WHITE PAPER

Enabling Mobile eBusiness Success

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Computer Associates™

Enabling Mobile eBusiness Success

The demand for and use of mobile technologies is increasing at a phenomenal rate. Simultaneously, the underlying landscape of mobile technologies is changing rapidly, creating the need for solutions to facilitate the long-term growth and success of mobile enterprise initiatives. It is important for software vendors to provide comprehensive solutions to manage, secure and maintain the mobile applications infrastructure, while fostering development, integration and access to applications and information over wireless mediums. By leveraging new, innovative development and a broad array of strategic business alliances, Computer Associates International, Inc. (CA) delivers comprehensive mobile eBusiness solutions to promote customer success.

Understanding the Mobile Landscape

A Brave New Mobile World

The use of mobile technologies is steadily on the increase, for both business and personal uses. Mobile phones are a common sight today and many people own personal information management (PIM) devices or palmtop computers where they manage their schedule, contacts and other essential functions. Employees on the move appreciate the value of staying connected with their enterprise and other resources through mobile phones. Most enterprises now have corporate mobile phone plans that make it easier for mobile employees to stay in touch and increase productivity.

With rapidly advancing technologies, transmission of data in addition to voice signals has become a popular offering of most wireless carriers today. For example, you can now receive email on your mobile phone in addition to regular calls. With the growing proliferation of wireless enabled PDAs (Personal Digital Assistants), Blackberry mobile email devices, and notebook PCs, it is all the more important to ensure that the mobile employees are connected to, and supported by the enterprise.

Although the terms "mobile" and "wireless" are often used interchangeably, they are two different things:

- **Mobile** pertains to the ability of an entity to be on the move.
- **Wireless** pertains to the technology that allows transmission of voice, data and other content through radio waves over the air, not restricted to physical cables or other physical mediums.
- **Mobile devices** are portable electronic components that are used by mobile people to do their work.

It is wireless technology that facilitates employee or enterprise mobility. Mobile devices depend on wireless technology to connect to the enterprise and conduct transfer of content in order to fulfill the users' business needs.

It is not surprising that an increasing number of employees are demanding mobile support from their enterprise in order to maximize performance. Without a proper mobile strategy in place most of enterprises will fail to meet their cost and performance objectives. In fact, recent studies have shown that mobile employees connected to the enterprise are much more effective than if their enterprise did not support a mobile workplace. For employees whose work is mostly away from their desktops, this is an important issue.

Mobile employees have a long list of enterprise capabilities needed to support their work. Here are some basic requirements:

- Mobile connection via laptops so that work can be done from anywhere.
- Connect to enterprise assets wirelessly using laptops, PDAs, mobile phones and other devices for flexible access to business processes.
- Adequate protection of information on wireless devices to ensure that confidential business information is not lost or stolen.
- Real-time synchronization of information to ensure accuracy and consistency.
- Receive appropriate alerts and messages to the mobile device in order to carry out required job functions with optimal efficiency.

The expectations listed above are quite typical, and the mobile infrastructure today is able to deliver them with significant success. The wireless industry is continually evolving, with new developments springing up at an accelerated pace.

The line between computing and telephony is slowly blurring. Devices that combine the features of mobile phones and PDAs are becoming quite popular in the market today. Eventually it will be one combined device we carry — that's where we do our scheduling, email, web surfing, videoconferences, document management and take all our business and personal calls. This would be a true all-round utility device. With data storage capabilities and network bandwidth steadily improving, it won't be long before we have the capabilities of a currently available high-end desktop computer available in a device that fits into our pocket. One can only speculate the ramifications this convergence of devices will have on the way we work and how enterprises will function.

Wireless Industry Standards

No technology works in a vacuum. Many entities work at different levels to bring the technology to a more mature and usable state. Standards and specifications are first conceived, developed and then implemented. Currently, most standards bodies for the mobile eBusiness environment are focused on hardware or infrastructure related issues. Listed below are some of the more important standards organizations related to the wireless industry today.

