC2. IPSec tunnels to VPC are also encrypted. In addition, customers can leverage AWS Key

Control Group	CID	Consensus Assessment Questions	AWS Response
Management *Encryption*	EKM-03.2	Do you leverage encryption to protect data and virtual machine images during transport across and between networks and hypervisor instances?	Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Refer to AWS SOC reports for more details on KMS. In addition, refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
	EKM-03.3	Do you support tenant-generated encryption keys or permit tenants to encrypt data to an identity without access to a public key certificate (e.g. identity-based encryption)?	
	EKM-03.4	Do you have documentation establishing and defining your encryption management policies, procedures and guidelines?	
Encryption & Key Management *Storage and Access*	EKM-04.1	Do you have platform and data appropriate encryption that uses open/validated formats and standard algorithms?	AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS and EC2. In addition, customers can leverage AWS Key Management Systems (KMS) to create and control encryption keys (refer to https://aws.amazon.com/kms/). Refer to AWS SOC reports for more details on KMS. AWS establishes and manages cryptographic keys for required cryptography employed within the AWS infrastructure. AWS produces, controls and distributes symmetric cryptographic keys using NIST approved key management technology and processes in the AWS information system. An AWS developed secure key and credential manager is used to create, protect and distribute symmetric keys and is used to secure and distribute: AWS credentials needed on hosts, RSA public/private keys and X.509 Certifications. AWS cryptographic processes are reviewed by independent third party auditors for our continued compliance with SOC, PCI DSS, ISO 27001 and FedRAMP.
	EKM-04.2	Are your encryption keys maintained by the cloud consumer or a trusted key management provider?	
	EKM-04.3	Do you store encryption keys in the cloud?	
	EKM-04.4	Do you have separate key management and key usage duties?	
Governance and Risk Management *Baseline Requirements*	GRM-01.1	Do you have documented information security baselines for every component of your infrastructure (e.g., hypervisors, operating systems, routers, DNS servers, etc.)?	In alignment with ISO 27001 standards, AWS maintains system baselines for critical components. Refer to ISO 27001 standards, Annex A, domain 14 and 18 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. Customers can provide their own virtual machine image. VM Import enables customers to easily import virtual machine images from your existing environment to Amazon EC2 instances.
	GRM-01.2	Do you have a capability to continuously monitor and report the compliance of your infrastructure against your information security baselines?	
	GRM-01.3	Do you allow your clients to provide their own trusted virtual machine image to ensure conformance to their own internal standards?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Governance and Risk Management *Risk Assessments*	GRM-02.1	Do you provide security control health data in order to allow tenants to implement industry standard Continuous Monitoring (which allows continual tenant validation of your physical and logical control status)?	AWS does publish independent auditor reports and certifications to provide customers with considerable information regarding the policies, processes, and controls established and operated by AWS. The relevant certifications and reports can be provided to AWS Customers. Continuous Monitoring of logical controls can be executed by customers on their own systems.
	GRM-02.2	Do you conduct risk assessments associated with data governance requirements at least once a year?	In alignment with ISO 27001 standard, AWS maintains a Risk Management program to mitigate and manage risk. In addition AWS maintains an AWS ISO 27018 certification. Alignment with ISO 27018 demonstrates to customers that AWS has a system of controls in place that specifically address the privacy protection of their content. For more information refer to the AWS Compliance ISO 27018 FAQ http://aws.amazon.com/compliance/iso-27018-faqs/.
Governance and Risk Management *Management Oversight*	GRM-03.1	Are your technical, business, and executive managers responsible for maintaining awareness of and compliance with security policies, procedures, and standards for both themselves and their employees as they pertain to the manager and employees' area of responsibility?	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. Refer to AWS Risk & Compliance whitepaper for additional details - available at http://aws.amazon.com/compliance.
Governance and Risk Management *Management Program*	GRM-04.1	Do you provide tenants with documentation describing your Information Security Management Program (ISMP)?	AWS provides our customers with our ISO 27001 certification. The ISO 27001 certification is specifically focused on the AWS ISMS and measures how AWS internal processes follow the ISO standard. Certification means a third party accredited independent auditor has performed an assessment of our processes and controls and confirms they are operating in alignment with the ISO 27001 certification standard. For additional information refer to the AWS Compliance ISO 27001 FAQ website: http://aws.amazon.com/compliance/iso-27001-faqs/.
	GRM-04.2	Do you review your Information Security Management Program (ISMP) least once a year?	
Governance and Risk Management *Management Support / Involvement*	GRM-05.1	Do you ensure your providers adhere to your information security and privacy policies?	AWS has established information security framework and policies which have integrated the ISO 27001 certifiable framework based on ISO 27002 controls, American Institute of Certified Public Accountants (AICPA) Trust Services Principles, PCI DSS v3.1 and National Institute of Standards and Technology (NIST) Publication 800-53 (Recommended Security Controls for Federal Information Systems). AWS manages third-party relationships in alignment with ISO 27001 standards. AWS Third Party requirements are reviewed by independent external
Governance and Risk Management *Policy*	GRM-06.1	Do your information security and privacy policies align with industry standards (ISO-27001, ISO-22307, CoBIT, etc.)?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	GRM-06.2	Do you have agreements to ensure your providers adhere to your information security and privacy policies?	auditors during audits for our PCI DSS, ISO 27001 and FedRAMP compliance. Information about the AWS Compliance programs is published publicly on our website at http://aws.amazon.com/compliance/.
	GRM-06.3	Can you provide evidence of due diligence mapping of your controls, architecture and processes to regulations and/or standards?	
	GRM-06.4	Do you disclose which controls, standards, certifications and/or regulations you comply with?	
Governance and Risk Management *Policy Enforcement*	GRM-07.1	Is a formal disciplinary or sanction policy established for employees who have violated security policies and procedures?	AWS provides security policies and security training to employees to educate them as to their role and responsibilities concerning information security. Employees who violate Amazon standards or protocols are investigated and appropriate disciplinary action (e.g. warning, performance plan, suspension, and/or termination) is followed. Refer to the AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security. Refer to ISO 27001 Annex A, domain 7 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	GRM-07.2	Are employees made aware of what actions could be taken in the event of a violation via their policies and procedures?	
Governance and Risk Management *Business / Policy Change Impacts*	GRM-08.1	Do risk assessment results include updates to security policies, procedures, standards and controls to ensure they remain relevant and effective?	Updates to AWS security policies, procedures, standards and controls occur on an annual basis in alignment with the ISO 27001 standard. Refer to ISO 27001 for additional information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification.
Governance and Risk Management *Policy Reviews*	GRM-09.1	Do you notify your tenants when you make material changes to your information security and/or privacy policies?	Our AWS Cloud Security Whitepaper and Risk and Compliance whitepapers, available at http://aws.amazon.com/security and http://aws.amazon.com/compliance, are updated on a regular basis to reflect updates to the AWS policies.
	GRM-09.2	Do you perform, at minimum, annual reviews to your privacy and security policies?	The AWS SOC reports provide details related to privacy and security policy review.
Governance and Risk Management *Assessments*	GRM-10.1	Are formal risk assessments aligned with the enterprise-wide framework and performed at least annually, or at planned intervals, determining the likelihood and impact of all identified risks, using qualitative and quantitative methods?	In alignment with ISO 27001 AWS has developed a Risk Management program to mitigate and manage risk. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification. Refer to AWS Risk and Compliance Whitepaper (available at aws.amazon.com/security) for additional details on AWS Risk Management Framework.

Control Group	CID	Consensus Assessment Questions	AWS Response
	GRM-10.2	Is the likelihood and impact associated with inherent and residual risk determined independently, considering all risk categories (e.g., audit results, threat and vulnerability analysis, and regulatory compliance)?	
Governance and Risk Management *Program*	GRM-11.1	Do you have a documented, organization-wide program in place to manage risk?	In alignment with ISO 27001, AWS maintains a Risk Management program to mitigate and manage risk. AWS management has 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. AWS Risk Management program is reviewed by independent external auditors during audits for our PCI DSS, ISO 27001 and FedRAMP compliance.
	GRM-11.2	Do you make available documentation of your organization-wide risk management program?	
Human Resources *Asset Returns*	HRS-01.1	Are systems in place to monitor for privacy breaches and notify tenants expeditiously if a privacy event may have impacted their data?	AWS Customers retain the responsibility to monitor their own environment for privacy breaches. The AWS SOC reports provides an overview of the controls in place to monitor AWS managed environment.
	HRS-01.2	Is your Privacy Policy aligned with industry standards?	
Human Resources *Background Screening*	HRS-02.1	Pursuant to local laws, regulations, ethics and contractual constraints, are all employment candidates, contractors and involved third parties subject to background verification?	AWS conducts criminal background checks, as permitted by applicable law, as part of pre-employment screening practices for employees commensurate with the employee's position and level of access to AWS facilities. The AWS SOC reports provides additional details regarding the controls in place for background verification.
Human Resources *Employment Agreements*	HRS-03.1	Do you specifically train your employees regarding their specific role and the information security controls they must fulfill?	In alignment with ISO 27001 standard, all AWS employees complete periodic role based training that includes AWS Security training and requires an acknowledgement to complete. Compliance audits are periodically performed to validate that employees understand and follow the established policies. Refer to SOC reports for additional details. All personnel supporting AWS systems and devices must sign a non-disclosure agreement prior to being granted access. Additionally, upon hire, personnel are required to read and accept the Acceptable Use Policy and the Amazon Code of Business Conduct and Ethics (Code of Conduct) Policy.
	HRS-03.2	Do you document employee acknowledgment of training they have completed?	
	HRS-03.3	Are all personnel required to sign NDA or Confidentiality Agreements as a condition of employment to protect customer/tenant information?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	HRS-03.4	Is successful and timed completion of the training program considered a prerequisite for acquiring and maintaining access to sensitive systems?	
	HRS-03.5	Are personnel trained and provided with awareness programs at least once a year?	
Human Resources *Employment Termination*	HRS-04.1	Are documented policies, procedures and guidelines in place to govern change in employment and/or termination?	AWS Human Resources team defines internal management responsibilities to be followed for termination and role change of employees and vendors. AWS SOC reports provide additional details.
	HRS-04.2	Do the above procedures and guidelines account for timely revocation of access and return of assets?	Access is automatically revoked when an employee's record is terminated in Amazon's Human Resources system. When changes in an employee's job function occur, continued access must be explicitly approved to the resource or it will be automatically revoked. AWS SOC reports provide further details on User access revocation. In addition the AWS Security White paper, section "Employee Lifecycle" provides additional information. Refer to ISO 27001 Annex A, domain 7 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Human Resources *Portable / Mobile Devices*	HRS-05.1	Are policies and procedures established and measures implemented to strictly limit access to your sensitive data and tenant data from portable and mobile devices (e.g. laptops, cell phones and personal digital assistants (PDAs)), which are generally higher-risk than non-portable devices (e.g., desktop computers at the provider organization's facilities)?	Customers retain the control and responsibility of their data and associated media assets. It is the responsibility of the customer to manage mobile security devices and the access to the customer's content.
Human Resources *Nondisclosure Agreements*	HRS-06.1	Are requirements for non-disclosure or confidentiality agreements reflecting the organization's needs for the protection of data and operational details identified, documented and reviewed at planned intervals?	Amazon Legal Counsel manages and periodically revises the Amazon NDA to reflect AWS business needs.
Human Resources *Roles / Responsibilities*	HRS-07.1	Do you provide tenants with a role definition document clarifying your administrative responsibilities versus those of the tenant?	The AWS Cloud Security Whitepaper and the AWS Risk and Compliance Whitepaper provide details on the roles and responsibilities of AWS and those of our Customers. The whitepapers area available at: http://aws.amazon.com/security and http://aws.amazon.com/compliance.

