



# Transportation in the 21st Century



## Improving transportation safety and mobility

In an attempt to decrease congestion and increase safety on both roads and railroads, Departments of Transportation (DOT) continue to look for better, "smarter" ways to improve traffic flow within the existing infrastructure and road systems. By using Intelligent Transportation systems (ITS), DOTs have access to reliable, accurate traffic data for efficient and effective road and rail management.

Traditional ITS networks have relied on older technologies for communications systems including SONET and SDH.

The essential problem is that legacy technologies such as SDH are optimised for slow-growing, narrowband, circuit-switched voice traffic. SDH and serial communications networks lack the dynamic functionality and rapid scalability needed for the many new ITS projects, which are utilising high-bandwidth applications including video monitoring.

Intelligent transportation systems (ITS) encompass a broad range of wireless and wire line communications-based information and electronics technologies. When integrated into the transportation system's infrastructure and in vehicles themselves, these technologies relieve congestion, improve safety and enhance productivity.

## Meeting needs

Because industrial Ethernet is reliable, flexible, affordable and can be deployed in many different types of ITS, it can play a significant role in meeting the needs of ITS engineers:

- Arterial Management
- Freeway Management
- Transit Management
- Incident Management
- Emergency management
- Electronic Payment
- Traveller Information
- Information Management
- Crash Prevention and Safety
- Roadway Operations and Maintenance
- Road Weather Management

## Achieving goals

Ethernet has the technology and the solutions to assist you achieve your goals.

The shift to Ethernet as the single underlying technology in ITS networks is a natural convergence, completed in the corporate arena a decade ago, and rapidly moving into transportation, industrial process and control, and into telecommunications markets today.

# Reliable. Scalable. Hardened.

# Affordable. Flexible. Open standards.

## Achieving goals

**A closer look at the needs of ITS networks makes the benefits of Ethernet clear:**

**Cost** - Ethernet is very cost effective, being anywhere from 35 to 60 per cent less expensive compared to a similar SDH network.

**Commonality** – Traffic engineers are interested in deploying a single underlying technology for the network infrastructure. Ethernet is highly mature and is the most widely recognised networking standard today.

**High bandwidth and bandwidth optimisation** – Increasing use of incident detection systems, licence plate recognition and real-time traffic monitoring are making video transmission a vital element of an ITS network. Digitally encoded video over IP requires data streams of anywhere from 500kbps to 6Mbps. Fast Ethernet and Gigabit Ethernet infrastructures allow cost-effective scalability to meet these needs.

**Availability and scalability** – ITS networks need to be resilient. The network should be able to respond to unexpected bursts in traffic or the failure of a network component, and recover quickly in the event of a link failure. The network should also be able to scale from tens to hundreds or thousands of devices.

## Tougher Ethernet

GarrettCom produces significantly hardened Ethernet products by housing all components in a tough steel casing.

The components themselves are all made from premium quality materials and thoroughly tested to ensure operation whatever the conditions – 50°C below to 95°C above, in high or low humidity, in conditions of dust or corrosion.

## Smarter Ethernet

GarrettCom's industrial Ethernet products provide additional services that make ITS networks highly functional (with built in support for key technologies like Power over Ethernet, and video and legacy data via IGMP, QoS, DiffServ), manageable (standards based control and monitoring via SNMP and RMON, intuitive with 3rd party GUI support and web management, flexible with e-mail alarms, Telnet and command line interface for hands on engineers), and secure (market leading security features including SNMP v3 with authentication and encryption, web interface via SSL, IP access control and port security, event logging and port and tag based VLAN, RADIUS, and TACACS+).

## Certified to perform

Modern ITS communications networks demand fibre optic transmission equipment engineered and built to provide unconditional long term reliability, stability, and performance under extremely difficult operating environments.

GarrettCom designs, builds and tests Ethernet products to exceed the environmental requirements of industry accepted standards such as NEMA TS-2, IEC 61850 and NEBS/ETSI.

## Fibre Ethernet

Fibre is ideally suited to the ITS marketplace, largely due to the economic advantages it offers, including freedom from electrical ground loops, reduced lightning-induced damage to sensitive electronic equipment on the roadside and virtually unlimited information bandwidth.

This is why GarrettCom products offer a huge range of fibre options including 10Mb, 100Mb and Gigabit, SC, ST, MTRJ, LC and single strand.



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