

These release notes provide information for the SerialTek General Software Release “BusXpert-4.0.1030”. These release notes refer to changes made since general software release 4.0.1017.

Linux users: Please include the following options when installing for RHEL-based operating systems:

```
sudo rpm -i --force BusXpert[version].rpm
```

where [version] is the software version number.

New Features Implemented in General Software Release “BusXpert-4.0.1030”

PCIe/NVMe

LTSSM View (General). A suite of views designed to expedite analysis of the PCIe Link Training and Status State Machine (LTSSM). Combines the industry-standard state and substate machine diagrams with a row-by-row LTSSM history and text descriptions of the different states and substates. Hide non-LTSSM or LTSSM events on Up- or Down-stream to focus on the most relevant trace content. Includes both L1.1 and L1.2 states (as “L1.x”).

CLKREQ# and PERST# Trigger (General). It is now possible to set the analyzer to trigger on a rising or falling edge of sideband signals CLKREQ# and PERST#.

TLP Filtering has been re-enabled for this release. For a walkthrough, please visit

<https://www.youtube.com/watch?v=glrA1OzCZqM>

Major Bugs fixed in General Software Release “BusXpert-4.0.1030”

PCIe/NVMe

Continued bug fixes and performance improvements.

Errata for General Software Release “BusXpert-4.0.1030”

General

- 1) USB 3.0 currently is supported only under the Windows operating system; USB chipset support is limited. Future releases of the BusXpert software will offer USB 3.0 support for both 64-bit Linux systems. To install SerialTek USB drivers
 - a. Verify that the PC is disconnected from the USB port of the analyzer (the SerialTek USB 3.0 drivers must be installed before connecting the Analyzer to the PC).
 - b. From the install directory
 - i. For Windows XP, run the file busxpert_usb_xp.exe, e.g.
"C:\Program Files (x86)\SerialTek\BusXpert 4.0.1030\BusXpert_USB_XP.exe"
 - ii. For Windows v7.0 and greater, run the file busxpert_usb.exe, e.g.
"C:\Program Files (x86)\SerialTek\BusXpert 4.0.1030\BusXpert_usb.exe"
- 2) Calibration: it is recommended that calibration be performed only before or after capturing a trace. If calibration is performed during capture e.g. in order to count errors, capture should be stopped and restarted after the calibration menu is closed.
- 3) Under BusXpert Capture Controls > Device > Trigger position: if the trigger position is set to zero percent (0%), the analyzer may fail to trigger. If the analyzer triggers, successfully, the trace may not be processed, correctly.
- 4) The LOS indicator in the calibration menu should be ignored until further notice. Link/Activity and Frame/TLP LEDs should be used to gage link signal integrity.
- 5) The calibration menu should be closed prior to turning off the analyzer.

NVMe/PCIe

- 1) LTSSM View: the first time LTSSM View is enabled, the Main State Diagram may not display, properly. If this occurs, or the LTSSM controls are initially unresponsive, save the trace, close, and reopen, or close the trace and “Open Trace from Analyzer...”. The Main State Diagram should now display, properly.
- 2) Electrical Idle Error Filter: when “Electrical Idle Errors” is unchecked, analyzer speed should be configured to “Auto A” or “Auto B”. At other speed settings, trace data may not be accurate.
- 3) When running BusXpert Software from the DUT PC i.e. the same PC is both generating traffic and analyzing traffic, NVMe queues may disappear due to a “race condition” that overflows queue memory. To prevent this, after software is installed
 - a. Open the following configuration file
C:/Program Files(x86)/SerialTek/BusXpert [version]/cc.ini
 - b. Add the following line under the [Debug] section
DisablePCIeDiscovery = 1
- 4) Protocol View: binary decodes in Protocol View may not work.
- 5) Autospeed: low power states such as L1 may cause the Auto Speed to function incorrectly.
- 6) Capture, Scrambling: Gen3 scrambling is not correct when lane reversal/swizzling is used.
- 7) Capture, Lane Inversion: manual polarity settings persist until “Auto Invert” is selected (switching overall Lane Control from “Manual” to “Auto” does not affect lane polarity inversion).
- 8) NVMe: per *NVMe Express 1.2*, abort command implementation is vendor-specific; as such, abort commands in transaction view may not display as anticipated.
- 9) Search: searches using a timer are not supported, at this time.
- 10) Interrupts: MSI and MSI-X interrupts are not decoded or displayed in the NVMe transactions.
- 11) Auto-detect for interposer/adaptor width is not yet implemented. To avoid spurious errors, users must ensure that interposer/analyzer width matches device width.
- 12) When using "Load trace from analyzer...", NVMe decode may not be present. Whenever possible, users should save all traces before disconnecting from the analyzer.
- 13) Export: when exporting Transaction View the NVMe-specific columns are not exportable. A fix is in progress.
- 14) Statistics: Statistics Navigation is not working for TLP Completions. A fix is in progress.
- 15) Search: search for End Data Stream (EDS) is not working. A fix is in progress.

SAS/SATA

- 1) Auto-calibration for BusXpert Pro, Micro, and Pro II. An issue with the auto-calibration functions found at

BusXpert > Capture Control > View > Calibration Settings

Auto-Calibrate Input Signal Equalization 1

Auto-Calibrate Input Signal Equalization 2

Auto-Calibrate Short Time Pre-emphasis

Auto-Calibrate Long Time Pre-emphasis

causes BusXpert Capture Control to crash, requiring a re-start. For this reason, auto-calibration should not be used, at this time.

- 2) "Auto" is the default speed setting; if the user manually sets the speed, calibration settings can be affected, resulting in spurious errors in the trace. Users are encouraged to set the speed to Auto, whenever possible.
- 3) Calibration: It may be necessary to uncheck/recheck the "Wide SSC" calibration setting for Wide SSC to take effect.
- 4) Speed: to reset Autospeed, it may be necessary to force the analyzer to a lower speed e.g. 3G and back.
- 5) An issue was found affecting EOF support in SAS/SATA. Fix is in progress.