EtherWAN

Ethernet Connectivity
for Roadside Communication

- ◆ **Managed Ethernet Switches**
- ◆ **Ethernet Extenders**
- ◆ **Hardened Media Converters**
- ◆ **Surge Protectors**

Car Traffic Jam
Speed down

- ■ **Hardened Design for Critical Environments**
- ■ **Field-proven Quality & Reliability**
- ■ **High-speed Failure Recovery Network Redundancy**

About EtherWAN

Founded in 1996, EtherWAN's US headquarters is located in Anaheim, CA with Pacific Rim headquarters and manufacturing in Taipei, Taiwan. With engineering expertise on both sides of the Pacific Ocean and its own production lines in Taiwan, EtherWAN continues to provide professional support with the most advanced Ethernet technology at very economical prices.

WHAT DO WE OFFER?

EtherWAN specializes in the design and manufacture of Ethernet products used in both commercial and harsh environments. The company's extensive product range includes Ethernet switches, media converters, Ethernet extenders (phone line & coaxial), and power over Ethernet products, for applications where connectinity is crucial.

- NEMA TS2 for ITS and transportation
- IEC 61850-3 / IEEE 1613 for utility substations
- EN 50155 for railway and train applications
- IEC 61000 for industrial automation applications
- ISA 12.12.01 / ATEX for hazardous locations
- PoE for security & access control
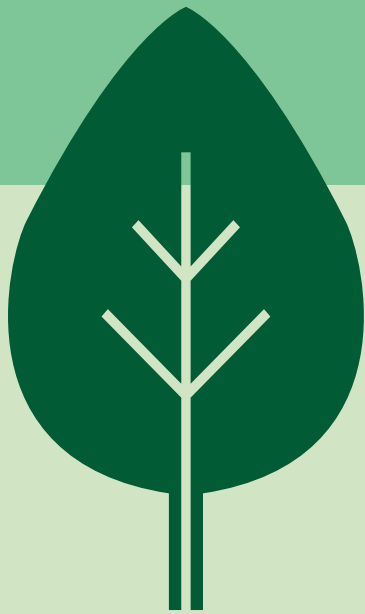
Environmental Policy

EtherWAN Systems, Inc. accepts responsibility for the environmental effects of our operations both locally and globally.

We are committed to reducing our environmental impact and to continuous improvement of our environmental performance. This commitment is an integral part of our business strategy and operating methods, and is subject to yearly review and assessment. We encourage our staff, suppliers, and business partners to join us in the effort of protecting the environment.

RoHS

To safeguard human health and the environment, we obey RoHS regulations that control hazardous substances usages in electrical and electronic equipment, and formulate technical standards that strictly forbid our suppliers in using them. All products manufactured by EtherWAN Systems, Inc. are compliant with the RoHS Directive (2011/65/EU) of 8 June 2011.

WEEE

The European Waste Electrical and Electronic Equipment (WEEE) Directive came into effect on 13th August 2005, and its recast Directive 2012/19/EU transposes into member state's law and regulations. The Directive focuses on the precautionary prevention of the impact of electronic waste, and in addition, the reuse, recycling and other forms of recovery of such waste.

ISO14000

EtherWAN adheres to an ISO 14000 certified environmental management system (EMS) in all production processes.

We are dedicated to energy conservation, to the preservation of natural resources, and to minimizing negative impacts on the environment. The wastes generated by our production processes are disposed of by professional waste management partners.

What Makes Us **Different**

To say that EtherWAN places a high priority on product stability and reliability would be an understatement. Because when it comes to critical networks, we know that data must flow uninterrupted. Our rigorous conformance to industry standards, combined with comprehensive in-house quality assurance systems, ensures maximum performance and lifespan of every product.

Design rigor

- Our engineering team performs a comprehensive feasibility study before every project is launched. Feasibility is analyzed in consideration of hardware, software, and other facets.

- Reliability is achieved through adherence to rigorous component selection guidelines and systematic thermal design methodology.

