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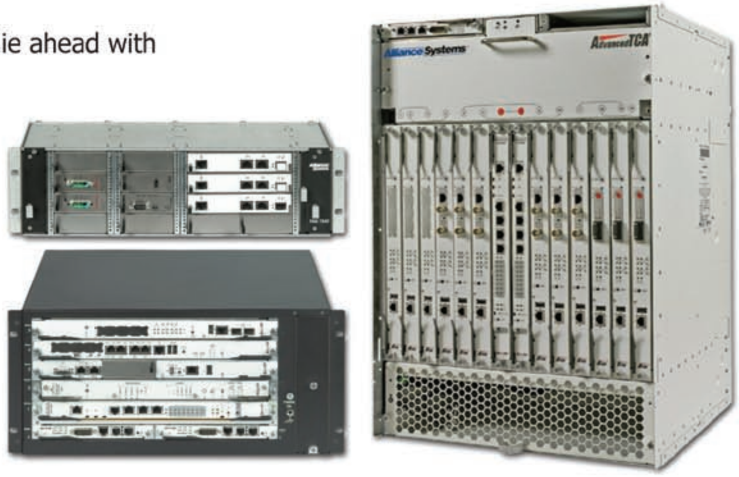

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Clockwise from top: **FCI** AirMax VS System Connector; **MEN Micro** F17 Core 2 Duo SBC; **Performance Technologies'** ATC6640 1Gb/10Gb Ethernet Switch; **Alliance Systems'** A-5000 5U Server

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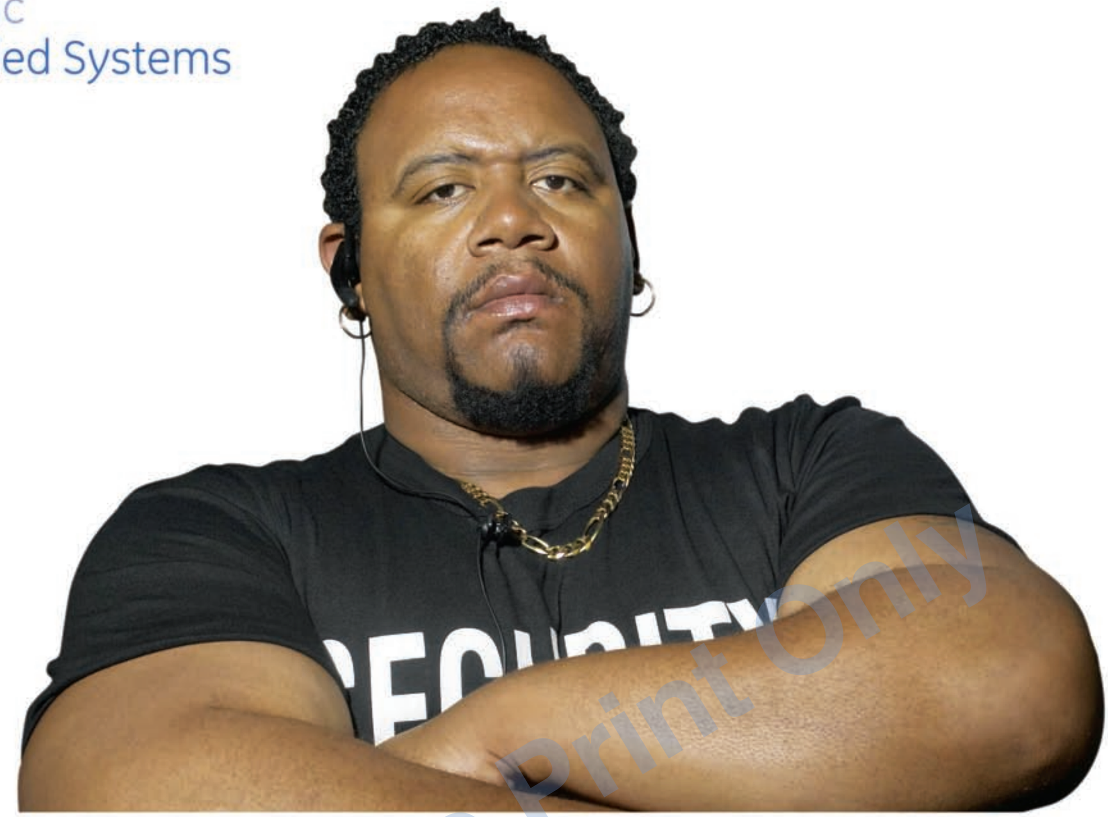

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Editor's Foreword

By Joe Pavlat

True end users and trends to watch

Welcome to the *4th Annual CompactPCI and AdvancedTCA Systems Resource Guide*. In addition to presenting the reader with an ever-expanding list of technologically advanced products, this issue offers articles that shed light on how some of the technologies we focus on are solving real world problems today as well as a glimpse of what the future may offer.

It's easy to think that the telecom equipment manufacturers are the end customers for AdvancedTCA systems, but it is actually the carriers – Verizon, Cingular, and the like – that are the end customers. When I spoke with Mitch Simcoe of Nortel he offered significant insight into carriers' requirements. Nortel is already shipping significant quantities of AdvancedTCA systems to its customers, and Mitch talks about the needs of the carriers, requirements for the future, and why AdvancedTCA is a potent weapon in their arsenal.

Brian Carr and Shreekant Raivadera from Motorola give us a detailed analysis of the evolution of AdvancedTCA and MicroTCA-based communications servers. They note that open, standards-based communications servers have now been adopted for much of the next generation of networking equipment to support emerging applications. As this trend accelerates, the breadth of applications is expanding – driven by continuing work in the standards development organizations, guidance from equipment providers, and demand for multivendor interoperability.

The authors review the benefits that have already been delivered to the industry and explain the challenge of broadening communications server technology to fulfill its promise as a key enabler of IMS and IPTV infrastructure and broadband wireless evolution including 3G LTE, 4G, and WiMAX.

Brian and Shreekant also discuss the technology implications of other major trends, including the growing demand for features traditionally found in the data center that need to be embedded into the telecom network and into central office environments. Also addressed is the growing use of software configuration rather than multiple hardware implementations. This results in consolidation of network functions into a smaller number of common, carrier grade base platforms. Technology issues, including processor technology, thermal issues, packaging, and software are also discussed.

> "As networks become ever more complex, keeping things running while dynamically updating software or changing configurations is a difficult challenge."

James Radley of Continuous Computing brings us up to date on the Communications Platforms Trade Association (CP-TA) and how it is solving the challenge of interoperability by extracting a narrowed-down set of choices from within the complete PICMG 3.x group of options. He also touches on Ethernet as the *fabric du jour* and why it has gained that role.

Until the 1990's every microprocessor manufacturer had their own protocol for connecting to peripheral chips, fragmenting the market for both microprocessors and peripheral chips. The PCI bus changed all that, and it became the industry's first processor independent chip-to-chip interconnect. The result was a flood of cheap, powerful peripheral chips that could be used almost anywhere. PCI data transfer speeds increased steadily, but eventually the laws of physics caught up and designers began to look to switched serial interconnects – often called switched fabrics – to break the bottleneck and go faster. Switched fabrics are fast, more robust than parallel buses, and reduce the needed number of traces/pins. Many switched fabrics exist, but at the chip-to-chip level PCI Express has become the new ubiquitous standard.

Among backplane interconnects, Ethernet has long been the overwhelming winner. Touseef Bhatti from PLX Technology puts forth the case in his article that PCI Express now has the potential to unseat Ethernet as a backplane technology, offering better scalability, lower latency, hardware error checking, and better security and efficiency.

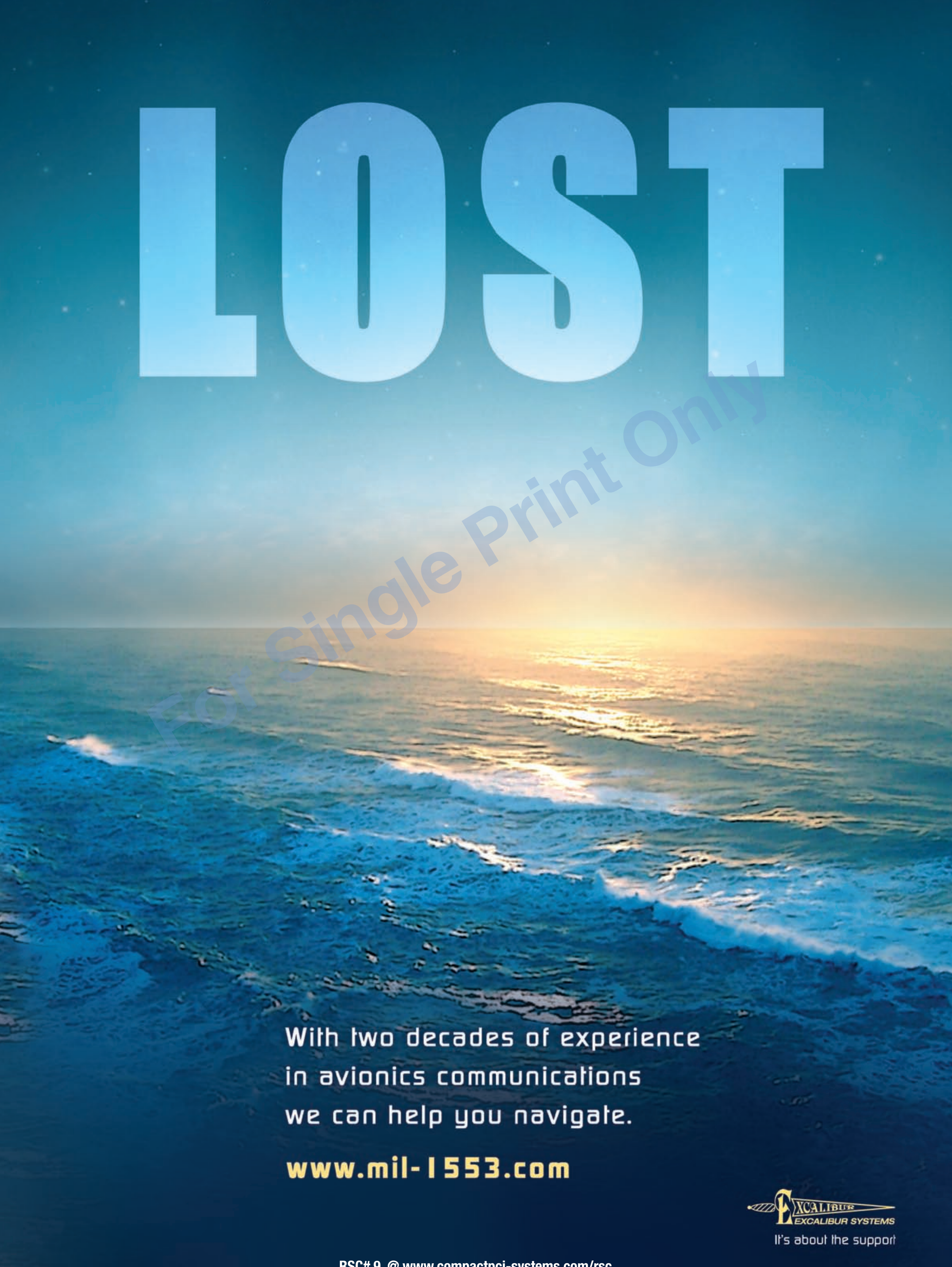
Uninterrupted service is the Holy Grail of all major telecom systems, and achieving this through high availability architectures is the norm. As networks become ever more complex, keeping things running while dynamically updating software or changing configurations is a difficult challenge. Claes Wikström from Tail-f Systems is an old pro when it comes to high availability network management, and he tells us about some of the requirements, issues, and challenges facing network designers. Claes offers helpful tips on keeping the whole network alive on a continuous basis.

And last but certainly not least, this month's *CompactPCI and AdvancedTCA Systems* E-letter (www.compactpci-systems.com/eletter) has an article about the difficulty of delivering the critical *last mile* of high-bandwidth content to the home for converged services including video and VoIP. Alan Percy of AudioCodes describes the heavyweight competition in this arena and the huge potential rewards. He explains many of the technical issues and solutions that exist. His article makes a good introduction to voice compression and transcoding.

Enjoy.

Joe Pavlat

Joe Pavlat
Editorial Director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What's next for the communications server?

Identifying and targeting the application classes of common platforms in next-generation networks

By Brian Carr and Shreekant Raivadera

The authors look at the future of communications servers, touching on a number of issues, from the cost reduction challenges facing Network Equipment Providers (NEPs) to applications' journeying from the data center to the network environment and the impact on servers.

In the telecom equipment industry, the only constant is change! Operators need to add services to retain customers and increase revenue. Vendors fight to win contracts while containing or reducing investment in research and development. This situation has left many NEPs struggling to find the right balance to achieve success and profitability. In essence, NEPs must focus on their core competencies and differentiating value.

More often than not, this differentiating value cannot be found in the base computing platform of equipment providers' products. The advent of appropriate open standards such as AdvancedTCA and MicroTCA hardware, Carrier Grade Linux (CGL) operating systems, and Service Availability Forum (SA Forum) middleware has led the NEPs to look to off-the-shelf components to construct their next-generation products.

With a standards-based approach and a component-level ecosystem, NEPs traditionally follow a set product development pattern:

- Choose an appropriate chassis
- Configure this with different types of blades from a variety of different vendors
- Write application and management code
- Integrate, test, and release to market

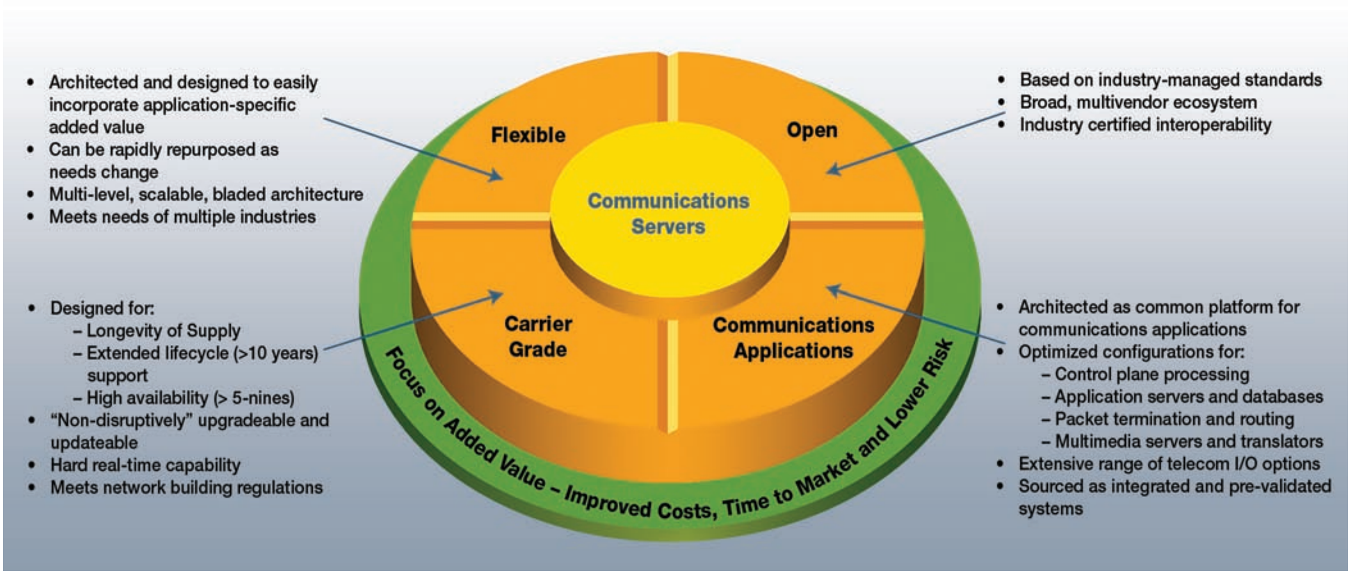
While this business model is widely used, the promised time-to-market gains are often harder to come by for two reasons:

1. Component-level integration and testing to the stringent standards required in telecom require significant effort.
2. All open standards invariably have room for intepretation, and where choice exists, so does the risk that different suppliers will make different implementation choices leading to incompatibilities. This was true with CompactPCI, and it is still true today in AdvancedTCA, MicroTCA, and AdvancedMC.

In order to reduce both risk and effort for their customers, many open-standards suppliers are moving toward offering a preintegrated, prevalidated platform tailored specifically to meet the needs of NEPs: the communications server.

Communications servers defined

Communications servers are open, standards-based computing platforms that serve as a common, carrier grade foundation for a wide range of communications applications and allow for value-add at many levels of the system architecture. Communications servers have several fundamental characteristics, outlined in Figure 1, that make them ideal for com-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– Packet termination and routing
– Multimedia servers and translators
• Extensive range of telecom I/O options
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Figure 1

munications applications and sets them apart from traditional enterprise servers or so-called application-ready platforms.

It's significant that several large NEPs are already accruing communications server benefits. A study by the Yankee Group identified a significant (30 percent) reduction in overall development cost when using standards-based communications servers and a meaningful increase in Net Present Value when time-to-market advantage is factored in.

> "Communications servers have several fundamental characteristics that make them ideal for communications applications ..."

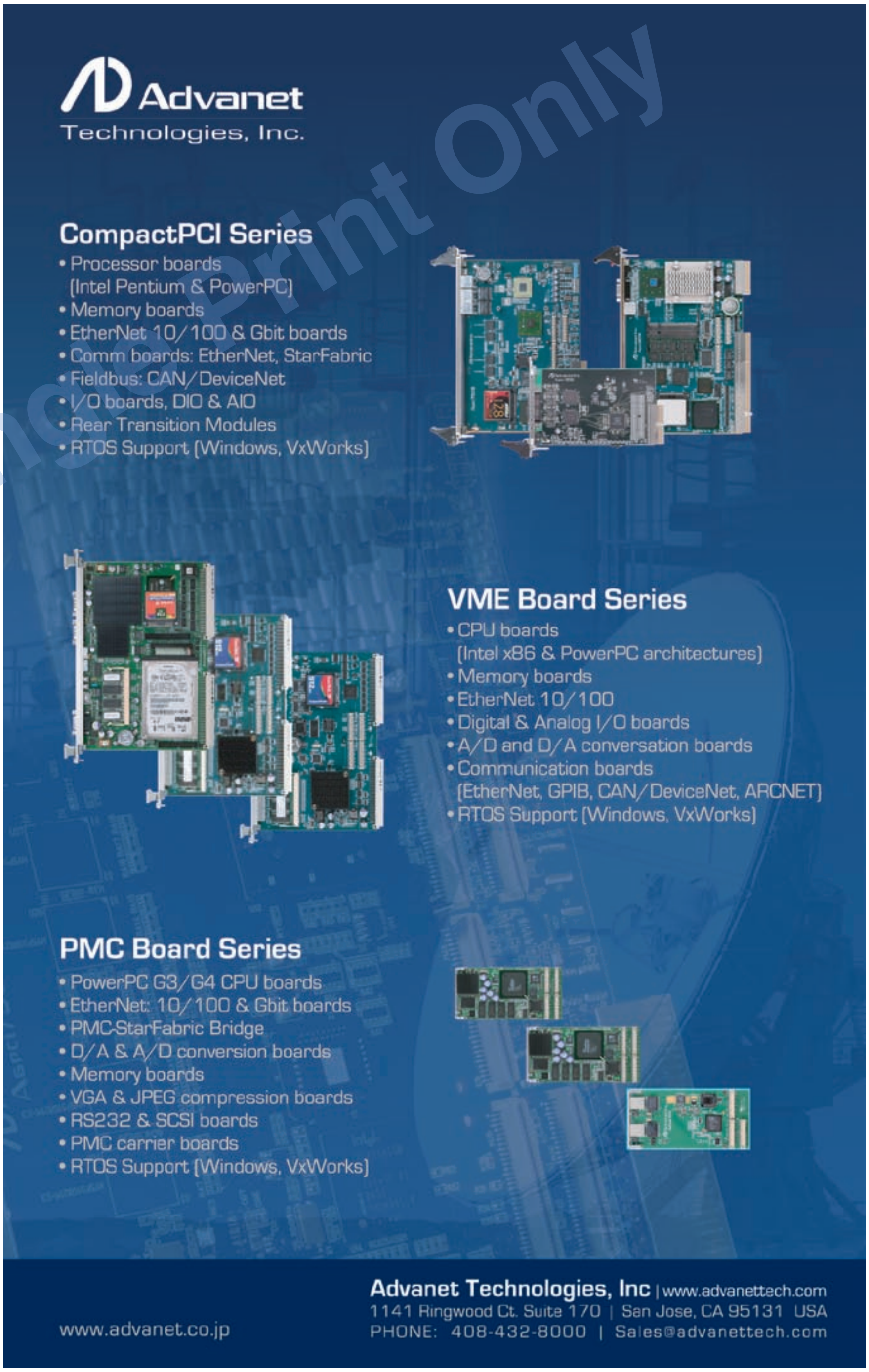
The first-generation communications server is based on the AdvancedTCA standard. One of the first companies to adopt an AdvancedTCA communications server, Nortel, developed its Versatile Service Engine (VSE) by capitalizing on the benefits of an open standards-based common platform. This approach made many applications software, rather than hardware, configurable. As a result of adopting the communications server platform, Nortel reduced its total cost of ownership by decreasing spares, training, and installation costs, putting simpler provisioning and configuration in place, and improving scalability.

Common platform classes

Ideally, a single common platform architecture would exist for all possible applications. Unfortunately, processing characteristics, environmental needs, and data flow capacities differ too much to make a single implementation feasible. However, establishing a small number of common platform architectures that specifically address as many applications as possible is a reasonable goal.

In order to determine how many common platform architectures are required, we need to analyze the major network element applications in the next-generation network and look for commonality of features, data flow, and environment within six major network classes:

1. **Application Class:** traditional application servers including presence and push-to-x servers, as well as domain name and other network services
2. **Authentication and Subscriber Profile Class:** database-intensive applications such as Home/Visitor Location Registers, Home Subscriber Server (HSS), and Authentication Authorization and Accounting (AAA) servers
3. **Signaling Class:** often considered "control plane" applications, including softswitch, IP Multimedia Subsystem (IMS), Control Server (x-CSCF), and Signaling Gateway (SGW)
4. **Bearer Class:** applications that pass or manipulate bearer traffic including both circuit and IP Media Gateways (MGW), Aggregation Router, and Base Station Controller (BSC)
5. **Transport Class:** applications that are part of the access network including IP-DSLAM, Optical Network Termination, and Optical Line Termination
6. **Base Station Class:** a specialized class covering the needs of wireless base stations serving WiMAX/4G and 3GPP/3GPP2 networks, and often has specialized environmental needs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Each of these classes has substantially common needs, so it is possible to configure an optimal common platform on an individual basis. However, a further grouping is possible concerning the optimal communications server platform. As shown in Figure 2, this can be illustrated by considering the IMS and partitioning the architecture into a layered network diagram.

Calling 10G

As depicted in Figure 2, three principal communications server platform cores together cover the majority of applications:

1. A central office platform based on a 1G – 4G Ethernet fabric infrastructure with a blend of general computing and storage elements and medium density telecom I/O. This is provided today by existing AdvancedTCA technology and in the future could also be implemented in a redundant MicroTCA form factor for a more granular scalability.
2. A central office platform based on a 10G Ethernet fabric infrastructure with high-performance computing and specialist packet-processing elements together with high-density telecom and network I/O. This is next-generation AdvancedTCA territory.
3. A smaller, heavily customizable architecture with a variety of fabric interconnect options, scalable processing, and I/O elements, and an ability to adapt to access network environments. This flexibility of architecture and packaging best suits MicroTCA.

The 1G AdvancedTCA based platform was the first to be generally available, so the majority of existing deployments fall into the target application classes for this platform. For example, there are existing AdvancedTCA communications servers deployed as SIP call agents, softswitches, base station controllers, small scale media gateways, application servers, HLRs, and signaling gateways. For many applications, this level of performance will remain sufficient. However, extending the benefits of communications servers to other applications in the bearer and transport plane will require the next generation AdvancedTCA 10G base platform.

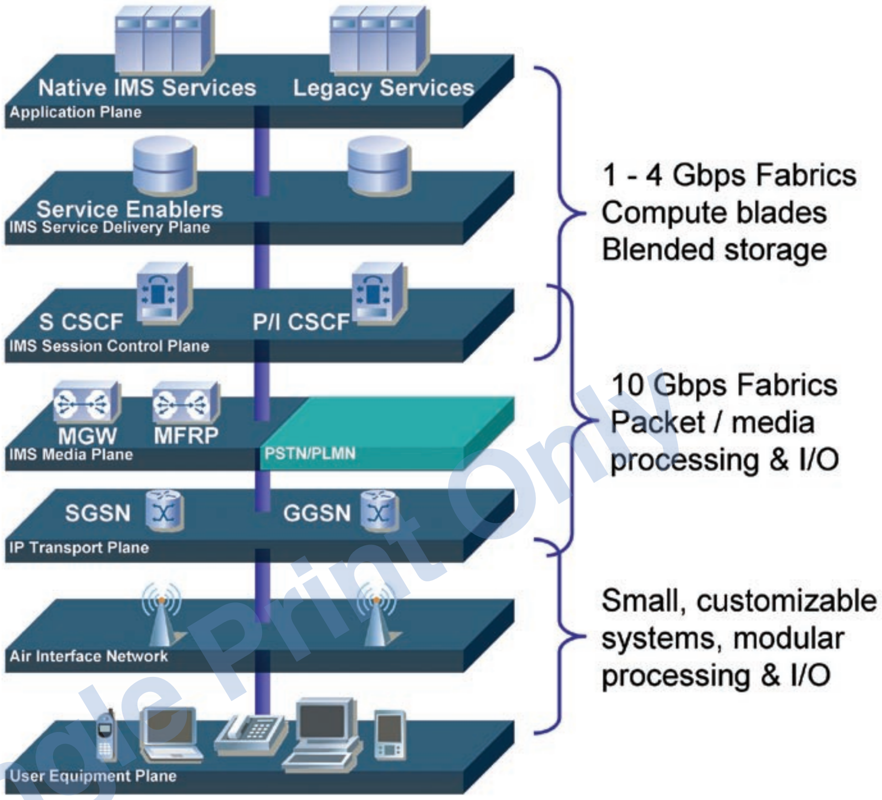

Figure 2

Next-generation communications servers

The next generation of communications servers will be better performing, have lower costs and broader market appeal, be more interoperable, and feature more software content. Communications servers based on 10G fabrics are just now coming to market. Their advent enables the next wave of applications in both control plane and data/bearer plane to take advantage of the open standards business model. In turn, to meet the needs of these new applications and the ongoing industry need for cost reduction, the core features of communications servers must evolve.

Customer and application needs

The biggest issue facing NEPs today is the imminent need to reduce cost. Not only do they need to lower the cost of existing equipment, they also need to ensure that the next generation has an appropriate cost reduction trajectory. In many cases, increasing the performance and density is an important means of reducing the overall cost per subscriber. Additionally, cutting operational costs by reducing power consumption and even floor area, for example, is desirable. These concerns have led to ongoing equipment consolidation and the need for bladed communications servers. Once implemented in separate boxes, functional elements are now residing as software functions on blades. In addition, groups of functional elements have moved from racks to multiple blades in a single communications server shelf. Continuing this trend puts constant pressure on NEPs to increase the performance per unit for existing applications.

The next wave of applications spurring communications server development involves wireless evolution and the wider deployment of "all-IP" networks, specifically 4th Generation (4G) wireless networks, including WiMAX, and IPTV triple-play solutions. An all-IP flat-network architecture, such as the example in Figure 3, allows for benefits such as optimal traffic routing, network simplification, and truly seamless mobility. This architecture also demands:

- End-to-end security
- Access management
- Perimeter protection
- Increased authentication, authorization, and auditing activity

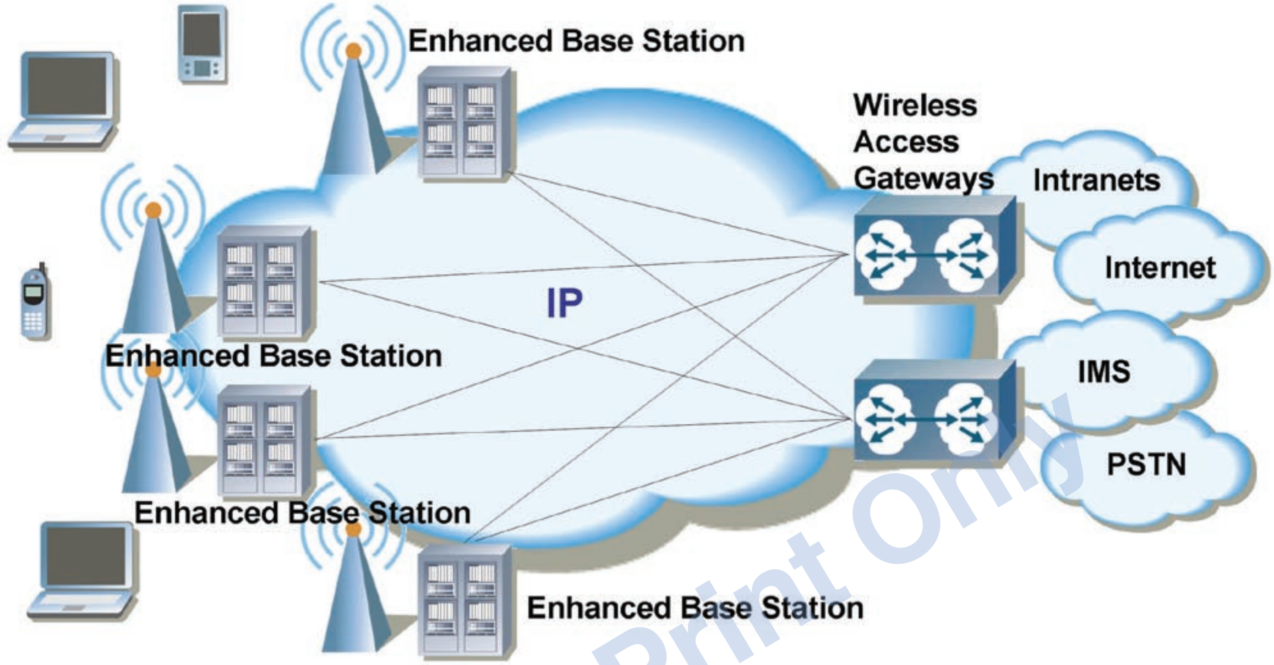

Figure 3

In the case of wireless access, this involves an upgrade or replacement of the existing radio access network elements with new enhanced base stations and IP packet routing and gateway elements managing traffic into the core network.

Overall, the trend is one of a substantially increased packet-processing requirement and a move of computing functions out from the traditional data centers and into the telecom network, where central office standards apply. These standards include high availability, remote management, and thermal performance.

Technology trends

The migration of applications from the data center into the network environment has been driving both hardware and software evolution of AdvancedTCA communications servers. On the software side, especially in the IMS and IPTV arenas, the drive has been toward more productive use of certified software applications that run in the data center. This trend has led to the support of enterprise Linux distributions such as Red Hat and SUSE on Intel Architecture processor blades within the communications server.

On the hardware side, the drive is to continue to increase processing capability and support the software initiatives. This implies a move to embedded versions of the latest dual and quad core Intel Architecture processors. And coupled with these embedded processors is a proportionally high memory capacity to support telecom server applications. This is relatively straightforward in a cooled data center. However, the adverse thermal conditions and requirements imposed by the Network Equipment Building Standards (NEBS) make this a substantial challenge for AdvancedTCA systems.