- **Wireless Ethernet Compatibility Alliance (WECA)**[1] seeks to attest interoperability of products based on the 802.11b specification, and certify them Wireless Fidelity (Wi-Fi) compatible. They endorse Wi-Fi as the global wireless LAN standard across all market segments.
- **The Institute of Electrical and Electronics Engineers (IEEE)**[2] does extensive research in technology spanning a broad spectrum. They created the 80211 standard for wireless networks, and are also instrumental in creating security protocols such as Wired Equivalent Privacy (WEP). The IEEE does not provide certifications of any kind for their specifications.
- **Bluetooth Special Interest Group (SIG)**[3] is a volunteer organization run by employees from member companies. Members support a number of working groups that focus on specific areas, such as engineering, qualification and marketing. The member companies build and qualify products under strict qualification procedures with regular testing of products at events sponsored by Bluetooth.
- **Wireless Application Protocol (WAP) Forum**[4] offers a comprehensive certification and interoperability testing program that covers device testing, content verification, and a set of authoring guidelines to assist developers in providing interoperable WAP applications and services.

Many other organizations such as the W3C, Wireless DSL Consortium and other institutions have standards directly affecting the wireless industry, though they are not specific to wireless communications. For example, XML and Web Services standards are increasingly part of the development and deployment to server and desktop processing, but they are equally applicable to wireless application. Several new standards groups are being formed to address specific issues regarding mobile eBusiness.

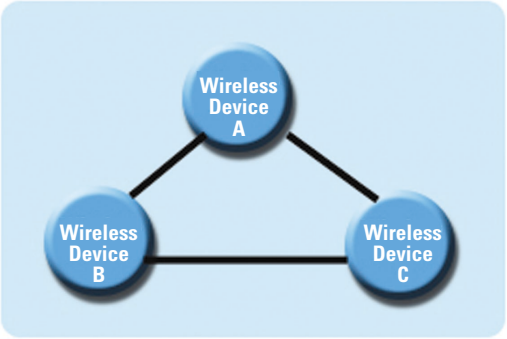
Wireless Communication Platforms for LANs

Despite the prevalence of standards committees in the wireless industry, there is no single unifying standard. It is important for enterprises to consider all the aspects involved in mobile support while contemplating a strategy for mobile eBusiness. Some of the key criteria in choosing a wireless network specification include:

- Number of devices in the wireless network
- Range of transmission
- Average size of transfers
- Speed of network
- Security measures
- Others

Wireless networks may operate in one of two modes — on demand, and Infrastructure mode.

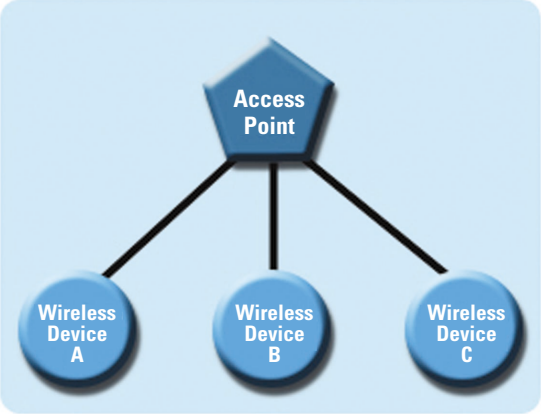
- **On demand mode (Peer-to-Peer).** Each mobile device, also known as a mobile client, communicates with the other devices in the network, within



Peer-to-Peer (on demand) Wireless Network

a specified transmission range or cell. This is described in the figure below. If a client has to communicate with a device outside the specified cell, a client within that cell must act as a gateway and perform the necessary routing.

- **Infrastructure mode (Wireless LAN).** Communications between multiple wireless clients are routed by a central station known as an "access point." The access point acts as a bridge and forwards all communications to the appropriate client in the network whether wireless or wired. Besides having routing mechanisms, the access point also has as a DHCP server and other features that facilitate wireless communications in a small to large business environment. Residential gateways are similar to access points, but do not have advanced management features required for corporate networks or high-traffic environments. A wireless client must first be authenticated, and then associated with an access point before it can perform any communications. The following diagram shows a typical wireless LAN environment.



Wireless LAN (Infrastructure Mode)

Enterprises that have a strong mobile eBusiness strategy must make a selection from the following major wireless LAN specifications available in the market today.

802.11b

This specification was defined by the IEEE. 802.11b is used as an extension of Ethernet to wireless communication, and as such is quite flexible about the different kinds of network traffic that passes over it. It is primarily used for TCP/IP, but also supports AppleTalk and other PC file sharing standards. Disparate systems like PCs and Macs may communicate over 802.11b using PC or PCI cards, and even some of the newer hardware utilizing USB and other forms of 802.11b based wireless network cards. Adapters for PDAs, such as Palm OS and PocketPC based devices are also available.

