CORPORATE APPLICATIONS ON A MOBILE DEVICE NEAR YOU. NOW EASIER THAN EVER.

Micro Focus OnWeb® provides the fastest, easiest solution to allow mobile users to work with corporate applications.
Introduction

The face of corporate computing has changed dramatically over the last few years. The rapid adoption of Internet technologies has enabled organizations to expand access to corporate applications beyond the boundaries of the traditional networks. In the process, many “internal use only” applications have been integrated into company-wide intranet applications. Extranet applications have broadened business processes to include partners and e-commerce applications, allowing virtually instant interactions with both uppliers and customers. As a discipline, IT has shifted from thinking of corporate applications as only automating tedious back-office data processing to a new understanding of corporate information as a powerful competitive weapon that can swiftly transform both companies and industries.

In the rush to turn business into e-business, lessons were learned and re-learned. Patient organizations learned that moving to conduct business electronically does not have to mean that everything has to be replaced with a flashy new application suite. Established companies learned how to realize tremendous benefits by enhancing their existing information systems with Web-enabling technology, making previously isolated systems work with each other to create an integrated e-business solution.

Application developers also learned that a “terminal” is no longer just a terminal. With the right interfaces, a Web browser did an even better job of presenting traditional corporate applications – better than the host terminals and original host applications. Once freed from the constraints of host terminal formats, any device with a browser – including personal computers, televisions, game consoles, smart appliances, ATM machines and gas pumps – become potential corporate application terminals.

The Internet wave has continued the decades-long trend to push information out of the back office and get it closer to where business transactions actually take place – with salespersons, service representatives and directly with customers. Today, with Internet connectivity reaching onto every desktop and into every briefcase, corporate applications can be delivered anywhere in the wired world.

The next major transformation is coming from companies who are thinking beyond the limitations of the wired network and its “access to information” metaphor. The new metaphor of mobile computing is one of “information delivery” to users, wherever they are.

Mobile computing

The sales growth of laptop, notebook, and tablet-type devices over the last few years underscores the demand for information that travels with people as they move around. These devices have become essential tools for different mobile workers – from salespeople to service technicians. Now, they all can have access to and enter data electronically, creating a new standard for doing business.

In recent years, the market for small handheld computers (such as PDAs) has grown very rapidly and trends point to even more exploitation of mobile technology. Research shows that while laptops are still the main mobile device of most companies, smaller handheld devices are being used to deliver mobile email to field personnel. RIM blackberry devices have been at the forefront of this new age of mobile communication, but many other vendors are able to deliver mobile email on other handheld devices, such as those using the Microsoft Windows Mobile and Symbian platforms. In addition, many employees have purchased handheld devices like PDAs and smart phones and are looking for ways to leverage these devices in their business lives.

So, many companies are now facing the challenge of coming up with strategies to turn PDAs into useful productivity and communications devices. They are facing an equal challenge in the fact that PDA technology cycles every six months – much more quickly than conventional PCs and laptops.

Nowadays, most of these devices come loaded with more than one wireless option for data communications, including Bluetooth, Wi-Fi, General Packet Radio Service (GPRS) and other 3G network technologies, such as EDGE. All of these devices come with browser support, which in most cases goes beyond support for Wireless Application Protocol (WAP) to support standard HTML base Websites. In addition, most of these modern devices support development frameworks, such as J2ME and the Microsoft .NET Compact Framework, which creates new opportunities to develop solutions beyond mobile email. With this, the availability of literally thousands of Wi-Fi...
hotspots has meant that the combination of 3G GPRS and Wi-Fi can realistically be used to deliver the mobile infrastructure needed by the enterprise.

The real opportunity for companies is to move beyond just mobile email, and to leverage the millions of mobile devices already in the hands (literally) of salespeople, service representatives, and customers to deliver.

The mobile Internet – reality vs. hype

In the past, the media – with plenty of eager help from over-zealous marketing campaigns – has generated a massive amount of hyperbole about the wonders of the mobile Internet. By confusing “Internet capable” with “can do everything that the wired Internet can do,” the mobile Internet has been over-sold. Many companies’ inflated expectations have been dashed by the realities of yesterday’s first generation implementation of the mobile Internet.

