Homeland Security Solutions

Homeland Security - RAD Solutions

Many organizations in the public and private sectors today require Homeland Security (HLS) systems: Defense agencies and defense industries, overseers of vital state assets, government ministries, municipalities, transportation companies, enterprises, and large campuses. Utilizing its vast experience in networking, wireless, video, audio, computing and information security for the defense sector, RAD has the solutions and the capability to design, integrate and customize leading products into end-to-end, turn-key, worldwide HLS projects. Our solutions for the HLS market include Video Surveillance, Access Control, Mobile Surveillance Systems, and Command & Control and Emergency Centers.

As HLS moves towards modern IP solutions, RAD has all the IP Surveillance Systems to support capturing, storing, viewing and responding to events, using the IP network as the platform.

Video Surveillance

RAD Video Surveillance solutions enable control and protection of an organization's assets and the safety of people through:

* Access to video (real-time wide-scale cameras and offline recorded video from NVR/DVRs) at any time from any place, enabling real time incident response, investigation and resolution.

* Dynamic **Video Management System (VMS)** for HLS platforms provides IP based network Video Analytics and surveillance solutions.

* Scalable, open, standards-based infrastructure, which enables the deployment and control of new security applications

* Leveraging existing investments in video surveillance and physical security technology.

HLS Command & Control and Emergency Centers

The purpose of "HLS Command & Control and Emergency Centers" is to improve operational effectiveness of Disaster-Response management by means of a technical solution, which provides control over every event in the area by inter-force cooperation. Solutions are based on technologies that provide full connectivity of the HLS center to all necessary organizations/units with the ability to receive all the information (data, voice, radio and video) and operate in synchronization with all the units. This includes stationary and mobile surveillance systems.

The major components of HLS Command & Control and Emergency Centers are Public Safety Answering Point (PSAP), dispatch systems, unified communication systems, computing systems, security systems and Emergency Operations Center (EOC) applications.
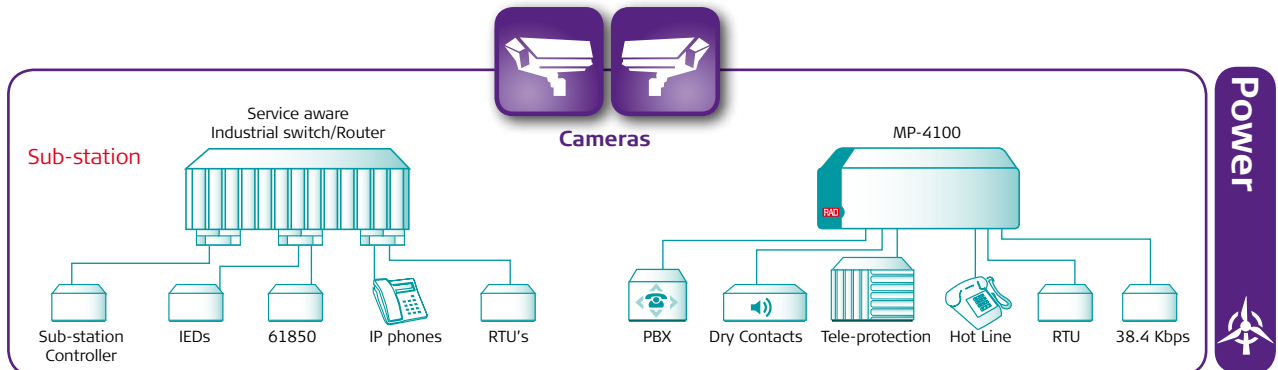
The use of IP systems in the HLS Command & Control and Emergency Centers provides flexibility in provisioning and mobilizing resources, support of various intelligence sources and convenient and easy management.

Finally, Mobile Surveillance Systems demand higher bandwidth than in the past. An example of such an application is mobile patrol vehicles (manned or unmanned) that continue to receive inputs from sensors, such as video cameras and data/video streams, from HLS Command & Control and Emergency Centers at high vehicle speeds.

HLS Applications

Power Plant Sub-station Security

Sub-station

Service aware Industrial switch/Router

Cameras

MP-4100

| Sub-station Controller | IEDs | 61850 | IP phones | RTU's | | PBX | Dry Contacts | Tele-protection | Hot Line | RTU | 38.4 Kbps |

On December 2008, the European Union issued a modified Council Directive (No. 2008/114/EC), on the identification and designation of European critical infrastructures and an assessment of the need to improve their protection. Power companies are a major critical infrastructure that is subject to this directive.

