STORDIS

The Open Networking Expert

ADVANCED PROGRAMMABLE SWITCH

The STORDIS BF2556X-1T is the world´s first fully programmable 25GbE Barefoot Tofino based switch with built in time synchronisation, supported speeds of 1/10/25/40/50/100 GbE, a powerful CPU and dedicated control plane ports.

#SWITCH2OPEN

Key Features

- 1588v2 PTP Time Synchronization
- Tofino Data Plane Programmability with P4
- Supported Speeds from 1GbE to 100 GbE
- Dedicated SDN Controller Ports
- Premium Hardware Components
- ONIE Bootloader Preloaded

BF2556X-1T
Advanced Programmable Switch

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Specifically designed to measure up to the high requirements of today's extensive use of data traffic, the STORDIS Advanced Programmable Switches (APS series) offer an unprecedented solution based on a P4 programmable Barefoot Tofino™ chip set. The switches are the first Barefoot Tofino™ units supporting PTP time sync and 1Gb throughput to deliver significant business advantage in various fields of the industry. The exceptional open hardware architecture of the switches and the high-level performance provide a wide spectrum of possibilities.

| 16x
1/10/25GbE | 16x
10/25GbE | 16x
10/25GbE | 8x
40/50/100GbE |

48x
1/10/25GbE
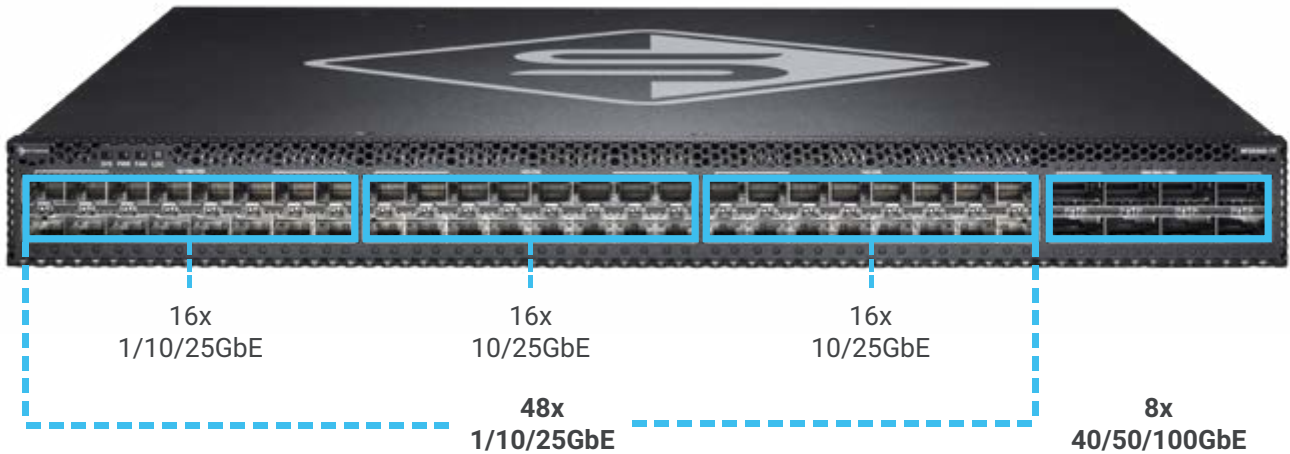
Technical Specifications

48x25G + 8x100G in 1RU Chassis
Port 1 - Port 16: Support 1G/10G/25G
Port 17 - Port 48: Support 10G/25G

