State Department Avoids $6.3 Million in Costs with Cloud-Based Messaging System

Overview

Country or Region: United States
Industry: Education—K-12

Customer Profile
The Frankfort, Kentucky–based Kentucky Department of Education (KDE) provides resources and guidance to the state's 1,221 schools and 174 districts. KDE has approximately 400 employees.

Business Situation
KDE, a long-time user of Microsoft Exchange Server, wanted to upgrade from Microsoft Exchange Server 2003 to consolidate its infrastructure and offer enhanced messaging capabilities to users.

Solution
KDE upgraded to Microsoft Outlook Live, which is based on Microsoft Exchange Server 2010, for its 700,000 student, faculty, and staff users.

Benefits
- Improved IT staff productivity
- Enhanced educational experience
- Cost avoidance of U.S.$6.3 million
- Strong foundation for future collaboration

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The Kentucky Department of Education (KDE) provides services to the 174 school districts across the state and sought to improve communication and collaboration for teachers and students. KDE upgraded from Microsoft Exchange Server 2003 to a cloud-based Microsoft Outlook Live solution, available through Microsoft Live@edu and powered by Microsoft Exchange Server 2010. KDE conducted the upgrade to 700,000 mailboxes overnight, giving individual districts choices in how to structure their messaging. The upgrade relieves KDE staff, students, and teachers from mailbox size limitations and gives them the flexibility to extend the learning environment. KDE has reduced its management burden and increased system reliability because the messaging environment is maintained in the cloud by Microsoft, and it has avoided U.S.$6.3 million in costs over a four-year period.

Microsoft®
Exchange Server 2010

Situation

The mission of the Kentucky Department of Education (KDE) is to prepare all Kentucky students for next-generation learning, work, and citizenship by engaging schools, districts, families, and communities through excellent leadership, service, and support. One of the resources that KDE provides is a statewide email system, with a common global address list (GAL), which the state's 174 school districts use for communication. "The rationale behind establishing common communications technologies throughout the state has been to break down geographical barriers among individual schools and counties," says Chuck Austin, Product Manager at the Kentucky Department of Education.

KDE has provided enterprise technology services, including email, to the state's school districts since 1994. Since that time, KDE has relied almost exclusively on various versions of Microsoft Exchange Server. "We've stuck with Exchange Server over the years because of its easy migration strategies, positive user experience, and familiar look and feel," says Austin.

The department gradually shifted from its initial setup, in which districts carried the burden of system installation and management of physical server computers onsite at every district, to a scenario that used centralized management, the Active Directory service, and standardized images of Microsoft Exchange Server 2003. Despite the move away from decentralized software management, KDE still had to have a distributed physical architecture because the state's standardized, T1-based wide area network (WAN) infrastructure limited further consolidation efforts.

Communication Requirements

As part of its continuous improvement efforts, KDE has worked to move students, faculty, and staff from basic communication practices toward collaboration, which it views as a critical component of an effective instructional process. "Since our original implementation in 1994, email has probably been the best mechanism we've had to communicate simultaneously with large groups of users and the one consistent method we've had to collaborate with them," says Austin. These exchanges take place among students; students, teachers, and administrators; school districts; and between KDE and all stakeholders.

However, supporting that communication came with challenges. Kentucky has a statewide Internet safety law which requires KDE and school districts to ensure that access to electronic resources is as safe as it can be. The ability to monitor email activities, especially those of minors, is of critical importance.

Additionally, the department wanted to enhance its users' email experience. Students, faculty, and staff were frustrated by the limited capacity of their email boxes—5 megabytes (MB) for students, 50 MB for faculty, and 200 MB for staff—and by their inability to share content due to email attachment size limitations. "The shortcomings that we experienced with Exchange Server 2003 were somewhat self-imposed because we had business requirements related to GAL visibilities that caused us to do lots of customization with Exchange Server 2003," says John Logan, Messaging and Directory Services Architect at the Kentucky Department of Education.

KDE also wanted to ensure reliable service. "Funding constraints prevented us from providing around-the-clock support for users, but they increasingly want email to be available for use at all times of the day and night," continues Logan. "Our chief

information officer eventually asked that we get out of the high-risk, low-reward email business."

