

The VMware logo is displayed in white lowercase letters with a registered trademark symbol. The background of the entire page is a collage of overlapping blue geometric shapes in various shades, ranging from light to dark blue. In the lower right portion, there is a blurred photograph of a person in a white shirt standing in an office, with a laptop and other office equipment in the foreground.

# 2017 Enterprise Mobility Roadmap:

5 Essential Steps to Future-Proof  
Your Enterprise Mobility Strategy



# Introduction

The age of digital transformation is evolving at a rapid pace. To keep up, modern enterprises must be willing to embrace a mobile-first, user-centric enterprise mobility strategy. The way people work has changed dramatically in recent years – largely due to the widespread adoption of Bring Your Own Device (BYOD) programs, which have paved the way for mobile workforce enablement in the enterprise. Combined with increased cloud technology access and enterprise application availability, businesses are facing the constant pressure to step up security strategies based on the broad range of devices and operating systems employees insist on using to complete enterprise tasks. However, without insight into data access prerequisites, these enterprises could be jeopardizing user experiences and leveraging inaccurate information when making business decisions. By implementing new strategies – including unified management platforms that drive visibility and seamless deployment, analytics that anticipate user needs and preferences, and more secure business models – enterprises are redefining business processes, as well as laying the groundwork to adopt emerging trends, such as the Internet of Things (IoT).

Industry experts often recount how the concept of mobility started as a business-to-consumer opportunity that gave companies a cost-effective marketing conduit to directly interact with their consumers. However, as individuals learned that these smart devices were actually miniature computers sitting in the palms of their hands, users slowly began taking advantage of more device functionality and applied it in more areas of their everyday lives. Today, essentially any task – from paying bills to planning vacations – can be more efficiently accessed and executed from one’s mobile device. Naturally, users have gradually started to expect the same benefits of simplicity and productivity in their professional lives as they experience in their personal lives.

The evolution of enterprise mobility has also reshaped the way that companies support smart devices across their organizations. For example, what started out as a means of enabling users to bring their personal smartphones or tablets into the workplace has become much more complex with the advent of wearables, as well as the ever-increasing variety of devices, operating systems, and supporting carriers. Mobility is now moving beyond a “device-driven” practice and into a business-critical requirement that must deliver an intelligent user experience among employees. Meanwhile, IT is challenged to deliver access to mission-critical data users need to make business decisions, while still monitoring and securing corporate data and protecting users’ personal privacy.



It has become evident that enterprise mobility commitments will only continue to increase. Gartner recently forecasted that by 2022, mobile devices will account for 70 percent of enterprise software interactions, according to “Predicts: 2017 Mobile Apps and Their Development.” Enterprises will thus need to adapt to the new mobile ecosystem with a holistic business mobility strategy that allows them to transform business processes and ensure employees can consistently access corporate data and achieve productivity away from their desks. By following an actionable plan, enterprises will be prepared to manage, secure, and enable true enterprise mobility, both now and in the future.

## **1. Adopt User-Centric, Unified Platforms**

They say variety is the spice of life. These words definitely ring true in regard to mobile solutions. Initially, the onset of the BYOD phenomenon prompted organizations to adopt the strategy as a means of streamlining operations and supporting workforce productivity. Even now, IDC vice presidents of mobility, Carrie MacGillivray and John Jackson, forecast that by 2019, 85% of enterprises will offer a Choose Your Own Device (CYOD) program as the default device policy, according to the “IDC FutureScape: Worldwide Mobility 2017 Predictions” report. Until recent years, most enterprises based their mobile strategies on an unofficial, yet standardized approach that supported specific hardware, software, and platforms. Too often however, this leads to more harm than good.

While individuals once made their device choices based on their personal needs, they are now demanding that their IT teams learn to support their personal choices in an enterprise environment as well. As contemporary consumers become more comfortable with their preferred hardware and operating systems, they expect to use the same devices at work and play with a simplified, consistent experience. Additionally, users now expect intuitive features such as a single login to access corporate data, apps, and productivity tools. Businesses must effectively integrate these modern expectations into their mobility strategies in order to maintain a competitive advantage, as the notion of a seamless end-user experience for both customers and employees further establishes itself as a critical component of enterprise mobility in 2017 and beyond.

Meanwhile, there is currently no one single mobility platform – and according to industry pundits, likely will never be. For example, by the end of the third quarter of 2016, Android devices in the market contributed to 86.8% of the smartphone market share, followed by

iOS claiming 12.5% and Windows Phone with .03% of the total market share, according to the “Smartphone OS Market Share, 2016 Q3” report from IDC. With the fluctuation in market share domination, enterprises must be diligent and take steps to support both Android and iOS platform-based devices. Furthermore, the most comprehensive unified endpoint management (UEM) solutions will manage all major devices operating systems – including iOS, Windows, Android, macOS, etc – across mobile, desktop, rugged and IoT endpoints. IDC predicts that by 2019, “40% of enterprises will save time and money by adopting common management and policy controls across disparate devices to manage all endpoints with a single system” in the “IDC FutureScape: WorldWide Mobility 2017 Predictions” report.



