

Keysight PCIe Gen5 Protocol Testing

This document contains the latest information on the Keysight P5551A PCIe Gen5 Protocol Exerciser, P5552A PCIe Gen5 Protocol Analyzer, P5563A PCIe Gen5 Test Backplane hardware, and the accompanying P5500 Traffic Analysis software.

Keysight P5551A PCIe Gen5 Protocol Exerciser, P5552A PCIe Gen5 Protocol Analyzer, P5563A PCIe Gen5 Test Backplane Hardware, and P5500 Traffic Analysis Software

Version 1.2.0

Released Date:	May 17, 2023
Software Version:	1.2.0
Exerciser Requirements	Refer to Hardware Requirements
Analyzer Requirements	Refer to Hardware Requirements
Controller Requirements	Refer to Controller Requirements
License Requirements	Refer to License Requirements

New Features and Enhancements

This release of the Traffic Analysis GUI application introduces the following features and the below listed bug fixes:

- Exerciser and Analyzer support for port bifurcation
PCIe Gen5 Protocol Exerciser can emulate a bifurcation-aware root complex to test your bifurcated devices. Additionally, you can capture and analyze traffic exchange between a bifurcation-enabled server board or a root complex and a device. The Traffic Analysis GUI software now supports specifying the bifurcated lanes on which the DUT is connected.
- Autonomous equalization for 32.0 GT/s data rate
The Autonomous equalization feature is applicable if the link partners are 32.0 GT/s capable. In autonomous equalization, the Exerciser automatically computes the preset/coefficient values and makes coefficient requests to DUT using these values in Phase 2/3 of equalization. If Autonomous speed change to 32 GT/s option is selected, Protocol Exerciser acting as an Upstream component will always perform equalization at the first entry to 32 GT/s after exit from the Detect State. If Protocol Exerciser is acting as a Downstream component, it will respond to the Equalization state transitions of the upstream component.
- SRIOV
The Protocol Exerciser can be emulated as an SRIOV-enabled PCIe component. As a SRIOV-capable component, Exerciser supports the five physical functions, Function A through Function E. The function B and C are SRIOV capable. Function B has two virtual functions VF1 and VF2 associated with it while Function C has virtual function VF1 associated with it.
- API documentation updates for clarity and enhanced usability.

Fixed Issues

General

- Application errors or Module initialization failed error while launching the hardware modules.
- Getting locked modules when the software is relaunched after closing it from task manager.
- The software installer prompts about newer Keysight PathWave License Manager version installed on the computer, than delivered with the installer.
- Ensure there is sufficient space on disk drive before installing the Traffic Analysis GUI; otherwise, errors might be encountered.

Protocol Exerciser GUI

- Auto-equalization mode is currently not supported.
- The Memory Read 32b and Memory Read 32b Locked might show the same ACK packets (having the same sequence numbers).
- The Payload Checker under the Algorithmic Payload settings tab might not correctly show the Error Status during transmission from all the Functions simultaneously.
- When working with the Power Management capabilities,
 - o FTS transmission for 2.5 GT/s and 5.0 GT/s works correctly for all the link widths; however, for 8 GT/s, 16 GT/s, and 32 GT/s, the correct transmission is observed for the x1 link width only.
 - o “On exit send SKP Ordered Sets” feature might not work correctly.
- Complete Numeric value is not shown in "At" field under Data memory option of Edit packet.
- Exerciser might not enter L1 substate when clock is asserted from the test backplane.
- In a setup with the exerciser acting as a root complex, the credit limit might be displayed as 0 when the SSC is set to -0.25%.
- When a configuration file saved using a previous version of the Traffic Analysis software is loaded, error is observed.

