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USBTracer/Trainer™ 2.50 - Release Notes

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1. Overview

This Read Me file contains last-minute product information for the USBTracer ™ software for Microsoft Windows. For full instructions on using the USBTracer/Trainer™ please see the User's Manual and other documents provided with this product.

2. System Requirements

The following is a list of recommendations for the configuration of the host machine that runs the USBTracer™ application and that is connected to the USBTracer/Trainer™ system. Please note that the application would operate on systems with less memory and slower CPU rate than the recommended; however, for best results it is recommended that the host machine meets or exceeds the suggested configuration.

2.1.   Software

Operating System:
Microsoft Windows 2000, Windows XP, Windows Vista 32, or Windows Vista 64.
Note: Support for Windows 2000 will be deprecated as of January 1, 2008. No releases after that date will be supported on that operating system.
Required setup:
Microsoft Internet Explorer, version 5 or newer.
Note:
When Using Windows XP, please disable the function: "Allow the Computer to turn off this device to save power." This can be disabled in the My Computer Properties (System Properties) window under the Hardware Tab. To do so, go to 'Device Manager' > 'Universal Serial Bus Controllers' > 'USB Hubs'. Find the Hub that corresponds to the UPAS 2500H select the Power management tab (The internal Hub on the CATC Analyzer has 4 ports). If this feature is enabled (checked), it will cause the UPAS system to hang after a firmware or BusEngine update. So uncheck it. If you do no want to change this attribute, you can instead re-enable the port by power cycling your computer.

2.2.   Hardware

Processor:
For optimum performance, use processors of Intel's PentiumIII/Pentium4 family, AMD's Athlon/Duron family, or other compatible processors with clock speed of 500mHz or higher (Processors of Intel's Pentium II/Celeron family or AMD's K6 family with clock speed of 300mHz is a minimum).

Memory:
For the best performance, it is recommended to have physical RAM twice the size of the recording buffer setup - 512MB or more (minimum of 128MB of RAM).

Hard Disk:
At least 20MB of free hard disk space is required for the installation. Additional disk space is needed for the operation of the applications and for storing the recorded data in files during the recordings process (can be as much as 500MB when recording a full buffer size).

Display:
Resolution of at least 1024 x 768 with at least 16-bit color depth is recommended (resolution of 800 × 600 with 16-bit color is a minimum).

Connectivity:
Due to the high-speed uploads, a USB 2.0 interface is recommended for the connection with the USBTracer™ analyzer (USB 1.1 is a minimum). This is not a requirement if the analyzer application is used only to view pre-recorded traces.

3. Release Notes

3.1.   What's New

- This is version 2.50 of the USBTracer/Trainer™ product.
- This release contains the following components, which are necessary for the operation of the product:
    - USBTracer™ Application Version 2.50.
    - USBTracer™ Bus Engine Version 2.58 (Analyzer + Host Emulation) and Version 2.60 (Analyzer + Device Emulation).
    - USBTracer™ Firmware Version 1.09.
- This release includes the following updates:
    - Windows Vista 32 and Windows Vista 64 support added
    - The following USB Class decoding is now supported:
        - IrDA
        - ATAPI
        - HTTP
        - IP
- This release includes the following fixes:
    - Separate Mass Storage SCSI Status Transfer from Data Transfer [619]
    - Export of HiEOP value from Advisor to Generator Text file fixed [500]
    - HID report descriptor decoding fix [709]

3.2.   Known Issues

- The integrated Generation File (.utg file) Editor does not work with Windows 98 or Windows ME. You can either edit the .utg files with your own text editor, or upgrade to Windows 2000 or XP.
- Occasionally, uploading may hang on some systems. The I/O times out, and the user must try the trace again. It appears to be a low-level I/O problem, and we are working to resolve it.
- Errors may appear in the last couple of packets of a recording which are not real errors. They are a side effect of the recording terminated during the middle of a packet. Also, the first packet in a trace may be a partial one.
- Installation requires the existence of command.com file, which is not present on a fresh install of Windows 2000.
- In Auto Detect mode, the first few (up to ~20) packets may have errors on a high speed trace due to

bouncing of the speed selection relay. These packets should be ignored.

