

Advantech Networking and Security Solutions

Accelerating Edge to Cloud Network Transformation for the AIoT Era

- ✓ SD-WAN & SASE
- ✓ Scalable Edge Devices
- ✓ White-box Benefits
- ✓ Remote Evaluation
- ✓ Enhanced Platform Management
- ✓ Global Services
- ✓ Ecosystem Partners
- ✓ Selection Guide
- ✓ Certification

SD-WAN

SASE

vFW

vRouter

Edge

AI

5G

IoT

FWA

uCPE



ADVANTECH

Enabling an Intelligent Planet

www.advantech.com/cloud-iot

intel
partner
Titanium
IoT Solutions

Universal Edge Platforms for the Cloud Native Enterprise

As operational, information and communications technologies converge, accelerated by the virtualization of applications, the software defined, AI-driven network infrastructure that promises to be extremely agile and reconfigurable is in the making. Advantech Network Appliances provide a solid and open foundation for service providers and enterprises to deploy agile and secure network services that break away from monolithic architectures. These scalable edge-to-cloud white boxes integrate latest computing and networking technologies into optimized platforms that are widely deployed running popular SD-WAN, SASE, security and uCPE software from industry leading ecosystem partners. This flexible approach allows for disaggregated strategies that minimize supply chain risks and protect network investment building an open and cloud-native infrastructure ready to enable microservices that scale from small branch offices and small-to-medium-sized businesses to enterprise and service provider networks.



From SD-WAN to SASE - Anywhere Security for the AIoT Era

One of the main benefits of SD-WAN is the contextual awareness that it provides to software about the state of the WAN and connection quality. By providing this additional intelligence, software is able to re-route traffic on the fly in cases where connections between the on-premise equipment and the cloud are down or degraded. In addition centralized management provides a single-pane-of-glass view of the state of all the devices on the WAN. But SD-WAN is just one piece of the broader WAN networking and security puzzle. In addition to SD-WAN, SASE provides features such as NGFW, IPS, CASB, DLP and SWG. With the entire network and security infrastructure delivered as a single cloud-native platform, enterprises benefit from increased visibility, fewer silos, and enhanced security. Cost-savings, agility, and cloud-friendliness are key benefits of SD-WAN. SASE delivers those benefits as well as additional networking and security functionality to prepare the cloud-native enterprise for the AIoT era.

Foster Innovation with Advantech Enterprise Edge Devices

The Pioneer in White-box SD-WAN & uCPE

For over 30 years, the world's leading brands have chosen to embed Advantech computing platforms and IoT intelligent systems into their products, empowering Industry 4.0, building smart city and transforming the network infrastructure. As early-movers in new technologies such as AI, IoT and SDN, Advantech helps co-create new business ecosystems that enable an intelligent planet.

Advantech's network appliances provide the range of innovative platforms needed by service providers to transform the network using new disaggregated, AI-driven models. Advantech white boxes extend the cloud to the enterprise edge where technologies such as SD-WAN, AI and FWA enable a converged edge architecture securely connecting people and things. Over 150 dedicated engineers design our networking products to address new market needs following strict quality design rules and test criteria. Certification and regional homologation services ensure products can be safely deployed globally. All this backed by a solid financial base and an extensive network of more than 8,500 employees globally. That is why we are the trusted SD-WAN, SASE and network edge hardware partner to service providers across the world.

Edge to Cloud Scalability

Advantech's white box network appliance range, built on standard x86 processors in feature-flexible appliances, covers multiple configurations and price points scaling from 2 to 100+ cores providing maximum physically achievable throughputs up to 800+ Gbps. Optional networking modules offer a highly flexible WAN connectivity choice of hybrid 5G, 4G LTE, WiFi6, WiFi5, xDSL & SFP+ configurations.

Encryption acceleration is supported using Intel® QuickAssist on Intel® Atom™ and Intel® Xeon® based platforms, with DPDK providing the technology needed to accelerate packet handling by up to 10x. As a result, secure branch connectivity including end-to-end encryption can be provided without compromising VNF performance or increasing cost. The 1U higher end platforms have been designed for high-availability networks with integrated fail-safe redundancy and advanced remote security and management features that minimize system down time.

SD-WAN & SASE Appliances			
 FWA-T011 <ul style="list-style-type: none">• Budget-friendly• Versatile Mounting Approach• Fan-less & Extremely Compact Slim CPE for cloud-based deployments	 FWA-1000/2000 Series <ul style="list-style-type: none">• Optimized C/P Ratio• RF Certified• Fan-less & Compact SMALL OFFICE, OUTLET (Less than Gbps)	 FWA-3000 Series <ul style="list-style-type: none">• Efficient Performance• Rich Connectivity• Built-in QAT Medium, ENTERPRISE Branch (Less than 20Gbps)	 FWA-5000/6000 Series <ul style="list-style-type: none">• Superior Performance• High Scalability• Redundant Design HQ, DATA CENTER (Above 20Gbps)



Learn More

White-box Benefits

Advantech's feature flexible white-box network appliance range offers a solid foundation for deploying SD-WAN, SASE and additional edge services functions from key industry partners. This brings the benefits described below to the entire ecosystem: from enterprise, to services providers and software partners.

Enterprise

Virtualized, white-box solutions replace multiple fixed-function appliances in the enterprise, reducing capital and operating costs while providing increased service provisioning flexibility. Choosing open and re-programmable commercial-off-the-shelf (COTS) platforms offers an investment protection for the long-term. Virtualized white boxes securely extends the cloud to the enterprise edge where new and optimized business services can be deployed faster than ever before.

Hardware consolidation for lower TCO

Streamline the rollout of new business services and branches

Agile on-demand services boost enterprise productivity

Enhanced security and network optimization choices from open marketplace

Service Provider

When hardware and software functions are disaggregated, service providers and enterprise users alike gain the benefits of multi-vendor choice and avoid lock-in by any single vendor. Moreover, by leveraging an open universal platform providing a virtual infrastructure, supply chains can be streamlined across one or two white box models. Service providers can now benefit by offering virtual network functions and application marketplaces that allow them to differentiate from competition and introduce innovative ways to monetize and grow revenue.

Faster time to revenue with new services

CAPEX & OPEX savings

Full virtual solution avoids vendor lock-in

Simplified CPE portfolio, platform & architecture

Ecosystem

The arrival of open and universal CPE solutions presents a whole new opportunity for the ecosystem driving innovation and bringing faster time to revenue. Enterprises and service providers can benefit from this thriving ecosystem that mixes open source and commercial solutions. Solution vendors can leverage standard infrastructure and address a broader marketplace with new and optimized services while management and orchestration players offer single-pane-of-glass and enhanced automation services. System Integrators can offer comprehensive deployment & support models for customers requiring a full service model.

Universal edge platform opens new markets and business opportunities

Faster time to revenue with software centric solutions

Open co-creation framework that drives innovation

Mix of open source and commercial solutions

Connect to Advantech Remote Evaluation Lab

Advantech's Remote Evaluation Service (RES) is designed to help customers get ahead of the technology curve and rapidly evaluate next-generation applications and services on a wide range of networking platforms that can emulate different deployment scenarios at different network locations. We work together with leading silicon, middleware and NFV ecosystem partners so that you can load your software onto Advantech Carrier Grade and Edge Servers, Network Appliances and Universal CPEs for:



Next-gen technology for early evaluation and benchmarking.



Remotely perform functional and interoperability testing



Get an early start on development while saving resources, time and money



RES puts virtual control of your own test lab at your finger-tips. You no longer incur the costs of shipping heavy freight around the world, purchasing expensive test rigs or breaking your back installing equipment in a lab which you probably wouldn't sit in anyway. The systems we propose are pre-integrated application-ready platforms embedded in a qualified, dedicated, and secure network test environment. In addition, our NFV Test-Drive Portals build a full-stack NFVI environment where users can remotely evaluate VNF performance or interoperability for a particular use case.

What's In It For You

Accelerate the Evaluation Process: quickly kick off SD-WAN hardware and software evaluation without having to deal with all the shipping, licensing and setting up hassle.

Choose From the Widest Range: take any Advantech white-box uCPE for a test-drive, from ultra-low footprint to high-end performance.

Simplify Decision-Making: get your hands on pre-validated SD-WAN stacks that have been configured to perform well together.

Find Your Sweet Spot: mix and match software and hardware components, get rid of unnecessary load and find the perfect feature-set that match your customer's compute, throughput and storage needs.

Quick Start SD-WAN: start getting familiar with uCPE managers, SD-WAN controllers and cloud orchestrators, reproducing everyday situations on real-world networking gear.



Learn More

Advantech Platform Management

To Improve Security, Reliability, and Productivity

Advantech offers an in-house baseboard management solution that provides secure in-band and out-of-band control functions. This fully integrated firmware solution performs a range of system security control functions that can improve system availability, simplify operations, and reduce time to market. Our field-proven modular server solutions have been widely deployed in telecommunications, industrial edge, network appliance, storage, and private cloud server applications.

System Management

Advantech platform management provides intensive system control through IPMI, Web, and RESTful API — alongside BIOS POST and sensor status monitoring. It also supports multiple alarm channels (e.g. SMTP, SNMP, LED, and Beep).



Remote Management

Advantech platform management can work independently from the OS and be achieved remotely from any location instead of time-consuming device management on-site. Remote functionality enables users to provide an efficient, multi-location service with lower maintenance and operation costs.



High Availability

Advantech's integrated solution reduces overall operational costs and minimizes downtime by offering fast recovery mechanisms and fail-safe firmware updates (BIOS, BMC, etc.), thereby preventing single points of failure.



