napatech

Napatech Link™ SmartNIC Hardware

for Reconfigurable Computing

In a world of Reconfigurable Computing it is the software that defines the use case functionality, but the wrong choice of hardware can seriously limit the overall benefits and reliability of the solution.
Napatech's Link™ SmartNICs are designed to meet all the standards of modern servers, and with a rapidly changing world of Data Center and hyperscale deployments in mind.

PEACE OF MIND

The first thing on everybody's mind when selecting a hardware solution is the question of reliability. Software can be patched if faulty, but hardware needs a physical replacement. You need to get it right the first time!

When Napatech is designing hardware, reliability is first and foremost in everything we do. Our customers need solutions that will support their use cases without worry. Our long-term loyal customer base proves this point.

KEEP YOUR COOL

The power of FPGA technology is only available if you can harness the power, and that takes cooling! In simple terms: The more you can cool, the more power you can burn, and the more functionality you can run on your Link™ SmartNIC. This translates into real economical benefits, as you can fit more compute power into server rack space with a good cooling solution.

Napatech designs Link™ SmartNICs with both active and passive cooling. The actively cooled solutions provide a 100% self-contained cooling solution with NO requirements for a specific server airflow. This solution exhales the majority of dissipated energy outside the server through front plate cutouts. This means that customers have the freedom to choose server designs without worrying about cooling capacity. To meet telecom requirements, the passively cooled solutions are NEBS-compliant.

GOOD VIBRATIONS

Modern servers have quick release PCI fastening mechanisms that allow for easy change of Link™ SmartNICs. Unfortunately, some of these designs are exposing PCI cards to vibration in the slot during transportation. To make sure that the hardware survives this environment, Napatech hardware is designed to meet the highest standards.

STANDARDS OF EXCELLENCE

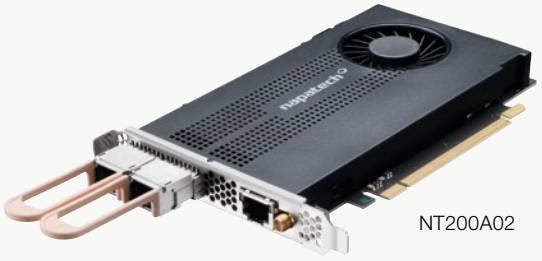
Understanding the in's and out's of modern servers starts with the standards, but continues into tackling the hard realities of compromises and exceptions made to fit a certain form factor or price point. The more the SmartNIC hardware adheres to established industry standards, the easier it will be for customers to integrate it in their solution.

Napatech is on the PCI-SIG integrators list as a testimony to Napatech's efforts to make sure that our customers do not need to worry about the hardware, and can focus on their software solution.

LINK TO THE FUTURE

Napatech offers a whole range of FPGA software options for the Link™ hardware, that address use cases within:

- Network Security
- Network Quality of Experience Assurance
- Network & Security Forensics
- Application Performance Management (APM)
- Network Test & Measurement
- Cyber Defense
- vSwitch Acceleration
- Virtual Network Monitoring



NT200A02

DN-0251 Rev. 38

Link™ SmartNIC Hardware for COTS Servers

	NT20E3-2	NT40E3-4/ NT40A01	NT80E3-2	NT100E3-1	NT200A01	NT200A02
						
General Hardware Specifications						
Height	Full	Full	Full	Full	Full	Full
Length	Half	Half	3/4	3/4	Half	Half
FPGA technology	XC7VX330T	XC7VX330T	XC7VX690T	XC7VX690T	XCVU095	XCVU5P
SDRAM	DDR3	DDR3	DDR3	DDR3	DDR4	DDR4
- Density	4 GB	4 GB	8 GB	8 GB	12 GB	12 GB
- Bandwidth	120 Gbps	120 Gbps	240 Gbps	240 Gbps	460 Gbps	512 Gbps
- Number of memory controllers	1	1	2	2	3	3
PCIe configuration	PCIe Gen3 8 lanes @ 8 GT/s	PCIe Gen3 8 lanes @ 8 GT/s	PCIe Gen3 16 lanes @ 8 GT/s	PCIe Gen3 16 lanes @ 8 GT/s	PCIe Gen3 2 × 8 lanes @ 8 GT/s [1]	PCIe Gen3 16 lanes @ 8 GT/s
Network Ports and Link Speeds						
Network ports	2xSFP+	4xSFP+	2xQSFP+	1xCFP4	2xQSFP28	2xQSFP28
1G [3]	√	√	√ (breakout)		√ (breakout)	√ (breakout)
10G [3]	√	√	√ (breakout)		√ (breakout)	√ (breakout)
25G [3]					√ (breakout)	√ (breakout)
40G [3]			√		√	√
50G [3]					√ (breakout)	√ (breakout)
100G [3]				√	√	√
Time Synchronization Ports [3]						
Tyco Mini female for RJ45-F/ SMA-F adapter (on PCI bracket)	√	√	√	√		
2 x internal MCX-F for PPS and NT-TS	√	√	√	√	√	√
2 x internal MCX-F for NT-TS2			√	√		
RJ45-F for 100/1000BASE-T IEEE1588 PTP (on PCI bracket)					√	√
SMA-F for PPS (on PCI bracket)					√	√
Time Synchronization Support						
Stratum 3E compliant TCXO	√	√	√	√	√	√
SyncE frequency synch support [3]	√	√	√	√	√	√
High-Speed Interconnect Port [3]						
Maximum bandwith	89 Gbps	89 Gbps	112 Gbps	112 Gbps	309 Gbps	393 Gbps
Hardware Board Monitoring						
FPGA temperature	√	√	√	√	√	√
Pluggable module temperature	√	√	√	√	√	√
Ambient temperature	√	√	√	√	√	√
Power sensors	√	√	√	√	√	√
Power and Cooling						
Cooling solution	Active	Active	Active	Active	Active	Active
Max. power dissipation [2]	45 W	45 W	85 W	85 W	95 W	95 W
Idle power dissipation [2]	10 W	10 W	15 W	15 W	15 W	15 W
Airflow requirement	None	None	None	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	263,546	259,880	317,821	317,821
Weight	260 g	260 g	455 g	455 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] Requires bifurcation support from the server
[2] The max and idle power dissipation values indicate the capabilities of the hardware platform. The actual power consumption is dependent on the FPGA software payload.
[3] Features depend on software support. Please refer to product briefs for Link™ Software.

