Complus Systems

WIMO CMIPR
COMPACT MOBILE IP ROUTER

Product Description

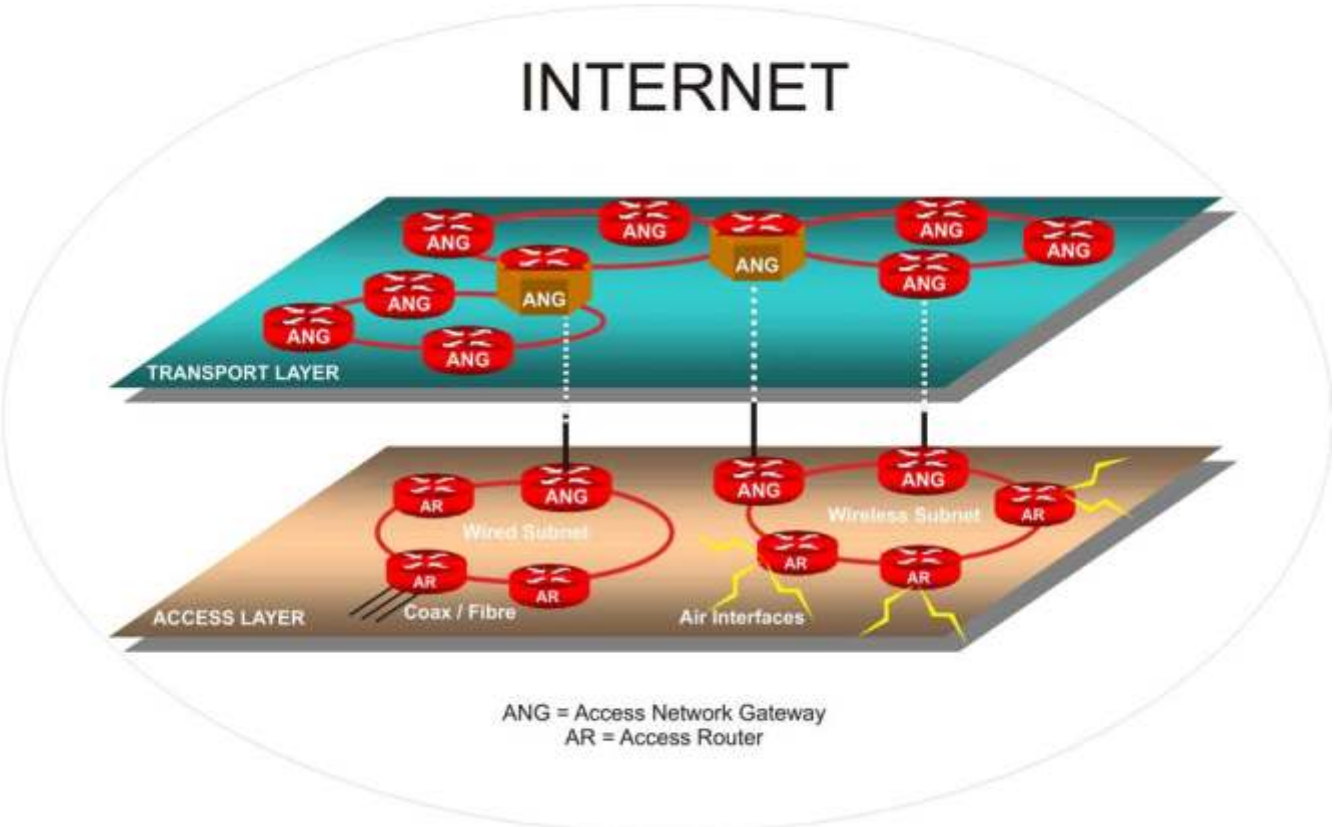
1. INTRODUCTION

Mobile IP was developed before the widespread adoption of wireless LANs. The original intent was to permit a mobile terminal to communicate using its permanent home IP address while connected to a foreign wired network. Terminals that do not require a permanent IP address can simply borrow a temporary local address using DHCP.

However, this does not allow them to move between subnets. Since the introduction of wireless LANs, mobile IP has been extended to enhance the ability of the terminal to move between wireless subnets while maintaining its active connections.

The basic concept is to use a home agent to maintain a binding between the mobile terminal's home IP address and its current location. When a mobile enters a foreign subnet it obtains an IP address, called a care-of address, from that subnet's address space. The mobile registers the new care-of address with its home agent. Subsequently, all packets received for the mobile by the home agent are tunneled across the network using the care-of address.