- When uninstalling version 1.60, you may get a dialog asking: "! This will remove InstallShield Dialog Sampler from your computer. Do you wish to proceed?" Just click on "Yes". The correct application WILL be uninstalled. (The phrase in the InstallShield script should have contained the string "USBTracer" in the place of "InstallShield Dialog Sampler".)
- According to the MTP Specification Revision 0.83 by Microsoft Corp., NumberOfInterdependencies and NumberOfPropDescs in InterdependentPropDescDataset are UINT16 value with size of 2 bytes. However, we have encountered some products on the market that are using UINT32 instead, which could mess up the whole InterdependentPropDesc Dataset decoding. If you have decoding problems with the GetInterdependentPropDesc operation, set the variable '*InterdependentPropDescDatasetSizeBytes*' equal to 4 in the **\Scripts\StillImageClass\PTPUserEditParams.inc** script file. [275]
- For PTP Transactions that would decode into a very large number of fields, the script decoding will automatically stop creating display fields after a user-configurable amount of fields have been processed. By default, once this limit has been reached, the script decoding will also stop processing the rest of the data, meaning it will not discover any more errors that might occur deeper in the data. You can configure these behaviors by changing the variables '*MAX_CELLS_TO_DISPLAY*' and '*IF_CONTINUE_ON_PROCESSING_DATA*' in the **\Scripts\StillImageClass\PTPUserEditParams.inc** script file.
- When invoking the View Decoded Fields dialog for a large PTP Transaction, the application may appear to hang and become unresponsive while it processes the data. Once the application finishes processing the data, it will display the dialog. [321]
- The Microsoft driver stack that is required for the Intel WUSB PDK is not compatible with the USBTracer/Trainer device driver. The Intel WUSB PDK must be installed on a computer separate from the host controlling the USBTracer/Trainer. For details, refer to the Intel PDK documentation. [638]

OTG
IMPORTANT NOTE REGARDING OTG ADAPTERS:
- For your convenience, we have included 2 USB OTG Adapters for your use in OTG debugging. Included are:
    1. One Standard-A Receptacle to Mini-A Plug. This adapter has not gone through Compliance testing, but was built with the intent of meeting the specification.
    2. One Mini-AB Receptacle to Standard-A Plug. THIS IS A NON_COMPLIANT PART. The OTG Specification calls for a Mini-A Receptacle to Standard-A Plug, but there were no Mini-A receptacle parts available when we tried to obtain these adapters. This part should work as a substitute, but you should be aware of its non-compliance.
- Suggested OTG Connection Configuration:
    o Your OTG "A" DEVICE (with Mini-AB Receptacle)
    o Standard-A Receptacle to Mini-A Plug (CATC supplied)
    o Standard AB Cable (CATC supplied)
    o CATC Analyzer Channel 0 (CATC supplied)
    o Standard AB Cable (CATC supplied)
    o Mini-AB Receptacle to Standard-A Plug (CATC supplied)
    o (Only plug in Mini-A Plugs into this adapter!)
    o Mini-A Plug to Mini-B Plug (supplied by you)
    o Your OTG "B" DEVICE (with Mini-AB receptacle)

3.3.   API
Automation:
- **Sample files Installation:** To install the sample files, please select the 'Custom' installation option and select the 'Automation' group. The samples are suitable for the USBTracer™ analyzer. Please refer to the Automation manual for additional information.
- To run the sample files, you should make sure that the USBTracer™ software is already installed.
- The library file name to be used is: ***USBAutomation.tlb*** for the USBTracer™ analyzer.
- **HTML Sample:**
- For editing the HTML sample code you can use a text editor or other HTML-editing tools.
- **CPP sample:**
    1. To compile the Visual C++ sample project you first need to install the Microsoft Visual Studio.
    2. You can select to install the USBTracer™ software in a directory different than the default one. If you

choose to do so, make sure you add a path to the installation directory in your project's paths list. You can find the ***USBAutomation.tlb*** file in the installation directory. When using Microsoft Visual Studio, the path to the installation directory should be added to the following places in the 'Project Settings' property sheet:
- (1) Under 'C/C++' tab, 'Preprocessor' category in the 'Additional include directories'.
- (2) Under 'Resources' tab, in the 'Additional resource include directories'.

