CDW® PEOPLE WHO GET IT®

MOBILE APPLICATIONS: SEIZING THE OPPORTUNITY

Organizations see big wins after deploying **apps to improve interactions** with customers. Next challenge: transform internal operations.

EXECUTIVE SUMMARY

Organizations of all sizes and types capitalize on the power of mobility by deploying apps that help them improve service, personalize marketing, build stronger relationships with customers and boost revenues. In a surprisingly short amount of time, mobile devices have become indispensable to business. More than two-thirds of Americans own smartphones, while 45 percent own tablets. Those figures climb even higher among professionals.

Forward-thinking organizations look to mobile apps to improve internal operations. As many as 87 percent of business leaders plan to expand the number of apps in use within the next year. The stakes are high, yet few enterprises have the skill set they need to develop and deploy successful mobile apps.

A growing pool of resources is available to help organizations create, deploy and manage enterprise-facing apps the right way. CDW taps those resources to help its customers create a sound mobile strategy and connect with industry leaders who can build customized apps or provide the tools required to develop their own. Using CDW's mobile application management solution, organizations can deploy custom and off-the-shelf apps and manage them successfully.

Mobility doesn't need to be intimidating. With the right partners and tools, mobile apps can streamline workflows, cut costs and transform businesses.

The Promise of Mobile Apps

Eight years ago, the apps Super Monkey Ball and Bejeweled were all the rage with smartphone users of all ages. They were bestsellers among the 500 offerings available when Apple launched its App Store in July 2008.

But apps weren't all fun and games. People used their new phones to read the latest headlines, calculate restaurant tips and shine flashlights in a pinch. Within a few days of the App Store's opening, downloads climbed to 10 million. By June 2015, the App Store had stocked 1.5 million apps and reached 100 billion downloads.

Along the way, apps have evolved from forms of entertainment to relied-upon tools for work and life. Users have apps that wake them up, count their steps, report the day's weather, maintain their calendars, shop for clothes, send bank transfers or deposit checks, and adjust their thermostats.

Users have become so dependent on their smartphones and tablets that it's only natural for organizations to roll out apps to improve their interaction with customers and partners. Enterprises across a wide swath of industries have signed on to the mobile-first mantra and continue to find new ways to bring value to their clients and build stronger relationships with them. For example, airlines allow customers to use their apps to check in for flights, download mobile boarding passes or change seats. Sports teams send discounts on in-stadium food or merchandise to fans and alert them to entrances or restrooms with the shortest lines. Restaurants send alerts to customers when their tables are ready.

Engage Customers, Boost Revenue, Build Brand Loyalty

The average American checks his or her smartphone 46 times per day, according to a study from Deloitte — collectively, that's 8.5 billion times that 185 million U.S. smartphone users look at their devices. Such numbers mean that organizations no longer need to rely on users finding them. Instead, apps provide millions of opportunities for organizations to interact with customers directly.

In addition to improving customer service and engagement, organizations also generate greater revenue through mobile apps. Retailers, for instance, may offer coupons to their customers, but apps also allow them to gather data from their customers' shopping habits, helping them to later offer more targeted or specific discounts. An app user who shops for sneakers but does not finalize the transaction might receive a coupon for 20 percent off their next shoe purchase, for example.

Retailers also leverage beacons for proximity marketing, sending discounts via apps to customers as they enter malls. Beacons also allow retailers to send targeted discounts based on where customers have wandered within a specific store location.

Some retailers let app users preview products, such as downloading a chapter of a book for free from a national bookstore chain, increasing the chance that customers who download will purchase the full title.

Such customer-focused apps work well to build or enhance brand presence and loyalty. Instead of paying for billboards, commercials or direct mailings that customers may or may not see, organizations can instead send specialized messaging, notifications and alerts directly to the devices in customers' pockets.

Mobile apps take brand loyalty to new levels, making it easy to track rewards and motivating users to become repeat customers. Apps also make it easier to shop: Customers can save their shipping and billing information and place orders quickly and easily from any location. They can also receive suggestions within product categories they've shopped before, increasing the chance that they'll buy sooner rather than later. Some businesses, such as Starbucks and the video rental company

How DevOps Fosters App Deployment

Over the past several decades, software development largely followed a straight path: Developers wrote code, tested it, then took it back to be further developed. When ready, a systems operations team took over to deploy and manage the software. Each team would independently perfect their work before handing it off to the next team — a system that worked when organizations created a limited amount of software with a long shelf life.

