R&S PostMan II

Information & Communication System

ROHDE & SCHWARZ

Advanced IT technology for tactical ...

The seamless connection of mobile stations to wired communication networks is one of the greatest challenges in tactical and strategic radiocommunication. R&S PostMan II – a follow-up to R&S PostMan – is the ideal solution. Whether mail, fax or other TCP/IP services on the Internet or in military intranets, R&S PostMan II offers them all by radio from any point on the earth. The combined hardware/software solution guarantees advanced Internet communication via a number of different transmission media. The system complies with international standards, thus ensuring interoperability with systems from other producers, operation in computer networks using different controller platforms and operating systems as well as the use of a great variety of standard communication programs.

The key to unrestricted information exchange across network borders is the TCP/IP protocol. The TCP/IP international standard is used worldwide for almost all communication services in computer networks. Based on this standard, R&S PostMan II allows advanced office and Internet communication technologies to be used over HF, VHF, UHF, directional radio or satellite links. Owing to new protocols and coding methods, even shortwave, which provides virtually unlimited range but is subjected to a whole variety of interfering effects, can be used for this purpose. Depending on the requirements profile, the user can choose between two transmission protocols at the air interface.

If interoperability with other NATO partners or systems from other manufacturers is called for, the choice will fall on STANAG 5066 which is used in battle force e-mail (BFEM), for example. STANAG 5066 specifies the ARQ (automatic repeat request) transmission protocol, the ALE (automatic link establishment) procedure, the waveforms of the HF modem and the applications to be used. Most of the information is exchanged by e-mail. As STANAG 5066 is based on the SMTP (simple mail transfer protocol), most of the e-mail systems such as Outlook or Notes can be used.
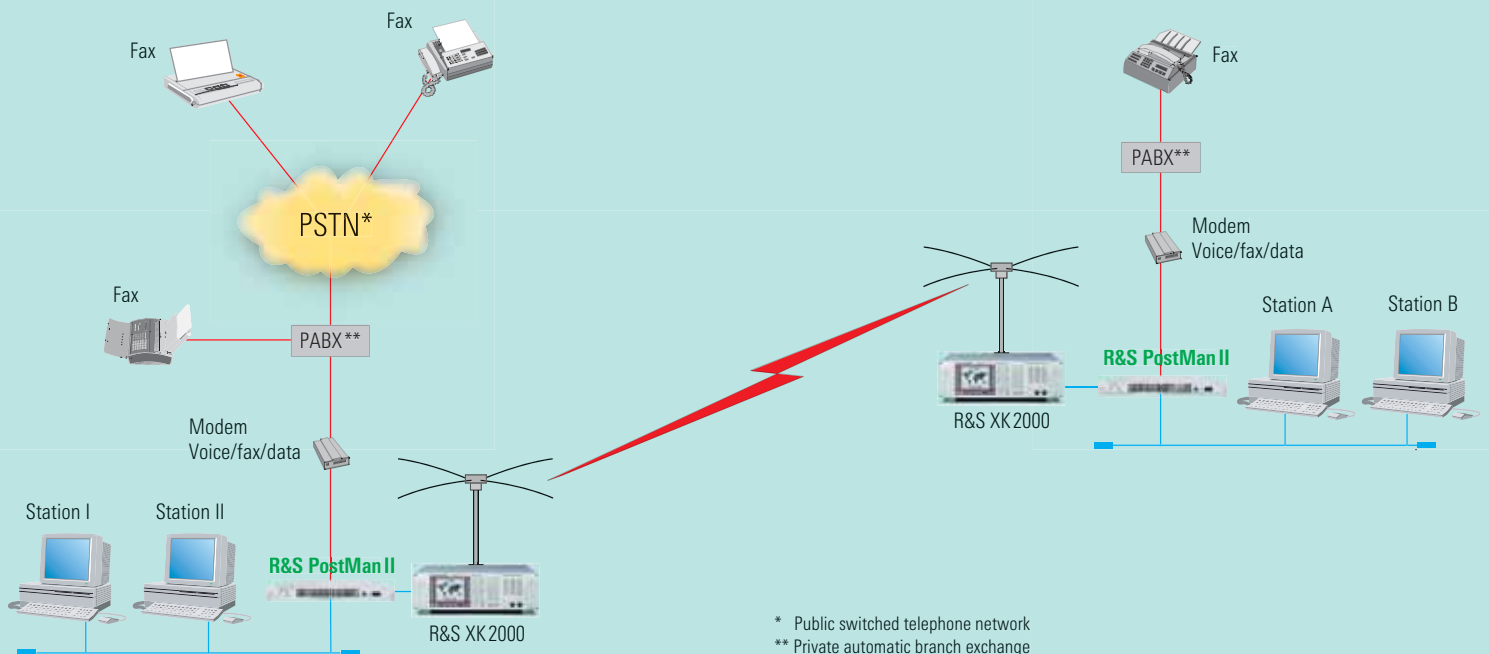

