M-Business Anywhere™, an Introduction

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Contents

About this guide

Focus of this guide

This guide is designed to provide an introduction to M-Business Anywhere™. It first gives you a high-level overview of the application architecture, then you are presented with a description of development guidelines that you would need to follow to create mobile client applications. Lastly, you can review code samples for incorporating standard functionality in addition to code samples of more advanced techniques.

For actual implementation details and in-depth information, sections in this guide refer you to the appropriate topics in the other books in the M-Business Anywhere documentation set.

Audience

This guide is designed for people who will be evaluating whether this technology is the solution to mobilizing their company's applications.

Conventions

The following table lists the formatting conventions used throughout this guide.

Table 1. Formatting conventions

Item	Treatment	Example
Name of publication	Italic	*Administrator Guide for M-Business Server*
Items on which user is to take an action	Bold	Click the **Reset** button.
Multi-level menu selections	Bold with "»" separator	Choose **Start»Settings» Control Panel**.
Text you type	Bold, fixed width font	Type **Admin** in this field.
Text displayed in a file or on the screen	Fixed width font	The screen reads: `Backup Complete`
Keyboard key	Angle brackets	<Enter>
File names and paths	Italic	*.../conf/sync.conf*
Literals in code synopsis	Bold	void **PODSaddRef**(PODSObject* *podsobj*)**;**
Variables in code synopsis	Italic	void **PODSaddRef**(PODSObject* *podsobj*)**;**
Variables in text	Angle brackets plus italic	http://*<servername>*:*<port>*

The M-Business Anywhere documentation set

In addition to this document, there are several other iAnywhere Solutions publications available that you may find useful in setting up and using M-Business Server.

> **Note**
> Unless otherwise noted, all of these publications are available from: http://www.ianywhere.com/developer/product_manuals/mbusiness_anywhere/
> In order for links between different PDF files to work correctly, you must open the files directly from the web site, or download them from the web site into the same local directory.

♦ *Developer Quick Start Guide for M-Business Anywhere*

♦ *Release Notes for M-Business Anywhere*

♦ *User Guide for M-Business Anywhere Client*

♦ *M-Business Anywhere, an Introduction*

♦ *Application Developer Guide for M-Business Anywhere*

♦ *API Reference for M-Business Anywhere*

♦ *Ensuring Mobile Security from the Device to the Datacenter,* available from http://www.ianywhere.com/whitepapers/ensuring_security.html

Related publications

UltraLite for M-Business Anywhere

For more information about using UltraLite® for M-Business Anywhere, please refer to the following iAnywhere Solutions™ publications:

♦ *UltraLite for M-Business Anywhere Quick Start*, available from http://www.ianywhere.com/developer/product_manuals/sqlanywhere/1001/en/html/ulagen10/ag-preparing-evb-development.html

♦ *Exploring the CustDB Samples for UltraLite* http://www.ianywhere.com/developer/product_manuals/sqlanywhere/1001/en/html/ulfoen10/fo-fo-custdb.html

♦ *UltraLite M-Business Anywhere Programming, version 10*, available from http://www.ianywhere.com/developer/product_manuals/sqlanywhere/1000/en/pdf/ulagen10.pdf

Adaptive Server Anywhere

For more information about Adaptive Server® Anywhere, please refer to the following iAnywhere Solutions publications.

♦ *SQL Anywhere 10* documentation, available from http://www.ianywhere.com/developer/product_manuals/sqlanywhere/1001/en/html/index.html

♦ *Setting Up Adaptive Server Anywhere as a Cluster Database Service*, available from http://www.ianywhere.com/developer/technotes/asa_cluster_db_service.html

Recommended references

The M-Business Anywhere documentation set focuses on aspects of mobile web application development that are unique to the M-Business Anywhere environment. For a list of references on the standards and third party software that are incorporated in the M-Business Anywhere architecture, see "Recommended references" [*M-Business Anywhere Application Developer Guide*].

Contacting iAnywhere Solutions

Technical support

If you need assistance using iAnywhere software, in North America, please contact iAnywhere Technical Support by calling 1-800-8SYBASE (800-879-2273) and then selecting option 3. You can call Monday through Friday (except major US holidays) between 9:00 a.m. and 9:00 p.m. Eastern time. Services will be provided in accordance with your support agreement.

Outside of North America, for your local support number and hours, please see: http://www.sybase.com/contactus/support

Registering as a Named Contact

Calling the 800-number during business hours should always work to get you technical support — a Customer Number is created for you as soon as your purchase is completed. You will find it faster and easier to get technical support, by phone or online, if you have registered as a Named Contact.

When you purchase an iAnywhere product, a *Sybase Technical Support Contact Form* will automatically be emailed to you within 7-10 days. If your company should need to add another Named Contact, or change the one initially registered, call the Technical Support 800-number and request a *Sybase Technical Support Contact Change Form*.

The *Sybase Technical Support Contact Form* will contain your Customer Number, with spaces for you to provide an email address and other identifying information for the Named Contact for your product. Fill in the requested information and fax the form back to the phone number indicated.

When your fax is received, an email will be sent to you, providing your Technical Contact ID number. You can then use this number to speed up the process when you call for technical support, and to access technical support online.

Using the Sybase Online Support Services

A major benefit of using the Sybase Online Support Services is 24x7 availability. Online support also allows you to look up and review past and current support issues.

When you register as a Named Contact, the email sent to you with your Technical Contact ID number also contains instructions for registering and using the Sybase Online Support Services. Follow these instructions to register as a first-time user, or to update your account with information for the new product you have purchased.

If you have any trouble registering for the Sybase Online Support Services, you can of course call iAnywhere Technical Support for assistance!

Application development — customizing iAnywhere software

If you need help with customizing iAnywhere software to better serve your enterprise, please contact iAnywhere Solutions Professional Services at contact_us@ianywhere.com.

Product information

If you need information about other iAnywhere products for your enterprise, please contact iAnywhere Workforce Sales at contact_us@ianywhere.com.

Feedback on documentation

If you have questions or suggestions about this document or other iAnywhere technical publications, please contact iAnywhere Technical Publications at iasdoc@ianywhere.com.

We would like to receive your opinions, suggestions, and feedback on this documentation. Although we do not reply to individual emails, we read all suggestions with interest and attempt to incorporate them in future releases.

CHAPTER 1

M-Business Anywhere

Contents

Overview of M-Business Anywhere

M-Business Anywhere is a comprehensive platform for developing, deploying, and managing mobile applications using web technology on a variety of devices, including handheld PDAs (Personal Digital Assistants) running the Palm or Windows Mobile Pocket PC operating systems; the Microsoft Smartphone (2000, 2002, 2003, and 2004 Phone Editions); Windows Mobile 5 and 6 devices; Windows XP devices; and some Nokia phones running the Symbina operating system.

This is the industry's most reliable, scalable, secure and open mobile applications platform. It uniquely supports an Always Available model of seamless online and offline connectivity modes.

Using this industry-leading platform, you, the application developer, can today create and deliver useful information and applications to mobile users wherever and whenever your users need them.

This chapter discusses this platform's architecture by first presenting an architectural overview diagram followed by a discussion of each major architectural component. We provide references to the various books in the product documentation set that will enable you to research additional information about specific features you want to implement.

M-Business Anywhere architecture

Refer to the following architectural diagram for an illustration of the M-Business Anywhere environment. The following sections in this chapter will discuss each component at a high level and provide you with references on where to find detailed information.
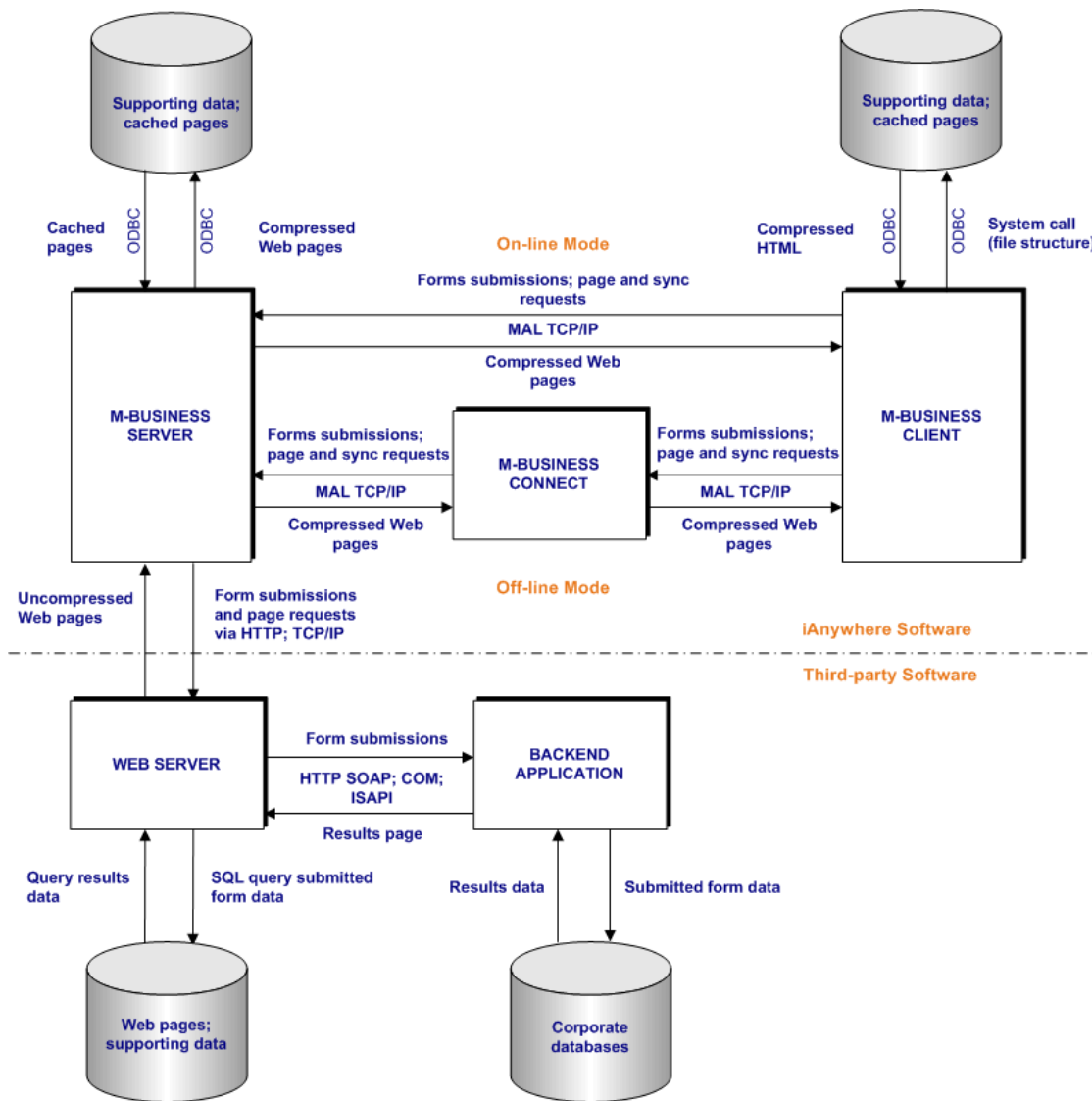
M-Business Server components