Link™ SmartNIC Hardware NEBS-Compliant

	NT20E3-2	NT40E3-4/ NT40A01	NT80E3-2	NT100E3-1	NT200A01	NT200A02
						
General Hardware Specifications						
Height	Full	Full	Full	Full	Full	Full
Length	Half	Half	3/4	3/4	Half	Half
FPGA technology	XC7VX330T	XC7VX330T	XC7VX690T	XC7VX690T	XCVU095	XCVU5P
SDRAM	DDR3	DDR3	DDR3	DDR3	DDR4	DDR4
- Density	4 GB	4 GB	8 GB	8 GB	12 GB	12 GB
- Bandwidth	120 Gbps	120 Gbps	240 Gbps	240 Gbps	460 Gbps	512 Gbps
- Number of memory controllers	1	1	2	2	3	3
PCIe configuration	PCIe Gen3 8 lanes @ 8 GT/s	PCIe Gen3 8 lanes @ 8 GT/s	PCIe Gen3 16 lanes @ 8 GT/s	PCIe Gen3 16 lanes @ 8 GT/s	PCIe Gen3 2 × 8 lanes @ 8 GT/s [1]	PCIe Gen3 16 lanes @ 8 GT/s
Network Ports and Link Speeds						
Network ports	2xSFP+	4xSFP+	2xQSFP+	1xCFP4	2xQSFP28	2xQSFP28
1G [3]	√	√	√ (breakout)		√ (breakout)	√ (breakout)
10G [3]	√	√	√ (breakout)		√ (breakout)	√ (breakout)
25G [3]					√ (breakout)	√ (breakout)
40G [3]			√		√	√
50G [3]					√ (breakout)	√ (breakout)
100G [3]				√	√	√
Time Synchronization Ports [3]						
Tyco Mini female for RJ45-F/ SMA-F adapter (on PCI bracket)	√	√	√	√		
2 x internal MCX-F for PPS and NT-TS	√	√	√	√	√	√
2 x internal MCX-F for NT-TS2			√	√		
RJ45-F for 100/1000BASE-T IEEE1588 PTP (on PCI bracket)					√	√
SMA-F for PPS (on PCI bracket)					√	√
Time Synchronization Support						
Stratum 3E compliant TCXO	√	√	√	√	√	√
SyncE frequency synch support [3]	√	√	√	√	√	√
High-Speed Interconnect Port [3]						
Maximum bandwith	89 Gbps	89 Gbps	112 Gbps	112 Gbps	309 Gbps	393 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 [2]	45 W	45 W	85 W	85 W	95 W	95 W
Idle power dissipation [2]	10 W	10 W	15 W	15 W	15 W	15 W
Airflow requirement	>= 2.5 m/s	>= 2.5 m/s	>= 2.5 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)	297,993	297,993	263,546	259,880	317,821	317,821
Weight	260 g	260 g	455 g	455 g	355 g	355 g
Regulatory compliance (common)	PCI-SIG®, NEBS level 3, CE, CB, RoHS, REACH, cURus (UL), FCC, ICES, VCCI, RCM					
Regulatory compliance (product specific)	KCC	KCC	KCC			

[1] Requires bifurcation support from the server
[2] The max and idle power dissipation values indicate the capabilities of the hardware platform. The actual power consumption is dependent on the FPGA software payload.
[3] Features depend on software support. Please refer to product briefs for Link™ Software.

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COMPANY PROFILE

Napatech helps companies to reimagine their business by bringing hyperscale 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. Additional information is available at www.napatech.com