



Deliver mobile apps

A lifecycle approach to mobile testing and development





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Executive summary

Mobility services are frequently being positioned as part of broader application transformation offerings, enabling enterprises to support the bring-your-own-device (BYOD) approach, with the development of enterprise app stores and the ability to leverage personal devices for business functions.

This white paper describes software and services that accelerate and simplify the creation of internally developed or “in-house” enterprise mobile applications. It also describes how to deploy and manage these mobile apps on both company-provided and “bring-your-own” smartphones and tablet computers. Solving the complete mobile app lifecycle means transforming enterprise apps for multiscreen devices, facilitating design, mobile testing, security, performance, management, and compliance to reach new customers and employee expectations.

Introduction to mobile app lifecycle

Enterprises need to transform their mobile strategy due to the availability of a variety of mobile devices and ever-increasing demands for new mobile applications from their stakeholders. HPE Mobile Application Lifecycle helps to drive the evolution of mobility within the enterprise.

This paper shares how through this lifecycle approach, HPE brings together its top enterprise services and software solutions and experience and knowledge of years of providing services to different enterprises, to help not only in mobile applications development and mobile testing but also to use HPE Software to manage them.

Global Industry Analysts (GIA) predicts that the global market for enterprise mobility is projected to reach \$174 billion USD by 2017.¹

International Data Corporation (IDC) foresees the IT spending to reach \$1.8 trillion USD in 2012 of which 20 percent will be related to the mobility segment.²

For enterprises, HPE Mobile Application Lifecycle can accelerate the time to market of their mobile applications and help them optimize company-wide processes, lifecycle management, and end-to-end quality control for mobile applications.

For service providers, it also creates new revenue stream opportunities by offering an end-to-end solution with cloud scalability for the development of mobile applications for enterprises (business-to-business [B2B], business-to-consumer [B2C], and business-to-employees [B2E]), mobile network operators [MNOs], independent software vendors [ISVs], or value-added resellers [VARs].

For both enterprise and service providers, it decreases costs by offering an efficient end-to-end monitoring and management of mobile applications.

¹“Enterprise mobility—A global strategic business report, MCP-6256,” Global Industry Analysts, Inc., October 2012. For more information, visit strategyr.com/pressMCP-6256.asp.

²“IDC predicts 2012 will be the year of mobile and cloud platform wars as IT vendors vie for leadership while the industry redefines itself,” IDC, December 2011. For more information.

Enterprise mobility: where it all starts

Mobility will help drive the evolution of business models

Many IT projections for 2012 showed mobility as one of the widely discussed topics for this year and for the upcoming years also.

CIOs surveyed by Gartner in 2012³ placed mobility (mobile technologies) at number 2 in their overall priorities, behind analytics and business intelligence and before cloud computing. Mobile technologies are increasingly becoming a priority to support business strategies:

- Changing business models drastically and driving the business value of enterprise mobility through mobile payments
- Creating new business channels to reach customers and users
- Generating opportunities to improve or streamline business processes, cut costs, or open up new revenue streams
- Deepening the customer's connection to the enterprises they interact with or are interested in

Mobility helps change the face of the workforce

Previously, IT organizations tightly controlled the type of devices used for work, however we are witnessing a remarkable trend where employees are bringing their own devices to work. As companies continue to compete within the global market, the demand for employees to be accessible at all times is becoming increasingly important. Paired with the need to remain connected to corporate work information while traveling, enterprise communications is now a key business strategy for all type of organizations.

According to recent estimates from ABI Research, enterprise mobility management services, which include services to manage mobile apps, devices, content, network services, expenses, policy and security—will grow to \$11 billion USD worldwide by 2016.⁴

Powerful, game-changing business drivers are inspiring enterprises around the globe to integrate mobility into their core IT support strategy, leading to employees:

- Being more available to interact with customers
- Experiencing better connect with their peers and co-workers
- Showing increased productivity, reduced paperwork, and more responsive customer service that can add up to an increase in revenues/profits

According to Forrester, the worldwide mobile management services market is expected to reach \$6.6 billion USD in 2015, a marked 69 percent increase over its previous forecast in about six months ago in March 2011.⁵

³ "Business intelligence, mobile, and cloud top the technology priority list for CIOs in Asia: Gartner Executive Programs Survey," Gartner, September 2012.

