



# PRIVATE 5G NETWORK SOLUTIONS FOR INDUSTRY 4.0

CYRUS 2.0 from ASOCS on Supermicro Servers Built for 5G Solutions



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## SUPERMICRO

Supermicro is a global leader in high performance, green computing server technology and innovation. We provide our global customers with application-optimized servers and workstations customized with blade, storage, and GPU solutions. Our products offer proven reliability, superior design, and one of the industry’s broadest array of product configurations, to fit all computational need.

## Executive Summary

Industry 4.0, the 4th industrial revolution, is driving technology investments and innovation in robots, drones, connected production lines, and process automation. Industrial IoT (IIoT) devices collect vast amounts of data that need to be processed quickly and securely – hence locally at the Edge.

Industrial enterprises worldwide are adopting smart manufacturing and automation technologies as they prepare their manufacturing facilities for Industry 4.0. As part of this revolution, the manufacturing industry is breaking away from the traditional model of efficiency through automation, specialization, and scale and entering the world of big data. Every object in the factory will communicate with the others. Decisions and directions for assembly will be made at the product level and adapted to current conditions.



## Industry 4.0 and 5G

Such automation and flexibility require high-performance wireless communication between machines, people, and even the walls and floors of the facilities themselves. Until recently, achieving the required level of connectivity was not possible. The number of devices that need to be connected, the amount of data that needs to be transferred, the reliability, latency, and the security requirements - all of these could not be achieved with previous technologies. That is where 5G comes in.

5G is seen by many in the manufacturing industry as a necessary driver for Industry 4.0 and the automation of manufacturing processes. Currently, connecting machines and devices on the factory floor requires specialized wireless equipment that fails to provide the reliability and security levels needed for such mission-critical applications.

### Welcome, New Spectrum!

#### CYRUS 2.0 FOR PRIVATE NETWORKS

### CYRUS 2.0



#### Open RAN

- Complies with O-RAN 7.2 fronthaul
- Use any 7.2 radio



#### Pure IT Solution

- No special hardware or FPGA acceleration
- Runs on any server



#### Cloud-Native

- Runs on common virtualization layer (VMware, OpenStack)

One of the key aspects of 5G is the fact that an operator is no longer a prerequisite for creating a local cellular network. There has been a worldwide move to allocate specific radio frequencies for public use without licensing. This means that with the proper equipment in place, you can set up your own private network that you fully control, without the need to rely on an external provider or share the network with others. ASOCS, an Israel-based software company, is a leader in cellular clouds and 5G private networks, enabling mobile connectivity at fiber-like speeds and bandwidth. The company's unique approach to cellular access is based on fully virtualizing cellular access, and utilizing the Open Radio Access Network (O-RAN) specifications, making its solution ideal for system integrators who wish to incorporate the cellular processing layer as part of their overall edge service offering.

### CYRUS® 2.0

The CYRUS 2.0 solution is a single software stack for 5G cellular processing. CYRUS is fully virtualized across all layers; therefore, it can run on any standard server. It connects to radios based on the O-RAN 7.2 fronthaul interface, enabling multiple use cases. The CYRUS solution supports 4G technologies in the same architecture. While 4G (LTE) is less applicable to the industrial use case, in specific markets such as the USA, an interim use of 4G over the CBRS band may become a transitional step on the way to a full 5G

SA network. In such a case, CYRUS can guarantee full backward and forward compatibility within this band without any forklifting. The virtual base station software runs as a virtual function on a standard IT hardware. Having the 5G access solution run as virtualized software, disaggregated from the radio units, ensures full flexibility and upgradability in any type of private network scenario.

The CYRUS solution for 5G private networks can support the facility's full range of IoT devices while providing unlimited bandwidth to process and transfer massive amounts of data from these connected devices. Utilizing standard servers, CYRUS

2.0 is managed like any other IT element. It enables industrial enterprises to easily implement 5G private networks with Time Sensitive Networking (TSN), high network reliability, low latency, and speed, making it ideal for innovative IIoT applications.

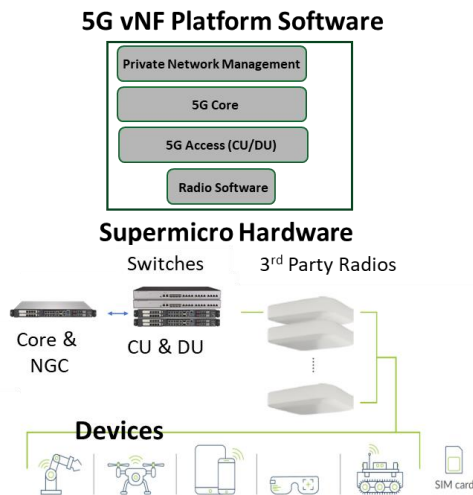
## About ASOCS

ASOCS is disrupting the traditional RAN market with a cloud-native solution, delivering a 4G and 5G mobile network solution in a single software stack. Our cloud-native mobile connectivity solutions are delivered on commercial off-the-shelf IT hardware and O-RAN compliant radios, which allow industrial enterprises and operators alike to benefit from new levels of performance and reliability in Wide Area Networks or localized private networks. Privately-held ASOCS serves industrial enterprises, operators, tower companies and enterprises in retail, real estate, corporate offices, hospitality, hospitals, sports and entertainment markets, and has offices in Israel and the United States.

