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PETracer 5.6 Release Notes

Updated: October 17, 2008

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2. 1. Overview

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

3. 2. System Requirements

The following is a list of recommendations for the configuration of the host machine that runs the PETracer™ application and that is connected to the Summit, UPAS10000, or UPAS100K system. Please note that the application can operate on systems with less memory and slower CPU than the recommended configuration; however, for best results it is recommended that the host machine meets or exceeds the suggested configuration.

1. 2.1. Software

Operating System: Microsoft Windows 2000, or Windows XP

2. 2.2. Hardware

Processor: For optimum performance, use processors with clock speed of 500MHz or higher.

Memory: For the best performance, it is recommended to have physical RAM twice the size of an average trace file (minimum of 128MB).

Hard Disk: At least 25MB of free hard disk space is required for the installation of the PETracer™ software. Additional disk space is needed for the operation of the application and for storing the recorded data in files during the recordings process (can be over 8 GB when recording a full buffer size).

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

Connectivity: A USB interface is required (USB 2.0 high speed preferred) to connect to the PETracer Edge™, PETracerML™, PETrainerML™, PETrainer EML™ or PETracerEML™. An Ethernet network interface is required for PETracer Summit™. This is not a requirement if the PETracer™ application is going to be used only as a trace viewer.

4. 3. Release Notes

1. 3.1. What's New

- Summit Z2-16 Fast Transmit functionality added.
- Summit Z2-16 Memory Completer functionality added.
- Summit Z2-16 Ethernet support added.
- Multiple Summit Z2-16 bug fixes.
- PETracer Summit and Summit T2-16 stability improvements.
- Edge T1-4 support added.
- MR_IOV Trace view decoding added. Please note that other views are not updated and may display incorrect information for MR-IOV packets.

2. 3.2. Known Issues

- Known Problems and Issues Summit T2-16
  - **External Reference Clock** – When External Reference Clock option is selected in Recording Options, Summit

requires reference clock to be present at all times during the recording. Do not use this option for boot up recordings.

- o **Real Time Statistics** – Real Time Statistics is not implemented.
- o **Auto-Configure Lane Polarity** – for correct polarity detection Summit recording settings has to be initialized (at lest one recording with correct settings is done) before the monitored link is trained. Switching between BitTracer and Protocol recordings is resetting all detected polarity settings.
- o **Trigger Position** - Trigger positioning can be off by a few (up to 6) packets in either direction due to certain real-time constraints with heavy packet loading.
- o **Connectivity** – Summit T2-16 may not work correctly if connected over Ethernet and USB at the same time. Please use only one type of interface.
- o **Active Interposer** - Summit T2-16 requires Active Interposer revision G or higher.
- o **Passive Interposer** – Summit T2-16 2 meter cable option will not work reliably Passive Interposer, use 1 meter cables.

- Known Problems and Issues PETracer Summit
  - o **External Reference Clock** – When External Reference Clock option is selected in Recording Options, Summit requires reference clock to be present at all times during the recording. Do not use this option for boot up recordings.
  - o **Real Time Statistics** – Real Time Statistics is not implemented.
  - o **Auto-Configure Lane Polarity** – for correct polarity detection Summit recording settings has to be initialized (at lest one recording with correct settings is done) before the monitored link is trained. Switching between BitTracer and Protocol recordings is resetting all detected polarity settings.
  - o **Trigger Position** - Trigger positioning can be off by a few (up to 6) packets in either direction due to certain real-time constraints with heavy packet loading.
  - o **Ethernet Connectivity** – Summit fails to work correctly if plugged directly into GigE network, works OK if plugged through 10/100 Ethernet HUB.
  - o **USB support** – not supported