If we look back to the year 2000, it was estimated that by 2004 the number of Internet capable cell phones being shipped and used would outstrip – by a large margin – those that did not have a data communications capability. That milestone was reached in half that time.

In 2005, Forrester research shows that mobile networks now cover 80% of the world’s population, which means that over five billion people are within range of a cellular network. And a quarter of the world’s population – some one-and-a-half billion people – use mobile services. In addition, 78% of those users are connected to GSM networks, with the greatest penetration of mobile use in Europe followed by the USA.

IDC has estimated that over 55 million mobile devices were sold in 2005 with a growth of 165% over 2004. In other surveys, IDC has said that approximately 40% of them will possibly require middleware in an enterprise environment. The estimate is that there are tens of millions of phones with the capability of running J2ME applications – all of which are capable of integrating with the enterprise through their HTTP and Web capabilities.

Research company Gartner estimates that mobile terminal sales are likely to reach 848 million by 2008. They also estimate that in the third quarter of 2005 the shipment of smart phones exceeded 12 million units. World Smartphone shipments surpassed those of PDAs for the first time in the third quarter of 2004 by 1.2 million units. In the third quarter of 2005, this gap widened to 9 million units.

Lessons learned

Mobile Internet pioneers have learned some important lessons:

1. The mobile Internet is not suitable for all of the same applications you find on the wired Internet. The key is choosing applications that fit within the screen space and speed constraints of today’s mobile devices. Applications that provide on-the-spot order entry, sales force automation, customer lookups, and equipment services are all excellent candidates for mobile Internet use.

2. Mobile Internet technology, at all levels, is moving very fast – handsets, network speeds, interoperability standards, and protocols are all evolving rapidly. Mobile phone manufacturers, network infrastructure players, and mobile network providers are investing massive amounts of resources in developing and deploying the next-generation networks. Today’s devices have bigger screens and full color, and the faster networks enable even more types of applications and services to go mobile.

3. Mobile network technology is not a North American technology, nor European, nor is it GSM-specific or tied to any transport network or technology. Mobile applications mask all the local differences and enable worldwide deployment of mobile applications using virtually any handset and wireless network.

Many corporations have started to deploy mobile applications into small projects and a substantial number more are in trial or pilot stages. The types of mobile applications being deployed range from packaged mobile applications used to deliver solutions for specific groups (such as a field service) to custom mobile applications, where they need access to multiple corporate systems in a single solution.

When it comes to the benefits of mobile technology in the enterprise, most companies cite better employee productivity as the major gain, with the advantages of real-time access to corporate information as a close second.

The mobile Internet – reality vs. hype

The more information people have at their disposal, the better decisions they will make.

Forrester defined mobile enterprise technology as a set of technologies – including networks, infrastructure and portable devices – that enable employees and systems to use applications in a mobile environment. Key deliverables from mobile-able corporate applications include a boost in customer service, an increase in productivity and a reduction in costs.

The concept of multi-channel and multi-modal applications means that corporate applications should be able to inherently support access from any device. Of course, the reality is that this is not the case and will not be for quite some while. In the meantime, mobile application middleware will deliver solutions that allow both core custom-developed applications and contemporary packaged applications to be accessed from handheld devices from a multiplicity of vendors. Obviously, any mobile middleware solution should have built-in support for as many enterprise applications, old and new, as possible.

Back in 2004, Gartner stated that companies should plan for a widening range of mobile application platforms to become available. They advised companies that they should plan for mobile applications to become a strategic part of a company’s IT portfolio and not just tactical solutions.
They estimated that while only 5% of a company’s IT budget was spent on mobile in 2003, the percentage would double by 2007 with the majority of that spend going for middleware with multi-channel access capabilities. That is a significant investment in moving organizations to the goal of the mobile enterprise. GIGA (now part of Forrester) in their assessment of mobile application development in 2004 cited choosing middleware with versatility and flexibility as being uppermost in the selection criteria (with a focus on Web services and strong connectivity to existing applications and a good development framework being key.

