Calnex Paragon - x

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Software Release 22x

NEW FUNCTIONALITY AND ENHANCEMENTS

Contents

1 Software Release Overview

Release 22X (X.10.34) adds the following features to Paragon-X, CAT[1] and PFV[2]:

SUS (Software Upgrade Service)

Enhancements to existing options	Base product enhancements

Peer-to-Peer Master/Slave Emulation:
   • 802.1AS (gPTP)
   • Time Aware Device Accuracy testing
   • CumulativeScaledRateOffset test
 	
PFV:
   • Time Sensitive Networking Profile: 802.1AS (gPTP)
	Defect Fixes

	Calnex Analysis Tool (CAT):
	   • Trace Overlay Function
	   • Box Zoom

✋ To check the current software version installed, select Help **>** About Paragon Remote Client on the Paragon-X GUI.

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[1] This release includes enhancements to the CAT. The CAT accompanies Paragon-X and is used to display/present graphical results such as Wander and Time Error and to calculate metrics such as MTIE/TDEV for further analysis.

[2] This release includes enhancements to the PFV. The PFV option allows PTP protocol to be analysed to standards-based and user-defined profiles.

2 Features and Benefits

| Paragon-X	Benefit
Peer-to-Peer Master/Slave Emulation: 802.1AS (gPTP)	Specific test scenarios, measurements and impairments allow full performance insight for PTP as used in Time Sensitive Networking applications
PFV: 802.1AS (gPTP)	Allows fast protocol analysis (and debug) for gPTP profile, for devices using this - or multiple - profile configurations
CAT	**Benefit**
Trace Overlay Function	Added capability for graphical analysis, allowing clear one-graph comparison for results from multiple individual or parallel tests
Box Zoom	Fast method to focus on areas of interest in measurement results

3 Enhancements to Existing Options

3.1 Peer-to-Peer Master Slave Emulation: gPTP profile (802.1AS)

To deliver the specific synchronisation performance requirements for Time Sensitive Networking applications, IEEE 802.1AS 'gPTP' profile is used.

As of this release, the Peer-to-Peer Master/Slave Emulation implementation in Paragon-X has additional support for configuration and testing to this profile.

802.1AS gPTP is now available as an 'auto-configuration' option in the MSE window – logical default values will be set, and you can manipulate fields as desired. The SW will indicate if you have changed any setting to be non-compliant to the profile by changing the indicated profile to '*Custom*':
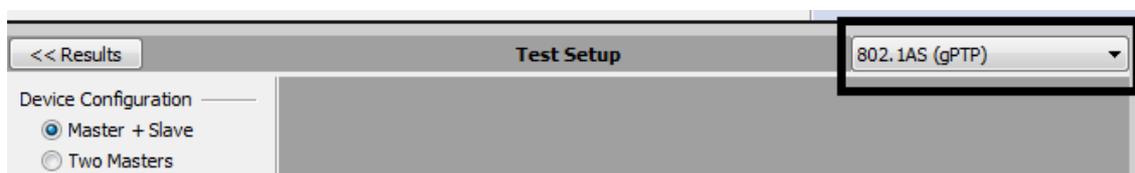
To enable specific test modes and measurements for 802.1AS devices, you can now select *Time Aware Bridge* and *Time Aware End Station* from the *Test Configuration* drop-down menu:
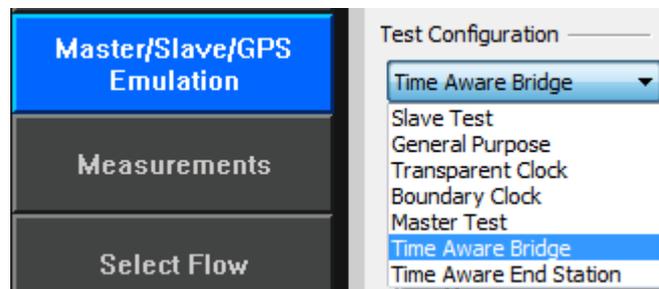
With Master/Slave Emulation running, CAT can then be launched to display measurement metrics.

For Time Aware Bridges and End Stations, 1pps Time Error can be displayed and analysed.

For Time Aware Bridges, in addition to specific PTP Time Error and Peer-to-Peer performance measurements (See 18X Release Notes for more details), there are also additional Rate Ratio metrics to determine the accuracy of frequency offset measurement by the DUT.

NRR Accuracy analyses the difference between actual and DUT estimated Neighbour Rate Ratio. By default, Pass/Fail check to the standards-defined limit of 0.1ppm is active.

NRR (Actual) displays the actual Neighbour Rate Ratio, determined using the Master timebase as reference. As the period over which Rate Ratio is determined can vary by implementation, it is possible to choose the number of packets over which the value is derived:

NRR (DUT) displays the estimation of Rate Ratio as calculated by the DUT (calculated from the CumulativeScaledRateOffset field).

CSRO Delta Shows the change a DUT makes to the CumulativeScaledRateOffset message field.

In addition to these performance measurements, you can stress test the DUT by adding network effects such as delay variation and packet corruptions, as well as setting various values for CorrectionField, CumulativeScaledRateOffset, etc. into the DUT.