Those days are gone.

In the eight years since its introduction, Apple's App Store has seen more than 100 billion downloads by mobile device users worldwide. The sheer number of mobile apps available for download or purchase has grown exponentially in volume, creativity and complexity, and they continue to evolve.

To accommodate such growth, application development needed a makeover. Organizations had to figure out how to develop apps quickly and scale them so they could evolve alongside the market. Enter DevOps, an approach to app development that breaks down the walls between development and operations teams and improves collaboration throughout the software development process.

Working together, developers and operations staff focus on small parts of a project. If someone finds a mistake, that component can be repaired without the entire project having to start over from scratch. This means that apps can be adapted quickly as organizational or business needs change.

Plus, DevOps automates much of the creative process, shaving even more time and complexity.

When done correctly, the DevOps approach results in faster development, fewer errors and better-performing apps.

Redbox, have developed apps that allow customers to preorder items so they're ready ahead of time.

Improve Internally

Given the success of customer–facing apps, it's only natural that businesses and other organizations would start to imagine how mobility might also improve their own internal operations.

Enterprise or employee–focused apps make sense in an age when workers may spend little time sitting at a desk. Armed with a smartphone or tablet, workers can visit clients, attend meetings, input data from site visits and work on projects from home, all while enjoying the same access to organizational resources as they would while working at the office.

In the past, when businesses adopted new technologies, they had to sell employees on their value and train them on how to use the technology properly. Because so many employees today already use mobile apps, they're often comfortable adopting work–related apps with little or no training.

Those realities open the door to a wide assortment of apps that can re-create the tasks employees perform on the job or in the office. In many cases, workstaff who use those apps work far more efficiently. Employees who spend time in the field — utility workers, caseworkers, inspectors and police officers — use apps to produce reports, complete with photos and location coordinates, in real time. They're no longer forced to take longhand notes that must be transcribed later. Those workers can also complete forms within apps, further saving time and reducing errors.

Apps can improve communication and collaboration among colleagues and their partners or clients. Employees can use apps to share files easily, update teams, send instant messages to colleagues and participate in video conference meetings.

Organizations can use apps to manage assets. Trucking companies can keep track of their vehicle locations, use sensors to detect maintenance issues and adjust routes based on traffic conditions.

Enterprise–facing apps can increase productivity, simplify workflows and cut expenses, such as printing costs. Salespeople can access product or inventory information and finalize orders while visiting with customers. Inspectors can complete forms and collect signatures electronically. Business and organizational leaders can identify major operating challenges and have apps developed or customized to address them.

Despite their promise, mobile apps still have room for growth: Only 17 percent of enterprises have re-engineered a business process to move it to an app, according to a recent study by CDW. That's poised to change: Eighty–two percent of organizations say custom mobile apps generate additional revenue, and almost all say they help their employees save time.

Recognizing the demand for such tools, app developers have rolled out products and services to help organizations create

and manage apps. CDW partners with industry leaders shaping enterprise mobile app trends, so we're able to offer insight on new developments in this emerging market and in–depth advice on the best tools available.

Deploying a Mobile App

''There's an app for that.''

The premise of the now–famous iPhone slogan, that there's an app for every task or idea imaginable, doesn't seem far off in today's highly mobile environment. Developers have capitalized on pocket–sized creative solutions for just about every aspect or challenge of work and life.

To handle internal functions, for instance, organizations can purchase off–the–shelf apps such as Box for file sharing or Skype for communications. However, reimagining enterprise-specific processes is not as simple as an App Store download. Off–the–shelf solutions don't necessarily offer the specificity users require. In those cases, organizations can opt for custom–developed mobile apps, either fully or partially designed around their unique needs.

Compare a few of the advantages and disadvantages of off–the–shelf and custom apps:

Off–the–Shelf Applications

- **PRO:** When an off–the–shelf app that fits an organization's needs is available in the marketplace, it makes sense to purchase it. In many cases, such apps are created by professionals with wide–ranging experience in mobile app development, and the apps enjoy a broad user base that provides continuous feedback for refinements. Unlike custom apps, they're available immediately and can be deployed quickly and easily. They also tend to be inexpensive compared with the labor and resources required to develop a custom app.
- **CON:** The one-size-fits-all mold of off–the–shelf apps can't accommodate every business need or organizational process. Although some off–the–shelf apps provide a degree of customization that may help them better meet an organization's specific needs, the cost of compromising on features may outpace any savings that could be realized through an off–the–shelf app deployment.

