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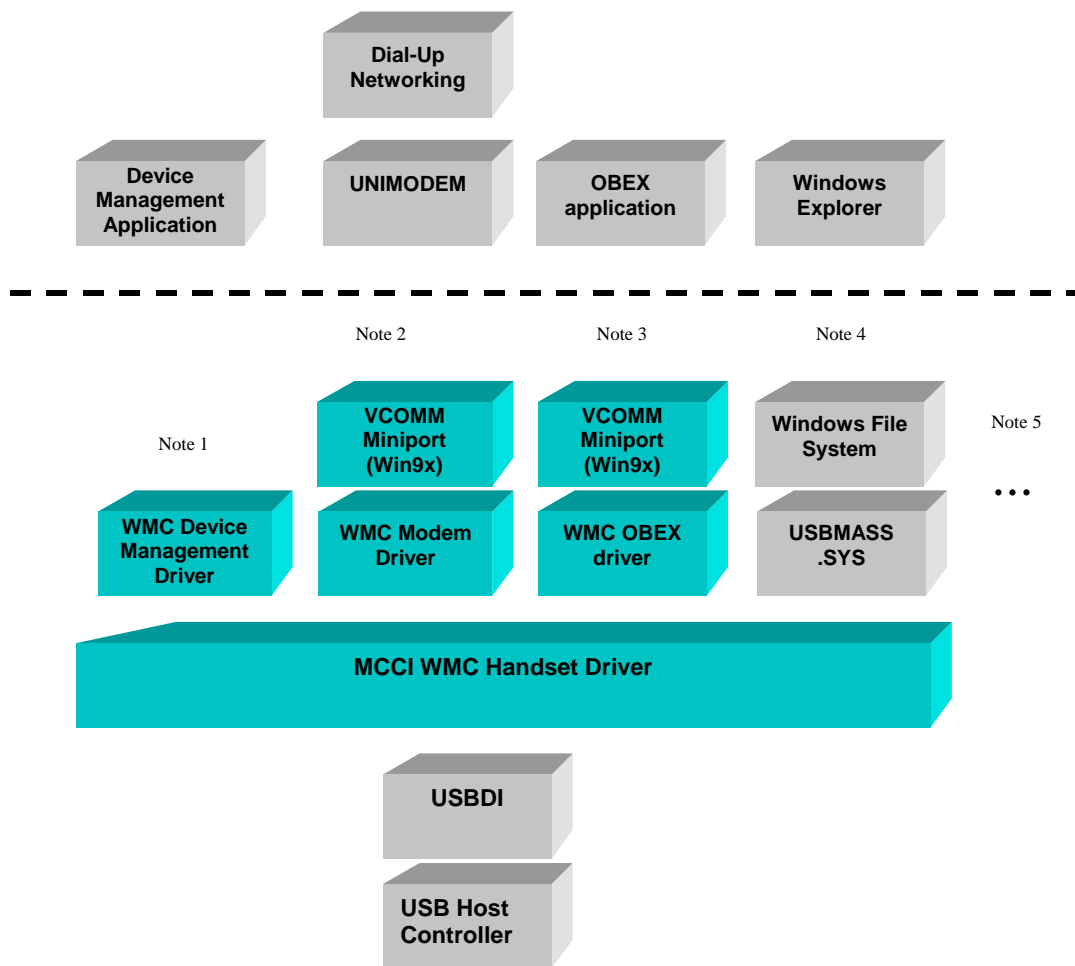
Product Information

MCCI® DRIVERS FOR WMC-COMPATIBLE CELL PHONES AND DATA TERMINALS

An integrated Solution for Wireless Communication

The Wireless Mobile Communication (WMC) device class specification, recently published by USB-IF, now allows cell phones to use USB to offer communication functions with other multi-media capabilities to PCs and PDAs

MCCI's WMC drivers extend MCCI's field-proven USB drivers for communication devices to allow GSM, GPRS, CDMA-2000 and WCDMA terminal equipment to take full advantage of these new capabilities.



The information in this document is preliminary and subject to change without notice. Contact MCCI for current information and design status

As shown in the block diagram, the WMC driver suite starts with a central driver, which provides device-level management services, and additionally enumerates the subfunctions of the phone. This central driver is able to enumerate any device complying with the WMC specification, including:

- Data/Fax communication functions
- Mobile Direct Line Model (MDLM) functions
- Ethernet Control Model (LAN-frame based) functions
- Mass Storage Class functions
- Audio Class functions
- Human Interface Device (HID) functions
- Vendor Specific functions

MCCI further supplies high-performance drivers for data/fax, device management, object exchange, LAN frame exchange, and other purposes. These drivers all operate concurrently, and can be used simultaneously with operating-system supplied function drivers for mass storage, audio, HID and other functions.

