Betacom AirGap Protection™

Executive Summary

As more enterprises are implementing digital transformation strategies in the move to Industry 4.0, cyber attacks are increasing at an unprecedented pace. The Cybersecurity & Infrastructure Security Agency (CISA) now identifies 16 critical infrastructure sectors whose systems and data are considered so vital to the United States that their breakdown or destruction would have a debilitating effect on national security, the economy, and public health and safety. In many cases these are the very same sectors turning to automation to increase productivity and manage limited resources (e.g.: Manufacturing, Transportation Systems, Energy).

Private 4G/5G networks are at the core of many automation projects because they provide the performance needed to reliably run mission-critical Industrial IoT applications, including automated guided vehicles, autonomous mobile robots, and high-definition cameras. Above all, these networks need to provide the highest level of security available. Betacom 5G as a Service is built from the ground up to protect critical infrastructure and data from threats. Our new cyber defense architecture – Betacom AirGap Protection™ – provides another layer of security to our Zero Trust design and management capabilities. No other private wireless network on the market offers this level of security.

The Betacom AirGap Protection Security Advantage

Data privacy and network security are critical considerations as enterprises expand their digital footprints, especially in those industry sectors that are designated critical infrastructure. Enterprises are seeking solutions that reduce the risk, complexity and cost of deploying automation and Industrial IoT applications.

The foundation of Betacom 5GaaS is a private network architecture that enhances security for mission-critical industrial automation applications. This unique cyber defense architecture includes Betacom AirGap Protection (Figure 1), a design that completely isolates the private network from the rest of the enterprise infrastructure to limit the impact of breaches. Betacom AirGap Protection adds end-to-end encryption and traffic segregation to Betacom's Zero Trust network design for a comprehensive and robust cybersecurity solution.

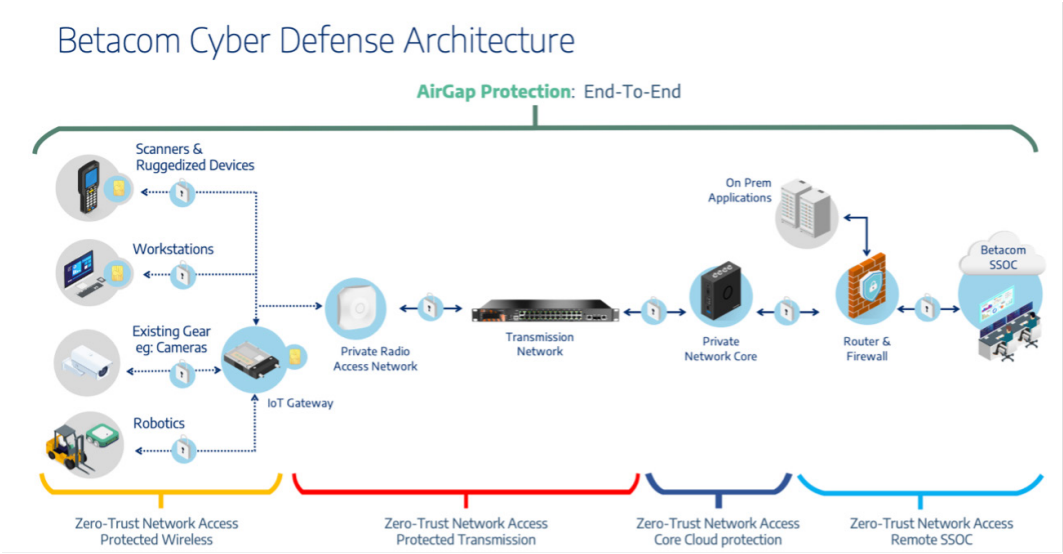

Figure 1: Betacom E2E Cyber Defense Architecture

Betacom takes a Zero Trust approach to design networks as if they have already been breached. By hardening the network from end-to-end, we can reduce the attack surface and limit the impact of malicious activity. Our Zero Trust design spans four areas:

On the Edge

Security starts with strong 3GPP authentication and SIM-based access control for each device. We also work with customers to define granular security policies that dictate which nodes and resources each endpoint can access – closing loopholes that allow unfettered access to sensitive systems and data.

In the Radio Access Network (RAN)

We work with leading RAN partners to continually optimize their platforms and deploy them in unique ways to address security at a system-level. Betacom AirGap Protection utilizes encryption and tunnels from the RAN all the way to the network core to ensure that traffic remains secure and invisible to other enterprise IT infrastructure.

At the Core

We have redesigned the standard 4G/5G core by consolidating and hardening all elements on a single server that is hosted on-premises. This provides the flexibility of a distributed architecture without sacrificing security.

In the SSOC

The Betacom Security and Service Operations Center (SSOC) provides another layer of intrusion detection without ever decrypting or exposing customer data. We continually monitor network performance and traffic patterns and employ proven security tools to identify potential attacks and vulnerabilities. Our service level agreements (SLAs) outline a notification and escalation process that can trigger an enterprise's security response strategy.