802.11b facilitates the wireless transmission of approximately 11 Mbps (Mega bits per second) of raw data at distances ranging from a few feet to several hundred feet over the standard 2.4 GHz (Giga Hertz) unlicensed band. The coverage distance depends on line of sight, obstacles, and unforeseen obstacles.

Several new protocols based on 802.11b, but not compatible with it, are also being released, including:

- **802.11a** — transmits 54 Mbps over the 5 GHz band. This is ideal for large data file transfers and bandwidth intensive applications over a limited area. While performance and throughput are significantly increased, the transmission range is notably reduced.
- **802.11g** — transmits 22 Mbps over 2.4 GHz. This specification is considered to be the next generation wireless network platform for the enterprise, working twice as fast as the current 802.11b specification. However, this is still a work in progress as of the date of this publication.

802.11b has become the standard wireless network deployment platform for public short-range networks, such as those found at airports, hotels, conference centers, and coffee shops and restaurants[5].

Bluetooth

This wireless network specification, defined by the Bluetooth Special Interest Group, is ideally suited for Personal Area Networks (PANs) that operate in short ranges and need a robust wireless network that allows transmission of bandwidth intensive information. Bluetooth specifications also promote inter-device communications, so mobile phones can communicate to PDAs, Notebook PCs with Laptops, and so on. Although it uses the unlicensed 2.4 GHz band for transmission, its transmission is faster than the 802.11b networks in both on demand and infrastructure modes. Bluetooth's range is, however, much lesser.

Bluetooth technology works well for on demand networks and situations where device-to-device communication is desired. For example, you can wirelessly connect from your PDA to a printer to print documents, or perhaps synchronize your desktop with your PDA over the air.

Wireless WANs

While the above architectures are specific to wireless LAN environments, employees that are outside the coverage area require to connect through wireless carriers that provide support for a wireless WAN (Wide Area Network) environment.

There are several wireless WAN protocols used all over the world. Two of the most widely used are listed below:

- **CDMA (Code Division Multiple Access):** Here, a large number of users are able to access wireless channels on demand. Used by most digital mobile phone companies today, the performance is almost 8 to 10 times better than traditional analog cell phone systems. The latest generation of this technology is called 3G and is much anticipated by many mobile users.
- **GSM (Global System for Mobile, formerly known as Groupe Speciale Mobile):** This wireless platform provides full voice and data support with worldwide roaming capabilities. Included in the GSM family is the GPRS (General Packet Radio Service) platform for delivering internet content on mobile devices, and the upcoming EDGE (Enhanced Data-rates for GSM Evolution) and 3GSM (third Generation GSM) for delivering mobile multimedia.

Most wireless carriers base their offerings on the above-mentioned platforms, leveraging the strengths of the protocol they decide to use. For example, services offered by Sprint PCS and Verizon Wireless are based on CDMA, while AT&T Wireless and Voicestream use GSM.

Facilitators of a Wireless Environment

In order to facilitate a mobile eBusiness environment, participation of several partners is required, namely:

- Mobile device manufacturers
- Independent hardware vendors (IHVs)
- Wireless operators (or carriers)
- Service providers (SPs)
- Independent software vendors (ISVs)

Connecting all these participants together to create a viable solution are System Integrators with focused practices in mobile eBusiness implementation.

Wireless Hardware

There are numerous devices that are wireless enabled to facilitate an efficient mobile workforce. Some of the top companies that provide these devices are:

- **Palm.** Currently the leading provider of PDAs, their operating system, called Palm OS, is a popular platform for wireless application deployment.
- **Compaq.** The makers of iPAQ handheld computers and notebook PCs, they are used in many enterprise settings due to their versatility and high performance. They use Microsoft's PocketPC platform as the operating system.
- **RIM.** Research In Motion makes the increasingly popular Blackberry wireless devices that allow mobile users to send and receive email.
- **Kyocera.** They specialize in mobile phones with PDA capabilities, using the Palm OS.
- **Nokia.** The leading mobile phone manufacturer, with innovating products that combine mobile phones, PDAs and other features.
- **Symbol.** The leading manufacturer of wireless devices and scanners for retail, utilizing the latest technology in bar code scanning.

Wireless devices add value to the enterprise only when they connect to the IT infrastructure and are actively supported by the administration. Access points, network cards, and other components essential to the deployment of a wireless communications infrastructure are available from several vendors, including:

- 3Com
- Cisco
- Fujitsu
- HP
- IBM
- Siemens

With the wireless infrastructure in place, it is important to choose the right carrier to facilitate high quality communications.