- Known Problems and Issues PETracer EML

- o **Trigger Position** - Trigger positioning can be off by a few (up to 6) packets in either direction due to certain real-time constraints with heavy packet loading.
  - o **L0s transitions** – When recording link traffic that is coming into and out of the L0s state, some false errors may be recorded during the link state transition. This is due to transient behavior on the PCI Express signal coming into and out of electrical Idle. Setting the number of Fast Training Sequences to 64 or more will help reduce the occurrences of these errors.
  - o **Missing packets** – a few packets could be missing from the end of a recorded trace in case filtering is used
- Known Problems and Issues PETracer ML
  - o **Trigger Position** - Trigger positioning can be off by a few (up to 6) packets in either direction due to certain real-time constraints with heavy packet loading.
  - o **Trigger on LCRC -** Fault triggering on LCRC error for packet size 1024 DWords.
  - o **Timestamp Accuracy** - When using two PETracer ML analyzer units to analyze a bidirectional PCI Express link, timestamps between the upstream and downstream directions of the link can be skewed up to 30 symbol times (120 ns) at any point in the recording. However, the timestamps between upstream and downstream link directions will NOT exhibit any clock drift over long recording periods.
  - o **Sequencer Limitations** - When using two PETracer ML analyzer units to analyze a bidirectional PCI Express link, event counting and sequencing is applied only to events that occur in a single link direction (for example, sequencing based on event A downstream followed by event B upstream is not supported).
  - o **L0s transitions** – When recording link traffic that is coming into and out of the L0s state, some false errors may be recorded during the link state transition. This is due to transient behavior on the PCI Express signal coming into and out of electrical Idle. Setting the number of Fast Training Sequences to 64 or more will help reduce the occurrences of these errors.

- o When an instance of PETracer application is running along with an automation client connected to the PETracer server (including the Compliance application), starting the Real-Time Monitoring can cause a crash.

- Known Problems and Issues Summit Z2-16
  - o **Wait=time** - Wait = time instruction may disable execution of subsequent wait instructions. To avoid this use wait on TLP with corresponding timeout.
  - o **Manual Ack/NAK mode** – operation of manual Ack/NAK mode is not reliable.
  - o **Wait=DLLP**- Wait on DLLP is not working reliably.
  - o **Wait=TLP** - Wait on TLP may not work reliably at gen2 speeds.
- Known Problems and Issues PETrainer EML
  - o **Spread Spectrum clocks –** The use of a spread spectrum reference clock may cause the PETrainer operation to be unreliable. It is recommended than a non-spread spectrum reference clock is used. If a spread spectrum reference clock must be used, the JP2 jumper should be installed on the device emulation card. This will allow the PETrainer SerDes to track the frequency shift on most systems. For Host emulation the Non-SSC clock source should be enabled on the front panel of the Host Emulator.
- Known Problems and Issues PETrainer ML
  - o **Generation hang-up** - Generation hangs when generating TLP->DLLP->TLP traffic. Workaround: insert wait or idle between the packets.
  - o **Spread Spectrum clocks –** The use of a spread spectrum reference clock may cause the PETrainer operation to be unreliable. It is recommended than a non-spread spectrum reference clock is used. If a spread spectrum reference clock must be used, the "Use external reference clock" selection should be enabled in the generation options. This will allow the PETrainer SerDes to track the frequency shift on most systems.
  - o **Reference Clock Requirements** - When using the External Reference clock, the PETrainer ML may lock up when the power to the DUT or Host Emulation Test fixture is cycled. To

avoid this, do not select the External
Reference clock when testing devices
that require power cycling.

5. 4. Previous Releases

The following is a summary of previous releases of
PETracer™:

1.   4.1.   5.4 version

- Added support for Summit T2-16 analyzer.

2.   4.2.   5.5 version

- Summit Z2-16 gen 2 exerciser released.

3.   4.3.   5.3 version

- PETracer Summit support of Automatic
  receiver Calibration to ensure error free
  recordings is introduced.
- DataFlow View is added as an additional
  method of analyzing PCI commands.
- Bug fixes

4.   4.4.   5.21 version

- Maintenance expiration check in PETracer
  5.2 is fixed.

