



**MAKE THE RIGHT
CONNECTIONS**



**LTE/HSPA+/UMTS/CDMA/EDGE/GPRS
Mobile Router Technology**

Designed for M2M Applications



A **B&B ELECTRONICS** Company

Whatever Your Challenge, We Have a Mobile Solution

We help companies and organisations around the world integrate, connect and upgrade their networks and devices. No matter what you do, build or sell, our experience in your industry and broad portfolio of device connectivity solutions makes it easy to create a powerful, rugged and efficient network.



Transportation and Security

- Transfer video and images from security IP cameras to central control and monitoring stations
- Remote monitoring and control of traffic management systems, such as traffic signs, traffic light signals, tunnels, parking, etc.
- Internet access for vehicles and mobile devices (buses, trains, ships, trucks)
- Remote management of digital signage for messaging and advertising



IT and Communication

- Monitor key elements of telecommunication networks
- Back-up connections of telecommunication lines



Self-Service Terminals

- Secure networks for point-of-sale systems, ATMs, lottery terminals and vending machines
- Remote monitoring of information kiosks, vending machines, self-service gas stations and other point-of-sale systems

The Challenge

Reducing traffic density and preventing traffic jams in cities is not an easy problem to solve.

Connected wirelessly via UMTS technology, traffic cameras are a vital part of a complete traffic system. The need to dynamically manage traffic flow requires the ability to send pictures or streaming video, direct from roads and streets, to control rooms. By monitoring the traffic information, actions can be taken to avoid a bad traffic situation or prevent a bad situation from getting worse.

Traffic monitors have the ability to control traffic by changing the display of online road LED boards or other automatic signs, at any given moment, to slow down or speed up traffic in defined locations or navigate drivers to clearer roadways.

The ability to transfer data, via GSM mobile operator infrastructures, from traffic cameras and to road LED boards (automatic signs) is a very effective solution for problematic city traffic situations.



The Solution

The Conel LR77 v2 LTE/UMTS/HSUPA mobile network routers from B&B Electronics are connected directly to a camera placed above the road or street. Digital images, videos and traffic data are transferred instantaneously to the traffic control center. Using their SW application, control room dispatchers can change traffic speeds by changing the status on LED boards along roadways. From the control room, command data is delivered wirelessly to the LR77 v2 UMTS/HSUPA router connected directly to the road LED boards. Reaction time to traffic situations can be measured in the tenths of a second.



Secure, Reliable, Advanced Networking

- **Modular & Flexible:**
 - Modular HW and SW concept
- **Secure & Reliable:**
 - VPN support, industrial design
- **LINUX Platform & Advanced Networking Functions**
 - Easy to use, open source platform
- **Designed for M2M Applications:**
 - Industrial Systems
 - Remote Service
 - Telemetry & SCADA
 - ATM, Lottery, Kiosks
 - TELCO & IT



Industrial Automation

- Remote management of industrial control systems and computers
- Remote control and servicing of machinery and equipment
- Remote programming of control machines and SCADA systems



Energy & Natural Resources

- Remote monitor production and distribution SCADA systems
- Remote monitor power plants, water treatment facilities, wind and solar installations
- Utility metering for power, water and gas
- Oil and gas pipeline monitoring



Meteorology, Alarm & Warning Systems

- Transfer data provided by meteorological stations and sensors
- Air quality measurement and monitoring
- Flood control systems, early warning information systems
- Gas and radiation detection systems
- Prediction of Seismic events and other natural disasters
- Monitoring of volcanic activity

The Challenge

Point-of-sale (POS) machines are everywhere in our daily life. The convenience, speed and ease of these transactions for the consumer will depend on highly secure data communications technology, performing reliably in locations at the very edge of the network. Consider the complex interactions required to:

- Withdraw money from an ATM
- Purchase a ticket from a ticketing machine to ride a city bus
- Deposit money into a vending machine to purchase a bottled soda or packaged food
- Pay a parking meter in order to park an automobile at a designated location



The Solution

An UMTS wireless mobile operator network, for data transfer from machines offering POS services, is frequently used.

The UR5i v2 router is connected to a POS machine and transfers information and transactional data from the machine over a secure UMTS/HSDPA network to a control room server, where the data is then stored and processed. The UR5i v2 routers use VPN tunnels and other advanced networking features for secure data transfer and machine communications. The UR5i v2 router is fast, secure and cost effective, backed by our vast industry experience, and the router's field-proven ability to perform in many countries worldwide.