Although moving to the latest dual core Intel Xeon series processors substantially increases processing density, the trend here is for the CPU devices to dissipate more power and with a correspondingly higher power density. This trend makes it harder to stay on the ever-increasing processor performance curve with an appropriately matched memory block, yet remain within the 200 W per slot limit of current AdvancedTCA systems. Industry efforts are concentrating on cooling performance, thermal design, and especially thermal interoperability for the next generation communications server chassis and blades, led by the Communications Platforms Trade Association (CP-TA).

Many-core processing debuts

The advent of all-IP networks, including 4G wireless, increases the need for content-aware packet processing technology for secure terminations and deep packet inspection. An exciting new technology that looks to address this and also offers substantial performance and cost benefits is referred to as *many-core processing.*

It's clear that network processors failed to take off in the open standards-based environment. They certainly met an application need, however the applications did not match up well to the capabilities of the 1G AdvancedTCA common base platforms available to host them. Because the performance of general-purpose CPUs was adequate and they were already used in the platform, many applications adopted them. At the same time, network processors often faced a challenging software development environment. As packet processing requirements increase, we pass the point where a general-purpose CPU approach is sufficient, but moving on to network processors is not the answer either. What is needed is a device that features many processing elements, memory controllers, onboard caches, and specialized accelerators as network processors do, but (unlike network processors) is as flexible and easy to use as the general-purpose CPU. The new Many-core Processor Units (MPUs), such as the Octeon family from Cavium Networks, appear to offer this balance and match well with the latest high-capacity links and fabrics available in next-generation AdvancedTCA communications servers.

MPUs typically offer 8 to 16 independent processing cores or hardware threads per device, allowing for up to 32 independent processing elements in a typical AdvancedTCA blade implementation. This new generation of processors is relatively easy to program because they can run standard Linux operating environments and come with various hardware accelerators for security and traffic management. They also support virtualization: different cores can be assigned separate independent tasks allowing discrete functions to be implemented on the same blade.

The application of many-core processing to transport plane functions such as packet inspection and forwarding is obvious. Also intriguing is the potential application to control plane tasks. The characteristics of control plane applications mean that the best performance architecture often features many loosely coupled processing elements operating in parallel. Previously, this would have been implemented as a collection of standard processor blades loosely coupled over Ethernet. Now, there is the potential to use a single many-core processor blade to replace several general-purpose CPU blades, addressing both control and data plane tasks in parallel, saving space and cost, and allowing higher density solutions to be deployed.

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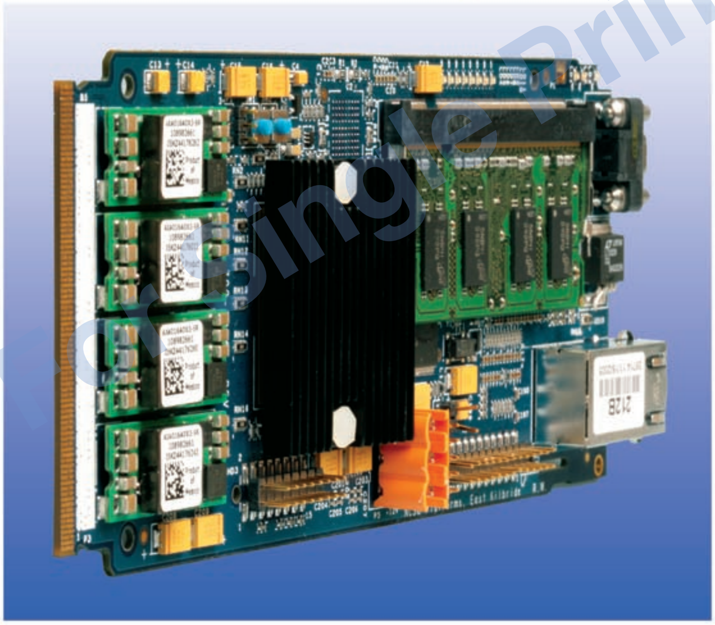

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To get the best out of the many-core MPU-based AdvancedTCA systems, careful planning and understanding of a new architecture is required, so its benefits don't come gratis. As the evolution into higher performance dual-core and quad-core general-purpose CPUs continues, so the cost/benefit analysis for using many-core MPUs will change over time. However, the potential cost benefits are substantial. Expect to see much more about many-core processing units over the next year.

Beyond the central office

Finally, we are seeing the emergence of small-scale systems for deployment in areas other than central office environments and even outside traditional telecom networks. An example of this is in the next-generation electronic battlefield communications systems. The basic infrastructure is the same as in a commercial wireless telecom network enabling the technology to be largely reused, but the final implementation and environment for the equipment is very different. This is where MicroTCA-based communications servers potentially have application – they could support a variety of packaging options, including fully rugged defense, but reuse the same core technology to maximize economies of scale.

First generation AdvancedTCA communications servers are already being deployed, and are fulfilling the promise of reduced cost of ownership and enhanced time to market for common base platforms at a number of telecom equipment manufacturers. Case studies of these applications demonstrate substantial advantages to the companies concerned, and industry analysts agree there are good business benefits available to adopters.

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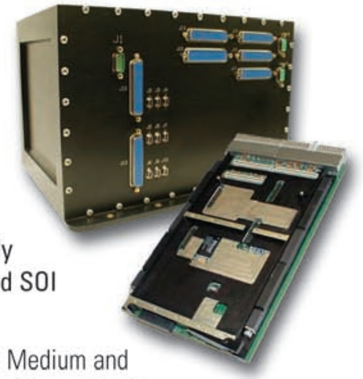

We are now seeing the introduction of the next generation of AdvancedTCA communications servers. These are based on 10 Gigabit technologies with improved thermal designs, and open the way for a new wave of applications to gain the same benefits. At the same time, other technology advances such as many-core processing complement the increases in base platform capability. The next year promises to be an exciting time.

Brian Carr *is a strategic marketing manager in Motorola's Embedded Communications Computing business. Brian joined Motorola in 2001 as part of the acquisition of Blue Wave Systems, where he pioneered the company's telecom and voice-over IP product line. He is now responsible for communications servers based on open standards such as AdvancedTCA, MicroTCA, Carrier Grade Linux, and SA Forum. Brian brings together deployed products and next-generation technology requirements to guide the company's strategic roadmap. His 21 years of experience in the telecom industry started in R&D at BT Labs, where he helped develop a network embedded voice services platform and was technical lead on several related application deployments. Brian holds MS degrees in Engineering from Cambridge University and in Information Technology from Essex University.*

Shreekant Raivadera *has managed Motorola's communications server marketing program as it has become the leading supplier to network equipment providers. He started in the high tech industry with a range of clients including a global business software house, a top five PC vendor, and a world leader in digital printing. Previous roles include grassroots international relations for an education office in rural Japan and sales and marketing for a major Australian retailer. Shreekant has a Bachelors degree from the University of Wales, Swansea and is an Associate Member of the UK's Chartered Institute of Marketing.*

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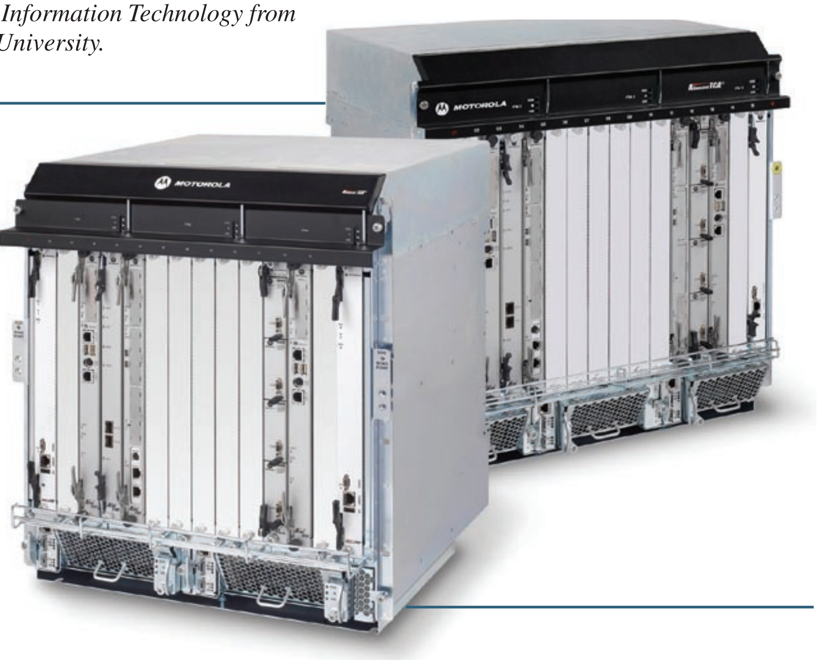

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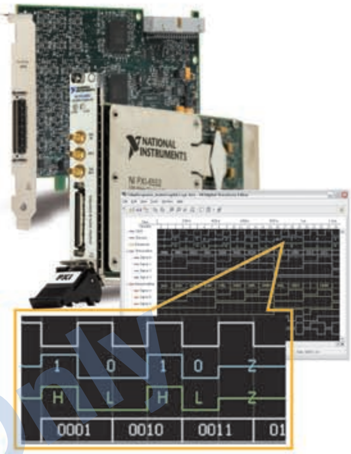

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AdvancedTCA: Interoperability delivered

By James Radley

AdvancedTCA offers the promise of carrier grade platforms, consistently managed and suitably packaged for deployment in the central office environment. As an open specification, AdvancedTCA should allow the wider vendor ecosystem to deliver competitive, interoperable COTS products. However, integrators of AdvancedTCA-based telecommunications platforms need to carefully ensure that the modules they select are indeed truly interoperable.

Introduction

The Advanced Telecommunications Computing Architecture offers an open specifications approach to creating carrier grade service platforms, suitable for deployment in the telecommunications network. A key advantage of AdvancedTCA in being an open specification (created by PICMG) is that it is possible to build platform systems out of modules designed and manufactured by different vendors. The appeal for those building telecommunication platforms is that they can choose the most suitable products from within the AdvancedTCA ecosystem and build a solution tailored to directly address the needs of each application.

The ideal situation, one in which a platform integrator can select arbitrary modular AdvancedTCA components and expect that they will harmoniously work together, is unfortunately not an automatic reality. Within the suite of PICMG 3.x specifications that make up the AdvancedTCA family, designers can legitimately make many implementation and architectural choices. The problem is that these choices are often incompatible with each other, and this leads to the distinct possibility that otherwise compliant AdvancedTCA modules do not necessarily interoperate.

Such incompatibilities can lead to the fragmentation of the AdvancedTCA ecosystem, with niche implementations being produced that are unable to interoperate with other AdvancedTCA product lines. The advantages brought through AdvancedTCA being an open specification, allowing integrators a rich choice of inter-working modular options, would be eroded.

The Communications Platforms Trade Association (CP-TA, www.cp-ta.org) is tackling these issues by identifying a narrowed down set of choices from within the wider PICMG 3.x menu of options, which member companies agree to support. In addition, and very importantly, it will produce a set of test procedures designed to build confidence that a CP-TA-certified AdvancedTCA module would interoperate with other such-certified products.

À la carte choices

One area in which the PICMG 3.x specifications offer a particularly rich choice of options is in the range of technologies designers can select for use on the backplane fabric channels. CP-TA has selected Ethernet (PICMG 3.1) to be the interconnect technology for use within CP-TA compliant systems. The other fabric options are certainly valuable technologies; Serial RapidIO in particular offers great promise when the deterministic scheduling of messages is a necessity. However, Ethernet is a ubiquitous technology, which is well understood and is arguably the most generally applicable interconnect technology on the AdvancedTCA à la carte menu. Consequently Ethernet is the logical choice when selecting the fabric option that is going to enjoy the widest possible market appeal and is hence best suited to building economies of scale within the AdvancedTCA ecosystem.

Even within PICMG 3.1 a range of "options" exists as to how Ethernet (and potentially Fibre Channel) can be delivered over the backplane. CP-TA has taken a pragmatic approach to ensuring that its Interoperability Compliance Document (ICD Version 1.0) carefully balances implementation flexibility without diluting the value of having an interoperability guide – by not allowing incompatible choices.

This balance is achieved by allowing for the future deployment of 10 GbE (option 9) in the backplane to be realized on all systems. The ICD insists that backplanes fully implement all four ports of each fabric channel, even if they are not intended for immediate use. The supported baud rate of these four ports also needs to be at least 3.125 G baud each to allow for future 10 GbE operation even if the intention is not to initially deploy beyond 1 GbE.

For 1 GbE operation, the lowest common denominator, one port of 1 GbE per channel, is specified (PICMG 3.1 option 1). Note that for redundancy CP-TA mandates two fabric channels configured in a dual star configuration. Other 1 GbE options, providing for two or four ports of 1 GbE per channel, are allowed for, although they are not specifically supported by the ICD. What is required is that the use of these extended 1 GbE configurations (PICMG 3.1 options 2 and 3) does not interfere with the correct operation of option 1 systems. Any AdvancedTCA module that offers multiple 1 GbE ports within a single channel must also interoperate with single port 1 GbE fabric only modules.

Cost-sensitive applications are supported within the CP-TA ICD by allowing boards that do not support any fabric channels to be classed as CP-TA compliant.

Some commentators have expressed the view that the choice of Ethernet as the *fabric du jour* is somewhat server-centric. Given that the choices made by CP-TA are guided by the profiles published by the SCOPE Alliance (www.scope-alliance.org) and that these to date have been server focused, this is perhaps only to be expected.

However, Continuous Computing has developed its Packet Processor, the ATCA-PP50, (based upon Raza Microelectronics' XLR architecture) to be CP-TA compliant (Figure 1). It can

Figure 1

> "Such incompatibilities can lead to the fragmentation of the AdvancedTCA ecosystem, with niche implementations being produced that are unable to interoperate with other AdvancedTCA product lines."

be configured to work in 10 GbE mode as well as supporting up to four ports per channel when used in 1 GbE mode (PICMG 3.1, option 3).

Systemic design

To successfully deliver interoperability it is important that the design of any one module is sympathetic to the requirements of the other modules that will also be part of any system in which it will be deployed. Thermal compatibility is a good example of how CP-TA has taken a systemic design approach to interoperability requirements.

Consider the two AdvancedTCA blades depicted in Figures 2a and 2b.

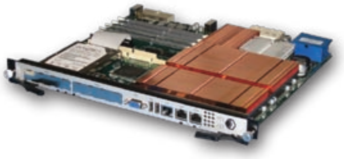

Figure 2a

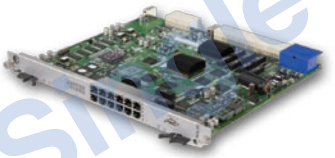

Figure 2b

Often a higher power dissipating board (Figure 2a) will be densely populated and will normally incorporate hefty heat sinks. This is a board that will need to make full use of its fair allocation of cooling airflow. However, due to its densely populated layout it will also present significant airflow impedance.

Lower power boards (Figure 2b), on the other hand, will often be less densely populated. Although by their nature they require less airflow to cool them, they typically have lower air impedance than those boards, which dissipate more power. Unless this difference in relative air impedance is addressed it is possible for a lower density board to act as a by-pass and to "steal" valuable cooling airflow from its more densely populated cousins.

CP-TA therefore requires that the less dense, lower power boards provide air baffles so that airflow impedance can be matched fairly between all blades in a system. More details of the suggested protocol for balancing airflow and the suggested test methodologies for demonstrating that a suitable balance has been achieved can be found in the CP-TA ICD and Test Procedure Manual (TPM) documents.

Compliancy testing

Interoperability is not just an issue of ensuring that vendors make compatible choices from the range of options available within the AdvancedTCA specifications. In order to increase the confidence that modules will properly interoperate it is vital that implementations are tested to ensure that they perform within required parameters. A major part of the work undertaken by

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CP-TA has been to design a comprehensive range of test procedures, published in the TPM (Version 1.0). This document covers testing for fabric integrity and platform management and outlines procedures for validating the thermal characteristics of AdvancedTCA components.

CP-TA has been working in conjunction with leading industry test and measurement equipment manufacturers to define tools for testing the various key interoperability characteristics identified in the ICD.

Some tests take the form of simply inspecting design documentation; others involve using test fixtures to measure the characteristics of physical properties (such as air flow and signal integrity). Functional tests are also used to qualify a particular Device Under Test (DUT). It is anticipated that CP-TA will be appointing a number of test houses to provide approved test facilities for CP-TA certification testing.

Compliancy testing will not in itself be able to guarantee that all certified components would always work together. An integrator is still going to have to do due diligence to ensure that the choice of platform modules work well together. However CP-TA certification can be used to give confidence that certified modules will interoperate with other so-certified modules in respect to those points of interaction as described in the CP-TA's ICD.

Conclusion

CP-TA brings together a wide cross-section of leading technology companies serving the telecommunications equipment industry. These companies are working together to ensure that the promise of open specification-based interoperability is delivered. CP-TA has an ambitious target of extending the delivery of interoperability beyond just AdvancedTCA hardware to include Carrier Grade Linux and Service Availability Forum compliant HA middleware as interoperable components.

The next project for CP-TA is to define interoperability design guidelines and test procedures for PICMG's Advanced Mezzanine Cards (AdvancedMCs). This is an exciting project, and CP-TA would welcome any interested company joining the CP-TA to contribute to this very important initiative.

***James Radley** is principal architect at Continuous Computing Inc. James brings 20 years of engineering experience in hardware, software, and integration to his role at Continuous Computing. James previously worked at Sun Microsystems as a senior staff engineer where he was involved with the development of custom fault tolerant servers for telecom applications. His diverse background includes work in the fields of computer graphics, workstations, defense systems, industrial control, and fault tolerant computers.*

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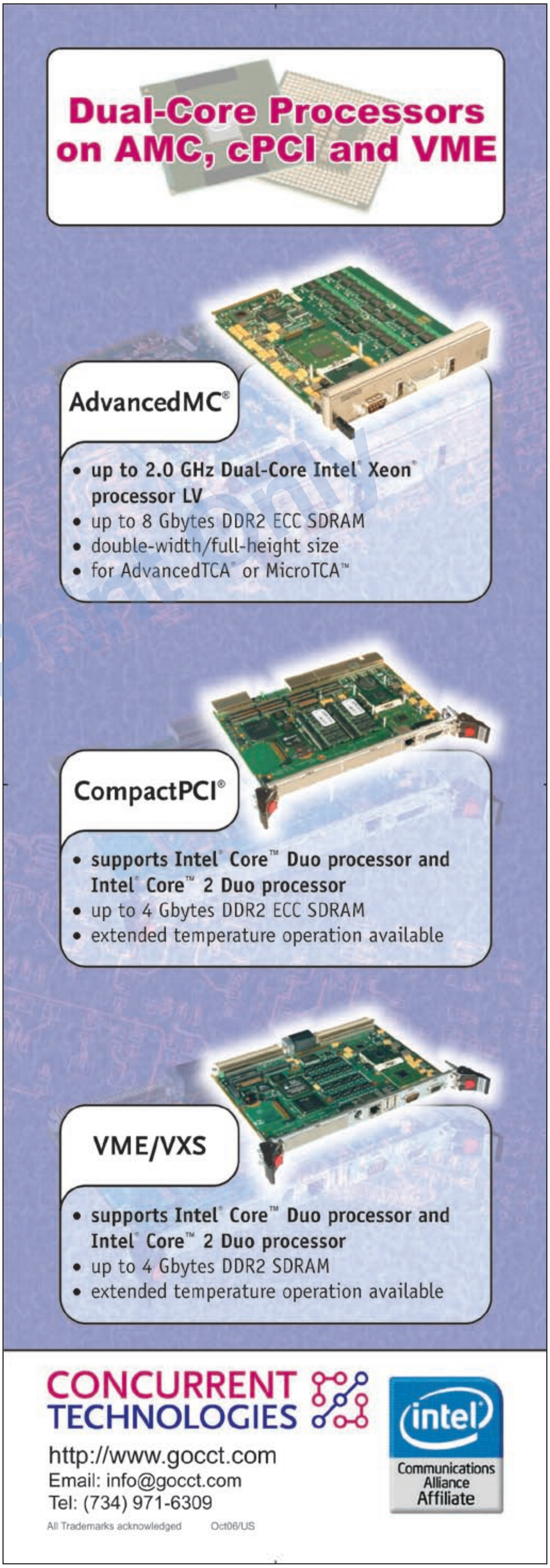

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AdvancedTCA: One TEM's perspective

An interview with Mitch Simcoe, Nortel

Recently Joe Pavlat, CompactPCI and AdvancedTCA Systems editorial director, spoke with Mitch Simcoe, Nortel's senior manager of product marketing for carrier VoIP and IMS, on the role AdvancedTCA plays and will continue to play as networks converge, thermal limits are pushed, and carriers look to give users the same experience across access types.

Q. ***We understand the dynamics of AdvancedTCA for the Telecom Equipment Manufacturers (TEMs), but how much pull are you getting from the carriers, from the Verizons of this world, for AdvancedTCA? Are they specifically requesting it?***

A. We are seeing AdvancedTCA specified as a carrier requirement to a greater extent. The carriers are trying to understand what AdvancedTCA offerings are being introduced by the major TEMs. A key driver we are seeing with regard to AdvancedTCA is for a common platform to be deployable across multiple network elements. Nortel is meeting this requirement by deploying our AdvancedTCA-based platform across our wireline, wireless, and IMS product families.

From the customers' (carriers') point of view if you had a customer deploying all those types of platforms, there is obviously a value in that they can now share the same platform, reduce spares, lower OPEX costs, and cut training costs. Today, carriers may not choose to deploy all these applications together in the same network. They are, however, moving towards converging their networks so they do see value in deploying a common platform across those applications.

Q. ***Does the drive to a converged network vary by geography?***

A. Some geographies are further ahead than others, but all are pursuing quadruple play, which is voice, video, data, and mobility. The cable companies already deliver video, data, and voice services and are currently looking at bundling wireless through various kinds of partnerships with the wireless carriers. The Incumbent Local Exchange Carriers (ILECs) such as AT&T and Verizon also deliver voice, data, and wireless services and very quickly are adding video services to their offerings.

We are seeing Europe and North America deploying quadruple play services first, with Asia PAC and CALA a little farther behind, but moving in this direction.

Q. ***To return to the feedback you are getting from the carriers …***

A. Some of the feedback that we are getting from the carriers is that they are seeing the network evolve into something much more like an enterprise data center. IMS, for example, splits out applications from the core of the network. Delivery of those applications requires many servers, in some cases thousands of distinct pizza box-sized servers. Carriers are looking to evolve to a blade server architecture to reduce footprint and power. AdvancedTCA is attractive – because they are looking for carrier class reliability in a blade server, the kind of reliability that they are accustomed to in their traditional carrier equipment.

So certainly at the core of the network, they see AdvancedTCA as attractive. They are also evaluating the class of blade server such as the IBM BladeCenter T. There are situations where BladeCenter T is attractive versus AdvancedTCA, so we are getting a lot of questions: "Why should I use AdvancedTCA instead of BladeCenter T?"

Q. ***Can BladeCenter T be considered a truly open architecture?***

A. BladeCenter T has not developed as extensive a silicon partner ecosystem as AdvancedTCA but has a lot of momentum in the applications layer of the network.

Q. ***How do you position AdvancedTCA versus BladeCenter T?***

A. For our IMS architecture, we are using BladeCenter T for many of the application layer functions and using AdvancedTCA at the core of the network. We see roles for both and can adapt each to different operator environments.

Q. ***The benefits you note for Nortel's Versatile Service Engine (VSE) include reducing the footprint of network core components, increasing network capacity, and improving reliability and flexibility, among others. Do any of these quarrel with one another or force you to take a hard look at which ones get priority?***

A. There are always trade-offs, and the interesting challenge we have is that we have five different products, each using the same platform. There are clear benefits because there are many common requirements, but there are also individual ones that need to be prioritized the right way. Clearly, reliability is always going to be critical for us.

The footprint issue is an interesting one; we want a system that is scalable in the same footprint. To take advantage of newer, faster processors, the system can scale within the same footprint just by taking out a blade and putting in a newer, faster one – that is a great advantage that we could not do as easily in the past.

Q. ***Yes, but when we talk faster processors, you're going to be facing some interesting thermal challenges.***

A. Carriers say this is all great stuff, but they have central offices that have been around for a 100 years that have air conditioning and power from the past and they don't want to rip all that out of their legacy infrastructure. Carriers tell TEMs, "Your product may have better benefits, but if it is going to cost me more to rip apart my central offices, it is not worth it."

We have to consider the carriers' viewpoint and their Network Equipment Building Standards (NEBS) specifications that call for only so much power or heat per square foot. We can make equipment that can scale and can pack in so much processing power per square foot, but there are trade-offs.

One of the impacts of following NEBS standards is the effect on carrier insurance rates. By following NEBS requirements, carriers have reduced the number of service impacting events (such as fires), which has reduced their risk and resulted in lower insurance costs over the years.

Q. ***When you start looking within the chassis at watts per cubic inch, with AdvancedTCA we are getting close to the limit of what you can do with air, and I think it is going to be a huge gulf.***

A. And that is not just a telecom problem; it is a data problem. The enterprise space has the same issue as the telecom space does; for example, Google spends more on power than servers. Power is becoming the biggest OPEX.

So one of the things we are doing is developing products that generate less power per processing transaction than in the past, giving carriers more subscribers per watt.

Q. ***How is using AdvancedTCA helping with time to market?***

A. In the past we had many different product groups building their own hardware and software from scratch. R&D effectiveness was not maximized using that approach. By having a common platform and one central design authority per platform each product group can focus on the features unique to their applications.

Q. ***When Nortel acquires a platform that is application ready so you can start adding your intellectual property, where does your intellectual property begin, with software?***

A. There are a number of aspects in the design process to consider: We have taken the approach to outsource the core hardware and software and then we put our various software layers on top of that. One is a high availability middleware layer, which has been designed for carrier grade applications. On top of that will be the application-specific software layer, which delivers the unique network functionality – whether call server for wireless or a Home Subscriber Services (HSS) database for IMS.

At the end of the day the carrier is still buying the complete product from us; they are looking for us to guarantee the Service Level Agreement (SLA) of that complete solution or platform.

One could argue that the carrier could go to Motorola and buy the platform from them, and we could just ship them software and ask them to guarantee that themselves, but the carriers prefer to outsource that function to system vendors such as Nortel.

Q. ***So your intellectual property is in defining and choosing the right platform and defining all the bits and pieces …***

A. That is one aspect, if you just look at the platform. An IMS call session controller must have a certain SLA and must process x number of transactions per hour. Our customers look to us to guarantee that performance, and they do not care what Motorola or Intel does; they look to Nortel. Even though we are outsourcing, at the end of the day we have to make the entire system work.

Q. ***They write the check to you?***

A. That is right, they write the check to us, and if it breaks they come to us too.

Q. ***Is this model true across the board for all your customers?***

A. I can only think of one customer who is buying the VSE from us and writing their own software on top of it. Most customers do not; they want to buy a product and have that performance guarantee. Even though they know the platform is part of this open ecosystem, they are going to multivendor networks; they are choosing platforms from different vendors.

That said, we will hardly get to multivendor plug-and-play blades, although some customers have said they would like to get a blade from Nortel and plug it into another vendor's chassis but that is not likely in the short term, because if you do that the vendor will not guarantee the overall solution performance and we would not guarantee performance of that vendor blade if it came into our chassis.

However, if the look and feel of the architecture is similar, it cuts down on training and facilities design, and makes it easier to compare platforms – those are some of the values of AdvancedTCA.

What we are also seeing, is that for many networks like IMS, there are several different components and the carriers do want multivendors – they know that certain companies make best of class for some elements and they want a vendor to integrate the whole system, they want a guarantee of service – for example, for push-to-talk or voice service on TV.

Carriers want to buy best-in-class from a variety of vendors but recognize they cannot guarantee the performance of that entire solution.

Q. ***Do you anticipate the carrier business model will be described as having extremely thin profit margins for the foreseeable future and are there some things in place today that just won't survive given another three to five years, say, of extremely thin profit margins? What do you think might surprise the market about what will survive?***

A. The trend is that we are seeing consolidation in the industry.

Delivering quadruple play today means consolidation in the bill – to deliver all those services it still takes four different networks. The operational systems are different and not giving a ubiquitous experience among devices or services. In addition, ways to deliver are all separate, and it is very costly to do that.

I think that, again, the trend is to collapse or converge them all. That is what IMS does, it says you have one core network that delivers the services.

The trend is to sell as many services as carriers can, and then consolidate the network so that they can cut their CAPEX and OPEX costs, that is how they are going to succeed. We are starting to see examples of convergence in Internet-based content being delivered via wireline and wireless infrastructure. Examples of this include YouTube content being displayed on a Verizon wireless device.

It is going to generate opportunities and hopefully not just be about cutting costs but also about generating revenue.

Q. ***Is IMS stable as a technology?***

A. IMS is in a state of evolution; it has been defined and is now being tested and deployed. One early application we see is based on Fixed Mobile Convergence where handsets can be both Wi-Fi and cellular – allowing others to contact you with one identity. IMS is the architecture to enable that application on a large scale going forward.

Today it is not about the carriers saying to their customers: "I can give you a bundle of core services for $100 a month," because anybody can do that. Instead it is about the same user experience across those access types, and that is what IMS is about. IMS is going to be needed to differentiate in a converged service world, and AdvancedTCA is a key part of that because it gives you the same platform for running between those different access types.

AdvancedTCA is not a must-have, but it is a way to further reduce the cost of deploying IMS and wireless networks.

Q. ***Is there any growth in wireline or is it just going to move to legacy? The future network will have an increasingly large wireless as opposed to wireline component, so how does IP fit in?***

A. The growth will be IP, but TDM networks are not going to go away overnight because TDM still meets the requirements for many customers.

We cannot ignore the Skypes of the world out there delivering VoIP; we are seeing that voice will be integrated into desktop applications.

Thirty percent of the time, when using a mobile phone, you are within a Wi-Fi hot spot. The cost of wireless over Wi-Fi is cheaper than cellular, providing an opportunity to say to the customer, "We will give you wireless experience, but you don't have to pay as much in cell phone bills when in a Wi-Fi zone."

We want to see the kind of integration where if the customer is watching TV, rather than being interrupted to answer a landline phone and discovering the call is for his wife who is not home, he would instead see on the TV screen that the call is for his wife and forward the call to her mobile.

You are going to subscribe to a service and get that service over any device, any access. Today voice is tied to a fixed landline or handset, but in the future, will be delivered over a number of access types. The content service will be separated from the access service.

Q. ***What applications are in store for VSE?***

A. We have one platform on the wireless side for GSM and one for IMS already in trials.

We have other wireless products coming out this year, which we continue to evaluate, as other products are going through evolution – VSE is now a standardized platform in Nortel, and we will look to see where it make sense to use VSE.

Q. ***How long a lifetime do you foresee for AdvancedTCA, and what enhancements will be needed in the next 10 years?***

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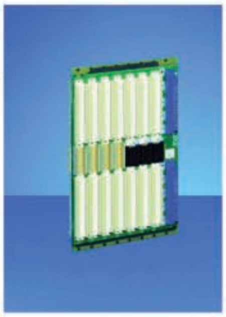

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A. For the applications we are doing now, even with a very high quantity of transactions as with VoIP or IMS the AdvancedTCA platform definitely meets our requirements. Because of the AdvancedTCA ecosystem, the vendors are always going to bring faster processors to the table.