5.   4.5.   5.20 version

- Summit Bit Tracer recording is released
  - Logic Analyzer style time based view
  - Simple triggering on 10bit symbol
  - Embedded packet view
  - Apply different Link parameters to
    the view (lane skew, link width,
    polarity, lane swizzling, scrambling
    settings)
  - Export to CATC trace
- Compact view functionality added
- LTSSM Flow graph functionality added

6.   4.6.   5.10 version

- PETracer Summit support
  - Gen1/Gen2 recordings at x1, x2, x4,
    x8 and x16 lane widths
  - 8GB Recording Buffer
  - MidBus Probe support
  - Ethernet connectivity

7.   4.7.   5.00 version

- PETracer Edge support
- PCI Express specification 2.0 support at Gen1 speeds.
- New Trace File format that provides smaller files and faster operation. Old traces can be automatically converted to the new format on open.
- "Simple Mode" is added to Recording Options for quick triggering and filtering setup
- More Errors are tracked in the Error summary
- Improved display of Ordered Sets
- New BusEngine for PETracer ML fixes the problem with the analyzer not always being able to lock to the data after power cycling of the DUT
- Bug fixes

8.   4.8.   4.60 version

- PETrainer EML x2 support
- Bug fixes

9.   4.9.   4.50 version

- Support for PETracer™ analyzer based on UPAS 2500 discontinued
- Combined TLP Header / Payload trigger resource
    - No more stand-alone payload resource
    - Each TLP resource has payload resource attached to it
    - ML payload resource includes offsets now (same as EML)
- Added Metrics functionality for performance analysis including
    - in Trace Display for metrics data for Link and Split transactions
    - Timing calculation display for metrics based data
    - Bus Utilization graphs for metrics data
    - Traffic summary tables for metrics data
- Improved Timing calculation providing data for
    - Link Utilization
    - Time Coverage
    - Bandwidth
    - Data Throughput
    - Packets per second
    - Split Transaction performance (metrics)
- Export to CSV
- Hiding Toolbar is redesigned to provide faster access to most common hiding usage
- Search dialog changes, it is possible to

specify search direction for every search type
- VSE is updated to include Metrics data and Split transaction data
- Trace Navigator Improvements
  - new look
  - legend with selectable color, priority, show/hide
- User selectable sample rate for averaging Bus Utilization graphs
- Copy packet to PETrainer generation script format added
- Introduction of Named features for ML Trainer/Tracer

10. 4.10. 4.40 version

- PETracer ML:
  - Includes various bug fixes
- PETracer EML:
  - Includes various bug fixes
- PETrainer EML:
  - Add Memory and IO Transaction Handler:
    - Provides automatic response to memory and IO transactions
    - When enabled, the PETrainer EML will process incoming Transaction requests such as MemRd, MemWr, IoRd, and IoWr. This includes taking the data from the write operations and placing it into a scratchpad memory. Later access to this scratchpad memory via MemRd or IoRd will result in the PETrainer EML creating appropriate CplD packets with correct data read from the scratchpad.
    - One 64 bit memory space, Two 32 bit memory spaces, and two IO spaces can be configured through the PETracer Application or through programming of Configuration space base address registers.
    - 512MB of scratchpad memory available for the 64 bit addressable memory space
    - 128MB of scratchpad memory available for each 32 bit addressable memory space

- 128 Bytes of scratchpad memory available for each IO space
- User will be able to preload these memory spaces through the PETracer GUI using an integrated Hex editor or by loading a user binary file.
- User will be later able to read each scratchpad memory space and verify what changes were made.