Wireless Operators

Wireless Operators are organizations that provide the hardware and communications infrastructure to make wireless transmission possible in a wireless LAN and/or a wireless WAN environment. Most of these provide basic wireless phone services and many of them now

offer services to transmit data in various forms. The top 3 wireless carriers worldwide are listed below:

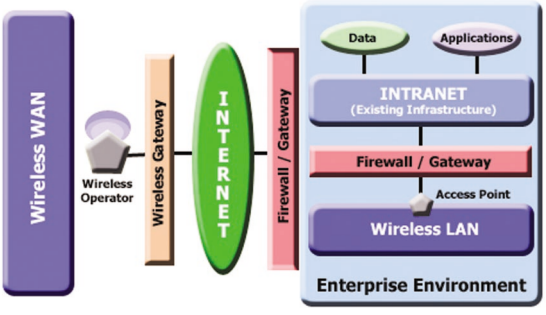
Wireless Operator	Country of Service
Vodafone	Germany
China Mobile	China
NTT DoCoMo Inc.	Japan

Table 1 : The Top 3 International Wireless Operators

The top wireless carriers in the USA are:

- AT&T Wireless
- Cingular Wireless
- Sprint PCS
- Verizon Wireless

Depending on the geographical scope of your organization, you will have to choose the right partner who can provide the required regional and/or national coverage necessary for your eBusiness.



Enterprise-wide View of the Wireless Infrastructure

Wireless Software

The wireless software industry is still maturing, and while most of the players are niche solution providers, very few actually provide substantial value to enterprise deployments. Ranging from low footprint applications like mini-browsers or PDA utilities, to more sophisticated solutions like inter-device communications or global positioning systems, wireless software vendors are engaged in several innovative research and development initiatives. Companies like Microsoft, Sun, Palm and others are active in this area.

When deploying a mobile eBusiness strategy, you have to consider the right combination of wireless network architecture, platforms, infrastructure components, devices and applications in order to be successful. The diagram titled "Enterprise-wide View of the Wireless Infrastructure" depicts a typical wireless architecture adopted by most enterprises.

Even with the absence of ubiquitous standards, the current wireless infrastructure is stable enough to support and deploy wireless applications developed for the mobile workforce. As wireless technologies mature, the quality and availability of wireless software will grow also. An important factor to consider is the need to secure and manage the enterprise infrastructure, while making all the necessary assets available to your mobile workforce[9].

Concerns for the Mobile Enterprise

While it is one thing for organizations to keep up to the latest industry trends, making it happen in the everyday life is a totally different story. Following are some of the key concerns of enterprises that are contemplating a mobile eBusiness strategy:

- **Security.** Wireless networks are very easy to break into and difficult to monitor. Your enterprise assets must be protected.
- **Management.** Effective management the components that make up a mobile enterprise, all the way from servers to the mobile devices.
- **Information Access.** Corporate information and business intelligence must be made accessible to your mobile workforce.
- **Return on Investments.** Wireless connections should perform as good as, if not better than, wired connections. They should add value to the enterprise and generate revenue. The benefits should be measurable in some form. ROI and business continuity is important.

Security

The number one concern in the world of wireless enterprises is security. Wireless networks are one of the easiest to hack into and most security measures may not be adequate to prevent this intrusion. There are several vulnerabilities in the WEP security features provided in the 802.11b standard. The goal of WEP is to provide data confidentiality in wireless networks at the same level as one that is wired. However, despite having well known encryption mechanisms, namely the RC4 cipher, WEP is vulnerable to attacks, both passive and active. This opens up the wireless network to malicious parties to eavesdrop and tamper with wireless transmissions[6]. Key management and robust authentications are also open problems with the 802.11b security features. The IEEE is scheduled to release a more secure version of WEP in the near future.

Bluetooth comes equipped with security measures like encryption and authentication, but these measures may not be very sophisticated for an enterprise environment. Organizations that have invested in a wireless network need a strong security solution today. One way to secure an enterprise infrastructure that includes a wireless network is to build it separate from the Intranet, and set up a firewall to protect communications. Implementing a robust VPN solution is also useful. The security features available with the VPN solution along with additional authentication, and access control features secure the users whether they are on a wired or wireless network.