The big constraint for the AdvancedTCA platform (as it is now) is the backplane. It's a 12-gig platform now, and if you really want to expand to other applications which are higher bandwidth, for data or video example, the backplane is going to have to be bigger.

Q. ***Certainly 10 gig per pair technology is being looked at.***

A. I think that is a key constraint in being able to extend the concept to more applications. We make products in our data space, our routers, and our optical space for which we have proprietary hardware today because there is nothing in the industry available to do the kind of bandwidth that's necessary. We have an optical product that has a 200 gig backplane or higher because it needed that. So when the day comes that we have a bigger backplane, I think those products can certainly look at migrating to AdvancedTCA. That is probably where we will see the next evolution.

I think the other way of looking at it is with smaller platforms like MicroTCA. MicroTCA is another opportunity because we have a lot of gateway products or smaller devices that don't need anything as big as AdvancedTCA and like the AdvancedTCA concept but would like something in a smaller footprint with lower cost, so that is something we are constantly evaluating.

Q. ***Is 300 mm an issue for Nortel? Companies such as Ericsson say, "We cannot use AdvancedTCA because we have to build 300 mm equipment." It is one of the raison d'êtres for MicroTCA.***

A. I do not think it is so much the chassis size. I think it is more that when you buy AdvancedTCA your fixed costs are higher, because you have to buy all these cards, and a lot of applications, such as gateways, don't need that.

Q. ***One of the things I get asked is: "What about Fabric?" It seems that everything but Ethernet is now dead?***

A. We have been a proponent of Ethernet for many years. Where Ethernet is the native transport, there is not a lot of value in switching fabrics. Nortel was a leader in merging SONET and Ethernet. Simplicity reduces cost and increases reliability. 🌐

Mitch Simcoe *has more than 20 years of experience in the telecommunications industry. He started his career with Bell Canada in the technology development group standardizing first-generation fiber optics products. He later joined Nortel and has assumed numerous roles in sales, marketing, and product management in a variety of product groups including voice switching, broadband access, and optical networking. He is currently senior manager of product marketing for carrier VoIP and IMS. He received a Bachelor of Engineering (Electrical) and an MBA from McGill University in Montreal, Canada.*

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Network management: the missing piece in the high-availability puzzle

By Claes Wikström

Telecommunications products include many hardware and software elements to guarantee uninterrupted service. 5-nines reliability has been the standard for such products. Now enterprises demand similar levels of reliability. However, as networks become increasingly dependent on frequent software updates and dynamic service provisioning, configuration management emerges as the missing piece in the high-availability puzzle. The challenge is more acute in high-performance networks, which cluster multiple blades to deliver scalable performance. Claes examines the challenges in designing on-device configuration management for highly available networks and makes practical recommendations for dealing with them.

Building blocks

Two architectures for network management are typically found in networking hardware using AdvancedTCA frameworks. Chassis-based products commonly use two management blades. A dual management blade architecture replicates the configuration and operations data on both management blades for redundancy reasons. All configuration changes are always written to both management blades. If one of the management blades fails, the system will still appear to be fully functional. This architecture makes it possible to upgrade the system without bringing down the service simply by upgrading the two management blades one at a time. In the dedicated management blade architecture, two blades handle the management function: the Master Network Management Blade and the Slave Network Management Blade.

The use of clustered blades in a chassis or server is increasingly being employed to deliver scalable performance. No blades are dedicated to the management function. Instead, two or more blades in the cluster are dynamically elected to store and handle configuration data. In this type of clustered architecture, incremental blades can be added without reconfiguring the cluster. In a clustered architecture, two Network Process Blades share the management function. Any of the clustered blades can store and handle the configuration data.

Hidden hardware

Regardless of the configuration management system's architecture – dedicated or clustered – its challenge is to operate without any dependency on the hardware configuration. The configuration management software must hide its environment from the network elements and managed objects such as protocol stacks and configuration parameters. For example, each clustered blade should be unaware that it is running in a clustered environment. This allows programmers to reuse managed object code in similar but unclustered products, a frequently used, and therefore important, technique.

In both dedicated management blade and clustered architectures, an active/standby approach makes sense for configuration data if the failover time is relatively short. Consider this example: when the active unit fails, it changes to the standby state while the standby unit changes to the active state. The active unit always serves as the master and the standby unit as the slave. Even if an active/active architecture were used for traffic processing, an active/standby is optimal for configuration management because longer failover delays can be tolerated in management applications compared to in-line traffic processing. Furthermore, an active/active architecture presents more design challenges than an active/standby one.

Election time

Building effective software for highly available network management systems using a scalable clustered architecture is more challenging than creating software for a chassis with a fixed number of nodes. In the fixed environment, master election with two nodes can happen fairly easily. When a management node starts, it knows the address of the "other" node and simply needs to negotiate with that single node. In the cluster scenario, however, a variable number of nodes exist, and they must follow a

"…a banking system absolutely requires the most accurate data and must sacrifice speed for accuracy."

predetermined protocol, known as a master election algorithm, in order to determine all nodal relationships.

In a clustered environment, the process of electing a master can be controlled by High Availability Framework (HAFW) software. The configuration management system must ensure that all nodes use the same configuration version, which is stored in the master node. If the master should fail or appear to be nonresponsive, the HAFW must elect a new master and notify the configuration management system about the new master/slave configuration.

Single point of access

The HAFW typically performs another important task. It creates the illusion of a single point of access to the system. If the HAFW should decide to failover the master from one blade to another, the failover must not affect existing clients. In practice this means that the HAFW must migrate a virtual IP address to the new master. Existing sessions are usually aborted when a failover occurs. If the aborted sessions do not meet a product's design requirements, the HAFW must carry out more complex functions, including replicating the TCP state for existing sessions.

Traditionally, developers used homegrown HAFWs with protocols such as ARP, CARP, and VRRP to manage failover conditions. Today, however, more sophisticated and robust commercially developed software solutions target telecommunications industry needs.

Accuracy versus availability

As with many development decisions, certain trade-offs must be considered among performance, accuracy, and availability when evaluating a data replication approach. Application-specific requirements play a large role in these decisions. For example, a network management system has very different goals than those of a banking system. In a network management system it is acceptable to use an older set of configuration data to quickly start up the system. In contrast, a banking system absolutely requires the most accurate data and must sacrifice speed for accuracy. Configuration management applications are also designed to make small sacrifices in consistency to achieve better performance.

Partitioned networks

Hardware or software errors can cause an error state known as *a partitioned network*. Under this error scenario, two master configuration databases simultaneously try to restart the network. In a clustered network, the replicated database must never fail to start due to issues with partitioned networks. If the cluster is partitioned and then later rejoined, it is better to just pick the configuration data from one of the partitions and go with that rather than refuse to start due to an unknown state.

Get this network started

Upon startup the HAFW must communicate to any new nodes. If a new node is master, it must be notified and all slave nodes must be given the master's identity. If a new node serves as master, the configuration management system will read the configuration from storage.

Theoretically, a new slave must copy the entire configuration from the master. However, several timesaving approaches exist that eliminate the need to copy unchanged configuration data. One approach involves recording an identification (ID) number for each transaction and the master node's ID at the time of a committed transaction. When a node starts, it first identifies the master node. Next, it retrieves the node-ID and the transaction integer from the last committed transaction in its own file storage. The master uses this information to tell the slave if it is current and sends only the missing configuration data. This replication scheme enables extremely fast failovers because the slave always has a complete up and running copy of the entire configuration database.

Nonstop service

Databases typically provide random read/write access to all data. This implies that disks store indices. When a transaction is committed under *Method A* multiple indices must be updated, possibly in several files. Depending on the level of sophistication of the configuration database, a slightly more fault-tolerant replication scheme, *Method B*, would stream the updates to the slave nodes but only append the data to a log file. The data would not be written into the real database. Method B's primary advantage is that the database is not opened in write mode. If a slave using Method A were upgraded to a master role, the contents of the database logs would first need to be transferred to the configuration database. Although Method B gives us better fault-tolerance characteristics, its downside is that the failover time increases.

Under certain circumstances, a clustered element can perform software upgrades without stopping the service that the element delivers. This goal must be identified during the development phase of the configuration management systems. A strong approach is to manually partition the cluster while keeping the traffic processing in one partition, upgrade the software, and divert all traffic to the upgraded cluster. The upgrade continues

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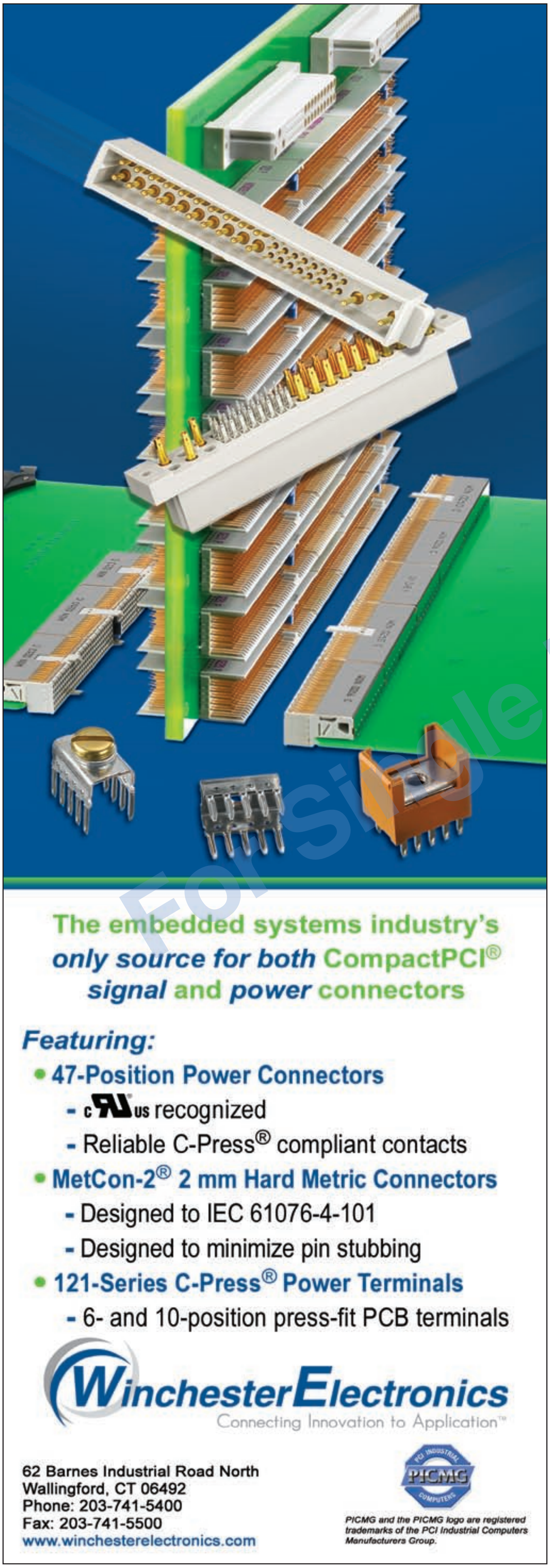

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on the remaining parts of the cluster. In order for this scheme to work, the configuration management system must be able to not only upgrade the version of the configuration, but also to downgrade if the upgrade fails.

An XML-based network management application

Tail-f Systems developed an XML-based network management application, ConfD, to address the issues described here. ConfD works well with HAFWs and implements effective algorithms to maximize consistency, accuracy, and performance under the different scenarios surrounding configuration management.

Claes Wikström *is a senior member of the engineering team at Tail-f Systems. He has worked on research and product development within the telecommunications and IT industry for more than 15 years. During this time he architected and developed many products in which high availability was a crucial element. Prior to joining Tail-f, he held positions at Ericsson and Nortel Networks and was a founding member of the Bluetail AB team.*

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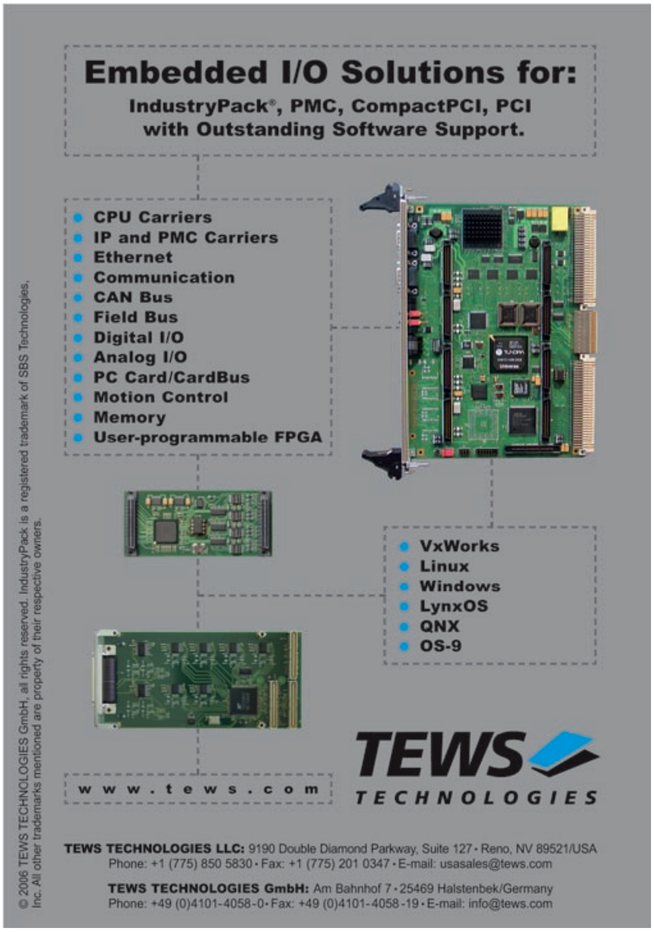

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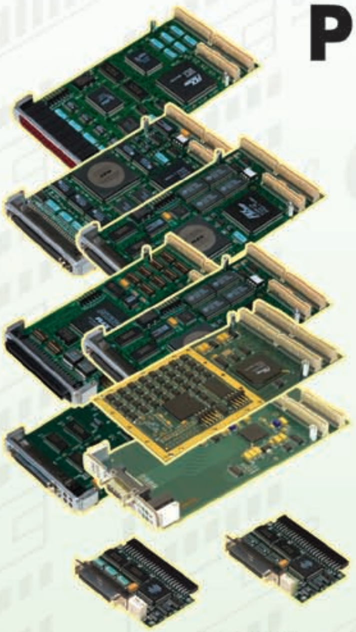

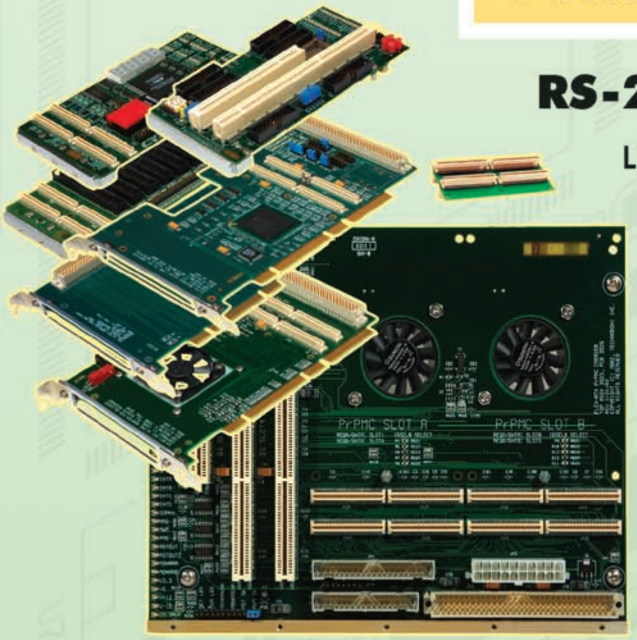

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The final frontier: PCI Express in backplane applications

By Touseef Bhatti

Over the past two years, PCI Express has taken the tech industry by storm. Its high bandwidth, low pin count, and highly scalable architecture has allowed it to establish itself as the interconnect protocol of choice across all market segments. But as recently as two years ago, PCI Express-based systems were virtually nonexistent, with the exception of graphics systems (PCs). Today, all the major chipset vendors are implementing PCI Express technology into their chipsets. It can be found in servers, workstations, storage systems, Redundant Array of Independent Disks (RAID) controllers, Fibre Channel host-bus adapters, routers, switches, and in an array of instrumentation applications.

The lone market segment that PCI Express has yet to conquer is the backplane application space, where Ethernet maintains its stronghold. Until PCI Express came along, no viable contender had stepped forward. Backplane system designers really had no option other than Ethernet. The prominent backplane specifications today are the AdvancedTCA, MicroTCA, and BladeCenter T specifications (released jointly by IBM and Intel). These specifications require a standard serial interface in the backplane. Therefore, PCI, PCI-X, and other parallel interfaces that were compliant with the CompactPCI specification are no longer options. Routing parallel signals at high clock rates over long distances is a challenge and leads to perils such as reflections and bit-skewing.

The AdvancedTCA and BladeCenter T specifications are fairly generic in that all standard serial protocols are supported, including Serial RapidIO, InfiniBand, and the Advanced Switching Interface (ASI). Serial RapidIO, which was targeted at embedded systems, requires an ecosystem that supports it, such as a Serial RapidIO-compliant processor (for example, PowerPC), switches and/or bridges, and endpoints. Most bladed systems today, however, use an x86-based processor from Intel or AMD, which does not support a Serial RapidIO interface. On the other hand, x86-based processors generally connect to a chipset that supports PCI Express. Interestingly, the new PowerPC processors are adding PCI Express support to their feature sets. Furthermore, all the new chipsets from major vendors have native PCI Express built into the chipset. Hence, while the ecosystem prominent in today's bladed systems favors PCI Express, it does not lend itself to Serial RapidIO.

InfiniBand technology is not ideal for backplanes, either, as it's used primarily for interconnection between high-end, high-density cluster systems. It is a more complex technology with a heavy software burden; its software is not compatible with either legacy PCI, and compatibility with Ethernet requires additional software. System designers are much more eager to change the system's hardware than their software. Moreover, InfiniBand technology has always been a niche solution. It never gained much traction in the mainstream marketplace and, therefore, never caught on in the backplane space.

ASI was primed to be the ideal backplane interface. It built upon the PCI Express technology, with added Quality of Service (QoS) and the capability of supporting multiple hosts via its host-agnostic, address-based protocol. However, the technology never gained traction, as the specification kept getting more and more complex. What began as a few upgrades to the PCI Express specification turned into a major overhaul. Ultimately the complexity of the specification kept increasing while PCI Express continued to gain traction in the marketplace. Now, with PCI Express having gained mass adoption as the interconnect of choice, and PCI Express 2.0 around the corner, ASI has missed its time to market and is no longer a viable technology. PCI Express 2.0 will support 5 Gbps signaling and a new PCI Express extension called I/O Virtualization (IOV) will support multihost capabilities, filling a large need that ASI intended to serve. The ASI-SIG has disbanded and has handed the technology over to PICMG.

While all these technologies were proving to be unsuitable for backplanes, designers were left with two choices: go with a proprietary solution or use Ethernet. Proprietary solutions using ASICs quickly proved to be too expensive. Ethernet, on the other hand, was a tried-and-true solution with existing software. So, Ethernet took the lead and has never looked back. However, an argument can be made that PCI Express is poised to unseat Ethernet in backplanes.

Ubiquity

When PCI Express first arrived, designers were not willing to abandon Ethernet just yet. After all, they had spent years building upon the same software. From Ethernet to GbE to 10 GbE, Ethernet had proven itself to be a dependable backplane interface; its ubiquity was its strongest asset.

But with its mass adoption over the past few years, PCI Express has become ubiquitous itself. Most chipsets today support PCI Express, and due to its versatile nature, PCI Express can communicate with protocols such as Ethernet, Fibre Channel, InfiniBand, and legacy PCI and PCI-X systems. Moreover, since PCI Express is based upon legacy PCI software, minimal software investment is required.

With the emergence of PCI Express, most blades connecting to the backplane are running PCI Express (see Figure 1). As mentioned earlier, both x86 and newer PowerPC processors support PCI Express, and all new chipsets support PCI Express as well. Designs requiring a mid-plane, or connectivity to the backplane, are also using PCI Express to fan out to (or aggregate from) connectivity modules (see Figure 2). The only piece of traffic not running on PCI Express is the backplane traffic. If the backplanes can also be designed around PCI Express, the entire system can run off of one protocol.

PCI Express is a suitable *in the box* solution, serving as the best chip-to-chip

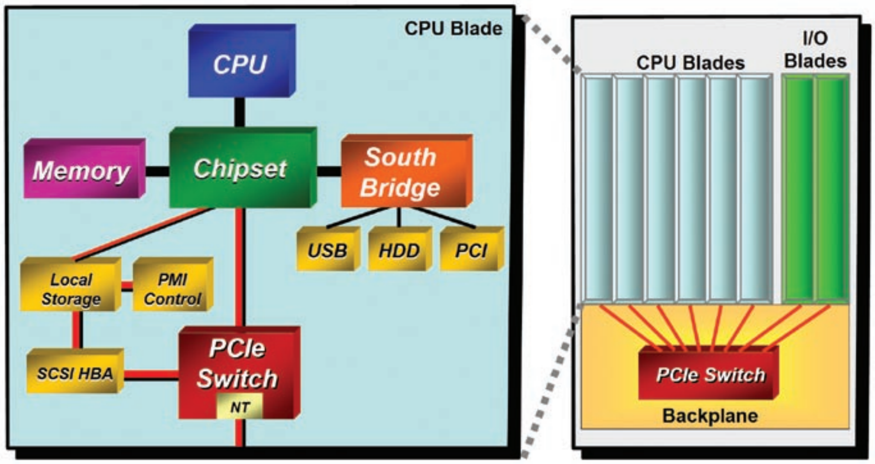
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Figure 1

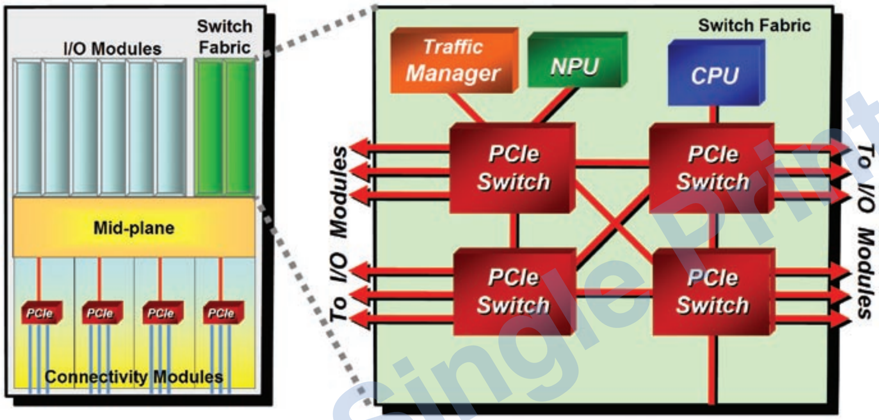
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Figure 2

interconnect, while Ethernet provides a viable *out of the box* solution. With the recent introduction of the PCI Express Cable Specification, PCI Express capabilities have been extended by a few meters. Nonetheless, PCI Express is not in any position to replace Ethernet in the LAN/MAN/WAN spaces. The backplane, however, is still very much *in the box*, where PCI Express strengths lie.

Scalability

The AdvancedTCA and BladeCenter T backplane standards support up to four lanes per switch fabric interface. This means a x4 PCI Express link can be supported per blade by backplanes and yield 10 Gbps (2.5 Gbps x 4) theoretical bandwidth in each direction. But the true aggregate throughput is 80 percent of that (due to 8b/10b encoding), which yields 8 Gbps in each direction. This falls short of the 10 Gbps (3.125 Gbps x 4 x 80 percent) supported by 10 GbE. However, very few applications today require an aggregate data rate of 10 Gbps. For most applications, especially backplane applications, even 8 Gbps is more than enough.

PCI Express is also far more scalable than Ethernet. With PCI Express, designers can choose to utilize a 1-, 2-, or 4-lane link. These links would yield a data rate of 2 Gbps, 4 Gbps, or 8 Gbps. Ethernet provides a data rate of only 10 Mbps, Fast Ethernet provides 100 Mbps, GbE provides 1 Gbps, and 10 GbE provides 10 Gbps. The scalability is not as efficient. With increasing throughput requirements, GbE has already been ruled out of the discussion. Even one lane of PCI Express will yield a data rate of 2 Gbps, double that of GbE. The only option after GbE is 10 GbE, a jump from 1 Gbps to 10 Gbps. Ethernet is not as scalable as PCI Express, where data rates of 2 Gbps (x1), 4 Gbps (x2), or 8 Gbps (x4) are achievable.

Latency

In addition to its scalability assets, PCI Express has lower latency and, therefore, much less overhead than does 10 GbE. PCI Express has three D-words of overhead (packet

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header) for 32-bit processors and four D-words of overhead for 64-bit processors. Ethernet, on the other hand, has 16 D-words of overhead. In terms of bytes, for every four bytes of data (or payload), PCI Express requires a 20-byte packet for four bytes of data, meaning only 16 bytes of overhead. Ethernet, on the other hand, requires a 64-byte packet for every four bytes of payload, meaning 60 bytes of overhead. This means that, with Ethernet, more CPU cycles are being utilized on processing the overhead rather than the actual data transfer. Because of its larger overhead, Ethernet's latency is higher than that of PCI Express, so in latency-sensitive systems, PCI Express will prove to be more efficient than Ethernet.

The primary reason for this higher latency is that Ethernet requires processing of the TCP/IP stack, while PCI Express does not. The impact of the header depends on the granularity of the data. If large data packets are being transferred, the impact of the header is less. However, if smaller packets of 256 bytes are being transferred, the impact of the header is magnified quite a bit. This is the reason PCI Express is often used for control plane applications where the packet sizes are small and require processing by the CPU.

Quality of Service

Last but not least, PCI Express provides better QoS than Ethernet does. PCI Express offers guaranteed error-free packets and delivery, while Ethernet does not. Per the PCI Express specification, PCI Express does not allow for dropped packets and checks acknowledgements, or ACKs, at each hop to ensure that the integrity of the data is maintained and that no packets are dropped. In Ethernet, however, dropped packets can cause large hits to bandwidth. With no hardware error recovery in Ethernet, the system does not know that a packet has been dropped until the data reaches its destination. At that time the system will request for the packet to be resent all over again from its origin. This leads to oversubscription, which in turn erodes the 10 Gbps of available bandwidth.

Going forward

Due to the throughput requirements, those insisting on sticking with Ethernet will be forced to make the jump from GbE to 10 GbE. Since 10 GbE is still relatively new, it can be pricy to implement. Although the investment in Ethernet software is preserved, 10 GbE requires new hardware that is still quite pricy. PCI Express has been in the market for enough time to establish itself technically, and its pricing is competitive as more suppliers are entering the market. While PCI Express is already providing multihost support via the Non-Transparent Bridging de facto standard, with the PCI Express Base Specification 2.0 recently finalized, PCI Express will now also offer multihost support through the new IOV standard. Now, PCI Express can be used to connect to multiple CPU blades in the backplane without needing extra devices for host isolation.

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Conclusion

Although Ethernet has been the tried-and-true backplane interface, PCI Express boasts greater scalability, lower overhead, lower latency, higher security, and better cost efficiency than 10 GbE. Ethernet's ubiquity kept it ahead of the pack, but the mass adoption of PCI Express is rapidly gaining steam with no signs of slowing down. Designers are now starting to realize that for applications utilizing smaller payloads and/or packets requiring heavy processing, PCI Express proves to be more efficient than Ethernet. Also, vendors such as PLX Technology are now offering high port-count switches targeted at backplane and control-plane applications. As the PCI Express technology and market matures, vendors and users alike will continue to enhance their understanding of PCI Express and how to better implement it into the backplane.

Touseef Bhatti *is senior product marketing engineer at PLX Technology. He has a BSCE from the University of Michigan.*

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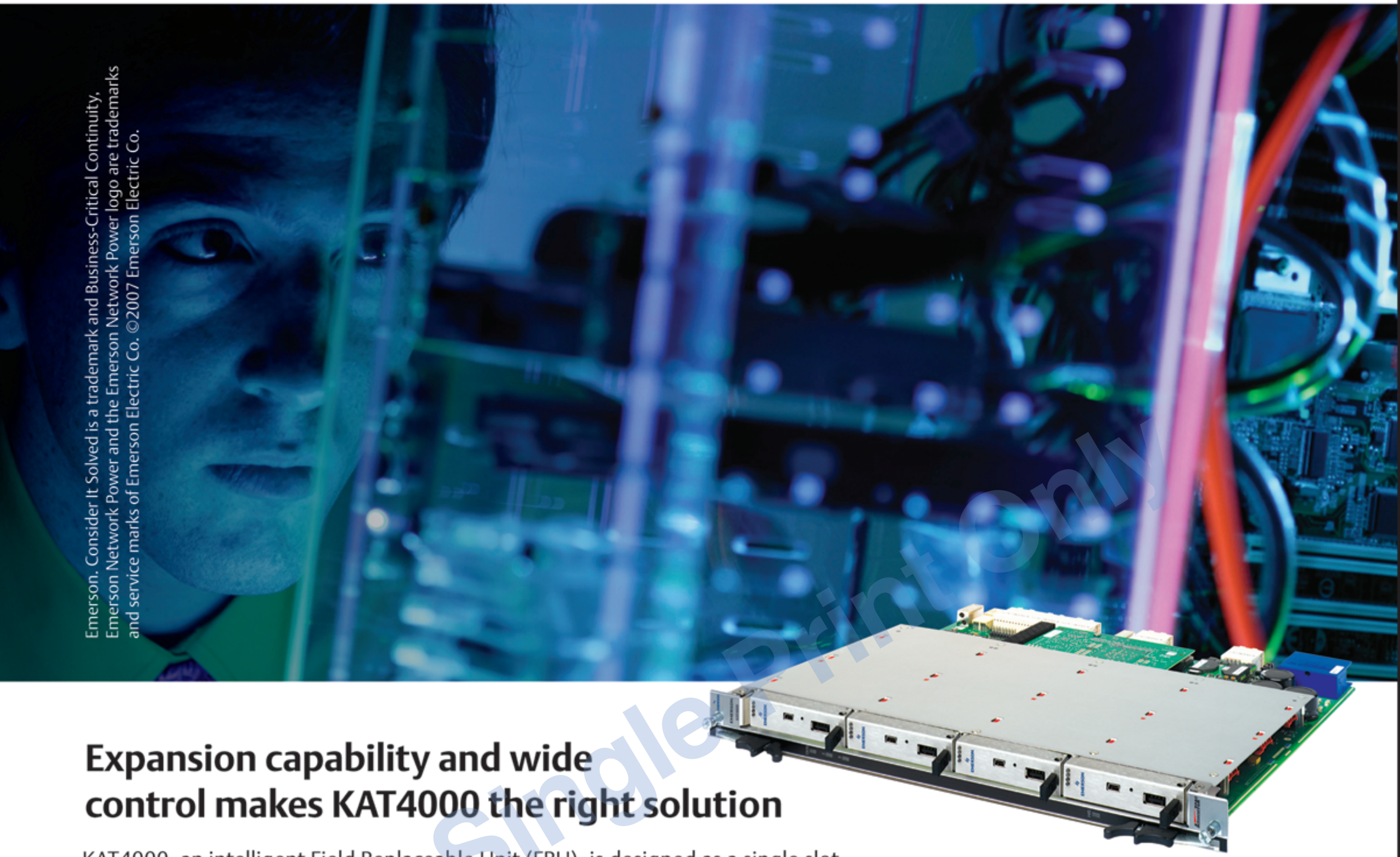

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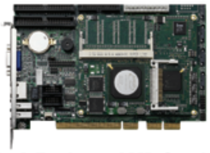

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TL-VDS600-14

The TL-VDS600-14 is a 14-slot PICMG 3.0 AdvancedTCA compliant backplane, designed and built for a central office environment. TechnoLabs offers a family of optimized AdvancedTCA shelves.