M-Business Server

M-Business Server accepts form submissions and page and synchronization requests from M-Business Client. It then returns compressed web pages to M-Business Client.

M-Business SOAP API

The M-Business SOAP API supports web services that allow developers to programmatically perform any task that can be performed through the Administrator Console UI. The SOAP API also allows customers or independent software vendors to re-brand or customize the Administrator Console, or to completely replace it, making it possible to OEM or embed M-Business Anywhere with a completely custom interface.

For more information, see "M-Business SOAP API reference" [*M-Business Anywhere API Reference*].

Supporting data; cached web pages

Both and M-Business Client cache web pages for an administrator-specified amount of time. This allows the system administrator to decide how often a channel needs to be refreshed, based upon the type of content that is being accessed.

M-Business Connect

The desktop component of M-Business Client is M-Business Connect, which is the conduit that allows you to synchronize your device with M-Business Server. The settings in M-Business Connect provide the information that M-Business Client uses to communicate with M-Business Server.

M-Business Connect also installs on your mobile device, allowing you to configure settings for M-Business Server directly on your device and to synchronize remotely (if your device is equipped with a modem, network, or wireless connection).

For additional information, see "Introduction " [*M-Business Anywhere Client User Guide*].

M-Business Client

M-Business Client is usually installed on a handheld or mobile device such as a Palm Treo 650, Pocket PC, or Microsoft Smartphone. The mobile device can be used as a web browser, for forms submission — where forms are filled in on the device and later submitted to the server via a synchronization — and for data access to an on-device datastore.

Web server components

This section lists the components of the web server.

Web server

M-Business Anywhere supports the use of the following web servers for third-party software applications: Apache, IIS, IIS.Net, TomCat, WebLogic (BEA), and WebSphere (IBM).

SQL query submitted form data

Web servers query data using ADO, ADO.NET,.NET, ODBC, OLEDB, PBI, and SQL connectivity, among others, to the back-end database(s).

Query results data

A web server may use ADO, ADO.NET,.NET, ODBC, OLEDB, PBI, and SQL connectivity to retrieve data from the back-end database(s). This is abstracted from the web server. The results data is incorporated into HTML or saved as XML.

Web pages: supporting data

The supported web servers listed above can use a variety of databases, including: ASA, ASE, DB2, Oracle, and SQL Server.

Back-end application

Application servers can be used to support back-end applications, such as: Lotus Notes, Oracle, PeopleSoft, Salesforce.com, Siebel, SQL, SQL Server, and SOAP.

Submitted form data

A web server or back-end application can use ADO, ADO.NET,.NET, ODBC, OLEDB, PBI, and SQL connectivity to the back-end corporate database(s).

Results data

A web server can use ADO, ADO.NET,.NET, ODBC, OLEDB, PBI, and SQL connectivity to retrieve data from the back-end database(s).

Corporate database(s)

The supported back-end applications listed above can use a variety of databases, including: ASA, ASE, DB2, SQL Server, and Oracle.

Introduction to channels

What is an M-Business channel?

In its most basic form, an M-Business channel is just another web site. There is more to it than that, of course. An M-Business channel page does not contain all the bells and whistles you might see on, say, a web page in Internet Explorer 5.x. But if you know how to create a web page, you can make yourself an M-Business channel.

As a simple introduction, look at what happens when you subscribe to and subsequently download an M-Business channel. Some elements have been simplified for the sake of brevity, but you will get a basic understanding of the process. See "Testing and deploying your mobile application" on page 25.

The first thing you need to do is open up and configure an account on M-Business Server. This account contains certain relevant information: your username and password, what channels you want to subscribe to, and so on.

After that, you install the software necessary to view M-Business channels. This software includes:

♦ **M-Business Client**. This is a web browser (and a mini web server) that is installed on your Palm OS, Pocket PC, or other mobile device. Some information about your account is also stored here.

♦ **M-Business Connect**. This is installed on both your desktop computer and device. It is the software that enables you to connect to M-Business Server whenever you synchronize your device.

What happens when you synchronize?

When you synchronize your mobile device, M-Business Connect takes over and connects to M-Business Server. M-Business Server, after looking up what channels you are subscribed to, downloads those pages from the web server(s) where they reside. In most cases, these sites are distinct areas that contain pages optimized specifically for M-Business channels.

M-Business Server downloads all these pages and performs some pre-processing on them. This includes shrinking images that are too large for the mobile device's screen, discarding pieces that cannot be used by M-Business Client (such as Java applets), and compressing the rest of the HTML. This compressed HTML is compared with what is on the device. If necessary, the pages are transferred to the device. For additional information, see "What is an M-Business channel?" [*M-Business Anywhere Application Developer Guide*].

HTML page development

M-Business Client supports a rich palette of features that web designers can use to create effective HTML pages. To make more effective use of the limited memory available on mobile devices, some of the least used features found in desktop browsers, such as Microsoft's Internet Explorer, have been omitted. The majority of features that are used in most web sites are fully supported.

Web designers for mobile devices will find that they can continue to use most of the features they are accustomed to using in pages designed for desktop browsers. The greatest challenge is posed by the inherent limitations of mobile devices: small screens, limited color depth, or no color at all in older models.

There is also greater variation in the way a page displays on different mobile devices, as compared with the variations in how the same page may display on PCs running different browsers on different monitors. For guidance on designing HTML pages for M-Business Client, see "Designing pages for the channel web site" [*M-Business Anywhere Application Developer Guide*].

HTML page development tools

You can use any tool with which you are comfortable to develop HTML pages. These tools include any text editor such as emacs, TextPad, Notepad, up to high-end products such as DreamWeaver.

JavaScript

JavaScript provides you, the web developer, a quick and simple language to use for enhancing web pages and servers. A segment of JavaScript functionality is embedded as a small program within a web page which is in turn interpreted and executed by the web client. JavaScript functions that can be called from within a web document are often executed by mouse functions, buttons, or other user-initiated actions. For additional information about the decision to use JavaScript Engine versus PODS, see "Choosing a language" [*M-Business Anywhere API Reference*].

Screen widths

Mobile devices impose severe constraints on HTML page design due to limitations on device screen widths. The following table lists sample screen widths for a number of supported devices.

Table 1. List of supported device screen widths

Device type	Older models	Newer models
Windows Mobile Pocket PC and Windows Mobile 5 and 6	240 x 320	480 x 640
Palm OS	160 x 160 (Treo 600; m500)	320 x 320 (Tungsten C; O/S 5.0)
Windows XP	N/A	Tablet PC - N/A Laptops - N/A
Microsoft Smartphone	N/A	176 x 220

Custom branding for M-Business Client

In order to have M-Business Client use a custom icon and display a custom message if the home page is unavailable, it is necessary to write a launcher application for the operating system. You can write such a launcher application using any language you choose that can produce a binary executable for the target platform. iAnywhere, Inc. Professional Services also offers this service.

You can customize the M-Business Client home page by changing the home page URL in the ASA database to point to your home page's location.

You can also customize the M-Business Client menus.

For guidance on creating custom branding for M-Business Client, see "Custom branding for M-Business Client" on page 8.

When to use the M-Business client extension API

Use the M-Business client extension API to support your HTML pages. For additional information on the following topics, see "PODS API mechanics" [*M-Business Anywhere API Reference*].

♦ Roadmap to PODS Interfaces

This section summarizes the functionality provided by each M-Business client extension API (PODS) interface. From these summaries, you should be able to determine which interface you need to use to implement which types of application tasks in PODS.

♦ Interface Inheritance

A PODS interface can extend another PODS interface, meaning that the interface includes all of the methods of its parent interface(s). This section shows you how to define a sample interface to extend another hypothetical interface.

♦ PODS Data Types

The PODS data types, defined in the `podstypes.h` file, are described in the PODS Data Types table.

By using PODS data types, your code will be insulated from any future changes in the way these data types are defined; it also will make your PODS code more portable. Whenever possible, you should use PODS data types instead of any equivalent data type that may be available in C. Refer to this section to view a list of PODS data types and their descriptions.

♦ Deriving C Macro Method Syntax Directly From IDL Source

The source files for PODS are Interface Definition Language (IDL) files. The vast majority of header files in M-Business Anywhere are generated from these IDL files. The M-Business Anywhere API Reference [*M-Business Anywhere API Reference*] documents the details of calling each method in each interface, through the method's associated macro.