Control Group	CID	Consensus Assessment Questions	AWS Response
Human Resources *Acceptable Use*	HRS -08.1	Do you provide documentation regarding how you may or access tenant data and metadata?	AWS has a formal access control policy that is reviewed and updated on an annual basis (or when any major change to the system occurs that impacts the policy). The policy addresses purpose, scope, roles, responsibilities and management commitment. AWS employs the concept of least privilege, allowing only the necessary access for users to accomplish their job function. Customers retain the control and responsibility of their data and associated media assets. It is the responsibility of the customer to manage mobile security devices and the access to the customer's content. Refer to the ISO 27001 standard and 27018 code of practice for additional information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 and ISO 27018.
	HRS - 08.2	Do you collect or create metadata about tenant data usage through inspection technologies (search engines, etc.)?	
	HRS - 08.3	Do you allow tenants to opt out of having their data/metadata accessed via inspection technologies?	
Human Resources *Training / Awareness*	HRS -09.1	Do you provide a formal, role-based, security awareness training program for cloud-related access and data management issues (e.g., multi-tenancy, nationality, cloud delivery model segregation of duties implications and conflicts of interest) for all persons with access to tenant data?	In alignment with ISO 27001 standard, all AWS employees complete periodic Information Security training which requires an acknowledgement to complete. Compliance audits are periodically performed to validate that employees understand and follow the established policies. AWS roles and responsibilities are reviewed by independent external auditors during audits for our SOC, PCI DSS, ISO 27001 and FedRAMP compliance.
	HRS - 09.2	Are administrators and data stewards properly educated on their legal responsibilities with regard to security and data integrity?	
Human Resources *User Responsibility*	HRS -10.1	Are users made aware of their responsibilities for maintaining awareness and compliance with published security policies, procedures, standards and applicable regulatory requirements?	AWS has implemented various methods of internal communication at a global level to help employees understand their individual roles and responsibilities and to communicate significant events in a timely manner. These methods include orientation and training programs for newly hired employee as well as electronic mail messages and the posting of information via the Amazon intranet. Refer to ISO 27001 standard, Annex A, domain 7 and 8. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. In addition the AWS Cloud Security Whitepaper provides further details - available at http://aws.amazon.com/security.
	HRS -10.2	Are users made aware of their responsibilities for maintaining a safe and secure working environment?	
	HRS -10.3	Are users made aware of their responsibilities for leaving unattended equipment in a secure manner?	
Human Resources *Workspace*	HRS -11.1	Do your data management policies and procedures address tenant and service level conflicts of interests?	AWS data management policies are in alignment with ISO 27001 standard. Refer to ISO 27001 standard, Annex A, domain 8 and 9. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. AWS SOC reports

Control Group	CID	Consensus Assessment Questions	AWS Response
	HRS -11.2	Do your data management policies and procedures include a tamper audit or software integrity function for unauthorized access to tenant data?	provides additional details on the specific control activities executed by AWS to prevent unauthorized access to AWS resources. AWS has identified auditable event categories across systems and devices within the AWS system. Service teams configure the auditing features to record continuously the security-related events in accordance with requirements. Audit records contain a set of data elements in order to support necessary analysis requirements. In addition, audit records are available for AWS Security team or other appropriate teams to perform inspection or analysis on demand, and in response to security-related or business-impacting events.
	HRS -11.3	Does the virtual machine management infrastructure include a tamper audit or software integrity function to detect changes to the build/configuration of the virtual machine?	
Identity & Access Management *Audit Tools Access*	IAM -01.1	Do you restrict, log and monitor access to your information security management systems? (E.g., hypervisors, firewalls, vulnerability scanners, network sniffers, APIs, etc.)	In alignment with ISO 27001 standards, AWS has established formal policies, procedures to delineate the minimum standards for logical access to AWS resources. AWS SOC reports outlines the controls in place to manage access provisioning to AWS resources. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
	IAM -01.2	Do you monitor and log privileged access (administrator level) to information security management systems?	AWS has identified auditable event categories across systems and devices within the AWS system. Service teams configure the auditing features to record continuously the security-related events in accordance with requirements. The log storage system is designed to provide a highly scalable, highly available service that automatically increases capacity as the ensuing need for log storage grows. Audit records contain a set of data elements in order to support necessary analysis requirements. In addition, audit records are available for AWS Security team or other appropriate teams to perform inspection or analysis on demand, and in response to security-related or business-impacting events. Designated personnel on AWS teams receive automated alerts in the event of an audit processing failure. Audit processing failures include, for example, software/hardware errors. When alerted, on-call personnel issue a trouble ticket and track the event until it is resolved. AWS logging and monitoring processes are reviewed by independent third party auditors for our continued compliance with SOC, PCI DSS, ISO 27001 and FedRAMP compliance.
Identity & Access Management *User Access Policy*	IAM -02.1	Do you have controls in place ensuring timely removal of systems access that is no longer required for business purposes?	AWS SOC reports provides further details on User access revocation. In addition the AWS Security White paper, section "Employee Lifecycle" provides additional information. Refer to ISO 27001 Annex A, domain 9 for additional details. AWS has

Control Group	CID	Consensus Assessment Questions	AWS Response
	IAM-02.2	Do you provide metrics to track the speed with which you are able to remove systems access that is no longer required for business purposes?	been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Identity & Access Management *Diagnostic / Configuration Ports Access*	IAM-03.1	Do you use dedicated secure networks to provide management access to your cloud service infrastructure?	Controls in place limit access to systems and data and provide that access to systems or data is restricted and monitored per the AWS access policy. In addition, customer data is and server instances are logically isolated from other customers by default. Privileged user access controls are reviewed by an independent auditor during the AWS SOC, ISO 27001, PCI, ITAR, and FedRAMP audits.
Identity & Access Management *Policies and Procedures*	IAM-04.1	Do you manage and store the identity of all personnel who have access to the IT infrastructure, including their level of access?	
	IAM-04.2	Do you manage and store the user identity of all personnel who have network access, including their level of access?	
Identity & Access Management *Segregation of Duties*	IAM-05.1	Do you provide tenants with documentation on how you maintain segregation of duties within your cloud service offering?	Customers retain the ability to manage segregations of duties of their AWS resources. Internally, AWS aligns with ISO 27001 standards for managing segregation of duties. Refer to ISO 27001 standard, Annex A, domain 6 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Identity & Access Management *Source Code Access Restriction*	IAM-06.1	Are controls in place to prevent unauthorized access to your application, program or object source code, and assure it is restricted to authorized personnel only?	In alignment with ISO 27001 standards, AWS has established formal policies, procedures to delineate the minimum standards for logical access to AWS resources. AWS SOC reports outlines the controls in place to manage access provisioning to AWS resources. Refer to AWS Overview of Security Processes for additional details - available at http://aws.amazon.com/security.
	IAM-06.2	Are controls in place to prevent unauthorized access to tenant application, program or object source code, and assure it is restricted to authorized personnel only?	
Identity & Access Management *Third Party Access*	IAM-07.1	Do you provide multi-failure disaster recovery capability?	AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Each Availability Zone is designed as an independent failure zone. In case of failure, automated processes move customer data traffic away from the affected area. AWS SOC reports provides further details. ISO 27001 standard Annex A, domain 15 provides additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification.
	IAM-07.2	Do you monitor service continuity with upstream providers in the event of provider failure?	
	IAM-07.3	Do you have more than one provider for each service you depend on?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	IAM-07.4	Do you provide access to operational redundancy and continuity summaries, including the services you depend on?	
	IAM-07.5	Do you provide the tenant the ability to declare a disaster?	
	IAM-07.6	Do you provided a tenant-triggered failover option?	
	IAM-07.7	Do you share your business continuity and redundancy plans with your tenants?	
Identity & Access Management *User Access Restriction / Authorization*	IAM-08.1	Do you document how you grant and approve access to tenant data?	AWS Customers retain control and ownership of their data. Controls in place limit access to systems and data and provide that access to systems or data is restricted and monitored. In addition, customer data and server instances are logically isolated from other customers by default. Privileged user access controls are reviewed by an independent auditor during the AWS SOC, ISO 27001, PCI, ITAR, and FedRAMP audits.
	IAM-08.2	Do you have a method of aligning provider and tenant data classification methodologies for access control purposes?	
Identity & Access Management *User Access Authorization*	IAM-09.1	Does your management provision the authorization and restrictions for user access (e.g. employees, contractors, customers (tenants), business partners and/or suppliers) prior to their access to data and any owned or managed (physical and virtual) applications, infrastructure systems and network components?	Unique user identifiers are created as part of the onboarding workflow process in the AWS human resources management system. The device provisioning process helps ensure unique identifiers for devices. Both processes include manager approval to establish the user account or device. Initial authenticators are delivered to user's in-person and to devices as part of the provisioning process. Internal users can associate SSH public keys with their account. System account authenticators are provided to the requestor as part of the account creation process after the identity of the requestor is verified.
	IAM-09.2	Do you provide upon request user access (e.g. employees, contractors, customers (tenants), business partners and/or suppliers) to data and any owned or managed (physical and virtual) applications, infrastructure systems and network components?	AWS has established controls to address the threat of inappropriate insider access. All certifications and third-party attestations evaluate logical access preventative and detective controls. In addition, periodic risk assessments focus on how insider access is controlled and monitored.
Identity & Access Management *User Access Reviews*	IAM-10.1	Do you require at least annual certification of entitlements for all system users and administrators (exclusive of users maintained by your tenants)?	In alignment with ISO 27001 standard, all access grants are reviewed on a periodic basis; explicit re-approval is required or access to the resource is automatically revoked. Controls specific to User Access reviews are outlined in the SOC reports. Exceptions in the User entitlement controls are documented in the SOC reports. Refer to ISO 27001 standards, Annex A, domain 9 for additional details.

