



Modern Mobility

Enabling a mobile workforce

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COVER STORY

It's Apple's World, and We're Just Living in It

Apple has taken over the enterprise, but is that good or bad for IT?



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I CURRENTLY HAVE no fewer than four Apple devices in my apartment. There's my trusty iPhone 5 for everyday texting and Instagramming. There's an iPad Air 2 permanently attached to the coffee table for Chromecasting my favorite shows, and shoved in a drawer is another iPad, a years-old fourth generation device I barely use. Finally, there's the croaking Mac I share with my fiancé for tasks that are just plain easier with a real computer, like buying concert tickets and choosing seats.

This is not uncommon, and it hasn't been for a while. A CNBC poll in 2012 showed that the average Apple-owning home has three iOS or OS X devices. And it's likely that residents of those homes often use their devices for work-related tasks.

I regularly check and respond to email, read Word and PDF documents and sync files through Dropbox on my iPhone. But despite owning four of them, Apple devices aren't always enough for my needs. When I attend technology conferences for work, such as last month's VMworld, it's actually a Surface 2 tablet that's at my fingertips. I need a proper keyboard and access to the full-featured version of Word, and I like the ease of saving and syncing documents automatically to OneDrive right from the desktop.

So despite the company's dominance—in the stock market, in the media and in the court of public opinion—Apple isn't everything. Plenty of people need other devices for business use. Plus, the company doesn't really cater to enterprise IT's full management and security needs.

In this month's cover story, site editor Jake O'Donnell delves into the pros and cons of supporting Apple devices in the enterprise. ●



MOBILITY NOW



It's Apple's World, and We're Just Living in It

The iPhone and iPad took over the lives of consumers, and IT is still struggling to adapt.

JAKE O'DONNELL

APPLE BECAME ONE of the richest and most successful companies in the world by creating fascinating, innovative mobile devices aimed at general consumers. Apple did not set out to be one of the most prevalent companies in the business world, but that has happened by default, with mixed results for IT departments.

CREDIT: VIEWPART/ISTOCK



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The advent of the iPhone—and, crucially, the App Store—in 2007 ushered in a new era of mobile computing. Suddenly, everyone could access email and perform other traditionally desktop-centric tasks on devices aimed at consumers—not the BlackBerry or Palm devices that dominated the business world up to that point.

“Apple creates products that speak to consumers in a way that overpowers any business IT influence on what technology people are using and purchasing,” said Michael Oh, CTO and founder of TSP, an IT managed services provider and Apple reseller in Boston.

The iPhone and, later, the iPad opened the door for other consumer devices in the enterprise—primarily those sporting Google’s Android operating system. IT had to react in a big way. Entirely new enterprise markets appeared thanks to this bring-your-own-device (BYOD) trend: enterprise mobility

management (EMM), enterprise file sync and share, mobile application development and secure remote access. From IT’s perspective, users are generally happier and more productive on devices they want to use—i.e., Apple’s.

“If you give employees support on devices they want to use, they’re more likely to work with you as opposed to against you,” said Bob O’Donnell, chief analyst and founder of TECHanalysis Research of Foster City, Calif. “But if you don’t, they do whatever they can to work on something they think is better than corporate-delivered devices.”

NOT A BAD APPLE

IT pros have found plenty of other benefits of supporting Apple devices in the workplace.

In an April study by Tech Pro Research, 32% of respondents said using Apple products had led to fewer calls to IT. Thirty-one percent saw a reduction in training employees to use the technology, and 23% experienced longer and cheaper upgrade cycles.

Organizations don’t need extensive training because so many people are accustomed to Apple devices in their private lives, dating back to the iPod, said Jeff Janovich, a software



Learn about the [Apple-IBM partnership](#) and the vendors’ promised iOS business apps.



analyst at Carlisle Construction Materials in Pennsylvania, where almost all mobile employees use iOS devices.

“Everything is familiar about the interface and how it works,” Janovich said.