## The ASOCS/Supermicro Solution

The CYRUS 2.0 system enables the industrial user to connect fixed or mobile devices to a centralized compute center via a 5G wireless system. As described in the drawing below, the hardware elements are based on two Supermicro 1019D-16C-FHN13TP servers, two switches, and standardized radios (O-RAN-RU). All the RAN and Core elements are implemented as software running on top of a virtualization layer.

### SUPERMICRO/ASOCS 5G SOLUTION



### BENEFITS FOR INDUSTRY 4.0

#### The network you need

High performance, high speed, high device density, low latency, elevated security, traffic prioritization, and network analytics – the infrastructure needed for the factory of the future.

#### Complete flexibility

ASOCS supports an Infrastructure-as-a-service business model, so industrial enterprises can enjoy complete control, flexibility and scalability.

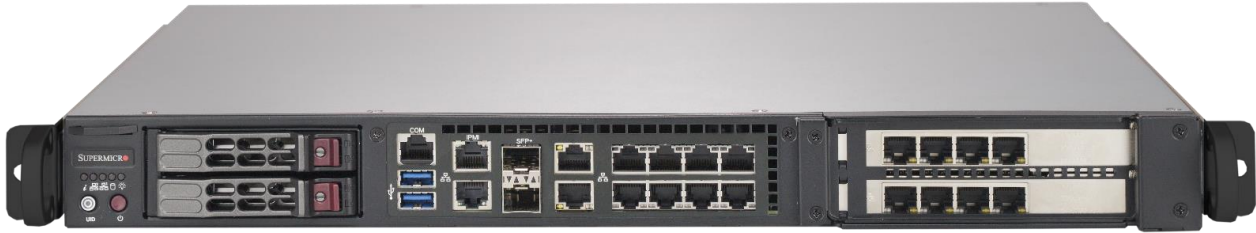
Tailored and prioritized cellular access ensure reliable cellular service specifically tailored to their specific needs and requirements.

#### Wi-Fi-like installation – It's that easy

Install a private cellular network as easily as other organizational IT systems - upgrade, scale up, and make changes as needed.

## Supermicro 1019D-16C-FHN13TP

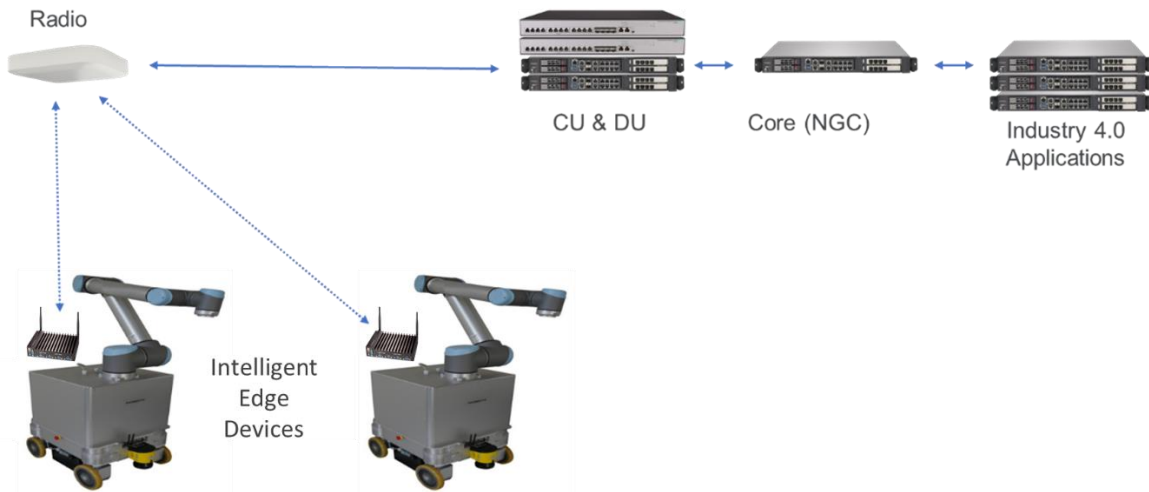
The Supermicro 1019D-16C-FHN13TP is a short-depth 1U rackmount server optimized for edge computing applications. It supports an Intel® Xeon® D D-2183IT 16-core processor and two PCI-E expansion cards, such as network accelerators and AI inferring cards.



1019D-16C-FHN13TP Edge Server

### Benefits of the Supermicro/ASOCS solution

- Utilizes Supermicro 1019D-16C-FHN13TP servers and white box switches
- Radios connect via standard Ethernet cable (CatX) which delivers the power as well (PoE)
- Radios are available in multiple cellular bandwidths (depending on the spectrum available in each country)
- Easy-to-use management tool for site configuration, performance monitoring, fault management, and life cycle management. The network can also be managed via 3<sup>rd</sup> party management tools used in the factory



### Supermicro/ASOCS Private 5G Solution

### Conclusion

Public and private 5G-based infrastructure is becoming more critical for both enterprise and Industry 4.0 evolution as it enables a new breed of applications that require high performance and low latency. Available now, the ASOCS CYRUS 2.0 platform combined with Supermicro's servers built for 5G provide a best-in-class next-generation private 5G wireless solution, enabling a clear path for customers to deliver their low-latency, secure IoT solutions.