



we answer the call

GROUPWARE[®]
TECHNOLOGY

Application Performance & Cost Reduction with AWS



NEVRO[®]



About Nevro

Nevro is a fast-growing global medical device company with headquarters in Redwood City, CA. The company provides innovative, evidence-based solutions for the treatment of chronic pain. It has rigorously researched and developed a new therapy that has advanced the state of spinal cord stimulation (SCS). The Nevro Senza SCS System is available in the US as well as Europe and Australia. Nevro has also developed HF10 therapy, an innovative, evidence-based non-pharmacologic neuromodulation platform for the treatment of chronic back and leg pain. HF10 is the only Spinal Cord Stimulation option to be designated as “Superior” by the FDA for chronic back and leg pain relief.

Workload Migration to AWS Utilizing Elastic Block Store

Problem

Nevro needed to move its existing application workload environment, hosted on VMware vCloud Air, to Amazon Web Services (AWS) due to increasing costs, management overhead and the uncertain future of vCloud Air at VMware (vCloud Air was ultimately acquired by OVH.) Nevro needed capabilities around reliable, secure storage with low-latency performance that could scale with point-in-time snapshots.

Goal

Nevro was seeking an environment that could support the company’s growth into various geographies as needed and easily scale up/down while reducing its operational costs without sacrificing performance.

Solution

Groupware performed an evaluation of Nevro’s existing application environment, developed a migration plan and migrated the company’s workloads to AWS utilizing Amazon Elastic Compute Cloud (EC2) backed by Amazon Elastic Block Store (EBS) as primary storage.

The Business Challenges

Nevro Had Three Challenges

1. Previously Nevro chose VMware vCloud Air as its hosting platform. With a renewal approaching, the need to scale, as well as concern over costs and the future of the platform, led Nevro to explore other alternatives. The company needed to seamlessly migrate workloads from one cloud provider to another and needed the expertise in doing so.
2. Nevro had a mix of Windows and Linux virtual machines (VM) that would need to be migrated with the need to minimize downtime. The company needed to minimize downtime for production level applications, one of these being Nevro’s corporate ERP system. Migrating to AWS would allow Nevro to take advantage of existing and new services as they become available.
3. Nevro did not want to sacrifice performance, security, reliability or scalability for their data protection needs.

Without the resources in-house to manage this migration, Nevro searched for support from a trusted partner with a strong background around AWS solutions and thus engaged the services of Groupware Technology.

The Groupware Solution:

During the assessment phase, the Groupware team reviewed Nevro's existing vCloud Air environment to understand the number of VMs, storage requirements, network topology, firewall/port settings, user access requirements and data protection needs, so that a solution could be architected for a seamless migration to AWS. We then designed a VPC architecture to support future growth, availability and resilience.

Utilizing the CloudVelox, a multi-cloud automation and orchestration software, we were able to obtain a baseline EC2 instance and EBS volume sizing template for each VM to be migrated to AWS. Based on performance needs, we examined each application workload (ERP, archive, R&D, file, and Certificate Authority servers to name a few) and determined the IOPS provided by the general purpose SSD (gp2) met their current requirements from a performance to price ratio perspective. EBS volumes are designed to be highly available and durable with each volume being automatically replicated within its Availability Zone to protect the customer from component failure. This will allow the customer to scale their environment as they grow and take advantage of the scale up and down capabilities while controlling costs and protecting their data with encryption and access control policies.

Utilizing EBS volumes in conjunction with snapshots gave Nevro not only the functionality of a point-in-time snapshot recovery from S3 but also the ability to schedule regular backups based on what they deemed appropriate. In addition, they were able to convert a snapshot into an Amazon Machine Images (AMI) should they need to create a new instance.

With CloudVelox, we were able to migrate the workloads to AWS with minimal downtime. We also configured a site-to-site VPN to extend the on-premises AD environment into AWS as well as deploy OKTA SSO integration for easier end-user management. This helped to define assumed roles with least privileged access, therefore creating a more secure environment. Doing so enabled us to provide Nevro with an environment that follows the AWS well-architected framework of best practices for designing and operating reliable, secure, efficient and cost-effective solutions in the cloud.

The migration of 25 VMs was completed with the following services deployed to support the new environment within AWS.

- **Amazon Elastic Compute Cloud (EC2)**
- **Amazon Elastic Block Store (EBS)**
- **Amazon Virtual Private Cloud (VPC)**
- **Amazon Machine Images (AMI)**

The Business Benefits:

1. An architecture that supported what the company had now and what they could potentially have in the future--basically, a scalable design that included mitigation plans for systems that needed to be down for maintenance.
2. A detailed project plan that included extensive testing. Migration failures of production environments were not an option; however, rollback plans needed to be included. Every scenario needed to be thought of.
3. Groupware's resourcing flexibility to allow migrations to happen at Nevro's speed.

A successful migration to AWS Cloud by Groupware resulted in numerous benefits to Nevro, among them:

- Lower cloud costs compared to the vAir platform. Nevro’s main concerns about increasingly high cloud costs and vAir’s tenuous status at VMware were thus alleviated.
- Nevro does not have to commit to a subscription term as AWS gives the flexibility of on-demand usage with a pay-only-for-what-you use service model.
- A high-availability (HA) architecture design allows for growth and scalability.
- EC2 instances backed by persistent block storage volumes offering high availability and durability, secure, low-latency performance with point-in-time snapshots.
- The ability to take advantage of ever increasing new services under AWS as they become available.

The Result:

The result was a scalable, highly available architecture that was implemented as planned with minimal downtime and issues. The month-to-month costs are relatively down but the main advantage for Nevro’s infrastructure team is the ease of use.

“The Groupware team was largely responsible for the success of our migration. They have an excellent technical team but also a team that understood our challenges and worked to satisfy us. In the initial month, we calculated the savings to be about 15%. However, we have seen this grow to 18% in subsequent months,” noted Lance Shinseki Director of Information Technology at Nevro.

