Solution Brief

Retail, Energy, Transportation, Manufacturing, Networking/Telco
Telecommunications Providers, Manufacturing Companies, and Retail Chains

# iBASE SD-WAN and Cyber Security CPE uses Intel Atom® Processors

## iBASE's INA1607 SD-WAN and INA2205 cyber security appliances use Intel Atom® processors and Intel® NetSec Accelerator Reference Design for edge connectivity and data security needs

Organizations today face an ever-growing range of network security threats and increasing pressure to ensure data integrity, optimize performance, and maintain compliance with evolving security and privacy regulations.

Branch office universal customer premises equipment (uCPE) and appliances are evolving rapidly to keep pace with the changing needs of a hybrid workforce. IT teams face the challenge of expanding edge computing capabilities to support growing workloads, enhanced security, and AI-driven applications—all while staying within budget.

As organizations strive to boost productivity and collaboration, branch office uCPE has transitioned from merely providing connectivity to playing a central role in digital transformation strategies.

A key development in this evolution is the widespread adoption of software-defined wide-area networks (SD-WAN) combined with advanced cybersecurity measures. SD-WAN enhances network efficiency and resilience across distributed locations, making it a critical asset for organizations seeking improved performance, security, and cost management. The demand for greater computing power has intensified, particularly for managing growing and complex traffic flows, optimizing service quality, and enabling real-time decision-making.

At the same time, network security has become increasingly sophisticated, driven by the expanding attack surface created by an increase in connected devices, a dispersed workforce and the rise of edge and cloud applications.

To counter these challenges, branch offices now require high-performance encryption capabilities and advanced security solutions such as secure access service edge (SASE) gateways, next-generation firewalls, and intrusion prevention systems (IPS)—all of which demand significant computing resources.

To meet the needs of digital branch offices iBASE Technology Inc., an Intel® Industry Solution Builders member, has developed the INA1607 uCPE / SD-WAN appliance and the INA2205 branch office cyber security appliance – both of which are powered by Intel Atom® processor for edge and network security applications.

### Intel Atom® x7405C processor-based INA1607 uCPE for SD-WAN

The INA1607 (shown in Figure 1) is a fanless uCPE / SD-WAN appliance designed to meet modern connectivity demands in edge computing, enterprise IT, and industrial IoT. Powered by the Intel Atom x7405C processor, the INA1607 provides reliable and efficient networking with quiet, low-maintenance operation.

**Figure 1.** iBASE INA1607 uCPE for SD-WAN applications.

The four-core, 2.2 GHz Intel Atom x7405C processor provides compute power combined with power efficiency. The CPU can boost clock speed to 3.4 GHz using Intel® Turbo Boost Technology.

For communication with other components in the system, the Intel Atom x7405C processor uses a PCI-Express Gen 3 connections. Hardware virtualization is available on the Intel Atom x7405C processor, which greatly improves virtual machine performance.

Calculation-heavy applications that can benefit from Intel® Advanced Vector Extensions (Intel® AVX) and Intel® Advanced Vector Extensions 2 (Intel® AVX2) can run on this processor. The device also supports fast LPDDR5 / DDR5 / DDR4 memory to help process more packets for network security workloads.

The low 12W TDP of the Intel Atom x7405C processor makes it possible for the INA1607 to have a fanless design that enhances durability and reduces noise. The fanless design makes it ideal for installation in locations where acoustics are a concern. The INA1607 supports up to 16GB of DDR5 memory and features four 2.5GbE RJ45 ports alongside two dual-function GbE ports (RJ45/SFP), offering flexible deployment options.

To maximize wireless connectivity, the INA1607 supports Wi-Fi / Wi-Fi 6, LTE/5G modules, and up to six antennas, ensuring seamless, high-speed communication across distributed networks. To ensure efficient data handling, it features a mini PCI-E slot and two M.2 slots: one for wireless modules and the other for additional storage. Storage options also include a 2.5" SATA drive bay and up to 64GB eMMC storage, making it capable of handling intensive workloads and secure data processing.

The appliance comes with three USB 3.0 ports, an RJ45 console for management, and GPIO interfaces for custom solutions.

## Small Appliance Delivers Range of Cyber Security

The 1U high INA2205 (shown in Figure 2) is designed as an entry-level network security appliance for offices of up to 100 people. The INA2205 provides a cost-effective platform with the combination of high performance and flexible connectivity for running third-party firewalls, virtual private networks (VPNs) unified threat management (UTM), distributed denial of service (DDOS), intrusion prevention system (IPS) security applications along with application delivery.

The INA2205 features six 2.5GbE RJ45 ports and two SFP ports, including one bypass segment to maintain uninterrupted network operation. The appliance is optimized for efficient data processing and secure storage through its 16GB of DDR5 memory capacity along with flexible storage options that include a 2.5" HDD/SSD and an M.2 SATA slot.

The INA2205 is equipped with advanced I/O interfaces, including an RJ45 console, two USB 3.0 ports, and an integrated liquid crystal display module (LCM) for customized displays. Its compact, fanless design makes it ideal for office environments that require minimal maintenance and space.

The INA2205 network security appliance is powered by the Intel Atom® x7835RE processor which delivers performance, scalability, reliability and advanced technologies that align with the needs of modern network security applications.

The device features eight cost-effective cores for application processing along with integrated Intel® UHD Graphics for AI applications. With a TDP of 12W, the Intel Atom x7835RE processor provides an ideal balance of energy efficiency and processing power, ensuring the INA2205 performs seamlessly under demanding workloads.