The backplane supports a maximum of 14 slots in dual star topology where a pair of hub boards provides redundant interconnects between node boards with signal speeds up to 3.125 Gbps.

The system is capable of dissipating as much power as 200 W per single slot by two redundant primary 48 V power feeds.

Power connectors are mounted on the two rear PEMs. An intelligent system management is responsible for the whole shelf's health status and correct functionality. The basic software on the system is based on Linux. A web interface and standard telecom are provided.

FEATURES

- Dimensions 12U (H) , 450 mm (W)
- Rack mountable 19" (23"and 600x600 with adaptor)
- 14-slot dual star backplane with signal speeds up to 3.125 Gbps
- Dual redundant IPMBs; Dual shelf manager and alarm panel
- Dual 48 Vdc input terminals
- Two Power Entry Modules (PEMs)
- Three pluggable removable fan trays with air filtering
- Advanced front rear cooling
- Management interface (RMCP, CLI, WEB, SNMP)
- RoHS and WEEE compliant

For more information, contact: giovanni.mosca@technolabs.it

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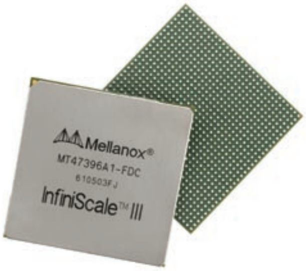
InfiniScale III

The InfiniScale III is Mellanox's third generation InfiniBand switch device used to create reliable, scalable, and easy to manage switch fabrics for compute, communication, storage, and embedded applications. The device supports 24 4X (10 or 20 Gbps) or 8 12X (30 or 60 Gbps) ports, or a combination of both port types. The architecture features a non-blocking packet switch design with an advanced scheduling engine that provides QoS and ultra low switching latencies. The InfiniScale III architecture also scales efficiently to allow designers to create InfiniBand switch systems that support non-blocking clusters over 10,000 nodes. The local management interface is transaction-based using a small set of registers enabling a simplified API for switch management.



FEATURES

- InfiniBand version 1.2 compatible fully non-blocking switch
- Twenty-four 10 or 20 Gbps 4X InfiniBand ports or eight 30 or 60 Gbps 12X ports (or any combination)
- Ultra low latency cut-through switching – 200 ns (10 Gbps version) or 140 ns (20 Gbps version)
- Congestion management and QoS
- Hardware credit based link level flow control
- CPU bus support for master and slave DMA transactions

For more information, contact: info@mellanox.com

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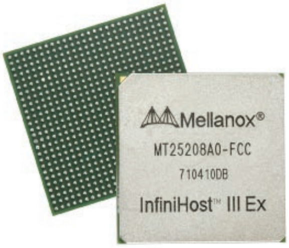
InfiniHost III Ex



The Mellanox InfiniHost III Ex is a PCI Express x8 to dual-port 4X InfiniBand adapter family providing high-performance connections to InfiniBand switch fabrics. The flexible architecture supports both low latency clustering as well as applications requiring high throughput and scalable connectivity. The high-performance packet processing core provides concurrent receive and transmit data processing. MemFree Technology enables CPU RAM (instead of locally attached adapter memory) to store connection information. Alternatively, connection information can be stored locally through the 64-bit SDRAM interface. By providing world-class latency and high bandwidth connectivity in a low-power package the family offers the optimal solution for fabric connectivity.

FEATURES

- InfiniBand version 1.2 compatible host/target channel adapter (HCA/TCA)
- Dual 4X InfiniBand ports with integrated SerDes supporting either 10 or 20 Gbps per port
- PCI Express x8 interface (20+20 Gbps)
- Remote Direct Memory Access (RDMA) and transport layer processing supported in hardware
- Supports kernel bypass, de-coupling host CPU for I/O operations
- Typically consumes 7 W (10 Gbps version) or 10 W (20 Gbps version)

For more information, contact: info@mellanox.com

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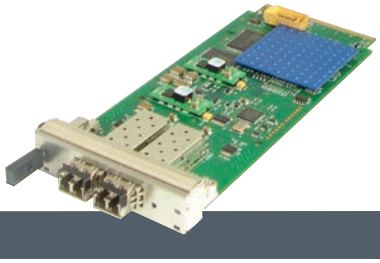
SB-AMC-FC



The SANBlaze SB AMC-FC Dual Channel, 4 Gbit Fibre Channel AdvancedMC adapter provides maximum performance and low latency Fibre Channel device connectivity to embedded systems based on AdvancedTCA and MicroTCA. The SB AMC-FC has two independent 4 Gbit Fibre Channel ports.

The Dual channel, 4 Gbit AdvancedMC host adapter provides redundant configurations and high availability solutions for Storage Area networks (SANs). The SB AMC-FC can auto negotiate down to 1 and 2 Gbit operation to assure backward compatibility with existing 1 and 2 Gbit SAN infrastructures and meets the requirements of today's 4 Gbit SANs. The module is available in mid or full-height.

FEATURES

- Two independent, 4 Gbit Fibre Channels
- 8 Lane PCI Express Backplane Connection
- Single-width (AMC.0) mid, or full-height
- Supports switch and loop (private and public) topologies
- Auto-negotiation for legacy connect (1 or 2 Gbit)

For more information, contact: info@sanblaze.com

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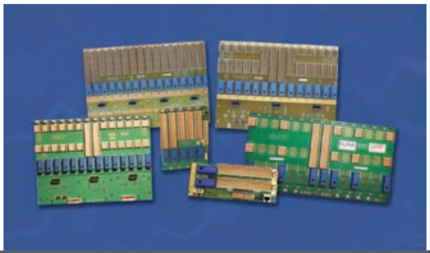

FEATURES

- Compliant to PICMG 3.0 Rev. 1.0 specification
- Controlled impedance stripline design
- Pluggable connectors for shelf manager(s)
- Dual star and mesh configurations
- Signal Integrity Analysis for optimized performance

For more information, contact: sales@elmabustronic.com

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T-HUB

Telco Systems' T-HUB is a PICMG 3.0/3.1 compliant blade that delivers unparallel connectivity to AdvancedTCA platforms supporting multi rate, GigE and 10 GE with 1/2/4 GigE, Fibre Channel connectivity.

The T-HUB is powered by BiNOS™ networking software suite to provide a complete AdvancedTCA platform networking solution.

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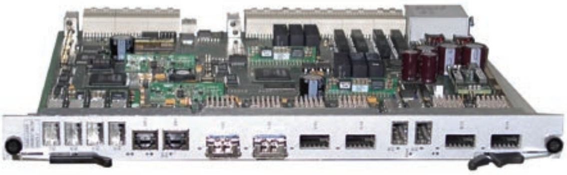

FEATURES

- GbE base interface with 2x 10 GbE uplinks
- GbE and 1/2/4 Gbps Fibre Channel Fabric interface with 4x 10 GbE uplinks
- Separate Base and Fabric Interface Switching and CPU to provide enhanced security and protection
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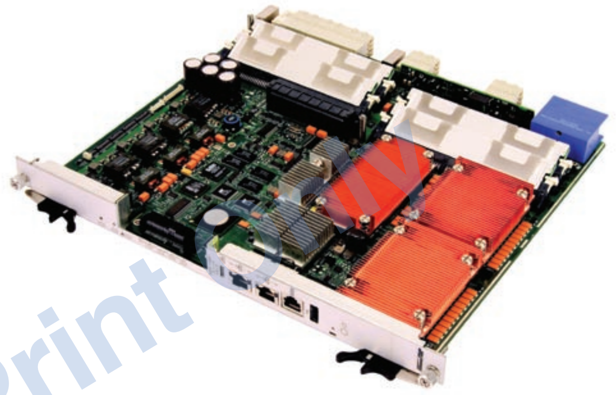
Intel NetStructure® MPCBL0050 Single Board Computer

Intel's most powerful AdvancedTCA® form factor single board computer, the Intel NetStructure® MPCBL0050 Single Board Computer, features the Dual-Core Intel® Xeon® processor LV 5138. It combines Intel® 64 technology with dual-core, dual processing capabilities for a total of four processor cores on a single platform, providing performance boost, superior subsystem scalability and density. This fifth-generation design achieves significant performance improvements for compute-intensive and database-access applications including IP Multimedia Subsystems (IMS), wireless control plane, and IPTV.

The MPCBL0050 SBC is optimized to support first-generation AdvancedTCA chassis that limit front-board power to less than 200 W. It also interoperates with AdvancedTCA products from Intel and with third-party building blocks meeting the PICMG® 3.0 specification.

The Dual-Core Intel® Xeon® Processor LV 5138 enables performance improvement greater than five times that of the first-generation Intel NetStructure® MPCBL0001 SBC. Intel 64 supports 64-bit instructions and provides flexibility for 64-bit and 32-bit applications and operating systems. Intel® Core™ microarchitecture supports higher levels of performance and power efficiency

Compliant with the revised AMC.0 specification, the MPCBL0050 SBC provides one AdvancedMC® site to support the next-generation mezzanine card standard. It utilizes PCI Express® and Gigabit Ethernet for maximum throughput, while increased board area and power envelope support high-density I/O mezzanines. AdvancedMC provides full hot swap support and allows management via onboard IPMB. Cards can also reduce time-to-market by providing baseboard modularity via an easy-to-use expansion slot that requires no infrastructure change.



FEATURES

- Dual-Core Intel® Xeon® processor LV 5138 helps reduce power/thermal operating costs and improve data center density
- Superior subsystem scalability and density support maximum number of network elements in an AdvancedTCA chassis
- 4 MB shared L2 cache per physical processor allow dynamic allocation between cores, based on application load
- Intel® 5000P chipset with 1066 MT/s FSB provides optimized support for intensive computing demands of high-performance applications
- AdvancedMC mezzanine site supports module hot-add and hot-swap, as well as easy expandability and higher throughput bandwidth than PMCs
- Optional Rear Transition Module supports Fibre Channel, SAS-based HDD, expansion external SAS ports, 4 Ethernet ports, and additional I/O
- Power and thermal (< 200 W) meets power limits of first-generation AdvancedTCA chassis
- Intelligent Platform Management Controller (IPMC) supports carrier-grade system reliability and manageability
- Redundant BIOS images, IPMC firmware images, and dual 256 MB flash drives provide redundancy on key items for high reliability
- Dual Star GbE base and 4 fabric backplane ports with redundant features support high I/O requirements, access to high-speed storage systems
- Optional Intel NetStructure® Single Board Computer Diagnostics provide comprehensive diagnostic suite of major SBC subsystems

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MIC-5301

Advantech's MIC-5301 single-slot AdvancedTCA® processor blade combines computing performance with I/O flexibility in a power efficient quad core, dual AdvancedMC design. Featuring two high performance Dual-Core Intel® Xeon® LV processors, the MIC-5301 facilitates the consolidation of multiple single core designs and frees up valuable system slots for increased processing power or I/O connectivity.

The MIC-5301's overall design flexibility positions it for use as a common processing blade for multiple applications. As architecture reuse means gains in economies of scale, the MIC-5301 is ideally suited for a wide range of application processing needs. Two single full-size AdvancedMC sites support the use of a variety of AdvancedMC modules such as coprocessors, TCP/IP offload engines, physical disks, LAN or WAN adapters. Packet throughput is increased by enhanced fabric connectivity with four Gigabit Ethernet ports to the fabric interface in addition to the two Gigabit Ethernet ports to the base interface.

An Intel E7520 Memory Controller Hub MCH and Intel 6300ESB I/O Controller Hub provide high-end server class support for the two dual core processors. The E7520 addresses up to 16 GB of dual channel DDR2 ECC Registered SDRAM in 4 DIMM sockets. Further connectivity is supported via an optional Serial Attached SCSI (SAS) module with SAS ports connected to a Rear Transition Module mounted SAS drive. IPMI 1.5 support is assured by a Pigeon Point System® (PPS) Solution on a Renesas H8S/2167.

Advantech offers a range of innovative AdvancedTCA customization services specifically targeted at the Telecommunications Equipment Manufacturers (TEMs). Advantech's Design To Order Services (DTOS) team partners with TEMs to evaluate project requirements and develop TEM-specific solutions in order to improve overall operating costs. The MIC-5301 is an example where proven core engineering IP can be reused as a base for a TEM specific design.

FEATURES

- Two Dual-Core Intel® Xeon® processor LV 2.0 GHz
- Intel E7520® chipset supports 667 MHz FSB
- Dual channel DDR2 400 MHz ECC Registered SDRAM, configurable up to 16 GB
- Four 1000BASE-BX ports on Fabric interface
- Two 1000BASE-Tx ports on Base interface
- Two PCI Express x4 (PCIe) AdvancedMC slots with style B/B+ connector
- Support optional Serial Attached SCSI (SAS) module
- SAS ports module to Rear-Transition Module (RTM)
- One serial port for IPMI on front panel
- One onboard CompactFlash socket
- Two USB 2.0 ports in front and in RTM; One 2.5" SATA/SAS HDD on RTM
- 20 indicators for system alarm and status report

For more information, contact: CTInfo@advantech.com

RSC# 32878 @ www.compactpci-systems.com/rsc

Emerson Network Power
8310 Excelsior Drive • Madison, WI 53717
608-831-5500
www.artesyncp.com

KatanaQp

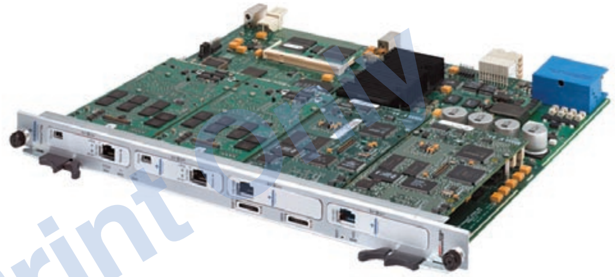
AdvancedTCA (PICMG 3.0) is the consummate open architecture telecom platform, and the KatanaQp is the ultimate configurable AdvancedTCA telecom blade. It features a two-way Symmetric Multi-Processing (SMP) architecture with dual PowerPC MPC7448 processors and a full complement of I/O for communications applications.

The KatanaQp PCI Telephony Mezzanine Card (PTMC, PICMG 2.15, VITA 32) expansion sites give telecom OEMs, who want to get started with AdvancedTCA today, instant access to a wealth of third-party PMC modules. This off-the-shelf expansion capability makes it easy to configure the KatanaQp for a wide variety of control and packet processing applications, including WAN access, SS7/SIGTRAN signaling, media gateways, traffic processing, wireless base station controllers and softswitches.

In telecom network elements, system management is essential. KatanaQp is an intelligent FRU and implements a redundant System Management Bus (SMB). It also fully supports the Intelligent Platform Management Interface (IPMI) with AdvancedTCA extensions to support standards-based shelf management.

Using the KatanaQp off-the-shelf processor blade saves you time-to-market by allowing you to focus your engineering efforts on the key value add portions of the system without spending time and effort on the processor design and testing. A processor subsystem blade also lowers your lifetime cost of ownership by providing an easy upgrade path and protecting you from obsolescence issues.

Katana is a Japanese word for “sword.” Emerson’s Katana family of processor blades embodies the power and swiftness of this sword.



FEATURES

- Single or Dual PowerPC™ MPC7448 processors running at up to 1.4 GHz
- 2-way SMP architecture
- AdvancedTCA PICMG 3.1 Node (1000BASE-T base interface + Octal high-speed GbE fabric interface)
- Layer 2/3 Ethernet switch option
- Quad PMC expansion sites
- Redundant System Management Bus with IPM controller
- Up to 2 GB DDR SDRAM w/ECC in SODIMM package
- Up to 64 MB Linear Flash
- Real-time clock with supercap backup
- VxWorks® and CG Linux® support
- RoHS/WEEE compliant configuration available
- Quality assured by over 30 years of design experience and a TL-9000 and ISO 9001:2000 certified quality management system

For more information, contact: info@artesyncp.com

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8310 Excelsior Drive • Madison, WI 53717
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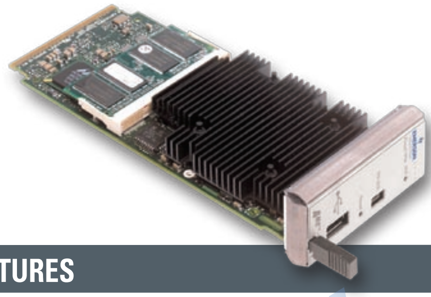

KosaiPM

KosaiPM is an AdvancedMC module based on the Intel Pentium M processor, providing a complete processor subsystem. It is designed to allow communication equipment manufacturers to add modular and upgradeable compute functionality to their AdvancedTCA or proprietary baseboards and provide the localized horsepower necessary for applications such as protocol processing, packet processing, data management, and I/O management.

To support high-speed packet data transfers on and off the card, KosaiPM features both PCI Express and dual Gigabit Ethernet interfaces to the baseboard.

KosaiPM is hot-swappable, which allows modules to be replaced by operators or service organizations in the field without bringing down an entire AdvancedTCA blade or system.

FEATURES

- Intel Pentium M® running at up to 1.8 GHz
- Full-height and half-height PICMG AdvancedMC form factor
- Up to 2 GB DDR or DDR2 DRAM with ECC
- 256 MB onboard USB Flash device
- Dual Gigabit Ethernet connectivity to AdvancedMC
- PCI Express connectivity to baseboard

For more information, contact: info@artesyncp.com

RSC# 30596 @ www.compactpci-systems.com/rsc

Interphase Corporation
2901 North Dallas Parkway, Suite 200 • Plano, TX 75093
214-654-5000
www.iphase.com

Designed To Perform. Designed To Last.™

iNAV® 74K

The iNAV 74K blade from Interphase is a quad processor Freescale 8641 dual-core AdvancedTCA blade targeted at high-volume transaction and user-plane traffic processing required for next generation wireless infrastructure and IMS control planes. These network platforms will be required to serve millions of active terminals and will require the packet processing power delivered by the iNAV 74K. The iNAV 74K supports complex processing of Layer 4-7 protocols and unified control-plane and host media processing using PowerPC vector processing extensions.

Integrating the iNAV 74K with I/O AdvancedMCs™ such as the iSPAN® 36x series hosted on the iNAV 31K Carrier Card results in a very powerful solution architecture, which can be used to implement the next generation of network platforms.

FEATURES

- Four Freescale 8641D dual-core processors based on the Power e600 Core
- Superior cost, density, memory capacity, and thermals compared to Processor AMCs plugged into a carrier card
- 10 GbE links to AdvancedTCA fabric for high throughput and data transfer
- Up to 4 GB of memory per processor complex
- Independent PowerPC PowerQUICC III based-board management computer to enable full use of processors
- Linux Board Support Package for hosting control applications on Board Management Computer

For more information, contact: fastnet@iphase.com

RSC# 32874 @ www.compactpci-systems.com/rsc

PLX Technology, Inc.
870 W. Maude Avenue • Sunnyvale, CA 94085
408-328-3500
www.plxtech.com/pcie

PCI Express® I/O Interconnect Switches

PLX offers the industry's largest selection of PCI Express (PCIe) Switches ranging from 5 to 48 lanes and 3 to 9 ports. PLX's ExpressLane™ PCI Express Switches enable users to add scalable high-bandwidth interconnects to a wide variety of applications including servers/workstations, storage systems, communications platforms, blade servers, high-end graphics, and embedded control products.

The PEX 8548, PEX 8547, PEX 8533, and PEX 8525 offer high-performance fan-out boasting the industry's lowest latency at 110 ns. Featuring a native Cut-Thru architecture, a max payload size of 1 KB, Weighted Round Robin Port Arbitration, 3 Standard Hot-Plug Controllers, and an I2C interface, these switches are ideal for high-end applications requiring fan-out.

The PEX 8532, PEX 8524, and PEX 8516 switches support Non-Transparent Bridging and a Standard Hot-Plug Controller on each port. The Non-Transparent Bridging allows for dual-host support in fail-over applications used in storage systems, communications platforms, or intelligent adapter cards.

The PEX 8518, PEX 8517, and PEX 8508 offer high-performance fan-out for lower-end applications and boast the lowest latency among 16- and 8-lane switches at 150 ns. Featuring a Cut-Thru architecture, Non-Transparent Bridging, and a Standard Hot-Plug Controller on every port, these switches are ideal for NICs, HBAs, AdvancedMCs, Notebook Docking Stations, and Intelligent I/O modules.

The PEX 8509 and PEX 8505 are the industry's first and only switches offering an equal number of lanes and ports. Featuring a native Cut-Thru architecture, a max payload size of 1 KB, and three Standard Hot-Plug Controllers, these switches are ideal for backplane and embedded control applications requiring high connectivity.

All of these PLX PCI Express Switches are available now.

Contact PLX today at www.plxtech.com/contact or dial 1-800-759-3735.

PLX TECHNOLOGY
PEX 8532
PLX TECHNOLOGY
PEX 8516
PLX
PEX 8114

FEATURES

- PEX 8548 – 48 lanes, 9 ports, Typical Power 4.9 W
- PEX 8547 – 48 lanes, 3 ports, Typical Power 4.9 W
- PEX 8533 – 32 lanes, 6 ports, Typical Power 3.3 W
- PEX 8525 – 24 lanes, 5 ports, Typical Power 2.6 W
- PEX 8532 – 32 lanes, 8 ports, Typical Power 5.7 W
- PEX 8524 – 24 lanes, 6 ports, Typical Power 3.9 W
- PEX 8516 – 16 lanes, 4 ports, Typical Power 3.2 W
- PEX 8518 – 16 lanes, 5 ports, Typical Power 2.6 W
- PEX 8517 – 16 lanes, 4 ports, Typical Power 2.6 W
- PEX 8508 – 8 lanes, 5 ports, Typical Power 1.6 W
- PEX 8509 – 8 lanes, 8 ports, Typical Power 1.5 W
- PEX 8505 – 5 lanes, 5 ports, Typical Power 1.5 W

For more information, contact: dhurd@plxtech.com.

RSC# 32860 @ www.compactpci-systems.com/rsc

PLX Technology, Inc.
870 W. Maude Avenue • Sunnyvale, CA 94085
408-328-3500
www.plxtech.com/pcie

THE I/O INTERCONNECT SOLUTION

PCI Express® I/O Interconnect Bridges

PLX Technology offers high performance PCI Express (PCIe) ExpressLane™ bridges that enable designers to migrate legacy PCI, PCI-X, and Local bus interfaces to the high-speed, serial, PCI Express architecture.

The PEX 8111 is the world's smallest, lowest power PCIe bridge that provides a x1 PCI Express link and a parallel bus segment supporting conventional PCI operation.

The PEX 8114 is the most flexible PCIe bridge equipped with a standard PCI Express port that scales to x1, x2, or x4 and a parallel bus segment supporting the PCI-X protocol or conventional PCI operation.

The PEX 8311 is a multipurpose bridge that includes a x1 PCI Express link to 32-bit, 66 MHz Generic Local Bus, enabling scalable high bandwidth to a variety of embedded systems.

All PLX PCI Express Bridges are in full production now.

Contact PLX today at www.plxtech.com/contact or dial 1-800-759-3735.

PCI Express is a registered trademark of the PCI-SIG.

PLX TECHNOLOGY
PEX 8532
PLX TECHNOLOGY
PEX 8516
PLX
PEX 8114

FEATURES

- Each device includes integrated 2.5 Gbps PCI Express
- 1.0a-compliant PHYs
- Each device's PCI Express port is compliant with the PCI-SIG specification 1.0a with polarity reversal
- PEX 8111 and 8114 support forward/reverse bridging; reverse-mode allows legacy PCI/PCI-X systems to connect to PCIe endpoints
- PEX 8111's 10 mm x 10 mm package is ideal for applications with limited board space and power budget
- PEX 8311 offers direct connection to two industry-standard interconnect buses
- PEX 8311 includes two DMA channels to offload CPU, increasing I/O performance without degrading system performance
- PEX 8111 is available in a 144-ball PBGA and 161-ball fine pitch PBGA packages, in both leaded and lead-free options
- PEX 8114 is available in a 256-ball PBGA
- PEX 8311 is available in a 337-ball PBGA
- PLX ExpressLane PCIe bridges are listed on the PCI-SIG Integrator's list, certifying compliance to the PCI Express standard
- PLX PCIe bridges undergo a broad range of interoperability tests, assuring trouble-free operation with available chipsets and endpoints
- All PLX PCI Express bridges are in full production now. Contact PLX today at www.plxtech.com/contact or dial 1-800-759-3735

For more information, contact: dhurd@plxtech.com.

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FCI
825 Old Trail Road • Etters, PA 17319 USA
800-237-2374
www.fciconnect.com

AirMax VS® System

The AirMax VS® connector system provides the most comprehensive family of high-speed, lightweight, flexible, and scalable connectors available today, making it ideal for a broad range of applications in Data, Communications, and Industrial equipment. The revolutionary AirMax VS system uses edge-coupling technology and an air dielectric between adjacent conductors to deliver high signal density with low insertion loss and low crosstalk, all without the use of costly and space-consuming metal shields. And data rates can scale from 2.5 Gbps to beyond 12 Gpbs without requiring redesign of a basic platform.

Co-planar signal, power, and guidance modules from the AirMax VS family are ideally suited for use as Zone 3 interconnects in next-generation AdvancedTCA carrier-grade communications equipment. Zone 3 in an AdvancedTCA shelf allows for direct connection between an AdvancedTCA front board and a Rear Transition Module (RTM) to route signals to the rear of an AdvancedTCA rack. AirMax VS right-angle signal modules easily enable these high-density connections. Up to four 150-position modules, each module with capability to support 50 differential pairs, can be placed side-by-side to provide up to 200 differential pairs in Zone 3.

In addition to superior electrical performance, the AirMax VS family offers design versatility because signal connectors can be scaled by varying the number of columns of contacts, the number of contacts per column, and the column spacing. AirMax VS connectors also allow for mixed pin assignments (differential or single-ended signals or power) to provide additional flexibility to system designers.

AirMax VS co-planar power modules are also available to provide increased current-carrying capacity when needed. These compact 12 mm-wide modules utilize a 1x2 or 2x2 contact configuration rated to 80 Amps with 150 V voltage rating. Two available mating lengths for power receptacle contacts offer capability for sequential mating of power, ground, and signal contacts.

Please visit www.fciconnect.com/airmax for more information.

AdvancedTCA® and ATCA® are trademarks of PICMG®.

FEATURES

- Innovative edge-coupling technology and air dielectric between adjacent conductors deliver lowest insertion loss and crosstalk
- High-speed serial data rates can scale from 2.5 Gbps to beyond 12 Gbps without requiring redesign of a basic platform
- Opposed dual-beam receptacle contact structure provides high reliability
- Contains no interleaving shields reducing connector weight, cost, and PCB routing complexity
- Allows for allocation of differential or single-ended signals or power within the same signal module connector
- Co-planar modules are available with 15 contacts (5 differential pairs), 12 contacts (4 pairs), or 9 contacts (3 pairs) per column
- 2 mm pitch, 5-pair configuration provides 63 differential pairs per linear inch on 25 mm (1.0 inch) card slot spacing
- Wider 3 mm column spacing offers the opportunity to reduce board cost by routing more traces on a single board layer
- Compact 12 mm-wide power modules provide increased current-carrying capacity of 80 Amps with 150 V voltage rating
- “Eye of the Needle” (EON)-compliant tail for press-fit PCB termination. Lead-free and RoHS-compatible options are available
- Available guidance modules provide alignment capability prior to connector engagement
- A full set of building blocks for backplane, co-planar, mezzanine, and cable-to-board applications in Hard Metric building practices

For more information, contact: electronics.us@fciconnect.com

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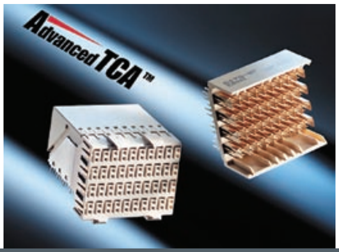
ERNI Electronics, Inc.
3005 East Boundary Terrace • Midlothian, VA 23112
804-228-4100
www.erni.com

ERmetZD

The ERmetZD connector system was specifically designed for high speed differential data transmission from 3.125 Gbps to 10+ Gbps. With its adoption as the PICMG AdvancedTCA Zone 2 differential connector, the ERmetZD allows high bandwidth, serial data transmission over various switch fabric backplane architectures. ERmetZD connectors share many design fundamentals with CompactPCI designed 2 mm Hard Metric connectors such as key layout dimensions, mating dimensions, and press-fit hole requirements. Three pair and two pair ERmetZD connector configurations are also available along with the AdvancedTCA defined four pair ERmetZD connector. Additionally, the ERmetZD product line offers high speed cable and mezzanine configurations to meet Zone 3 and board-to-board applications.



FEATURES

- Supports differential data transmission from 3.125 Gbps to 10+ Gbps
- Fully compatible with 2 mm Hard Metric equipment
- Routing channels allow twin pair routing for improved routing density and PCB manufacturing cost savings
- Four pair ERmetZD provides 40 differential pairs/25 mm
- Three pair ERmetZD provides 30 differential pairs/25 mm
- Two pair ERmetZD provides 20 differential pairs/25 mm

For more information, contact: info.usa@erni.com.

RSC# 20395 @ www.compactpci-systems.com/rsc

ERNI Electronics
3005 East Boundary Terrace • Midlothian, VA 23112
804-228-4100
www.erni.com

AdvancedTCA Zone 1 Power Connector

The AdvancedTCA Zone 1 Power Connector combines eight size-16 contacts along with twenty-two size-22 contacts. Based on stamped contacts and by adding the use of a high conductivity copper alloy, the power contacts are capable of carrying 16 A and the signal contacts 2 A. The female contacts lead-in design combined with cavity protection prevent the contacts from being damaged. Contacts that were plated subsequently don't have any bare ends and therefore are suitable for long term usage in critical environments. The contact terminals provide compliant press-fit zones for easy assembly to the PCB and are flat-rock compatible (no need for special press-in tools). The connector meets all PICMG 3.0 performance requirements.

FEATURES

- In accordance with the PICMG 3.0 standard
- Gold over nickel plating in contact area, tin plating on PCB terminals
- Controlled plating thickness at female mating point
- RoHS compliant
- Reliable and proven press-fit zone
- Standard flat rock press-in tools

For more information, contact: info.usa@erni.com.