Technology Requirements
As Exchange Server 2003 neared the end of its supported life, KDE assembled an advisory committee of users from around the state to determine what the next evolution of messaging needed to include. The committee's input was critical regarding the obvious requirements of improved reliability, greater capacity, widespread availability, better supportability, and integration with the existing Active Directory infrastructure. KDE also desired to consolidate the state's distributed messaging infrastructure because the statewide WAN now could support a far greater degree of infrastructure consolidation.

Solution
In considering its next-generation messaging platform, KDE turned first to Microsoft. "We thought Exchange Server 2003 was an excellent product, and we have a great partnership with our Microsoft account team, so we have lots of confidence in Microsoft products and the support behind them," says Logan.

KDE began to evaluate Exchange Server 2007, with the intent to upgrade and further consolidate its infrastructure and host a centralized email system at KDE in Frankfort. At that point, however, KDE learned about the upcoming availability of an entirely cloud-based solution called Microsoft Outlook Live, which provides the capabilities of Microsoft Exchange Server 2010 and is available through the Microsoft Live@edu program, a no-cost suite of easy-to-use online services. Microsoft Live@edu also includes Windows Live SkyDrive for storage and Microsoft Office Web Apps for communication and collaboration. "We

were definitely interested but also skeptical, because rarely is anything of real IT value free," says Austin.

After investigating Outlook Live, KDE found that the combination would give the department a cost-effective solution with 10-gigabyte (GB) mailboxes to solve its size-limitation issues. The new solution also meant that Microsoft would be the single point of 24-hour-per-day support. "Plus, using Outlook Live would make it possible to conduct both 100 percent consolidation of our infrastructure and ongoing monitoring of electronic activity," says Austin. "All that and the additional collaboration options that we did not have before made it a win from everyone's perspective—teachers, students, administration, and operations staff."

KDE was so pleased with its option to upgrade to Outlook Live that it did not pursue any other cloud-based solutions. "We wanted to closely integrate this solution with our existing Active Directory architecture, and no other product could do that better than Outlook Live because it is powered by Exchange Server 2010," says Austin. "Additionally, it's critical that we have the technology and legal rights to inspect our own data, which we are given with the Live@edu program, so that was another big point in its favor."

Messaging System Migration
Because of the scale of its migration, KDE sought the help of Microsoft Services consultants in dealing with the complexity of its environment, including the move to Outlook Live. Microsoft Services consultants also addressed difficulties posed by the state's GAL visibility requirements, which involve setting and enforcing specific permissions on a district-by-district basis. The consultants worked with KDE to upgrade the state's Active

Directory infrastructure from one based on the Windows Server 2003 operating system to Windows Server 2008 and developed the migration path for moving all 700,000 users from the on-premises system to Outlook Live, which is powered by Exchange Server 2010.

To aid in the transfer, KDE used a third-party software tool from FullArmor called MailPortal Migrator. (Quest Software has since acquired that tool, and it is now known as Quest Migrator for Cloud Email.) KDE also received assistance from Microsoft Services in developing the connections between the KDE infrastructure and the cloud that would allow for end-user or local district administration and provisioning. "We received exceptional help from our Microsoft Services consultants," says Logan.

KDE and its consultants decided that the best way to deploy the new solution was to conduct an overnight upgrade. "We usually took 12 months to roll out new software to all 174 districts, but we felt that taking a 'Big Bang' approach this time presented the least risk and complexity, so we set out to make sure local IT staff and all our end users were fully prepared," says Austin.

To prepare, KDE created a deployment guide to walk the districts through the change in the environment and spent hours discussing with each district the various options with regard to the upgrade, including the use of the Microsoft Outlook Web App web client in addition to the Microsoft Outlook 2010 messaging and collaboration client or Outlook 2007 client on desktops. Providing individual districts with choices proved popular. "The solution and its toolset met with immediate acceptance throughout the state because districts had a measure of control over what would best serve their needs and

were fully informed about not only the coming upgrade but also what day one would look like following it," says Marty Park, Customer Experience Engineer at Kentucky Department of Education.

