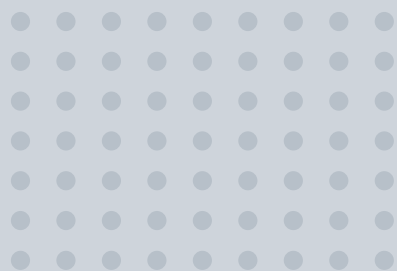


RAILWAY COMMUNICATION NETWORK SOLUTIONS



An **IRIS**[®] certification -certified company

Designed for Future Rail Applications

Lantech EN50155 certified Ethernet switches and routers

The conventional train communication networks (TCN) are facing several challenges to improve services, including the bandwidth limitations, devices' IP management, and integration. At the same time, the devices in railway systems often operate in a narrow and harsh environment with unique requirements such as cabling, power, and industry standards.

To ensure safety and efficiency of railway communication networks, Lantech designed a complete EN50155 Ethernet portfolio that focuses on speed, safety, mobility, quality, and durability for railway vehicles and systems.

Our solutions aim to help customers build railway communication networks that integrate displays, cameras, WLANs, and other devices in space-limited onboard environments easily and cost-effectively.

R-NAT & TTDP

R-NAT & TTDP are defined in IEC 61375 to build an Ethernet based TCN (Ethernet Consist Network). Lantech also developed DHCP for TTDP & VLAN for TTDP, providing a better solution for devices' IP management and VLAN applications.

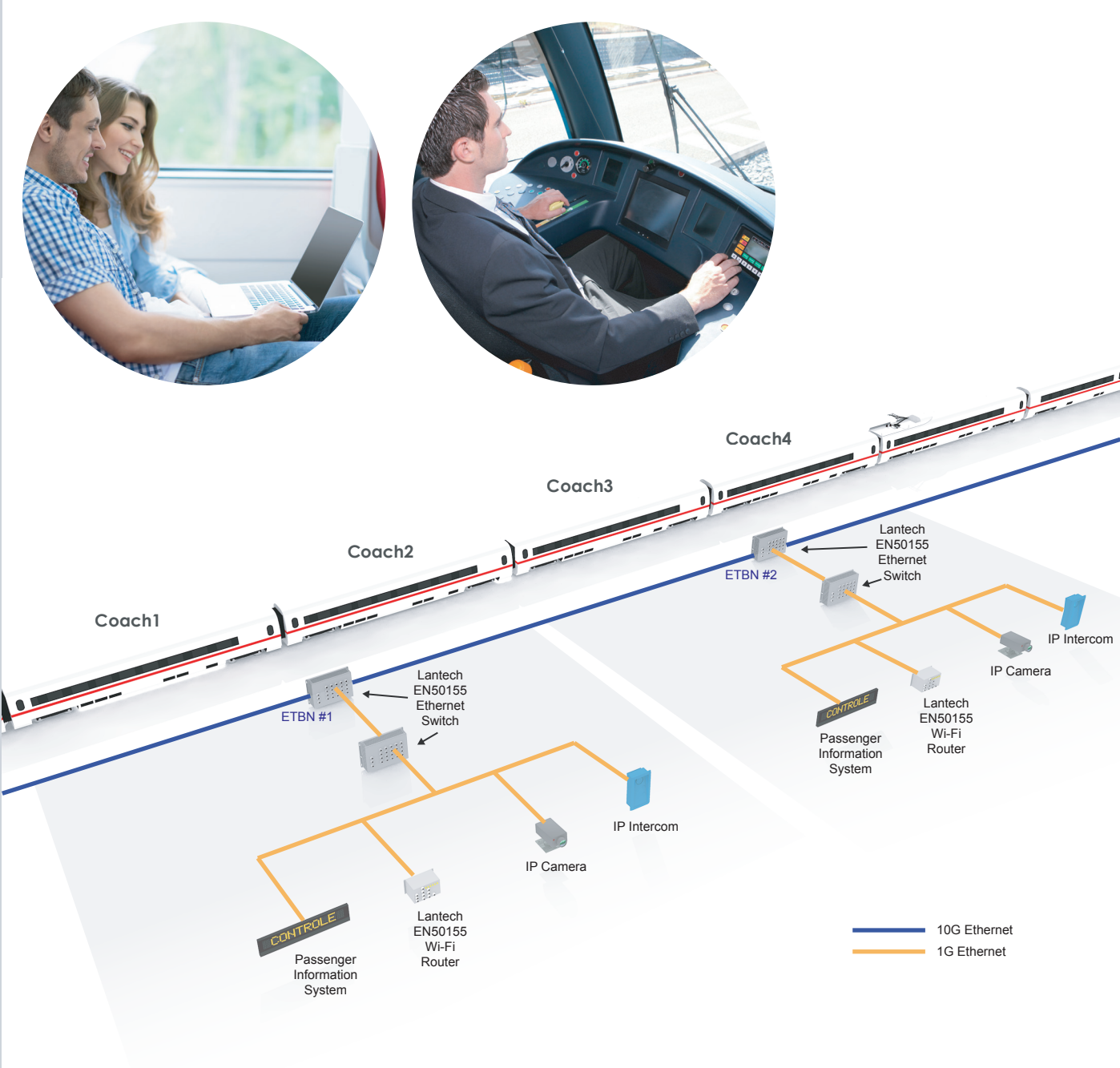
VLAN for TTDP
DHCP for TTDP

IEC 61375 2-5/3-4

The support of ECN (Ethernet Consist Network) allows interconnection between end devices located in a single consist of train and interoperability with IEC 61375-2-5 (TBN).

10G Fiber or Copper

Lantech EN50155 Ethernet switches come with up to 8X 10GbE speed uplink ports which make the series ideal for rail applications.



About Lantech

Lantech is an IRIS and ITxPT certified company focused on on-board EN50155 and E-Marking Ethernet switches and Wireless /LTE Routers development. Lantech is dedicated to transportation verticals where it covers onboard train/bus, stations, trackside, ITS and smart city. Lantech has been working together with key customers in effort to create up-to-date on-board passenger information, video security, track side data communications by providing rugged 10GbE, PoE Managed switches, LTE/ Wi-Fi Routers, ITxPT and E-mark certified solutions to fulfil various and critical requirements.



