

Dell Federal 5G Solution

Dell's Federal 5G solution, designed and engineered by Dell Technologies for the U.S. Government and Department of Defense, provides secure and reliable communication for mission-critical operations.



The Dell Federal 5G Solution offers a comprehensive and secure approach to meeting the needs of the U.S. Federal market, including the DoD and mission-critical operations.

Some of the key benefits to the solution include:

- Comprehensive, ready-to-use solution supporting diverse use cases for civilian government and military
- GUI-based simplified network deployment, management, and orchestration through Dell's Private Wireless Orchestrator software
- O-RAN compliant architecture
- High-performance RAN and 5G-SA core
- Architected from the ground up with a focus on security and full federal compliance



Delivering unparalleled performance with Private 5G networks

Building a secure private telecommunications network is essential for U.S. federal government agencies and the Department of Defense to conduct mission-critical operations with the highest reliability and lowest response times.

Private wireless networks provide unmatched performance and reliability, which is crucial for national security and defense. These networks support tactical missions by ensuring quick, secure, and reliable communication across an integrated fighting force.

Private 5G networks will play a critical role in future defense and tactical operations, enabling secure, resilient information exchange and low-latency communication for real-time battlefield decision-making. They facilitate the integration of advanced technologies like AI-driven edge computing, drones, and IoT sensors, ensuring rapid response and operational superiority. With their reliability and scalability, private 5G networks empower defense forces to execute complex operations safely and with greater command and control.

Introducing Dell Federal 5G

Understanding the potential impacts of private wireless networks to enable mission-critical use cases, Dell Technologies has built a complete solution from the ground up. Our goal is to provide secure, reliable and high performing private wireless network to United States federal governments that enable new and innovative use cases. Dell Federal 5G provides the following benefits:

- Designed from the ground up as a fully Open RAN compliant, 5G stand-alone (SA) solution, enabling uncompromised performance as well as the flexibility of an Open RAN front haul supporting multi-vendor Radios.
- Fully supports U.S. autonomy and leadership in 5G and beyond with a U.S. Company which has designed and manufactured the secure government solution within North America.
- Uniquely focused on meeting U.S. government federal compliance to ensure mission critical communication is secure, reliable and mission ready.

The Dell Federal 5G solution is a complete end-to-end solution that includes all the hardware, software, ancillaries, cabinets, etc. to quickly deploy a secure private wireless network. It incorporates enhanced feature and capabilities to guarantee mission-critical grade performance tailored specifically for the needs of the federal government and Department of Defense.

Dell Federal 5G Solution

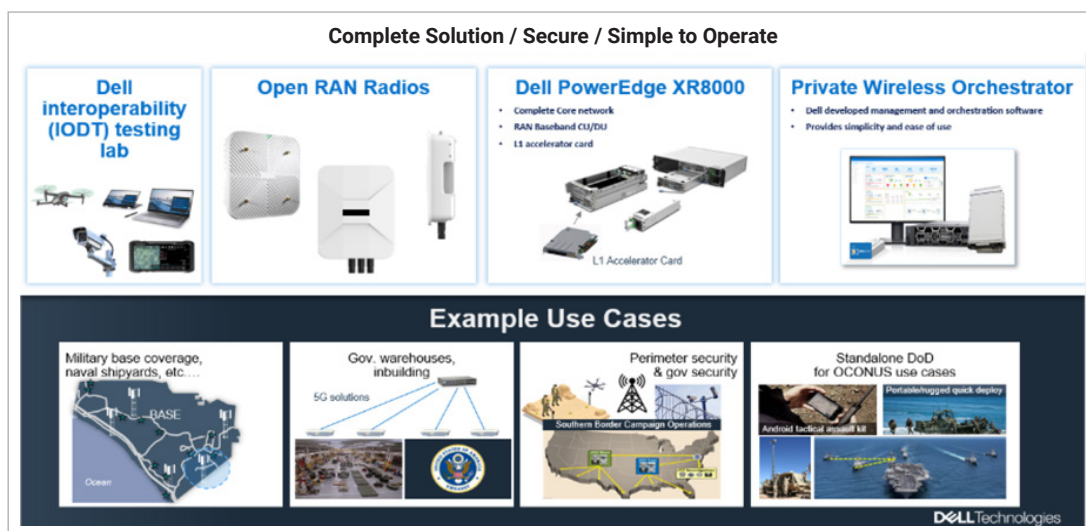


Figure 1: The Dell Federal 5G Solution Architecture

The solution includes the following Hardware and Software components:

Hardware



Dell PowerEdge XR8000 Servers

These rugged servers are built for extreme environments and are perfect for private wireless deployments in difficult terrain due to its innovative SLED-based architecture. These servers provide the compute power necessary to efficiently run the Dell RAN CU-CP, CU-UP and DU software. The Druid RAEMIS Core software also runs on the Dell PowerEdge servers. The XR8000 Servers supports SLED-based architecture, significantly enhancing the solution's flexibility and modularity.



Dell RAN RU DRU77440-1 4x40W

High-performance 5G Radio Unit (RU) that operates in the n77 band, covering frequencies from 3300 to 4200 MHz for enhanced flexibility and coverage within the O-RAN network. This Dell-developed RU supports the mid-band Time Division Duplex (TDD) spectrum, specifically operating in the 3700 to 3980 MHz frequency range, enabling network operators to deliver a comprehensive 5G experience with improved coverage and capacity, all within a small footprint. The DRU77440-1 features four transmit antennas and four receive antennas (4T4R) with a transmit (Tx) output power of 4x40W.



n79 Outdoor RU 4x5W

The n79 Outdoor Radio unit 4x5W is a rugged, high-performance 5G O-RAN Radio Unit designed for seamless deployments. Supporting 5G Standalone (SA) architecture and Time Division Duplex (TDD) technology, it optimizes capacity, reduces latency, and maximizes spectrum use by efficiently adjusting uplink and downlink resources. Built for outdoor reliability, it features 4x4 MIMO with up to 5W per antenna, delivering exceptional 5G coverage and performance. Operating in the n79 band (4500-4900 MHz), it provides a powerful solution for next-generation networks.



n79 Indoor RU 4x250mW

The n79 Indoor Radio unit 4x250mW is a high-performance 5G Radio Unit designed for indoor deployments. Optimized for 5G Standalone (SA) architecture with TDD technology, it enhances capacity, lowers latency, and maximizes spectrum efficiency. Featuring 4x4 MIMO and 24dBm output per antenna, it ensures strong 5G performance and coverage on the n79 band (4600-4900 MHz), providing reliable and robust indoor connectivity.



Dell RAN Accelerator card

A PCIe card that enhances the performance of the DU by processing all Layer 1 software in-line on the card, freeing up the server CPU for Layer 2 workloads. This simplifies DU deployments by removing the need for additional fronthaul Network Interface Card (NIC), Global Navigation Satellite System (GNSS) timing, and Forward Error Correction (FEC) offload accelerator cards.

Software

Dell Private Wireless Orchestrator Software

Provides end-to-end management and orchestration of the entire Dell Federal 5G solution including zero touch provisioning (ZTP), SIM cards and device management. Dell Private Wireless Orchestrator Software is centrally hosted on Microsoft Azure Government Cloud and provides multi-tenant management and orchestration.

