Scalable Network Application Platforms

Now you can scale up and out with all the benefits of a common architecture

- Tabletop & Rackmount Appliances
- High Performance Servers
  - I/O Optimized
  - Carrier Grade
- Netarium™ ATCA Systems
- eATCA for High End Networking

www.advantech.com/nc
Scalability is considered one of the most important criteria when designing network computing solutions today. Advantech platforms are designed with scalability in mind, allowing equipment providers and operators to select the most effective solution that meets today’s needs and then grow the system “UP or OUT” easily and economically as requirements change.

Besides product reliability and the ability to apply rapid customization, scalability is one of the top design requirements at Advantech for every board, blade, platform and system we create. Scalability at Advantech starts with offering different processor SKU options and flexible, modular designs matching compute, IO and acceleration capabilities to distinct price-performance sweet-spots. This enables network equipment providers to offer attractive entry level products with ‘grow as you need it’ upselling business models to their customers. A derivative benefit of this approach is that later purchases can incorporate new technology into the solution.

Scalability also includes the ability to migrate between different platforms on the product roadmap which have consistent platform feature sets, thereby facilitating a maximum of software re-use for customers. This not only yields lower resource investments for cross-platform software porting, optimization and life-cycle management but also obvious time-to-market advantages. By offering the broadest range of networking platforms in the industry based on Intel Architecture (IA) we maximize the competitive advantages our customers can leverage.

Scalability however can be viewed from another angle than that of scaling UP. The ever-growing demand for networking bandwidth and Quality of Service, along with the increasing need for business and service flexibility are the driving forces behind cloud computing, Software Defined Networking and Network Function Virtualization demanding horizontal scaling or scaling OUT.

Horizontal scalability for Advantech means that we design our products for ease-of-use and deployment, optimize support for virtualized environments and add platform software that makes it easier to change workloads without performance degradation. But there is even more to this. Our global services based on Advantech integration and logistics centers around the world can help customers master the challenges that scale-OUT deployment and business models bring.

The Foundation: A Scalable Architecture

Advantech works to realize this scalability goal by providing solutions based on a single processor architecture where individual systems can be easily expanded with new hardware options and with compatible product families which range from table-top appliances all the way up to ATCA systems with terabit-per-second throughput. Building a product portfolio that can indeed do this requires an underlying hardware architecture that can support a consistent and cohesive software product that in turn is able to scale up based on the functionality and capacity requirements. A silicon partner delivering dependable year over year performance and feature improvements using world leading process technology is a key enabler in these fast paced times.

At the foundation of Advantech’s portfolio is the Intel® Platform for Communications Infrastructure. Specifically designed for workload consolidation, it is capable of performing application, control plane, and data plane processing concurrently with L3 forwarding throughputs of approximately 255 million packets per second (MPPS) and scalable security performance to over 80 gigabits per second (Gbps) of IPsec acceleration on platforms with dual Intel® Xeon® processor E5-2600 v2 product family series and Intel® Communications Chipset 89xx Series.
Intel® QuickAssist Technology & Intel® Data Plane Development Kit (Intel® DPDK)

NPU-like packet processing performance is attained by leveraging the performance-optimized libraries in the Intel® DPDK to speed up packet processing and increase throughput. The platform integrates Intel® QuickAssist Technology, a set of software modules for bulk encryption, data compression, and other workloads critical to networking. As acceleration hardware embedded within the chipset, on PCIe cards, NMCs or FMMs are available, compute-intensive algorithms can be off-loaded from the CPU cores, freeing up processor cycles for application and control processing.

Advantech’s platforms built on iA now cover the broadest range of performance, cost and power levels, providing developers with both a scalable product range and a dependable upgrade path. High-performance processors offer extra features and platforms scale up from dual processor servers to bladed ATCA systems, while lower-performance parts allow greater cost-optimization in entry level appliances. Advantech's platform designs ensure that hardware acceleration based on QuickAssist™ scale with processing power and system connectivity.

