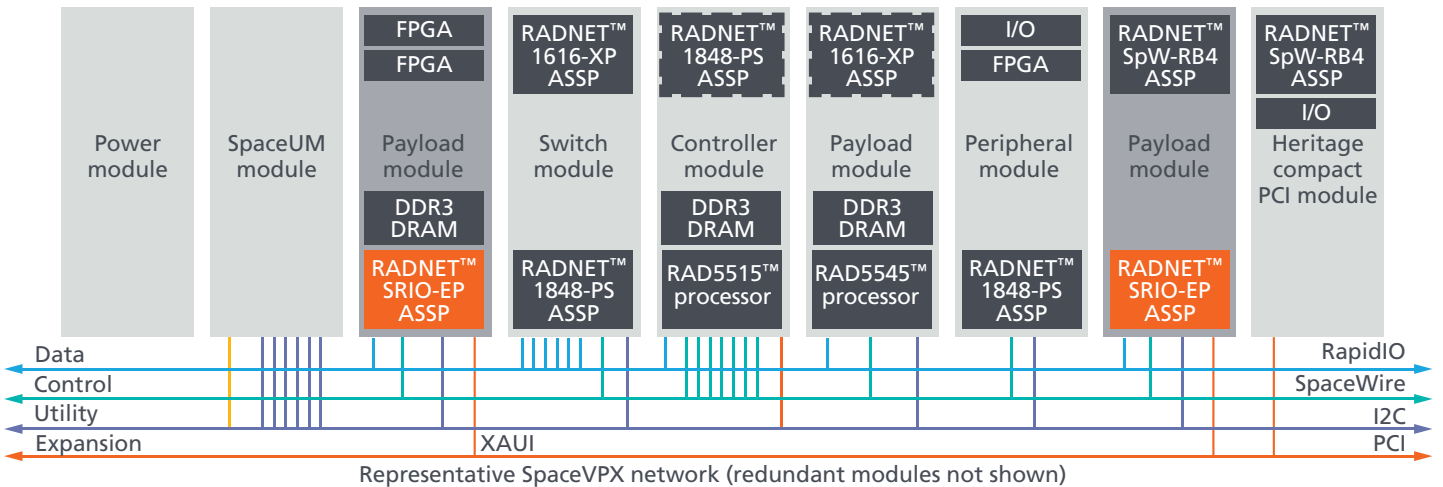
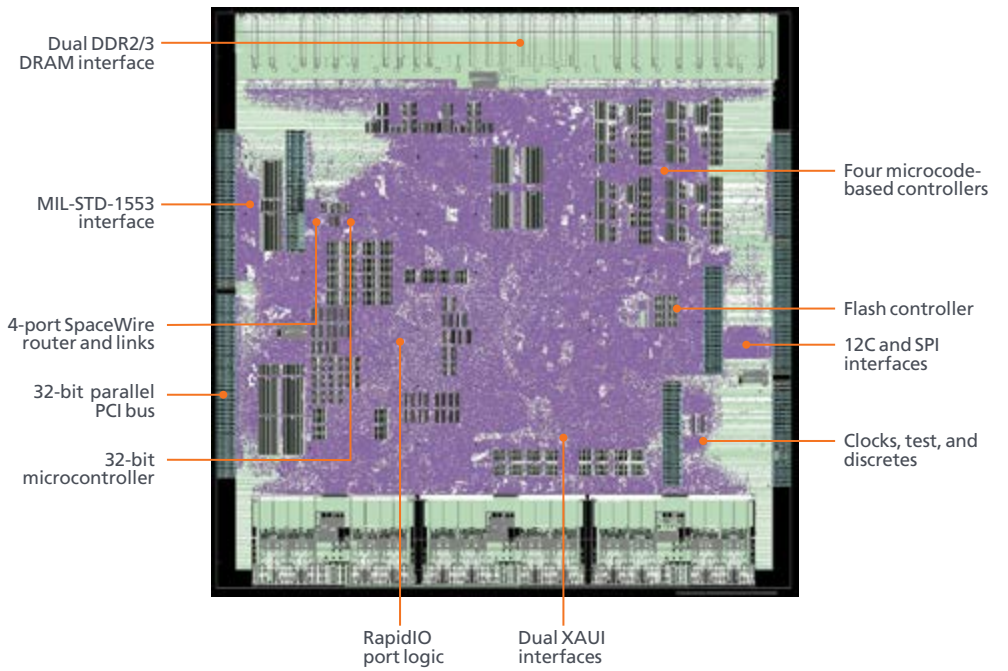


# RADNET™ SRIO-EP radiation-hardened RapidIO® endpoint microcontroller-based ASSP

The RADNET SRIO-EP application specific standard product (ASSP) provides connection between the RapidIO Revision 2.1 fabric and alternative interfaces along with access to large capacity DRAM memory.

