



INNOVATION IN MOTION

Curtiss-Wright VPX Products Bus and Board 2007

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Introduction

- VPX products under development at Curtiss Wright
- Brief overview of features
- VPX-specific benefits to the customer
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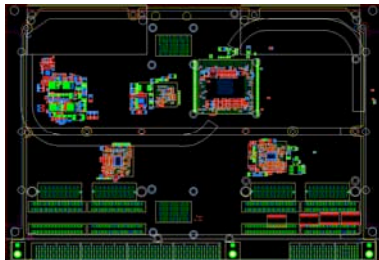
VPX Products in Development at Curtiss-Wright



CHAMP-AV6 Multicomputer
Quad FreeScale 8641
Serial Rapid IO interconnect



VPX6-185 Single Board Computer
One dual-core FreeScale 8641
Serial RapidIO and PCIe fabric connections



VPX6-215 PMC/XMC Carrier
One dual-core FreeScale 8641
Serial RapidIO and PCIe fabric connections

Coming soon



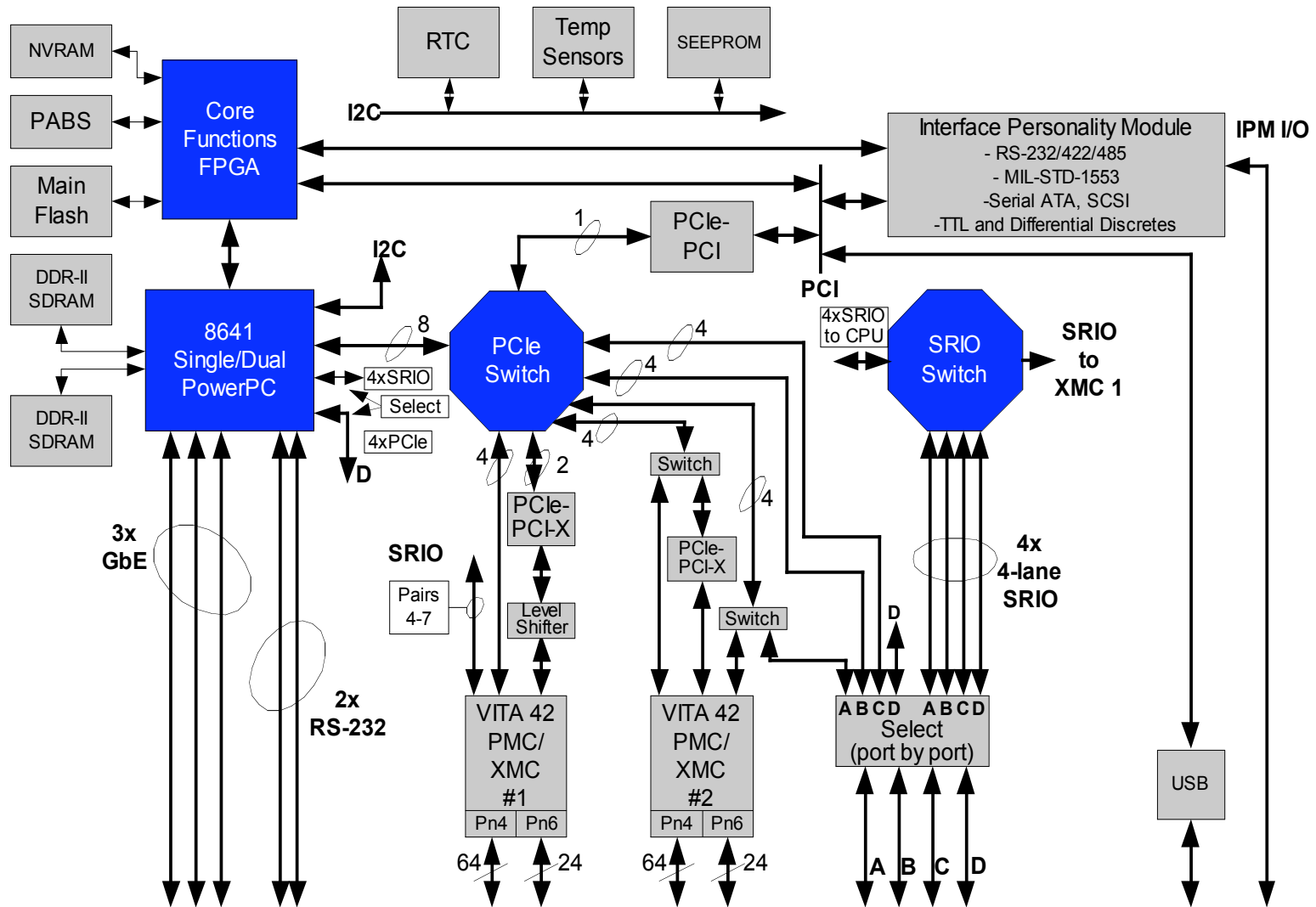
VPX6-185 SBC Highlights

- Dual-core PowerPC 8641 processor
 - Up to 2GB SDRAM, 512MB Flash
- Two PMC/XMC sites with PCI-X and PCIe
- Four Gigabit Ethernet ports
- Four RS-232 ports, two USB 2.0 ports
- Options for 1553, SCSI, SATA, RS-422, TTL interfaces via “IPM” mezzanine module
- VME64 interface option
- Software selectable core-fabric interfaces
 - Serial RapidIO for card to card interfaces
 - PCIe for connection to peripheral devices and carrier cards
- Commercial rugged air-cooled and conduction cooled versions
- VPX 0.8” pitch mechanical format