Custom–Built Applications

- **PRO:** There are many instances in which custom apps are worth the investment. They can be designed to address unique needs or challenges, and can be integrated seamlessly with existing infrastructure and operations. Despite the long lead time for development, custom apps can result in more efficient processes for the long term. Once a business opts for a custom app, it must decide how best to create it — either in–house or through a developer.
- **CON:** Customized apps generally require large investments of time and resources up front.

7.5 hours

Average time saved per employee in a 40–hour workweek thanks to custom mobile apps[1]

Going Solo

For organizations that employ the staff required to develop an app in-house, that option may be appealing, as it provides greater control over the process, as well as the end result. In-house teams should have a deeper understanding of the nuances of the organization and its unique requirements, and can apply that knowledge to their app development process.

Relying on in-house developers means that the same people who conceive, create and deploy the app will be available to maintain and fine-tune it after its launch. They would also bring a broad understanding of the app (and the ability to demonstrate how employees can get the most from it) to the table.

When developing apps that will contain proprietary information, organizations might choose to stick with in-house developers to ensure privacy and better protection of the data involved. In-house development is not without its own set of challenges. The greatest hurdle most organizations face is a lack of skilled talent. App development requires new skills that continue to evolve, so even where organizations employ staff with app development expertise, it's often difficult for those teams to keep pace with market shifts. In addition to staff, organizations also must have the infrastructure, including servers, middleware, storage and other resources, required to support in-house app development projects.

For those still looking to retain control over the development process and the app itself, several third-party tools and services can simplify the process and provide a middle ground. A June 2016 Gartner study found that 34 percent of organizations turn to vendors for mobile app development platforms (MADPs), 11 percent use Mobile Backend as a Service (MBaaS) products and 9 percent use rapid mobile app development (RMAD) tools. About 90 percent use native software design kits (SDKs) and 44 percent use open-source tools.

Platform as a Service

Vendors such as Kony, IBM, Xamarin and Appcelerator provide the tools, infrastructure and processes required for successful app development, allowing organizations to focus on creating their apps instead of building the environment to get started. That saves significant time and money, while offering control over app development.

Products such as Kony MobileFabric, for instance, can cut app development time in half. This MADP provides customers with backend Infrastructure as a Service and a set of application programming interfaces (APIs) that can be leveraged to easily add features such as authentication, messaging and location services to a custom app. Organizations can use the product to connect an app to enterprise or third-party systems, and it works with a variety of development tools, frameworks and platforms, including JavaScript, iOS and Android.

Lenoir, N.C.-based Bernhardt Furniture turned to IBM MobileFirst to create an app to replace its paper-based system for placing furniture orders during the biannual High Point Market trade show. Its old system was time consuming and error-prone, so the company set out to replace it through a mobile app. Bernhardt's IT team didn't have the resources or skills to create the app in house, so they turned to IBM Emerging Technologies' jStart team and its Bluemix cloud-based Platform as a Service to create a virtual showroom app for iPad devices. The app houses all of the tools and paper catalogs employees once had to flip through on sales calls, allowing them to locate furniture and place orders directly through the app.

Turning to a Partner

For an IT department that's always stretched thin, choosing a partner to create an enterprise app means internal teams can focus on mission-critical tasks without sacrificing the competitive gains mobility offers. While teams can outsource virtually any service, choosing a partner to develop a custom mobile app makes a lot of sense, and helps teams overcome the complexity and the rapid rate of change in the mobile app marketplace.

Partnering can also mean faster development and greater cost savings. Because vendors make it their life's work to create apps, they can do it more quickly than most teams outside of the app development industry. They can better anticipate hurdles or challenges and are more likely to complete custom projects on time and on budget.

The Major Players

A few of the major app developers for hire today bring a wide variety of benefits to their partners.

Kony: A leading mobile application development platform (MADP) provider, Kony offers cloud-based, cross-platform enterprise mobility tools to build and manage scalable mobile apps. The Kony Visualizer tool (a visual development environment) and Kony MobileFabric together represent a comprehensive MADP, offering everything from data integration and authentication, to analytics and security management.

