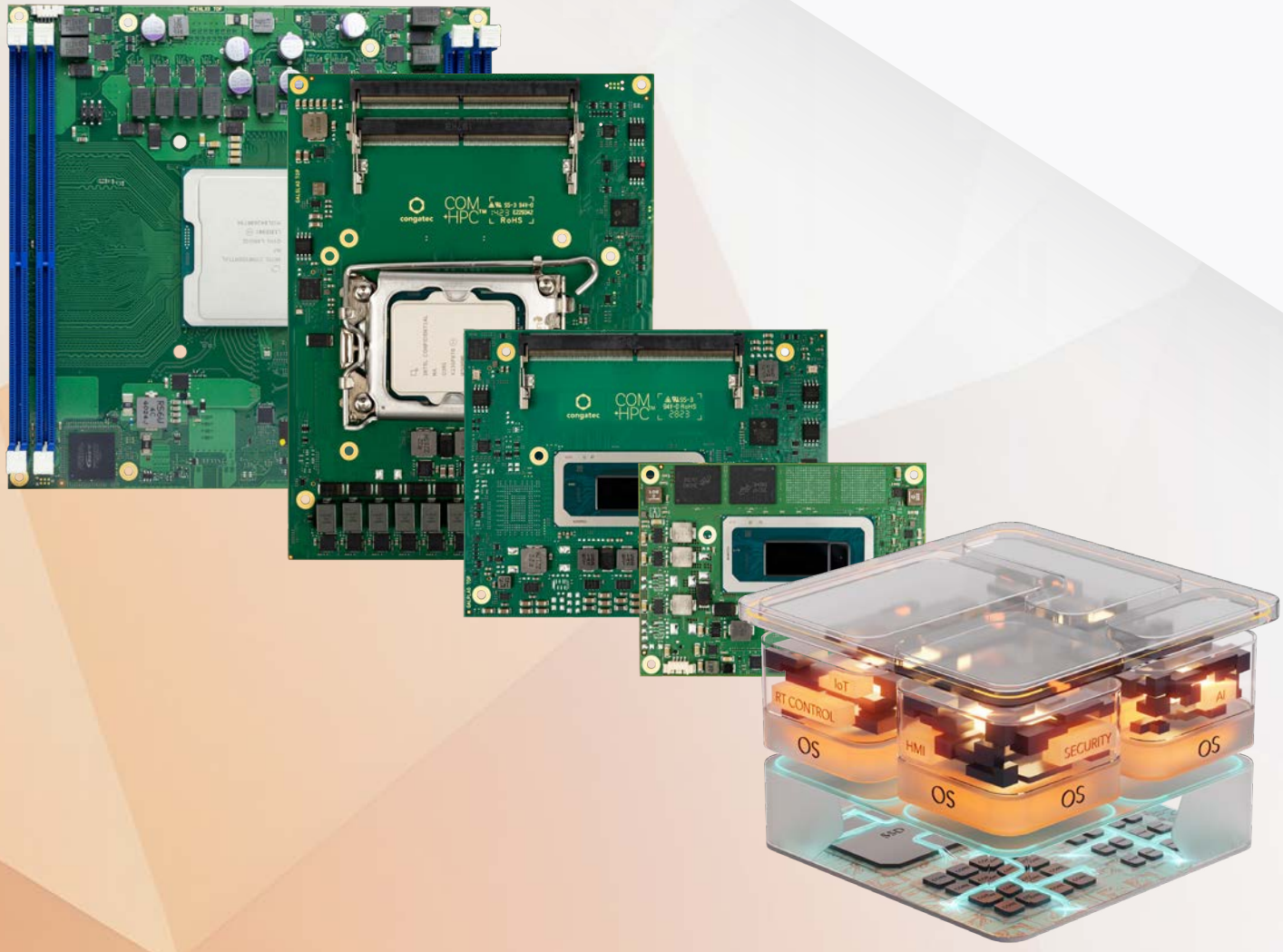
congatec Highlights



ABOUT CONGATEC

congatec is a rapidly growing technology company focusing on embedded and edge computing products and services.

