

Reconfigurable Computing

Napatech

Investor Relations
July 2-3, 2018

**BUSINESS
& STRATEGY
UPDATE**



Henrik Brill Jensen
Napatech
Chief Executive
Officer

**RECONFIGURABLE
COMPUTING
OPPORTUNITY**



Jarrod J.S. Siket
Napatech
Chief Marketing
Officer

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Business Update

Henrik Brill Jensen
Chief Executive Officer



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Napatechs' Transformational Journey

Pioneered the use of FPGAs to accelerate networking and security applications in **networking appliances**



Cloud, premise and hybrid software solutions for FPGA acceleration in an expanding set of server use cases

Improving **data center servers** based on broad set of FPGA software for leading IT applications, supported on a wide array of hardware

Rapidly Expanding Market Opportunity



2022

Broadening our software portfolio for FPGA-based SmartNICs will allow us to grow by **dominating** our leadership position in capture applications, **expanding** into new networking and security applications, **establishing** new positions in virtualization and **exploring** the emerging cloud deployments.

- 15 million platforms
 - Standard servers and appliances
- \$1.67 billion NIC opportunity
 - Programmable and Offload NIC market
- \$2.5 to \$3 billion TAM
 - Software and hardware solutions

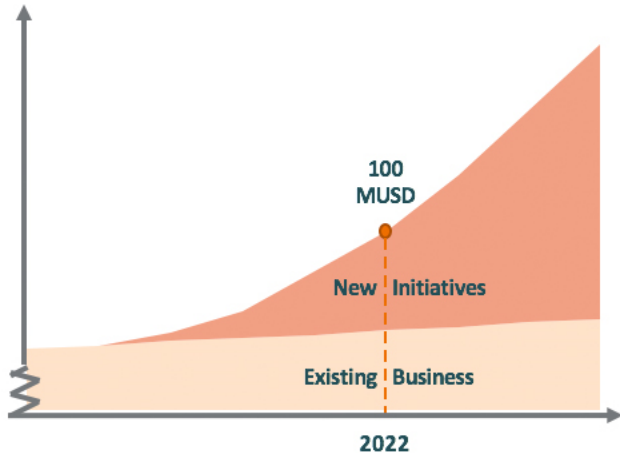
Source: IHS Markit, Ethernet Network Adapter Equipment Market Tracker Q4 2017

Recent Initiatives Supporting Our Strategy

Implemented actions paving the way for accelerated growth

- Expanded Board of Directors with cloud, data center, server and software businesses expertise
- Strengthened executive management with new US-based CMO and CSO, driving new design-win focus
- Redirected focus on North American market with sales, marketing and technical support
- Expanded worldwide channel sales organization to extend reach and support partners
- Strategic partnerships established with Xilinx and Intel, the leading suppliers of FPGA technologies
- Engaged in several proof-of-concepts with market-leading Tier-1
- Right-sized global organization headcount, office locations and other expenses
- Reviewed lead customer consumption, inventories and forecasts to validate short term business

Napatech is positioned to take advantage of the market shift to Reconfigurable Computing Platforms



- Napatech pioneered FPGA-based application-driven solutions
- Napatech is maximizing growth from our existing business to fund investment in new initiatives, fueling long-term growth
- Napatech is expecting growth in New Initiatives towards 2022 and beyond
 - **Cybersecurity** Solutions from existing and new customers, from a large and growing market, up to 60% contribution
 - **Virtualization** solutions primarily for new mobile and datacenter customers, in a small market with massive growth, up to 60% contribution
 - **Compute Offload** Solutions for new customers in cloud and premise application, with massive growth, up to 20% contribution

Napatech sees a potential for the new initiatives significantly higher than our existing business as we move to broader market and support more applications

Reconfigurable Computing

Jarrold J.S. Siket
Chief Marketing Officer



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Hyperscale networks have emerged

Hyperscale networking allows companies to reimaging their businesses and the applications and services that define them.