RAD provides multiservice aggregation devices, which allow smooth migration of legacy interfaces in the sub-station, such as RTU, SCADA, voice and Teleprotection, to a new packet-based core network. RAD also offers an industrial switch/router with integrated service aware firewall to handle the new 61850 IEDs. Both products enable connectivity to surveillance IP cameras as part of

the protection solution provided to prevent and identify threats.

RAD's HLS solution supports full video management and Command & Control and Emergency Centers. Real-time communication to each site over wireless, mobile and fixed line links enable two-way communications in case of an event and the ability to analyze and react as quickly as possible
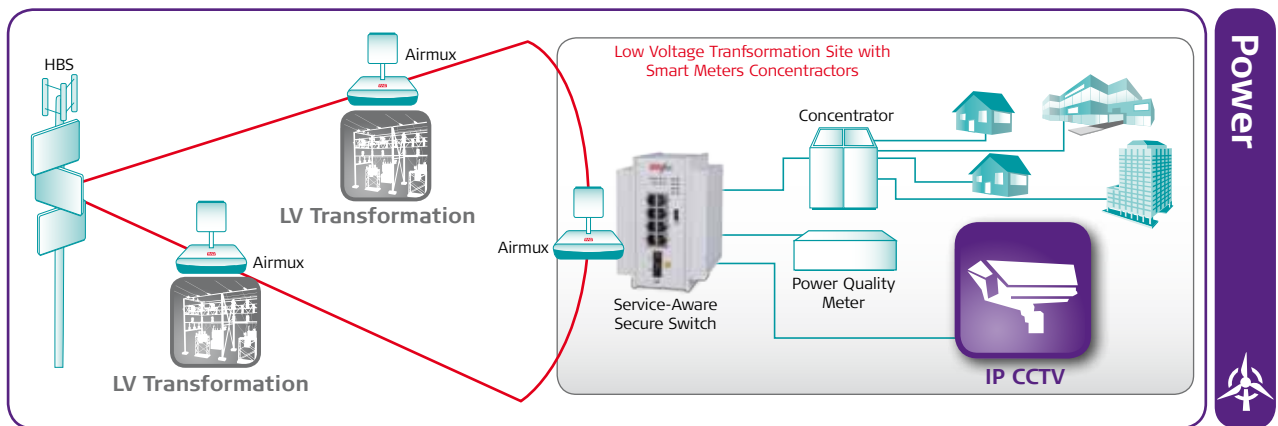
One service-aware switch replaces:

• Sub-station switch (61850)   • Firewall   • Serial gateway

Megaplex-4100:

• Migration to PSN   • Legacy interfaces   • TPoPSN

Smart Grid Low-Voltage Transformer Site Security

HBS

Airmux

Airmux

LV Transformation

Airmux

LV Transformation

Low Voltage Tranformation Site with Smart Meters Concenctractors

Concentrator

Service-Aware Secure Switch

Power Quality Meter

IP CCTV

One result of the evolution to Smart Grids is the deployment of Smart Meters in residential areas. These meters enable bi-directional communications with the power control systems and billing applications.

The meters' data concentrators are located mostly in the low-voltage transformer sites of the power distribution companies, installed in outdoor cabinets or on top of poles.

RAD supplies an industrial switch with a service aware firewall, which can aggregate traffic from the meters' concentrators and additional data appliances such as power

quality meters and more. Communication to those switches is generally supplied by point to multipoint radio systems, or via fiber, copper or cellular links. However, since these locations are vulnerable to possible intrusion and malicious penetration of the operator network, deployment of an HLS system is essential.

RAD's HLS Command & Control and Emergency system addresses potential and actual threats to those sites by providing a comprehensive solution for video coverage and real time control and reaction.