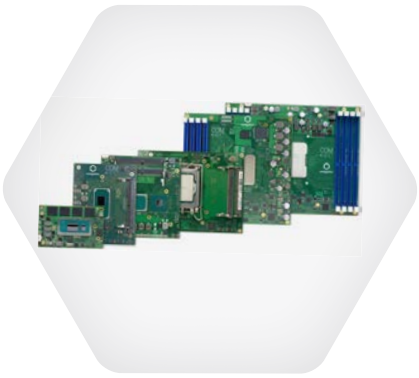
Vision

To innovate embedded computing technology and enable our customers to maximize the value of their solutions.

Mission

We empower innovation with secure, high-performance embedded building blocks from Computer-on-Modules to cloud, enabling our customers to focus on core competencies and shorten innovation cycles.

CONGATEC PORTFOLIO



Products
Based on the open COM-HPC, COM Express, and SMARC standards, our high-performance ecosystems help customers to simplify the use of embedded computing technology and be first to market with industry-leading solutions.

Services
With our tailored services spanning every phase of your project, we aim to shorten your time-to-market while support throughout the entire development cycle from project definition to validation and roll-out.

aReady.
The aReady. strategy simplifies the implementation and utilization of modern base technologies such as Artificial Intelligence, IoT connectivity, and Security throughout the entire lifecycle of your solutions.

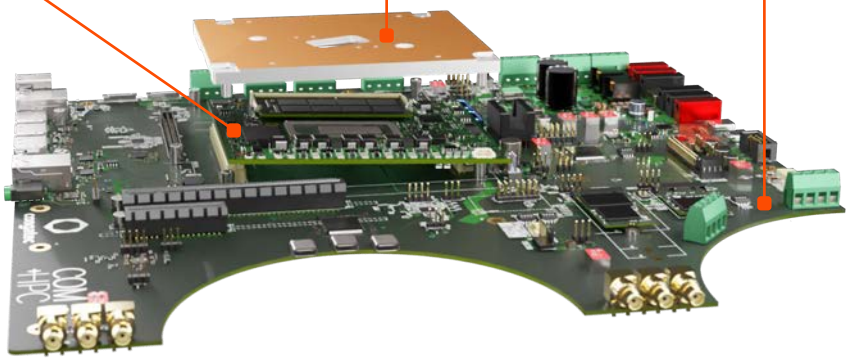
COMPUTER-ON-MODULES CONCEPT

Utilization of Computer-on-Modules is by far the most widely employed embedded design principle. Different Computer-on-Module form factor standards are available. COMs of the same standard are freely interchangeable, both across processor generations and between vendors.

Computer-on-Modules
Function-validated super-component in a complete package

Cooling solutions
Tailored solutions available for all modules, from passive to active cooling

Carrier boards
Fast and cost-effective application-specific designs



Your Benefits

- Short time-to-market
- Low development costs
- High design security and long-term availability
- High scalability and easy upgrades
- Efficient re-use of existing building blocks
- Comprehensive design-in support

COM-HPC

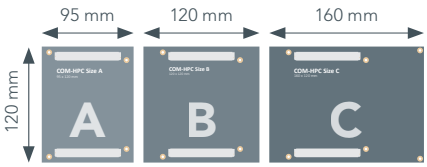
High-performance computing

Mini Size

- 16x PCIe with Target Support*
- 4x USB4*
- 4x USB 3.2x1* / 2x USB 3.2 x2*
- 8x USB 2.0*
- 2x SATA*
- 12x GPIO, 2x UART, 1x CAN
- eSPI, 2x SPI, SMB, 2x I2C
- 2x MIPI-CSI on flatfoil connector
- HDA/I2S, 2x SoundWire
- FuSa
- 2x NBaseT, 2x NBaseT Serdes*
- 2x DDI*, 1x eDP
- Power 8-20V DC