*Industrial-grade products

Software platform Layer 3

OS4 Platform
OS3 Platform

L3 includes all L3L features mentioned above plus the following features:

RIP v1/v2*

Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network.

PIM-DM/SSM*

Protocol-Independent Multicast (PIM) is a family of multicast routing protocols for Internet Protocol (IP) networks that provide one-to-many and many-to-many distribution of data over LAN, WAN or Internet. PIM Dense Mode (PIM-DM) uses dense multicast routing. It implicitly builds shortest-path trees by flooding multicast traffic domain wide, and then pruning back branches of the tree where no receivers are present. PIM Source-Specific Multicast (PIM-SSM) builds trees that are rooted in just one source, offering a more secure and scalable model for a limited number of applications (mostly broadcasting of content).

DVMRP*

Distance Vector Multicast Routing Protocol (DVMRP) is a routing protocol used to share information between routers to facilitate the transportation of IP multicast packets among networks.

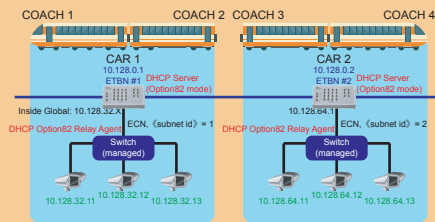


IEC 61375-2-5 DHCP for TTDP

OS4 Platform
OS3 Platform

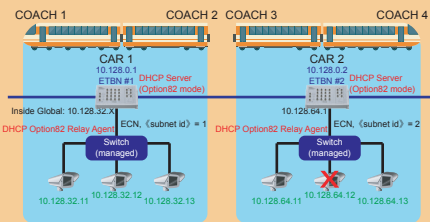
Scenario 1

When car 2 is replaced by a new car, the switch & devices on the new car can inherit the IP address



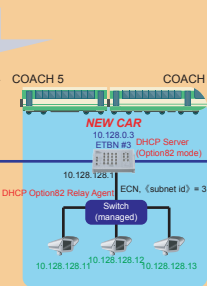
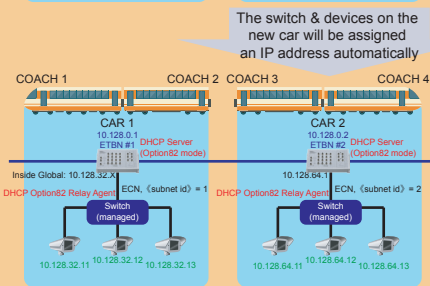
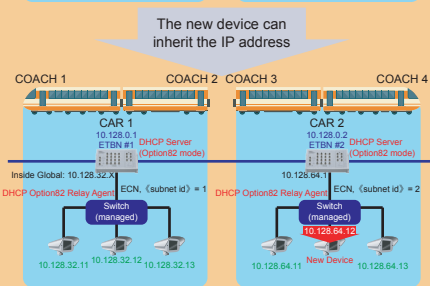
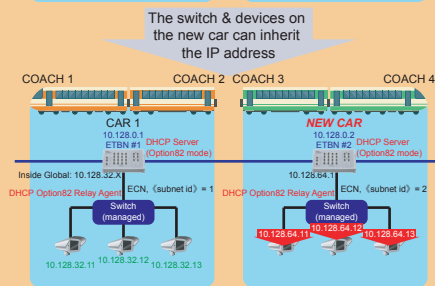
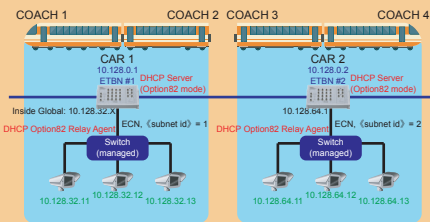
Scenario 2

When a broken device is replaced, the new device can inherit the IP address



Scenario 3

When a new train car is added, the switch & devices on the new car will be assigned an IP address automatically

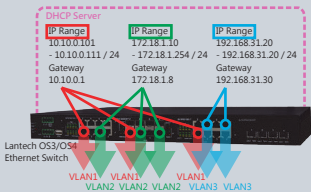


Software platform Layer 3 Lite

OS4 Platform
OS3 Platform

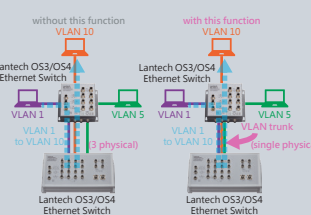
Inter-VLAN Routing

Route traffic between different VLAN by implementing a switch with routing function in the network.



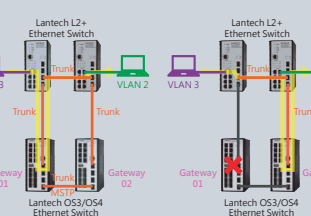
Router-on-a-stick

A type of routing configuration in which a single physical interface set as VLAN trunk port manages traffic between multiple VLANs from edge site.



VRRP

Provides automatic assignment of available VLAN gateways to participating hosts and increases the availability and reliability of VLAN routing paths via automatic default gateway selections on different VLAN groups.



Static route (Up to 32)

Set routing path manually, static routes are fixed and do not change if the network is changed or reconfigured.

Rescue mode

Offers repairing ability to repair operating system if the booting image of the switch is damaged.

PIM-SM

PIM Sparse Mode (PIM-SM) explicitly builds unidirectional shared trees rooted at a rendezvous point (RP) per group, and optionally creates the shortest-path trees per source. PIM Allow RP (Rendezvous Points) enable the receiving device to use its own RP to create state and build shared trees when a PIM Join is processed and a different RP is identified. Lantech switches support static RP client and dynamic RP address (BSR). BSR (Bootstrap) can let Lantech switch find address of RP automatically.

OSPF

Open Shortest Path First (OSPF) protocol is an Interior Gateway Protocol used to distribute routing information within a single Autonomous System.

TTDP (IEC61375-2-5)**

TTDP (Train Topology Discovery Protocol) can assign IP and Gateway IP automatically when train network topology is changed due to the adjustment of train cars.

Dual flash images

Provides independent primary and secondary operating system files for backup while upgrading.

