



# SUPERMICRO AND INTEL UNLOCK THE FUTURE OF SMART CITIES WITH IP65+ SYSTEMS

*High-Efficiency Solution for Supporting Multiple 5G Networks and Edge AI*



*Supermicro IP65+ Server*

## Executive Summary

The IP65+ is a revolutionary solution tailored to the evolving needs of smart cities and intelligent transportation systems. With the integration of Intel's edge-optimized processors with Supermicro's platform, customers can take advantage of AI networking and workload orchestration acceleration to consolidate their operations. This solution enables rapid, scalable, affordable, and secure deployment of multi-5G networks and AI at the edge. It offers significant sustainability benefits and new income-generating opportunities. IP65+ is a

complete telecom system with Supermicro's outdoor IP65 grade server and 5G network software; with the addition of Radio Units, IP65+ can be deployed as a self-sufficient 5G private network that is water and dustproof or as an extension of an operator's public network.

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## Key Features

- **One Deployment, One Server, Four 5G Networks & Edge AI Compute:**

The IP65+ platform supports up to four complete 5G networks within a single unit. This unique multi-tenant capability allows different entities—such as municipal governments, enterprises, and public safety organizations—to operate their networks on shared infrastructure, optimizing resources while maintaining dedicated access. Figure 1 shows support for multiple 5G Networks in one server.

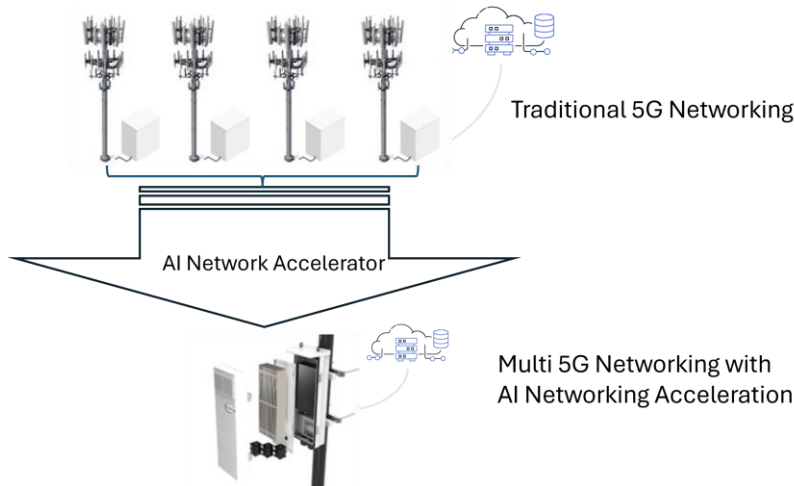


Figure 1 - Support for Multiple 5G Networks Using AI Networking Accelerator

- **Edge AI Compute with Sustainability Focus:**

The integrated AI networking and workload orchestration accelerator consolidates the operations of the four 5G networks into a single, streamlined network-to-cloud pathway. This consolidation reduces operating costs by nearly 75%, significantly cutting energy consumption, noise and supporting sustainability initiatives across urban environments. Figure 2 shows the product components and functions flow.

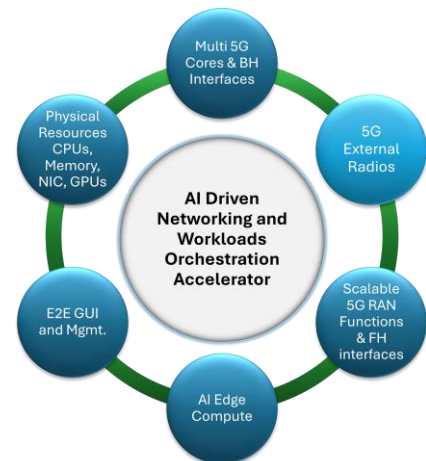


Figure 2 - IP65+ Functions Flow

- **Rapid, Scalable Deployment, and Cost Efficiency:**

This solution can be deployed in less than a day, offering a highly cost-effective solution for urban centers. It supports scalable data rates of up to 3Gbps download and 1Gbps upload, making it ideal for applications requiring high-speed, low-latency connections. Figure 3 below demonstrates a comparison of the cost and deployment time of traditional 5G deployment vs IP65+.