Broadwell-DE 8-core @2.0GHz
32G DDR4
128G SSD

Barefoot Tofino 2.0Tbit

1588v2 PTP Time Synchronization

Software Supported
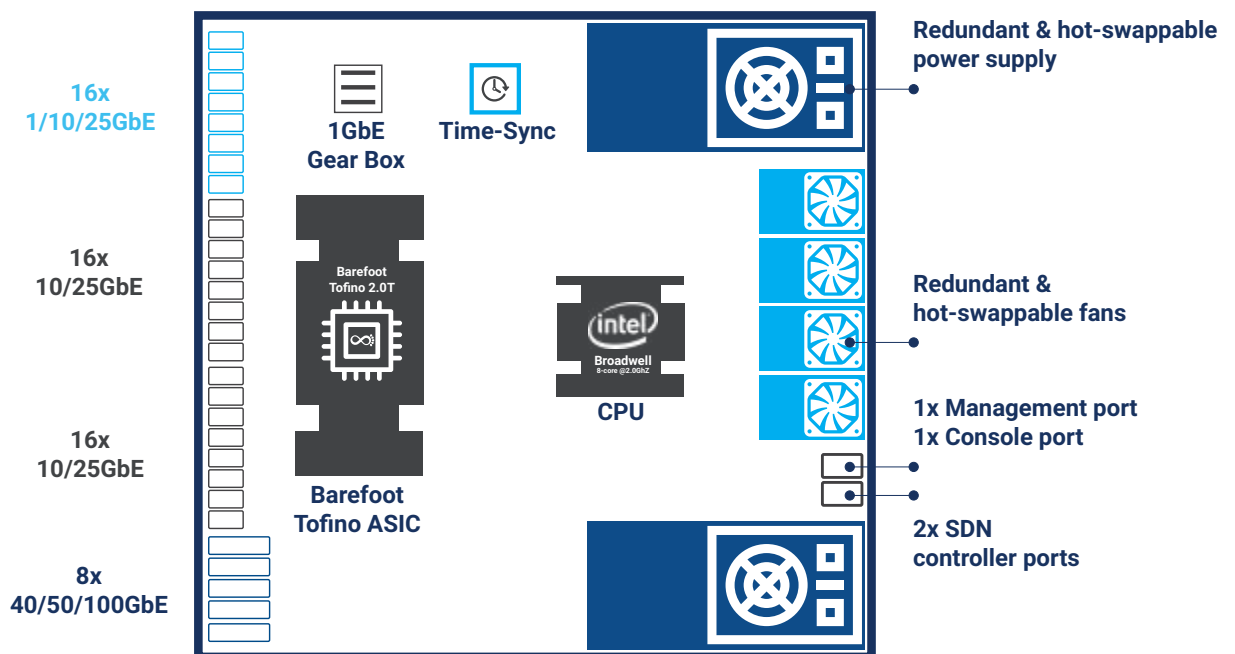
| NoviWare™ | SOFTWARE DEFINED FABRIC™ | Stratum | ONL | SONiC | UBUNTU |

🕐 1588v2 PTP Time Synchronization

The STORDIS APS series are the first to deploy a Barefoot Tofino™ chip set with a time synchronization function, which is an essential capacity in the field of telecommunication as well as media and entertainment. This feature enables uncompressed transmission of video streams via live IP studio and precise timestamping. Low latency is particularly crucial for high frequency trading as well. The relevant onboard chipset supports IEEE 1588v2 time protocol with a resolution of 4 nanoseconds and enables the switch to act as either transparent or both boundary and master clock. The frequency lock by oven-controlled oscillator (OCXO) provides a precise frequency locking among all devices within the network.

Essential use cases: Live IP Studio | Synchronization of media streams | Mobile network cell handover | Network edge | Precise timestamping (HFT legal compliance, telemetry)

16x
1/10/25GbE

1GbE
Gear Box

Time-Sync

Redundant & hot-swappable
power supply

16x
10/25GbE

Barefoot
Tofino 2.0T

Barefoot
Tofino ASIC

intel
Broadwell
8-core @2.0Ghz

CPU

Redundant &
hot-swappable fans

16x
10/25GbE

1x Management port
1x Console port

2x SDN
controller ports

8x
40/50/100GbE

🔲 Tofino Data Plane Programmability with P4

The innovative technology of the Barefoot Tofino™ chipset offers unlimited open networking possibilities by the use of the data plane programming language P4, featuring in-band telemetry and mega scale data center switching. P4 is easy to access, it enables hardware offloading of protocols, arbitrary tagging of packets and controlling behavior based on individual data pattern matches. Hyperscalers benefit from layer 4 load-balancing and a network packet broker. The flexible but highly specific packet processing pipeline provides the ability to create own protocols and add individual packet metadata. Integrated on the fly encapsulation and decapsulation is efficiently used in the field of telecommunications. The switch has a non-blocking switching capacity of 2.0 Tb/s and is capable of complex protocol processing at wire-speed.

