# Keysight Logic and Protocol Analyzer Software (64-bit Application)

Version 6.00 – September 2014

## Operating System Compatibility

Version 6.00 of the Keysight Logic and Protocol Analyzer software is a 64-bit application and therefore it is only supported for use with 64-bit operating systems.

Recommended operating systems:

- Windows® 8.1
- Windows® 8
- Windows® 7
- Windows® Server 2012 R2
- Windows® Server 2012
- Windows® Server 2008 R2
- Windows® Server 2008
- Windows® Vista 64-bit (SP2)

Notes:

- Keysight recommends you install the latest service pack offered for your operating system. In addition, apply all critical operating system updates.
- Each OS variant places a different limit to the amount of physical memory supported to the system. Users should consult their system's documentation to determine how much memory their specific operating system variant will support. For optimum performance of the Logic and Protocol Analyzer software, Keysight recommends installing more than the minimum required system memory.
- Version 6.00 of the Logic and Protocol Analyzer software is **not** compatible with 32-bit operating systems. Version 5.80 or lower of the Logic and Protocol Analyzer software is supported for use with 32-bit operating systems.

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## Hardware Prerequisites

Keysight 16850A Series Portable Logic Analyzers and the Keysight M9536A embedded controller for AXIe modular systems are fully compatible with the Logic and Protocol Analyzer software.

The following recommendations are for M950xA AXIe modular systems with an external host PC (desktop or laptop) running the Logic and Protocol Analyzer software.

- The minimum CPU, memory, and graphics specified for your chosen operating system
- Increase RAM to 4 GB minimum, or more (e.g. 8 GB is recommended for a multiple module logic and protocol analysis system)
- Increase CPU performance to a minimum of 2 GHz dual core processing
- 80 GB minimum hard drive, SSD recommended for loading/storing configurations and acquired data

Additionally, for an external host PC (desktop or laptop) connected to an M9502A or M9505A AXIe chassis or a U4002A AMP chassis, the appropriate IO support for the chassis is required.

- Cabled PCIe is the recommended IO option

## Supported Instruments

If you do not see your specific logic or protocol analyzer listed here, please refer to www.keysight.com/find/la-sw-download to determine the correct software to use for your instrument.

- 16850A Series Portable Logic Analyzers
- U4154B 4 Gb/s Logic Analyzer Module
- U4154A 4 Gb/s Logic Analyzer Module
- U4301B Protocol Analyzer Module for PCIe 8 Gbps
- U4301A Protocol Analyzer Module for PCIe 8 Gbps
- U4421A Protocol test module for MIPI D-PHY
- U4331A protocol test module for MIPI M-PHY

## How to Download

- Click the download button, select file and save.

## How to Install

The Logic and Protocol Analyzer software install directory is:

*"C:\Program Files\Keysight Technologies\Logic Analyzer\".*

Licenses for options to the U4154A, U4301A, and U4421A modules, as well as licenses for software add-ins and features released prior to version 6.00, are installed in the following directory:

*"C:\Program Files (x86)\Agilent Technologies\Logic Analyzer\License"*

## Licensing

- The Logic and Protocol Analyzer application software does not require a license.
- Some hardware and software features and options are licensed.  See the appropriate product data sheet for more information.

## Supporting Documentation

- See Logic and Protocol Analyzer Readme (version 6.00)
- See Logic and Protocol Analyzer Online Help Files (Version 6.00)
- See Logic and Protocol Analyzer Online Help – PDF Version (Version 6.00)

## Add-On Software / Utilities

See www.keysight.com/find/lpa-sw-download for the most up-to-date list of software applications supported by version 6.00 and higher.

- B4621B DDR2/3/4 Bus Decoder
- B4622B DDR2/3/4, LPDDR2/3/4 Protocol Compliance and Analysis Tool
- B4623B LPDDR2/3/4 Bus Decoder
- DDR/LPDDR Memory Support Tools
- B4655A FPGA Dynamic Probe for Xilinx
- B4656A FPGA Dynamic Probe for Altera
- E9528A ARM Cortex ETM Trace Decoder
- E9529A ARM Cortex PTM Trace Decoder
- Analysis AddIn Wizard – Create custom plug-ins for the Logic and Protocol Analyzer
- Protocol Development Toolkit – Create custom protocol decoders
- License Server – Administer floating licenses shared within an organization
- COM Automation – Use the Logic and Protocol Analyzer COM interface from a PC or a laptop where the application has not been installed

## Start the application software

1. Double click the Keysight LPA icon  located on your desktop.

   Or type "Analyzer" into the Search box in the Windows 7 start menu.

