



AWS for Genomics:

Genomic data security and compliance with AWS

Speed and scalability as you want it. Security and compliance as you need it.

DNA is the most personal source of data. Providing the blueprint for who we are, the gathering, storing, analyzing, and interpreting of genomic data requires an unwavering commitment to security and regulatory compliance.

From clinical genomics to population-scale programs, the genomics industry builds on Amazon Web Services (AWS) to deliver a secure cloud environment for building compliant genomics workflows and applications. For almost a decade, genomics organizations have leveraged AWS' robust suite of security tools, purpose-built solutions, and [shared responsibility model](#) to reduce operational burdens, ranging from hosting operating systems down to ensuring physical and environmental security.

With access to the most secure and most extensive cloud offering, genomics organizations like [Illumina](#), [DNAnexus](#), [Genomics England](#), and [Ancestry](#) are able to scale and accelerate innovations while maintaining security & compliance.

Raise the bar on security & compliance with AWS for Genomics

AWS for Genomics provides secure purpose-built solutions, tools, and partner offerings across the genomics workflow.



Data sovereignty

AWS provides the most extensive global infrastructure to support in-country data hosting. With [84 Availability Zones with more than 310 Points of Presence](#), genomics organizations can take full advantage of the cloud and meet domestic and international regulatory standards, including [GDPR](#).



Compliance

AWS supports 98 security standards and compliance certifications, more than any other offering, including HIPAA, HITECH, FedRAMP, GDPR, ISO 27001, and ISO 3425. All AWS services that store customer data offer the ability to encrypt that data.



Data ownership

Maintain existing security and compliance postures including inter-team data enclaves. As the sole owner of the encryption key for each unique data set, no one can see or access your data on AWS but you.



Data provenance & governance

Improve data auditability, and monitor and control authorization using integrated AWS Cloud Services that make it easy to automatically receive alerts and granularly track who accesses and changes data—while controlling data versions.

Achieve industry compliance and regulations faster

HITRUST



FedRAMP



"At the very foundation, we can count on the AWS Shared Responsibility Model to ensure that our underlying cloud infrastructure maintains enterprise-level security and compliance."

illumina

"AWS gives us enhanced security to help us comply with strict patient health information (PHI) data-protection requirements."

FABRIC
GENOMICS™

Services to elevate your security in the cloud

At AWS, security is “Job Zero.” AWS offers a robust portfolio of services designed to help organizations secure their workloads and applications, including:

Identity & access management:

- AWS Identity & Access Management
- AWS Single Sign-on
- AWS Resource Access Manager

Data protection:

- AWS Certificate Manager
- AWS Secrets Manager
- AWS Macie

Detection:

- AWS Security Hub
- AWS CloudTrail
- AWS Config

Incident response:

- Amazon Detective
- Amazon Elastic Disaster recovery

Infrastructure protection:

- AWS Network Firewall
- AWS Shield
- AWS Firewall Manager

Compliance:

- AWS Artifact
- AWS Audit Manager

A shared approach to security

The AWS shared responsibility model helps you manage data privacy, reliability, and security of both the data within the cloud and of the cloud itself. Work with a team of industry specialists to understand and improve your cloud security posture at every stage of the genomics lifecycle—from data creation, collection, and processing to storage and access.

AWS shared responsibility model

Customer

Responsibility for security **“IN” the cloud**

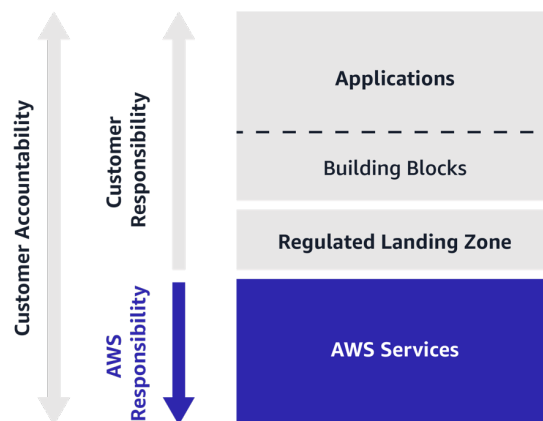
Genomics organizations control access to and management of their data, includes data access permissioning.

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AWS

Responsible for security **“OF” the cloud**

AWS is responsible for protecting the infrastructure that runs all of the services offered in the AWS Cloud.



The AWS shared responsibility model enables genomics organizations to comply with industry regulations and compliances, including:



HIPAA Choose from 180+ HIPAA-eligible services on AWS to help you store, analyze, and share genomic data in a compliant fashion.



GDPR Maintain privacy and protect personal data for EU citizens through end-to-end data encryption and fine-grained access controls.



CLIA and CAP Build reproducible workflows as well as automated reporting to handle lab analyses, sample processing, diagnostic testing, and more.



GA4GH Enable responsible genomic data sharing using cloud services that follow open standards from the Global Alliance for Genomics and Health (GA4GH).

About AWS for Genomics

AWS for Genomics matches the needs of the genomics industry with innovative technologies to provide scalable, secure, and cost-effective tools that accelerate genomic discoveries. From solutions to migrate and securely store genomic data in the AWS cloud, to tools to accelerate secondary and tertiary analysis, to services to integrate genomic data into multi-modal datasets, AWS for Genomics offers a curated portfolio of validated AWS and AWS Partner solutions across the genomics workflow.

To learn more, visit: aws.amazon.com/genomics