

X-ES

Fast, Flexible, and Customer-Focused Embedded Solutions

X-ES Integrates Cisco 5940 Router in Development and Deployed Systems

Cisco Solutions Technology Integrator

Cisco 5940 Systems Overview

- System-level support from X-ES
- Additional I/O supported via PMC/XMC modules
- Intel Core i7 or Freescale QorIQ™ processor SBC's by X-ES
- 100% USA supplier - ITAR compliant/registered
- Easy migration from development to deployable systems
- Complete RTOS support directly from X-ES

Extreme Engineering Solutions, Inc. has been accepted into the Cisco Solutions Technology Integrator (STI) program. As an STI, X-ES integrates Cisco technology into systems targeted at military, communications, industrial, and commercial embedded applications.

X-ES integrates the Cisco® 5940 Embedded Services Router (ESR) into air- and conduction-cooled 3U CompactPCI (cPCI) systems. The Cisco 5940 ESR is complemented by Cisco IOS Software and Cisco Mobile Ready Net capabilities. With this technology, X-ES systems can provide highly-secure data, voice, and video communications to stationary and mobile network nodes across wired and wireless links.



Figure 1: Cisco 5940 Embedded Service Router (ESR)
Air-Cooled, Conduction-Cooled, and RTM



Figure 2: XPedite7332
Core i7 CPU Board

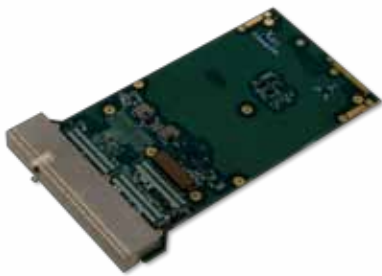


Figure 3: XChange1200
PMC/XMC Carrier



Figure 4: XPm2010
Power Supply



Figure 5: XPand1300
Air-Cooled Chassis

Cisco 5940 ESR

The Cisco 5940 ESR (Figure 1) is a high-performance air- or conduction-cooled, ruggedized, embedded-services router designed for use in harsh environments. It offers reliable operation in extreme temperatures and under shock and vibration conditions typical for mobile applications in rugged terrain. With on-board hardware encryption, the Cisco 5940 ESR offloads encryption processing from the router to provide highly secure, yet scalable video, voice, and data services for mobile and embedded outdoor networks. The router offers four Gigabit Ethernet interfaces and a rich Cisco IOS feature set, providing investment protection for customers deploying bandwidth-intensive applications in mobile or embedded networks in public safety, transportation, defense, and energy markets.

The Cisco 5940 ESR is a 3U cPCI router card that is available in both air- and conduction-cooled models. An optional rear transition module (RTM) is available for applications requiring access to the I/O connectors through standard RJ-45 connectors. X-ES provides the Cisco 5940 ESR integrated into development platforms, as well as deployable systems.

Cisco 5940 Router Features

- Runs Cisco IOS software
- Four integrated 10/100/1000 Ethernet ports
- Cisco Unified Communications Manager Express (CME) support
- Cisco Mobile Ready Net, which allows for mobile ad hoc networking and radio-aware routing
- Onboard hardware acceleration
- Hardware encryption
- Integrated threat control using Cisco IOS Firewall, Cisco IOS Zone-Based Firewall, Cisco IOS Intrusion Prevention System (IPS), and Cisco IOS Content Filtering
- Identity management using authentication, authorization, and accounting (AAA) and public key infrastructure
- 3U cPCI form factor
- Conduction- or air-cooled

Cisco 5940 Development Platforms

System developers can start with a Commercial Off-the-Shelf (COTS) development platform from X-ES and seamlessly migrate to a deployed system. The Cisco 5940 ESR can be integrated with any number of the following products:

- XPedite7332 - Intel Core i7 cPCI SBC, 8 GB DDR3, XMC site (Figure 2)
- XPedite7330 - Intel Core i7 cPCI SBC, 4 GB DDR3, XMC/PMC
- XPedite5530 - Freescale QorIQ P2020 cPCI SBC, 4 GB DDR3, XMC/PMC
- XChange1200 - PMC/XMC carrier (Figure 3)
- XPm2010 - MIL-STD-704 28V-DC Power module (Figure 4)
- XPort6103 - 64 GB to 512 GB Solid State Disk (SSD) XMC module

Additional X-ES and third-party 3U CompactPCI and PMC/XMC modules can be integrated into the development platforms.