Application Flexibility

Advantech's in-house solution is fully featured to maintain all aspects of development and create flexible options for easy customization and quick response times within service level agreements. Our solution is verified across different platforms, helping service providers and businesses bridge the gap between ODMs and standard products to speed time to market.



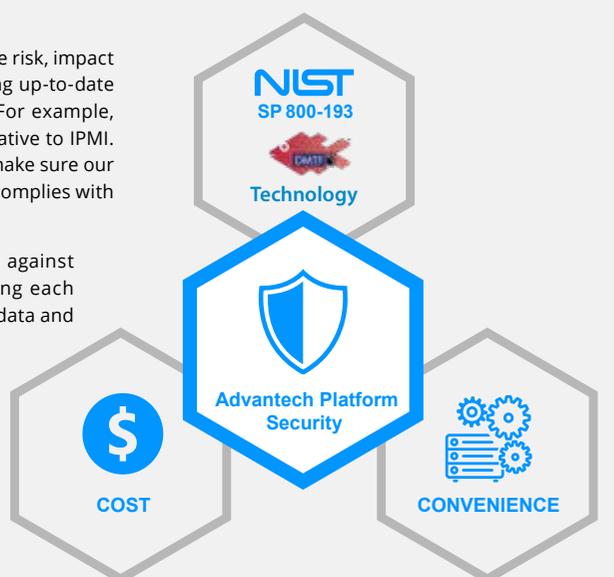
Platform Security

Advantech platform management increases security to reduce risk, impact on service, and maintenance cost by continuously developing up-to-date secure technology and following the latest specifications. For example, Redfish is the next-generation platform management alternative to IPMI. We also maintain vulnerability and patch management and make sure our solution passes security scans (e.g. Nessus, NMAP, etc.) and complies with common international laws and guidelines.

NIST SP 800-193 increases the resiliency of our platforms against potentially destructive attacks, and is aimed at protecting each device from unauthorized changes to its firmware or critical data and restoring the platform to a state of integrity.

Advantech platform security also provides an efficient interface with the user experience in mind. Our sustainable firmware solution provides seamless default protection without additional hardware changes and security hardening necessary to fulfill different user scenarios.

To learn more about software support for a specific product, please contact us.

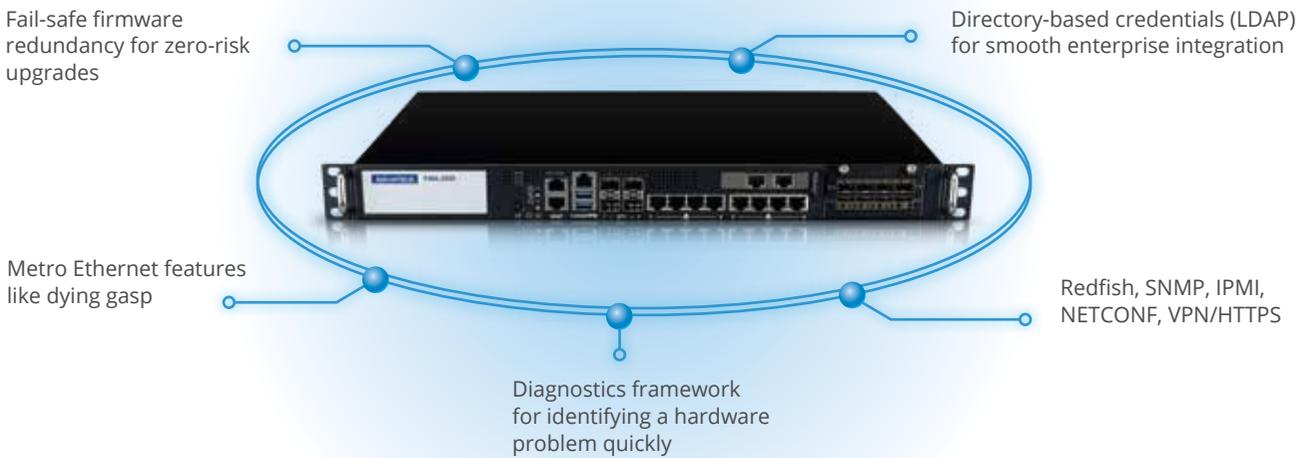


Learn more

Enhanced Platform Management

Advantech's networking platforms have been specifically designed to run high-availability telecommunication services and minimize costly downtime. Advantech's Advanced Platform Management provides all required IPMI v2.0 Baseboard Management Controller (BMC) functionality and also additional features that allow local and remote users to early detect system degradation, avoid system interruption and shorten mean time to repair.

Enhanced Lights-out Management Features



QuickStart Linux Image (QSL)

- CentOS 7 based start-up image (USB base)
- Features include:
 - Platform specific drivers (Intel® NIC, IPMI driver, etc.)
 - Advantech LAN bypass
 - LCD module control
 - Platform Management tool (ipmitool, lm-sensor...etc)
 - Offline diagnostics
 - DPDK & QAT

USB Image			Pre-installed on HDD/SSD (on request)		
Platform Tools	BIOS Update	LCD Module Control	DPDK pktgen	Intel® QAT Openssl	Diagnostic Tools
	FRU Data Display	LAN Bypass Control	DPDK I2fwd	DPDK ipsecgw	
	Sensor / Health	Sierra QMI SDK	DPDK PMD	DUI	
	Platform mgmt. tools	TPM Sample	Intel® QAT Sample	System Info	
Ethernet Drivers	TPM Drivers	SR-IOV Drivers	DPDK Drivers	QAT Drivers	HWM Drivers

CentOS 7 Linux

Premium Global Services



Manufacturing



Logistics



Customer Support

The foundation of our business is built on world-class manufacturing, quality, and integration processes that enable our customers to deploy reliable business-critical solutions worldwide with total confidence.

Deploying standardized products that enable our customers to create industry-leading solutions requires a full suite of high-quality products, advanced customization technology, an extensive ecosystem, and a full complement of lifecycle services. Advantech's platforms, customized COTS framework, Ecosystem Alliance Program, Remote Evaluation, and Global Services meet these requirements suitably. We provide a comprehensive service package that integrates our key service models into a complete transaction process, from the manufacturing and system integration phase to global logistics and after-sales support. In order to create the maximum value for our customers, Advantech Global Services has the ability to transform your projects into reality.

Manufacturing Capabilities

Our world-class manufacturing centers in Taiwan and China both maintain precise quality control and offer a full range of cost-effective, state-of-the-art production capabilities. To maximize the efficiency of operational procedures, we have implemented a cluster manufacturing system within our segmented manufacturing service units. This unique approach enables a direct, simplified, and highly streamlined design-to-manufacturing process. We pride ourselves on our:

- In-house board, chassis, and system production capabilities
- Dual world-class manufacturing centers
- Advanced production capabilities and customizable processes
- Rigid quality assurance system
- Complete ISO standard coverage

We Build It Exactly as You Imagine It

Advantech provides full customization and branding services to integrate our innovative platforms with existing product lines to maintain customers' "look and feel". With our Configure-to-Order Services, we provide cost-effective services to build different system SKUs in our logistics centers around the world. Through these services, we bring our clients the benefits of greater flexibility, lower inventory, shorter lead times, and global reach all with a local touch.

International Quality Standards

The Group Quality system is audited and compliant with ISO 9001. The system covers all aspects of product design,

component selection, design verification, manufacturing, quality control and customer satisfaction. From the board of directors on down, each member takes pride in providing our customers with the highest level of quality in products and services. We also hold global certifications for ISO 13485, TL 9000, ISO 14001, OHSAS 18001, and IECQ QC 080000.

Global Logistics Services

With strong integrated ERP and SAP supply chain solutions, our worldwide logistics network offers great flexibility for various delivery models including local and global solutions to meet your unique needs and budget requirements. Advantech's Logistics Service gives you the flexibility to simplify your logistics networks, bring your products to market on time, and enjoy a timely return on your investment.

Customer Support Services

Our global presence provides localizable, customizable, and reliable customer support services that can be leveraged to create an optimized maintenance and support plan that helps reduce costs and proactively mitigate business risks. In addition to our complete technical and repair support, we provide a variety of customizable after-sales services, including extended warranty, advance replacement, upgrades, fast repair, etc. Our knowledgeable local support groups enable a consistent support experience around the world and help keep your investment at peak performance and within your budget.