⁴ "Smartphones and media tablets drive enterprise mobility management services to \$11 billion USD by 2016," ABI Research, October 2011. For more information, visit abiresearch.com/press/smartphones-and-media-tablets-drive-enterprise-mob.

⁵ "Mobile Management Takes A 180-Degree Turn—A BT Futures Report," by John C. McCarthy and Michele Pelino, Forrester, August 2011.

Growing importance of managed mobility services

Many enterprises are increasingly looking at managed mobility services as a potential solution to the problems of managing the growing cost and complexity of mobility on an international scale. According to a Frost and Sullivan study funded by HPE, about 50 percent of the respondents said that they would implement an enterprise mobility service and are more likely to prefer an outsourced or hosted solution.⁶

Managed mobility services are being positioned as an alternative for enterprises that normally would have to build their own mobility solution. The market is ripe for carriers, operators, system integrators, and other firms that are looking to:

- Strengthen their service offerings to help retain customers and gain new ones
- Create additional revenue streams

The year 2011 saw a continued evolution of managed mobility services, offered by both wireless operators and IT service providers, and generally including telecom expense management (TEM), mobile device management (MDM), mobile security, logistics, and mobile application enablement and management. A particular emphasis this past year on mobile security and application management reflects growing enterprise requirements in these areas.

Why are so many companies launching mobile apps?

The quality of experience and the familiarity employees have with their own technology means they naturally resort to using their own devices and applications for work. With just over 60 million mobile workers in the U.S. (38 percent of the entire workforce), nearly three quarters of companies consider working from home or on the road as part of their wider organizational culture, and the vast majority of companies now believe these workers are as productive as those working in an office. Mobile professionals are leading the way as executives, managers, administrators, public servants, and other knowledge workers who have spread mobility outward across different job roles and downward from executives to nonmanagerial staff.

Along with the growing mobile workforce, a number of additional factors are driving growth in mobile applications. Key factors include the evolution of high-speed mobile networks, the explosion of smart mobile devices, users' familiarity with apps and mobile app stores, and a decrease in the costs associated with developing, distributing, and maintaining mobile applications. This has spurred companies to look beyond mobile email and basic mobile access to corporate databases and consider other applications to liberate enterprise data and more directly impact key business processes.

To mobilize applications, enterprises will have to go through the stages as described in figure 1. The stages include deciding the design of the applications, building it through to deploying them on various devices, and managing them end to end. These enterprises are actively engaging third parties in this effort.

⁶ "Enterprise Application Store (EAS) Research," Frost and Sullivan (HPE sponsored), January 2012.

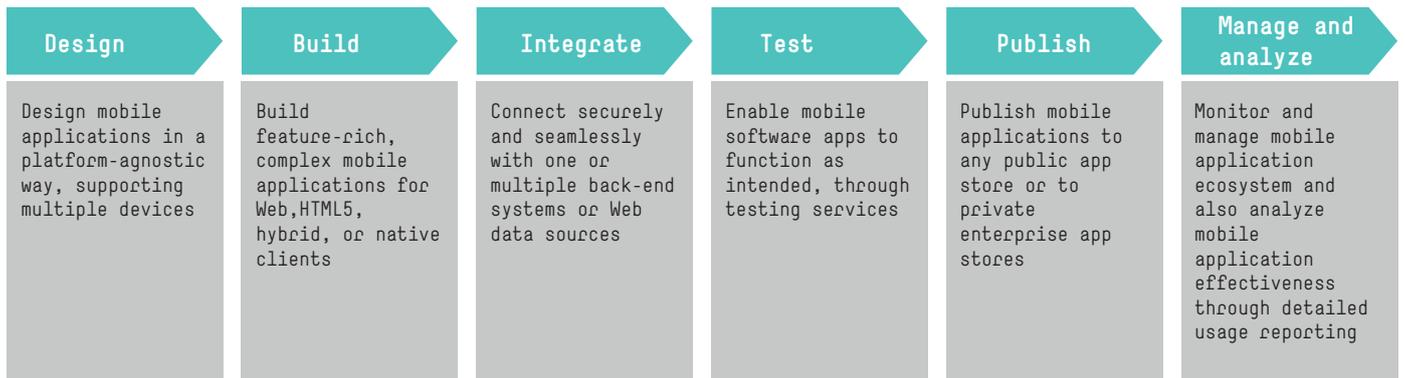


Figure 1. Steps involved in mobilizing enterprise applications

Mobilization of enterprise apps

As an answer to these different steps involved in mobilizing enterprise, the HPE Mobile App Lifecycle is a complete solution set that helps provide end-to-end management of enterprise applications. This provides application lifecycle management as well as end-to-end monitoring and management of mobile applications.