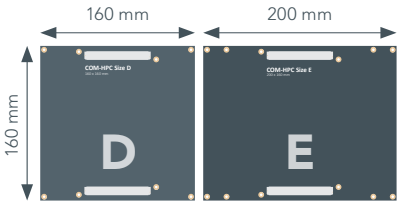
* Some interfaces are shared.
Check congatec.com/COM-HPC-Mini for details

Client Sizes



- 49x PCIe
- 4x USB 4.0
- 4x USB 2.0
- 2x SATA
- 12x GPIO, 2x UART
- eSPI, 2x SPI
- SMB, 2x I2C, IPMB
- 2x SoundWire, I2S
- 2x NBaseT (max. 10 Gb)
- 3x DDI
- eDP
- Power 8-20V DC
- 2x 25GBE KR

Server Sizes



- 65x PCIe
- 2x USB 4.0
- 2x USB 3.1
- 4x USB 2.0
- 2x SATA
- 12x GPIO
- 2x UART
- eSPI, 2x SPI
- SMB, 2x I2C, IPMB
- 1x NBaseT (max. 10 Gb)
- 8x 25GBE KR
- Power 12V DC

Learn more

PERFORMANCE CLASS

Enter the Era of accelerated AI processing

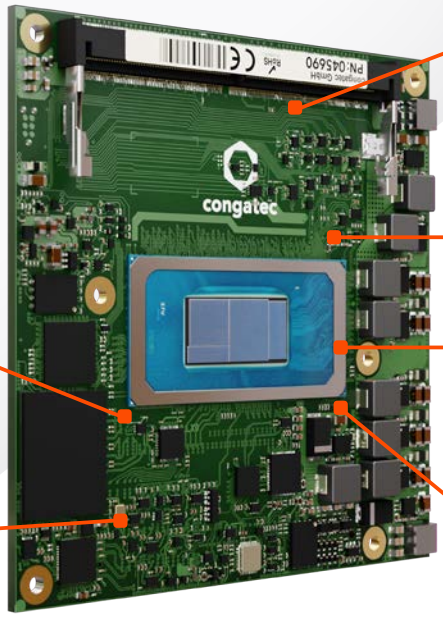
The most complete

conga-TC700

- with Intel Core Ultra
- available as aReady.COM

Power efficient
Intel® Tile Architecture
with integrated CPU,
GPU and NPU

Intel® Arc™ Graphics
up to 128 Execution
Units for up to 1.81 faster
graphics performance*



Up to 24 % higher CPU
performance*
Up to 14 Cores for
22 Threads

Integrated Neural
Processing Unit
Intel® AI Boost with up
to 8.2 eTOPS additional
acceleration

Up to 2.56* performance
for AI inference

Faster and larger memory
Up to 96 GB DDR5 RAM
with 5600 MT/s
In-band ECC

* compared to predecessor

VIRTUALIZATION READY

Learn more

The most advanced

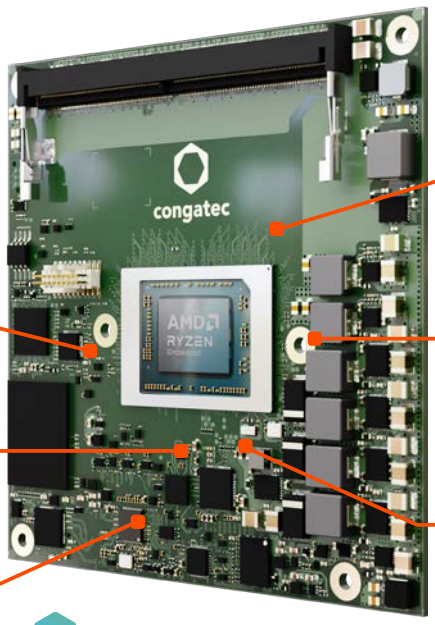
conga-TCR8

- with AMD Ryzen Embedded 8000
- available as aReady.COM

Exceptional multi-purpose
computing with up to 39 TOPS

Highly efficient x86 computing
with up to 8 ‚Zen 4' cores (4nm)