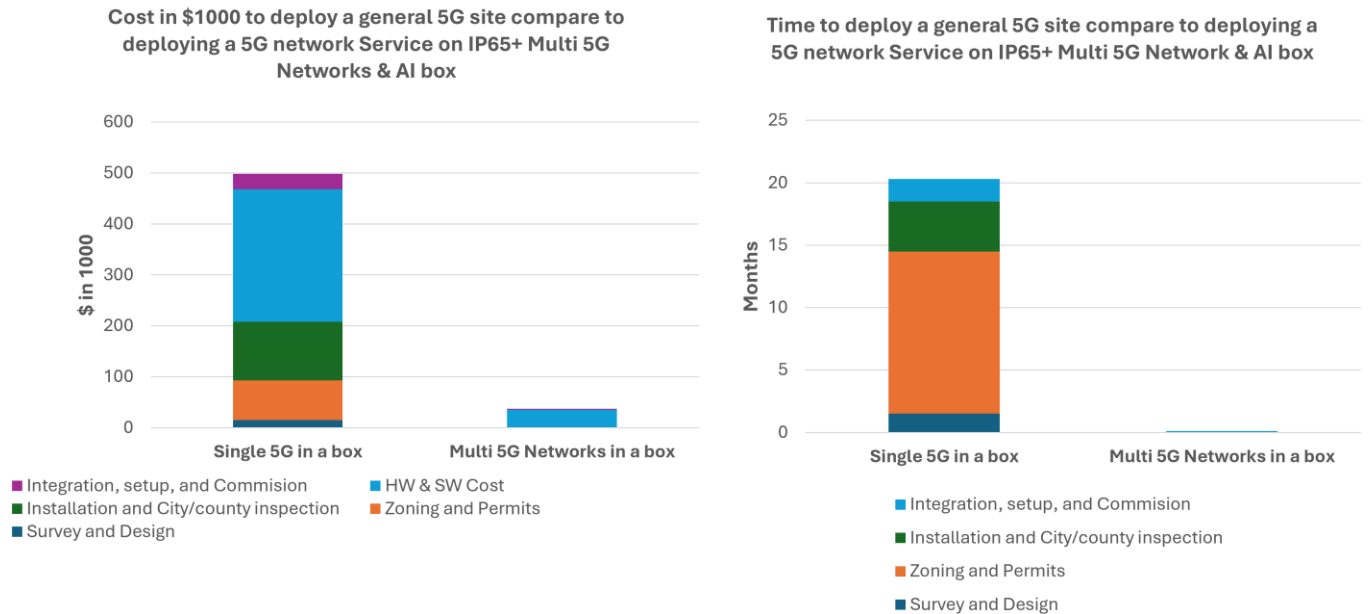


Figure 3 - Cost and Deployment of Classic 5G vs. the IP65+

### Use Cases

- **The platform for new wireless service providers for enterprise and public services:**

The IP65+ offers a platform for new data, voice, texting, and PTT service providers using public and mmWave spectrum. It offers multi-backup networks in case of emergency and disasters and E911 service for all. In addition, it supports a combination of Private/Public 5G to enhance pop-up events such as concerts and parades.

- **Smart City Management:**

Real-time data processing at the edge improves the performance of smart traffic management and environmental monitoring applications, enabling cities to enhance efficiency and responsiveness. The table below shows how a single IP65+ platform could support multiple networks and services for different customers in the city of San Francisco.

5G Operator	# of subs	Throughput Requirements	Max Latency Requirements	Services Required	AI in prem	AI in cloud
City of SF Smart City and Transportation	500	200Mbps DL 20Mbps UL	40 msec	Data, Voice, 911	No	Yes
SFPD Security, Comm. & Body Cam.	200	100Mbps DL 100Mbps UL	10 msec	Data	Yes	No
Google Autonomous Driving & AI Services	500	400Mbps DL 200Mbps UL	10 msec	Data	Yes	Yes
Amazon Shipping Locating & Tracking	300	300Mbps DL 50Mbps UL	10 msec	Data, PTT	Yes	Yes

Table 1 - Example of Multi-5G Networks and AI Using a Single IP65+



Figure 4 - IP65+ in action in SF union square

The figure to the left shows the RF coverage (RSSI) prediction of a single IP65+ deployment on the Union Square of the City of San Francisco, and radios transmit 10 watts each using omni antennas at 16 ft high.

- **Advanced Transportation Systems:**

The platform provides the reliable, low-latency connectivity necessary for autonomous vehicles and fleet management, promoting safety and reducing congestion.



*Figure 5. Autonomous Driving with Dedicated 5G Network Bandwidth*

- **Public Safety:**

Seamlessly integrates with public safety technologies such as police body cameras, allowing for real-time video streaming and secure data management, improving transparency and response times.

## **Conclusion**

The IP65+ is a technological and sustainable innovation and a significant revenue-generating opportunity for cities and operators. Its "one deployment, one server, four 5G networks" model, combined with edge AI compute capabilities, ensures that urban environments can meet the demands of tomorrow with unmatched efficiency, reduced operational costs, and a commitment to sustainability, all while creating new streams of income.

## **For More Information**

Supermicro Edge Portfolio - <https://www.supermicro.com/edge>

## Appendix A – System Configuration

The IP65+ solution is built on Supermicro’s ruggedized pole-mounted outdoor edge system, capable of operating in temperatures from -40°C to 46°C. It is specially designed for outdoor applications with features like a wide temperature support, tamperproof design, and enclosure intrusion detection. With an external radio unit, it is the perfect fit for a public /private 5G solution. It offers two options for heat exchangers (HEX) and air conditioning versions (ACU), options for AC/DC power sources, and PCIe expansion slots for GPU cards. It also supports fiber. From an installation and maintenance perspective, it supports power cycle design for delay on/off, self-diagnostic, and remote management.

CPU	Intel® Xeon® 6433N, 32Cores, 205W
Memory	32GB DDR5-4800
Storage	SSD 2.5" SATA 960GB
Network	Intel Ethernet Network Adapter E810
GPU	Intel Data Center GPU Flex 170

### SUPERMICRO

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