



Industries across the world have deployed DAMM's de-centralised architecture to secure their mission-critical communications. For example, in harsh environments such as mining oil and gas, the vendor says its *TetraFlex* system has delivered integrated voice and data solutions based on a "true IP backbone".

# Being open – the key to digital migration

In a volatile global market, companies are being challenged to make productivity gains. Critical radio communications in PMR environments may offer opportunities for doing just that, according to ALLAN DETLEFSEN.

**A**dvanced networks enable companies to capture major gains in collaboration, workforce productivity and asset utilisation. According to consultancy firm McKinsey, improving production efficiencies by upgrading to new digital capabilities can yield substantial productivity improvements in operations.

So why have so many companies not yet replaced their existing analogue systems with newer, more advanced digital solutions?

Upgrading installations and migrating to new platforms is not without challenges. It requires time and investment; companies may have to apply for new frequencies; current installations have existing wired systems, equipment and components, so there

remains considerable uncertainty about the risk of deploying a digital communication system; and personnel may also need special training.

What's more, all this may require a big investment in equipment such as terminals, applications and infrastructure, not to mention derived costs such as cold rooms for central IT purposes.

But despite these challenges, upgrading should not be regarded as a bad thing. Like going from old mobile phones to smartphones, people quickly discover they can do so much more with their digital system and can communicate more efficiently.

So here's the key question: how will you prioritise your critical radio communications spend to better run, grow and transform your business?

## Centralised or de-centralised architecture?

Given the challenges, companies need to know the best way to move forward and to ensure that their critical radio communications network will remain viable and relevant in the future.

In some ways, it is similar to the days when companies made the transition from being dependent on large computer systems to adopting desktop computing and mobile PCs. The new technologies simply allowed people to be far more agile and productive.

Not only that, but executives quickly realised that it was a whole lot more cost effective to upgrade PCs



rather than huge computer systems as technologies and applications advanced.

In our experience, companies that have successfully pursued upgrades and replacement programmes for their PMR environments consider one of two approaches: should they choose a centralised or de-centralised system architecture? This is a fundamental issue.

Centralised systems tend to require the largest upfront investment, both financially and in terms of the time it takes to design, install and commission. Such architectures operate redundant servers, links and routing paths from a central

control site. They may require specific communication protocols and highly trained specialists to design the infrastructure to ensure a stable power supply, and provide housing as well as cooling for the units.

Additionally, centralised systems can be prone to failure because they depend on central switch/control configurations from which units are shared. This means that when a unit fails, the connection to the central units can fail, and this can have a domino effect throughout the system.

De-centralised systems offer a more flexible option. They give companies the opportunity to

start small and then scale out in response to business requirements.

Today's de-centralised systems require a smaller initial investment and do not need large engineering teams to design and configure them. Moreover, they tend to be highly resilient in the face of the failure of a single unit because hardware resources are not shared. That means there is simply no single point of failure, so there is no risk of impact on neighbouring units.

From a business perspective, de-centralised architecture models mean higher availability and greater continuity of service. And they have

proven interoperability with other vendors' equipment and applications. According to many in the industry, the de-centralised approach is preferred to mandating a single, centrally developed and controlled system across the network.

### The open architecture approach

Companies with successful digital migration programmes think in terms of total lifecycle costs and economics. The key to a de-centralised system (such as DAMM Cellular's *TetraFlex*) is its plug and play simplicity for easy setup, fast deployment, and cost-effective scalability. Basically, it enables companies to think big, start small and scale fast.

When planning a network, capacity and coverage requirements are factored into dimensioning to determine the initial scale of a deployment. With an open architecture, owners and operators can rapidly deploy their networks today and scale fast tomorrow to meet operational demands.

No special infrastructure protection, such as cool rooms, is needed with an outdoor solution. This means that when IP65-rated encapsulated equipment is used, you know it is rugged and built to withstand the most challenging outdoor conditions. All of this keeps upfront costs to a minimum, and it means that investments can be aligned with a company's growth.

The use of open gateways means the system is vendor-neutral and can interface with other technologies. It enables an open architecture system to bridge between TETRA platforms via, for example, the *DAMM Group Bridge* solution as well as interface with analogue networks and terminals.

Additionally, TETRA over LTE is possible operating through Wi-Fi,

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WiMAX, UMTS (3G) and LTE networks, gaining full benefits of broadband technologies. Plus, it keeps the system open to third-party applications.