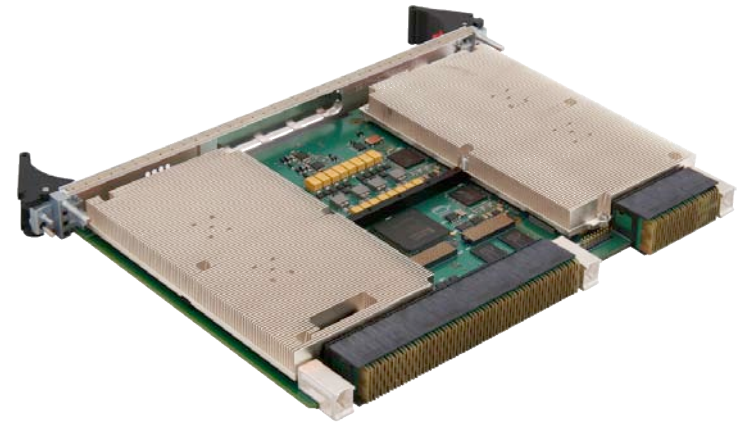
VPX6-185 Block Diagram





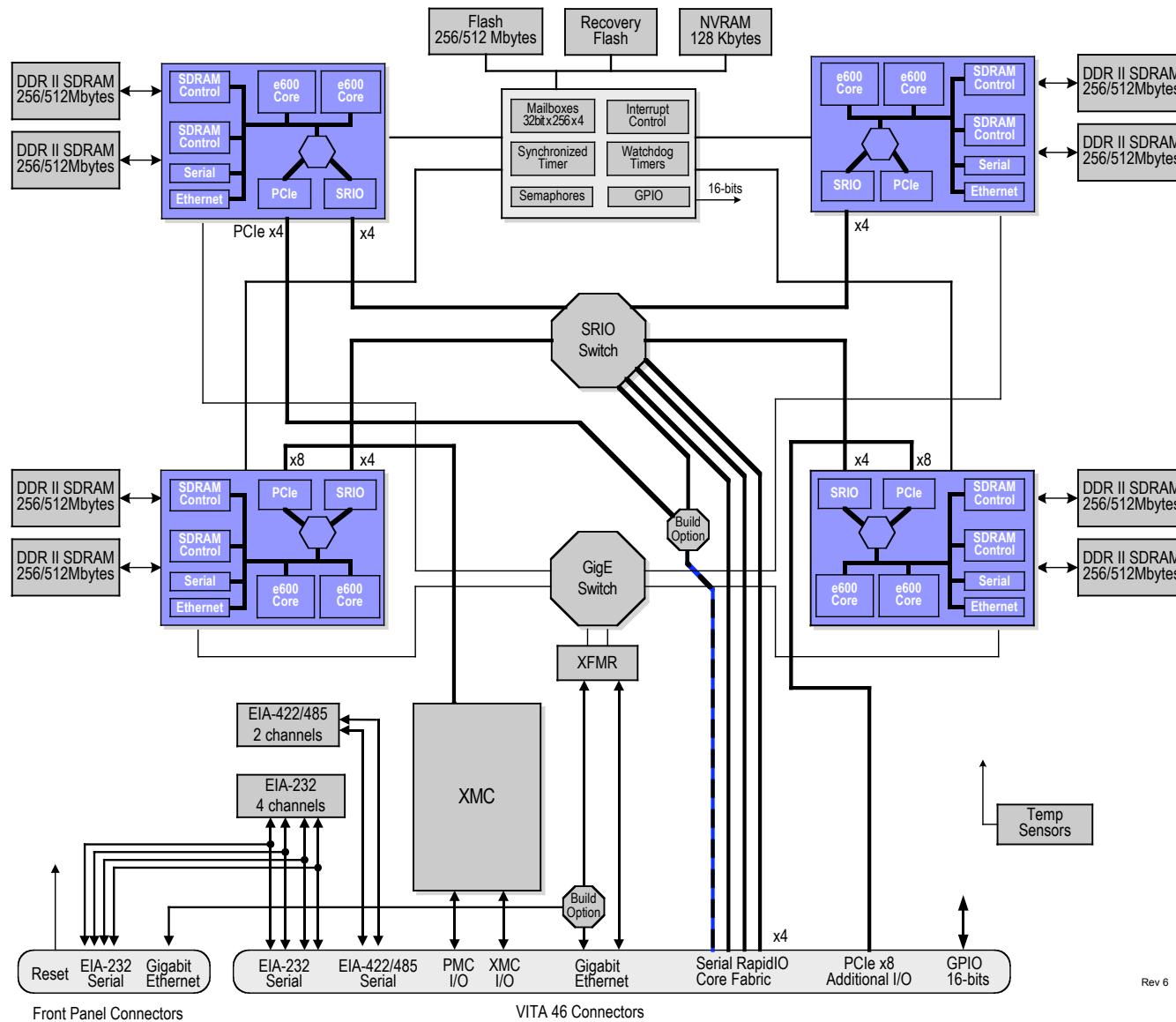
CHAMP-AV6 Quad 8641 Multicomputer

- Four PowerPC 8641 processors
 - Up to 1GB SDRAM per processor
- Serial RapidIO architecture
- All processors with Gigabit Ethernet
- On-board Gigabit Ethernet switch
- One XMC site with PCI Express
- Serial RapidIO core fabric interface
- Option for PCIe interface for connection to peripheral cards
- Commercial rugged air-cooled and conduction cooled versions
- VPX-REDI 1.0" pitch mechanical format





