

Network Security

Security Solution to Protect Private Networks at Semiconductor Facilities



NEXCOM and CTOne Join Forces to Enhance Network Security at Semiconductor Manufacturing Site

This case study explores how the semiconductor manufacturing site achieved enhanced cybersecurity measures, ensuring the integrity and confidentiality of sensitive data through the deployment of NEXCOM's TCA 5170 – 1U Edge server – with Trend Micro Mobile Network Security, powered by CTOne.

 Advanced Production Management	 Product Quality Assurance and Inspection	 Online Training Session via Virtual Platform
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Background

Semiconductor manufacturing sites are prime targets for cyberattacks due to the sensitive nature of their intellectual property and the critical role they play in global supply chains. As the threat landscape evolves, it becomes vital to fortify their private networks against potential breaches.

One of the recent projects of Marketech International Corp (MIC), a professional technology service provider dedicated to marketing and technology integration support services, is not an exception. They have started an advanced manufacturing project to upgrade their semiconductor fab at Tainan Science Park. Together with Vertex System Corporation (Vertex), a professional system integrator providing end-to-end complete 5G private network equipment and deployment services, they were in search of a verified and trusted IT/OT security solution.

Tailored Security Solution

Based on specific private network security requirements assessment, NEXCOM's TCA 5170 – 1U Edge server – was selected for its advanced features, including high core count

to manage heavier workloads and embedded QAT feature to accelerate encryption and decryption processes, ensuring the secure transmission of sensitive data across networks. TCA 5170 offers multiple Ethernet interfaces for large-scale deployments, including eight 1GbE copper and four 10GbE fiber ports, and reserves two LAN module slots for additional extension.

An optional trusted platform module (TPM) for encryption, authentication, and digital rights management is also available for the TCA 5170, and the whole system can be monitored by the Intelligent Platform Management Interface (IPMI 2.0), adding to its cyber threats resistance.

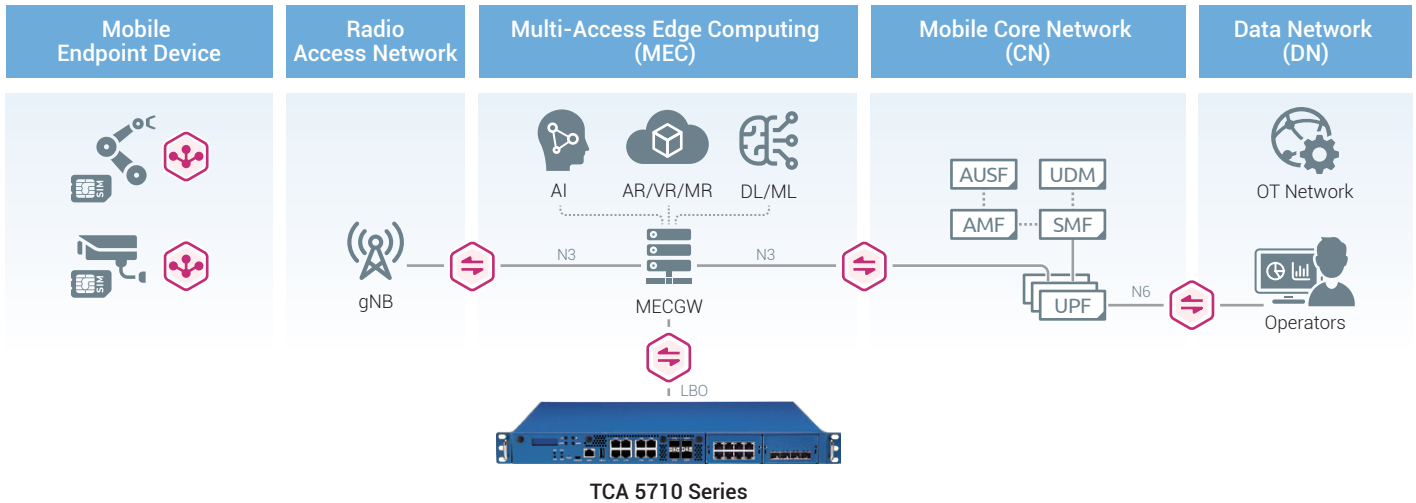
CTOne Add-on Cybersecurity Value

CTOne's virtualized private 5G security secures enterprise private 5G networks, safeguarding both mobile data and endpoints. Integrated seamlessly across IT and CT networks, it enables real-time monitoring of data traffic at key interfaces like N3 or N6. Suspicious activities trigger immediate interception and isolation of endpoints, supporting a Zero Trust approach without additional device agents.

Private Network Security Challenges at Semiconductor Facilities

Data Transmission Attacks	Intellectual Property Theft	Data Encryption Challenges	Insider Threats
Advanced Persistent Threats	Network Complexity	Edge Computing Risks	Supply Chain Vulnerabilities

Solution Integration into Network Infrastructure



Endpoint Protection Mobile IoT/IoT Endpoint Protection	TCA 5170 Series Multi-Access Edge Server for SASE and SD-WAN	Network Protection Data Network and Edge Computing Protection
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CTOne's virtualized private 5G security was installed on NEXCOM's TCA 5170, and units were further integrated at strategic points within the existing network architecture to provide real-time threat detection, intrusion prevention, and data encryption capabilities.

This solution served as the frontline defense against cyber threats, actively monitoring network traffic, identifying anomalies, and mitigating potential risks.

Achieved Results

Following the deployment of the NEXCOM x CTOne joint solution, the semiconductor manufacturing site experienced significant improvements in private network security:

- Improved Security Visibility and Secure 5G Communication
- Easy management of unfamiliar OT networks
- Minimizing the learning curve for IT personnel
- Improved Transparency and Communication

Conclusion

By prioritizing cybersecurity, leveraging innovative technologies, and partnering with industry-leading vendors, semiconductor companies can safeguard their critical assets and uphold the integrity of their operations in an increasingly interconnected world. The implementation of NEXCOM's Edge server and CTOne's virtualized private 5G security solution has significantly strengthened private network security, enabling it to mitigate cyber risks effectively and maintain operational resilience.

Enhanced Private Network Security Strengthened defense mechanisms and proactive threat mitigation capabilities
Improved Data Protection Ensured the confidentiality and integrity of sensitive data transmitted across the network
Increased Operational Resilience Minimized the risk of downtime and disruption to production activities
Cost-Effective Solution Achieved a high ROI by mitigating the potential impact of cyber incidents on business operations

TCA 5170 Series

- Intel® Xeon® D-2100 processor series, up to 14 cores
- 8 x DDR4 2133/2400/2666 RDIMM sockets, up to 256GB
- 1 x 2.5" internal SSD/HDD bay
- 8 x 1GbE RJ45 ports, with 2 bypass pairs
- 4 x 10GbE SFP+ ports
- 2 x PCIe x8 LAN module slots
- Supports Intel® QAT