Multiple configuration files

Stores easily to the flash image

Complete session logging

Provides detailed information for problem identification and resolution

SNMPv1, v2c, and v3

Facilitate centralized discovery, monitoring, and secure management of networking devices

SNMP MIB – RMON

Uses standard SNMP to monitor essential network functions; supports events, alarm, history, and statistics group plus a private alarm extension group

Command authorization

Leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail log activity.

Secure Web GUI

Provides a secure, easy-to-use graphical interface for configuring the module via HTTPS.

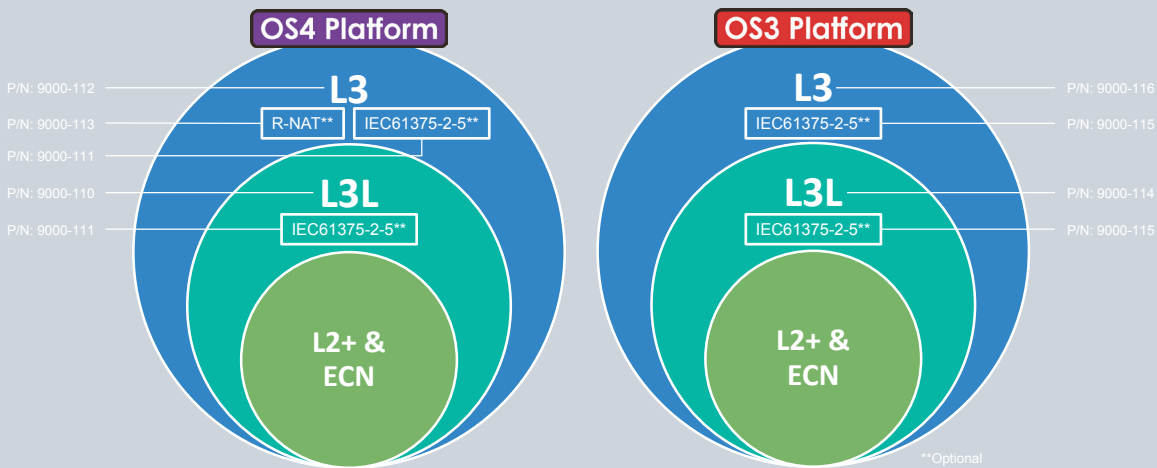
Under the DHCP standard, a DHCP server has to build a DHCP Pool for assigning the IP address for its DHCP clients and each DHCP client can get the IP within this Pool. The IP of the DHCP server must be fixed and be under the same network segment with the DHCP Pool since the DHCP protocol is designed for communication between client and server via broadcast packets. The TTDP standard only manages the switch's IP. The TTDP doesn't assign IPs to devices connected to the switch.

With Lantech's DHCP for TTDP technology, when the IP of the switch is re-assigned by TTDP due to train car changes, the switch will reserve a new IP automatically and compile a new DHCP Pool for its DHCP client. This technology ensures the DHCP client can connect to the new ECN (Ethernet Consist Network) network via IP. Lantech's DHCP for TTDP technology can also be combined with Port based DHCP or DHCP Option 82, which means, if the end device connected to the switch needs to be replaced, the new device can inherit the IP assigned by simply connecting it to the same switch port.

When a new train car is added, the switch will calculate automatically and add the domain for the new train car after the switch is rebooted.

*Future release
**Optional

OS3 OS4 Platform Comparison

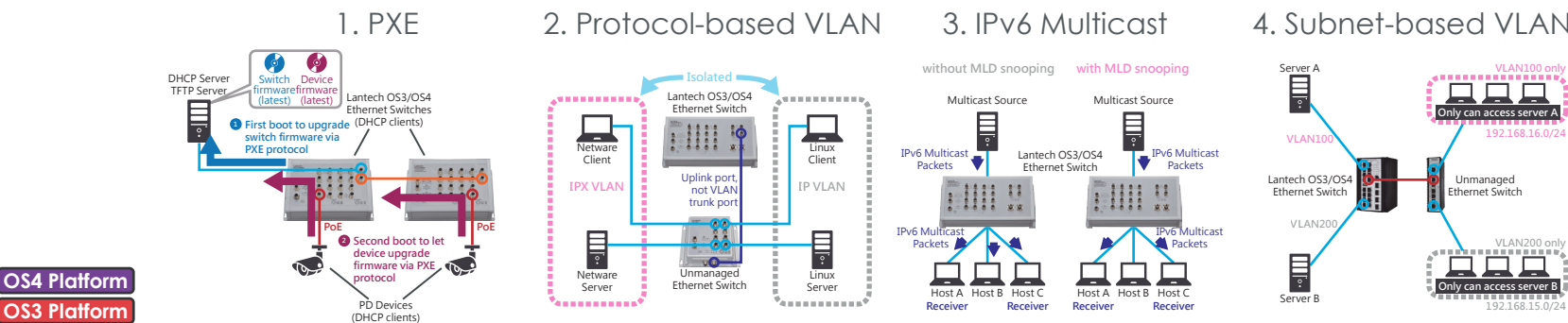


Layer 3 vs. Layer 3 Lite

	OS3 Platform	OS4 Platform
Unicast Routing: RIP	●	●
Unicast Routing: OSPF	●	●
Multicast Routing: DVMRP	●	●
Multicast Routing: PIM (DM)	●	●
Multicast Routing: PIM (SM)	● (RP&BSR)	● (client)
VRRP	●	●
VLAN routing	●	●

Ethernet Switches FEATURE HIGHLIGHTS

Software Advantage – Layer 2+



Real-time Environmental Monitoring

The enhanced environmental monitoring can detect when the switch's overall temperature, total PoE load, voltage or current are abnormal and it can send syslog or e-mail as a notification.

OS4 Platform
OS3 Platform

Firmware System Protection

The 4 mechanisms are designed to provide a more reliable firmware system: Boot Loader Protection, Dual Image, Rescue Mode, and NAND Flash Protection.