Enterprises must also ensure that all devices are virus-free and that they do not act as carriers of malicious code. Access to the network from mobile devices must be authenticated, and only authorized users should be allowed access.

Management

Like a wired network, the infrastructure that supports a wireless network also needs to be managed. Some of the components that must be managed include access points, mobile devices, wireless application servers and others.

Management of the network increases performance and allows the administration team to respond to issues quickly. Besides providing a real-time view of the wireless network, the management solution must also provide a future view, so that proactive measures can be taken to prevent problems before they occur.

Corporate assets need to be accounted for; therefore each mobile device should come under the eye of enterprise management. Automatic transfer of relevant information, applications, and updates (like the latest antivirus signatures) should be made possible. In addition, data on the mobile devices must be backed up without causing any impediment to normal processing, and must be automatically moved to the server unobtrusively when on a wired network.

It is important to understand that wireless systems do not operate in a vacuum; they integrate into the IT infrastructure. Therefore, management of the wireless infrastructure must be in the context of the overall enterprise infrastructure. Point solutions for wireless networks are unable to effectively integrate wireless management information with monitoring the rest of the enterprise to promptly identify and resolve problems. Wireless management solutions must be integrated, comprehensive, and reliable.

Information Access

Enterprises with large data resources have volumes of untapped intelligence just waiting to be put to use. With a growing mobile workforce, it is essential to make this business intelligence available to them at their point of need and equip them to make profitable decisions. Mobile employees must also be able to access the business processes critical to their job function.

Enterprise portals provide a viable dissemination tool for organizations today. Wireless access to these portals is no longer a "nice-to-have" feature, but an absolute requirement. Organizations are also looking for ways to leverage legacy resources and make them available to mobile devices. With the emergence of Web Services, the need for a reliable solution to extend applications to mobile devices is ever on the rise.

Return On Investments

As the demand for wireless support from the workforce grows, enterprises need to act quickly and provide the necessary services in order to promote success. Gartner Group predicts that more than 50% of mobile applications deployed at the start of 2002 will be obsolete by the end of 2002[7]. Keeping this analysis in mind, it is important to make the right decisions to promote application longevity while at the same time being open to new improved solutions.

For enterprises that are contemplating a mobile eBusiness strategy, the following points are worth considering:

1. **Develop Your Mobile eBusiness Strategy With an Enterprise-Wide Focus.** All your wireless communications and other mobile activities are an integral part of your eBusiness. Choose an enterprise-wide solution that covers your eBusiness from end to end, providing all the required measures for security, management, and information access.
2. **Ensure Your Wired Enterprise Infrastructure is in Order First.** It is easier to integrate a wireless network into a well managed wired environment at an enterprise-wide scale.
3. **Choose the Right Partner.** Get into partnerships with the right companies that can help you with

your specific needs. Work with system integrators who have a focused wireless practice. It is therefore extremely important to choose the right software vendor to deliver an integrated, comprehensive, and reliable enterprise-wide solution for your eBusiness.

4. **Anticipate Change and Be Prepared to Leverage New Technologies.** The wireless industry is changing rapidly. Mobile devices are getting smaller, faster, and more capable. Performance of wireless networks is steadily improving. Opportunities to leverage mobile technologies will continue to grow. Associate with companies that will change with the times and yet be stable in what they do best.

Other issues like performance, extensive coverage, hand-over (between WLANs and WWANs) and roaming are also important and must be part of the evaluation process. While it is important to implement a strategy for mobile eBusiness, an overall enterprise focus is imperative to gain fast and steady returns on investments.

Computer Associates' Mobile eBusiness Solutions

Mobile eBusiness is not to be separated from what we know eBusiness to be today. CA makes software that manages eBusiness, including mobile deployments. Constantly innovating and evolving to address customer requirements, CA has positioned itself as a successful provider of solutions for the wireless enterprise. CA delivers value adding solutions for mobile eBusiness with the following initiatives:

- **Innovative Development.** With a broad array of skills and talented minds, CA's Research and Development team has developed innovative solutions for the wireless enterprise. Spanning all solution areas, CA is committed to ongoing research and development of solutions that add value to your eBusiness and foster success.
- **Strategic Partnerships.** CA has embarked on several strategic partnerships to provide enterprises a thorough and complete solution for mobile eBusiness.
  - Wireless companies that are CA partners include market leaders like Aether Systems, Broadbeam, Mobile-Mind, MobileSys, Nokia, Novarra, Opto22, Red-M, RIM, Qualcomm, Wavelink, VoyageData and many more.
  - Wireless operators like Cingular and SprintPCS ensure our presence at the decisive edge of wireless technology implementation and maintain high visibility.
  - Software vendors and system integrators like CompuCom, EDS and others have enabled us to expand our scope into the outer reaches of enterprise management and other solution areas.
  - Wireless device and system manufacturers like Alcatel, Compaq, Palm, Kyocera, Microsoft, Nokia, RedM, RIM, Samsung, Siemens, Symbol and others are also in business partnerships with CA.

