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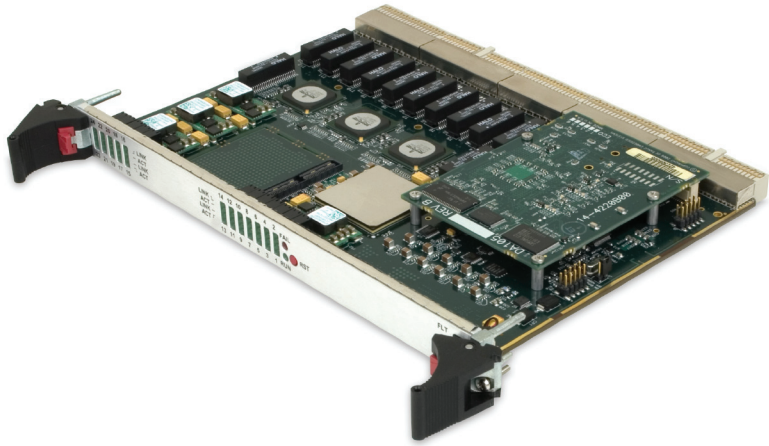
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GE
Intelligent Platforms



NETernity CP921RC-30x

IPv6 Enabled, PICMG 2.16 Compliant 6U CompactPCI 24-Port Managed Layer 2/3+ Gigabit Ethernet Switch with OpenWare™ Switch Management Environment

Features

- 6U CompactPCI® form factor
- 24 port Gigabit Ethernet switch
- Option to support two 10 GigE and two GigE on the front panel
- Options for SFP and SPF+ interfaces
- Hardware enabled IPv6 and IPv4 support
- Fully managed L-3 switch
- L-2 and L-3 switching at wire-speed (including IPv6)
- L-3 protocol support including OSPF, RIP and VRRP
- OpenWare™ Switch Management Environment
- Allows up to 4096 VLANS
- SNMP management
- Multicast support: IGMP Snooping Querier and MLD Snooping Querier
- Supports high availability Hot Swap
- RoHS compliant
- Supports copper media
- Front panel ports support 10GBASE-SR, 10GBASE-LR, 10 Gigabit Copper, 1000BaseSX, 1000BaseLX, and 10/100/1000BaseT
- Industrial temperature versions available

Key Specifications

- IEEE 802.3-2005
- PICMG® 2.1 (Hot Swappable)
- PICMG 2.16 (Ethernet on the backplane)
- PICMG 2.9 (IPMI compliance)
- IMPI 1.5
- IEEE 802.1D (Prioritization)
- IEEE 802.3ad (Link aggregation)
- IEEE 802.1Q (VLAN tagging)
- IEEE 802.1Q-2005 (Multiple Spanning Tree)
- IEEE 802.1X (Port Authentication)
- IETF RFC 4541 (IGMP & MLD Snooping Switches)
- RoHS 2002/95/EC compliant

NETernity™ CP921RC-30x is a Layer 2/3+ Ethernet embedded switch offering full IPv6 wire speed switching and routing, and full management capabilities with 24 rear I/O Gigabit Ethernet ports. Optionally, the CP921RC can support 22 rear Gigabit Ethernet ports with four front panel ports – two of which can support 10 Gigabit. The front panel ports are designed to support SFP and SFP+ transceivers so customers can choose the front panel configuration to best suit their needs.

Designed to meet the needs of a wide range of challenging applications in telecom, industrial and military systems, the 6U CompactPCI form factor CP921RC-30x facilitates communications within a chassis as well as supporting the network outside the chassis. It is PICMG 2.16 and RoHS compliant, and supports high-availability hot swap as well as IPMI v1.5.

The CP921RC-30X also offers the capability to direct one of the ports across the fabric-to-fabric link on the PICMG 2.16 backplane to support inter-switch communication, enabling features like switch redundancy. The use of the TRCPP9XX-5RC-F Rear Transition Module (RTM) enables this feature.

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NETernity CP921RC-30x 6U CompactPCI 24-Port Managed Layer 2/3+ Gigabit Ethernet Switch

CP921RC-30x delivers full wire-speed Gigabit Ethernet switching that can be fully managed and easily deployed. Proven, high-performance architecture and a multilayer switching fabric provides a rich feature set, broad functionality, scalability, and product life longevity. Based on a PowerPC® management processor and a leading high-performance switch fabric, the CP921RC-30x has integrated Layer-2/3 switching capabilities as well as the ability to support higher Layer 4-7 functionality when required.

IPv6 brings improved security, reliability and flexibility, enhanced support for mobile computing devices, and larger address space for global reach and scalability to applications. In the near future, support for IPv6 will be required for Military and Defense customers, and because this switch also supports IPv4 it offers a path forward which protects existing investments.