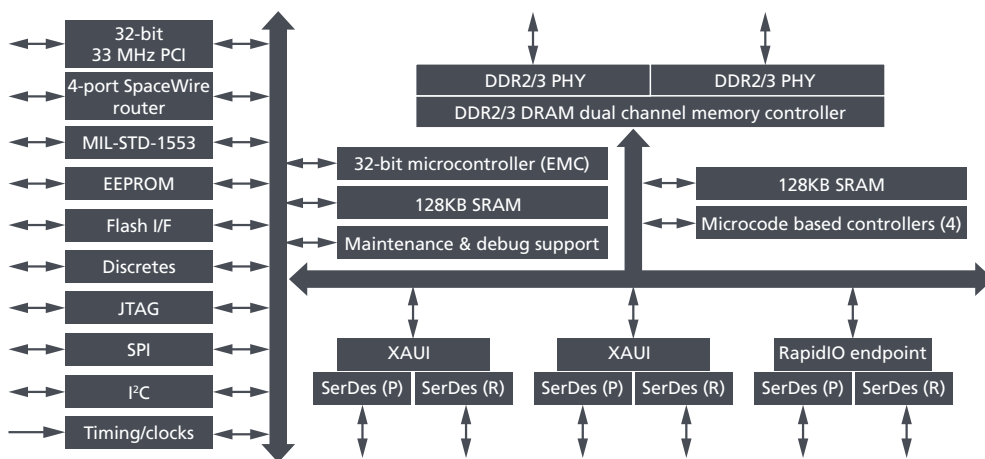
The RADNET SRIO-EP ASSP is a member of BAE Systems' RADNET family of high-performance radiation-hardened networking products. The ASSP integrates RapidIO and XAUI high-performance serial link interfaces with lower bandwidth legacy protocol interfaces. It is an extremely flexible general purpose connection device, which is compatible with the SpaceVPX standard.



## Key features and benefits

- RapidIO interface operates up to 3.125 Gbaud per lane
- SpaceWire and inter-integrated circuit (I2C) interfaces for SpaceVPX control and utility planes
- Legacy interfaces include peripheral component interconnect (PCI) and MIL-STD-1553
- SpaceWire serial links supported by a four-port router
- Dual interleaved DDR2/3 DRAM controllers, a NAND flash controller, and an EEPROM controller
- 256KB of on-die SRAM for use by the on-die microcontrollers
- Pseudo-random binary sequence (PRBS) generation and detection is provided to allow bit error rate testing across the serializer/deserializer (SerDes) links
- Five embedded microcontrollers to support bridging and priority queuing capabilities
- Four serial RapidIO embedded microcontrollers support multiple interfaces and are capable of 64 Dhrystone MIPS (DMIPS) of processing
- Serial RapidIO embedded microcontrollers create and direct messages between interfaces using a built-in 4KB priority scoreboard for queue management
- Fifth user-programmable embedded microcontroller provides 27 DMIPS of fixed-point processing for ASSP command and data handling
- Embedded microcontrollers optimize support for extensive priority queue management
- Two XAUI interfaces provide high throughput user interfaces
- SelectMAP interface provides support to configure multiple Xilinx® FPGAs
- SerDes interfaces support the RapidIO short and long run specifications, with programmable pre- and post-emphasis drive levels
- Unused ports can be powered down

## Hardware block diagram



### For more information contact:

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Cleared for open publication on 00/00

## Specifications

<b>Technology</b>	Radiation-hardened by design RH45® circuit library Trusted foundry 45nm silicon-on-insulator (SOI) process 1144-pin, 35mm ceramic column grid array package (I/O subset) 1752-pin, 45mm ceramic column grid array package
<b>Temperature</b>	Operating at -55 to +125 degrees Celsius
<b>Radiation-hardness</b>	Total ionizing dose: 1 Mrad (Si) Single event upset (SEU): SRAMs: <2E-9 upsets/bit-day, prior to the integrated ECC correction SEU: Flip-flops: 8E-14 upsets/bit-day Latch-up immune
<b>Power supply</b>	0.95 V +/- 5 percent core 1.5 or 1.8 V +/- 5 percent SerDes and double data rate (DDR) I/O 2.5 V low voltage differential signaling (LVDS) I/O 3.3 V CMOS I/O
<b>Power dissipation</b>	4-11 watts at 95 degrees Celsius and +5 percent voltage; depends on combination of active interfaces Unused interfaces can be powered down
<b>Interfaces</b>	
<b>Memory</b>	Dual interleaved DDR2/3 DRAM interfaces NAND flash controller EEPROM controller
<b>Input/output</b>	One four-lane Serial RapidIO port with redundant SerDes; up to 3.125 Gbaud/lane Two XAUI 802.3 four-lane ports (article 47 and 48 compliant) with redundant SerDes Four-port SpaceWire router Four I2C master/slave interfaces Serial peripheral interface (SPI) with four chip selects 36 discretes with clocks and timers 32-bit, 33 MHz PCI bus MIL-STD-1553B with A/B transceiver SelectMAP FPGA configuration interface
<b>Test and debug</b>	Dual JTAG master interface

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 CS-17-A05-01