This White Paper goes on to look at some of the options for delivery of mobile enterprise applications with a focus on “mobile in motion” as opposed to mobile employees simply working in different locations.

The mobile approach

In the enterprise, building mobile applications is as much about integration and the challenges associated with that as it is about pure application development.

Industry reports reveal that more than 70% of mission critical data and most of the pivotal business logic that runs worldwide commerce still reside within existing host systems – the speed and power of which are indisputable. Host systems are unquestionably here to stay for most large organizations and will continue to be a foundation for business success as organizations design and implement new business initiatives.

However, many of those same organizations have also invested in packaged applications (SAP, Siebel, Oracle Applications, PeopleSoft) to manage their businesses. When building mobile solutions that leverage these systems, enterprise developers need to use the existing business logic of these applications (to ensure data integrity and security) and not have to recreate this logic in new systems.

For many organizations, an enterprise mobile solution will need to expose business functions from multiple core business systems into a single, seamless, easy to use interface. These functions are usually housed on multiple platforms and consist of structured data (databases) and unstructured data (host, ERP, CRM applications and middleware). Without a comprehensive mobile platform with built-in connectivity to these core systems, delivering mobile solutions becomes difficult.

Consequently, in the enterprise, mobile applications are an extension of the company’s existing systems and processes and are very rarely standalone applications in their own right. They exist to allow the mobile workforce to have real-time and continuous access to corporate business processes and information.

Many enterprise mobile applications require real-time access to multiple existing business systems (e.g., to provide the sales team with a complete view of the customer). The mobile application might need to interact with the corporate SAP system for sales information, the Siebel system for customer care issues, and to a mainframe for customer records. Within the barriers of limited real estate and data bandwidth, the mobile enterprise solution should only provide the specific data required for the task and not try to be general purpose.

As such, mobile integration follows the same principles and the same tenets as does any other integration issue in the corporation. Today’s guiding principles for integration is the service-oriented architecture (SOA) and its major delivery mechanisms XML and Web services. Service-oriented architecture promises to decouple the end devices and their operating environments from the integration of mobile services with corporate applications. The adoption of XML and Web services will help this come about. Today, the consensus supports the adoption of mobile middleware. It is clear that off-the-shelf integrated application adapters combined with the capability to define and coordinate transactions across multiple back-end corporate applications (with process management) is the recipe for delivering corporate business processes and applications to mobile devices.

If that is the end product, what are the steps along the way?

Where is WAP?

A mobile phone used to be considered “Internet capable” when it had a specialized piece of software called a WAP browser installed in the phone. Even today, the majority of cellular providers still offer an Internet service that uses the capabilities of the WAP browser (often called a micro-browser), even though the capabilities of the phone and its form factor have changed considerably.

Although it is called a browser and it can be useful to think of WAP-based sites as a “minimalist Web pages,” the screen and keypad of a mobile phone present different challenges for the application designer than the rich output and input capabilities of a full-fledged modern Web browser. And existing Web sites – with their frames and graphical navigation aids – cannot be translated easily into the menu-oriented approach of the WAP browser.
**From WAP to Web**

The latest round of mobile devices offers much more capability than the simple cell phone with a micro-browser. Whether the device is based on Palm technology or Microsoft Windows Mobile technology, Symbian technology, or Java technology, the display capabilities are dramatically improved and the means of interaction with the device are similarly extended—from touch screens to thumb operated keypads. The human/machine interface is significantly better than the original simple monochrome WAP microbrowser which used a very small text-only screen. In addition to user interface improvements, these devices now have fully capable Web browsing capabilities and support many of the standards one expects to find on a desktop or laptop browser, such as Internet Explorer, Firefox or Opera. (The browser on Windows Mobile devices is the Pocket version of Internet Explorer and the Opera browser is available for PCs, PDA and phones.)