Switch Fabric and OpenWare Protocol Features

- Supports both Layer-2 (L2) and Layer 3 (L3) packet switching. Packets are categorized by the MAC addresses for L2 switching and by IP addresses for L3 switching.
- QoS prioritization (IEEE 802.1D) permits classifying packet priorities which is beneficial in delay-sensitive applications.
- Packet filtering to prevent forwarding of certain packets; filtering capabilities are available in Layers 2 - 7.
- Link aggregation (IEEE 802.3ad) links a group of physical ports creating a single logical port to provide higher bandwidth and increase redundancy between switches. The fabric is capable of full wire speed switching, allowing a maximum aggregate throughput that is the sum of all aggregated ports.
- Virtual LANs (VLANs) (IEEE 802.1Q) defines a forwarding (switching) domain; supports up to 4096 VLANs.
- Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1Q) enables automatic and rapid determination of an optimal loop-free topology from an arbitrary network of enabled switches with duplicate and redundant connections; supports rapid reconfiguration in the event of a link or switch failure; backward compatible with RSTP and STP.
- Broadcast storm control screens excessive traffic and controls the rate limit for each port and prevents flooding in the network.
- IGMP snooping permits the switch to monitor IGMP interactions between hosts and routers and to adjust its forwarding tables accordingly resulting in more efficient bandwidth use.
- Port mirroring eases debug and packet pattern study. This is a method to observe on one port traffic that is flowing on another port.
- High-availability Hot Swap that complies with PICMG 2.1 Rev 2; the switch may be removed and replaced while the system is operational.
- Security features - including port security, port authentication and DoS prevention.

L-3 IP Routing Protocols

- OSPF (Open Shortest Path First), a flexible link state protocol, tests the state of links and transmits that information throughout the system to establish the shortest path to the destination. This protocol also load balances by distributing traffic equally among routes. Messages may also be routed based on the type of service so that critical messages can transverse the most reliable routes.
- RIP (Routing Information Protocol), an easy-to-implement, dynamic routing protocol, allows routers to exchange information for computing routes through networks. Routing tables are used to store destination and metric pairs.
- VRRP (Virtual Router Redundancy Protocol) eliminates single points of failure on a network. Using an election protocol to provide failover for forwarding packets, VRRP provides a higher availability default path.

OpenWare Switch Management Environment

OpenWare™ is available exclusively on selected NETernity fully-managed Layer-2/3 Ethernet switches. Comprehensive and powerful, this switch management environment provides integrated management services including configuration, monitoring, switching control, addressing, routing and all supported protocols. Configuration and monitoring functions are accessible from a serial console or via a network. Supported access methods include Telnet, SSH and SNMP.

OpenWare features:

- IPv6 support for improved security, reliability and flexibility, enhanced support for mobile computing devices, and larger address space for global reach and scalability. IPv4 is also supported offering a path forward which protects existing investments.
- Easy deployment and management that results from the wide range of protocols supported. These protocols are defined by RFCs, and cover a range of operations: Switch, VLANs, Aggregation, Multicast, Filtering, Routing, QoS, and Management, NETernity switches with OpenWare offer broad functionality and support communications within the chassis as well as supporting the network outside of the chassis.
- MSTP, the latest version of the Spanning Tree protocol, allows use of the latest technology to create efficient, loop-free networks by combining multiple VLANs. In the event of link or switch failure, the network can be rapidly reconfigured minimizing down time. MSTP is backward compatible with RSTP and STP.
- Multicast management with IGMP Snooping Querier for IPv4 and MLD Snooping Querier for IPv6. Ensure that frames are only forwarded to interested parties. The addition of Querier functionality to OpenWare allows the switch to more quickly request “joins” from adjacent devices.
- OpenWare makes use of Linux®-based software to allow faster implementation and easy updates to firmware as part of standard releases or when customization is required. Customizations may be leveraged across all NETernity/OpenWare platforms. Standard Linux commands may be used as well as open source protocol and routing capabilities.
- OpenWare allows for a number of ways to manage the switch via serial console, Telnet or Web Interface.
- Using a combination of open source protocol software and OpenWare allows us in certain instances to provide full software source to customers. Additionally, full control over the software environments permits customization for specific requirements such as customer-specific handling of failover conditions.

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NETernity CP921RC-30x 6U CompactPCI 24-Port Managed Layer 2/3+ Gigabit Ethernet Switch

Switch Failover with Failover Groups (FOG) in OpenWare

The CP921RC-30x supports the latest version of our OpenWare switch management software, including Failover Groups (FOG). FOG provides very flexible configurations, so that a chassis with two switches can have one link from each switch into each external network. So, the redundant links do not need to be from the same switch. This allows for a powerful, distributed redundancy mechanism – possibly unique in the industry.