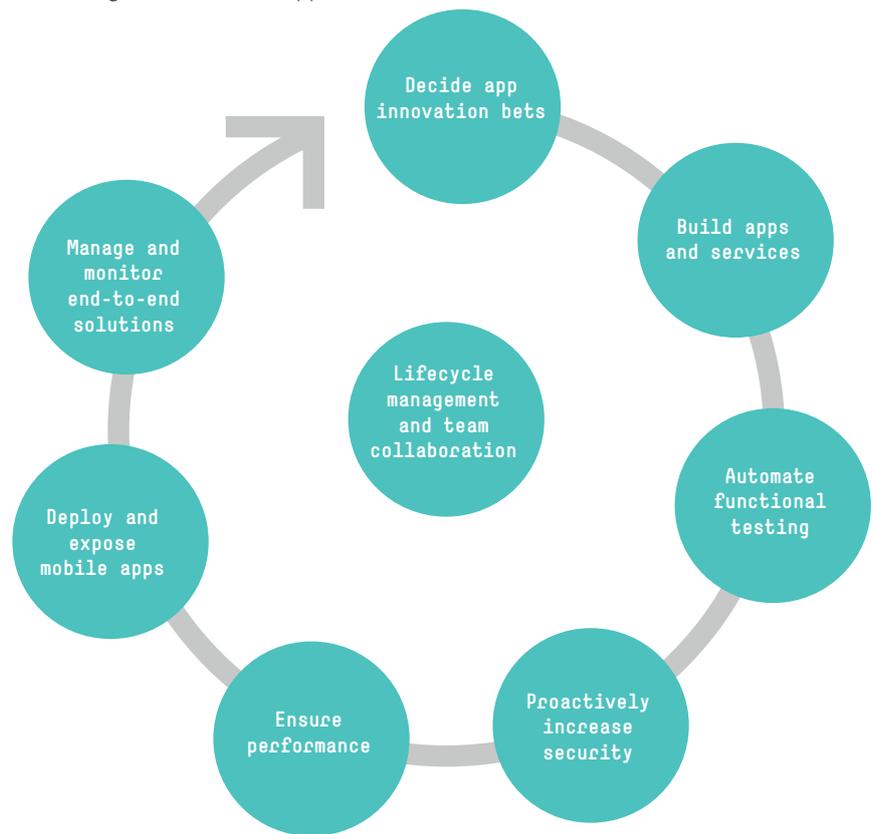


Figure 2. HPE Mobile App Lifecycle

A closer look at HPE Mobile App Lifecycle offering shows that it has solutions for every single stage of the mobilizing of applications and value chain. Now let's discuss each of these phases of the apps lifecycle.



Decide app innovation bets

Depending on the need, an organization can buy readymade applications, hire a third-party application vendor to develop them, or invest in an application lifecycle management solution. In most cases, the needs are such that the organizations need customized applications and the internal IT teams do not have the experience, time, or tools to design and build those customized applications. The mobile application transformation can:

- Rationalize and modernize the traditional application portfolio to the optimum number of applications required to run the enterprise—managed and delivered in the most cost-effective way
- Deliver new application solutions for customer service/engagement, which are enabled by a secure cloud application platform integrated to the customer's chosen client device

HPE Application Lifecycle Management (ALM) closes the gaps between IT team silos and disjointed work processes related to project planning and tracking, requirements definition and management; application development; functional, performance, and security testing activities; defect tracking; and application's readiness for release. Application governance sets the architectural and technical policies across the enterprise. Requirements management breaks out the application engineering-focused elements to drive the required developments with the respective owners.

