Bus & Tramway

Wireless communication solutions for connected vehicles

ACKSYS
COMMUNICATIONS & SYSTEMS

Bus & Tramway

Connected vehicles...

To provide even more services and safety to users but also to manage their fleet efficiently, operators need to exchange real-time operating data in motion or at the depot/station (video surveillance, ticketing, passenger counting, PIS...) with buses and trams.

> ACKSYS RANGE OF RUGGED WiFi/CELLULAR ROUTERS ALLOWS A RAPID AND AUTOMATIC TRANSFER OF ALL THESE DATA.

To allow a reliable and simultaneous transfer of all these data coming from the various embedded equipment, ACKSYS' solution offers advanced security functions (firewall, VPN, radius...) and streams mutualization functions (routing, filtering, VLAN, QoS...).

Only one router per vehicle is required, simplifying deployment and reducing operating and maintenance costs.
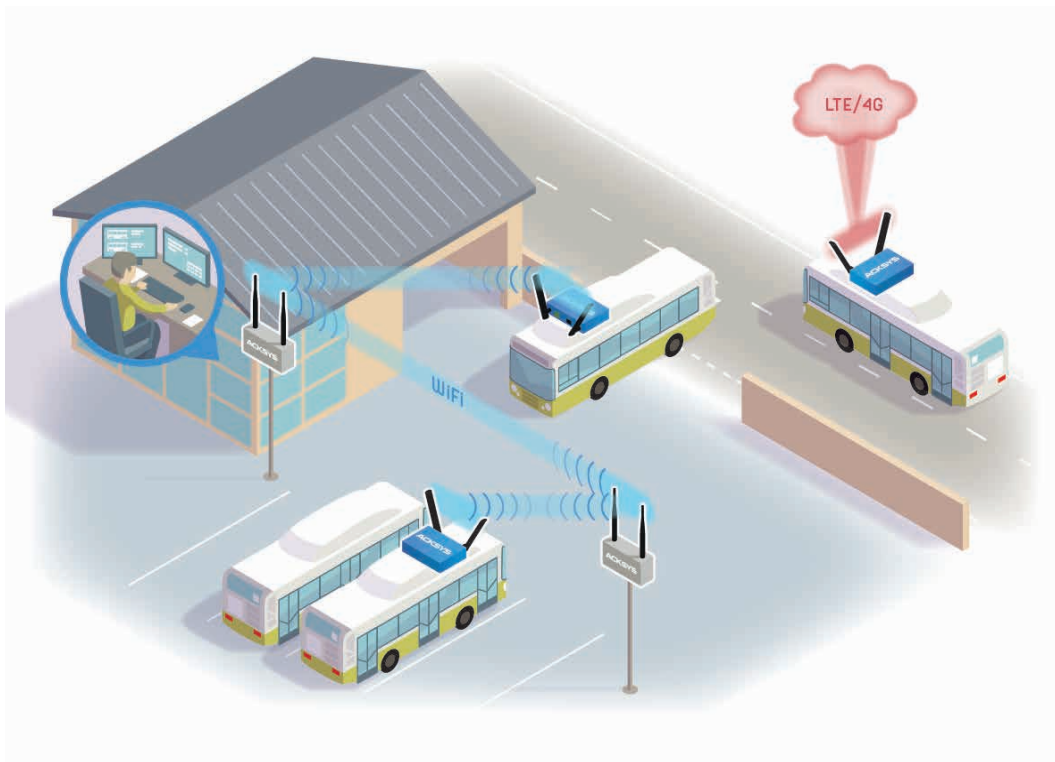
DIGITALIZATION OF TRANSPORT

BUS/TRAM & GROUND

DATA TRANSFER

... for an optimal quality of service

> ACKSYS RANGE OF RUGGED WiFi/CELLULAR ROUTERS ALLOWS A SEAMLESS DATA TRANSFER

ACKSYS devices offer auto-switch & failover capabilities between WiFi and cellular networks depending on available coverage thus ensuring a seamless data transfer.

In the specific case of trams, when the cellular network cannot provide a satisfactory level of service or when cellular communication costs become prohibitive (e.g: real-time CCTV, on-board entertainment...), ACKSYS is also able to propose a high availability WiFi infrastructure deployed along the track.

ACKSYS guarantees a high speed continuous and seamless connectivity thanks to its secured ground access points and its on-board WiFi clients (Connect Before Break technology guaranteeing a roaming in 0 ms and a rate of lost frames < 0.1%).