Spanning all solution areas, CA's Mobile eBusiness Solutions address specific concerns that enterprises have about the wireless initiative. CA is actively involved in several wireless research projects and standards committees, thus growing to become one of the foremost software solution providers for mobile enterprises.

The wireless infrastructure is an extension of the current enterprise infrastructure, and must be secured, managed and nurtured in order to reap maximum benefits.

Mobile eBusiness Security

Securing a wireless enterprise is a major concern, and CA's *e*Trust™ brand offers a variety of solutions to address specific requirements. Your wireless network needs to be made accessible to the authorized users, defended against malicious intruders, and the security must be managed from an overall perspective.

Access

*e*Trust™ Web Access Control delivers complete authentication and authorization services for wireless users. *e*Trust™ VPN is an effective security mechanism for wireless devices to maintain authenticity and prevent eavesdropping of transmissions. Employees on wireless enabled laptops connect to the corporate LAN through *e*Trust VPN, and are protected with the same security features that are available to them if they were connected through a wire.

Defense

*e*Trust™ Intrusion Detection alerts you when unauthorized users try to invade your Wireless LAN and prevents them from accessing enterprise assets. *e*Trust™ Antivirus

protects your mobile device from malicious code, regularly updating the virus signatures.

Security Management

*e*Trust™ Policy Compliance enforces enterprise security policies at access points and gateways. Unauthorized users who do not comply with the policies are denied access. *e*Trust™ Audit maintains a history of usage and access patterns that help the security administrator track and monitor activity on the wireless servers.

CA is also partnering with several technology companies to research the possibilities of advanced security measures on low capacity wireless devices.

Mobile eBusiness Enterprise Management

The traditional boundaries of an enterprise have been stretched by the proliferation of wireless devices. The problematic wireless environment, which includes mobile devices, gateways, application and middleware, needs careful handling. Integration with existing infrastructure and managing the complexities of access protocols, device-specific characteristics, and network delivery channels must also be considered[8]. Besides managing the wired enterprise, CA has extended its reach to manage edge devices through strategic partnership with leading wireless solution providers, while at the same time broadening its own offerings.

Wired and Wireless LAN Management

CA's Unicenter® is the *de facto* enterprise management solution in the market today. Having a well-managed wired network is a prerequisite to venturing into the wireless arena. Unicenter manages all aspects of a wired LAN, including the servers, terminals, network devices, applications and systems. Unicenter now manages wireless access points, measuring their performance and allowing you to optimize the environment while ensuring high availability to keep the wireless networks up and running. You can discover access points on your network and monitor their performance. Unicenter also manages RIM servers that route and control email traffic between Blackberry devices, along with monitoring the health and performance of the companion PCs with which the devices synchronize.

Wireless Device Management

With the steady proliferation of mobile devices in the enterprise, centralized management is imperative, especially to administer security features, loss control and other contingencies like device shut-off, device BIOS flash and others. In addition, you should also be able to manage your enterprise from mobile devices.

From a central management perspective, you can now monitor the condition of mobile devices running PocketPC from the Unicenter console and perform various event driven procedures to ensure efficient performance. Additionally, you can view your Unicenter console on your mobile PocketPC device and manage your enterprise while on the move.

Software assets on mobile devices also need to be managed. Mobile employees must have access to all the latest corporate software and necessary updates, just as the wired employees. Unicenter® Software Delivery ensures that the wireless devices are updated with all the necessary information every time mobile users synchronize their handhelds. Unicenter® Asset Management ensures that only authorized software is installed on the mobile device, thereby protecting the user. Software and hardware inventories are maintained and can be deployed to new devices at any anytime.

Wireless Support

The call center is an important aspect of an enterprise that delivers IT services to its employees and customers. Unicenter Service Desk is wireless enabled so that mobile employees can use their handheld devices to look up information on their help desk tickets, for example, how many issues are open, how many pending, which ones are critical and so on. Other management functions can also be performed.

