

A Webinar Summary: The Top Five Things to Consider When Migrating to Digital Communications

Communication networks are changing rapidly, reflecting the sweeping transition from analog connections to the digital age. As dynamic cell phones have replaced static landlines, so have flexible digital protocols replaced the existing but increasingly obsolete analog protocols. The migration from the analog standard (TDM) to the digital network environment (IP) has been underway for some time, and is gaining speed. To understand the transition from TDM to IP, it is helpful to know how each protocol originated.

The Old World of TDM

TDM (time dimension multiplexing) was developed over a hundred years ago for the mass communication and teletype industries. The way teletypes were originally sent was by individual cable. Soon the communications were consolidated onto a single platform, which is where the term “multiplexing” comes from.

The key limiting factor of TDM technology is that it was based on a dedicated, unmovable platform. It required a hardware-intensive infrastructure to be able to support connectivity, which caused updates to the system to be expensive and time consuming. It also required proprietary cabling. This type of everything-in-one-basket platform, along with aging and increasingly unavailable parts, is becoming obsolete.

The Emerging IP Standard

IP (Internet Protocol) was originally developed by the Department of Defense to connect remote locations together. It doesn't live in one basket, meaning it is decentralized, is completely scalable, and enables businesses to tie different technologies together into a common infrastructure.

When migrating from TDM to IP technology, there are five areas to consider to realize the full benefits of the new digital technology: disaster preparedness; failover and redundancy; network portability and login mobility; interoperability and maintenance; and scalability.

#1 Disaster Preparedness: No More Domino Effect

When everything was in one basket on the TDM platform, that meant everything was in one centralized location. If there was one failure, all components went down together like a row of dominoes. IP is a decentralized platform, meaning the components are separate from one another, can be handled separately, and sent through gateways. These abilities mitigate the risk and effects of disaster by a substantial factor, and are particularly useful

to those in the emergency sector, such as console users in law enforcement, and first responders.

#2 Failover and Redundancy: Creating a Safety Net of Standbys

IP allows networks to implement multiple devices, connected over a network with a primary IP address and a ghost IP address. This scenario creates a standby, ready to step in whenever needed. In addition, IP allows load sharing, so that one standby can sub in for another if one fails. This type of flexibility creates a built-in safety net, useful to users with consoles, whether in transportation, a fire department unit, or an emergency roadside service.

#3 Network Portability and Login Mobility: User Access From Anywhere

Because IP enables a decentralized, distributed environment, users can access information from anywhere. Distributed IP components, that have IP addresses, are available anytime, anywhere. The user has the ability to access the same infrastructure from the location of choice. So if a change has to be made on a console screen, any user with network access can do it quickly, from any location.

#4 Interoperability, Integration and Maintenance: The Benefits of Software

One key component of the evolving IP domain is that it's based on malleable software, not sedentary hardware. A software environment allows interfacing and integration with existing and multiple technologies. Software is much less time consuming to maintain than hardware, and allows for ongoing updates. Legacy analog and digital mobile infrastructures can be supported simultaneously, resulting in a more future-proof network.

In the TDM world, all changes were physical; if there was a software change, the hardware had to be manually updated by swapping out chips. The IP domain allows for instant software updates, usually without rebooting. This capability is very handy on devices such as console screens that act as a central communication tent.

#5 Scalability: Build a Limitation-Free Network

TDM's hardware-based model had inherent limitations, as the only way to add capacity was to build more hardware. The IP domain is the opposite scenario, where capacity limits are only set by the network's backbone, without any hardware constraints. The IP network is completely scalable, so that 10 gigabyte links between locations are not unusual.

Conclusion: Invitation to a Webinar

The migration from legacy analog technology such as TDM to the new, scalable realm of IP has opened doors to a new network frontier. Different technologies can exist together and be updated together. Changes can be made 24/7, remotely, resulting in a sharpened, scalable network with the ability to respond to on-the-fly demands. Console screens can now be updated without the limitations of hardware. Our VP of Utility Sales provides valuable and engaging insight in his webinar “Critical Considerations for Successful TDM to IP Migration.”