Control Group	CID	Consensus Assessment Questions	AWS Response
	IAM -10.2	If users are found to have inappropriate entitlements, are all remediation and certification actions recorded?	AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	IAM -10.3	Will you share user entitlement remediation and certification reports with your tenants, if inappropriate access may have been allowed to tenant data?	
Identity & Access Management *User Access Revocation*	IAM -11.1	Is timely deprovisioning, revocation or modification of user access to the organizations systems, information assets and data implemented upon any change in status of employees, contractors, customers, business partners or involved third parties?	Access is automatically revoked when an employee's record is terminated in Amazon's Human Resources system. When changes in an employee's job function occur, continued access must be explicitly approved to the resource or it will be automatically revoked. AWS SOC reports provides further details on User access revocation. In addition the AWS Security White paper, section "Employee Lifecycle" provides additional information. Refer to ISO 27001 Annex A, domain 9 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	IAM -11.2	Is any change in user access status intended to include termination of employment, contract or agreement, change of employment or transfer within the organization?	
Identity & Access Management *User ID Credentials*	IAM -12.1	Do you support use of, or integration with, existing customer-based Single Sign On (SSO) solutions to your service?	The AWS Identity and Access Management (IAM) service provides identity federation to the AWS Management Console. Multi-factor authentication is an optional feature that a customer can utilize. Refer to the AWS website for additional details - http://aws.amazon.com/mfa. AWS Identity and Access Management (IAM) supports identity federation for delegated access to the AWS Management Console or AWS APIs. With identity federation, external identities (federated users) are granted secure access to resources in your AWS account without having to create IAM users. These external identities can come from your corporate identity provider (such as Microsoft Active Directory or from the AWS Directory Service) or from a web identity provider, such as Amazon Cognito, Login with Amazon, Facebook, Google or any OpenID Connect (OIDC) compatible provider.
	IAM -12.2	Do you use open standards to delegate authentication capabilities to your tenants?	
	IAM -12.3	Do you support identity federation standards (SAML, SPML, WS-Federation, etc.) as a means of authenticating/authorizing users?	
	IAM -12.4	Do you have a Policy Enforcement Point capability (e.g., XACML) to enforce regional legal and policy constraints on user access?	
	IAM -12.5	Do you have an identity management system (enabling classification of data for a tenant) in place to enable both role-based and context-based entitlement to data?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	IAM -12.6	Do you provide tenants with strong (multifactor) authentication options (digital certs, tokens, biometrics, etc.) for user access?	
	IAM -12.7	Do you allow tenants to use third-party identity assurance services?	
	IAM -12.8	Do you support password (minimum length, age, history, complexity) and account lockout (lockout threshold, lockout duration) policy enforcement?	AWS Identity and Access Management (IAM) enables customers to securely control access to AWS services and resources for their users. Additional information about IAM can be found on website at https://aws.amazon.com/iam/. AWS SOC reports provides details on the specific control activities executed by AWS.
	IAM -12.9	Do you allow tenants/customers to define password and account lockout policies for their accounts?	
	IAM -12.10	Do you support the ability to force password changes upon first logon?	
	IAM -12.11	Do you have mechanisms in place for unlocking accounts that have been locked out (e.g., self-service via email, defined challenge questions, manual unlock)?	
Identity & Access Management *Utility Programs Access*	IAM -13.1	Are utilities that can significantly manage virtualized partitions (e.g., shutdown, clone, etc.) appropriately restricted and monitored?	In alignment with ISO 27001 standards, system utilities are appropriately restricted and monitored. AWS SOC reports provides details on the specific control activities executed by AWS. Refer to AWS Overview of Security Processes for additional details - available at http://aws.amazon.com/security.
	IAM -13.2	Do you have a capability to detect attacks that target the virtual infrastructure directly (e.g., shimming, Blue Pill, Hyper jumping, etc.)?	
	IAM -13.3	Are attacks that target the virtual infrastructure prevented with technical controls?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Infrastructure & Virtualization Security *Audit Logging / Intrusion Detection*	IVS-01.1	Are file integrity (host) and network intrusion detection (IDS) tools implemented to help facilitate timely detection, investigation by root cause analysis and response to incidents?	AWS Incident response program (detection, investigation and response to incidents) has been developed in alignment with ISO 27001 standards, system utilities are appropriately restricted and monitored. AWS SOC reports provides additional details on controls in place to restrict system access. Refer to AWS Overview of Security Processes for additional details - available at http://aws.amazon.com/security.
	IVS-01.2	Is physical and logical user access to audit logs restricted to authorized personnel?	
	IVS-01.3	Can you provide evidence that due diligence mapping of regulations and standards to your controls/architecture/processes has been done?	
	IVS-01.4	Are audit logs centrally stored and retained?	In alignment with ISO 27001 standards, AWS information systems utilize internal system clocks synchronized via NTP (Network Time Protocol). AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	IVS-01.5	Are audit logs reviewed on a regular basis for security events (e.g., with automated tools)?	AWS utilizes automated monitoring systems to provide a high level of service performance and availability. Proactive monitoring is available through a variety of online tools both for internal and external use. Systems within AWS are extensively instrumented to monitor key operational metrics. Alarms are configured to notify operations and management personnel when early warning thresholds are crossed on key operational metrics. An on-call schedule is used such that personnel are always available to respond to operational issues. This includes a pager system so alarms are quickly and reliably communicated to operations personnel. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
Infrastructure & Virtualization Security *Change Detection*	IVS-02.1	Do you log and alert any changes made to virtual machine images regardless of their running state (e.g. dormant, off or running)?	Virtual Machines are assigned to customers as a part of the EC2 service. Customers retain control over what resources are being used and where resources reside. Refer to the AWS website for additional details - http://aws.amazon.com.
	IVS-02.2	Are changes made to virtual machines, or moving of an image and subsequent validation of the image's integrity, made immediately available to customers through electronic methods (e.g. portals or alerts)?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Infrastructure & Virtualization Security *Clock Synchronization*	IVS-03.1	Do you use a synchronized time-service protocol (e.g., NTP) to ensure all systems have a common time reference?	In alignment with ISO 27001 standards, AWS information systems utilize internal system clocks synchronized via NTP (Network Time Protocol). AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Infrastructure & Virtualization Security *Capacity / Resource Planning*	IVS-04.1	Do you provide documentation regarding what levels of system (network, storage, memory, I/O, etc.) oversubscription you maintain and under what circumstances/scenarios?	Details regarding AWS Service Limits and how to request an increase for specific services is available on the AWS website at http://docs.aws.amazon.com/general/latest/gr/aws_service_limits.html. AWS manages capacity and utilization data in alignment with ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	IVS-04.2	Do you restrict use of the memory oversubscription capabilities present in the hypervisor?	
	IVS-04.3	Do your system capacity requirements take into account current, projected and anticipated capacity needs for all systems used to provide services to the tenants?	
	IVS-04.4	Is system performance monitored and tuned in order to continuously meet regulatory, contractual and business requirements for all the systems used to provide services to the tenants?	
Infrastructure & Virtualization Security *Management - Vulnerability Management*	IVS-05.1	Do security vulnerability assessment tools or services accommodate the virtualization technologies being used (e.g. virtualization aware)?	Amazon EC2 currently utilizes a highly customized version of the Xen hypervisor. The hypervisor is regularly assessed for new and existing vulnerabilities and attack vectors by internal and external penetration teams, and is well suited for maintaining strong isolation between guest virtual machines. The AWS Xen hypervisor security is regularly evaluated by independent auditors during assessments and audits. Regular internal and external vulnerability scans are performed on the host operating system, web application and databases in the AWS environment utilizing a variety of tools. Vulnerability scanning and remediation practices are regularly reviewed as a part of AWS continued compliance with PCI DSS and FedRAMP.
Infrastructure & Virtualization Security *Network Security*	IVS-06.1	For your IaaS offering, do you provide customers with guidance on how to create a layered security architecture equivalence using your virtualized solution?	AWS website provides guidance on creating a layered security architecture in a number of white papers available via the AWS public website - http://aws.amazon.com/documentation/.
	IVS-06.2	Do you regularly update network architecture diagrams that include data flows between security domains/zones?	Boundary protection devices that employ rule sets, access control lists (ACL), and configurations enforce the flow of information between network fabrics. Several network fabrics exist at Amazon, each separated by devices that

Control Group	CID	Consensus Assessment Questions	AWS Response
	IVS-06.3	Do you regularly review for appropriateness the allowed access/connectivity (e.g., firewall rules) between security domains/zones within the network?	control the flow of information between fabrics. The flow of information between fabrics is established by approved authorizations, which exist as access control lists (ACL) which reside on these devices. These devices control the flow of information between fabrics as mandated by these ACLs. ACLs are defined, approved by appropriate personnel, managed and deployed using AWS ACL-manage tool. Amazon's Information Security team approves these ACLs. Approved firewall rule sets and access control lists between network fabrics restrict the flow of information to specific information system services. Access control lists and rule sets are reviewed and approved, and are automatically pushed to boundary protection devices on a periodic basis (at least every 24 hours) to ensure rule-sets and access control lists are up-to-date. AWS Network Management is regularly reviewed by independent third-party auditors as a part of AWS ongoing compliance with SOC, PCI DSS, ISO 27001 and FedRAMPsm. AWS implements least privilege throughout its infrastructure components. AWS prohibits all ports and protocols that do not have a specific business purpose. AWS follows a rigorous approach to minimal implementation of only those features and functions that are essential to use of the device. Network scanning is performed and any unnecessary ports or protocols in use are corrected. Regular internal and external vulnerability scans are performed on the host operating system, web application and databases in the AWS environment utilizing a variety of tools. Vulnerability scanning and remediation practices are regularly reviewed as a part of AWS continued compliance with PCI DSS and FedRAMP.
	IVS-06.4	Are all firewall access control lists documented with business justification?	
Infrastructure & Virtualization Security *OS Hardening and Base Controls*	IVS-07.1	Are operating systems hardened to provide only the necessary ports, protocols and services to meet business needs using technical controls (i.e antivirus, file integrity monitoring and logging) as part of their baseline build standard or template?	
Infrastructure & Virtualization Security *Production / Nonproduction Environments*	IVS-08.1	For your SaaS or PaaS offering, do you provide tenants with separate environments for production and test processes?	AWS Customers retain the ability and the responsibility to create and maintain production and test environments. AWS website provides guidance on creating an environment utilizing the AWS services - http://aws.amazon.com/documentation/.
	IVS-08.2	For your IaaS offering, do you provide tenants with guidance on how to create suitable production and test environments?	
	IVS-08.3	Do you logically and physically segregate production and non-production environments?	AWS Customers retain responsibility to manage their own network segmentation in adherence with their defined requirements. Internally, AWS network segmentation is aligned with ISO 27001 standards. Refer to ISO 27001 standard, Annex A. domain 13 for further detail. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Infrastructure & Virtualization Security *Segmentation*	IVS-09.1	Are system and network environments protected by a firewall or virtual firewall to ensure business and customer security requirements?	
	IVS-09.2	Are system and network environments protected by a firewall or virtual firewall to ensure compliance with legislative, regulatory and contractual requirements?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	IVS-09.3	Are system and network environments protected by a firewall or virtual firewall to ensure separation of production and non-production environments?	
	IVS-09.4	Are system and network environments protected by a firewall or virtual firewall to ensure protection and isolation of sensitive data?	
Infrastructure & Virtualization Security *VM Security - vMotion Data Protection*	IVS-10.1	Are secured and encrypted communication channels used when migrating physical servers, applications or data to virtual servers?	AWS provides customers the ability to use their own encryption mechanism for nearly all services including S3, EBS and EC2. VPC sessions are also encrypted.
	IVS-10.2	Do you use a network segregated from production-level networks when migrating physical servers, applications or data to virtual servers?	AWS Customers retain control and ownership of their own data. AWS provides customers the ability to maintain and develop production and non-production environments. It is the responsibility of the customer to ensure that their production data is not replicated to non-production environments.
Infrastructure & Virtualization Security *VMM Security - Hypervisor Hardening*	IVS-11.1	Do you restrict personnel access to all hypervisor management functions or administrative consoles for systems hosting virtualized systems based on the principle of least privilege and supported through technical controls (e.g. two-factor authentication, audit trails, IP address filtering, firewalls and TLS-encapsulated communications to the administrative consoles)?	AWS employs the concept of least privilege, allowing only the necessary access for users to accomplish their job function. When user accounts are created, user accounts are created to have minimal access. Access above these least privileges requires appropriate authorization. Refer to AWS SOC reports for more information on Access Controls.
Infrastructure & Virtualization Security *Wireless Security*	IVS-12.1	Are policies and procedures established and mechanisms configured and implemented to protect the wireless network environment perimeter and to restrict unauthorized wireless traffic?	Policies, procedures and mechanisms to protect AWS network environment are in place. AWS security controls are reviewed by independent external auditors during audits for our SOC, PCI DSS, ISO 27001 and FedRAMP compliance.
	IVS-12.2	Are policies and procedures established and mechanisms implemented to ensure wireless security settings are enabled with strong encryption for authentication and transmission, replacing vendor default settings? (e.g., encryption keys, passwords, SNMP community strings)	

Control Group	CID	Consensus Assessment Questions	AWS Response
	IVS-12.3	Are policies and procedures established and mechanisms implemented to protect wireless network environments and detect the presence of unauthorized (rogue) network devices for a timely disconnect from the network?	
Infrastructure & Virtualization Security *Network Architecture*	IVS-13.1	Do your network architecture diagrams clearly identify high-risk environments and data flows that may have legal compliance impacts?	AWS Customers retain responsibility to manage their own network segmentation in adherence with their defined requirements. Internally, AWS network segmentation is aligned with the ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	IVS-13.2	Do you implement technical measures and apply defense-in-depth techniques (e.g., deep packet analysis, traffic throttling and black-holing) for detection and timely response to network-based attacks associated with anomalous ingress or egress traffic patterns (e.g., MAC spoofing and ARP poisoning attacks) and/or distributed denial-of-service (DDoS) attacks?	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. In addition, the AWS control environment is subject to regular internal and external risk assessments. AWS engages with external certifying bodies and independent auditors to review and test the AWS overall control environment. AWS security controls are reviewed by independent external auditors during audits for our SOC, PCI DSS, ISO 27001 and FedRAMP compliance.
Interoperability & Portability *APIs*	IPY-01	Do you publish a list of all APIs available in the service and indicate which are standard and which are customized?	Details regarding AWS APIs can be found on the AWS website at https://aws.amazon.com/documentation/. In alignment with ISO 27001 standards, AWS has established formal policies, procedures to delineate the minimum standards for logical access to AWS resources. AWS SOC reports outlines the controls in place to manage access provisioning to AWS resources. Refer to AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
Interoperability & Portability *Data Request*	IPY-02	Is unstructured customer data available on request in an industry-standard format (e.g., .doc, .xls, or .pdf)?	
Interoperability & Portability *Policy & Legal*	IPY-03.1	Do you provide policies and procedures (i.e. service level agreements) governing the use of APIs for interoperability between your service and third-party applications?	
	IPY-03.2	Do you provide policies and procedures (i.e. service level agreements) governing the migration of application data to and from your service?	Customer retain control and ownership of their content. Customers can choose how they migrate applications and content both on and off the AWS platform at their discretion.