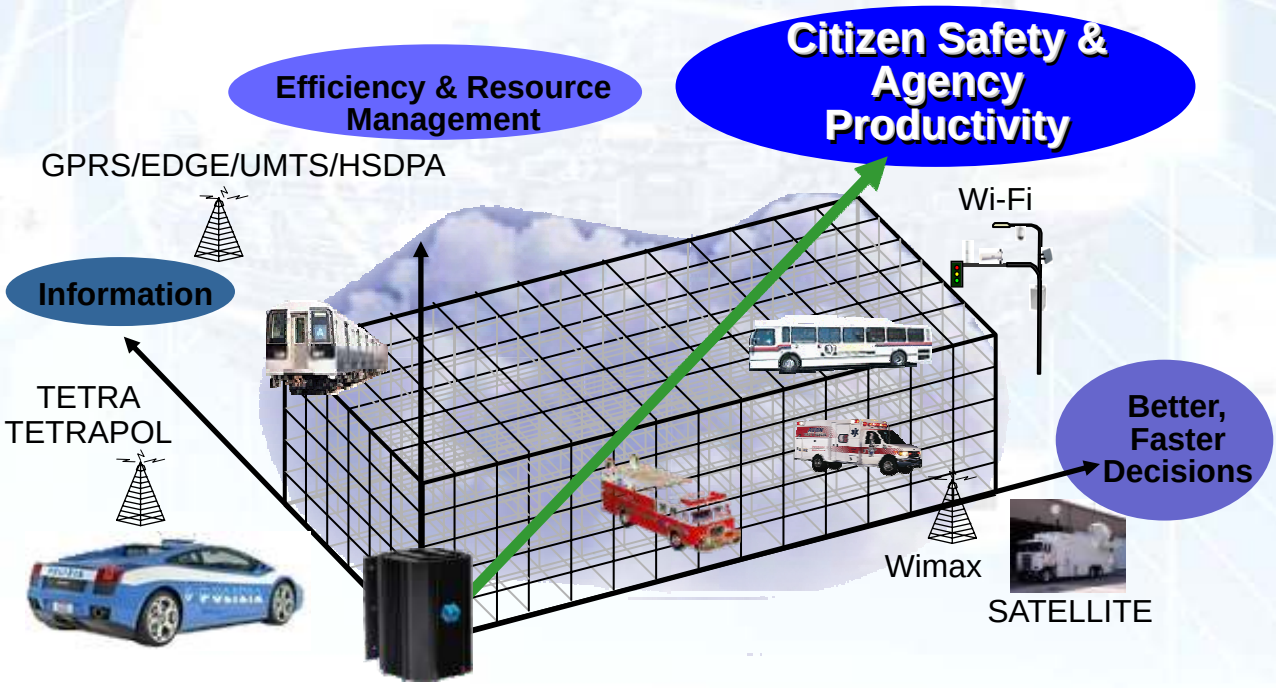
During the last two years, Complus Systems has been designing and developing new solutions based On Mobile IP and is now able to offer advanced and stable WIreless Mobility appliances through state of Technology products.



2. ALL IP LAYERS

Complus has introduced a global Wireless Mobility solution, called WIMO, dedicated to suit the needs of integration between existing and next generation wireless and wired networks. We are researching, developing, and implementing systems for:

- Wireless mobile data networking for city, state, and federal agencies
- Wireless connectivity to fixed locations/applications
- Interoperability and integration between individual networks applications
- Integrated network security across the entire network
- Use of licensed and unlicensed wireless technologies
- Network foundation for future wireless technologies and applications



Wireless grid of existing standards
Seamless Handover between existing wireless networks

3. APPLICATIONS

With ComPlus WiMo CMIPR, it is possible to manage the following applications within the same Mobile IP platform:

Public Safety (Police, Municipalities, Fire-Fighters and any public force)

- Dispatch
- Field reporting, premise history lookup
- Car-to-car messaging
- Auto Vehicle Location/Mapping
- Pictures, criminal database/history
- E-Ticketing
- Vehicle telematics
- Situational video transmitting and receiving
- Send/receive medical data
- Hazard material monitoring
- Emergency and disaster recovery

Public Transports (Buses, Trams, Trains, Underground, Taxi, and any other public tranport vehicle)

- Centre-to-Vehicle messaging
- Vehicle-to-Vehicle messaging
- Vehicle Location/Mapping
- E-Ticketing
- Vehicle telematics
- Situational video transmitting and receiving
- Wireless broadband Internet services available to passengers of public transport vehicles on the move

Logistics (Tansport of goods by means of Trucks, Trains and boats)

- Vehicle-to-Vehicle messaging
- Centre-to-Vehicle messaging
- Vehicle Location/Mapping
- Vehicle telematics
- Situational video transmitting and receiving
- Security video transmitting and receiving
- Web access to drivers

Private transport (Cars, Vans etc.)

