

# Cellwize Enables Private 5G Business Opportunity For SIs

**System Integrators (SIs) are trusted by enterprises to install private 5G networks and Cellwize Simplify, running on Intel®-based hardware, offers a solution that handles the complexity of network deployments and management**



5G technology continues to mature and expand aided by regulatory worldwide bodies designating and licensing 5G spectrum. At the same time, the demand for the technology is rising—and not just for consumer communications. Industry 4.0 and other enterprise workloads that need mobility and low latency are driving interest and demand in private 5G networks.

The fifth generation of cellular technology—5G—provides high bandwidth and low latency and is based on a cloud-based infrastructure. Within industrial, enterprise and institutional settings, private 5G networks can change the game in applications such as edge computing, asset management, logistics, IT infrastructure and others. Indeed, private 5G is the only wireless networking technology to deliver the fast, secure and reliable networking with ultra-low latency that Industry 4.0 and other advanced use cases require.

Private 5G networks are customizable so that they can be implemented based on the unique needs of the application. This enables an enterprise to deploy lightning-fast communications for robots on an assembly line, for example, and higher latency, lower bandwidth connectivity for IoT sensors that communicate in low-bandwidth bursts. Meanwhile, 5G's hyper-densification capability can support a hundred times as much traffic compared to 4G technologies.<sup>1</sup>

## Challenges of Private 5G Networks

Private 5G networks operate in higher radio frequency bands for the bigger bandwidth they offer, and several countries have auctioned off frequencies that will enable these new networks, including the auction of C-band (between 3.4 GHz and 4.2 GHz) frequencies in the U.S. Due to this use of higher frequencies, private 5G radio infrastructure must be based on small cells to compensate for reduced signal range due to attenuation. In a private 5G network, the short range is an advantage—it ensures the network is limited to the facility where it is deployed, heightening its security along with its performance. But it does increase the complexity of the radio frequency (RF) planning which makes it harder to deploy and manage the network.

Private 5G networks are built using virtualized software on a commercial-off-the-shelf (COTS) server hardware platform. This can make the solutions more cost-effective and allow certain, non-real-time software elements to be run in the cloud.

Even so, a private 5G network may offer new challenges. Designing and deploying could require multiple skill sets that a typical IT department may be unable to offer, including RF planning, data transport and connectivity, orchestration, enterprise edge cloud and use of network function virtualization (NFV) and cloud native applications. If the organization does not design, build and manage its network correctly, performance will falter, and the organization will not realize the full extent of 5G's advantages.

## What Is 5G?

5G networks will provide 50 times more speed, 10 times less latency, and 1,000 times more capacity than 4G/LTE. This means 5G will be able to connect more devices and transmit more data than ever before, delivering fast connectivity and significantly enhanced user experiences.<sup>2</sup>

Further, a private 5G network is not necessarily limited to a single facility. When it spans multiple facilities, or even multiple countries, the planning must account for legal and regulatory differences between countries, as well as availability of components from specific vendors.

This complexity creates a wide range of potential trouble spots (see Fig. 2). The initial radio frequency planning has to carefully consider the coverage and capacity of the network under development. In addition to the right Radio Access Network (RAN) choice, a private 5G network has a core network and a range of connected devices, calling for a third-party management system that integrates all of those elements.

## The System Integrator (SI) Opportunity

Only a select few organizations will have the expertise to self-install a private 5G network, which means there is a need for expert guidance in deploying the 5G network. This situation opens a prime opportunity for systems integrators or communications service providers. SIs have an inside track because IT directors know and trust them. In a 2021 Cellwize-BDO survey, 73% of organizations planned to hire an SI for some or all of the 5G implementation, and 82% for private 5G operations.

To meet this demand, SIs must train existing teams as well as hire technical staff with skillsets that are not already available among the company's professionals and research technology vendors in order to deliver the solution.

