

BaseSpace[™] Sequence Hub

Cloud-based software for
simplified run management,
monitoring, and
bioinformatics analysis

- Intuitive interface allows easy run planning and configuration of analysis workflows before sequencing, removing touchpoints and streamlining data processing
- Real-time data upload and run monitoring allows users to view run progress and begin analysis immediately after run completion
- Simplified bioinformatics accelerates analysis with a curated and comprehensive menu of intuitive apps, including award-winning DRAGEN[™] secondary analysis applications
- Secure data sharing supports collaboration and engagement with the scientific community



BaseSpace Sequence Hub

Traditionally, labs pursuing next-generation sequencing (NGS) required the services of highly trained bioinformaticians and dedicated infrastructure to perform data management, analysis, and storage. BaseSpace Sequence Hub is a cloud-based genomics run management and simplified bioinformatics solution that relieves many of these burdens. The software integrates with Illumina sequencing systems through an intuitive interface that allows users to streamline run setup and monitoring (Figure 1). BaseSpace Sequence Hub provides access to push-button secondary analysis applications and enables data sharing with collaborators, all within a secure cloud ecosystem with expandable storage for growing laboratory needs.

Run setup and management

BaseSpace Sequence Hub makes sample and run management easy with an intuitive, graphical environment for one-stop library and run preparation.

- Prepare and manage biological samples, libraries, pools, and planned sequencing runs directly in BaseSpace Sequence Hub
- Plan and set a run to start in BaseSpace Sequence Hub without additional setup at the instrument
- Import a sample list or a full run from a sample sheet
- Import biological sample or library information in batch mode for large experiments