What’s more, you can tap into iA with the guarantee of proven software compatibility spanning multiple processor generations allowing you to commit to any platform today with the assurance your software investment is securely future-proofed. Scalability makes it simpler to design a range of products using a common software base starting with desktop appliances for SMB security and ranging to UTMs and policy enforcement engines leveraging the Intel® Data Plane Developers Kit and Intel® QuickAssist Technology in next-generation network platforms.
Advantech’s Netarium™ series of ATCA Reference systems are specifically targeted to help network equipment providers reach superior levels of performance to extend their product range at the high end. The series represents a new generation of systems which offer superior scalability and flexibility with the latest 40 Gigabit Ethernet (40G) backplanes, switches and application blades. We optimize the systems to achieve the highest possible density at the rack level, with a maximum number of payload blades, network ports and switching capacity.

Each system is tailored for customers and can be rapidly deployed for applications which require faster and deeper packet processing such as policy and charging enforcement, network security, real-time traffic monitoring, load balancing, subscriber analytics and content optimization among others. As ATCA was designed to meet the carrier-grade constraints of the telecom industry, the systems integrate the chassis, cooling, power distribution and shelf management into an off-the-shelf platform solution capable of superior 5 Nines availability and reliability. What’s more, Advantech’s Advanced Shelf Management make these powerful systems as easy to manage as a big appliance.

Advantech’s new eATCA architecture is specifically targeted at network equipment providers building solutions for large enterprise network security systems or in datacenter and service provider environments where highest available performance and enhanced I/O are uncompromising factors of choice. The eATCA systems integrate standard ATCA blades with a new extended rear transition module (eRTM) providing almost four times more real-estate than that currently offered by traditional commercial bladed systems suppliers or the ATCA ecosystem. The increased capacity supports more PCIe-based I/O connectivity and enables a new and simpler way to add special purpose acceleration hardware.

The ability to scale Advantech’s new eATCA systems to over 1 Terabits per second throughput hits the performance sweet spot targeted by customers deploying solutions at the high-end of today’s network computing and packet processing spectrum.
Advantech Networking Platforms on Intel Architecture

Products

Network Mezzanine Cards
Advantech's NMCs are cost-optimized, high density IO modules, but are cost-optimized for use in Advantech's eATCA systems, Network Application Platforms and Appliances.

The GbE and 10GbE NMCs use best-in-class Intel® Ethernet controller technology, providing LAN failover plus enhanced acceleration features and offload functions with PCIe Gen 3 x8 connectivity for maximum packet throughput. Various 40G options are also available. For accelerated hardware encryption and compression, NMCs based on Intel® QuickAssist technology can easily be added to scale security and crypto hardware offload along with system IO.

<table>
<thead>
<tr>
<th>P/N</th>
<th>NMC-0107-10E</th>
<th>NMC-0803-10E</th>
<th>NMC-1004-10E</th>
<th>NMC-4002</th>
<th>NMC-0501</th>
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<tbody>
<tr>
<td>Description</td>
<td>4-port GbE card</td>
<td>8-port GbE card</td>
<td>2-port 10 GbE card</td>
<td>2-port 40G Card</td>
<td>Intel QuickAssist Accelerator</td>
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<tr>
<td>Controller</td>
<td>Intel I350-AM4 x 1</td>
<td>Intel I350-AM4 x 2</td>
<td>Intel 82599 × 1</td>
<td>Various 40G options available</td>
<td>Intel® Communications Chipset 89XX</td>
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<td>Ports</td>
<td>4 × RJ45</td>
<td>8 × RJ45</td>
<td>2 × SFP+</td>
<td>2 x QSFP</td>
<td>-</td>
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<tr>
<td>Other</td>
<td>With LAN bypass</td>
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<td>-</td>
<td>-</td>
<td>PCIe card also available</td>
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</tbody>
</table>

Contact your Advantech representative for a full list of available NMCs with different port configurations and bypass options.

Fabric Mezzanine Modules
The FMM concept is one of the key elements in Advantech’s Customized COTS strategy. FMMs are a new denominator for personalizing a common platform at the blade level and they scale extremely well for both I/O and acceleration functions. For example, the MIC-5333 ATCA blade based on two Intel® Xeon® E5 Series processors houses three FMM sites on the front blade and one FMM site on the rear transition module enabling a wide variety of solutions.