Control Group	CID	Consensus Assessment Questions	AWS Response
Interoperability & Portability *Standardized Network Protocols*	IPY-04.1	Can data import, data export and service management be conducted over secure (e.g., non-clear text and authenticated), industry accepted standardized network protocols?	AWS allows customers to move data as needed on and off AWS storage. Refer to http://aws.amazon.com/choosing-a-cloud-platform for more information on Storage options.
	IPY-04.2	Do you provide consumers (tenants) with documentation detailing the relevant interoperability and portability network protocol standards that are involved?	
Interoperability & Portability *Virtualization*	IPY-05.1	Do you use an industry-recognized virtualization platform and standard virtualization formats (e,g., OVF) to help ensure interoperability?	Amazon EC2 currently utilizes a highly customized version of the Xen hypervisor. The hypervisor is regularly assessed for new and existing vulnerabilities and attack vectors by internal and external penetration teams, and is well suited for maintaining strong isolation between guest virtual machines. The AWS Xen hypervisor security is regularly evaluated by independent auditors during assessments and audits. Refer to the AWS Cloud Security Whitepaper for additional details - available at http://aws.amazon.com/security.
	IPY-05.2	Do you have documented custom changes made to any hypervisor in use, and all solution-specific virtualization hooks available for customer review?	
Mobile Security *Anti-Malware*	MOS-01	Do you provide anti-malware training specific to mobile devices as part of your information security awareness training?	AWS' program, processes and procedures to managing antivirus / malicious software is in alignment with ISO 27001 standards. Refer to ISO 27001 standard, Annex A, domain 12 for additional information.
Mobile Security *Application Stores*	MOS-02	Do you document and make available lists of approved application stores for mobile devices accessing or storing company data and/or company systems?	AWS has established an information security framework and policies and has 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 (Recommended Security Controls for Federal Information Systems). Customers retain the control and responsibility of their data and associated media assets. It is the responsibility of the customer to manage mobile security devices and the access to the customer's content.
Mobile Security *Approved Applications*	MOS-03	Do you have a policy enforcement capability (e.g., XACML) to ensure that only approved applications and those from approved application stores be loaded onto a mobile device?	
Mobile Security *Approved Software for BYOD*	MOS-04	Does your BYOD policy and training clearly state which applications and applications stores are approved for use on BYOD devices?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Mobile Security *Awareness and Training*	MOS -05	Do you have a documented mobile device policy in your employee training that clearly defines mobile devices and the accepted usage and requirements for mobile devices?	
Mobile Security *Cloud Based Services*	MOS -06	Do you have a documented list of pre-approved cloud based services that are allowed to be used for use and storage of company business data via a mobile device?	
Mobile Security *Compatibility*	MOS -07	Do you have a documented application validation process for testing device, operating system and application compatibility issues?	
Mobile Security *Device Eligibility*	MOS -08	Do you have a BYOD policy that defines the device(s) and eligibility requirements allowed for BYOD usage?	
Mobile Security *Device Inventory*	MOS -09	Do you maintain an inventory of all mobile devices storing and accessing company data which includes device status (os system and patch levels, lost or decommissioned, device assignee)?	
Mobile Security *Device Management*	MOS -10	Do you have a centralized mobile device management solution deployed to all mobile devices that are permitted to store, transmit, or process company data?	
Mobile Security *Encryption*	MOS -11	Does your mobile device policy require the use of encryption for either the entire device or for data identified as sensitive enforceable through technology controls for all mobile devices?	
Mobile Security *Jailbreaking and Rooting*	MOS -12.1	Does your mobile device policy prohibit the circumvention of built-in security controls on mobile devices (e.g., jailbreaking or rooting)?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	MOS -12.2	Do you have detective and preventative controls on the device or via a centralized device management system which prohibit the circumvention of built-in security controls?	
Mobile Security *Legal*	MOS -13.1	Does your BYOD policy clearly define the expectation of privacy, requirements for litigation, e-discovery and legal holds?	Customers retain the control and responsibility of their data and associated media assets. It is the responsibility of the customer to manage mobile security devices and the access to the customer's content.
	MOS -13.2	Do you have detective and preventative controls on the device or via a centralized device management system which prohibit the circumvention of built-in security controls?	
Mobile Security *Lockout Screen*	MOS -14	Do you require and enforce via technical controls an automatic lockout screen for BYOD and company owned devices?	
Mobile Security *Operating Systems*	MOS -15	Do you manage all changes to mobile device operating systems, patch levels and applications via your company's change management processes?	
Mobile Security *Passwords*	MOS -16.1	Do you have password policies for enterprise issued mobile devices and/or BYOD mobile devices?	
	MOS -16.2	Are your password policies enforced through technical controls (i.e. MDM)?	
	MOS -16.3	Do your password policies prohibit the changing of authentication requirements (i.e. password/PIN length) via a mobile device?	
Mobile Security *Policy*	MOS -17.1	Do you have a policy that requires BYOD users to perform backups of specified corporate data?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	MOS -17.2	Do you have a policy that requires BYOD users to prohibit the usage of unapproved application stores?	
	MOS -17.3	Do you have a policy that requires BYOD users to use anti-malware software (where supported)?	
Mobile Security *Remote Wipe*	MOS -18.1	Does your IT provide remote wipe or corporate data wipe for all company-accepted BYOD devices?	
	MOS -18.2	Does your IT provide remote wipe or corporate data wipe for all company-assigned mobile devices?	
Mobile Security *Security Patches*	MOS -19.1	Do your mobile devices have the latest available security-related patches installed upon general release by the device manufacturer or carrier?	
	MOS -19.2	Do your mobile devices allow for remote validation to download the latest security patches by company IT personnel?	
Mobile Security *Users*	MOS -20.1	Does your BYOD policy clarify the systems and servers allowed for use or access on the BYOD-enabled device?	
	MOS - 20.2	Does your BYOD policy specify the user roles that are allowed access via a BYOD-enabled device?	
Security Incident Management, E-Discovery & Cloud Forensics *Contact / Authority Maintenance*	SEF-01.1	Do you maintain liaisons and points of contact with local authorities in accordance with contracts and appropriate regulations?	AWS maintains contacts with industry bodies, risk and compliance organizations, local authorities and regulatory bodies as required by the ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Security Incident Management, E-Discovery & Cloud Forensics *Incident Management*	SEF-02.1	Do you have a documented security incident response plan?	AWS' incident response program, plans and procedures have been developed in alignment with ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. The AWS SOC reports provides details on the specific control activities executed by AWS. All data stored by AWS on behalf of customers has strong tenant isolation security and control capabilities.
	SEF-02.2	Do you integrate customized tenant requirements into your security incident response plans?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	SEF-02.3	Do you publish a roles and responsibilities document specifying what you vs. your tenants are responsible for during security incidents?	The AWS Cloud Security Whitepaper (available at http://aws.amazon.com/security) provides additional details.
	SEF-02.4	Have you tested your security incident response plans in the last year?	
Security Incident Management, E-Discovery & Cloud Forensics *Incident Reporting*	SEF-03.1	Does your security information and event management (SIEM) system merge data sources (app logs, firewall logs, IDS logs, physical access logs, etc.) for granular analysis and alerting?	
	SEF-03.2	Does your logging and monitoring framework allow isolation of an incident to specific tenants?	
Security Incident Management, E-Discovery & Cloud Forensics *Incident Response Legal Preparation*	SEF-04.1	Does your incident response plan comply with industry standards for legally admissible chain-of-custody management processes and controls?	
	SEF-04.2	Does your incident response capability include the use of legally admissible forensic data collection and analysis techniques?	
	SEF-04.3	Are you capable of supporting litigation holds (freeze of data from a specific point in time) for a specific tenant without freezing other tenant data?	
	SEF-04.4	Do you enforce and attest to tenant data separation when producing data in response to legal subpoenas?	
Security Incident Management, E-Discovery & Cloud Forensics *Incident Response Metrics*	SEF-05.1	Do you monitor and quantify the types, volumes and impacts on all information security incidents?	AWS Security Metrics are monitored and analyzed in accordance with ISO 27001 standard. Refer to ISO 27001 Annex A, domain 16 for further details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	SEF-05.2	Will you share statistical information for security incident data with your tenants upon request?	

Control Group	CID	Consensus Assessment Questions	AWS Response
Supply Chain Management, Transparency and Accountability *Data Quality and Integrity*	STA-01.1	Do you inspect and account for data quality errors and associated risks, and work with your cloud supply-chain partners to correct them?	Customers retain control and ownership over the quality of their data and potential quality errors that may arise through their usage of AWS services. Refer to AWS SOC report for specific details in relation to Data Integrity and Access Management (including least privilege access)
	STA-01.2	Do you design and implement controls to mitigate and contain data security risks through proper separation of duties, role-based access, and least-privileged access for all personnel within your supply chain?	
Supply Chain Management, Transparency and Accountability *Incident Reporting*	STA-02.1	Do you make security incident information available to all affected customers and providers periodically through electronic methods (e.g. portals)?	AWS' incident response program, plans and procedures have been developed in alignment with ISO 27001 standard. The AWS SOC reports provides details on the specific control activities executed by AWS. The AWS Cloud Security Whitepaper (available at http://aws.amazon.com/security) provides additional details.
Supply Chain Management, Transparency and Accountability *Network / Infrastructure Services*	STA-03.1	Do you collect capacity and use data for all relevant components of your cloud service offering?	AWS manages capacity and utilization data in alignment with ISO 27001 standard. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	STA-03.2	Do you provide tenants with capacity planning and use reports?	
Supply Chain Management, Transparency and Accountability *Provider Internal Assessments*	STA-04.1	Do you perform annual internal assessments of conformance and effectiveness of your policies, procedures, and supporting measures and metrics?	AWS procurement and supply chain team maintain relationships with all AWS suppliers. Refer to ISO 27001 standards; Annex A, domain 15 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
Supply Chain Management, Transparency and Accountability *Third Party Agreements*	STA-05.1	Do you select and monitor outsourced providers in compliance with laws in the country where the data is processed, stored and transmitted?	Personnel security requirements for third-party providers supporting AWS systems and devices are established in a Mutual Non-Disclosure Agreement between AWS' parent organization, Amazon.com, and the respective third-party provider. The Amazon Legal Counsel and the AWS Procurement team define AWS third party provider personnel security requirements in contract agreements with the third party provider. All persons working with AWS information must at a minimum, meet the screening process for pre-employment background checks and sign a Non-Disclosure Agreement (NDA) prior to being granted access to AWS information. AWS does not generally outsource development of AWS services to subcontractors.
	STA-05.2	Do you select and monitor outsourced providers in compliance with laws in the country where the data originates?	
	STA-05.3	Does legal counsel review all third-party agreements?	
	STA-05.4	Do third-party agreements include provision for the security and protection of information and assets?	

