



MCCI

3520 Krums Corners Road

Ithaca, New York 14850 USA

Phone +1-607-277-1029

Fax +1-607-277-6844

www.mcci.com

MCCI V4.34.2705 USB Driver Release Notes

Engineering Report 950252

Rev.K

Date: 8/05/2005

Copyright © 2005
All rights reserved

PROPRIETARY NOTICE AND DISCLAIMER

Unless noted otherwise, this document and the information herein disclosed are proprietary to Moore Computer Consultants, Incorporated, 3520 Krums Corners Road, Ithaca, New York 14850 ("MCCI"). Any person or entity to whom this document is furnished or having possession thereof, by acceptance, assumes custody thereof and agrees that the document is given in confidence and will not be copied or reproduced in whole or in part, nor used or revealed to any person in any manner except to meet the purposes for which it was delivered. Additional rights and obligations regarding this document and its contents may be defined by a separate written agreement with MCCI, and if so, such separate written agreement shall be controlling.

The information in this document is subject to change without notice, and should not be construed as a commitment by MCCI. Although MCCI will make every effort to inform users of substantive errors, MCCI disclaims all liability for any loss or damage resulting from the use of this manual or any software described herein, including without limitation contingent, special, or incidental liability.

MCCI, TrueCard, TrueTask, MCCI Catena, and MCCI USB DataPump are registered trademarks of Moore Computer Consultants, Inc.

MCCI Instant RS-232, MCCI Wombat and InstallRight Pro are trademarks of Moore Computer Consultants, Inc.

All other trademarks and registered trademarks are owned by the respective holders of the trademarks or registered trademarks.

Copyright © 2005 by Moore Computer Consultants, Incorporated

Document Release History

Rev I	1-14-2005	Update for V4.28.2703
Rev J	3-15-2005	Update for V4.32
Rev K	8-10-2005	Update for V4.34.2705

TABLE OF CONTENTS

1. Introduction.....	1
1.1 Scope.....	1
1.2 Driver Build Changes.....	1
2. Driver File Contents	2
2.1 Serial/Modem drivers.....	2
2.2 Network/PDA drivers.....	3
3. Driver changes between 4.10 and 4.34.2705.....	3
3.1 Common code/bus driver changes between 4.10 and 4.34.....	3
3.1.1 Added ability to insert missing interfaces to form a consecutive sequence. ...	3
3.1.2 Bug 1115: WHQL Device Path Exerciser blue screen w/Driver Verifier	4
3.1.3 Bug 1124: Support more than 4 simultaneous device instances.....	4
3.1.4 Bugs 1178 & 1215: Independent device removal properties	4
3.1.5 Bug 1277: Attempt to open non-existent pipe fails	5
3.1.6 Bug 1278: Attempt to open an interface without all pipes fails.....	5
3.1.7 Support multiple driver instances	5
3.1.8 IRP response processing.....	6
3.1.9 Multifunction installation in Windows XP gold and XP SP1	6
3.1.10 Bug 1396: Blue screen running Driver Verifier	6
3.1.11 Bug 1399: Blue Screen in Driver Verifier after resume from Standby	6
3.1.12 Bug 1465: Prevent BlueScreen while starting devices due to timelock mechanism.	7
3.1.13 Generic driver supports GET CONFIGURATION and GET INTERFACE	7
3.1.14 Bug 1481: OS freezes when going to Hibernate/Standby mode.....	7
3.1.15 Bug 1514: Reduce CPU overhead with multiple devices	8
3.1.16 Bug 1494: Windows freezes during WHQL 2m_P_hibernate test	8
3.2 Serial/Modem Driver changes between 4.10 and 4.34.2705.....	8
3.2.1 Bug 1138: Blue Screen on unplug while Internet Access Wizard running.	8
3.2.2 Bug 1142: WHQL Device Path Exerciser works w/o blue screen.....	9
3.2.3 Bug 1146: Added support for Vendor Specific IOCTLs.	9
3.2.4 Bug 1147: Add registry key to handle SET_BREAK_ON/OFF.	9
3.2.5 Bug 1148: WHQL Device Path Exerciser works w/o blue screen.....	10
3.2.6 Bug 1172: Manual Uninstall/Reinstall of VxD Fails on Win 9x Family	10
3.2.7 Bug 1180: Blue Screen if disconnect during DUN connection process.....	11
3.2.8 Bug 1214: Open link prevents hibernation	11
3.2.9 Bug 1217: TX_Empty event notifications lost.....	11
3.2.10 Bug 1218: Modem traffic status not updated	11
3.2.11 Bug 1221: Add support for IRP_MJ_FLUSH_BUFFERS.....	12

