

## Mobilize your application with iAnywhere Solutions\* mobile database platform



### Overview

#### OCCASIONALLY CONNECTED COMPUTING

No longer are users content to be tied to the desk by a wired network connection. The freedom and flexibility of wireless access is causing many to cut the cord at an ever quickening pace; however, it is also exposing latent problems in the design of many applications that cause users to demand change. To deal with the inherently transient nature of wireless connectivity, developers must construct applications which support the occasionally connected model of computing – that is, the applications continue working, even when network connections are short-lived or worst case, simply not available.

To many developers, the task of implementing an application that supports the needs of occasionally connected users seems like yet another challenge in an already complex world. For those who make the decision to leverage the efforts of others, the job can be done without causing undue duress. A solution to this problem can be found with iAnywhere Solutions – a developer/provider of mobile databases, synchronization software, and middleware components that enable wireless access to enterprise information.

The iAnywhere Solutions mobile database solution, SQL Anywhere Studio\*, is used by developers as a key building block for constructing a diverse range of mobile-enabled applications that span all aspects of industry. SQL Anywhere Studio forms a key component of iAnywhere Solutions' m-Business Platform. With more than 7 million technology licenses at 10,000 customer sites worldwide, iAnywhere Solutions has been recognized as the market leader<sup>4</sup> in mobile databases for six consecutive years.

#### A Growing Opportunity

The need for this technology is growing rapidly due to the increasing deployment of mobile PCs and handheld devices. According to DataQuest<sup>1</sup> the proliferation of mobile PCs will continue unabated with a 19% compound annual growth rate. This means that by 2005, close to one-third of all business PCs will be mobile. Wireless access via 801.11b (and soon with 54Mbps 802.11a) is becoming de rigueur on mobile PCs. Intel is furthering this trend with the recent announcement of Intel® Centrino™ mobile technology – a low power, yet high-performance mobile PC technology with embedded Wi-Fi (Wireless Fidelity) capability<sup>2</sup>.

Handheld devices, which have become significantly more useful since the addition of color screens and powerful processors like the 733MHz Intel® XScale™ processor 80200, are now also sprouting Wi-Fi antennas. The potential of this market segment, according to IDC<sup>3</sup>, should not be ignored as rapid sales growth is expected to catapult the number of PDAs (of all types) from the current 12 million to around 35 million in 2005.



## An Offline Solution

It is clear that the once “niche” problem of supporting occasional connectivity is now becoming every developer’s concern. Where it was once possible for a product designer to clearly determine if an application would be utilized away from the network, the integration of Wi-Fi support into Intel Centrino™ mobile technology based notebooks now exposes all enterprise applications to this question.

As mobile users roam around, within, and between buildings, they continually drift in and out of wireless access zones. During these transitions there will likely be times when network connectivity is lost entirely. “Applications designed without occasional connectivity in mind will often hang in this scenario,” said Alison Henderson, iAnywhere Solutions’ UK Operations Director. “We have a long history of helping developers implement solutions to these challenges – the rapid growth of Wi-Fi has brought this issue to the forefront and is causing many developers to address this need proactively.”

The usability challenges posed by occasional connectivity can be effectively addressed by adding application support for an offline processing mode. In this mode, the application maintains a local data store using SQL Anywhere Studio and provides sufficient functionality to continue operating while offline. When connectivity is re-established, the contents of the local data store are bidirectionally synchronized with the application’s primary data store (typically residing in a large-scale enterprise database).

The benefits of providing offline capabilities go beyond the obvious. Aside from facilitating an improved user experience when the application transitions between connected and disconnected states, an offline mode can also improve battery life. Offline processing requires significantly less power than online processing, thus increasing the longevity of mobile devices with power-hungry wireless technologies like GPRS (General Packet Radio Service) modems.

Henderson emphasized that “SQL Anywhere Studio also does its part to minimize the impact of network transfers by heavily compressing data that is sent during the synchronization process.”

## ADVANCED TECHNOLOGY

With a solution clearly focused on the needs of mobility developers, iAnywhere Solutions resonates with its target audience to the tune of a 73% market share<sup>4</sup>. The technology behind SQL Anywhere Studio was designed from the ground up as a small footprint database and offers multiple synchronization options for the bidirectional exchange of information with a wide variety of enterprise datasources (including Sybase Adaptive Server Enterprise\*, Oracle\*, Microsoft SQL Server\*, and IBM DB2\*).

