



140 PA/IP Communications Systems

MVV Münchener Verkehrs- und Tarifverbund GmbH

REFERENCE



ms NEUMANN ELEKTRONIK GmbH

Efficient solutions for information and security

Since the MVV GmbH was founded on 18 May, 1971 – just half a year before operation of the underground railway system was started – the MVV Münchener Verkehrs- und Tarifverbund GmbH (Munich Linked Public Transport and Tariff System) has been meeting the challenges of constantly growing demands and the expansion of mass transportation. The increasing numbers of passengers, the rapid growth of the population especially in the suburban areas surrounding the Land capital, the expansion of the railway network, the construction of the Franz-Josef-Strauß Airport; these are all challenges that the MVV has successfully mastered.

Over 30 years of experience and competence in regional public transport have made the company strong for the future. Providing services for its passengers has always played an important role, which is why this new project to immediately implement improved passenger information (visually/acoustically) at the individual stations has been initiated.

The Solution



The project encompasses project planning, supplying some 135 IP communications systems throughout the transport system network as well as 5 along the main route including the necessary IP/ISDN exchange equipment, installing the entire system, and putting it into operation.

At the heart of the system is the highly advanced IP-capable ELA@GATE type public address (PA) system, which with its flexible variations in equipment features – needed to meet the individual safety requirements – and its indepen-

dence of proprietary network technologies, is the ideal solution to fulfil the customer's needs. And it goes without saying that the existing PA equipment can be migrated into the new system.

The system is operated from 6 passenger information operator stations located in the Munich Operations Centre. The entire system is subdivided into 18 subsystems and stretches along nearly the entire Munich "S-Bahn" (suburban fast train) system.

Automated Passenger Information



In the Munich "S-Bahn" system, all passenger information is provided by centralised, automated, supra-regional IP-based public address systems that also allow PA announcements to be initiated manually, partially automated or fully automated.

During regular operation, the PA system, which is connected to a passenger information unit (FIA), works for the most part automatically. Communication is made via a TCP/IP connection; the local PA unit consists of a digital announcement device that is part of the local PA system.

The passenger information system includes interfaces to systems for train schedules, operational conditions and train tracking data. The system control thus receives information from various data sources on the planned and actual train movements as well as possible schedule changes. Different control commands for the announcement devices are generated based on this data. An important advantage of automated PA announcements is that the quality of the announcements – especially with regard to speech quality – is at a consistently very high level.

The hardware and software used for the system is responsible for the intelligence of the FIA system; the main components of the system – FIA server, communications server and ISDN gateway – are installed in a 19" rack-mount cabinet in the IB3 area of the Munich Operations Centre. The system is based on a dual-computer and server PC configuration running the multitasking/multi-user LINUX operating system. The dual-computer redundant configuration of the COM server is an integral part of the system; the concept is based on a digital exchange system utilizing IP technology, to which gateways can be connected in addition to IP terminal equipment.

The PA system is powered by the existing 230 VAC low voltage mains supply at each respective location. A backup power supply guarantees at least 30 minutes of continuous operation of the system in the event of a power failure. The switchover from regular mains supply to the backup power supply occurs without interrupting operation of the system.

IP telephones are provided as a fail-safe level for audio communications should, in the event of a fault condition, the interface between the FIA system and the COM server be interrupted. This allows live announcements to be made over the IP network. In addition, the telephone is also connected to the IP interface of the operations centre data network. Via the H.323 standard used for the system, the IP telephone can be connected to one or more local PA systems.

Built-in Flexibility

Operator personnel can at all times take over control of the system via the user interface in the event of irregularities in train operations. Various (partially automated) procedures provide the greatest freedom to handle each particular situation – for example, emergency programmes allow the broadcasting of pre-recorded messages to be initiated manually.

An additional possibility is the broadcasting of announcements that are triggered by various input signals (e.g., ZB9). This feature enables an external system (such as the train signal control system) to select a defined PA target and start the pre-recorded announcement.



Furthermore, the PA system can also be operated, as needed, in a purely manual mode: the announcer selects a PA target from his/her call station, and speaks the required announcement text (live announcement); for example, "The S1 train leaving from platform no. 1 takes you to the Rail#Tec trade fair."