Control Group	CID	Consensus Assessment Questions	AWS Response
	STA-05.5	Do you provide the client with a list and copies of all sub processing agreements and keep this updated?	
Supply Chain Management, Transparency and Accountability *Supply Chain Governance Reviews*	STA-06.1	Do you review the risk management and governance processes of partners to account for risks inherited from other members of that partner's supply chain?	AWS maintains formal agreements with key third party suppliers and implements appropriate relationship management mechanisms in line with their relationship to the business. AWS' third party management processes are reviewed by independent auditors as part of AWS ongoing compliance with SOC and ISO 27001.
Supply Chain Management, Transparency and Accountability *Supply Chain Metrics*	STA-07.1	Are policies and procedures established, and supporting business processes and technical measures implemented, for maintaining complete, accurate and relevant agreements (e.g., SLAs) between providers and customers (tenants)?	
	STA-07.2	Do you have the ability to measure and address non-conformance of provisions and/or terms across the entire supply chain (upstream/downstream)?	
	STA-07.3	Can you manage service-level conflicts or inconsistencies resulting from disparate supplier relationships?	
	STA-07.4	Do you review all agreements, policies and processes at least annually?	
Supply Chain Management, Transparency and Accountability *Third Party Assessment*	STA-08.1	Do you assure reasonable information security across your information supply chain by performing an annual review?	
	STA-8.2	Does your annual review include all partners/third-party providers upon which your information supply chain depends?	
Supply Chain Management, Transparency	STA-09.1	Do you permit tenants to perform independent vulnerability assessments?	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

Control Group	CID	Consensus Assessment Questions	AWS Response
and Accountability *Third Party Audits*	STA-09.2	Do you have external third party services conduct vulnerability scans and periodic penetration tests on your applications and networks?	these types of scans can be initiated by submitting a request via the AWS Vulnerability / Penetration Testing Request Form. AWS Security regularly engages independent security firms to perform external vulnerability threat assessments. The AWS SOC reports provides additional details on the specific control activities executed by AWS.
Threat and Vulnerability Management *Antivirus / Malicious Software*	TVM-01.1	Do you have anti-malware programs that support or connect to your cloud service offerings installed on all of your systems?	AWS' program, processes and procedures to managing antivirus / malicious software is in alignment with ISO 27001 standards. Refer to AWS SOC reports provides further details. In addition, refer to ISO 27001 standard, Annex A, domain 12 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	TVM-01.2	Do you ensure that security threat detection systems using signatures, lists or behavioral patterns are updated across all infrastructure components within industry accepted time frames?	
Threat and Vulnerability Management *Vulnerability / Patch Management*	TVM-02.1	Do you conduct network-layer vulnerability scans regularly as prescribed by industry best practices?	Customers retain control of their own guest operating systems, software and applications and are responsible for performing vulnerability scans and patching of their own systems. 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. AWS Security regularly scans all Internet-facing service endpoint IP addresses for vulnerabilities. AWS Security notifies the appropriate parties to remediate any identified vulnerabilities. AWS' own maintenance and system patching generally do not impact customers. Refer to AWS Cloud Security Whitepaper for further information - available at http://aws.amazon.com/security. Refer to ISO 27001 standard, Annex A, domain 12 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	TVM-02.2	Do you conduct application-layer vulnerability scans regularly as prescribed by industry best practices?	
	TVM-02.3	Do you conduct local operating system-layer vulnerability scans regularly as prescribed by industry best practices?	
	TVM-02.4	Will you make the results of vulnerability scans available to tenants at their request?	
	TVM-02.5	Do you have a capability to rapidly patch vulnerabilities across all of your computing devices, applications and systems?	
	TVM-02.6	Will you provide your risk-based systems patching time frames to your tenants upon request?	
Threat and Vulnerability Management *Mobile Code*	TVM-03.1	Is mobile code authorized before its installation and use, and the code configuration checked, to ensure that the authorized mobile code operates according to a clearly defined security policy?	AWS allows customers to manage client and mobile applications to their own requirements.

Control Group	CID	Consensus Assessment Questions	AWS Response
	TVM-03.2	Is all unauthorized mobile code prevented from executing?	

Appendix B: AWS alignment with the Australian Signals Directorate (ASD) Cloud Computing Security Considerations

The Cloud Computing Security Considerations was created to assist agencies in performing a risk assessment of services offered by Cloud Service Providers. The following provides AWS alignment to the Security Considerations, published on September 2012. For additional details refer to: http://www.asd.gov.au/publications/csocprotect/Cloud_Computing_Security_Considerations.pdf

Key Area	Questions	AWS RESPONSE
Maintaining Availability and Business Functionality	a. Business criticality of data or functionality. Am I moving business critical data or functionality to the cloud?	AWS customers retain control and ownership of their content. Customers are responsible for the classification and use of their content.
	b. Vendor's business continuity and disaster recovery plan. Can I thoroughly review a copy of the vendor's business continuity and disaster recovery plan that covers the availability and restoration of both my data and the vendor's services that I use? How much time does it take for my data and the services that I use to be recovered after a disaster, and do the vendor's other customers that are larger and pay more money than me get prioritization?	AWS customers retain control and ownership of their data. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Each Availability Zone is designed as an independent failure zone. In case of failure, automated processes move customer data traffic away from the affected area. AWS SOC 1 Type 2 report provides further details. ISO 27001 standard Annex A, domain 11 provides additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification. Customers utilize AWS to enable faster disaster recovery of their critical IT systems without incurring the infrastructure expense of a second physical site. The AWS cloud supports many popular disaster recovery (DR) architectures from "pilot light" environments that are ready to scale up at a moment's notice to "hot standby" environments that enable rapid failover. To learn more about Disaster Recovery on AWS visit https://aws.amazon.com/disaster-recovery/. AWS provides customers with the capability to implement a robust continuity plan, including the utilization of frequent server instance back-ups, data redundancy replication, and multi-region/availability zone deployment architectures. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Each Availability Zone is designed as an independent failure zone. In case of failure, automated processes move customer data traffic away from the affected area. AWS data centers incorporate physical protection against environmental risks. AWS' physical protection against environmental risks has been validated by an independent auditor and has been certified as being in alignment with ISO 27002 best practices. Refer to ISO 27001 standard, Annex A domain 9 and the AWS SOC 1 Type II report for additional information.

Key Area	Questions	AWS RESPONSE
	c. My data backup plan. Will I spend additional money to maintain an up to date backup copy of my data located either at my agency's premises, or stored with a second vendor that has no common points of failure with the first vendor?	AWS customers retain control and ownership of their content and it is the customer's responsibility to manage their data backup plans. AWS allows customers to move data as needed on and off AWS storage. AWS Import/Export service for S3 accelerates moving large amounts of data into and out of AWS using portable storage devices for transport. AWS allows customers to perform their own backups to tapes using their own tape backup service provider. However, a tape backup is not a service provided by AWS. Amazon S3 service is designed to drive the likelihood of data loss to near zero percent and the durability equivalent of multi-site copies of data objects is achieved through data storage redundancy. For information on data durability and redundancy, please refer to the AWS website. AWS offers a range of cloud computing services to support Disaster Recovery. To learn more about Disaster Recovery on AWS visit https://aws.amazon.com/disaster-recovery/.
	d. My business continuity and disaster recovery plan. Will I spend additional money to replicate my data or business functionality with a second vendor that uses a different data center and ideally has no common points of failure with the first vendor? This replication should preferably be configured to automatically "failover", so that if one vendor's services become unavailable, control is automatically and smoothly transitioned to the other vendor.	Customers retain control and ownership of their data. Customers can export their AMIs and use them on premise or at another provider (subject to software licensing restrictions). Refer to the AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security. AWS allows customers to move data as needed on and off AWS storage. AWS Import/Export service for S3 accelerates moving large amounts of data into and out of AWS using portable storage devices for transport. AWS allows customers to perform their own backups to tapes using their own tape backup service provider. However, a tape backup is not a service provided by AWS. AWS data centers are built in clusters in various global regions. All data centers are online and serving customers; no data center is "cold." In case of failure, automated processes move customer data traffic away from the affected area. Core applications are deployed in an N+1 configuration, so that in the event of a data center failure, there is sufficient capacity to enable traffic to be load-balanced to the remaining sites. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Each Availability Zone is designed as an independent failure zone. This means that Availability Zones are physically separated within a typical metropolitan region and are located in lower risk flood plains (specific flood zone categorization varies by Region). In addition to discrete uninterruptable power supply (UPS) and onsite backup generation facilities, they are each fed via different grids from independent utilities to further reduce single points of failure. Availability Zones are all redundantly connected to multiple tier-1 transit providers. Customers should architect their AWS usage to take advantage of multiple Regions and Availability Zones. Distributing applications across multiple Availability Zones provides the ability to remain resilient in the face of most failure modes including natural disasters or system failures. AWS SOC 1 Type 2 report provides further details. ISO 27001 standard Annex A, domain 11 provides additional details. AWS has been validated

Key Area	Questions	AWS RESPONSE
		and certified by an independent auditor to confirm alignment with ISO 27001 certification.
	e. My network connectivity to the cloud. Is the network connectivity between my agency's users and the vendor's network adequate in terms of availability, traffic throughput (bandwidth), delays (latency) and packet loss?	Customers can also choose their network path to AWS facilities, including multiple VPN endpoints in each AWS Region. In addition, AWS Direct Connect makes it easy to establish a dedicated network connection from your premises to AWS. Using AWS Direct Connect, you can establish private connectivity between AWS and your data center, office, or colocation environment, which in many cases can reduce your network costs, increase bandwidth throughput, and provide a more consistent network experience than Internet-based connections. Refer to AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security.

Key Area	Questions	AWS RESPONSE
	f. Vendor's guarantee of availability. Does the Service Level Agreement (SLA guarantee that the vendor will provide adequate system availability an quality of service, using their robust system architecture and business processes?	AWS does commit to high levels of availability in its service level agreements (SLAs). For example, Amazon EC2 commits to annual uptime percentage of at least 99.95% during the service year. Amazon S3 commits to monthly uptime percentage of at least 99.99% Service credits are provided in the case these availability metrics are not met. Customers should architect their AWS usage to take advantage of multiple Regions and Availability Zones. Distributing applications across multiple Availability Zones provides the ability to remain resilient in the face of most failure modes including natural disasters or system failures. AWS utilizes automated monitoring systems to provide a high level of service performance and availability. Proactive monitoring is available through a variety of online tools both for internal and external use. Systems within AWS are extensively instrumented to monitor key operational metrics. Alarms are configured to notify operations and management personnel when early warning thresholds are crossed on key operational metrics. An on-call schedule is used such that personnel are always available to respond to operational issues. This includes a pager system so alarms are quickly and reliably communicated to operations personnel. AWS Network Management is regularly reviewed by independent third-party auditors as a part of AWS ongoing compliance with SOC, PCI DSS, ISO 27001 and FedRAMP[sm].
	g. Impact of outages. Can I tolerate the maximum possible downtime of the SLA? Are the scheduled outage windows acceptable both in duration and time of day, or will scheduled outages interfere with my critical business processes?	AWS does not require systems to be brought offline to perform regular maintenance and system patching. AWS' own maintenance and system patching generally do not impact customers. Maintenance of instances themselves is controlled by the customer.
	h. SLA inclusion of scheduled outages. Does the SLA guaranteed availability percentage include scheduled outages?	AWS does not operate an environment with scheduled outage as AWS provides customers the ability to architect their environment to take advantage of multiple Availability Zones and regions.
	i. SLA compensation. Does the SLA adequately reflect the actual damage caused by a breach of the SLA such as unscheduled downtime or data loss?	AWS provides customer remuneration for losses they may incur due to outages in alignment with AWS' Service Level Agreement.