- Extensive test coverage ranges from detailed signal integrity measurement to system environmental testing and standard compliance certification.
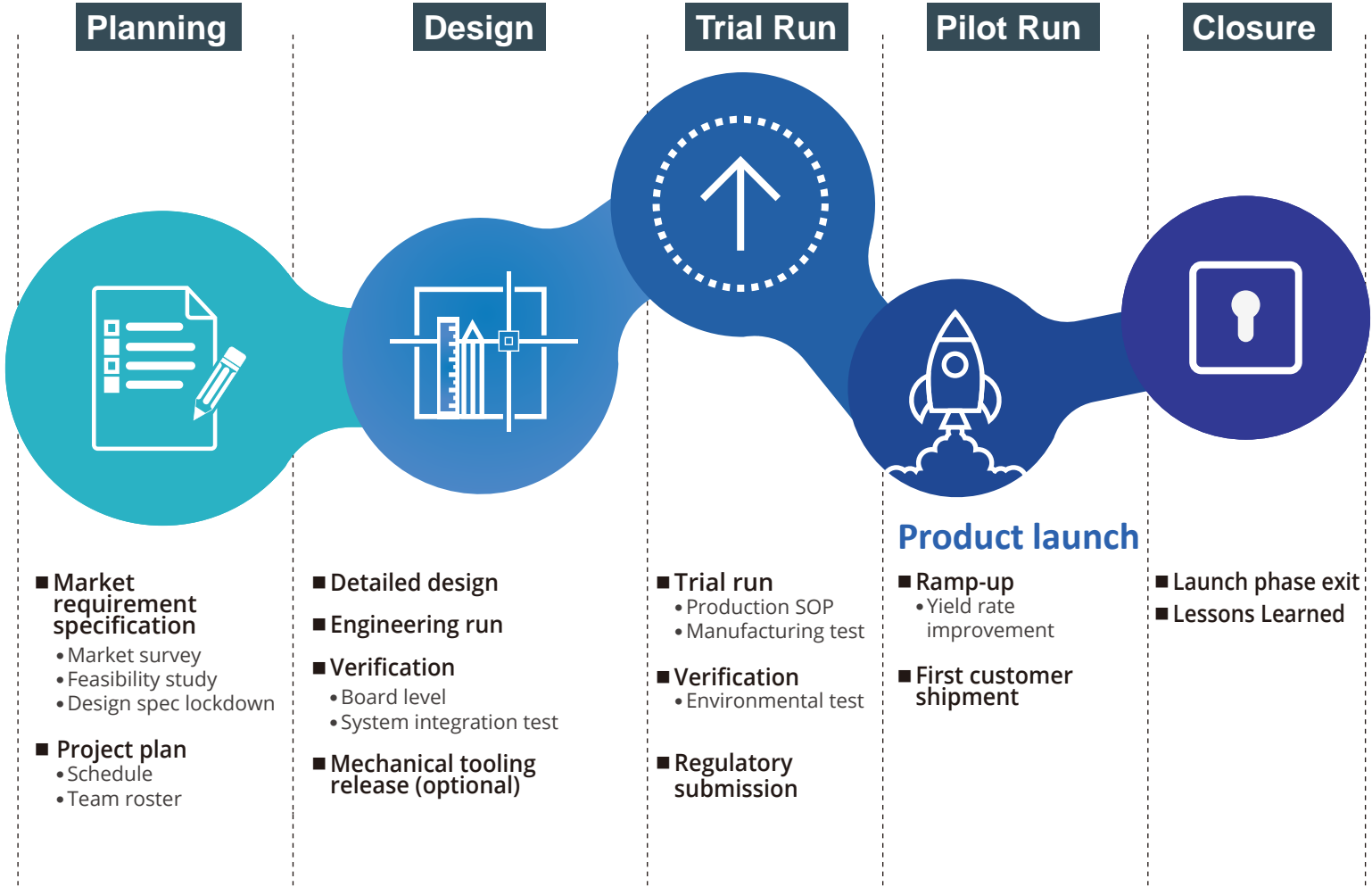
Total control of software releases

- EtherWAN specializes in custom network solutions for businesses and industries that require exceptional capabilities from both the firmware and the physical equipment. EtherWAN builds software expertise from the ground up, with complete understanding of every software module being integrated.

- Full access of the source code at the OS, middleware, and application layers: It is not uncommon that software engineers run into binary libraries at some point while tracing source code for issue analysis. With software releases built from the source code level, customers can ensure that field issues, if any, can be resolved with the clear root cause understood and analyzed.