Data Preservation

BrightStor™ Mobile Backup takes hot backups of your laptop data in a non-disruptive manner without having to connect to a backup server. Automatic synchronization is carried out with the backup server when you connect to the LAN. This utility is invaluable when it comes to replacing laptops or building a new one as a result of theft or misplacement.

As the market continues to get infiltrated with mobile devices of different kinds on various platforms, managing mobile devices becomes a critical factor for organizations seeking to reap the benefits of wireless enablement. CA is committed to support your enterprise, and besides the current offerings, extensive research is ongoing to build more solutions that effectively manage mobile devices in the context of the entire enterprise infrastructure.

Mobile eBusiness Information Management

Mobile employees require access to pertinent information when they need it to make business decisions. CA provides various solutions to glean valuable intelligence from enterprise data and then make it accessible to users — whether they are wired or mobile.

Wireless Content Integration

A major breakthrough for information access through mobile devices has been achieved by the Advantage™ Wireless Integrator. This solution enables you to build wireless applications, and render content from disparate data sources to wireless devices. This is ideal for organizations that require making legacy resources available to their mobile workforce. Advantage Wireless Integrator also enables you to make any mobile device an interface to any SOAP compliant Web Service. In this manner, you can subscribe to, and access appropriate Web Services using your mobile device. The Advantage Wireless Integrator is device independent and supports a broad range of device platforms. This allows you to build the wireless application once and deploy it to many devices.

Wireless Portal Delivery

CleverPath™ Portal is the market leading enterprise portal that has advanced wireless capabilities to render business intelligence to your mobile workforce. The CleverPath™ Portal Wireless Services automatically detect the type of device that you connect from and renders the desired information according to your device's configuration. Using your mobile device, you can access the CleverPath Portal libraries and channels, perform appropriate administration tasks, search for information, and view appropriate content. Users are authenticated by using security features within the CleverPath Portal and are given access only to authorized areas.

Wireless Access to Web Services

Web Services deployment on platforms like Sun's J2EE and Microsoft's .NET are rapidly gaining traction in the enterprise[10]. CA effectively manages, maintains, and surfaces Web Services to your users across your enterprise including your mobile eBusiness. The Advantage™ Host Integrator for .NET allows you to rapidly produce a Web Services interface to existing legacy applications. These can leverage the Advantage Wireless Integrator to make host applications directly available on mobile devices. You can also create interfaces to Web Services and make them accessible through the CleverPath Portal.

If mobile employees are able to make the right business decisions because they are able to access the required information in a timely manner, the return on investment is evident. CA's solutions for mobile eBusiness information management facilitate easy access of content, intelligence and Web Services from mobile devices.

Enabling Mobile eBusiness Success

A global paradigm shift towards a mobile enterprise is well underway, and CA is poised to be a leading solution provider for this market. Armed with strategic partnerships and innovative products that enhance the value chain, CA's mobile eBusiness solutions provide these critical benefits:

- Secure wireless infrastructure that promotes safe communication and efficient mobile eBusiness.
- Ability to efficiently manage your complete enterprise — servers, access points, devices and other components of your wired and wireless environment — in an integrated manner.
- Easy information access so that mobile users are equipped with timely intelligence to make profitable business decisions without any restrictions.
- Leverage your wireless infrastructure to provide quality service and reap significant ROI as you continue to grow your enterprise.

As the wireless industry continues to evolve and mature, CA will continue to innovate, grow and deliver end-to-end, comprehensive and integrated solutions that foster customer success.

Footnotes

Biography

Sumit Deshpande, One Computer Associates Plaza, Islandia, NY 11749 (Sumit.Deshpande@ca.com).

Mr. Deshpande is a Technology Strategist in the Office of the CTO. He is responsible for defining and communicating Computer Associates' global strategy for solutions in the Portal and Business Intelligence domain. He has worked extensively with several Business Intelligence solutions and is responsible for many successful projects at client sites. Mr. Deshpande has a broad range of experience in varying aspects of IT, including networking, application development, technology consulting, market analysis, and others. His articles have been published in several technical publications. Mr. Deshpande presents at several trade shows, and advises clients, analysts, and other relevant parties on Computer Associates' high-level strategy for 21st century technology solutions. He has a BS in Computer Science from Pune University, India, and an MS in Information Systems from Marist.

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