- **FMM-5001B**: Intel® 82599ES with 2 × 10GBaseKX4 FI
- **FMM-5001F**: Intel® 82599ES for 2 × 10GbE with dual SFP+
- **FMM-5001Q**: Quad Intel® 82599ES with 8 × 10GBaseKR FI
- **FMM-5002**: Servers Graphics Controller with VGA connector
- **FMM-5004M**: Mellanox CX3 with 2 × 40GBaseKR4 FI
- **FMM-5006**: Intel® QuickAssist Accelerator
# Global Access, Local Support

**Regional Service & Customization Centers**

<table>
<thead>
<tr>
<th>Design Centers</th>
<th>Manufacturing Centers</th>
<th>Configure To Order Service Centers</th>
<th>Logistics Centers</th>
<th>Repair Centers</th>
</tr>
</thead>
</table>

**Design Centers**
- Kunshan, China
- Taipei, Taiwan
- Eindhoven, Netherlands
- Warsaw, Poland
- Milpitas, USA

**Manufacturing Centers**
- Kunshan, China
- Eindhoven, Netherlands
- Warsaw, Poland
- Milpitas, USA

**Configure To Order Service Centers**
- Kunshan, China
- Eindhoven, Netherlands
- Warsaw, Poland
- Milpitas, USA

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- Kunshan, China
- Eindhoven, Netherlands
- Warsaw, Poland
- Milpitas, USA

**Repair Centers**
- Kunshan, China
- Eindhoven, Netherlands
- Warsaw, Poland
- Milpitas, USA

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**Regional Offices**

**Greater China**
- China
  - Beijing
  - Shanghai
  - Shenzhen
  - Chengdu
  - Hong Kong
- Taiwan
  - Taipei
  - Kaohsiung
  - Rueiguang
  - Yang Guang
  - Taichung

**Asia Pacific**
- Japan
  - Tokyo
  - Osaka
- Korea
  - Seoul
- Singapore
  - Singapore
- Malaysia
  - Kuala Lumpur
  - Penang
- Indonesia
  - Jakarta
- Thailand
  - Bangkok
- India
  - Bangalore
- Australia
  - Melbourne
  - Sydney

**Europe**
- Germany
  - Munich
  - Hilden
- France
  - Paris
- Italy
  - Milano
- Benelux & Nordics
  - Broda
- UK
  - Reading
- Poland
  - Warsaw
- Russia
  - Moscow

**Americas**
- North America
  - Cincinnati
  - Milpitas
  - Irvine
- South America
  - Mexico
  - São Paulo

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**Contact Information**

- **China**: Kunshan, 86-512-5777-5666
- **Taiwan**: Taipei, 886-2-2792-7818
- **Netherlands**: Eindhoven, 31-40-287-7000
- **Poland**: Warsaw, 49-22-33-23-740 / 741
- **USA**: Milpitas, CA, 1-408-519-3898

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**Global Access, Local Support**

**Worldwide Offices**

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<tr>
<th>Country</th>
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<tr>
<td>China</td>
<td>Kunshan</td>
<td>800-810-0345</td>
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<td>Beijing</td>
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<td>Shenzhen</td>
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<td>Chengdu</td>
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<td>Kaohsiung</td>
<td>886-7-229-3600</td>
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**Asia Pacific**

- **Japan**
  - Tokyo: 080-500-1055
  - Osaka: 81-3-6802-1021
- **Korea**
  - Seoul: 080-363-9494
  - 82-2-3663-9494
- **Singapore**
  - Singapore: 65-6442-1000
- **Malaysia**
  - Kuala Lumpur: 1800-88-1809
  - Penang: 60-4-397-3788
  - 60-4-397-4188
- **Indonesia**
  - Jakarta: 62-21-769-0525
- **Thailand**
  - Bangkok: 66-2-248-3140
- **India**
  - Bangalore: 1800-425-5070
  - 91-80-25450206
- **Australia**
  - Melbourne: 1300-308-531
  - Sydney: 61-3-9797-0100
  - 61-2-9476-9300

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**Europe**

- **Europe**
  - 00800-2426-8080
- **Germany**
  - Munich: 49-89-12599-0
  - Hilden: 49-2103-97-885-0
- **France**
  - Paris: 33-1-4119-4666
- **Italy**
  - Milano: 39-02-9544-961
- **Benelux & Nordics**
  - Broda: 31-76-5233-100
- **UK**
  - Reading: 44-0118-929-4540
- **Poland**
  - Warsaw: 48-22-33-23-740/741
- **Russia**
  - Moscow: 8-800-555-01-50
  - 7-495-232-1892

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**Contact Information**

- **www.advantech.com**
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