Redundancy know-how

- It is critical that network systems stay up and running at all times. Various redundancy features are available within EtherWAN systems:
  - Dual firmware images prevent a system from crashing in the event of an error during upgrade
  - Redundant power input design protects against single-point power failures

- With the proven Alpha Ring (self-healing) and Alpha Chain technologies supporting failover of just 15 milliseconds, EtherWAN continues to develop network redundancy technologies to meet different application needs

Planning	Design	Trial Run	Pilot Run	Closure

Product launch

- **Market requirement specification**
  - Market survey
  - Feasibility study
  - Design spec lockdown

- **Project plan**
  - Schedule
  - Team roster

- **Detailed design**

- **Engineering run**

- **Verification**
  - Board level
  - System integration test

- **Mechanical tooling release (optional)**

- **Trial run**
  - Production SOP
  - Manufacturing test

- **Verification**
  - Environmental test

- **Regulatory submission**

- **Ramp-up**
  - Yield rate improvement

- **First customer shipment**

- **Launch phase exit**
- **Lessons Learned**

When Ethernet Connectivity is Crucial

Creating reliable, secure, and durable network solutions requires more than just manufacturing know-how and quality assurance. It requires an in-depth understanding of the requirements and constraints of a client's specific application. EtherWAN's engineering team services are customer-focused, ensuring that all parties involved in network design and implementation have the information necessary to make the best decision.

Network Consulting

With decades of experience in Ethernet connectivity for critical environments, EtherWAN has assisted many clients with the design, implementation, and maintenance of efficient networks in the fields of IP surveillance, intelligent transportation systems, renewable energy, oil and mining industrial applications, and factory automation.

Our network consultant service team can help you create a network from scratch. Or better yet, take an existing network and enhance or update existing components for improved flexibility, maximized utilization, and a more cost-effective configuration.

Product Consultation

Networks underlie all major information technology activities, and the hardware and protocols used to implement networks are crucial to long-term success.

A properly designed network protocol is the key to efficient and stable communication between network devices. Choosing the proper products and network protocols creates the most outstanding benefits from system integration. EtherWAN's product consultants provide advice and guidance on a full range of products and services to help clients realize the most appropriate solutions with maximized benefits. EtherWAN's Online Product Selector provides fast and efficient identification of the correct switch for a specific application.

Initiation
- Project Manager assigned
- Identify Requirements

Planning
- Topology outline
- Requirements and scope definition
- Benefits defined
- Simulation

Executing & Consulting
- Execution and issue analysis
- Executive summary

Identifying Challenges, Structuring Solutions

Striking the right balance between speed, cost and ease of installation, and widely compatible with almost all end devices and protocols, Ethernet remains as the ideal networking system for the vast majority of applications.

However, high temperatures, humidity, water leaks and brightness are all potentially harmful conditions that could damage network equipment. The key to avoiding debilitating network outages lies in the selection of the proper equipment, both when creating new networks, or upgrading existing infrastructures. With the right choices, network stability and performance can be maximized, while set up in such a way as to make future upgrades or expansions relatively trouble-free.

Advanced Training

At the end of the day, an organization's data has to flow smoothly. Networking projects require a unique combination of professional knowledge, planning, and technical skills, all of which EtherWAN is poised to provide.

EtherWAN offers customized training sessions, based on the specific needs of each client, to provide comprehensive understanding of the hardware and software aspects of networking, from basic topologies to wide-scale commercial and educational infrastructures. EtherWAN also provides specialized product training for specific product lines, which enhances product knowledge and applications for both small and wide-scale project executions.

Training

- Technical training
- Product training
- Implementation support

Closing & Maintenance

- Finalize review and close
- After sale service and maintenance

Smart Cities & **Mobile Data**

Today, maximizing mobility and limiting congestion are challenges for every city. Intelligent networks are able to connect vehicles and infrastructures to improve speed, efficiency and safety in transportation grids.
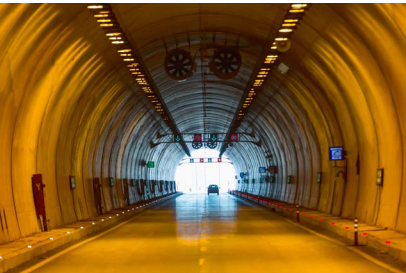
Tunnel Monitoring

Tunnel operators rely heavily on real time surveillance to monitor the flow of traffic, to make adjustments, and to broadcast emergency announcements when the occasion calls for it. It is critical that the entire surveillance system operates without interruption or downtime. EtherWAN's proprietary Alpha Ring, Alpha Chain, and "redundant pair" protocols allow for network redundancy, with extremely low failover time in the event of hardware failure.