- When a remote server is disconnected abruptly while a client application is still connected, the client application might hang up for several minutes. At the end of this timeout, the client would be released with a "The RPC server unavailable" notification. This is due to Windows conduct. [C0004997]

4. Previous Releases

4.1.   Version 2.32, Build 418

New Features:
- The following USB Class decoding is now supported:
  - Video Class 1.1
  - Communications Data Interface Class
  - Cable Based Association Framework (WUSB implementation)
  - Smart-Card Class (CCID + ICCD)
  - RNDIS

Bug Fixes:
- wChannelConfig standard audio descriptor incorrect decoding in description [362]
- iTerminal text for standard audio descriptor says input when it is an output terminal [363]
- HID report descriptor parser incorrectly decodes 32-bit tags [605]

4.2.   Version 2.30, Build 388

New Features:
- Three new Transaction Levels were added: PTP Transaction, PTP Object and PTP Session.
- With the introduction of these new Transaction Levels the following decodes are now supported:
  - PictBridge
  - MTP
  - PTP
- The following decodes were updated to match the latest specifications:
  - Monitor (HID extension)
  - Physical Interface (force-feedback extension to HID)
  - Power (HID extension)
  - HUT (HID)
  - Point of sale Devices (HID extension)

Bug Fixes:
- Fix Wire Adapter decoding problems.
- Fix failure of Legacy Descriptor decoders in Transfer view.
- Fix Audio Class Decoding problems.
- Fix msb<->lsb incorrect order in Transfer Level Request Field display.
- Fix crash when hitting Intelliframe/Bitstream button in Gen file.
- Fix hiding by host/address/endpoint for control transactions and transfers.
- Fix crash when opening of USB Gen Files from Automation client. They now open explicitly when you start generation.

4.3.   Version 2.20, Build 366

New Features:
- Certified Wireless USB Host and Device Wire Adapter (HWA & DWA) Transfer decoding. This gives the user a high-level view of the transfers passing through a Wire Adapter RPipe.
- Decoding assignment feature now includes support for Class/Vendor Request and Endpoint assignment to

Certified Wireless USB HWA & DWA RPipes.
- Support for the Automation Analyzer Adapter.

Bug Fixes:
- Correct the totals on some reports in Traffic Summary. [C0006930]
- Fix software hang when trying to hide NAKs during transaction decoding. [C0006960]
- Fix software crash when decoding a trace file of a Low Speed enumeration through a High Speed hub. [C0006954]
- Fix software bug that caused decoding of certain trace files to take a very long time. [C0006943]

4.4.   Version 2.15, Build 358

New Features:
- Enhanced Navigator functionality.
- High Level Decoding Mapping User Interface Enhancements:
  o Access Decoding Dialog via "Decode" Button in Toolbar (Always available)
  o Access Decoding Dialog from ANY packet, transaction, or transfer (You previously had to look for an appropriate entry!)
  o Single click selection of decoders (was select then apply)
  o Selection choices now direction-aware (only applicable ones added to selection list)
- CCID Messages for Bulk Endpoint decoding were added
- Improved the Hub Class Decoding.
- Toggle Analysis improvements. (C0005148)