# Highway Security and Traffic Control
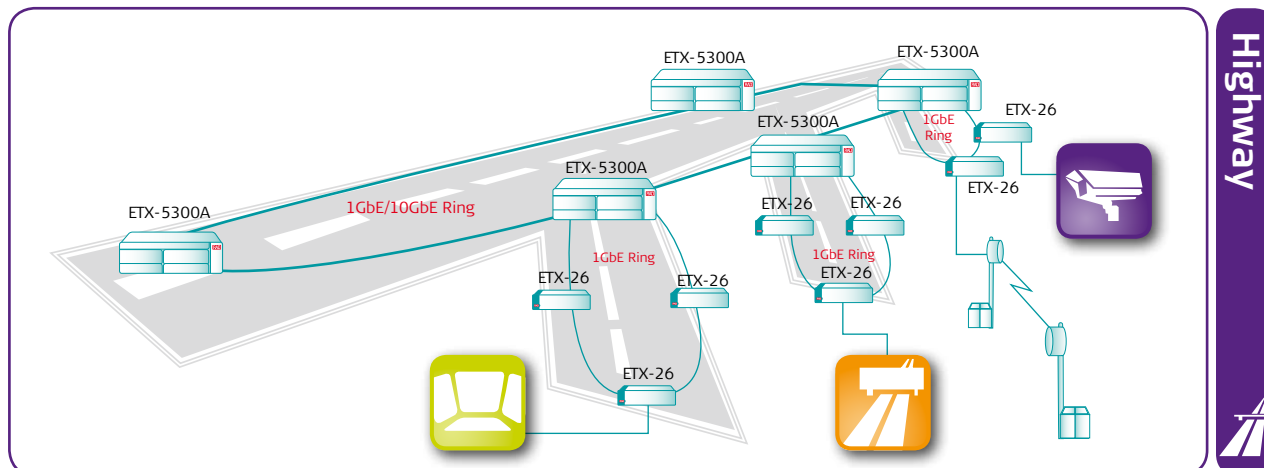
Highway communications solutions must support a multitude of equipment requirements and growing bandwidth needs. In addition to data from traffic control systems and information signs, there is an increase in traffic from high quality real-time surveillance video.

RAD supplies Ethernet core network solutions over fiber, copper, wireless and mobile links to address the diverse communications requirements and interfaces of various roadside data and voice transmission equipment. These solutions are based on a mix of Ethernet switches with protected rings of up to 10Gbps and fiber or copper modems, which enable connectivity of remote cameras or electronic

messaging signs. Where wireless backup is required or fixed line communications is not possible, RAD offers a router with 3G communications capabilities.

RAD's industrial switch/routers are engineered to meet the rigid environmental conditions and outdoor requirements of highway communications devices. RAD's complete HLS system offering includes cameras for day and night vision, fully controlled by RAD's Video Management System and the HLS Command & Control and Emergency System, providing a one-stop shop for all highway authority communications, security and control needs.

Oil and Gas Pipelines and Drilling Platforms
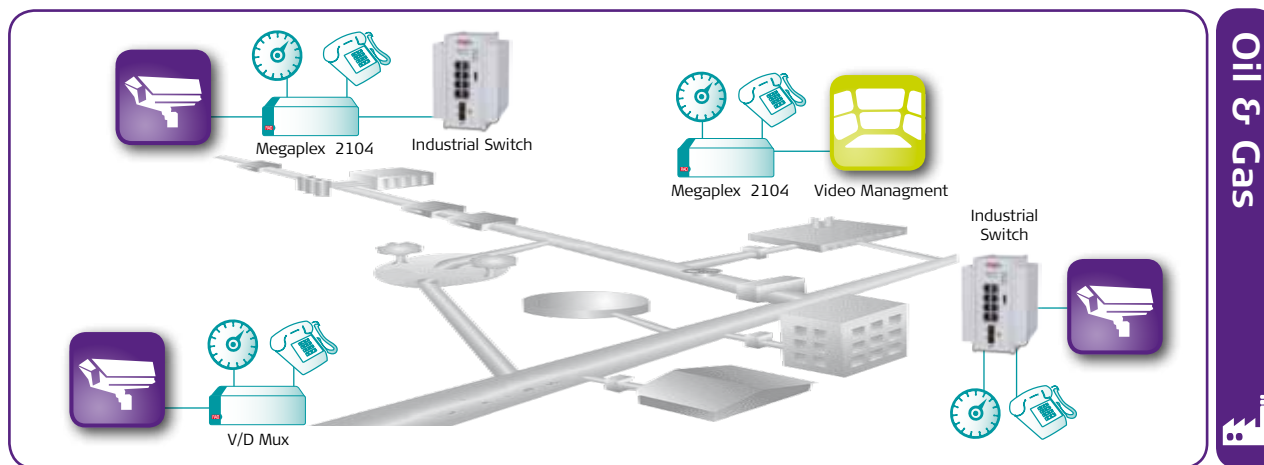
Fast and reliable communications are vital for maintaining secure and safe operations of gas or oil platforms, rigs or distribution pipelines. RAD offers a range of aggregation multiplexers and industrial Ethernet switches to handle the transport and concentration of real-time monitoring and control data, SCADA, telephony and video communications over fiber, copper or wireless links.