On-board/ground cellular communication

WiFi infrastructure (if cellular not adapted)
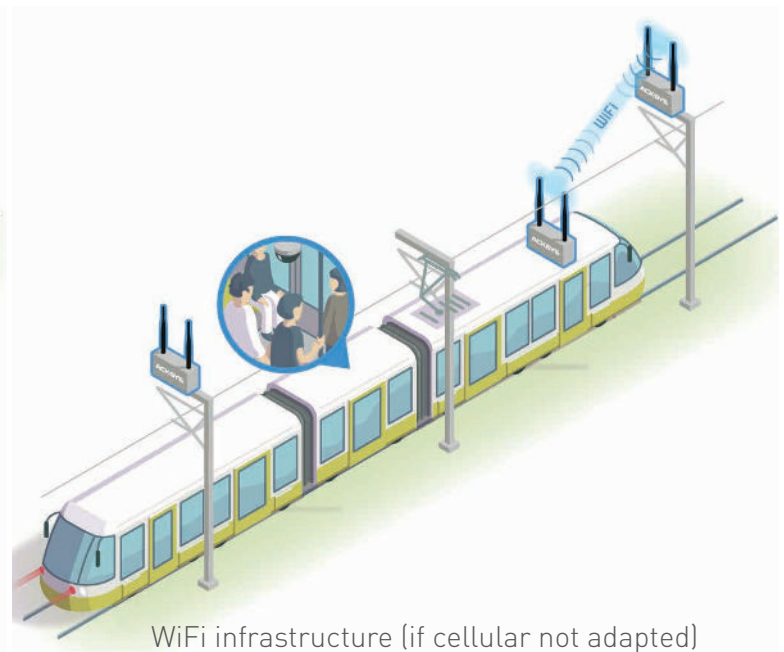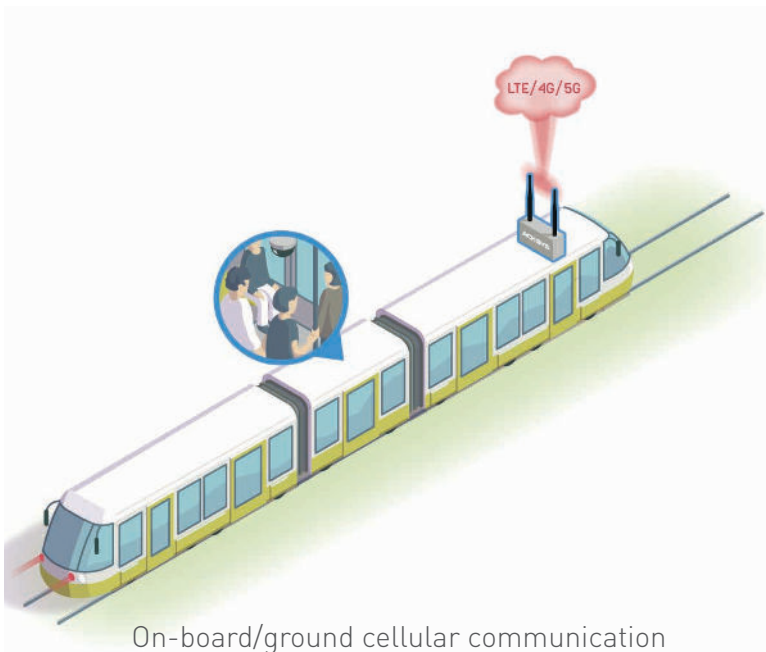
STREAMS MUTUALIZATION

WIFI <> CELLULAR SWITCHOVER

SEAMLESS CONNECTIVITY

> ## ACKSYS offers devices tailored for both **ground** and **onboard** use

SIMPLIFIED DEPLOYMENT

- Centralized administration (WaveManager software)
- Streams mutualization : a single embedded router, accessible to all the vehicle's equipment
- Identical IP addressing scheme in all vehicles without interconnection risks
- Mesh networks and multi-radios access points to simplify the deployment of the ground WiFi infrastructure

MOBILITY

- (WiFi) High-speed data transfer in motion (fast roaming <30 ms or 0 ms depending on models)
- Auto-switch & failover between WiFi and Cellular networks

SECURITY

- IEEE 802.1x (radius)
- Safe tunnels (OpenVPN, IPsec)

- Built-in firewall
- Network isolation (VLAN)...