IBM: This veteran technology company has a track record of developing enterprise-class mobile apps that businesses can deploy across large-scale operations. Its MobileFirst for iOS offerings have helped a dozen industries with their mobile initiatives by providing industry-specific template apps for Apple iOS devices.

Piper: This technology company specializes in proximity messaging and data capturing. Piper's proximity-based messaging platform uses Bluetooth LE beacon technology to deliver local, timely and contextual information to smartphone users. The company works with enterprises to provide custom app development to improve customer engagement, generate robust analytics, track inventory and perform other important functions.

WillowTree: This mobile strategy and app development firm works with organizations of all sizes, across a variety of industries, to create cross-platform apps that deliver digital media, help employees in the field better perform their jobs and manage loyalty or payment programs.

The final product will likely turn out better when it's developed by mobility professionals rather than created in-house. Employees at companies such as Kony, IBM, Lextech and WillowTree (see "*The Major Players*") stay on top of the latest trends in mobility and can provide innovative ideas when it comes to imagining all that the app can do. As problems arise during development, they are also better equipped to resolve them.

For luxury footwear and accessories manufacturer Donald J Pliner, where company sales representatives spend a lot of time on the road, being able to access email and frequently used applications, including Microsoft Word, Excel and PowerPoint, was a benefit offered by Office 365. The cloud-based software suite also includes collaboration tools, such as Skype and Yammer. Donald J Pliner's move from Microsoft's desktop software to its cloud-based suite of applications also proved beneficial because it included mobile device features, and the IT team no longer had to manage an on-premises mail server.

The keys to a successful deployment lay in moving from on-premises email and productivity software to Microsoft's cloud-based servers. CIO Jeff Moss turned to longtime partner CDW for help. Working with another partner, SkyKick, CDW took charge of licensing, design and rollout of Office 365, while providing 24/7 support throughout the implementation.

"The real reason we were able to get this done was because CDW put everything together," Moss says. "Rather than having our staff just maintain hardware, deploy patches and service packs, and wonder whether this piece of equipment or software is up or down, we can focus on pushing the

75%

Percentage of enterprises projected to adopt at least one mobile app development platform by 2020, up from about 33 percent in 2015[2]

envelope, thinking about how IT can contribute to the future of the company."

Challenges in Mobile App Deployment

Just as organizations must exercise caution in selecting and developing apps, it's also important to understand how to deploy them. What follows are a few of the challenges that may arise during deployment, as well as best practices for overcoming them.

Integration

Many apps increase in value when connected to other apps. For instance, an employee can email his or her colleagues an invitation to a meeting that, if accepted, will automatically populate their calendars. During that meeting, presenters could share files with participants without having to leave the video conferencing app. Such integration can be challenging to deploy because the apps likely have different architectures.

Native apps, which are developed for a particular platform or operating system, can be downloaded for use on a specific device, and can be accessed whether online or offline. Web apps, on the other hand, require an Internet connection.

Developed using HTML5, JavaScript and Cascading Style Sheets, web apps represent the mobile version of a website. Their greatest advantage is that they work with a variety of devices and operating systems, so organizations aren't required to develop multiple versions of their app to work with specific devices.
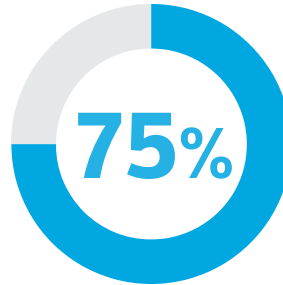
Hybrid apps, a mix of both web and native, are designed specifically for mobile devices, but rely on websites to function.

Integrating enterprise mobile apps with back-end systems can provide a wealth of benefits. For example, sales teams can gain insights while meeting with clients by tapping into data from a customer relationship management (CRM) system. A social services caseworker can complete required forms while visiting with families at their homes or schools.