Bug Fixes:
- Fixed ACK direction field after tokens in splits. (C0005278)
- Fixed false incomplete for split IN transactions. (C0005322)
- Fixed issue with Standard Requests not being decoded when in Video Decode Script Decoding mode. (C0005399)
- Fixed issue with Data toggle and display errors when Control Endpoint is not endpoint 0. (C0006322)
- When converting from Interrupt Transfer to Bulk Transfer, data payload loses one byte of data. This was fixed in this release. (C0006508)
- Fixed issue with Mass Storage decoding (Incorrect data size when CSW is at end of transfer). Fixed issue with PTP decoding (Incorrect container length displayed). (C0006853)
- Now, 16 view flags are allowed compared to previously only 5 flags. (C0006855)
- Fixed bandwidth calculation to include NYET'ed traffic. (C0006044)
- Fixed issue of not marking incorrect packet length if data length is larger than speed and transfer type allows. (C0006343)
- Fixed issue with the Traffic File Editor Replace function not replacing the current found one. (C0006223)
- Fixed issue with data toggle and display errors when Control Endpoint is not endpoint 0. (C0006223)
- Syntax checker for wrap did not report errors on invalid memory usage used. This was fixed in this release. (C0006510)
- Trainer: Fixed issue with incorrect generation of audio files. (C0006825)
- Trainer: Fixed incorrect display of raw data error. (C0006509)
- Trainer: Device emulation generates incorrect packets and corrupts data when in a loop. (C0006479)

4.5.   Version 2.12, Build 237

Bug Fixes:
- Device Emulation: Add configurable Device Resume Time
- Device Emulation: Fix Looping bugs
- Device Emulation: Fix Suspend/Resume functionality
- Host Generation: Add device resume capability: add wait_resume=HERE before resume=nnn statement
- For extremely large traces (> 16 million packets), allow for an special option for decoding files to try to prevent running out of memory while loading the file.
- Fix bug which corrupted a trace file during automatic updating from a previous release's file format.
- Fix hang when saving a modified .utg file while NAK's are hidden

4.6.   Version 1.91, Build 200

New Features:
- Advanced Script-Based Decoding
- Mass Storage Bulk-Only SCSI Decode
- Updated Hub Decoder
- Update Bluetooth HCI decoder
- Added association of .utg Line Number with Packet on Screen,
- add ability to invoke Default Editor
- Preserve user overrides on Transfer Types (Interrupt vs. Bulk assignment)

Bug Fixes:
- Timing Calculator can now be closed when it's pinned
- Search for Frame Number, Empty Frames, and non-empty frames fixed

4.7.   Version 1.81, Build 164

New Features:
- Faster Hiding of Packets
- Vendor ID's Decoded into their company name
- Hide Chirps button

Bug Fixes:
- Fix Jitter problem on some Automatic SOF's generated by USBTrainer
- Fix problem where fan could make noise when partially blocked on left side
- Fix problem which caused FW to need to be downloaded twice when plug-ins were changed
- Add a twenty seconds timeout to prevent infinite hang when I/O failure occurs during uploading.

4.8.   Version 1.80, Build 160

New Features:
- Support for UPAS 2500H, a USB 2.0 High Speed interface to the host
- On-The-Go VBus monitoring (requires version 5 of USBTracer Plug-In)
- Navigator Window to help define areas of interest for scrolling within a trace file
- Dockable Bandwidth Calculator
- Descriptor Decoding window is now sizeable
- .VCD file importing function
- Marker dialog can remain open while navigating through trace file
- Add ability to check syntax on a .utg file without downloading it to the bus engine
- Search for Transfer Data Length
- View Transfer Data Block
- Trigger on Data Length Equals, Less than, Greater than, and Not Equal to a value
- F1 key-based Help
- Explorer plug-in for previewing .usb files
- Partial Upload capability allows efficient conditional use of large traces
- Generator can now generate SE0 conditions smaller than 2.5uSec

Bug Fixes:
- Next and Previous buttons in Decoding Dialog fixed
- Fix crash when hitting Hide Devices button after previously closing it with the close box (rather than the Apply button)
- Fix ability to hide packets based on speed
- MDATA Packet Direction fixed
- Formulas now shown for Timing Calculator
- Fix Export Data bug which exported data from NAK'ed transactions
- Export Data now works on transfers over 1 million
- Fix bug with recording more than 256 meg when USBTrainer plugged in
- Fix hang when hitting Start/Stop button on box when no USBTrainer Plug-In
- Fix bug which did not allow DATA2 pids in .utg file

