

VoIP for air traffic control

R&S®VCS-4G for emergency voice communications systems



Your challenge

Emergency systems for voice communications have to fulfill the same requirements as main and stand-by VCSs:

- Reliable air-ground and ground-ground communications
- Interoperable with VCSs of neighboring air navigation service providers (ANSP)

They also need to be integrated into the existing operational environment with all its available resources. The emergency system needs to be able to access the radio and telephone lines from main and standby VCSs at all times without having to rewire or switch lines.

Rohde & Schwarz solution

The challenges facing such emergency VCS installations can be well addressed with an IP-based communications infrastructure such as the R&S®VCS-4G.

Integration

An IP infrastructure that connects all the resources necessary for air-ground and ground-ground communications reduces the effort of accessing these resources from different locations. A TDM infrastructure requires rewiring or at least a switching of lines to change from the main VCS to the emergency VCS. An IP-based solution does not, because each resource is identified by its unique IP address and can be accessed from any location.

Availability

As a last resort system, an emergency VCS needs to always be available. This can be achieved with true VoIP systems, which migrate intelligence away from the network core to the peripheral equipment. Since intelligence is distributed over various elements, a failure in one part of the system does not affect the operation of the rest of the system. The direct result is higher reliability and availability. Geographic redundancy, with system elements distributed over several locations and interconnected by an engineered IP network, provides an excellent solution for disaster recovery situations.

Interoperability

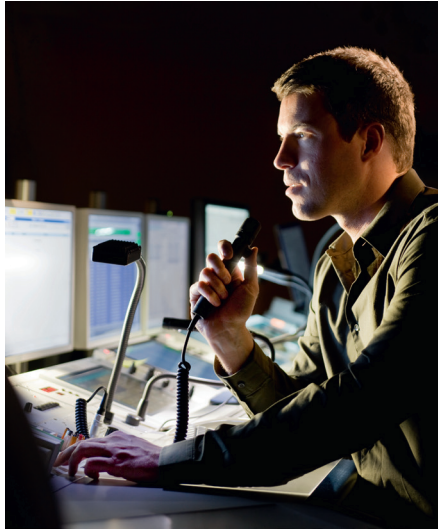
EUROCAE issued the ED-137 standard, which specifies the use of IP for voice communications in ATC environments. Customers who select equipment that meets this standard can be assured that the various system components interoperate properly with one another. As a result, sharing of resources does not require additional integration effort, but only a physical connection to the site.

In conclusion, IP-based voice communications solutions like the R&S®VCS-4G are ideal for emergency applications, providing the necessary interoperability and easy integration in existing infrastructures while increasing reliability.

Deployment

Romanian air navigation service provider ROMATSA equipped its emergency area control center (ACC) in Bucharest, which covers all of Romania, with the R&S®VCS-4G IP-based voice communications system.

The emergency ACC with the fully IP-based R&S®VCS-4G voice communications system provides air-to-ground and ground-to-ground communication services that



Emergency system installation.

are designed to take over if both the main and standby VCSs of ROMATSA ACC in Bucharest fail. For redundancy purposes, system components of the emergency system are distributed over several locations in and around Bucharest.

ROMATSA staff at the emergency ACC communicates completely independently of the main and standby VCSs, with access to VoIP radios across the nation and to all national control towers. Ground-to-ground communications with neighboring air navigation service providers (ANSPs) is assured by using MFC-R2 lines.

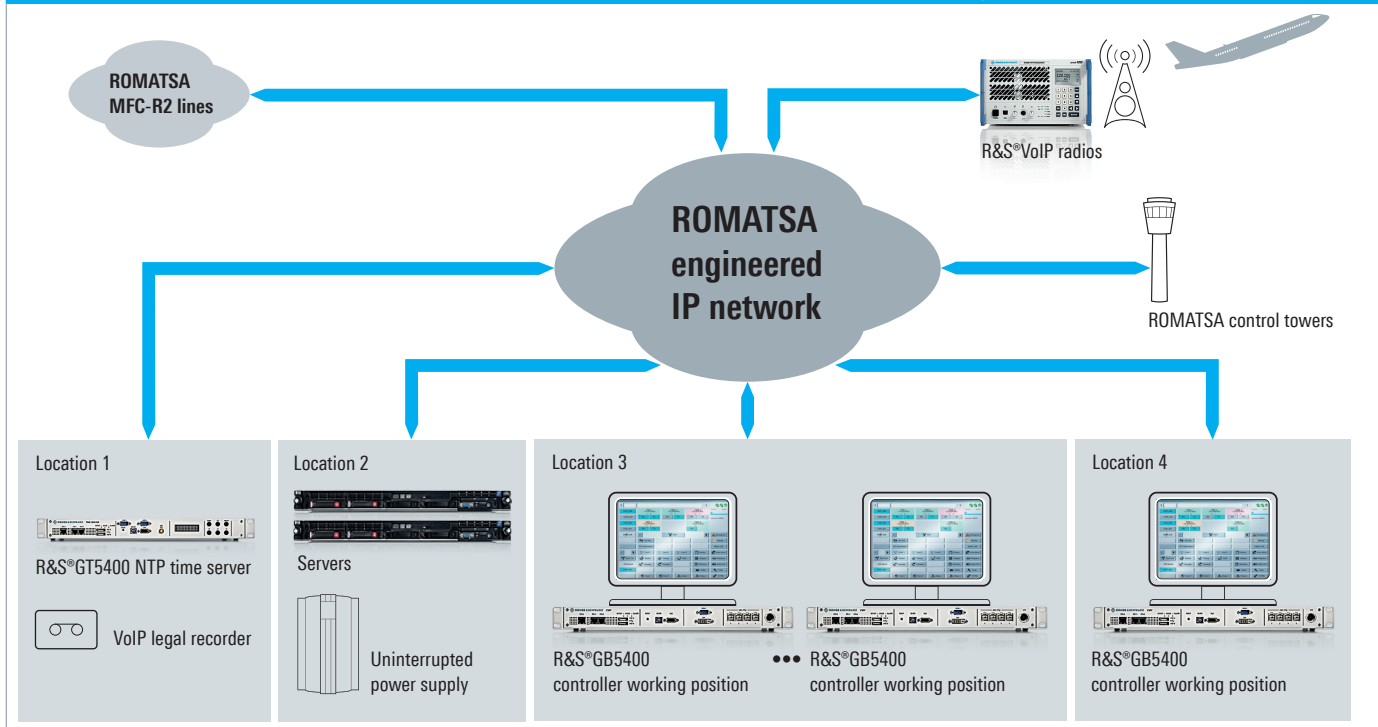
ROMATSA's IP network infrastructure is used for communications between the emergency systems and ROMATSA's existing radio/telephony resources.

System overview:

- R&S®VCS-4G controller working positions
- IP interconnections to R&S®Series4200 VoIP radios
- IP interconnections to MFC-R2 lines
- IP interconnections to all national ROMATSA control towers

System integration was performed by Rohde & Schwarz Topex SA.

Rohde & Schwarz IP-based voice communications system at ROMATSA emergency ACC



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