In addition, RAD's HLS solution supports two-way communications and full video management and analysis as well as Command, Control and Emergency Centers to safeguard against terrorist threats or sabotage and communicate equipment malfunctions in real time.

HLS Applications

Wireless Security Mobility System for Public Transportation

Metro/Subway Systems, Light Rail/Trams, Long Distance Rail, Buses

More and more mass transport operators are installing real-time on-board video surveillance equipment in their vehicles as a protective measure and deterrence against in-cabin violence and vandalism.

RAD has designed a mobile wireless system, which enables transport of real time video (CCTV) from a moving railway car/automotive vehicle to the main control room. The same communications network can be a platform for additional services such as video surveillance from road-track cross to the driver, telemetry, and Internet access, as well as news and entertainment feeds to passengers. RAD's vast experience in transportation and railway networking enables it to design and integrate turn-key, end-to-end solutions.

Advantages to the operator:

✓ High resolution CCTV capability ✓ Protection from vandalism ✓ Increased attractiveness for passengers due to enhanced security ✓ Crime prosecution supported by video ✓ Centralized video storage ✓ Immediate detection of criminal offences ✓ Real-time picture transmission for further processing ✓ Emergency assessment ✓ Enhanced passenger flow management ✓ Increased passenger satisfaction ✓ Improved passenger service

Furthermore, the trend toward automated driverless systems requires dedicated, extremely reliable communications technologies with high availability between the vehicles and operations control rooms.

