



**ELMA**  
Your Solution Partner

# Unleashed Connectivity

## Cisco routers - Elma solutions

SYSTEMS SOLUTIONS

ENCLOSURES & COMPONENTS

ROTARY SWITCHES

CABINETS



[www.elma.com](http://www.elma.com)



Connectivity guaranteed

Ground vehicles, aircraft, watercraft or humans on foot must be able to share information in harsh environments where network topologies constantly change. Our Cisco enabled routers, switches and edge computing platforms span a wide range of fixed and mobile applications:

- Defense & aerospace
- Mining and drilling operations
- Homeland security
- Transportation
- First responders and rescue operations
- Agriculture

# Routers, switches and edge computing platforms

powered by  Cisco Technology

Elma's outstanding selection of electronic packaging designs bring IP connectivity to harsh environments at the network edge and everywhere else. As a Channel Partner, we offer highly reliable standard and custom sub-systems and packaged solutions for Cisco's board and software based Embedded Services Routers (ESR) products.

Critical information must be readily accessible for sharing and coordination between networked assets that are constantly on the move in highly changeable circumstances. The means of delivering IP-based data, voice and video between every vehicle and device

is complicated by security concerns, radio bandwidth inefficiencies, harsh environments, size, weight and power (SWaP) constraints, and by the dynamic nature of rapidly forming mobile operations.

Cisco ESRs feature Advanced Enterprise IOS and Mobile Ready Net capabilities that address secure connectivity concerns and mobile connectivity with the rock solid dependability only Cisco provides.

Take a moment to browse through our catalog for the optimal solution to your networking challenges.

**Cisco-certified mobile routing plus the packaging and integration know-how of Elma Electronic.**



Rugged, application-ready and reliable best define Elma's ComSys family of modular and highly configurable systems. ComSys enables reduced cost of ownership through quick and easy CPU, I/O and storage upgrades as mission requirements evolve and component obsolescence occurs.



**ComSys-5001 Rugged Vehicular System**

The ComSys-5001 addresses an array of critical vehicular communication requirements. The system features Cisco's 5921 ESR for secure mobile communications, CANbus, Wi-Fi and solid state storage. A powerful Intel processor is at the heart of the system running Cisco Advanced or Base Enterprise IOS with Mobile Ready Net capabilities.

- > Latest Intel® Core™ CPU with high performance graphics
- > CANbus support for intra-vehicular systems communication
- > Dual band Wi-Fi 802.11 a/b/g/n for maximum transceiver ranges
- > Configurable SSD storage
- > 2x 10/100/1000 Ethernet routing ports
- > USB, serial and video I/O options
- > Fanless, conduction-cooled design
- > IP67 rated



ComSys allows for fast reconfiguration when evolving missions and applications force CPU upgrades and changes to the I/O mix. A carrier-based design, ComSys provides:

- > 1 x COM Express Type 6 CPU site for fast performance upgrades
- > 1 x XMC / PMC site for a range of I/O support
- > 2 x miniPCle sites for more application-specific options
- > 2 x slim SATA drive sites for high storage capacity

The flexible design of ComSys enables the use of custom I/O panels, connector types and color choices which compliment these I/O choices:

- |  |                              |
|--|------------------------------|
| ■ Cisco-Certified Secure Mobile IP Routing | ■ WiFi                       |
| ■ High speed graphics processing           | ■ A/D conversion             |
| ■ Ethernet expansion                       | ■ ARINC-429 and MIL-STD-1553 |
| ■ FPGA processing                          | ■ GPS                        |
| ■ CANbus                                   | ■ Storage capacity upgrades  |

**Software enabled routing - Cisco's 5921**



Cisco® 5921 software router

The Cisco® 5921 ESR is a Cisco IOS® Software router designed for systems based on Intel x86 processors that are running Linux operating systems. The 5921 supports Cisco's Mobile Ready Net capabilities with all the same mobility and security protocol support as the 5915. As a software product however, the 5921 is board form factor agnostic making it adaptable to a range of custom designed hardware platforms. The 5921 is available with ComSys products in 10 different performance packages:

- > Basic or Advanced Enterprise IOS each with 5 core routing speed options

The network edge is space constrained and hostile. Our NetSys family of rugged conduction cooled systems protect against extremes in temperature, shock and vibration in a SWaP optimized chassis. A stackable board architecture featuring Cisco's 5915 ESR, enables multiple configuration options like expanded port counts and edge computing including Cisco's Advanced Enterprise IOS with Mobile Ready Net capabilities.



