

# STORDIS LAUNCHES FIRST OPTIMISED BAREFOOT TOFINO SWITCHES WITH TIME SYNCHRONISATION AND 8-CORE PROCESSING POWER

**New Advanced Programmable Switches First to Unlock the Full Potential of P4**

**OCP Global Summit, San José, CA – March 13 2019** - Open Networking experts STORDIS today announced the launch of two bare-metal switches powered by the fully programmable Barefoot Tofino ASIC. An industry first, the STORDIS Advanced Programmable Switches (APS) offer comprehensive 1588v2 time synchronisation support, as well as providing more powerful processing, higher memory and greater in-built storage capacity.

Next generation networking functionality is delivering significant, and often critical, business advantage across an increasing number of markets. The implementation of the open source P4 programming language on Barefoot's Tofino networking ASIC, is sparking a new boom in open networking innovation, allowing industry groups, system integrators and end-users to engineer significant new advantage for themselves.

STORDIS' new, more powerful and feature-rich bare-metal switches have been built in response to previously unmet customer requirements across a variety of markets including telecoms, finance, media and broadcast, cybersecurity, industry and academia (see the packed **Supporting Quotes:** section below).

*"After delivering P4 trainings for Barefoot in Europe and speaking to customers, we found that users needed a more powerful hardware platform to capture the full benefits of the Tofino ASIC's programmable architecture. Support for time synchronization is also essential to engineer solid business advantage across a range of industries," states **Alexander Jeffries, CEO of STORDIS**. "These are the first switches to go beyond simply swapping out the chipset in a standard OTS bare-metal switch. We have put a lot of thought and research into building a broader, open hardware architecture that supports real-world use cases. And we will be releasing the full switch specifications and design documents to the Open Compute Project."*

Support for 1588v2 time synchronisation on the STORDIS APS range is also designed to enable users to program more advanced (often application-level) functionality into the network. For example, accurate time stamping enables more efficient 5G features development in Telco environments, IP Studio and live digital broadcast for media companies, and can be essential for accuracy within financial trading environments.

Both switches are available from early April from STORDIS.

## **STORDIS APS Hardware Specifications**

Alongside support for boundary and transparent clock time synchronization, both new switch models sport an 8-core CPU, 128GB SSD and 32GB of RAM. The 25G platform (see below) is also the only Tofino based switch to have 1G support, delivering backward-compatibility that is essential in many markets.

The first two models in the STORDIS APS series are:

- BF2556X-1T: 48x25G/8x100G, supporting speeds of 1, 10, 25, 40, 50 and 100G, based on the Barefoot Tofino 2.0Tbps ASIC, 8-core CPU, 128GB SSD, 32GB RAM, 1588v2 support, 1 x 1PPS SMA connector, 2x SFP SDN controller ports, support for 1G on ports 1 to 16
- BF6064X-T: 64x100G, support speeds of 10, 25, 40, 50 and 100G, based on the Barefoot Tofino 6.4Tbps ASIC, 8-core CPU, 128GB SSD, 32GB RAM, 1588v2 support, 2x RJ45 SDN controller ports

The switches come with AC and DC power supply options, and a 12V DC pass through module (PTM) is also available for the use in OCP racks.

### **Built for Software Defined Networking**

The switches also incorporate two dedicated SDN controller ports, allowing for easy and redundant integration into a broader, unified SDN architecture. With the flexibility of the programmable Barefoot Tofino ASIC using P4, customers can develop bespoke, specific, business-orientated data-plane code, which can be controlled through open controllers such as ONOS.

### **STORDIS Training and Development Services**

STORDIS already provides P4 trainings for existing Barefoot customers across Europe, and the company is supporting its own switching hardware with an extensive range of complementary services. Customers will have access to a range of training options around P4 development and other aspects of open networking. In addition, STORDIS is offering expert consultancy and supportive development resources for customers taking on their own in-house development projects.

The company is also keen to ensure that open networking does not have to mean 'Do-it-Yourself'. STORDIS is offering bespoke development as a service, giving customers without a dedicated network development team equal access to the benefits of custom network functionality and open networking innovation.

### **NOS/Software Options**

The new STORDIS switches will support a range of commercial switch operating systems including Kaloom and NoviFlow, with further options to be announced in the near future. In addition, there is support for open source options, such as Open Network Linux (ONL), SONiC and Ubuntu. There is also support for the Open Networking Foundation's 'Stratum' project (based on ONL).

This choice of switch operating systems allows users to make use of the Tofino's capabilities, providing access to production-ready functionality for dedicated use cases, while STORDIS is providing expert services for customising open source operating systems and bespoke P4 dataplane development.

### **OCP Recognition**

Continuing STORDIS' support for the open networking community, the design documentation of both switches has been submitted to the Open Compute Project (OCP) with the intention of receiving the OCP Accepted™ recognition. The STORDIS APS line will be the first Tofino-based switches submitted to OCP with time synchronisation support. In addition, a 2U OCP rackmount shelf will also be submitted to receive the OCP Accepted™ recognition mark. This will be the first 2U switch rackmount shelf submitted to the OCP.