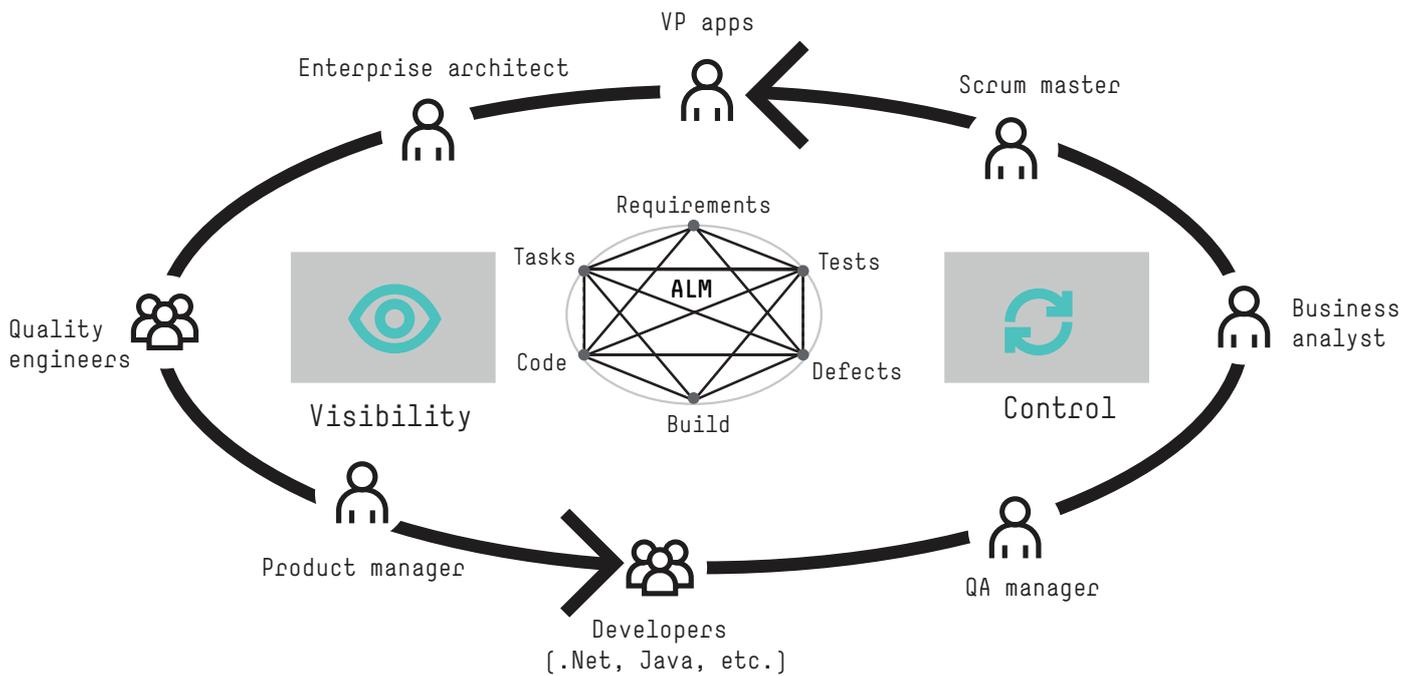


Figure 3. 360-degree visibility for stakeholders

Lifecycle management and team collaboration

It is well-known that collaboration tools in the IT space are rapidly on the rise and industry analysts expect this rise to continue into 2012. Currently, there are several standalone collaboration solutions as well as established IT management providers embedding collaboration into their existing enterprise products.

Processes in the enterprise are usually well structured. But often, they require unstructured discussions, over email or IM, to be completed. This is especially amplified in mobile use cases: mobile user needs the connection of structured processes with their unstructured conversation counterparts in a more organized and context-based fashion.

The question is can collaboration help IT organizations perform better?

IT today is built around well-structured processes, such as incident management that often require unstructured discussions, over email or IM, to complete the task. These side conversations are typically disconnected from the actual IT processes, thus most of the knowledge shared in the communications is lost after the incident is closed. In other cases, there are unstructured activities that take place within and between silos, such as DevOps that often must pull-in outside contributors. Again, organizing these fragments of information is a difficult and often unfulfilled task.