3.2 PTP Field Verifier (PFV): gPTP profile (802.1AS)

In addition to existing PTP profile and custom options, PFV can now be used to analyse captured protocol exchanges and indicate Pass/Fail to IEEE 802.1AS - gPTP profile. All PFV features such as automatic highlighting of non-compliance and report generation capability are available. For more information on PFV, please see 18X Release Notes.

4 Enhancements to CAT

4.1 Trace Overlay

To allow greater flexibility to compare and contrast results from different independent test runs, CAT can now export a 'trace' format. This can then be reimported and overlayed with other traces to create a user-defined single view of relative performance:


When choosing '*Export*' for loaded data, there is now the option to choose a Trace export, rather than a source data or table summary export.

The source data and, if relevant, the derived metric to export can then be chosen. There are options to export the full set of data points for the chosen plot or a reduced data set, in either .csv or .txt format.
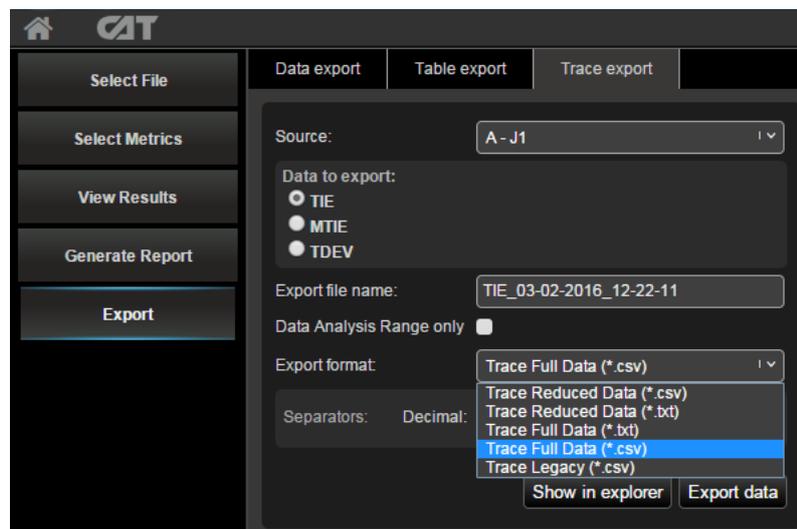
When importing, you can choose to import a trace file rather than a standard file. This data will be displayed in an independent 'Trace' tab. Any compatible trace files (i.e. that can be displayed in the same context) can then be imported and displayed as an overlay.
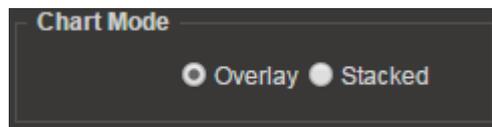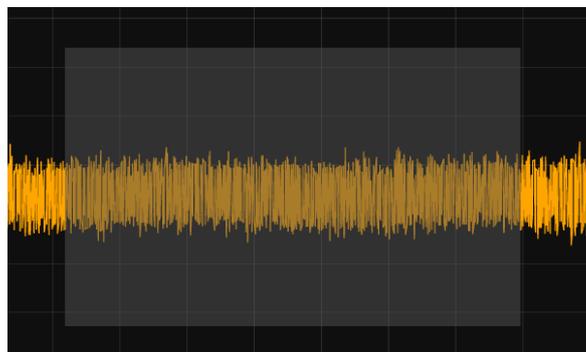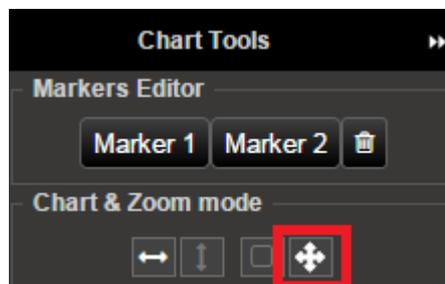

4.2 Box Zoom

To automatically zoom to an area of interest, you can now select using Box Zoom. From *Chart Tools*, select the *box* icon:
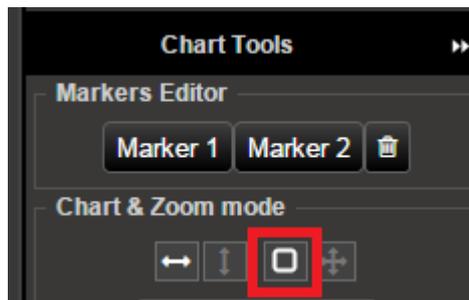
then left click and drag to highlight the area of interest:

Once zoomed, select the *pan* icon, to allow the data to pan by left clicking and dragging.

Appendix A: Software Advisory Notes

- Wireshark version: use version 1.4.9 supplied on Paragon-X installation CD. Later versions may appear to work but could cause problems in some applications.

- In OAM operating mode, the front-panel 10MHz reference output signal is unavailable. Use a BNC T-piece to tap the input reference clock to the Paragon-X.

- In PTP (1588) operating mode, multi-flow replay, generating a variable delay latency profile with magnitude >9,000us may generate unintended sequence errors.

- Port 2 link must be up (Rx connection in place to port 1 Tx) in order to allow Port 2 Tx to function in Packet Generation mode.

- Script recorder does not support manual setting of filters through 'flow filter' in Through Mode operation. This can be addressed by saving filter settings and then recalling the saved settings in your script.

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