Key Area	Questions	AWS RESPONSE
	j. Data integrity and availability. How does the vendor implement mechanisms such as redundancy and offsite backups to prevent corruption or loss of my data, and guarantee both the integrity and the availability of my data?	AWS data integrity controls as described in AWS SOC 1 Type II report provides reasonable assurance that data integrity is maintained through all phases including transmission, storage and processing. In addition, refer to ISO 27001 standard, Annex A, domain 12 for further information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. Data centers are built in clusters in various global regions. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region. Customers should architect their AWS usage to take advantage of multiple Regions and Availability Zones. You choose where to store your data by specifying a region (for Amazon S3) or an availability zone within a region (for EBS). Data stored in Amazon Elastic Block Store (Amazon EBS) is redundantly stored in multiple physical locations as part of normal operation of those services and at no additional charge. However, Amazon EBS replication is stored within the same availability zone, not across multiple zones. Amazon S3 provides a highly durable storage infrastructure. Objects are redundantly stored on multiple devices across multiple facilities in an Amazon S3 Region. Once stored, Amazon S3 maintains the durability of objects by quickly detecting and repairing any lost redundancy. Amazon S3 also regularly verifies the integrity of data stored using checksums. If corruption is detected, it is repaired using redundant data. Data stored in S3 is designed to provide 99.999999999% durability and 99.99% availability of objects over a given year. Refer to AWS Overview of Security Processes whitepaper for additional details - available at http://aws.amazon.com/security
	k. Data restoration. If I accidentally delete a file, email or other data, how much time does it take for my data to be partially or fully restored from backup, and is the maximum acceptable time captured in the SLA?	AWS customers retain control and ownership of their data. AWS provides customers the flexibility to place instances and store data within multiple geographic regions as well as across multiple Availability Zones within each region.
	l. Scalability. How much available spare computing resources does the vendor provide to enable my usage of the vendor's services to scale at short notice?	The AWS cloud is distributed, highly secure and resilient, giving customers large scaling potential. Customers may scale up or down, paying for only what they use.

Key Area	Questions	AWS RESPONSE
	m. Changing vendor. If I want to move my data to my agency or to a different vendor, or if the vendor suddenly becomes bankrupt or otherwise quits the cloud business, how do I get access to my data in a vendor-neutral format to avoid vendor lock-in? How cooperative will the vendor be? How do I ensure that my data is permanently deleted from the vendor's storage media? For Platform as a Service, which standards does the vendor use that facilitate portability and interoperability to easily move my application to a different vendor or to my agency?	Customers retain control and ownership of their data. Customers can export their AMIs and use them on premise or at another provider (subject to software licensing restrictions). Refer to the AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security. AWS allows customers to move data as needed on and off AWS storage. AWS Import/Export service for S3 accelerates moving large amounts of data into and out of AWS using portable storage devices for transport. AWS allows customers to perform their own backups to tapes using their own tape backup service provider. However, a tape backup is not a service provided by AWS.
Protecting Data from Unauthorized Access by a Third Party	a. Choice of cloud deployment model. Am I considering using a potentially less secure public cloud, a potentially more secure hybrid cloud or community cloud, or a potentially most secure private cloud?	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. The AWS security framework integrates the ISO 27002 best practices and the PCI Data Security Standard. Refer to AWS Risk and Compliance Whitepaper for additional details - available at http://aws.amazon.com/security. AWS provides third-party attestations, certifications, Service Organization Controls 1 (SOC 1) Type II report and other relevant compliance reports directly to our customers under NDA. Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the Amazon Web Services (AWS) Cloud where you can launch AWS resources in a virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways. You can easily customize the network configuration for your Amazon VPC. For example, you can create a public-facing subnet for your webservers that has access to the Internet, and place your backend systems such as databases or application servers in a private-facing subnet with no Internet access. You can leverage multiple layers of security, including security groups and network access control lists, to help control access to Amazon EC2 instances in each subnet. Additionally, you can create a Hardware Virtual Private Network (VPN) connection between your corporate data center and your VPC and leverage the AWS cloud as an extension of your corporate data center

Key Area	Questions	AWS RESPONSE
	b. Sensitivity of my data. Is my data to be stored or processed in the cloud classified, sensitive, private, or data that is publicly available such as information from my public web site? Does the aggregation of my data make it more sensitive than any individual piece of data? For example, the sensitivity may increase if storing a significant amount of data, or storing a variety of data that if compromised would facilitate identity theft. If there is a data compromise, could I demonstrate my due diligence to senior management, government officials and the public?	AWS customers retain control and ownership of their data and may implement a structured data-classification program to meet their requirements.
	c. Legislative obligations. What obligations do I have to protect and manage my data under various legislation, for example the Privacy Act, the Archives Act, as well as other legislation specific to the type of data? Will the vendor contractually accept adhering to these obligations to help me ensure that the obligations are met to the satisfaction of the Australian Government?	AWS customers retain responsibility to ensure their usage of AWS is within compliance of applicable laws and regulations. AWS communicates its security and control environment to customers through industry certifications and third-party attestations, white papers (available at http://aws.amazon.com/security) and providing certifications, reports and other relevant documentation directly to AWS customers. AWS has published a whitepaper on using AWS in the context of Australian privacy considerations, available here.

Key Area	Questions	AWS RESPONSE
	d. Countries with access to my data. In which countries is my data stored, backed up and processed? Which foreign countries does my data transit? In which countries is the failover or redundant data centers? Will the vendor notify me if the answers to these questions change?	AWS customers choose the AWS Region or regions in which their content and servers will be located. This allows customers with geographic specific requirements to establish environments in a location of their choice. AWS customers in Australia can choose to deploy their AWS services exclusively in the Asia Pacific (Sydney) region and store their content onshore in Australia. If the customer makes this choice, their content will be located in Australia unless the customer chooses to move the data. Customers can replicate and back up content in more than one region, but AWS does not move or replicate customer content outside of the customer's chosen region or regions. AWS is vigilant about customers' security and does not disclose or move data in response to a request from the Australian, U.S. or other government unless legally required to do so in order to comply with a legally valid and binding order, such as a subpoena or a court order, or as is otherwise required by applicable law. Non-U.S. governmental or regulatory bodies typically must use recognized international processes, such as Mutual Legal Assistance Treaties with the U.S. government, to obtain valid and binding orders. Additionally, our practice is to notify customers where practicable before disclosing their content so they can seek protection from disclosure, unless we are legally prevented from doing so.

Key Area	Questions	AWS RESPONSE
	e. Data encryption technologies. Are hash algorithms, encryption algorithms and key lengths deemed appropriate by the DSD ISM used to protect my data when it is in transit over a network, and stored on both the vendor's computers and on backup media? The ability to encrypt data while it is being processed by the vendor's computers is still an emerging technology and is an area of current research by industry and academia. Is the encryption deemed strong enough to protect my data for the duration of time that my data is sensitive?	AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS, SimpleDB and EC2. VPC sessions are also encrypted. Amazon S3 also offers Server Side Encryption as an option for customers. Customers may also use third-party encryption technologies. Internally, AWS establishes and manages cryptographic keys for required cryptography employed within the AWS infrastructure. AWS produces, controls and distributes symmetric cryptographic keys using NIST approved key management technology and processes in the AWS information system. An AWS developed secure key and credential manager is used to create, protect and distribute symmetric keys and is used to secure and distribute: AWS credentials needed on hosts, RSA public/private keys and X.509 Certifications. AWS cryptographic processes are reviewed by independent third-party auditors for our continued compliance with SOC, PCI DSS, ISO 27001 and FedRAMP[sm]. The AWS CloudHSM service allows you to protect your encryption keys within HSMs designed and validated to government standards for secure key management. You can securely generate, store, and manage the cryptographic keys used for data encryption such that they are accessible only by you. AWS CloudHSM helps you comply with strict key management requirements without sacrificing application performance. The AWS CloudHSM service works with Amazon Virtual Private Cloud (VPC). CloudHSMs are provisioned inside your VPC with an IP address that you specify, providing simple and private network connectivity to your Amazon Elastic Compute Cloud (EC2) instances. Placing CloudHSMs near your EC2 instances decreases network latency, which can improve application performance. AWS provides dedicated and exclusive access to CloudHSMs, isolated from other AWS customers. Available in multiple Regions and Availability Zones (AZs), AWS CloudHSM allows you to add secure and durable key storage to your Amazon EC2 applications.
	f. Media sanitization. What processes are used to sanitize the storage media storing my data at its end of life, and are the processes deemed appropriate by the DSD ISM?	When a storage device has reached the end of its useful life, AWS procedures include a decommissioning process that is designed to prevent customer data from being exposed to unauthorized individuals. AWS uses the techniques detailed in DoD 5220.22-M ("National Industrial Security Program Operating Manual ") or NIST 800-88 ("Guidelines for Media Sanitization") to destroy data as part of the decommissioning process. If a hardware device is unable to be decommissioned using these procedures, the device will be degaussed or physically destroyed in accordance with industry-standard practices. Refer to AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security.

Key Area	Questions	AWS RESPONSE
	g. Vendor's remote monitoring and management. Does the vendor monitor, administer or manage the computers that store or process my data? If yes, is this performed remotely from foreign countries or from Australia? Can the vendor provide patch compliance reports and other details about the security of workstations used to perform this work, and what controls prevent the vendor's employees from using untrustworthy personally owned laptops?	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.
	h. My monitoring and management. Can I use my existing tools for integrity checking, compliance checking, security monitoring and network management, to obtain visibility of all my systems regardless of whether these systems are located locally or in the cloud? Do I have to learn to use additional tools provided by the vendor? Does the vendor even provide such a mechanism for me to perform monitoring?	AWS Cloudwatch provides monitoring for AWS cloud resources and the applications customers run on AWS. Refer to aws.amazon.com/cloudwatch for additional details. AWS also publishes our most up-to-the-minute information on service availability on the Service Health Dashboard. Refer to status.aws.amazon.com. The AWS Trusted Advisor inspects your AWS environment and makes recommendations when opportunities exist to save money, improve system performance and reliability, or help close security gap.
	i. Data ownership. Do I retain legal ownership of my data, or does it belong to the vendor and may be considered an asset for sale by liquidators if the vendor declares bankruptcy?	AWS customers retain ownership and control of their data. AWS only uses each customer's content to provide the AWS services selected by each customer to that customer and does not use customer content for any secondary purposes. AWS treats all customer content the same and has no insight as to what type of content the customer chooses to store in AWS. AWS simply makes available the compute, storage, database and networking services selected by customer – AWS does not require access to customer content to provide its services.

Key Area	Questions	AWS RESPONSE
	j. Gateway technologies. What technologies does the vendor use to create a secure gateway environment? Examples include firewalls, traffic flow filters, content filters, and antivirus software and data diodes where appropriate.	The AWS network provides significant protection against traditional network security issues and customers can implement further protection. Refer to the AWS Overview of Security whitepaper (available at http://aws.amazon.com/security) for additional details. Amazon assets (e.g. laptops) are configured with anti-virus software that includes e-mail filtering and malware detection. AWS Network Firewall management and Amazon's anti-virus program are reviewed by independent third-party auditors as a part of AWS ongoing compliance with SOC, PCI DSS, ISO 27001 and FedRAMP[sm].
	k. Gateway certification. Is the vendor's gateway environment certified against government security standards and regulations?	AWS obtains certain industry certifications and independent third-party attestations which include the AWS Gateway environment.
	l. Email content filtering. For email Software as a Service, does the vendor provide customizable email content filtering that can enforce my agency's email content policy?	A Customer can utilize a system to host e-mail capabilities, however in that case it is the Customer's responsibility to employ the appropriate levels of spam and malware protection at e-mail entry and exit points and update spam and malware definitions when new releases are made available.

Key Area	Questions	AWS RESPONSE
	m. Policies and processes supporting the vendor's IT security posture. Can I have details of how the vendor's computer and network security posture is supported by policies and processes including threat and risk assessments, ongoing vulnerability management, a change management process that incorporates security, penetration testing, logging and regular log analysis, use of security products endorsed by the Australian Government, and compliance with Australian government security standards and regulations?	Policies and procedures have been established by AWS Information Security based upon the COBIT framework, ISO 27001 standards and the PCI DSS requirements. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard. In addition AWS publishes a SOC 1 Type II report. Refer to the SOC 1 report for further details. The AWS Risk and Compliance whitepaper for additional details - available at http://aws.amazon.com/security. 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 and formerly referred to as the Statement on Standards for Attestation Engagements No. 16 (SSAE 16) 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.
	n. Technologies supporting the vendor's IT security posture. Can I have details of how the vendor's computer and network security posture is supported by direct technical controls including timely application of security patches, regularly updated antivirus software, defense in depth mechanisms to protect against unknown vulnerabilities, hardened operating systems and software applications configured with the strongest possible security settings, intrusion detection and prevention systems,	AWS provides third-party attestations, certifications, Service Organization Controls 1 (SOC 1) Type II report and other relevant compliance reports directly to our customers under NDA. 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. In addition, the AWS control environment is subject to regular internal and external risk assessments. AWS engages with external certifying bodies and independent auditors to review and test the AWS overall control environment.