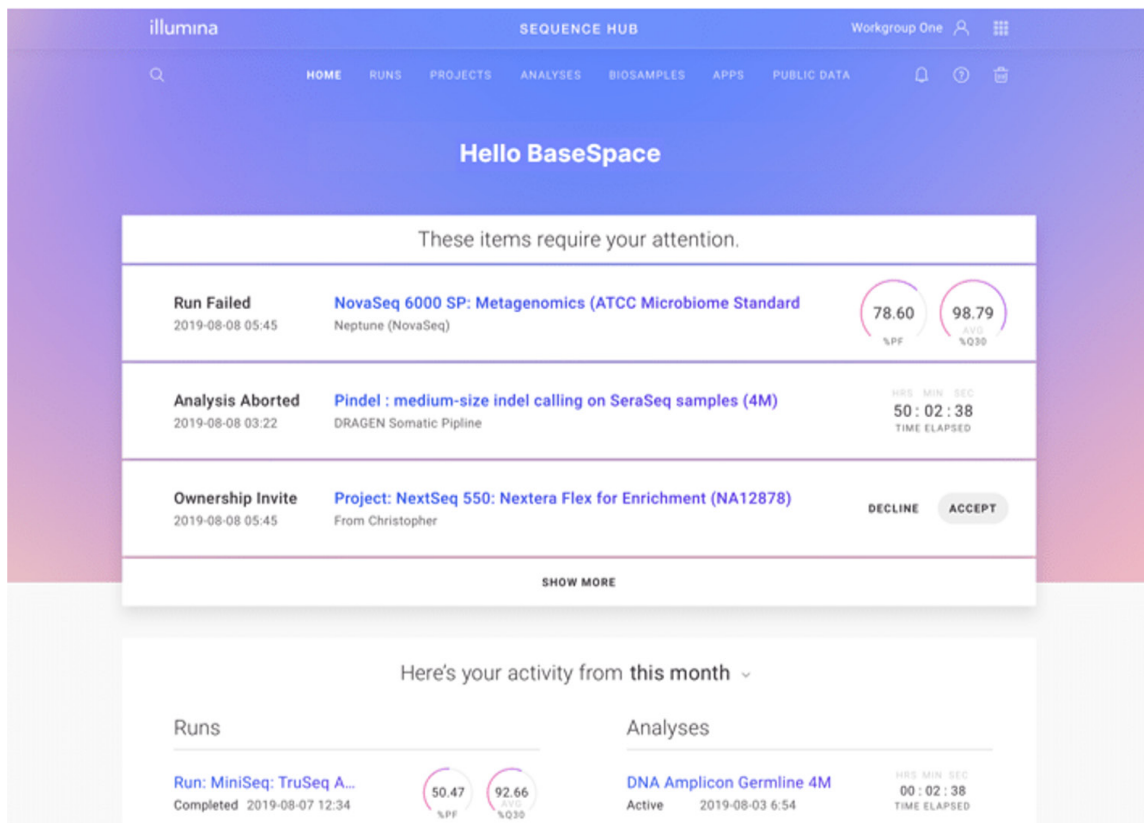


Figure 1: BaseSpace Sequence Hub dashboard—The dashboard has a spotlight section that highlights any sequencing runs or analyses that require attention and the latest sharing and ownership transfer activities. The Run Insights tool allows comparison of sequencing data across instruments. The Recent Activity panel shows the statuses of the most recent runs and analyses.

Real-time monitoring

BaseSpace Sequence Hub is directly integrated with Illumina sequencing systems. With the Runs Dashboard, users can monitor data, by lane or by cycle, as data are generated in real time on the sequencing system. Additionally, users can view quality performance metrics from the browser on any device (Figure 2).

Streamline analysis with automated workflows

A typical bioinformatics analysis workflow comprises many steps, including reviewing lane metrics, post-run demultiplexing, merging data from multiple runs, setting up secondary analyses, and reviewing results. The process is time-consuming and susceptible to human error. BaseSpace Sequence Hub enables users to configure customized workflows to automate the analysis process from sequencing run completion to secondary analysis and results review, prior to data delivery or tertiary analyses.

BaseSpace Sequence Hub enables high-volume laboratories to maximize efficiencies by tracking biosample status throughout the analysis workflow. The interface is highly intuitive and users can review the progress of individual biosamples as they proceed through individual analysis points.

Access DRAGEN secondary analysis apps

Analysis of complex sequencing data sets is a challenge at any scale. BaseSpace Sequence Hub provides a continuously growing list of powerful apps, including award-winning DRAGEN secondary analysis applications, that allow researchers to set up and perform complex data analyses. DRAGEN pipelines, as well as other commercial and open-source pipelines, are made available via a simple and intuitive interface (Figure 3). The expansive menu of powerful and intuitive BaseSpace apps meet the diverse needs of researchers, regardless of informatics experience.