Superior single thread
performance with up to 5.1 GHz



16 TOPS of dedicated AI
performance with AMD
XDNA™ NPU

Immersive graphics with
Radeon RDNA 3™ and up
to 12 compute units

For memory intensive
applications with up to
128GB DDR5-5600 (ECC
optional)

VIRTUALIZATION READY

Learn more

PERFORMANCE CLASS

based on Intel® 13th and 14th Generation Intel® Core™ Processors

COM-HPC Client

The most performant
Fuels even the performance hungriest embedded demands

VIRTUALIZATION READY

conga-HPC/cRLS

- Intel® performance hybrid design combines performance cores with Efficient cores
- Intel® UHD Graphics 730/770 driven by Xe Graphics architecture
- PCI Express Gen4 and Gen5

The most versatile
Ready for the next generation of embedded applications at the edge

VIRTUALIZATION READY

conga-HPC/cRLP

- Intel® performance hybrid design combines performance-cores with Efficient–cores
- Up to Intel® Iris® Xe Graphics architecture with up to 96 EUs
- Up to PCI Express Gen 5

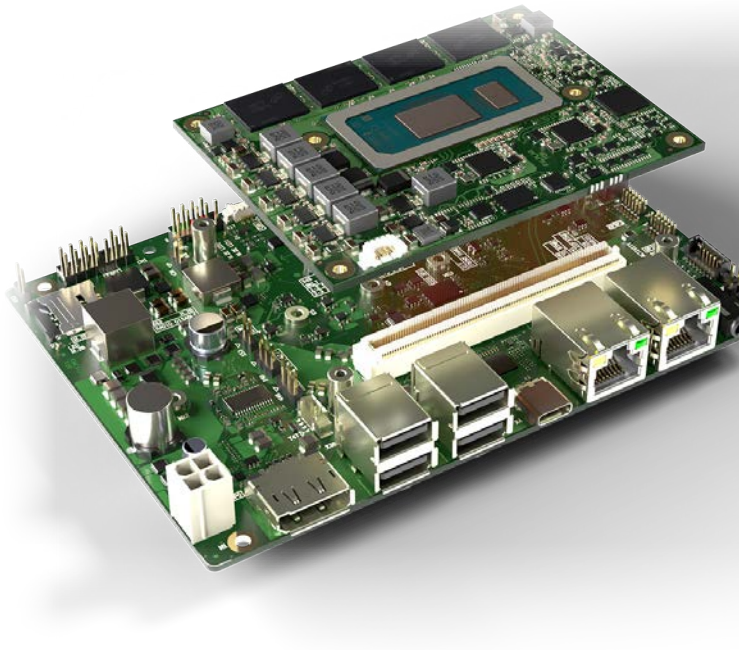
COM-HPC Mini

The most compact
Engineered to fit tightest spaces

VIRTUALIZATION READY

conga-HPC/mRLP

- Memory down LDDR5x and onsoldered NVMe
- Options with integrated Iris Xe graphics
- Industrial temperature –40 °C to 85 °C



COM Express Compact

The most popular
Upgrade with ease to meet latest requirements

VIRTUALIZATION READY

conga-TC675

- Intel® hybrid design combines Performance cores with Efficient cores
- PCI Express Gen 4 | USB 4
- AI Acceleration with Intel® Deep Learning Boost (VNNI)

The most rugged
Built to withstand even the toughest conditions

VIRTUALIZATION READY

conga-TC675r

- Memory down LPDDR5x and options for onsoldered NVMe
- Intel® Iris® Xe Graphics architecture with up to 96 EUs
- Industrial Temperature –40 °C to 85 °C

