syn1588® Software Suite

Release Overview

Version 1.17.3 – February 29th 2024

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v1.17 2024-Q1

Overview

This release focuses on the NDIS 6.5+ Windows Driver for syn1588 PCIe Rev 2.3 NIC and future generations, major background preparations for the new syn1588 C API and Quality-of-Life and compatibility improvements.

NDIS 6.5 Windows Driver – certification pending

Based on the BETA Version of the NDIS 6.5 Driver major performance and stability improvements have been added. The driver is now in a stage that the Windows certification can be concluded in the upcoming weeks. This driver will also be required for the upcoming syn1588 C API (and therefore Python or C++ access to syn1588 hardware).

syn1588 C API

Work on the new API has reached a main milestone in integration of all central hardware features. Documentation and some optional features are still in development and internal tests for the next release will focus on this API. The current release does include these sources and utilizes a few functions for internal uses. Source exports will also expose this API but it is not stable yet.

Quality-of-life and compatibility

Due to the increasing product range the firmware update process was streamlined to allow automatic firmware and product matching.

The Linux driver has been further expanded to support a multitude of different older Linux distributions and support for the newest LTS Kernel 6.1. This and other compatibility improvements are listed in the OS support documentation accompanying the current document.

Issue reports, workarounds and patch sets

Starting with this release we will add short reports detailing specific issues. These reports will contain the scope of the issue, trigger and effect, and potential workarounds. For source code customers we will make patch sets available based on the last release to make selective updating of older code possible.

v1.16 2022-Q4

Overview

This release focuses on the new syn1588 PCIe Rev 2.3 NIC.

syn1588 Updater

The old syn1588 NIC Updater GUI is no longer part of the syn15888 Software Suite and will be replaced in a future release.

At this time the syn1588 command line utility can be used to update all syn1588 PCIe NICs (Rev2.0/2.1 and 2.3) as well as the syn1588 Dual NIC.

syn1588 Linux module v2.16

The new syn1588 Linux module replaces the old v1.x module. It is required to operate the new syn1588 PCIe Rev 2.3 and also supports Rev 2.0 and Rev 2.1 NICs.

syn1588 C API

This release provides a basic C API for access to syn1588® hardware (e.g., syn1588® PCIe NIC).
This C API requires the syn1588® PCIe Linux driver v2.x and upcoming new Windows driver (based on the current NDIS 6.3 BETA driver) for operation. In upcoming releases this will be expanded so that it can fully replace the current C++ based API. It will provide an ABI-stable interface to the syn1588® hardware and in future releases will be delivered as pre-compiled library for easier integration into user applications.

v1.15 2022-Q1

Overview

This release focuses mainly on the finalization of the new log system, internal improvements to the syn1588® Software Suite source code and new driver support for Windows.

New Logger

The PTP logger introduced with the last release restructures the log output verbosity levels and message content. This release finalizes this restructuring, many of the informal messages have been reevaluated and moved to higher verbosity levels (i.e., "debug") to provide a cleaner and still informal output on the less verbose output level "info".

Windows driver: Beta version of new NDIS 6.3 driver

To prepare for the new Windows infrastructure for native PTP support, we have been working on an updated windows driver based on NDIS 6.3.
In the long run, this driver will replace the current NDIS 5.x driver for Windows 10 (Server 2016) and newer systems.
For this release we will provide the new driver as beta version for early exploration. Final tests and certification will commence until the next release.

Linux module: syn1588® technology, PCIe NIC, Dual NIC

The syn1588® Linux module compatibility has been updated and is now available as rpm package for easier installation and maintenance in SUSE based Linux systems

Compatibility for Linux Kernel 5.15 has been added.

v1.14 2021-Q4

Overview

This release focuses on the integration of a new log system for the syn1588® Software Suite and further streamlining of the syn1588® PCIe NIC and Dual NIC Linux module for Linux.