♦ PODSPodNew( ) Function Reference

`PODSPodNew()` is the single entry point to the shared library containing a POD. It is comparable to a constructor for a C++ class.

`PODSPodNew()` creates and returns a new `PODSPod` object. It allocates memory for the POD and tells M-Business Client about this POD. Your implementation may also perform any other initialization functions that your POD requires.

Built-in PODS

The following PODS are built into M-Business Anywhere.

M-Business JavaScript engine

To view a list of supported ECMA and DOM features from standard JavaScript, see "JavaScript" [*M-Business Anywhere Application Developer Guide*]. ECMA is core JavaScript specified in ECMA-262, 3rd Edition. DOM 0 is client-side JavaScript specified in the standard called DOM Level 0 API. W3C DOM consists of the document object model features specified in the W3C DOM 1.0+ standards. For more information, see "Using DHTML" [*M-Business Anywhere Application Developer Guide*]. Use the code sample detailed in Appendix "M-Business JavaScript engine sample code" [*M-Business Anywhere Application Developer Guide*] to execute the example and view the described functionality.

Symbol scanner (Palm only)

M-Business Anywhere provides a PODSSymbolScanner interface that implements the Symbol scanner API. See "Using a Symbol scanner" [*M-Business Anywhere Application Developer Guide*].

Signature capture

M-Business Anywhere provides you with an in-line scribble widget that allows signature capture on the device at the scribble label level. There is no large dialog box that pops up, so the signer of the document is clearly signing the agreed-upon document. See "Capturing signatures with an in-line scribble widget" [*M-Business Anywhere Application Developer Guide*].

Plug-in PODS

This section provides application details, including object tag parameters and API, for using the M-Business PODS listed below.

For application details, including examples of how the plug-ins appear on both a Pocket PC OS device and a Palm OS emulator, see "Tools to add special features to a channel" [*M-Business Anywhere Application Developer Guide*].

Date/Time Picker

The M-Business Date/Time Picker is a MIME player that allows the user to select a date and/or a time. A Date/Time Picker instance is initially displayed as a read-only text field. The user taps on the text field to expand the Date/Time Picker inline; the user taps on the text field again to return the Date/Time Picker to its original state. See "Using the Date/Time Picker" [*M-Business Anywhere Application Developer Guide*].

List Viewer

The List Viewer displays the contents of an `agdbset` or of an `ExtendedDBSet`. See "Using the List Viewer" [*M-Business Anywhere Application Developer Guide*].
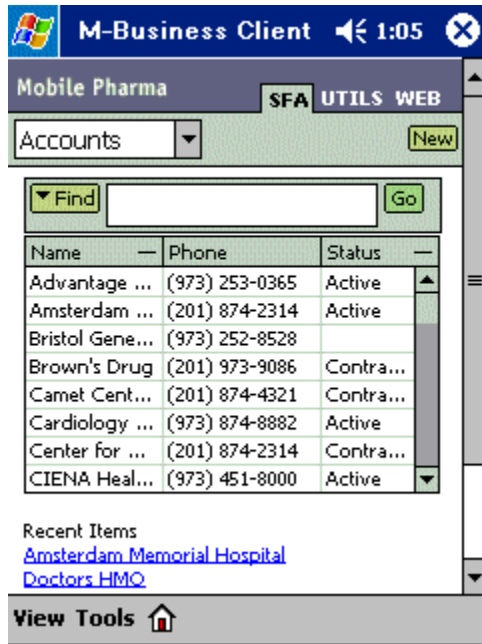
Symbol scanner (Microsoft OSes only)

M-Business Anywhere provides you with a `PODSSymbolScanner` interface that implements a Symbol scanner API for Microsoft OSes. See "Using a Symbol scanner" [*M-Business Anywhere Application Developer Guide*].
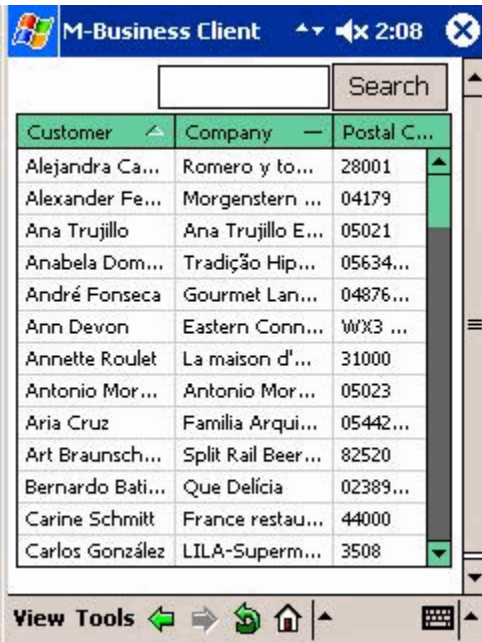
UltraLite for M-Business Anywhere

UltraLite technology provides the industry's first application-optimized, ultra-small XML datastore that resides locally on mobile devices and can synchronize data with most central consolidated database management systems. This deployment option is aimed at mobile and embedded devices. See the tutorial for an overview of Ultralite for M-Business Anywhere at the following URL:

http://www.ianywhere.com/developer/technotes/overview_ultralite.html
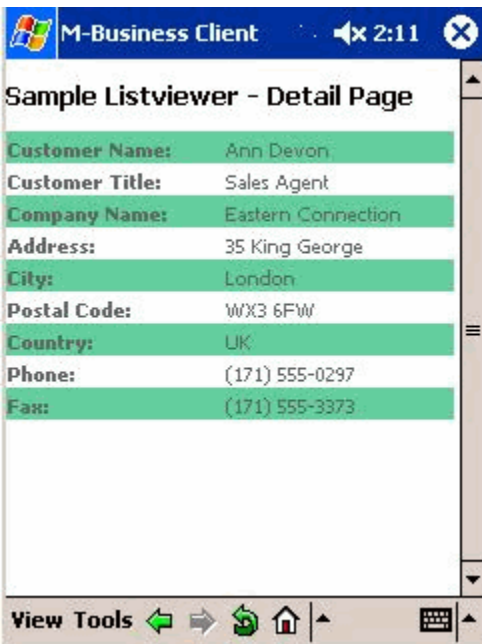
M-Business XML datastore

M-Business Anywhere supports access to data stored in database systems and enterprise applications. The M-Business XML datastore is used to store relational data on-device.

See the following URL to view the detailed code sample:

http://www.ianywhere.com/developer/code_samples/master_detail_mbus.html

Security options

Securing M-Business Client to M-Business Server sessions

You can secure M-Business Client/M-Business Server sessions by implementing industry-standard 128-bit SSL (Secure Sockets Layer) protocol (version 3.0). SSL is implemented through M-Business Client's default proxy settings, unless you implement SSL through Microsoft Internet Explorer proxy settings.

Securing M-Business Client/M-Business Server to on-device sessions

Elliptic curve cryptography is used to secure server to device connections. This helps with the on-device performance of your handheld. Elliptic curves are used in this cryptosystem to take a set of elements and perform arithmetic operations on them.

Securing M-Business Server

M-Business Server automatically provides some significant security features. For example, M-Business Server stores user cookies encrypted using a 128-bit key. When SSL is enabled, M-Business Server automatically performs transmission checks, monitoring all transmissions received to ensure that the SSL protocol is not being bypassed.

> **Caution**
> To make M-Business Server and its communications with web servers and M-Business Client as secure as possible, take all the standard precautions that security experts recommend for any server software that connects to the Internet.

Securing M-Business Server to web server connection

In addition to enabling SSL for the connection between M-Business Client and M-Business Server, you also can enable SSL for the M-Business Server-web server connection. SSL between M-Business Server and web servers is used to authenticate secure pages. M-Business Anywhere supports all industry standard certificates, including Thawte and RSA.

Other security-related product features include on-device password hashing, minimum password length option in the Admin UI, secure only connections, and available integration for NT domain, LDAP, and Active Directory.

Implementing security options

For instructions on enabling the Secure Sockets Layer (SSL) security option for use with M-Business Server, see "Enabling secure sockets layer (SSL)" [*M-Business Anywhere Administrator Guide*]. The Security

chapter discusses setting up security. For a general overview of this security option, see "Security" [*M-Business Anywhere Administrator Guide*].

Depending on whether you install an ECC or an RSA certificate, M-Business Connect will use either the Default or the Microsoft Internet Explorer proxy settings to provide users with a secure connection during synchronizations with M-Business Server.

Securing the mobile device

M-Business Anywhere offers several ways to secure your data in M-Business Client on the mobile device. These include on-device encryption when you store data in an Ultralite datastore, user authentication when accessing the on-device application, and enabling client password protection globally on M-Business Server where your channel is based.

For instructions on enabling client password protection, see "Understanding channel settings" [*M-Business Anywhere Administrator Guide*].

Caching to improve performance

M-Business Anywhere supports caching of channel page both on M-Business Server and on the mobile device where M-Business Client is running. In addition, the web server hosting your channel supports caching at the source. You can significantly reduce the time it takes your typical user to synchronize a device with M-Business Server by fine tuning the caching settings at all three points. For detailed instructions on caching, see "Caching to improve channel performance" [*M-Business Anywhere Application Developer Guide*].

CHAPTER 2

Mobile application design guidelines

Contents

Using dynamic HTML

For detailed implementation information that M-Business channel developers need to smoothly implement efficient channels to serve target audiences, see the M-Business Anywhere Application Developer Guide [*M-Business Anywhere Application Developer Guide*]. It provides guidance on creation of handheld-friendly channel content with basic HTML. It does not cover details of programming in C/PODS. You should read this guide if you are creating, administering, or trouble-shooting an M-Business channel.

For detailed information, see Appendix "HTML 4 support in M-Business Client 5.x and later" [*M-Business Anywhere Application Developer Guide*].