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

3.2.12	Bug 1273: Hyperterm hangs if Set Line Control Fails	12
3.2.13	Bug 1274: Driver sometimes set Xon/Xoff limits to zero	12
3.2.14	Bug 1292: Correctly synthesize modem status change bits.....	13
3.2.15	Bug 1355: Add support for QXDM to Qualcomm DM-port driver	13
3.2.16	Add serial data buffer policy controls.....	13
3.2.17	Error processing improvements.....	14
3.2.18	Bug 1380: Surprise Removal Handling	14
3.2.19	Suspend & Hibernation controls.....	15
3.2.20	Support Prolific PL2303-HX	15
3.2.21	Bug 1346: Spinlock management	15
3.2.22	Bug 1359: Unknown devices appear when multiple identical devices connected via hub	15
3.2.23	Bug 1362: Start modem status loop only when needed by the protocol.	16
3.2.24	Bug 1363: Handle STALL condition in Driver Rx loop	16
3.2.25	Bug 1365: Prevent an infinite wait in MCCIMODEM.....	16
3.2.26	Bug 1372: XONLimit & XOFFLimit settings	17
3.2.27	Bug 1375: connect to com port after suspend.....	17
3.2.28	Bug 1395: Writefile never returns	17
3.2.29	Bug 1390: Accept Suspend during active communications session.....	18
3.2.30	Bug 1407: CommClearError returns correct status	18
3.2.31	Bug 1408: Fix bluescreen in return from hibernation.....	18
3.2.32	Bug 1409: load drivers on Win98 after the PC resumes from standby	19
3.2.33	Bug 1468: Avoid hang on second hibernation request.	19
3.2.34	Bug 1475: Avoid Application hang.....	19
3.2.35	Bug 1477: Blue screen on surprise remove with modem port open	20
3.2.36	Bug 1490: Checked serial driver causes blue screen during first installation	20
3.2.37	Bug 1497: Bluescreen while running HCT Device Path Exerciser test	20
3.3	Network/PDA Driver changes between 4.10 and 4.34.2705.....	20
3.3.1	Bug 1216: V4.18 Cable Modem drivers fail HCT 12.0	20
3.4	Generic Driver changes between 4.10 and 4.26	21
4.	Setup/Uninstaller changes between 4.10 and 4.34.2705	21
4.1	Setup.....	21
4.1.1	Prevent setup.exe from copying useless inf files on Windows 2000/XP	21
4.1.2	Bug 1219: some INF file entries not installed.	21
4.1.3	Bug 1173: Ignore serial number in production environments	22
4.1.4	Bug 1188: Automatic post-installation fails on some Windows 98 family systems.....	22
4.1.5	Bug 1192: Setup.exe does not copy .cat files to a harddisk folder	22
4.1.6	Upgraded to support Windows Server 2003 family	23
4.1.7	Bug 1224: Setup.exe couldn't find proper install path on Spanish Windows.	23
4.1.8	Bug 1267: Setup.exe was upgraded to handle CatalogFile.nt entry.....	23
4.1.9	Bug 1268: Setup.exe uses CatalogFile entry in Version section on Win98	23
4.1.10	Bug 1271, Reduce end-user confusion from Bug 1268 fix	24
4.1.11	Control Windows version installation	24

4.2 xxxUninstall..... 24
4.2.1 Bug 1121: Uninstall removes driver & INF files if called with -quiet 24

5. Release Matrix for previous builds..... 25

1. Introduction

1.1 Scope

These notes apply to MCCI V4.16 through V4.34 build 2703 USB driver sets, including:

- INFs
- executables
- preinstaller and uninstaller

This document, 950252k supercedes documents 950252a-920252j (4.16-4.30).

Note that in this revision, where applicable, detail has been added. In the case of feature requests, the reasons may be cited. In the case of bugs, the problem description is included, and in some cases the reproduction procedure is also included.

The “official” releases of V4.16-V4.34 include installation technology based on InstallRight Pro V1.11 through V1.26. The Installation technology is built separately from the drivers, and has an independent version number. That version number can be determined easily from the file. Please consult your MCCI support contact for more information.

1.2 Driver Build Changes

MCCI may release intermediate driver builds. The first build of each revision level is 2701; 4.34.2701 is the first driver release of this series. Note that not all intermediate builds are released to customers, and not all intermediate builds have changes that are visible to customers. Therefore, only builds that were released to customers with visible changes are included in the following table.

This section summarizes the changes between builds, with reference to the note on each change.

Table 1. Release Matrix for V4.34.2705

Bug	2701	2702	2703	2704	2705	Summary
1390	√	√	√	√	√	Bug 1390: Accept Suspend during active communications session
1475	√	√	√	√	√	Bug 1475: Avoid Application hang
1481	-	√	√	√	√	OS freezes when going to Hibernate/Standby mode
1514	-	-	√	√	√	Reduce CPU overhead with multiple devices
1490	-	-	-	√	√	Checked serial driver causes blue screen during first installation

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

1494	-	-	-	√	√	Windows freezes during WHQL 2m_P_hibernate test
1497	-	-	-	-	√	Bluescreen while running HCT Device Path Exerciser test

2. Driver File Contents

"xxx-" corresponds to the customer-specific label for each product.

2.1 Serial/Modem drivers

Typical driver sets include 17 files:

1. xxx-bus.inf bus driver INF file
2. xxx-wdm.inf WDM driver INF file
3. xxx-vxd.inf Win9x modem INF file
4. xxx-w2k.inf Win2K/XP modem INF file
5. xxx-bus.sys primary bus driver
6. xxx-cr.sys WDM class registry
7. xxx-mdm.sys Modem driver
8. xxx-mdfl.sys Modem filter driver
9. xxx-comm.vxd Win9x VXD
10. xxx-vcv.vxd Win9x VXD
11. xxx-vcr.vxd Win9x VXD
12. xxx-cm95.vxd Win9x support functions
13. xxx-cmnt.sys Win2K/XP support functions
14. xxx-wh95.sys Win9x support functions
15. xxx-whnt.sys Win2k/XP support functions
16. setup.exe preinstall setup application
17. xxx-uninstall.exe uninstall application

2.2 Network/PDA drivers

Typical driver sets include 12 files:

- | | |
|-----------------------|------------------------------|
| 1. xxx-unic.inf | WDM driver INF file |
| 2. xxx-ndis.inf | NDIS miniport INF file |
| 3. xxx-unic.sys | USB WDM driver |
| 4. xxx-cr95.vxd | Win9x WDM class registry |
| 5. xxx-crnt.sys | Win2K/XP WDM class registry |
| 6. xxx-vcr.vxd | Win9x Virtual Device Driver |
| 7. xxx-wh95.sys | Win9x support functions |
| 8. xxx-whnt.sys | Win2k/XP support functions |
| 9. xxx-nd3.sys | NDIS 3 miniport driver |
| 10. xxx-nd5.sys | NDIS 5 miniport driver |
| 11. setup.exe | preinstall setup application |
| 12. xxx-uninstall.exe | uninstall application |

3. Driver changes between 4.10 and 4.34.2705

3.1 Common code/bus driver changes between 4.10 and 4.34

3.1.1 Added ability to insert missing interfaces to form a consecutive sequence.

A device from one manufacturer produces USB device/interface descriptors that are non-standard, in that some interface numbers were omitted from the set of interfaces in the configuration descriptor. This situation normally causes the Microsoft USB stack to fail during driver startup. The bus driver was modified to work around the discovered issues.

