

Boulder Valley School District

Journey to the Cloud

February 2019

Districts often worry about transitioning servers from on-premise data centers to the cloud. However, when Andrew Moore became the CIO of the Boulder Valley School District (BVSD) in Colorado, he knew that cloud server hosting would reduce IT system complexity and improve data security. Based upon his experiences in private industry and utility computing - the predecessor to cloud computing - Moore had deep expertise in the use of cloud services.

BVSD is a combination of mountain, urban, and suburban environments, with about 20% of the population qualifying for free and reduced lunch. It is located in the foothills of the Rocky Mountains and includes approximately 30,000 students in 56 schools over 500 square miles.

CHALLENGE

The district transition to the cloud began when BVSD's customized ERP system reached end of life and could no longer be upgraded. Later challenges, such as flooding in the IT building and the need to support a Windows environment on Chromebooks, continued to drive the journey. Each challenge presented an opportunity to leverage the capabilities of cloud computing.

APPROACH

As a first step, BVSD replaced its fragile ERP system with a hosted, non-customized solution. The vendor sub-hosted the solution on a cloud services provider platform. Based on this initial experience, the district began transitioning to other cloud services.

JOURNEY

After their successful ERP move, BVSD became the first district in Colorado to move to a cloud-based Student Information System (SIS). Their system runs on a single-tenant cloud infrastructure with full https. These moves significantly reduced the system management time and effort required, making it possible to repurpose staff for security engineering, network engineering, and cloud liaison work.

With the ERP and SIS moved to the cloud, BVSD then moved 110 servers to a hosting facility in Denver with backups in Phoenix, including real-time replication and hot failover capability between sites. The vendor provides intersite connectivity and data mirroring. Shortly after the move, BVSD's IT building experienced 6 inches of flooding, further demonstrating the value of cloud hosting.

For the future, BVSD will be doubling down on the cloud with the piloting of desktop-as-a-service. This allows students who need access to a Windows environment - such as a programming for a computer science class - to access it via a browser tab on their Chromebooks. The district pays for the windows environment access by the hour, rather than having to invest in dedicated machines and licenses. Students can also access the environment for home, making it easier for them to complete homework.

The district's bandwidth usage has grown steadily following the launch of a 1:1 program. They are currently served by two redundant 5GB links and plan to increase bandwidth as needed to meet increased capacity needs. On-premise infrastructure is minimal, primarily their DHCP and DNS servers. Even their phone systems are remotely hosted, following a transition to a cloud-based VOIP provider in 2018.

TAKE-AWAYS

BVSD identified the advantages of moving to the cloud:

Reduced complexity: The district no longer needs to anticipate developments in server infrastructure technology or maintain staff expertise in server hardware and operating systems. Instead, these systems are managed by cloud service providers with service level agreements committed to specific performance guarantees.

Increased Reliability: District's system uptime has increased significantly. If there is an outage the cloud service provider has a host of experts to immediately address it.

Enhanced Security: The physical security of the cloud service provider is far better than that of their previous local data center that was hosted in a wing of the high school. Logical security is also improved, since the cloud service providers have dedicated security engineering teams.

Simplified Budgeting: Instead of facing large capital expenses, the transition to cloud services allowed the district to shift costs to monthly operating expenses, simplifying the budgeting process.

This paper is part of [CoSN's Smart Education Networks by Design \(SEND\): Cloud Initiative](#)

Thank you to the following sponsors for their support:

Amazon Web Services, ENA (Education Networks of America), Google for Education, Microsoft

Consortium for School Networking 1325 G St, NW, Suite 420, Washington, DC 20005



Permission is granted under a Creative Commons Attribution + Non-commercial License to replicate, copy, distribute, and transmit this report for non-commercial purposes with attribution given to CoSN.