



EMBRACING NETWORKING IN THE CLOUD

In today's fast-paced, evolving world, the ability to streamline processes and improve efficiencies is critical to business success. Organizations around the world are looking at new ways to maximize performance, improve productivity and expand their capabilities.

Enter the cloud. Already a key part of everyday lives, cloud technology has the potential to help commercial organizations more effectively manage their consumption of information. For forward-looking commercial organizations, the cloud's agility and simplicity makes it a unique communications network architecture solution that could be utilized to better support long-term system growth and emerging data capabilities.

But how could moving land mobile radio (LMR) network cores to the cloud benefit commercial organizations?



USING THE CLOUD TO BOOST COMMERCIAL LAND-MOBILE RADIO

The cloud's ability to provide cost savings, increase agility, simplify radio networks and improve overall data management has made the technology an important focus for many enterprise organizations.

INCREASED COST EFFICIENCY

Traditionally, organizations have opted to purchase on-premise (on-prem) LMR network solutions and to customize them to their exact needs. This one-time capital expense and deployment is seen to be more affordable and efficient. However, organizations often underestimate the cost – including time and labor – of running any network of scale on-prem.

An initial LMR deployment on-prem requires large amounts of planning and an estimation of capacity needs – as well as the upfront purchase of new software and hardware. Conservative planning may result in capacity that is never used while overly-optimistic planning will require larger, incremental investments down the road in order to expand. In addition, acquiring, racking, imaging, flashing and connecting the network is a huge task that requires a large investment of both time and manpower.

By hosting their LMR network core in the cloud, organizations make their operational expenses fixed and predictable.

Beyond the initial deployment, on-prem network solutions require organizations to manually keep systems up-to-date. Year after year, changes, upgrades and additions increase costs and work. Software licensing, security monitoring – physical, network and software – and infrastructure maintenance all need to be continually assessed and managed. In the long run, maintenance, updates, labor and other complexities can result in on-prem radio network costs adding up. This can be a burden for organizations that are already stretched thin.

By hosting their LMR network core in the cloud, organizations make their operational expenses fixed and predictable. Pricing models enable companies to control costs and to pay solely for what they actually use. As a result, they are able to “right-size” their solution from the start. In addition, the scalable computing and storage capacity native to the cloud ensures that organizations are able to add or expand their network capabilities as their needs change.

The cloud also simplifies initial deployment and continued network maintenance. With browser-based access, users are able to switch on and begin using their radio and software immediately – eliminating the majority of on-premise planning, installation and configuration.

Moving past the initial deployment, a cloud-hosted network ensures that updates and upgrades are immediately deployed – keeping the system and radios up-to-date. With access to new capabilities upon development, companies are able to stay current with software releases, keep systems secure and realize the full potential of their solution – ultimately increasing its value to the organization.



SIMPLIFIED NETWORK MANAGEMENT

One of the most overlooked considerations when looking at the cloud is the substantial benefit from on-going radio network support and maintenance. From initial deployment, on-prem solutions require internal resources to manage radio equipment and build infrastructure. The network must be maintained, files cleaned, backups performed, operating systems patched and extensive monitoring put in place to ensure continued overall health. If the technology fails, internal teams are responsible for troubleshooting, triaging and debugging. In addition, hardware failures need to be repaired or replaced and software updates have to occur regularly to ensure technology stays up-to-date. All of this requires precious time and resources.

The cloud eliminates the burden and cost of day-to-day system support – including maintenance, repair and updates. With the cloud, the service provider assumes responsibility for operating

and running the system on an ongoing basis. This includes 24x7 maintenance and monitoring, regular installation of updates and new features, and automatic pushing of new capabilities to radio users the next time they power up.

With the cloud, the burden of dedicating valuable resources to maintain an operation is no longer placed on the organization. Instead, service provider professionals are responsible for managing and maintaining the radio network cloud core, freeing up personnel to stay focused on day-to-day business operations. With technology experts becoming increasingly scarce, moving to the cloud eliminates the burden of attracting, training and retaining these individuals.

In reality, the cloud can often provide higher levels of protection for LMR networks than on-prem systems.



INCREASED DATA SECURITY

In today's highly-connected world, organizations need their communications and transferred data to remain secure and protected from compromise. As such, data security has become a critical concern for most, if not all, organizations.

Many believe that storing data virtually in the cloud increases the security risk and opens that data up for compromise. In reality, the cloud can often provide higher levels of protection for LMR networks than on-prem systems.

With on-prem systems, organizations are responsible for every facet of their systems – requiring employees to be experts across all areas. This includes everything from land-mobile radio networks and devices to the IT networks, servers and software that LMR cores are running on.

When the LMR system is hosted in the cloud, dedicated experts manage the servers, operating systems, backups and infrastructure. Different experts manage the radio system itself – including the oversight of communications security.

The cloud service provider is responsible for continuous system monitoring, enabling rapid response. In addition, the cloud introduces the ability to apply predictive analysis to the system, identifying issues before they evolve into service-impacting problems. As these issues are discovered, the service provider is then able to immediately make the changes necessary to secure the system. The ability to apply updates quickly on the cloud also enables new threats to be mitigated much faster than with distributed on-prem solutions.

In addition, because cloud technology is on-demand, it can combat emerging and changing threats with updates that occur automatically, making it more proactive in the face of active threats – ensuring LMR networks stay secure. The move to the cloud for LMR network management, removes the burden of continued internal maintenance – greatly reducing vulnerabilities.