Protocol Analyzer GUI

- Exporting large amount of packet data from the Protocol Analyzer GUI to a CSV file might take excessive time.
- The packet data might not get cleared after clicking the Stop button.
- Red packets might be observed at 2.5 GT/s and 8.0 GT/s data rates with the LTSSM and TLP DLLP modes, when working with some devices.
- Triggering on EIEOS at 32 GT/s data rate may produce incorrect results.
- The Feedthrough mode and When Flag 1...4 is set event check boxes under the External Trigger tab are not working.
- Analyzer column resizing and drag and drop placement are not working.
- After loading a .paans or xml file, the Filter, Find Next, and Go To Trigger options under the Capture menu might display error messages.
- Compare packets feature is not working.
- The “Relaxed” lane alignment feature is not working correctly.
- Lost panel position when switching between Exerciser GUI and Analyzer GUI.
- After linkup stabilizes, “filling memory” issue might be observed when link width or link speed is changed, when working with some host devices in the LTSSM mode.

Known Issues

General

- The Traffic Analysis GUI might not immediately detect the hardware modules after the modules power up. It is recommended to wait for about 20 seconds after powering up the hardware modules, and then starting the software.
- There should be a time lag between launching of two modules in two different instances of the Traffic Analysis GUI application; otherwise, exceptions might be observed.
- An initialized session of the Protocol Analyzer GUI might still exist even after restarting the controller PC. Remove the session while closing the Traffic Analysis GUI and then restart the software.
- Power cycling of the hardware modules might also require running the Cleanup utility before starting the Traffic Analysis GUI application.

Protocol Exerciser GUI

- Dark Theme is not fully implemented.
- The software is not usable for higher screen resolutions and multiple monitors.
- Exerciser occasionally does not achieve 32 GT/s x16 link up directly. Initiate Speed change might be needed or a retry needed.
- Equalization Settings and Transceiver Settings:
 - o Automatic Coefficient Request to DUT is not yet supported for data rates other than 32.0 GT/s. Presets or Cursor Values must be manually configured.
- Exerciser sees protocol checker violations with some devices.
- Exerciser might send unexpected NAKs and display corresponding protocol violations at 5.0 GT/s speed.
- Exerciser might stop TLP transmission in continuous mode at 5.0 GT/s for some devices.
- Link between Protocol Exerciser and some devices might go out of L0 at 32 GT/s speed.
- Exerciser Protocol Checker shows violations when starting Functions.
Workaround: Clear the protocol checker after functions got started.
- GUI font sizes and alignments not fully implemented.
- Limited support for the Lane configuration settings.
- Short SKP OS might be observed when transmitting TLPs in continuous mode from the Protocol Exerciser GUI.
- During traffic exchange, editing and reloading the data memory in an exerciser might cause an error.
- When working with the Power Management capabilities, the specified "Exit L1 timeout" cannot be verified from the Protocol Analyzer.
- Memory compare feature currently works with Function A only.
- Linkup issues might be observed when automatic lane reversal is disabled and lane reversal is enabled and the upstream and downstream components have different linkwidths.
- In some host and device combinations, some functions might occasionally get stuck in the "Stopping" state when packet transmission is stopped in the continuous mode.
Workaround: Disable and then re-enable the link to get the clear status for the functions.

Protocol Analyzer GUI

- Analyzer PHY tuning is speed dependent: For best results use Equalization Index 5/6/7/8 for 8.0 GT/s, 16 GT/s, and 32 GT/s, and Equalization Index 15 for 2.5 GT/s and 5.0 GT/s.
- Analyzer Master Lane selection is untested.
- Disparity errors cannot be verified for all the packets sent through block transfer from the Protocol Exerciser GUI.
- The "Hide" and "Show" actions might not work correctly in the Simple Packet Filter dialog box.
- Logical Idles might not be visible in the Lanes tab.
- Unexpected Memory Read 32b packet might be captured on startup. Link-down and re-linkup might solve the issue.
- Triggering might not happen for config read write operations.
- Message with Data TLPs cannot be verified.
- A packet injected with the incorrect payload size might not be shown as a red packet.
- Ordered set EIEOSQ and SDS might not get detected after exit from the LOs state.
- Lane margining decode is not working correctly.
- Occasional red packets might be observed with captures at 5.0 GT/s, x8 linkwidth with some devices.
- The Status window is not fully implemented.
- Trigger position does not highlight the actual packet on which the trigger occurred.
- Performance Overview tab might show incorrect results.
- If a filter is applied to view TLPs only, then out of the TLPs sent in a block transfer from the Exerciser, the last packet might not get captured and be displayed in the Analyzer trace.
- Application exceptions might sometimes be observed when capturing at 16 GB memory depth.
- The compact feature might incorrectly compact the TS1s for equalization Phase 2 in an LTSSM trace.
- LTSSM decoding might show incorrect configuration states when the LTSSM capture does not start at the 2.5 GT/s data rate.
- Filling memory error might occasionally be observed during LTSSM capture.
- Capture linkwidth setting change after the Auto linkwidth option is selected, is currently not supported.