Apple’s enterprise presence has forced IT to become more educated about the company’s technology. Absent actually attending Apple’s

“Apple never truly changes their OS to help in the corporate world. [It] locks down too much.”

—Jeff Janovich, Carlisle Construction Materials

annual Worldwide Developers Conference, Oh suggested administrators learn more about new iOS enterprise features by joining Apple’s developers program for \$99 a year.

For organizations with security in mind, Apple has mostly been ahead of its counterparts at Google. Apple iOS is a closed OS, whereas Android’s Linux-based open source OS affords more opportunities for security flaws—in apps where hackers have been able to bypass cryptographic signatures to

modify or steal application data, for instance. Android’s Google Play store has seen more issues with malware than Apple’s App Store, Oh said.

APPLE SLOW TO IT’S NEEDS

Still, one major negative outcome of Apple devices in the enterprise has been cost. Thirty-five percent of the Tech Pro Research respondents said Apple products led to increased spending on equipment, and 22% saw increased overall IT department spending.

Plus, supporting Apple means IT has to deal with managing and securing devices that weren’t meant for business, and many observers believe Apple has been slow to give IT the tools and support it needs to fully manage iOS.

“Apple never truly changes their OS to help in the corporate world,” Janovich said.

For example, his organization uses LogMeIn’s Rescue remote support technology, which allows IT to have full remote control access to users’ Android devices. But for iOS, Rescue can only process device details and screenshots.

“[Apple] locks down too much,” Janovich said.

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The tools Apple provides for corporate IT to manage its devices have also historically been a mixed bag.

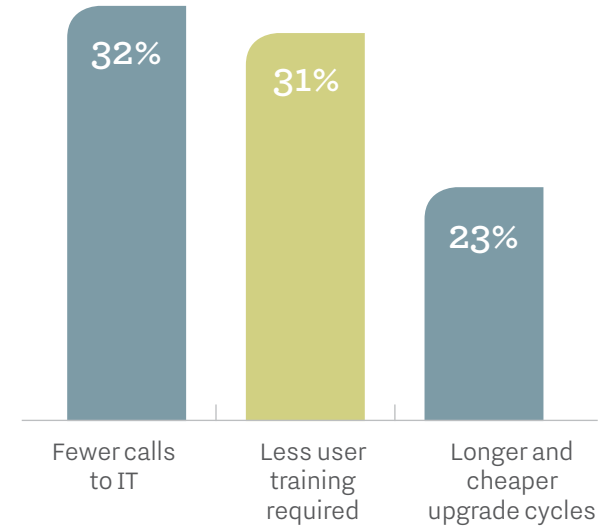
“Apple is not an IT vendor at its core,” said Chris Hazelton, enterprise mobility research director at 451 Research in New York. “They could do more, but their heritage has been in the consumer market.”

For example, it wasn’t until 2013 that Apple finally offered a built-in way to manage corporate mobile apps in iOS 7 with Managed Open-In. That feature gives IT more control over which apps can access corporate data, but EMM vendors including VMware had already offered some form of that capability for third-party iOS management.

A year later, Apple announced a partnership with IBM to produce 100 industry-specific enterprise iOS apps. Experts believed teaming with IBM would help grow Apple’s credibility among major industries such as banking and travel, but to date, IBM and Apple have released only about 30 of the promised apps.

Improvements to device management programs will arrive with iOS 9 this year, including the untethering of Apple IDs from the Volume Purchase Program for bulk app

Benefits of Supporting Apple Devices



SOURCE: TECH PRO RESEARCH'S APRIL 2015 STUDY "APPLE'S GROWING ROLE IN THE ENTERPRISE"; RESPONDENTS: 1,369

purchases. In addition, Apple is partnering with EMM vendors MobileIron and AirWatch by VMware to deploy and secure third-party iOS business apps including Box, DocuSign and MicroStrategy. These new platforms, which haven’t been released, intend to allow

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configuration and authentication of business apps without the need for app wrapping or software developer kits.