SEAMLESS DEVICE MOBILITY

As more and more software and devices are loaded onto LMR networks, it becomes increasingly more difficult to ensure seamless integration between networking equipment, software and devices. This is particularly true for organizations with multiple locations. With the cloud, all of these systems are connected to a single source. There are no separate systems for each site, just one cloud. As a result, individuals are able to move from site to site without losing device connectivity and without the need for site-specific restructuring. Moving an LMR network core to the cloud eliminates the barriers between devices, networks and locations – ensuring that all employees stay connected.

As demand for easily-consumable and highly-available data continues to grow, more and more organizations are turning to the cloud to support their LMR networks. With the ability to drastically improve overall data management and utilization, the cloud is an affordable and efficient solution to address each organization's unique requirements and data challenges. In addition, its "additive" nature ensures that it can seamlessly integrate with existing investments – expanding and amplifying current technologies. Ultimately, the cloud will make it easier for organizations to achieve their ever-evolving business goals – efficiently and effectively.



WHAT IS THE CLOUD?

Cloud computing has been around for years. Mobile consumers, businesses and governments are already leveraging the cloud to store and consume media, sync their apps and share files and data across devices. From Gmail and Spotify to Dropbox and Ubiquiti, the cloud has become a key part of everyday lives.

In the simplest terms, the cloud is the Internet. Placing data “in the cloud” enables individuals to store and access data and programs over the internet instead of using their own computer’s hard drive. This allows organizations and individuals to share resources, view information and access software from anywhere, on any internet-capable device. Modern virtualization, data-security and content delivery technologies make this far more reliable, scalable, seamless and secure, than it was even a few years ago.



TOP 5 CLOUD MYTHS

MYTH: The cloud will completely replace my current systems.

FACT: Cloud-based solutions work together with your current technology.

It is not a zero-sum game. Organizations are able to assess what's best for their business – which may involve combining current technology with the cloud. This enables organizations to extract the most value from their existing investments.

MYTH: Cloud computing is really only effective for big companies.

FACT: Organizations of all shapes and sizes can benefit from the cloud.

Small and medium-sized organizations stand to gain access to infrastructure, advanced capabilities and systems expertise that was previously out of their reach. Large organizations can remain agile, customizing to local needs and scaling up quickly once a concept is proven. In addition, the cloud makes communications much more accessible to organizations of all sizes. It is easier to build, manage and deploy, enabling smaller-sized organizations to take advantage of workgroup communications.

MYTH: I lose control and ownership of my data when I use the cloud.

FACT: Organizations retain full ownership of their data and can retrieve it at any time.

This hasn't always been the case, but pushback from customers have led to changes in the way service providers manage data. Today, the majority of service agreement policies clearly state that the customer retains ownership of the data. The service provider owns and manages the physical storage, but it is merely the custodian of the data. In addition, organizations can control who has access to their data using a permissions-based structure. Customers can choose to control encryption keys, as well as set the rules for who can and can't access the data or applications. This restricts access to data based on individual rights and roles, as defined by organizational policy.

MYTH: I can't operate if internet connectivity is lost.

FACT: There are numerous strategies designed to increase the availability of cloud connectivity.

While it is true that your cloud operations rely on the internet to work, reliable connectivity is on the rise. Work is being done to develop internet connections that are more resilient in order to ensure continued success. In addition, wire redundancies, dedicated links, multiple connections from different service providers and alternative backhails – such as satellite communications – can increase the availability of cloud connectivity. Incorporating these backups is a simple solution to ensure continued connectivity.

MYTH: The cloud is less secure than traditional models.

FACT: One of the draws of cloud technology is that it is, in fact, very secure.

Not only do you have access to your data (which is protected with encryption), but some cloud services providers offer constant monitoring for potential threats. Combined with the ability to quickly apply updates, cloud technology enables organizations to address new threats faster than traditional models. In fact, in 2018, the 60% of enterprises that implemented appropriate cloud visibility and control tools experienced one-third fewer security failures than those in traditional data centers¹. In addition, providers have insights into what is happening with other customers, allowing them to address emerging threats before exposure. Cloud providers' business depends on remaining available and reliable. Toward that end, these organizations employ world-class security experts – a vital resource that continues to be difficult to attract and retain. They are more likely to build security at every level – from physical access to data centers to continuous monitoring, regular audits and best practices in access control. Because for them, infrastructure security is their business².

¹Is the Cloud Secure? [Gartner](#).

²The great IT myth: Is cloud really less secure than on-premise? [Information Age](#).



TECHNOLOGY DEPLOYMENT MODELS



ON-PREMISE

Customer Fully-Managed Data Center

With private, on-premise solutions, applications are deployed by the customer, on customer-owned equipment, and subsequently managed by the customer. Customers are responsible for everything including service availability, data durability, data security, geo-redundancy, scaling, and more. All data and information is saved on location.



HYBRID

Combination Of Cloud and On-Premise

Hybrid solutions can be a combination of hosted cloud and private, on-premise solutions. Often it involves integrating cloud infrastructure with an organization's on-premise resources. This enables companies to secure their current investments while adding the value of the cloud. Using a hybrid format keeps data stored and available on-premise while backing it up in the cloud – providing redundancy and accessibility.



CLOUD

Cloud Service Provider Hosted and Fully-Managed

Hosted cloud solutions are offered as-a-service, deployed in a private, community or public cloud at a secure cloud service provider's data center. The infrastructure is managed by the cloud service provider and can be operated solely for an organization or small group of organizations (private or community cloud), or made available to the general public or larger, typically industry-oriented group (public cloud). With the cloud, your data is saved on the network.

For additional information on Using The Cloud, please visit: www.motorolasolutions.com/Nitro



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