napa:tech;
RECONFIGURABLE COMPUTING

PRODUCT OVERVIEW

FPGA-based SmartNIC Hardware for Capture, Inline, Virtualization and Programmable.

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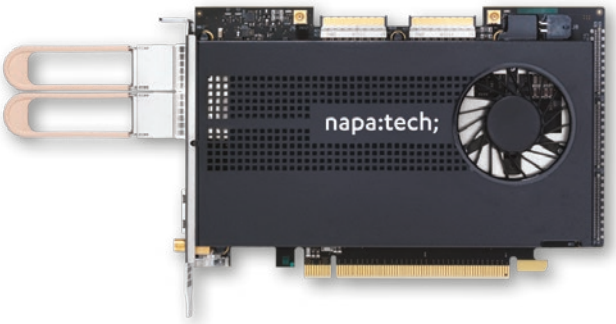
RECONFIGURABLE COMPUTING

SOLUTIONS
Cybersecurity
Monitoring
Infrastructure
Cloud and Edge
Mobile
Financial

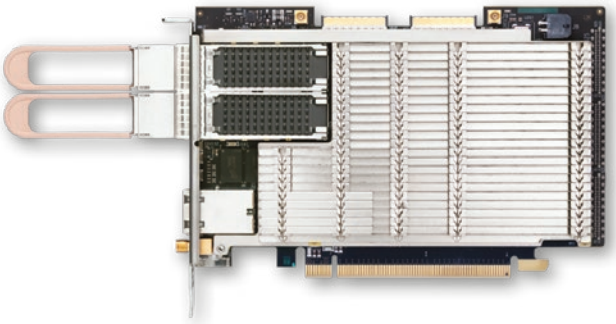
PLATFORMS
Link™ Capture Software
Link™ Inline Software
Link™ Virtualization Software
Link™ Programmable
SmartNICs
FPGA Cloud Crypto

APPLICATION PERFORMANCE
Suricata
Bro
Snort
n2disk
Wireshark
TRex
+ More

SERVICES
Professional Services
Custom Development



NT200A02-SCC



NT200A02-NEBS

FPGA-based SmartNIC Hardware

In a world of reconfigurable computing, it is the software that defines the use case functionality. However, the wrong choice of hardware can severely downgrade the overall value and reliability of the solution.

Napatech SmartNICs are designed to meet the standards of modern servers, with the rapidly changing world of data center and hyperscale deployments in mind.

Industry-Leading Reliability
When selecting a hardware solution, reliability is of the utmost importance. Software can be patched if faulty, but hardware needs a physical replacement, which is costly and complex.

For all Napatech designs, performance and reliability are unconditional tenets. With ~300,000 hours of mean time between failures (MTBF), our hardware ensures uninterrupted, error-free operation for many years ahead – as validated by our long-term loyal customer base.

Superior Thermal Design
The power of FPGA technology is only of value if it can be harnessed – and that requires cooling. An efficient cooling solution allows you to fit more compute power into your rack space, which translates into substantial TCO benefits.

Napatech SmartNICs are designed with active and passive cooling. The active solution provides 100% self-contained cooling with no requirements for a specific server airflow. This solution exhales most of the dissipated energy outside the server through front plate cutouts, which gives customers the freedom to choose server designs without worrying about cooling capacity.

To meet telco requirements, the passively cooled solutions are NEBS-compliant. A proprietary full body heatsink has been developed securing optimal cooling performance in the challenging NEBS applications for all critical components in the SmartNIC.

Hardware Resilience
Modern servers have quick-release PCI fastening mechanisms that allow for easy card replacement. Some of these designs, however, expose the card to vibration during transportation. Napatech SmartNICs are designed specifically to ensure hardware resilience in this environment.

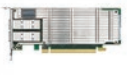
Standards of Excellence
Network appliances often require exceptions and compromises to fit a certain form factor or price point. In complex data center environments, it is therefore extremely beneficial if the hardware adheres to established industry standards, as this will make it easier for customers to integrate it in their solution.

As a certified PCI-SIG member, Napatech has completed the meticulous compliance test, which demonstrates our high standards of excellence.