Such back-end integration not only gives employees ready access to the mission-critical data required to do their jobs, but also allows them to input data into those systems in real time. That improves data quality because it's up to date and entered directly into digital forms rather than transcribed later from notes.
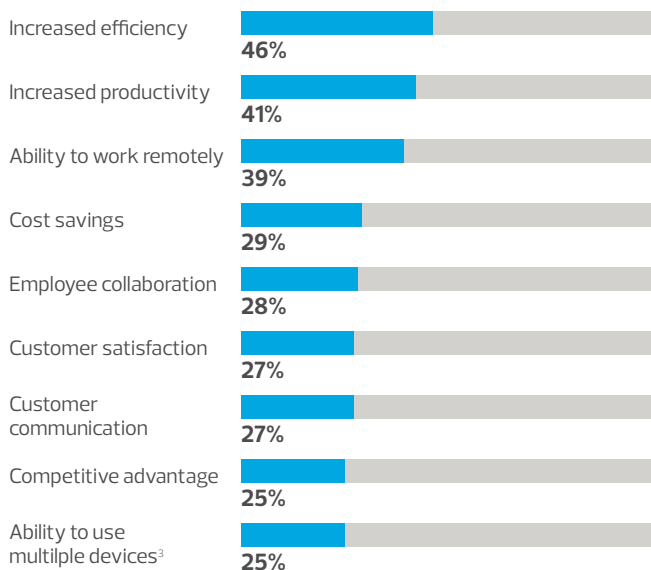
Successful integration and deployment represent just part of the app development challenge. While robust, mobility is still in its infancy, and apps have undergone dramatic transformations in a relatively short period of time. Unlike traditional IT systems that took months or years to develop and deploy, mobile apps should be agile enough to undergo rapid change.

The most successful mobile apps examine user behavior and incorporate those insights into future versions. It's just as critical for developers to spend time monitoring and updating apps as it is to create them.

Benefits of Custom Mobile Apps

Increased efficiency	**46%**
Increased productivity	**41%**
Ability to work remotely	**39%**
Cost savings	**29%**
Employee collaboration	**28%**
Customer satisfaction	**27%**
Customer communication	**27%**
Competitive advantage	**25%**
Ability to use multilple devices[3]	**25%**

SOURCES: [2]Gartner, "Magic Quadrant for Mobile App Development Platforms," June 15, 2016. [3] The App Age: How Enterprises Use Mobile Applications

Testing

Clearly, the goal of any organization rolling out an enterprise app is for employees to use it. If they do, but experience an app bogged down with flaws, it will prove a difficult sell to get them to try it again. It's crucial for developers to test mobile apps before rolling them out to a large user base.

Developers should consider several things when testing apps. First, it's important to test native apps on multiple device types, including older generations. Devices vary in type, brand and size, all running a variety of operating systems. Developers can test apps before deployment using real or emulated devices.

Real-device testing offers a more accurate view, but can be costly and complex when considering the sheer number of devices available. Emulators can save time and confusion, but don't always behave exactly as real devices do. A third option is to combine the two: Use emulated devices early in the testing phase, then switch to real devices.

Security

While enterprise apps can help organizations cut costs, streamline workflows and improve customer service, they can also do serious damage if they open the door to security breaches. In the rush to meet the demand for custom apps, many organizations fall short on securing them. A Ponemon Institute/ IBM Security study found that half of large companies don't devote any of their mobile app development budgets to security, and those that do allocate only about 5.5 percent toward it.

33%

Percentage of businesses reporting that they don't test mobile apps[4]

Unlike desktops, mobile devices can be easily lost or stolen. They also connect to external networks that may have questionable security. Here are some steps to take to protect apps that access sensitive data:

Authentication: The first and most critical step toward protecting mobile apps is to ensure that users are who they claim to be. Authentication takes many forms, including passwords, preferably long, complex ones that are changed periodically; biometrics, such as retina scans or fingerprints; and multifactor authentication, which combines two or more of those methods. Password manager solutions such as Keeper Security can help organizations stay on top of authentication.

Encryption: An algorithm can scramble data while it's at rest on a device or in transit, and requires users to provide a key (often a user name and password) to decrypt it.

Back-end security: Many enterprise apps tap into back-end servers to access the data needed to operate, but that data can be compromised in transit. Developers should address back-end security in the early design stages by verifying APIs used to connect apps to servers, and through strong access controls.

Performance monitoring: By observing how workers use enterprise apps, enterprises can make them more useful and gain insight for future apps. There are two main approaches to monitoring app performance:

1. Synthetic monitoring: This type of monitoring simulates how users interact with an app and its performance under different circumstances. The advantage is that developers can find problems with apps and fix them before users are affected. That can be particularly helpful when preparing for a busy period (for instance, an accounting firm in the run-up to April 15) or before launching a high-stakes app.