General page design considerations

For a list of references to information about how to use supported M-Business Client HTML 4 features, see "Recommended references" [*M-Business Anywhere Application Developer Guide*].

Brief description of M-Business JavaScript engine

JavaScript is a compact, cross-platform, object-based scripting language that extends the capabilities of HTML. JavaScript is integrated with HTML to allow developers to create interactive web pages. For example, you can create a JavaScript program to pre-validate a form before sending it back to the server, set options based on user preferences, update text displayed in a form's text box, etc. Because JavaScript is downloaded with the HTML page, its execution requires no further interaction with the server.

JavaScript is easy to learn, yet powerful enough for sophisticated scripting tasks. It uses syntax similar to C and C++ and has object-oriented features that use prototype-based inheritance.

M-Business JavaScript engine is the iAnywhere Solutions, Inc. implementation of client-side JavaScript. Many JavaScript features that are not considered high priority for handheld devices are not supported in order to conserve mobile device resources. At the same time, most of the features of PODS are directly available to JavaScript Engine as if they were provided by JavaScript native objects. For details on what JavaScript Engine omits from JavaScript and what it adds from PODS, see Appendix "M-Business JavaScript engine reference" [*M-Business Anywhere Application Developer Guide*].

Specific features of M-Business JavaScript engine

JavaScript Engine enables developers to:

♦ Dynamically generate HTML pages

♦ Dynamically change the contents of HTML pages via DHTML

♦ Dynamically change the contents of forms on HTML pages

♦ Call a browser to perform various tasks, such as manipulating form fields or form submissions

♦ Support user interaction with HTML pages when disconnected, if the page is cached on the device

Using M-Business client extension API

For information on the M-Business client extension API, including information on how JavaScript Engine can call this API, see the M-Business Anywhere API Reference [*M-Business Anywhere API Reference*]. Also review its Reference section for information describing the various PODS objects.

M-Business JavaScript engine (JavaScript) versus PODS (C code)

The JavaScript supported by M-Business JavaScript engine provides you, the web developer, with a quick and simple language to use for enhancing web pages that is device-independent. A segment of JavaScript functionality is embedded as a small program within a web page which is in turn interpreted and executed by the web client.

Using compiled C code to create your own PODS, on the other hand, provides you with better performance, the capability to perform file operations, interaction with native programs, and increased programming flexibility. The trade-off is that you must compile your C code separately for each device OS that you support, and then set up platform-specific delivery of the correct binaries to each platform. For more information on setting up a single channel that can deliver the correct platform-specific files to different devices, see "Using M-Business Client HTTP request headers to customize content" [*M-Business Anywhere Application Developer Guide*].

Using offline form submissions

For more detailed information on using offline form submissions, refer to the following.

♦ See "Managing channel form submissions" [*M-Business Anywhere Application Developer Guide*] for comprehensive information about submitting forms offline and using the Forms Manager.

♦ See "Form extensions" [*M-Business Anywhere Application Developer Guide*] for a list of supported extensions to the JavaScript methods of the `Form` object for form submission.

♦ See "Using M-Business Client HTTP request headers to customize content" [*M-Business Anywhere Application Developer Guide*] for information and examples on setting cookies for forms.

Using M-Business Client HTTP request headers to customize content

There will be times when you want finer control of the display on the client. The best example of this would be with logos. Sure, a color logo looks great on a high-end color Palm or a Pocket PC device, but it looks dithered on a black-and-white Palm. And while a posterized 4-color grayscale logo looks nice on a black-and-white Palm, when you look at it on a color device, it looks like a 4-color grayscale logo. What you would really like is the ability to serve up different images based on the device that is viewing your channel.

That is where the M-Business Client headers come in. As you already know, when a browser accesses your web server, it sends across several headers in the HTTP page request. These are informational headers telling your server a little about the browser; what type of browser it is, what host it thinks it is connecting to, the language the client prefers, and other parameters as follows: all of which can be used to customize content.

Table 1. List of M-Business-specific headers

Header	Description
User-Agent	Mozilla/4.0 (compatible; AvantGo 5.5; Windows NT)
X-AvantGo-Version	base64 encoded
X-AvantGo-ColorDepth	base64 encoded
X-AvantGo-ClientLanguage	en_US
X-AvantGo-ScreenSize	base64 encoded
X-AvantGo-DeviceOS	base64 encoded
X-AvantGo-DeviceOSVersion	base64 encoded
X-AvantGo-UserId	base64 encoded
X-AvantGo-DeviceId	base64 encoded
X-AvantGo-ChannelId	en_US

For additional information, see "Using server URL macros to customize content" [*M-Business Anywhere Application Developer Guide*].

AG_USER example

Below are some simplified examples of mapping the AG_USER URL macro to web server directories and files. In these examples, the it is assumed that the web server's domain is http://myserver.com, that

this domain maps to the file system path *D:\webserver\contentroot*, and that you have three user IDs: `aasmith`, `bjwong`, and `ccgomez`.

Sample code

Refer to the following code samples for an illustration of the concepts described above.

♦ Different files for different users, in same directory:

Channel URL - `http://myserver.com/myapp/AG_USER.asp`

Files for different users -

D:\webserver\contentroot\myapp\aasmith.htm D:\webserver\contentroot\myapp\bjwong.htm D:\webserver\contentroot\myapp\ccgomez.htm

♦ Different directories for different users, with same file name:

Channel URL - `http://myserver.com/AG_USER/myapp.htm`

Files for different users -

D:\webserver\contentroot\aasmith\myapp.htm D:\webserver\contentroot\bjwong\myapp.htm D:\webserver\contentroot\ccgomez\myapp.htm

♦ User ID passed as parameter to web application:

Channel URL - `http://myserver.com/myapp.asp?id=AG_USER`

Files for different users -

D:\webserver\contentroot\myapp.asp (The same file, *myapp.asp*, generates different content when each user ID replaces `AG_USER` in the channel URL.)

Using server URL macros to distribute content to multiple device types

URL macros on M-Business Server allows you to set up a single channel that delivers different content to different users. The content differences can be based on the username, the user's device, or even the processor on the user's device. For a discussion on how to insert URL macros into your channel URL and a list of available URL macros, see "Using server URL macros to customize content" [*M-Business Anywhere Application Developer Guide*].

Designing applications to work both online and offline

For information on designing and managing channels that contain forms which users can submit, see "Managing channel form submissions" [*M-Business Anywhere Application Developer Guide*].

Follow the few simple guidelines presented in that chapter to give your users a much more elegant experience. You will also have complete control over the messages displayed and how the response pages are accessed after a user's next synchronization. The chapter contains the topics listed below.

Forms in the online world

You should already have a sense of how forms work in the normal online world of desktop web browsers. You create a form and associate it with an action; often a cgi-bin script of some sort. A user enters data into the form through text fields, check boxes, and so on. Using the M-Business Client capabilities, you also can create a form with fields pre-populated with a user's email address and zip code, and, if you feel like being clever, you can enter data for the user through hidden fields. Regardless of what elements are in the form, the data is passed on as parameters to the action associated with that form. The action will perform some sort of processing on the data received, and then outputs its results in the form of an HTML document.

Forms in the offline world

The majority of mobile devices do not come with modems, so dealing with forms and user input is a little more tricky. Your users are viewing your forms offline. They can enter all their data into the forms using text fields, checkboxes, radio buttons, and all the usual form objects.

What the Forms Manager does

When users submit a form in offline mode, the form is stored on the device in a repository called the Forms Manager. This is where your form is kept until your mobile device is synchronized again. At that point, the data is sent to the cgi-bin script (or other action) associated with the form. It is processed, then the resulting HTML page is sent back to the mobile device.

Submitting forms the right way

If you want your channel form submissions to work nicely, whether the user is online or offline, all you have to do is be sure that the form submissions work well in offline mode.

Avoiding collisions in multiple offline submissions

When the same form is submitted more than once while the user is offline, cookies in the successive submissions can interfere with each other when the M-Business Sync Server processes them. There are several ways to avoid this problem.

Serializing forms: breaking one form into several pages

Sometimes it is desirable to break a single form into several logical pages, which compose a single form submission. There are two basic approaches to doing this in M-Business Anywhere: Serialize from a single page, and Serialize using Submission Manager.

Using cookies to support personal channels

Cookies through M-Business Client and the M-Business Sync Server work similarly to cookies in other applications. The only difference is that cookies are not stored on the mobile device. They are stored on the M-Business Sync Server and are associated with the user's M-Business Anywhere account.

Testing and deploying your mobile application

Most of the guidelines for testing and deploying any web-based application apply equally to mobile applications using the M-Business Anywhere architecture.

Testing your mobile application

Initial application testing can be done in a desktop browser if M-Business Client extensions are not involved (M-Business client extension API, certain JavaScript engine features). Even if your application will use M-Business Client extensions, you may find it more convenient to do initial testing of the HTML and most of the JavaScript pieces in a desktop browser.

If you are developing an application for the Palm OS, initial testing can be done on the desktop in the Palm emulator software. If you are developing an application that will be used on RIM OS, in addition to other platforms, we recommend that you do initial development and testing on the RIM platform.

When you begin testing application components on a mobile device, you may be able to save time by copying files directly to the device, then opening HTML pages through the Open Page dialog box. This may be quicker than synchronizing the entire channel, especially for large applications.

Setting up users and groups

Unless your application is intended for everyone in the company to use, you probably have in mind particular individuals or groups as the application's target audience. All the users for your application must be defined on your M-Business Server individually. For convenience, individual users can be assigned to groups so that the M-Business Server system administrator can provide the whole group access to the same content.

Groups may already be defined on your M-Business Server for functional workgroups, such as sales, human resources, and top management. There may even be a group for everyone in the company who uses a mobile device. You may be able to use some combination of existing groups to give users access to your application, or you may need to define a new group.

