



syn1588® Software Suite

# Release OS Support

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## General

We test the syn1588 Software Suite with the current OS/distributions **marked green** in the following tables.

OS/distributions that are not tested with the current release but are still supported and/or will be phased-out by the OS maintainer themselves soon are **marked yellow**.

OS/distributions **marked orange** are not tested with the current release and may be moved out of support with upcoming releases.

Support for newer versions of OS/distributions will be added with upcoming releases.

If you require support for unlisted OS/distributions please contact us ([support@oregano.at](mailto:support@oregano.at)).

## Hardware Overview

### syn1588 PCIe NIC Rev 2.0 and 2.1

These devices are supported by all Linux modules and by the NDIS 5.0 Windows driver. These devices are no longer available for purchase and will be removed from this document in the next iteration.

### syn1588 PCIe NIC Rev 2.3

These devices are supported by the Linux v2.x and the NDIS 6.x Windows driver and are currently available for purchase.

The Rev 2.3 NIC have gone through major firmware changes which break the compatibility of newer Firmware with the older NDIS 6.3 Windows driver. The syn1588 live system delivered together with the sny1588 PCIe NIC will always contain the compatible Windows driver. If you are uncertain of the Firmware version and the Windows driver is not loaded for the device, please contact our technical support via [support@oregano.at](mailto:support@oregano.at).

### syn1588 PCIe Dual NIC Rev 1.0

These devices are supported by the Linux v1.15 module and have no support for Windows.

### syn1588 technology for SoC FPGAs

The syn1588 technology that is implemented in the syn1588 PCIe devices is a sub-set of the syn1588 technology. The syn1588 technology is also be implemented in the different SoC FPGA families of various FPGA vendors (or non-SoC FPGAs with PCIe interface).

For these implementations the table for the v2.x Linux Module is applicable and integration in a Yocto-based Linux is possible for both the Linux module as well as the syn1588 Software Suite user space applications. As Yocto typically utilizes the mainline Linux kernel the corresponding entries of the table apply.

## Linux

### syn1588 Linux module v1.x vs. v2.x

Starting with release v1.16 of the syn1588® Software Suite we provide a completely new Linux driver v2.x that replaces the old Linux driver v1.x. v2.16 of this new Linux module provides full access to the syn1588® PCIe NICs of Revision 2.0, 2.1 and the new syn1588® PCIe NIC of Revision 2.3.

### v2.x Linux Module – Rev 2.0+

syn1588® Linux module		Distribution	Kernel	syn1588® Hardware			Architectures <sup>(4)</sup> and other remarks
from	till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC Rev 1.0	
V2.x			6.2+				planned
v2.17	ongoing	Mainline Kernel (e.g., Debian 12.0)	6.1	yes	yes	no	amd64, aarch64, armv7
v2.16	ongoing	Mainline Kernel	5.17-5.19	yes	yes	no	amd64, aarch64, armv7
v2.17	ongoing	Mainline Kernel	5.15	yes	yes	no	amd64, aarch64, armv7
v2.16	ongoing	Debian “Bullseye” 11.x	5.10	yes	yes	no	amd64, aarch64, armv7
v2.16	ongoing	Ubuntu 20.04.x LTS	5.4/5.8	yes	yes	no	amd64, aarch64, armv7
v2.17	ongoing	Mainline Kernel <sup>(5)</sup>	4.14, 4.19	yes	yes	no	amd64, aarch64, armv7
v2.17	ongoing	Redhat/CentOS Linux 8.x <sup>(1)</sup>	4.18- *(5)	yes	yes	no	
v2.17	ongoing	Redhat/CentOS Linux 7.x <sup>(2)</sup>	3.10.0- *(5)	yes	yes	no	

syn1588® Linux module		Distribution	Kernel	syn1588® Hardware			Architectures <sup>(4)</sup> and other remarks
from	till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC Rev 1.0	
v2.16	ongoing	Redhat/CentOS (Linux) 6.10 <sup>(1)</sup>	2.6.32- *(5)	yes	yes	no	
n.a.	n.a.	CentOS Stream <sup>(3)</sup>	...	no	no	no	...
on demand	on demand	other distributions	...	possible	possible	no	Available on demand

<sup>(1)</sup> ... various Linux distributions use custom kernels containing backported features from newer mainline Linux Kernels. This can cause unexpected compatibility issues for newer versions of distributions and can make or break the compatibility if kernel updates are applied. The Kernel version listed here depicts the Kernel version as given by the respective distribution.