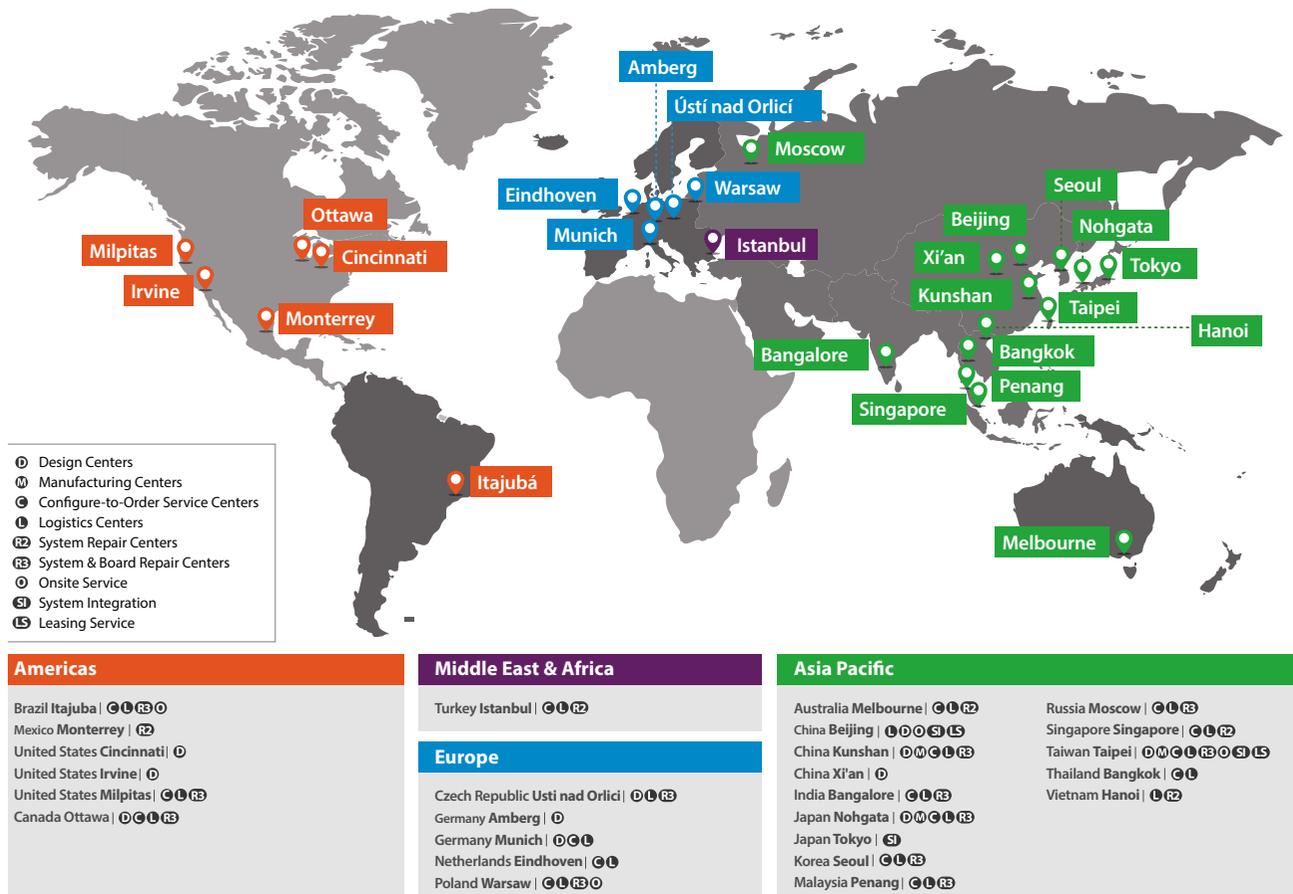
- 24/7 technical support: hotline AE & online chat support
- Global deployment with local full-line repair capability
- Easy-to-use web-based repair and tracking system
- Various other value-added after-sales support services



Learn more

Global Operations Infrastructure and Logistics Network with Local Delivery

Advantech is located in 27 countries in each major operating region, offering a global reach. We support our customers through an extensive global network of offices and an industry-leading eBusiness infrastructure designed to provide responsive service that benefits clients anytime, anywhere.



Online Technical and Repair Services for Total Lifecycle Support

Our Post-Sales Repair Service is equal in importance to our Design and Manufacturing division. The service represents our commitment to comprehensive technical support after delivery of new products. The web-based eRMA System is a personalized portal which offers real-time RMA status tracking at all times, anywhere, via the Internet. Through Advantech's worldwide Customer Support Centers, our clients can get regional technical support and repair services along with a stringent, dependable quality standard.

Six Ready-to-Go AdvantechCare Service Packages

(1) Extended Warranty Service:

Advantech provides 3-month, 6-month, and 1-to-3-year extended warranty service.

(2) Onsite Service:

Defective parts will be replaced with components of the same or higher quality. Advantech also provides one-off onsite service by request.

(3) Fast Repair Service:

Commitment to repair the defective unit within 24 / 48 hours.

(4) Advanced Replacement Service:

Advantech provides an advance replacement service for 1-, 2-, and 3-year contracts and all parts are free of charge during the warranty period.

(5) Technology Update Service:

Upgrade, furnish, and refurbish your stock at a fraction of the new purchase cost. A customizable product revision management solution is available. The service optimizes system performance and extends equipment life cycles.

(6) Preventive Maintenance Service:

Advantech Preventive Maintenance Service preserves and enhances equipment reliability by replacing worn components before they actually fail.

Strategic Partner Engagement to Accelerate Network Transformation

Best-of-Breed Partners

Advantech and its ecosystem partners bring together innovators to foster technology teamwork, interoperability testing and solution development. Proven product interoperability means customers can rapidly integrate tested combinations of hardware and software components with total confidence. In a fast paced market this results in delivering innovative solutions more rapidly and responding more effectively to new customer needs.

Advantech's partner ecosystem is made up of leaders in each of their respective areas of expertise. Together, these companies provide all of the essential components for developing, verifying, integrating and building high performance networking and security products.



"Advantech is an integral part of the 6WIND eco-system. For over a decade, we have been delivering network virtualization software solutions on Advantech's platforms based on Intel technology to meet the needs of Service Providers globally. Our leading Virtual Service Router (VSR) solutions deliver the best cost-performance-functionality ratio and responds well to ISP requests to combine 6WIND VSR solutions with Advantech's server expertise for a ready to run alternative to proprietary hardware routers"

Julien Dahan, CEO, 6WIND

"We are pleased to be working with Advantech on their uCPE products based on the newest Atom and Xeon CPUs from Intel. The latest products from Advantech provide remarkable levels of performance, which is matched by the efficient and full-featured Ensemble solution from Adtran. And because our solutions are pre-integrated and performance-tested, CoSP customers can quickly and economically deploy today's uCPE applications and easily migrate to next-generation edge cloud solutions."



*Mike Heffner, General Manager
Business Solutions, Adtran*



BeBroadband is specifically designed for service providers and their business customers. It is next-gen SD-WAN providing fully secured multi-link bonding, load-balancing and fail over capabilities alongside advanced WAN Optimizations and application-level traffic steering. A complete solution differentiated by simplicity of deployment, operation and maintenance. Advantech's line of edge appliances provides universal compatibility, allowing service providers to standardize their offerings. These appliances also offer multiple configuration options to meet diverse business use cases, empowering flexibility and cost efficiency. Together, Advantech and BBT.live deliver a comprehensive solution that enhances network performance, security, and flexibility for service providers and their B2B customers.

Erez Zelikovitz, EVP Chief Product & Revenue Officer, BBT.live



"Our strategic partnership with Advantech enables the rapid deployment of Telco Systems' Edgility platform across a wide range of edge implementations and use-cases. This strong alliance combines service-ready, plug-and-play solutions with Advantech's advanced white box hardware, offering service providers and other organizations the ability to expand their offerings and provide enhanced value, with uCPE and other Edge applications. Moreover, it presents lucrative revenue opportunities for providers of managed services within the crucial and growing SMB market segment. The collaboration between Telco Systems and Advantech exemplifies our unwavering commitment to our customers in achieving enhanced agility and significant cost savings when deploying new business services across various market segments. By optimizing cost structure and resource requirements, we ensure an optimal environment for our valued clientele." - Ariel Efrati, CEO, Telco Systems.



Ariel Efrati, CEO, Telco Systems



"Versa Networks and Advantech long-term collaboration has helped global enterprises and service providers meet continuously increasing networking and security demands leveraging trusted solutions based on latest Intel technology that scale from small branches to the data center. The combination of Advantech Network Appliances and Versa Networks VOS™ enabled Zero Trust solutions are deployed by leading customers worldwide with the confidence that their mission and business critical assets and resources are securely connected and their operations ready to thrive in the hyperconnected AIoT era."

Nikhil Desai, Director of Product Marketing, Versa Networks

SD-WAN & SASE Simplify Network Management & Security to Support Distributed Workforces & Connected Devices



Overview

In today's world of connected devices, always-on mobility, and cloud services, networking has become increasingly complex. For many enterprises with distributed branch offices, their existing network infrastructure is unable to provide the security and responsiveness needed for current business models. Network evolution is essential to optimize the entire management structure and support a connected workforce.

To keep employees connected to the data center, the cloud, and their applications, companies are looking for cost-effective solutions that support cloud-based applications and always-on networking. Network administrators must take into account ease of rollout and administration for a hybrid workforce. A key benefit of a software-defined wide area network (SD-WAN) is the ease and speed of remote deployment. SD-WAN integrates with your existing WAN architecture to identify the most effective way to route traffic. SD-WAN also transfers security monitoring from physical devices to a centralized controller, enabling network managers to control traffic and configure priorities based on real-time network load, without requiring on-site IT support.

For a comprehensive networking and security solution, SD-WAN can be delivered as part of a SASE (Secure Access Service Edge) architecture, that incorporates a range of technologies to boost flexibility for the new age of virtualisation – including zero trust network access (ZTNA) and firewall-as-a-service (FWaaS).

Changes brought on by SD-WAN and SASE are set to support

a whole range of new applications as the telecoms industry moves rapidly towards 5G, while helping fulfill the needs of the future created by more distributed edge and cloud networks. This will open up the possibilities for the Internet of Things (IoT) and Edge AI, as well as business cases that intelligently combine the two in artificial-intelligence-of-things (AIoT) devices.

SD-WAN to (WWAN) Wireless Networking

A modern workforce is largely mobile, work away from their desks, and predominantly operate from laptops and smartphones. All of which rely on wireless connectivity. Businesses from small to large are rapidly migrating to wireless environments (Mesh networks), which requires more flexibility on how and where employees connect. SD-WAN can balance traffic across multiple providers, such as Wi-Fi, cellular, and Ethernet, move traffic from an overloaded service and access point, to a less loaded one, and perform traffic conditioning to ensure quality of service is maintained.