CHAMP-AV6 Block Diagram

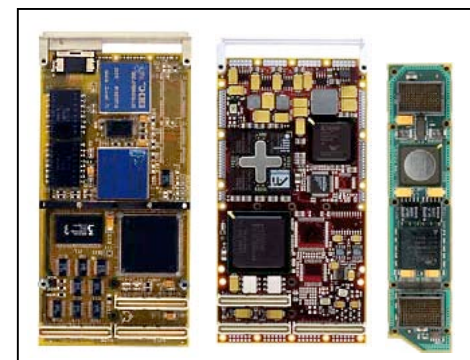


Rev 6



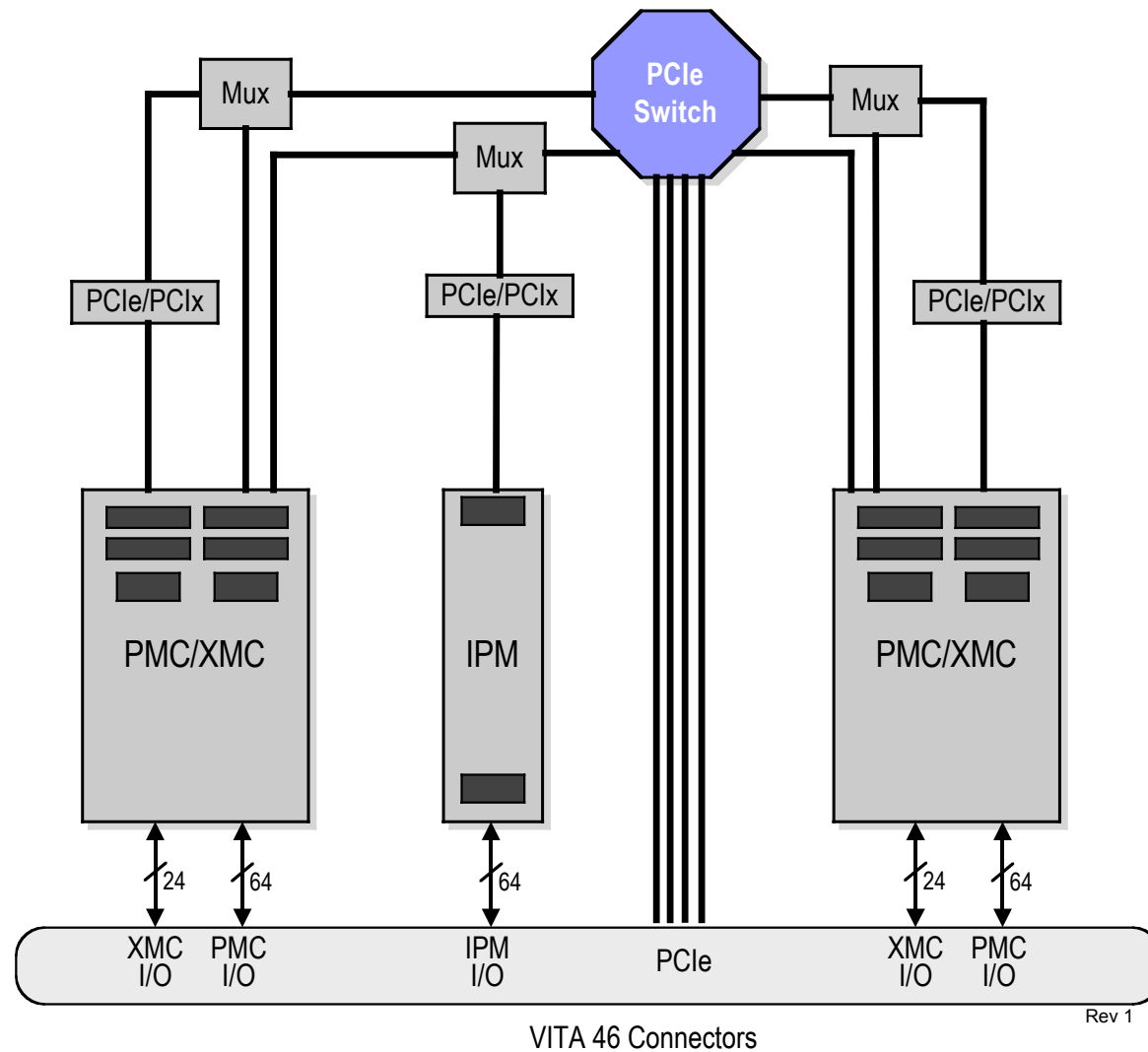
VPX6-215 PMC/XMC Carrier

- Allows addition of PMC/XMC modules into a system
- Takes advantage of “natural” ability of VPX to support PCIe in the backplane
- Supports two PMC/XMC sites and one IPM site
- Two high performance XMC sites support x8 PCIe links per VITA42.3
- PMC sites support up to 66MHz, 64-bit PCI-X
- Commercial rugged air-cooled and conduction cooled versions
- VPX 0.8” pitch mechanical format