An important advantage of the UR5i v2 router is mobility. Whether you transfer data from a busy city street or from a bus ticketing machine placed far away from a town, when you have the mobile operator UMTS signal available, you can use the UR5i v2 routers to connect devices and collect data to a central PC or server. Welcome to digital freedom.

Fully Modular Concept – Buy Exactly What You Need

Basic and full versions are available, with the combination of optional ports and SIM card holders.

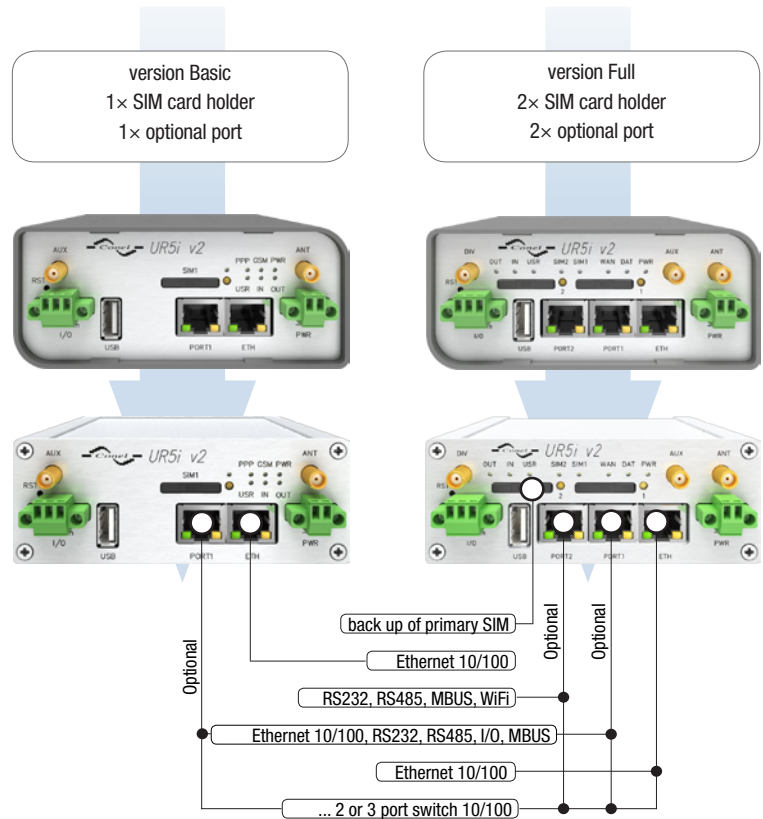
Fixed communication interfaces:

- ETHERNET 10/100
- USB HOST
- I/O port with 1× input and 1× output

Optional interfaces to optimize according to your application, with the ability to add additional interfaces in the future:

- 1-2× ETHERNET 10/100 with possible modes:
 - 2-port Ethernet switch
 - 3-port Ethernet switch
 - 2× independent LAN
- Wi-Fi: AP or client mode
- RS232 serial port
- RS485 galvanic separation possible
- RS422 galvanic separation possible
- MBUS master for up to 30 slave meters
- Wireless MBUS
- I/O CNT interface including 4× binary inputs (2 inputs may be configured as counter) 2× analogue inputs and 1× binary output

For all routers, you can choose either a metal or plastic casing.



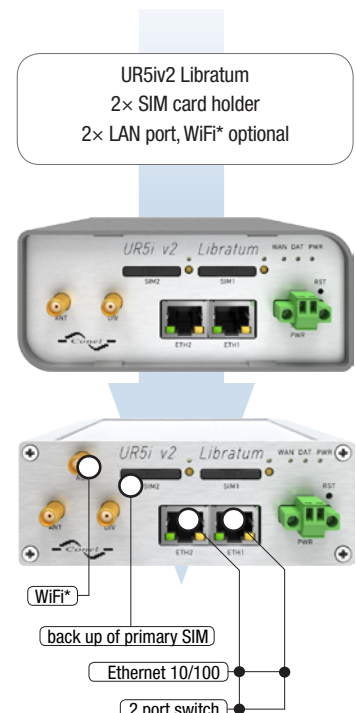
Balanced Concept - UR5i v2 Libratum

All the best from "Fully Modular concept" - Balanced router UR5iv2 Libratum HSPA+ wireless router featuring high speed data rates (14.4 Mbit/s)