Advantech has been a front-runner in state-of-the-art technologies including SD-WAN, SASE, AI and IoT. The company's broad range of network appliances can ramp up enterprise services from small and medium branches to large campuses and headquarters, while supporting the latest processing and networking technology, helping extend the cloud to the IoT edge.

Optimising the Enterprise Edge with White-box Network & Security Solutions



Overview

The disaggregation of hardware and software functions in white-box solutions paves the way to a vibrant, open ecosystem, avoiding vendor lock-in and facilitating a wider marketplace with new business opportunities, whereby customers can pick and choose among the most popular networking and security solutions to enhance innovation and competitiveness.

In addition, open and software-defined network infrastructure solutions enable cloud-native microservice architectures for seamless web-scale open compute, networking and storage. As software agnostic infrastructure, white boxes protect network investment, being ready to incorporate future AI and edge computing technologies as they become available.

However, some challenges are posed by visualization and the use of white-box solutions in terms of achieving the performance and reliability levels of proprietary hardware. As enterprises become much more distributed and move to a less data-center centric architecture, it is important that they also provide a high level of security against threats – with data breaches causing a loss of customer trust.

Finding the right balance between agility, performance and reliability is a fine art for every IT engineer that can be solved by choosing white-box off-the-shelf – yet optimized and qualified – platforms that have been designed for high availability networks to accelerate networking and security workloads, achieving the required throughput and minimizing service interruptions.

Advantech's Answer & Rollouts

The ability to offer optimized white-box solutions has allowed Advantech to engage in some highly forward looking business models, co-creating products and services aimed at forming the backbone of the new AIoT economy by working closely with customers and ecosystem partners.

These types of strong relationships give the company a significant edge in the market when designing products that harness Advantech's over 20 years of experience providing mission-critical hardware to leading global communications solutions and service providers. Companies integrating solutions from Advantech include Verizon Wireless, Colt and CityFibre, operators that are at the forefront of pushing universal CPE.

Advantech's range of products reflects the modern needs of businesses to build an open universal enterprise edge for supporting the whole host of future services that are arriving in today's more visualized world.

FWA-1112VC fanless network appliance for SD-WAN, SASE and uCPE with 10GbE, 5G and Wi-Fi 6E support, trusted by leading communications service providers worldwide.



FWA-1112VC

FWA-VERSA

Pre-configured White-boxes with Versa Networks VOS™



FWA-1010VC



FWA-1012VC



FWA-5070

Overview

Advantech provides a full range of platforms which are validated by Versa Networks. To streamline global deployment at the enterprise edge, all the kits are pre-configured with the necessary components, firmware and Versa Networks VOS™ to offer exact performance and feature sets at application level.

Versa Networks VOS™ enabled Zero Trust Solutions

The highly flexible Versa Operating System (VOS) enables businesses, organizations, and service providers to deploy a broad spectrum of software-defined solutions including Secure SD-WAN and Secure Access Service Edge (SASE) in branch offices, cloud, campus and data centers. Regardless of where VOS is deployed (on-premises or in the cloud), all network and security capabilities are provisioned and managed centrally through the Versa Director, a single-pane-of-glass management platform. Versa Analytics works in conjunction with Versa Director to provide visibility, base-lining, correlation, and predictive analysis for network, application usage, and security events.

VOS is a cloud-native, multitenant, and multi-service software stack with a full set of networking capabilities, including Full-featured SD-WAN and advanced scalable routing, along with a wide range of comprehensive integrated security functions – making it possible to seamlessly design rich managed services and software-defined enterprise architectures that allow for agility.

Advantech Model	FWA-1010VC		FWA-AAL1010	
Advantech part number	FWA1010VC1701-T	FWA1010VC1702-T	FWA-AAL1010VC-4CA	FWA-AAL1010VC-8CA
Versa sku	V110-EX-NW	V120-EX-NW	V110-NW	V120-NW
SPEC OVERVIEW				
Form Factor	Tabletop	Tabletop	Tabletop	Tabletop
Processor System	Processor	Intel® Atom™ C2558	Intel® Atom™ C2758	Intel® Atom™ C2558
	Core Number	4C	8C	4C
	Frequency	2.4GHz	2.4GHz	2.4GHz
	Chipset	-	-	-
Memory	Single 8GB ECC UDIMM	Two 8GB ECC UDIMM	Single 8GB ECC UDIMM	Two 8GB ECC UDIMM
Storage	Single 128GB M.2 SSD	Single 256GB M.2 SSD	Single 128GB M.2 SSD	Single 256GB M.2 SSD
Ethernet	2x 1G SFP/RJ45 1x RJ45 4x switched RJ45	2x 1G SFP/RJ45 1x RJ45 4x switched RJ45	2x 1G SFP/RJ45 4x RJ45	2x 1G SFP/RJ45 4x RJ45
TPM	TPM1.2	TPM1.2	TPM1.2	TPM1.2
Power supply	External 60W adaptor	External 60W adaptor	External 60W adaptor	External 60W adaptor
Rack-mount kit	Optional	Optional	Optional	Optional
Pre-installed Software	Versa Networks VOS™			

*For details on Versa software please visit <https://www.versa-networks.com>

Advantech Model		FWA-1012VC	
Advantech part number		FWA-1012VC-4CA1V	FWA-1012VC-8CA1V
Versa sku		V210-NW	V220-NW
SPEC OVERVIEW			
Form Factor		Tabletop	Tabletop
Processor System	Processor	Intel® Atom™ C3558	Intel® Atom™ C3758
	Core Number	4C	8C
	Frequency	2.2GHz	2.2GHz
Memory		Single 8GB ECC UDIMM	Two 8GB ECC UDIMM
Storage		Single 128GB M.2 SSD	Single 256GB M.2 SSD
Ethernet		2x 1G SFP 4x RJ45	2x 1G SFP 6x RJ45(2 for POE)
TPM		TPM1.2	TPM1.2
Power supply		External 60W adaptor	External 60W adaptor
Rack-mount kit		Optional	Optional
Pre-installed Software		Versa Networks VOST™	

*For details on Versa software please visit <https://www.versa-networks.com>

Advantech Model		FWA-5070	
Advantech part number		FWA5070L2205-T	FWA5070L2001-T
Versa sku		Versa850	Versa1800
SPEC OVERVIEW			
Form Factor		1U - Rack Mount	1U - Rack Mount
Processor System	Processor	1 x Intel® Xeon® Silver 4210R	1 x Intel® Xeon® Gold 6212U
	Core Number	10C	24C
	Frequency	2.4GHz	2.4GHz
	Chipset	Intel C626 (QAT)	Intel C621
Memory		Four 16GB ECC RDIMM	Six 16GB ECC RDIMM
Storage		One 512GB M.2 SSD	Two 480GB 2.5" SSD
Ethernet		4x 10G SFP+ 5x RJ45 1x Mgmt(RJ45)	8x 10G SFP+ 9x RJ45 1x Mgmt(RJ45)
Expansion	PCIe expansion slot	-	PCIe-3031 (QAT)
BMC		Yes	Yes
TPM		TPM2.0	TPM1.2
Power supply		Internal two 650W AC	Internal two 650W AC
Power supply redundancy		Yes	Yes
Slide rail		Yes	Yes
Pre-installed Software		Versa Networks VOST™	Versa Networks VOST™

*For details on Versa software please visit <https://www.versa-networks.com>

FWA-JUNIPER

Pre-configured White-boxes with Juniper® Session Smart™ Router



FWA-1112VCL

Streamlined Operations with the Juniper™ Session Smart® Router

To support cloud-enabled enterprise networks, the Juniper Session Smart Router (SSR) powers artificial intelligence-driven SD-WAN with distributed, software-defined routing. It provides a service-centric control plane and service-aware data plane that offers IP routing, policy management, improved visibility, and proactive analytics.

The SSR is paired with the Juniper Mist cloud platform to form a single and highly distributed control plane as well as a session-aware data plane. Mist’s automated network orchestration uses artificial intelligence, machine-learning algorithms, and data science techniques to streamline operations, improve reliability (as measured by mean time between failure), and maximize productivity.

The SSR also includes several security features. Its service-centric, tenant-based security architecture allows it to understand sessions and perform vital business operations. Employing zero trust security, it follows the principle of “deny-by-default,” using a series of checkpoints to validate legitimate network traffic. And the SSR’s advanced design replaced the traditional routing plane with one built for security from the ground up. By using the IDP and Enhanced Web Filtering features in the Session Smart Routers, customers leverage the Juniper IDP Signature Database, providing state of the art protection against the most up-to-date vulnerabilities.