For instructions on setting up users and groups, see "Managing users" [*M-Business Anywhere Administrator Guide*] and "Managing groups" [*M-Business Anywhere Administrator Guide*].

Setting up a channel and subscribing users

Your application will be delivered to the mobile devices of the groups of users that you specify through a channel. For an overview of tasks involved in setting up a channel for a group, see "Creating a group" [*M-Business Anywhere Administrator Guide*] and "Managing channels for a group" [*M-Business Anywhere Administrator Guide*].

When you set up a channel on M-Business Server, you specify a single URL for the top level page of the channel content, and the Link Depth; the number of links away from that page for which pages should also be downloaded. For a graphic explanation of Link Depth, see the "Link Depth Setting" description in "Understanding channel settings" [*M-Business Anywhere Administrator Guide*].

When you set up a channel, you may also specify the channel audience. Channels can be categorized according to the audience targeted, as follows:

♦ Group channels: A group is a collection of users to which you can assign web channels. When you assign web channels to a group, all members of that group will have access to those channels. You can also specify the type of channel you are creating: Managed, Optional, or Required.

♦ Personal channels: You specify a single user, and that user only is automatically subscribed to the channel.

♦ Public channels: By defining a channel as public, you allow any user to subscribe to it, but no one will be subscribed to it automatically. The channel will be listed in the M-Business Server's list of public channels and individual users may subscribe to them through the M-Business Server desktop user interface or directly from the mobile device.

For instructions on setting up these different categories of channels, see the following topics.

♦ "Creating a group channel" [*M-Business Anywhere Administrator Guide*]
♦ "Creating a personal channel for a user" [*M-Business Anywhere Administrator Guide*]
♦ "Managing public channels" [*M-Business Anywhere Administrator Guide*]

For user instructions on self-subscribing to channels, see "Managing channels on the desktop computer" [*M-Business Anywhere Client User Guide*].

CHAPTER 3

Code samples

Contents

Overview of code samples

Refer to the code samples in this Appendix to learn how to develop a data-driven Web application using the M-Business Anywhere platform. This information is geared towards the Web application developer who wants to develop mobile Web applications that are deployable onto mobile devices.

Downloading sample code

Sample files are contained in downloadable zip files. For example, `pods.zip` is one downloadable zip file containing sample code. To download this file, navigate to the download page URL provided to you via email, or use the URL below to request a developer edition.

http://www.ianywhere.com/developer/code_samples/index.html#mbus

Each sample file is named as indicated by its heading as listed under "PODS samples" on page 29 below.

PODS samples

For information on how to download and work with the PODS sample files, see Appendix "PODS code samples" [*M-Business Anywhere API Reference*].

Master Detail page example

This example demonstrates how to develop a data-driven master-detail Web application using the M-Business Anywhere platform. The sample code provided there demonstrates the use of the following iAnywhere technology:

♦ XMLDB on-device datastore to store relational data.

♦ MIMEList player to display data from XMLDB in tabular format.

♦ AvantGo Preferences object to store session information.

Refer to the following URL to view the detailed code sample:

http://www.ianywhere.com/developer/code_samples/master_detail_mbus.html

Forms sample: serializing forms

This pair of code samples illustrate two approaches to breaking a single form into multiple logical pages: DHTML to selectively hide and display sections of a single form; and DOM to build sections of a form in the Forms Manger. Available online at:

http://www.ianywhere.com/developer/code_samples/mbus_serializing_forms.htm l

One button sync

This sample application illustrates use of UltraLite for M-Business Anywhere for on-device data. It uses the MobiLink™ Redirector and one-button synchronization features of M-Business Client, version 5.5 and higher, along with MobiLink in Adaptive Server Anywhere, version 9.02. Available online at:

http://www.ianywhere.com/developer/code_samples/master_detail_mbus.html

Executive Dashboard

This sample application illustrates some of the features that you can implement with DHTML, including expanding/collapsing menus and text hierarchies, an interactive calendars and charts, form submissions, and dynamically sorting a table. Available online at:

http://www.ianywhere.com/developer/code_samples/mbus_dhtml.html

Date/Time Picker sample

Use this sample to see a demonstration of how to use the datetimepicker element to easily add date and time selection to your M-Business Client application. For detailed information, see Appendix "PODS code samples" [*M-Business Anywhere API Reference*]

PODS sample: submitting forms

Use this sample source code to help you create PODS modules for iAnywhere Solutions software. For detailed information, see Appendix "PODS code samples" [*M-Business Anywhere API Reference*].

DocumentSrc sample: vending documents

This function is invoked when the document manager searches for a document. If the URL matches your SAMPLE_URL, a document is generated and returned to the document manager. For detailed information, see "DocumentSrc sample: vending documents" [*M-Business Anywhere API Reference*].

ObjectSrc sample: vending objects to JavaScript

This function is invoked when the object manager is searching for an object. If the name matches the SAMPLE_NAME, it returns the object (creating it if necessary) and returns it to the object manager. For detailed information, see Appendix "PODS code samples" [*M-Business Anywhere API Reference*].

Online tutorial: Building an UltraLite application for M-Business Anywhere

To learn how to build a cross-platform UltraLite application for M-Business Anywhere, see the online tutorial, *UltraLite for M-Business Anywhere Quick Start*, referenced in "Related publications" on page ix. At the end of the tutorial you will have an application and small XML datastore that synchronizes with a central consolidated database.

This tutorial guides you through the process of building an UltraLite application for M-Business Anywhere. It includes the following sections:

♦ Introduction: Provides you with a description of the tutorial, the amount of time it should take you to complete the tutorial, and a list of prerequisites you must have in place to be able to start the tutorial.

♦ Lesson 1: Create a project architecture - describes how to create an UltraLite database schema. The database schema is a description of the database. It describes the tables, indexes, keys, and publications within the database, and all the relationships between them.

♦ Lesson 2: Create the application files - shows you how to use a form to create a user interface.

♦ Lesson 3: Set up M-Business Server and client - lists the steps you should take to create an M-Business Anywhere user, group, and channel for your application.

♦ Lesson 4: Add startup code to your application - instructs you on how to add startup code to your application that connects to an UltraLite on-device database. This will require adding HTML to the main page and adding JavaScript logic to control the application.

♦ Lesson 5: Add inserts to your application - shows you how to add data manipulation and navigation logic to your application.

♦ Lesson 6: Add navigation to your application - provides sample code for scrolling forwards and backwards through the rows of a result set.

♦ Lesson 7: Add updates and deletes to your application - provides sample code for updating and deleting rows.

♦ Lesson 8: Add synchronization to your application - provides a procedure to implement synchronization.

Advanced techniques

M-Business Anywhere provides a clean superset of Web standards for dealing with the particular requirements of mobile applications development. For signature capture, an input field of type `scribble`, borrowed from the draft HTML 4.1 specification, is provided. For barcode scanning, a JavaScript interface to Symbol® scan-enabled devices is provided. The included Forms Manager (with a JavaScript API) provides the ability to manage offline form submissions. For additional information, see "Utilities" [*M-Business Anywhere API Reference*].

Signature capture

Use M-Business Anywhere to capture signatures on Pocket PC or Palm devices. The `scribble` input field has been implemented as specified in the draft HTML 4 standard. It allows the capture of signature data as well as (potentially) the timing information associated with each stroke. For additional information, see "Utilities" [*M-Business Anywhere API Reference*].

Scanner

Web-based applications can take advantage of device features such as barcode scanners and cameras. M-Business Anywhere offers a Symbol scanning API encapsulated in a JavaScript object. For additional information, see "Utilities" [*M-Business Anywhere API Reference*].

Other hardware

Cameras usually just place the photos in the file system. PODS allows customers to build plug-ins to M-Business Client that can interface with any device hardware. For additional information, see "Utilities" [*M-Business Anywhere API Reference*].

Glossary

Adaptive Server Anywhere	The database management software that is bundled with M-Business Anywhere and supports the M-Business Server database. See also: ♦ "M-Business Server database" on page 44 ♦ "UltraLite" on page 50
Adaptive Server Anywhere database	See: "M-Business Server database" on page 44.
Admin Server	See: "M-Business Admin Server" on page 39
Administrator Console	A web-based interface used to manage M-Business Server. The Administrator Console allows registered users to access functions that they are allowed to manage. Basic users can only perform basic account and channel management for their own personal accounts. Users who are designated as group administrators can also perform certain group administration duties, such as managing group memberships and adding group channels. The admin user can perform all functions available in the Adminstrator Console, including assigning basic users to be group administrators. See also: ♦ "users" on page 51 ♦ "groups" on page 37 ♦ "channels" on page 35
admin user	See: "Administrator Console" on page 33
APIs	See: ♦ "M-Business client extension API" on page 41 ♦ "M-Business DOM API" on page 43 ♦ "M-Business SOAP Server" on page 44 ♦ "M-Business XML API" on page 45 ♦ "M-Business Date/Time Picker API" on page 43 ♦ "M-Business List Viewer API" on page 43
ASA	See: "Adaptive Server Anywhere" on page 33.
authentication information	The part of the shared cache that is used to store authentication information for users. The admin user or a group administrator can clear the authentication information for an individual user or groups of users. See also: ♦ "shared cache" on page 49

♦ "channel cache" on page 34
♦ "cookies" on page 35
♦ "caching" on page 34

caching

In general terms, caching refers to storing a temporary copy of frequently accessed information in a location where it is faster to retrieve than it would be in its permanent location. Caching saves time and improves system performance.

In M-Business Anywhere, caching refers specifically to temporarily storing channel web pages, either on the mobile device or on M-Business Sync Server. On the mobile device, pages are stored in the client cache. On M-Business Sync Server, pages are stored in the shared cache. And the Web servers supplying channel content also provide a caching capability.