OS4 Platform
OS3 Platform

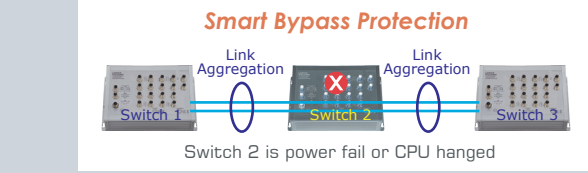
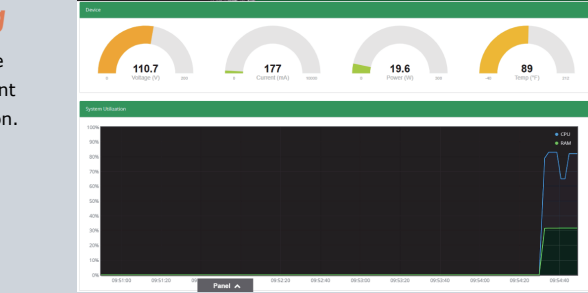
Smart Bypass Protection (Optional)

The bypass relay is set to bypass the switch to the next one when the power is off or the CPU hanged in order to prevent network disruption.

802.3at/af PoE
up to 30W per port

Wide voltage (isolated)
16.8~137.5VDC power input
(EN50155 Series)

Built-in power converter
12/24VDC boost up to 48VDC
(Industrial Series)




























Inrush current protection

10GbE connectivity to fulfill huge bandwidth requirement































USB port to upload & download the configuration file

EN50155 10G Uplinks Managed Ethernet Switches

OS4 Platform			
 <p>T(P)GS-R6804XFT 4 1G/2.5G + 6 10G copper + 2 10G Q-ODC fiber (w/8 PoE) EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-R6804XT 4 1G/2.5G + 8 10G copper (w/8 PoE) EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-R6804XFT 4 10/100TX + 6 10G copper + 2 10G Q-ODC fiber (w/8 PoE) EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-R6804XT 4 10/100TX + 8 10G copper (w/8 PoE) EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>
 <p>T(P)GS-R6616XFT 16 10/100/1000T (PoE at) + 4 10G copper + 2 10G Q-ODC fiber EN50155 OS4 Managed Switch</p> <div><div>6</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-R6616XT 16 10/100/1000T (PoE at) + 6 10G copper EN50155 OS4 Managed Switch</p> <div><div>6</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-R6416XFT 16 10/100/1000T (PoE at) + 2 10G copper + 2 10G Q-ODC Fiber EN50155 OS4 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-R6416XT 16 10/100/1000T (PoE at) + 4 10G copper EN50155 OS4 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>
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 <p>T(P)GS-L6416XFT 16 10/100/1000T (PoE at)+ 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-L6416XT 16 10/100/1000T (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-L6408XFT 8 10/100/1000T (PoE at) + 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-L6408XT 8 10/100/1000T (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>
 <p>T(P)GS-L6216XT 16 10/100/1000T (PoE at) + 2 10G Copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-L6216XF 16 10/100/1000T (PoE at) + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-L6208XT 8 10/100/1000T (PoE at) + 2 10G Copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-L6208XF 8 10/100/1000T (PoE at) + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>
 <p>T(P)ES-L6424XFT 24 10/100TX (PoE at) + 2 10G copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>24</div><div>24</div><div>USB</div></div>	 <p>T(P)ES-L6424XT 24 10/100TX (PoE at) + 4 10G copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>24</div><div>24</div><div>USB</div></div>	 <p>T(P)GS-L6416XFT 16 10/100TX (PoE at)+ 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L6416XT 16 10/100TX (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>
 <p>T(P)ES-L6408XFT 8 10/100TX (PoE at) + 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L6408XT 8 10/100TX (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L6216XFT 16 10/100TX (PoE at) + 2 10G copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L6216XF 16 10/100TX (PoE at) + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>
 <p>T(P)ES-L6208XT 8 10/100TX (PoE at) + 2 10G copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L6208XF 8 10/100TX (PoE at) + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	Model name (P) = PoE model	



EN50155 2.5G Uplinks Managed Ethernet Switches















OS4 Platform			
 <p>T(P)GS-R5804MGFT 4 10/100/1000T + 6 1G/2.5G copper + 2 1G/2.5G Q-ODC fiber w/8 PoE EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-R5804MGT 4 10/100/1000T + 8 1G/2.5G copper w/8 PoE EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-R5804MGFT 4 10/100TX + 6 1G/2.5G copper + 2 1G/2.5G Q-ODC fiber w/8 PoE EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-R5804MGT 4 10/100TX + 8 1G/2.5G copper w/8 PoE EN50155 OS4 Managed Switch</p> <div><div>8</div><div>4</div><div>8</div><div>USB</div></div>
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 <p>T(P)ES-R5616MGFT 16 10/100TX (PoE at) + 4 1G/ 2.5G copper + 2 1G/2.5G Q-ODC fiber EN50155 OS4 Managed Switch</p> <div><div>6</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-R5616MGT 16 10/100/1000T (PoE at) + 6 1G/2.5G copper EN50155 OS4 Managed Switch</p> <div><div>6</div><div>16</div><div>16</div><div>USB</div></div>	OS3 Platform	
 <p>T(P)GS-L5408MGFTA 8 10/100/1000T (PoE at) + 2 1G/ 2.5G Copper + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-L5408MGTA 8 10/100/1000T (PoE at) + 4 1G/2.5G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-L5216MGT 16 10/100/1000T (PoE at) + 2 1G/2.5G Copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)GS-L5216MGF 16 10/100/1000T (PoE at) + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>
 <p>T(P)GS-L5208MGTA 8 10/100/1000T (PoE at) + 2 1G/2.5G Copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)GS-L5208MGFA 8 10/100/1000T (PoE at) + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L5424MGFT 24 10/100TX (PoE at) + 2 1G/ 2.5G copper + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>24</div><div>24</div><div>USB</div></div>	 <p>T(P)ES-L5424MGT 24 10/100TX (PoE at) + 4 1G/2.5G copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>24</div><div>24</div><div>USB</div></div>
 <p>T(P)ES-L5416MGFT 16 10/100TX (PoE at) + 2 1G/ 2.5G Copper + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L5416MGT 16 10/100TX (PoE at) + 4 1G/2.5G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L5408MGFTA 8 10/100TX (PoE at) + 2 1G/ 2.5G Copper + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L5408MGTA 8 10/100TX (PoE at) + 4 1G/2.5G Copper EN50155 OS3 Managed Switch</p> <div><div>4</div><div>8</div><div>8</div><div>USB</div></div>
 <p>T(P)ES-L5216MGT 16 10/100TX (PoE at) + 2 1G/2.5G copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L5216MGF 16 10/100TX (PoE at) + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>16</div><div>16</div><div>USB</div></div>	 <p>T(P)ES-L5208MGTA 8 10/100TX (PoE at) + 2 1G/2.5G copper EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>	 <p>T(P)ES-L5208MGFA 8 10/100TX (PoE at) + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch</p> <div><div>2</div><div>8</div><div>8</div><div>USB</div></div>
Model name (P) = PoE model			



