VoIP for air traffic control

R&S®VCS-4G for simulator and training systems

Your challenge

In order to ensure flight safety, every controller needs to receive basic and continuous training on the voice communications system (VCS).

Air navigation service providers (ANSP) often install independent VCS simulator and training systems so that the ongoing controller activities at the operational VCS are not disturbed. These VCS simulator and training systems should have the exact same user interface and operational behavior, but do not always need to provide the same reliability as the operational system.

Flexible, scalable and cost-effective solutions are required.

Rohde & Schwarz solution

The challenges facing such simulator and training installations can be well addressed by a deploying a highly scalable IP-based communications infrastructure such as the R&S®VCS-4G.

Scalability

VCS simulator and training systems are typically smaller installations independent of the main operational system. In order to provide the same look and feel with respect to audio accessories, graphical user interface and operational behavior, it is advantageous to use a small scaled-down "main" VCS as a training system. Modern IP-based systems with their distributed network intelligence do not require a central switching entity, providing pay-as-you-grow scalability that allows small systems to start with one server and one controller working position.

Cost-effectiveness

As a result of the high system scalability, ANSPs only need to invest in the relevant basic VCS devices to build a functioning non-redundant training or simulator system. And sharing the same IP infrastructure for voice and data applications, e.g. radar and flight plan data, creates synergies in procurement, operation and maintenance, all of which leads to significant cost savings.

Purchasing both the main operational VCS and the simulator/training VCS from the same source further reduces the resources and project management effort that must be invested by the ANSPs.

Space saving

Featuring state-of-the-art IP technology, the VCS does not need proprietary central TDM switches. Instead, it extensively uses COTS hardware and lightweight endpoints that provide great flexibility in the final dimensioning of the system. A small IP-based VCS with a few controller working positions, gateways and servers can be as compact as a few height units in a 19" cabinet.

The R&S®VCS-4G features all these advantages of a true IP-based VCS and provides the ANSP with all the benefits.

ROHDE & SCHWARZ

Deployment

Romanian air navigation service provider ROMATSA equipped its simulation and training system for the Bucharest towers with the IP-based VCS from Rohde&Schwarz. The fully IP-based VCS provides the necessary scalability to handle at a small scale the identical features and operational behavior as the actual IP-based VCS also from Rohde&Schwarz. It provides the same air-ground and ground-ground communications services.

Simulator and training system at ROMATSA.

While the controller has the same look and feel, the system behind it runs on a single COTS server and some hardware to emulate analog interfaces.
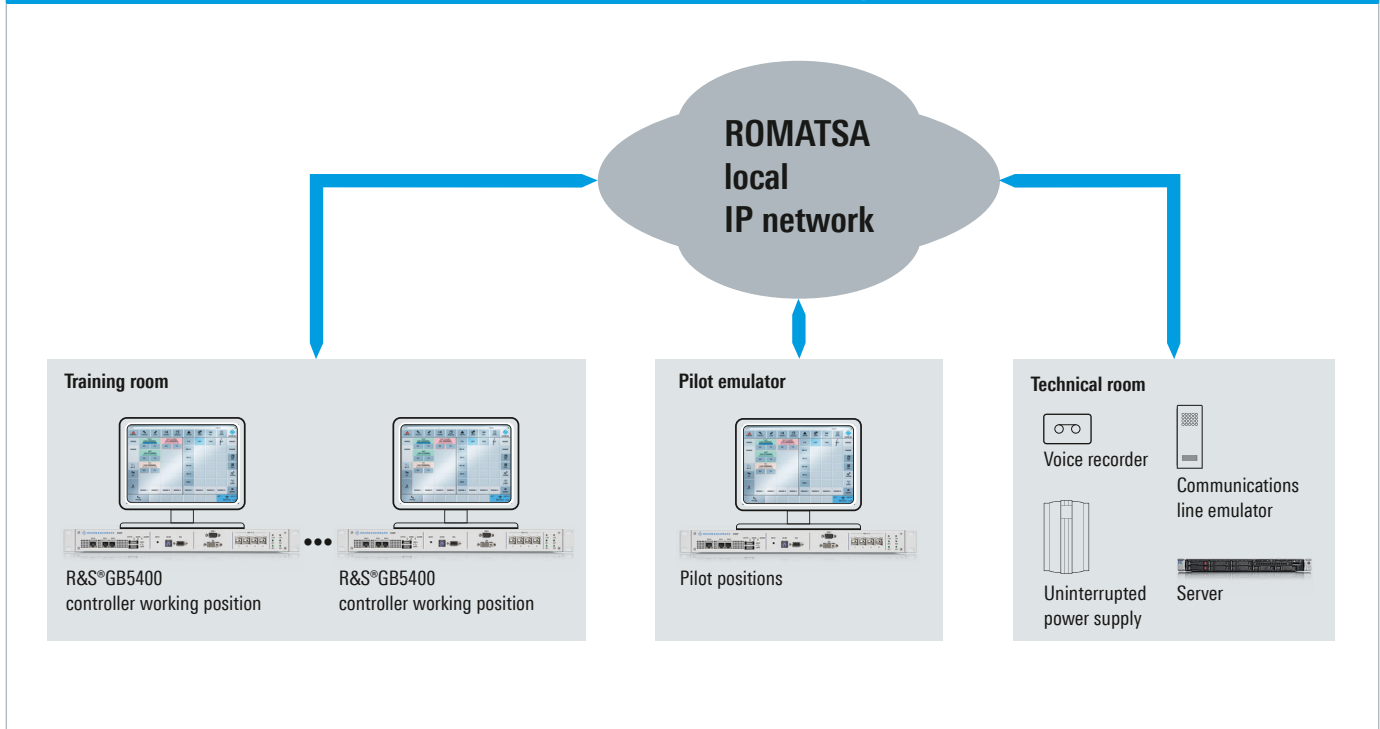
ROMATSA staff uses the simulator and training system for their basic and continuous training as well as for scenario simulation. Together with the other air traffic management (ATM) systems in place in the training center, real-life scenarios can be trained and critical situations replayed. Controllers and supervisors from ROMATSA receive the best possible preparation for real-life operation. The entire communications system is integrated with the ATM system of the ROMATSA simulator and training system into one common IP network infrastructure.

System overview:
❙ Rohde&Schwarz controller working positions
❙ Working position for the trainer
❙ Working positions for the pilots
❙ Air-ground line emulation
❙ Ground-ground line emulation for intercom

System integration was performed by Rohde&Schwarz Topex SA.

Rohde&Schwarz IP-based VCS for ROMATSA simulator and training system

ROMATSA local IP network

Training room
R&S®GB5400 controller working position
R&S®GB5400 controller working position

Pilot emulator
Pilot positions

Technical room
Voice recorder
Communications line emulator
Uninterrupted power supply
Server

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