- XPand1300 (Figure 5) development platform is ideal for all air-cooled application development.
- XPand1200 (Figure 6) conduction-cooled lab development platform offers 100% hardware migration from development to deployment.



Figure 6: XPand1200 Conduction-Cooled Chassis



Figure 7: XPand3200 Cold Plate Chassis

Cisco 5940 Deployed Systems

Following development, conduction-cooled payloads can be integrated into several conduction-cooled $\frac{1}{2}$ ATR chassis: XPand3200, XPand4200, or XPand5200 are ideal for Size, Weight, and Power (SWaP) constrained applications.

- XPand3200 (Figure 7) - Sub 1/2 ATR, 6 slot, cold plate conduction-cooled chassis
- XPand4200 (Figure 8) - Sub 1/2 ATR, 6 slot, forced air-cooled chassis for conduction-cooled modules
- XPand5200 (Figure 9) - Sub 1/2 ATR, 4 slot, natural convection-cooled/conduction-cooled chassis



Figure 8: XPand4200 Forced-Air-Conduction Chassis



Figure 9: XPand5200 Natural-Convection Chassis

Systems to MIL-STD-810F and MIL-STD-461E Qualification

X-ES can perform in-house environmental qualification and in-house EMI pre-qualification. Utilizing our in-house equipment, X-ES has the expertise and capability to perform full environmental qualification for temperature (Figure 10), humidity, altitude, shock, and vibration (Figure 11) based on MIL-STD-810F/G or DO-160 requirements. Working closely with third party test facilities, X-ES performs full EMI/EMC qualification based on MIL-STD-461E/F, DO-160, FCC, or UL requirements.

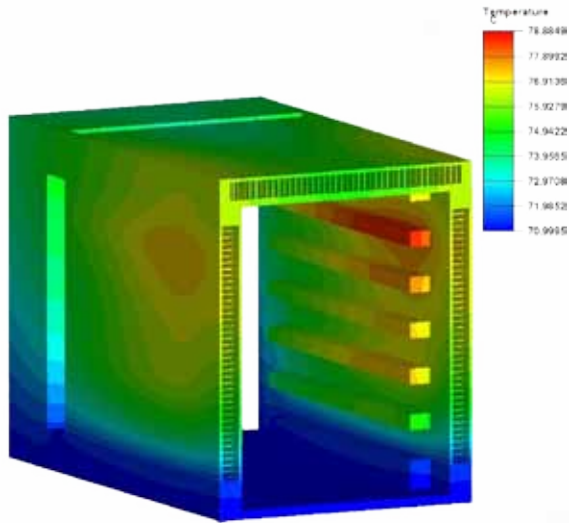


Figure 10: Thermal Simulation Plot

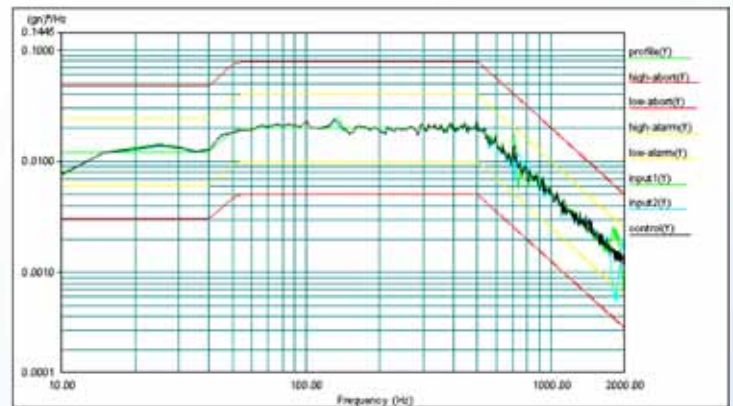


Figure 11: Vibration Chart

Customized Systems

X-ES excels at engineering systems that meet our exact customers' requirements. If you have unique system requirements, X-ES is ready to discuss a modified COTS solution. We can incorporate X-ES and 3rd party I/O solutions (e.g., MIL-STD-1553, NTDS, A/D, D/A, serial, etc.) and provide a turnkey solution to satisfy almost any requirements. Please contact your X-ES sales representative to discuss your system requirements.

Corporate Overview

Extreme Engineering Solutions, Inc. (X-ES) designs and builds chassis, single-board computers, I/O, power, backplane, and system-level products within the embedded computer industry. X-ES offers cutting-edge performance and flexibility in design plus an unparalleled level of customer support and service. For further information on X-ES products or services, please visit our website: www.xes-inc.com or call (608) 833-1155.

