dish wireless

DISH WIRELESS SYSTEMS INTEGRATION

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This white paper describes how enterprise customers can use the unique capabilities of the DISH Wireless Smart 5G™ network to manage complex system architectures and unlock opportunities for innovation.

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EXECUTIVE SUMMARY

To connect employees, customers, partners and IT applications, enterprises operate complex environments. These environments are connected by a local area network (LAN) and wide area network (WAN), and require dedicated IT professionals to operate and monitor the network and manage policies and access.

As enterprise networks have grown beyond the boundaries of traditional office footprints, they require expanded, disaggregated and diversified LANs and WANs to cover on-site, remote and mobile connections. These complex architectures increase the demand on enterprise IT resources by complicating management and control across multiple platforms.

Current mobile network operators (MNOs) offer a “one-size-fits-some” connectivity model to their customers, whether they are consumer users or enterprises. The consumer base prioritizes network connectivity and reliability over network control and transparency and when an MNO extends this consumer-centric model to an enterprise, it’s offering an incomplete solution to an enterprise’s complex problems. This results in an inadequate experience that fails to address unique requirements of enterprises, has limited capability for personalization and remains closed off.

Additionally, legacy MNO options don’t provide enterprises with secure and adaptable systems and don’t allow enterprises the level of management and control over their networks that they need. To fill these gaps enterprises introduce their own solutions. However, these work-arounds often present new difficulties and obstacles for managing both their policies and users.

Traditional network options are closed solutions, operating much like a “black box” that hinders an enterprise IT professional’s ability to fully monitor and manage the system. When enterprises are forced to adopt consumer-based solutions, additional complexities are introduced, like the inability to troubleshoot performance issues and a lack of security when data is routed over the network.

The challenges enterprises face when using legacy MNO services include:

1. Limited control of network operations;
2. Limited visibility into network performance; and
3. “One-size-fits-some” packages.

DISH Wireless is building the first Smart 5G™ network, designed with enterprises in mind. The DISH model grants users full control of the network and unparalleled insight into performance. The network’s open ecosystem and cloud-native architecture enables adaptable and consistent experiences across enterprise ecosystems, resulting in:

1. Improved network control and transparency;
2. Flexibility and fit-for-use; and
3. New opportunities for growth and innovation.

By using a network designed to meet their unique needs, enterprises can simplify management of their resources, enabling them to better serve their employees, customers and partners. DISH Wireless offers enterprises that solution.

TRADITIONAL ENTERPRISE LANDSCAPE AND CHALLENGES

Most MNOs operate on brownfield infrastructure originally designed and built to support consumer-centric offerings. Updates and changes to these networks are expensive and difficult for the MNO to make, and delays in upgrades mean delays in innovation for their customers. Supporting legacy retail systems while trying to build a new network to engage enterprises represents a substantial challenge to traditional MNOs.

Limited Control

Enterprises face difficulties because MNOs offer a repurposed consumer package that limits visibility and prevents control over their ecosystem. Enterprises often use over-the-top solutions (OTT), like mobile device management (MDM) or virtual private networks (VPN), to exert some control over their network, but these add-ons are often inadequate as they increase layers of complexity, introduce gaps in functionality and create additional points of failure. OTT solutions also increase costs and delay implementation of more effective solutions. Additionally, any effort an enterprise expends on trying to cobble together OTT solutions distracts from its primary goals (see Table 1).

Limited Visibility

Because enterprises must rely on traditional consumer models instead of a commercial-focused offering, they have limited visibility into network performance or system conditions. This black box system prevents enterprises from observing operations in real-time or responding to performance issues quickly. Without the ability to pinpoint causes of disruption or inefficiencies effectively, enterprises must use their time and resources troubleshooting, rather than driving innovation for their business and their customers.