Advantech Model		FWA-1112VC	
Advantech Part Number		FWA-AJN1112VC-4C1U	FWA-AJN1112VC-8C1U
SPEC OVERVIEW			
Form factor		Tabletop	Tabletop
Processor System	Processor	Intel® Atom® C3558	Intel® Atom® C3758
	Core Number	4C	8C
	Frequency	2.2GHz	2.2GHz
Memory	Capacity	8GB	16GB
Networking	WAN/LAN ports	4x 1GbE RJ45 & 2x 10GbE SFP+	
	WWAN	Up to 2x 4G LTE/5G module (optional)	
Storage	M.2	128GB SLC SSD	
Power	Power Type	External 36W adapter	
Environment	Operating Temperature	0 ~ 70 °C (32 ~ 104 °F)	0 ~ 60 °C (32 ~ 158 °F)
OS		Juniper® Session Smart™ Router	

FWA-FLEXIWAN

Pre-configured Slim uCPE with Ubuntu & flexiWAN SD-WAN



FWA-T011

Features

- Verified configuration pre-loaded and pre-tested with Ubuntu + flexiWAN flexiEdge SD-WAN
- Pre-configured to boot out-of-the box with zero touch provisioning
- Based on Advantech FWA-T011 slim uCPE for entry-level deployments
- Features include:
 - Multi-Tenant Accounts and Users, Organization based inventory
 - IPSec over VxLAN tunnels, Tunnel quality metrics
 - Internet Breakout, Static routes configuration
 - Dashboards, Credit card based billing
 - Scheduled auto software upgrade, Northbound API access keys

Overview

The FWA-FLEXIWAN Starter Kit simplifies the development and testing of entry level white box SD-WAN solutions based on the Advantech FWA-T011. Designed for bare metal deployments, the kit is pre-configured with Ubuntu 18.04 LTS and the flexiWAN flexiEdge software installed as a debian package. The installation adds all the necessary components required for running the flexiEdge router including VPP, FRR, and flexiWAN Agent. All components are installed as Ubuntu system services. As both the Ubuntu and flexiWAN components are open source they require no additional software licenses.

flexiWAN flexiEdge Open-source SD-WAN

flexiWAN flexiEdge is a centrally managed SD-WAN package with integration points in its core that allow for 3rd party logic to be integrated in a performance efficient way. Delivered as an open source package, it is democratizing the second Wave of SD-WAN, allowing enterprises and service providers to better manage and control their networks, and improve the way data/traffic is handled.

Starter Kits

For more information about pricing and additional starter kit configurations, please contact us at sdn.nfv@advantech.com.

Advantech Model		FWA-T011
Advantech part number		FWA-T011FX-4CA1S
FlexiWAN sku		FWA-FLEXIWAN-1
SPEC OVERVIEW		
Form Factor		Tabletop
Processor System	Processor	Intel® Celeron® Processor J3455
	Core Number	4C
	Frequency	1.5GHz
Memory		Single 8GB Non-ECC SO-DIMM
Storage		Single 32GB M.2 SSD
Ethernet		4x RJ45
WWAN (LTE or 5G)	Spec	Optional
WLAN (WiFi)		Optional
Power supply		External 36W adaptor
Rack-mount kit		Optional
Pre-installed Software		Ubuntu + Open source flexiWAN flexiEdge SD-WAN Software

FWA-BBT.live

BBT's Universal SD-WAN Based SASE Edge Unit



FWA-1112VCL



FWA-T011

At a Glance

BeBroadband™ is the first-of-its-kind SDN cloud-based orchestrator software for secure network connectivity between all types of branch users. BBT.Live delivers an all-in-one secure cloud-based connectivity solution designed for service providers and their customer. With BBT.Live, service providers gain faster and easier access to new market segments and revenue streams, allowing them to improve profitability without sacrificing quality.

All-In-One Secure Connectivity

- **Connectivity.** Multi-connection bonding and smart load balancing maximizes WAN connectivity over VDSL, MPLS, fiber and 4G & 5G by implementing link aggregation
- **Routing & Switching Management.** Dynamic traffic management and engineering, app discovery, segmentation, multi-tenancy, topology management, and major 3rd party cloud optimization
- **Security & Zero Trust Network Access (ZTNA).** Secure any type of branch user from any location to any destination, Check Point Threat Protection
- **Visibility.** Intuitive self service orchestration portal offers control, real-time analytics and reports

For more configurations and ordering information, please contact sdn.nfv@advantech.com.

Advantech Model		FWA-T011	FWA-1112VCL
SPEC OVERVIEW			
Form factor		Tabletop	Tabletop
Processor System	Processor	Intel® Celeron® J3455	Intel® Atom® C3558
	Core Number	4C	4C
	Frequency	1.5GHz	2.2GHz
Memory	Capacity	8GB	4GB
Networking	WAN/LAN ports	4x 1GbE RJ45	6x 1GbE RJ45
	WWAN	4G LTE/5G module (optional)	Up to 2x 4G LTE/5G module (optional)
Storage	M.2	1 x 2280 SATAIII SSD	1 x 2280 SATAIII SSD
Power	Power Type	External 36W adapter	External 36W adapter
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 70 °C (32 ~ 158 °F)
OS		Linux Ubuntu + BBT.live Local Gateway agent	

Selection Guide



Model		FWA-T011	FWA-1010VC	FWA-AAL1010VC
Form Factor		Tiny box	Tabletop	Tabletop
Processor System	Processor	Intel® Celeron® N3350/J3455	Intel® Atom™ C2558/C2758	Intel® Atom™ C2558/C2758
	Core Count	2C/4C	4C/8C	4C/8C
	Frequency	1.1GHz/1.5GHz	2.4GHz/2.4GHz	2.4GHz/2.4GHz
	L2 Cache	2MB	2MB/4MB	2MB/4MB
	Chipset	–	–	–
BIOS		AMI UEFI	AMI UEFI	AMI UEFI
Virtualization		VT-x, VT-d	VT-x	VT-x
Memory	Technology	DDR3L 1600/1866MHz	DDR3/DDR3L 1600MHz	DDR3/DDR3L 1600MHz
	Max. Capacity	8GB	32GB	32GB
	Socket	1 x 204-pin SO-DIMM	2 x 240-pin DIMM	2 x 240-pin DIMM
	ECC Support	–	Yes	Yes
Networking	Controller	4 x Intel i210	3 x Marvell 88E1112, 1 x Marvell 88E6141	4 x Marvell 88E1112, 1 x Marvell 88E6141
	1GbE/2.5GbE	4 x GbE RJ45	2 x 1GbE RJ45 or SFP via Marvell 88E1112; 1 x 1GbE RJ45 via Marvell 88E1112; 4 x 1GbE RJ45 via Marvell 88E6141	2 x 1GbE RJ45 or SFP via Marvell 88E1112; 2 x 1GbE RJ45 via Marvell 88E1112; 2 x 1GbE RJ45 via Intel i350
	10GbE	–	–	–
	LAN bypass	Advanced Legacy	– –	– –
Expansion Slots	PCIe Slot	–	–	–
	NMC	–	–	–
	M.2 (Except SSD)	1 x 2230 WiFi/BT module 1 x 3042 3G/4G LTE module	1 x 2230 WiFi module	1 x 3042 3G/4G LTE module
	Mini PCIe	–	1 x full-size 3G/4G LTE module	1 x full-size WiFi module
Storage	SIM Socket	1	1	1
	2.5" Bay	–	1 x 2.5" SSD (9.5mm height, C2758)	1 x 2.5" SSD (9.5mm height, C2758)
	3.5" Bay	–	–	–
	M.2	1 x 2280 SATA SSD	1 x 2280 SATA SSD 2 x 2242 SATA SSD (Optional)	1 x 2280 SATA SSD 2 x 2242 SATA SSD (Optional)
I/O	Console	1	1	1
	USB 3.0	–	–	–
	USB 2.0	2	1	1
	LED Indicator	Power, HDD, 4G LTE, WiFi, Software-defined	Power, HDD, 4G LTE, WiFi, Software-defined	Power, HDD, 4G LTE, WiFi, Software-defined
	Display Interface	HDMI	–	–
Button	1 x Power switch, 1 x Software-defined	1 x Power switch, 1 x Software-defined	1 x Power switch, 1 x Software-defined	
TPM		TPM1.2 or TPM2.0 (Optional)	TPM1.2 (Optional)	TPM1.2 (Optional)
Power Supply	Power Type	DC	DC	DC
	Watts	36 W	60 W	60 W
	Input	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V
	Power Adapter	12V 3A, 36W external adapter	12V 5A, 60W external adapter	12V 5A, 60W external adapter
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Vibration Resistance	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis
	Shock Protection	10 G, 11 ms	10 G, 11 ms	10 G, 11 ms
Cooling		Fanless	1 x system fan with smart fan	1 x system fan with smart fan
Mechanical	Construction	Steel	Steel	Steel
	Mounting	Desktop/Rackmount optional	Desktop/Rackmount optional	Desktop/Rackmount optional
	Dimensions (W x H x D)	152 x 21 x 125 mm (6.0" x 0.83" x 4.92")	250 x 44 x 190.4 mm (9.84" x 1.73" x 7.5")	250 x 44 x 190.4 mm (9.84" x 1.73" x 7.5")
	Weight	0.7 kg (1.54 lbs)	2.3 kg (5.1 lbs)	2.3 kg (5.1 lbs)
OS Support		Linux, Windows 10	Linux, Windows 10	Linux, Windows 10
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP): afu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)
IPMI		–	–	–