RSC# 32156 @ www.compactpci-systems.com/rsc

HARTING North America
1370 Bowes Road • Elgin, IL 60123
847-741-1500
www.HARTING.com

Harting Connectors

HARTING AdvancedTCA® & MicroTCA™ Connectors

The HARTING AdvancedMC™ connector (B+ style) is fully compliant with the PICMG AMC.0 specification for use with AdvancedTCA® carrier boards or related applications; the HARTING MicroTCA™ connector is fully compliant with the PICMG MicroTCA™ specification for use with MicroTCA™ backplanes. Both connectors are designed to support the full range of AdvancedMC™ data transmission speeds up to 12.5 Gbps while sharing a precision press-fit compliant pin designed for 0.55 mm plated PCB holes. This provides significant reliability advantages over other termination technologies. The footprints minimize PCB layer count, leading to PCB mfg cost reductions. HARTING AdvancedMC™ connectors feature **con:**card+® technology for enhanced mating reliability.

con:card+® Technology

con:card+® is a quality seal for AdvancedMC™ connector that delivers a significant increase in the reliability of MicroTCA™ and AdvancedTCA® systems. To reach the target availability of 99.999 percent, all system components must be coordinated, and functionally reliable. Today, it is virtually impossible for series production to meet tolerances for AdvancedMC™ modules as defined by PICMG specs. To address this, **con:**card+® offers five key reliability enhancements* highlighted by the innovative GuideSpring.

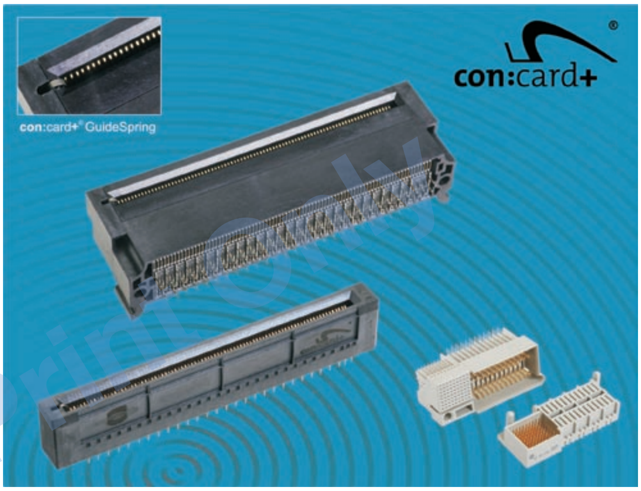
GuideSpring

The HARTING **con:**card+® GuideSpring offsets module tolerance deviations by constantly pressing the module against the opposite wall. With this displacement toward the middle, the AdvancedMC™ module is optimally positioned and the mating reliability increases tremendously. In addition, the GuideSpring secures the module position in the case of shock and vibration. This prevents loss of contact and surface wear.

Power Connectors

HARTING also offers the full range of power connectors specified for use within AdvancedTCA® or MicroTCA™ systems.

Press-in Tooling – The different demands of system design are covered by HARTING's highly adaptable tooling system for AdvancedTCA® or MicroTCA™ connectors. HARTING has a special tooling system for the AdvancedTCA® B+ AdvancedMC™ connector for a reliable and safe press-in process.



FEATURES

- AdvancedTCA® and MicroTCA™ Connectors: Press-fit termination technology for a reliable connection; Assembly with standard flat rock
- High availability: MicroTCA™ and AdvancedMC™ B+ connectors are in serial production; High-speed differential applications up to 12.5 Gbps
- Optimized footprint enables routing on low layer count; Fully compliant with PICMG AMC.0 and MicroTCA™ specifications
- Excellent routing capabilities with wide-routing channels and low cross talk

***con:**card+® Design Enhancements

- The GuideSpring offsets PCB finger tolerance deviations by constantly pressing the module against the opposite wall
- The GuideSpring slot is optimally designed for the AdvancedMC™ module, and increases mating reliability
- GuideSpring secures the module position in the case of shocks and vibrations. This prevents loss of contact and surface wear.
- Increased wear resistance with corrosion-resistant contact plating, special contact surface and relaxation-resistant material; ruggedized press-fit connection
- Meets the AdvancedMC™ 200 mating cycles specification using Harting's experience in stamping and components to minimizing gold pad wear

For more information on **con:**card+® visit www.concardplus.com

For more information, contact: Remy.Trotabas@HARTING.com

RSC# 32887 @ www.compactpci-systems.com/rsc

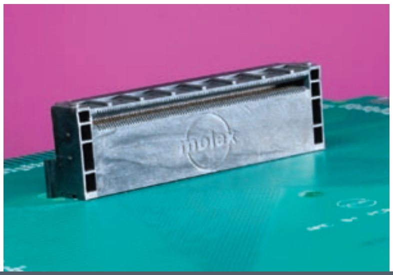
Molex
2222 Wellington Court • Lisle, IL 60532
630-969-4550
www.molex.com

AdvancedMC B+

AdvancedMC™ B+ connectors from Molex support the next generation of mezzanine card standards and speeds of 12.5 Gbps.

These 170-circuit connectors support the (Advanced Mezzanine Card) base specification as developed by PICMG. Molex AMC.0 B+ connectors feature controlled impedance and reduced crosstalk, plus a footprint launch optimized for high-speed data rates. The design enables the connector to achieve 12.5 Gbps signal transmission.

This enhanced footprint further reduces crosstalk by managing inter-pair affinity and incorporating additional ground vias for isolation, resulting in crosstalk of less than 3% at 12.5 Gbps.



FEATURES

- B+ style connector meets PICMG AdvancedMC™ specification and industry-standard requirements
- Controlled impedance and reduced crosstalk
- Press-fit contacts for simpler application to PCB and superior signal integrity
- Footprint launch optimized for high-speed data rates
- Design enables 12.5 Gbps signal transmission
- Crosstalk of less than 3%, with adjacent Tx and Rx

For more information, contact: amerinfo@molex.com

RSC# 32835 @ www.compactpci-systems.com/rsc

Yamaichi Electronics USA, Inc.
475 Holger Way • San Jose, CA 95134
408-715-9100
www.yeu.com

AdvancedTCA Zone 1 Power Connector

Yamaichi provides an AdvancedTCA Zone 1 power connector "CNU004 Series." The contact terminals provide compliant press-fit to the PCB, and the connector meets all PICMG 3.0 performance requirements and is inter-mateable with alternative connectors.

FEATURES

- Comply RoHS
- Press-fit termination
- Four level sequential pins for hot swappable
- Alignment feature for blind mate

For more information, contact: info@yeu.com

RSC# 32872 @ www.compactpci-systems.com/rsc

Fujitsu Microelectronics America
1250 E. Arques Avenue • Sunnyvale, CA 94085
800-866-8608
www.us.fujitsu.com/micro

20-port 10 GbE IC

Fujitsu's next-generation high-density switch chip embeds 20 high-bandwidth, full-duplex 10 Gbps ports into a single, integrated, small-footprint package. Each port has the flexibility to support either 10 Gbps serial, XAUI, or CX4. In addition, the adaptive equalization capability on each port can increase reach for XAUI, CX4, and 10 Gbps serial applications, as well as eliminate the need for external re-timer circuits, reducing board space, power consumption, and cost. With 10 Gbps serial capabilities on each port, the MB8AA3020 allows direct connection to optical XFP modules on any port, eliminating the use of third-party SerDes chips. This reduces board complexity, improves cost, and reduces time to market. MB8AA3020 offers a total of 400 Gbps of non-blocking aggregate switching capacity in both cut-through and store-and-forward mode of operation. A switching latency of 300 ns, including 10 GbE SerDes in cut-through mode, makes the switch ideally suited for high-density, latency-sensitive applications.

As a result of being fabricated with 90 nm technology, the MB8AA3020 switch chip provides the lowest-power-consumption, high-port density 10 GbE switch chip in the industry, making the MB8AA3020 well suited for high density, low-power applications. The Fujitsu MB8AA3020 20-port 10 GbE switch chip provides eight priority classifications per port, which allows priority switching based on DiffServ, MAC address, VLANs, extended VLANs, and ports. The MB8AA3020 also provides several carrier-grade Ethernet features including priority PAUSE, backward congestion notification, and early class-based watermark capabilities for congestion notification.

FUJITSU
MB8AA3020

FEATURES

- 10 Gbps serial capabilities enable the use of XFP modules without requiring third-party SerDes chips
- Adaptive-equalization algorithm eliminates need for external re-timer circuit in CX4 cabling, saving power, latency, and cost
- Redundant GbE ports give users a high availability, agnostic management interface not tied to any particular processor chip
- On-chip micro-engine increases flexibility and simplifies software development, reducing time to market
- Delivers 400+ Gbps, non-blocking, aggregate switching bandwidth through 3 MB of proprietary, multistream shared buffer memory
- Supports state-of-the-art Congestion Management, with on-chip 10 Gbps serial SerDes
- 20-port 10 Gbps switching operations at wire speed; 2 Gigabit Ethernet management ports; and on-chip micro-engine reduces S/W development
- Integrated XAUI/CX4 SerDes and 10 Gbps serial capabilities for all 20 high-speed ports
- Adaptive equalization eliminates the need for external clock re-timer circuit in CX4 applications
- Low power consumption; large 2.9 MB integrated memory; 90 nm technology; small (35 mm x 35 mm) foot print
- EEPROM interface used for initialization; two I2C interfaces; two MDIO interfaces; advanced class Ethernet features

For more information, contact: inquiry@fma.fujitsu.com

RSC# 32829 @ www.compactpci-systems.com/rsc

Performance Technologies
205 Indigo Creek Drive • Rochester, NY 14626
585-256-0200
www.pt.com

ATC6640

The ATC6640 is the first and only base-fabric 1 Gb/10 Gb Ethernet switch that fully uses all the advanced capabilities of the PICMG® 3.0/3.1 specifications and is the ideal interconnect for network-centric packet and protocol processing typically seen in modern telephony systems. Part of Performance Technologies' award-winning line of IPnexus® switches, it offers greatly increased platform bandwidth, network performance, and reliability in high availability applications including wireless, media, and signaling gateways, IMS, and IPTV.

The ATC6640 features two independent switches, each with its own dedicated management processor and memory, ensuring users can isolate control and production traffic for optimum system performance and security. Each switch features support for IPv4/IPv6 switching/routing at wire-speed, as well as 10 Gb uplinks. To ensure system reliability, the ATC6640 can be configured to monitor network status. It also continuously checks its own health through real-time integrity tests. In the event of system or network failure, data can be automatically rerouted to an alternate path.

The ATC6640 has dual, full-height, single-width AdvancedMC™ sites, each with a single 1 Gb connection from the base and up to two 10 Gb connections from the fabric. These positions can be populated with a number of options, including dual 10 Gb optical or copper uplink modules. Both positions support AMC.2 types 5, 6, and E1. The primary AdvancedMC site also supports CLK1 and CLK2.

The ATC6640 protects investments for the long term with easy FTP/TFTP updates to platform flash memory. System software is available that greatly simplifies and eliminates the need for dedicated onsite network administration.

FEATURES

- Two completely isolated, individually managed switches (Base and Fabric)
- Wire-speed, nonblocking IPv4/IPv6 switching and routing
- Dual AdvancedMC™ sites
- Optional onboard shelf management module
- Flexible uplink and RTM options
- Real-time, continuous integrity checks
- Rapid Spanning Tree, Link Aggregation, VRRP, and Jumbo Frame support
- Advanced Fast Filter Processor for wire-speed Layer 2-7 packet classification and filtering
- LUA script language
- Fully RoHS and WEEE compliant

For more information, contact: info@pt.com

RSC# 31114 @ www.compactpci-systems.com/rsc

Fabric switches

Tundra Semiconductor

603 March Road • Ottawa, ON K2K 2M5 Canada
613-592-0714
www.tundra.com

Tundra Tsi578™

The Tsi578 Serial RapidIO® Switch is setting industry benchmarks for high performance and low power consumption through an innovative feature set. It supports RapidIO version 1.3 and is ideally suited for AdvancedTCA® and MicroTCA™ backplane or local DSP connectivity. These platforms will benefit from the switch's ability to route packets to more than 64,000 endpoints, independent unicast and multicast routing mechanisms, as well as error management extensions. Scalable for a broad spectrum of wireless, networking, military, and video infrastructure applications, the Tsi578 Serial RapidIO switch enables designers to take advantage of configuration options to optimize link speed and power consumption for the application.

TUNDRA
TMN669A.12
G65004.1.234
53NXL20504
Tsi578-10GCLY e1

FEATURES

- Supports 80 Gbps aggregate bandwidth
- Up to eight 4x mode ports or 16 1x mode ports
- Port frequency configuration to 1.25, 2.5, and 3.125 Gbaud with 8b/10b encoding
- Integrated high-speed, full duplex SerDes with 120-200 mW per port power
- High-performance hardware multicast
- Advanced traffic management features

For more information, contact: sales@tundra.com

RSC# 31757 @ www.compactpci-systems.com/rsc

Front panel hardware

Purcell Technologies, Inc.

161 Sand Creek Road • Brentwood, CA 94513
925-513-4200
www.purcelltech.com

ATCA, cPCI, PMC

Purcell Technologies, Inc. takes great pride in being a leading manufacturer of AdvancedTCA, CompactPCI, PMC, and PCI I/O panels and brackets for the embedded, network, and personal computing industries.

A one-two punch of volume production, which utilizes progressive stamping, die-casting, injection molding, and extrusion tooling combined with state-of-the-art prototyping, employing CNC milling and laser cutting, provides our customers with cost-effective, quality controlled hardware solutions that are delivered worldwide and on time.

We are a certified ISO 9001 company and committed to compliance with all environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) directive.

FEATURES

- AdvancedTCA panels, handles, and hardware
- CompactPCI panels, ejectors, and hardware
- PMC bezels, gaskets, and filler plates
- PCI brackets and retainers
- ATX I/O shields
- Board stiffeners

For more information, contact: info@purcelltech.com

RSC# 32853 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

A better grip

Having difficulty injecting/ejecting your new AdvancedTCA blade? Schroff's stylish, high-leverage, inject/eject handle will operate flawlessly in the most demanding of hands.

This new, ergonomically designed handle provides a distinct look, feel, and action for improved application reliability. The handle conforms to the PICMG 3.0 R2 specification.

FEATURES

- Intuitive inject/eject operation
- Industry-leading ergonomic design
- Push-button activation of microswitch
- Positive locking with audible feedback
- ID labels for customization

For more information, contact: info@pentair-ep.com

RSC# 18039 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

ATCA 2 to16 Slot

Schroff AdvancedTCA System solutions integrate key technologies – thermal, backplane design, and shelf management – to provide today's engineers with leading-edge solutions for the communications market. High-performance thermal solutions handle the 200+ watts per slot required for the newest generation of blades for chassis from 2 to 16 slots. With data speeds pushing 10 Gigabits per second on the high-speed fabric interface – backplane design is a critical element of AdvancedTCA systems. Schroff provides a range of topologies from dual star to triple replicated mesh – featuring leading-edge techniques such as backdrilling and quad routing. Shelf Management is the control and management infrastructure for high availability AdvancedTCA systems.

FEATURES

- Broadest range of integrated 2- to 16-slot AdvancedTCA systems
- AC and DC options for both NEBS telco and cost sensitive enterprise requirements
- Topology options include dual star, full mesh, and triple replicated mesh with bussed or radial IPMB
- Proven high performance thermal solutions for 200 watts per slot and higher
- Schroff Shelf Management Architecture based on Pigeon Point ShMM 500 technology
- Full range of accessory products including air baffles, front panels, test boards, and cabinets

For more information, contact: info@pentair-ep.com

RSC# 20417 @ www.compactpci-systems.com/rsc

Southco
P.O. Box 0116, 210 N. Brinton Lake Road • Concordville, PA 19331
610-459-4000
www.southco.com/ATCAresource

Faceplate Hardware

Southco AdvancedTCA access and alignment hardware provides the total solution of all faceplate hardware needed for complete PICMG 3.0 compliance.

Ergonomic Southco handles secure AdvancedTCA faceplates. The handles also ensure proper interface with microswitches to signal a graceful power-down sequence during hot-swap operation. All Southco AdvancedTCA-compliant hardware can be custom tailored to user-specified configurations. Optional custom-color powder-coated handles are available to enhance aesthetics or color-code components.

All of these Southco solutions provide finishes that are RoHS-compliant and other attributes gained from years of Southco access hardware experience – such as robust die-cast construction, ergonomic molded handle grips, and precision machining to ensure precise fit.

FEATURES

- Push-to-close handles actuate microswitches, while spring-loaded secondary catches lock boards in position
- Narrow handle design takes minimal space, yet provides ample ergonomic grip for easy board removal
- Handles fit faceplates from 0.8 mm to 2.5 mm thick, and accommodate lever-, plunger-, or custom-microswitches
- Captive screws are available in multiple styles for easy manual tightening, including color-coated knobs
- Alignment/grounding pins in multiple lengths feature smooth bullet-nose design for easy alignment/insertion
- Alignment and keying modules in multiple pin/receptacle configurations are economical and extremely durable

For more information, contact: info@southco.com

RSC# 21498 @ www.compactpci-systems.com/rsc

Power management/Entry modules

Astec Power
5810 Van Allen Way • Carlsbad, CA 92008
760-930-4600
www.astecpower.com

Artesyn ATC210

The Artesyn ATC210 dual-input bus converter is a fully integrated power conversion and power management module for use on latest-generation telecoms cards. It provides AdvancedTCA board designers with a compact and optimized front-end power solution for space-constrained blades and AdvancedMCs.

ARTESYN
ATCA
Bus Converter

FEATURES

- Dual A and B -48 Vdc inputs accommodate wide -36 to -72 V input range
- Two independent, isolated dc outputs: up to 17.5 A @ 12 V and up to 1.8 A @ 3.3 V
- Power management functions include input ORing, inrush control and transient protection
- Optically-isolated hardware alarms for loss of A or B -48 Vdc input feeds
- I2C serial bus interface for monitoring, reporting and digital programming of fault thresholds
- Comprehensive protection against overload and fault conditions

For more information, contact: pamvaughn@astec.com

RSC# 32838 @ www.compactpci-systems.com/rsc

Picor Corporation
51 Industrial Drive • North Smithfield, RI 02896
800-735-6200
www.picorpower.com

QPI Series Filters

PICOR
QPI-8L
0306A

The Picor QPI Series of active EMI filters attenuate conducted common-mode and differential-mode noise in the CISPR22 range from 150 KHz to 30 MHz for load currents up to 7 A or 14 A. The proprietary active filtering provides superior attenuation at low frequencies intended to support EN Class B limits, including PICMG® 3.0 for AdvancedTCA boards.

In comparison to passive solutions, the use of active filtering reduces the volume of the common-mode choke, providing a low profile, surface mount device. The small size of the filter saves 50% board area, compared to other filters. In additon, their reduced height enhances airflow in blade applications. Most models, including units with integrated hot-swap, are 25mm x 25mm x 4.5mm size, surface-mount LGA package.

FEATURES

- 48/60 V and 24/28 V telecom input ranges
- 7 A, 14 A, or 6 A for models with integrated hot-swap
- Up to 60dB CM and 80dB DM attenuation at 250 kHz
- Efficiency: > 99% at full load
- -40 °C to +100 °C PCB Temperature
- UL/CSA/TÜV approved and RoHS compliant

For more information, contact: cfirek@picor.vicr.com

RSC# 21712 @ www.compactpci-systems.com/rsc

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25th APRIL 2007
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Organisational Sponsor
PICMG® Europe

- Presentations covering all aspects of AdvancedTCA and MicroTCA systems design from hardware, subsystems, software, tools and systems validation
- Running demos
- Practical guidelines, rules of thumb for dimensioning and show areas of application, migration paths and technical alternatives
- Hands on sessions
- Panel discussion

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WIND RIVER
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Further information and registration at www.atca-microtca-amc.co.uk

InVents
Invents UK Ltd, Kent Innovation Centre, Thanet Reach Business Park, Millenium Way, Broadstairs, CT10 2QQ.
Tel +44(0) 1843 609364 info@invents-uk.com

RSC# 53 @ www.compactpci-systems.com/rsc

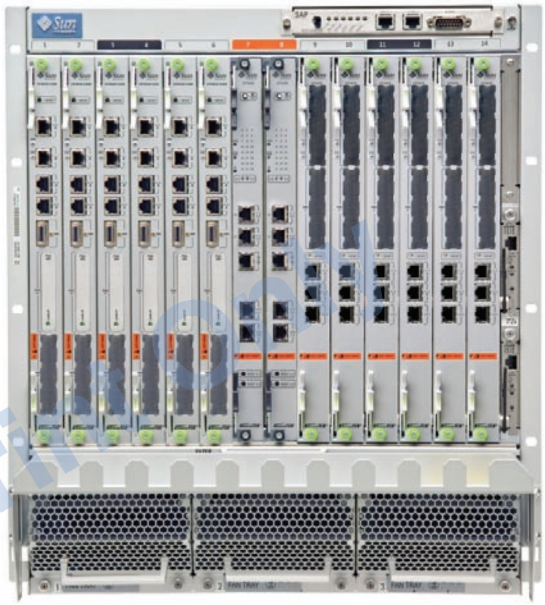
Sun Microsystems, Inc.
4150 Network Circle • Santa Clara, CA 95054 USA
866-596-7234 x19
www.sun.com/netra

Netra ATCA

Sun Microsystems, Inc. introduced the AdvancedTCA product line, as an extension of the Netra™ product family, to increase the flexibility, choice, and scalability of solutions using open, industry standard blades. The Netra product family is Sun's range of NEBS Level 3 Certified carrier grade servers. The product family consists of rack mount servers, CompactPCI blades and servers, and now the AdvancedTCA product line. Beyond the Netra product family, Sun also has a line of NEBS Level 3 Certified carrier grade storage products.

The AdvancedTCA product line supports multiple architectures from Sun: UltraSPARC IIIi, X64 (AMD Opteron), and UltraSPARC T1. Future blades will include more performance and increase scaling capabilities. The Solaris®) 10 operating environment is supported across all AdvancedTCA blades and Linux is supported on the X64 blade. Third party blades for storage, signaling, processing, codecs, and other functionalities are also available from Sun's many partners in either AdvancedTCA blades or PMC/AdvancedMC form factors.

The Netra product family provides the telecommunications industry with servers that can scale vertically, up to 24 cores, or horizontally up to 12 blades. The choice of operating environments and the ability to migrate applications across different sized platforms gives many telco applications the choice and flexibility it needs.



FEATURES

- Netra CT 900 Blade Server. 12U, 12 user nodes
- Netra CP3010 UltraSPARC IIIi: One or two-way SMP, dual PMC, CF-II slot, 4 DIMMs.Solaris 9/10 support
- Netra CP3020 X64 (Opteron) blade. Single or dual core, dual HDD, dual PMC, CF-II slot, 4 DIMMs. Solaris 10, CGL support
- Netra CP3060 UltraSPARC T1. 4/6/8 core, up to 32 threads, AdvancedMC, 8 DIMMs, CF-II slot, Solaris 10 support
- Sun AdvancedTCA products are NEBS Level 3 Certified
- PICMG 3.0 and 3.1 Compliant for all AdvancedTCA products
- Carrier grade rack servers
- Carrier grade storage
- Solaris Operating Environment available on all Sun Netra products
- OEM support services
- OEM product life cycles

For more information, contact: contactus@sun.com.

RSC# 32885 @ www.compactpci-systems.com/rsc

Startech Global

7735 Densmore Avenue • Los Angeles, CA 91406
818-909-7627
www.startechglobal.com

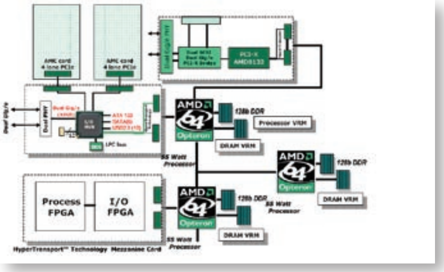
ATCA R&D Services

Startech Global specializes in product engineering services and systems solutions for AdvancedTCA, MicroTCA, and AdvancedMC design and development – from conceptualization to commercialization.

Startech combines onshore C-level and senior project and program management with offshore R&D and engineering services. Client benefits include: (1) low cost, (2) access to the highest quality talent pool in China, (3) reduced time-to-market, (4) increased engineering capacity, (5) improved quality of innovation, and (6) on-demand staff augmentation.

Startech developed the world's first AdvancedTCA System-on-Board with three processors. Design to first run boards: seven months.

Startech GLOBAL



FEATURES

- Board Design: Architecture, PCB design, power optimization, shelf management, high-level hardware synthesis
- Prototype Development: PCB prototyping and testing, ATE, NDT, in-circuit testing/BIST, boundary scanning
- FPGA Design: EDA; Xilinx, Altera chips; programming, pin assignment, board design and implementation, ATE
- Thermal Management and Analysis: Design, prototyping, simulation and testing – Temperature, velocity, airflow
- Software Development and Engineering: Firmware, BIOS; source-level code optimization; Assembly language, C
- Misc: Component and manufacturing sourcing; mechanical packaging; data transport interfaces; China market entry

For more information, contact: sales@startechglobal.com

RSC# 32836 @ www.compactpci-systems.com/rsc

Wickenby Ltd.

HaNachshonim 54/4 • Ariel, 44837 Israel
+1 978 296 4698 (Hours GMT +2)
www.wickenby.com

14-14-DS- infra

Wickenby Ltd. is a telecom shelf vendor offering fully integrated hardware platforms. Wickenby has entered this market with a fresh approach to the infrastructure paradigm. To be ready for applications the infrastructure needs a shelf manager and a hardware systems manager and should allow custom and third party boards to be genuinely "ready to go."

The shelf manager is SAF HPI compliant and all the shelf FRU are ready for integration with the market leading SelfReliant middleware. Full hardware and applications support is available as Wickenby Ltd. is a GoAhead VAR for the SelfReliant middleware. There are no "gotchas" with Wickenby infrastructures.

Wickenby has manufacturing capacity in Israel as well as large volume capacity in Taiwan.

FEATURES

- 14 slots, 14U height (for noise reduction) compliant with PICMG 3.0 revision 3.0
- 10 Gbps dual star backplane
- 400 W power distribution capability with cooling from 200 W upwards depending on configuration of boards
- HA cooling management: Airflow measurement, predictive cooling and failure analysis, and air filter sensors
- Independent main and RTM cooling (for further noise reduction)
- SAF-HPI compliant shelf manager with dual 10 Mbps hub and dual Gigabit front panel Ethernet ports

For more information, contact: sales@wickenby.com

RSC# 32847 @ www.compactpci-systems.com/rsc

System management

Hendon Semiconductors

1 Butler Drive • Hendon, SA 5014 Australia
+61 8 8348 5200
www.bus-buffer.com

I²C Bus Buffers

The Hendon Semiconductors IES5501 and IES5502 bus buffers are compatible for extending I²C and other similar 2-wire bus systems where optimum performance is required. They feature very low input to output offset voltages, allowing buffer cascading and increasing system reliability.

The IES5501 and IES5502 significantly increase system noise margins on the Intelligent Platform Management Bus (IPMB) and are excellent for implementing cost-effective IPMB architectures. The hot insert feature of the IES5502 makes them ideal for use on Intelligent Platform Management Controller (IPMC) boards.

The buffers' wide allowable voltage range expands their potential in AdvancedTCA and CompactPCI power management systems, backplane management systems, and for bus voltage level translation.

FEATURES

- Fully I²C compliant and supports a wide range of 2-wire bus standards
- Very low input to output offset voltages allow multiple buffers in cascade or "daisy chain" configuration
- IES5502 has hot insert and 1 V pre-charge functionality
- Plugs into live backplanes
- Level shifting between bus voltages (1.8 V to 15 V)
- Superior response times

For more information, contact: hendon.info@ies-sa.com.au

RSC# 32828 @ www.compactpci-systems.com/rsc

Systems

Fortinet Inc.

1090 Kifer Road • Sunnyvale, CA 94086
408-235-7700
www.fortinet.com

FortiGate-5000

The Fortinet FortiGate-5000 Series of Advanced Telecom Computing Architecture security chassis delivers multigigabit performance and integrated multi-threat protection ideal for securing high-bandwidth enterprise and service provider networks. Complete Unified Threat Management features include: firewall, VPN, intrusion prevention, web content filtering, anti-spam, anti-virus, Instant Messaging controls, and Peer-to-Peer controls.

The FortiGate-5000 Series features three chassis designs and multiple security modules that meet stringent enterprise and service provider requirements. Highly available configurations with redundant power supplies and fans combined with superior UTM features ensure nonstop availability of critical applications.

FEATURES

- The first security-based AdvancedTCA platform
- Most scalable (up to 112 GbE interfaces), multifunction security platform available
- Allows customers to design and create remarkably secure networks
- Multiple security functions via an ASIC-accelerated security platform
- Lower capital and operational expenditures when compared to combining multiple vendors
- Performs the following security functions: firewall, anti-virus, IDS/IPS, VPN, anti-spam, web filtering, and QoS

For more information, contact: sales@fortinet.com

RSC# 32149 @ www.compactpci-systems.com/rsc

Alliance Systems
3501 E. Plano Parkway • Plano, TX 75074
800-977-1010
www.alliancesystems.com

A-14000 14U Server

With carrier-grade features such as NEBS, ETSI, and 99.999% availability, this high-performance AdvancedTCA platform incorporates the latest trends in high-speed interconnect technologies, next-generation processors, and improved reliability, manageability, and serviceability resulting in a new blade and chassis form factor optimized for communications.

With its 14 board slots, vertically mounted in a 14U enclosure, the A-14000 Server boasts the highest peripheral computing density available today in the AdvancedTCA arena.

The A-14000 high-availability features include redundant -48 Vdc power, redundant management modules, hot-swappable switches, and CPU boards, redundant Gigabit Ethernet, and industry-leading power and thermal capabilities.

FEATURES

- 14-slot, fully passive, AdvancedTCA-compliant backplane with dual-dual star routing topology
- Supports up to 12 AdvancedTCA compute blades featuring single or dual Xeon processors
- Onboard 30 Gigabyte high duty 2.5-inch hard drive
- Redundant -48 Vdc power and (6) 120 mm fans
- AdvancedTCA front air management blade
- Support for up to (2) 16-port ZNYX PICMG 3.0 Gigabit Ethernet base fabric switches with 10/100/1000 Ethernet

For more information, contact: sales@alliancesystems.com

RSC# 19543 @ www.compactpci-systems.com/rsc

Alliance Systems
3501 E. Plano Parkway • Plano, TX 75074
800-977-1010
www.alliancesystems.com

A-5000 5U Server

Alliance A-5000 5U AdvancedTCA system is designed to support dual Intel shelf managers, two 16-port PICMG 3.0 Gigabit Ethernet base fabric switches, and three node slots for expansion boards.

With carrier-grade high-reliability features such as NEBS, ETSI, and 99.999% availability, the A-5000 addresses thermal and shelf management and serviceability issues with redundant -48 Vdc power, hot-swappable tool-less Single Board Computers (SBCs), and industry-leading power and thermal capabilities.

A complete AdvancedTCA solution includes Alliance-proven integration and testing of hardware and software components to enable rapid deployment of new triple and quadruple play applications.

FEATURES

- 5-slot AdvancedTCA system with full-mesh topology for 3.125 Gbps throughput
- Supports up to 3 AdvancedTCA low-voltage dual Xeon 2.0 GHz compute blades with 512 KB L2 cache, 400 MHz FSB
- (2) 16-port ZNYX PICMG 3.0 Gigabit Ethernet base fabric switches
- Dual Intel shelf managers
- Provides cooling for 200 W per blade with (2) 290 cfm front-removable fans, air baffles, and filler panels
- Supplies 200 W power to AdvancedTCA slots and 30 W to shelf managers with dual 25 A PEMs -48 Vdc with power on indicator

For more information, contact: sales@alliancesystems.com

RSC# 21329 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

Centellis 3000 and 4000 Series

The Motorola Centellis™ families of AdvancedTCA® communications servers are highly integrated and verified platforms that help drive down infrastructure costs, improve time-to-market and enable you to focus on revenue-generating applications and services. Communications servers are open standards-based carrier-grade platforms for network equipment providers (NEPs) to develop and deploy new applications with confidence. They feature high availability operation and fully validated system and software environments including optional HA middleware.