Why choose GE Intelligent Platforms NETernity Ethernet Switches?

GE Intelligent Platforms has a wealth of expertise in Military, Commercial and Telecommunications markets. This makes us unique in the embedded computing industry – we understand application requirements and we know communication protocols. Our line of NETernity Ethernet Switches is unmatched. Not only is our product selection extensive, but the switches themselves provide maximum flexibility, performance, and density. NETernity Ethernet Switches are available in a variety of form factors, interfaces, and levels of ruggedness, port configurations, media support, and types of management.

Fully Managed switches are Layer 2/3+ switches with control and monitoring capabilities via local or remote access. Layer 2 managed switches are switches with control and monitoring capabilities, but with the management limited to layer 2 capabilities. These are also accessed locally or remotely. Unmanaged switches are Layer-2 switches with no operator interfacing and are designed for quick deployment in simpler applications.

Call the GE Intelligent Platforms knowledgeable sales team for help in selecting the switch that best meets your applications requirements.

Ordering Information

CP921RC-300:	NETernity Fully Managed Layer-2/3+ Ethernet switch; 24 Gigabit Ethernet copper ports rear I/O; PICMG 2.16; OpenWare firmware; RoHS
CP921RC-300-IND:	NETernity Fully Managed Layer-2/3+ Ethernet switch; 24 Gigabit Ethernet copper ports rear I/O; PICMG 2.16; OpenWare firmware; RoHS; Industrial temperature range
CP921RC-301:	NETernity Fully Managed Layer-2/3+ Ethernet switch; 22 Gigabit Ethernet copper ports rear I/O and four ports front I/O supporting two 10 Gigabit (SFP+) and two 1 Gigabit (SFP) ports; PICMG 2.16; OpenWare firmware; RoHS: Configuration does not include transceivers which can be ordered separately.
SFP-0A:	10GBASE-SR SFP+ Transceiver
SFP-0B:	10GBASE-LR SFP+ Transceiver
SFP-0C:	10Gigabit Copper SFP+ w/Direct Attached Cable
SFP-0D:	1000BaseSX - SFP Transceiver
SFP-0E:	1000BaseLX - SFP Transceiver
SFP-0F:	10/100/1000BaseT - SFP Transceiver
42G8519-0001:	Ochre Key for use of CP921RC in expanded CPCI Chassis
TRCP9XXRC:	Rear Transition Module, 2 slots, (24) 10/100/1000Base ports via RJ45 connectors
TRCP9XX-5RC:	Rear Transition Module; (5) 10/100/1000Base ports via RJ45 connectors
TRCP9XX-12RC:	Rear Transition Module; (12) 10/100/1000Base ports via RJ45 connectors
TRCP9XX-5RC-F	Rear Transition Module to enable Fabric to Fabric link; (4) 10/100/1000BaseT ports via RJ45 connectors.
Add Suffix	-CC to model number to indicate polyurethane conformal coating -CCA to model number to indicate acrylic conformal

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NETernity CP921RC-30x 6U CompactPCI 24-Port Managed Layer 2/3+ Gigabit Ethernet Switch

Specifications

IPMI
- C8051 controller
- IPMI/IPMB version 1.5

Physical Interface
- All Gigabit Ethernet ports, the Ethernet management port and serial console are routed to rear on CP921RC-300 models
- On CP921RC-301 models, 22 Gigabit Ethernet ports are routed to the rear, with Ethernet management port, serial console, 10Gigabit and 1 Gigabit SFP ports routed to the front.
- Ethernet ports support 10BaseT/100BaseTX/1000BaseT
- Copper media
- RJ45 connectors for rear I/O ports
- SFP (GigE) and SFP+ (10GigE) transceivers for front panel ports

IPv6
- IPv6 addressing and specification (RFC 2460)
- Neighbor discovery for IPv6 (RFC2461)
- Stateless address auto configuration (RFC 2462)
- ICMPv6 (RFC 2463)
- IPv6 over Ethernet (RFC 2464)

Dimensions
- 6U (4HP) single slot CompactPCI form factor
- Height: 9.2 in. (233.4mm)
- Depth: 6.3 in. (160mm)
- Thickness: 0.8 in. (20.3mm)
- Weight: 1.08 lbs (0.49Kg)

Power Requirements (Maximum)