- Mobile Internet on the move (your office moves with you)
- Security video transmitting and receiving

WIMO-CMIPR, is a smart device which allows the delivery of Mobile-IP services by means of integration of existing wired and wireless networks into the IP world. Furthermore its routing capability makes the handover between different networks completely seamless.

Thanks to its flexibility and scalability, WIMO-CMIPR is ready to integrate also future wireless technologies.

WIMO-CMIPR, is the first compact and cost effective Mobile IP Router available on the market.

4. UNIT SPECIFICATIONS

The ComPlus WIMO CMIPR Rugged Router is a high-performance rugged processor card designed to support multiple applications running concurrently over wired and wireless networks. With onboard hardware encryption, the WIMO CMIPR offloads encryption processing from the router CPU to provide secure, yet scalable video, voice, and data services for outdoor and mobile networks.

Based on custom-made Linux core, comes with:

CORE SYSTEM

PC/104+ Single Board Computer

- CPU : x86 architecture
  - 266/300/600/1000/1800 MHz CPUs
- PCI and ISA expansion busses
- 128 Mbyte SDRAM
- 512 Mbyte Flash Disk
- Graphics Controller with interface for TFT panels, NTSC/PAL TV and RGB color monitors
- Standard peripherals: serial ports, LPT port, I/O ports, FDC, PS/2 keyboard and mouse, IrDA, HDD interface
- Power consumption 5-10W

CONNECTIVITY

- **802.11 b/g interface/s for connection to Public WLAN and Hot Spot creation.**
  - **Data Rate**
    - Up to 54 Mbps
  - **IEEE Standard**
    - 802.11b/g
  - **Security**
    - 64/128 bit WEP, WPA/WPA2, 802.1x, AES(*optional)*
  - **Signal Range**
    - Indoors: Up to 100m. Outdoors: depending on antenna
    - SMA Connector for Antenna / U.FL RF (Hirose CL331-0471-0-10) inside equipment

- **HSDPA/UMTS/E-GPRS interface/s with external antenna.ÿ**
  - **Air Interface**
    - UMTS (HSDPA) antenna
    - SMA Connector for Antenna / U.FL RF (Hirose CL331-0471-0-10) inside equipment
    - 50 ohm
  - **RF features**
    - Quad-band GSM/GPRS 850, 900, 1800, 1900 MHz
    - UMTS WCDMA FDD 2100 MHz Packet mode features
  - **Packet mode features**
    - UMTS data rates 384 kbps Downlink, 384 kbps Uplink
    - HSDPA data rates 3.6 Mbps Downlink, 1.8 Mbps Uplink
    - GPRS/EDGE Class B, Multislot Class 10

- **Certifications**
  - ③ Complies with the essential requirements of §3 and the other relevant provisions of the FTEG (article 3 of the R&TTE Directive), when used for its intended purpose.
  - ③ Health and safety pursuant to § 3 (1) 1. (Article 3(1)a))
    Harmonized standards applied:
    - **EN 60950-1: 2001 + A11: 2004**
  - ③ Protection requirements concerning electromagnetic compatibility § 3 (1) 2. (Article 3(1) b))
    Harmonized standards applied:
    - **EN 55022: 1998 + A1: 2000 + A2: 2003**
    - **EN 55024: 1998 + A1: 2001 + A2: 2003**
    - **EN 61000-3-2: 2000 + A2: 2005**
    - **EN 61000-3-3: 1994 + A1: 2001**

- **1• Ethernet 10/100 interfaces (optionally the number of interfaces can be extended).**
- **USB 2.0 interface**
- **1• RS-232 inerface (optionally the number of interfaces can be extended)**

POWER SUPPLY

PC/104+ Power Suppy unit

- 25 Watt output
- +5V
- Clean and Filtered Power for the PC/104 bus
- “Load Dump” transient protection
- Options: Battery Backup, Battery Charger, Power Management & AC Bus Termination
- Optional reverse input protection (Part # RPD)
- Low quiescent current