New Logger

The new PTP logger is a complete re-work of the existing logging class. The new default implementation utilizes the libfmt library v8.0.1 which provides a rich feature-set for formatting log output and is part of the C++ Standard 2020.

With this new logger a connection ("log sink") to common OS loggers has been added. The Event Logger for Windows OS and syslog for Linux OS.

You can find a detailed description in the new document "syn1588_upcoming_changes", which also includes a roadmap and migration recommendations for moving from the old to the new logger.

Linux module: syn1588® technology, PCIe NIC, Dual NIC

The syn1588® technology, which incorporates the syn1588® Software Suite, can also be applied to non-standard systems (SoC FPGAs) that are Linux based. The Linux module has been generalized to better support devices utilizing a device tree (SoC FPGAs).

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This update also adds

- A basic PHC interface to the syn1588® hardware clock, this feature will be extended in future releases

- A module parameter to configure a syn1588® Dual NIC to use a common hardware clock for both interfaces or two independent hardware clocks (default)

- A module parameter to silence the SMA outputs of a syn1588® PCIe Single NIC or Dual NIC

Redundant Clock Synchronization Update

The syn1588® utility redSync can now utilize a syn1588® PCIe Dual NIC for redundant synchronization to two PTP Leaders. For this support, a kernel module parameter can be used to configure the two Dual NIC interfaces to use a common hardware clock.

Quality of life improvements

- The syn1588® Linux module is now available as rpm package for easier installation and maintenance in RedHat and CentOS based Linux systems
- A syn1588® Linux module kernel parameter can be used to silence the SMA outputs at system start
- The syn1588® Software Suite components started as Windows service can now be accessed via the shared memory API from a user application. This is disabled by default. Refer to AN021 for more information.

v1.13 2021-Q2

Overview

This release focuses on PTP v2.1 and quality of life improvements throughout all components of the syn1588® Software Suite. Especially interesting for source code customers is the new, state-of-the-art build environment based on cMake and the shift to C++ 2011. Especially interesting for Windows and Linux platform integrators are the different installation packages for easier setup and maintenance of the syn1588 Software Suite.

PTP v2.1

With the release of the new IEEE1588 standard specifying PTP v2.1 we have been busy implementing and extending the support of the syn1588® PTP Stack.

In this release you get access to PTP v2.1 for early exploration. We are currently testing different scenarios and use-cases of PTP v2.1 and PTP v2.0 interoperation and target the next release (Q3 2021) for finalizing PTP v2.1 support.

You can find a detailed list of PTP v2.1 options targeted for future releases in the syn1588® Release Roadmap. If you require specific features, please contact us, so we can integrate your request in the roadmap.

Redundant Clock Synchronization Update

We introduced the syn1588® utility redSync with release v1.12.

The current release features an extension to this utility, providing redundant synchronization of the system clock. It operates together with the syn1588® lSync utility and two physical interfaces (either syn1588® PCIe NIC or other IEEE1588 capable interfaces).

Quality of life improvements

- The syn1588® Software Suite is now available as Debian package for installation in Linux systems and as package for simpler installation in Windows systems
- The syn1588® PCIe NIC and Dual NIC Linux module is now available as Debian package for easier installation and maintenance in Linux systems
- Updated and added configuration files for all supported PTP profiles

New features

- syn1588® utilities and PTP Stack can now select the syn1588® hardware by clockID

- Explicit syn1588® hardware time stamper selection, this allows users high-level access to the different timestamping units of the syn1588® technology

For current and future source code customers

cMake build environment

The switch from the old, proprietary build environment to industry standard cMake will allow faster and friction less integration of the syn1588® software suite into existing and new projects and improve the syn1588® software suite release cycle.