Cloud Computing



5G Mobile



Internet of things

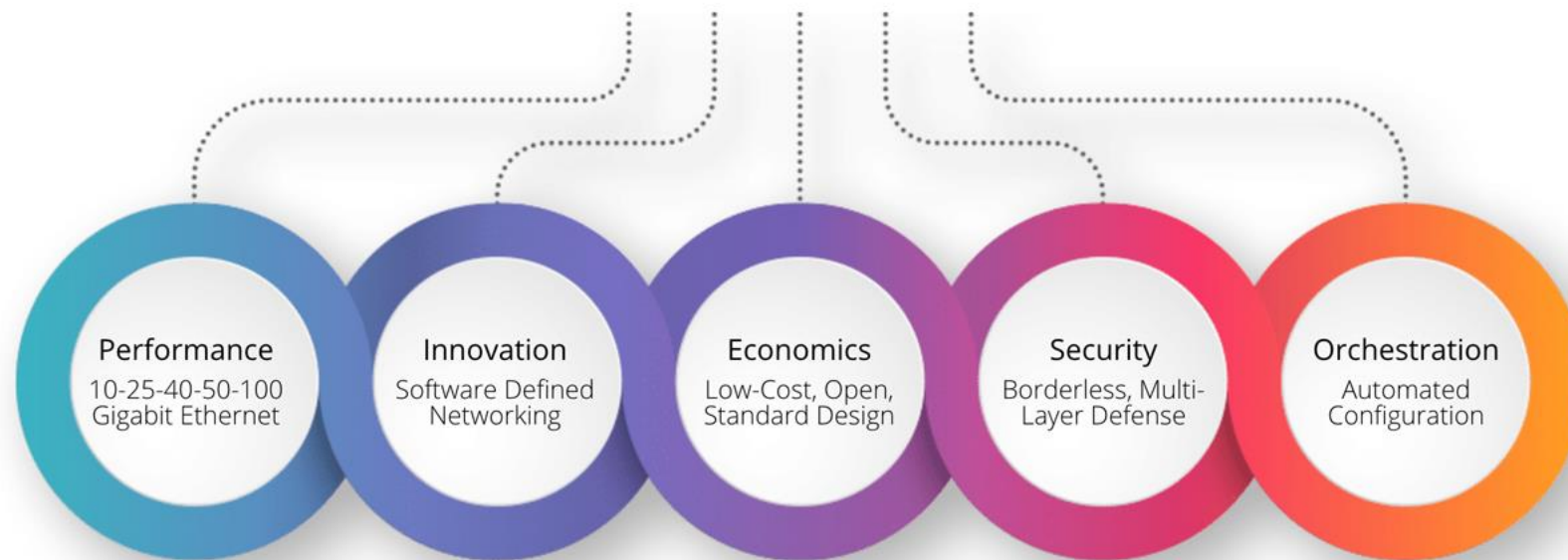


Data volume by 2020. Source: IDC.

Hyperscale data centers are changing the way people build networks

Innovative technologies have been created to fulfill the vision and promise of hyperscale networking.

Networking devices are transforming to open standard compute platforms



Networking devices are transforming

New open, standard, high-volume and low-cost server platforms can be used for networking and communications designs.

STANDARD COMPUTING PLATFORM



Third-party Apps
Security and Network
Applications



Standard NIC
Not FPGA compatible



Server
Compatible with any
standard server

RECONFIGURABLE COMPUTING PLATFORM



Third-party Apps
Security and Network
Applications



FPGA Software
FPGA SmartNIC
Independent



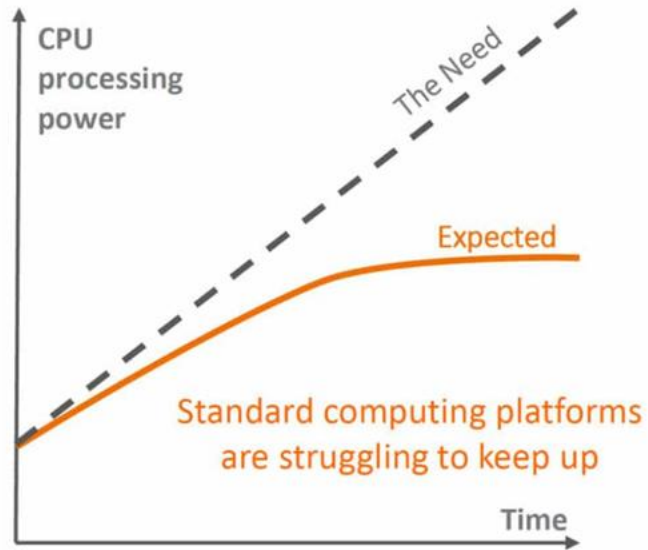
FPGA SmartNIC
Compatible with any Intel
or Xilinx FPGA SmartNIC



Server
Compatible with any
standard server

Standard computing platforms need help

Complex networking, security, storage and other compute workloads fail meet application and service requirements.