Network

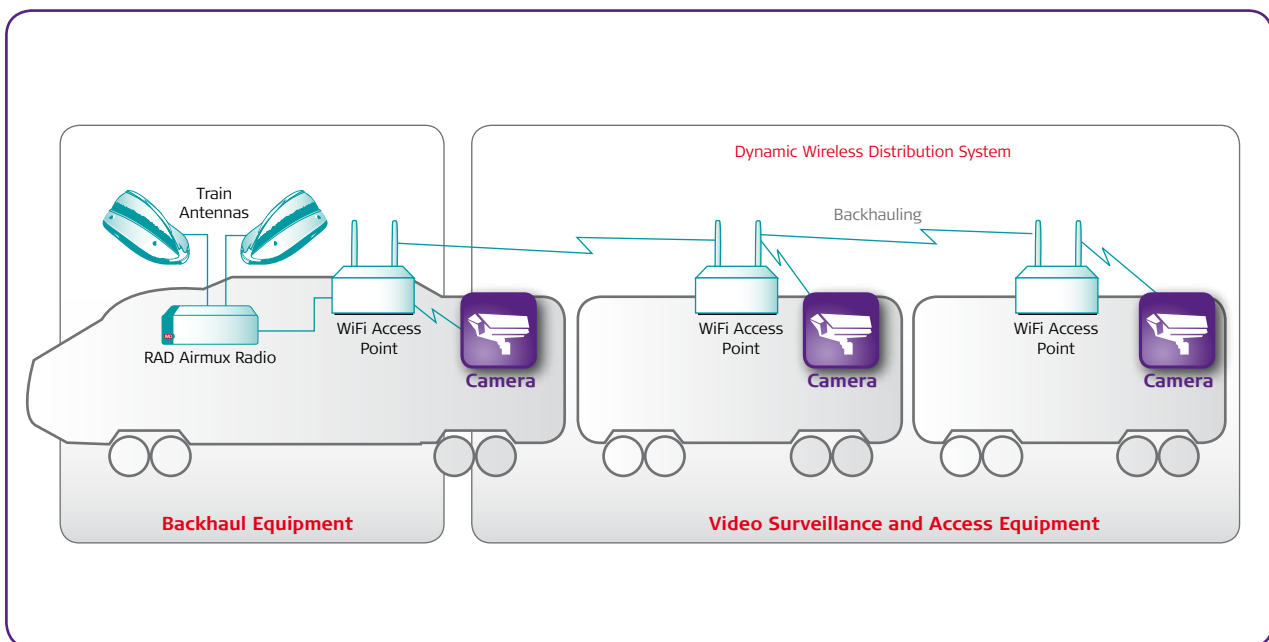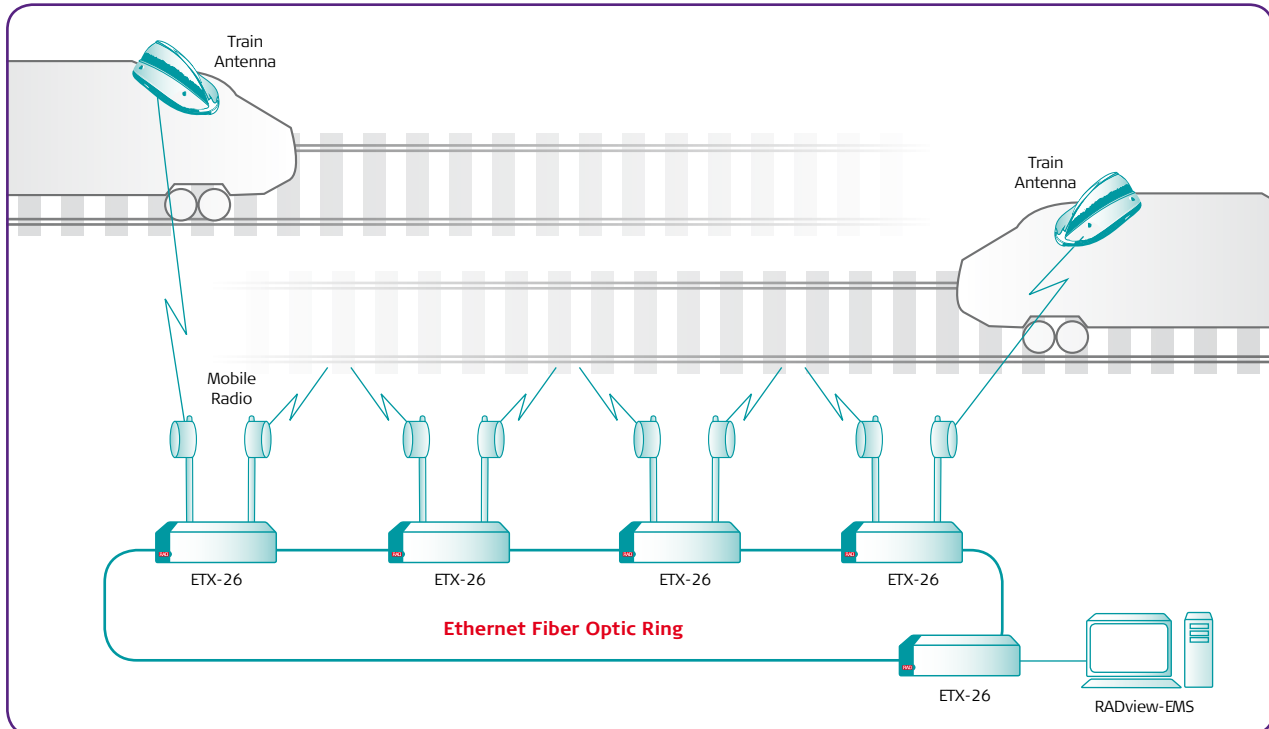**Continuous high capacity video surveillance is secured** ➤
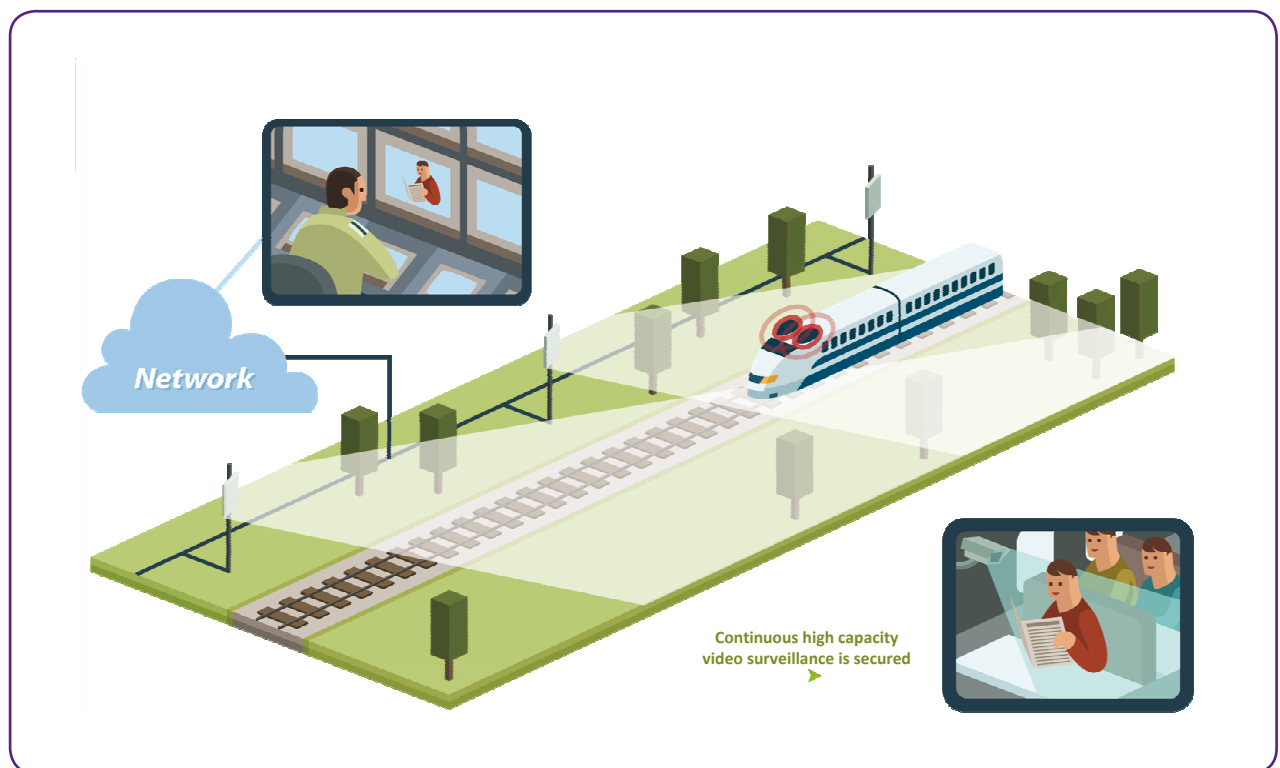
The Solution