The Centellis 3000 series features a fully redundant architecture with a 1 Gb base fabric and a mixture of 1 Gb-4 Gb fabric links to each payload slot. Together with high performance computing blades, they are the ideal carrier-grade base platform for a wide range of applications including infrastructure for IP Multimedia Subsystem (IMS), IPTV and softswitches.

The Centellis 4000 series represents the next-generation in communications servers from Motorola. Specifically designed to address the new wave of packet-intensive networks, they provide a 10 Gigabit common platform on which multiple high bandwidth applications (including 4G wireless infrastructure) can be deployed. Backwards compatibility with the Centellis 3000 payload blades eases the transition to the 10 Gigabit environment.

To maximize space and scalability, three Centellis AdvancedTCA communications servers can be placed in a standard 42U telecom rack with space available for breaker panels, management elements and other ancillary equipment.

Centellis communications servers are RoHS compliant, architected for 5NINES (99.999%) reliability and availability, and designed to achieve NEBS and ETSI compliance.

A variety of fully integrated payload blade options provide support for most application requirements, and the core software environment supports the addition of HA middleware to create a fully HA operating environment. Combined with our professional services, the Centellis 3000 and 4000 series will help you accelerate cost-effective deployment of converged services.

FEATURES

- Integrated and verified AdvancedTCA based communications servers
- 12.5U 14-slot/19-inch or 16-slot/23-inch shelf options
- Integrated shelf management for electronic keying, thermal management, and network based remote access
- Redundant base/fabric switching blades supporting Option 1, 2, and 3 (Centellis 3000) or Option 1 and 9 (Centellis 4000)
- Combined switch/controller blades maximize billable application payload
- Integrated operating environment, including Carrier Grade Linux, forms an ideal base for HA middleware
- Variety of integrated payload blade options including CPU blades, AdvancedMC carriers, and storage elements
- Designed for NEBS/ETSI compliance, RoHS compliant
- Field proven performance and reliability

For more information, contact: inquiry@mcg.mot.com

RSC# 32882 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

Centellis 31KX

The Motorola Centellis™ 31KX is an entry-level, low cost integrated AdvancedTCA® platform that can be used to achieve high density embedded computing at the rack level within central office-driven environmental needs. It integrates a 13U, 14-slot chassis, cooling, power distribution, shelf management, fabric switches and a range of payload blade options into an off-the-shelf solution to which you can easily add your service-related hardware and software.

The high availability architecture of the Centellis 31KX provides redundancy at the component level to avoid single points of failure; allows for repair and upgrade of the running system without impacting the system service; and supports remote access for monitoring, control, and upgrade. In addition to redundancy of all active system components, the Centellis 31KX supports high availability through hot-swappable key system components. Power distribution, cooling fan trays, and shelf management controllers are all hot-swappable to minimize downtime and Mean Time To Repair (MTTR).

The result is a high availability server ideally suited for data intensive central office and networking applications, including media gateway controllers, VoIP concentrators, multimedia servers, signaling gateways, cable head-end, and next-generation wireless Base Station Controller (BSC) systems.

MOTOROLA
AdvancedTCA
Centellis

FEATURES

- 13U/19"AdvancedTCA chassis with 14 vertical payload blade slots
- Gigabit Ethernet switches for non-blocking base channel switching and Option 1 (1 Gb) Layer 2 fabric switching
- Integrated shelf management for electronic keying, thermal management, and network based remote access
- Fault-resilient design to minimize hardware induced failures delivers 5NINES availability into central office environments
- Field-proven performance and reliability

For more information, contact: inquiry@mcg.mot.com

RSC# 18706 @ www.compactpci-systems.com/rsc

Carlo Gavazzi Computing Solutions
10 Mupac Drive • Brockton, MA 02301
508-588-6110
www.gavazzi-computing.com

546 5U aTCA System

The 546 Series of 5U AdvancedTCA systems is designed to the PICMG 3.0 AdvancedTCA specification. The systems support six slots at 30 mm pitch front and rear with a 5-slot high-performance backplane, which is configured as a 3X Replicated Full Mesh extended fabric topology, maximizing bandwidth with a 10 Gbps transfer rate.

All of the systems in this series have front accessible cooling modules, a feature which enables them to optimize power dissipation while minimizing MTTR. The high-performance thermal management system contained within the 546 Series is comprised of two 6-fan modules that are configured in a push-push orientation to provide the required airflow to cool 250 watts front side and 30 watts back side. The 546 Series also features a front removable NEBS filtered intake.

Dual Redundant Shelf Management Modules, featuring Pigeon Point System or Intel technology, are available in the 546 Series. These Shelf Management Modules reside in a dedicated front panel slot, allowing the chassis and backplane to accommodate six slots of full size AdvancedTCA boards and five of their RTMs. All field replaceable units are intelligent devices and communicate to the Shelf Managers through the IPMI.

Rear access dual redundant EMC filtered -48 V power entry modules are capable of handling 30 A each and include intelligent IPMI Controller and FRU data module.

The 546 Series systems are designed to meet RoHS, NEBS, FCC Class A/B, UL 60950, and CE requirements.

FEATURES

- 8.75" (5U) H x 17.5" W x 16.4" D
- 6-slot 3X Replicated Full Mesh extended fabric backplane
- Front and rear removable push-push intelligent cooling
- Cooling system that provides redundant cooling for 250 watts per slot front side and 30 watts back side
- Front replaceable dual redundant Shelf Management Modules
- 6-slot, 8U x 280 mm, 6HP (30 mm) sub rack
- 5-slot, 6U x 100 mm, 6HP (30 mm) rear transition rack
- Front/rear ESD jacks
- Dual redundant -48 V input intelligent power entry modules

For more information, contact: pr@cg-cs.com

RSC# 32846 @ www.compactpci-systems.com/rsc

RadiSys
5445 NE Dawson Creek Drive • Hillsboro, OR 97124
800-950-0044
www.radisys.com

PROMENTUM SYS-6010

The RadiSys Promentum SYS-6010 10 AdvancedTCA application ready platform architecture. enabling 10-Gigabit Ethernet fabric connectivity. It is a 10 Gigabit Ethernet (GE) platform and integrates a multitude of state-of-the-art building blocks such as 10 GE switch and control module, dual-core compute module, SAS/FC storage modules, STM-1/OC-3, PDH and Gigabit line card modules and platform software including data path software to meet the next generation performance requirements for the target applications.

The managed platform is pre-validated with a variety of modules for configuration integrity and enables TEMs to address multiple applications using specific configurations. For example, customers can build a Radio Network Controller (or Base Station Controller) using the 10 Gigabit switching, STM-1/Gigabit Ethernet line cards, and dual core compute modules. Alternatively, they can build a high performance application or media server platform with primarily compute and storage modules.

The RadiSys Promentum™ SYS-6010 10 AdvancedTCA application ready platform architecture incorporates leading edge technologies such as 10 Gigabit Ethernet (PICMG 3.1 Option 9), dual-core computing, NPU-based line card for wire-speed packet processing and platform software including datapath software. The platform architecture is designed to interoperate with both RadiSys and third party modules. The platform is pre-integrated with validated RadiSys modules to create various configurations to meet the specific application.

RadiSys
AdvancedTCA
Promentum™

FEATURES

- Application ready platform to address next generation requirements for RNC/BSC, Media Gateways, IMS, and IPTV infrastructure
- Switched 10 Gigabit Ethernet (fabric) and Switched Ethernet (Base)
- 24 Gigabit Ethernet ports for Base and 20 10 Gigabit Ethernet ports for Fabric
- 4 Gigabit Ethernet ports for Base and 4 10 Gigabit Ethernet for Fabric
- SA Forum HPI 1.1 compliant APIs enables platform independent middleware and applications
- NEBS Level 3 compliant, highly redundant architecture eliminate any single point of failure and enables 5 nines or 6 nines availability
- Architecture and building blocks enable meeting/exceeding performance objectives to target subscriber and traffic growth
- PICMG 3.0 and PICMG 3.1 compliant

For more information, contact: info@radisys.com

RSC# 32894 @ www.compactpci-systems.com/rsc

AudioCodes
27 World's Fair Drive • Somerset, NJ 08873
732-469-0880
www.audiocodes.com

TP-12610 AdvancedTCA™ VoIP Communication

STM-1/OC-3 AdvancedTCA™ VoIP Communication Blade

The TrunkPack®-12610 is an AdvancedTCA® PICMG® 3.0 compliant VoIP Media Gateway and media processing blade. This blade makes an ideal building block for deploying advanced high-density, high-availability Voice over Packet (VoP) systems. The TP-12610 is designed to meet the requirements of engineers designing high-density VoIP trunking and access gateways, voice and video media servers, cable telephony gateways, and wireless gateways. Offering integrated voice and signaling gateway functionality, the TP-12610 supports all necessary functions for voice and fax streaming over IP networks.

Deliver Feature-Rich Solutions

The TP-12610 supports a wide array of voice processing-related algorithms, including: G.711, G.723.1, G.729AB, EVRC, AMR, QCELP and GSM Vocoders; G.168-compliant echo cancellation; T.38 real-time Fax over IP; a wide selection of In-band; and Out-band tone detection and generation. Additionally, the TP-12610 supports signaling protocols including: ISDN PRI; SIGTRAN (xUA); and CAS protocols. All media processing, signaling, and control protocols are applied independently and simultaneously on all of the 4032 LBR channels.

Comply with Industry Standards

The AudioCodes TrunkPack®-12610 blade complies with industry standard network control protocols including SIP, MEGACO (H.248), as well as AudioCodes' proprietary API (TPNCP). This allows for the implementation of distributed gateway architecture that separates call-processing functions from media streaming functions resulting in better redundancy, scalability, and higher system availability.

Applications

- Next Generation Switches
- VoIP Access Gateways
- Trunking Gateways
- Voice and Video Media Servers
- Wireless Gateways

FEATURES

- 4032 voice/fax independent multiple LBR channels
- OC-3/STM-1, T3, and T1/E1/J1 trunks for PSTN interface
- Scalable offering supporting lower channel counts than 4032
- MEGACO (H.248) and SIP compliant
- Complete "Media Gateway on a blade"
- Video streaming, conferencing, and transcoding
- MPEG 4, H.264, H.264 video coding
- G.168-2002 compliant echo cancellation
- Real-time fax over IP/T.38
- PSTN Signaling: CAS, ISDN, PRI, and SS7 layer 2/3 termination
- Tone detection and generation (MF, DTMF, RFC 2833)
- SIGTRAN IUA, M2UA, M3UA over SCTP

For more information, contact: bbl.info@audiocodes.com

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ALPHI TECHNOLOGY CORPORATION

CPCI-6713-2IP
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- 3U CompactPCI
- Local 300MHz DSP
- TMS 320C6713B

PCI-6713-MFIO
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- TMS 320C6713B
- Fast 16 bit ADC's & 16 DAC's
- User CYCLONE FPGA
- Expansion Bus

PCI-6713-4IP
- Quad Industry Pack Carrier
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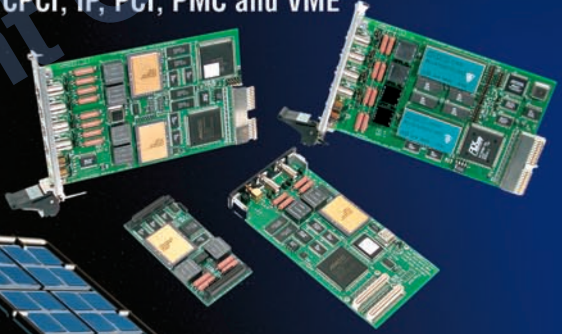
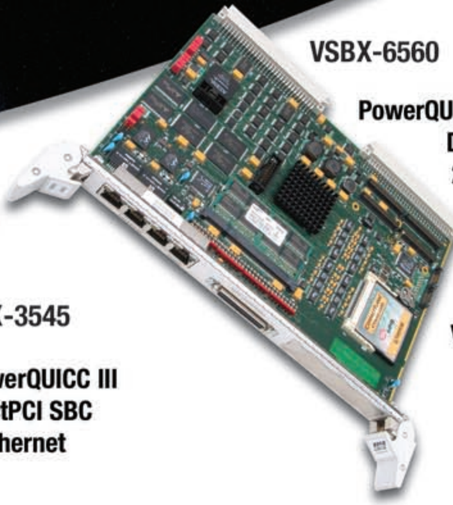
- CPCI, IP, PCI, PMC and VME





VSBX-6560

LINUX

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4 HDLC port
64-bit PMC slot
Dual Serial-ATA
Compact Flash
VME master/slave

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- 3U CompactPCI SBC
- DualGbit ethernet

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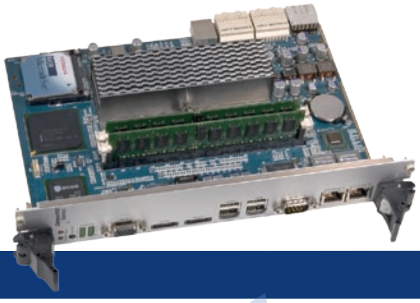
A6exp8021



The Advanet A6exp8021 is a high-performance 6U CompactPCI Express CPU board incorporating an Intel Core Duo L2400 (1.66 GHz) processor. The board utilizes E7520 chipset for server grade performance and unsurpassed memory management.

The PCI Express bus is available in 4x4 or 2x8 lanes and is compatible with various backplanes. The onboard peripherals include Gigabit Ethernet, Serial ATA, Graphics, USB 2.0, CompactFlash slot, and DIMM slots for up to 4 GB PC2-3200 RAM.

The A6exp8021 is an ideal board for a variety of industrial, power, military/aerospace, medical, telecom, and scientific applications.

FEATURES

- Intel Core Duo L2400 (1.66 GHz) w/ E7520 server chipset
- Dual ch. PC2-3200 Registered RAM, SEC/DED, or x4 SDDC
- Two Gigabit Ethernet, two Serial ATA, four USB 2.0
- Onboard SXGA graphics, 1280 x 1024, 24-bit
- 6U CompactPCI Express bus, PICMG EXP.0 R1.0 Spec.
- RoHS compliant, 0 °C to +55 °C operating temp. range

For more information, contact: sales@advanettech.com

RSC# 32837 @ www.compactpci-systems.com/rsc

Hartmann Elektronik GmbH
Motorstra. 43 • Stuttgart, D-70499 Germany
49-711-13989-0
www.hartmann-elektronik.de

HARTMANN ELEKTRONIK
A Phoenix Mecano Company

cPCI-Express Backplane

This new Hartmann Elektronik cPCI-Express Backplane has two bridges, one for CompactPCI to CompactPCI Express and another for CompactPCI Express to CompactPCI, making our cPCI-Express Backplane a hybrid board. CompactPCI CPUs are able to communicate with CompactPCI Express boards and also the other way round.

Hartmann Elektronik developed this cPCI-Express Backplane as an Evaluation Platform, for testing new boards and complete systems. During 2007 Hartmann Elektronik will widen the product range for CompactPCI and PCI Express backplanes and bridge-boards. The target is to offer the customer all required bridge-boards to connect laptops, personal computers, and industrial computers to each other by an Express-Connection.

This is the new product range of one of the leading backplane producers.

FEATURES

- LEFT: CompactPCI system slot and two CompactPCI legacy slots
- RIGHT: CompactPCI Express system slot + switch slot + hybrid slot + Type 1 slot + three Type 2 slots
- MIDDLE: CompactPCI Express hybrid slot + CompactPCI Express Type 2 slot + CompactPCI legacy slot
- BRIDGES: CompactPCI Express and CompactPCI world are connected together by two bridges
- Power input by screw connection (20 A/screw) and by ATX connector (6 A/pin). 1 V/76A 5 V/50 A 3.3 V/64 A GND/192 A
- According to PICMG EXP.0 R1.0; CompactPCI 32-bit without rear I/O; Also available as complete system platform

For more information, contact: info@hartmann-elektronik.de

RSC# 32155 @ www.compactpci-systems.com/rsc

Inova Computers, Inc.
610 Ten Rod Road • North Kingstown, RI 02852
401-667-7218
www.inova-computers.de/icpesyscgn.php

ICPe-SYSC-GN [GoldNugget]

Profiting from technological developments and the latest silicon emerging in the desktop PC market, the high-speed serial PCI Express comes to the industrial sector in the form of the GoldNugget – recognized as being the world's first 3U CompactPCI Express system for rugged applications.

The GoldNugget system comprises a 3U, 48 HP chassis, state-of-the-art conduction cooled CPU, 6-slot backplane, PCIe to PCI translation board, and passively-cooled, 100 W AC/DC PSU. Of the 5, 32-bit CompactPCI backplane peripheral slots, 3 are "hybrid" and can be used for dedicated Express I/O boards.

The 2 GHz Pentium M CPU can address up to 2 GBytes of fast DDR-2 RAM clocked at 533 MHz and soldered for superior mechanical integrity, complementing the inherent robustness of the 3U form factor. And when equipped with either a 1.8" hard disk drive, a CompactFlash mass-storage device or a solid-state uDOC USB Flash device, the CPU is transformed into possibly the most rugged controller of its kind for the embedded market. In addition to its processing capabilities, the CPU communicates to the outside world via the Gigabit Ethernet, 3x USB 2.0 interfaces, and has four external x1 Express links to address the latest Express I/O without incurring the data-bottleneck problems prevalent with all current parallel bus solutions.

Integrating the Intelligent Platform Management Interface (IPMI) technology of the enterprise server world, with its remote diagnostic and maintenance functions, transforms the platform into a highly versatile device suitable for the most mission-critical embedded applications. When combined with the Baseboard Management Controller (BMC), fast pre-boot diagnostics and OS self-repair are possible for lifetime forecasting in the harshest of industrial environments.

The translation board, apart from its obvious task of serving as a bridge between the two technological worlds, is also equipped with an additional Serial ATA 2.5" hard disk drive and Gigabit Ethernet interface.

The complete system with the high-performance Pentium M CPU is available for rugged applications starting at $2,990.00 for OEM volume.

FEATURES

- First Complete 3U CompactPCI Express System
  - 48HP, 3U EMI Shielded Chassis
  - Mounting Brackets on Front, Rear and Base
  - Conduction Cooling
  - 100 W 230 V/115 V (47 Hz to 63 Hz) AC/DC PSU
  - 6-Slot CompactPCI Express Backplane with Legacy Support
  - MTBF > 200,000 Hours
  - 0 °C to +50 °C Operational Temperature
  - Long-Term Product Availability
  - Full Software Compatibility
- 2 GHz Pentium M CPU
  - Intel 915GM chipset with DirectX9 H/W support
  - Up to 2 GByte 533 MHz DDR2 RAM
  - Analog Video
  - Up to 2048 x 1536 Pixel Video Resolution
  - Single i82573 Gigabit Interface
  - 3x Front-Panel USB 2.0 Interfaces
  - Single-Slot, Inline Serial ATA Interface
  - uDOC USB Flash Technology or CompactFlash
  - µController for System Management
  - Linux Firmware and IPMI Technology
- Translation Board
  - CompactPCI Express to CompactPCI Bridge
  - Embedded SATA interface for 2.5" devices
  - Single i82573 Gigabit Ethernet Interface

For more information, contact: deb.st@inova-computers.com

RSC# 32721 @ www.compactpci-systems.com/rsc

Inova Computers, Inc.
610 Ten Rod Road • North Kingstown, RI 02852
401-667-7218
www.inova-computers.de/icpesyscgr.php

SYSC-GR [GoldRush]

PCI Express has the most momentum among today's high-speed point-to-point serial links, and its adaptation for the rigorous environmental requirements of embedded applications has created a capable foundation that will last well into the future.

The GoldRush system comprises a 4U, 84 HP chassis with front-accessible fan tray, high-performance, 2 GHz, Pentium M CPU with 2x independent Gigabit Ethernet, and 6x USB 2.0 interfaces, five free 32-bit CompactPCI slots (of which 3 are "hybrid" and can be used for dedicated Express I/O boards), standard 200 W wide-range ATX AC/DC PSU and translation board (CompactPCI Express to CompactPCI) with independent Gigabit Ethernet and provision for an onboard Serial ATA hard disk.

With this adaptation of the CompactPCI Express (PICMG EXP.0 R1.0) standard, not only are the bottleneck problems associated with current (parallel) bus standards such as CompactPCI eliminated, but applications traditionally reserved for 6U boards and systems can now be realized in the more compact and robust 3U form factor with all the obvious advantages, such as mechanical robustness and stability, tolerance to shock and vibration, compactness, and economic design.

By integrating the Intelligent Platform Management Interface (IPMI) technology of the enterprise server world, with its remote diagnostic and maintenance functions, an even more versatile platform emerges that is suitable for the most mission-critical embedded applications. When combined with the Baseboard Management Controller (BMC), fast pre-boot diagnostics and OS self-repair are possible for lifetime forecasting in the harshest of industrial environments.

All in all, the adoption of PCI Express and IPMI creates a new class of Mighty Mite embedded servers with an impressively small footprint that are as powerful as they are rugged and compact, and as reliable as human ingenuity can (at this point in time) achieve.

The complete GoldRush system is available for rugged applications starting at $3,450.00 for OEM volume.

inova
Computers

FEATURES

- First Complete 4U CompactPCI Express System
  - 84HP, 4U EMI Shielded Chassis
  - Mounting Brackets and Handles on the Front
  - 4x 80 mm Fans for Active Cooling
  - Monitored Fan Tray with Fault Tolerance
  - 200 W Wide-Range ATX AC/DC PSU
  - 6-Slot CompactPCI Express Backplane with Legacy Support
  - MTBF > 200,000 Hours
  - 0 °C to +55 °C Operational Temperature
  - Long-Term Product Availability
  - Full Software Compatibility
- 2 GHz Pentium M CPU
  - Intel 915GM chipset with DirectX9 H/W support
  - Up to 2 GByte 533 MHz DDR2 RAM
  - Analog Video
  - Two Independent i82573 Gigabit Interfaces
  - Up to 8x USB 2.0 Interfaces
  - CPU extension with HD, COM and PS-2 Interfaces
  - Single-Slot, Inline Serial ATA Interface
  - uDOC USB Flash Technology or CompactFlash
  - µController for System Management
  - Linux Firmware and IPMI Technology
- Translation Board
  - CompactPCI Express to CompactPCI Bridge
  - Embedded SATA interface for 2.5" devices
  - Single i82573 Gigabit Ethernet Interface

For more information, contact: deb.st@inova-computers.com

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ADVANTECH

UTCA-5503

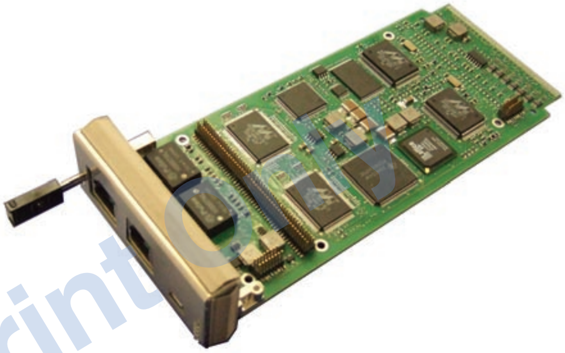
The Advantech UTCA-5503 MicroTCA Carrier Hub (MCH) is a single AdvancedMC Module that combines the control and management infrastructure and the interconnect fabric resources necessary to support up to twelve AdvancedMC's in a MicroTCA shelf. It switches the Primary Gigabit Ethernet (GbE) fabric on Common Options Fabric A and provides MicroTCA Carrier Management Controller (MCMC) functions to configure and control the elements.

The MCMC is the central authority in a MicroTCA Shelf. It monitors and controls the constituent AdvancedMCs. This control function makes use of IPMI links to each AdvancedMC, as well as presence detect, enable, and geographic address signals. When redundant MCH's are installed, failures in the management circuitry on one MCH can be handled by a failover to the other MCH. The MCMC Management LAN interface is available for optional remote management via a RJ-45 connector on the front panel or routed to the Base Fabric switch.

In its basic configuration, the MCH acts as the Gigabit Ethernet hub of a star network, providing centralized switching and high-speed connectivity to each AdvancedMC.

The switch on the MCH provides an unmanaged layer 2, non-blocking, low-latency GbE Switch. Two MCHs can be used to implement a dual-star topology required for reliability. This is further enhanced by a Gigabit Ethernet Update Channel Port between the two MCH's. A front panel RJ-45 or SFP provides further network expandability with GbE uplink ports for external interconnects.

The UTCA-5503 provides extension connectors between PCB1, 2 and 3 for enhanced processing functions such as Level 2/3 switch management, authentication and encryption, TPM for server/cluster security or remote management such as HPI over IP tunneling. It can also provide PCB3 switching for fat pipes PCIe, SRIO, GbE, or 10 GbE. A PCB2 module can be added for clock distribution and external clock connectivity. The front panel design offers flexibility for clock, I/O and alarm panel requirements.



FEATURES

- Layer 2 Gigabit Ethernet switch for up to 12 AdvancedMCs on Common Options Fabric A
- MCH Update Channel for carrier hub redundancy
- Front panel Gigabit Ethernet uplink over RJ-45 or SFP
- Pigeon Point-based MCMC with direct or switched 10/100 Management LAN port available on front panel
- IPMB-0 / IPMB-L for complete carrier management
- Built-in expandability for future pluggable enhancements
- Switch management and extended fabric switching
- Customizable clock module and front panel I/O
- Compliant with PICMG MicroTCA.0 R1.0 specification

For more information, contact: CTInfo@advantech.com

RSC# 32880 @ www.compactpci-systems.com/rsc

CorEdge Networks

50 Commonwealth Avenue • Boston, MA 02116
617-267-5205
www.coredgenetworks.com

CEN-MCH

CorEdge Networks' MicroTCA Carrier Hub (MCH) provides the central management, networking, and clocking for MicroTCA systems. Developed to provide maximum flexibility and scalability for MicroTCA solutions, the CorEdge MCH consists of a base module with optional clock and fabric daughter cards. The base module uses CorEdge's patent-pending technology to deliver GbE switching and IPMI management in one chip. It supports up to 12 AdvancedMCs, 2 CUs, 4 PMs, and a redundant MCH in a single chassis. Optional clock and fabric combinations are supported through a wide range of daughter cards. In combination with CorEdge's MicroTCA Power Module (CEN-MPWR), the MCH provides a high performance and flexible solution to meet your MicroTCA application requirements.

FEATURES

- Base channel 1 GbE, fat pipe fabric, clock, and IPMI management support for up to 12 AdvancedMCs
- Multiple fabric options: including PCI Express, 10 GbE, SATA/SAS, and Serial RapidIO
- Multiple clock options including PCI Express 100 MHz, Telco 8 KHz/19.44 MHz, and GPS 1PPS synchronized 30.72 MHz
- Robust MicroTCA Carrier Management Controller (MCMC) fully supports up to 12 local AdvancedMCs
- Front panel support for GbE management/uplink SFP ports, telco alarm panel, and mini-USB interface
- Fully compliant solution that has undergone extensive interoperability testing with chassis and card vendors

For more information, contact: sales@coredgenetworks.com

RSC# 32252 @ www.compactpci-systems.com/rsc

Alliance Systems

3501 E. Plano Parkway • Plano, TX 75074
800-977-1010
www.alliancesystems.com

U-3000 3U Server

Based on MicroTCA standard architecture, the U-3000 provides 10 single-wide AdvancedMC slots, eight of which can be converted to double-wide AdvancedMC slots. With redundant power supplies, fans, and MCHs available, the U-3000 provides the maximum availability for a 3U platform.

Built for the rapid deployment of wireless and wireline communications applications, the U-3000 is perfect for small high-reliability deployments. This standards-based server features superior performance density, advanced I/O capacity, greater scalability, easier manageability, and high reliability.

Alliance has also developed application-ready platforms for WiMAX and other communications applications for faster time to market. Depending on your needs, Alliance Systems has the right solution for you.

FEATURES

- 3U rack-mount with 10 AdvancedMC slots and redundant MCHs
- Convertible AdvancedMC slots: double-wide or single-wide AdvancedMCs can be used in various combinations
- Power and cooling for up to 40 W per single-wide AdvancedMC
- Throughput of 10 Gbps per AdvancedMC slot
- Optional duplication of central resources for .99999 availability
- Dual front access hot-swap fans and power supplies

For more information, contact: sales@alliancesystems.com

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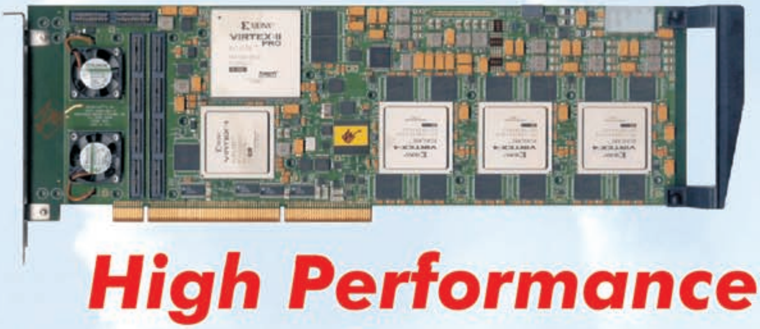

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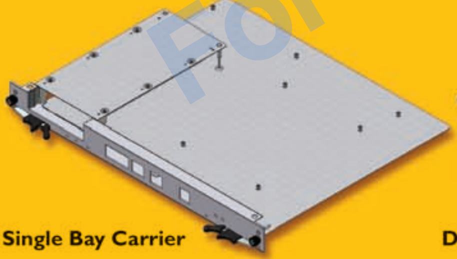
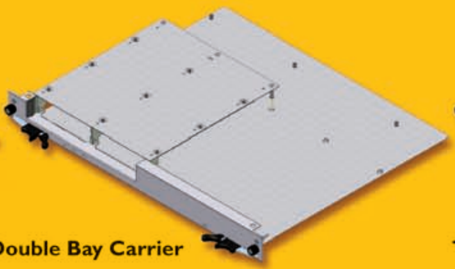
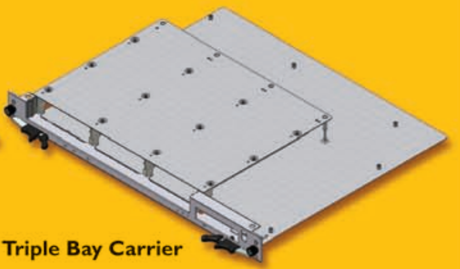
Like many others in telecom and electronics, are you migrating from full-size to mid-size AdvancedMC® PCB carriers? If so, let XTech customize a solution to meet your exact needs and help you stay ahead of the AMC carrier curve.

Key features of XTech mid-size AMC carriers

- Available in configurations of 1, 2, 3, or 4 bays
- Meets PICMG Compact and Mid-Size component envelopes. Full-Size modules can easily be converted to Mid-Size as long as the components do not exceed the Mid-Size form factor. Extended Full-Size envelopes are not supported.
- Fully-assembled and ready-to-use
- Matches ejector system used in XTech's AdvancedTCA® systems
- Die-cast struts and card guides for a more robust system


Single Bay Carrier


Double Bay Carrier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XTech AMC face plates available in full-size, mid-size, and compact size in single or double width. Now accepting orders for the ECN-002 LED configurations (shown).

