Converged solution

The Need

Industrial
Why now?

- Industrial Automation and Control systems infrastructure parallel that of IT infrastructure and nearly the same bandwidth needs, but with time-sensitive and latency-sensitive traffic.
- Industrial Automation markets are served by about dozen different proprietary protocols, some of which leverages parts of Ethernet standards.
- It is the desire of the Industrial Automation industry to adopt mainstream 802.3 Ethernet and 802.1 bridging standard to serve its time-sensitive network requirements over converged network.
Industrial Automation

Ethernet captures more and more Industrial Applications

Traditional Markets

• Industrial Automation
  • Factory Automation
    • e.g. PLC, Motion Control, Robots
  • Process Automation
    • e.g. Oil, Gas, Chemical / Petrochemical, Food & Beverage

• Energy Automation
  • Power Generation
    • e.g. Fossil Power Plants, Wind Turbines
  • Power Transmission and Distribution

• Building Automation
  • Climate Control
  • Fire Safety

New Markets

• Avionics
  • Fly-by-Wire

• Railway Systems
  • Train Control
  • Railway Traffic Management Systems

• Medical
Industrial Automation

Wide Range of Industrial Performance Requirements to be met

- Process Automation
- Energy Automation
- Power Distribution
- Motion Control

100ms
Typical Application Cycle
or Reaction Time

31.25µs

IEEE 802.3 Preemption CFI – Draft 12
2012 March Plenary
Industrial Automation

Industrial Communications Services

Services:
- **Best Effort Traffic**
  - Configuration
  - Diagnostic
  - Web Services
  - Events
  - ...
- **AV Streams**
  - Real Time Diagnostic
    e.g. inspection, identification, tracking, counting and measurement
  - Vision Systems
- **Control Data Traffic**
  - General Automation to exchange typical analog an digital values
    e.g. manufacturing and process industry
  - Motion Control to exchange typical analog and digital values
    from actuators and sensors based on synchronized processes

**Today**
- **Best Effort Traffic:** No guaranteed bandwidth
- **AV Streams:** Separate network
- **Control Data Traffic:** Dedicated solutions to guarantee min latency, resources and bandwidth

**Future**
- Guaranteed amount of bandwidth
- Guaranteed QoS for AV Streams in one network
- Standardized solution to guarantee min latency, resources and bandwidth
Questions?