

## IP-Based DMR Simulcast Systems for Critical Communications over Wide Areas



**Tait DMR Tier 3 and DMR Tier 2 simulcast networks are IP-based digital systems that are specifically designed to provide Trunking or Conventional simulcast DMR critical communications over wide geographic areas.**

**Tait DMR simulcast networks can be stand-alone, or integrated into a larger non-simulcast Tait DMR network, for example for tunnel coverage. As DMR simulcast networks use the same hardware as Tait current DMR networks, they can be partially or fully upgraded to simulcast later should this be required.**

### Key Features

#### Advanced Functionality

The Tait DMR simulcast solution uses significantly less equipment than a typical analog simulcast network solution as the voting system is already included in the TB9300 and TB7300 base stations with intelligent resiliency. This reduces the possible points of failure, increases the reliability and therefore reduces maintenance costs. For example, the network is resilient being able to automatically switch the master voter base station from one site to the back-up site assigned of the same channel group.

DMR simulcast provides connectivity with the IP network for simplicity.

A Timing Frequency reference unit is required on each site for 1PPS, NTP and Frequency management.

#### DMR Simulcast Coverage

DMR Simulcast coverage is significantly less than analog FM, as it is limited by its delay spread inherent to the 4FSK DMR standard demodulation. Therefore, special care is recommended when designing your DMR Simulcast network.

### Migration Paths

The DMR Simulcast network uses the same Tait TB9300 and TB7300 base stations used in analog modes (e.g. MPT-IP analog trunked systems) and DMR Tier2 and Tier3 systems. These platforms use a common multi-mode software managed with licenses, for a smart solution.

### Investment Protection

The Tait DMR network portfolio, based on the latest TB9300 and TB7300 base station platforms, is a compact solution that will grow with changing customer needs thanks to its ability to be reconfigured into a number cost effective solutions:

- DMR Tier2 Conventional multi-site
- DMR Tier3 Express (up to 6 sites)
- DMR Tier3 Express20 (up to 20 sites, with High Availability redundancy option)
- DMR Tier3 Full solution

The DMR Simulcast solution also supports all the DMR full system features (e.g. Tait EnableFleet and partner data applications).

# Tait DMR Simulcast Networks



## Why simulcast?

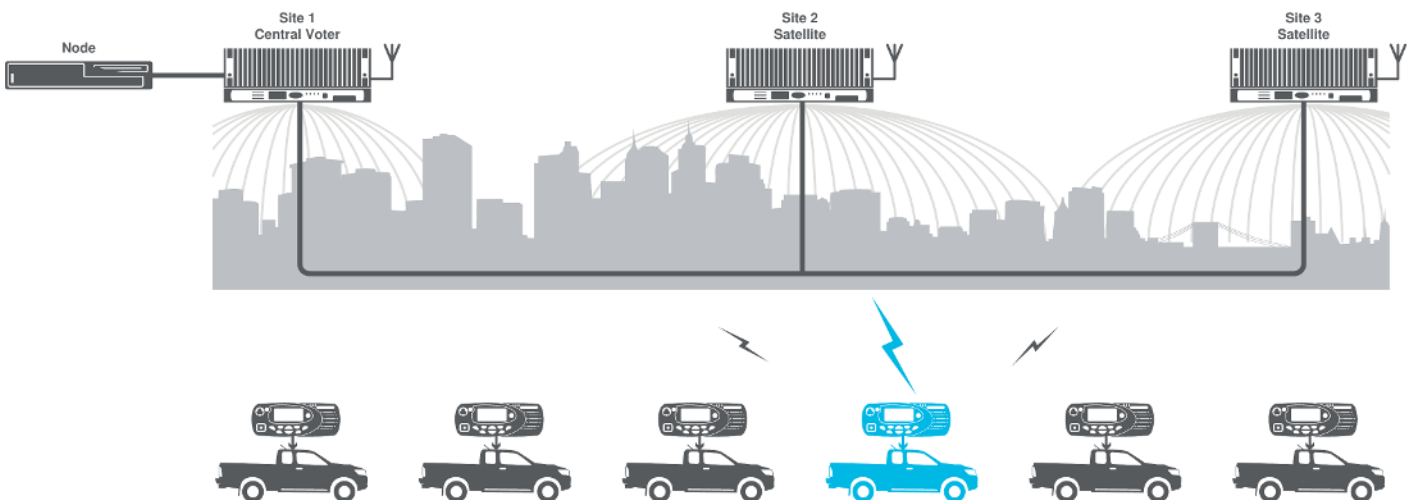
Simulcast transmission provides a means of achieving wide-area coverage with geographically separated base stations using the same single receive and transmit frequency. In simulcast systems, audio is broadcast simultaneously over a number of transmitters. Essentially, for simulcast each transmitter in the system transmits exactly the same signal, with the

same characteristics, and the timing is optimized to deliver the best outcome.

The incoming signals from terminals on the simulcast network are often received by multiple base stations. The best of these signals is chosen by a digital voter and provided for re-transmission or to an interface to other services.

Simulcast is very useful because obtaining multiple frequency allocations in many

countries is difficult, and reusing the same frequency over a large area is cost-effective and sometimes the only possible way. Simulcast also provides the additional benefits of simplifying the user experience by reducing channel change activities in conventional systems and reduces the number of re-registrations on a trunking network.



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