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Source: IDC Report, “Smartphone OS Market Share, 2016 Q3”

Not surprisingly, companies looking to future-proof their organizations for this continued diversity are increasingly opting for unified, device-agnostic platforms that drive visibility, the adoption of end-user commonality, and overall monitoring of device “endpoints” across the enterprise network. Simply stated, these infrastructures control endpoint security and management, as well as deploy standard policies across the IT infrastructure. By adopting a unified platform, enterprises are ensuring their companies can reduce operating system (OS) complexity and enable a seamless experience for the end user. Successful adoption of unified endpoint management – the new era of enterprise mobility – is quickly becoming the obvious next step for organizations preparing for the future of enterprise mobility.

## 2. Set the Tone with Mobile Security

Clearly, business mobility initiatives are driving a range of strategic results for global organizations. While a unified platform enables organizations to integrate and streamline diverse mobility devices across an enterprise, each new touch point creates new vulnerability points that need to be secured. Failure to do so only intensifies the potential for corporate data breaches. That said, more companies need to evaluate the role that a strong unified endpoint management strategy could play for their enterprises.

While not all companies are convinced a lack of a UEM solution will make them a higher security risk, evidence suggests otherwise. First, companies face the risk of increased vulnerability to third-party hackers. Another factor often overlooked is the risk that internal employees' unmanaged devices pose through unprotected access to mission-critical data. Furthermore, employees often use these same devices to access personal apps for mail, games, social media, and other functions. While they are doing so in a non-malicious way, oftentimes these unprotected apps are still being launched and used across the "edge" of corporate Wi-Fi networks – or the location where devices access the network. In their report, "Application Security in the Changing Risk Landscape," F5 and the Ponemon Institute warn that the majority of modern security attacks are aimed at user identity and applications, and these application-layer attacks are typically 63% harder to detect and 67% more difficult to contain than network-level attacks.

That said, as companies continue to shift applications and data to mobile cloud-based platforms, it will become increasingly critical for organizations to adopt a unified platform containing an intelligent security solution with endpoint analysis for threat detection and remediation. This will only become a progressively larger issue as more connected devices contribute to the IoT, which is a myriad of devices and software systems connected with each other via the Internet. Once connected, these web-based systems seamlessly communicate, analyze, and share their data. However, as these solutions connect to Wi-Fi networks directly or through their Bluetooth functionality, most sensors use an unencrypted link to communicate, creating a potential lag in security, as summarized in "Cybersecurity and the Internet of Things," a report from E&Y.

The combination of giving employees accessibility to data, yet creating a basic "block and tackle" strategy to support mobility strategies can jeopardize workforce effectiveness and mobility "buy in." Rather, it is essential for companies to create a mobility strategy that can improve workforce effectiveness beyond simple employee productivity, along with enabling an improved user experience that keeps pace with the environment users are experiencing in their consumer lives, according to VMware's "State of Business Mobility Report." This includes adding BYOD policies around application access and data from "untrusted" devices – a move that can help keep data safe, as well as manage internal apps that give users access to the mission critical data they need without restriction.

### 3. Integrate IoT to Maximize Business Process Efficiencies

The increased establishment of IoT in recent years has taken enterprise mobility to an entirely new level. With their cloud-based infrastructure in place, one of the biggest opportunities will presumably be the value of mobile-driven IoT projects. Mobility is already driving enterprises to redefine the way they approach tasks and associate responsibilities. By adding more web-based solutions to the mix, new IoT devices are now redefining traditional business processes with maximized efficiency. According to a Juniper Research press release, an estimated 38 billion devices will be connected to the IoT by 2020.


Naturally, the dramatic increase in the volume of Internet-connected devices will continue to drive demand for properly managed devices – including connectivity, security, and applications in the IoT ecosystem, according to Research and Markets’ article, “Worldwide IoT Managed Services Market - Drivers, Opportunities, Trends, and Forecasts, 2016-2022.” Forward-thinking enterprises would be remiss to leave IoT out of their mobility strategies at this point. That said, using a comprehensive UEM solution to encompass management of IoT devices along with traditional mobile devices will not only provide enterprises with more efficient business processes but also a strengthened mobility strategy that will withstand the next few years of digital transformation.