2. Real-device monitoring: Real-device monitoring examines how users interact with an app under real-world conditions. It helps developers see problems as they happen so that they can be resolved in real time. For instance, developers can tell when spikes in demand occur and what may contribute to them so that they can address them appropriately.

Real-World Benefits

A large number of enterprise mobile apps are abandoned by users after their first use — some estimates put the drop-off rate at about 80 percent — an intimidating proposition for business leaders. It's important to understand that app development can be costly and time consuming, yet still fail miserably. When planned correctly, however, apps can transform organizations for the better and solve age-old problems. It's not difficult to find success stories.

Ontario-based Shred-it document-destruction service worked with Kony SkyMobile to create a module for its SAP CRM system to be deployed on Windows Mobile handheld devices. The
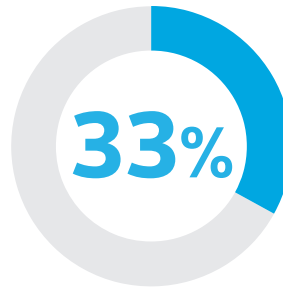
Testing Ground

Developers perform several types of tests on mobile apps, including:

- **Functional testing**
  Ensures an app operates in the ways it was designed to operate

- **Usability testing**
  Examines the user-friendliness of the app

- **Performance testing**
  Ensures the app performs well under a variety of circumstances

- **Security testing**
  Searches for vulnerabilities within the app

- **Load testing**
  Ensures an app won't crash or load slowly

- **Interruption testing**
  Ensures an app can handle interruptions, such as incoming calls or network outages

SOURCE: [4]The Ponemon Institute and IBM Security, "The State of Mobile Application Insecurity," February 2015

mobile app allowed customer service representatives to input data from the field, capture customer signatures, scan barcodes, print invoices and provide customers with proof–of–service documentation.

The Ottawa Hospital turned to IBM to co–develop a mobile care–management platform, providing medical personnel 24/7 access to patient information, collaboration tools and other resources. Instead of leaving a patient's bedside to schedule surgeries, examine X–rays and email colleagues from their office PCs, hospital staff can use a custom mobile app to access critical information, discuss cases with colleagues and perform administrative tasks using iPads right at patients' bedsides. The app improved workflows so well that doctors reported they were able to spend an additional two hours per day with their patients.

A Highly Mobile Office

One of the most mission–critical functions in any organization today is email. It's no surprise, then, that moving email to a mobile app can have such a transformative effect.

The mobile sales team at Coastal Beverage in Wilmington, N.C., also felt the constraints of Microsoft's traditional desktop Office suite, but the primary reason for that company's shift to Office 365 was to offload the burden of managing Microsoft Exchange.

"It was the biggest consumer of our storage space, processing power, network bandwidth and time," says Charlie Pope, IT/IS manager at Coastal Beverage. "We spent a lot of effort managing it."

Rather than invest in server and storage upgrades to accommodate the next version of Exchange, the distributor moved to Office 365. In addition to the traditional Office suite of software and Skype and Yammer, Office 365 also includes online storage through Microsoft OneDrive, which solved another big problem for Coastal Beverage.

The company enlisted the help of CDW to deploy Office 365 and migrate all users and data to the cloud. Coastal Beverage's IT team had some concerns about the migration, such as moving its on–premises version of Microsoft Lync for enterprise telephony to the cloud without losing messaging functionality during the process, but CDW proceeded cautiously, and the migration was a success.

"We had fewer issues migrating to the cloud than some of the times that we've had to migrate mailboxes to different servers internally," says Worth Beacham, IT support technician at Coastal Beverage.

End users have also been pleased with the switch. "If I'm on the road, I can pull up whatever file or folder I need, when I need it," says Tim Skinner, a chain account manager for Coastal Beverage. "It's completely streamlined my work process."

Flexible and Adaptable

In addition to fulfilling users' expectations on the front end, mobile apps also have to be extremely adaptable on the back end. With the advent of virtualization and the cloud, back–end IT infrastructure (where the data lives) has become very fluid. It's imperative to build mobile apps that can flexibly access those back–end resources without having to be updated in the field after they have been deployed. Such flexibility also allows developers to avoid interruptions in their mobile initiatives, which can add cost and undermine success.

