BART Switches to Nutanix Enterprise Cloud

CHALLENGE

BART completed a $40 million business transformation project in 2012, modernizing all of its finance, HR, and maintenance systems using traditional storage systems and HP servers. "We decided to use 3-tier infrastructure for the project, but the environment was never very scalable," explained Ravi Misra, Chief Information Officer at SF Bay Area Rapid Transit. "It was also very time-consuming to deploy new applications with that architecture, and it couldn't provide the stability we needed for our mission-critical apps. We wanted to find a seamless, high performance IT solution that was easy to manage—one without all of the moving parts that you get with traditional architectures."

SOLUTION

Starting with VDI

After a thorough study, BART selected Nutanix for its virtual desktop deployment project in 2013. "Since we are a public organization, getting IT budgets approved in a timely manner is always a huge challenge," noted Misra. "The procurement process was quite complex with our 3-tier solution. And once we received the new hardware, installing and integrating all of the different components took a lot of time. That was one of the key reasons we chose the Nutanix hyperconverged systems. With just one vendor, the procurement and deployment processes were much simpler."

BART initially purchased four NX-3450 systems and one NX-3150 node for its virtual desktop deployment. "I must admit, our IT team was a bit hesitant to use Nutanix at first, because they were much more comfortable with the legacy technologies they'd been using for the last 20 years," Misra said. "But once they started working with the Nutanix systems, they found it so much easier to manage than all of the disparate technologies they used before."

Deploying a New Private Cloud

After achieving great success with the VDI project, BART gave Nutanix the 'go ahead' for its internal cloud platform project and purchased an additional NX-7100 node. "We decided to build our own private cloud several years ago, but until Nutanix came into the picture, we weren't able to implement the solution in-house," Misra explained. "Building a private cloud using traditional architecture would have required us to integrate multiple server, storage, and networking solutions from six different vendors. The cost and complexity of that approach was over the roof, so we chose the Nutanix hyperconverged platform."

When asked why BART chose to deploy a private cloud instead of using a public cloud offering like AWS, Misra replied, "We are subject to a lot of regulatory requirements that dictate where our data can reside. For many of those apps, a public cloud is not an option. The economics of public vs private clouds also played a role. All of the public cloud options we looked at were more expensive than creating our own private cloud. Plus, our general manager was thrilled that we decided to deploy cutting-edge, easy to manage technologies with Nutanix."

> **"With Nutanix, we can now focus on delivering services to our business units, not managing our data center."**
>
> – Ravi Misra, Chief Information Officer, SF Bay Area Rapid Transit

Your Enterprise Cloud Platform

Launching the Oracle Virtualization Project

Another project deemed impossible before Nutanix was BART's Oracle database virtualization initiative. "We looked at several different solutions for virtualizing our database environment, including Oracle's ExaData," Misra shared. "But since ExaData is a proprietary system, we would be tied to that solution for a very long time. Nutanix engineered a system that works perfectly for us. It provides us with the performance we need for our Oracle environment, simple management, and all of the visibility we need to effectively understand what is happening with our database operations."

RESULTS

Fast Deployment

"It took us almost eight months to deploy our old EMC SAN," Misra reported. "It was a very complicated process, requiring a huge number of trained specialists. With Nutanix, we were up and running in just a few days. After we deployed the systems, we migrated 50 to 60 TB from each of our two SANs over to Nutanix within a few weeks. It really is a world of difference for us."

BART is now using Nutanix for all of its enterprise workloads, including its mission-critical maintenance software and the Maximo work order system. "These are the systems that directly impact the availability of trains," Misra explained. "We have a very small window where we can perform maintenance and repairs on our trains, from 2 to 4 a.m. each day before they start regular service. Nutanix is enabling us to keep our trains running in optimal condition and on-schedule, improving the transportation experience for all of our passengers."

Lower CapEx and OpEx

"We obtained a 30% reduction in CapEx by moving from the 3-tier environment to Nutanix," Misra reported. "But the savings are much more than just our technology acquisition costs. We were able to cut the number of IT specialists needed to manage the environment in half by moving everything to Nutanix."