<sup>(2)</sup> ... CentOS 7.x 64 Bit systems are incompatible with the default build of the syn1588® Software Suite, we can provide a build on-demand

<sup>(3)</sup> ... CentOS Stream is not supported by default, it is possible that the current driver supports a specific version of CentOS Stream but this compatibility can break due to the nature of CentOS Stream. Note that CentOS Linux 8.x and CentOS Stream 8.x are not the same.

<sup>(4)</sup> ... we typically support amd64, x86, aarch64, armv7 architectures for the Software Suite, some architecture/kernel combinations are actively tested and referenced accordingly, x86 is no longer actively tested

<sup>(5)</sup> ... The patch versions of the Kernel may differ significantly from each other which can break compatibility.

## v1.x Linux Module – Rev 2.0/2.1

syn1588® Software Suite		Distribution	Kernel	syn1588® Hardware		Support
from	till			PCIe NIC Rev 2.0/2.1	Dual NIC <sup>(3)</sup> Rev 1.0	
v1.15	ongoing	Ubuntu 22.04.0 LTS	5.15	yes	yes	Full support
v1.14	ongoing	Ubuntu 20.04.4 LTS	5.13	yes	yes	Full support
v1.14	ongoing	Ubuntu 20.04.3 LTS	5.11	yes	yes	Full support
v1.13	ongoing	Ubuntu 20.04.2 LTS	5.8	yes	yes	Full support
v1.13	ongoing	Ubuntu 20.04.1/0 LTS	5.4	yes	yes	Full support
v1.13	ongoing	Ubuntu 18.04.x LTS	4.15 <sup>(1)</sup> ... 5.4	yes	yes	Full support
v1.11	ongoing	Ubuntu 16.04.x LTS	4.4 ... 4.15 <sup>(1)</sup>	yes	yes	Full support
v1.3.2	on demand	Ubuntu 14.04.x LTS	3.13 ... 4.4	yes	yes	Available on demand
v1.13	on demand	Ubuntu pre-14.04	2.26.32	possible	possible	Available on demand
v1.15	ongoing	SUSE 15 SP3 <sup>(2)</sup>	5.3	yes	yes	Full support
n.a.	n.a.	CentOS Stream <sup>(5)</sup>	...	no	no	...
v1.13	ongoing	CentOS Linux 8.x <sup>(5)</sup>	4.18-*	yes	yes	Full support

syn1588® Software Suite		Distribution	Kernel	syn1588® Hardware		Support
from	till			PCIe NIC Rev 2.0/2.1	Dual NIC <sup>(3)</sup> Rev 1.0	
v1.2.374	on demand	CentOS Linux 7.x <sup>(2)(4)</sup>	3.10.0-*	possible	possible	Available on demand
v1.0	on demand	CentOS (Linux) 6.x <sup>(2)</sup>	2.6.32-*	yes	yes	Available on demand
v1.0	on demand	CentOS (Linux) 5.x <sup>(2)</sup>	2.6.18-*	no	no	Software timestamping
v1.14	ongoing	Debian “Bullseye” 11.x	5.10	yes	yes	Full support
v1.13	ongoing	Debian “Buster” 10.x	4.19 <sup>(1)</sup>	yes	yes	Full support
v1.13	ongoing	Debian “Stretch” 9.x	4.9	yes	yes	Full support
v1.2.419	on demand	Debian “Jessie” 8.x	3.16	yes	yes	Available on demand
v1.2.x	on demand	Debian pre-8.x	2.26.32+	possible	possible	Available on demand
v1.2.253	on demand	Fedora 13+	2.26.32+	possible	possible	Available on demand

<sup>(1)</sup> ... a missing check in a Linux module for CvP (Configuration via Protocol) FPGA handling caused issues when operating a syn1588® PCIe NIC, you may experience these issues in systems with Kernel 4.14 ... 4.20 (fixed with 5.0), the Application note: “**an023\_issues\_with\_linux\_4\_14\_and\_altera-cvp\_module**” describes this further and provides a solution.