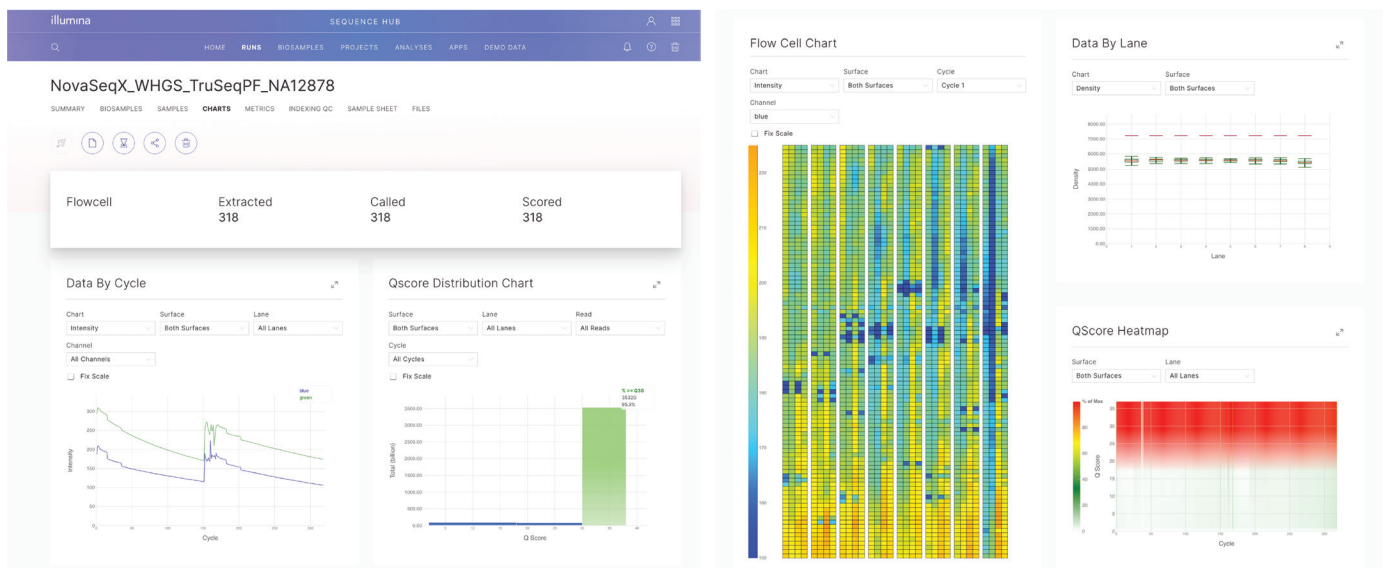


Figure 2: Monitor sequencing run data in real time—Sequence Analysis Viewer (SAV) capabilities are built into the BaseSpace Sequence Hub user interface, allowing real-time, cycle-by-cycle monitoring. The Charts view shows data by lane and by cycle, with Q-score distribution and heat map features. Each graph can be expanded to full size.

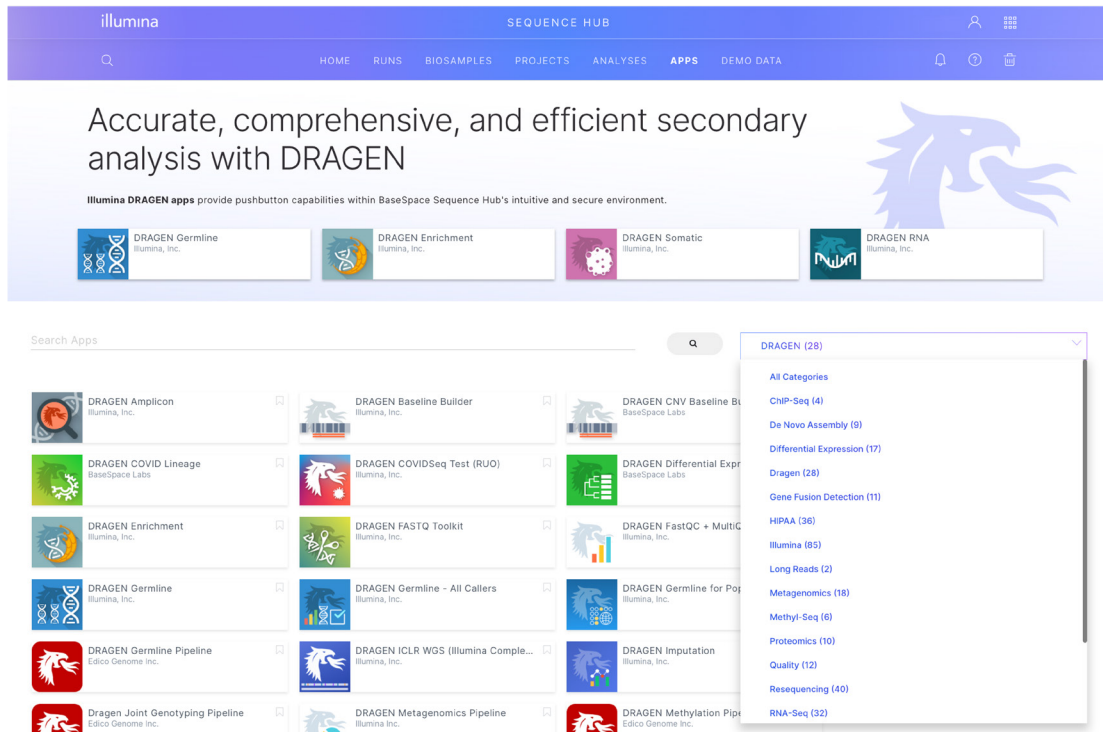


Figure 3: Launch analytical tools on demand—Browse and explore a growing list of apps in the BaseSpace Apps Store and launch selected apps with a single click, directly from the data set.