Selection Guide



Model		FWA-1012VC	FWA-1112VC	FWA-1212VC	FWA-1013
Form Factor		Tabletop	Tabletop	Tabletop	Tabletop
Processor System	Processor	Intel® Atom™ C3338/C3558/C3758	Intel® Atom™ C3558/C3758	Intel® Atom™ C3336/C3558/C3436L	Intel® Atom™ C5315/C5325/P5332/P5352
	Core Count	2C/4C/8C	4C/8C	2C/4C/4C	4C/8C (C5300); 12C/20C (P5300)
	Frequency	1.5GHz/2.2GHz/2.2GHz	1.6GHz/1.3GHz/2.2GHz/2.2GHz	2.2GHz	2.4GHz (C5300); 2.2GHz (P5300)
	L2 Cache	2MB/Core	2MB/2MB	4MB/8MB/8MB	2MB/2MB
	Chipset	–	–	–	–
Virtualization		AMI UEFI VT-x, VT-d	AMI UEFI VT-x, VT-d	AMI UEFI VT-x, VT-d	AMI UEFI VT-x, VT-d
Memory	Technology	DDR4 2400MHz	DDR4 1866/2133/2400MHz	DDR4 1866/2133/2400MHz	DDR4 2400/2667/2933MHz
	Max. Capacity	64GB	32GB	32GB	128GB
	Socket	1 x 288-pin DIMM for 2 core 2 x 288-pin DIMM for 4/8 core	1 x 260-pin SO-DIMM	1 x 260-pin SO-DIMM	2 x 288-pin RDIMM
	ECC Support	Yes	Yes	Yes	Yes
Networking	Controller	1 x Intel i350, 1 x Marvell phy 88E1543	2 x Intel i211; 1 x Marvell phy 88E1543	2 x Marvell 88E1543 4 x Intel i211	1 x Intel i350-AM4; 2 x Intel i226
	1GbE/2.5GbE	2 x 1GbE RJ45 and 2 x SFP via Intel i350 4 x 1GbE RJ45 ports via Marvell 88E1543 (2 POE+)	2 x 1GbE RJ45 via Intel i211 4 x 1GbE RJ45 via Marvell 88E1543 or 2 x 1GbE RJ45 via Marvell 88E1543 plus 2 x SFP+ via SoC	2 x Combo ports via Marvell 88E1543, 4 x 1GbE RJ45 via Intel i211	4 x 1GbE RJ45 via SoC; 4 x 1GbE RJ45 via i350; 2 x 2.5GbE RJ45 via i226
	10GbE	–	2 x 10G/1G SFP+ via SoC	–	4 x 10G SFP+ via SoC
	LAN	Advanced Legacy	–	–	–
	LAN bypass	–	–	–	2 pairs of LAN bypass (Optional)
Expansion Slots	PCIe Slot	–	–	–	–
	NMC	–	–	–	1
	M.2 (Except SSD)	1 x 3042 LTE module (Optional: 1 x 2242 SATA)	1 x 2242 LTE/5G module; 1 x 2230 Wifi module	1 x M.2 3052 B-key 5G or 1 x M.2 3042 B-key 4G LTE 1 x M.2 2230 E-key WiFi6	1 x 2230 Wifi module
	Mini PCIe	1 x half-size and 1 x full-size Wifi module	1 x full-size Wifi module (BOM option)	1 x Mini-PCIe for 4G LTE or WiFi5	–
	SIM Socket	2	2	–	–
Storage	2.5" Bay	1 x 2.5" SSD (9.5mm height, C3758)	–	–	–
	3.5" Bay	–	–	–	–
	M.2	1 x 2242/2280 SATA/PCIe Gen3 x1 SSD (Optional: 1 x 3042 LTE)	1 x 2280 SATA SSD	1 x 2280 SATA SSD	2 x 2280 SATA SSD
I/O	Console	1	1	1	1
	USB 3.0	2	2	–	–
	USB 2.0	–	–	2	2
	LED Indicator	Power, HDD, 4G LTE, WiFi, Software-defined	Power, HDD, 4G/LTE, LTE/WiFi, Software- defined	Rear: power, system, cloud Front: HDD, power, system, cloud, Wi-Fi, 3 x RF signal	Power, Alert, Locate, Software-defined
	Display Interface	–	–	–	VGA
	Button	1 x Power switch, 1 x Software-defined	1 x Power	1 x Power, 1 x Software-defined	1 x Power, 1 x Software-defined
TPM	TPM1.2 or TPM2.0 (Optional)	TPM2.0 or None TPM	TPM1.2 or TPM2.0 (Optional)	TPM2.0 or None TPM	
Power Supply	Power Type	DC	DC	DC	DC (Single/Redundant)
	Watts	36 W for 2 core 60 W for 4/8 core	36 W	36 W	150 W
	Input	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V	100 V ~ 240 V
	Power Adapter	12V 5A, 60W external adapter	12V 3A, 36W external adapter	12V 3A, 36W external adapter	12V 12.5A, 150W external adapter
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 70 °C (32 ~ 158 °F) 4 Core 0 ~ 60 °C (32 ~ 140 °F) 8 Core	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Vibration Resistance	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis
	Shock Protection	10 G, 11 ms	10 G, 11 ms	10 G, 11 ms	10 G, 11 ms
Cooling	2 x system smart fan (8core SKU) or 2 x system smart fan (2/4core SKUs)	Fanless	Fanless	2 x system smart fan	
Mechanical	Construction	Steel	Steel	Steel	Steel
	Mounting	Desktop/Rackmount optional	Desktop/Rackmount optional	Desktop/Rackmount optional	Desktop/Rackmount optional
	Dimensions (W x H x D)	250 x 44 x 190 mm (9.84" x 1.73" x 7.48")	220 x 44 x 160 mm (8.66" x 1.73" x 6.3")	270 x 44 x 168 mm (6.1" x 1.32" x 5.04")	339 x 44 x 241 mm (13.35" x 1.73" x 9.49")
	Weight	2.3 kg (5.1 lbs)	2.3 kg (5.1 lbs)	3.0 kg (6.6 lbs)	3.0 kg (6.6 lbs)
OS Support	Linux (CentOS, Red Hat, Ubuntu)				
Advantech S/W Packages	- QuickStart Linux Image (CentOS based reference BSP): afru; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afru; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afru; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afru; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPDK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	
IPMI	–	–	–	IPMI v2.0 compliant BMC with web interface	

Selection Guide



Model		FWA-2012	FWA-2013	FWA-3034	FWA-3050	FWA-3051
Form Factor		1U Rackmount				
Processor System	Processor	Intel® Atom™ C3558/C3758/C3958	Intel® Atom™ P5342/P5362	12th/13th Generation Intel® Core™	Intel® Xeon D-2100	Intel® Xeon D-2700/D-2800
	Core Count	4C/8C/16C	16C/24C	Up to 16C/24C	8C/14C/16C	8C/16C/20C (Optional: 14C/22C)
	Frequency	2.2GHz/2.2GHz/2.0GHz	2.2GHz	Up to 3.4GHz/3.2GHz	1.9GHz/1.9GHz/2.0GHz	1.8GHz~2.5GHz
	L2 Cache	4C&8C 2MB/Core; 16C 2MB/Core Pair	2MB/2MB	5MB~32MB	11MB/19MB/22MB	15MB~30MB
	Chipset	—	—	Intel R680E/H610E	—	—
Virtualization		AMI UEFI VT-x, VT-d	AMI UEFI VT-x, VT-d	AMI UEFI Intel® VT-x, VT-d, SR-IOV	AMI UEFI VT-x, VT-d	AMI UEFI VT-x, VT-d
Memory	Technology	DDR4 2400MHz	DDR4 2400/2667/2933MHz	DDR5 4800/5600MHz	DDR4 2667MHz	DDR4 2667/2993/3200MHz
	Max. Capacity	64GB	128GB	64GB	256GB	256GB
	Socket	2 x 288-pin DIMM	2 x 288-pin RDIMM	2 x 288-pin UDIMM	4 x 288-pin RDIMM	4 x 288-pin DIMM
	ECC Support	Yes	Yes	Yes	Yes	Yes
Networking	Controller	1 x Marvell 88E1543; 2 x Intel i210-AT	1 x Intel i350-AM4; 2 x Intel i226-LM	2 x Intel i210-IS; 8 x Intel i226-LM; 1 x Intel X710-BM2	2 x Intel i350-AM4; 2 x Intel i210-AT	1 x Intel i350-AM4; 2 x Intel 210-AT
	1GbE/2.5GbE	4 x 1GbE RJ45 via Marvell 1543 (2 pairs LAN bypass) 2 x GbE RJ45 via Intel i210	4 x 1GbE RJ45 via SoC; 4 x 1GbE RJ45 via i350; 2 x 2.5GbE RJ45 via i226;	2 x 1GbE SFP via Intel i210; 8 x 2.5GbE RJ45 via Intel i226	8 x 1GbE RJ45 via Intel i350; 2 x 1GbE RJ45 via Intel i210	4 x 1GbE RJ45 via SoC 4 x 1GbE RJ45 via i350 2 x 1GbE RJ45 via i210
	10GbE	—	4 x 10G SFP+ via SoC	2 x 10G SFP+ via Intel X710	4 x 10G SFP+ via SoC	4 x 10GbE SFP+ via SoC
	LAN bypass	2 pairs of LAN bypass (Optional)				
Expansion Slots	PCIe Slot	—	—	1 x FH/HL Gen4 x8	1 x HH/HL Gen3 x8	1 x FH/HL Gen4 x16 (Customized)
	NMC	1	1	1	1	2
	M.2 (Except SSD)	—	1 x 2230 WiFi module	1 x 3052/3042 4G module (5G by project base) or 2230 WiFi module	—	—
	Mini PCIe	—	—	—	—	—
	SIM Socket	—	—	—	—	—
Storage	2.5" Bay	1 x 2.5" HDD/SSD (Optional)	1	2 x 2.5" SATA HDD/SSD	2 x 2.5" SATA HDD/SSD	2 x 2.5" SATA HDD/SSD
	3.5" Bay	1	Option	—	—	—
	M.2	1 x 2280 SATA SSD	2 x 2280 SATA SSD	1 x 2280 SATA/PCIe Gen4 x4 SSD	2 x 2280 SATA/PCIe Gen3 x1/x2 SSD	2 x 2280 SATA/PCIe Gen3 x4 SSD
I/O	Console	1	1	1	1	1
	USB 3.0	2	—	2	2	2
	USB 2.0	2 (by pin header)	2	—	—	—
	LED Indicator	Power, Alert, Locate	Power, Alert, Locate, Software-defined			
	Display Interface	—	VGA	VGA	VGA	VGA
	Button	1 x Power	1 x Power, 1 x Software-defined			
TPM		TPM 1.2 or 2.0 (Optional)	TPM 2.0 or None TPM	TPM 2.0	Module option	TPM 2.0 (Optional)
Power Supply	Power Type	AC Single	AC Redundant / Single	AC Redundant / Single	AC Redundant	AC Redundant
	Watts	150 W	320 W Redundant / 250 W Single	300 W Redundant / 250 W Single	300 W	300 W
	Input	100 V ~ 240 V	100 V ~ 240 V	100 ~ 240 V	100 V ~ 240 V	100 ~ 240 V
	Power Adapter	—	—	—	—	—
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Vibration Resistance	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis
	Shock Protection	10 G, 11 ms				
Cooling		2 x system smart fan	2 x system smart fan	3 x system smart fan	Max. 4 x system smart fan (Hot-swappable optional)	4 x system smart fan
Mechanical	Construction	Steel	Steel	SECC	Steel	Steel
	Mounting	1U Rackmount				
	Dimension (W x H x D)	438 x 44 x 320.7 mm (16.93" x 1.73" x 12.63")	438 x 44 x 390.5 mm (17.24" x 1.73" x 15.37")	438 x 44 x 420 mm (17.24" x 1.73" x 16.54")	438 x 44 x 420 mm (17.24" x 1.73" x 16.54")	438 x 44 x 420 mm (17.24" x 1.73" x 16.54")
	Weight	6.6 kg (14.6 lbs)	—	8.2 kg (18.1 lb)	15 kg (33.1 lbs)	15 kg (33.1 lbs)
OS Support		Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	Linux (Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Fedora, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP): afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP): afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUI (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUI (Offline Diagnostics)
IPMI		Option with Advantech LOM Module	IPMI v2.0 compliant BMC with web interface			