Learn more

SERVER CLASS

Highly agile application development with shortest time to market

COM-HPC Server

Defines the ultra-high end of embedded computing with up to 100 Gbit/s Ethernet and up to 65 PCIe lanes

The most powerful

The powerhouse for edge server

conga-HPC/sILH

- Intel® Xeon® D2800 and D2700 processors
- Up to 22 cores
- Up to 512 GB RAM
- Industrial temperature –40 °C to 80 °C
- 100 Gb max. Ethernet bandwidth

The most efficient

Enable power sensitive edge server designs

conga-HPC/sILL

- Intel® Xeon® D1800 and D1700 processors
- Up to 10 cores
- Up to 256 GB RAM
- Industrial temperature –40 °C to 85 °C
- 100 Gb max. Ethernet bandwidth

COM-Express Type 7

Server-on-Modules for embedded edge and fog servers support with up to 4x10 GbE and 32x PCIe lanes

The most edgeable

Enable highly rugged edge server designs

conga-B7XI

- Intel® Xeon® D1800 and D1700 processors
- Up to 10 cores
- Up to 128 GB RAM
- Industrial temperature –40 °C to 85 °C
- Up to 4 × 10 GbE with CEI/KR/SFI interface support

The most multicore

High core count on small form factor

conga-B7E3

- AMD EPYC™ Embedded 3000 processors
- Up to 16 cores
- Up to 96 GB RAM
- Industrial temperature –40 °C to 85 °C
- Up to 4 × 10 GbE with KR interface support

Upgrade

Boosted server efficiency – Intel Ice Lake-D Refresh

Now with upgrade to D-2800/D-1800 Series

- More Cores (HCC)
- Higher Base Frequency
- Intel® Speed Select Technology
- Improved Performance/Watt

Learn more

LOW-POWER CLASS

Addressing deeply embedded small form factor applications

SMARC Module

Create SMART solutions with SMARC modules –
IT'S YOUR CHOICE

The most adaptive

High multitasking capabilities

VIRTUALIZATION READY

conga-SA8

- Intel Atom® x7000RE Series
- Up to 8-Cores
- GbE with TSN and TCC support
- WiFi option (with TSN)
- Industrial temperature
  –40 °C to 85 °C

The most visionary

Powerful NPU and vision capacities

conga-SMX95

- NXP i.MX 95 Processor Family
- Up to 6-core Arm® Cortex®-A55
- NXP eIQ® Neutron NPU
- EdgeLock™ security
- Industrial temperature
  –40 °C to 85 °C

The most scalable

Optimal balance between power and performance

VIRTUALIZATION READY

conga-SA7

- Intel Atom® x6000E, Intel® Pentium® or Celeron® J
- Up to 4 cores
- GbE with TSN and TCC support
- Up to 16 GB LPDDR4x
- Options with WiFi
- Industrial temperature
  –40 °C to 85 °C

The most intelligent

Deep learning inference at the edge

conga-STDA4

- TI processor TDA4VM or DRA829J
- Up to 2 cores Arm® Cortex®-A72
- Up to 6x Arm® Cortex®-R5F for real-time communication
- C7x vector DSP
- Deep-learning accelerator
- Industrial temperature
  –40 °C to 85 °C

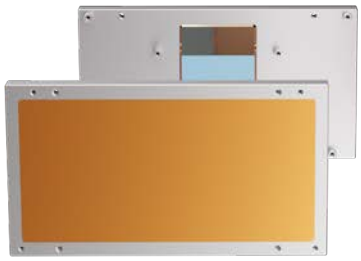
Learn more

COM COOLING SOLUTIONS

A vital part of any reliable embedded system and edge server design

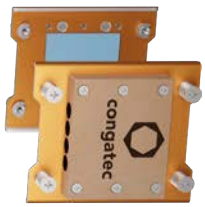
Active cooling solution

Heatspreader



Passive cooling solution

Heatpipe Adapter



"congatec's smart cooling pipes pave the way for unlimited performance growth for Computer-On-Modules"

High-performance
active cooling solution
for server class COM Express
Type 7 modules

High-Performance Cooling

The congatec heatspreaders and cooling solutions for high-performance modules feature special heatpipes in order to boost performance and reliability. A copper block is mounted on the chip to absorb heat and to mitigate the effects of thermal peaks. To account for different component heights and manufacturing tolerances, the copper block is spring loaded to apply an optimized pressure to the silicon dye. The copper block transfers the heat to the cooling fins or heat plate by flexible flat heat pipes.