Apple's exact involvement in these efforts isn't clear yet, but it is a sign Apple is serious



Read our guide to the [enterprise features in iOS](#).

about enterprise security. Still, IT may have to wait for bigger changes due to the “institutional patience” Apple executes with everything it does, Oh said.

“They have the discipline to not release things until everything's there [that] they need for it to be a success,” Oh said. ●

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It's Make-or-Break Time for Microsoft

There's a lot riding on the company's smartphone and Windows strategy.

FROM THE ANTITRUST suits of the 1990s to the utter failure of Windows Vista, it seems as if Microsoft is always facing one existential crisis or another. This year, as mobile technology continues to hammer away at the once-dominant position of Windows PCs, the company is taking bold steps that will either right the ship or make the company even less relevant.

Erasing the mistakes of the past is a crucial component of Microsoft's strategy to move forward. CEO Satya Nadella wrote off his predecessor Steve Ballmer's \$7.2 billion Nokia acquisition this summer, shortly after former Nokia CEO Stephen Elop left the company. The 2013 deal, the second biggest in



MICROSOFT CEO
SATYA NADELLA

Microsoft's history, had failed to substantially alter the company's fortunes in the smartphone market.

And the free Windows 10 upgrades currently offered to every Windows user are as much about introducing the new operating system as they are about getting customers off Windows 8—an OS that clung too tightly to history at the expense of embracing the mobile future.

These moves do not come without risk. At a time when smartphone sales continue to grow and PC sales drop, Microsoft finds itself without a flagship manufacturer for its Windows Mobile devices. Although Nokia wasn't even

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one of the top five smartphone manufacturers by market share, according to Gartner, it had some presence. Nadella said Microsoft is committed to its own branded smartphones and pledged to reinvent its business, but details—which will ultimately determine the company’s success or failure—remain scant.

The Windows 10 update option Microsoft pushed out will make it significantly easier for Windows 7 and 8 users to give the new OS a spin, but this creates a double-edged sword situation. If customers try it and like it, adoption could skyrocket. If it’s buggy, or if the learning curve is too steep, people could abandon Windows altogether—especially if

the downgrade process is cumbersome. (Microsoft makes it easy to revert to Windows 7 or 8 within a month of upgrading to Windows 10, but users who wait longer will have to reinstall the old OS from scratch with a USB drive.)

Windows is Microsoft’s core business, and its success in the mobile era is essential to the company’s future. Windows is also the core computing platform in the business world, and if it falls out of favor with end users, it will have serious ramifications for IT. ●

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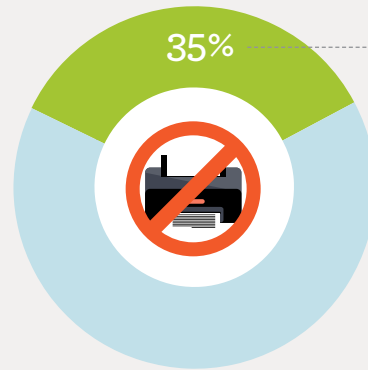
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What Users Do with their Mobile Devices

With today's faster networks and new mobile tools, end users want to do more, more, more.

Print

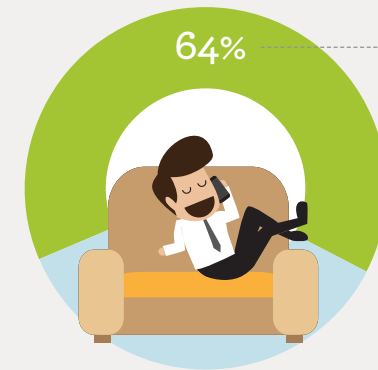


of smartphone users want to print but can't because of a lack of mobile printing tools