Fax
Fax
PSTN*
Fax
PABX**
Modem Voice/fax/data
Station I   Station II
R&S PostMan II
R&S XK 2000

Fax
PABX**
Modem Voice/fax/data
Station A   Station B
R&S PostMan II
R&S XK 2000

* Public switched telephone network
** Private automatic branch exchange

FIG 1: Fax service

... and strategic radio networks

Station I   Station II   **R&S PostMan II**

R&S XK 2000

Modem
Voice/fax/data

PABX**

PSTN*

R&S PostMan II

R&S XK 2000

Station A   Station B

* Public switched telephone network
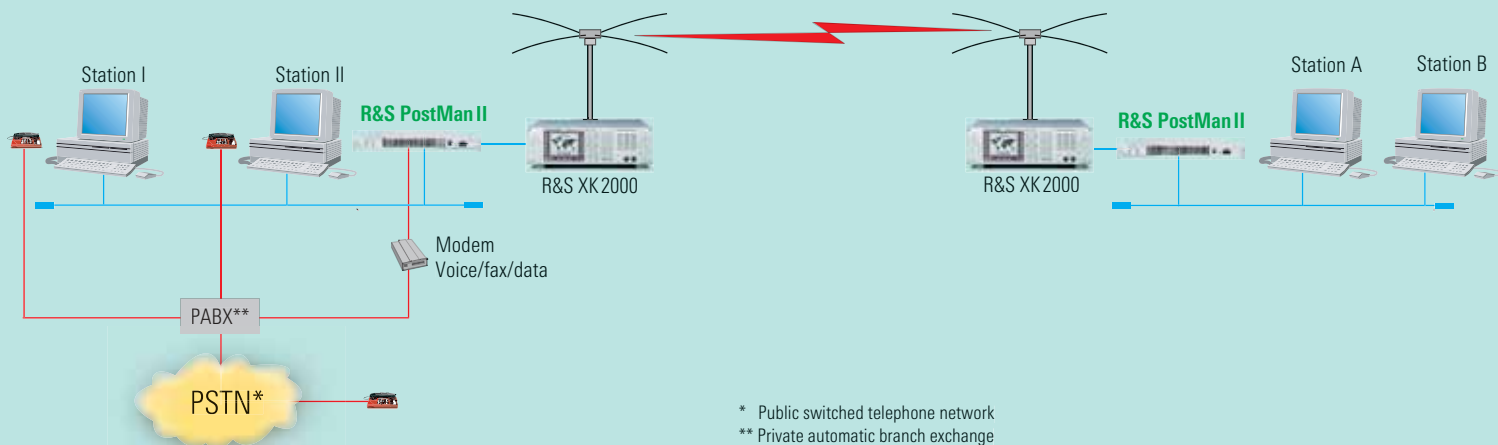** Private automatic branch exchange

FIG 2: Voice mail

The interoperability of the STANAG 5066 solution from Rohde & Schwarz with systems from other producers was proven on the occasion of the NATO exercise JWID 2001 (joint warrior interoperability demonstration). In a military environment, mobile units at sea, on land and in the air were given the opportunity to participate in radiocommunication via a worldwide, secure computer network called the CWAN (coalition wide area network).

Where interoperability with other nations is not significant, a data transmission protocol especially developed by Rohde & Schwarz will be chosen. This protocol is optimized for high data throughput on TCP/IP-based semiduplex connections, which are common on most radio links. The high data rates allow the use of virtually any state-of-the-art communication program, and communication is not restricted to e-mail or file transfer. Given the 3 kHz bandwidth, which is the rule in shortwave communication, live video conferences are out of the question of course.

Fax is one of the many new services of R&S PostMan II. The fax to be sent can either be generated electronically on the PC or placed in the fax machine as a hardcopy. The destination address entered on the workstation computer or the number dialled on the fax machine may be another computer or fax machine. All services of R&S PostMan II are available to both standalone workstations and computer networks in a LAN or WAN.