Collaborate securely with the Workgroup feature

The ability to form a team through the Workgroup feature is available with an upgrade to a BaseSpace Professional or BaseSpace Enterprise subscription. Each BaseSpace Professional subscription is provided with a single Workgroup, while BaseSpace Enterprise tier customers can create any number of Workgroups for better management data access. Workgroups enable simplified collaboration on a global scale:

- The team administrator (subscriber) can invite other users to the Workgroup
- All team members will have secure access with an individual login
- Team members can switch between individual and Workgroup spaces
- In the Workgroup context, team members can access all runs, analyses, and storage usage that belongs to the Workgroup

In large labs with multiple users, accounts and passwords are often shared between technicians, bioinformaticians, lab managers, etc. The Workgroup feature enables each invited individual to log in with individual passwords. This also mitigates issues that arise if a user leaves the lab.

Collaborate easily on a global scale

Researchers frequently need to collaborate and share access to sequencing data and results. BaseSpace Sequence Hub enables users to share raw sequencing data and analysis results, easily and securely, with collaborators across the globe. Shareable links can be easily created and emailed to partners, allowing instantaneous access to shared data and results. Also, data delivery is simplified with the ability to transfer runs and projects effortlessly to collaborators or customers. BaseSpace Sequence Hub makes big data portable and accessible to the people who need it most.

Enhanced security

Security is of paramount importance when deciding to move genomic data to cloud-based analysis and storage. In BaseSpace Sequence Hub, data are protected through various physical, electronic, and administrative measures. Data for upload are encrypted using the AES256 standard¹ and protected by transfer layer security (TLS). Data within BaseSpace Sequence Hub are hosted on Amazon Web Services (AWS), which is compliant with a wide variety of industry-accepted security standards.² Enterprise subscriptions offer an additional level of security. Enterprise customers are provided their own domain and the ability to use their own security assertion markup language (SAML) 2.0 supported authentication service to manage users and passwords. BaseSpace Sequence Hub also supports Enterprise customers in a Health Insurance Portability and Accountability Act (HIPAA)³–regulated environment with a business associate agreement (BAA). For more information, read the [BaseSpace Sequence Hub Security and Privacy security brief](#).⁴

Flexible billing plans

BaseSpace Sequence Hub uses an iCredit system to price data storage services and analysis apps. All BaseSpace Sequence Hub accounts include a quantity of complimentary iCredits to help you get started, with additional iCredits available for purchase. Additional information about iCredit pricing can be found [here](#).

Customers can choose between two flexible billing options: a consumption billing option that invoices iCredit charges each month and a prepaid option that allows customers to purchase iCredits as they are used.

In addition to complimentary iCredits, all BaseSpace Sequence Hub accounts come with 1 TB of free data storage, access to instrument run monitoring capabilities, and free demultiplexing for runs streamed into a customer’s account. Features vary with each level of BaseSpace Sequence Hub subscription ([Table 1](#)).

Table 1: Billing features for BaseSpace Sequence Hub subscriptions

Feature	Basic	Professional	Enterprise
Included storage	1 TB	1 TB	1 TB
Complimentary iCredits	250 ^a	500	500
Payment plans	Not applicable	Monthly billing and or prepaid iCredits	Monthly billing and or prepaid iCredits
Run setup and monitoring	✓	✓	✓
FASTQ generation	Included	Included	Included
Data egress	Included	Included	Included
Data sharing	✓	✓	✓
Advanced security and compliance (encryption, ISO 27001, ISO 27701, ISO 13485)	✓	✓	✓
API and CLI	✓	✓	✓
Number of users	One	Unlimited	Unlimited
Workgroups		One	Unlimited
Premier security (private domain, single sign-on ^b , audit trail, access control)			✓
HIPAA BAA (US only)			✓
Service level agreement			✓

a. 250 iCredits expire after a 30-day introductory trial.

b. Available for systems with control software that support Universal Copy Service—not available for all legacy systems.

Learn more

[BaseSpace Sequence Hub](#)

Ordering information

Product	Catalog no.
BaseSpace Sequence Hub Professional Annual Subscription	20042109
BaseSpace Sequence Hub Enterprise Annual Subscription	15066411
BaseSpace Sequence Hub Consumption Billing	20012931
Illumina Analytics - 1 iCredit	20042038
Illumina Analytics Starter Package - 1000 iCredits	20042039
Illumina Analytics - 5000 iCredits	20042040
Illumina Analytics - 50,000 iCredits	20042041
Illumina Analytics - 100,000 iCredits	20042042

References

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1.800.809.4566 toll-free (US) | +1.858.202.4566 tel
 techsupport@illumina.com | www.illumina.com

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