During subsequent synchronizations, information about the copy of the page in the client cache is compared with information about the corresponding copies of the page in the shared cache on M-Business Sync Server and the channel web server's cache. If the page in the client cache is not outdated, time is saved by not downloading a new copy. If the copy of the page in the client cache is outdated, but the corresponding page in the shared cache is current, time is saved by downloading a new copy of the page to the device from the shared cache instead of getting it from the web server.

Complex rules can be set up on the web server and M-Business Sync Server, operating on information embedded in the channel web pages, to control how caching behaves in detail. The objective is to ensure that M-Business Client users do not receive outdated pages and the servers involved do not check more often than is necessary to ensure that a particular cached page is not outdated.

See also:

♦ "client cache" on page 35
♦ "shared cache" on page 49
♦ "M-Business Sync Server" on page 44
♦ "synchronization" on page 50
♦ "web servers" on page 51
♦ "channels" on page 35

channel cache

The part of the shared cache that is used to store temporary copies of channel web pages for users. The admin user or a group administrator can clear the authentication information for an individual user or groups of users.

See also:

♦ "shared cache" on page 49
♦ "channel cache" on page 34
♦ "cookies" on page 35
♦ "caching" on page 34

channels	Channels in M-Business Anywhere associate a specified web site with a user's mobile device. Typically the source web site is specially designed, with pages optimized for display on mobile devices. A channel may contain different pages, accessed through the same URL, that are optimized for different mobile devices or different users. During synchronization, M-Business Sync Server downloads pages that meet channel criteria from the web site to the mobile device, where the user can view them using M-Business Client.

See also:

- ♦ "group channels" on page 37
- ♦ "personal channels" on page 47
- ♦ "public channels" on page 48
- ♦ "database channels" on page 36
- ♦ "M-Business Sync Server" on page 44

client cache	A temporary storage area on a mobile device which M-Business Client uses to store copies of channel web pages that have been downloaded in a synchronization. During a subsequent synchronization, M-Business Sync Server may be able to determine that the copy of the page in the client cache is not outdated and that it can thus save time by not downloading the same page again.

See also:

- ♦ "caching" on page 34
- ♦ "shared cache" on page 49

conduit	See: "M-Business conduit" on page 42
configuration files	Store settings for M-Business Server that cannot be set through the Administrator Console.

See also:

- ♦ "Administrator Console" on page 33
- ♦ "M-Business Server" on page 44

cookies	In M-Business Anywhere, as in desktop web development, cookies are used to store user information set through a browser, for later communication with a web server. An important difference is that, in M-Business Anywhere, cookies are stored on M-Business Server, while in desktop web development, cookies are stored locally on the system where the browser is running.

A second definition in M-Business Anywhere: The part of the shared cache that is used to store cookies for users. The admin user or a group administrator can clear cookies for an individual user or groups of users.

See also:

- ♦ "shared cache" on page 49
- ♦ "caching" on page 34

♦ "client cache" on page 35

cradle synchronization

A synchronization in which the mobile device is placed in a cradle that is connected to a desktop PC with an Internet connection. Cradle synchronizations are performed by users who do not have a wireless connection.

See also:

♦ "synchronization" on page 50
♦ "offline mode" on page 47
♦ "wireless connection" on page 51

database channels

A special type of group channel that M-Business XML conduit uses to deliver on-device data to M-Business Client.

See also:

♦ "group channels" on page 37
♦ "M-Business XML conduit" on page 45

database conduit

See: "M-Business XML conduit" on page 45.

database POD

See: "M-Business XML POD" on page 46.

emulators

In general terms, an emulator is a program that simulates in software the behavior of a piece of hardware. The emulators of interest to M-Business Anywhere developers are those that simulate the behavior of specific mobile devices. Developers can install M-Business Client on an emulator and test a channel that is under development. Emulators are often faster and more convenient than physical hardware for initial testing. However, there is always a chance that an emulator does not behave always *exactly* like the physical device it is simulating, so final testing of a channel should always be done on real hardware.

See also:

♦ "M-Business Client" on page 41
♦ "M-Business Client platforms" on page 41

forms

HTML forms are web pages that provide places where users can enter information. When the user submits a form, it is sent to a server, which may then use the information immediately in further processing, or store it in a database for future use.

If M-Business Client is operating in offline mode when the user submits a form, it cannot be sent directly to the server that needs to receive it, so M-Business Client stores it in a queue in the Forms Manager. When the user synchronizes, all the forms that were submitted offline are sent to the receiving servers and the servers' responses are retrieved.

If M-Business Client is operating in online mode when the user submits a form, it is sent immediately to the server and the server's response is immediately displayed.

See also:

♦ "offline mode" on page 47
♦ "online mode" on page 47
♦ "Forms Manager" on page 37

Forms Manager

An M-Business Client component that stores forms that users submit while in offline mode. Offline mode users can view the forms waiting for processing in the Forms Manager's queue. There they can modify the information in the forms, change the order in which the forms will be processed, or remove a form from the queue. When the user synchronizes, all the forms in the Forms Manager's queue are sent to the receiving servers and the servers' responses are received.

The servers's responses to forms submitted offline are also returned to the Forms Manager, although most enterprise applications gather the servers' responses and present them to the user in a more elegant fashion.

See also:

♦ "offline mode" on page 47
♦ "online mode" on page 47
♦ "synchronization" on page 50

group administrators

See: "Administrator Console" on page 33

group channels

Channels that are defined in association with a particular group. All members of the group are automatically subscribed to the group's channels. No other users may subscribe to the group's channels, without becoming a member of the group first.

See also:

♦ "groups" on page 37
♦ "channels" on page 35

groups

A collection of users who need to be subscribed to the same channels. All members of a group are automatically subscribed to the group channels that are defined for that group. A user may be a member of multiple groups.

See also:

♦ "group channels" on page 37
♦ "required groups" on page 48
♦ "optional groups" on page 47
♦ "managed groups" on page 38
♦ "users" on page 51

HTTP headers	Information exchanged between a web server and a browser that describes what is being requested or what is being sent. Caching depends on HTTP header information to be able to determine when a particular page needs to be updated and whether it should be updated from the shared cache or the web server.
	See also: "HTTP request headers" on page 38.
HTTP request headers	Information sent from a browser to a web server that can be used by the web server to respond better to the request. In M-Business Anywhere, HTTP headers sent by M-Business Client to M-Business Sync Server are used to customize channel content for specific devices or users.
	See also:
	♦ "server URL macros" on page 49
	♦ "HTTP headers" on page 38
lightweight directory access protocol (LDAP)	When M-Business Server is integrated with an LDAP server, user ID and password information that is available from the LDAP server is not duplicated in the M-Business database and users cannot be created through the Administrator Console.
	See also:
	♦ "users" on page 51
	♦ "M-Business database" on page 42
	♦ "NT domain integration" on page 46
.mal files	A .mal file configures a server connection for a user who already has the M-Business Client software installed. On a workstation where M-Business Client has been installed, the .mal extension is automatically associated with M-Business Connect. When M-Business Connect executes the .mal file, the specified server is configured for the user and is synchronized the next time the user synchronizes.
	See also:
	♦ "synchronization" on page 50
	♦ "M-Business Connect" on page 42
	♦ "M-Business Client" on page 41
managed groups	Groups in which members must be added or removed by the admin user or a group administrator. Users cannot add or remove themselves.
	See also:
	♦ "groups" on page 37
	♦ "required groups" on page 48
	♦ "optional groups" on page 47

M-Business Admin Server	Provides authorized administrators and users access to M-Business Server through a standard desktop web browser. Using this web-based interface, administrators can manage users' access privileges, add and remove users, groups, and channels, modify conduit settings, as well as remotely add applications to mobile devices. Users also can use the interface to add personal channels, subscribe to public channels, manage group memberships, and view conduit options and synchronization histories.

See also:

♦ "M-Business Server" on page 44
♦ "M-Business Sync Server" on page 44
♦ "M-Business SOAP Server" on page 44 |
| M-Business Anywhere | The M-Business Anywhere product provides a platform for delivering web-based content and applications to mobile devices rapidly and cost-effectively, with minimal recoding. Web developers can leverage their existing skill sets and open standards to develop and deploy fully interactive mobile web applications with sync-and-go or wireless capabilities. So no matter where users are, they will be able to access the information and applications they need to make more effective business decisions in the field. Just as importantly, companies can develop, deploy, and maintain mobile web applications rapidly and with the lowest total cost of ownership (TCO) possible.

See also M-Business Anywhere editions:

♦ "M-Business Anywhere Application Edition" on page 39
♦ "M-Business Anywhere Web Edition Standard" on page 40
♦ "M-Business Anywhere Web Edition Pro" on page 40

See also M-Business Anywhere components:

♦ "M-Business Client" on page 41
♦ "M-Business Connect" on page 42
♦ "M-Business Server" on page 44 |
| M-Business Anywhere Application Edition | M-Business Anywhere Application Edition combines all of the features of Web Edition Standard, plus developer access to the public M-Business application programming interfaces (APIs). The M-Business APIs bring the power of full-featured enterprise applications and XML web services to mobile devices, significantly reducing development time and providing the lowest total cost of ownership (TCO) for enterprises deploying interactive mobile web applications.

See also:

♦ "M-Business Anywhere" on page 39
♦ "M-Business Anywhere Web Edition Standard" on page 40
♦ "M-Business Anywhere Web Edition Pro" on page 40 |

♦ "M-Business APIs" on page 40

M-Business Anywhere Web Edition Pro	M-Business Anywhere Web Edition Pro combines all of the features of Web Edition Standard, plus support for JavaScript and the M-Business client extension API. JavaScript adds the ability to provide a more interactive experience on a page by adding business or navigation logic to pages and forms, creating robust, two-way web applications. The M-Business client extension API allows you to write C code that integrates closely with the M-Business Client binaries, with the ability to access any hardware features that are software-controllable. Most of the M-Business client extension API is also accessible from JavaScript.