- (2) ... various Linux distributions use custom kernels containing backported features from newer mainline Linux Kernels. This can cause unexpected compatibility issues for newer versions of distributions. The Kernel version listed here depicts the Kernel version as given by the respective distribution which is NOT equivalent to the mainline Linux Kernel.
- (3) ... The syn1588® Dual NIC support has been added with Release v1.12 of the syn1588® Software Suite
- (4) ... CentOS 7.x 64 Bit systems are incompatible with the default build of the syn1588® Software Suite, we can provide a build on-demand
- (5) ... CentOS Stream is not supported by default, it is possible that the current driver supports a specific version of CentOS Stream but this compatibility can break due to the nature of CentOS Stream. Note that CentOS Linux 8.x and CentOS Stream 8.x are not the same.

## Main Linux Distributions

The main line syn1588® Software Suite supports 32-Bit and 64-Bit Linux distributions. The syn1588® Software Suite is currently delivered in a USB LiveSystem based on Ubuntu 20.04 LTS (64-Bit) with Kernel 5.4. Some older Linux distributions are still supported but come with limitations and may be phased-out for future versions of the syn1588® Software Suite.

The default syn1588® Software Suite is statically linked with musl to provide support for various environments. Other flavors can be made available on-demand.

If you plan to use the syn1588 products together with unlisted Linux distributions and you encounter errors during installation of the drivers, please get in contact with us (support@oregano.at). When you do so, please provide information about the actual Linux distribution (version, service pack) as well as that versions Linux Kernel. Some distributions provide rolling releases or “stream” releases (e.g., CentOS). We do not support these releases directly, i.e., via the syn1588 .deb or .rpm packages, but provide the syn1588 driver sources. We can provide case-by-case support, so get in touch with our support team via support@oregano.at.

**@Available on-demand:**

Please note that on-demand Kernel support can involve significant engineering effort and will be evaluated together with your demand of syn1588 PCIe NICs case-by-case.

## Custom Linux

We support 32 Bit distributions as well as these are typically needed for Linux based SoC systems (e.g., Yocto or Petalinux). If you plan to use syn1588® Technology in your custom SoC/Linux system, we recommend that you enable the following kernel configurations for a seamless integration:

- Linux Device Tree  
SoC/Linux based systems rely on the Linux Device Tree to describe the system and provide proper information to device modules. We can provide support for integrating the syn1588 technology device modules in your Linux Device Tree based system.
- SO\_TIMESTAMPING (Linux Kernel 2.26.32+)  
This interface is provided by the Linux kernel as general interface for software and hardware Ethernet packet timestamping. If you plan to use our syn1588® PCIe NIC or Dual NIC in your system, we recommend keeping this feature in the kernel. If you want to use the syn1588® IP cores, we can help you in setting up the system for operation with the syn1588® Software Suite.
- Use without syn1588® hardware technology, for optimal performance you will need an IEEE 1588 capable network device,  
to be more precise:
  - SO\_TIMESTAMPING support in the network device  
(SOF\_TIMESTAMPING\_RX\_HARDWARE and SOF\_TIMESTAMPING\_TX\_HARDWARE).
  - PHC support in the network device
- PHC (Physical Hardware Clock)  
This interface is provided by the Linux kernel (3.0+) as general interface to a hardware clock. If the syn1588® Software Suite is used together with syn1588® PCIe NIC, Dual NIC, or IP Cores this is not required.

## Windows

### syn1588 Windows driver NDIS 5.0 vs. NDIS 6.x

The new syn1588 PCIe Rev 2.3 NIC is and will be only supported by the new Windows NDIS 6.x drivers.

To prepare for the new Windows infrastructure for native PTP support, we have been working on an updated windows driver based on NDIS 6.5.

In the long run, this driver will replace the current NDIS 5.0 driver for Windows 10 (Server 2016) and newer Windows systems. We currently provide the new driver as BETA version for early exploration. Final tests will commence in the background and a Microsoft-certified driver will be provided in future releases.

Note that the BETA driver should not be used for production and is currently not provided as Microsoft-certified driver.

For testing this BETA driver, please update your Windows 10 Version to at least 21H1 19043.1706. It is necessary to enable the use of uncertified drivers in the Windows system, please refer to the Quick start guide delivered with a syn1588 PCIe NIC for the corresponding procedure.