### NetSys-5301 Rugged Cisco Router

The rugged design of the NetSys-5301 brings Cisco's 5915 Embedded Services Router with dual routing and 3 switching ports and Cisco-certified mobile IP routing protocols to the network edge - or wherever you need it - in a SWaP optimized chassis.

- > Rugged design
- > 5x 10/100 ports (2x routed, 3x switched)
- > Front LEDs for power & system status and link activity
- > MIL-STD-704F & MIL-STD-1275D compliant power supply
- > IP67 rated



### NetSys-5302 Cisco Router with expanded switch port count

Featuring a generous external count of 27 Ethernet switch and 2 router ports, the rugged design of Elma's NetSys-5302 brings Cisco-certified mobile and secure IP routing protocols to larger networks with more assets that need connectivity.

- > Rugged design
- > 29x external Ethernet ports (2x 10/100 router ports, 2x 10/100/1000 switched ports, 25x 10/100 switched ports)
- > Front LEDs for power, system s/w status and link activity
- > MIL-STD-704F & MIL-STD-1275D compliant power supply
- > IP67 rated



### NetSys-5303 Computer, Cisco routing, expanded port count and removable storage

Perform pre-processing tasks at the network edge with this computing platform featuring Corei7 CPU, Cisco routing, up to 9 additional switching ports and the convenience of a multi-terabyte removable storage bay.

- > Intel 4th Generation CPU
- > Selection of USB, serial and video I/O
- > High capacity removable storage bay
- > Rugged design
- > Front LEDs for power & system status and link activity
- > MIL-STD-704F & MIL-STD-1275D compliant power supply
- > IP67 rated



### NetSys-5401 Rugged Industrial Router

For industrial applications, the NetSys-5401 features the same connectivity as its more rugged cousin, the 5301. While incorporating the same rugged casing, the 5401 uses RJ45 connectors and includes an industrial power supply.

- > 5x 10/100 Ports (2x routed, 3x switched)
- > Rugged design
- > Front LEDs for power & system status and link activity



## Railway ready

The NetSys chassis brings Cisco Embedded Routing technology to railway applications. Designed to meet railway standards for equipment used in rolling stock applications, its rugged and flexible design enables the use of custom I/O panels using M12 connectors.



### NetSys-5304 Cisco Router for Railway

The rugged design of the NetSys-5304 brings Cisco's 5915 Embedded Services Router and its Cisco-certified mobile IP routing protocols to the network edge - or wherever you need it - in a SWaP optimized chassis.

- > 5x 10/100 Ports (2x routed, 3x switched)
- > M12 connectors
- > Rugged design
- > Front LEDs for power & system status and link activity
- > IP65 rated

## The brains behind the operation - Cisco's 5915



### Cisco 5915

The Cisco® 5915 Embedded Services Router (ESR) is a PCI/104 board included in all NetSys products, optimized for mobile and embedded networks that require IP routing and services. The 5915 runs Cisco's Advanced Enterprise or Base Enterprise IOS and features key mobility and security protocols in the Advanced package:

- > Radio Aware Routing
- > Quality of Service support
- > Mobile Ad Hoc Networking
- > Dynamic Layer 3 IPV4 and IPV6 Routing
- > Dynamic Link Exchange Protocol
- > Suite-B encryption support

## For custom solutions – trust Elma.

Elma's systems tackle packaging and integration challenges, allowing you to extend Cisco IOS with its secure mobile routing features into new places at the heart or edge of the network. The IoT explosion and the growing demand for stationary and mobile connectivity across wired and wireless links means that network access needs to be available in diverse locations spanning a wide range of environments and physical spaces.

In addition, Elma can combine the Cisco 5915 and the form factor agnostic 5921 ESR with application specific I/O sets onto a single hardware platform to provide secure mobile routing to extremely small, low-power solutions as well as 19" rackmount systems. We work with a best in class portfolio of board partners to deliver a solution that is greater than the sum of its parts and without the usual high costs of customization.



## Systems designed for your specific needs

Elma COTS and custom packaging designs address environmental challenges typical of commercial applications through to the most demanding heavy industrial and defense applications. Cisco IOS and its full list of routing features can be incorporated into any design while taking advantage of these added features:

- Custom environmental testing including thermal modeling, shock, vibration, ingress and EMI
- Custom I/O panels including 38999, M12, RJ45, DB-9 and other connector choices.
- Extensible designs ready to adapt as your payload needs change
- Mounting options including table top, cold plate, DIN rail and rackmount
- Standards-based qualification testing for operation in MIL, transportation, mining and other rugged environments
- Elma and best-in-class partner board designs for specific payload needs

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