The heat pipes are attached directly to the cooling blocks on the chip and the heat spreader plate. As a result, more heat can be transfered from the processor environment to the heat spreader, hot spots are cooled more efficiently and therefore the processor stays longer in its ideal thermal state, delivering best performance without throttling down.

The heatpipe adapter uses the same principles to transfer the heat from the module directly to standard heat pipes with 8mm diameter. This approach allows for cost optimized, passively cooled and ultra-flat system solutions i. e. 1 U rack units.

SERVICES

Existing know-how and infrastructure make it possible for customers to outsource custom designs to congatec. As a single supplier covering the complete range of cost-effective standard solutions to individual customized projects, congatec supports the full range of technology platforms.

Project Definition Phase

Product Selection Support
SBC, COM or full custom design? Forward looking I/O selection, …

Design-In Training
Engineering trainings covering all aspects for carrier board designs

Design Phase

Design Guides
In depth best practice solutions

Component Selection
Support to find the right functionality, costs, availability, …

Schematic Review
Check the design to recognize problems at an early stage

Layout Review
Detailed check and best practice advice from our specialists

Signal Integrity Simulation
High speed simulation allows layout adjustments before the first prototypes are produced

BIOS/UEFI/Firmware Customization
Implementation of customized features or settings

Bring-Up Support
congatec engineering support to bring life to the first prototypes quickly

Validation Phase

Signal Integrity Analysis
Signal integrity analysis of high speed interfaces such as PCI Express 6.0, Thunderbolt, USB, …

Thermal Solutions
Optimized cooling solutions featuring heat stacks, heat pipes or vapor chambers

Customized Article Handling
Handling of manufacturing and logistics requirements

Pre-EMC Measurement
Pre-EMC Measurement and engineering support to optimize the designs to EMC requirements

MTBF
Reliability calculations based on different standards i.e. Telcordia 4, SN 29500, …

Learn more

aReady.

Simplify your development with high-performance building blocks from COM to cloud

The aReady. strategy is specifically designed to simplify the implementation and utilization of modern base technologies. With our aReady. high-performance embedded building blocks, you can focus on your core competencies and become an innovation driver in your industry. Our constantly growing aReady. portfolio includes aReady.COM, aReady.IOT and aReady.VT, covering the most relevant use cases for your applications.

Learn more

aReady.COM

Application-ready Computer-on-Modules from congatec

aReady.COM reduces complexity of COM-based designs by seamlessly integrating hardware and software building blocks for unparalleled performance and flexibility.