Table 1 - Example of Limited Control

Situation	Problem
An insurance firm uses both an MDM application and a VPN as OTT solutions. The MDM allows the firm to apply policies to mobile devices (like smartphones and tablets) and allows them to be locked down remotely to protect the firm's data integrity. The VPN provides secure connectivity for the mobile devices to access the firm's LAN, extending the enterprise architecture to traveling or remote employees, which protects proprietary resources and applications.	Integrating OTT applications into traditional networks results in added complexity that must be managed by the firm's IT team or outsourced to a third party vendor. For example, using OTT applications from different sources can create inefficiencies like gaps in coverage. Furthermore, OTT applications can complicate access to and storage of data. A holistic network experience allows for streamlined integration of OTT applications in a single ecosystem. DISH Wireless offers enterprises this experience.

One-Size-Fits-Some

Standardized, one-size-fits-some packages often don't include offerings that enterprises need and include capabilities that enterprises don't want, resulting in added expenses for unnecessary services (see Table 2). Enterprises get burdened with systems that don't fit their needs, hinder operational efficiency and stifle innovation. Enterprises have broad and diverse network requirements and an enterprise that uses a repurposed network, designed with few options for true personalization, cannot fit the system to its unique needs. For example, the same IT architecture used in a smart factory is not appropriate for a fleet management system. When the network is not tailored to the use case, information about network performance and setup is hidden and the enterprise cannot access important network performance indicators and metrics.

Table 2 - Example of One-Size-Fits-Some Limitations

A maintenance company wants a simple network solution that allows employees to make calls from company phones while working at remote job sites. At shift changes, the devices get transferred between workers, so the company does not need or want voicemail. Because MNOs offer a consumer-centric service, voicemail is built-in and not optional and the company ends up spending money on an unnecessary feature.

PLATFORM PRINCIPLES, TECHNOLOGY AND BENEFITS

DISH Wireless is building the first Smart 5G™ network to meet the unique needs of all customers, no matter their industry. The cloud-native OpenRAN network architecture empowers enterprises to overcome the challenges posed by legacy systems like black box networks and standardized packages, as illustrated in Figure A. The DISH Wireless network offers personalized and dynamic solutions that grant full control to an enterprise, provide a cohesive experience and introduce new opportunities for collaboration and innovation.

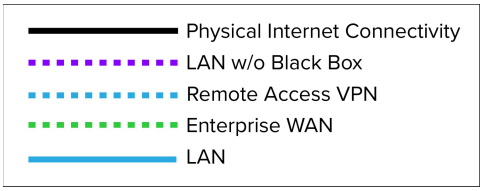
Open, Cloud-Native and Containerized

DISH Wireless has designed, engineered and built a new kind of network, one that moves beyond the black box offering. Our open ecosystem gives enterprises unprecedented levels of control and visibility into operations and processes throughout the network. The DISH Wireless cloud-native principles allow for a network that adapts, scales and remains secure from end-to-end. Enterprises can also add or remove services in real-time to optimize performance and respond to changing conditions.

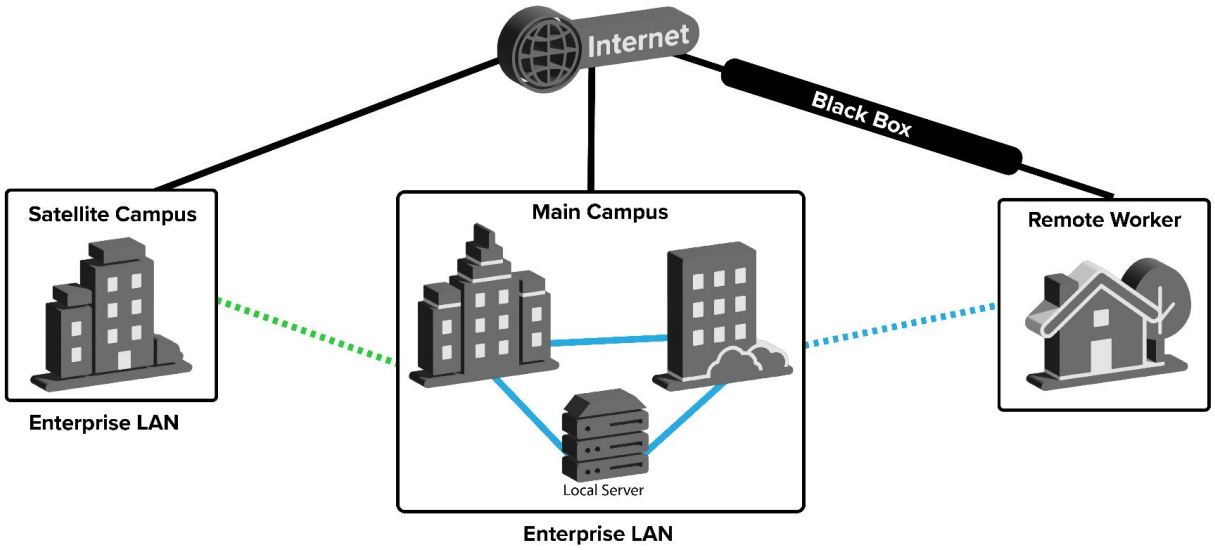
First-Ever Smart 5G™ Network: A Network Ecosystem