Standard computing platform basis for hyper-scale today but struggling to keep up

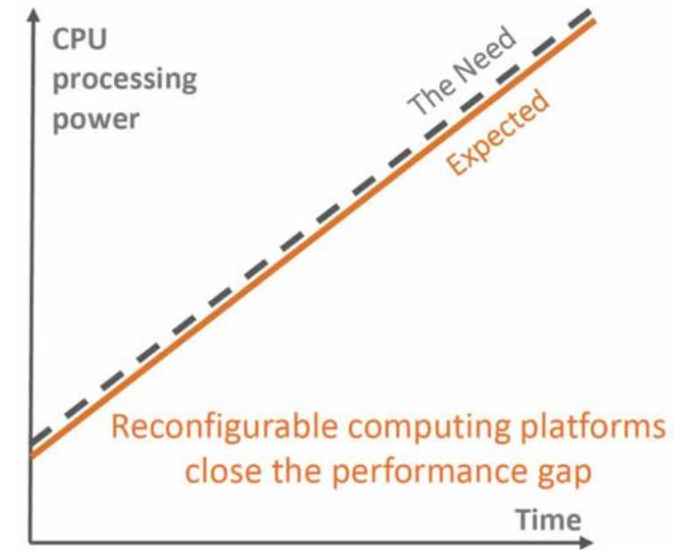
Central Processing Unit (CPU)

Processes all the data for cloud services

Needs to divide time and resources between many different tasks

Network Interface Card (NIC)