As with WAP technology, there are two elements to Web support on mobile devices and the standards are the standards of the Internet. The underlying communications technology is IP and the underlying network is the Internet, in very much the same way that it is for desktops and laptops. The end-user application is a Web browser that is capable of rendering text and graphical pages from data delivered in HTML and XML or their mobile equivalents. As such, very complex interactive application presentations are possible, bringing the mobile corporate enterprise one step closer to reality through the mobile Web. However, these mobile browsers still do not provide the full functionality of a desktop Web browser, so still present some limitations compared to the full Web experience.

Consequently, mobile-enabling corporate information is many times easier with smart mobile devices with full browser capabilities. Products like Micro Focus OnWeb Mobile can deliver corporate applications and transactions to Web-enabled PDAs and smart phones very easily. It is possible to have Micro Focus OnWeb Mobile extract and re-present transactions from a corporate application enabling the creation and delivery of real-time enterprise mobile applications.

**From Web to mobile application**

As mobile devices have become more powerful and capable and move towards supporting programmable operating systems, new applications can be built and added to them. In the case of Windows Mobile devices, there is full support for the Microsoft programming environment. The Compact .NET Framework is implemented on PDAs, Phone Edition PDAs and Smartphones. This has helped Microsoft gain a leading 48% market share (and the greatest growth rate) in PDA shipments as its dominance of the enterprise market for PDAs continues. In Western Europe, that market share is a record 70%. In the case of Palm devices and many phones based on the Symbian operating system (such as Nokia and Sony-Ericsson), there is support for the Java 2 Mobile Environment Virtual Machine (J2ME) which allows Java programs to be written for and run on even generic cell phones. Delivery of these applications to the mobile device can be done automatically through a capability called Over-The-Air provisioning (OTA), where delivery and installation is done wirelessly through the cell network.

This programmability for mobile devices opens up opportunities for corporate use and integration with corporate applications. If the corporate programming environment extends right down to the mobile device as with the Microsoft .NET Compact Framework (.NET CF), it is possible to develop applications to run on the mobile device that have the look and feel of a mobile application, but are interacting seamlessly with corporate assets over GPRS or Wi-Fi networks.

For example, a GPRS wireless PDA application can be built that interacts with Micro Focus OnWeb Mobile, which in turn interacts with the mainframe core system or contemporary systems, such as SAP. Micro Focus OnWeb converts the business transactions into reusable objects or components such as Web services, .NET Assemblies or Java Beans, and then these are consumed by the mobile application running on the mobile device.

An example of this type of application would be in customer relationship management where a mobile application on a wireless PDA allows the salesperson on the road to access customer contact information. An application that looks and behaves like a PDA application running locally on the PDA would allow the salesperson to tap the PDA’s touch sensitive screen to input customer or company names to retrieve contact details. In the background, the application running on the PDA uses the GPRS network to communicate with Micro Focus OnWeb Mobile, which communicates with an IBM iSeries system that runs the customer database. Information from the iSeries system is passed back completely transparently by Micro Focus OnWeb Mobile to the PDA application. To the salesperson it looks as though the whole sequence has run locally on the PDA. The salesperson has simply tapped the screen and received the information he or she was looking for. The key standard delivering this transparency for future mobile applications will be Web services.

**From mobile Web to mobile Web services**

The enabling technology for the new mobile economy will be Web services, under the umbrella of a service-oriented architecture (SOA). The principles of SOA are not new. Existing client-server systems, such as DCE, CORBA and DCOM, have delivered distributed applications for quite some time—some more successfully than others. The key difference with SOA is that the intercommunication technology is based on standards and those standards are manifested through Web services, which has the advantage that
information providers can be developed completely independently from information consumers.

In a corporate environment, the information providers will be the existing applications that drive the business. These will be core IBM mainframe applications or more modern contemporary applications like SAP or more likely a mixture of many applications across many platforms. For these applications to provide information in a standardized manner, an integration layer must exist between the “old” applications and the “new” Internet-enabled mobile economy. Therefore, the challenge is to Web-enable or mobile-enable existing corporate assets so that transactions within them (or entire business processes that span more than one application) can be presented as services to be consumed by other applications and systems.