Companies that can crack the IoT code, so to speak, will drive innovation; a move that gives them a leg up among their competition. Coca-Cola for example, is using IoT – and expertly managing this program – as a means of differentiating itself in a highly saturated marketplace. The company’s Freestyle dispensers – customized kiosks that can deliver up to 125 beverage flavors with a simple brush of the unit’s touch screen – found success across stores, movie theaters, and fast food venues, among other locations. While these factors helped it earn the accolade of being one of the “coolest products of the decade,” in 2011 by Forbes magazine, the concept didn’t start that way.

When the devices were introduced in 2007, reliable wireless connectivity was a pipe dream. Coca-Cola worked with different technology partners to build out



By 2019, all effective IoT efforts will merge streaming analytics with machine learning trained on data lakes, marts, and content stores, accelerated by discrete or integrated processors.



an early version of a wireless network that integrated dispensers with its backend systems, but this configuration had several limitations. For example, big files were prerequisites when updating software – a cumbersome and time-consuming task as more devices hit the marketplace. Meanwhile, gaining the visibility into customer flavor preferences was not immediate, making analysis less than accurate.

By adopting an enterprise mobility platform, the consumer packaged goods company now has visibility into how each connected device performs, any maintenance issues, including refills and offline issues – regardless of where it is installed. Since these devices are web-connected, the brand also has continuous insight into usage, including the top flavors and combinations, all of which is saved in a big data repository for ongoing predictive analysis, according to a company statement.

#### 4. Leverage Intelligent Analytics to Understand Usage and Anticipate User Needs

The importance of big data is on the rise. According to TechRepublic's article "6 Big Data Trends to Watch in 2017", more analytics systems will be moved into the mission-critical category in 2017, but they will also be expected to perform well operationally, meet governance standards, and fulfill promises of business value to the company.

Instant access to the increasing velocity of big data is creating new challenges for IT and business leaders when it comes to how to leverage and execute decisions based on the information collected. As a result, many companies are incorporating more advanced and predictive analytics apps, a move that will contribute to 65% faster business decision execution than those using apps without predictive functionality. Even more staggering is that by 2020, organizations will be able to analyze all relevant data and deliver actionable information, a move that will contribute to an extra \$430 billion in productivity gains over less analytically-oriented peers, according to IDC's report, "FutureScape: Worldwide Big Data and Analytics 2016

**\$430  
BILLION**

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Source: International Data Corp. (IDC) report, "FutureScape: Worldwide Big Data and Analytics 2016 Predictions."

Predictions.” Using a unified endpoint management platform connects companies to their device endpoints and grants visibility to how and when corporate apps are being used. These insights can be harvested and analyzed to give IT the ability to make smarter predictions and ultimately provide a more intuitive user experience.

In a recent CIO article entitled “6 EMM Predictions for 2017,” Gartner research director Chris Silva predicts that new data and better automation around data management in EMM will open doors to “completely new use-cases,” for the data, says Silva. “An example could be an EMM that compiles data on users’ movement by seeing what parts of the wireless network they attach to, correlate this with time-of-day and apps being on their device; over time, policies can ‘learn’ what my behaviors are in a given location and time and serve up the apps or their data proactively,” he says.

The convergence of IoT will also play a formidable role in the acceleration of analytics adoption. Sumit Dhawan, VMware EUC SVP & GM, recently told Enterprise AppsTech “there are already two billion devices that we think of – whether it’s desktop, or mobile, or corporate owned, or BYO – accessing corporate information. Once you start adding these additional devices, you’re talking about billions more that are going to get added just in the context of the workplace. The systems that are going to be needed just can’t be statically configuring access controls and policies and management, but need to be a lot more autonomic based on the data that it’s continually collecting and analyzing.”


**“Simply put, business intelligence has become business critical. An intelligent analytics platform could give companies the tools needed to optimize app license usage, improve business operations, save money, and add new IT value.”**

- Noah Wasmer, VMware, Senior Vice President of Mobile Products

## 5. Merge the Mobile Cloud

The growth of mobile in the workplace continues, with 4 out of 5 organizations (78 percent) reporting successful executions or actively executing mobile initiatives according to VMware’s “2016 State of Business Mobility Report.” One area where companies often struggle is implementing the most flexible infrastructure to support endeavors. As the demand for mobile-based operations increases in today’s mobile-first, cloud-first era, more organizations will choose to leverage cloud-based services to support and streamline their mobility innovations and





strategies – especially as enterprise mobility continues to grow in importance. Worldwide spending on public cloud services could double from almost \$70 billion in 2015 to over \$141 billion in 2019, according to research firm IDC. IDC expects Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) solutions – such as Amazon’s AWS and Microsoft’s Azure – to grow faster than Software as a Service (SaaS) platforms.