SOURCE: IDC RESEARCH'S JUNE 2015 STUDY "MOBILE DEVICE USERS/NON-USERS: PRINT, SCAN, DOCUMENT MANAGEMENT, WORLDWIDE"; RESPONDENTS: 22,041

Skirt IT



use their work device for personal use

SOURCE: ABSOLUTE SOFTWARE'S JANUARY 2015 MOBILE SECURITY REPORT; RESPONDENTS: 762

Get Productive



said the biggest benefit of mobility is being able to work while traveling

SOURCE: ABSOLUTE SOFTWARE

Use Lots of Data



SOURCE: JUNIPER RESEARCH'S "MOBILE DATA OFFLOAD AND ONLOAD: WI-FI, SMALL CELL AND NETWORK STRATEGIES 2015-2019"; 8 COMPANIES INTERVIEWED



We need to consider network availability, bandwidth and latency, security and cost before embracing IoT.

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IoT is the New Paperless Office

There's a lot of hype around the Internet of Things, but technology trends don't always pan out.

AFTER THE DOT-COM bust, companies looked inward and tried to automate everything—a movement that became known as the “paperless office.” Fifteen years later, organizations have definitely become more automated, but few are anywhere close to paperless. Today, the Internet of Things similarly promises to revolutionize IT, but it faces roadblocks that will temper adoption.

In this new world, everyday objects—from coffee makers to server racks—glean information from built-in sensors and use it to

communicate with people and other devices. Our refrigerators can sense that we are out of milk, connect to our grocery stores and order more for us. Our cars can drive themselves and tell us when they need maintenance.

Sounds like utopia, right? The problem is it's much easier said than done. At the very least, we need to consider network availability, bandwidth and latency, security and cost before embracing the Internet of Things (IoT).

Enterprise IT can learn about the challenges of IoT by examining the current debate about the electrical smart grid. The Environmental Protection Agency and many members of Congress would like to see the United States move to a national, fully integrated smart grid. Such a grid would further enable IoT by connecting all electricity delivery systems in the country to each other, allowing for two-way computer-based communication. But the Department



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of Defense has serious security concerns: If hackers gain access to one area of the grid, they could compromise the entire grid. That's also a major issue with Internet of Things devices coming into the enterprise; IT needs to ensure that outside sensors and employees using these devices can't tamper with the corporate network.

There will be a limit to how far we can go with IoT. People will still need to manage IoT devices, so it would be naïve to assume that everything connected to the Internet will be able to communicate without human



Learn how to factor [security policies](#) into your IoT strategy.

interaction. Security and cost considerations will still trump technological advancement around the Internet of Things for some time to come.

IT is—or should be—in the business of improving people's lives through technology. Some people and companies will be early adopters of IoT, and some will fight tooth and nail to retain their current way of life. The question is: How far will we be able to push connected networks? Many more of our networks and devices will be connected together over the course of the next several years, but the age of a fully interconnected network is still a ways off. ●

STEVE DAMADEO is IT operations manager at industrial automation supplier Festo. Follow him on Twitter: [@sdamadeo](#).



Under the Hood | ERIC KLEIN

Dual persona tools offer an attractive way to deal with the co-mingling of personal and corporate data, but large deployments have been scarce.

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Do You Really Need Dual Persona?

They say two heads are better than one, but not all employees will benefit from two mobile device profiles.

SECURE WORKSPACES, CONTAINERS and identity management tools aim to solve the problems that arise when workers use the same mobile devices for business and personal tasks. These technologies have succeeded in giving CIOs the peace of mind they need to extend more mobile applications to their employees, but they aren't for everyone.

Legal and privacy concerns complicate the use of devices for business and personal tasks in risk-averse organizations, as well as in regulated industries such as aviation, finance

and healthcare. For these reasons, there is a sizeable portion of the workforce that carries separate work and personal phones with them most of the time. I call them "two-pocketers," and I know many would love to ditch that second device.

