

Orion Health Deploys AWS Services to Help Keystone Health Information Exchange Expand



Executive Summary

Keystone Health Information Exchange (KeyHIE) is one of the oldest and largest health information exchanges in the US, and it is considered to be a national leader in health information technology. With Amazon Elastic Compute Cloud (Amazon EC2), Amazon Elastic Block Store (Amazon EBS), and Amazon Relational Database Service (Amazon RDS), KeyHIE can reliably provide secure and comprehensive patient data to its 200 participating organizations. The high availability, strong performance, and increased flexibility of AWS enables KeyHIE to continue to grow its participant base while its clients retain 24/7 access to patient records.

KeyHIE Experiences Unexpected Growth

Since 2005, [Keystone Health Information Exchange](#) (KeyHIE) has worked tirelessly to earn the trust of its clients by putting the patient at the center. Based in rural Pennsylvania, KeyHIE's goal is to make sure that patient data follows patients wherever they receive care, and that the data is easily accessible to any care provider team treating them. Today, 200 organizations and 7.5 million patients rely on KeyHIE's ability to gather data and provide comprehensive medical records for the coordination of patient care in Pennsylvania, New Jersey, Delaware, and Maryland.

Recently, KeyHIE had experienced unusually rapid growth. Its client base increased by 67 percent over a two-year period, and this growth has shown no signs of slowing. While the increase in business was good news, KeyHIE soon discovered that the rapid pace had its drawbacks. The legacy system could not keep up with growing demand, and KeyHIE's clients were experiencing unreliable performance and unexpected downtime. [Orion Health](#), a provider of health information technology and an [AWS Advanced Technology Partner](#), had been supporting KeyHIE's system on its on-premises health information platform, but it was becoming apparent that this platform could not support the increased workloads.

Carlton Cozart, account executive at Orion Health, knew that KeyHIE needed a solution that could expand with its growing business while providing its clients with reliable and secure access to patient data. He also knew that AWS could deliver. "We had migrated a number of other clients to the AWS Cloud," said Cozart. "And these clients saw substantial improvements in system uptime, flexibility, and scalability, as well as cost savings." However, Kim Chaundy, senior director of operations at KeyHIE, needed some convincing that the AWS solution was the right one. "We wanted to make sure that we could deliver clinical data to our clients accurately, securely, and in a timely manner. We were having interruptions in service, and we didn't feel like we were giving our clients the best solution. We needed to ensure that the new platform could reliably support our service." Furthermore, Chaundy was looking for a flexible enough solution to support KeyHIE's continued expansion.

Building a Scalable, Flexible, and Secure Solution in the Cloud

With stability and performance top-of-mind, the Orion Health technical team and the AWS team collaborated to develop a solution that could handle large and complex datasets, perform high value, predictive analytics, and have the flexibility to handle increased workloads.

The solution that the joint team implemented is comprised of Orion Health components installed on [Amazon EC2](#) instances. Data is stored in [Amazon EBS](#) volumes, [Amazon RDS](#), and [Amazon Simple Storage Service](#) (Amazon S3) buckets. The solution resides on a KeyHIE-specific, multi-tiered [Amazon Virtual Private Cloud](#) (Amazon VPC). To ensure data security, the solution utilizes [AWS Identity and Access Management](#) (IAM), single sign-on

About Keystone Health Information Exchange



Keystone Health Information Exchange (KeyHIE) is one of five certified health information exchanges in the state of Pennsylvania. Founded in 2005, it is among the oldest and largest health information exchanges in the US. Currently, 200 organizations participate in KeyHIE, including hospitals, long-term care facilities, home health agencies, emergency medical services (EMS) groups, payers, and private practices.

(SSO), and OAuth 2.0 technology for user authentication and authorization. Applications are protected by [AWS Web Application Firewall](#) (AWS WAF), and all data flowing across the AWS networks is automatically encrypted at the physical layer before it leaves AWS secured facilities. When KeyHIE's information security office evaluated the AWS solution, they found that it exceeded expectations in terms of security.

Expanded Capacity Benefits Clients

The joint team worked to ensure that the transition from the legacy environment was a smooth one. They ensured that all of the custom code was migrated, tested, and validated before moving the first of KeyHIE's clients to the new platform. The team deployed the AWS solution over a two-week period to ensure that there was no disruption in service.

Once the migration was complete, KeyHIE's clients realized the benefits immediately, most noticeably around data retrieval. The move to AWS allowed for seamless delivery of information between different platforms. Previously, most of the information retrieval relied on client queries to other participants in KeyHIE's information exchange. Now, KeyHIE is able to set up queues that also query other health information exchanges in the state of Pennsylvania, enabling clients to seamlessly retrieve clinical data they could not access before.

KeyHIE is now taking this capability to the next level by delivering clinical data to payers on behalf of the healthcare providers in its information exchange. This offloads much of the administrative burden for KeyHIE's clients, saving them time, reducing the potential for errors, and increasing productivity.

The flexibility of AWS supports KeyHIE's continued growth in a number of ways. As the workload increases, the solution continues to provide a high level of performance, and clients no longer experience disruption in service. Additionally, new client onboarding is much more streamlined. Previously, new clients would require a lengthy system evaluation before joining KeyHIE's information exchange. Due to the flexibility of AWS, this evaluation is no longer necessary, and now KeyHIE can rapidly and seamlessly add new clients to its system.

System Stability Helps Build Trust

The Orion Health managed services team continues to maintain the system, but the AWS solution does much of that work for them. With the solution's proactive monitoring capabilities, the team can deal with increased workloads before they become a problem. Before the migration, the Orion Health team was in constant reactive mode as it strove to support an unstable system. Since moving KeyHIE's system to the AWS Cloud, the Orion Health team can be proactive and utilize key performance metrics, such as CPU utilization and latency, to ensure high levels of performance. With this proactive approach to maintaining the system, the Orion Health team is free to spend more time on higher priority projects.

Among the benefits that KeyHIE realized by moving to the AWS Cloud, the most important one is regaining the trust that it had worked so hard to build with its clients. According to Chaundy, "Moving to AWS allowed us to gain that confidence back from all of our members, and now they lean on us to bring them new services. With the move to AWS, our members trust our commitment to stabilize the environment and give them a sound, solid solution."

About Orion Health

Founded in 1993, Orion Health is a healthcare information technology provider whose mission is to advance population health with precision medicine solutions for delivery of care across all healthcare ecosystems. Its technology is currently used by hundreds of thousands of clinicians across the globe and manages more than 100 million patients.