Thus an open architecture platform offers distinct benefits with regard to seamless integration capabilities with existing technologies. This helps to avoid being locked in by technology choices, both past as well as future.

### Smarter system thinking

De-centralised networks give users layout freedom, vendor independence, and flexibility with a 100 per cent standard IP backbone. As coverage or capacity needs grow, additional base sites can be readily deployed and seamlessly 'dropped' into the distributed IP architecture. Its standard IP technology connects all network components including indoor and outdoor base stations, dispatchers, network management facilities, logging servers and external gateways in one state-of-the-art intelligent distributed architecture.

The use of intelligent software enables simple and self-configuring site expansion – even while the system is in operation. The entire user interface is *Windows*-based and has the same user interface

## FROM PIT TO PORT

How a mining company unearthed the value of a de-centralised and secure open architecture solution.

Fortescue Metals Group (FMG) in Australia is one of the world's largest iron ore mining and export companies. It also runs its own railway which leads to Port Hedland in Western Australia's Pilbara region.

Today, FMG's rail network includes a main 300km route as well as a 130km branch line. The company's rail and mining infrastructure benefits significantly from Damm's distributed architecture because it has allowed it to scale in response to business requirements.

There are 25 nodes in the rail corridor alone and, thanks to the low power consumption of the IP65 encapsulated outdoor *DAMM Base Station*, many of the nodes are run on solar

power, creating considerable savings. Since no air conditioned housing is needed and power consumption is extremely low, initial installation costs can also be kept to a minimum.

In mining, rail and port applications, DAMM claims that its *TetraFlex* system has proven to be "cost-effective and remarkably reliable". It adds that the solution for FMG is only one among hundreds of successful projects that provide real world proof that is durable and cost effective.

"Installations from the hot climates of Australia to the freezing mountains of Norway have shown that this system, which has no fans or moving parts, keeps maintenance, repair and operations costs next to zero," says the company.

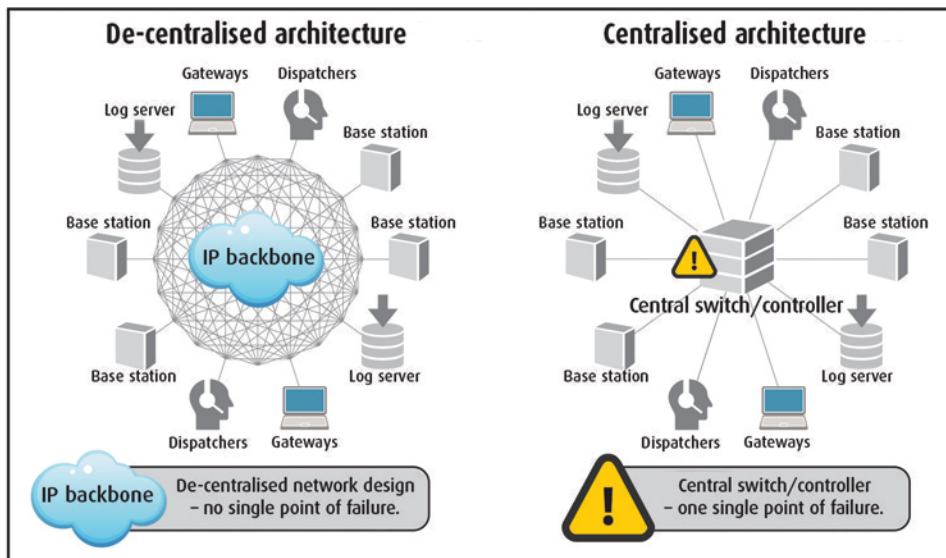
many are familiar with, so no special training is required to use it.

And from a purely practical perspective, an outdoor base station such as *TetraFlex* is so easy to deploy it only takes a single engineer (rather than

an entire team) to mount the mast and ready the system for operation.

Enterprise managers are constantly under pressure to reduce costs while simultaneously transforming their businesses with new critical radio communications opportunities.

Industry experience and prudent risk management dictate that all your options be thoroughly investigated and, if possible, proven in small-scale implementations to begin with. Ultimately, it's all about spending more on equipment that maximises the value critical radio communications delivers to your business, and less on things that don't. Which may be the best case yet for adopting a de-centralised approach to critical radio communications. ■



Before migrating from analogue to digital, PMR users need to decide upon a centralised or de-centralised approach to their system architecture.



Allan Detlefsen, Director of sales and marketing, DAMM Cellular Systems