EN50155 Rackmount Ethernet Switches

OS3 Platform			
 T(P)GS-L6424XFTR 24 10/100/1000T (PoE at) + 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch <div>4 10G 24 GT 16 PoE USB</div>	 T(P)GS-L6424XTR 24 10/100/1000T (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch <div>4 10G 24 GT 16 PoE USB</div>	 T(P)GS-L6416XFTR 16 10/100/1000T (PoE at) + 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch <div>4 10G 16 GT 16 PoE USB</div>	 T(P)GS-L6416XTR 16 10/100/1000T (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch <div>4 10G 16 GT 16 PoE USB</div>
 T(P)GS-L6408XFTR 8 10/100/1000T (PoE at) + 2 10G Copper + 2 10G Q-ODC fiber EN50155 OS3 Managed Switch <div>4 10G 8 GT 8 PoE USB</div>	 T(P)GS-L6408XTR 8 10/100/1000T (PoE at) + 4 10G Copper EN50155 OS3 Managed Switch <div>4 10G 8 GT 8 PoE USB</div>	 T(P)GS-L5408MGFTR 8 10/100/1000T (PoE at) + 2 1G/ 2.5G Copper + 2 1G/2.5G Q-ODC fiber EN50155 OS3 Managed Switch <div>4 2.5G 8 GT 8 PoE USB</div>	 T(P)GS-L5408MGTR 8 10/100/1000T (PoE at) + 2 1G/2.5G Copper EN50155 OS3 Managed Switch <div>4 2.5G 8 GT 8 PoE USB</div>

EN50155 Giga Uplinks Managed Ethernet Switches

OS3 Platform			
 T(P)GS-L5016T 16 10/100/1000T (PoE at) EN50155 OS3 Managed Switch <div>16 GT 16 PoE USB</div>	 T(P)ES-L5408T 8 10/100TX (PoE at) + 4 Giga Copper Uplinks EN50155 OS3 Managed Switch <div>4 GT 8 TX 8 PoE USB</div>		
OS1 Platform			
 T(P)GS-5208GF 8 10/100/1000T (PoE at) + 2 1000FX L2+ EN50155 Managed Switch <div>2 Q-ODC 8 GT 8 PoE</div>	 T(P)GS-5010T 10 10/100/1000T (w/ 8 PoE at) L2+ EN50155 Managed Switch <div>10 GT 8 PoE</div>	 T(P)GS-5008T 8 10/100/1000T (PoE at) L2+ EN50155 Managed Switch <div>8 GT 8 PoE</div>	 T(P)ES-5416T 16 10/100TX (PoE at) + 4 10/100/1000T L2+ EN50155 Managed Switch <div>4 GT 16 TX 16 PoE</div>
 T(P)ES-5408T 8 10/100TX (PoE at) + 4 10/100/1000T L2+ EN50155 Managed Switch <div>4 GT 8 TX 8 PoE</div>	 I(P)GS-5008T 8 10/100/1000T (PoE at) L2+ EN50155 Managed Switch <div>8 GT 8 PoE</div>	 I(P)ES-5416T 16 10/100TX (PoE at) + 4 10/100/1000T L2+ EN50155 Managed Switch <div>4 GT 16 TX 16 PoE</div>	 I(P)ES-5408T 8 10/100TX (PoE at) + 4 10/100/1000T L2+ EN50155 Managed Switch <div>4 GT 8 TX 8 PoE</div>
 I(P)ES-5408S 8 10/100TX (PoE at) + 4 10/100/1000T L2+ EN50155 Managed Switch <div>4 GT 8 TX 8 PoE</div>	 I(P)ES-5208DF 8 10/100TX (PoE at) + 2 100/1000FX L2+ EN50155 Managed Switch <div>2 FX 8 TX 8 PoE</div>	<div>Learn more</div> 	

Model name (P) = PoE model

EN50155 Unmanaged Ethernet Switches

Product Line-ups			
 T(P)ES-0216T 16 10/100TX (PoE at) + 2 10/100/1000T EN50155 Unmanaged Switch <div>2 GT 16 TX 16 PoE</div>	 T(P)ES-0212T 12 10/100TX (PoE at) + 2 10/100/1000T EN50155 Unmanaged Switch <div>2 GT 12 TX 12 PoE</div>	 T(P)ES-0210T 10 10/100TX (PoE at) + 2 10/100/1000T EN50155 Unmanaged Switch <div>2 GT 10 TX 10 PoE</div>	 T(P)ES-0016T 16 10/100/1000T (PoE at) + 2 10/100/1000T EN50155 Unmanaged Switch <div>16 TX 16 PoE</div>
 T(P)GS-0010T 10 10/100/1000T (8 PoE at) EN50155 Unmanaged Switch <div>10 GT 8 PoE</div>	 T(P)GS-0208GF 8 10/100/1000T (PoE at) + 2 1000FX EN50155 Unmanaged Switch <div>2 Q-ODC 8 GT 8 PoE</div>	 T(P)GS-0008CA 8 10/100/1000T (PoE at) EN50155 Unmanaged Switch <div>8 GT 8 PoE</div>	 T(P)ES-0008CA 8 10/100TX (PoE at) EN50155 Unmanaged Switch <div>8 TX 8 PoE</div>
 I(P)ES-0208GF 8 10/100TX (PoE at) + 2 1000FX EN50155 Unmanaged Switch <div>2 FX 8 TX 8 PoE</div>	 I(P)ES-0208T 8 10/100TX (PoE at) + 2 10/100/1000T EN50155 Unmanaged Switch <div>2 GT 8 TX 8 PoE</div>	 I(P)ES-0008A 8 10/100TX (PoE at) EN50155 Unmanaged Switch <div>8 TX 8 PoE</div>	 I(P)ES-0008B 8 10/100TX (PoE at) EN50155 Unmanaged Switch <div>8 TX 8 PoE</div>
 I(P)ES-0005B 5 10/100TX (PoE at) EN50155 Unmanaged Switch <div>5 TX 5 PoE</div>	 IPES-0101T 1 10/100TX (PoE at) + 1 10/100TX EN50155 Unmanaged Switch <div>2 TX 1 PoE</div>		
		Learn more 	