Intersection Monitoring

A city's traffic control and intersection monitoring systems can be visualized as a complex interwoven network. The network architecture should be hierarchical; that is, network devices should be grouped into multiple segments with a layer 3 switch at the center. This type of design allows for easier management and maintenance. But for this approach to work, the central switch must have high resistance to environmental extremes. EtherWAN manufactures a range of industrial Lite Layer 3 managed switches that can survive under harsh ambient temperatures.

Bridge Safety

Pulling fiber cables on the bridge is often not an economical approach. EtherWAN Ethernet extenders provide other options, allowing existing coax or telephone lines to be used. When used together with PoE solutions, their implementation is ideal in terms of cost and performance.

Highway Communication

Digital devices are now found on all modern highways and gantries. These include electronic tolling systems, emergency reporting systems, traffic flow detectors, and weather sensors. The network that connects these devices must be able to operate in a wide temperature range, and handle full data loading for long periods. EtherWAN's hardened-grade equipment plays a vital role in many major highway management networks around the world.

Infrastructure Security

Many intelligent networking devices are deployed and integrated in transportation infrastructures. These systems include traffic signal control, surveillance, electronic toll collection (ETC), and tunnel fire detection, implemented at intersections, highways, tunnels and airports. Networked devices bring benefits in access to real-time data and response times.

However, the risks to critical systems have increased dramatically in recent years. Not only physical structures may be targeted, but critical information systems as well. Intrusions may be launched from both external networks and internal LANs. EtherWAN recognizes these risks, and provides thorough prevention mechanisms to ensure data security.

Network Access Control

1. **IEEE802.1X:** Port-based authentication via Remote Authentication Dial In User Service (RADIUS) server, which prevent the attackers from accessing the local area network (LAN). When an authentication failure occurs, an alarm will be recorded and sent. The end device MAC address can be authenticated by IEEE802.1X authentication, which allows devices to be relocated with no change to the security configuration.

2. **Access control lists (ACL):** User and service access is regulated by explicitly defined conditions, preventing undesired traffic.

3. **TACACS+:** A protocol for handling device authentication, authorization, and accounting services separately.

Encryption and Service continuity

1. **SSH/HTTPS:** Secure Shell and secure http protocols encrypt data to prevent packet sniffing.

2. **Loopback Detection:** Detects and prevents network loops resulting from the same port receiving the same packet.

3. **Storm Detection:** Detects and prevents malicious mass broadcasts that could paralyze the network.

Notification and Auditing

1. **Digital input:** When the switch is connected to a sensor on the control box door, an alarm will be simultaneously triggered and forwarded to the control center if the door is opened.

2. **SNMP Trap:** Timely warning through the sending of alarms to control center and forwarding to administrators.
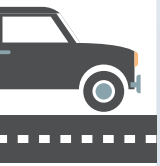
Broad Product Range

With a core focus on connectivity products for extreme environments, all EtherWAN products are tested exhaustively in order to meet the strictest requirements in terms of performance and lifespan.

1 Ethernet Switches

EtherWAN offers a full line of Unmanaged, Web-Smart and Managed switches with an emphasis on products designed for harsh environments. With a wide range of switches supporting PoE, EtherWAN products are ideal for Networks requiring a high level of reliability and remotely powered devices.

→ Managed, web-smart, and unmanaged switches
→ Hardened, Industrial, and Commercial grade
→ PoE support with up to 60 Watts per port on select models
→ Layer 2 and Layer 3 switches
→ Gigabit Ethernet, 10G

2 Ethernet Extenders

EtherWAN's Ethernet Extenders remove the standard 100-meter limit of IEEE 802.3 Ethernet, and use existing cable infrastructure such as phone wire, twisted pair or coaxial cable to economically connect remote or separated network

→ Proprietary Power over Link (PoL) Technology
→ Ethernet Extender over Coaxial Cable
→ Ethernet Extender over Copper Wires

3 Media Converters

Media converters serve as a bridge between fiber optic and copper media. Options include single mode, multi-mode, and WDM (Wavelength-division multiplexing) fiber optic and 10/100/1000 Mbps copper media, allowing for stable and high-speed connection of geographically distant LANs.

