How the cloud helped Portland schools transform IT operations

Large school districts face some of the most multifaceted computing demands of any organization today. Teachers and students need fast networks and constant connectivity, while administrators and IT teams require tight security and system flexibility.

Modern cloud technologies can help school IT leaders meet and exceed these demands, as demonstrated by a recent migration project in Portland, Oregon.

"We can quit worrying so much about internal IT infrastructure," says Don Wolff, chief technology officer for Portland Public Schools. "And we can focus more on the outcomes we want for our students and staff."

Challenges: Modernizing IT, migrating ERP to cloud

Portland Public Schools (PPS), Oregon's largest district, serves more than 45,000 students and nearly 9,000 employees with an IT infrastructure sprawling across some 100 buildings.

In 2019, PPS migrated its enterprise resources planning (ERP) software to the Amazon Web Services (AWS) Cloud. Aging network hardware, inadequate wireless infrastructure, and other soon-to-be obsolete hardware strengthened the district's resolve to modernize.

"Our data center requires a significant upgrade to support today's demands," Wolff says. "We're looking to get out of the data center-hosting business as quickly as we can."

With a small IT staff, the district lacks the resources to maintain, update and secure a data center and its sprawling network amid rising cyber threats.

Like most public sector organizations, the district deals with high IT staff turnover and consistently loses institutional knowledge when employees move to the private sector. Outdated technologies also posed a challenge, especially when everyone from preschoolers to superintendents is using the latest, greatest mobile devices and applications in their personal lives. When COVID-19 hit, the district needed cloud-based technologies like virtual desktop infrastructure (VDI) so students could use applications like computer-aided design (CAD) on their laptops. And the district needed e-signature capabilities for contracts and other legal documents. Cloud infrastructure was central to meeting these needs.

Solution: AWS architecture, virtual desktops, and more

The biggest job was migrating the school district's PeopleSoft ERP application to the AWS Cloud. Partnering with an expert AWS system integrator for the migration freed the PPS IT staff to find ways to make the application more secure and effective in its new home in the cloud.

A working relationship with AWS proved fortuitous when COVID arrived. "AWS provided the virtual desktops," Wolff recalls. "That was crucial during the pandemic."

VDI essentially streams an operating system onto the screen of a computing device. This enables a simple tablet computer to operate complex software like the Adobe suite.

"Students can do high-end work on a low-end device, which made comprehensive distance learning tolerable during the shutdown," Wolff adds. "If we didn't have the AWS pilot infrastructure in place, it would've been a much more painful transition for our staff and our teachers to stay productive in the shutdown."

AWS security teams provide comprehensive monitoring, maintenance, and management of the cloud infrastructure, delivering expertise far beyond the school district's capacities. "The cost to hire security staff to manage and maintain the vast infrastructure we need would be prohibitive for a school district of our size," Wolff says.

PPS also joined two AWS Executive Briefing sessions to discuss topics like data warehousing and Amazon Connect contact center solutions. Executive Briefings dig deep into business and technology strategy, keeping AWS clients apprised of the latest industry trends. Moreover, the sessions helped PPS map out ambitious projects like replacing their ERP system over the next three to five years.

Results: Higher usage of ERP, better path to the future

Migrating the ERP system to AWS meant PPS staff could access

the app on any internet-connected device. "Access to the critical ERP app increased by 50% because it wasn't on-site anymore," Wolff says. This means teachers can do things like checking their pay stubs from home on a Saturday morning and accounting clerks can track financial matters while taking a child to soccer practice.

Essentially unlimited storage and high availability in the cloud help the district minimize downtime. AWS can handle all the bandwidth demands of a sophisticated ERP application and it can ensure the district can implement a comprehensive backup-and-recovery program.

Moreover, the district has access to advanced security and networking expertise, which eases staffing pressures. "We couldn't have done this work without all of the expertise that our partners from AWS bring," Wolff says.

Competition for cloud customers gives AWS research-and-development teams a strong incentive to stay on the leading edge of cloud technologies. This pressure to constantly improve helps PPS future-proof its IT environment.

If the PPS IT team needs to move IT workloads around, the AWS experts can help them nail down all the details of the system architecture. "They show us all the steps to get the best possible experience and we rely on that incredibly."

Cloud modernization best practices

Wolff offers some recommendations for getting the best performance from a cloud modernization:

Secure buy-in. District executives and elected leaders will need to be shown the value of switching to an operating-expenses model from the traditional capital-expense framework. Leaders readily grasp the value of purchasing data center hardware. But they may not realize the expense of support, updates, security, and maintenance that a cloud provider takes on.

Start with a mission-critical application. PPS migrated its ERP functionality, which people use every day, to demonstrate the value of a modern cloud infrastructure. "You want visible wins that will create buzz about how you've opened up opportunities to deliver services in ways that couldn't be done before," Wolff says.

Avoid vendor lock-in. Districts need an open, flexible data architecture to help ensure their systems can communicate with other systems both today and years from now.

Organize backups and virtual machines (VMs). The scale and flexibility of the cloud expand opportunities to deploy virtual machines and craft thorough backup-and-recovery strategies.

Test systems in parallel before cutover. It's essential to test your migrations thoroughly in a parallel environment to work out any bugs and minimize user disruptions during system cutover.

Monitor usage and cost. "We've heard enough horror stories," Wolff says, alluding to common anecdotes of unwatched cloud resources accidentally racking up huge cloud bills. "We're very diligent on spinning down things that we don't need and only using what we do need."

Let your vendors help. Cloud vendors know how to avoid pitfalls and maximize system performance. "Our partners at AWS are truly invested in our success, and that's been pretty awesome," Wolff says.

Building a cloud-centered future

The cloud does more than resolve the conventional data center challenges of on-prem computing, networking, and storage. It paves the way for advanced applications like artificial intelligence and machine learning that can make districts more efficient while improving student outcomes.

"It opens up a whole universe of opportunities to deliver services that aren't available if you're locked into on-premises systems," Wolff says. With strong implementation partners and support from AWS, "we now have avenues we just couldn't have seen as possibilities before."

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