Version 1.1.0

Released Date:	January 30, 2023
Software Version:	1.1.0
Exerciser Requirements	Refer to Hardware Requirements
Analyzer Requirements	Refer to Hardware Requirements

Controller Requirements	Refer to Controller Requirements
License Requirements	Refer to License Requirements

New Features and Enhancements

This minor release of the Traffic Analysis GUI application is mostly focused on bug fixes and introduces a minimal set of features as listed below:

- Power Management (in Beta state)
- Internal code enhancements

Fixed Issues

General

- When the hardware modules are switched off while using the Traffic Analysis GUI, the software GUI might stop functioning.
- Module(s) connected to a USB 2.0 port might simply get ignored without a message.
- 10-bit tag support has been implemented.

Test Backplane

- The connection status might still be seen enabled (green) in the Self-Test window even after having disconnected the UART cable.
- The Test Backplane API is undocumented.

Protocol Exerciser GUI

- Exerciser Link retraining is sometimes happening at 32 GT/s speed with Host devices for x8 or x16 operation.
- When attempting to train the link at 32 GT/s after power cycling the hardware modules, ensure that the Autonomous Speed Change to 32 GT/s check box is selected.
- In a setup involving two Protocol Exerciser modules, linkup might still be shown to be successful even if the Session Type is configured to be "To Downstream" for both the modules.
- The drop-downs associated with the Run and Stop toolbar buttons, for running and stopping traffic from the functions individually, currently do not work.
- The Generate > Reload menu option might not work.
- When working with the Power Management capabilities, the number of FTS to be transmitted on exit from the L0s state is limited to 256.

Protocol Analyzer GUI

- Analyzer does not yet support filtering out packets on capture.
- Excessive lock time in analyzer during speed change.
- When using the Compact Training Sequences option in the offline version of Protocol Analyzer GUI, incorrect packet counts might be shown when compacting is disabled.
- The Search feature might sometimes fail to locate the required packets.
- The Find dialog box might behave erratically when an ala file is loaded.
- Bit errors might be observed when link width is selected as "Auto" with the LTSSM mode.
- Mismatch between the "tag identifier" values for an unsupported completion request might be observed between the Header tab and packet viewer and Details tab.
- "Valid licenses are not available for Analyzer" error message is displayed when Analyzer only license is installed.
- Frequent "Index Out of Range" error messages when switching between Transaction Decode tab and other tabs.
- Transaction Decode misses to decode the first config write packet in a trace.
- Traffic capture stops much too early when switching from 2.5 GT/s to 5.0 GT/s in the TLP mode.
- Triggering on EQ TS2 sometimes fails.

Known Issues

General

- The Traffic Analysis GUI might not immediately detect the hardware modules after the modules power up. It is recommended to wait for about 20 seconds after powering up the hardware modules, and then starting the software.
- There should be a time lag between launching of two modules in two different instances of the Traffic Analysis GUI application; otherwise, exceptions might be observed.
- An initialized session of the Protocol Analyzer GUI might still exist even after restarting the controller PC. Remove the session while closing the Traffic Analysis GUI and then restart the software.
- Power cycling of the hardware modules might also require running the Cleanup utility before starting the Traffic Analysis GUI application.
- If you see application errors or Module initialization failed error while launching the hardware modules, restart the Traffic Analysis GUI application.
- Ensure there is sufficient space on disk drive before installing the Traffic Analysis GUI; otherwise, errors might be encountered.
- MRIOV is not supported by the Traffic Analysis GUI application; however, references to MRIOV might be observed on the user interface of the application.