### NDIS 5.0 Windows driver – Rev 2.0/2.1

syn1588® Software Suite		Windows version (32/64 Bit)	Latest Build	syn1588® Hardware			Support for Windows <b>without network layer 2 VLAN operation</b>
from	till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC <sup>(1)</sup> Rev 1.0	
On demand	On demand	Windows Server	18362+	possible	no	no	Qualification on demand
v1.6-2	ongoing	Windows Server 2019	17763	yes	no	no	Full support

v1.4	ongoing	Windows Server 2016	14393	yes	no	no	Full support
v1.3.2	ongoing	Windows Server 2012	9600	yes	no	no	Full support <sup>(2)</sup>
v1.0	ongoing	Windows Server 2008	7601	yes	no	no	Full support <sup>(2)</sup>
v1.0	v1.2.419	Windows Server 2003	3790	possible	no	no	Old version, on demand
v1.4	ongoing	Windows 10	19043 (21H1)	yes	no	no	Full support
v1.3.2	ongoing	Windows 8.1	9600	yes	no	no	Full support <sup>(2)</sup>
v1.3.2	ongoing	Windows 8	9200	yes	no	no	Full support <sup>(2)</sup>
v1.0	ongoing	Windows 7	7601	yes	no	no	Full support for Windows <sup>(2)</sup>
syn1588® Software Suite		Windows version (32/64 Bit)	Latest Build	syn1588® Hardware			Support for Windows <b>without network layer 2 VLAN operation</b>
from	till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC <sup>(1)</sup> Rev 1.0	
v1.0	v1.2.419	Windows XP	3790	possible	no	no	Old version, on demand

<sup>(1)</sup> ... the Dual NIC is currently only available for Linux based systems, contact Oregano Systems if you require support for Windows

<sup>(2)</sup> ... there is no support for signed drivers for these OS versions. Secure boot must be disabled to use the driver on these OS versions. Windows 7 users might need to install → [KB3033929](#).

<sup>(3)</sup> ... the syn1588® PCIe Rev 2.3 NIC is only available as SFP NIC

### NDIS 6.3 Windows driver – Rev 2.3

syn1588® Software Suite		Windows version (64 Bit)	Latest Build	syn1588® Hardware			Support for Windows <b>network layer 2 operation for PTP on-demand</b>
from	till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC <sup>(1)</sup> Rev 1.0	
v1.15	v1.16	Windows 10+ 64 Bit	21H2+	no	yes	no	BETA

- (1) ... the Dual NIC is currently only available for Linux based systems, contact Oregano Systems if you require support for Windows
- (2) ... there is no support for signed drivers for these OS versions. Secure boot must be disabled to use the driver on these OS versions.
- (3) ... the syn1588® PCIe Rev 2.3 NIC is only available as SFP NIC

### NDIS 6.5 Windows driver – Rev 2.3+

syn1588® Software Suite		Windows version (64 Bit)	Latest Build	syn1588® Hardware			Support for Windows network layer 2 operation for PTP on-demand
from	Till			PCIe NIC Rev 2.0/2.1	PCIe NIC Rev 2.3	Dual NIC <sup>(1)</sup> Rev 1.0	
v1.17	ongoing	Windows 10+ 64 Bit	21H2+	no	yes	no	BETA

<sup>(1)</sup> ... the Dual NIC is currently only available for Linux based systems, contact Oregano Systems if you require support for Windows

## Limitations for Windows systems

The support of Windows, i.e., no network layer 2 VLAN operation, will reduce the feature-set of the PTP stack on a Windows system. Some PTP Profiles require operation over network layer 2 VLANs, i.e., Power profiles (C37.238-2011 and C37.238-2017) and are not supported on a Windows-based system.

Starting with v1.17 we can provide network layer 2 support for PTP on-demand and are planning to integrate this support with v1.18.

Please refer to the Application Note “**an006\_ptp\_profiles**” to get a full overview of the PTP profiles supported by the syn1588® Software Suite.

## Other OS

The syn1588® Software Suite has been ported to various hardware platforms and operating systems. A porting guide, a brief overview of the different components, estimations, and further information is given in the Application Note “**an016\_porting\_syn1588\_ptpstack**”.

## 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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