Effect on applications: none

Effect on subordinate drivers: none - they still only receive the descriptors that belong to their specific function of the device.

MCCI V4.34.2705 USB Driver Release Notes Engineering Report 950252 Rev.K

Effect on devices: some devices that previously would not work as multi-function devices under Windows now will work correctly. No effect for devices that were previously working.

3.1.2 Bug 1115: WHQL Device Path Exerciser blue screen w/Driver Verifier

Problem Description: Running WHQL HCT11.2 Universal test DPE and DV, getting blue screen and bug check errors.

Problem solutions:

1. Generally improved the handling of unsupported IRPs in the bus driver
2. Return STATUS_INVALID_PARAMETER for unsupported IRPs.

Effect on applications: none

Effect on devices: none

3.1.3 Bug 1124: Support more than 4 simultaneous device instances

Problem Description: V4.10 cannot support more than 4 identical devices simultaneously. (V3.40 could support at least 8 identical devices simultaneously.)

This problem was introduced by an attempt to work-around issues with hot Plug and Play (bug 1049, which was fixed in 4.10). However, this inadvertently introduced a limitation in the number of devices that can be supported.

Problem Solution:

1. improve the instance tracking logic in the bus driver
2. correct some boundary conditions which caused blue-screen problems on hot removal.

Effect on applications: applications no longer need to be quite as careful about closing COM ports immediately when an unplug event (WM_DEVICECHANGE) is reported by Windows.

Effect on devices: none

3.1.4 Bugs 1178 & 1215: Independent device removal properties

Problem Description: When enumerating a mass storage function in a multi-function device with the MCCI Bus driver, the "Safely Remove Hardware" system applet is not displayed. This results in the "Unsafe Removal" message being displayed by the system when the device is disconnected.

Problem Solution: Allow each function driver to specify its own Surprise Removal capabilities.

Effect on applications: Users will now be able to invoke the "Safely Remove Hardware" applet prior to disconnecting their device from the system.

Effect on devices: None.

3.1.5 Bug 1277: Attempt to open non-existent pipe fails

Problem Description: If a driver attempts to open a non-existent pipe on an existing interface on a device using the generic driver, the system crashes in MCCIUSB_FindPipe with a null-pointer dereference. The result is a bluescreen.

Problem Solution: Fix the generic driver so that it detects the error generated by attempts to open non-existent pipes on interfaces without endpoints. When detected, it fails gracefully with error indication.

Effect on applications: none.

Effect on devices: none.

3.1.6 Bug 1278: Attempt to open an interface without all pipes fails

Problem Description: If a device is actually missing an RX or TX pipe (that was in the descriptors) a device open using the checked CDC drivers fails. If debug printing is turned on, the system will blue-screen.

Problem solution: The solution is to check for null pointers in the debug print.

Effect on applications: none.

Effect on devices: the checked drivers can now recover gracefully if a device USB implementation is defective.

3.1.7 Support multiple driver instances

Feature Request: Allow the loading of multiple driver instances for each enumerated device function in the event that a previous driver instance remains loaded.

- 1) created "MultipleInstancePolicy" dword registry key.
- 2) driver cdcbus detects this key, and allows multiple instances if configured.

Effect on applications: none.

Effect on devices: separate drivers instances can be loaded for multiple devices.

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

3.1.8 IRP response processing

Feature implementation:

- 1) call StopDeviceProcessing before returning STATUS_SUCCESS from IRP_MN_QUERY_STOP.
- 2) call StartDeviceProcessing before completing an IRP_MN_CANCEL_STOP_DEVICE.

Effect on applications: none.

Effect on devices: none.

3.1.9 Multifunction installation in Windows XP gold and XP SP1

Problem description: after implementation of the Cable Emulation drivers, installation did not work in Windows XP gold or in Windows XP SP1. (It worked fine in Windows 9x, any version of Windows 2000, and in Windows XP SP2. This turns out to be a regression bug between Windows 2000 and Windows XP, fixed in XP SP2.

Problem Solution: shortened generated instance ID string.

Effect on applications: none.

Effect on devices: none.

3.1.10 Bug 1396: Blue screen running Driver Verifier

Problem Description: When running the WHQL HCT12.0 NDIS test, Driver Verifier bug checks with DRIVER_VERIFIER_IOMANAGER_VIOLATION (c9).

Problem Solution: Implement a work-around which preserves the existing behavior when running on all OS versions below WinXP.

Effect on Applications: Allows successful completion of WHQL test. No effect on applications outside of the WHQL HCT.

Effect on Devices: None.

3.1.11 Bug 1399: Blue Screen in Driver Verifier after resume from Standby

Problem Description: When running the WHQL HCT12.0 NDIS test, Driver Verifier bug checks with DRIVER_PAGE_FAULT_IN_FREED_SPECIAL_POOL (d5).

Problem Solution: Removed debug print code which was accessing the pIrp->IoStatus block after having called PoCallDriver.

Effect on Applications: Allows successful completion of WHQL test. No effect on applications outside of the WHQL HCT.

Effect on Devices: None.

3.1.12 Bug 1465: Prevent BlueScreen while starting devices due to timelock mechanism.

Problem Description: If the current system time predates the driver build time, the driver generates a bluescreen.

Problem resolution: Detect the condition and prevent bluescreen.

Effect on applications: none.

Effect on Devices: None.

3.1.13 Generic driver supports GET CONFIGURATION and GET INTERFACE

Problem Description: The generic driver doesn't properly pass through GET_CONFIGURATION and GET_INTERFACE commands. Any attempt to use them results in a failure (invalid parameter) and no bus traffic. (This is when formatting GET_CONFIGURATION and GET_INTERFACE using the general-purpose setup-command facility.)

Problem Resolution: Fix handling of GET_CONFIGURATION and GET_INTERFACE when sent via MCCIUSB_GET_USB_CONTROL_IOCTL.