Essential use cases: On the fly encap/decap (tunneling) | Offloading of link control and monitoring protocols (e.g. PPPoE, BFD) | Network packet broker (on any OSI layer) | In-band Network Telemetry | Broadband Network Gateway | Load-balancing | Seamless switching of video streams | Provider edge: convert between MPLS and IP

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Advanced Programmable Switch

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🖥 Supported Speeds from 1GbE to 100 GbE

To offer nearly unlimited flexibility, the switches support all available speeds from 1GbE to 100GbE. To particularly meet the requirements of broadcasters and telecommunication providers, a multitude of devices supporting only 1Gb can be connected via integrated 1Gb SFP ports.

Furthermore, the switches provide multiple SFP+ ports supporting 10Gb and 25Gb, and 8 uplink ports supporting 10Gb, 25Gb and 50Gb with breakout, and additionally 40Gb and 100Gb, and is not limited to high-speed interfaces.

Essential use cases: Audio equipment | PTP Grandmaster | KVM switches | Leaf/Edge data center switch

⊕ Dedicated SDN Controller Ports

The versatile switch offers multiple management options to attain maximum functionality predestined for software defined networking. Next to the Ethernet out-of-band management port and one console port (RS232), it uniquely provides two dedicated SFP cages for either management or connecting SDN controllers. The highly available SDN controller can be extended and modified meeting individual requirements due to a flexible controller network topology.

Essential use cases: Redundant connections to SDN controller, Slice switch into two separate logical units controlled by different SDN controllers

🖴 Premium Hardware Components

To take full advantage of the Barefoot Tofino chipset, the switches are equipped with highly efficient hardware components. Compute heavy and complex processes, such as SDN based environments and link monitoring, can be easily supported on the platform due to a powerful 8-core CPU, a large 128Gb SSD and 32Gb RAM. Redundant power supplies and hot-swappable fans ensure a continuous uptime and high availability. Reliable components are especially important for hyperscalers, providers and the telecommunication industry. The future-proof SDN-ready network design allows complex distributed control-plane and management-plane processing, and a facilitated addition of custom software.

Essential use cases: Northbound SDN controller interfaces (e.g. P4 Runtime) | GNMI, GNOI | Legacy control-plane protocols in complex network fabrics

⟳ ONIE Bootloader Preloaded

By default the switches come with an ONIE bootloader and can optionally be equipped with a pre-installed operating system. A range of leading software options are available to run on the platform, commercial variants such as NoviWare™ (NoviFlow) and SOFTWARE DEFINED FABRIC™ (Kaloom) and open source variants like Ubuntu, ONL, Stratum as well as Microsoft Sonic.