Perhaps the key to better IT efficiency is to connect the structured IT processes with their unstructured conversation counterparts in a more organized fashion. In this construct, all data passed around the organization could be fed into a single system of record, where all interactions, no matter where they originate, including IT applications, email, chat, and others, are all monitored and archived.

Build apps and services

The requirement is to extend applications to the mobile perimeter. The typical approaches to doing so vary widely. Each has its merits and drawbacks, depending upon a company's business requirements and the user experiences they want to provide. Here, we discuss the characteristics of the following mobile application development and deployment options:

Web apps

This approach mobilizes applications using a Web browser and can be an easy way to extend existing applications. To access the application, users launch the browser on their mobile device the same way they do on their desktop, without the need to learn a new application. With no need to develop, install, and manage applications for each specific device and platform, this model can deliver substantial time and cost savings. There's also no need to push updates to mobile devices, just the website needs to be updated. Browser-based solutions also deliver a relatively passive experience for B2C applications: Nothing happens unless the user opens the browser. Companies are missing the opportunity to create fully immersive and interactive experiences for customers.

Native apps

In this model, developers use downloadable development kits provided by device manufacturers to write mobile applications using the device's native language. This enables the application to be tightly integrated with that device's APIs and unique features such as a barcode scanner, GPS, or camera, and other device-resident applications such as email, address books, or calendars.

There are disadvantages. With very little portability across mobile devices and platforms, native client applications require developers to build and update multiple versions of the same application. This requires different skill sets for each device and also demands developers to be in a constant state of re-learning and repetitive development cycles.

Hybrid apps

The third category of mobile apps that is emerging is based on a combination of native apps and Web Apps. Leveraging the power of HTML5 and JavaScript and combining a platform specific native application, it may be possible to harness the benefits of both Web and native approaches. The native container provides access to device-level capabilities, such as location, messaging, camera, and other sensors. The HTML5 and JavaScript part can then be coded to be universal, so that the bulk of the application can be used on any mobile device—so long as there is a native container.

HPE Service Virtualization software allows development and testing teams to access limited or unavailable services in a simulated, virtual environment. This easy-to-use solution speeds application delivery, eliminates risks, and reduces cost by virtualizing services within existing environments. By enabling parallel development and early functional testing, it eliminates wait times. HPE Service Virtualization also reduces the use of high-cost, business-critical infrastructure or pay-per-use components for testing.

Automate functional testing

Mobile application testing services enable that enterprises' mobile software applications function as intended. It also helps enterprises to efficiently identify salient application issues early in the application development lifecycle itself, to make sure defects do not leave the development phase. This in turn would accelerate the time to market of mobile applications and reduce the total quality assurance time and cost of mobile testing.

The cornerstone of this strategy is mobile testing automation. By automating the functional and regression testing of your mobile applications, you can provide the quality and performance of your applications on any device, OS, network, and location. A key enabler of this strategy is device-agnostic scripting; allowing enterprises to build test cases that can be easily maintained, reused, and ported to multiple mobile platforms.

As your mobile applications need to meet the same quality standards and business objectives as your desktop or Web apps, it is essential to integrate mobile testing within your existing ALM infrastructure. By managing desktop, Web, and mobile application testing through a single integrated ALM platform, organizations can centrally manage and track all application projects, leverage the accumulated knowledge of their teams, and provide consistent workflows and processes.

The HPE Unified Functional Testing (UFT) platform is an industry-leading testing automation suite.

Proactively increase security

Security of mobile devices is a major concern, especially as more and more business functions and processes are mobile enabled. Mobile applications provide access to information and the ability to complete sensitive transactions as if connected to the physical network.

Mobile devices can also present unique security challenges, which require adequate care and attention to manage risk. Imagine the risks if your CEO loses his or her smartphone? Are your applications and data still secure?

It's one thing to address security vulnerabilities in software during development or during QA testing. But what about the software you've already deployed and use every day? It may contain multiple flaws that could be exploited. Removing them may not be practical in the short term for a variety of reasons—especially if you don't own the original source code. Instead, what's needed is the ability to contain the risk from potential vulnerabilities until they can be fixed.