Effect on Applications: GET CONFIGURATION and GET INTERFACE will work.

Effect on Devices: none.

3.1.14 Bug 1481: OS freezes when going to Hibernate/Standby mode

Problem Description: On a dual-processor Windows XP machine, trying to suspend a system with attached device causes the OS to freeze.

Problem Resolution: Treated StopEvent as a NotificationEvent instead of a SynchronizationEvent.

Effect on Applications: none.

Effect on Devices: none.

MCCI V4.34.2705 USB Driver Release Notes Engineering Report 950252 Rev.K

3.1.15 Bug 1514: Reduce CPU overhead with multiple devices

Problem Description: In a test environment including a Windows XP SP2, Pentium 4, high speed hub and a set of USB-to-serial adaptors, CPU usage reaches 90%, as measured via Windows' Task Manager applet. The CPU usage correlates with the number of attached devices. It turns out that the usage is processing serial state notification and related interrupts.

Problem Resolution: MCCI implemented a work-around to override the INTERRUPT pipe polling bInterval value specified in a device's endpoint descriptor based on the following criteria: If the system is Windows 2K or XP, use the new "MCCIUSB_FEATURE_INTERRUPT_PIPE_CPU_OVERLOAD" feature macro and the new "MinimumInPipeInterval" dword registry key. If the value in the descriptor is less than the non-zero value specified by "MinimumIntPipeInterval" then it is overridden.

Effect on Applications: none.

Effect on devices: host response to interrupts may be less than that indicated by the device in descriptors.

3.1.16 Bug 1494: Windows freezes during WHQL 2m_P hibernate test

Problem Description: When doing WHQL 2m_P_hibernate test, Windows becomes stuck at preparing to enter hibernation screen. The mouse will move but the keyboard does not respond. This happens randomly during the 10 times scheduled hibernation of the test. System recovery requires hardware reset or power-off.

Problem solution: Protect manipulation of PendingActionCount and PowerActionCount in MCCIWDM_Power_BeginQueuingIrps(). This required adding an input parameter to MCCIWDM_Power_BeginQueuingIrps().

Effect on Applications: none.

Effect on devices: none.

3.2 Serial/Modem Driver changes between 4.10 and 4.34.2705

3.2.1 Bug 1138: Blue Screen on unplug while Internet Access Wizard running.

Problem Description: On Windows XP, if the modem/phone is unplugged while an 'Internet Access Wizard is running, and downloading a web page, a blue-screen will occur.

Problem solution: Avoid de-referencing an invalid pointer. This change affects all drivers that export a serial or modem-compatible interface.

Effect on applications: none

Effect on devices: none

3.2.2 Bug 1142: WHQL Device Path Exerciser works w/o blue screen

Problem Description: On Windows XP, the WHQL Device Path Exerciser crashes with v4.14rc1 serial/modem drivers. With free drivers, the stack backtrace includes a symbol of the form:

```
xxx-mdm!mccimdmd_klsi_immedchar_done
```

Problem solution: Correct a function result to match results returned by Microsoft in-built serial drivers. This change affects all drivers that implement IOCTL_SERIAL_IMMEDIATE_CHAR.

Effect on applications: The MCCI drivers more accurately model the behavior of real serial ports.

Effect on devices: none

3.2.3 Bug 1146: Added support for Vendor Specific IOCTLs.

As requested by a customer, support for two Vendor Specific IOCTLs was added. These in turn support two applications supplied by that customer.

Note: These IOCTLs are enabled by a special entry in the INF file. Please contact MCCI for more information if needed.

Effect on applications: If IOCTL support is not enabled in the registry, there is no effect. If enabled, two new IOCTLs are available, but none of the existing IOCTLs are affected.

Effect on devices: none.

3.2.4 Bug 1147: Add registry key to handle SET_BREAK_ON/OFF.

Problem Description: a customer device does not correctly handle the CDC 1.1 SET_BREAK_ON/OFF setup requests; the device does not perform the status phase. This causes the original IRP's status to remain STATUS_PENDING until the request is cancelled by the application.

Solutions:

1. For devices that report a CDC 1.1 compliant descriptor, but which do not handle the CDC setup requests, simulate BREAK handling inside the driver without sending to the device if the "EnableCR1147".(cdc protocol) registry key is set to a positive value.

MCCI V4.34.2705 USB Driver Release Notes

Engineering Report 950252 Rev.K

2. For devices which report only a vendor-specific descriptor, but which support CDC 1.1 BREAK handling correctly, the DisableCR1147 registry key, if set to a positive value, disables this BREAK simulation.

This change affects CDC ACM protocol drivers and the applicable manufacturer-specific protocol drivers.

Effect on applications: applications that use IOCTL_SERIAL_SET_BREAK_ON/OFF with the deficient devices will now work, rather than hanging. Otherwise no effect.

Effect on devices: devices that don't implement CDC SET_BREAK requests correctly can now be used. A registry setting is required to tell the driver that break doesn't work.

3.2.5 Bug 1148: WHQL Device Path Exerciser works w/o blue screen

Problem Description: On Windows XP, the WHQL Device Path Exerciser crashes with v4.14rc1 drivers. The crash backtrace indicates that the crash is at:

```
xxx-serd!mccimdm_diagnostic_sethandflow+0x72
```

Problem solution: Improve handling of IOCTL_SERIAL_SET_HANDFLOW so that parameters are correctly validated

Affected drivers: this bug only affected the "diagnostic port" drivers for CDMA handsets.

Effect on applications: applications that use IOCTL_SERIAL_SET_HANDFLOW *incorrectly* when working with a virtual serial port created by the diagnostic port drivers may now (correctly) fail, when in the past the behavior was unpredictable. For correct applications, there is no effect.

Effect on devices: none.