Delivers data to and from the CPU



Reconfigurable computing platform using FPGAs to close the performance gap

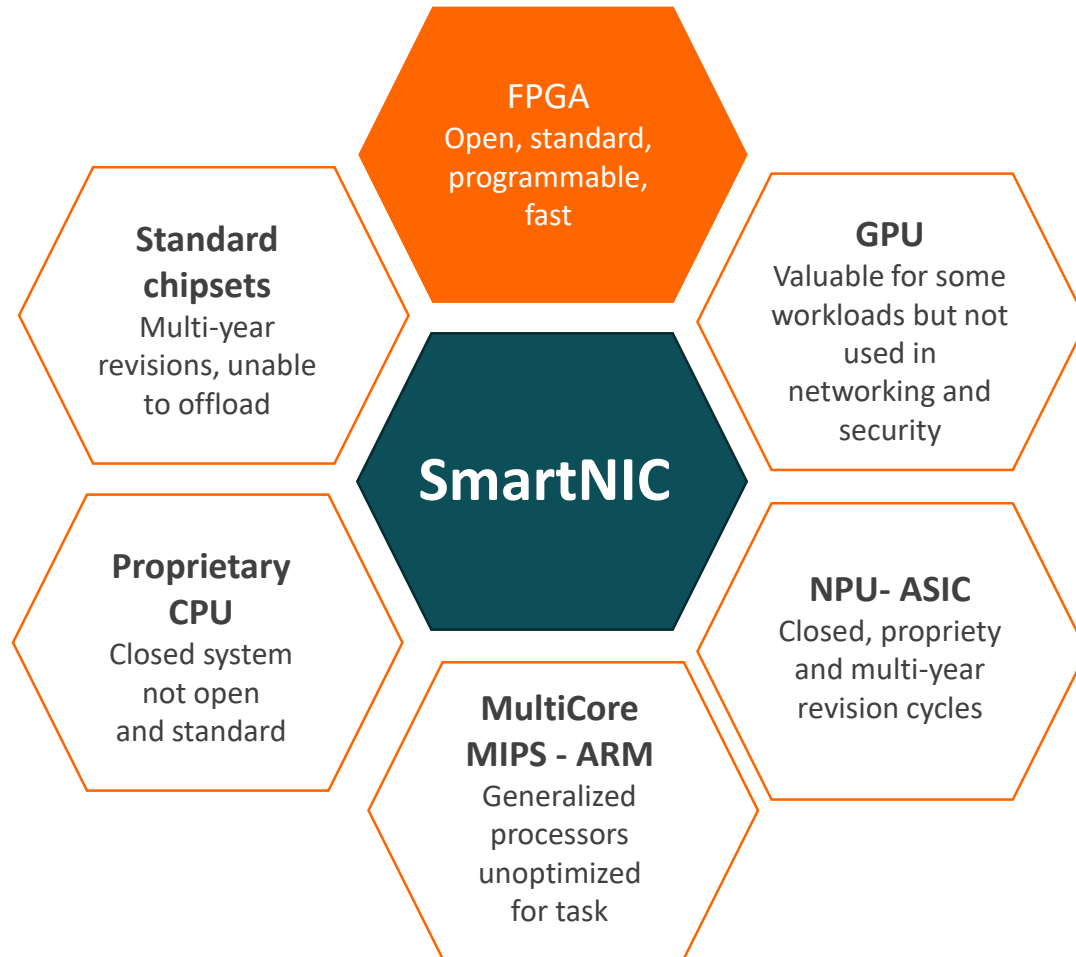
Reconfigurable Computing Platform

Combination of CPU and FPGA processes all the data for cloud services

FPGAs can focus on specific tasks while CPU continues to support other tasks

FPGA-based SmartNIC can offload tasks and data from CPU

FPGAs deliver the reconfigurable computing



<https://www.Microsoft.com/en-us/research/publication/configurable-cloud-acceleration/>

Napatech pioneered the use of FPGA-based NICs for networking



Configurable cloud architecture based on FPGAs



Intel acquires Altera FPGA for record \$16.7B



Amazon introduces FPGA-as-a-Service



Alibaba introduces FPGA-as-a-Service

Reconfigurable Computing Platform fulfills the vision for software defined networking

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

Our Reconfigurable Computing Platform flexibly offloads, accelerates and secures standard servers based on a broad set of FPGA software for leading IT applications supported on an wide array of hardware.

8x
Networking
Improvement

Get more out of every system
OVS Port-to-Port Roundtrip Throughput (MPPS)

Standard Server: 5 MPPS

Reconfigurable Computing: 40 MPPS

8x
CPU
Improvement

Reduce system costs
CPU Usage (Cores)

Standard Server: 16 Cores

Reconfigurable Computing: 2 Cores

30x
Faster
Performance

Reduce time on complex tasks
Compression Time (ms)

Standard Server: 12 ms

Reconfigurable Computing: 0.37 ms

Who benefits from Reconfigurable Computing

Napatech aims to be the provider of Reconfigurable Computing Platforms for **every IT organization** providing hyper-scale hardware performance with the speed of software innovation



Cloud and Data Center
Services
Hyperscale Cloud Operators



Service Providers
Telecom
Cable
Managed Services



Enterprise
Fortune 5000
Banking
Financial
Manufacturing
Healthcare



Infrastructure and
Defense
Civilian
Defense
Intelligence

Application driven

Reconfigurable Computing flexibly offloads, accelerates and secures standard servers.
Based on broad set of FPGA software. For leading IT Applications.
Supported on an wide array of hardware.



Cyber Security

- Firewall
- Next-Gen Firewall
- Intrusion Detection
- Intrusion Prevention
- Forensics
- Threat Detection
- Secure Web Gateway
- Surveillance
- Data Loss Prevention



5G Mobile

- vEPC
- vIMS
- C-RAN
- CORD
- Telemetry
- vBRAS



Analytics

- Big Data
- Machine Learning
- Artificial Intelligence
- Test & Measurement
- Performance Monitoring



Infrastructure

- SD-WAN
- V-CPE
- Packet Broker
- Network Taps
- Load Balancer
- vRouter

Independent!

Software focused and hardware independent.
A-based Software and Hardware for Reconfigurable Computing.

Napatech Solution →



Capture Software



Inline Software

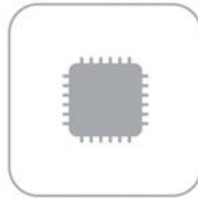


Switching Software



Application Engines

Napatech Accessories
and Partners →



CPUs



SmartNICs



SmartCards

For everywhere you need it to be – your entire network.



On Prem



Cloud



Hybrid

We work with these great companies



Questions ?