

Keeping the Mobile Enterprise Moving

Rapid surge in mobile apps use outpaces traditional software development tools

Enterprises can't afford to be left behind as mobility surges to the forefront of IT and business strategies. Nor can they afford to churn out poorly performing mobile apps that alienate users and sap valuable IT assets. This white paper examines current trends in enterprise mobile app use. It explores why businesses are jumping into the mobile arms race and the risks of implementing poorly disciplined software development practices.

The Mobile Surge - Swim Fast or Sink

The business world has embraced mobile devices to the point where products and communications are built around a 'mobile first' strategy. This mindset is taking hold in enterprise app development strategies that assume enabling the mobile workforce as a primary consideration over more traditional user devices such as the desktop PC.

"The exploding interest in, and use of, mobile devices across consumer and business markets means that mobile interfaces are setting expectations for the usability, appearance and behavior of future systems and applications."

David Mitchell Smith
Research Vice President and Gartner Fellowⁱⁱ

According to the IT research and advisory company, Gartner, Inc., 90 percent of enterprises have already deployed mobile devicesⁱ. As a result, mobile-centric design is replacing desktop-centric design for user interfaces.

Business Motivations

Enterprises realize they must stay relevant as mobility transforms consumer markets, whether the focus is on their own workers or customer engagement.

Mobile solutions are increasingly being used today to facilitate business processes, provide training and communication to employees and partners, access business intelligence and assist personnel in the field.

It's not just smartphones that enterprises must accommodate. According to IDC, the number of tablets shipped in 2013 will exceed those of desktop PCs and portable PCsⁱⁱⁱ. By 2015, tablet shipments will surpass the combined total of portables and desktops.

While it is the consumer market that is driving tablet and smartphone sales, enterprises are increasingly accommodating these same systems as they either adopt their own mobile first strategies, formally adopt 'Bring Your Own Device' (BYOD) policies that allows workers to use their personal devices, or grudgingly accommodate the user shift to a growing variety of smart, mobile devices to their workforce.

"At most businesses, it's now an accepted fact that at least some employees use personal smartphones and tablets for at least some work purposes or use work-provisioned mobile devices for at least some personal purposes."

Galen M. Gruman
InfoWorld columnist^{iv}

According to the Accenture CIO Mobility Survey, companies are investing in mobility to drive revenue through customer engagement and transactions on mobile devices, improve field service and customer service delivery, accelerate the sales cycle^v.

New Pressures on IT to Respond

The rush to put mobile apps into the hands of users, however, is outpacing the ability of IT departments to ensure the performance of those apps are sufficient to keep workers and consumers happy. According to studies, one in four apps is abandoned after its initial use and more than 60 percent of apps in the Apple App Store have never been downloaded at all^{vi}. With smartphone users having an average 41 apps per mobile device^{vii}, it's easy for poorly performing mobile apps to be discarded or ignored.

According to Chris Kelly, Director of Developer Outreach at New Relic, "Your users expect your apps to work as promised. They expect them to perform like applications on their traditional desktops and web browsers regardless of the fact that the apps are running on networks and hardware with the specs of an eight-year old computer. If it doesn't respond or takes longer than three seconds to respond, you have a problem^{viii}."

Supporting the mobile environment is a much more complex undertaking than support for the traditional client/server environment. Smartphone users typically upgrade to new devices every 18 - 20 months, while prepaid users cut the upgrade cycle to as little as 7 - 8 months^{ix}.

Not only are there many different devices and operating systems, there are many versions of operating systems that likely need

Grappling with the App Store Phenomenon

Another aspect of mobility that is new to the traditional IT organization is the app store phenomenon, named after Apple's hallmark online software marketplace and subsequently emulated with Google Play (previously named Android Market).

These app markets generally fall short of the standards that enterprises require. "Put simply, a consumer marketplace is built for consumers," notes *Enterprise Apps Today*^{xi}, which said apps in those environments generally don't arrive on 'shelves' soon

Perils of Mobile App Misses

With new languages and platforms to support and the expectation for rapid development, the risk of pushing out a poorly performing app increases. The costs of designing and developing a mobile app can cost as much as \$200,000 to \$350,000^{xiii}, so the risk of failure is high.

to be supported at the same time, including multiple variants of iOS and Android. *CIO* magazine recently opined that the BYOD movement took off in the second half of 2010 when employees started asking to access their work email on their personal iPad.

According to a recent Yankee Group survey, 50 percent of surveyed companies are increasing their budgets this year for mobile apps.

"In short order, a rapid march toward a BYOD model began," says *CIO's* Shane O'Neil. "In such BYOD scenarios (which as *CIO.com* often reports are more complex than they seem), IT must manage a variety of smartphones, tablets, mobile apps and operating systems namely Apple iOS and Google's Android. IT departments must also keep managing PC-based Windows 7, Windows XP and, to a smaller extent, Windows Vista and Mac OS^x."