3.2.6 Bug 1172: Manual Uninstall/Reinstall of VxD Fails on Win 9x Family

Problem Description: Under Windows 9X and ME the V4.16 and earlier driver releases would not work correctly after having been manually removed through Device Manager and then re-installed through the use of the Device Manager "refresh" function. The COM port assigned by the system during the original installation is no longer able to be opened. When the device is un-plugged and subsequently re-plugged in, another driver installation is performed resulting in a new COM port assignment.

Problem Solution: Ensure that registry keys created during the initial installation process are restored when processing CONFIG_ENUMERATE requests.

Effect on applications: Applications will now be able to re-open the original assigned COM port after the manual driver removal and refresh procedure.

Effect on devices: None.

3.2.7 Bug 1180: Blue Screen if disconnect during DUN connection process

Problem Description: A "blue screen" would infrequently occur if a handset was disconnected from the PC while Dial-Up Networking was in the process of establishing a connection.

Problem Solution: The Modem Filter Driver was modified to return appropriate status to IOCTLs while in a Surprise Removal state.

Effect on Applications: TAPI applications should receive the appropriate status and abort the connection attempt.

Effect on Devices: None.

3.2.8 Bug 1214: Open link prevents hibernation

Problem description: The following sequence of events results in a hibernation failure:

- 1) bring up sprint link
- 2) bring up SSH to MCCI
- 3) lock the workstation (ctl-alt-del, lock)
- 4) close the lid on the notebook, forcing hibernation.

Expected behavior is that the connection would be torn down, and that hibernation would not be blocked.

Problem solution: not yet known.

3.2.9 Bug 1217: TX_Empty event notifications lost.

Problem Description: TX_EMPTY event notifications are sometimes lost depending on the way applications use the Serial API.

Problem Solution: Implement a different mechanism for resetting the driver's notion of the TX_EMPTY state.

Effect on Applications: Applications will no longer miss TX_EMPTY events.

Effect on Devices: None.

3.2.10 Bug 1218: Modem traffic status not updated

Problem description: In Windows XP, running Dial Up Networking, on USB cell phone, the connection is made and works, but the data traffic counters are not always updated. Similarly, the 'lights' on the tray icon do not always blink with data traffic.

MCCI V4.34.2705 USB Driver Release Notes Engineering Report 950252 Rev.K

Problem Solution: not yet known. The work around is to close the connection or unplug before hibernating, which is inadequate.

3.2.11 Bug 1221: Add support for IRP_MJ_FLUSH_BUFFERS

Problem Description: While running HCT Enable/Disable test, IRP_MJ_FLUSH_BUFFERS fails.

Problem Solutions: Add an implementation function to the MCCI serial/modem drivers:

- Updated MCCIUSB_DEVSITCH to include IrpMjFlushBuffers, which (if non-NULL) will be used as the dispatch function for IRP_MJ_FLUSH_BUFFERS.
- Updated init macros to _V12; the standard declaration macro now requires <drvname>_FlushBuffers as a dispatch routine.
- Updated mccimdm.h to use the V12 macro.

Effect on Applications: none

Effect on Devices: none

3.2.12 Bug 1273: Hyperterm hangs if Set Line Control Fails

Problem Description: Some drivers do not implement all possible settings in VSP. Unfortunately, they did not fail with error returns. Example: If an illegal setting is selected using Hyperterm under Windows 2000 or XP, and an attempt is made to open the port, Hyperterm locks up until manually terminated. This also happens with WCOM32. It doesn't seem to happen with COMTEST2. However, if portmon is loaded, the problem is not reproducible; you instead get a proper "can't open port" message.

Problem Solution: To affected drivers, add error returns for invalid VSP line settings when working with Hyperterm and the Windows comm library. Also change SET_CHARS not to change characters in the database until the device has commented on the command.

Effect on Applications: Applications that generate illegal settings but also implement error recover will now recover gracefully.

Effect on Devices: none

3.2.13 Bug 1274: Driver sometimes set Xon/Xoff limits to zero

Problem description: For Windows 98, if no Xon or Xoff Limit is specified, the driver may set them both to zero. This causes logical errors in the firmware regarding flow control.

Problem solution: Add logic that detects this condition and adjusts.

3.2.14 Bug 1292: Correctly synthesize modem status change bits

Problem Description: Trying to connect to a vendor's modem implementation failed. The cause was incorrect handling of modem status bits.

Problem Solution: Return the current status bits (as the W32 drivers actually work), not the previous status as described in the DDK.

Effect on Applications: none

Effect on devices: none

3.2.15 Bug 1355: Add support for QXDM to Qualcomm DM-port driver

Problem Description: Qualcomm's QXDM application requires special support in the DM-port driver, to allow QXDM to operate correctly across surprise removals. Previous versions of the MCCI DM driver did not include this support.

Problem solution: The support in the MCCI DM driver was upgraded to support the latest versions of QXDM.

Effect on applications: QXDM will be able to detect surprise removal in its preferred way. This uses a proprietary API, and so other applications are not effected.

Effect on devices: None.

3.2.16 Add serial data buffer policy controls

Feature request: implement heuristics on buffer purging in serial devices.

This dword registry should be used only when necessary to support applications that require the driver to track the last AmountInQueue to determine whether or not to ignore a SERIAL_PURGE_RXCLEAR IOCTL_SERIAL_PURGE request.

Implementation:

- 1) add EnablePurgeHeuristics registry key; if enabled, track the last reported AmountInQueue.
- 2) add SuppressDevicePurge registry key; add logic to suppress purge requests to the device based on that key.

Effect on applications: none.

Effect on devices: none.

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

3.2.17 Error processing improvements

Feature request: migrate legacy applications to support power management

This key is used to encourage legacy applications to relinquish any open handles to the driver as quickly as possible.

Implementation:

- 1) When called during error processing, check for null URB pointers.
- 2) In surprise removal, drop the modem status lines and satisfy any pending WAIT_ON_MASK IOCTLs.
- 3) If Bouncio set, return STATUS_DELETE_PENDING.

Effect on applications: none.

Effect on devices: none.

3.2.18 Bug 1380: Surprise Removal Handling

Feature request: migrate legacy applications to support power management

These keys are used to encourage legacy applications to relinquish any open handles to the driver as quickly as possible.