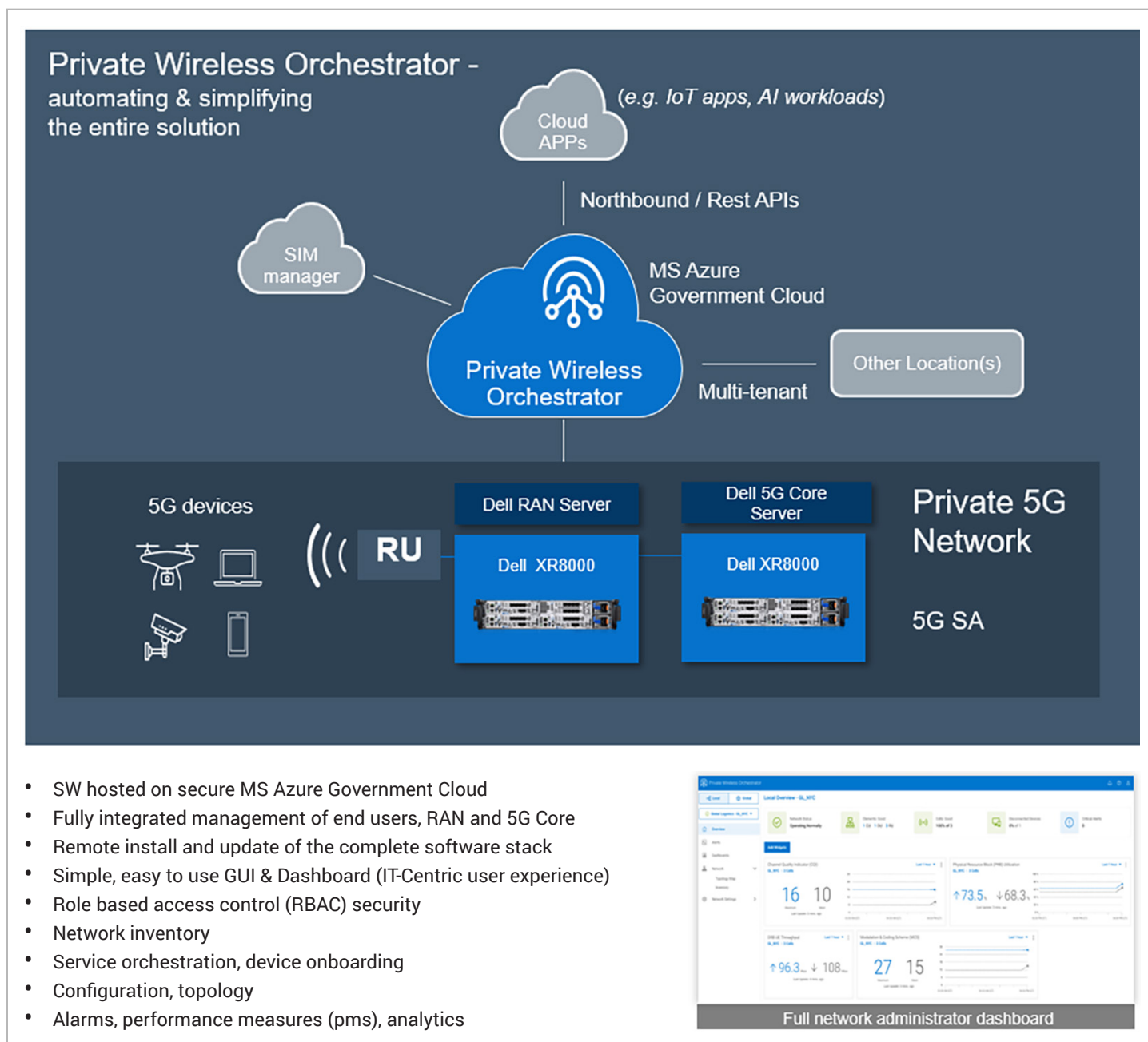


Figure 2: Dell Private Wireless Orchestrator software

Dell RAN CU-UP, CU-CP and DU software

Dell developed Layer 1, 2, and 3 RAN software stack that provide the required low-latency, high reliability, high user throughput and high network capacity for enabling mission-critical use cases.

Druid RAEMIS 5G Core software

Designed with a secure supply chain and full federal compliance, it is a fully functional 3GPP 5G SA core providing robust security features essential for government and DoD applications.

Federal Compliance

Federal certification for DoD use cases

Achieving federal compliance is a key requirement in 2025 to support both civilian and Department of Defense (DoD) use cases. Federal compliance ensures Dell solutions meet the U.S. government’s stringent security and regulatory standards. The Dell Federal 5G solution is already federally compliant for civilian deployments as of Release 1.1. Required STIGs/SRG, and FIP 140 testing has also been completed along with code submission for Common criteria for accredited validation testing.

