TRANSITIONING TO THE CLOUD: ESTABLISHING A COLLABORATIVE DIGITAL PATHOLOGY PLATFORM AT THE NATIONAL CANCER INSTITUTE

AN ENTERPRISE DEPLOYMENT OF HALO®, HALO AI, and HALO Link

Growing interest within the NCI community in HALO products necessitated expanding HALO resources and this provided the perfect opportunity to transition on-premises HALO resources to the cloud.

The NCI team took many considerations into account when planning their Amazon Web Services deployment of the HALO platforms.[1] These considerations included:

- Management of the data migration with data from multiple groups, labs, and instruments – each with their own scheduling considerations
- Providing HALO, HALO AI, and HALO Link access to a variable number of users simultaneously, where the number of users could vary drastically according to time-of-day and day-of-week
- Testing a wide variety of use cases from small JPEG tissue microarray images with a large cohort size to 30+ channel fluorescence images of 50 GB+/ image
- Evaluating metrics of system utilization and performance
- Establishing a support structure for both the infrastructure and local software support
- Providing training and support documentation

National Cancer Institute

At the National Cancer Institute Division of Cancer Epidemiology & Genetics (DCEG), the mission is to discover causes of cancer and inform the means for prevention by conducting transdisciplinary epidemiological and genetic research.[2]

HALO® is the gold standard image analysis platform for quantitative tissue analysis in digital pathology. **HALO Link** is a browser-based image management system that gives researchers the freedom to access their images and analysis data anytime, anywhere and to share this data with collaborators worldwide.

"One of the biggest benefits we feel is collaboration opportunities. With a centralized deployment of HALO and HALO Link at the NCI cloud, we can leverage outside expertise both intramurally and extramurally simply by sharing studies to collaborators. A good use case for this within the NCI is when a small research group is strained for pathology support. With the collaborative system, a small research group can temporarily provide access to images under studies to expedite the research effort.[1]"

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Associate Scientist
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BENEFITS OF MIGRATING TO THE CLOUD FOR NCI[1]

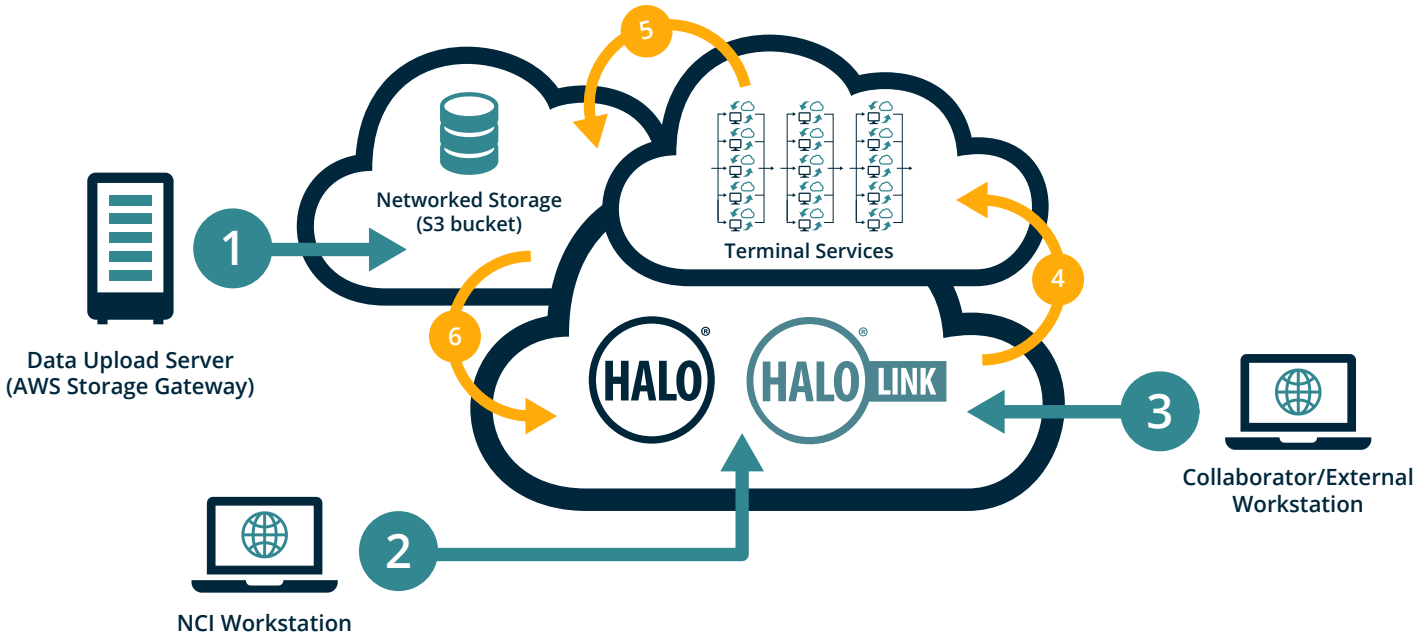
- 50% faster HALO analysis in cloud deployment
- 180% increased adoption of platform as measured by number of users
- Collaboration opportunities expedite research efforts
- Ability to dynamically scale infrastructure according to user demand
- Archival samples can provide data for AI training initiatives through a diverse dataset and ground-truth annotations from expert users
- Creation of virtual cohorts

KEY STATISTICS

- **1,767,178** Images*
- **197,740** Analysis jobs*
- **100+** Users*
- **>13,000** Studies*
- **>300 TB** of Data*

*Data as of November 2020

CLOUD INFRASTRUCTURE OF HALO® AND HALO LINK AT NCI



A high-level overview of the HALO cloud infrastructure at the NCI is shown. (1) Images are uploaded to the NCI Amazon Web Services (AWS) Cloud via a data upload server. (2) Users at the NCI access images in networked storage through HALO and HALO Link using a Remote App on their workstation. (3) NCI researchers and external colleagues collaborate through HALO Link which can be accessed externally through an internet browser. (4) Users submit image analysis jobs from HALO or HALO Link. Auto Scaling of Terminal Services provides a dynamic infrastructure of HALO clients and analysis servers to optimize cost and performance. (5) Image analysis results and metadata are sent to networked storage and (6) this data can be accessed along with the images via HALO and HALO Link. Learn more about the NCI's Amazon Web Services Cloud deployment at our recent webinar and read our press release. [1,3]

[1] https://bit.ly/3n5zkyg | [2] https://dceg.cancer.gov/about/dceg-mission | [3] https://bit.ly/3m0Voes

READY TO COLLABORATE?

Contact us to schedule a HALO or HALO Link demo or reach out with questions on your cloud deployment.

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