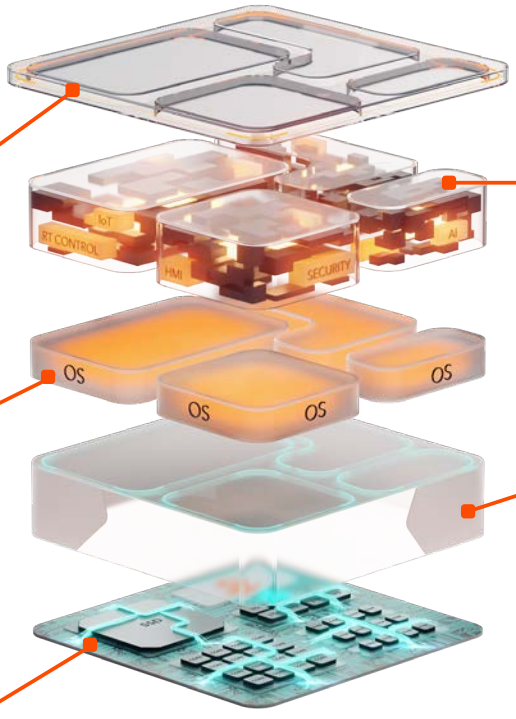
Your Benefits

- Optimize time-to-market and design efforts by combining existing hardware and software building blocks
- Optimized cost and efficiency by reducing efforts for installation, compatibility testing and licensing
- Increased security by pre-evaluated hardware and software building blocks
- Reduced system size, weight, power, and cost by system consolidation
- Increased flexibility and scalability by simple extension with further building blocks

Customer Application
Applications built on aReady.COMs are more agile and responsive.

Operating Systems Layer
Every aReady.COM comes with pre-installed and licensed operating systems fitted to your needs.

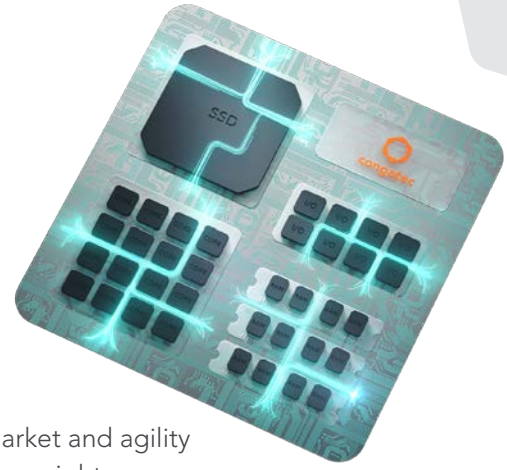
Hardware-Layer
aReady.COMs facilitate flexible integration, enable easy upgrades to extend product lifecycles, and improve return on investment.



Software Layer
Pre-evaluated functional software building blocks minimize design efforts and compatibility concerns.

Virtualization Layer
Hypervisor-on-Module enables the consolidation of multiple applications to make full use of all resources.

Learn more



aReady.VT

Virtualization technology from congatec – consolidate what belongs together

Harness the power of today's multi-core processors with our aReady.VT technology. Consolidate functionality that previously required multiple dedicated systems onto a single hardware platform.

Your Benefits

- Improved time-to-market and agility
- Reduced system size, weight, power and cost
- Full flexibility in system functionality
- Support from low-power modules to high-performance server designs

Learn more

Hypervisor-on-Modules

At congatec, the hypervisor is now standard in all our new x86-based Computer-on-Modules. With the free trial license, you can immediately start evaluating the advantages of virtualization. Check out our entire Hypervisor-on-Module product range.

Learn more

Hypervisor

Additionally, we offer the industry leading Hypervisor from Real-Time Systems as a stand-alone software for your applications, no matter if you are relying on congatec hardware or not.

Learn more

aReady.IOT

IoT technology from congatec – for secure OT/ IT connection from COM to cloud

aReady.IOT Building Blocks are designed for secure IoT connectivity from COM to cloud. Developers use them for secure connection between Operational Technology (OT) and Information Technology (IT).

You can choose from application-ready software building blocks as part of our aReady.COM offerings or opt for our conga-connect multi-edge device, which comes as an out-of-the-box hardware solution.

Your benefits:

- High security by physical network separation
- VPN gateway function adds another security layer
- Enhanced communication via wireless and wired connectivity options
- Pre-configured for fast and easy roll-out
- High scalability enables digitization even across multiple locations
- High integration level ideal for system integrators

Learn more

About congatec

congatec is a rapidly growing technology company focusing on embedded and edge computing products and services. The high-performance computer modules are used in a wide range of applications and devices in industrial automation, medical technology, robotics, telecommunications, and many other verticals. congatec is the global market leader in the Computer-on-Module segment with an excellent customer base from start-ups to international blue chip companies.

Let's connect

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