Implementation:

- 1) Create EnableMdmStatus Heuristics registry key.
- 2) Create EnableSurpriseRemovalHeuristics registry key.
- 3) Return STATUS_DELETE_PENDING to all Serial Device Control requests if the MCCIMODEM_SURPRISE_REMOVAL_HEURISTICS_RETURN_DELETE_PENDING bit is set in the EnableSurpriseRemovalHeuristics registry key. This is the default behavior.
- 4) If surprise removal event detected, let the modem status loop die.
- 5) If the corresponding bits are set in EnableMdmStatusHeuristics are set, force the DCD and/or DSR signals ON.
- 6) Set STATE_REMOVING prior to calling IoCallDriver when passing down a IRP_MN_SURPRISE_REMOVAL.
- 7) In shutting down, return STATUS_DELETE_PENDING instead of STATUS_SUCCESS.

Effect on applications: none.

Effect on devices: none.

3.2.19 Suspend & Hibernation controls

Feature request: migrate legacy applications to support power management

Depending on the specific setting, this dword registry key can configure the driver to allow or refuse a suspend/hibernate request.

Implementation: create EnableSuspendHibernationHeuristics registry key and associated logic.

Effect on applications: none.

Effect on devices: none.

3.2.20 Support Prolific PL2303-HX

Implementation: add VID/PID and functional logic to support this device.

Effect on applications: none.

Effect on devices: PL2303-HX works.

3.2.21 Bug 1346: Spinlock management

Problem description: A local KIRQL variable was being used incorrectly. This can cause a blue screen under specific error recovery code execution paths. This problem is localized to the MCPC AT Command and WMC Device Management protocols of the serial/modem drivers.

Problem solution: The application can close without a blue screen.

Effect on applications: the phone can be unplugged while connection is in progress.

Effect on devices: none.

3.2.22 Bug 1359: Unknown devices appear when multiple identical devices connected via hub

Problem Description: plug in two or more identical devices (e.g. phones) through a hub, and run an application. After several rounds of test, some phones will start to show "unknown device" during enumeration.

Problem Solution:

- Added support for overriding the default pDE->TimeoutDelay (currently set to 0 in createdev.c) through the use of the "OverrideTimeoutDelayMS" dword registry key.

MCCI V4.34.2705 USB Driver Release Notes

Engineering Report 950252 Rev.K

The key defines the number of milliseconds to delay. A 50 millisecond minimum delay is enforced in order to comply with the implementation in cusbdasy.c.

- Added support for "EnableCloseProcessingHeuristics" bitmask dword registry key which allows control over "close" processing. Currently only one bit is defined:

MCCIMODEM_CLOSE_PROCESSING_HEURISTICS_NO_DEVICE_ACCESS

This bit definition instructs the driver not to send any requests to the device during "close" processing.

Effect on applications: none.

Effect on devices: none.

3.2.23 Bug 1362: Start modem status loop only when needed by the protocol.

Problem description: The modem status loop is not necessary for protocols that utilize notification endpoints to deliver modem status information such as CDC ACM, MCPC, and WMC.

Problem solution: Move the "Start" and "Stop" of the modem status loop from the generic open/close functions to the class-specific open/close functions of the protocols that actually need it.

Effect on applications: none.

Effect on devices: none.

3.2.24 Bug 1363: Handle STALL condition in Driver Rx loop

Problem description: If the RxIrp completes with an error, and the URB status indicates a USBD_STATUS_STALL_PID error, the RxIrp should actually be resubmitted after resetting the IN pipe. Otherwise, a STALL condition may lead to device errors/instability.

Problem solution: Detect whether the RxIrp error status is associated with an URB status of USBD_STATUS_STALL_PID. If so, then set the RxNeedsReset flag and re-submit the RxIrp.

Effect on applications: none.

Effect on devices: none.

3.2.25 Bug 1365: Prevent an infinite wait in MCCIMODEM

Problem description: It is possible for a thread to enter into an infinite wait state if it has tried to terminate an IRP and if the RX pipe reset completes with an error.

Problem solution: Detect the condition and ensure that this condition is handled correctly.

Effect on applications: none.

Effect on devices: none.

3.2.26 Bug 1372: XONLimit & XOFFLimit settings

Problem description: When some applications try to set XOnLimit and XOffLimit larger than the ReceiveQueueSize for flow control, the driver will return fail.

Problem solution: by customer request, the drivers will return success indication, whether or not the limits exceed ReceiveQueueSize.

Effect on applications: applications that try to set these limits above ReceiveQueueSize will not fail due to error returns from setting those high values.

Effect on devices: none.

3.2.27 Bug 1375: connect to com port after suspend

Problem description: HCT is unable to connect com port after first time hibernation with AllowSuspendWhileOpen registry key enabled.

Problems solution: the power management code now checks whether the Rx loop has been re-started as a result of a failing RxIrp completion status or the result of a previous call to RxStop.

Effect on applications: none.

Effect on devices: none.

3.2.28 Bug 1395: Writefile never returns

Problem Description: The serial/modem driver did not handle the case where a write completion occurs just as the write total timer dpc has been scheduled to run, causing the current IRP_MJ_WRITE request to remain pending forever.

Problem Solution: Detect the situation and ensure that the Irp is completed.

Effect on Applications: Applications which previously were susceptible to the problem now work correctly.

Effect on Devices: None.

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

3.2.29 Bug 1390: Accept Suspend during active communications session

Problem Description: By design, our WMC drivers block suspend if there is an active connection. Through HCT 11.x, this passed WHQL. By Microsoft decision, this fails in HCT 12.0. They granted a contingency #1137 to support migration.

Problem solution: for Windows XP and later, our WMC drivers will accept suspension if there is an active connection. The implementation includes an AllowSuspendWhileOpen registry key, that forces the previous policy.

Effect on Applications: Legacy applications which are not power management aware will be adversely effected when running on Windows XP or later. In particular, forced suspension (user closes the lid on a notebook; low power warnings) will cause the driver to accept suspension. Connections will be lost.