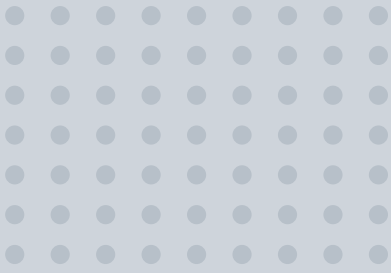
Model name (P) = PoE model

EN50155 Power Protector

Product Line-ups	
 Power Protector <ul style="list-style-type: none">Power input voltage protectionPower input polarity protectionInrush current protectionEnhance Surge protectionEnhance EFT protection	Learn more  (Coming Soon)

Multi-function Routers

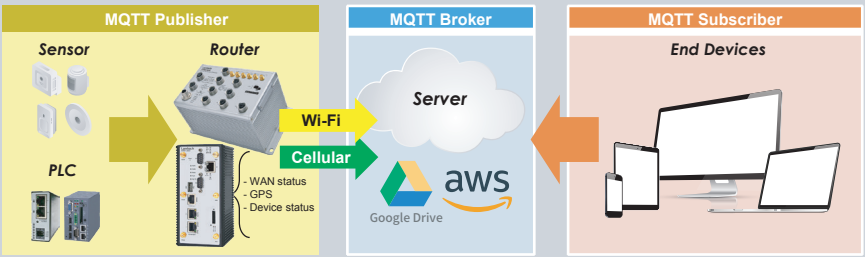
FEATURE HIGHLIGHTS



MQTT

Message Queuing Telemetry Transport

MQTT is designed for connections with remote locations where a "small code footprint" is required or the network bandwidth is limited. So, it's ideal for IIoT applications and the latest trends in automation engineering. MQTT is a publish-subscribe-based messaging protocol and works on top of the TCP/IP protocol. An MQTT system comprises one broker and several clients, where clients can either be publishers or subscribers. The publishers send data to the broker in the form of MQTT packets, which consist of a "topic" and "payload", then the broker distributes the "payload" to the subscribers based on which "topics" they have subscribed.

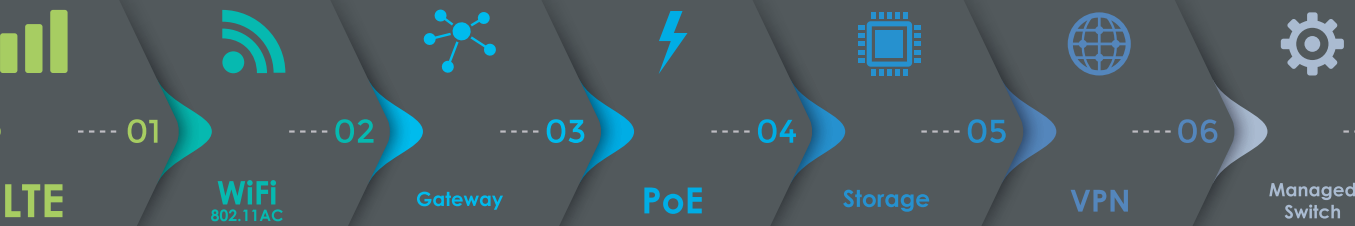


- Benefits**
- Narrow network bandwidth and small power loss requirements
 - A lightweight and reliable binary communication protocol between the sensor and the satellite
 - Suitable for IoT devices with limited processor resources and network bandwidth

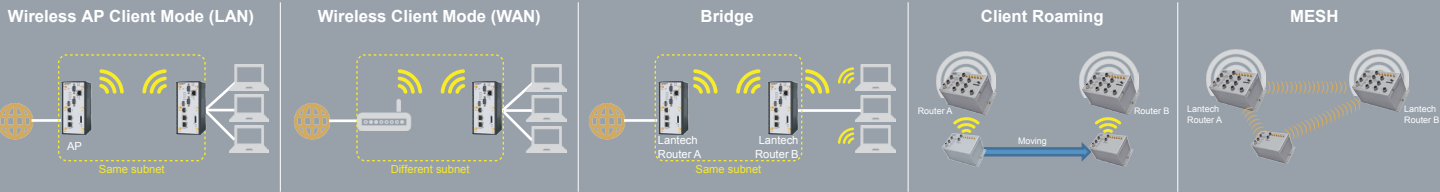
"Lantech's routers are able to publish the messages of device information, WAN status, GPS location and hardware monitor."

7in1 7-in-1 Multifunction

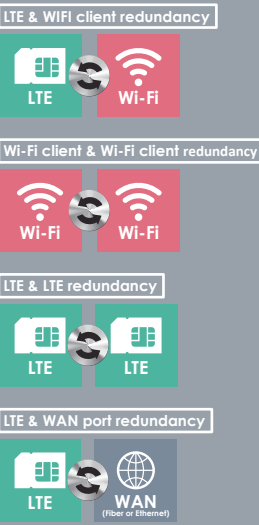
Lantech 7-in-1 EN50155 multi-function VPN routers are designed for on onboard rolling stock applications, providing advanced features and powerful performance for future rail.