BF2556X-1T
Technical Specifications

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Product Model	BF2556X-1T
Network Ports	48x SFP28 & 8x QSFP28
Max 100GbE Ports	8
Max 50GbE Ports	16
Max 40GbE Ports	8
Max 25GbE Ports	80
Max 10GbE Ports	80
Max 1GbE Ports	16 (ports 1 to 16)
Throughput	2.0 Tbps
Packets per Second	up to 3.0 Bpps
Latency	from 600ns
Time syncronisation	transparent & boundary clock
CPU	8-core x86
System memory	32 GB
Flash storage memory	2 x 16MB
System SSD storage	128 GB
System / Packet buffer memory	22 MB
Number of pipelines	2
Management ports	1x 1G RJ45 (10/100/1000)
RS-232 serial ports	1 (RJ45)
SDN Controller / Control Plane Ports	2 x 1G SFP cages
USB ports	1
Hot-swap power supplies	2 (1+1 redundant)
Hot-swap fans	4 (N+1 redundant)
Typical/Max Power Draw	106W / 490W
Power supplies	850W max (AC), 800W max (DC)
Frequency (AC)	47Hz to 63Hz
Power supply options	AC / DC
Airflow	Port-side intake and exhaust
Rack units	1RU
Physical dimensions (WxHxD) (in cm and inches)	W43.85 H4.3 D46 cm (W17.26" 1.69" D18.11")
Weight in lbs and kgs	8.6KG (28.95 lbs) Net Weight
Rack mount kit	easy to install rail sliding kit
Boot loader	ONIE
Open source switch OS support	ONL, SONiC, Ubuntu, Stratum
Commercial switch OS support	NoviFlow's NoviWare™, Kaloom's Software Defined Fabric™
SDE	Barefoot P4 Studio™
Acoustics	67.63 dBA at 50% fan speed, 78 dBA at 70% fan speed, and 93.9 dBA at 100% fan speed
MTBF	347,890 hours
Power Supply	**1U AC power supply**
Input Voltage	100-240VAC
Typical Input Current	10 - 5A

Input Frequency	47/63Hz
Input Connector	IEC 320-C13
Efficiency (Typical)	93% Platinum
Power Supply	**1U DC power supply**
Input Voltage	40-72V DC
Typical Input Current	20A max
Input Frequency	DC
Input Connector	DA3(2P1S)-3DZS-05
Efficiency (Typical)	90%
Hardware warranty	**3 years**
Standards Compliance	
EMC	Emissions: FCC, EN55022, EN61000-3-2, EN61000-3-3 or EN61000-3-11, EN61000-3-12 (as applicable) Immunity: EN55024 Emissions and Immunity: EN300 386
Safety	UL/CSA 60950-1, EN 60950-1, IEC 60950-1 CB Scheme with all country differences
Certifications	North America (NRTL); European Union (EU); BSMI (Taiwan); C-Tick (Australia); CCC (PRC); KCC (South Korea); VCCI (Japan); Anatel (Brazil)
European Union Directives	2006/95/EC Low Voltage Directive 2004/108/EC EMC Directive 2011/65/EU RoHS Directive 2012/19/EU WEEE Directive
Property	
Operating temperature	32 to 104°F (0 to 40°C)
Non-operating (storage) temperature	−20 to 158°F (−20 to 70°C)
Humidity	5 to 95% (noncondensing)
Altitude	0 to 6000 ft (0 to 2000 m)
Specification	
Safety	UL 60950-1 Second Edition; CAN/CSA-C22.2 No. 60950-1 Second Edition; EN 60950-1 Second Edition; IEC 60950-1 Second Edition; AS/NZS 60950-1; GB4943
EMC: Emissions	47CFR Part 15 (CFR 47) Class A; AS/NZS CISPR22 Class A; CISPR22 Class A; EN55022 Class A; ICES003 Class A; VCCI Class A; EN61000-3-2; EN61000-3-3; KN22 Class A; CNS13438 Class A
EMC: Immunity	EN55024; CISPR24; EN300386; KN 61000-4 series
RoHS	The product is RoHS-6-compliant, with exceptions for leaded-ball grid-array (BGA) balls and lead press-fit connectors
Accessories	
Fan, Back to Front	FAN-1HB
Fan, Front to Back	FAN-1HF
AC PSU, Back to Front	PS-A1B
AC PSU, Front to Back	PS-A1F
DC PSU, Back to Front	PS-D1B
DC PSU, Front to back	PS-D1F
Spare Rack Sliding Kit	RSK1

Service and Support
Customer Focused Solutions

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To ensure a fully satisfying customer experience, STORDIS is committed to a high standard of quality. STORDIS guarantees a 3-year standard warranty for the applied hardware components and provides first-class support services.

For a smooth set up of the required network infrastructure, STORDIS offers on-site installations, maintenance services and full support for a customized network environment.