Security surveillance services for mass transport operators and passengers, including CCTV, local and remote monitoring, tracing, real-time video analytics and alarm notifications, can be provided by using the wireless infrastructure on the train and the stations along the track.

To support such a high bandwidth, high quality application, an end-to-end, always-on broadband communication network is required. This includes broadband wireless mobile for rail and bus vehicles as well as broadband data backhaul (wired or/and wireless).

Service Features

- Dedicated and robust wireless link to a mobile unit
- High capacity, up to 100 Mbps net aggregate throughput
- Wide coverage, requires base stations up to 10 km apart
- Support for wide range of sub-6GHz frequencies
- Continuous connectivity both above ground and underground, including redundancy
- Complete online radio system diagnosis

- Secure network connection
- Central network management
- Very low latency, suitable for VoIP and video applications
- Speeds Up to 200 km/h
- Fast handoff between base stations to ensure uninterrupted service
- Compliance with European railway standard EN50155

Train Antenna

Train Antenna

Mobile Radio

ETX-26   ETX-26   ETX-26   ETX-26

Ethernet Fiber Optic Ring

ETX-26

RADview-EMS

Train Antennas

Dynamic Wireless Distribution System

Backhauling

RAD Airmux Radio

WiFi Access Point

Camera

WiFi Access Point

Camera

WiFi Access Point

Camera

Backhaul Equipment

Video Surveillance and Access Equipment

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The Access Company