- **Electrical Specifican**
  - 5V output 5.0A
  - 12V output 1.0A
  - -5V output 0.40A
  - -12V output 0.16A
  - Input Voltage 8 to 30VDC

- **Performance Characteristics**
  - Peak to Peak ripple* <50mV
  - Load Regulation** <30mV
  - Line Regulation** 40mV
  - Output Temp. Drift** <10mV
  - Output Ripple** 50mV
  - Quiescent Current*** 22mA
    Efficiency up to 85%

PC/104+ Enclosure

- The WIMO CMIPR container is a rugged anodized aluminum PC/104 enclosure designed for harsh environments.
- With an isolating shock mount and an internal stack vibration mount, the enclosure provides maximum protection from high frequency vibrations and low frequency G-forces
- Internal rubber corners guides for easy insertion of additional PC/104 modules
- Standard 5/8/10/12 inches size depending on configuration
- Dual system of isolating and absorbing shock
- Protects and enhances the reliability of PC/104 components
- Optionally available in IP66 aluminum enclosure and waterproof endcaps

MECHANICAL AND ENVIRONMENTAL SPECIFICATION

- Form factor according to PC/104-Plus specification
- Operating temperature: -20 °C … +70 °C
- Storage temperature: -40 °C … +85 °C
- Vibration resistance DIN EN 60068-2-6
- Shock DIN EN 60068-2-27

The ComPlus WIMO-CMIPR

Note:

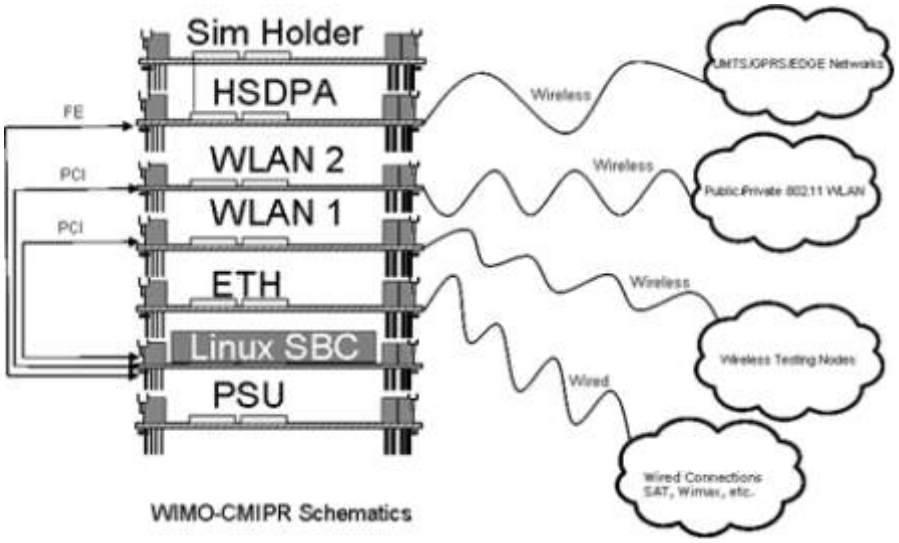
* Current rating includes current supplied to 12V and -12V regulators
** Measured on 5V output
*** LEDs disabled and power supply is in shutdown mode

.OPERATIONAL SYSTEM

- Os Platform based on customized Linux (Kernel 2.6).
- Mobile-IP stack implementation based on IETF (RFC Editor) recommendations:
    - RFC3344 IP MOBILITY SUPPORT
    - RFC2003 IP ENCAPSULATION WITHIN IP
    - RFC3519 UDP TUNNELING
    - RFC2794 NAI EXTENSIONS
    - RFC3012 CHALLENGE/RESPONSE EXTENSIONS
    - RFC3024 REVERSE TUNNELING
    - RFC3115 VENDOR EXTENSIONS.
- Web-Baed (HTML) MMI Interface.

5. PC104 STACK

Each WIMO CMIPR is custom made on the base of the customers' needs: available interfaces include Fast Ethernet, WLAN, HSDPA/UMTS/EDGE (European and American), RS232.
Herein below is shown a typical configuration; please note that the card positioning can change.