5-in-1 Wireless Modes

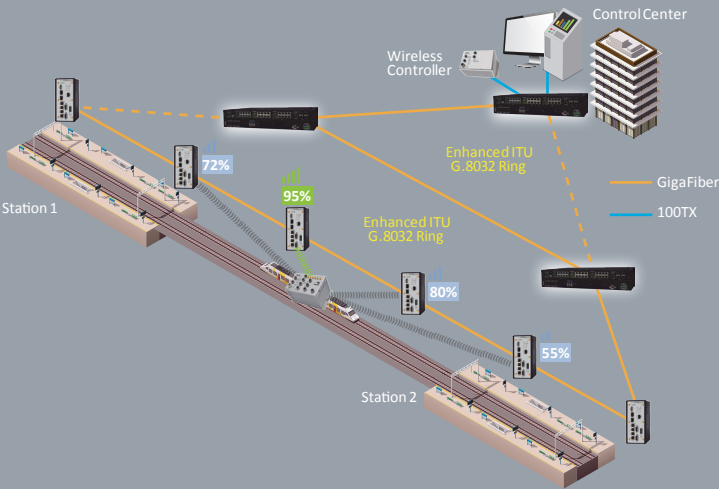


Highly Redundancy

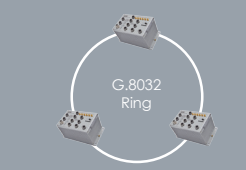


Wireless Client Roaming

Lantech router supports client-base roaming to swap between the APs in a network.

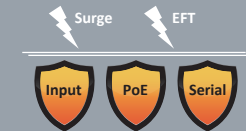


LAN Ethernet Ring Redundancy

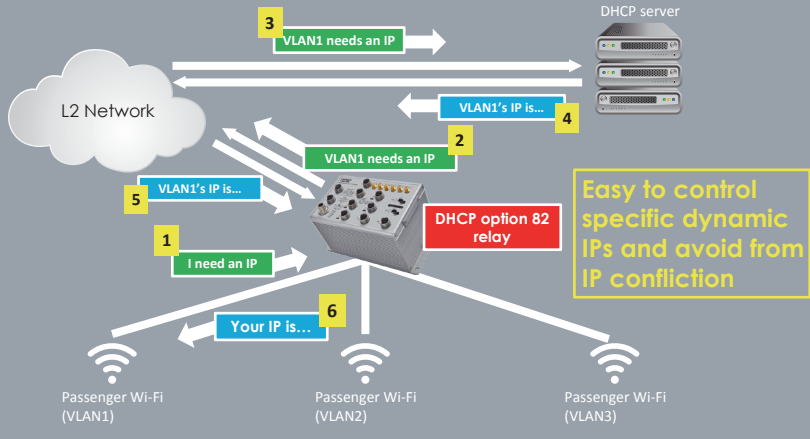


Double Isolation

Double isolation design to minimize the risk of surge, EFT at input, PoE and serial ports.



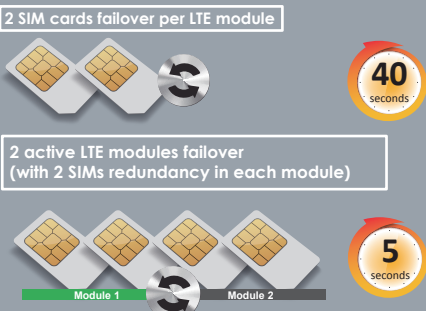
Work as DHCP option 82 relay



SIM Redundancy

With one mobile LTE module (1L model), 2 SIM card slots, the series provides redundant link between two service providers.

With dual LTE module design (2L model), 4 SIM card slots, the series allows auto-swap, failover & fallback between multiple service providers for real non-stop connection.



Full VPN support

- OpenVPN
- IPSec
- Multi-site VPN
- L2TP over IPSec
- L2 over GRE
- IPGRE MDVPN

DDoS & Firewall

Lantech's DDoS protection can effectively block all kinds of DDoS attacks.

- ✓ UDP Flood
- ✓ TCP SYN Flood
- ✓ ICMP Flood
- ✓ Ping of death
- ✓ Distributed HTTP flood

QoS on WAN

By port: Filter by application
By protocol: Filter by protocol



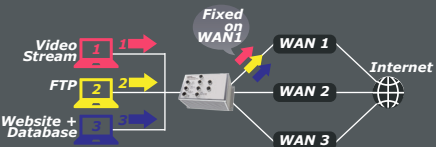


Load balancing on WAN ports

With 5 different schemes for load balancing, Lantech routers can prioritize different data requirements with different paths for maximum performance of the bandwidth available.

Fixed

All traffic will be distributed to a single WAN.



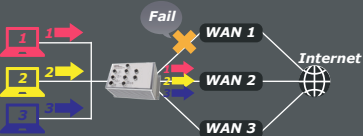
Priority

Select the active WAN according to priority.



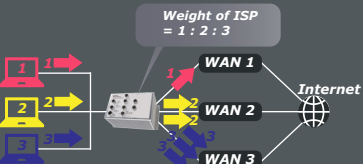
Fail Over

Routes connections through preferred WAN link while others stand-by. Sequentially activating another link if the preferred link fails.



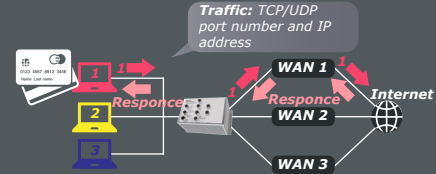
Weighted Round-Robin

Even distribution of the traffic over all working WAN links in circular order according to the specified weights.



Custom Route

Routing through the selected WAN links for each specific traffic, ex: TCP/UDP port number and IP address.



Built-in Managed Switch Function

Managed switch function is built-in and provides various L2+ functions for network access deployment. It delivers ports and PoE management, VLAN, QoS, multicast, redundant ring, and security functions.



EMMC Flash storage (Optional)

The optional EMMC flash storage on the router can offer 8G/16G/32G capacity.



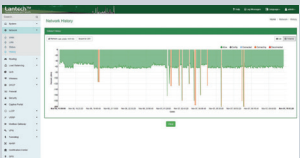
Smart Bypass Protection (Optional)

The optional bypass relay is set to bypass the router to the next one when power is off in order to protect the network from crashing.



Graphical Wi-Fi & LTE signal strength

The graphic WIFI & LTE signal strength shows connection status at a glance.