Setup and Ongoing Use
KDE took pains to ensure that its new cloud-based configuration would meet its privacy and visibility needs. "Ours is different from the typical Outlook Live architecture in that the faculty and staff for all 174 districts are in one organization, but each district has its students within their own separate organizations," explains Austin. "To satisfy our visibility requirements, we set it up so that teachers and staff members can use the GAL to find and collaborate with each other but students cannot be seen."

One of the features that was most helpful to KDE was the Exchange Management Shell, which is based on the Windows PowerShell command-line interface. Exchange Management Shell provides a command-line interface that KDE and its districts use to automate administrative tasks, such as setting up new email accounts. KDE also uses role-based access control (RBAC) to give a designated district the ability to manage its own permissions without affecting any other district. The state created packaged RBACs at the outset of the solution's rollout to make deployment easier for its districts.

Since the upgrade to Outlook Live through Live@edu, Microsoft has delivered approximately 5.3 million email messages per week for Kentucky schools. "Even at the start, the Live@edu service for Kentucky schools proved to provide much better service than we were ever able to deliver in the past 15 years," says Phil Coleman, Director of Operations and Services for

Knowledge and Information Data Services at the Kentucky Department of Education.

KDE has noted a marked correlation between high email use rates and the districts in which teachers integrate email communications into their instructional practices—for example, elementary-school students submitting their project ideas to teachers for approval, and groups of middle-school and high-school students using email to work together on an assignment. "We're visiting our high-usage districts to see the ways they weave email communications into their day-to-day activities so that we can help others take better advantage of it as an effective teaching and learning tool," says Park.

One such district is Scott County, based in Georgetown, Kentucky. Students at Western Elementary School, which is part of Scott County, had difficulty sharing electronic documents with teachers in the past. "Teachers created workaround solutions by asking students to either bring work on a USB flash drive or save documents into a teacher's particular network folder, which automatically gave students access to some other files as well," says Carrie Garrett, Librarian and Technology Coordinator at Western Elementary School.

Garrett now uses some of her weekly class time with students to show them how to access their Microsoft Live accounts, create documents and groups, and email attachments to teachers. "Now students can share information without barriers and without creating a security risk by using a teacher's account," says Garrett. "We want to establish responsible technology habits at a young age to help our students become good 'cyber-citizens.'"

Garrett envisions email becoming a more integrated part of the state's curriculum, even at the elementary level. "I believe that, in the future, teachers will set up distribution lists not just for parents but for students, too, and that email communication will continue to knock down barriers to learning," says Garrett. "Students will no longer be able to claim that they could not get details about a project because of avenues like email, which they can use to gather complete information from teachers or peers. We're using technology solutions to build accountability and support collaboration."

Benefits

By adopting Outlook Live through the Live@edu program, KDE is reducing its management burden while providing students, teachers, and staff members in all 174 districts with reliable, cost-effective messaging capabilities. "It's a rare opportunity when you increase organizationwide capacity, significantly add functionality, and, at the same time, lower the cost of doing business, but that's exactly what we've done by moving to Outlook Live," says Austin.

Improved IT Staff Productivity

KDE is no longer responsible for monitoring and updating its messaging environment; instead, it relies on Microsoft to provide those services as part of the cloud-based scenario. "Even more valuable than the time we are all saving is the peace of mind we have gained from knowing that the servers that everyone in our districts depend on are being kept up-to-date by Microsoft," says Coleman. "There is a lot of work that our teams do not have to worry about anymore, such as defragmenting hard drives, conducting software updates and backups, and so on."

For years, Coleman would wake at five in the morning and check the status of the KDE servers and network from home. If something were down, he or a member of his staff would have to hurry to identify the problem and fix it.

"I recently woke up early, checked on things from my mobile device out of habit, and discovered no network connectivity," recalls Coleman. "As I was reaching for the phone, I suddenly remembered that Microsoft deals with problems like this now, and I went back to sleep. My staff and I have definitely gained a quality-of-life benefit from not having to drop everything, including sleep, to address problems with the system." Coleman learned later that morning that the outage was extremely brief and only affected mobile device access.

