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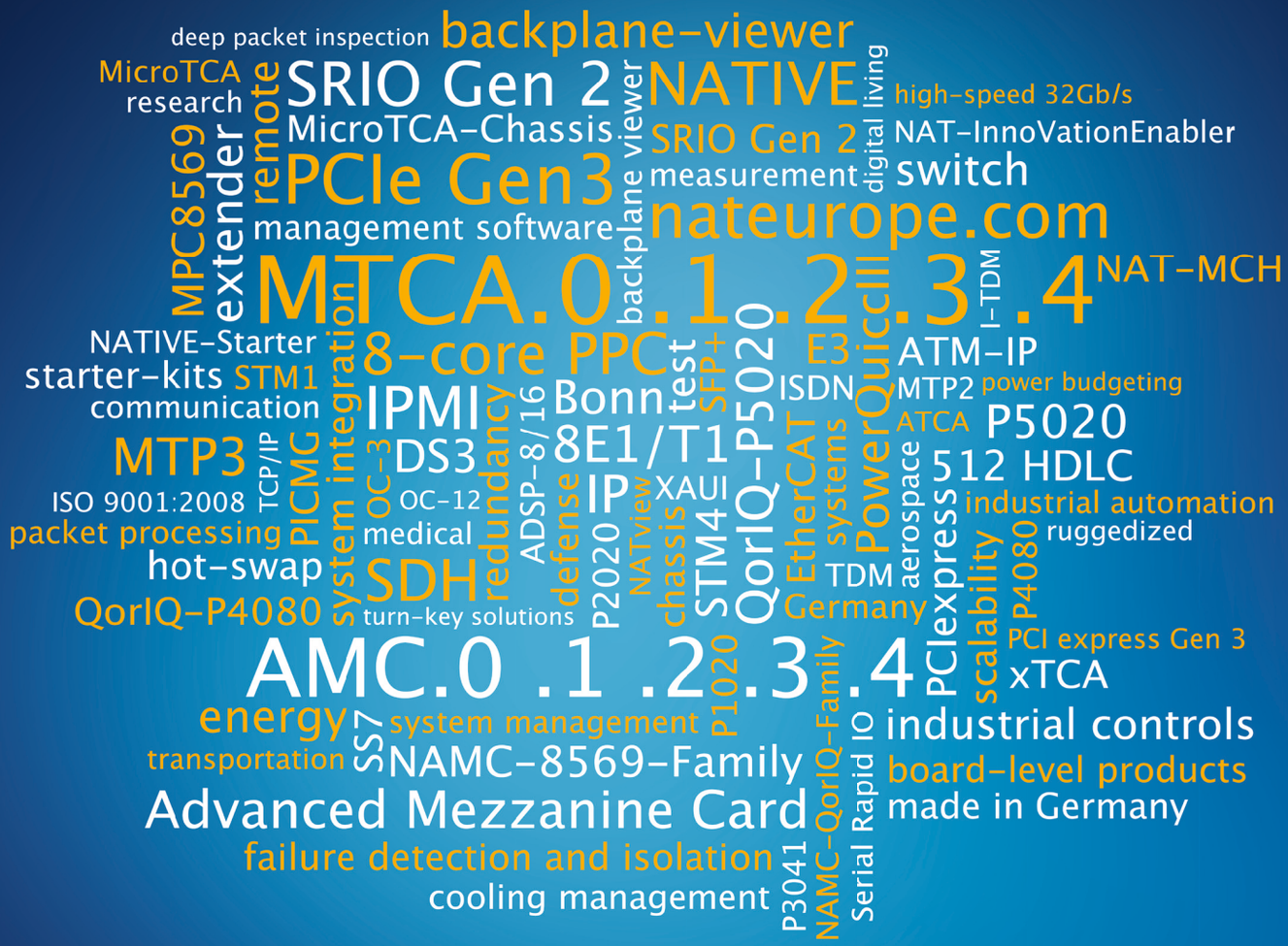
Whenever your system needs to communicate

COMMUNICATE WITH N.A.T.



The MicroTCA Concept IV by N.A.T.

The expert of high performance connectivity products for data and telecommunication solutions.