That's a lot of disparity to manage. "Enterprises are trying to manage a very broad and fragmented ecosystem, which means keeping track of what devices are being used by what app and by how many users," says Bill Hodak, Director of Product Marketing at New Relic.

enough, lack sophisticated billing procedures, may be weak in security and may not integrate with enterprise backend services.

But users want access to mobile app marketplaces. And IT benefits from their self-service functionality, which has spawned development of in-house enterprise app markets to supply sanctioned apps to business users. Gartner predicts that within four years, 25 percent of enterprises will have their own app marketplaces^{xii}.

However, the nature of mobility amplifies traditional application performance issues. "Fixing performance problems after the fact is pretty much standard procedure for all applications," says *TechTarget* editor Jennifer Lent^{xv}. "But mobile environments make the problem much worse. With users on the move

among widely varying connectivity conditions, poor mobile app performance is so prevalent it's almost the norm."

Lent argues that, "Instead of architecting apps to run fast from the get-go – and coding and testing them with performance goals in mind – [developers] take a wait-and-see approach, hoping the software won't run into trouble when in production."

But the risk of workers out on the front line experiencing mobile app performance issues is likely to require redefining the duties of developers. Forrester Research analysts Jeffrey Hammond and Julie Ask advise that enterprises should, "Expect more developers to be on call for application support in the new model,

Charting the Best Mobile App Strategy

"IT departments are used to building big, complex systems that process transactions. But mobile apps require a new way of thinking," CIO editor Mitch Betts writes in an ebook on enterprise mobile app strategies^{xvii}.

Unlike traditional client/server architectures that were typically constrained by support for a minimal number of platforms (and sometimes just one!), in the mobile environment IT is likely facing demands to support both Apple's iOS and the many versions of Google's Android (and probably Windows and BlackBerry, too). A successful IT mobile development strategy needs to find the right balance between those user demands and the enterprise's need for minimizing the number of devices or OS versions being supported.

Ultimately, success depends on how the app runs on a device. "There are many considerations at this tier, including data availability, communication with middleware, local resource utilization, and local data storage," notes Microsoft's *Architecture*

Performance Is Everything

"To improve the quality of their apps, developers must understand how the apps perform in the wild,"^{xix} observes a team of Microsoft researchers. "Lab testing is important, but is seldom sufficient. Mobile apps are highly interactive, and a full range of user interactions are difficult to simulate in a lab."

When it comes to mobile apps, "Developers need to think beyond how the app is performing on the device to how constant communication with web services and APIs are impacting performance," says New Relic's Bill Hodak. Mobile

using triage to handle defects and investigate degradation to production services. Those tasks have traditionally been the domain of systems administrators.^{xvi}"

"End users have consumeristic expectations for mobile apps – they must be native, easy to deploy and use, and provide a rich experience that includes app awareness and contextual data^{xiv}."

Amy Konary
IDC analyst

Journal^{xviii}. "In addition, many business factors need to be considered. For example, who are the target users? How critical is it to have the latest data? Are there restrictions for storing data on the device? What provisions are there in case of no network connectivity?"

This all starts, of course, with developing a sound mobile roadmap. First, define the role mobile has in the overall enterprise IT strategy. Gather input from both business leaders and end users to determine what they need from mobile and how they need an app to work. In addition to lining up resources needed to execute the roadmap, it also helps to have a business sponsor high enough in the hierarchy to resolve internal political issues and champion the development team's mission and budget. Once the coding begins, testing and feedback with target end users is more important than ever, given that mobile users not only will quickly shun a poorly performing app, but they're likely to utilize their social networking resources to spread the word.

app crash reports offer just one insight into performance, but if users are forced to stand idle watching a loading icon for interminable seconds or minutes, that's not going to show up in a crash report.

The limitations of crash reporting is that it happens after the fact, so a poor user experience has been generated before the development team is even aware there's an issue. There are multiple points of possible failure with a mobile app, including within the application code, in the mobile device or calls to web services

and APIs. Most enterprises lack any tools to pinpoint the cause of a holdup or hang up: Which web service calls are the slowest? Is it the app or the network that's causing it to be slow?

It's vital to analyze usage and performance details across different versions of your app to make sure the newest version

Conclusion

The mobile app market is projected to top 89 billion downloads by 2015 and it is expected that half of all payments will be transacted via mobile by 2020. Although millions of dollars are being poured into mobile applications, app developers and line of business managers have had no actionable insight into the performance of the apps that deliver key services.

New Relic, the SaaS-based cloud application performance management provider, is enabling the business success of

is also the best one. Being able to determine which version of an app is getting the most usage, and how memory and CPU usage compare across different versions can be critical to ensuring acceptable performance across the enterprise.

the mobile app industry with New Relic for Mobile Apps, a first-of-its kind service. The new addition to the New Relic world-class web app, real user and server monitoring service extends its in-depth visibility capability to the performance of Android and Apple iOS mobile applications. New Relic for Mobile Apps allows app developers to see exactly what their mobile users are experiencing to ensure high customer satisfaction. For more information go to newrelic.com/mobile.

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