- 2× ETHERNET 10/100 with possible modes:
 - 2-port Ethernet switch
 - 2× independent LAN
- Optional* Wi-Fi: AP or client mode
- Dual-SIM fail over
- Antenna Rx Diversity
- Temperature up to +70°C
- You can choose either a metal or plastic casing

All Conel routers are compatible with:

R-SEENET
SMART CLUSTER



LTE/HSPA+/UMTS/CDMA/EDGE/GPRS Routers

Choose the right model by data transfer technology:

ROUTER	MOBILE WIRELESS NETWORK TECHNOLOGY	MAX DOWNLOAD	MAX UPLOAD
ER75i v2 GPRS/EDGE router	GPRS/EDGE	236,8 Kbit/s	118,4 Kbit/s
UR5i v2 UMTS/HSPA+ router	UMTS/HSPA+ & GPRS/EDGE	14,4 Mbit/s	5,76 Mbit/s
UR5i v2 Libratum router	UMTS/HSPA+ & GPRS/EDGE	14,4 Mbit/s	5,76 Mbit/s
LR77 v2 LTE router	LTE & UMTS/HSPA+ & GPRS/EDGE	100 Mbit/s	50 Mbit/s
CR10 v2 CDMA router	CDMA 2000 1X, EV-DO Rev. A, B, 400 MHz bands	14,7 Mbit/s	5,4 Mbit/s
UCR11 v2 UMTS/CDMA router	UMTS/HSPA+ & GPRS/EDGE & CDMA2000 1X, EV-DO Rev A, B, 400 MHz bands	21,1 Mbit/s	5,76 Mbit/s
XR5i v2 LAN router	ETHERNET 10/100	100 Mbit/s	100 Mbit/s

	ER75i v2	UR5i v2	UR5i v2 Libratum	LR77 v2	CR10 v2	UCR11 v2
Frequency Bands						
GSM 900, 1800 MHz	✓	✓	✓	✓		✓
GSM 850, 1900 MHz	✓	✓	✓	✓		✓
UMTS (WCDMA/FDD) 900, 2100 MHz		✓	✓	✓		✓
UMTS (WCDMA/FDD) 850, 1900 MHz		✓	✓			✓
LTE 800, 900, 1800, 2100, 2600 MHz				✓		
CDMA 2000 400 MHz					✓	✓

Functions & Software Features

Conel routers enhanced functionality, incorporating self-diagnostics and a HW watchdog, ensure secure and consistent operation and ultra-reliable wireless connections.

For critical applications, these routers offer wireless redundancy through dual SIM failover with SMS and email messaging and control capability for remote alerts and resets. They support the most commonly used LAN/WAN network protocols and Conel's custom software allows for easy, flexible and effective networking and management.

Networking

- DHCP: automatic IP addressing in LAN network
- NAP/PAT: IP address and port translation
- Firewall: filtering of addresses, ports, protocols
- VRRP: virtual backup router function
- DynDNS client: access to the dynamic IP address
- VLAN 802.1Q: virtual LAN
- QoS: quality of service
- PPPoE Bridge: PPP over Ethernet Bridge mode
- Dial-in: communicate over dial CSD call
- NTP client, NTP server: time synchronization

2× SIM for all FULL version wireless routers

- Back-up by switching two independent mobile networks
- Switch when data limit is exceeded, when roaming is detected or by any other programmable option

VPN Tunneling

- IPSec, OpenVPN, PPTP, L2TP, EasyVPN, GRE
- Authentication by certificates, shared keys, name/password

Remote Router Supervision & Mass Network Management

- HTTP/HTTPS, Telnet/SSH for local and remote configuration and firmware updates
- Automatic configuration and firmware updates from FTP/HTTP server by schedule
- Up to 4 independent configuration profiles can be stored and remotely switched using scripts, SMS messages, I/O, etc.
- Additional software for easy networking and monitoring SmartCLUSTER and R-SeeNet

Diagnostics

- Detailed logs of operational information, including signal status and data traffic
- Signal level data, cell identifiers and data traffic are saved in router's memory for up to 2 months
- SNMP: router diagnostics, communication with I/O and MBUS
- LED indication: signal strength, connection status, ports

SMS & E-mail Info

- Information about status, connection or disconnection and many others
- SMS control: on/off connection, switching SIM, router profile, I/O
- SMS communication: AT commands (RS232 and TCP/IP), I/O or HTTP

Modular LINUX Software Environment

Open LINUX based system allows use of common LINUX commands, scripts and other features. Conel routers offer an extension of standard firmware with optional software plug-ins. You can create your own plug-in and simply apply it to the router. The router has 128kb non-volatile RAM memory, ready for data collection and processing applications.