Although the WMC specification was developed by leaders in the telecommunications industry, it is not limited to use with cell phones. Any USB application that combines a communication function (fax, modem, network) with another USB function (mass storage, audio, etc.) can take advantage of this specification.

MCCI completes the solution by providing the additional function drivers that are needed

Notes to block diagram:

1. The Device Management function driver provides a separate API to the device; this API is normally used for status monitoring and display. The WMC specification specifies the use of AT commands over this interface, but MCCI's driver can transport any kind of data over this interface. MCCI's drivers allow the designer to choose to use a simulated COMM. port, or to use a DeviceIoControl() interface, which hides the simulated COMM port from the user.
2. If a simulated COM port is used, then an additional VCOMM vxd will be used to provide the legacy services in Windows 98/98SE/Me.
3. The WMC Modem Driver provides high-performance data/fax services, matching the speed of 3G services. With a throughput of up to 3Mbps, this driver allows handset makers to deliver the full bandwidth of their hardware to the Windows host system. Components in this group will be loaded for each Mobile Abstract Control logical terminal adapter that supports data services. The enhanced VCOMM miniport is used only on Windows 98, 98SE and Me.
4. The WMC OBEX Driver provides a straightforward interface to the OBEX functions of the USB device. OBEX is typically used for phonebook

synchronization and to save and restore the settings of the device on the PC. Again, the designer can choose to operate the OBEX port either as a simulated COMM port or use a DeviceIoControl() interface to hide the port from the user.

5. Mass Storage interfaces are handled automatically, using Operating-System supplied drivers on Windows Me, 2000 and XP. [On Windows 98 and 98SE, optional MCCI drivers must be used for this purpose.]
6. Voice services will be handled using an Audio Interface, one interface per logical TA, as guided by the descriptors in the device. Call control for this audio interface will be handled by a separate mechanism (not shown in this diagram). These audio interfaces will be associated with the other interfaces in the logical TA according to the information in the descriptors.
7. Additional standard USB class drivers (for example, HID, audio class for the handset, vendor specific drivers for test and maintenance) are enumerated automatically by the WMC Handset Driver, which parses the device descriptors to determine which functions are present.

Specifications:

Table 1. MCCI WMC Bus Driver

<i>Operating systems</i>	Win98, 98SP1, 98SE, 98ME; Windows 2000, XP
<i>Installation</i>	Plug and Play (INF based). Optional pre-install and uninstall utilities are available; see Table 5.
<i>Device Classes Supported for enumeration</i>	CDC, Audio, plus all single-interface classes
<i>API</i>	Device I/O Control, SetupDiGetClassDevs(), with AT commands automatically sent as encapsulated commands via the COMM Interface
<i>Number of simultaneous cell phones supported</i>	Limited only by system resources.
<i>Device Requirements</i>	CDC 1.x, including any of the mobile control models. Audio class; any Audio Class interfaces must be compatible with the limitations of the underlying operating system. Other single interface functions will also be enumerated correctly.
<i>Number of Data Class Interfaces Supported</i>	Up to 14 (due to limited number of endpoints in real USB silicon)
<i>Language support and localization</i>	Provided by customer
<i>Technical Documentation</i>	Functional Specification, including descriptor requirements and INF-based options. API document, for writing programs that use the management interface directly.

Table 2. MCCI Enhanced WMC FAX/Modem Port Drivers

<i>Operating systems</i>	Win98, 98SP1, 98SE, 98ME, Win 2000, XP
<i>Installation</i>	Plug and Play (INF based). Optional pre-install and uninstall utilities are available; see Table 5
<i>Number of ports supported</i>	Up to 128 (limited by Windows)
<i>API</i>	Standard COMM port, including support for most 16-bit Windows apps and real-mode DOS apps via a port-mapping VxD. (Timing differences may uncover bugs in the applications.)
<i>Device Requirements</i>	Abstract Control Model, as given in CDC 1.1 and clarified by the WMC 1.0 specification. Device must support AT commands over data class pipe, as well as supporting encapsulated commands. COMM class notifications must correctly indicate the associated DATA class interface.
<i>Application Support</i>	Most non-USB aware data and fax communication applications can be supported directly, including Procomm 4.6, Winfax, Dial-Up Networking, Hyperterm, and many others.
<i>Throughput</i>	Limited by the device , telecom network, and USB considerations. Up to 3Mbps has been measured with 3G networks.
<i>Language support and localization</i>	Provided by customer
<i>Technical Documentation</i>	Functional Specification, including descriptor requirements and INF-based options.
<i>INF File Customization for AT Command Set</i>	MCCI provides an INF file based on a standard V.25ter modem model. MCCI can develop the INF file to match customer requirements, or can incorporate customer INF files into the customer-specific build.

