VoIP for air traffic control

R&S®VCS-4G in mobile tower solutions for civil and military ATC

Your challenge

Mobile ATC towers are used as temporary or emergency air traffic control solutions when there is no local infrastructure available to manage flight operations. To ensure flight safety at all times, it is essential that controllers have access to reliable air-ground and ground-ground communications. For a mobile and efficient voice communications solution, the voice communications system (VCS) infrastructure must be transportable and quick and easy to set up.

Since a mobile tower is constrained in terms of space and weight, all onboard electronics must be compact, lightweight and easy to install, consuming minimum space.

Rohde & Schwarz solution

Thanks to their highly flexible architecture, IP-based voice communications systems such as the R&S®VCS-4G can address all the challenges of building and operating a mobile ATC tower.

Reliable communications

VoIP systems migrate intelligence away from the network core to the peripheral equipment at the network edge. A failure in one part of the system does not affect the operation of the rest of the system. The result is higher reliability and availability. Compliance with industry standards such as EUROCAE ED-137 ensures a reliable solution for air-ground and ground-ground communications.

Transportability and quick setup

Transportability of the electronics and system components is of great importance for mobile towers. The VCS elements must comply with relevant industry standards. Fast and efficient operation can be achieved by using a distributed system with intelligent endpoints that ensure a fast system startup time.

Space and weight saving

Featuring state-of-the-art IP technology, the VCS does not need large, heavy central TDM switches. Instead, it uses lightweight endpoints that provide great flexibility in the final dimensioning of the system. A small IP-based VCS with two controller working positions connecting to VoIP radios via a redundant IP network can be as compact as a few HU in a 19" cabinet.

Civil and military mobile towers can provide reliable, easy-to-operate air-ground and ground-ground communications and efficiently expand the existing ATC infrastructure using lightweight IP-based voice communications solutions such as the R&S®VCS-4G.

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Deployment

Indonesia's air navigation service provider, the Directorate General of Civil Aviation (DGCA) uses the mobile tower communications solution from Rohde & Schwarz to promptly and efficiently respond to emergency situations when independent and flexible ATC control is needed.

Mobile tower for DCGA in Indonesia.

The main components of the solution are the fully IP-based R&S®VCS-4G voice communications system and the R&S®Series4200 and R&S®Series2000 radios, all installed on a two-axle trailer with integrated lifting mechanism and detachable ATC cabin. The R&S®MX400 mobile tower is equipped with controller working positions that have access to VoIP and analog radios and to analog telephone lines.
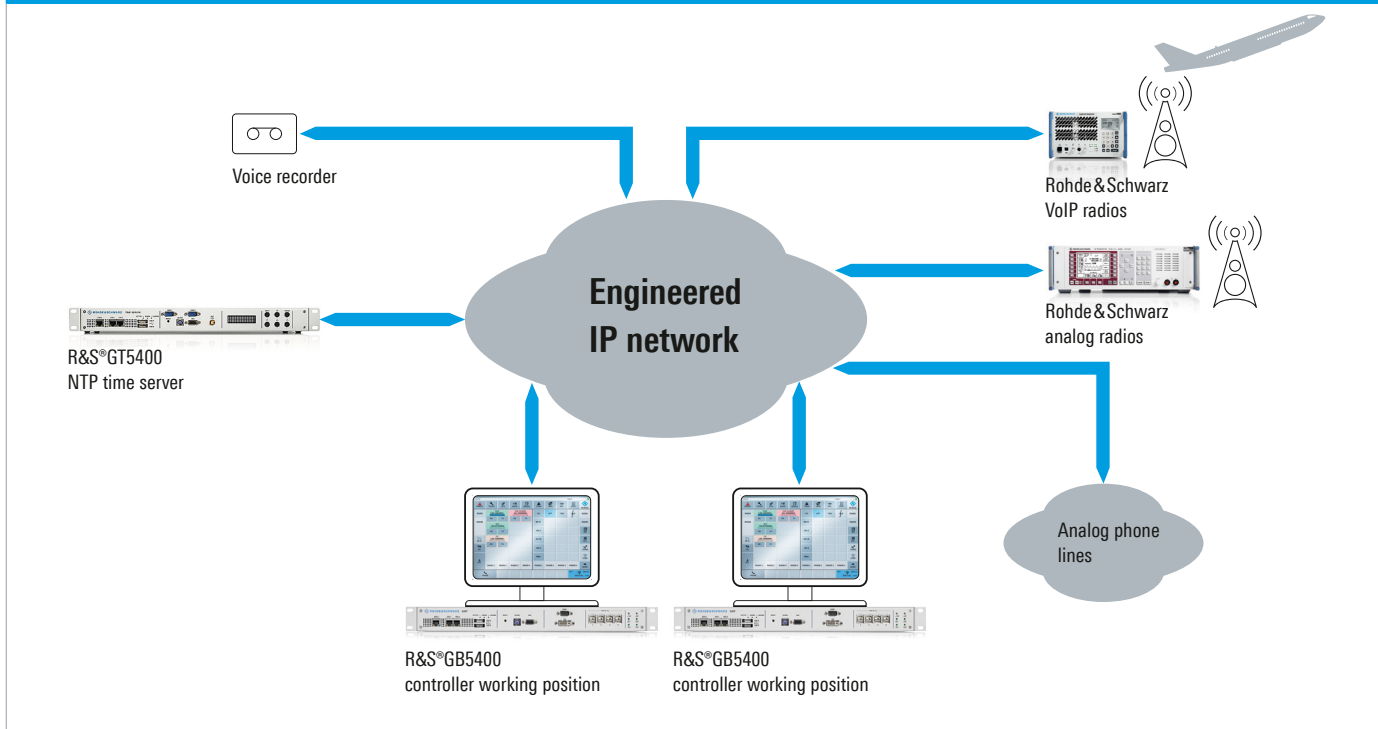
The mobile tower uses the fully IP-based R&S®VCS-4G voice communications system to provide air traffic control facilities for ATC communications while remaining highly mobile, spacious and efficient.

System overview:
- Rohde & Schwarz controller working positions
- R&S®Series4200 VoIP radios
- R&S®Series2000 radios
- Interconnection to analog telephone lines
- Antenna array
- Communications infrastructure

The mobile tower was integrated by Rohde & Schwarz Systems GmbH.

Rohde & Schwarz VoIP voice communications system for DGCA in Indonesia

Voice recorder

Engineered IP network

R&S®GT5400 NTP time server

Rohde & Schwarz VoIP radios

Rohde & Schwarz analog radios

Analog phone lines

R&S®GB5400 controller working position

R&S®GB5400 controller working position

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