That brings us to dual persona, a compelling method for separating work and personal assets on the same device. Dual persona technology provisions and maintains two discrete and autonomous user environments on a single device. For a worker, using a personal device while having access to the business productivity apps they need for work is very attractive. Plus, isolation of the work persona ensures that there is no risk of corporate data leaking into the user's personal apps. Add split billing to the mix, and organizations can ensure that they are only paying for work-related voice and data usage on that device.



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HEAVY POLICIES HURT DUAL PERSONA

Corporate counsels have only just begun to fully understand the legal ramifications of mixing personal and business tasks on the same device and the liabilities that may arise without the appropriate policies. Generic BYOD policies that don't address specific restrictions around approved cloud services or methods for corporate network access no longer suffice. Organizations need to enforce the use of passwords and encryption, require employees to immediately report lost or stolen devices, and reserve the right to remotely lock or wipe compromised devices.

Policies should also include language inferring that employees should have no expectation of privacy around company data on the



From WhatIs.com: How does [dual persona](#) work?

device or personal data transmitted over the company's systems (such as email). Obtaining consent to monitor data that users store, send or receive on the device is also routine. Such policies may not fly with employees using their own devices, however.

Dual persona tools offer an attractive way to deal with the comingling of personal and corporate data, but large deployments of this technology have been scarce, and there is scant evidence of user acceptance. It may fit best in corporate-owned device deployments, where businesses have the legal right to implement the security policies they deem necessary. But even then, you have to consider whether the users will bother to use the personal profile.

With all these issues around privacy and usability, the verdict on dual persona remains largely unknown. ●

ERIC KLEIN is director of mobile software at VDC Research in Natick, Mass. Follow him on Twitter: [@eakleiner](#).



Simply taking the functions of a desktop app and making them touch-friendly will not make a satisfactory mobile app.

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Application Refactoring

Desktop apps aren't always mobile-friendly. A new breed of tech aims to fix that.

AS MORE COMPANIES embrace mobility, they find themselves unable to modernize all the apps they need.

Many organizations have a large number of Windows applications and Web apps meant to be accessed from desktop browsers. These are often older, legacy apps or customized in-house apps, and the original source code may no longer be available. It can be prohibitively expensive and impractical to create mobile versions of these applications by building native iOS and Android apps from scratch,

and off-the-shelf replacements often don't exist.

Application refactoring, also known as app transformation, addresses this problem. App refactoring takes the user interface of an existing application and uses special remote protocols and software to transform it into a new mobile-friendly app.

Refactoring requires that the original desktop applications still run and be maintained, which brings an added bonus: Refactored apps can take advantage of their desktop counterparts' existing back-end integrations. Windows applications can run in a corporate data center, in the cloud using desktop virtualization, or even on a physical desktop. Web applications can run in what's known as a headless browser—a browser without a graphical user interface, which is often used to test apps because it's controlled by the command line.



STEP ONE: READ THE SOURCE APP

All app refactoring products work differently. In general, they take all the user interface (UI) elements of a source application, including text fields, forms, menus and other controls, and transform the code to make it more suitable for mobile devices. There are three ways for app refactoring products to do so:

- Read the UI elements out of a Web app's HTML and CSS code in a browser;
- Insert an agent between the operating system and a Windows application to watch the UI instructions sent between the two;
- Intercept the remote display protocol, which has instructions for rendering the UI on the remote client, and use that to transform an application into HTML5. (This approach works for both Windows and Web applications.)

The technique the app refactoring platform uses will determine what applications the developer can refactor. In general, app refactoring is better for business apps that are data-centric as opposed to apps with rich media or pictures.

STEP TWO: CREATE THE NEW CLIENT APP

Once app transformation software has extracted the controls and UI elements from the source application, the next crucial step is to define the mobile UI. Simply taking the functions of a desktop app and making them touch-friendly will not make a satisfactory mobile app. It is important to decide what features to build into new mobile apps and what to leave out. It's often best to break up a large desktop application into multiple task-specific mobile apps, each with a few essential features for specific workflows.