That's where Kony MobileFabric, part of the broader Kony Mobile Platform, proves particularly helpful. An abstraction layer insulates apps from back–end resources so the app doesn't have to be recompiled when those resources are moved or modified. Any back–end changes can be accommodated automatically.

In fact, by leveraging Kony, CDW provided rapid and cost–effective support on a broad mobility initiative at one of the largest healthcare systems in South Florida. The initiative encompasses 10 different mobile apps, including one that mitigates the revenue loss associated with physician referrals outside of the healthcare system.

Organizations might see the same results by paying close attention to user interface design and by abstracting apps from back–end resources. That kind of true mobile enablement provides significant operational advantages and sets the stage for even more sophisticated mobile capabilities in the future.

On the Go

Breakthru Beverage Group (formerly the Charmer Sunbelt Group), a New York–based wholesale beverage distributor, armed its 2,200–member sales force with iPad Air 4G devices purchased from CDW, which equipped the devices with a custom app that integrated five back–end systems.

Sales representatives use an order–entry app that connects to the company's SAP enterprise resource planning system to access prices, promotional deals and inventory data. The app also connects staff to E–Pride, a custom application that provides product information about wines, Breakthru Beverage's CRM, a business intelligence tool and another custom application that managers use to set objectives for sales reps.

Tenneco, a Lake Forest, Ill.–based auto parts supplier, also has found success deploying iPad Air tablets with mobile apps to its sales team. The devices, purchased from CDW, are easy to carry on sales calls, and allow sales reps to gain fast access to enterprise applications and product or customer databases. The setup has also proved more helpful for the customer and reduced the cost of printing sales materials by $10,000 a year.

Tenneco teams also use the devices' email and camera apps on the job. When a customer has a problem with a part, instead of shipping the part and waiting for a diagnosis, a sales rep can take a photo or video of it, email it to the manufacturer's technical support department and receive a call or email instantly. That shift not only speeds up the repair and replacement process, but also cuts down on shipping costs.

CDW: A Mobile App Partner That Gets IT

The potential of mobile apps is undeniable, but frequently there's a disconnect between demand and supply, due largely to the complexity of app development. When IBM asked developer survey respondents about their mobile application projects, only a third said they achieve success in terms of meeting budget, schedule and project objectives.

CDW breaks down the complexities that otherwise hinder organizational app development and deployment, helping to plan smarter paths toward secure and scalable mobile environments that deliver greater value. Our team of experts and partners helps organizations plan deployments and development projects based on specific goals, budgets and infrastructure.

As part of that journey, CDW connects clients with mobile industry leaders that build native, HTML5 or hybrid apps. And for those organizations already set with the resources to develop apps in-house, CDW offers mobile application development platforms configured with all of the tools needed to create, deploy and maintain custom apps. CDW's mobile application management solution, with a branded custom-app store, helps organizations successfully deploy off-the-shelf or custom apps that advance employee performance and productivity.

CDW has a strong track record of helping organizations of all types and sizes — nonprofits and startups, as well as retail, healthcare, energy and utilities, education, government, and financial services — enhance their processes so that they can achieve big returns on their mobile investments, and better serve their customers and clients.

To learn more about how CDW can help your organization navigate the world of mobile applications, visit CDW.com/mobileapps.

The CDW Approach

ASSESS
Evaluate business objectives, technology environments, and processes; identify opportunities for performance improvements and cost savings.

DESIGN
Recommend relevant technologies and services, document technical architecture, deployment plans, "measures of success," budgets and timelines.

DEPLOY
Assist with product fulfillment, configuration, broad-scale implementation, integration and training.

MANAGE
Proactively monitor systems to ensure technology is running as intended and provide support when and how you need it.

You and CDW

NETMOTION WIRELESS

NetMotion Mobility® is an intelligent VPN solution for secure connectivity and management of mobile deployments. It's designed specifically for workers who rely on wireless networks and mobile devices to get their jobs done. NetMotion Mobility transforms mobile access for both mobile users and the IT support team entrusted to manage and support them.

piper™

Piper creates an entirely new way to experience what it means to be right here, right now. It helps enterprises create contextual and engaging messages at exactly the right moment. Use Piper to push messages, connect with your dynamic data, communicate with employees and track inventory. Piper also works with enterprises by providing SDKs and custom app development to help improve customer engagement, generate robust analytics, inventory tracking and many other solutions.

CDW® PEOPLE WHO GET IT®