ProcessorAMCs

NAMC-8569-CPU

Multi-service, low cost, low power, general purpose PrAMC, addressing high-performance broadband access equipment including 3G/WiMAX/LTE base stations, radio network controllers and gateways in mid-size form factor.

front panel interfaces
- GbE, RS232, USB

backplane interfaces
- 2x GbE and either of the following combinations: SRIO x4, PCIe x4, 2x SRIO x1, PCIe x1 and SRIO x1

on-board
- PowerQUICC III MPC8569 (1,3 GHz)
- Lattice FPGA

NAMC-QorIQ-P204x

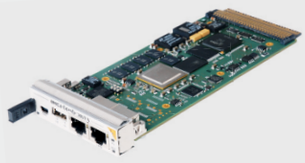
Powerful packet processing engine with four cores, built on Power Architecture technology. The NAMC-QorIQ-P2040 operating at up to 1.2 GHz and the NAMC-QorIQ-P2041 at up to 1.5 GHz in mid-size form factor designated for today's packet oriented network applications.

front panel interfaces
- 1x GbE, 1x USB, 1x RS232

backplane interfaces
- fat pipe: PCIe, SRIO or XAUI (P2041 only)
- base fabric: 2x GbE, 2x SATA

on-board
- QorIQ P2040
- QorIQ P2041

Multi Core



NAMC-QorIQ-P3041

Powerful packet processing engine with four cores, built on Power Architecture technology, operating at up to 1.5GHz in mid-size form factor, designated for today's packet oriented network applications.

front panel interfaces
- 1x GbE, 1x USB, 1x RS232

backplane interfaces
- fat pipe: PCIe, SRIO or XAUI
- base fabric: 2x GbE, 2x SATA

on-board
- QorIQ P3041

Multi Core

Chassis and Power Modules

NATIVE-SX

size
- 197 x 134mm table top
- depth: 252 mm

slots
- 2 full- and 3 mid-size AMCs
- 1 full-size MCH for fat pipe support

power supply
- 110-240VAC, 300W output, front pluggable

cooling unit
- single fan (integrated)

backplane configuration
- direct SATA / SAS connections
- single star base fabric and fat pipe, PICMG compliant

NATIVE-C1

size
- 1U 19" rack-mounted
- depth: 206 mm

slots
- 6 mid-size AMCs
- 1 full-size MCH for fat pipe support

power supply
- 110-265VAC, 600W output, front pluggable, or
- -48VDC, 420W or 840W output, front pluggable

cooling units
- 2 redundant hot-swap fan trays

backplane configuration
- direct SATA / SAS connections
- single star base fabric and fat pipe, PICMG compliant

NATIVE-C2

Also available as Starter Kit

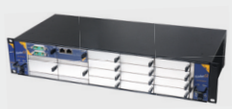
size
- 2U 19" rack-mounted
- depth: 206 mm

slots
- 12 mid-size AMCs, horizontally-mounted
- 2 full-size MCHs for fat pipe support

power supply
- 2 power modules
- 110-265VAC, 600W output, front pluggable, or
- -48VDC, 420W or 840W output, front pluggable

cooling units
- 2 redundant hot-swap fan trays

backplane configuration
- direct SATA / SAS connections
- dual star base fabric and fat pipe, PICMG compliant



Line Interface Cards

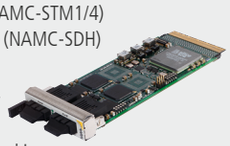
NAMC-STM1/4
NAMC-SDH

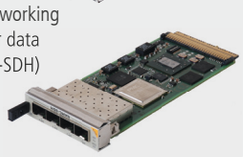
SDH line interface for STM-1/OC-3 or STM-4/OC4 providing add/drop functionality at DS0 and subrate level including TDM cross-bar and I-TDM interworking and optional data handling by onboard Kintex-7 FPGA (NAMC-SDH).

front panel interfaces
- 2x OC-3 or 1x OC-12 (NAMC-STM1/4)
- 4x OC-3 or 2x OC12 (NAMC-SDH)

backplane interfaces
- 2x GbE, opt. PCIe (NAMC-STM1/4)
- 4 xGbE, opt. fat pipe (NAMC-SDH)

on-board
- add/drop multiplexer
- TDM cross bar
- TDM-to-iTDM interworking
- XILINX Kintex-7 for data processing (NAMC-SDH)





NAMC-8569-ATM

Multi-service ATM board featuring conversion between optical OC-3/STM1 ATM traffic, Ethernet and TDM data designated to connect systems to ATM legacy data, designated networks.

front panel interfaces
- OC-3, OC-12, DS3 or Ethernet

backplane interfaces (opt.)
- 2x GbE and either of the following combinations: SRIO x4, PCIe x4, 2x SRIO x1, PCIe x1 and SRIO x1, IPMI

on-board
- PowerQUICC III MPC8569
- AAL1, AAL2 and AAL5 processing engine

NAMC-8569-xE1/T1

Signalling processing engine providing 8 or 16 E1/T1 line interfaces including TDM cross connect and I-TDM interworking in mid-size or full-size form factor.