Selection Guide



Model		FWA-4134	FWA-5070	FWA-5072	FWA-6072	FWA-6172
Form Factor		2U Rackmount	1U Rackmount	1U Rackmount	2U Rackmount	2U Rackmount
Processor System	Processor	12th/13th Generation Intel® Core™	2nd Gen Intel® Xeon® Scalable	4th Generation Intel® Xeon® Scalable	4th Generation Intel® Xeon® Scalable	4th Generation Intel® Xeon® Scalable (Dual)
	Core Count	Up to 16C/24C	8C~28C	8C~32C	8C~52C	8C~52C / Socket
	Frequency	Up to 3.5GHz	2.0GHz~3.6GHz	Up to 3.7GHz	Up to 3.7GHz	Up to 3.7GHz
	L2 Cache	5MB~32MB	4MB~28MB	2MB/core	2MB/core	2MB/core
	Chipset	Intel R680E	Intel C626 or C621	Intel C741	Intel C741	Intel C741
BIOS		AMI UEFI				
Virtualization		Intel® VT-x, VT-d, SR-IOV	VT-x, VT-d	Intel® VT-Redirection Protection, Intel® S-IOV	Intel® VT-Redirection Protection, Intel® S-IOV	Intel® VT-Redirection Protection, Intel® S-IOV
Memory	Technology	DDR4 3200MHz	DDR4 2400/2666MHz	DDR5 4800/4400MHz	DDR5 4800/4400MHz	DDR5 4800MHz
	Max. Capacity	128GB	768GB	1024GB	1024GB	1024GB
	Socket	4 x 288-pin DIMM	12 x 288-pin DIMM	16 x 288-pin DIMM	16 x 288-pin DIMM	16 x 288-pin DIMM
	ECC Support	Yes	Yes	Yes	Yes	Yes
Networking	Controller	2 x Intel i210-AT				
	1GbE/2.5GbE	2 x 1GbE RJ45 via Intel i210				
	10GbE	2 x 10GbE SFP+ via Intel X710	2 x 10G SFP+ via Intel C626 (by SKU)	-	-	-
	LAN bypass	Advanced Legacy	2 pairs of LAN bypass (Optional) -	Supported by NMC Supported by NMC	Supported by NMC Supported by NMC	Supported by NMC Supported by NMC
Expansion Slots	PCIe Slot	1 x FH/HL Gen3 x4 (Optional)	1 x HH/HL Gen4 x8/x16	1 x HH/HL Gen4 x16	1 x FH/HL Gen4 x16	2 x FH/HL Gen5 x16 or 1 x Double-deck 10.5" Gen5 x16
	NMC	4/8	4	4	8	8
	M.2 (Except SSD)	-	-	-	-	-
	Mini PCIe	-	-	-	-	-
	SIM Socket	-	-	-	-	-
Storage	2.5" Bay	Optional	Max. 3 x 2.5" HDD/SSD	2 x 2.5" SATA HDD/SSD	2 x 2.5" SATA HDD/SSD	2 x 2.5" SATA or NVMe HDD/SSD
	3.5" Bay	4 x 3.5" SATA HDD	-	-	-	-
	M.2	-	1 x 2280 SATA SSD (PCIe Gen3 option)	2 x 2280 SATA/1 x PCIe Gen3 x1 + 1 x PCIe Gen3 x4 SSD	2 x 2280 SATA/1 x 2280 SATA + 1 x PCIe Gen3 x4 SSD	2 x 2280 SATA/PCIe Gen3 x4 SSD
I/O	Console	1	1	1	1	1
	USB 3.0	2	2	2	2	2
	USB 2.0	-	-	-	-	-
	LED Indicator	Power, HDD	Power, Alert, Software-defined	Power; Alert, Locate, Software-defined	Power; Alert, Locate, Software-defined	Power; Alert, Locate, Software-defined
	Display Interface	VGA	VGA box header	VGA	VGA	VGA
	Button	1 x Power, 1 x Software-defined	1 x Power	1 x Power, 1 x Software-defined	1 x Power, 1 x Software-defined	1 x Power, 1 x Software-defined
TPM		-	TPM1.2 or TPM 2.0 (Optional)	TPM 2.0	TPM 2.0	TPM 2.0
Power Supply	Power Type	AC Redundant / DC Redundant (Optional)	(AC) Redundant / (DC) Redundant (Option)			
	Watts	350 W / 300 W	(AC) 650 W / (DC) 800 W	(AC) 550 W / (DC) 800 W	(AC) 800 W / (DC) 800 W	(AC) 1200 W / (DC) 800 W
	Input	100 ~ 240 V	(AC) 100 V ~ 240 V, (DC) -72 V ~ -40 V	(AC) 100 V ~ 240 V, (DC) -72 V ~ -40 V	(AC) 100 V ~ 240 V, (DC) -72 V ~ -40 V	(AC) 100 V ~ 240 V, (DC) -72 V ~ -40 V
	Power Adapter	-	-	-	-	-
Environment	Operating Temperature	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)	0 ~ 40 °C (32 ~ 104 °F)
	Non-operating Temperature	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)	-40 ~ 70 °C (-40 ~ 158 °F)
	Vibration Resistance	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis	5-500 Hz, 0.3 Grms, 3 axes, 1 hr/per axis
	Shock Protection	10 G, 11 ms				
Cooling		3 x system smart fan	3 x system smart fan	5 x system smart fan	3 x system smart fan	4 x system smart fan
Mechanical	Construction	Steel	Steel	Steel	Steel	Steel
	Mounting	2U Rackmount	1U Rackmount	1U Rackmount	2U Rackmount	2U Rackmount
	Dimension (W x H x D)	438 x 88 x 520 mm (17.24" x 3.4" x 20.4")	438 x 44 x 550 mm (17.24" x 1.73" x 21.65")	438 x 43.7 x 600 mm (17.2" x 1.7" x 23.6")	438 x 88 x 600 mm (17.2" x 3.4" x 23.6")	438 x 88 x 600 mm (17.2" x 3.4" x 23.6")
	Weight	20 kg (44.1 lbs)	20 kg (44.1 lbs)	11 kg (24.25 lbs)	15 kg (33.06 lbs)	21.5 kg (47.4 lbs)
OS Support		Linux (Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu)	Linux (CentOS, Red Hat, Ubuntu, Fedora)	Linux (CentOS, Red Hat, Ubuntu, Fedora)	Linux (CentOS, Red Hat, Ubuntu, Fedora)
Advantech S/W Packages		- QuickStart Linux Image (CentOS based reference BSP); afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUJ (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUJ (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP); afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUJ (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUJ (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP); afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUJ (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUJ (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP); afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUJ (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUJ (Offline Diagnostics)	- QuickStart Linux Image (CentOS based reference BSP); afnu; ipmitool; LCD4Linux; Advanced LBP Utility; Intel DPK; Intel QAT; DUJ (Offline Diagnostics) - Individual Packages: Advanced LBP Library; DUJ (Offline Diagnostics)
IPMI		-	IPMI v2.0 compliant, with web interface and iKVM	IPMI v2.0 compliant, with web interface and iKVM	IPMI v2.0 compliant, with web interface and iKVM	IPMI v2.0 compliant, with web interface and iKVM