HPE Fortify secures the whole mobile stack, from the client device to the network communications to the back-end server. HPE Fortify Mobile Application Security solutions provide the most comprehensive, automated, and advanced mobile security protection for the enterprise. Whether your application is developed in-house, procured from third-party sources, or running in production, we ensure that every single line of code is written securely for Apple iOS or Android devices.

Ensure performance

The most obvious issue is to design mobile applications that can function when the data connection is sporadic. This is not only a design aspect but also a key factor that must be considered when planning a mobile application. Applications and mobile websites need to be optimized for the mobile experience and account for the nature of limited and variable bandwidth that is normal on mobile devices. A less obvious performance issue with mobile applications is the impact that the shared mobile network can have on the performance of the application. The impact of a mobile device on an existing system can be surprising. When mobile access is added to an existing system, the device has the potential to dramatically slow or crash the system. The problem is that the mobile device typically takes longer to complete transactions, locking up key server resources, which are normally used and released quickly.

Because network is such a key element in mobile applications, HPE LoadRunner software and HPE Performance Center software now include speed simulation to simulate various types of upstream and downstream bandwidth. For a solution that includes other characteristics such as latencies, packet loss, and jitter, we add network emulation to the HPE mobile performance testing solution through HPE Network Virtualization (see figure 4).

Deploy and expose mobile apps

A key aspect of application management is application delivery. Enterprises need to build and launch multiple new applications rapidly that can effectively run on multiple smart devices. These applications cover customer relationship management (CRM), enterprise resource planning (ERP), and other back-end systems, including financial applications, HR applications, travel management, records management, and billing. It could also include enterprise enforcement applications such as antivirus, server administration, even IT management to name a few.

Enterprises are looking to provide a personalized experience to employees, so that they can access the applications that are relevant for the employees. The goal of building applications for a large number of employees coupled with the reality that majority of employees already own smart devices is driving the economics to deploy enterprise apps store.