front panel interfaces
- 8 E1/T1 (mid-size) or 16 E1/T1 (full-size)

backplane interfaces
- 2x GbE and either of the following combinations: SRIO x4, PCIe x4, 2x SRIO x1, PCIe x1 and SRIO x1, IPMI

on-board
- TDM cross connection, TDM to I-TDM interworking
- PowerQUICC III MPC8569
- Firmware: ISDN, SS7

NAMC-QorIQ-P4080
NAMC-QorIQ-P4080-V6

Powerful octal-core packet processing engine built on eight Power Architecture e500mc cores-operating at frequencies up to 1.5 GHz in mid-size form factor, designated for applications requiring extensive multi-processing resources optionally combined with a free programmable data path engine.

front panel interfaces
- XAUI (SFP+), 1x GbE, 1x USB, 1x RS232

backplane interfaces
- fat pipe: PCIe, SRIO, or XAUI
- base fabric: 2x GbE

Latest FPGA Technology

Multi Core

on-board
- QorIQ P4080
- Xilinx Virtex-6 FPGA

NAMC-QorIQ-P5020
NAMC-QorIQ-P5020-V6

Powerful dual-core packet processing engine with the 64-bit, e5500 core built on Power Architecture technology, frequencies scalable to 2.2 GHz designated for today's packet oriented applications like LTE or VoIP, optionally with a high-performance customizable FPGA.

front panel interfaces
- 1x GbE, 1x USB, 1x RS232

backplane Interface
- fat pipe: PCIe, SRIO, or XAUI
- base fabric: 2x GbE, 2x SATA

Latest FPGA Technology

Multi Core

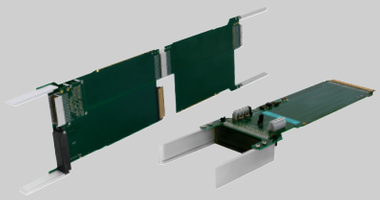
on-board
- QorIQ P5020
- Xilinx Virtex-6 FPGA

Extenders

NAMC-EXT-RTM/-PS
NAMC-EXT/-PS

Both extender kits provide a versatile tool to speed up the development process and to troubleshoot AMC cards within an ATCA or MTCA environment.
- wire bridge for management and payload power measurements
- test pads for backplane and RTM signals
- pads to connect JTAG equipment

Variants:
- NAMC-EXT-RTM-PS and NAMC-EXT-PS offer an additional on-board 3.3V power supply for stand-alone operation of AMC



NATIVE-R5

Also available as Starter Kit

size
- 5U table top, depth: 373,3 mm

slots
- 6 double mid-size AMCs + RTM
- 1 full-size MCH with fat pipe support

power supply
- 110-240VAC, 300W output

cooling units
- 4 fans for AMCs and 2 fans for RTMs

backplane configuration
- direct SATA / SAS connections
- single star base fabric and fat pipe, PICMG compliant
- p2p connections at AMC ports 12-15 (MTCA.4)
- trigger, clock and interlock signals

NATIVE-R9

size
- 9U 19" rack-mounted
- depth: 373.3 mm

slots
- 12 single/double width mid-size AMCs + RTM
- 2 MCH with fat pipe support

power supply
- up to 4 power modules
- 110-265VAC, 600W output, or
- -48VDC, 420W or 840W output

cooling units
- 2 redundant hot-swap fan trays for AMCs and RTMs

backplane configuration
- direct SATA / SAS connections
- dual star base fabric and fat pipe, PICMG compliant
- p2p connections at AMC ports 12-15 (MTCA.4)
- trigger, clock and interlock signals

NAT-PM-DC840
NAT-PM-AC600/D

These N.A.T. power modules offer power conversion from either a dual -48VDC or a single 110-265VAC input source to 16 independent 12 V channels for payload power and 3.3 V for management power.

size
- full size (6 HP), single width

key features
- output power: 840W (DC) / 600W (AC)
- optical load indicator
- support of N+1 and 2+2 redundancy
- 16 channels of 12 V @ max. 6.6 A / 3.3 V @ 150 mA max.
- support of 12 AMCs, 2 CUs, 2 MCHs with individual control of management and payload power
- input power: dual -48VDC or single 110-265VAC
- supports field upgrades through HPI protocol
- Shared Management Power (SMP)