- Fix decoding of High Bandwidth Isoch Transfers
- Fix false toggle violation when GET Control Transfer returns no data
- Fix incorrect identification of Bulk transfer on low speed branch
- Fix incorrect toggle violation after Chirp Sequence
- Fix misc bugs in Timing Calculator
- Fix incorrect explicit frame numbers during export of Hi-Speed traffic to .utg file.
- Fix bug which prevented partial nibble mask/match values in data related Recording Resources (Data Pattern, Transactions, Device Requests)

4.9.   *Version 1.71, Build 137*

New Features:
- Transaction Decoding in Background allows quicker access to viewing traces
- Search for Splits
- Performance Enhancements
- Updating older files to current versions is now under User's control
- User can override transfer types identified for some Interrupt and Bulk transfers, in case analyzer was not able to distinguish them properly
- User can choose Quick Search for Pid's and some Bus Conditions, at the cost of greater memory use. Also speeds up SOF/NAK hiding.
- Quick search for ANY Errors
- Add ability to default to Data Fields Expanded

Bug Fixes:
- Installation fixed to avoid possibility of accidental deletion of user's trace files or other files in the USBTracer directory during uninstall,
- Fix crash upon loading previous version files that contain Markers
- Fix decoding of OTHER_SPEED_CONFIGURATION descriptor
- Fix crash when doing time calculations on Empty trace
- Fix bug that prevented USBChief files of release 1.33 from being converted to current format.
- Fix bad and or missing packets when recording on rev 3 or below USBTracer Plug-Ins
- Improve Transfer Decoding algorithms to better identify transfer types
- Fixes to OTG decoding algorithms
- Fix bug which caused Packet Lengths to be reported as 0
- Fix Auto-Merge recording options feature
- Fix incorrect (bogus) packets which incorrectly show Data Truncation
- Fix virtual memory problem in Export to Generator Text feature
- Fix counters in Recording Options (only went to 255, now 65535)
- Fix crash when double-clicking on a .usb file

4.10.   *Version 1.70, Build 111*

New Features:
- OTG (On-The-Go) Protocol Support: HNP and SRP decoding and searching
- Trigger Sequence Enhancements: Up to 7 levels of trigger event sequencing for ALL event types. In addition, up to 2 of these events can utilize Counters.
- Real-time Statistics of running traffic (At any time, Tracing or not!)
- New, more complete, easier to use Display Options Dialog.
- Automation (Remote Control) Interface and API available
- Up to 512 Mb Trace with or without USBTrainer module plugged in
- Search in Hidden (Search for packets even if they are currently hidden from view)
- Find All search function
- Licensing and Maintenance infrastructure
- Split Token trigger resource
- Packet Direction field in Packet View
- Identify and report incomplete byte errors

- Trigger on incomplete bytes
- Trigger on 8-bit ext Data Pattern input (Data7-Data0 on Beakout Board)
- Trigger on High Speed bus conditions (Chirp, Full Speed J, Full Speed K)
- Bluetooth Decoding file is now 1.1 compliant
- Add search for FS bus conditions on High Speed Branch
- Go To Channel #
- Go To Host, HNP, or SRP for On-The-Go traces
- Windows: Tile Vertical as well as Horizontal
- Performance Enhancements

Bug Fixes:
- Fix crash when hitting Device button in Bandwidth Calculator
- Fix problem preventing "raw_data=" from working in Generator
- Channel in Recording Options dialog not set correctly after saving .rec file
- Toolbar icons now correct after an install
- GP Extern Out forms not staying set
- Fix 2.0 GetDescriptors and SetDescriptors decoding
- Position Markers accurately in .utg files
- Occasional crash when reading .utg files
- Merging Advisor files from USBTracer and vice versa caused crash
- Fix formats selection for External Data field
- Seperate Intelliframe and Bitstream buttons for Generator
- Fix crash when scrolling an empty trace window
- Fix false toggle errors after a Bus Reset condition