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N.A.T. GmbH
Kamillenweg 24 • Sankt Augustin, 53757 Germany
+49-2241-3989-0
www.nateurope.com

NAT-MCH

The NAT-MCH is a MicroTCA (μTCA) Carrier Hub in the form factor of a single-width double-height Advanced Mezzanine Card (AdvancedMC). It provides the central management and data switching entity for all MicroTCA systems. The NAT-MCH comprises a base module and numerous optional daughtercards, which can be mounted on the base module. The NAT-MCH is MicroTCA.0 R1.0 compliant and delivers switching and hub functionality for the various system fabrics as defined in the AMC.x standard series, such as Gigabit Ethernet, PCI Express, Serial RapidIO, or Serial Attached SCSI (SAS). The NAT-MCH can also provide a centralized clock distribution to all AdvancedMCs in the system.

The NAT-MCH base board is equipped with a Freescale ColdFire, SDRAM, and flash memory.

FEATURES

- Management of up to 12 AdvancedMCs, 2 cooling units, and 1-N power units
- Gigabit Ethernet and/or PCI Express switching
- Freescale ColdFire CPU at 200 MHz, 32/64 MB DRAM, 32/64 MB flash
- Telecom: Stratum 3 PLL with reference from either 1 of the 12 AdvancedMCs or external clock via front panel
- Support of standalone and industrial applications
- O/S: OK1, Linux
- API: HPI compliant Java based GUI

For more information, contact: +49-2241-3989-0

RSC# 32200 @ www.compactpci-systems.com/rsc

Yamaichi Electronics USA, Inc.
475 Holger Way • San Jose, CA 95134
408-715-9100
www.yeu.com

MicroTCA-CN084

CN084 series fits perfectly into the aggregated AdvancedMC backplane connectors with low insertion force and is available in various combinations.

Featuring compression mount proven high reliability, the CN084 series has passed GR-1217-CORE test sequence. It achieves 12.5 Gbps and beyond easily. The CN084 series is low cost and replaceable quickly without requiring backplane disassembly.

FEATURES

- Insulation resistance – 100MΩ min. @ 80 Vdc
- Differential impedance of 100(±) 10Ω
- Withstanding voltage – 80 Vrms. min.
- Operating temperature – (-55 °C to +105 °C)
- Mating cycles – 200 times

For more information, contact: info@yeu.com

RSC# 32195 @ www.compactpci-systems.com/rsc

FCI
825 Old Trail Road • Etters, PA 17319
800-237-2374
www.fciconnect.com

MicroTCA Connector

MicroTCA™ Connectors

MicroTCA™ (μTCA™) vertical card-edge connectors provide 170 contacts on 0.75mm pitch and enable AdvancedMC™ modules to be plugged directly to a backplane. FCI offers options for press-fit or surface-mount (SMT) termination, and both connector versions are compatible with the PCB connector footprints defined in the MicroTCA specification. Customers can choose the termination option that best suits their system design and manufacturing preferences. The press-fit version accommodates differential signaling at speeds up to 10 Gb/s. The SMT connector utilizes an optimized PCB footprint and will support differential signaling with very low loss and crosstalk supports at speeds of 10 Gb/s and beyond.

The press-fit connector version extends the use of MicroTCA architecture to thicker backplanes where proven press-fit technologies are often preferred. The surface-mount connector supports systems that employ smaller and less complex backplanes and allows the use of more cost-effective, SMT reflow soldering processes. Capability for connector installation using conventional press-fit or SMT assembly processes, combined with connector designs that require no costly hardware, secondary mechanical retention or compensating board stiffeners, results in low total applied cost. Metal retention clips on the SMT connectors provide additional mechanical strength after soldering.

The MicroTCA standard, developed within PICMG®, defines a physically small but very powerful system in a shelf measuring 4U high by 300 mm deep. The MicroTCA system architecture reduces size and cost by eliminating the AdvancedTCA carrier board and providing a chassis that accepts AdvancedMC modules directly. The MicroTCA form factor is expected to be ideal for communications equipment, such as core routers and IP-gateways, radio base stations and switching centers and customer premises equipment, where small physical size and cost are key design constraints.

For more information, please visit our website at www.fciconnect.com/.

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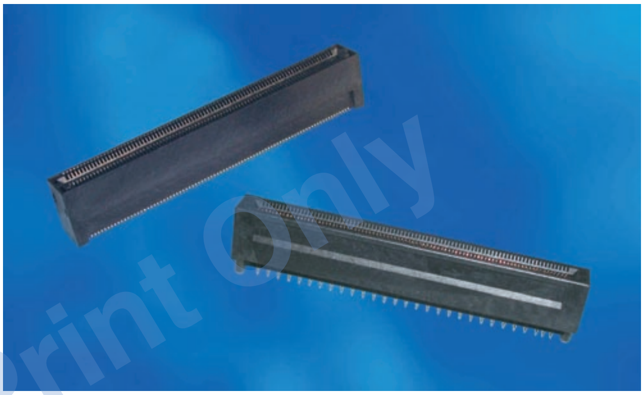

FEATURES

- Dual-row, 170-position card-edge interface with 0.75 mm contact pitch
- Options for press-fit or surface-mount (SMT) termination
- Press-fit termination for application to thicker and larger backplanes
- Surface-mount (SMT) termination optimized for electrical performance
- Very low loss and crosstalk for low-voltage differential signaling at data rates of 10 Gb/s per lane
- SMT footprint allows for increased flexibility in routing PCB traces
- Metal retention clips at SMT connector ends provide additional mechanical strength after soldering
- Lead-free and RoHS-compatible
- Designed to be compliant with Telecordia Uncontrolled Environment (UE) requirements

For more information, contact: electronics.us@fciconnect.com

RSC# 30214 @ www.compactpci-systems.com/rsc

Positronic Industries

423 N. Campbell Avenue • Springfield, MO 65806
800-641-4054
www.connectpositronic.com

POSITRONIC
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Power Input

QB Series, MicroTCA Power Input Connector

Over twenty years ago, Positronic introduced the dual-port, stacked D-subminiature connector to the electronics industry.

Recently, a combination D-subminiature version of the dual port connector was chosen as the MicroTCA power input interface. The dual-port package provides for close spacing between the upper and lower connectors, allowing for a narrow input module face plate.

Placing a “dual-connector” interface into the input power module during manufacturing is simplified. Only one connector unit need be placed onto the PCB.

FEATURES

- 7W2 variant meets μTCA 48 V input requirements
- 9W4 variant meets μTCA 12 V input requirements
- Dual-port right angle PCB mount connector simplifies manufacturing
- Crimp contact cable connectors offer ultra low profile backshells, allowing ease of in-cabinet cable routing

For more information, contact: info@connectpositronic.com

RSC# 31802 @ www.compactpci-systems.com/rsc

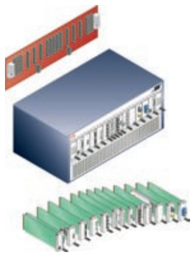
Molex

2222 Wellington Court • Lisle, IL 60532
630-969-4550
www.molex.com

molex®

MicroTCA Chassis

MicroTCA is emerging as an attractive form factor for low-end equipment and multiple applications. To enable customers to quickly develop μTCA systems, Molex has collaborated with Simon Industries to offer a small and sophisticated development chassis. It is equipped with the Molex backplane and connector, as well as an AC-to-DC power supply (mounted at the rear of the chassis). This makes it an ideal chassis to place on the desk lab bench for development and testing of cards, software, and middleware. The full redundancy capability of our dual-star backplane allows customers to test the functionality of their management chips as well as fail-over capability.



FEATURES

- Small, convenient size: 17.25" wide x 7.13" high x 10" deep (438 mm x 181 mm x 254 mm)
- Air input from all 4 sides; exhaust from 3 sides and the top enables full cooling functionality in 4U height
- 4 compact slots to allow either 10 full-height slots or 4 compact and 8 full-height slots (12 total)
- Slide-out fan tray with 10 fans makes repairs easy
- 10 Gbps backplane installed for direct comparison of Molex to other backplane solutions in a similar card cage
- Power supply on rear converts 110 or 220 Vac to 48 Vdc that is wired to the front

For more information, contact: microtca@molex.com

RSC# 32834 @ www.compactpci-systems.com/rsc

Tyco Electronics
P.O.Box 3608 • Harrisburg, PA 17105
800-522-6752
www.tycoelectronics.com/products/MicroTCA

One Stop Shopping

High-Speed Vertical AdvancedMC Connector
Tyco Electronics' 170-position vertical AdvancedMC card edge connector meets the MicroTCA specification for high-speed backplane application of AdvancedMC boards and comes with press-fit tails.

MicroTCA Power Connector
The MINIPAK HD power connector, specified for MicroTCA power modules to backplane connections, combines 2-row high conductivity, hot swappable 15 A power contacts and an 8 x 9 grid of high-density signal contacts in one molded housing to set the power and signal density standard.

Memory Sockets
Tyco Electronics offers memory sockets designed specifically to fit in AdvancedTCA and MicroTCA applications. The low profile DDR2 socket accepts the new VLP (Very Low Profile) memory module and meets height requirements. SODIMM sockets will allow mounting SODIMM modules within the width of AdvancedMC boards.

Input/Output (I/O) Connectors

RJ-45 Connectors
A line of low profile RJ-45 connectors especially designed for applications on AdvancedMC, MicroTCA, and AdvancedTCA applications include 1x1 and 1x4 configurations optimized for Compact Module faceplates. A full line of stacked configurations for full size AdvancedMC and AdvancedTCA faceplate sizes and LED options are available.

SFP Modules
Small Form-Factor Pluggable (SFP) cages/connectors in multiple configurations, with and without light pipes, fit in AdvancedTCA, AdvancedMC, and MicroTCA applications.

Tyco Electronics also offers virtually all other I/O series of connectors that might be required for MicroTCA applications including USB, PCIe, InfiniBand, MiniSAS, Serial ATA, MRJ21, etc.

AdvancedTCA and AdvancedMC
Tyco Electronics also meets all your AdvancedTCA connector needs including PICMG specified Zone 1 power connector, Zone 2 high-speed backplane connector, keying/guide hardware, many solutions for Zone 3 including high density, high speed, fiberoptic, power, cable, as well as right angle, high speed mezzanine for AdvancedMC on AdvancedTCA boards.

FEATURES

- Vertical AdvancedMC Connector – Designed for high-speed differential applications (10+ Gbps); Precision formed compliant pin
- MicroTCA Power Connector – 24 individual 15 Amp power contacts and 72 individual high density signal contacts, all stamped and formed for cost effectiveness with Hot Plug contact design
- Low Profile DDR2 Memory Socket – Accepts Very Low profile (VLP) memory module with specially designed ejectors allowing airflow to reach memory module DRAMs for efficient cooling
- SODIMM Memory Socket (in process) –Specially designed to meet AdvancedMC board width dimension while still accepting standard SODIMM modules; Available in multiple heights
- RJ-45 Connectors – Low profile versions for compact AdvancedMC (individual and ganged); Stacked versions designed for full size AdvancedTCA; Available in 1x1, 1x4, 2x1, 2x4, 2x6, and 2x8 configurations
- SFP Modules – Products per Multi-source Agreement (MSA); Uses 20 position PT connector; Hot swappable
- MRJ21 Connector – Designed to meet or exceed Cat5e crosstalk; 1.5 times the port density of RJ-45 (single port is the equivalent of 6 RJ-45 ports); Fits in mid and full sized AdvancedMC faceplates
- AdvancedTCA Connectors
  - Zone 1 Power Connector
  - Zone 2 High Speed Connector
  - Zone 3: Many solutions available for high speed, optical and/or power
  - Compliant guides and keying modules

For more information, contact: product.info@tycoelectronics.com

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Yamaichi Electronics USA, Inc.
475 Holger Way • San Jose, CA 95134
408-715-9100
www.yeu.com

MicroTCA-CN080

CN080 is essential to bring the high performance and reliability of AdvancedTCA to the MicroTCA system. Our unique connector-mounting technology, Compression Mount Technology (CMT), requires fewer backplane inner layers. The CN080 is capable of 12.5 Gbps and beyond and is GR-1217-CORE and RoHS compliant. It withstands shock and vibration testing. CN080 also complies with the MicroTCA design requirements by having 170 contacts on 0.75 mm pitch.

FEATURES

- Insulation resistance –100MΩ min. @ 80 Vdc
- Differential impedance of 100(±) 10Ω
- Withstanding voltage – 80 Vrms. min.
- Operating temperature – (-55 °C to +105 °C)
- Mating cycles – 200 times
- Cross talk ratio – NE&FE less than 3%

For more information, contact: info@yeu.com

RSC# 24954 @ www.compactpci-systems.com/rsc

Elma Electronic
44350 S. Grimmer Blvd. • Fremont, CA 94538
510-656-3400
www.elma.com

MicroTCA

Elma has the widest selection of MicroTCA backplanes, system platforms, and more! Using a unique modular extrusion-based design, Elma can quickly and easily modify its MicroTCA platforms to various different configurations. Elma's MicroTCA product selection includes the features noted on the right:

FEATURES

- Backplanes: 14-slot star backplane; 14-slot dual star backplane; 10-slot dual star cube backplane
- System platforms:
  - 2.5U open card cage (for cabinet enclosure)
  - 4U, 5U subrack: Single modules, 14 slots
  - 6U subrack: Redundant fans, single modules, 14 slots
  - 7U subrack: Double modules, 14 slots
  - 7U cube: Single or double modules, 10 slots
  - 8U subrack: Redundant fans, double modules, 14 slots
- MicroTCA cabinet: 44U liquid-cooled MicroTCA cabinet enclosure
- MicroTCA components: handles and panels (coming soon!)

For more information, contact: sales@elma.com

RSC# 32876 @ www.compactpci-systems.com/rsc

Simon Industries, Inc.
1003 Morrisville Parkway Suite 100 • Morrisville, NC 27560
919-469-2004
www.simonindustries.com

Ceres 1000

MicroTCA (Telecommunications Computing Architecture) is a PICMG standard, open architecture specification using field-replaceable, hot-swap capable, Advanced Mezzanine Cards.

MicroTCA™Table Top Development Platform
Simon Industries' MicroTCA table-top development chassis is well-suited for developing and debugging MicroTCA systems using full-height and half-height AdvancedMC modules. Utilizing the Molex Dual-Star backplane, the Simon Chassis can facilitate hardware and software development, accelerate time to market, and allow developers to evaluate various AdvancedMC cards, power supplies, and MCH products.

The Simon chassis features blind mating connectors to enable live replacement of the fan tray without powering down the chassis. The backplane features the Molex press-fit edge card connectors that are combined with precise launch geometry, minimizing reflections and enabling 10 Gbps over each differential pair. This allows the backplane to handle up to 4 times the bandwidth of other backplanes.

To minimize crosstalk, the design of the MicroTCA backplane employs spacing between pairs of at least 0.25 mm (0.010"). A Field Replaceable Unit Read Only Memory (FRU ROM) that facilitates communication of all important backplane characteristics to the MCH.

Backplane Configuration
Four compact slots to allow either 10 full-height AdvancedMC cards (or 4 compact and 8 full-height payload slots) for a total of 12 AdvancedMC slots. Fabric B on ports 2 and 3 is configured to support SAS or SATA drives in any of the slots, allowing customers to connect processor cards directly to storage drives. Slots for 2 MCH modules and 2 power supplies, make it easy to test hand-off features to the alternate MCH or power supply.

Cooling
The removable fan-tray is equipped with 10 high-performance 12 Vdc fans mounted beneath the card cage. The arrangement of these 80 mm fans provides optimized uniformly turbulent airflow to all slots of the card cage. When installed, the rear-mounted 1000 Watt power supply has its own independent cooling fans and air circulation path.

SIMON
μTCA
POWER
DC Out
DC Out

FEATURES

- Cabinet construction: Painted steel cabinet with stamped steel card guides
- Height: 6.98" (177 mm) Standard 4U; Width: 17.25" (438 mm); Depth: 8.50" (208 mm) without rear p/s; Depth: 10.25" (260 mm) with rear p/s
- 1000 Watt rear-mounted 115/240 Vac input p/s
- -48 Vdc to one or two MicroTCA-specified in-rack supplies
- Available for order without p/s

For more information, contact: jjenkins@simonindustries.com

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Hybricon Corporation
12 Willow Road • Ayer, MA 01432
978-772-5422
www.hybricon.com

Rugged µTCA

- Full ATR tall long chassis 10.5" (W) x 10.625" (H) x 19.62" (D) with front to rear airflow
- Shock-mounted MicroTCA card cage for rugged environments
- MIL-STD-461 EMI containment; fully EMI gasketed
- Top load MicroTCA/AdvancedMC cards
- MicroTCA card cage supports a front 150 mm section and rear 75 mm section, with air flowing through the two series front to back
- www.ruggedmicrotca.com

FEATURES

- AC/DC front end power supply supporting 110/220 Vac operation with 48 Vdc output to DC MicroTCA power module
- 0 °C to +50 °C, noncondensing humidity (nonconformal coated)
- Military filtered power input connector with 6-foot external power cord
- Pressurizing commercial grade fans mounted to card cage at front panel with honeycomb air inlet panel
- Designed to cool 80 W per double-width full-height slot and 40 W per single-width full-height slot at 10,000 feet
- Designed to meet MIL-STD-461E; CE102, CS101, CS116, RE101, RE102

For more information, contact: cburden@hybricon.com

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Jasper Electronics
1580 N. Kellogg Drive • Anaheim, CA 92807
714-917-0749 x23
www.jasperelectronics.com

TCA380 µTCA Supply

Jasper Electronics, for many years an industry leader in CompactPCI power supplies, releases the first MicroTCA product. The “TCA380” is a full featured 16 payload power module that is completely PICMG µTCA compliant.

This hot-swappable 6HP single-width power supply has an input range of -36 Vdc to -72 Vdc, and an AC input version is now in development.

These power supplies are RoHS compliant, and production quantities will be manufactured in our Far East ISO9001-2000 certified facilities.

Jasper welcomes customer custom configurations to meet user specified requirements.

For more information, please contact Jasper or visit our website.

FEATURES

- 16 payload outputs: 12 V, 7.6 A default current limit
- Programmable payload current to 9.4 A in 40 mA increments
- 16 management power outputs: 3.3 V @ 150 mA min/225 mA max
- -36 Vdc to -72 Vdc input range
- Hot-swappable, redundant, and IPMI compliant
- Standard µTCA power input and output connectors

For more information, contact: sales@jasperelectronics.com

RSC# 32707 @ www.compactpci-systems.com/rsc

Emerson Network Power
8310 Excelsior Drive • Madison, WI 53717
608 831-5500
www.artesyncp.com

MicroTCA EMC6000 Series

The MicroTCA (Micro Telecommunications Computing Architecture) is a standard, open architecture shelf specification for low-cost, small-form-factor, field-replaceable chassis utilizing hot-swappable AdvancedMC mezzanine cards. Developed by the PCI Industrial Computer Manufacturers Group (PICMG), MicroTCA targets central office, outside plant, last-mile access, and Customer Premises Equipment applications with tight cost and size constraints. Emerson's MicroTCA Communication and Computing Platform EMC6000 and EMC6200 give customers multiple options to deploy their applications.

EMC6000 is a 6U 19" rack mount chassis supporting up to 12 Single or Double, Compact or Full AdvancedMC modules. EMC6000 is an ideal platform for applications requiring a mixture of Double and Single modules such as GPON or WiMAX applications. EMC6200 is a 6U 19" rack mount chassis with two independent tiers. Each tier supports a combination of 12 Single, Compact, or Full AdvancedMC modules. EMC6200 gives customers a high density option and preserves valuable rack space.

The EMC6000 and the EMC6200 are equipped with a MicroTCA Carrier Hub (MCH) with each MCH supporting up to 12 AdvancedMC modules, a cooling unit, and a 600 W 48 V DC power management module (per tier).

Emerson's optional SpiderWareM3 Shelf Management Edition software is available to shorten the learning curve and accelerate application development. SpiderWareM3 features an intuitive Java based GUI that makes it easy to monitor key physical system characteristics such as power and module status. SpiderWareM3 also simplifies integration with existing applications by providing a standard SAF (Service Availability Forum) Hardware Platform Interface (HPI). SpiderWareM3 runs on an optional Emerson KosaiPM, a Pentium M processor AdvancedMC, or on any remote server.

FEATURES

- 6U 19" rack mount chassis
- EMC6000: a single tier supporting up to 12 Single or Double, Compact or Full AdvancedMC modules
- EMC6200: two tiers supporting up to 24 Single, Compact, or Full AdvancedMC modules
- Layer 2 GbE MicroTCA Carrier Hub (MCH) with dual front panel 10/100/1000 Ethernet ports
- IPMI management for power and AdvancedMC modules
- 48 V DC 600 W power management module per tier
- Optional SpiderWareM3 Shelf Management edition software
- TL-9000 and ISO 9001 :2000 certified quality management system (FM 26789)

For more information, contact: info@artesyncp.com

RSC# 32057 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

MicroTCA 6U

The MicroTCA 6U x 19" is a rack-mount system with redundant cooling units and 9+2+2 AdvancedMC slots. The shelf provides two cooling units, one lower and one upper for a push pull configuration. The air intake is located at the bottom front of the chassis. The removable air filter is directly above the lower cooling unit, just below the subrack. Air exhausts out the top side and rear of the system.

FEATURES

- 6U x 19" redundant cooling system
- Nine AdvancedMC full-size slots (6HP)
- Two MicroTCA Carrier Hubs (MCH) slots (6HP)
- Two Power Modules (PM) slots (9HP)
- Two Cooling Unit (CU) connectors
- Compliant to PICMG MicroTCA Base Specification

For more information, contact: info@pentair-ep.com

RSC# 32715 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

MicroTCA Industrial PC

The MicroTCA Industrial PC allows for the installation of four single, full-size AdvancedMC modules. To keep the costs low an open frame AC input power supply with +12 V output is installed in the rear of the system and has its own cooling fan. Cooling is achieved with a fixed fan in the rear with lower front air intake and rear exhaust.

FEATURES

- Table top and rack-mount configurations available
- Four AdvancedMC slots with hot swap capability
- AC power input located at the rear
- PCIe switch routing from CPU slot to AdvancedMC slots

For more information, contact: info@pentair-ep.com

RSC# 32716 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

Centellis 1000

The Centellis™ 1000 Series MicroTCA™ communications server provides highly integrated and verified hardware and software components, reduces development costs, and accelerates time-to-market. This allows Network Equipment Providers (NEPs), defense primes, and Original Equipment Manufacturers (OEMs) in a broad range of market segments and applications to focus their development efforts on critical, differentiating features that provide a competitive advantage.

The Centellis 1000 series is designed to the MicroTCA open standard, making it physically smaller, with finer-grained scalability than Motorola's initial communications servers that are based on the AdvancedTCA® industry standard.

Because MicroTCA builds on AdvancedTCA technology, products based on the MicroTCA standard can get to market quickly with lower development costs. A MicroTCA system uses the same AdvancedMC™ module designs that are deployed as mezzanines on AdvancedTCA blades. Reuse of existing hardware and software will improve cost efficiency through economies of scale. Architecture similarities make software migration between the two types of platforms relatively easy.

The Centellis 1000 family will be used in a wide range of applications, such as WiMAX and IP PBX point-of-access points, VoIP access gateways, and cellular base stations where reducing the capital cost of installing or extending next-generation network elements is very important. Small physical size, low power consumption, and enhanced serviceability also make these new communication servers ideal for a variety of applications in defense/aerospace, federal, medical, and industrial market segments.

FEATURES

- 11-slot MicroTCA communications server
- Highly integrated and verified hardware and software components
- Reduce development costs and accelerate time-to-market
- Basic Blade Services software compliant to the Service Availability™ Forum (SA Forum) Hardware Platform Interface (HPI) layer
- Configurable with broad portfolio of AdvancedMCs from Motorola and ecosystem partners
- 19 in. (483 mm) wide, 7 in. (178 mm) high, 9.3 in. (237 mm) deep shelf
- 600 watt AC or -48 Vdc power entry modules support full complement of AdvancedMCs
- Gigabit Ethernet backplane fabric with optional PCI Express secondary fabric
- MontaVista CGL or Wind River PNE Linux Edition operating system
- MicroTCA Carrier Hub (MCH) combines shelf management, clocking, and fabric switching in a single module, maximizing payload capacity
- Designed for embedding in rugged environments including NEBS

For more information, contact: inquiry@mcg.mot.com

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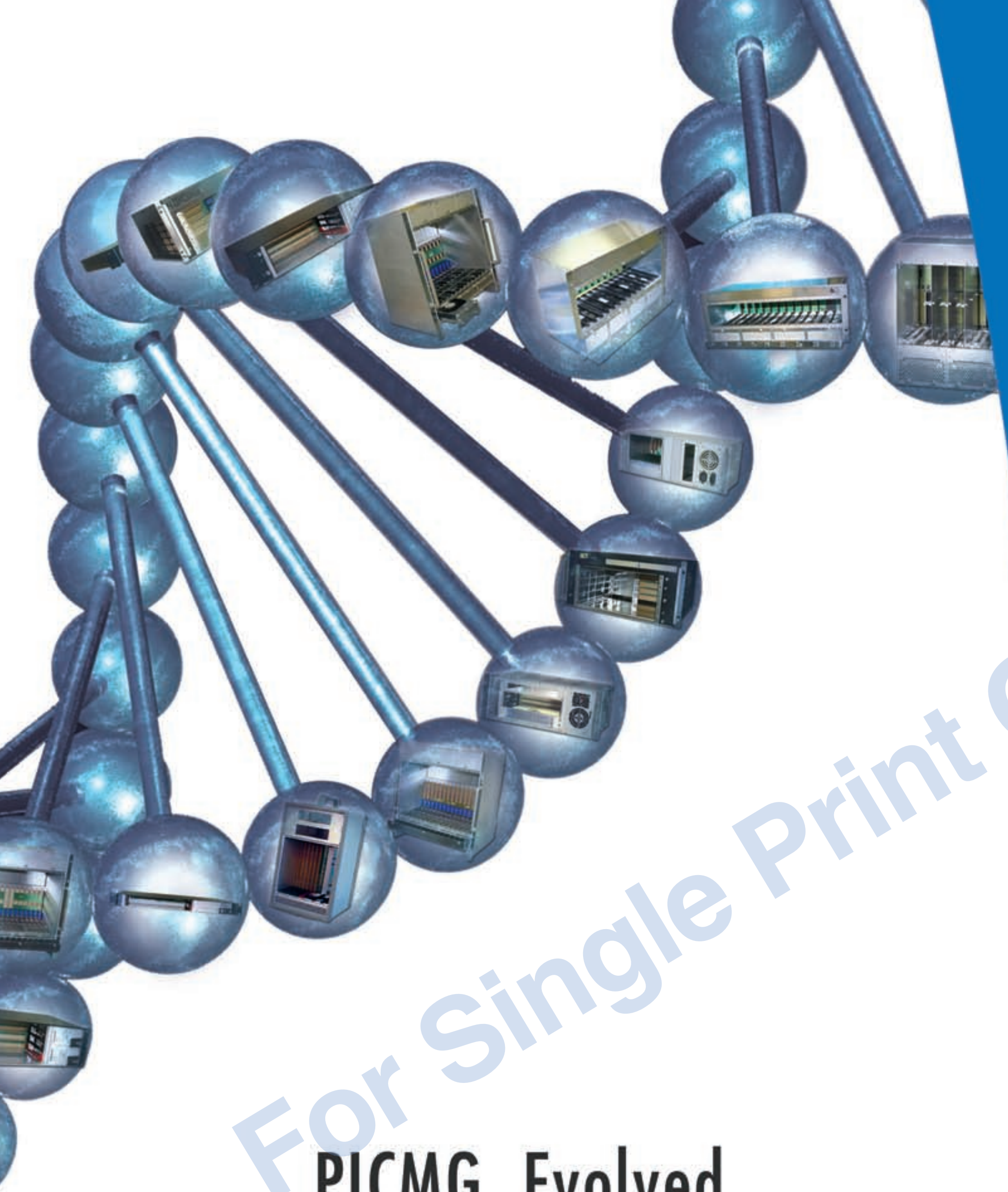

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Molex
2222 Wellington Court • Lisle, IL 60532
630-969-4550
www.molex.com

MicroTCA Backplane

Molex's MicroTCA backplane is ideal to evaluate the performance of various Advanced Mezzanine Cards (AdvancedMCs), MicroTCA Carrier Hubs (MCH) modules, and power supplies. This dual-star backplane is configured with two MCH modules that provide full redundancy for both control and switching functions. The 10 Gbps performance will facilitate the development of state-of-the-art µTCA systems. The µTCA backplane has redundant power supplies located to the left and right of the MCH modules. Each power module is routed radially to each AdvancedMC and MCH slot, thus allowing the MCH to independently power up or down any slot. There are 12 centrally located payload slots for industry standard AdvancedMCs.

FEATURES

- Backplane for single wide AdvancedMC cards, 0.42 m by 0.12 m (16.82" by 5.00")
- 4 compact slots, which allows either 10 full-height slots or 4 compact and 8 full-height slots (12 total)
- Power system supports 80 watts per slot – the maximum allowed by the MicroTCA 1.0 specification
- Connectors for 2 power supplies and 2 MCHs for testing of handoff features when one power supply or MCH fails
- MicroFit 3.0™ 14-circuit, blind mate, fan tray connectors provide hot-swappable fan trays for redundancy
- Design easily scalable to meet different customer applications and needs

For more information, contact: microtca@molex.com

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Choices between old and new bus architectures, multi-core processors and option card technologies have you frustrated? Relax, we got you covered!

Trenton's system host boards (SHBs) combined with our SHB Express™ or PICMG® 1.3 backplanes simplify system designs by merging legacy solutions with today's latest computing innovations. In addition to the latest PCI-X and PCI Express™ system architectures, our SHBs and backplanes support legacy ISA and PCI buses and option cards. Trenton products enable system designs that maximize processing power, thermal efficiency, configuration flexibility and longevity. Call us today or visit us online at www.TrentonTechnology.com to learn more about our extensive line of SHB Express products.

- Single Processor SHBs with Intel® Pentium® 4, Intel® Pentium® M, Intel® Core™ Duo or Intel® Core™ 2 Duo processors
- Dual Processor SHBs featuring Single- or Multi-Core Intel® Xeon® processors
- Server-class and Graphics-class PCI Express configurations
- PCI Express™ x16, x8, x4 and x1 link support
- PICMG® 1.3 Compatible System Host Boards (SHBs)

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Trenton's MCX/MCG series of PICMG® 1.3 or SHB Express™ System Host Boards (SHBs) offers a wide variety of board configurations designed to excel in your most demanding and diverse server-class and graphics-class computing applications. Dual-Core processor options provide two and Quad-Core processors provide four execution cores per CPU. For dual-processor board configurations, each CPU has its own independent system bus to reduce data bottlenecks while maximizing processing throughput. The four-channel memory interface features DDR2-667 FB-DIMMS with a maximum of 16 GB. An extended memory SHB configuration is available that supports up to 32 GB of system memory.