Selection Guide



Model Name		NMC-0108	NMC-0120	
Ordering Part Number		NMC-0108-04FSA1	NMC-0120-04FBSSA2	NMC-0120-04FBLSA2
Chipset		Intel I350-AM4	Intel I350-AM4	Intel I350-AM4
Speed		1 Gb/s	1 Gb/s	1 Gb/s
Connector Type		4 x Fiber (SFP)	4 x Fiber LC (SR)	4 x Fiber LC (LR)
Interfaces		1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	1 x PCIe x4, Gen2
LAN Bypass (Legacy/Advanced)		–	Fiber bypass (OBM Module)	Fiber bypass (OBM Module)
Present Pin Detection		Yes	Yes	Yes
LED Definition		Speed LED 10 Mb/s: – 100 Mb/s: – 1000 Mb/s: – Link/Act/Bypass LED Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Link / Act LED (Right/Left) Link: Green on Active: Green Blinking Bypass LED (Middle) LAN Bypass: Amber on Disconnect: Amber blinking Connect: –	Link / Act LED (Right/Left) Link: Green on Active: Green Blinking Bypass LED (Middle) LAN Bypass: Amber on Disconnect: Amber blinking Connect: –
Power	Voltage	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%
	Consumption	10 W	10 W	10 W
Environment	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
	Storage Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)
	Storage Humidity	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
Mechanical	Dimensions W x H x D	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm
	Weight	0.3 kg	0.7 kg	0.7 kg



Model Name		NMC-0121		NMC-0804	NMC-0806	
Ordering Part Number		NMC-0121-04CSA1	NMC-0121-04CBSA1	NMC-0804-08FSA1	NMC-0806-08CSA1	NMC-0806-08CBSA1
Chipset		Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4
Speed		1 Gb/s	1 Gb/s	1 Gb/s	1 Gb/s	1 Gb/s
Connector Type		4 x Copper (RJ45)	4 x Copper (RJ45)	8 x Fiber (SFP)	8 x Copper (RJ45)	8 x Copper (RJ45)
Interfaces		1 x PCIe x4, Gen2	1 x PCIe x4, Gen2	2 x PCIe x4, Gen2	2 x PCIe x4, Gen2	2 x PCIe x4, Gen2
LAN Bypass (Legacy/Advanced)		–	Advanced LBP	–	–	Advanced LBP
Present Pin Detection		Yes	Yes	Yes	Yes	Yes
LED Definition		Speed LED (Left) 10 Mb/s: – 100 Mb/s: Amber on (Downgrade speed) 1000 Mb/s: Green on (Maximum speed) Link/Act/Bypass LED (Right) Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Speed LED (Left) 10 Mb/s: – 100 Mb/s: Amber on (Downgrade speed) 1000 Mb/s: Green on (Maximum speed) Link/Act/Bypass LED (Right) Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking	Speed LED 10 Mb/s: – 100 Mb/s: – 1000 Mb/s: – Link/Act/Bypass LED Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Speed LED (Left) 10 Mb/s: – 100 Mb/s: Amber on (Downgrade speed) 1000 Mb/s: Green on (Maximum speed) Link/Act/Bypass LED (Right) Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Speed LED (Left) 10 Mb/s: – 100 Mb/s: Amber on (Downgrade speed) 1000 Mb/s: Green on (Maximum speed) Link/Act/Bypass LED (Right) Link: Green on Active: Green Blinking LAN Bypass: Amber on Disconnect: Amber blinking
Power	Voltage	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%
	Consumption	10 W	10 W	15 W	15 W	15 W
Environment	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
	Storage Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)
	Storage Humidity	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
Mechanical	Dimensions W x H x D	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm
	Weight	0.4 kg	0.4 kg	0.5 kg	0.7 kg	0.7 kg

Selection Guide



Model Name		NMC-1001	NMC-4007	NMC-1012	
Ordering Part Number		NMC-1001-04FSA1	NMC-4007-04FBSSA2	NMC-1012FN-08A1	
Chipset		Intel XL710-BM1	Intel XL710-BM2	Intel E810-CAM2	
Speed		10 Gb/s	10 Gb/s	10 Gb/s	
Connector Type		4 x Fiber (SFP+)	4 x Fiber LC (SR)	8 x Fiber (SFP+)	
Interfaces		1 x PCIe x8, Gen3	1 x PCIe x8, Gen3	1 x PCIe x8, Gen4	
LAN Bypass (Legacy/Advanced)		–	Fiber bypass (OBM Module)	Fiber bypass (OBM Module)	
Present Pin Detection		Yes	Yes	Yes	
LED Definition		Speed LED 1 Gb/s: – 10 Gb/s: – Link/Act/Bypass LED Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Link / Act LED (Right/Left) Link: Green on Active: Green Blinking Bypass LED (Middle) LAN Bypass: Amber on Disconnect: Amber blinking Connect: –	Link / Act LED (Right/Left) Link: Green on Active: Green Blinking Bypass LED (Middle) LAN Bypass: Amber on Disconnect: Amber blinking Connect: –	
Power	Voltage	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	
	Consumption	15 W	17 W	10 W	
Environment	Operating Temperature	-5 ~ 45 °C (23 ~ 113 °F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	
	Storage Temperature	-20 ~ 65 °C (-4 ~ 149 °F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	
	Storage Humidity	5 ~ 85% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)
Mechanical	Dimensions W x H x D	74.6 x 42.4 x 174.7mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	
	Weight	0.5 kg	0.7 kg	0.5 kg	



Model Name		NMC-2501	NMC-2503	NMC-4006	NMC-6003L	NMC-6004	
Ordering Part Number		NMC-2501-02FSA1	NMC-2503FN-04A1	NMC-4006-02FSA1	NMC-6003L-01FSA1	NMC-6004FBD	
Chipset		Intel XXV710-DA2	Intel E810-CAM1	Intel X710-BM2	Intel E810-CAM1	Mellanox ConnectX-6	
Speed		25 Gb/s	25 Gb/s	40 Gb/s	100 Gb/s	100 Gb/s	
Connector Type		2 x Fiber (SFP28)	4 x Fiber (SFP28)	2 x Fiber (QSFP+)	1 x Fiber (QSFP28)	2 x Fiber (SR4)	
Interfaces		1 x PCIe x8, Gen3	1 x PCIe x8, Gen4	1 x PCIe x8, Gen3	1 x PCIe x8, Gen4	1 x PCIe x16, Gen4	
LAN Bypass (Legacy/Advanced)		–	–	–	–	–	
Present Pin Detection		Yes	Yes	Yes	Yes	Yes	
LED Definition		Speed LED <25 Gb/s: Amber on (Downgrade speed) 25 Gb/s: Green on (Maximum speed) Link/Act LED/Bypass LED Link: Green on Activity: Green Blinking LAN Bypass: – Disconnect: –	Link/Act/Bypass LED Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Speed LED <40 Gb/s: – 40 Gb/s: – Link/Act LED/Bypass LED Link: Green on Activity: Green Blinking LAN Bypass: – Disconnect: –	Link/Act/Bypass LED Link: Green on Active: Green Blinking LAN Bypass: – Disconnect: –	Link/Act/Bypass LED Link: Green on Active: Green Blinking Bypass LED (Middle) LAN Bypass: Amber on Disconnect: Amber blinking Connect: –	
Power	Voltage	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	+12 V ± 10%	
	Consumption	16 W	10 W	15 W	10 W	30 W	
Environment	Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)	
	Storage Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	-40°C ~ 70°C (-40°F ~ 158°F)	
	Storage Humidity	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	95% @ 60 °C (140 °F)	
	Vibration Resistance	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis	1. Test PSD: 0.026 G/Hz, 2.16 Grms 2. System condition: Packaged mode 3. Test Frequency: 5-500Hz 4. Test Axis: X, Y and Z axis
	Shock Protection	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	half sine 10G with package (x y z axis)	
Mechanical	Dimensions W x H x D	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	74.6 x 42.4 x 174.7 mm	149.6 x 42.4 x 174.7 mm	
	Weight	0.7 kg	0.5 kg	0.6 kg	0.5 kg	0.5 kg	

Certification

Type	Standard	FWA-T011	FWA-1010VC	FWA-AAL1010VC	FWA-1012VC	FWA-1112VC	FWA-1212VC	FWA-1013
Safety	CB: IEC 60950-1	v	v	v		v	v	v
	UL: UL 60950-1	v	v	v				
	CB: IEC 62368-1 2nd Edition	v	v	v	v	v	v	v
	UL: UL 62368-1 2nd Edition	v	v	v	v	v	v	v
	LVD: EN 62368-1	v	v	v	v			
EMC	FCC	v	v	v	v	v	v	v
	CE	v	v	v	v	v	v	v
	BSMI		v					
	CCC	v	v	v	v	v	v	v
	VCCI	v	v	v		v	v	
	RCM	v	v			v		
	KCC		v					
RF	WLAN: FCC					o		
	WLAN: RED					o		
	WWAN: FCC (5G/4G/LTE)		v	v	v	o		
	WWAN: RED (5G/4G/LTE)		v	v	v	o		

Type	Standard	FWA-2012	FWA-2013	FWA-3050	FWA-3051	FWA-3034	FWA-5070	FWA-5072
Safety	CB: IEC 60950-1	v	o	v	o		v	
	UL: UL 60950-1	v		v	o		v	
	CB: IEC 62368-1 2nd Edition	v	o	v	o	v	v	v
	UL: UL 62368-1 2nd Edition	v	o	v	o	v	v	v
	LVD: EN 62368-1							
EMC	FCC	v	o	v	o	v	v	v
	CE	v	o	v	o	v	v	v
	BSMI			v				
	CCC	v	o	v	o	v	v	v
	VCCI			v			v	
	RCM			v			v	
	KCC	v						
RF	WLAN: FCC							
	WLAN: RED							
	WWAN: FCC (5G/4G/LTE)							
	WWAN: RED (5G/4G/LTE)							

v Available o Coming Soon
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