Intelligent Security System
- output over-voltage and -temperature protection
- input under-voltage shutdown
- output short circuit protection
- IEC/EN/UL60950-1 safety standard compliant
- programmable current limiting threshold per output channel

NAMC-xE1/T1

Cost efficient AMC providing 8 or 16 E1/T1 line interfaces including TDM cross connect and I-TDM interworking in mid- or full-size form factor.

front panel interfaces
- 8 E1/T1 (mid-size) or 16 E1/T1 (full-size)

backplane interfaces
- 2x GbE, and optional PCIe

on-board
- TDM cross connection, TDM to I-TDM interworking

NAMC-ADSP-8/16

Multi-purpose telecommunication resource board in mid-size form factor for applications with extensive need for voice or data computation.

front panel interfaces
- 8 or 16 LEDs depending on DSP number

backplane interfaces
- GbE, PCIe x1, IPMI

on-board
- 8 or 16ADSP-BF535P (350MHz)
- 32MB SDRAM and 1MB FLASH per DSP
- boot loader via PCI
- I-TDM (1000BX), TDM cross connect

Carriers

NAMC-PMC

A single-width, mid- or full-size AMC carrier for one PMC module.

key features
- usage of standard off-the-shelf PMC boards in MTCA environments
- deployment of a rich variety of available PMC modules
- extension of PMC product life cycle

MicroTCA

Let Your **Application** benefit

open standard | no single vendor lock-in

Telecommunication
- solutions from simple to complex
- redundancy
- low latency
- optimized for converging networks
- TDM-Packet interworking

Medical
- low latency
- multi-cluster
- multi- graphic

Defence & Aerospace
- longevity
- ruggedized
- conduction cooled
- field replaceable
- bandwidth from 1Gbps to 30 Gbps

Transportation
- multi-cluster
- high speed graphics
- robustness

About **N.A.T.** (Network and Automation Technology)

N.A.T. was founded in 1990 with the aim of developing high-performance network solutions. From the beginning the goal has been to base these on an individual combination of hardware and software modules. Constant growth during the last 22 years and substantial knowledge in networking technologies has brought N.A.T. to the forefront of the embedded and (tele-)communications market.

Make our expertise your solution - talk to us... we care.

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Carrier Hubs

MicroTCA Carrier Hub

Central management and data switch (GbE, XAUI, SRIO, PCIe) with clock distribution and generation in compact- or mid- or full-size form factor as well as single or double width

base-board
- central mgmt. for 1-13 AMCs, 2 CUs, 1-4 PMs
- e-keying, redundancy, load sharing
- on-board or external carrier and shelf managers
- layer 2, non-blocking, low latency GbE switch,
- supporting VLAN, port base rate control and RSTP (Rapid Spanning Tree Protocol)

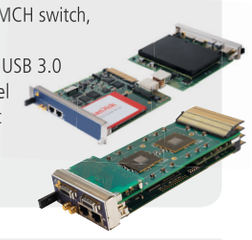
clock mezzanine
- either on-board Stratum 3/3E type PLL, supporting GPS and telecom frequencies
- source of clock reference configurable from either on-board PLL or any of the 12 AMC or from an external clock via the front panel connectors

fat pipes switch mezzanine
- SRIO (Gen2)
- PCIe (Gen3)
- 1GbE and 10GbE (XAUI)
- Xilinx Kintex-7 FPGA combined with SRIO (Gen2)

software support
- configuration via web browser or Command Line Interface (CLI) or scripting
- Java based visualization tool NATview with FRU editor and backplane connection viewer
- remote management support
- comprehensive debug support

front panel interfaces
- 2x GbE links supporting port trunking
- 2 clock connectors (input or output)
- 2 fat pipe uplinks (CX-4 and SFP+)
- status indicator LEDs for AMCs, CUs, and PMs
- console interface via USB or RS232

COM Express RTM support
(combined with double width MCH and PCIe Hub module)
- supporting all standard type 6 COM Express modules
- one 2.5" or two half 1.8" SATA storage devices
- x4 PCIe connection to hub module
- 1x GbE connection to MCH switch, 1x GbE at front panel
- 2x display port and 4x USB 3.0 interfaces at front panel
- PCIe Mini card support including SIM card



System Manager

NATview

User friendly graphic tool to view and control the components of the MicroTCA system – independent of any operating system.

key features
- tree structured representation of sensor and actor
- sensor value history, threshold setting, auto update
- intelligent alarm monitoring and prioritization
- logging events, alarms
- FRU (Field Replaceable Unit) editor
- backplane connection viewer