### Summary of unique facts:

- First bare-metal switch based on Barefoot's Tofino with 1588v2 time-synchronisation support
- First Tofino switches with highly powerful CPUs, larger SSD and sufficient memory to make best use of the Tofino's capabilities
- First Tofino-based switches with dedicated SDN controller ports
- First Tofino-based switches with 1588v2 support to be submitted to the OCP
- First Tofino-based switch supporting speeds from 1-100GbE

### Supporting Quotes:

#### **Open Networking Community:**

*"We're pleased to see STORDIS embracing the Next-Generation SDN movement," said **Timon Sloane, Vice President of Marketing & Ecosystem for the Open Networking Foundation**. "NG-SDN is poised to enable an unprecedented wave of innovation in networking by supporting full lifecycle management and complete software control of network forwarding behavior, all while enabling plug-and-play interchangeability of components. NG-SDN is helping to create a white-box ecosystem of networking switches, and we're very pleased to see STORDIS stepping up as an early proponent to help build out this ecosystem with their support of the ONF's Stratum thin switch OS on their new Barefoot Tofino powered switches."*

*"The STORDIS switches make available new features and technology with a very comprehensive support package. STORDIS' decision to support ONL, SONIC, Stratum and programmability with P4 aligns with the needs and opportunities we see in the market. Customers will also value having OCP-recognized switches with this level of support." said **Bill Carter, Chief Technology Officer at Open Compute Project Foundation***

#### **Telecommunications:**

*"At KPN, we believe Open, fully programmable switches enable us to deliver extremely competitive wireline, mobile and cloud hosting services," said **Michel Geensen Principal Architect, in the CTO Office at KPN**. "With these new state of the art, OCP-Accepted switches, offering Stratum and ONL support, STORDIS has created important building blocks for Telcos like KPN. This is an example of a development which is expected to help KPN to accelerate the rate of innovation while bringing down the cost".*

*"1588 time sync is a standout feature for the STORDIS APS range. For SKT the ability to deliver a high precision time reference from a white-box network packet broker (NPB), offers an incredibly valuable combination," says **Junho Suh, Research Engineer at Software R&D, SK Telecom**.*

#### **Financial Trading:**

*The STORDIS Advanced Programmable Switches are ideally suited for sophisticated financial trading applications through their full programmability. Actant provides trading solutions for financial firms trading on the world's major derivatives and stock exchanges. The switches enables reduced load, reduced latency and fewer hops for trading applications by proprietary filtering and directing multicast traffic besides others, what makes them a very interesting option for us and our customers," states **Daniel Ekengren, COO at Actant**.*

**Security:**

*"The STORDIS Tofino based switch provides us with the unique ability to create sophisticated custom grooming rules for our applications in the security domain," stated **Craig Renfrew, System Architect, Illuminate Technologies.***

**Academia:**

*"From the perspective of a researcher, P4 programmable ASICs are one of the most interesting developments in the field of networking. We are happy to see that STORDIS launched their Advanced Programmable Switch series. These switches offer a unique set of features and performance that can enable a wealth of new applications," states **Robert Soulé, Associate Professor at the Faculty of Informatics at the Università della Svizzera italiana (USI).** "Furthermore, STORDIS has been incredibly supportive of research in networking. The STORDIS Academia Program allows us to obtain the latest technical advances at a price point academics and researchers can afford."*

**Networking:**

*"The Barefoot Tofino series of P4-programmable Ethernet switch ASICs are setting the standard for high-performance and scalable networking solutions. Tofino is being adopted across the industry in use cases ranging from intelligent packet processing interconnects enabling Computational Networking to standard Top-of-Rack(ToR) switching with dataplane telemetry and Smart Programmable Realtime INT (SPRINT)," said **Ed Doe, Chief Business Officer of Barefoot Networks,** "We are pleased to see STORDIS combine their Open Networking expertise, P4 programmability and performance of Tofino to address next generation requirements of data center, financial, broadcast and telecom networks."*

*"We welcome STORDIS to our growing list of whitebox partners. We are very proud to work with STORDIS and to be able to offer their new Barefoot based switches to our customers. Kaloom offers a full suite of automated DC networking software for STORDIS' new family of switches to simplify the procurement, installation and deployment for the customers," said **Laurent Marchand, CEO of Kaloom.** "The market for OCP compliant whitebox networking switches is growing fast into a \$10 B market in three years (excluding FB and MS) which is very exciting"*

*"These new STORDIS switches combine with NoviFlow's NoviWare NOS for Tofino, to provide the ideal platform for demanding network application areas such as packet brokers, broadcast and cyber-security, especially with the inclusion of TpT time sync and 1G support," says **Dominique Jodoin, President and CEO of NoviFlow.** "In particular, their powerful 8-core host CPUs and generous 32GB of RAM make them ideally suited for security applications. NoviFlow sees our partnership with STORDIS as a key strategic element of our Tofino white-box strategy, and we are thrilled that with this announcement STORDIS is expanding our mutual customers' hardware options for powerful Barefoot Tofino technology!"*

## About STORDIS

STORDIS is 'The Open Networking Expert' and Europe's leading provider of open networking infrastructure solutions with a primary focus on academia and research, media and entertainment, cyber security, service providers, financial services, defence, and telecommunications.

STORDIS is specialized in developing tailor-made networking solutions for customers worldwide. As a full solution provider, STORDIS offers consultancy, system integration, professional support and software development to enterprises of any size. To complement the range of existing hardware, STORDIS designed a versatile, powerful and fully programmable network switch delivering significant business advantage in various fields of the industry.

At the two cutting-edge STORDIS LABS in Germany and the UK, proficient network engineers are acquainted with the most recent standards to offer the best customer service and support, while STORDIS ACADEMY organizes unique training courses worldwide to provide insights into the latest open networking technologies, such as data plane programming with P4 and Barefoot's Software Development Environment (SDE) Capilano™.

STORDIS is also a supporter, sponsor and an active contributor to many open source networking projects and communities, including the OCP (Open Compute Project), ONF (Open Networking Foundation), ONOS (Open Network Operating System), P4 Alliance, AMWA (Advanced Media Workflow Association), and Broad<CTRL>.

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