Developers need not be concerned that a small footprint design implies a product with limited capabilities. To the contrary, SQL Anywhere Studio includes a full-featured database with enterprise-class features such as industry standard SQL support; full transaction processing; triggers and stored procedures (in SQL and Java\*); and bidirectional, scrollable, updatable cursors. SQL Anywhere Studio also offers built-in referential and entity integrity, including support for cascading updates and deletes.

For deployment on small-memory handheld devices (such as Pocket PCs\* and Smart Phones), SQL Anywhere Studio includes an UltraLite\* deployment option. Using this technology, SQL Anywhere Studio generates a customized database that contains only the functionality used by the application – the result is a database with a memory footprint as small as 75K (well suited for in-memory operation). To facilitate rapid development of these applications, SQL Anywhere Studio is tightly integrated with many popular embedded development tools (including Appforge\*, MobileBuilder\*, MetroWerks CodeWarrior\*, Microsoft Visual C++\*, and Wind River Tornado\*)

Built on the assumption that mobile devices are not islands of information, SQL Anywhere Studio provides robust synchronization technology for updating the application's local database with the most current information from the remote enterprise database. The iAnywhere Solutions MobiLink\* server facilitates the efficient exchange of information using standard Internet protocols (TCP/IP, HTTP) and specialized handheld-specific protocols such as Microsoft ActiveSync\* and Palm HotSync\*.

Making best use of the limited availability (and bandwidth) of a wireless connection is a high priority for SQL Anywhere Studio. The synchronization process can be fine-tuned to control both the extent of information transferred and the order in which it is sent. Controlling the volume of data transferred – which could quickly saturate a slower wireless connection during an overly ambitious synchronization – is accomplished by sub-setting the data so remote systems receive only the data relevant to the end-users' job function. Further control is exerted by setting transfer priorities for specific subsets of data (critical information is synchronized first and less important data is exchanged later).

### **SUCCESSFUL CUSTOMERS**

Visionary companies have incorporated application support for occasionally connected computing since well before the broad deployment of wireless technologies. Case in point: ProspectSoft\* – a leading provider of Customer Relationship Management (CRM) solution has long supported the needs of “road warrior” types by utilizing the small-footprint database and synchronization capabilities of SQL Anywhere Studio (over 90% of ProspectSoft customers request mobile and remote data access). ProspectSoft CRM\* systems are deployed in sales, marketing, customer service and support functions in the SME and small corporate sectors.

According to Andrew Ardron, Managing Director of ProspectSoft, “ProspectSoft CRM has a usage pattern that lends itself well to offline usage – there is a typical 60-1 ratio of reads to writes.” In addition to the usability benefits of supporting an offline mode, ProspectSoft found that application performance is noticeably improved by reading from a local database. The reliability of ProspectSoft CRM also benefited from the transactional nature of the synchronization process. “It would be a critical failure if sales data containing new orders did not update as expected – this is prevented as ProspectSoft CRM – leveraging SQL Anywhere Studio – supports transactional rollback,” Ardron explained.

### **Summary**

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There is no going back to the world of wires and persistent connectivity since the forces driving the trend towards mobility are only increasing. With the spread of Wi-Fi capabilities like in Intel® Centrino™ mobile technology, developers will soon face relentless competitive pressures to create applications that fully support the needs of mobile users – regardless of the problematic nature of doing so. Developing support for occasionally connected computing can be a tough challenge for those that choose to go it alone – the quicker path to success (and the one proven by visionaries like ProspectSoft) is adopting the enabling technology of iAnywhere Solutions' SQL Anywhere Studio.



## Author

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1. Dataquest WW Mobile PC TAM Forecast, 12/01
2. Wireless connectivity and some features may require to purchase additional software, services or external hardware. Availability of public wireless LAN access points is still limited but grows rapidly. System performance measured by MobileMark\* 2002. System performance, battery life, wireless performance and functionality will vary depending on end user's specific hardware and software configurations. See [http://www.intel.com/products/centrino/more\\_info](http://www.intel.com/products/centrino/more_info) for more information.
3. IDC July 2001, "PID TAM Report"
4. Gartner DataQuest 2001

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