Power management aware applications, like Windows' DUN, will know to re-establish the connection.

Effect on Devices: none.

3.2.30 Bug 1407: CommClearError returns correct status

Problem Description: Certain VSP-aware applications expect the information returned in response to an IOCTL_SERIAL_GET_COMMSTATUS to be retrieved from the VSP device.

Problem Resolution: Implemented a registry key based approach to configure the VSP driver to issue the VSP_bRequest_GET_COMM_STATUS bRequest to the device on a brand by brand basis. The new dword registry key is named SendRequestForCommStatus.

Effect on Applications: VSP aware applications can now receive COMMSTATUS information from a VSP device.

Effect on Devices: VSP devices will now be sent the VSP_bRequest_GET_COMM_STATUS request based on the presence of the registry key described above.

3.2.31 Bug 1408: Fix bluescreen in return from hibernation

Problem Description: When a WMC OBEX driver is configured with the AllowSuspendWhileOpen registry key for use with the WHQL HCT 12.0 tests, the system will blue-screen after resuming from hibernate during the ACPI stress test. The use of the "AllowSuspendWhileOpen" registry key resulted in an execution path previously not taken by the WMC OBEX driver.

Problem Resolution: Correct the implementation to match the implementation of other protocols.

Effect on Applications: Prevents blue-screen from potentially occurring when the "AllowSuspendWhileOpen" registry key is used.

Effect on Devices: None

3.2.32 Bug 1409: load drivers on Win98 after the PC resumes from standby

Problem Description: After a PC resume from standby, modem and serial drivers were not visible in device manager under the device types, but they were visible under "Universal Serial Bus controllers" category.

Problem Resolution: Do not call StopDeviceProcessing unless configured to allow a suspend/hibernate request while currently "open".

Effect on Applications: Applications should not lose devices after suspend and resume.

Effect on Devices: none.

3.2.33 Bug 1468: Avoid hang on second hibernation request.

Problem description: In Windows 2000 or XP, if a second suspend request is generated while a first one is pending, the driver hangs.

Problem resolution: IRP queuing is disabled after processing the first suspend request has started.

Effect on Applications: none.

Effect on Devices: none.

3.2.34 Bug 1475: Avoid Application hang

Problem Description: A phone test and management application uses device management handles. When an attempt is made to terminate the application while the device is connected, it does not surrender the DM handle, and stays active in the task manager. Further, if the application is launched again, it cannot use the device, because the handle is still held by the previous application instance.

Problem resolution: Add support for cancellation of pending WaitNotifyIrp.

Effect on Applications: Applications should not hold handles when terminated, but they may be able to work if they do.

Effect on devices: none.

MCCI V4.34.2705 USB Driver Release Notes
Engineering Report 950252 Rev.K

3.2.35 Bug 1477: Blue screen on surprise remove with modem port open

Problem Description: In Windows 2000 or XP, using Hyperterm application, with modem port open (not a com port). On surprise removal there is a blue screen.

Problem Resolution: corrected implementation of cancellation code.

Effect on Applications: robust system behavior when modem ports are used.

Effect on Devices: none.

3.2.36 Bug 1490: Checked serial driver causes blue screen during first installation

Problem Description: Using Windows XP and a 4-port serial adaptor, checked version serial driver causing Windows blue screen when loaded. It tries to get tsp file object pointer which is null for the serial drivers.

Problem Resolution: Add a test for the validity of the irpStack file object before attempting to use it.

Effect on Applications: none.

Effect on Devices: none.

3.2.37 Bug 1497: Bluescreen while running HCT Device Path Exerciser test

Problem Description: Running HCT 12.1.01 device path exerciser, Windows fails after reboot.

Problem Resolution: free the receive input buffer if a failure occurs during "open" processing.

Effect on applications: none.

Effect on devices: none.

3.3 Network/PDA Driver changes between 4.10 and 4.34.2705

3.3.1 Bug 1216: V4.18 Cable Modem drivers fail HCT 12.0

Problem Description: The parameters passed in for certain IOCTLs are not validated.

Problem Solution: Ensure that parameters are validated for all IOCTLs.

Effect on Applications: Passing an illegal IOCTL parameter to the driver will cause a failure status to be returned to the application.

Effect on Devices: None.

3.4 Generic Driver changes between 4.10 and 4.26

None.

4. Setup/Uninstaller changes between 4.10 and 4.34.2705

Most customer releases of MCCI USB drivers also include InstallRight Pro, which simplifies installation and removal of the drivers.

V4.10 drivers included InstallRight V1.8; V4.18 and V4.20 included InstallRight Pro V1.11; V4.22 and V4.24 include InstallRight Pro V1.26.

Please be aware that version numbers for InstallRight Pro do not follow MCCI's usual numbering convention. In particular, V1.8 is *prior* to V1.11, because 8 is < 11 (even though 1.8 > 1.11). The numbering scheme will be changed in a future release.

Because InstallRight Pro is a separate product from the base drivers, it is often updated independently. You may have a later version in your release. Please contact your MCCI support office for updated information.

4.1 Setup

4.1.1 Prevent setup.exe from copying useless inf files on Windows 2000/XP

Problem Description: Windows 2000 and Windows XP generate Unsigned Driver warnings. This can be reduced if some of the files are not necessary to install.

Solution: Setup.exe searches valid inf files in preparation for driver installation. Setup.exe decides that an inf file is NOT valid if:

- that inf file is a modem class or a port class
- and it has no usb hardware key like "USB\VID_XXXX&PID_XXX" in model section
- and the installation platform is Windows 2K/XP.

Effect on applications: none

Effect on devices: none

4.1.2 Bug 1219: some INF file entries not installed.

Problem Description: The common.addreg entries in the inf file are not installed for a customer brand. This caused a driver workaround for a firmware bug to not be enabled.

MCCI V4.34.2705 USB Driver Release Notes Engineering Report 950252 Rev.K

Problem Solution: The brand was fixed.