- PETrainer ML:
  - Add Script branching support
    - User will have up to 4 levels of script branching
    - Each script branch will support 1 loop counter
- Software:
  - Verification Script Engine added
  - PETrainer script language extensions
  - Automation API is expanded
  - Hex Editor for PETrainer scratchpad memory
  - Flow Control Credit checker

11.   4.11.   4.31 version

- Operating system Support change
  - PETracer Software now only supports Windows 2000 or Windows XP
- PETracer ML:
  - Enhanced sequencer support with new "Recording Rules"
- PETracer EML:
  - Includes bug fixes related to packet filtering
- PETrainer EML:
  - Added support for x16 lane widths
  - Includes bug fixes related to the replay buffer
  - Includes bug fixes related to polarity inversion
  - Includes bug fixes related to low power states
- PETrainer ML:
  - Supports auto insertion of Tag numbers into TLP packets
  - Includes bug fixes related to intermittent NAK
  - Includes bug fixes related to low power states

12.   4.12.   4.21 version

- PETrainer EML:
  - o Added support for the new PETrainer EML hardware platform
  - o Supports x1, x4, and x8 lane widths
  - o Supports Script branching with up to eight separate branches
  - o Supports auto insertion of Tag numbers into TLP packets

13.   4.13.   4.20 version

- PETracer EML:
  - o Advanced Sequencer support
- PETracer ML:
  - o Repeat Upload in 2 PETracer ML setup is fixed.
  - o Partial uploading is implemented
- Software:
  - o Search and Hide capabilities are improved.
  - o Additional data is available for File Based Decoding parsing.
  - o Fixed crashes related to Link Tracker window browsing
- PETrainer ML Fixes:
  - o Generator scripting language is enhanced.
  - o New generator control bar is implemented.

14.   4.14.   4.11 version

- PETracer EML Bug Fixes:
  - o False CRC Triggers under high bandwidth traffic for x16 lane widths has been fixed.
  - o Recording corruption after link disconnect event has been fixed.
  - o Various problems related to recording the Link training process have been resolved.
  - o Fixes false CRC errors in the trace due to trace memory timing bugs
- PETracer ML Bug Fixes:
  - o Recording corruption after link disconnect event has been fixed.
  - o Various problems related to recording the Link training process have been resolved.
- Software Fixes:
  - o Reduced memory requirements for uploading from 512MB to 128 MB
  - o Fixed uploading problems with PETracerML in x8 configuration

- o Fixed crashes related to Link Tracker window browsing
- PETrainer ML Fixes:
  - o Fixed issues with occasional running of incorrect script.

15. 4.15. 4.10 version

- PETracer EML supports all lane widths including x1, x2, x4, x8, and x16
- PETrainer ML supports looping instructions
- PETrainer ML has improved ACK latency which will prevent replay timers from expiring on users devices
- Automation API added to allow control of PETracer application from other applications
- Partial upload and re-upload functionality added to PETracer products.
- PETracer ML has improved support for recording L0s to L0 transitions.

16. 4.16. 4.00 version

- Added support for PETracerEML product on the UPAS100K platform
  - o **x16 Traffic Recording** – PETracer EML now supports recording of full duplex x16 PCI Express traffic.
  - o **Enhanced TS1 and TS2 Triggers** – PETracer EML supports trigger and filtering based on modifier bits in the training sequences such as Hot Reset, Disable Link, Loop back, and Disable Scrambling.
- **Multi Segment Trace Uploading** – Allows the user to segment the recording into smaller traces during uploading. This is necessary for support of the 8GB trace memory in the UPAS100K platform.

17. 4.17. 3.02 version

- Fixes known software crashes

18. 4.18. 3.01 version

- This version fully supports PETracer, PETracer ML, and PETrainer ML
- Link Training improved for PETrainer ML
- Wait command now works correctly for PETrainer ML
- Auto configuration of Link Settings now works correctly for PETrainer ML

19. 4.19. 3.0 version

- This is the first version of the PETracer application that supports the PETrainer ML.
- Although this version does permit control of

both PETracer AND PETrainer products, it is not meant to be used for PETracer only customers. Not all configurations have been fully tested for the PETracer. For best results, PETracer should be controlled through a separate Host PC using PETracer software Version 2.10.

6. 5. Support

1. 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.

2. Online Support
Web: http://www.lecroy.com/
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