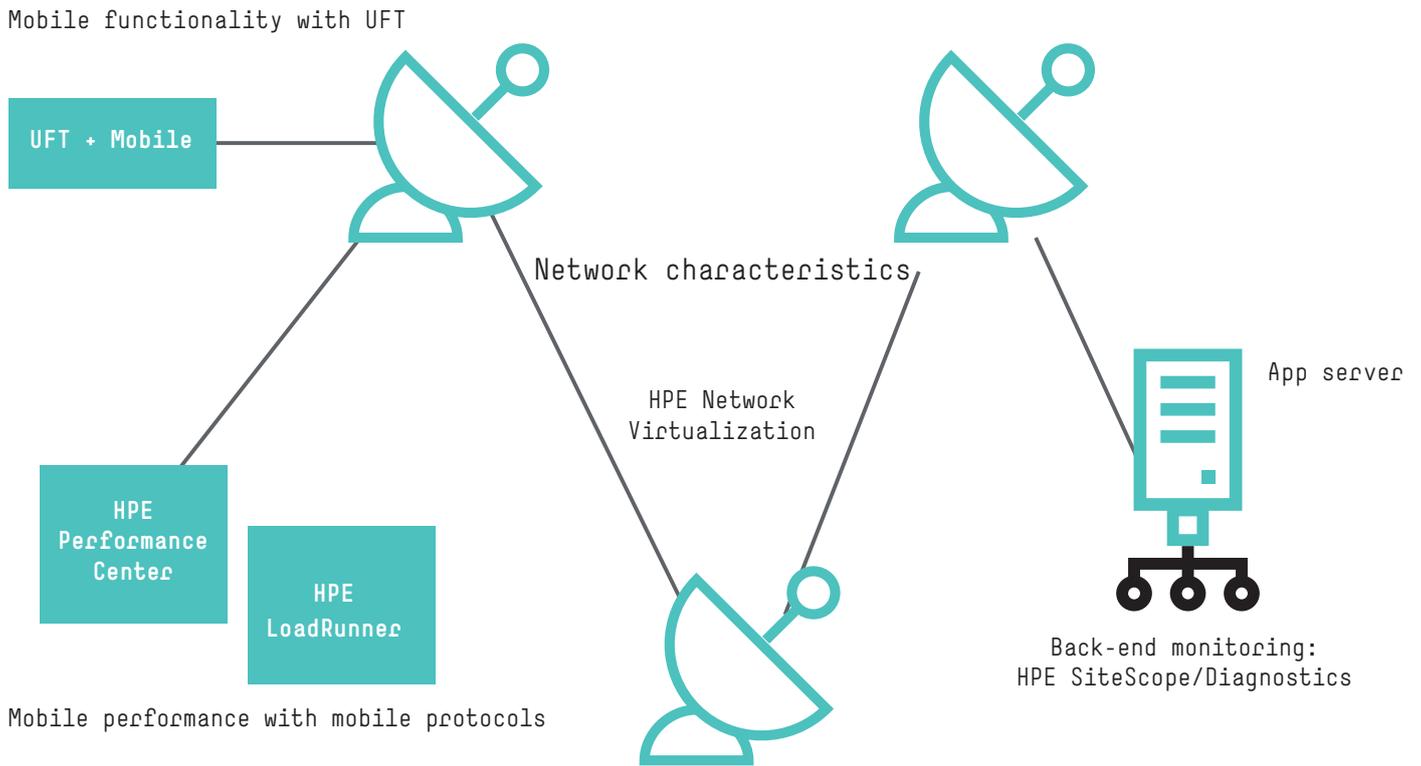


Figure 4. Test the complete user experience

Manage and monitor end-to-end solutions

With the growing demand of enterprise applications across the different hierarchy levels within an organization and especially a need for those applications to be as consumer friendly as they can get, the focus of organizations are shifting from just managing mobile devices to managing the applications on those devices. It is through applications that the productivity could be increased and users could be given “IT consumerization” experience. So, there has been a gradual drift in focus towards mobile applications management (MAM) from mobile device management (MDM). And especially with the phenomenon of BYOD, certain aspects of MAM such as customized application development and corporate data security have become the focus.

Application monitoring

After you deploy your first mobile application, inevitably, questions arise: How will IT manage the application? Will your users have a good mobile experience? And, how do you ensure transaction success? While IT organizations are often able to monitor and manage their traditional IT environments effectively, the solutions they are using may not be adequate for the new complexity that mobility brings. To continue offering the same or higher quality of service, you need an approach to monitor the end-to-end health of the mobile business services, from the application through the device, carriers, and back-end infrastructure. All these elements can have an impact on the mobile user’s experience, and you definitely want to know about those problems before reading about them on Twitter or Facebook or elsewhere online.

Security monitoring

Keeping your organization safe and secure can be a daunting task. Bots, worms, and hackers threaten it from the outside. Data breaches, theft, and fraud threaten it from the inside. A bad economy only magnifies the problems. At the same time, increasing regulations and fines highlight the risk of failure in preventing these threats. It's never been more challenging to protect your business. As a result, the value of automated security and compliance monitoring is higher than ever.

The HPE Business Service Management (BSM) and App Plus Mobile solutions for mobile monitoring provides an approach that enhances the performance and availability of your mobile applications. They monitor the health of the mobile application, as experienced by the user, and provides the necessary diagnostic details to isolate issues quickly. This solution provides the convergence between applications, systems, and infrastructure monitoring applications to provide a comprehensive end to end view of your business service. HPE BSM and App Pulse allow IT to:

- Control the performance and availability of mobile applications
 - Uncover mobile application issues quickly and easily
 - Bridge the gap between development and operations for greater agility and higher mobile application performance
-

The **HPE ArcSight Enterprise Threat and Risk Management (ETRM)** platform helps safeguard your business by giving you complete visibility into activities across the IT infrastructure: external threats such as malware and hackers; internal threats such as data breaches and fraud; risks from application flaws and configuration changes; and compliance pressures from failed audits. ArcSight ETRM includes the industry's leading security information and event management (SIEM) products for collecting, analyzing, and assessing security and risk event information. The result is rapid identification, prioritization, and response to policy breaches, cyber security attacks, and insider threats.

Why do organizations need HPE Mobile App Lifecycle?

