5G private networks for industrial enterprises

As large-scale adoption of Industry 4.0 and Industrial Internet of Things (IIoT) and technologies increases, enterprises in industries as diverse as manufacturing, warehousing and distribution, and agriculture, are finding that existing connectivity solutions, such as WiFi, cannot support their strategy for industrial automation at scale—and are also insufficient for the leading-edge innovations they envision.

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- AMR (Autonomous Mobile Robots)
- AGV (Autonomous Guided Vehicles)
- Digital twin
- Visual quality inspection
- Maintenance with AR (Augmented Reality)

To exploit these emerging technologies—and fully benefit from them—enterprises require the capabilities that low latency, high throughput and ultra-secure 5G connectivity enables: seamless coverage and mobility, simple enterprise architecture, and enhanced experiences.

Accelerate industrial automation with 5G private network

Enterprise private 5G networks provide the low latency, high throughput and reliable connectivity that enable enterprises to leverage their innovative Industry 4.0 and AI digital solutions to reimagine processes, improve operational efficiencies and reduce costs.

Manufacturing
Real-time quality inspection with vision AI

- Recognition, presence & absence, appearance, positioning & alignment, dimension
- Soldering, assembly, clipping, lot number identification, DLC marking control, body, power-train, paint, final assembly

Manufacturing
Autonomous material handling with forklifts and AMR

- Goods-to-person, tote-2-person (part picking/feeder), cart transportation, line-side inventory replenishment
- Interzone transportation (finished goods to warehouse)
- Pick-2-belt, object conveyor & positioning

Warehouse & distribution center
Augmented order fulfillment with AR

- Pick-by-vision (order scan / pick / track & route)
- Efficient inventory management
- Augmented standard operating procedure (SOP)
- Virtual container & safer loading strategies

Smart farming
Precision farming

- Harvest monitoring
- Soil and crop monitoring
- Yield monitoring
- Irrigation automation
- Autonomous Tractors and Drones

Five benefits of a 5G private network

Dedicated industrial network

- Single unified connectivity across enterprise requirements
- Purposely built for enterprise - coverage, throughput, latency, mobility and security
- Deterministic reliability & QoS

Enhanced experience & higher ROI

- Enhanced operations efficiency & productivity
- Guaranteed network performance – SLAs, QoS/QoE
- New revenue stream with next-gen use cases

Seamless coverage & mobility

- Ultra-reliable indoor & outdoor connectivity for dense manufacturing environment
- Critical mobility mgmt. for assets & AMRs, drones
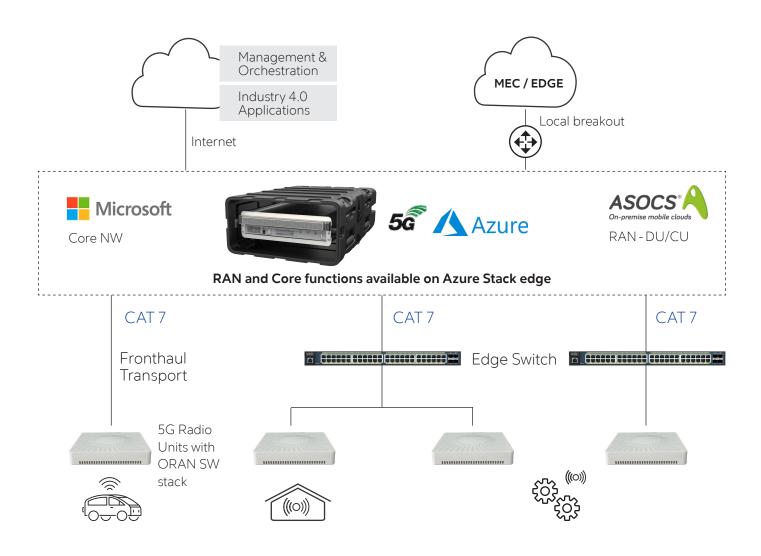- Positioning & accuracy

Ultra-secure connectivity & network

- Cellular grade security & resiliency
- E2E security – user, device, physical, network and data
- Enhanced OT+IT security

Simpler & advanced enterprise architecture

- Fewer cables & equipment, enabling ultra-quick deployment
- On-demand & dynamic expansion
- Leverage edge & cloud, SDN/NFV and SD-WAN ecosystem
- Network slicing enables dedicated bandwidth with full control

Cognizant 5G private network solution

A fully managed 5G network to support digital transformation.

