VoIP for air traffic control

R&S®VCS-4G for military ATC applications

Your challenge

Military and civil air traffic control (ATC) operations face similar needs. While civil voice communications systems (VCS) must provide safe and reliable communications, military ATC deployments additionally call for solutions that offer a high degree of flexibility.

Military ATC VCSs need to address the growing demand for national and international missions to support diverse airborne platforms. Plus, they must offer a high degree of flexibility to meet continuously changing operational needs while still providing a cost-effective communications solution. Future-oriented concepts are essential, addressing today's and tomorrow's requirements with a single system.

Flexible, interoperable and reliable solutions are required.

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 military ATC.

Flexible solutions

IP-based VCSs in military ATC environments must offer higher operational flexibility than civil VCSs. Communications needs are changing depending on the specific mission and even during ongoing missions. IP-based VCSs provide air traffic controllers with means that allows them to flexibly select radio resources and change radio parameters in order to quickly respond to changing communications needs. Moreover, with IP-based VCSs, additional information is delivered via the same IP infrastructure and presented on the same screen, allowing controllers to make the right decisions at the right time.

Interoperability

Interoperability in this context essentially means the ability to integrate existing radios and telephone lines into a military ATC scenario. IP-based VCSs provide modular, robust and scalable solutions with the required interfaces to meet customer needs. In order to be future-ready, IP-based VCSs offer VoIP interfaces in line with the EUROCAE ED-137 standard, allowing integration of any ED-137 compliant radio from any manufacturer at any time.

Reliable communications

VCSs in military ATC deployments need to provide reliable communications under all circumstances, not only from an operational but also from a threat perspective. IP-based VCSs address this requirement by migrating intelligence away from the network core to the peripheral equipment. A failure in one part of the system does not affect operation of the remaining parts of the system. The fully redundant architecture yields higher reliability and availability. Taking advantage of commercial-off-the-shelf hardware as far as possible allows the selection of hardware that best meets location-specific needs.

The R&S®VCS-4G features all the advantages of a truly IP-based VCS, to the benefit of military organizations.

ROHDE & SCHWARZ

Deployment

Rohde & Schwarz has provided the Belgian Ministry of Defense with a state-of-the-art, fully IP based R&S®VCS-4G voice communications system for the RAPCON program at the Beauvechain, Florennes and Kleine-Brogel airbases.
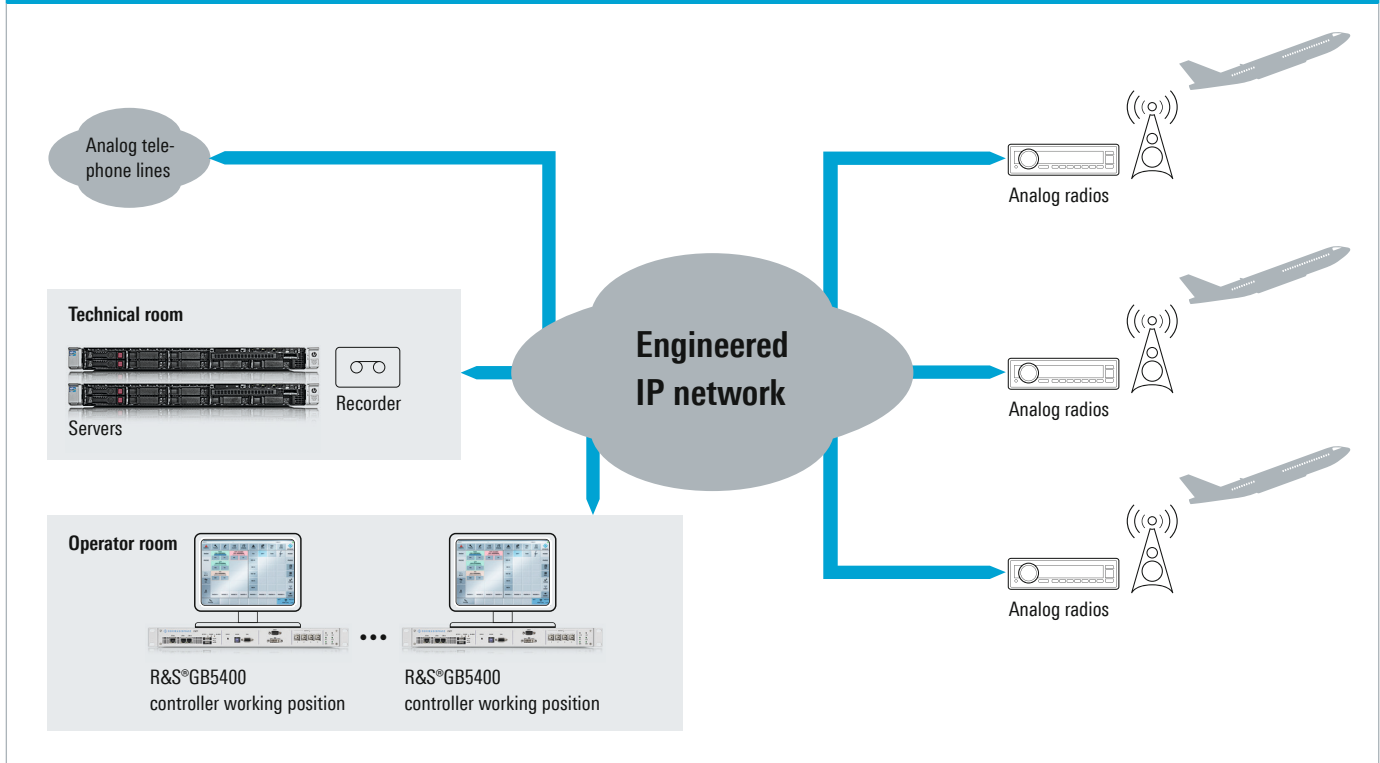
Military airfield.

The core component of the Rohde & Schwarz solution is the R&S®VCS-4G voice communications system. To protect existing infrastructure investments, the system features telephony and radio gateways for interconnection with government-supplied equipment such as analog PABX and radio stations with analog audio interfaces. In addition, the R&S®VCS-4G provides the necessary infrastructure for smooth and seamless migration to IP-based, software defined radios in the future. The fully EUROCAE ED-137 compliant R&S®VCS-4G system represents the first step in migrating customers to next-generation communications solutions. The operational scenario for each airbase includes ground-air communications using fixed frequency and multifrequency radios, ground-ground telephony using analog hotlines and dial-up telephone lines, and intercom facilities for communications between controller working positions.

System overview:
❙ R&S®VCS-4G controller working positions
❙ Interconnection with analog radios
❙ Interconnection with analog telephone lines
❙ Communications infrastructure

The system was integrated by Rohde & Schwarz.

R&S®VCS-4G deployment for military ATC systems

Analog telephone lines

Technical room

Servers

Recorder

Engineered IP network

Analog radios

Analog radios

Analog radios

Operator room

R&S®GB5400 controller working position

R&S®GB5400 controller working position

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