Voice mail straight from a telephone can be taken as an example of the various voice services provided by R&S PostMan II. After dialling the R&S PostMan II phone number and the number of the recipient, the voice message is stored on the R&S PostMan II server, which automatically sends it as an e-mail to the addressee. Like the fax service, this service is practically available to all subscribers of a connected PSTN.

The R&S PostMan II server is the hardware platform of R&S PostMan II. It meets high environmental requirements and also controls the radio sets connected. The LINUX operating system used has become an international standard and is employed worldwide in many safety-critical systems. The disclosed source text of the operating system permits all functions to be reproduced and allows full system management. The R&S PostMan II server is connected to the computer network via a standard Ethernet interface. A few entries by the system administrator and the preconfigured R&S PostMan II is ready integrated into the network and operational (plug & play).

Another feature is the possibility of tracking mobile stations by GPS (global positioning system). If a station is equipped with a GPS receiver, position data can be transmitted simultaneously with data exchange after decoding the NMEA (National Marine Electronics Association) protocol. The current positions of and the

routes covered by the individual mobile stations can thus be tracked from a command center. Knowing the position of a mobile station or the distances to be covered, the optimum frequency can be chosen on which the mobile station can be contacted.

After the addressee has been specified and the desired transmission medium selected, the R&S PostMan II information & communication system determines the time for message dispatch taking into account defined criteria such as good radio link quality or cheaper satellite link rates. If a link is interrupted, R&S PostMan II automatically attempts to contact the addressee through alternative routes or media. Despite all this complexity, the R&S PostMan II server can still exchange information on several links simultaneously. While a fax is being sent on one radio link for instance, an e-mail can simultaneously be transmitted on another, or two persons can converse in a chat room by text dialog.

All the information exchanged can of course also be protected against unauthorized access with the aid of customized encryption procedures. A whole range of encryption methods is available – from pure software solutions through combined software-hardware techniques at the computer end to the integration of customized encryption units in the information flow.
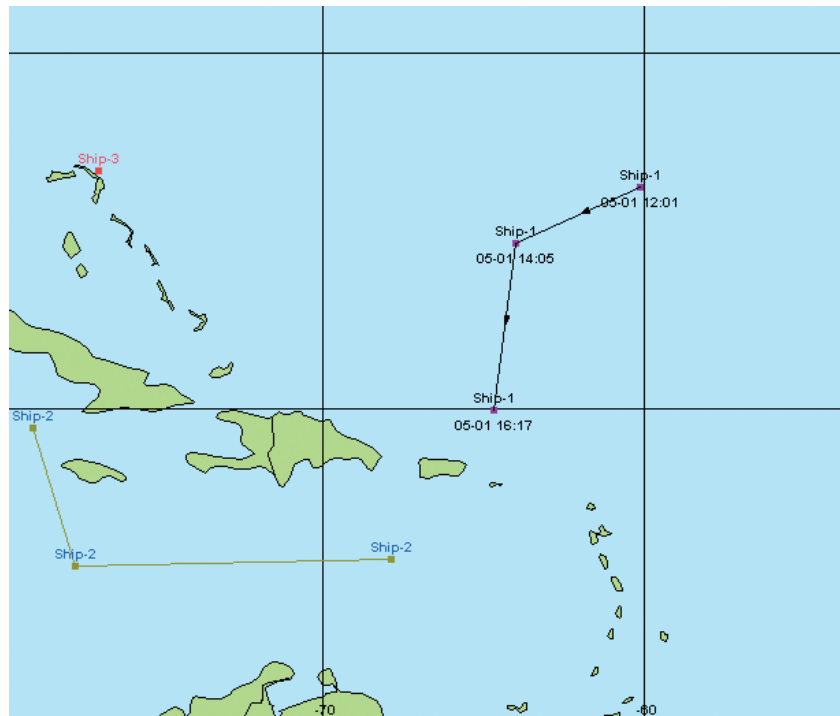

FIG 3: GPS tracking of mobile stations

System management and network planning are prerequisites for reliable and unimpaired operation in radio-based communication networks. All network data required is entered in a network and communication plan via intuitive graphical interfaces, and the available resources are managed in the radio link configuration.

R&S PostMan II is a promising system solution that meets all the requirements to be fulfilled by a modern radiocommunication system. This information & communication system introduces a completely new quality to radiocommunication.

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