Typical Applications
Napatech offers a range of FPGA software options for the SmartNIC hardware, addressing use cases within:

- Cybersecurity
- Network quality of experience assurance
- Network & security forensics
- Application performance management
- Network test & measurement
- Cyber defense
- vSwitch acceleration
- Virtual network monitoring

SmartNIC Hardware for COTS Servers

	NT20E3-2-SCC	NT40E3-4/ NT40A01-SCC	NT50B01	NT100A01	NT200A02-SCC	NT200D01-SCC
						
General Hardware Specifications						
Height	Full	Full	Half	Full	Full	Full
Length	Half	Half	Half	Half	Half	Half
FPGA technology	XC7VX330T	XC7VX330T	XCKU15P	XCVU5P	XCVU5P XCVU7P [1] XCVU9P [1]	S10 GX 2800
SDRAM	DDR3	DDR3	DDR4	DDR4	DDR4	DDR4
- Density	4 GB	4 GB	10 GB 20 GB [1]	8 GB 16 GB [1]	12 GB 24 GB [1]	12 GB 24 GB [1]
- Bandwidth	120 Gbps	120 Gbps	427 Gbps	341 Gbps	512 Gbps	512 Gbps
- Number of memory controllers	1	1	2	2	3	3
QSPI Flash memory	2 × 128 Mbit	2 × 128 Mbit	2 × 512 Mbit	2 × 512 Mbit	2 × 512 Mbit	2 × 1 Gbit
PCIe Gen 3 configuration @ 8 GT/s	8 lanes	8 lanes	16 lanes	16 lanes	16 lanes	16 lanes
Network Ports and Link Speeds						
Network ports	2 × SFP+	4 × SFP+	2 × SFP28	4 × SFP28	2 × QSFP28	2 × QSFP28
1G [2]	√	√	√	√	√ [3]	√ [3]
10G [2]	√	√	√	√	√ [3]	√ [3]
25G [2]			√	√	√ [3]	√ [3]
40G [2]					√	√
50G [2]					√ [4]	√ [4]
100G [2]					√	√
Time Synchronization Ports [2]						
Tyco Mini female for RJ45-F/ SMA-F adapter (on PCI bracket)	√	√				
2 x internal MCX-F for PPS and NT-TS	√	√		√	√	√
RJ45-F for 100/1000BASE-T IEEE1588 PTP (on PCI bracket)				√	√	√
SMA-F for PPS (on PCI bracket)			√ [1]	√	√	√
Time Synchronization Support						
Stratum 3 compliant TCXO	√ [6]	√ [6]	√ [1] [6]	√ [6]	√ [6]	√ [6]
SyncE frequency synch support on RJ45 port [2]	√	√			√	√
High-Speed Interconnect Port [2]						
Maximum bidirectional bandwidth	180 Gbps	180 Gbps	900 Gbps	900 Gbps	900 Gbps	-
Hardware Board Monitoring						
FPGA temperature	√	√	√	√	√	√
Pluggable module temperature	√	√	√	√	√	√
Ambient temperature	√	√	√	√	√	√
Power sensors	√	√	√	√	√	√
Fan	√	√		√	√	√
Power and Cooling						
Cooling solution	Active	Active	Passive	Active	Active	Active
Max. power dissipation [5]	45 W	45 W	55 W	75 W	95 W	105 W
Idle power dissipation [5]	10 W	10 W	10 W	15 W	15 W	15 W
Airflow requirement	None	None	>= 2.5 m/s	None	None	None
General Hardware Properties						
Operating temperature	0 °C to 45 °C (32 °F to 113 °F)					
Operating humidity	20% to 80%					
MTBF (hours)	297,993	297,993	991,182	317,821	317,821	-
Weight	260 g	260 g	350 g	355 g	355 g	-
Regulatory compliance (common)	PCI-SIG®, CE, CB, RoHS, REACH, cURus (UL), FCC, ICES, VCCI, RCM					
Regulatory compliance (product-specific)	KCC	KCC	KCC [1]	KCC [1]	KCC [1]	KCC [1]

