US City Embraces IT Modernization to Energize Service Delivery

Case Study

Overview
Boosting service quality and reliability

One of the largest American cities, with over one million residents, employs more than 15,000 individuals to support general administration, fire and police departments, public utilities, libraries, and parks and recreation facilities.

The administration decided to get rid of its legacy Vblock infrastructure, which was running end-of-life (EOL) hardware and an end-of-support (EOS) version of VMware Vsphere. This legacy system was hosting close to 200 servers, which had to be moved to a new one to boost service quality and reliability.

Zensar's brief:
Perform seamless migration of application workloads from the old EOL/EOS system to a cutting-edge system, ensuring compliance and enhanced service resilience.

Beyond the brief:
Guided by our commitment to "experience-led everything," we made sure that our focus was not just on technology, but on the entire solution delivery experience.

Challenges
Held back by outdated tech

The client's team faced a whole host of challenges with operations and migration planning due to the aging systems:

- **Risk of disruption:** Migration was inevitable as the Vblock infrastructure was reaching EOL/EOS and its performance was steadily declining. Moreover, in the event of a system failure, resolution would have been difficult and time-consuming.
- **Lack of compatible tools:** There were no migration tools compatible with the existing version, as it has been EOL since 2018. This made it challenging to migrate without much downtime and application impact.
- **IP address dependency:** It was not possible to change the IP addresses for close to 50 workloads. So, the IP addresses had to be retained for those workloads after the move.
- **Inefficient data reclamation:** The legacy storage solution was using the traditional VMware virtual machine file system (VMFS) data stores. This required frequent data reclamation, as auto reclaim was not supported.
- **Unoptimized storage:** Space released by deleted blocks from the OS were not reclaimed by storage pools, which were frequently filling up and causing high-severity issues.
- **Poor scalability and resilience:** Even as storage was running out of space, there was no scope for adding additional storage disks. Moreover, in case of disk failures, restoration was delayed.

Solution
Seamless migration to modern IT infrastructure

With meticulous planning, we moved close to 200 mixed workloads, both prod and non-prod, from legacy infrastructure to one that's more reliable, complaint, and efficient.

Solution priorities: After gaining granular insights into the client's technology ecosystem and the needs of the user base, we defined these priorities to improve IT performance:

- Build a private cloud to enable on-prem hosting while leveraging a cloud-based subscription model to boost agility and cost control.
- Upgrade virtual servers after moving to the new infrastructure, so that they were no longer running outdated VM tools.
- Resolve multiple high-severity issues caused by bad disks and pool auto-reclaim issues, helping to maintain storage SLAs in the green.
- Ensure that there were no more complaints about storage pools filling up and storage space constraints.
- Deploy new infrastructure with the provision to expand resources to accommodate a surge in demand.

Team composition: We put together an expert team for the migration, including a project manager, data center architects, and engineers.

Technology stack: Workloads were moved to hybrid cloud infrastructure. Some workloads were moved to on-prem VMware Cloud Foundation (VCF) infrastructure, while others were moved to a cloud cluster using VMware Cloud on AWS (VMC on AWS).

We built the on-prem VCF infrastructure on HPE hardware, using the GreenLake monthly subscription model, enabling cost optimization.

Migration approach: Our discovery process revealed multiple migration challenges: the legacy infrastructure not supporting any migration tools, IP address retention, multiple unidentified servers in the infrastructure, and space constraints. We addressed these issues with this implementation approach:

- Leveraged Rubrik to move workloads to the on-prem VCF infrastructure.
- Used VMware HCX to move workloads to the cloud (VMC on AWS).
- Made necessary changes in the gateway and created overlay segments within the same subnet in the NSX-T infra to retain the same IP address for some of the workloads.
- Carried out application-to-infrastructure mapping and network traffic analysis, using Aria.
- Followed a standardized decommission process for Vblock to reduce the data center footprint and power utilization.

Quality assurance: We ensured that the system met the required standards with a proven testing strategy and rigorous QA processes. For each group of servers that were moved, we brought together the application vendor and city departments to carry out extensive application and functional testing and resolve all outstanding issues.

Solution enablers

- **VCF**, a comprehensive software-defined stack, includes VMware vSphere, VMware vSAN, NSX-T, and VMware Aria Suite. It provides a complete set of software-defined services for compute, storage, and network.

- **VMC on AWS** enables seamless integration with existing VMware environments, enabling easy migration and scalability. It also offers the flexibility of cloud resources with the familiarity of VMware tools, reducing complexity and operational costs.

- **HPE GreenLake** subscription model enables the client to reserve the capacity it estimates will be utilized and keep the rest as variable capacity. The client is charged only for the variable capacity that is used.

Impact
Better service and cost efficiency

- Improved infrastructure availability, performance, scalability, and security
- Reduced MTTR for service outages
- Lower operational costs associated with data center hosting and Vblock maintenance
- Elevated customer satisfaction scores in surveys

Business outcomes: The migration solution enhanced performance, functionality, capacity planning, and reporting with extraordinary cost savings enabled by the cloud subscription model.

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