See also:

♦ "M-Business Anywhere" on page 39
♦ "M-Business Anywhere Web Edition Standard" on page 40
♦ "M-Business Anywhere Application Edition" on page 39 |
| M-Business Anywhere Web Edition Standard | M-Business Anywhere Web Edition Standard is the basic M-Business platform for delivering web-based content and forms to mobile devices, extending enterprise resources simply and efficiently to employees and customers. Benefits include increased information access, improved communications, and streamlined information distribution by mobilizing critical business information, including corporate intranet, product information/catalogs, business intelligence, financial and sales data, corporate directory, field data collection/surveys, market and competitive news and more.

Using M-Business Anywhere Web Edition Standard, companies of all sizes can deliver static web pages and content to mobile devices. With Web Edition Standard, businesses can easily publish static HTML 4.0 web page content, so they can be viewed offline with Palm OS and Microsoft OS devices.

See also:

♦ "M-Business Anywhere" on page 39
♦ "M-Business Anywhere Web Edition Pro" on page 40
♦ "M-Business Anywhere Application Edition" on page 39 |
| M-Business APIs | The set of public application program interfaces that is available with M-Business Anywhere Application Edition for use in building mobile applications on the M-Business Anywhere platform. All features of these APIs are accessible from C and most can be accessed from JavaScript. All the M-Business APIs are documented in the *API Reference for M-Business Anywhere*, in the reference portion that begins with the "PODS API mechanics" [*M-Business Anywhere API Reference*] chapter and ends with the "Utilities" [*M-Business Anywhere API Reference*] chapter.

See also:

♦ "M-Business client extension API" on page 41 |

- "M-Business Date/Time Picker API" on page 43
- "M-Business DOM API" on page 43
- "M-Business List Viewer API" on page 43
- "M-Business SOAP API" on page 44
- "M-Business XML API" on page 45
- "M-Business Date/Time Picker API" on page 43
- "M-Business List Viewer API" on page 43

| M-Business channels | See: "channels" on page 35 |

M-Business Client

M-Business Client is a web browser and mini-web server that installs on mobile devices and displays web content provided through M-Business Anywhere. In offline mode, users must initiate a synchronization with an M-Business Sync Server in order to update web content stored on the device. In online mode, web content is retrieved as needed as long as the wireless connection is available. M-Business Client uses M-Business Connect to set up connections to one or more M-Business Sync Servers.

See also:

- "synchronization" on page 50
- "offline mode" on page 47
- "online mode" on page 47
- "M-Business Connect" on page 42
- "M-Business Sync Server" on page 44

M-Business client extension API

All the functionality that is available through M-Business Client is provided through internal PODs that use PODS objects. The M-Business client extension API is simply the set of internal objects that are exposed for customers to use in creating custom PODs that extend the basic functionality of M-Business Client. The custom PODs plug into the system just like the internal PODs.

See also:

- "PODS" on page 48
- "M-Business APIs" on page 40

M-Business Client platforms

The specific families of mobile devices on which M-Business Client can be installed and used. These families are largely defined by the device operating system. For developers, the primary distinction is between the Palm OS and Microsoft OSes. Code that is compiled for the Palm OS will work properly with M-Business Client running on any supported Palm OS device; code compiled for Microsoft OSes will work properly with M-Business Client running on any supported Microsoft OS device.

In addition to Palm OS, M-Business Client currently supports the following Microsoft OSes:

- Windows Mobile Pocket PC
- Windows Mobile 5

♦ Microsoft Smartphone

♦ Windows XP

See also: "M-Business Client" on page 41.

M-Business conduit	A dedicated pathway that manages the flow of a specific type of information between between M-Business Anywhere components. See also: ♦ "M-Business web conduit" on page 45 ♦ "M-Business Connect conduit" on page 42 ♦ "M-Business XML conduit" on page 45
M-Business Connect	The desktop component of M-Business Client. The settings in M-Business Connect provide the information that M-Business Client uses to communicate with M-Business Server. If you use a Palm OS, Windows Mobile Pocket PC, or Windows XP device, M-Business Connect also installs on your mobile device, allowing you to configure settings for M-Business Server directly on your device. M-Business Connect on your device also allows you to synchronize remotely, if your device is equipped with a modem, network, or wireless connection. See also: ♦ "M-Business Client" on page 41 ♦ "M-Business Sync Server" on page 44
M-Business Connect conduit	The M-Business conduit for communication between M-Business Sync Server and M-Business Client. Channel content is downloaded from M-Business Sync Server to M-Business Client. Page requests and form submissions are uploaded from M-Business Client to M-Business Sync Server. When this conduit is disabled, M-Business Client cannot synchronize with M-Business Server. See also: ♦ "channels" on page 35 ♦ "M-Business conduit" on page 42 ♦ "M-Business Client" on page 41 ♦ "M-Business Sync Server" on page 44
M-Business database	The database that stores all the information defining users, groups, and channels that is necessary to synchronize content from web servers with mobile devices. In addition, the M-Business database also stores a synchronization history for each user. Information on users, groups, and channels can be entered into the M-Business database through a web-based interface, the Administrator Console. Some user information can also be imported from an external database, or may be synchronized with users defined in NT domains or LDAP.

See also:

- ♦ "users" on page 51
- ♦ "groups" on page 37
- ♦ "channels" on page 35
- ♦ "Administrator Console" on page 33
- ♦ "NT domain integration" on page 46
- ♦ "lightweight directory access protocol (LDAP)" on page 38

M-Business Date/Time Picker API	Allows developers to write simple, high-level code that provides users with a fast and convenient means of entering date and/or time information by picking it off a list. The M-Business Date/Time Picker API works with the M-Business XML datastore. See also: ♦ "M-Business XML datastore" on page 46 ♦ "M-Business List Viewer API" on page 43
M-Business DOM API	Allows developers to use a major portion of the W3C DOM level 1.1 standard to dynamically construct and/or modify channel pages. See also: "M-Business APIs" on page 40.
M-Business home directory	Refers to the directory that is created under the location that you specify during installation of M-Business Server.
M-Business JavaScript engine	The M-Business Anywhere implementation of JavaScript. Although not all features of standard JavaScript are supported, JavaScript engine supports a number of objects, methods, and properties that extend JavaScript functionality within M-Business Client. In addition, JavaScript engine provides access to most of the features available in the M-Business public APIs. Developers writing custom code in C, making calls to M-Business APIs, can make their compiled code accessible to JavaScript engine as platform-specific PODS. For applications with high data throughput, this can significantly speed up on-device processing. See also: ♦ "M-Business Client" on page 41 ♦ "M-Business APIs" on page 40 ♦ "PODS" on page 48
M-Business List Viewer API	Allows developers to write simple, high-level code that provides users with the abiliy to easily display, sort, and filter on-device data. The M-Business List Viewer API works with the M-Business XML datastore. See also: ♦ "M-Business XML datastore" on page 46

♦ "M-Business Date/Time Picker API" on page 43

M-Business Server

M-Business Server provides a solid, proven foundation for developing and administering mission critical, large-scale mobile applications. M-Business Server provides all the capabilities necessary to develop, deploy, and manage the most demanding mobile solutions.

M-Business Server is managed through a web-based Administrator Console and configuration files, and stores information in the M-Business database.

See also:

♦ "Administrator Console" on page 33
♦ "M-Business database" on page 42
♦ "M-Business Admin Server" on page 39
♦ "M-Business Sync Server" on page 44
♦ "M-Business SOAP Server" on page 44

M-Business Server database

See: "M-Business database" on page 42.

M-Business Server Manager

An M-Business Anywhere component that is available when M-Business Server is installed on Windows. M-Business Server Manager works with Microsoft Management Console (MMC) to provide a convenient means of starting, stopping, and restarting M-Business Server processes.

See also: "M-Business Server" on page 44.

M-Business SOAP API

Allows you to program the M-Business SOAP Server to perform functions that would otherwise have to be performed manually through the M-Business Server's Administrator Console.

See also:

♦ "M-Business SOAP Server" on page 44
♦ "M-Business Server" on page 44
♦ "Administrator Console" on page 33

M-Business SOAP Server

The M-Business Server component that generates the Administrator Console user interface. You can automate any process that can be performed through the Administrator Console by programming the M-Business SOAP Server through the M-Business SOAP API. You can also use the M-Business SOAP API to customize the Administrator Console.

See also:

♦ "Administrator Console" on page 33
♦ "M-Business Server" on page 44
♦ "M-Business SOAP API" on page 44

M-Business Sync Server

Handles requests from M-Business Client to perform synchronization functions. The Sync Server detemines whether particular pages requested are

to be obtained from the source web server or from the shared cache on the Sync Server.

See also:

- ♦
- ♦
- ♦

M-Business web conduit

The M-Business conduit for communication between M-Business Sync Server and channel web servers. Channel content is downloaded from web servers to M-Business Sync Server, from which it is relayed to M-Business Client. Page requests and form submissions are uploaded from M-Business Sync Server to channel web servers. M-Business web conduit is also used to communicate caching information between M-Business Sync Server and channel web servers.

See also:

- ♦
- ♦
- ♦

M-Business XML API

Provides programmatic access to on-device data delivered through the M-Business XML conduit to mobile devices running M-Business Client. The M-Business XML API relies on XML-based standards, including XML-formatted DBMS response and W3C-approved XML, Schema 1.0-compliant schema documents for describing databases.

See also:

- ♦
- ♦

M-Business XML conduit

The M-Business conduit for communication between XML data streams produced by server databases and the M-Business XML datastore on mobile devices running M-Business Client. Support for XML provides seamless integration with industry-leading databases, including Oracle, Microsoft SQL Server, and Sybase. The M-Business XML API provides a uniform, cross-platform method to access data with JavaScript.