Test Backplane

- Link up might not happen after disabling and re-enabling Clock Out from the Test Backplane Self-Test window.
Workaround: Restart the Traffic Analysis GUI application and link up again.

Protocol Exerciser GUI

- Dark Theme is not fully implemented.
- The software is not usable for higher screen resolutions.
- Exerciser occasionally does not achieve 32 GT/s x16 link up directly. Initiate Speed change might be needed or a retry needed.
- Auto-equalization mode is currently not supported.
- Equalization Settings and Transceiver Settings:
 - o Automatic Coefficient Request to DUT is not yet supported. Presets or Cursor Values must be manually configured.
 - o Exerciser Tx Pre/Data/Post Cursor Coefficient setting is not yet supported
 - o Tx Settings Manually setting Target Cursors is not yet supported
- Number of symbols in SKP ordered Set has no effect.
- Exerciser sees protocol checker violations with some devices.
- Exerciser might send unexpected NAKs and display corresponding protocol violations at 5.0 GT/s speed.
- Exerciser might stop TLP transmission in continuous mode at 5.0 GT/s for some devices.
- Link between Protocol Exerciser and some devices might go out of L0 at 32 GT/s speed.
- Exerciser stops TLP transmission even though Function is shown as running in Hardware Status when there are link instabilities. If function generation is not directly starting again:
 1. Disable Transmission
 2. Stop Functions
 3. Link up again
 4. Start Function
- Exerciser Protocol Checker shows violations when starting Functions.
Workaround: Clear the protocol checker after functions got started.
- GUI font sizes and alignments not fully implemented.
- Limited support for the Lane configuration settings.
- The Memory Read 32b and Memory Read 32b Locked might show the same ACK packets (having the same sequence numbers).
- Short SKP OS might be observed when transmitting TLPs in continuous mode from the Protocol Exerciser GUI.
- The Payload Checker under the Algorithmic Payload settings tab might not correctly show the Error Status during transmission from all the Functions simultaneously. However, when transmitting the TLPs individually from the functions, the Error Status might correctly be seen.
Workaround: Transmit the TLPs individually from the functions.

- During traffic exchange, editing and reloading the data memory in an exerciser might cause an error.
- When working with the Power Management capabilities,
 - o FTS transmission for 2.5 GT/s and 5.0 GT/s works correctly for all the link widths; however, for 8 GT/s, 16 GT/s, and 32 GT/s, the correct transmission is observed for the x1 link width only.
 - o “On exit send SKP Ordered Sets” feature might not work correctly.
 - o The specified “Exit L1 timeout” cannot be verified from the Protocol Analyzer.
- Exerciser might not enter L1 substate when clock is asserted from the test backplane.
- In a setup with the exerciser acting as a root complex, the credit limit might be displayed as 0 when the SSC is set to -0.25%.

Protocol Analyzer GUI

- Analyzer PHY tuning is speed dependent: For best results use Equalization Index 5/6/7/8 for 8.0 GT/s, 16 GT/s, and 32 GT/s, and Equalization Index 15 for 2.5 GT/s and 5.0 GT/s.
- Analyzer Master Lane selection is untested.
- The “Relaxed” lane alignment feature is not working correctly.
- Disparity errors cannot be verified for all the packets sent through block transfer from the Protocol Exerciser GUI.
- After loading a .paans or xml file, the Filter, Find Next, and Go To Trigger options under the Capture menu might display error messages.
- The "Hide" and "Show" actions might not work correctly in the Simple Packet Filter dialog box.
- Logical Idles might not be visible in the Lanes tab.
- Unexpected Memory Read 32b packet might be captured on startup. Link-down and re-linkup might solve the issue.
- Triggering might not happen for config read write operations.
- Message with Data TLPs cannot be verified.
- Exporting large amount of packet data from the Protocol Analyzer GUI to a CSV file might take excessive time.
- A packet injected with the incorrect payload size might not be shown as a red packet.
- Ordered set EIEOSQ and SDS might not get detected after exit from the LOs state.
- The packet data might not get cleared after clicking the Stop button.
- Triggering on EIEOS at 32 GT/s data rate may produce incorrect results.
- The Feedthrough mode and When Flag 1...4 is set event check boxes under the External Trigger tab are not working.
- Lane margining decode is not working correctly.
- Red packets might be observed at 2.5 GT/s and 8.0 GT/s data rates with the LTSSM and TLP DLLP modes, when working with some devices.
- After linkup stabilizes, “filling memory” issue might be observed when link width or link speed is changed, when working with some host devices in the LTSSM mode.