Software Plug-ins

- Easy VPN client: secure, encrypted VPN
- Dynamic routing protocols: BGP, OSPF, RIP
- IGMP: multicast protocols
- MODBUS RTU/TCP gateway and mapping: convert data from RTU to TCP/IP format



Overview of Conel routers



ER75i v2

UR5i v2 Libratum

UR5i v2

LR77 v2

CR10 v2

UCR11 v2

XR5i v2

MOBILE WIRELESS NETWORK TECHNOLOGY

GPRS	✓	✓	✓	✓		✓	
UMTS/HSPDA		✓	✓	✓		✓	
UMTS/HSPA+		✓	✓	✓		✓	
LTE				✓			
CDMA 2000 1X, EV-DO Rev. A, B					✓	✓	
WAN ETHERNET	optional	optional	optional	optional	optional	optional	✓

COMMUNICATION INTERFACES AND EXPANSIONS

Ethernet 10/100	✓	2x	✓	✓	✓	✓	✓
Ethernet 10/100 3-port switch	optional		optional	optional	optional	optional	
Wi-Fi (IEEE 802.11 b, g, n)	optional	optional	optional	optional	optional	optional	optional
USB Host	✓		✓	✓	✓	✓	✓
RS232/RS422/RS485	optional		optional	optional	optional	optional	optional
MBUS, Wireless MBUS	optional		optional	optional	optional	optional	optional
I/O CNT	optional		optional	optional	optional	optional	optional
I/O CNT (1xIN/1xOUT)	✓		✓	✓	✓	✓	✓
GPS Receiver			optional	optional			

DESIGN, DIMENSIONS, SIM, ENVIRONMENTAL

Plastic Casing (50x83x116 mm)	optional	optional	optional	optional	optional	optional	optional
Metal Casing (42x80x113 mm)	optional	optional	optional	optional	optional	optional	optional
2xSIM Card	optional	✓	optional	optional		✓	
Antenna Rx Diversity		✓	✓	✓	optional	optional	
Power Supply 10V - 30V DC	✓	✓	✓	✓	✓	✓	✓
Op. Temperature -30 to +60°C	✓	+70°C	✓	✓	✓	✓	✓
DIN holder TS35/TS32	✓	✓	✓	✓	✓	✓	✓

FUNCTIONS

Linux	✓	✓	✓	✓	✓	✓	✓
IPSec (DES, 3DES, AES, MD5, SHA-1, DH2, DH5)	✓	✓	✓	✓	✓	✓	✓
OpenVPN, PPTP, L2TP, GRE	✓	✓	✓	✓	✓	✓	✓
Authentication (X.509 certificate, Pre-shared key, PW)	✓	✓	✓	✓	✓	✓	✓
EasyVPN	optional	optional	optional	optional	optional	optional	optional
Firewall	✓	✓	✓	✓	✓	✓	✓
DHCP	✓	✓	✓	✓	✓	✓	✓
NAT/PAT	✓	✓	✓	✓	✓	✓	✓
HTTP/HTTPS Server	✓	✓	✓	✓	✓	✓	✓
Telnet/SSH	✓	✓	✓	✓	✓	✓	✓
DynDNS	✓	✓	✓	✓	✓	✓	✓
FTP Server	✓	✓	✓	✓	✓	✓	✓
NTP Server, NTP Client	✓	✓	✓	✓	✓	✓	✓
SNMP	✓	✓	✓	✓	✓	✓	✓
VRRP	✓	✓	✓	✓	✓	✓	✓
SMTp, E-mail	✓	✓	✓	✓	✓	✓	✓
SMS Functions	✓	✓	✓	✓	✓	✓	✓
VLAN 802.1Q	✓	✓	✓	✓	✓	✓	✓
QoS, IGMP, BGP, OSPF, RIP	optional	optional	optional	optional	optional	optional	optional
PPPoE Bridge	✓	✓	✓	✓	✓	✓	✓
COM Port TCP/UDP server/client	✓	✓	✓	✓	✓	✓	✓
MODBUS RTU/TCP Gateway	optional		optional	optional	optional	optional	optional
4 Configuration Profiles	✓	✓	✓	✓	✓	✓	✓
Automatic Configuration and FW Update	✓	✓	✓	✓	✓	✓	✓