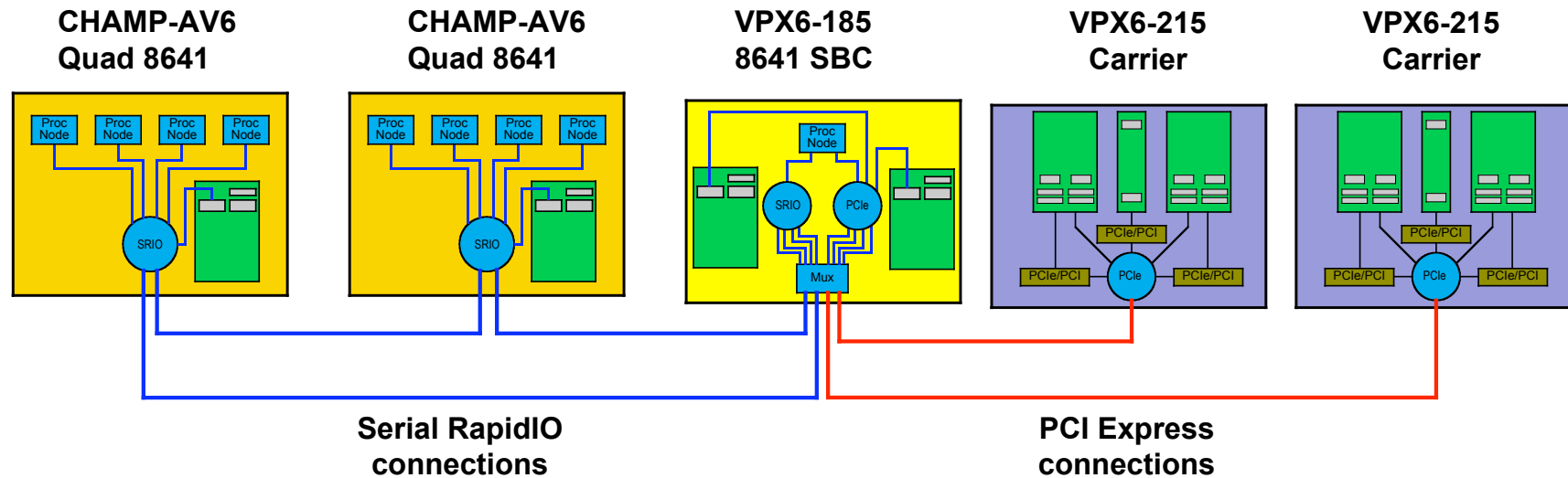


VPX6-215 Block Diagram





Example System using the carrier



Simple to support PCIe-based carrier cards with standard 5-slot mesh backplane
The 185 can select 1-4 fabric ports to be PCIe (or SRIO)
The AV6 can select 1 fabric port to be PCIe



VPX Advantages - Performance

Feature	Capability	Improvement
Off-card bandwidth	10GB/s	30x VME 2x VXS
I/O pin count	328	60% more than VME 300% more than VXS
XMC high-speed I/O	15GB/s	New capability
Additional high-speed serial I/O	80 differential pairs 25GB/s	New capability

XMC I/O bandwidth calculation. $2 \times 24 \text{ pairs}, 48 \times 3.125 \times 8/10 = 120 \text{ Gbps} = 15 \text{ GB/s}$

IO pins VME64x 205, VXS 110 (i.e VXS can not use the 95-pin PO for I/O)