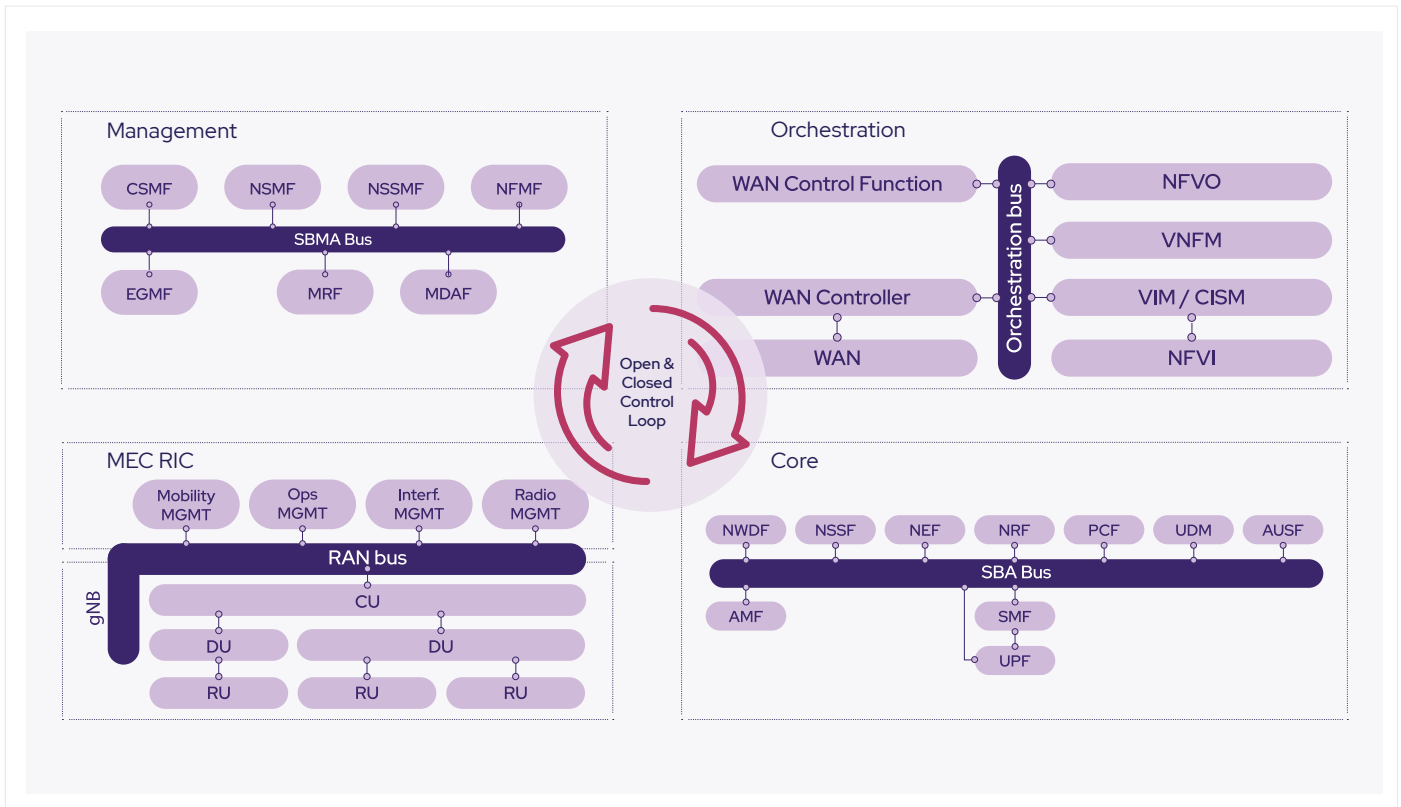


Figure 1. Sources of complexity in a 5G network.