Following the principles of open networking, the STORDIS APS are in the process of being OCP accepted and certified. All assembly plans and specifications will be open to the public and can be found on www.opencompute.org.

Support Coverage

- Next day
- 2 to 3 business days
- Please request the current lead time
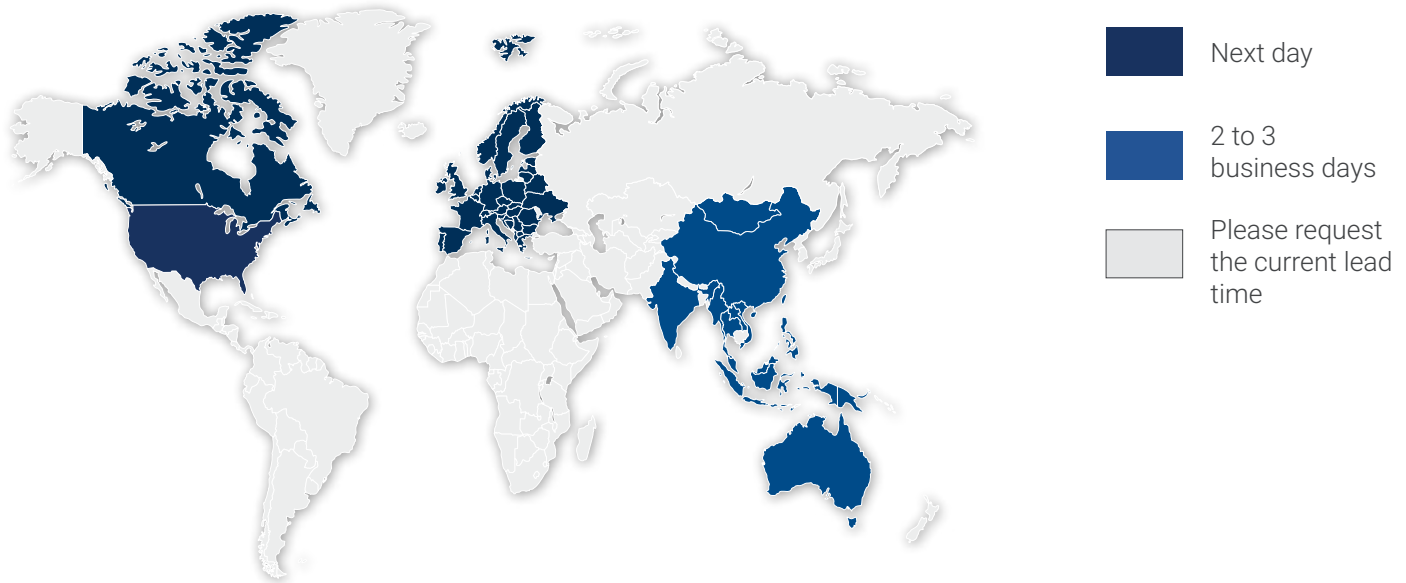
Optional Service Level Agreements

STORDIS is offering four types of Service Level Agreements as extension to our limited 3-year hardware warranty; Bronze, Silver, Gold and Platinum. All customers are supported by highly qualified STORDIS specialists or experienced, trained and certified support partners.

Support Level	Bronze	Silver	Gold	Platinum
Advanced Support Monday-Friday / 8:00 am – 5:00 pm	✔	✔	✔	✔
Advance Exchange Ship the same day to arrive the next business day.	✔	✔	✔	✔
9/5 Hotline Monday-Friday / 8:00 am – 5:00 pm	✖	✔	✔	✔
Reactive Remote Repair We remotly access your network and resolve the issue if possible	✖	✔	✔	✔
Onsite Service A certified technician will be dispatched to your location to make necessary repairs.	✖	✖	✔	✔
24/7 Hotline Monday-Sunday / 24 hours / whole year	✖	✖	✖	✔
4 hours Onsite Service A certified technician will be dispatched 4 hours after fault diagnostic to your location to make necessary repairs	✖	✖	✖	✔