## Additions

- **Keysight Technologies**: The Logic and Protocol Analyzer software has been re-branded with a new Keysight Technologies logo, splash screen and screen saver.
- **64-bit Application**: The Logic and Protocol Analyzer software and the Add-in packages supported on Version 6.00 have been released as 64-bit applications.
- **U4154B 4 Gb/s logic analyzer module support**.  The U4154B Logic Analyzer model is being introduced in conjunction with version 6.00 of the Logic and Protocol Analyzer software. Enhanced capabilities include the ability to combine 3 modules for higher channel count, and the addition of a clock qualifier.

- **U4301B PCIe Gen3 protocol analyzer module support**:  The U4301B modular PCIe Protocol Analyzer model is being introduced in conjunction with version 6.00 of the Logic and Protocol Analyzer software.  The U4301B has a memory depth of 8G.  The LTSSM Overview, Performance Analysis, and Transaction Decode features are included standard.

  The following new capabilities apply to the U4301B and U4301A PCIe Protocol Analyzer modules when operating under version 6.00.

  - o **Compute**
    - When checked, a "Compute All on Run" check box in the Protocol Viewer performs a compute in background after the data is captured for the Traffic Overview, LTSSM Overview, Performance Overview and Transaction Decode tabs.  The result is lower compute times relative to running a compute for each tab individually after a trace is captured.  Errors are included in the compute by default.
    - The Compute button in the Traffic Overview, LTSSM Overview, Performance Overview and the Transaction Decode tabs has been modified to select "Compute This" or "Compute All".  The modified button allows you to compute across all active tabs on data that was previously captured.
  - o **LTSSM Overview**
    - Enhanced LTSSM analysis with new EQ selections (Compute EQ and Setup Organized by EQ) that provide more insight into Equalization negotiation that occurred during the trace.
    - When the Setup is organized by EQ, the File area of the display provides a table that summarizes the equalization changes in order over time.
    - Enables you to see the EQ handshake process so you can understand when settings have been accepted, rejected, etc.  Clicking on a row in the EQ Overview takes to the particular packet in the Packet Viewer and LTSSM state.
    - The LTSSM state diagram has been updated to highlight which states have been visited for a given trace. This enables you to quickly identify not only which states have been visited but also see if states you expected to be visited did not occur.
  - o **Traffic Overview**
    - Added a packet type band chart to the Traffic Overview tab.
  - o **Performance Overview**
    - Added charting for Header Flow Control. In addition, sub-headings are now available under All Flow Control.
    - The Setup dialog has been updated to add controls for setting Header Flow Control Init values.
  - o **Transaction Decoder**
    - Scatter Gather List (SGL) support has been added to the NVMe Transaction Decoder.
  - o **Filter**
    - Added a Simple Packet Filter icon within the Protocol Viewer that provides an easy way to Show or Hide packets in the Protocol Viewer.
  - o **Search**
    - Added Simple Packet Search to quickly find the most frequently requested packets.  A new Search field within the Protocol Viewer includes an AutoComplete popup that provides both the Short Name and the Packet Type Name.

- **LPDDR4 support:**  LPDDR4 support at speeds ≤ 2.5 Gb/s and > 2.5 Gb/s has been added to:
  - o the B4623B LPDDR2/3/4 Decoder
  - o the Post Process Compliance Tool, Real-time Compliance Tool, and Performance Tool of the B4622B DDR2/3/4, LPDDR2/3/4 Protocol Compliance and Analysis Tool

- o and the DDR Setup Assistant and the Configuration Creator Tool of the DDR/LPDDR Memory Support Tools
- **DDR4 support:** Added support for RDIMM/LRDIMM for DDR4 in the B4621B DDR2/3/4 Bus Decoder

