Azure/Compal Private 5G Manufactory solution

COMPAL

Opportunities:

The Private 5G Network market is projected to reach **$ 13,925.6** million by 2028 from $ 924.4 million in 2020, growing at an estimated CAGR of **40.9%** from 2020 to 2028. A private 5G network is a local area network (LAN) that offers improved internet access to commercial, industry and other customers. The emerging next generation network are expected to meet the need for secure wireless communication to industries, public safety, and essential infrastructure connectivity. Organizations across vital communications and industrial IoT (Internet of Things) realms including national security agencies, military, utilities, oil & gas firms, mining associations, rail & port operators, manufacturers and industrial behemoths are making substantial investments in the private LTE networks. The very first private 5G networks are now starting to be deployed to enable a variety of device scenarios ranging from wired manufacturing robots and large sensor networking to AVG (Automated Guided Vehicles) and AR/VR power. The private 5G network plays a critical role in providing seamless and safe internet access to the Industrial IoT (IIoT) devices listed above.

Source : Polaris Private 5G Network Market Analysis & Segment Forecast to 2028

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Solutions:

With the power of Azure & Compal Golden Eye capabilities and experience, we aim to help manufactory customers to adapt Private 5G into manufacturing environment

- AGV
- Remote expert
- AR/VR
- Safety enhancement
- Operational efficiency
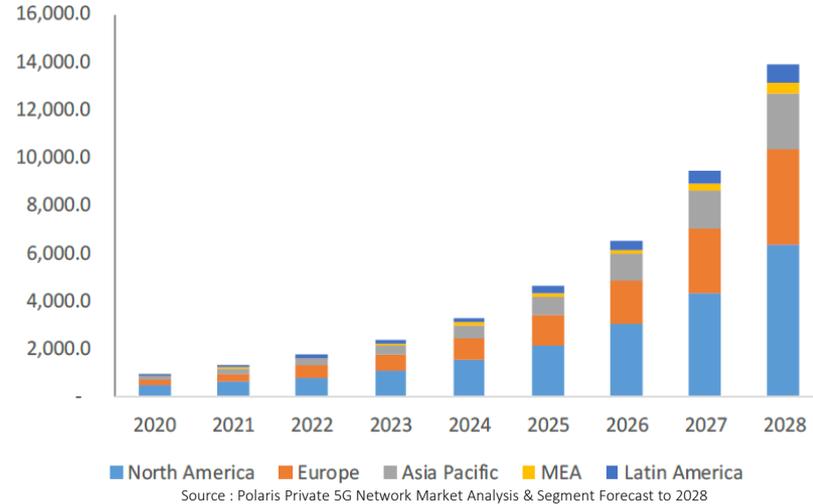
Package:

5G O-RAN System

- O-RU – Open interface decentralized architecture , FR1, 4T4R N78, N79
- O-DU / O-CU — SA mode , TDD patent, 256QAM DL/ 64 QAM UL, Adaptive MCS, Mobility(inter/intra handover)
- PHY Accelerator— Support offload complex computing from CPU and scalable to connect with multiple RU (high ratio)
- RIC — Support Automatic Neighborhood Relation, Cell of Detection , Mobile load Balancing.
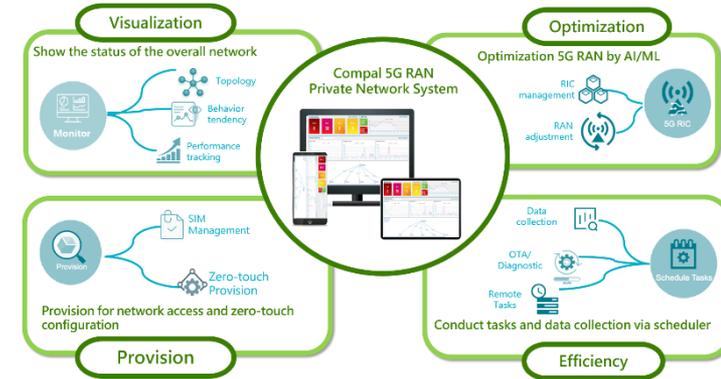- Network Management System — Smart base station network management system that complies with the 5G O-RAN standard

BOM	Vendor	Product drscription
O-RU	Compal	Teak
High-PHY	Compal	McLaren
O-CU/O-DU	Compal	Maple
RAN Intelligent Controller	Compal	Bach : (RIC)
Network Management System	Compal	Private 5G NMS : Golden Eye
User Equipments	Compal	MiFi : 5G router
5GC	Microsoft	AP5GC : Microsoft 5GC

5G RAN Private Network System – Golden Eye

Key Features:

- Open RAN standards have the benefits of introducing market competition, improving network performance, and reducing equipment costs.
- Open Interface support different O-RU or O-DU/O-CU vendors.
- PHY Accelerator increase packet processing speed and reduce CPU usage and hardware cost.
- One-click management of base station performance and resource load information to improve base station deployment, maintenance efficiency and network management performance
- Through machine learning, proactively adjust the network resource allocation between base stations in advance in response to changes in traffic environment

Suitable for:

- Telecom Operators, System Integrators (SI), Urban Planner, Local Government.

Private 5G usecases

p5G brings mobility, bandwidth and resiliency

- Business Driver:
  1. Process efficiency
     - Human Machine Interface
     - Sensors, Actuators, Robotics
     - Automated Guided Vehicles

  2. Collaboration/communication
     - Smart collaboration (Text, Voice, Video), PTT
     - Remote Expert & Augmented Reality
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  3. Safety and situational awareness
     - Cameras & Drones for HD Video
     - Hazard area monitoriung

5G Smart Factory
HD Video Crane monitoring, AGV, AI QC inspection

- 5G high assurance wireless for critical production efficiency and quality. Connectivity platform for closed loop AI/ML processes.

Supply Chain

- Autonomous Vehicles
- AI inward goods Inspection

Operational Safety

- Remote Overhead Crane monitoring

OT Productivity

- AI QC Inspection
- Autonomous functional testing
- AR guided inspection