App refactoring platforms usually include a design environment that allows app creators to select functions from source apps and build them into new mobile apps. These design tools often use codeless drag-and-drop interfaces, allowing non-developer IT staff or even end users to create apps.

The resulting client app can be an HTML5 app, accessible from a mobile browser or from a hybrid app, or it can rely on native device UI elements. IT can distribute and secure these apps just like any other, using enterprise mobility management software.

Refactoring can also bring new capabilities to enterprise apps. Some products can pull

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features from multiple source applications and combine them into a single mobile app, eliminating the need to copy and paste or switch between apps. App creators can also enrich apps by incorporating local device frameworks such as the phone dialer, address book, camera or GPS.

APP REFACTORING'S FUTURE

Considering the number of legacy applications that companies have, app refactoring is likely to be around for many years. Organizations may consider app refactoring in situations where they are using desktop

virtualization technologies, but that's not its only role. Any company with existing desktop apps should consider refactoring as a way to embrace mobility.

Still, this is just one of several options available for mobilizing enterprise applications. Some use cases may be better served by mobile app development platforms or custom native iOS and Android apps. Plus, more off-the-shelf enterprise apps will become available in the future. ●

JACK MADDEN is the author of *Enterprise Mobility Management: Everything You Need to Know about MDM, MAM and BYOD* and a blogger at BrianMadden.com. Follow him on Twitter: [@jackmadden](https://twitter.com/jackmadden).

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Lenovo ideacentre Stick 300

This tiny HDMI dongle is literally a pocket PC, and it has more inputs and ports than most Windows tablets.



WHY BUY? It's hard to imagine a portable PC smaller than the Lenovo ideacentre Stick 300, an Intel Atom-powered Windows PC that's no bigger than a pack of gum. The device's spec sheet rivals those of many budget Windows devices, which are more than capable of handling daily computing tasks. The ideacentre Stick 300 works with any HDMI-enabled monitor, which includes just about all HDTVs on the market, and it has a full-sized USB port for a keyboard and mouse.

PRICE: The stick costs a scant \$130—comparable to most budget tablets and smartphones.

SPECS: The device measures just 3.94 x 1.5 x .59 inches and weighs 0.1 pounds. It has an Intel Bay Trail Z3735F processor (quad-core Atom, 1.33 GHz) and 2 GB of RAM. In addition, the ideacentre Stick 300 has 32 GB storage capacity, with a microSD card reader extension, as well as a full-sized USB 2.0 input and a mini-HDMI output. It supports 802.11 b/g/n Wi-Fi and Bluetooth 4.0. The device ships with 32-bit Windows 8.1 with Bing but is upgradable to Windows 10.

ENTERPRISE PROS AND CONS: With portability comes compromise. The Lenovo ideacentre Stick 300 requires a keyboard and mouse, and the single USB input will necessitate a USB splitter if you need multiple wired accessories. The device also needs an external power source, which means more potential wire tangle. And it

lacks a microphone and camera, making it useless for Skype and other conferencing software.

It's not ideal for the enterprise road warrior, but this low-cost, low-powered PC with a tiny footprint could be valuable in terminals, kiosks, data centers and as thin clients.

As Intel's chip technology progresses, physically shrinks and requires less power to operate, it's not hard to see successive generations of this kind of PC stick become completely embeddable and more useful for enterprise users that want to access their PC screen on the go. ●



JAMISON CUSH is executive editor of TechTarget's Technology Guide. Follow him on Twitter: [@TGJamison](https://twitter.com/TGJamison).



More Devices, More Problems

Mobile devices have B.I.G. potential for corporate data leakage, especially as employees access files in the cloud.

TO TRULY ENABLE mobility, IT can't totally lock down smartphones and tablets—despite their risks of data leakage.

Organizations must approach data protection differently in the mobile era, which can be challenging. Here, Brett Hansen, Dell's executive director of end-user computing, talks about the role of security in an enterprise mobility strategy.