Effect on Applications: None.

Effect on Devices: A driver workaround for a firmware bug is now installed and enabled.

4.1.3 Bug 1173: Ignore serial number in production environments

Problem statement: USB devices with serial numbers result in multiple instances in the registry. Therefore, in production test, it is preferable to ignore the serial numbers. Existing MCCI drivers have an '-ignore_serialnum' command line switch.driver that can be used for manufacturing & testing. A customer requested additional support.

Problem solution (V1.12): setup (the installer) has been modified to detect the need to ignore the serial number via new mechanisms. First, means have been added so that any command line switch, including '-ignore_serialnum', can be added to driver branding information. Second, setup will check if any of the driver inf files that will be installed has "InstallOptions" string value. In this case, if any of xxxbus.inf, xxxm2.inf or xxxs2.inf has InstallOptions = "IgnoreHWSerialNumber" string value on Win2K/XP, setup will act as directed by the '-ignore_serialnum' command line switch.

Effect on applications: none

Effect on devices: none

4.1.4 Bug 1188: Automatic post-installation fails on some Windows 98 family systems

Problem Statement: Setup copies inf files to %SystemRoot%\inf\other. However, some Windows 98/98SE systems don't have the registry value "OtherDevicePath" set to %SystemRoot%\inf\other under HKLM\Software\Microsoft\Windows\CurrentVersion after a clean install. The result is that if the user plugs in the device, Windows 98/98SE can not find a matched inf file for device.

Problem solution (V1.14): Setup checks for an "OtherDevicePath" value under HKLM\Software\Microsoft\Windows\CurrentVersion when run on Windows 98/98SE/ME. If necessary, setup will set this value to include "%SystemRoot%\inf\other".

Effect on applications: none

Effect on devices: none

4.1.5 Bug 1192: Setup.exe does not copy .cat files to a harddisk folder

Problem Statement: Setup did not copy the .cat (catalog) files. This generates unsigned driver warnings on signed drivers.

Problem Solution (V1.16): Setup.exe was modified to copy .cat files if they exist and are declared in CatalogFile= directives in inf files.

Effect on applications: none

Effect on devices: none

4.1.6 Upgraded to support Windows Server 2003 family

Problem Statement: Setup did not work on Windows Server 2003.

Problem Solution (V1.18): Setup upgraded to support Windows Server 2003 family.

Effect on applications: none

Effect on devices: none

4.1.7 Bug 1224: Setup.exe couldn't find proper install path on Spanish Windows.

Problem Statement: see title

Problem Solution (V1.20): Setup will read the string value "ProgramFilesDir" from the registry under HKLM\Software\Microsoft\Windows\CurrentVersion.

Effect on applications: none

Effect on devices: none

4.1.8 Bug 1267: Setup.exe was upgraded to handle CatalogFile.nt entry

Problem Statement: Setup ignored handle CatalogFile.nt entries, which could result in unsigned drivers warnings.

Problem solution (V1.22): see title.

Effect on applications: none

Effect on devices: none

4.1.9 Bug 1268: Setup.exe uses CatalogFile entry in Version section on Win98

Problem Statement: Setup.exe did not handle CatalogFile entry in Version section on Windows 98. This would cause Windows 98/SE/ME to complain to that user looking for catalog files.

MCCI V4.34.2705 USB Driver Release Notes Engineering Report 950252 Rev.K

Problem solution (V1.22): Setup changes the applicable registry value HKLM\SOFTWARE\MICROSOFT\WINDOWS\CURRENTVERSION\SETUP\SourcePath to %SYSTEMROOT%\System, where it copies driver files and catalog files.

Effect on applications: none

Effect on devices: none

4.1.10 Bug 1271, Reduce end-user confusion from Bug 1268 fix

Problem Statement: The solution for Bug 1268 would work the first time, but it may cause subsequent component installs to fail, or will cause the user to be prompted for the CD, particularly if the user has installed from CABs on the hard disk.

Problem solution (V1.24): The change for Bug 1268 was removed. Setup will comment out CatalogFile directives in all inf files during pre-installation.

Effect on applications: none

Effect on devices: none

4.1.11 Control Windows version installation

Implementation:

- 1) User can append a command that prevents installation on specific Windows versions: "NotInstallOnWin[98 | 98se | 98vers | me | ver4 | 2k | xp | serv2003 | ver5]" to McciOptions string value(s) in the driver INF.
- 2) User can use a command line switch to prevent installation on specific Windows version: "-ensure_win[98 | 98se | 98vers | me | ver4 | 2k | xp | serv2003 | ver5]".

Effect on applications: none.

Effect on devices: none.

4.2 xxxxUninstall

4.2.1 Bug 1121: Uninstall removes driver & INF files if called with -quiet

Problem description: XXXXUninstall.exe didn't remove driver files and inf files under the Windows directory if called with the -quiet parameter.

Effect on applications: none

Effect on devices: none

5. Release Matrix for previous builds

Table 2. Release Matrix for V4.28.2713

Bug	2701	2703	2705	2706	2707	2712	2713	Summary
1359	√	√	√	√	√	√	√	Unknown devices appear when multiple identical devices connected via hub
1362	√	√	√	√	√	√	√	Start modem status loop only when needed by the protocol
1363	√	√	√	√	√	√	√	Handle STALL condition in Driver Rx loop
1365	√	√	√	√	√	√	√	Prevent an infinite wait in MCCIMODEM
1372	-	√	√	√	√	√	√	XONLimit & XOFFLimit settings
1375	-	√	√	√	√	√	√	Connect to com port after suspend
1395	-	-	√	√	√	√	√	Writefile never returns
1408	-	-	-	√	√	√	√	Fix bluescreen in return from hibernation
1407	-	-	-	-	√	√	√	CommClearError returns correct status
1380, 1466	-	-	-	-	-	√	√	Surprise Removal Handling
1465	-	-	-	-	-	√	√	Prevent BlueScreen while starting devices due to timelock mechanism