→ Gigabit
→ Fast Ethernet
→ Multiple Channel

4 Surge Protectors

In today's network environment, a power surge is not limited to the power source coming from the wall outlet; there are also other factors to consider. With EtherWAN's hardened surge protection device, power surges coming through the Ethernet Cable can be fatal to valuable network equipment. Designed for harsh environments, EtherWAN's surge protection protect your valuable network equipment.

→ Ethernet Port Surge Protector
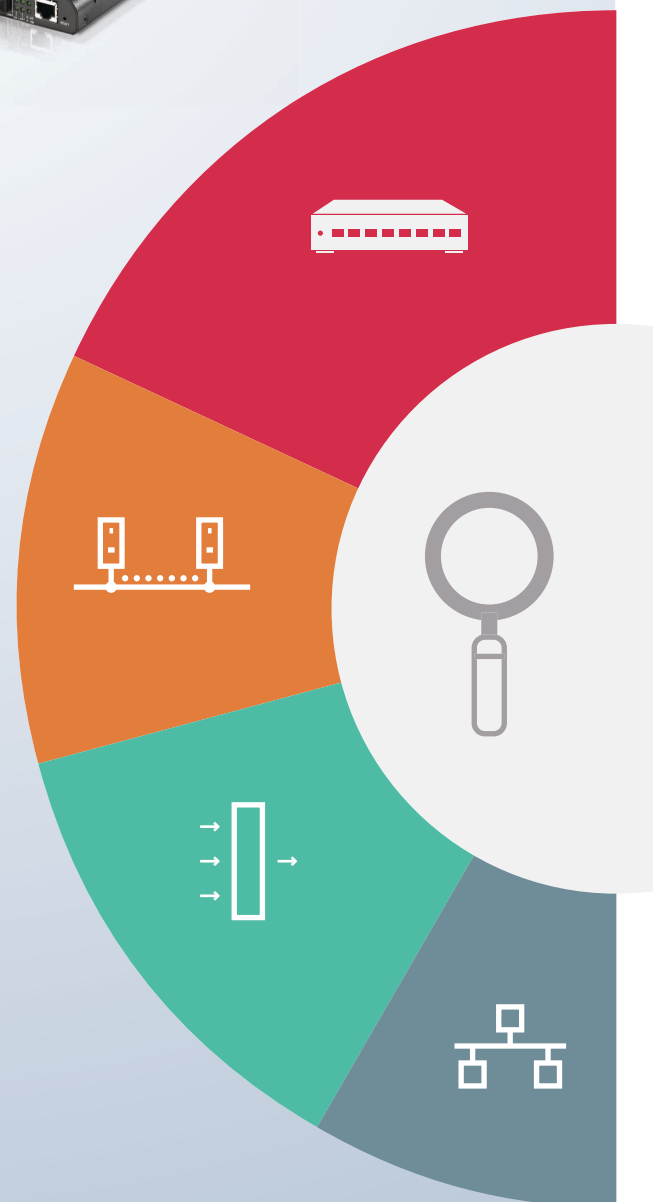→ Copper Port Surge Protector

5 Accessories

EtherWAN provides a variety of accessory products to support our connectivity solutions.

→ Network Interface Cards
→ Industrial Power Supplies
→ SFP Modules
→ Mounting Kits
→ TransRack

EtherWAN Systems, Inc.

US Office
2301E. Winston Road, Anaheim, CA 92806
TEL: +1-714-779-3800
FAX: +1-714-779-3806
Email: info@etherwan.com

Pacific Rim Office
8F, No.2, Alley 6, Lane 235, Baoqiao Rd.,
Xindian District, New Taipei City 231, Taiwan
TEL: +886-2-6629-8986
FAX: +886-2-6629-7758
Email: info@etherwan.com.tw

www.etherwan.com