

Build a secure and compliant genomic sequencing practice with BaseSpace™ Sequence Hub on AWS

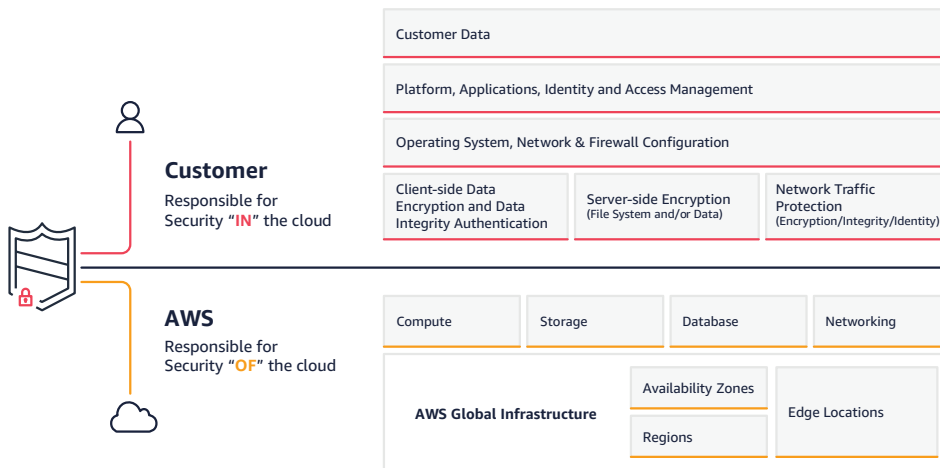
BaseSpace Sequence Hub is a powerful, easy-to-use bioinformatics compute and storage environment designed to manage, analyze, and share data.

Why Illumina is leveraging AWS

Healthcare compliance is constantly evolving. As practices become increasingly global, you not only have to worry about the scalability of your operations, but whether they are compliant with domestic and international regulatory standards. Organizations are turning to BaseSpace Sequence Hub on Amazon Web Services (AWS) to support their genomic sequencing operations because it delivers secure, high-performance computing instances and scalable storage. Instances can be hosted in the AWS Region of your choice, empowering you to meet requirements, such as Health Insurance Portability and Accountability Act (HIPAA) and General Data Protection Regulation (GDPR).

AWS Shared Responsibility Model

AWS works with each customer and partner through a shared responsibility model to manage security and compliance within the cloud, and of the cloud itself.



BaseSpace Sequence Hub is third-party certified on the following regulatory standards:



BaseSpace Sequence Hub on AWS

BaseSpace Sequence Hub is natively integrated with AWS services and your sequencing instruments, enabling you to more easily analyze and manage your data in a secure, compliant fashion.

- Comprehensive security and privacy controls
- Easy sharing and collaboration
- Simple, single-click analysis leveraging public and private tools
- Advanced automation and integration

Key security and compliance capabilities*

End-to-end data security and protection

- Data integrity checks are performed on a consistent basis, with self-heals to prevent data loss
- AES-256 and Transport Layer Security (TLS) are leveraged to encrypt data at-rest and in-transit, respectively
- Customer data is stored synchronously across multiple AWS Availability Zones (AZs), with three sets of backups (hourly, daily, and monthly)

Granular identity and access management controls

- Access control lists, or traffic flow policies, are established on each managed interface to regulate traffic flow
- Workloads run within Amazon Virtual Private Clouds (VPCs), providing virtual isolation for your sensitive data
- Users can dictate policies for login credentials, and configure account lockout practices to prevent brute forcing
- Single sign-on (SSO) capabilities are authenticated using security assertion markup language (SAML)

Audit-ready logging and monitoring

- Sequence Hub produces detailed audit trails describing the lifetime of a sample
- Access and changes to any data are logged and maintained to meet data retention requirements
- Precision monitoring capabilities validate whether instruments integrated to the BaseSpace platform are fully operational and operating in a compliant manner
- Illumina offers system validation for labs that don't have the resources to complete compliance validations on their own

* While many of these features are available on all versions of BaseSpace Sequence Hub, some are only available in the BaseSpace Enterprise subscription tier.

Responsibilities to note

Here's a brief overview of common regulatory requirements you likely need to meet:

HIPAA

Applies to the privacy and security of certain health information in the United States

- Implement physical facility access controls (e.g. AWS data centers)
- Establish role-based access controls to your software systems
- Uphold and maintain data integrity, including data backups and recoverability

GDPR

Applies to the privacy and protection of personal data of EU subjects

- Keep data in the same country as the individual it describes data sovereignty)
- Encrypt data at rest
- Consistently monitor your security posture
- Support disaster recovery capabilities
- Document all steps being taken to achieve compliance

CLIA and CAP

Applies to diagnostic testing of human samples in the United States

- Prevent modifications to published apps
- Maintain records of all result versioning
- Demonstrate the reproducibility of testing, including original analysis results

AWS and BaseSpace Sequence Hub can help you meet these requirements and others that you may be subject to.

Getting started

With Illumina and AWS, customers managing genomic data gain improved management, protection, and access capabilities. To learn more, contact your Illumina or AWS account manager.

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