The Betacom Managed Service Security Advantage

Betacom 5G as a Service (5GaaS) is a private wireless solution provided as an end-to-end managed service. This means that we plan, design, install and operate the network, while providing the enterprise with visibility into network performance and security (Figure 2). We manage the network from a modern SSOC – proactively monitoring network health and traffic patterns. If a vulnerability or signs of a potential attack are detected, Betacom immediately alerts the customer, which can trigger their enterprise response plans. In addition to our cyber defense architecture, we apply Zero Trust security principles into each phase of our managed service delivery.

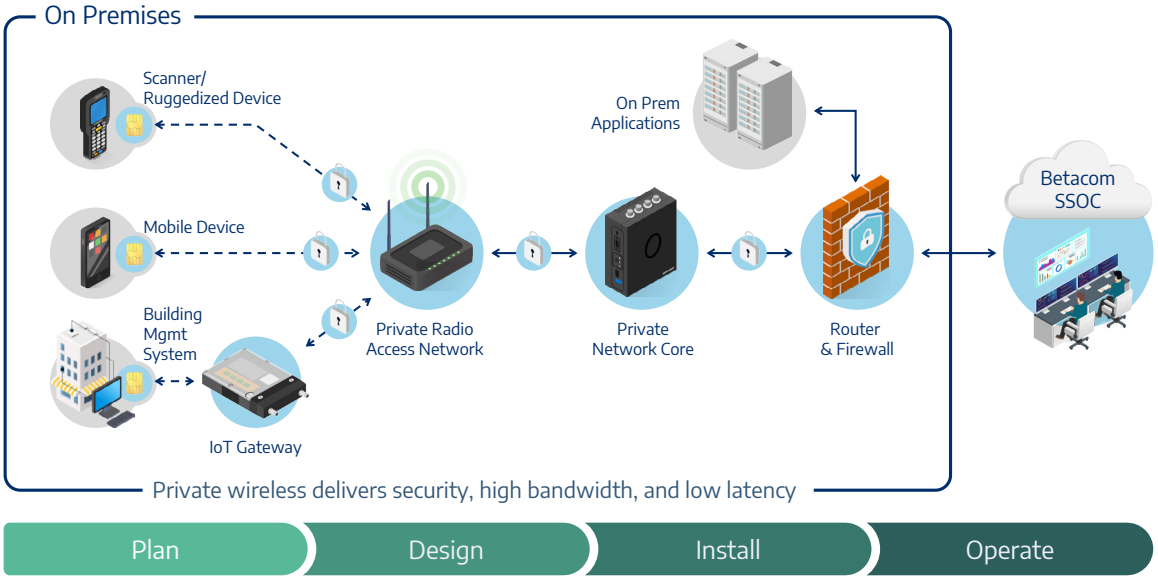

Figure 2: Security Across Each Managed Service Phase

Plan

Security starts in the planning stage. Along with establishing the detailed technical and performance requirements and identifying the applications that will run on the network, we work with our customers to define the security policies for the network. We meet with your IT team to discuss how to best deploy the private wireless network in your environment. This ensures that we understand the enterprise business, security concerns, and network and security systems in place so that we can design appropriately and execute against specific requirements.

Design

During the design phase, we establish the network architecture. This includes laying out the nodes that will be accessing your network, defining what devices and applications can access each node. We take into account your existing firewall and help make informed decisions about additional security measures that might be needed. The deliverables from this phase include the location of all required private wireless equipment (private radio access network, private wireless core and security gateways), an RF design that shows a heat map of coverage, a full bill of materials (BOM), and mutual decisions about where the network will reside.

Install

Before we step foot on a new installation site, we stage the private network to harden the security of each element in 5GaaS. We then install the system behind the enterprise firewall, ensuring that each network element is connected over a secure channel. Our highly trained installation crews have in-depth expertise in deploying 4G/5G networks, limiting risk associated with deployments. Our teams are focused on understanding precise requirements and troubleshooting needs with risk avoidance strategies to keep projects on track and within budget. In addition to performance tests, we will run security tests to ensure the network is running as designed.

Operate

Once we've installed the Betacom 5GaaS network, our managed service provides another line of defense as we proactively monitor the network 24x7 from our SSOC. Enterprises not only have dashboard access to ensure that the private wireless network is performing as specified, but our team of U.S.-based Engineers continually monitors network health and traffic patterns, which can indicate previous attacks or current threats. We also run periodic vulnerability scans to ensure the setup continues to be protected and has the latest updates. Our SSOC technical support team is also available 24x7 to address issues.

A Word About Our Security Partnerships

We have partnered with cybersecurity experts to harden all security aspects of Betacom 5GaaS. From next generation firewalls to up-to-date threat analysis, best-in-class security technology is built into our solution to continuously assess risks and automatically adjust to provide comprehensive real-time protection across the digital attack surface. The combination of Betacom 4G/5G and security expertise with industry leading security tools ensures that our enterprise customers are deploying the latest technology that reduces risk while providing a platform for business growth through private cellular wireless operational efficiency and automation.

Conclusion

Private wireless networks offer enterprises a new connectivity option for business-critical applications that require reliable secure, high-speed, low latency performance. From the wireless spectrum we use, to our Zero Trust design and 24x7 management, security drives every element of Betacom 5GaaS – giving customers the peace of mind that their infrastructure and data are protected. And as the threat landscape evolves, so will our cyber defense architecture.

Betacom