**Figure 2.** iBASE INA2205 cyber security appliance.

## Intel® NetSec Accelerator Reference Design

Many of the cyber security applications that enterprises will run on the INA2205 will require wire-speed cryptography and deep-packet inspection. For this intensive processing, iBASE has added an accelerator based on Intel® NetSec Accelerator Reference Design to the INA2205.

This reference design combines an Intel® Ethernet Controller E810 with an Intel® Xeon® D processor, packaged in a PCIe add-in card that features the functionality of a server with the capability to support security workload orchestration and real time and out-of-band management capabilities.

It is designed to augment server resources for network security workloads such as data plane packet processing, IPsec, SSL/TLS, firewall, SASE especially when power, space, and management resources are scarce at the edge. The Intel Xeon D processor also enables analytics and inferencing for network security on the edge without the deployment of expensive and power hungry GPUs. Because this accelerator features an Intel Xeon D processor, the network security software assets based on Intel can be deployed without refactoring, significantly reducing development cycle time and cost.

It's unique form factor enhances the INA2205 design by allowing for the deployment of additional network security optimized compute in space- and power-constrained data centers and edge locations.

## Providing Secure Access to Resources

The INA1607 and INA2205 can be used together or separately based on the needs of the network. Figure 3 shows how the two products are deployed in a branch office network and provide secure access to resources ranging from internet sites, cloud services and legacy networks for access to corporate databases and other resources.

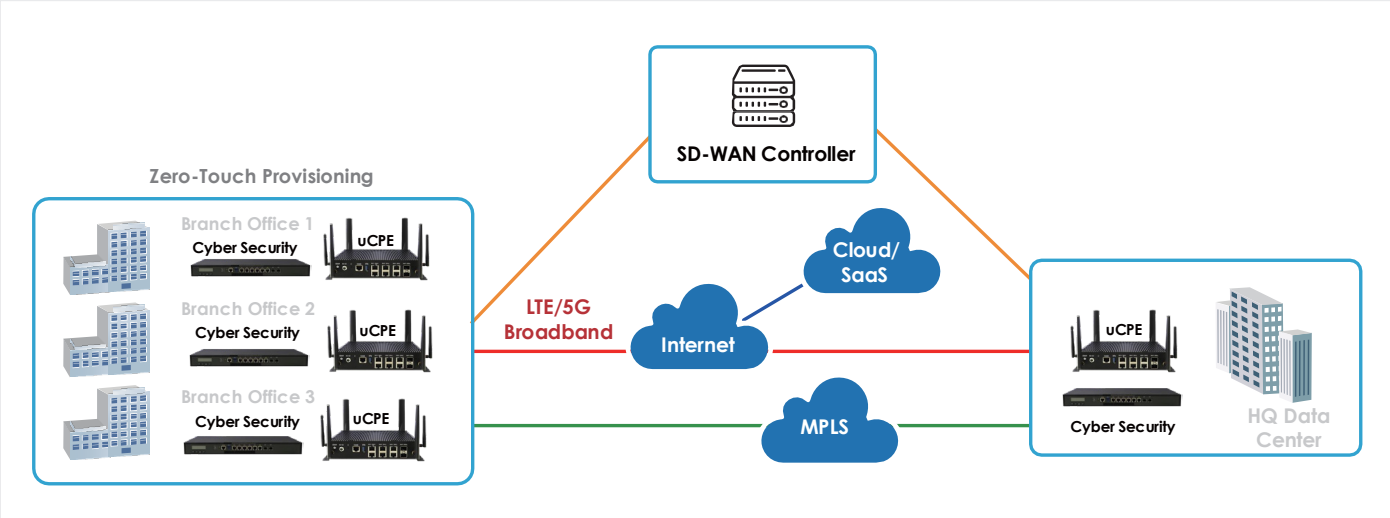


**Figure 3.** Example of a branch office network using the INA1607 and INA2205 for connectivity and cyber security.

The security functions that can be provisioned on the INA2205 vary by use case and organizational needs. Here are some examples:

- **Telecommunications and Internet Service Providers:** The INA2205 can be used as a services platform for firewall-as-a-service (FWaaS) and VPN-as-a-service (VaaS) applications.
- **Healthcare:** Use the compute power for data encryption, and VPNs to protect sensitive patient data. Use UTM to ensure medical systems remain secure and compliant with privacy regulations.
- **Financial Services:** VPN security for financial transactions, UTM and firewall services to encrypt data to maintain compliance with regulations and maintaining system performance during high transaction volumes.

## Conclusion

Hybrid workplace is an important trend and must be supported by branch office networks. More IoT devices are connected to corporate networks via edge locations. WAN connectivity and data security are the driving factors in the development of these networks. iBASE is meeting these needs with new products that leverage the compute performance and features of the Intel Atom processors for edge and network security applications. Intel NetSec Accelerator Reference Design further augments the network security capabilities with its unique form factor. The INA1607 is designed for complex, high-speed SD-WAN connectivity, and the INA2205 has accelerators for line rate cryptography and DPI. The systems can be used together or separate depending on the network need, but both represent the next generation of branch office compute appliance.

## Learn More

iBASE Home Page

INA1607 Product Page

INA2205 Product Page

Intel Atom® Processor Family for Edge and Network Applications

Intel® NetSec Accelerator Reference Design

Intel® Industry Solution Builders



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