The information consumers in the mobile economy are the mobile devices. Far from just presenting static information, like WAP card decks or Web pages, these mobile devices are fully programmable interactive systems with applications built for them by conventional development environments like Microsoft Visual Studio. In today’s world, applications for mobile devices can consume Web services and work easily with any corporate systems.

Web services is the lingua franca of both SOA and the mobile enterprise. It is also the common denominator between host systems, the Java world and the .NET world. The more a company’s application assets are Web-enabled and the business processes are presented as Web services (or perhaps more accurately as business services), the more those company assets can be utilized to deliver high-value mobile solutions very easily.

Micro Focus OnWeb Mobile

Micro Focus is a world leader in providing companies with a full spectrum of solutions for delivering access to corporate information sources and for integrating data and business processes from existing applications to create composite applications. Micro Focus OnWeb Mobile is a high-level environment in which new applications are created by first isolating the important corporate information from existing applications or data sources, then combining that information in new ways to create a single mobile application that presents information to end users.

Micro Focus OnWeb Mobile enables organizations to determine how the information should be presented to the mobile user – as a Web page in HTML, as an XML file that another program will process, as a Web service – all delivered to a mobile phone or a mobile communication-enabled PDA. This allows Micro Focus OnWeb Mobile to both Web-enable and mobileenable the underlying corporate applications.

In fact, a key advantage of Micro Focus OnWeb Mobile is its support for “scalable presentation,” which allows organizations to use the same application integration technology to mobile enable all their business systems – from mainframe, iSeries and UNIX-based systems to contemporary systems like SAP, Siebel, Oracle Application and PeopleSoft – and present them through Web-based as well as mobile applications.

Micro Focus OnWeb Mobile is capable of providing the application integration capability for a wide range of solution types, including those that are simply tactical and driven off of today’s line-of-business needs, as well as those that are more strategic initiatives and a fundamental part of an organization’s future IT architecture.
Available for both Microsoft and UNIX servers, Micro Focus OnWeb Mobile can integrate host transactions with Java (J2ME) or .NET CF applications providing the entire mobile solution as a composite mobile application server.

When working with Java and .NET development environments, the Micro Focus OnWeb Mobile tool set snaps into the development environment (JBuilder, Eclipse or Visual Studio) and allows developers to easily integrate host transactions with the mobile applications they are building. Micro Focus OnWeb can deliver Web services that represent host transactions in a loosely coupled architecture (for the Web) or components like Java Beans (or EJBs) and .NET Assemblies for tightly coupled architectures (used internally in organizations).

As a standalone mobile composite application server, Micro Focus OnWeb Mobile has the application connectivity, process management and application presentation capabilities needed in a single solution. Micro Focus OnWeb Mobile is multi-channel, multimodal and can take care of any presentation style needed for a wide range of corporate applications.

Summary

Companies have an excellent opportunity to improve their competitive advantage using mobile technology to deliver crucial corporate information to employees, partners and customers wherever they are located. The “go anywhere” coverage of mobile networks plus the ever-growing deployment of millions of Internet-enabled mobile phones and PDAs makes the mobile enterprise a viable and cost effective proposition.

The Micro Focus OnWeb Mobile Server provides a high-level environment for rapidly creating applications that use information from existing corporate applications and databases, and makes it very straightforward to render corporate information in different presentation formats for virtually any mobile device.

This makes it easier than ever for organizations to deploy truly mobile applications.

How to get started

Micro Focus OnWeb Mobile Server installation is a well-defined; straight-forward processes that can be handled by any experienced IT professional.

Building Micro Focus OnWeb Mobile applications that make corporate information available on mobile devices is easy for developers who are familiar with component-based development techniques and environments. Micro Focus has gotten a corporate mobile application working within a matter of days.

About Micro Focus

Micro Focus, a member of the FTSE 250, provides innovative software that allows companies to dramatically improve the business value of their enterprise applications. Micro Focus Enterprise Application Modernization and Management software enables customers’ business applications to respond rapidly to market changes and embrace modern architectures with reduced cost and risk.