Table 3. MCCI WMC OBEX Port Drivers

<i>Operating systems</i>	Win98, 98SP1, 98SE, 98ME, Win 2000, XP
<i>Installation</i>	Plug and Play (INF based). Optional pre-install utility available and uninstall utility; see Table 5
<i>Number of ports supported</i>	Up to 128 (limited by Windows)
<i>API</i>	Either simulated COMM port, or direct DeviceIoControl interface using APIs from ntddser.h.
<i>Device Requirements</i>	WMC OBEX Model, as given in the WMC 1.0 specification.
<i>Language support and localization</i>	Provided by customer
<i>Technical Documentation</i>	Functional Specification, including descriptor requirements and INF-based options.
<i>INF File Customization</i>	None required

Table 4. MCCI WMC Device Management Port Drivers

<i>Operating systems</i>	Win98, 98SP1, 98SE, 98ME, Win 2000, XP
<i>Installation</i>	Plug and Play (INF based). Optional pre-install and uninstall utilities are available; see Table 5
<i>Number of ports supported</i>	Up to 128 (limited by Windows)
<i>API</i>	Either simulated COMM port, or direct DeviceIoControl interface using APIs from ntddser.h.
<i>Device Requirements</i>	WMC Device Management Model, as given in the WMC 1.0 specification. Device must provide a separate interrupt endpoint for RESPONSE_AVAILABLE notifications.
<i>Language support and localization</i>	Provided by customer
<i>Technical Documentation</i>	Functional Specification, including descriptor requirements and INF-based options.
<i>INF File Customization</i>	None required

Table 5. MCCI Driver Preinstall/Uninstall Utility

<i>Operating systems</i>	Win98, 98SP1, 98SE, 98ME, 2000, XP
<i>Installation</i>	SETUP.EXE
<i>Notes</i>	This technology pre-installs all the driver components on the user's system disk, and copies the INF files to the system directory to allow proper installation with minimal user intervention
<i>Language support and localization</i>	Provided by OEM

Table 6. General Information

<i>Basic Delivery Format</i>	Binary plus INF files, as drivers in checked and free format; via download from MCCI's secure web site.
<i>Warranty</i>	90 days
<i>Pricing</i>	Depends on modules and operating systems licensed. May be licensed either via unit royalties or a flat annual subscription fee.
<i>Source Licenses</i>	Available at extra fee.
<i>Pass-through rights</i>	Available at extra fee.
<i>Branding</i>	Drivers will bear MCCI's copyright, but will be rebranded using MCCI's standard rebranding technology for customer, for one device. Additional rebranding available at extra fee.
<i>End-user Documentation</i>	Customer's responsibility
<i>Support</i>	MCCI supports its direct customers via telephone and email. Resellers or manufacturers of products incorporating MCCI technology are responsible for supporting their own customers.

Related MCCI USB Products

Drivers	MCCI USB Class Drivers for Windows and MacOS	UMTS, CDMA-One, CDMA-2000, GSM, GPRS, EDGE, and MCPC GL-004/005 or WMC WCDMA cell phones
		Ethernet devices
		Cable Modems
		Analog (POTS) modems and ISDN TAs
		Serial port Migration
		ADSL modems
		Device Firmware update
Firmware	MCCI USB DataPump® portable firmware environment	Silicon, operating system and CPU independent. Can be run in simulated environments on Windows
	MCCI USB DataPump Device Class modules	WMC and MCPC GL-004/005 cell phones
		Ethernet devices (CDC and Remote NDIS)
		Serial port migration
		Device Firmware Update
		HID class (keyboard/ mouse)
Mass Storage class		
MCCI TrueCard FTL	Patented NAND-flash file system	
USB Development Tools	MCCI Catena® Firmware Development Platforms for Windows 2000/XP	Model 1610 – USB Device module. Optional OSE or Nucleus integration
		Model 1620 – USB On-The-Go module. Optional OSE or Nucleus integration
	MCCI Wombat™ ARM-based Firmware Development Platforms	Model 1510 – development platform including GDB, GCC, USS820 USB device, 100BT Ethernet, NAND flash

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