Solution highlights:

- Designed, deployed and fully managed by Cognizant
- Fully virtualized radio and core networks
- 5G as an overlay standalone network—Ethernet-based front haul & using COTS HW
- Leverages standard switches and digital Ethernet infrastructure
- 5G DU and CU software from ASOCS – multivendor Open-RAN 5G Radio Unit ecosystem
- Microsoft Azure Private 5G Core and Azure Stack Edge
- Common management and orchestration platform cloud—managed and run by Cognizant
- Single dashboard for connectivity and IoT

Cognizant 5G private network service offerings

Cognizant takes holistic approach to our clients' needs by helping them design, implement, and fully manage their private 5G networks. We help you fully reimagine your processes and implement innovative digital solutions that solve operational challenges.

Our extensive experience in 5G private networks, IoT use cases across industry verticals and integration with existing digital enterprise IT enables enterprises in any industry to create new value with next-generation IoT solutions, powered by 5G.
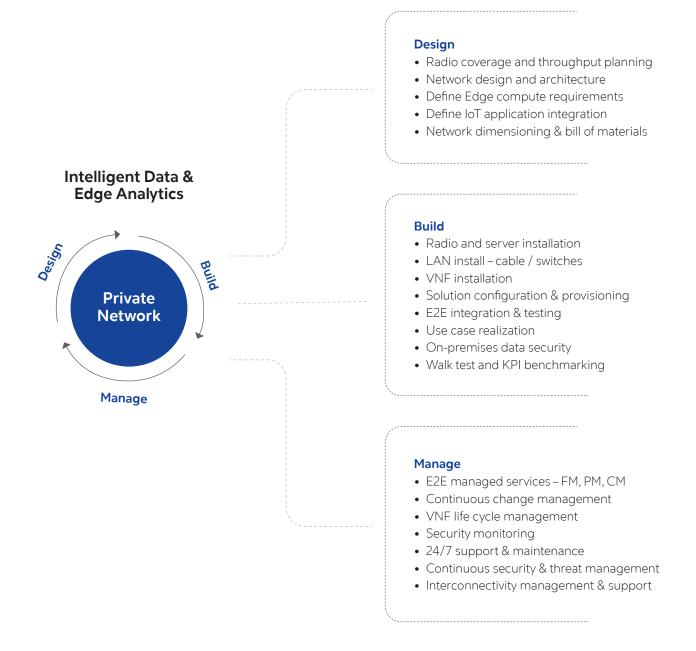
Consulting & assessment

Use cases

- Exiting pain areas and new use cases mapping
- Use cases prioritization and business benefits
- Existing infrastructure upgrades / new end devices

Connectivity

- Use-case-specific network requirements
- Data throughput, latency, mobility, security needs
- Existing LAN/WAN Infrastructure integration
- Network dimensioning

Spectrum

- Shared spectrum availability
- Frequency/bands assessment

Intelligent Data & Edge Analytics

Design

Build

Private
Network

Manage

Design

- Radio coverage and throughput planning
- Network design and architecture
- Define Edge compute requirements
- Define IoT application integration
- Network dimensioning & bill of materials

Build

- Radio and server installation
- LAN install – cable / switches
- VNF installation
- Solution configuration & provisioning
- E2E integration & testing
- Use case realization
- On-premises data security
- Walk test and KPI benchmarking

Manage

- E2E managed services – FM, PM, CM
- Continuous change management
- VNF life cycle management
- Security monitoring
- 24/7 support & maintenance
- Continuous security & threat management
- Interconnectivity management & support

About Cognizant

Cognizant (Nasdaq-100: CTSH) engineers modern businesses. We help our clients modernize technology, reimagine processes and transform experiences so they can stay ahead in our fast-changing world. Together, we're improving everyday life. See how at at **www.cognizant.com** or follow us **@Cognizant.**

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