Differential I/O 160 pins total. 32 used for core fabric, 2x24 used for XMC I/O, leaving 80 for other I/O



VPX Advantages – System Building Features

Feature	Benefit to the system integrator
PCIe and SRIO	SRIO for high-performance multi-processor systems PCIe supports PMC/XMC carriers and other peripheral cards Lowers cost of implementation
Distributed switching	Small systems can be constructed without fabric switch card. Smaller, more reliable, lower power, better.
VME	Re-use of legacy VME cards especially I/O cards

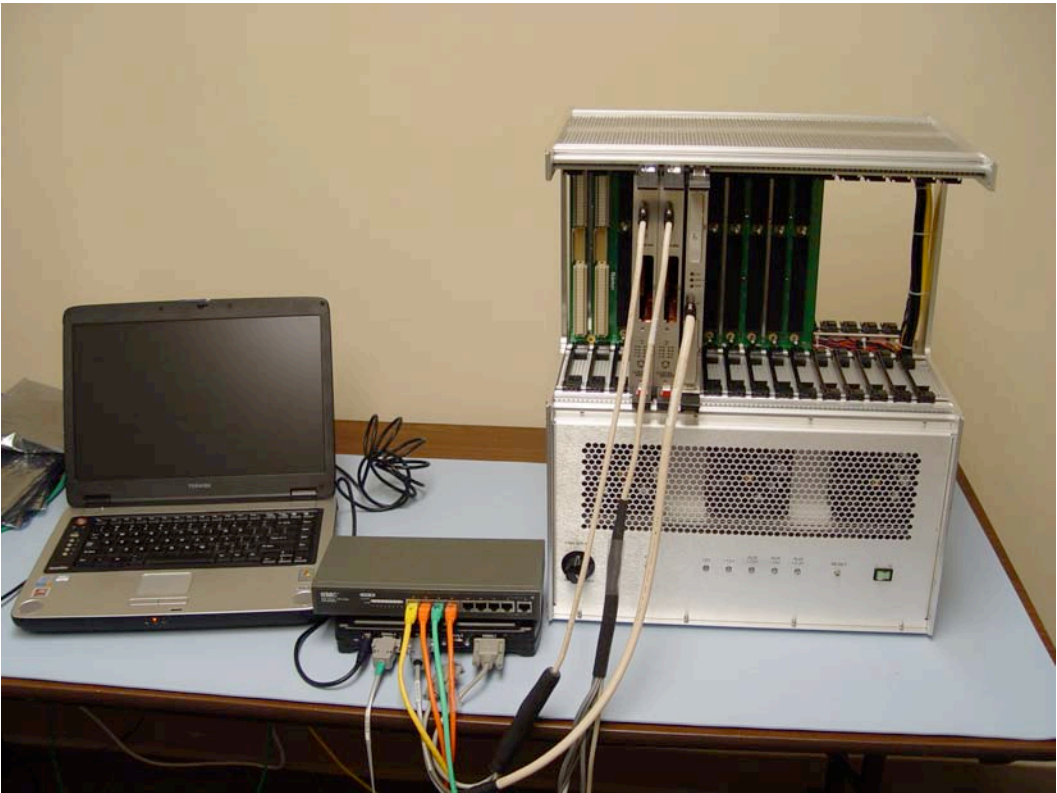


VPX Advantages – Packaging & Cooling

Feature	Capability
VITA 48 1" pitch	Higher power parts on the backside Can cool >150W at 85°C conduction cooled
Standardized keying	Corrects a short coming of conduction-cooled VME
Standardized alignment	Decreases failures caused by bent-pins
Standardized covered module format	Off the shelf covered modules will reduce cost to the DOD for 2-level maintenance programs.



It's alive!



Bus and Board
January 14, 2007

The worlds first live public demonstration of a VPX system

See yourself at the Curtiss-Wright booth during this evenings social event



Thank You