## Private 5G Embraces Open RAN

Most of the cost of a 5G network is in the radio access network (RAN) which consists of the baseband unit (BBU) which processes the analog radio signals that come into the remote radio head (RRH). Previously, RAN systems were proprietary and expensive. Open RAN is a new, disaggregated architecture for building the RAN. It breaks the BBU into a distributed unit (DU) and a centralized unit (CU) and connects all of the elements with open interfaces. DU/CU hardware runs on COTS servers or in the cloud and the open interfaces allow for competition among vendors.

OpenRAN's disaggregation, open APIs and multi-vendor interoperability, are ideal for building flexible, responsive private 5G networks. Already there is a large and growing ecosystem of companies and products designed for OpenRAN environments, a vast expansion compared to proprietary options. Further, it is designed for building virtualized RAN (vRAN) with artificial intelligence (AI) to manage control.

## Cellwize Simplify Removes 5G Complexity

Cellwize, an Intel® Network Builders ecosystem partner, has a solution to 5G complexity that is ideal for systems integrators to use when undertaking a 5G engagement. Cellwize Simplify is AI-powered software that provides a pre-integrated, certified and vendor agnostic software-as-a-service offering that greatly eases 5G deployment and operation. Cellwize Simplify enables non-5G experts to undertake the building and management of a 5G network.

The intelligent algorithms that power Cellwize Simplify can determine which network parameters are best for a given environment. They monitor performance and ensure that the provider is meeting network service level agreements, policies and key performance indicators in the contract.

As an adjunct to this capability, Simplify abstracts the complexity of network design and operation into an intuitive drag-and-drop interface. For example, someone using Simplify for network management can take advantage of the functionality of network slicing—creating multiple logical networks within the same physical network infrastructure—easily using a drag and drop GUI.

Network abstraction is a key Simplify capability. Abstraction allows SIs to provide offerings of multiple vendors to their customers without having to expend additional resources. It makes network management efficient, and eliminates the need for operators to model thousands of parameters.

Simplify supports multiple OpenRAN vendors, eliminating vendor lock-in. It provides automated assurance through algorithms and AI, and integrates with many common IT tools. This allows teams to monitor their 5G network using the same systems they use to monitor other internal networks.

The system also provides programmability, enabling an SI or MNO to integrate its expertise into third-party technology to facilitate the implementation of special use cases.

For systems integrators, the benefits include:

- Better alignment to customer needs
- Flexibility in selecting vendors and architectures, allowing the selection of best-of-breed technology for any given project
- Ability to run multiple simultaneous 5G projects, enabling them to take on more clients without expanding workforce.