Upcoming Features

The future releases of the P5551A PCIe Gen5 Protocol Exerciser and P5500 Traffic Analysis software will support the following features:

- Virtualization (SRIOV)
- Bifurcation

Version 1.0.0

Released Date:	October 17, 2022
Software Version:	1.0.0
Exerciser Requirements	Refer to Hardware Requirements
Analyzer Requirements	Refer to Hardware Requirements
Controller Requirements	Refer to Controller Requirements
License Requirements	Refer to License Requirements

New Features and Enhancements

P5551A PCIe Gen5 Protocol Exerciser hardware

Keysight Protocol Exerciser for PCI Express (PCIe) provides a test and debug solution for PCI Express to test up to the fifth generation of PCI Express technology. Keysight Protocol Exerciser for PCIe is an advanced traffic generator that you can use to send and respond to the TLP and DLLP packets to stimulate PCIe devices and systems.

Protocol Exerciser can function as an Exerciser and a Link Training and Status State Machine (LTSSM) with a PCIe system or a PCIe device under test.

P5552A PCIe Gen5 Protocol Analyzer hardware

The P5552A PCIe Gen5 Protocol Analyzer is an advanced traffic analyzer that enables you to capture the incoming traffic from the PCIe devices including the DUT and Protocol Exerciser modules for analysis. The captured traffic can be computed to view decoded transactions and summarized LTSSM information.

The Protocol Analyzer supports all PCIe 5.0 speeds, including 2.5 GT/s (Gen1), 5.0 GT/s (Gen2), 8 GT/s (Gen3), 16 GT/s (Gen4), and 32 GT/s (Gen5) and it supports link widths from x1 to x16.

P5563A PCIe Gen5 Test Backplane

The P5563A PCIe Gen5 Test Backplane is a test platform that primarily supports five x16 slots for PCIe add-in cards. It provides a mechanical fixture to support the add-in cards.

P5500 Traffic Analysis software

The P5500 Traffic Analysis Application enables you to:

- Manage the P5551A PCIe Gen5 Protocol Exerciser and the P5552A PCIe Gen5 Protocol Analyzer hardware modules from a single user interface
- Conduct self-tests for the P5551A, P5552A, and P5563A modules before starting the traffic generation and analysis operations
- Update the firmware for the hardware modules

As a software application for the P5551A Protocol Exerciser, the P5500 Traffic Analysis Application enables you to:

- Create and manage setup files for Protocol Exerciser
- Create a link between DUT and Protocol Exerciser
- Run LTSSM tests provided to test DUT's LTSSM functions
- View and update the link and Exerciser hardware status
- Define stimulus traffic
- Start the Stimulus and view results
- Inject errors in the outgoing traffic
- Perform protocol checks on the incoming traffic

As a software application for the P5552A Protocol Analyzer, the P5500 Traffic Analysis Application enables you to:

- Set the connection and traffic capture options for the Protocol Analyzer
- Set up simple and advanced triggers for capturing the incoming traffic
- Capture incoming traffic for analysis
- View incoming traffic using refined filtering and searching techniques
- View LTSSM states, state transitions, and equalization summary
- Compute and view decoded transactions (including Lane Margining traffic decode)
- Compute and view offline performance summary from the captured PCIe data

For more information about these features, refer to the *Keysight P5500 PCIe Gen5 Traffic Analysis User Guide*.

