

## Mobile communication brings the office to the patrol car

A highly visible police presence and short intervention times rely on efficient deployment of the resources available. The relevant means of communication must also be state of the art. By implementing the “Mobile Communication” project, the Zurich City Police Department will be able to further increase its effectiveness and visibility on the street.

Something that has been around in Hollywood for a long time is now a reality in Zurich. The use of laptops or PCs in police cars so that patrol officers can retrieve data from headquarters is known well enough from films and TV series. Using a mobile communication system, officers of the Zurich City Police out in their squad and patrol cars can now also verify personal details, check owner, driver, or vehicle data, or simply look up information available on the Internet. Based on mobile telephony, the new solution enables officers to access various federal, cantonal, and local databases or the internet from the vehicle on the spot.



### **Zurich City Police Department—mobile data communication for greater security**

Security as the foundation of a tolerant and free society is the primary concern of the Zurich City Police Department. With this vision, staff members work round the clock for the protection and security of the people. In order to achieve this, the means of communication used must be state of the art: as a modern police force, the City Police is at the forefront in terms of technology, and has invested in innovative technologies in the area of data communication.

### **Facilitation of daily police work**

Bruno Stucki, a police officer who is regularly on police car patrol as an operational commander throughout the entire city, confirms that the mobile system offers several advantages. “Police work takes place on the streets. Carrying out various types of on-the-spot investigations is everyday routine for us. However, the supporting information resources are back at headquarters. Up to

now, we had to do all our research with operational headquarters over the radio. This was rather laborious, time-consuming, and sometimes also led to errors. On top of this we had no access to certain types of information, for example photographic material, if we were only communicating by speech.”

The new system is clearly more flexible and efficient. It offers a high degree of user comfort; the police radio is freed up, more information can be sent, procedures are expedited, and it is far less likely to be prone to transmission errors. Thanks to the improved exchange of information between the teams on the spot and operational command, the efficiency of the mobile forces can be increased. “The benefit on the street is really huge, and this is true both in the course of our daily routine work, as well as with particular operations such as large-scale vehicle and driver checks,” says Bruno Stucki describing experiences from the front line.



### **Mobile IP router as the core**

The basis for the mobile communication system is a local IP network in the patrol vehicles with what is known as a mobile IP router as the core. The terminal and peripheral devices are linked via Ethernet connections. In addition to pre-installed car PCs or laptops in the vehicles, other possible devices may include IP video cameras, scanners, printers or voiceover-IP phones.

Communication with the police central servers is via wireless connections using modems linked to the router. The device will always select the channel available that allows the greatest bandwidth. If the vehicle is still in reach of the wireless LAN at City Police base, then it logs in there. Out on patrol, the system relies on the latest mobile telephony standards for data transmission from Swisscom mobile. As far as possible, this will be powerful UMTS technology HSDPA (High Speed Downlink Packet Access), which offers an average 500 kbit/s bandwidth for downloads and 250 to 350 kbit for uplinks. If the police vehicle finds itself out of UMTS range, the slightly less efficient Edge (Enhanced Data Rates for GSM Evolution) GSM technology is activated automatically and without interruption via mobile IP roaming.

## **An open solution for functional and technical expansion**

To help ensure that mobile data communication could be effectively and beneficially deployed today, the City Police launched the first field trials back in 2003. They were followed by requirements analyses and a prolonged testing period with nine vehicles that were fitted out with the various terminal devices. Feedback from the front line teams involved in the test was extremely positive. After the successful test phase, the plan then was to install the mobile system, developed in collaboration with “Organisation und Informatik der Stadt Zürich” (OIZ) and external partners, over the next 2-3 years in all 50 or so squad and patrol cars. Besides the lack of space in the vehicles for the screens, another major problem that came to light in practice was the increased use of power. This weak point was easily rectified by installing a second battery.

The system has a modular construction, with independent network, security, terminal device, and application units. On the one hand, the open solution approach is flexible when it comes to adapting to new technologies via the straightforward exchange of a plug-in. On the other hand, additional functions can be added to the existing infrastructure base. This may include things like global positioning system (GPS) positioning, status transmission to operational headquarters in the form of brief reports, or mobile fingerprint checks. Thanks to the consistent use of standards, the system can be enhanced technically in almost any way possible, for instance by connecting further terminal devices.