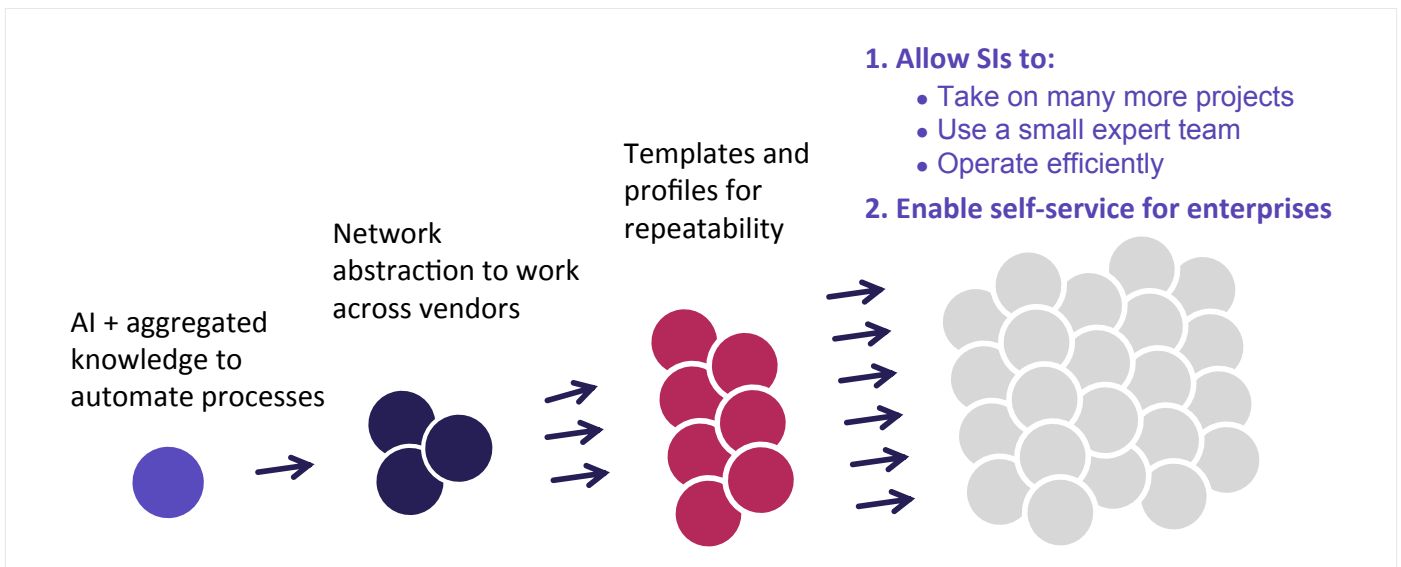


Figure 2. Cellwize Simplify provides benefits that allow system integrators to offer private 5G services.

## Intel® 5G Acceleration

Intel offers processors and acceleration products for 5G networks that include:



- **3rd generation Intel® Xeon® Scalable CPUs:** The 3rd-generation Intel Xeon Scalable family is optimized for cloud, enterprise, high-performance computing network, security, and IoT workloads. The processors provide built-in AI acceleration.
- **FlexRAN™ reference architecture:** FlexRAN is optimized hardware and software that enables enterprises and systems integrators to develop and implement highly optimized 5G scalable cloud-native RAN solutions on Intel architecture processors.
- **Intel® FPGA Programmable Acceleration Card (Intel® FPGA PAC) N3000:** Field Programmable Gate Arrays (FPGAs) serve as hardware accelerators in 5G deployments. They improve physical layer (Layer 1) performance.
- **Intel® eASIC™ N5X Devices:** Intel's structured application-specific integrated circuit—eASIC—technology provides custom logic in a dedicated chip that is compatible with FPGA cards.

## Conclusion

Private 5G networks can provide a significant advantage for organizations that use them in industrial operations, healthcare facilities and many other kinds of enterprises to take full advantage of rapidly advancing technology that enables automation, improves speed and security and allows rapid adaptation and change.

Cellwize Simplify, with AI enhancements and powered by Intel technology, simplifies and abstracts the complexities of deploying and managing a private 5G network into an orchestrator that can be managed using a drag-and-drop interface. Most of the complex calculation and analysis takes place under the hood, providing users with tools that allows them to leverage the power of 5G features without necessarily knowing much about 5G technology.

Simplify supports multiple OpenRAN vendors, allowing flexibility in vendor choice. It provides automated assurance through algorithms and AI, and integrates with many common IT tools. This allows teams to monitor their 5G network using the same systems they use to monitor other internal networks.

For systems integrators engaged in building out and operating private 5G networks on behalf of their customers, Cellwize Simplify simplifies the work.

## Learn More

[Cellwize Simplify Platform](#)

[Intel® Network Builders](#)

[Intel® Xeon® Scalable processors](#)

[Intel® eASIC™ N5x devices](#)

[Intel® FPGA Programmable Acceleration Card \(Intel® FPGA PAC\)](#)



### Notices & Disclaimers

<sup>1</sup> <https://www.visualcapitalist.com/5g-next-generation-mobile-connectivity/>

<sup>2</sup> <https://www.intel.com/content/www/us/en/wireless-network/5g-technology/5g-vs-wifi.html>

Intel technologies may require enabled hardware, software or service activation.

No product or component can be absolutely secure.

Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy.

Your costs and results may vary.

© Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others.

0222/TM/H09/PDF

Please Recycle

349569-001US