Known Issues

General

- The Traffic Analysis GUI might not immediately detect the hardware modules after the modules power up. It is recommended to wait for about 20 seconds after powering up the hardware modules, and then starting the software.
- An initialized session of the Protocol Analyzer GUI might still exist even after restarting the controller PC. Remove the session while closing the Traffic Analysis GUI and then restart the software.

- When the hardware modules are switched off while using the Traffic Analysis GUI, the software GUI might stop functioning.
Workaround: Run the Cleanup utility available from the Start menu and restart the Traffic Analysis GUI.
- Power cycling of the hardware modules might also require running the Cleanup utility before starting the Traffic Analysis GUI application.
- If you see Module initialization failed error while launching the hardware modules, restart the Traffic Analysis GUI application.
- Ensure there is sufficient space on disk drive before installing the Traffic Analysis GUI; otherwise, errors might be encountered.

Test Backplane

- The connection status might still be seen enabled (green) in the Self-Test window even after having disconnected the UART cable.

Protocol Exerciser GUI

- Dark Theme is not fully implemented.
- Exerciser occasionally does not achieve 32 GT/s x16 link up directly. Initiate Speed change might be needed or a retry needed.
- Auto-equalization mode is currently not supported.
- Equalization Settings and Transceiver Settings:
 - o Automatic Coefficient Request to DUT is not yet supported. Presets or Cursor Values must be manually configured.
 - o Exerciser Tx Pre/Data/Post Cursor Coefficient setting is not yet supported
 - o Tx Settings Manually setting Target Cursors is not yet supported
- Number of symbols in SKP ordered Set has no effect.
- Exerciser sees protocol checker violations for 5.0 GT/s with some devices.
- Exerciser Link retraining is sometimes happening in 32 GT/s speed with Host devices for x8 or x16 operation.
- When attempting to train the link at 32 GT/s after power cycling the hardware modules, ensure that the Autonomous Speed Change to 32 GT/s check box is selected.
- Exerciser stops TLP transmission even though Function is shown as running in Hardware Status when there are link instabilities. If function generation is not directly starting again:
 1. Disable Transmission
 2. Stop Functions
 3. Link up again
 4. Start Function
- Exerciser Protocol Checker shows violations when starting Functions.
Workaround: Clear the protocol checker after functions got started.
- GUI font sizes and alignments not fully implemented.
- Limited support for the Lane configuration settings.

- In a setup involving two Protocol Exerciser modules, linkup might still be shown to be successful even if the Session Type is configured to be "To Downstream" for both the modules.
- The Memory Read 32b and Memory Read 32b Locked might show the same ACK packets (having the same sequence numbers).
- Short SKP OS might be observed when transmitting TLPs in continuous mode from the Protocol Exerciser GUI.
- The drop-downs associated with the Run and Stop toolbar buttons, for running and stopping traffic from the functions individually, currently do not work.
Workaround: Use the Generate > Start Individual Functions menu option.
- The Generate > Reload menu option might not work.
Workaround: Use the Reload icon on the toolbar.
- The Payload Checker under the Algorithmic Payload settings tab might not correctly show the Error Status during transmission from all the Functions simultaneously. However, when transmitting the TLPs individually from the functions, the Error Status might correctly be seen.
Workaround: Transmit the TLPs individually from the functions.
- When working with the supported Power Management capabilities,
 - o The number of FTS to be transmitted on exit from the L0s state is limited to 256.
 - o FTS transmission for 2.5 GT/s and 5.0 GT/s works correctly for all the link widths; however, for 8.0 GT/s, 16 GT/s, and 32 GT/s, the correct transmission is observed for the x1 link width only.