A complete network ecosystem requires the integration of all elements - including operations and business support systems - with the goal of seamless and coordinated functionality. The DISH Wireless network ecosystem is not a black box but a plug-and-play personalized solution.

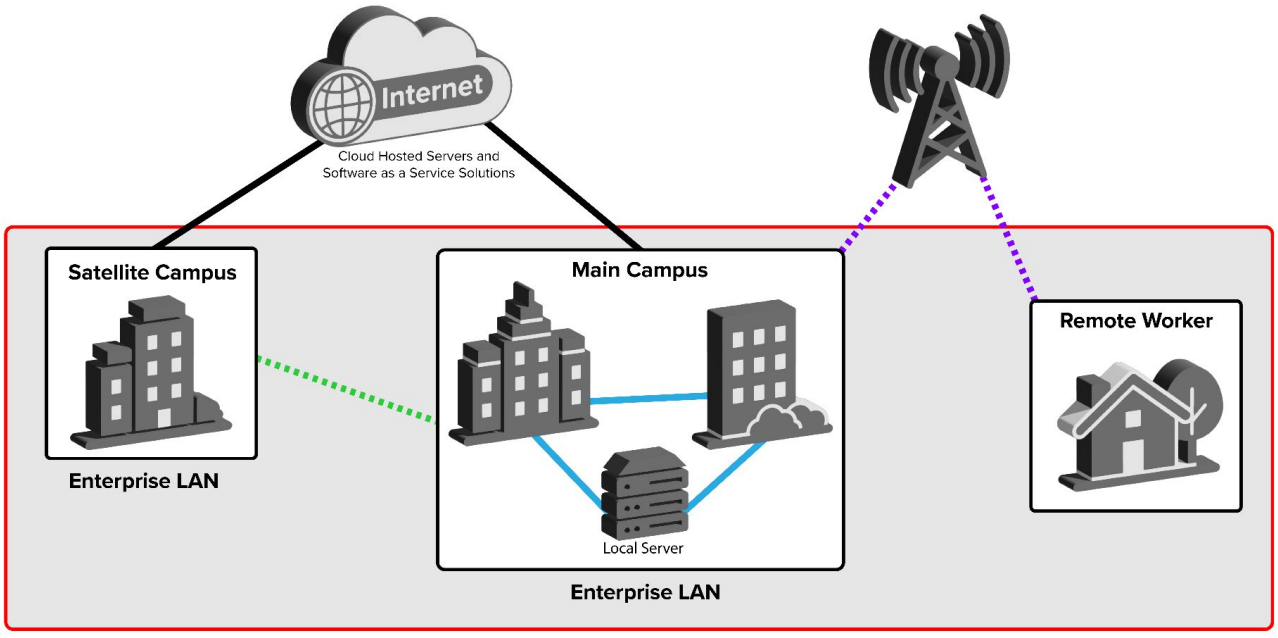
Figure A - Network Comparison



Traditional Enterprise Network



Cloud Connected Enterprise Network



New Logical Enterprise LAN Footprint

Because the network was designed with open interfaces, enterprises have the option to use different solutions and vendors for each component of their network to take advantage of best-in-class technology, systems and processes regardless of existing capabilities. This results in a system that is:

1. **Modular:** an enterprise can exchange, upgrade, replace or even design components as needed to achieve business goals. A modular network has the freedom to create a system that meets its needs by working with any vendor or partner.
2. **Open:** an enterprise can monitor processes in real-time, accessing data on performance and function that inform system use and strategy.
3. **Interoperable:** an enterprise can communicate and work across systems, including internal IT architecture, external partner or vendor systems and employee, user and customer devices. The enterprise can extend this level of integration to network functions, policies and even security operations, which simplifies and streamlines control of the network.
4. **Innovative:** an enterprise can partner with or employ their own developers and create new applications to solve unique business problems.

These features unlock innovation cycles, enabling enterprises to solve problems faster and create unique solutions.

NEW VALUES, NEW SOLUTIONS

The DISH Wireless OpenRAN cloud-native network solution provides a level of control, visibility and insight unlike any network before. Enterprises now have the opportunity to personalize and extend their IT networks through their cellular networks. This lets enterprises exercise control, adapt their networks, and create opportunities to innovate.

Control and Transparency

DISH Wireless allows an enterprise to extend its IT architecture to cover its cellular network, providing control over:

1. **Policy Management:** enterprises can define operating standards for employee devices attached to the network, increasing security and functionality and streamlining process improvement through distributed monitoring.
2. **Quality of Service / Quality of Experience:** enterprises can offer service level agreements (SLAs) which result in a more predictable experience for their network users and end consumer.
3. **Digital Twin and Real-Time Reporting:** enterprises have real-time network visibility that provides a level of insight previously unavailable. For example, using a digital twin – a virtual reproduction of the network that operates under conditions identical to real-world deployment – enables enterprises to test solutions before they are deployed. In doing so, they are able to more efficiently identify disruptions and implement a fix, accelerating innovation and reducing uncertainty.

Flexibility and Fit-for-Use

Enterprises need solutions tailored to meet their specific needs and goals. The move away from the consumer-centric model to a more adaptable and holistic system increases the collaborative process between DISH Wireless and an enterprise to design an ecosystem that serves its mission. The enterprise only uses what it needs when it is needed, allowing for flexibility and adaptability based on everyday operations or emergent conditions. Enterprises empowered with this collaborative and dynamic approach receive the best level of service and support based on their needs.

Opening the Black Box Opens New Frontiers

Transparency governs an enterprise's interaction with DISH Wireless, from the first conversation to ongoing monitoring and support. This transparency opens the black box and enables enterprises to drive innovation.

The open ecosystem allows enterprises to work with developers to optimize and personalize their networks. This encourages the adoption of best-in-class options for each component of the network, resulting in the creation of entirely new architectures that satisfy real-world demands. Enterprises don't have to wait on DISH Wireless to design solutions or create new value propositions. Instead, innovation becomes an ongoing exercise as enterprises can implement new applications quickly, due to the level of control and transparency now available. The increased level of competition provides the best value to customers and consumers and capitalizes on use cases defined by an enterprise and its partners.

CONCLUSION

Enterprises deserve networks created with their requirements in mind, including forward-looking needs, that allow for collaborative innovation. As services and resources move to the cloud, multi-platform IT ecosystems require enterprises to manage security, controls and policies across disparate systems. The ability to provide a seamless and cohesive experience has become a central tenet of enterprise IT at every level.

The DISH Wireless Smart 5G™ network offers a unified IT ecosystem that breaks open the black box and enables more and faster innovation in addition to new opportunities for growth and revenue. Enterprises receive the value of their network on their terms, exercise control and visibility and manage their resources to achieve organizational goals.

ACRONYMS

LAN ..... Local area network

MDM ..... Mobile device management

MNO ..... Mobile network operator

OTT ..... Over-the-top

RAN ..... Radio access network

VPN ..... Virtual private network

WAN ..... Wide area network