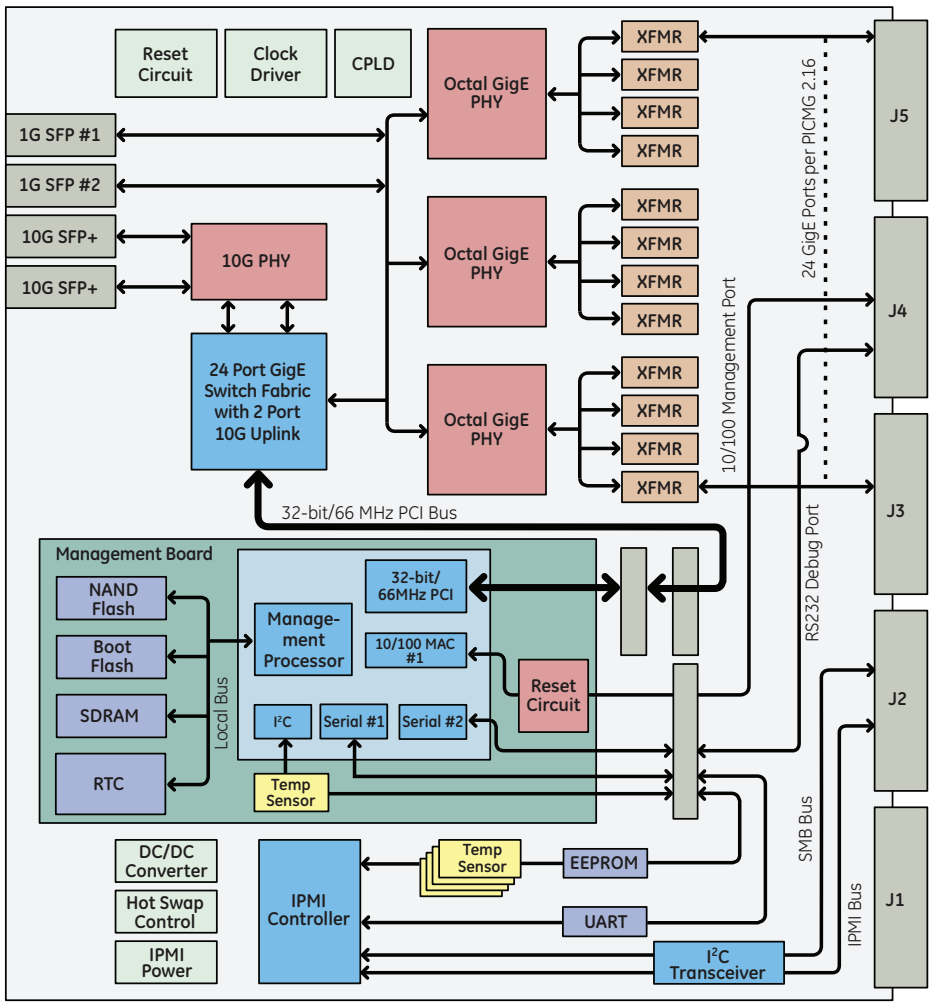
	300	301 (w/SPF's)
• Total	39W	47.5W
• +3.3V@	28W	26.3W
• +5V@	11W	11.2W

Environmental
- Temperature
  - Operating – Standard versions: 0° to +60 °C
  - Storage -40° to +85 °C
  - Operating – Industrial temp versions: -40° to +85 °C
  - Storage -40° to +85 °C
- Relative Humidity
  - Operating: 5% to 95%, non-condensing
  - Storage: 5% to 95%, non-condensing
- Vibration: 0.002g/Hz from 10-2000Hz Random and 2g Sinusoidal from 5 to 500Hz
- Shock: 20g peak sawtooth, 11mS duration

MTBF
- CP921RC-300: 292,812 hours at 40 degrees C, Grount Benign, Controlled
- CP921RC-301: 281,238 hours at 40 degrees C, Ground Benign, Controlled (no SFP or SFP+ loaded)

Regulatory Compliance
- European Union (CE Mark)
  - EN55024: 1998/A1:2001/A2:2003 ITE immunity characteristics
  - EN55022: 1998/A1:2000/A2:2003 Class A ITE emissions requirements
- United States
  - FCC 47 FR Part 15, Class A emissions
- Canada
  - ICES-003, Issue 4
- Japan
  - VCCI Class A ITE emissions
- Australia
  - AS/NZS CISPR 22:2002 Class ITE emissions requirements
- Safety:
  - UL60950-1
  - CSA C22.2, No. 60950-1-03
  - EN60950-1:2001 Low Voltage

Block Diagram



Note: Shielded cables (copper interface) must be used with the module to ensure compliance with FCC Class A limits.

About GE Intelligent Platforms

GE Intelligent Platforms, a General Electric Company (NYSE: GE), is an experienced high-performance technology company and a global provider of hardware, software, services, and expertise in automation and embedded computing. We offer a unique foundation of agile, advanced and ultra-reliable technology that provides customers a sustainable advantage in the industries they serve, including energy, water, consumer packaged goods, government and defense, and telecommunications. GE Intelligent Platforms is a worldwide company headquartered in Charlottesville, VA and is part of GE Home and Business Solutions. For more information, visit www.ge-ip.com.

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