- **Mobile PCIe (M-PCIe) support**:  Introduced Option 715 for the U4331A MIPI M-PHY protocol test modules to enable the Mobile PCIe (M-PCIe) decoder. The U4331A already supports the Unipro, UFS, SSIC, and CSI-3 MIPI M-PHY standards.
    - o The introduction of the Mobile PCIe protocol decoder includes the following capabilities leveraged from PCIe protocol toolset
        - Performance Statistics
        - Configuration Decode
        - Transaction and Remote Register Access Protocol (RRAP) Decode
    - o Additional enhancements to the existing SSIC protocol decoder include
        - Performance Statistics, leveraged from the PCIe toolset.
    - o Additional enhancements to the existing CSI-3 protocol decoder include
        - CSI-3 Decompression

## Modifications

- **Logic and Protocol Analyzer application – General**
    - o During installation, files are extracted into the Temp directory.  If you encounter the following installation error message…"There is not enough space on drive C:\ to extract this package", it means that the Temp directory may have a size limit or that the directory is almost full and files cannot be extracted. The solution to this issue is to clean out the Temp directory (*C:\Users\<user name>\AppData\Local\Temp*) and run the Disk Cleanup tool.  Ensure that the "Temporary Files" item is selected for cleanup.  (WIT 326481).
    - o The Protocol Perform overview pane defect occasionally resulting in perpetual processing has been fixed (WIT 342813)
    - o An infrequent GUI crash related to tool tip messaging has been fixed (WIT 222432)
- **View Scope**
    - o The DSAX91304A oscilloscope has been added to the list of scopes supported by View Scope (WIT 323454)
- **16850 Series Portable Logic Analyzers**
    - o An issue where the analyzer would occasionally throw a read memory error has been resolved (WIT 337757).
    - o A series of issues running the 16850 Series Logic Analyzer in a repetitive mode (continuous operation) have been resolved
        - Data Indexer issues resulting in time tags 'out of order' (WIT 277196, 206861)
        - Data Indexer fails to complete (WIT 277198)
        - Intermittent application lock up during repetitive operation (WIT 206863)
        - Bucketizer fails to read the last set of memory / memory systems hangs (WIT 277223)
- **U4301A PCIe Gen3 8 Gb/s Protocol Analyzer**
    - o Performance Statistics for flow control has been improved to include header packets.
    - o An issue involving the correlation between a U4301A analyzer and a Scope has been rectified. The fix was made available in the 5.80 patch branch version 5.80.1004 and is included in the 6.00 release (WIT 278427).
    - o An intermittent issue has been resolved, eliminating the condition where EIOS packets sent before electrical idle were occasionally missing (WIT 180114).
    - o Using advanced triggers, a corner-case condition has been resolved where a trigger on a pattern in the down direction was not successful.   This and several other downstream bi-directional triggering issues have been resolved.  The software has been modified to consistently enable the

fixed matchers for the B direction (downstream with interposer in bi-directional mode) (WIT 222918).

o   An infrequent 5.80 application crash involving a version 5.60 ala captured file has been resolved by adding additional code logic. (WIT 326478)

- **U4421A MIP D-PHY Protocol Analyzer**
    o   A popular enhancement request has been implemented for the U4421A software application, making a list of available images in the Image Viewer tab available to the user. The initial enhancement was distributed via 5.80 patch and is now being rolled into the 6.0 release. A 'Save All Images' button has been added to the 'Image View' tab of the Protocol viewer, enabling the image to be saved in BMP format into a user-specified folder in a single click (WIT 319472).
    o   CSI-2 compression/decompression has been added per CSI-2 spec version 1.3
    o   A U4421A trigger issue has been corrected, involving a situation where a basic trigger could ignore 'payload exclusion'. The code logic now uses the same width pattern matchers on either side of 'And' condition, in both simple and advanced trigger (WIT 241796).
    o   An infrequent application crash issue has been resolved, occurring when the 2nd module of a two-module hardware setup was disabled. The fix involved the implementation of a check to verify if previously selected choice pointed to a valid module (WIT 319538).

- **U4431A MIPI M-PHY Protocol Analyzer**
    o   The CSI-3 Protocol mode capability has been enhanced to extract a CSI-3 image when the entire frame is in a single packet.  This was accomplished by adding code that uses the image size information from EOP packets as well as image data off-set information (WIT 331352).
    o   An intermittent issue experienced by a specific customer involving Hibern8 state raw mode capture has been resolved (WIT 315118).