[1] On demand
[2] Features depend on software support, please refer to product briefs for Link™ Software
[3] Breakout or QSFP28 to SFP28 adapter
[4] Breakout
[5] The power dissipation values indicate the capabilities of the hardware platform; the actual power consumption is dependent on the FPGA software payload
[6] Stratum 3E compliant TCXO is available on demand

SmartNIC Hardware NEBS-Compliant

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				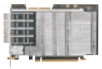	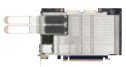	
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Length	Half	Half	Half	Half	Half	Half
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- Density	4 GB	4 GB	10 GB 20 GB [1]	8 GB 16 GB [1]	12 GB 24 GB [1]	12 GB 24 GB [1]
- Bandwidth	120 Gbps	120 Gbps	427 Gbps	341 Gbps	512 Gbps	512 Gbps
- Number of memory controllers	1	1	2	2	3	3
QSPI Flash memory	2 × 128 Mbit	2 × 128 Mbit	2 × 512 Mbit	2 × 512 Mbit	2 × 512 Mbit	2 × 1 Gbit
PCIe Gen3 configuration @ 8 GT/s	8 lanes	8 lanes	16 lanes	16 lanes	16 lanes	16 lanes
Network Ports and Link Speeds						
Network ports	2 × SFP+	4 × SFP+	2 × SFP28	4 × SFP28	2 × QSFP28	2 × QSFP28
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10G [2]	√	√	√	√	√ [3]	√ [3]
25G [2]			√	√	√ [3]	√ [3]
40G [2]					√	√
50G [2]					√ [4]	√ [4]
100G [2]					√	√
Time Synchronization Ports [2]						
Tyco Mini female for RJ45-F/ SMA-F adapter (on PCI bracket)	√	√				
2 x internal MCX-F for PPS and NT-TS	√	√		√	√	√
RJ45-F for 100/1000BASE-T IEEE1588 PTP (on PCI bracket)				√	√	√
SMA-F for PPS (on PCI bracket)			√ [1]	√	√	√
Time Synchronization Support						
Stratum 3 compliant TCXO	√ [6]	√ [6]	√ [1] [6]	√ [6]	√ [6]	√ [6]
SyncE frequency synch support [2]	√	√			√	√
High-Speed Interconnect Port [2]						
Maximum bidirectional bandwidth	180 Gbps	180 Gbps	900 Gbps	900 Gbps	900 Gbps	-
Hardware Board Monitoring						
FPGA temperature	√	√	√	√	√	√
Pluggable module temperature	√	√	√	√	√	√
Ambient temperature	√	√	√	√	√	√
Power sensors	√	√	√	√	√	√
Power and Cooling						
Cooling solution	Passive	Passive	Passive	Passive	Passive	Passive
Max. power dissipation [5]	45 W	45 W	55 W	75 W	95 W	105 W
Idle power dissipation [5]	10 W	10 W	10 W	15 W	15 W	15 W
Airflow requirement	>= 2.5 m/s	>= 2.5 m/s	>= 3.5 m/s	>= 2.5 m/s	>= 2.5 m/s	>= 2.5 m/s
General Hardware Properties						
Operating temperature	–5 °C to 55 °C (23 °F to 131 °F)					
Operating humidity	5% to 85%					
MTBF (hours)	367,807	367,807	991,182	398,565	398,565	-
Weight	285 g	285 g	350 g	350 g	350 g	-
Regulatory compliance (common)	PCI-SIG®, NEBS level 3, CE, CB, RoHS, REACH, cURus (UL), FCC, ICES, VCCI, RCM					
Regulatory compliance (product-specific)	KCC [1]	KCC [1]	KCC [1]	KCC [1]	KCC [1]	KCC [1]

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RECONFIGURABLE COMPUTING

Napatech helps companies to reimagine their business, by bringing hyper-scale computing benefits to IT organizations of every size.

We enhance open and standard virtualized servers to boost innovation and release valuable computing resources that improve services and increase revenue.

Our Reconfigurable Computing Platform™ is based on a broad set of FPGA software for leading IT compute, network and security applications that are supported on a wide array of FPGA hardware designs.

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