Optional eSIM chip enables router with versatile data plans



IEEE 802.311ac Dual Band Operation



Support Routing Protocol: Static route / RIPv2 / OSPF / BGP / EIGRP



Environmental monitoring for inside router info& alerting



802.3at/af PoE up to 30W per port



Wide voltage (isolated) 16.8~137.5VDC power input (WV models)



Built-in power converter 12/24VDC boost up to 48VDC (12V/24V models)



USB port to backup, restore the configuration file and upgrade firmware

Product Line-ups

4G LTE + Wi-Fi Multifunction Routers

Embedded Module Slots X3			Embedded Module Slots X2		Embedded Module Slots X3	
T(P)WMR-5208MGF EN50155 Multifunction VPN Router w/up to 2 WiFi 11ac + up to 2 LTE 4G + 8 GigaT + 2 1G/2.5G Fiber	T(P)WMR-5208MGT EN50155 Multifunction VPN Router w/up to 2 WiFi 11ac + up to 2 LTE 4G + 8 GigaT + 2 1G/2.5G Copper	T(P)WMR-5008 EN50155 Multifunction VPN Router w/up to 2 WiFi 11ac + up to 2 LTE 4G + 8 GigaT Ethernet + 4 serial ports	T(P)WMR-5006 EN50155 Multifunction VPN Router w/1 WiFi 11ac + 1 LTE 4G + 2 serial ports + 6 GigaT	T(P)WMR-5004 EN50155 Multifunction VPN Router w/1 WiFi 11ac + 1 LTE 4G + 2 serial ports + 4 GigaT + 2WAN	TWMR-5002 EN50155 Multifunction VPN Router w/1 WiFi 11ac + 1 LTE 4G + 2 serial ports + 2 GigaT (incl.1 PD)	IWMR-3003(-M12) Industrial Multifunction VPN Router w/up to 2 WiFi 11ac + up to 2 LTE 4G + 2/4 serial ports + 3 GigaT
8 GT, 2 Q-ODC, 8 PoE, USB, 2 WAN	8 GT, 2 2.5G, 8 PoE, USB, 2 WAN	8 GT, 8 PoE, USB, 4 Serial	6 GT, 4 PoE, USB, 2 Serial	4 GT, 4 PoE, USB, 2 Serial, 2 WAN	2 GT, 1 PD, 2 Serial, USB	3 GT, 1 PD, 4 Serial, USB

4G LTE Multifunction Routers

Embedded Module Slots X3			Embedded Module Slots X2		Embedded Module Slots X3	
T(P)MR-5208MGF EN50155 Multifunction VPN Router w/up to 3 LTE 4G + 8 GigaT + 2 1G/2.5G Fiber	T(P)MR-5208MGT EN50155 Multifunction VPN Router w/up to 3 LTE 4G + 8 GigaT + 2 1G/2.5G Copper	T(P)MR-5008 EN50155 Multifunction VPN Router w/up to 3 LTE 4G + 8 GigaT Ethernet + 4 serial ports	T(P)MR-5006 EN50155 Multifunction VPN Router w/2 LTE 4G + 2 serial ports + 6 GigaT	T(P)MR-5004 EN50155 Multifunction VPN Router w/2 LTE 4G + 2 serial ports + 4 GigaT + 2WAN	TMR-5002 EN50155 Multifunction VPN Router w/2 LTE 4G + 2 serial ports + 2 GigaT (incl.1 PD)	IMR-3003(-M12) Industrial Multifunction VPN Router w/2 LTE 4G + 2/4 serial ports + 3 GigaT
8 GT, 2 Q-ODC, 8 PoE, USB, 2 WAN	8 GT, 2 2.5G, 8 PoE, USB, 2 WAN	8 GT, 8 PoE, USB, 4 Serial	6 GT, 4 PoE, USB, 2 Serial	4 GT, 4 PoE, USB, 2 Serial, 2 WAN	2 GT, 1 PD, 2 Serial, USB	3 GT, 1 PD, 4 Serial, USB

Wi-Fi Multifunction Routers

Embedded Module Slots X3			Embedded Module Slots X2		Embedded Module Slots X3	
T(P)WAP-5208MGF EN50155 Multifunction VPN Router w/up to 3 WiFi 11ac + 8 GigaT + 2 1G/2.5G Fiber	T(P)WAP-5208MGT EN50155 Multifunction VPN Router w/up to 3 WiFi 11ac + 8 GigaT + 2 1G/2.5G Copper	T(P)WAP-5008 EN50155 Multifunction VPN Router w/up to 3 WiFi 11ac + 8 GigaT Ethernet + 4 serial ports	T(P)WAP-5006 EN50155 Multifunction VPN Router w/2 WiFi 11ac + 2 serial ports + 6 GigaT	T(P)WAP-5004 EN50155 Multifunction VPN Router w/2 WiFi 11ac + 2 serial ports + 4 GigaT + 2WAN	TWAP-5002 EN50155 Multifunction VPN Router w/2 WiFi 11ac + 2 serial ports + 2 GigaT (incl.1 PD)	IWAP-3003(-M12) Industrial Multifunction VPN Router w/2 WiFi 11ac + 2/4 serial ports + 3 GigaT
8 GT, 2 Q-ODC, 8 PoE, USB, 2 WAN	8 GT, 2 2.5G, 8 PoE, USB, 2 WAN	8 GT, 8 PoE, USB, 4 Serial	6 GT, 4 PoE, USB, 2 Serial	4 GT, 4 PoE, USB, 2 Serial, 2 WAN	2 GT, 1 PD, 2 Serial, USB	3 GT, 1 PD, 4 Serial, USB

*M12 model does not support serial ports.

EN50155 NAT Routers

T(P)GR-5208MGF-2WAN 8 10/100/1000T + 2 1G/2.5G Q-ODC Fiber + 2 1G/2.5G WAN EN50155 L2+ Managed Ethernet Router	T(P)GR-5208MGT-2WAN 8 10/100/1000T + 2 1G/2.5G Copper + 2 1G/2.5G WAN EN50155 L2+ Managed Ethernet Router
8 GT, 2 Q-ODC, 8 PoE, USB, 2 WAN	8 GT, 2 2.5G, 8 PoE, USB, 2 WAN

Model name (P) = PoE model



Learn more



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