Better Visibility

BART is now using Nutanix Prism to manage its enterprise cloud environment. "Troubleshooting is much easier with Nutanix because of the great visibility we get with the Prism interface," noted Misra. "If there are ever any issues with the database or applications, we can quickly pinpoint the problem by looking at a single management interface instead of 10 different consoles with our 3-tier infrastructure."

Easier Scalability and Faster Time to Market

"Nutanix gives us the ability to easily scale on demand—something we never had before," Misra said. "Since we don't have to guess at future growth when we start a new project anymore, it makes planning and budgeting so much easier. With the ability to add capacity on the fly, Nutanix has also improved time-to-market for all of our new IT projects and services, resulting in at least a 25-30% reduction in project development time."

3x Reduction in Footprint and Power

By moving from its traditional EMC SAN infrastructure to Nutanix, BART was able to reduce its data center footprint from six racks down to just two. "At BART, we have a corporate initiative to 'go green' whenever we purchase new infrastructure," noted Misra. "The 3x reduction in footprint and power with Nutanix is helping us meet our strategic plan initiatives for environmental sustainability and cost reduction."

Better Disaster Recovery

BART currently operates from two datacenters, a primary site for production and development workloads, and a secondary site for disaster recovery. "It is really simple to move workloads from one data center to the other with Nutanix. If there ever is an issue or disaster, we can immediately switch over to the other data center to ensure uninterrupted operations," Misra noted.

Recovering from a 'Perfect Storm' of Failures

BART experienced a catastrophic system failure on its EMC VNX system in 2015. "Our enterprise apps were still running on the EMC SAN at that time," Misra recalled. "We experienced a series of failures that caused a complete meltdown of our IT systems. Even with the RAID scenario that EMC had designed, multiple disk failures made it impossible to recover our data. We were scrambling when the EMC SAN went down, so we called Nutanix. Within a matter of hours, Nutanix assembled a huge team of support engineers and professional services specialists who were able to quickly triage and remedy the EMC problem."

"Nutanix was able to get our operations back up and running in less than a day—even though it wasn't their systems that crashed," Misra shared. "I can't imagine how long it would've taken to recover if we had to call 10 different vendors for help, versus just calling Nutanix. It's great to know we can rely on Nutanix in crisis."

NEXT STEPS

BART is currently using the VMware vSphere hypervisor. "We are looking at using Nutanix AHV as an alternate hypervisor in the future," Misra said. "We use a lot of commercial-off-the-shelf (COTs) products, so as long as AHV is certified with all of the different products we use from Oracle and IBM, then we would consider using AHV to simplify our environment and save on licensing costs."

BART's cyber security team is now getting ready to update the company's police application infrastructure. The team weighed Nutanix's ease of management against the need to deploy a standalone (data center in a box) environment due to security policies. The security team was well down the path with a 3-tier solution from HP and EMC, until they found out how Nutanix could simplify the storage deployment while consuming far less space (22U vs 4U per site)—without sacrificing performance. They quickly made the decision to deploy the BART Police application on Nutanix. The project is now well under way, and should be completed within a few months.

"Nutanix enables us to focus on delivering services to our business units, not just managing the data center," concluded Misra. "It's nice to be able to start the conversation with our business units on the services level, rather than how we're going to provision infrastructure for their projects. Nutanix is a huge game changer for us. It's hard to imagine any technology platform that would provide anywhere near the benefits we've seen from Nutanix."

COMPANY
SF Bay Area Rapid Transit (BART) is a public transportation system that connects San Francisco, California with cities in the East Bay and suburbs in northern San Mateo County.

INDUSTRY
Transportation / Logistics

BUSINESS NEEDS
BART wanted to create a new private cloud environment that was easy to manage and scale, refresh its BART police application infra-structure, and add a new DR location.

SOLUTION
› Nutanix Enterprise Cloud platform

› Nutanix Prism management solution

› VMware ESXi, VMware Horizon View, Oracle databases

BENEFITS
› Seamlessly launched a new private cloud for all enterprise apps

› Cut management time in half

› Reduced deployment time from 8 months to just a few days

› Reduced footprint and power requirements by 3x, without sacrificing performance

› Achieved a 25-30% reduction in application deployment time

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