What does modern mobility mean to you?

I want to do two things that are often in conflict with one another: On the one side ... I want to empower my workforce to work smarter,

more productively, more efficiently. At the same time ... data is the lifeblood of business, and protecting that data has to be forefront in my mind.

[Modern mobility brings] these two trends together. It's allowing my employees to work in a highly distributed mobile environment, but doing so in a way that I can be ensured my company data is being protected.

How can IT keep up with today's changing security needs?

Having a plan is the first step. Where do you want to go as a business? Understanding the business direction is an imperative to

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then taking the next step and saying “OK, what do I want to do in terms of my security posture?”

The second element is what am I going to be protecting? Do I have a lot of data that is going to have to be especially secured because we’re in the engineering sector and the [intellectual property] is absolutely essential for us?

What are some of the new attack vectors that come into play with mobile?

You’re bringing in more devices. You’re bringing in more operating systems. The days of a ubiquitous Windows environment have long since left us. Second, the movement of data and the velocity of data itself has dramatically increased.

Mobile devices naturally lend themselves to cloud environments. It’s very rare that I’m going to pull up a document and save it to my mobile device. Where I might save it to, though, is a Dropbox, Box or Google Drive account. So considering the implications of

employees storing company assets in a public environment has to be forefront in your mind.

Is there greater risk to corporate data through mobile devices or cloud services?

There is high risk as employees store data in more locations. It’s so easy for me send a bunch of pictures out to my family. But the problem is that also creates risk: ‘Oops, I also included in those pictures a document that has 5,000 customer names and addresses on it.’ Now we have a data breach.

Know what the data you have out there is, and consider the risk-reward situation. Am I willing to let that data leak out of my environment? That might be acceptable, but if it’s financial information or serial numbers, I might need to be more restrictive.

How can IT balance those security needs with a good user experience?

It’s not about being restrictive. You want to have very clear policies. Increasingly, people are more aware of the importance of adhering to those policies. But it can’t be so prohibitive that it stops them from getting their job done.

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LISTEN to the full interview on the [Modern Mobility Podcast](#).



It's accepting how the changes in the workforce are going to impact your world, having conversations with your business leaders to find out where they need to go and aligning your IT strategies to work with them—and then applying technologies and policies that will enable employees to get their job done, while at the same time protecting and securing your data.

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What's your all-time favorite movie?

Monty Python and the Holy Grail.

What's the best dish you can cook?

I'm very proud of my fajitas with my home-made guacamole, and of course, homemade margaritas. ●

ALYSSA WOOD is the managing editor of *Modern Mobility*. Follow her on Twitter: [@AlyssaLaura22](https://twitter.com/AlyssaLaura22).



Three Burning Questions

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Which Apple Watch apps are useful at work?

Apple Watch owners have almost assuredly been showing off the new gadget on the job. And what better way to demonstrate its functionality than by using it to simplify business processes? SearchMobileComputing highlights [five Apple Watch applications](#) IT can recommend to workers for collaboration, note-taking and other common tasks.

Should you upgrade your tablet to Windows 10 yet?

Users have learned from past versions of Windows to weigh the pros and cons before upgrading to the latest release. Tablet owners must decide whether to upgrade now or stick it out with touch-friendly Windows 8 until



ENTERPRISE APP INVOICE2GO FOR APPLE WATCH

Microsoft works out the kinks in Windows 10. TabletPCReview advises Windows 8 users on [who should upgrade and who should wait](#).

What's the deal with virtual mobile infrastructure?

It can be tricky for IT to provide the apps its users need, especially on different mobile platforms and with the proper security for corporate data. Virtual mobile infrastructure (VMI) can deliver apps to users on any platform from a safe home in the data center. Search-VirtualDesktop gives an [overview of VMI](#) and explains some of the downsides, such as its constant connectivity requirement. ●



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