Other solution components

Device integration

Comprehensive interoperability and device testing (IODT) with 5G devices such as spanning commercial user devices to tactical drones, sensors, ruggedized tablets, phones and Android Tactical Assault Kit (ATAK) devices, enhancing situational awareness and mission-critical communication.

Ancillaries

Includes both indoor and outdoor ancillaries supporting wide range of deployment scenarios and provides everything needed to deploy the Dell Federal 5G solution.

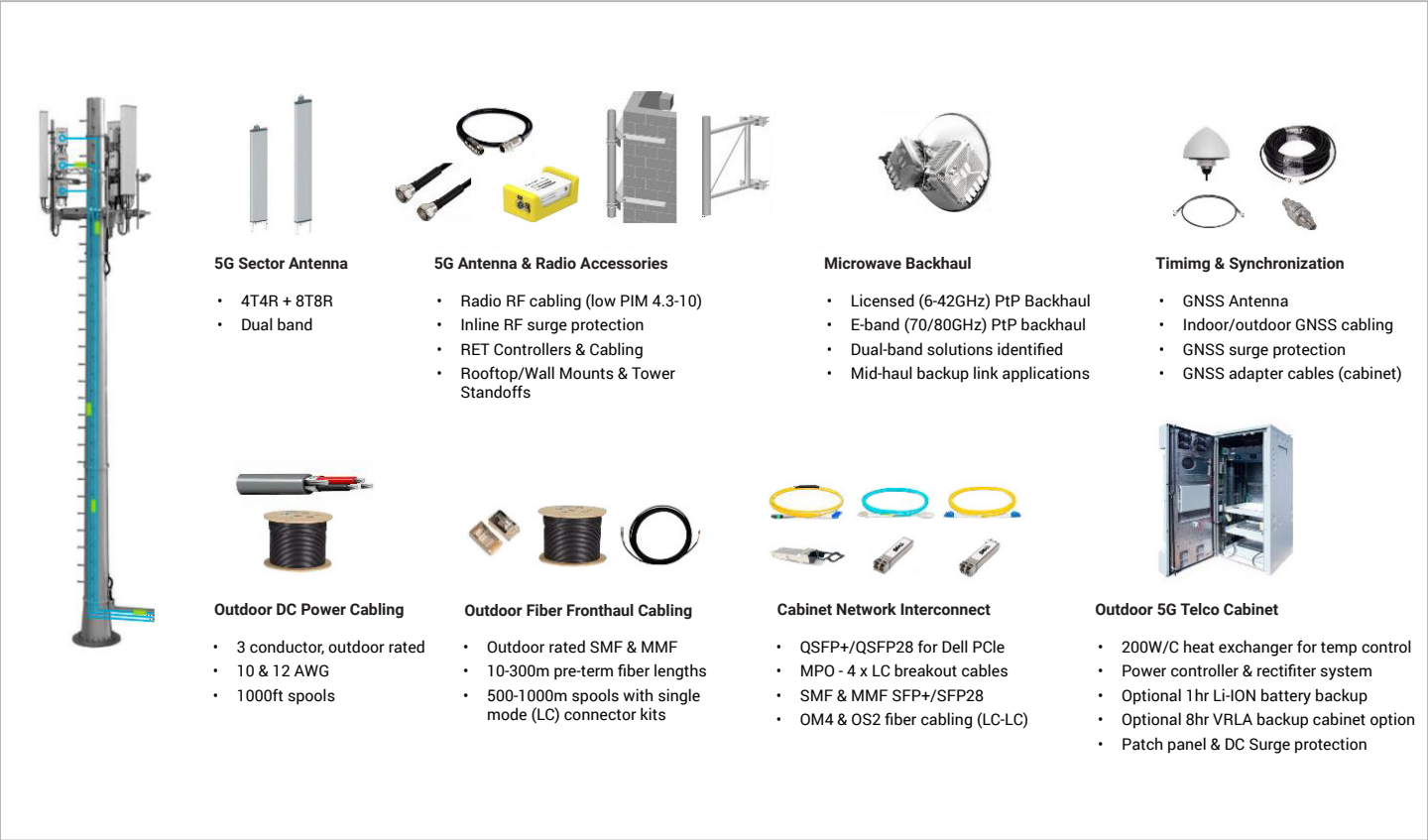


Figure 3: Outdoor deployment 5G RAN Ancillaries

Dell Federal 5G use cases

Dell Federal 5G has been built from the ground up to provide secure and reliable private wireless to enable a variety of federal use cases. Following are the examples of how the U.S. federal government and Department of Defense can leverage the solution:



Enable 5G military bases:

The rise in advanced threats has compelled military forces worldwide to revamp their equipment, infrastructure, and telematics. Portable and transportable 5G base stations enhance military mobility in critical mission scenarios. Applying 5G networks in U.S. military bases streamlines operations and supports the “Train like you fight” principle. Additionally, integrating network sensors, wearables, IoT devices, cloud computing, and 5G networks creates a cohesive defensive force for the Internet of Military/Battlefield Things. Swift communication among these interconnected devices facilitates the transition to updated military infrastructure.



5G technology for DoD applications:

5G technology will revolutionize battlefield networks by enabling defense personnel, divisions, and individuals to exchange surveillance photos, maps, target placements, and other operational data in near real-time. Its superior communication speeds will enhance various U.S. military applications, including real-time intelligence, control of swarming unmanned aerial vehicles (UAVs), dynamic RF spectrum use, distributed command and control, and smart warehousing and logistics. The advanced capabilities of 5G networks offer new opportunities for military units to make better decisions in high-risk environments. Additionally, 5G will enhance the capabilities of military drones and combat robots, allowing them to recognize, follow, and target individuals based on facial identification and other features.



5G connectivity for autonomous vehicles, drones and robots:

Autonomous vehicles, drones, and robots play a vital role in the defense industry. These are fully autonomous tools that employ telecommunication technology, such as the 5G network, at the disposal of defense agencies to provide services in real-time at dangerous, inconvenient, and impossible areas of operation, namely remote surveillance for enemy infantry. The adoption of these autonomous technologies significantly reduces operational costs and enhances efficiency, allowing them to recognize, follow, and target individuals based on facial identification and other features.

Dell Federal 5G - services to reduce complexity and deployments

Dell Technologies serves as the single point of contact for the Dell Federal 5G solution and associated services, helping private wireless operators reduce the complexity of deploying and maintaining private 5G networks.

Designed with simplicity in mind, in collaboration with our partners, our services allow our customers to focus on the use cases that private 5G enables. This helps achieve strategic planned outcomes, improve safety and productivity, and reduce nonconformity and operational costs.

Services include:

- Project Management
- Design services
- RAN deployment/commissioning/ integration services
- System integration services
- Optimization services
- On-site support

The Dell Advantage

Dell Technologies is committed to delivering secure 5G that unlock U.S. federal government and Department of Defense use cases. As a comprehensive ecosystem integrator, Dell Technologies simplifies the intricate challenges of private wireless by offering a complete package for efficient deployments. Our offer encompasses a Secure Edge Operations platform and an all-inclusive wireless connectivity suite that includes spectrum, SIM cards, core network components, RAN, operations and maintenance, industrial devices, and applications alongside the necessary platforms and services.

Summary

Dell Federal 5G has been designed from the ground up to be a fully Open RAN - compliant, 5G stand-alone (SA) solution. It has been designed, engineered and manufactured securely by Dell Technologies; a U.S. based company. The solution is uniquely focused on meeting U.S. government federal compliance to ensure resilient communications in support of mission-critical activities.

Discover how Dell Federal 5G can empower your mission. [Contact a Dell Federal Expert](#) today for a tailored consultation.