Enterprises are required to constantly keep up with change in technology and sometimes anticipate changes and proactively make upgrades to their existing infrastructure and systems. These changes have a bearing on the applications that run on the various devices in terms of need for increased security, need for changes in interfaces to make it more employee friendly, include functionalities among others. They address all these issues, a full lifecycle approach is required that can serve as a platform on which all these changes can be reactively as well as proactively monitored and implemented using best practices gathered from previous implementations.

Enterprises that rely on a host of solution providers would require sort of a centralized system or platform that provides governance for monitoring performance, capturing feedback, and feeding it back to the system. This platform can establish best practices in terms of collaboration, and leverage all that experience for constantly improving the process and thereby keeping the enterprises up to date with respect to infrastructure, technology, and processes. Focusing on the entire mobile lifecycle helps enterprises achieve this.

For example, a mobile enterprise application platform (MEAP) comes with an application development environment, and on this platform, mobile applications can be tested, deployed, and managed. Service providers need ISVs and MAM partners to accomplish that. However, with the growing need for mobilizing as well as managing applications, service as well as solution providers need the tools to do more than what regular MEAP players can offer. They need to understand the full lifecycle.

For some organizations, the best way to manage the lifecycle is through a center of excellence (COE) approach, which is a logical platform with centralized technology that helps drive mobilizing and management initiatives across the enterprise. A CoE can help standardize, centralize resources; eliminate redundancies; and increase efficiencies in the mobilization process. The best practices fostered by a CoE helps deliver quality applications.

How does HPE address enterprise needs?

HPE has adopted a dual go-to-market strategy where it reaches out directly to enterprises to address their mobility needs, and also equips service providers to provide mobility solutions to its end customers.

Each stage of the mobile app lifecycle addresses the specific IT organization needs:

- The line of business or portfolio management organization prioritize investment candidates.
- The delivery managers orchestrate the work of often distributed teams.
- The developers build feature rich, complex mobile applications for Web, HTML5/hybrid, or native clients.
- The testers verify apps for functionality, performance, security compliance.
- The deployment managers publish mobile apps to private enterprise app stores.
- The operations managers monitor and optimize apps through diagnostics and detailed usage reporting.

The HPE Mobile App Lifecycle leverages HPE Mobile Center, HPE ALM, HPE Sprinter, HPE UFT, HPE Network Virtualization, HPE Service Virtualization, HPE Fortify, HPE Performance Center, HPE BSM, HPE App Pulse Mobile, and HPE ArcSight. Together they meet the governance, testing, security, performance, and operations requirements through a service provider-based mobile-related applications COE.

Enterprises will be able to either consume internally the full portfolio for their own mobile applications development or rely on a service provider that will monetize an end-to end solution with the cloud scalability, for the development of mobile applications for enterprises (B2B, B2C, and B2E), mobile applications for mobile MNOs, ISVs, or VARs.

Through this lifecycle approach, HPE can bring together its top enterprise services and software solutions and experience and knowledge of years of providing services to different enterprises, to help not only in mobile testing and applications development but also use HPE Software to manage them. This approach to provide an environment, which brings together not only proven solutions needed to mobilize applications but also years of experience in providing ALM, BSM as well as other CSP-focused solutions, puts HPE in a highly competitive position compared to others.

Conclusion

With the HPE Mobile Applications Lifecycle, enterprises and service providers, can develop their IT strategy to prioritize their mobile opportunities, answer to the consumerization of the enterprise, and better serve their citizens and customers with new services.

Through its lifecycle approach, HPE addresses all requirements of an enterprise with respect to building and mobilizing applications. It has some of the best tools in the market to take care of every single stage in the mobilization process.

HPE Services

Get the most from your software investment. We know that your support challenges may vary according to the size and business-critical needs of your organization.

HPE provides technical software support services that address all aspects of your software lifecycle. This gives you the flexibility of choosing the appropriate support level to meet your specific IT and business needs. Use HPE cost-effective software support to free up IT resources, so you can focus on other business priorities and innovation.

HPE Software Support Services gives you:

- One stop for all your software and hardware services saving you time with one call 24x7, 365 days a year
- Support for: VMware, Microsoft®, Red Hat, and SUSE Linux as well as HPE Insight software
- Fast answers giving you technical expertise and remote tools to access fast answers, reactive problem resolution, and proactive problem prevention
- Global Reach Consistent Service Experience giving global technical expertise locally

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