4.11.   Version 1.60, Build 90

New Features:
- Load/Display .utg Generator files similar to .usb files
- CHIRP sequence recording
- Low Clock Speed generation and trace capturing for Classic Speed traffic
- Low Clock Speed generation and trace capturing for High Speed traffic (Purchaseable option)
- Bus Utilization view
- Drop-down display option menus on Packet Fields
- Trigger on Data Length
- 8 bits of External Data Saved (vs 2)
- Rear panel BNC Trigger Input supported
- Markers are now supported for Transactions
- Option of displaying Timestamp in Nanoseconds
- USBTrainer: NAK/NYET automatic retry in Intelliframe Mode
- USBTrainer: Breakpoints
- USBTrainer: Specify # of bits in raw_data packet

Bug Fixes:
- Fix idle time calculations when packets are preceded by or follow bus conditions and/or packets of different speeds (low speed on full speed branch)
- Fix error in Suspend Detection
- Fix error which caused faulty data to be displayed in the transaction view of a packet which had errors
- SplitTransaction faulty toggle violations fixed
- Export Data works on Control Transfers now.
- Export to Gen File:
  - Increase precision of generator idle times
  - Markers cause syntax error
  - Fix incorrect suspend times
  - Fix problem where saving without Naked transactions caused expected_pids to accidentally disappear

4.12.   Version 1.50, Build 65

Added Feature:
Classic Speed Slow Clock Generation. Outputs USB bitstream at fractions of the standard bit-rate.
Bug Fixes:
- Fix incorrect toggle errors on ISOC split transaction
- Fix problem where ISOC transactions were being mis-interpreted as BULK transactions, and vice-versa
- Fix problem with doing a SaveAs from Advisor on a USBTracer file (and vice-versa) was reporting numerous errors incorrectly.
- Fix bug where toggle/timeout errors were being reported on addresses that were not on the USB wire under test.
- Fix bug which caused dropped trace data blocks ~30 packets before the end of a trace after stop button is hit. Generally causes a false CRC problem,
- but could be others. Effects only high speed traces.
- Add checking for ENDPOINT_HALT to reset toggle state of an endpoint. Prior to this, toggle state was incorrectly shown as being an error in half of the cases.
- Fix bug which would cause incorrect data toggle and timeout error analysis on devices with addresses above 63.

4.13.   Version 1.42, Build 63

Bug Fixes:
- Fix Ping output in Export to Gen File
- Framing error in High Speed during reset: was showing errors on 2 packets, should have been 1.
- Generator: raw_data=(xx) fixed
- Use better filter for transceiver glitches to prevent regular Bad Packets from being filtered
- Show missing NAKs as errors (They were not being shown at any level)
- Fix various toggle violation errors: show ones that were being missed, remove false reports.
- Fix various turnaround/timeout violation errors: show ones that were being missed, remove false reports.
- Make turnaround violation visible at Transaction level
- Add checking for legal keywords and values in .utg file
- Fix exporting Low Speed trace to Gen File
- Make Timestamps on consecutive Packets which are the same an Internal Error
- Fix bug which caused bad data packets to be generated sometimes when bit stuffing had occurred.
- Fix Bus Conditions timestamp and duration precision.
- Fix Suspend/Resume generation problems
- Fix tooltip/taskbar interference bug in Windows NT/2K
- Fixed RESTART Recording Option Action for Counters and Sequencers.
- Time Stamp precision improvements
- Fix bug in Suspend and Resume duration calculations.
- Fix DRAM Power-on test
- Fix bad packets at the beginning of a High Speed trace when in Auto-detect mode
- Fix erroneous error packets on full speed during auto-detect.

4.14.   Version 1.41, Build 62

Updated release of USBTracer. Contains support for USBTrainer.

4.15.   Version 1.40, Build 57

This is the first release of USBTracer.

5. Support

Online Download
Please periodically check LeCroy Protocol Solutions Group's web site for software updates and other support related to this product. Software updates are available to those users with current Maintenance Agreements.

Online Support
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