PRODUCTS DESIGNED FOR TRANSPORT

- ITxPT : service inventory, NTP, GNSS
- Rugged solutions for on-board and ground-based WiFi infrastructures
- Extended operating temperature (up to -40°C and + 75°C depending on models)
- RJ45 or M12 connectors
- UTAC E2 - ECE R10 - compliant (buses)
- EN50155/EN50121-3-2 compliant (trams)
- EN61373 (shocks/vibrations)

HIGH BANDWIDTH SOLUTIONS

CENTRALIZED ADMINISTRATION

Cellular routers & WiFi access points
for public transportation

	AirWan	AirBox LTE	AirWan M12	RuggedAir	RailBox
Function	WiFi, cellular router + GNSS			WiFi router	WiFi, cellular router + GNSS
Market	BUS			TRAM - GROUND	TRAM
Certifications	ECE R10 & R118		ECE R10 & R118 EN50155 & EN45545	EN50155 & EN45545	
WiFi interface	802.11n 2.4 / 5 GHz			802.11ac 2.4 / 5 GHz	802.11ax 2.4 / 5 GHz
Cellular	4G LTE +GNSS	4G LTE Dual SIM +GNSS	4G LTE +GNSS	-	5G Dual SIM +GNSS

TECHNICAL CHARACTERISTICS

	AirWan	AirBox LTE	AirWan M12	RuggedAir	RailBox
Ethernet Interface	1 x 10/100/1000 + 1 x 10/100 RJ45	2 x 10/100/1000 RJ45	2 x 10/100 M12	2 x 10/100/1000 M12	2 x 100/1000/2500 M12
I/O	-	2 isolated inputs 2 isolated outputs	-	1 isolated input 1 isolated output	1 isolated input 1 isolated output
Dimensions (mm)	147 x 41 x 100	141.2 x 99 x 35	147 x 41 x 100	80 x 175 x 57	80 x 175 x 57
Power supply	7 to 48 VDC + PoE	Redundant 7 to 48 VDC + PoE	7 to 48 VDC	Redundant isolated 12 to 36 VDC + PoE	Redundant isolated 24 to 110 VDC or PoE+
Environment Operating temp IP rating	-20°C to +60°C IP40	-20°C to +60°C IP30	-20°C to +60°C IP40	-40°C to +70°C IP66	-25°C to +70°C or -40°C to +70°C IP66

FUNCTIONALITIES

	AirWan	AirBox LTE	AirWan M12	RuggedAir	RailBox
Roaming	WiFi < 30 ms and auto-switch & failover between WiFi and Cellular networks			WiFi < 30 ms	WiFi < 30 ms and auto-switch & failover between WiFi and Cellular networks
Security	SSID broadcast enable/disable, Firewall, VPN (Open VPN, IPsec), DoS, WIDS, HIDS, WPA2/ WPA3, 802.1X authentication, MAC filtering, Secure TLS/SSL administration (https), SNMP V3.				
Ethernet Routing	Multicast (PIM), IP redundancy (VRRP), NAT router, router.				
Ethernet Networking	ITxPT services, frames filtering, bridging, repeater, STP/RSTP, VLAN, WMM QoS, DHCP, DNS relay, DDNS.				
Administration	http, https, SNMP agent (V1, V2C, V3), WaveManager administration software, MQTT				
C-Key*	-	-	-	✓	✓

* Hardened memory key (configuration backup)

Why choose ACKSYS ?

> RELIABILITY AND ROBUSTNESS

ACKSYS' products are designed to be used in harsh environment, this is why their manufacturing components are carefully selected, controlled and submitted to endurance tests. They come with a 5-year or lifetime warranty.

> LONG LASTING PRODUCTS

In order to provide long lasting solutions to its customers, ACKSYS works closely with its suppliers to foresee any eventual obsolete products and thus back-up its product line to avoid any stock rupture. ACKSYS also pays attention to develop products compatible with existing solutions.

> RELEVANT SOLUTIONS

ACKSYS develops tailored solutions designed to fit its customers' specific business needs or unique application environment and is also able to adapt its products upon request. All ACKSYS' products are compliant with the standards in the various targeted markets.

> CUSTOMER SERVICE COMMITMENT

ACKSYS has developed a solid pre-sales and after-sales process to ensure that customers receive the highest level of support at every stage of their projects. ACKSYS commits to provide state-of-the-art technology, products and training to keep its customers and distributors in the forefront of communication solutions.

ACKSYS
COMMUNICATIONS & SYSTEMS

Since 1984, ACKSYS Communications & Systems has acquired a strong know-how in designing and manufacturing industrial data communication solutions (WiFi and cellular).

Its expertise and high quality standards allows it to meet the most severe requirements in transportation (rail & road), industrial (M2M, IIoT, automation), military, aeronautics, mining industry, oil & gas and environment (renewable energy, water, waste water).

Its teams - R&D, technical and commercial - welded and highly qualified can answer with precision the expectations of its customers and help them from the definition of their needs to the deployment on site. Thanks to a structured distribution network, ACKSYS is present on the five continents.

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