## Conclusion

As mobility entrenches itself as a mission-critical vehicle needed to streamline operations and support workforce productivity, some companies are finding themselves behind the eight-ball when it comes to giving associates streamlined access to the data and processes needed to complete their daily tasks. However, without the proper established guidelines in place, organizations can miss the mark when it comes to delivering optimal access to business information, as well as make themselves vulnerable to potential breaches – issues that not only jeopardize associate productivity, but also can ruin a company’s reputation. By implementing new strategies, including unified and cloud-based platforms, and analytics and security infrastructures that drive visibility in device usage and policies, enterprises can redefine business processes and protect their organizations in the increasingly digitally-driven mobile era.

# 62% in 2016

Digital transformation is now an executive priority, with more organizations—62% in 2016 compared to 56 percent in 2015—recognizing the power of mobility to transform their businesses and lack of adoption as an impediment, according to VMware’s “2016 State of Business Mobility Report.”

# Q&A with Sumit Dhawan

## VMware, SVP & GM of End User Computing

**Q** Trends like BYO and shadow IT have historically created challenges for an IT organization, but are clearly here to stay. How can companies turn these once “problematic” realities into real business value?

Mobile and cloud have led to shadow IT. What our industry has called “bring your own device” (BYOD) and “bring your own app” (BYOA) are now mainstream trends.

This created a harsh reality for businesses:

- The incremental cost per app is higher—since there are no economies in place, businesses end up spending to integrate each application into their environment.
- Security is the lowest common denominator—the overall security is determined by the least secure app, the one for which IT has minimal information.
- User satisfaction in aggregate remains poor in terms of workspace experiences. Instead of looking at BYOD as onerous, companies have the opportunity to embrace this new reality and prove value by making personal choice and scalability assets that drive business growth. End users and developers must be able to simply bring or plug in their apps with the lowest incremental cost, highest speed, and best possible security. To make this possible, the way we manage, secure, and access apps must be consistent across desktops, laptops, and mobile devices.



## **Q** How do you foresee mobile devices and apps being used in 2017 and beyond?


We no longer go into the office to access our work. Access is ubiquitous, meaning we can access work on any device, anywhere. Within five years, Gartner predicts, consumers will use and own more than three personal devices.

We are using mobile devices to do more and more today. A great example of this rise in mobile usage is online shopping. According to Adobe Digital Insights, over Black Friday and Cyber Monday in 2016, consumers spent \$1.07 billion via smartphones and tablets—34 percent more than in 2015. The consumer world is leaning more and more toward mobile experiences to get things done, and two key things happened in mobile that enable us to do more with our mobile devices:

- Our experiences are synced across devices: notes in Evernote, shopping lists or orders in Amazon, music in Spotify, and movies on Netflix.
- Mobile apps now deliver integrated workflows, making it simpler for us to use mobile devices: Yelp integrated with Maps, phone integrated as one-touch across apps, and GPS integrated with calendar.

I believe both of these have to be enabled for the business apps, which is what I call Enterprise Mobile Workflows. In 2017, enterprise apps will have connected workflows, so they can be more productive and deliver better customer experiences. For example, while helping a shopper in the store, retail workers can scan available inventory across locations, place orders, process payments, email receipts, and ship items from a single app.

Since the possibilities for enterprise mobile workflows are nearly endless in their potential, mobile experiences need to be designed carefully. On one hand, a great experience can drive a virtuous cycle for IT and the business, on the other hand, a poor one can be a disaster. To enable mobile workflows, data needs to come from both legacy and cloud applications. While Windows 10 furthers this challenge, I believe this new ecosystem also creates an exciting opportunity to reimagine app delivery and workflows.



**Q Big data and analytics is a hot topic in every industry.  
What role will this play in changing the way IT collects data?**

Shadow IT leads to blind IT. Business and IT have no clue as to what is happening—no way to measure costs and no way to manage security. So IT starts putting random probes to pull information. The reality is that those probes are good and should be used to catch exceptions—not designed to catch every possible app at all given times. Instead, a strategic platform is needed to audit access to all applications.

An amazing amount of information is collected within IT systems. Machine intelligence using the data can automatically set triggers for quarantine, authentication, or a complete wipe of information.

The use of new intelligent analytics in IT mobile management systems will take that raw data and, to quote my colleague Noah Wasmer: “Bring predictive and insightful information that enriches and transforms how employees work every day. The goal is to allow IT to focus more on enabling mobile business strategies and less on the minutia of operational tasks.”

It is time to enable what I call the second phase of mobile innovation. I look forward to the day when IT can break down outdated silos and create a virtuous cycle with end users via next-generation enterprise mobile workflows, connected to a platform that can deliver business value and minimize shadow IT.