Protocol Analyzer GUI

- Analyzer PHY tuning is speed dependent: For best results use Index 5/6/7/8 for 8.0 GT/s, 16 GT/s, and 32 GT/s, and Equalization Index 15 for 2.5 GT/s and 5.0 GT/s.
- Excessive lock time in analyzer during speed change.
- Analyzer does not yet support filtering out packets on capture.
- Analyzer Master Lane selection is untested.
- Disparity errors cannot be verified for all the packets sent through block transfer from the Protocol Exerciser GUI.
- The "Hide" and "Show" actions might not work correctly in the Simple Packet Filter dialog box.
- Logical Idles might not be visible in the Lanes tab.
- Message with Data TLPs cannot be verified.
- When using the Compact Training Sequences option in the offline version of Protocol Analyzer GUI, incorrect packet counts might be shown when compacting is disabled.
- Exporting large amount of packet data from the Protocol Analyzer GUI to a CSV file might take excessive time.
- The Search feature might sometimes fail to locate the required packets.
- A packet injected with the incorrect payload size might not be shown as a red packet.
- The Find dialog box might behave erratically when an ala file is loaded.

- Ordered set EIEOSQ and SDS might not get detected after exit from the LOs state.
- The packet data might not get cleared after clicking the Stop button.
- Mismatch between the "tag identifier" values for an unsupported completion request might be observed between the Header tab and packet viewer and Details tab.
- Bit errors might be observed when link width is selected as "Auto" with the LTSSM mode.
- Triggering on EIEOS at 32 GT/s data rate may produce incorrect results.
- The Feedthrough mode and When Flag 1...4 is set event check boxes under the External Trigger tab are not working.
- Red packets might be observed at 2.5 GT/s and 5.0 GT/s data rates only with the LTSSM mode, when working with some devices. The TLP DLLP mode might work correctly in such scenarios.

Upcoming Features

The future releases of the P5551A PCIe Gen5 Protocol Exerciser and P5500 Traffic Analysis software will support the following features:

- Virtualization (SRIOV)
- Power Management

Requirements

Hardware Requirements

Before installing the P5551A PCIe Gen5 Exerciser and P5552A PCIe Gen5 Analyzer hardware, you must carefully study the hardware and environmental specifications and requirements listed in the Datasheet or the Hardware Guides accompanying this product.

Controller Requirements

A controller system is a computer that hosts the full, supported PCIe Gen5 Exerciser and PCIe Gen5 Analyzer functionality including all software components and hardware support services for the Exerciser and Analyzer. This system is connected to the PCIe Exerciser and/or Analyzer card(s) via USB and communicates with the exerciser and/or analyzer card(s) through protocol exerciser and/or protocol analyzer sessions that you create using the 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 10GB free disk space on the C drive
- USB 3.0 interface for each exerciser/analyzer card

- Monitor screen resolution of 1920 x 1080

License Requirements

You must install the following licenses to be able to run the P5500 Traffic Analysis software:

- P5551PSWA (one for each Exerciser module)
- P5552PSWA (one for each Analyzer module)

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

Further, any of the above license types can be installed for 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 P5500 Traffic Analysis software. For steps on installing the licenses using the Keysight PathWave License Manager, refer to its Online Help.

Installation Steps and Getting Started Information

For information related to the installation of the PCIe Gen5 Protocol Exerciser and PCIe Gen5 Protocol Analyzer hardware and P5500 Traffic Analysis software, refer to the *Keysight PCIe Gen5 Protocol Testing Installation Guide* or the Hardware Guides for the Protocol Exerciser and Protocol Analyzer modules.

Related Documents

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

- P5551A_PClGen5_Exerciser_HardwareGuide.pdf
- P5552A_PClGen5_Analyzer_HardwareGuide.pdf
- P5563A_PClGen5_TestBackplane_HardwareGuide.pdf
- PCIE_Protocol_Testing_Installation_Guide.pdf
- P5500_SoftwareUserGuide.pdf
- PCle_Traffic_Analysis_API_Online_Help.pdf

These documents can also be found at the following location after you install the P5500 Traffic Analysis application:

%Program Files%\Keysight\PCleAnalysis\Docs