**“The police force is there where people need it. To be able to deal competently at all times with the challenges of a constantly changing society, the Zurich City Police Department has recently modified some of its procedures and structures. Also, in the choice of our equipment, we want and must be able to use contemporary technologies that show promise. By implementing our vision of the “office on the street” or in the squad car with the “Mobile Communication” project, we are increasing the efficiency of police work and optimizing resource planning. Mobile communication improves the flow of information between the operational units and operational command. To a large extent it is due to this optimum deployment of resources that the police presence on the streets can be increased. The use of modern technology contributes in equal measure to the fact that we will also be equipped in the future to meet the high requirements and increasing demands placed on a modern police force.”**

**—Philipp Hotzenköcherle, Commander of the Zurich City Police**

### **Highest security for sensitive data**

Given that everyday police work entails handling particularly sensitive data, privacy protection and data security are the top priority when they are being processed. For Richard Lehmann, Chief of Operational and Special Technology of the Zurich City Police, it was therefore crucial that no compromises were made in this respect. "The system is based on security and communications technology that OIZ has made standard across the city. So, for example, on top of other security measures in data transmission, end-to-end encoding is also used via a Virtual Private Network (VPN). Network access can only be made through the city fire wall infrastructure. Users themselves in the patrol cars have to log into the system with a smart card." Similarly, another security element is the principle of centralization: all necessary data are hosted on a central server. The risk potential is also minimized by the fact that no data are stored on the rather more accessible terminal devices in the vehicles.

### **Efficient mobile IP technology from Cisco**

Several external partners were involved in the City Police "Mobile Communication" project. The network components come from Cisco and Cisco's partner, AnyWeb. The core, the Cisco 3200 Mobile Access Router, sets up secure "always-on" connections for networks in police squad vehicles, ambulances, and trains that are on the move. Here, the Cisco 3200 amalgamates previously unrelated wireless networks such as GSM/GPRS/UMTS and WLANs under the 802.11 standard. Continuous real-time access to information can, therefore, be provided. This enables faster and more widespread access to information and increases the productivity and effectiveness of operational units. Wireless mobility: the Cisco 3200 Mobile Access Router is suitable for any type of wireless connection because IP traffic is independent of the transport medium. This means problem-free roaming between wireless networks. "Mobile Networks", a Cisco IOS (Internet Operating System) software function, increases the value of mobile IP, because it is possible for an entire network to maintain the connection as well as an individual client, even if it is on the move.

### **Security and compatibility**

Cisco IOS software extends IP services and compatibility to deliver comprehensive services for "networks on the move". Extended security functions such as fire walls and encrypted Virtual Private Networks (VPN) are aimed at protecting data on a public WAN infrastructure. Standards-based IP technology establishes the link between wireless infrastructures and frequencies that were previously unrelated. As a result, organizations that use different networks and applications can work together. Form: the compact, robust design is intended for harsh, mobile environments. Sized at 8.9 x 9.7 centimeters, the router meets the power, size, and weight requirements for installation in vehicles and integrated systems. With its powerful memory, the high-performance microprocessor and PCI communications bus offer the necessary performance to support progressive IP applications.



**Americas Headquarters**  
 Cisco Systems, Inc.  
 170 West Tasman Drive  
 San Jose, CA 95134-1706  
 USA  
[www.cisco.com](http://www.cisco.com)  
 Tel: 408 526-4000  
 800 553-NLTS (6387)  
 Fax: 408 527-0688

**Asia Pacific Headquarters**  
 Cisco Systems, Inc.  
 155 Robinson Road  
 #28-01 Capital Tower  
 Singapore 068912  
[www.cisco.com](http://www.cisco.com)  
 Tel: +65 6317 7777  
 Fax: +65 6317 7798

**Europe Headquarters**  
 Cisco Systems International BV  
 Heerlenbergpark  
 Heerlenbergweg 13-18  
 1101 CH Amsterdam  
 The Netherlands  
[www.europe.cisco.com](http://www.europe.cisco.com)  
 Tel: +31 20 600 020 0/91  
 Fax: +31 20 657 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

©2007 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Altonet, BPK, Catalyst, CCNA, CCD, CCIE, CCIP, CCMA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, FiberChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, Go to Drive, HomeLink, Internet Quotient, IOS, IPPhone, IPTV, iQ Experience, the iQ logo, iQ Not Roadside, Scorecard, iQuick Study, iSignStream, iUnify, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (07052)