Key Area	Questions	AWS RESPONSE
	and data loss prevention mechanisms?	
	o. Auditing the vendor's IT security posture. Can I audit the vendor' implementation of security measures, including performing scans and other penetration testing of the environment provided to me? If there is justifiable reason why auditing is not possible, which reputable third party has performed audits and other vulnerability assessments? What sort of internal audits does the vendor perform, and which compliance standards and other recommended practices from organization's such as the Cloud Security Alliance are used for these assessments? Can I thoroughly review a copy of recent resulting reports?	AWS provides third-party attestations, certifications, Service Organization Controls 1 (SOC 1) Type II report and other relevant compliance reports directly to our customers under NDA. 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. AWS Security regularly engages independent security firms to perform external vulnerability threat assessments. The AWS SOC 1 Type 2 report provides additional details on the specific control activities executed by AWS.

Key Area	Questions	AWS RESPONSE
	p. User authentication. What identity and access management systems does the vendor support for users to log in to use Software as a Service?	AWS Identity and Access Management (IAM) enables you to securely control access to AWS services and resources for your users. Using IAM, you can create and manage AWS users and groups and use permissions to allow and deny their access to AWS resources. AWS supports identity federation that makes it easier to manage users by maintaining their identities in a single place. AWS IAM includes support for the Security Assertion Markup Language (SAML) 2.0, an open standard used by many identity providers. This new feature enables federated single sign-on, or SSO, empowering users to log into the AWS Management Console or make programmatic calls to AWS APIs, by using assertions from a SAML-compliant identity provider, such as Shibboleth and Windows Active Directory Federation Services.
	q. Centralized control of data. What user training, policies and technical controls prevent my agency's users from using unapproved or insecure computing devices without a trusted operating environment to store or process sensitive data accessed using Software as a Service?	N/A

Key Area	Questions	AWS RESPONSE
	r. Vendor's physical security posture. Does the vendor use physical security products and devices that are endorsed by the Australian Government? How is the vendor's physical data center designed to prevent the tampering or theft of servers, infrastructure and the data stored thereon? Is the vendor's physical data center accredited by an authoritative third party?	The definition of AWS-defined logical and physical controls is documented in the SOC 1 Type II report, and the report is available for review by audit and compliance teams. AWS ISO 27001 and other certifications are also available for auditors to review. Physical security controls include but are not limited to perimeter controls such as fencing, walls, security staff, video surveillance, intrusion detection systems and other electronic means. Physical access is strictly controlled both at the perimeter and at building ingress points and includes, but is not limited to, professional security staff utilizing video surveillance, intrusion detection systems, and other electronic means. Authorized staff must pass two-factor authentication a minimum of two times to access data center floors. Physical access points to server locations are recorded by closed circuit television camera (CCTV) as defined in the AWS Data Center Physical Security Policy. Images are retained for 90 days, unless limited to 30 days by legal or contractual obligations AWS provides data center physical access and information to approved employees and contractors who have a legitimate business need for such privileges. All visitors are required to present identification and are signed in and escorted by authorized staff. See the SOC 1 Type II report for specific controls related to physical access, data center access authorization, and other related controls. Refer to ISO 27001 standard, Annex A, domain 9 for further information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.
	s. Software and hardware procurement. What procurement process is used to ensure that cloud infrastructure software and hardware has been supplied by a legitimate source and has not been maliciously modified in transit?	In alignment with ISO 27001 standards, AWS Hardware assets are assigned an owner, tracked and monitored by the AWS personnel with AWS proprietary inventory management tools. AWS procurement and supply chain team maintain relationships with all AWS suppliers. Refer to ISO 27001 standard, Annex A, domain 7 for additional details. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.

Key Area	Questions	AWS RESPONSE
Protecting Data from Unauthorized Access by the Vendor's Customers	a. Customer segregation. What assurance do I have that the virtualization and "multi-tenancy" mechanisms guarantee adequate logical and network segregation between multiple tenants, so that a malicious customer using the same physical computer as me cannot access my data?	Amazon EC2 currently utilizes a highly customized version of the Xen hypervisor. The hypervisor is regularly assessed for new and existing vulnerabilities and attack vectors by internal and external penetration teams, and is well suited for maintaining strong isolation between guest virtual machines. The AWS Xen hypervisor security is regularly evaluated by independent auditors during assessments and audits. All data stored by AWS on behalf of customers has strong tenant isolation security and control capabilities. Customers retain control and ownership of their data, thus it is their responsibility to choose to encrypt the data. AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS and EC2. VPC sessions are also encrypted. Amazon S3 also offers Server Side Encryption as an option for customers. Refer to AWS Risk and Compliance Whitepaper for additional details - available at http://aws.amazon.com/security.
	b. Weakening my security posture. How would using the vendor's cloud infrastructure weaken my agency's existing network security posture? Would the vendor advertise me as one of their customers without my explicit consent, thereby assisting an adversary that is specifically targeting me?	AWS customers are considered confidential and would not advertise customer details without explicit consent. Amazon Virtual Private Cloud (Amazon VPC) lets you provision a logically isolated section of the Amazon Web Services (AWS) Cloud where you can launch AWS resources in a virtual network that you define. You have complete control over your virtual networking environment, including selection of your own IP address range, creation of subnets, and configuration of route tables and network gateways.
	c. Dedicated servers. Do I have some control over which physical computer runs my virtual machines? Can I pay extra to ensure that no other customer can use the same physical computer as me e.g. dedicated servers or virtual private cloud?	VPC allows customers to launch Amazon EC2 instances that are physically isolated at the host hardware level; they will run on single tenant hardware. A VPC can be created with 'dedicated' tenancy, in which case all instances launched into the VPC will utilize this feature. Alternatively, a VPC may be created with 'default' tenancy, but customers may specify 'dedicated' tenancy for particular instances launched into the VPC.
	d. Media sanitization. When I delete portions of my data, what processes are used to sanitize the storage media before it is made available to another customer, and are the processes deemed appropriate by the DSD ISM?	Customers retain ownership and control of their content and provide customers with the ability to delete their data. When a storage device has reached the end of its useful life, AWS procedures include a decommissioning process that is designed to prevent customer data from being exposed to unauthorized individuals. AWS uses the techniques detailed in DoD 5220.22-M ("National Industrial Security Program Operating Manual ") or NIST 800-88 ("Guidelines for Media Sanitization") to destroy data as part of the decommissioning process. If a hardware device is unable to be decommissioned using these procedures, the device will be degaussed or physically destroyed in accordance with industry-standard practices. Refer to AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security.

Key Area	Questions	AWS RESPONSE
Protecting Data from Unauthorized Access by Rogue Vendor Employees	a. Data encryption key management. Does the vendor know the password or key used to decrypt my data, or do I encrypt and decrypt the data on my computer so the vendor only ever has encrypted data?	AWS Customers manage their own encryption unless they are utilizing AWS server side encryption service. In this case, AWS does create a unique encryption key per tenant. Refer to AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security.
	b. Vetting of vendor's employees. What personnel employment checks and vetting processes does the vendor perform to ensure that employees are trustworthy?	AWS conducts criminal background checks, as permitted by applicable law, as part of pre-employment screening practices for employees commensurate with the employee's position and level of access to AWS facilities.
	c. Auditing vendor's employees. What robust identity and access management system do the vendor's employees use? What auditing process is used to log and review the actions performed by the vendor's employees?	In alignment with ISO 27001 standards, AWS has established formal policies, procedures to delineate the minimum standards for logical access to AWS resources. AWS SOC 1 Type 2 report outlines the controls in place to manage access provisioning to AWS resources. Refer to AWS Overview of Security Processes whitepaper for additional details - available at http://aws.amazon.com/security.
	d. Visitors to data center. Are visitors to data centers escorted at all times, and is the name and other personal details of every visitor verified and recorded?	All visitors and contractors are required to present identification and are signed in and continually escorted by authorized staff. AWS only provides data center access and information to employees and contractors who have a legitimate business need for such privileges. When an employee no longer has a business need for these privileges, his or her access is immediately revoked, even if they continue to be an employee of Amazon or Amazon Web Services. All physical access to data centers by AWS employees is routinely logged and audited.
	e. Physical tampering by vendor's employees. Is network cabling professionally installed to Australian standards or internationally acceptable standards, to help avoid the vendor's employees from accidentally connecting cables to the wrong computers, and to help readily highlight any deliberate attempts by the vendor's employees to tamper with the cabling?	Physical security controls include but are not limited to perimeter controls such as fencing, walls, security staff, video surveillance, intrusion detection systems and other electronic means. This includes appropriate protection for network cables. The AWS SOC 1 Type 2 report provides additional details on the specific control activities executed by AWS. Refer to ISO 27001 standard, Annex A, domain 9 for further information. AWS has been validated and certified by an independent auditor to confirm alignment with ISO 27001 certification standard.

Key Area	Questions	AWS RESPONSE
	f. Vendor's subcontractors. Do the answers to these questions apply equally to all of the vendor's subcontractors?	Provisioning contractor / vendor access is managed the same for both employees and contractors, with responsibility shared across Human Resources (HR), Corporate Operations and Service Owners. Vendors are subject to the same access requirements as employees.
Handling Security Incidents	a. Timely vendor support. Is the vendor readily contactable and responsive to requests for support, and is the maximum acceptable response time captured in the SLA or simply a marketing claim that the vendor will try their best? Is the support provided locally, or from a foreign country, or from several foreign countries using an approach that follows the sun? What mechanism does the vendor use to obtain a real-time understanding of the security posture of my use of the vendor's services so that the vendor can provide support?	AWS Support is a one-on-one, fast-response support channel that is staffed 24x7x365 with experienced and technical support engineers. The service helps customers of all sizes and technical abilities to successfully utilize the products and features provided by Amazon Web Services. All AWS Support tiers offer customers of AWS Infrastructure Services an unlimited number of support cases with pay-by-the-month pricing and no long-term contracts. The four tiers provide developers and businesses the flexibility to choose the support tiers that meet their specific needs.
	b. Vendor's incident response plan. Does the vendor have a security incident response plan that specifies how to detect and respond to security incidents, in a way that is similar to incident handling procedures detailed in the DSD ISM? Can I thoroughly review a copy?	The Amazon Incident Management team employs industry-standard diagnostic procedures to drive resolution during business-impacting events. Staff operators provide 24 x 7 x 365 coverage to detect incidents and to manage the impact and resolution. AWS' incident response program, plans and procedures have been developed in alignment with ISO 27001 standard. The AWS SOC 1 Type 2 report provides details on the specific control activities executed by AWS. The AWS Overview of Security Processes whitepaper (available at http://aws.amazon.com/security) provides additional details.
	c. Training of vendor's employees. What qualifications, certifications and regular information security awareness training do the vendor's employees require, to know how to use the vendor's systems in a secure manner and to identify potential security incidents?	In alignment with ISO 27001 standard, all AWS employees complete periodic Information Security training which requires an acknowledgement to complete. Compliance audits are periodically performed to validate that employees understand and follow the established policies. Refer to AWS Overview of Security Processes Whitepaper for additional details - available at http://aws.amazon.com/security.