WIMO-CMIPR Schematics

6. MOBILE IP FEATURES & SECURITY

Feature	Description
Supported platforms	Linux (kernel 2.6)
MN authentication schemes	Shared Secret
FA authentication schemes	Shared Secret
Message validation schemes	HMAC-MD5, keyed MD5, CHAP RFC3012
Replay protection	Timestamps, nonces RFC3344
Tunnel modes	Full (bi-directional) tunnel, Triangle tunnel, MN decapsulation, FA decapsulation
AAA	RADIUS; LDAP authentication, custom authentication scripts
High availability and load balancing	

WIMO CMIPR doesn't place any artificial restrictions on the data security solution used to secure IP traffic. WIMO CMIPR is designed to be fully interoperable with all IPSec and other VPN solutions.
The mobile client implemented within each WIMO CMIPR is designed so it can be used together with all major VPN clients available under Linux.

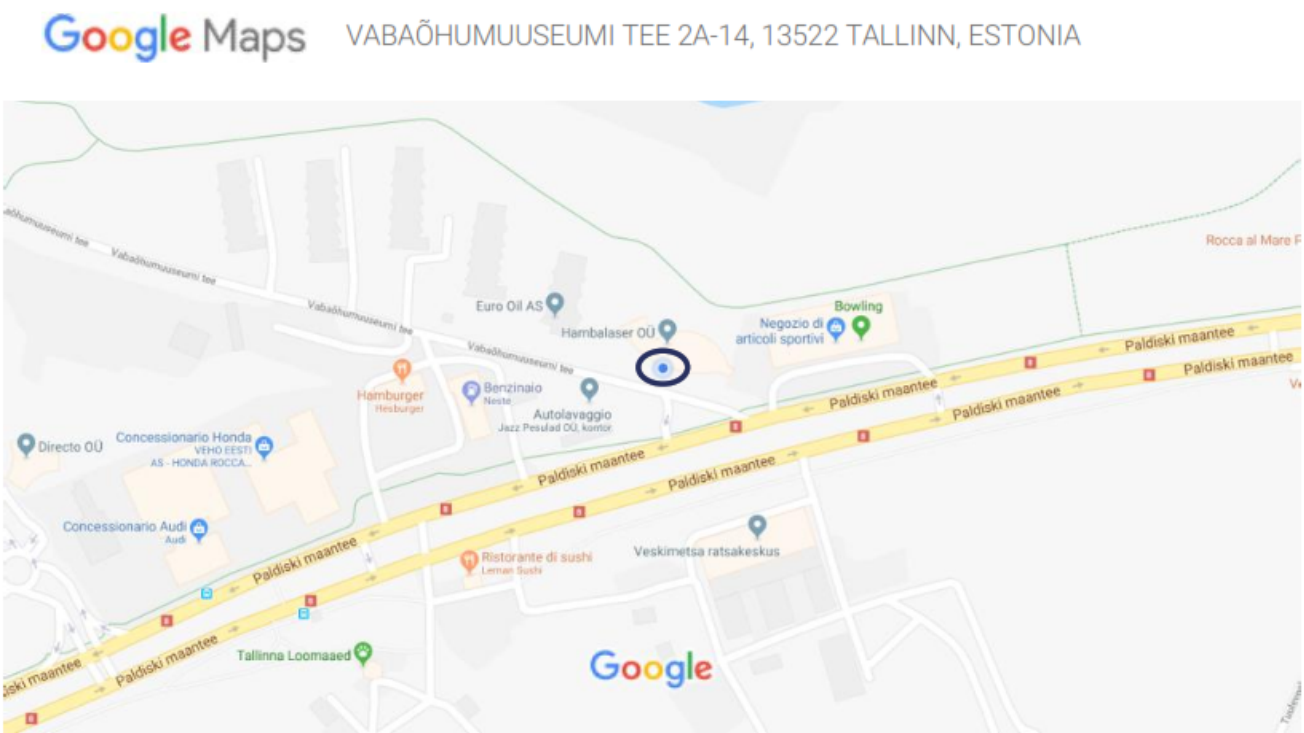
The Home Agent can be entirely decoupled from the encryption endpoint, e.g., IPSec gateway.

Most other Mobile IP solutions either offer no security support, or are bundled as a Mobile IP and IPSec product in one. These products are seldom interoperable with other VPN products. They also often force the Home Agent to be on the same server as the IPSec gateway.

Vabaõhumuuseumi 2A-14, Tallinn, Estonia Tel. +372-5010996
e-mail: Info@complusystems.com

HOW TO FIND US

R&D and Headquarters
ComPlus Systems Ltd.
Vabaõhumuuseumi tee 2A-14
Tel. +372 5010996
E-mail : info@complusystems.com
13522 Tallinn
Estonia



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