

Keysight PCI Express RAS Error Injection Tool

This document contains latest information on the Keysight PCI Express RAS Error Injection Tool software.

Keysight PCI Express RAS Error Injection Tool

Version 1.2

Released Date:	May 16, 2023
Software Version:	1.2.0.0
Exerciser Requirements	Refer to Hardware Requirements
Controller Requirements	Refer to Controller Requirements
Supported P5500 Traffic Analysis Software Version	Release - 1.1.0 Installer Version - 1.1.0.675
License Requirements	Refer to License Requirements

New Features and Enhancements

- Added option “x16” for link width set up
- Updated installer to Open TAP 9.20

Known Issues

- When starting the PCI Express RAS solution for the very first time after a fresh installation, the PathWave Test Automation software might not automatically open the RAS Error Injection Tool window. Please close and restart the software in this case or manually select the “PCI Express RAS” preset layout (see section “Focus Mode” in PCI Express RAS Solution Help)
- The "Set-up link" and "Initiate speed change" functions require that the PCI Express host port has started the link training and supports the requested data rate. In case the requested link width and data rate is not supported by the host port, the link status will not change and shows a warning message.
In rare cases, the PCI Express RAS solution reports a lower “Received Data Rate” from the host port than actually supported and will thus still be able to change to a higher data rate.
- In some cases, the P5551PRAS license will not be listed as installed license in the PathWave Package Manager though it is installed and shown in the PathWave License Manager. The RAS software should start normally anyway.
- When recalling the PCI Express RAS layout preset from the TAP menu (View->Presets) while working in an opened session, certain GUI elements might become disabled. Please restart the RAS software in this case to revert to a clean state.
- The software does not work with the 32-bit version of PathWave Test Automation Platform (TAP). Always select the 64-bit option while installing the PathWave Test Automation.
- The PathWave License Manager gets installed when you install the PCI Express RAS Error Injection Tool initially. If required, uninstall and reinstall the PathWave License Manager using the Package Manager only. If you uninstall the PathWave License Manager using Windows Control Panel or outside of Package Manager, a reinstallation of the PCI Express RAS Error Injection Tool does not automatically reinstall the PathWave License Manager.
- Even after the uninstallation of PCI Express RAS Error Injection Tool, the PathWave Test Automation Platform GUI might show the RAS Error Injection Tool window.

Version 1.1

Released Date:	Feb 06, 2023
Software Version:	1.1.0.0
Exerciser Requirements	Refer to Hardware Requirements
Controller Requirements	Refer to Controller Requirements
Supported P5500 Traffic Analysis Software Version	Release - 1.1.0 Installer Version - 1.1.0.675
License Requirements	Refer to License Requirements

New Features and Enhancements

- Support for new P5500 Traffic Analysis Software version 1.1.0

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Version 1.0

Released Date:	Oct 04, 2022
Software Version:	1.0.0.0
Exerciser Requirements	Refer to Hardware Requirements
Controller Requirements	Refer to Controller Requirements
Supported P5500 Traffic Analysis	Release - 1.0.0
Software Version	Installer Version - 1.0.0.598
License Requirements	Refer to License Requirements

New Features and Enhancements

The PCI Express RAS Error Injection Tool is a software application that provides a graphical user interface to create PCI Express bus conditions or inject PCI Express packets representing typical error scenarios from a Keysight P5551A PCIe Gen5 Protocol Exerciser hardware module acting as a PCI Express endpoint (EP) to the PCI Express root complex as part of a (up to) Gen5 System Under Test (SUT), typically a motherboard or a serverboard. These intentional error injections can then be used to monitor and log the response of the SUT to these induced error conditions packets, which might be further investigated using SUT specific hardware and/or software tools (outside the scope of this offering). In this manner, the PCI Express RAS Error Injection Tool helps in evaluating the SUT with respect to its Reliability, Availability, and Serviceability (RAS) features.

You can inject the following PCI Express error types:

- Correctable errors
 - LCRC error
 - Bad TLP
 - Bad DLLP
 - Replay timer timeout
 - Replay number rollover
- Non-Fatal Uncorrectable Errors
 - Completer abort error
 - Unsupported request
 - Completion timeout
 - Unexpected completion
 - Replay number rollover
 - ACS violation
- Fatal Uncorrectable Errors

- Flow control protocol
- Data link protocol
- ECRC error
- Malformed TLP
- Poisoned TLP
- Receiver Overflow
- Surprise link down
- MWR greater than 1DW
- Config Request Retry

For more information about these features, refer to the *Keysight PCI Express RAS Error Injection Tool Help*.

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Requirements

Hardware Requirements

Refer to the Datasheet for P5551A PCIe Gen5 Protocol Exerciser to learn more about the specifications for the P5551A PCIe Gen5 Protocol Exerciser.

Controller Requirements

A controller system is a computer that hosts the supported PCIe Gen5 Exerciser functionality including all software components and hardware support services for the Exerciser. This system is connected to the PCIe Exerciser card via USB and communicates with the exerciser through protocol exerciser session that you create using the PCI Express RAS Error Injection Tool or P5500 Traffic Analysis software.

On the Controller PC, following are the system requirements:

- Windows 10 64 bit operating system
- At least 16 GB RAM. For better performance, Keysight recommends you install 32 GB RAM or higher.
- At least 10 GB free disk space on the C drive
- USB 3.0 interface for the Protocol Exerciser card
- P5500 Traffic Analysis Software installed (Refer to the respective version section for the supported version of the P5500 Traffic Analysis Software.)

License Requirements

You must install the following licenses to be able to run the PCI Express RAS Error Injection Tool software:

- KS8000B
- P5551PRAS

Note: The KS8000B license does not need to be ordered separately, but is automatically included in the order of the P5551PRAS license. However, both license files need to be installed on the controller PC to run the PCI Express RAS Error Injection Tool.

You can install any of the license types - node-locked, transportable, USB portable, or floating.

Further, any of the above license types are available with these time durations: 6 months, 12 months, 24 months, 36 months, or perpetual.

The above licenses can be installed using the Keysight PathWave License Manager software that gets installed when you install the PCI Express RAS Error Injection Tool software. For steps on installing the licenses using the Keysight PathWave License Manager, refer to its Online Help.

For purchasing the licenses listed in this topic, contact Keysight Technical Support.

Installation Steps and Getting Started Information

For information related to the installation of the PCIe Gen5 Protocol Exerciser hardware, P5500 Traffic Analysis software, and PCI Express RAS Error Injection Tool, refer to the *Keysight PCIe Express RAS Error Injection Tool Help*.

Related Documents

For detailed information, refer to the Datasheet or the following documents:

- PCIExpressRASHelp.pdf or PCIExpressRASHelp.chm

These documents can also be found at the following location after you install the PCI Express RAS Error Injection Tool:

%ProgramFiles%\Keysight\Test Automation