Data flows in one direction only in the M-Business XML conduit: from the server database to the M-Business XML datastore. To update the source database on the server with on-device changes, you could write JavaScript or PODS code to run within M-Business Client that would return changes through form submissions, then have those changes processed through the receiving web server into the backend database.

See also: .

- ♦

- "M-Business XML API" on page 45
- "M-Business conduit" on page 42
- "UltraLite" on page 50

M-Business XML datastore	The on-device database supported by M-Business XML conduit and M-Business XML API. M-Business XML datastore provides only one-way synchronization of data, from server to device.

See also:

- "M-Business XML conduit" on page 45
- "M-Business XML API" on page 45

M-Business XML POD	The platform-specific compiled code module that must be downloaded to each device on which an application is to access M-Business XML datastore.

See also:

- "M-Business XML conduit" on page 45
- "M-Business XML API" on page 45

Microsoft OSes	Refers to the family of Microsoft device operating systems, when describing a development feature that is consistent across the entire family. The most important commonality is that the same compiled code runs on all devices that run Microsoft OSes.
mobile device	Refers to any type of device that has the basic capabilities of a personal computer, but is not stationary — it can be carried around and used under battery power wherever it is needed. PDAs, "smart" cell phones, tablet PCs, and laptop PCs are all examples of mobile devices. A mobile device may normally operate in offline mode or in online mode, or may switch between these modes.

See also:

- "offline mode" on page 47
- "online mode" on page 47

MobiLink	The UltraLite component that supports robust, flexible bi-directional synchronization between on-device data and enterprise data stores. MobiLink serves a function for UltraLite that is comparable to that of the M-Business XML conduit for M-Business datastore.

See also:

- "UltraLite" on page 50
- "M-Business XML conduit" on page 45

NT domain integration	When M-Business Server is integrated with one or more NT domains, user ID and password information that is available from an NT domain is not duplicated in the M-Business database and users cannot be created through the Administrator Console.

See also:

- ♦ "users" on page 51
- ♦ "M-Business database" on page 42
- ♦ "lightweight directory access protocol (LDAP)" on page 38

offline mode

M-Business Client is in offline mode when it is operating without an active connection to the Internet. Users may browse channel web pages that have been downloaded in a previous synchronization and queue up form submissions that will be sent to the receiving web server(s) at the next synchronization. Users cannot download updated channel pages while in working in offline mode.

See also:

- ♦ "online mode" on page 47
- ♦ "M-Business Client" on page 41
- ♦ "synchronization" on page 50
- ♦ "cradle synchronization" on page 36

online mode

M-Business Client is in online mode when it is operating with an active connection to the Internet. Channel content is automatically updated when pages are requested, based on the caching rules that are in effect on the web server, M-Business Server, and M-Business Client. Users with devices that normally have an active connection to the Internet may be forced to work in offline mode when that connection is unavailable. Those users may also choose to work in offline mode, for example, if connection charges are an issue.

See also:

- ♦ "offline mode" on page 47
- ♦ "wireless connection" on page 51
- ♦ "caching" on page 34
- ♦ "M-Business Client" on page 41

optional groups

With optional groups, users may add or remove themselves members

With optional groups, members may add or remove themselves. The admin user or a group administrator may also add or remove users.

See also:

- ♦ "groups" on page 37
- ♦ "managed groups" on page 38
- ♦ "required groups" on page 48

personal channels

Channels defined specifically for individual users. An admin can create personal channels for users, or users can create personal channels for themselves, if this is allowed by M-Business Server settings.

See also:

- "channels" on page 35
- "public channels" on page 48
- "group channels" on page 37

PODS   A collection of shared object-oriented code libraries on a mobile device that can be accessed by JavaScript code in channel pages. PODS can also be compiled C code that accesses the public M-Business APIs. On Palm OS, a POD is a Palm OS shared library. On Microsoft OS devices, a POD is a DLL.

See also:

- "M-Business APIs" on page 40
- "M-Business JavaScript engine" on page 43

public channels   Channels that are available to all users, but to which no users are automatically subscribed. Users must subscribe themselves to public channels through the Administrator Console.

See also:

- "channels" on page 35
- "subscribing to a channel" on page 49

remote access   See: "wireless connection" on page 51

required groups   With required groups, all users are automatically members. Users cannot remove themselves. The admin user and group administrators cannot remove a user from a required group without deleting the user from the M-Business Server database.

If you create a required group before you add users, all users automatically will be added to the group as they are added to the M-Business Server database. If you create a required group after you have added users, you have the option of having M-Business Server populate the group with all existing users.

See also:

- "groups" on page 37
- "optional groups" on page 47
- "managed groups" on page 38

serializing forms   Breaking a single HTML form into a series of separate pages that appear to a user to be completely separate forms. The series is sent to the channel web server as a unit, the response is returned as a unit, and the submission is listed in M-Business Client's Forms Manager as a single entry.

See also:

- "forms" on page 36
- "Forms Manager" on page 37

server URL macros	Server URL macros are strings that you can use in URLs within a channel to have M-Business Sync Server automatically return different pages to different devices or users for the same URL. Each server URL macro has a corresponding HTTP request header associated with it. When M-Business Sync Server encounters a request from M-Business Client for a URL that contains a server URL macro, M-Business Sync Server automatically replaces the server URL macro with the value of the corresponding HTTP request header.
	For example, the URL on a channel page may be `http://mychannel.com/AG_DEVICEOS/schedule.html`. When M-Business Sync Server receives a request for this page, it replaces `AG_DEVICOS` with `PALM_OS` for Palm OS devices, but with `WIN32_OS` for Windows XP devices. The Palm OS device then gets the page from `http://mychannel.com/PALM_OS/schedule.html`, while the Windows XP device gets the page from `http://mychannel.com/WIN32_OS/schedule.html`. In this way, the same URL can return different pages that have been customized for different devices, different users, different processors, or different versions of M-Business Client.
	See also:
	♦ "HTTP request headers" on page 38 ♦ "M-Business Sync Server" on page 44
shared cache	The client cache is a temporary storage area on M-Business Sync Server that is used to store copies of channel web pages that have been downloaded to users in recent synchronizations. During subsequent synchronizations, M-Business Sync Server may be able to determine that the copy of the page in the shared cache is not outdated and that it can thus save time by downloading the page to M-Business Client from the shared cache instead of getting the same page again from the web server.
	See also:
	♦ "caching" on page 34 ♦ "client cache" on page 35
subscribing to a channel	The process by which an M-Business user is paired up with a channel in M-Business Server's database, so that content from that channel is downloaded to the user's mobile device when the device is synchronized.
	See also:
	♦ "group channels" on page 37 ♦ "personal channels" on page 47
sync	See: "synchronization" on page 50.
Sync Server	See: "M-Business Sync Server" on page 44.

synchronization	The process in which M-Business Sync Server downloads pages from channel web servers as necessary to ensure that all the channel pages in the client cache on a mobile device are the same as the corresponding pages on the channel web server. In offline mode, synchronization is a discrete process that the user initiates periodically. In online mode, synchronization is an ongoing automatic process.

See also:

- ♦ "offline mode" on page 47
- ♦ "cradle synchronization" on page 36
- ♦ "online mode" on page 47
- ♦ "wireless connection" on page 51
- ♦ "M-Business Sync Server" on page 44
- ♦ "M-Business Client" on page 41
- ♦ "channels" on page 35
- ♦ "web servers" on page 51

UI Server	See: "M-Business Admin Server" on page 39.
UltraLite	An alternative to M-Business XML conduit, UltraLite is a separate database product that works seamlessly with M-Business Anywhere to provide on-device database capabilities for applications running in M-Business Client. UltraLite provides a robust database solution with a high performance synchronization engine that will scale for thousands of users.

UltraLite has features, like indexing, which allow searching and improved responsiveness with much larger datasets, rich dynamic SQL support, transaction processing to comply with the existing enterprise rules, and other features expected of a full-featured database. MobiLink also offers robust, flexible bi-directional synchronization with enterprise data stores.

See also:

- ♦ "MobiLink " on page 46
- ♦ "UltraLite POD" on page 50
- ♦ "M-Business XML conduit" on page 45

UltraLite API for M-Business Server	Provides programmatic access to UltraLite database functionality on mobile devices running M-Business Client.

See also:

- ♦ "UltraLite" on page 50
- ♦ "UltraLite POD" on page 50
- ♦ "M-Business XML API" on page 45

UltraLite POD	The platform-specific compiled code module that must be downloaded to each device on which an application is to access UltrLite data.

See also:

- "UltraLite" on page 50
- "UltraLite API for M-Business Server" on page 50
- "M-Business XML POD" on page 46

users	Individuals who are registered in the M-Business database for the purpose of being subscribed to channels. Users may be entered into the system through the Administrator Console, by being imported from existing databases, or by integrating M-Business Server with NT domains or LDAP. Users typically are assigned to groups. Most user settings can be managed at the group level.

See also:

- "M-Business database" on page 42
- "Administrator Console" on page 33
- "NT domain integration" on page 46
- "lightweight directory access protocol (LDAP)" on page 38
- "groups" on page 37

web conduit	See: "M-Business web conduit" on page 45.

web servers	Host the web sites that supply content for the channels that M-Business Sync Server synchronized with users' mobile devices. M-Business Anywhere does not include its own web server component. You may set up a web server for a channel using any standard web server software that supports web sites on the Internet.

See also:

- "channels" on page 35
- "M-Business Sync Server" on page 44

WebToGo conduit	See: "M-Business web conduit" on page 45.

wireless connection	A direct connection between a mobile device and the Internet that uses radio waves instead of wires.

See also:

- "mobile device" on page 46
- "online mode" on page 47
- "offline mode" on page 47

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