ADDITIONAL SOFTWARE SUPPORT

SW Plug-in Modules	✓	✓	✓	✓	✓	✓	✓
R-SeeNet	✓	✓	✓	✓	✓	✓	✓
Smart Cluster	✓	✓	✓	✓	✓	✓	✓

Smart Decisions Begin with Intelligent Management Software

R-SEENET

R-SeeNet - Monitoring & Management Software

R-SeeNet is the software system used for monitoring Conel routers. It continuously collects information from individual routers in the network and records the data into a SQL database. Then, it creates a visual form and reports of the information collected for the network administrator.

R-SeeNet consists of two parts:

- R-SeeNet Server**
 A server application that can be programmed to automatically send SNMP queries (Simple Network Management Protocol) to each router defined in the network. The application retrieves status information from the routers and records it in the SQL database.
- R-SeeNet PHP**
 A web-based application that accesses to the SQL database and provides the user or network administrator information about the status of individual routers, as well as about the status of the entire network.

Available Data

Everything you need to know about your network's current status as well as a historical view of the information transferred today, yesterday, this week, this month and last month.

- Signal strength
- Data traffic
- Response time
- Router availability
- Number of PPP connections
- Number of various channels connected
- Visual reports, tables and graphs
- Up to 2 months of past data for each router

The screenshot shows the R-SeeNet web application interface. At the top, there's a navigation bar with 'R-SeeNet' and 'Status' tabs. Below, there's a table with columns for 'Router ID', 'Description', 'IP Address', 'Signal Strength', 'Data Traffic', 'Response Time', 'Router Availability', and 'Number of PPP connections'. The table contains multiple rows of data, with some rows highlighted in yellow and red to indicate specific status levels. The interface also includes a sidebar with 'Device List' and 'Report' options.



SMARTCLUSTER

SmartCLUSTER - Internet VPN Portal

SmartCLUSTER is software designed to create safe communications systems while using a public network - the Internet. SmartCLUSTER is an OpenVPN server that offers three functions for the creation of safe private networks in a public environment.

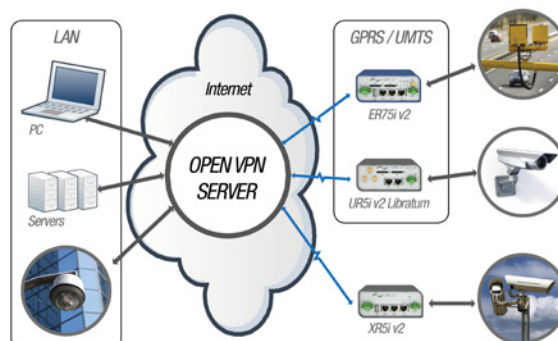
1. As an OpenVPN server it connects clients (Conel routers and end-user computers) via an OpenVPN tunnel. It creates communication links between individual tunnels and thereby enables individual devices to communicate with each other.

2. Based on the user-defined network configuration and connection parameters of VPN tunnels, SmartCLUSTER creates a configuration file for Conel routers and also creates secure certificates for both sides of the secured OpenVPN tunnel. This allows the user to install individual Conel routers easily into a virtual private network, confident the system is secure against attacks or unauthorised access.

3. SmartCLUSTER can be used as an instrument for basic network management through information on the connection status of individual routers.

The SmartCLUSTER solution

- SmartCLUSTER provides solutions for applications where you need to connect devices on local area networks (LANs), and a router. The router provides communication with the LAN and does not have a public internet IP address.
- SmartCLUSTER does solve problems relevant to network security and the secure connection of individual local networks.
- SmartCLUSTER solves the problem of how to connect devices which are behind routers with SIM cards belonging to various GSM/UMTS operators. It is also a great solution for devices located in various countries that use local tariffs without a roaming service, but use the SmartCLUSTER communication server.



For Mobile M2M, We're the Experts so You Don't Have to Be



*You build your business and we'll build your
communication solution. Whether you choose standard products or
require special designs for specific applications - consider Conel
your best mobile connection.*



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