Key Area	Questions	AWS RESPONSE
	d. Notification of security incidents. Will the vendor notify me via secure communications of security incidents that are more serious than an agreed threshold, especially in cases where the vendor might be liable? Will the vendor automatically notify law enforcement or other authorities, who may confiscate computing equipment used to store or process my data?	Notification of security incidents are handled on a case-by-case basis and as required by applicable law. Any notification is performed via secure communications.
	e. Extent of vendor support. How much assistance will the vendor provide me with investigations if there is a security breach such as an unauthorized disclosure of my data, or if there is a need to perform legal electronic discovery of evidence?	AWS provides infrastructure and customers manage everything else, including the operating system, the network configuration and the installed applications. Customers are responsible for responding appropriately to legal procedures involving the identification, collection, processing, analysis and production of electronic documents they store or process using AWS. Upon request, AWS may work with customers who require AWS' assistance in legal proceedings.
	f. My access to logs. How do I obtain access to time synchronized audit logs and other logs to perform a forensic investigation, and how are the logs created and stored to be suitable evidence for a court of law?	Customers retain control of their own guest operating systems, software and applications and are responsible for developing logical monitoring of the conditions of these systems. In alignment with ISO 27001 standards, AWS information systems utilize internal system clocks synchronized via NTP (Network Time Protocol). AWS CloudTrail provides a simple solution to log user activity that helps alleviate the burden of running a complex logging system. Refer to aws.amazon.com/cloudtrail for additional details. AWS Cloudwatch provides monitoring for AWS cloud resources and the applications customers run on AWS. Refer to aws.amazon.com/cloudwatch for additional details. AWS also publishes our most up-to-the-minute information on service availability on the Service Health Dashboard. Refer to status.aws.amazon.com.
	g. Security incident compensation. How will the vendor adequately compensate me if the vendor's actions, faulty software or hardware contributed to a security breach?	AWS' incident response program, plans and procedures have been developed in alignment with ISO 27001 standard. The AWS SOC 1 Type 2 report provides details on the specific control activities executed by AWS. The AWS Overview of Security Processes whitepaper (available at http://aws.amazon.com/security) provides additional details.

Key Area	Questions	AWS RESPONSE
	h. Data spills. If data that I consider is too sensitive to be stored in the cloud is accidentally placed into the cloud, referred to as a data spill, how can the spilled data be deleted using forensic sanitization techniques? Is the relevant portion of physical storage media zeroed whenever data is deleted? If not, how long does it take for deleted data to be overwritten by customers as part of normal operation, noting that clouds typically have significant spare unused storage capacity? Can the spilled data be forensically deleted from the vendor's backup media? Where else is the spilled data stored, and can it be forensically deleted?	Customers retain ownership and control of their content. All data stored by AWS on behalf of customers has strong tenant isolation security and control capabilities. AWS allows customers to use their own encryption mechanisms for nearly all the services, including S3, EBS and EC2. IPSec tunnels to VPC are also encrypted. Amazon S3 also offers Server Side Encryption as an option for customers. Refer to AWS Risk and Compliance Whitepaper for additional details - available at http://aws.amazon.com/security. Refer to AWS Risk and Compliance Whitepaper for additional details - available at http://aws.amazon.com/security.

Appendix C: Glossary of Terms

Authentication: Authentication is the process of determining whether someone or something is, in fact, who or what it is declared to be.

Availability Zone: Amazon EC2 locations are composed of regions and Availability Zones. Availability Zones are distinct locations that are engineered to be insulated from failures in other Availability Zones and provide inexpensive, low latency network connectivity to other Availability Zones in the same region.

DSS: The Payment Card Industry Data Security Standard (DSS) is a worldwide information security standard assembled and managed by the Payment Card Industry Security Standards Council.

EBS: Amazon Elastic Block Store (EBS) provides block level storage volumes for use with Amazon EC2 instances. Amazon EBS volumes are off-instance storage that persists independently from the life of an instance.

FedRAMP[sm]: The Federal Risk and Authorization Management Program (FedRAMP[sm]) is a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services. FedRAMP[sm] is mandatory for Federal Agency cloud deployments and service models at the low and moderate risk impact levels.

FISMA: The Federal Information Security Management Act of 2002. The act requires each federal agency to develop, document, and implement an agency-wide program to provide information security for the information and information systems that support the operations and assets of the agency, including those provided or managed by another agency, contractor, or other source.

FIPS 140-2: The Federal Information Processing Standard (FIPS) Publication 140-2 is a US government security standard that specifies the security requirements for cryptographic modules protecting sensitive information.

GLBA: The Gramm–Leach–Bliley Act (GLB or GLBA), also known as the Financial Services Modernization Act of 1999, sets forth requirements for financial institutions with regard to, among other things, the disclosure of nonpublic customer information and the protection of threats in security and data integrity.

HIPAA: The Health Insurance Portability and Accountability Act (HIPAA) of 1996 requires the establishment of national standards for electronic health care transactions and national identifiers for providers, health insurance plans, and employers. The Administration Simplification provisions also address the security and privacy of health data. The standards are meant to improve the efficiency and effectiveness of the nation's health care system by encouraging the widespread use of electronic data interchange in the U.S. health care system.

Hypervisor: A hypervisor, also called Virtual Machine Monitor (VMM), is software/hardware platform virtualization software that allows multiple operating systems to run on a host computer concurrently.

IAM: AWS Identity and Access Management (IAM) enables a customer to create multiple Users and manage the permissions for each of these Users within their AWS Account.

ITAR: International Traffic in Arms Regulations (ITAR) is a set of United States government regulations that control the export and import of defense-related articles and services on the United States Munitions List (USML). Government agencies and contractors must comply with ITAR and restrict access to protected data.

ISAE 3402: The International Standards for Assurance Engagements No. 3402 (ISAE 3402) is the international standard on assurance engagements. It was put forth by the International Auditing and Assurance Standards Board (IAASB), a standard-setting board within the International Federation of Accountants (IFAC). ISAE 3402 is now the new globally recognized standard for assurance reporting on service organizations.

ISO 9001: AWS' ISO 9001 certification directly supports customers who develop, migrate and operate their quality-controlled IT systems in the AWS cloud. Customers can leverage AWS' compliance reports as evidence for their own ISO 9001 programs and industry-specific quality programs, such as GxP in life sciences, ISO 13485 in medical devices, AS9100 in aerospace, and ISO/TS 16949 in automotive. AWS customers who don't have quality system requirements will still benefit from the additional assurance and transparency that an ISO 9001 certification provides.

ISO 27001: ISO/IEC 27001 is an Information Security Management System (ISMS) standard published by the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). ISO 27001 formally specifies a management system that is intended to bring information security under explicit management control. Being a formal specification means that it mandates specific requirements. Organizations that claim to have adopted ISO/IEC 27001 can therefore be audited and certified compliant with the standard.

NIST: National Institute of Standards and Technology. This agency sets detailed security standards as needed by industry or government programs. Compliance with FISMA requires agencies to adhere to NIST standards.

Object: The fundamental entities stored in Amazon S3. Objects consist of object data and metadata. The data portion is opaque to Amazon S3. The metadata is a set of name-value pairs that describe the object. These include some default metadata such as the date last modified and standard HTTP metadata such as Content-Type. The developer can also specify custom metadata at the time the Object is stored.

PCI: Refers to the Payment Card Industry Security Standards Council, an independent council originally formed by American Express, Discover Financial Services, JCB, MasterCard Worldwide and Visa International, with the goal of managing the ongoing evolution of the Payment Card Industry Data Security Standard.

QSA: The Payment Card Industry (PCI) Qualified Security Assessor (QSA) designation is conferred by the PCI Security Standards Council to those individuals that meet specific qualification requirements and are authorized to perform PCI compliance assessments.

SAS 70: Statement on Auditing Standards No. 70: Service Organizations is an auditing statement issued by the Auditing Standards Board of the American Institute of Certified Public Accountants (AICPA). SAS 70 provides guidance to service auditors when assessing the internal controls of a service organization (such as AWS) and issuing a service auditor's report. SAS 70 also provides guidance to auditors of financial statements of an entity that uses one or more service organizations. The SAS 70 report has been replaced by the Service Organization Controls 1 report.

Service: Software or computing ability provided across a network (e.g., EC2, S3, VPC, etc.).

Service Level Agreement (SLA): A service level agreement is a part of a service contract where the level of service is formally defined. The SLA is used to refer to the contracted delivery time (of the service) or performance.

SOC 1: Service Organization Controls 1 (SOC 1) Type II report, formerly the Statement on Auditing Standards (SAS) No. 70, Service Organizations report (formerly referred to as the SSAE 16 report), is a widely recognized auditing standard developed by the American Institute of Certified Public Accountants (AICPA). The

international standard is referenced as the International Standards for Assurance Engagements No. 3402 (ISAE 3402).

SSAE 16 [deprecated]: The Statement on Standards for Attestation Engagements No. 16 (SSAE 16) is an attestation standard published by the Auditing Standards Board (ASB) of the American Institute of Certified Public Accountants (AICPA). The standard addresses engagements undertaken by a service auditor for reporting on controls at organizations that provide services to user entities, for which a service organization's controls are likely to be relevant to a user entities internal control over financial reporting (ICFR). SSAE 16 effectively replaces Statement on Auditing Standards No. 70 (SAS 70) for service auditor's reporting periods ending on or after June 15, 2011.

SOC 2: Service Organization Controls 2 (SOC 2) reports are intended to meet the needs of a broad range of users that need to understand internal control at a service organization as it relates to security, availability, processing integrity, confidentiality and privacy. These reports are performed using the AICPA Guide: Reporting on Controls at a Service Organizations Relevant to Security, Availability, Processing Integrity, Confidentiality, or Privacy and are intended for use by stakeholders (e.g., customers, regulators, business partners, suppliers, directors) of the service organization that have a thorough understanding of the service organization and its internal controls.

SOC 3: Service Organization Controls 3 (SOC 3) reports are designed to meet the needs of uses who want assurance on the controls at a service organization related to security, availability, processing integrity, confidentiality, or privacy but do not have the need for or the knowledge necessary to make effective use of a SOC 2 Report. These reports are prepared using the AICPA/Canadian Institute of Chartered Accountants (CICA) Trust Services Principles, Criteria, and Illustrations for Security, Availability, Processing Integrity, Confidentiality, and Privacy. Because they are general use reports, SOC 3 Reports can be freely distributed or posted on a website as a seal.

Virtual Instance: Once an AMI has been launched, the resulting running system is referred to as an instance. All instances based on the same AMI start out identical and any information on them is lost when the instances are terminated or fail.

Version History

January 2016
- Added GxP Compliance Program
- Twelfth region added (Asia Pacific - Seoul)

December 2015
- Updates to certifications and third-party attestations summaries
- Added ISO 27017 certification
- Added ISO 27018 certification
- Eleventh region added (China - Beijing)

November 2015
- Update to CSA v3.0.1

August 2015
- Updates to in-scope services for PCI 3.1
- Updates to regions in-scope for PCI 3.1

May 2015
- Tenth region added (EU - Frankfurt)
- Updates to in-scope services for SOC 3
- SSAE 16 language deprecated

Apr 2015
- Updates to in-scope services for: FedRAMP[sm], HIPAA, SOC 1, ISO 27001, ISO 9001

Feb 2015
- Updates to FIPS 140-2 VPN endpoints and SSL-terminating load balancers
- Updates to PCI DSS verbiage

Dec 2014
- Updates to certifications and third-party attestations summaries

Nov 2013 version
- Edits to IPsec tunnel encryption verbiage

Jun 2013 version
- Updates to certifications and third-party attestations summaries
- Updates to Appendix C: Glossary of Terms
- Minor changes to formatting

Jan 2013 version
- Edits to certifications and third-party attestations summaries

Nov 2012 version
- Edits to content and updated certification scope
- Added reference to the SOC 2 and MPAA

Jul 2012 version
- Edits to content and updated certification scope
- Addition of the CSA Consensus Assessments Initiative Questionnaire (Appendix A)

Jan 2012 version
- Minor edits to content based on updated certification scope

- Minor grammatical edits

Dec 2011 version

- Change to Certifications and Third-party Attestation section to reflect SOC 1/SSAE 16, FISMA Moderate, International Traffic in Arms Regulations, and FIPS 140-2
- Addition of S3 Server Side Encryption
- Added additional cloud computing issue topics

May 2011 version

- Initial release

Notices