C++ 2011 language standard

C++ 2011 support has been available for almost 8 years for both GCC (4.8.1) and Visual Studio (2013), Hence, we are incrementally adding C++ 2011 language features in our rework of the syn1588® software suite libraries.

v1.12 2020-Q3

Overview

This release focuses on redundant PTP clock synchronization and introduces the redSync utility for this mode. In addition, a new Linux driver for the syn1588® PCIe NIC is introduced which is compatible with the current syn1588® PCIe NICs as well as the brand new syn1588® Dual NIC.

redSync utility

This new utility allows the user to run two syn1588® PTP stack instances in parallel. Each synchronizing with a different PTP Master over a common syn1588® PCIe NIC interface. This utility can be configured to use the first syn1588® PTP stack that is in-sync with its PTP Master or to compare both syn1588® PTP Stacks (and their Masters) via the PTP BMCA and select the better PTP Master. The utility will monitor both syn1588® PTP stacks during operation. It will seamlessly switch to the backup syn1588® PTP Stack when the primary syn1588® PTP Stack connection or the quality of its PTP Master degrades.

Take a look at the syn1588® User Guide for a detailed overview of the redSync utility and its recommended application or contact Oregano Systems (contact@oregano.at or sales@oregano.at) for more details.

syn1588 PCIe NIC driver for Linux

We introduce the new syn1588® PCIe NIC driver for Linux which provides the usual support for the syn1588® PCIe NIC. In addition, this driver supports the brand new syn1588® Dual NIC, i.e., one will be able to use both ports of the syn1588® Dual NIC like the well-known syn1588® PCIe NIC. This will allow you a seamless integration of the syn1588® Dual NIC in your current applications. Upcoming releases will incrementally introduce advanced features of the syn1588® Dual NIC. This driver directly replaces the current syn1588® PCIe NIC driver.

v1.11 2019-Q4

Overview

This release focuses on documentation of the user APIs. In addition, preparations for redundant clock synchronization have been added to the software suite. This involves

- access to a second timestamping unit on the same interface of a syn1588® PCIe NIC device
- enabling/disabling control of the clock for a PTP Stack

v1.10 2019-Q3

Overview

This release focuses on 32-Bit and 64-Bit system compatibility. It further includes improvements to the PTP Security implementation and various bugfixes and smaller improvements.

v1.9 2019-Q2

Overview

The 2019 v1.9 Release of the syn1588® software suite is mostly concerned with increasing the performance and the improvement of our documentation. The new feature introduced with this release is an implementation of the PTP v2.1 Security protocol, which is described below.

PTPv2.1 Security

The first feature from the upcoming PTP Version 2.1 implements the PTP Security protocol as specified in IEEE1588-2018. The PTP Security protocol provides an effective way to secure PTP traffic from Man-In-The-Middle attacks, Replay attacks as well as malicious Master spoofing. See the Application Note *an_security.pdf* for further details.

v1.8 2019-Q1

Overview

The most interesting improvement introduced with the Q1-2019 release of the syn1588® Live System is the new feature Dynamic Port Re-configuration, which will be described below. Apart from that, the current release features a couple of minor bugfixes relating to different parts of the syn1588® software, such as the parser, offset compensation, and improvements in the handling of Layer2 mode.

Dynamic Port Re-configuration

The Precision Time Protocol has introduced the concept of PTP ports. During start-up of the syn1588® PTP Stack a physical port is linked to a PTP port. In previous versions of the syn1588® PTP Stack this was done statically. Any changes in the physical port required to stop the syn1588® PTP stack and re-invoke it after making the changes for the Ethernet port

Dynamic Port Re-configuration allows to user to modify the Ethernet port (i.e. change the IP Address) or link a different Ethernet port to a specific PTP port) during runtime of the syn1588® PTP Stack. The reconfiguration is done via the Shared Memory API.

For further information on how to use the Dynamic Port Re-configuration feature, please take a look at the example program in the Shared Memory API export.

Further Information

You are looking for further information about our syn1588® product line-up? Please contact Oregano Systems support! We will be pleased to provide you all the required information.

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