

RUGGED, RELIABLE CONNECTIVITY

UTILIZING MESH NETWORK TECHNOLOGY ON CONSTRUCTION SITES

Construction technology is taking off — more devices for automation, monitoring and augmentation enter the space every day. To be effective, these devices need a reliable network or data connection to update applications, feed data for monitoring systems and receive updates themselves. But achieving reliable network connectivity across construction sites is often easier said than done.

Construction sites vary in size and shape and are in a constant state of change, making them generally unfavorable for complex electronics. Sites also have high peak demands, so the networks needed to support them must be highly available while remaining flexible. Plus, these networks are often deployed at remote, temporary sites where there is little to no IT support readily available.

The typical solution — placing a consumer wireless router in the construction trailer — can't entirely overcome these challenges. However, construction companies can begin to capitalize on technologies like video safety monitoring and machine diagnostics by taking advantage of the rapid pace of innovation and decreasing cost of commercial off-the-shelf wireless mesh networks.

UNDERSTANDING MESH NETWORKS

A wireless mesh network is a self-organizing network that is able to distribute the connectivity and workload for devices across both the network and a diverse geographic area. Unlike traditional networks, where every access point needs to be wired to the wide area network (WAN) or a local area network (LAN) switch, mesh network nodes utilize a separate wireless network to communicate with each other. Traffic is then passed back to a central node that is connected to the internet via a WAN.

Nodes can be set up in a closed circuit for traditional, large site construction or in a linear configuration for projects such as a transmission and distribution lines, says Woods Denny, manager of technology innovation at Burns & McDonnell. All you need is power and a place, either stationary or mobile, to mount the mesh network nodes.



“Network nodes can be powered by a vehicle, a small solar array, battery packs or any other available power source,” Denny says. “If you’re building a four-story building or a long transmission line, you can simply move your network as construction progresses.”

CONFIGURING YOUR NETWORK

In addition, when paired with a low-cost wireless-to-Ethernet bridge, mesh networks are affordable. This allows you to run the network from a smartphone or MiFi device.

“You don’t need to have an IT degree to set up your mesh network,” Denny says. “You can configure the entire network using an app on your mobile device, including setting up separate networks for subcontractors and controlling their bandwidth and user access independently.”

Once programmed and initialized, the nodes maintain their settings almost indefinitely. They can be configured remotely, shipped to the site and set up by simply plugging them in. Monitoring and troubleshooting can be managed either on-site or remotely by an IT support team, if one is available.

“Mesh network technology isn’t new, but it has recently become robust enough to be valuable at every level of construction,” Denny says. “Mesh networks now provide the reliable, rugged and cost-effective connectivity construction companies need to streamline communication, access essential data and monitor the job site remotely.” ●

MESH NETWORK COVERAGE SITE TEST

98%

725 feet



6.6 acres

825 feet

950 feet



100%



Internet

mobile hotspot
device



100% baseline



Bridge (router)



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