The six IT staff members who used to work on Exchange Server 2003 and at the KDE services desk now have time to learn new technologies and tackle new projects. For instance, staff members who previously managed the state's 200 distributed messaging servers now are delving deeper into Active Directory as they focus on disaster recovery and the customized provisioning that connects the state to the cloud.

Prior to the move, approximately 10 percent of the district's service desk calls had to do with email. That number has dropped 50 percent since KDE switched to Outlook Live. "We are completing new projects faster now and better addressing the business needs of the organization because we no longer have to spend time responding to so many calls. Instead, we can proactively focus our energies on tackling the projects in our queue," says Coleman.

Enhanced Educational Experience

Moving to Outlook Live is having a positive effect on the learning environment throughout the state. "The beauty of our messaging solution is that we essentially moved technology out of the way so that it no longer acts as a barrier for end users," says Austin. "The Microsoft cloud-based solution removes the technical complexity from their world, which drives adoption in the classroom and beyond."

KDE also can make technology accessible to everyone, which is especially important for the 56 percent of students who come from low-income families. "A lot of our students may not have the access to great technology at home, but now they can be on a level playing field," says Austin.

One of the most important elements of the upgrade is that it allays concerns about security and cyber-bullying, a growing problem for many schools. "The more we can demonstrate and convince faculty and staff that this kind of collaboration is a good thing, the more we can bridge the gap between faculty and students," says Austin. Using Live@edu, KDE can implement an anti-cyber-bullying policy that protects students from harassment, a closed campus supervision policy to help administrators prevent students from sending or receiving emails from unapproved sources, and other security and supervisory efforts.

KDE sees its messaging system as a vehicle for extending student learning and making it possible for teachers and students to work together at any time. "It's impossible to accurately depict just how important email will become to instructional practices," says Park. "The upgrade is helping us all get out of the mindset that learning can only happen at a certain prescribed time and place, and that is

making a positive impact throughout the state."

Teachers and students alike now store and share Microsoft Word documents, Microsoft PowerPoint presentation graphics files, and other information on Windows Live SkyDrive to make it available to each other for easier collaboration from wherever they are working. Also, they use presence functionality to contact each other or their peers for help when they see that a particular teacher or student is online and available.

Students and teachers have experienced a minimal learning curve when it comes to using the new messaging environment. "It's phenomenal how quickly our students, educators, and administrators throughout the state got comfortable with Exchange Server cloud-based services," comments Park. "Teachers and students are delighted that their mailboxes and email attachments are no longer so size-limited."

Students and teachers also appreciate the service availability of Outlook Live. "Previously, if a district's server went down, those teachers, students, and staff had no access to email," recalls Austin. "Now they've got multiple ways to access the cloud—from school, home, a library, and so on—using computers or various mobile devices, so they know they can continue to communicate with each other no matter what's going on with the network."

Significant Cost Avoidance
Perhaps most impressive is the fact that KDE has managed to make such improvements while conserving costs. "Typically, huge upgrades to existing infrastructure in the public sector require substantial capital outlay, which is both difficult to obtain and to retain, particularly in tough economic times," says Austin. "We

were looking to operationalize the cost of our messaging system so that we did not have to worry about finding and defending funds every three to five years for new distributed hardware, operating system licenses, software applications, professional services, and ongoing maintenance. By moving to Outlook Live in the cloud, KDE is avoiding U.S.$6.3 million over four years." Funds that KDE can avoid spending at the state level get reallocated to the local districts to support their efforts to advance education in the schools.

Strong Foundation for Future Collaboration
KDE considers its use of Outlook Live as the latest step on a continuing path toward enhanced collaboration in the state of Kentucky. "We view the Live@edu program as key tools for collaboration at an organizational level," says Park. "We want every classroom in every school throughout the state to have the same tools for student projects, challenge-based activities, and other interactive uses."

Coleman adds, "Our switch to Outlook Live has been such a positive experience and provided such a dependable solution that we will certainly look to it as a great model to follow as we move forward with other cloud-based technologies."

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