FEATURES

- One circuit board plus two quad-core processors deliver eight excution cores of outstanding performance
- Single circuit board SHB design featuring dual-or quad-core Intel® Xeon® processors with independent FSBs
- Quad channel DDR2-667 Memory Interface supports up to 32 GB of system memory
- Supports 32-bit /64-bit applications and x16, x8, x4, and x1 PCI Express links to a PICMG® 1.3 backplane
- Six Serial ATA/300 Interfaces with RAID 0, 1, 5, and 10 support and seven USB 2.0 interfaces
- Supports three Gigabit Ethernet interfaces: two to the board's I/O bracket and one down to the backplane

For more information, contact: jrenehan@TrentonTechnology.com

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AMC-5301

The AMC-5301 is a highly integrated CPU board, which is implemented as a single-width, full-size, processor AdvancedMC module. The AMC-5301 module design is based on the low-power and high-performance Intel® Celeron® M and Pentium® M processors combined with the high-performance Intel 3100 chipset. The board supports Intel Celeron M and Pentium M processor versions with frequencies ranging from 1.0 GHz up to 2.0 GHz providing FSB speeds of 400 MHz. The initial mainstream version implements an Intel Pentium M Processor 738 running at 1.4 GHz to provide the most optimum performance per watt configuration. It supports Dual Channel DDR2 memory up to 2 GB running at 400 MHz with ECC support. One dual Gigabit Ethernet controller utilizes the PCI Express interconnection to the 3100 chipset for maximum data throughput between processor and memory.

The AMC-5301 has full hot swap capability, which enables the board to be replaced, monitored and controlled without having to shutdown the AdvancedTCA carrier board or the system. A dedicated Module Management Controller (MMC) is used to manage the board and support a defined subset of Intelligent Platform Management Interface (IPMI) commands and PICMG® (AdvancedTCA/AdvancedMC) command extensions. Localized AdvancedMC temperature, voltages, and power status are monitored and hot swap operations are all managed on board. The AdvancedMC module supports one USB 2.0 host interface to the front, and one EIA-232 serial interface via a 9-pin micro D-SUB connector. One of the two on-board Gigabit Ethernet ports can be directed to the front panel RJ-45 connector. The high-speed interconnect topologies to the carrier board include a Dual Gigabit SerDes connection, two USB ports, and Serial ATA storage interface to the common options region of the AdvancedMC port mapping. A PCI Express x8 or two x4 lanes from the MCH are connected to the carrier via the AdvancedMC fat pipe ports.

The Intel 3100 chipset was selected for the dual core version of the AMC-5301 which is currently under development. This will greatly facilitate board support package and driver reuse for integrators migrating to the dual core version.

FEATURES

- Intel Pentium M Processor 738 (1.4 GHz) and Celeron M 373 (1 GHz) with 400 MHz FSB support; Intel 3100 chipset solution
- 1 GB DDR2 onboard (2 GB optional) with ECC registered support
- Supports Intel AMT Technology; Trusted platform management; Programmable watchdog timer
- One optional expansion board for CompactFlash and one onboard 512 MB bootable USB storage flash
- PigeonPoint-compatible MMC with COM2 debug
- AMI BIOS, BIOS parameters stored in EEPROM, boot order defined via MMC Common
- One single PCI Express x8 or dual PCI Express x4 to AdvancedMC connector Fat Pipes region
- Intel 82571EB Dual Gigabit Ethernet Controller with pin-outs to AdvancedMC common options region port 0-1
- Two SATA connect to rear AdvancedMC edge connector pin-outs to AdvancedMC common ports region 2-3
- One Gigabit Ethernet accessible either at front panel via RJ-45 connector or rear AdvancedMC edge connector
- COM1 to front panel as USB slave through onboard USB to serial converter and micro D-SUB connector
- One USB 2.0 compliant host port on front panel and one USB 2.0 port to AdvancedMC edge connector

For more information, contact: CTInfo@advantech.com

RSC# 32879 @ www.compactpci-systems.com/rsc

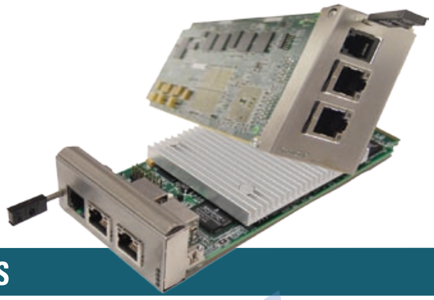
GDA Technologies, Inc.

1010 Rincon Circle • San Jose, CA 95131
408-432-3090
www.gdatech.com

PowerQUICC III AMC

Based on the Freescale MPC8548E PowerQUICC® III processor, the GDA AdvancedMC (PICMG AMC.x compliant) includes two Gigabit Ethernet ports in the front panel, two Gigabit Ethernet ports with x8 PCI Express, and IPMI on the AdvancedMC edge connector.

Delivering performance beyond 3065 MIPS, this hot-swappable and field-replaceable cost-effective AdvancedMC solution with built-in hardware XOR acceleration can significantly enhance processing capability in AdvancedTCA™, MicroTCA™, or proprietary systems while addressing power and heat constraints for an AdvancedMC form-factor. The rich encryption capabilities of the board can also enable secure robust communications at very high speeds along with TCP/IP checksum acceleration and QoS support.



FEATURES

- Freescale MPC8548E PowerQUICC® III Integrated Host Processor at 1,333 MHz
- Four 10/100/1000 Ethernet ports, and eight lane PCI Express verified in Target and standard Modes (32 Gbps)
- Hardware support for Katsumi ("Misty"), DES, 3DES, MD-5, SHA-1/2, AES, RSA, RNG, and ARC-4
- Onboard 512 MB DDR2 SDRAM at 167 MHz, 32 MB Boot Flash and I2C EEPROM
- Supports intelligent remote management (IPMI v1.5) along with power and temperature monitoring
- BSP includes Embedded Linux and GDA diagnostics software

For more information, contact: sales@gdatech.com

RSC# 31959 @ www.compactpci-systems.com/rsc

VMETRO, Inc.

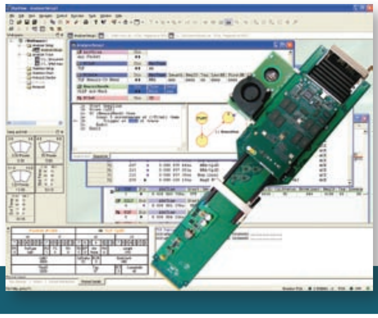
1880 S. Dairy Ashford, Suite 400 • Houston, TX 77077
281-584-0728
www.vmetro.com

VMETRO innovation deployed

Vanguard Express

The VMETRO Vanguard Express family of Protocol and Link analyzers are designed for today's engineers working with PCI Express based development. Useful for debugging, testing, and validating the PCI Express protocol, the Vanguard Express analyzer allows testing of x1, x4, and x8 PCI Express card-edge, XMC, and AdvancedMC form factors.

The Vanguard Express is designed to offer maximum flexibility for multiple form factors. In an AdvancedMC environment, a PCI Express AdvancedMC module under test is installed on a carrier/extender card that also accepts the Vanguard Express Serial Analyzer Engine module (SAE) or the Vanguard Express XMC. The SAE can also be used in PCI Express card-edge systems using carrier cards.



FEATURES

- Supports x1 to x8 PCI Express
- Analysis, Real-Time Statistics, and Protocol Checker
- Support for AdvancedMC, XMC, and PCI Express card-edge form factors
- Ethernet or USB host connection
- Same GUI as PCI and VME bus analyzers
- Concurrent operation of all functions

For more information, contact: info@vmetro.com

RSC# 22795 @ www.compactpci-systems.com/rsc

AVIVA Networks, Inc.
46961 Zapotec Drive • Fremont, CA 94539
866-850-8787
www.AVIVAnetworks.com

AMC10G

The AVIVA Networks AMC10G Network Processor Card is a single-width, full-height AdvancedMC™ packet processing engine powered by EZchip Technologies' NP-2 series network processors. Featuring 10-20 Gbps full-duplex throughput (up to 40 Gbps total) deep packet inspection, the AMC10G can be utilized in AdvancedTCA™ and MicroTCA™ applications, and supports firewall/NAT, traffic management, traffic shaping and policing, and load balancing applications.

FEATURES

- Flow-through architecture, with a 10 Gbps CX4 line-side interface for data center and enterprise applications
- Available with multi-mode and single mode XFP optical interface
- Front panel 1000BASE-T 1 Gbps LAN/maintenance port
- AMC.0 IPMI V1.5 subsystem initializes board parameters, monitors board voltage and temperature
- High performance x1 PCIe control plane interface to NPU, providing plug & play configuration
- FCC Part 15 Class A and NEBS Telecordia GR-63 compliance

For more information, contact: info@avivanetworks.com

RSC# 32884 @ www.compactpci-systems.com/rsc

AVIVA Networks, Inc.
46961 Zapotec Drive • Fremont, CA 94539
866-850-8787
www.AVIVAnetworks.com

AMC1000

The AVIVA AMC1000 Security and Encryption Blade is a single-width, full-height AdvancedMC™ packet processing engine powered by Cavium Networks' breakthrough 16 core MIPS64® OCTEON™ processor. The AMC1000 Security and Encryption Blade is ideal for AdvancedTCA routers, switches, Unified Threat Management (UTM) security gateways, content-aware switches, application-aware gateways, triple-play gateways, WLAN and 3G access and aggregation devices, and storage network equipment servers.

FEATURES

- AES, DES, 3DES, SHA, MD5, Secure Vault
- A robust set of SDKs and development tools to meet a diverse range of application requirements
- Range of performance levels from 8 to 16 cores
- Line-rate packet processing, low latency, differentiated QoS, dual RJ-45 1000BASE-T line-side interfaces
- FCC Part 15 Class A and NEBS Telecordia GR-63 compliance
- Security features include hardware processing engines for PacketIO, IPv4/IPv6 TCP, and packet inspection

For more information, contact: info@avivanetworks.com

RSC# 32883 @ www.compactpci-systems.com/rsc

BittWare, Inc.
9 Hills Avenue • Concord, NH 03301
603-226-0404
www.bittware.com

B2-AMC

Featuring the ADSP-TS201S TigerSHARC processor, BittWare's B2-AMC is an AdvancedMC that supports universal baseband processing for wireless communications infrastructure such as 2G, 2.5G, 3G, WiMAX, and SDR. A full-height, single-wide AdvancedMC, this board attaches to AdvancedTCA carriers or other cards equipped with AdvancedMC bays and is completely hot-swappable. The B2-AMC features an Altera® Stratix® II FPGA and four TigerSHARC DSPs. It also has a variety of front and back panel I/O interfaces, and a configurable 4x network interface supporting a variety of protocols. It also provides a 10/100 Ethernet interface and a Gigabit Ethernet interface for command, control, and reprogramming, as well as flash memory for booting the DSPs and FPGAs.

FEATURES

- Altera Stratix II FPGA for I/O, routing, and processing
- Four ADSP-TS201S TigerSHARC® DSPs providing 57.5 GOPS or 14.4 GFLOPS
- Network interface configurable to support: Serial RapidIO™, PCI Express™, and ASI, GbE, and XAUI™ (10 GbE)
- FINe™ bridge providing GbE and configurable for PCI Express
- Front Panel I/O – 10/100 Ethernet, LVDS I/O, GPDIO, RS-232, optional 1x Fiber Transceiver
- Full-height, single-wide AdvancedMC

For more information, contact: info@bittware.com

RSC# 18040 @ www.compactpci-systems.com/rsc

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214-654-5000
www.iphase.com

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iNAV® 31K

The iNAV® 31K AdvancedMC 10 Gbps Carrier Card is a flexible, high-performance addition to next generation systems. It meets the needs of a wide variety of applications in AdvancedTCA 3.1 systems, including I/O, processing, and storage.

The iNAV 31K features include a high-performance Ethernet switch with 24 Gigabit Ethernet ports and up to two 10 Gigabit Ethernet ports, an optional PCI Express switch, and advanced Telecom Clock management, as well as a Linux®-based Board Management Processor that provides full local and remote management.

Advanced fully managed Ethernet Switching technology supports features such as complex VLANs, Rapid Spanning Tree, Link Aggregation, and Multicast.

FEATURES

- Supports four single-width, mid-size AdvancedMCs or up to two double-width, mid-size AdvancedMCs
- Supports 1/10 Gigabit (AdvancedTCA 3.1 Option 1 and 9) links to the AdvancedTCA Fabric, as well as Base Interface links
- 4x GE and optional x1 PCI Express links to each AdvancedMC bay, and support for a Processor AMC (PrAMC) and SAS/SATA disk AdvancedMCs
- Advanced Telecom Clock management accepts clock from and to any AdvancedMC bay and can drive a clock to any bay
- Powerful Linux®-based PowerQUICC III Board Management Computer with PCI-e and GE access to all AdvancedMC bays
- The iNAV® 31K provides an ideal environment for delivery of highly integrated sub-systems

For more information, contact: fastnet@iphase.com

RSC# 32867 @ www.compactpci-systems.com/rsc

Embedded Planet
4760 Richmond Road, Suite 400 • Cleveland, OH 44128
216-245-4180
www.embeddedplanet.com

EP8548A

The EP8548A is a single-width, full-height AdvancedMC processor board with a low power, high performance Freescale MPC8548 processor that operates at up to 1.33 GHz. In addition to the AdvancedMC configuration the EP8548A can operate as a stand-alone module and boot from on board flash allowing for rapid application development outside of the integrated AdvancedTCA or MicroTCA environment. With Linux operating support, the EP8548A is built for a broad range of demanding applications in wireless basestations, media gateways, enterprise network access systems, test and measurement systems, and server blades.

For fabric connectivity the EP8548A is compliant with the AMC.4 (AdvancedMC channels 4-7) and with the AMC.2 (AdvancedMC channels 0 and 1) specification for Serial RapidIO and Gigabit Ethernet fabric interfaces. PCI Express is optionally available on the AdvancedMC connector, contact us for information.

At the heart of the EP8548A is a Freescale MPC8548 PowerQUICC III processor. The MPC8548 is a highly integrated System-on-Chip (SoC) platform that includes a PowerPC core, an integrated security engine, integrated PCI Express, Serial RapidIO, and Gigabit Ethernet controllers, and an integrated DDR2 memory interface. The highly integrated SoC architecture improves system performance, simplifies board design, lowers power consumption, and reduces cost.

The EP858A board includes a Module Management Controller (MMC) built from a 32-bit Freescale ColdFire processor. The MMC supports the Intelligent Platform Management Interface (IPMI) and allows for independent management and monitoring of the EP8548A board.

Embedded Planet also supports the EP8548A with PlanetCore hardware diagnostics, multiple OS options and an open source bootloader and flash programmer, allowing you to focus on your application. Like all Embedded Planet products the EP8548A can be custom configured to meet your needs.

EMBEDDED PLANET
RS232
EMBEDDEDPLANET
10/100/1000 ETHERNET
EP8548AMC

FEATURES

- AMC.2, Type E2 and AMC.4 (channels 4 - 7) compliant design for simple inclusion in Serial RapidIO fabric based AdvancedTCA systems
- Operates in stand-alone mode with included power supply to simplify and accelerate early application development
- Freescale PowerQUICC III MPC8548 operating at up to 1.33 GHz delivering an estimated 3065 MIPS (Dhrystone 2.1)
- Integrated security engine supporting DES, 3DES, MD-5, SHA-1/2, AES, RSA, RNG, Kasumi F8/F9, and ARC-4 encryption algorithms
- Two Gigabit Ethernet to front RJ-45 connectors and single RS-232 port for simplified system data entry and direct module control
- Single SODIMM slot with DDR2 interface for high-bandwidth RAM access and up to 128 MB of onboard flash
- Onboard JTAG connection to simplify development and debugging of software applications
- Software support includes: PlanetCore Hardware Diagnostics, UBoot Bootloader, Linux, INTEGRITY, and VxWorks Board Support Packages
- Complete AdvancedTCA development systems are available including AdvancedTCA carrier boards, chassis, and multiple AdvancedMC cards

For more information, contact: info@embeddedplanet.com

RSC# 23603 @ www.compactpci-systems.com/rsc

Embedded Planet
4760 Richmond Road, Suite 400 • Cleveland, OH 44128
216-245-4180
www.embeddedplanet.com

EP8641A

The EP8641A is a single-width, full-height AdvancedMC processor board featuring the high performance Freescale MPC8641D dual-core PowerPC processor operating at up to 1.5G Hz. In addition to the AdvancedMC configuration the EP8641A can operate as a standalone module and boot from on board flash allowing for rapid application development outside of the integrated AdvancedTCA or MicroTCA environment. With its Linux, VxWorks, and INTEGRITY operating support, the EP8641A is built for a broad range of demanding applications in wireless basestations, media gateways, enterprise network access systems, test and measurement systems, and server blades.

For fabric connectivity the EP8641D is compliant with the AMC.4 (AdvancedMC channels 4-7) and AMC.2 (AdvancedMC channels 0 and 1) specification for Serial RapidIO and Gigabit Ethernet fabric interfaces. PCI Express is optionally available on the AdvancedMC connector, contact us for information.

At the heart of the EP8641A is a Freescale MPC8641D dual-core PowerPC processor. The MPC8641D processor is a highly integrated system-on-chip (SoC) platform that includes dual e600 PowerPC cores, an integrated security engine, integrated PCI Express, Serial RapidIO, and Gigabit Ethernet controllers, and an integrated DDR2 memory interface. The highly integrated SoC architecture improves system performance, simplifies board design, lowers power consumption, and reduces cost.

The EP8641A includes a Module Management Controller (MMC) built from a 32-bit Freescale ColdFire processor. The MMC supports the Intelligent Platform Management Interface (IPMI) and allows for independent management and monitoring of the EP641A board.

Embedded Planet also supports the EP8641A with PlanetCore hardware diagnostics, multiple OS options, and an open source bootloader and flash programmer, allowing you to focus on your application. Like all Embedded Planet products the EP8641A can be custom configured to meet your needs.

FEATURES

- AMC.2, Type E2 and AMC.4 (channels 4 - 7) compliant design for simple inclusion in Serial RapidIO fabric based AdvancedTCA systems
- Operates in standalone mode with included power supply to simplify and accelerate early application development
- Dual core MPC8641D Power Architecture from Freescale scaling to 1.5 GHz
- Two Gigabit Ethernet to front RJ-45 connectors and single RS-232 port for simplified system data entry and direct module control
- Up to 1 GB of DDR2 RAM in two independent banks (512 MB x 2) , one allocated to each core
- Onboard JTAG connection to simplify development and debugging of software applications
- Software support includes: PlanetCore Hardware Diagnostics, UBoot Bootloader, Linux, INTEGRITY, and VxWorks Board Support Packages
- Complete AdvancedTCA development systems available including AdvancedTCA carrier boards, chassis, and multiple AdvancedMC cards

For more information, contact: info@embeddedplanet.com

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iSPAN® 3639

The Interphase iSPAN 3639 is a mid-size AdvancedMC™ 4- or 8-port T1/E1/J1 communications controller that delivers a comprehensive high capacity connectivity solution for use with AdvancedTCA and MicroTCA platform solutions to deliver a wide range of Voice Over IP, Wireless, and IP Multimedia Subsystem (IMS) infrastructure application elements.

The iSPAN 3639 incorporates Freescale's PowerQUICC III communications controller to deliver high performance and high capacity processing of signaling traffic. With the addition of an optional FPGA with support for TDM switching and I-TDM protocol conversion together with ISDN or CAS signaling protocol support, the 3639 can be used for full capacity media termination and media switching applications.

FEATURES

- Freescale™ MPC8560 (PowerQUICC III™) onboard processor @ 800 MHz
- Optional FPGA accelerates media termination and processing
- Four or eight individually software selectable T1/E1/J1 interfaces with both front and rear access
- AMC.1 PCIe and AMC.2 Gigabit Ethernet connectivity for use on SBC's, carriers, and in MicroTCA
- Onboard support for SS7 signaling (MTP-1, MTP-2, Q.SAAL,Q.2140), I-TDM, ISDN(L3), CAS, Frame Relay, and HDLC
- Pre-integrated with 3rd party higher layer protocol stacks for ease of integration and time-to-market

For more information, contact: fastnet@iphase.com

RSC# 22267 @ www.compactpci-systems.com/rsc

Interphase Corporation
2901 North Dallas Parkway, Suite 200 • Plano, TX 75093
214-654-5000
www.iphase.com

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iSPAN® 3650

The iSPAN® 3650 AdvancedMC Quad OC-3/STM-1 interworking card is part of a new paradigm in communications processing subsystems. Based on the easy to program Wintegra™ WinPath2™ packet processor, which is purpose built for I/O processing tasks in network access environments, the iSPAN 3650 offers an extensive set of protocols and multi-protocol interworking that reduce application development cycles and improve time to market.

The iSPAN 3650 delivers unprecedented performance in IP traffic interworking between ATM AAL5 and Ethernet with its gateway on a card capability. Specialized functions include packet routing/classification, Layer 2 and Layer 3 traffic switching, VPN tag switching, etc.

FEATURES

- Four OC-3/STM-1 or one OC-12/STM-4 SFP interfaces
- High Performance: 64,000 PVCs, 1 M/s AAL2 CPS packets, 50,000 Active CIDs, full-wire speed
- Multi Protocol: AAL1, AAL2 and AAL5, ATM and PPP over SONET/SDH
- Carrier Grade Availability with APS support terminated on physically separate 3650 cards
- Embedded MIPS 24K 450 MHz processor for onboard control processing
- Telecom clocks can be input and output on AdvancedMC CLK1 and CLK2

For more information, contact: fastnet@iphase.com

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214-654-5000
www.iphase.com

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iSPAN® 3676

The iSPAN 3676 AdvancedMC is designed especially for high-availability, high-bandwidth access applications, providing OC-3/STM-1 ATM network interface connectivity.

Today's networks require scalable, high-performance platforms with the flexibility to allow network capacity to keep pace with customer's demands. The iSPAN 3676 controller meets the needs of a variety of applications, including IP switching and routing, Internet connections, and other applications that require the Quality of Service (QoS) guarantees provided by ATM.

FEATURES

- Single-width, mid-height AdvancedMC
- Single or dual OC-3/STM-1 interfaces via SFP optics
- PCI Express (AMC.1) interface to the carrier
- Multimode/single mode fiber
- Mindspeed™ RS8236 155 Mbps ATM SAR
- Support for ATM AAL5 and AAL0 Adaptation Layers

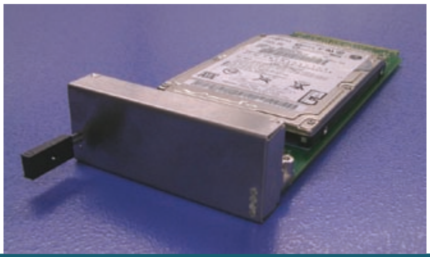
For more information, contact: fastnet@iphase.com

RSC# 32653 @ www.compactpci-systems.com/rsc

SANBlaze Technology, Inc.
2 Clock Tower Place, Suite 550 • Maynard, MA 01754
978-897-1888
www.sanblaze.com

SANBlaze Technology, Inc.

SB-AMC-HD



The SB-AMC-HD module is a Drive Carrier Module for AdvancedTCA or MicroTCA systems. The module can be configured with either one 2.5 inch SATA, one SFF SAS drive, or one SATA Solid State Drive. The module is AMC.0 compliant and uses the serial storage signaling defined in AMC.3.

The SB-AMC-HD is available with multiple drive technology options. A version with a 2.5" SATA drive is available as a lower cost storage solution. Support for Extended Duty SATA drives allows for more robust requirements. The SAS version provids a more robust, enterprise class storage option. The module also supports Solid State Drive technology, allowing the use of Solid State drives for peak performance and extended environmental requirements.

FEATURES

- SATA Drive options of 40, 60, 80, 100, 120, 160, and 200G
- SATA Extended Duty options of 40, 60, 80, 100 and 120G
- SAS Storage options of 36, 73, and 146G
- SATA Solid State Drive options up to 64G
- Single-width, Compact, Mid, or Full-height AdvancedMC form factor
- AMC.0 and AMC .3 compliant

For more information, contact: info@sanblaze.com

RSC# 25541 @ www.compactpci-systems.com/rsc

RadiSys
5445 NE Dawson Creek Drive • Hillsboro, OR 97124
800-950-0044
www.radisys.com

Promentum AMC-7211

The RadiSys Quad Gigabit Ethernet AMC-7211 is the ideal component for your Gigabit line AdvancedMC solution. Based on the Cavium OCTEON™ Plus multicore processor, the AMC-7211 is capable of meeting wire-speed packet processing for L2-L7 for the full line rate of 4 Gbps.

The AMC-7211 is a single-width, mid-size AdvancedMC that provides up to 4 Gigabit Ethernet interfaces through SFP connectors supporting copper and optical interfaces. The hardware design incorporates state of the art packet processing technology from Cavium, OCTEON™ Plus. The OCTEON™ Plus processor is a multicore processor with significant hardware acceleration engines for both packet processing and security processing. Leveraging the multicore capabilities of the processor and its silicon based hardware acceleration, the AMC-7211 can handle full line rate processing for various packet processing functions including forwarding, load balancing, traffic management, and IPsec. This versatile module accelerates development time for a multitude of network elements – Media Gateway, RNC, Security/Network Gateway, Edge Routers, Session Border Controllers, Intrusion Detection Systems, QoS/Policy Management servers, and more.

Software Support:
The AMC-7211 comes complete with software development kits in the form of Linux compatible API's. It supports carrier grade Linux from Wind River plus other Linux distributions can be supported upon request. The AMC-7211 software includes the necessary LSP for the Linux operating systems and blade management software. Optionally, data path software is also available from RadiSys. The AdvancedMC specification requires every AdvancedMC to support a level of hardware management functionality – availability, type, thermal, etc. However, in a real network element design a significant higher level of FCAPS functionality is required by the way of heart beat, administration, software image management, file system management, etc. RadiSys provides much of this blade management functionality as part of its software for the AMC-7211.

FEATURES

- Intelligent AdvancedMC with Cavium OCTEON™ Plus 58xx processor onboard for wire-speed processing for up to quad GbE
- Multicore processor onboard with hardware accelerators enable L2-L7 wire-speed packet processing
- AMC-7211 is compliant with AMC.0, AMC.1, and AMC.2 with support for front I/O or rear I/O through build options
- Carrier Grade Linux operating system support for both management processor and AdvancedMC
- AMC-7211 includes hardware and software – full complement of blade management and optional data path software
- Data path software for IPV4/IPV6 forwarding, security (IPsec, SSL, SRTP), IP filtering, traffic management, and more

For more information, contact: info@radisys.com

RSC# 32832 @ www.compactpci-systems.com/rsc

Emerson Network Power
8310 Excelsior Drive • Madison, WI 53717
608-831-5500
www.artesyncp.com

EMERSON
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Embedded Computing

KosaiPM

Advanced Mezzanine Card (AdvancedMC) is a collaboration of major telecom OEMs and suppliers to create an optimal expansion platform for AdvancedTCA or proprietary baseboards that addresses major bandwidth, availability, field upgradeability, cost, scalability, management, and interoperability issues.

KosaiPM is an AdvancedMC module based on the Intel Pentium M processor, providing a complete processor subsystem. It is designed to allow communication equipment manufacturers to add modular and upgradeable compute functionality to their AdvancedTCA or proprietary baseboards and provide the localized horsepower necessary for applications such as protocol processing, packet processing, data management, and I/O management. To support high speed packet data transfers on and off the card, KosaiPM features both PCI Express and dual Gigabit Ethernet interfaces to the base board. With ever-increasing application and data transfer requirements, this combination of more traditional Gigabit Ethernet interfaces and the emerging PCI Express interface allows developers to easily migrate existing applications to PCI Express.

KosaiPM is hot swappable, which allows modules to be replaced by operators or service organizations in the field without bringing down an entire AdvancedTCA blade or system. This reduces spares costs and Mean-Time-To-Repair (MTTR), lowering both CAPEX and OPEX. KosaiPM also provides an IPMI-based system management interface, which enables operators to pinpoint and fix problems at the module level, also lowering MTTR and OPEX.

For quality in real time, choose the performance, reliability, and responsiveness of Artesyn Communication Products. Our customer support group is available to answer your questions. Please call 1-800-356-9602 or visit our website at www.artesyncp.com for more details.

FEATURES

- Intel Pentium M running at up to 1.8 GHz
- Full-height and half-height PICMG AdvancedMC form factor
- Up to 2 GB DDR DRAM with ECC
- Dual Gigabit Ethernet connectivity to baseboard
- PCI Express connectivity to baseboard
- Full hot swap support
- USB and Console serial ports via front panel
- Intelligent peripheral management functionality
- Carrier Grade Linux support
- RoHS/WEEE compliant configuration available in 2006
- Quality assured by over 30 years of design experience and a TL-9000 and ISO 9001:2000 certified quality management system (FM 26789)

For more information, contact: info@artesyncp.com

RSC# 30596 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

AMC.0 Rev 2.0

Schroff offers a comprehensive line of standard AdvancedMC products and a full range of customization services. Schroff's full line of AdvancedMC panel assemblies, including the next generation hot-swap latch, can support Quad or Tri light pipe configurations. All AdvancedMC products are expertly designed to fully comply to the AdvancedMC specification.

By logging onto www.a-tca.com/amc, system designers can access an extensive library of downloadable drawings for AMC.0 Rev 1.0 and Rev 2.0 front panels and AMC.0 Rev 1.0 full size carriers and Rev 2.0 mid size carriers. The drawings are available in a variety of formats, including IGS, STEP, eDrawing, DXF, PDF, and JPG files. The CAD drawings give designers an effective starting point in the development process.

AdvancedTCA

FEATURES

- Quick turn delivery
- Plating, powder coat, silk screening, and overlays
- Component kitting and full assembly
- On-line 3D models and drawings
- Worldwide manufacturing facilities

For more information, contact: info@pentair-ep.com

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Interphase Corporation
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www.iphase.com

iSPAN® 36CA

The iSPAN 36CA AdvancedMC™ 4 port Gigabit Ethernet Packet Processing solution from Interphase delivers a high capacity line rate engine for use in AdvancedTCA, MicroTCA and other proprietary form-factors to address the needs of IPSEC acceleration, policy management and routing, and content inspection and management in the emerging 3G/4G, IMS, and Voice Over IP infrastructure application elements.

The iSPAN 36CA is an AdvancedMC implementation of the Cavium Networks next generation 58xx multi-core Octeon Network Services Processor family. With AMC.1 and AMC.2 connectivity and optional TCAM for pattern matching, this AdvancedMC can be used on SBCs and carriers in AdvancedTCA, MicroTCA, and proprietary platforms.

INTERPHASE®
Designed To Perform. Designed To Last.™

FEATURES

- Cavium Networks Octeon 58xx onboard processor up to 600 MHz, with support for 4 to 16 cores
- 4x GbE interfaces on front panel
- 4x GbE (AMC.2) + PCIe x1 (AMC.1) interfaces to the AdvancedMC connector with management support across either interface
- Up to 1 Gb of DDR2 SDRAM and optional TCAM for pattern matching and fast lookup
- Delivered with software solutions for applications such as IPSEC acceleration, TCP/IP, and SRTP offload
- Experienced professional services group for custom application development and application enhancements

For more information, contact: fastnet@iphase.com

RSC# 32868 @ www.compactpci-systems.com/rsc

Yamaichi Electronics USA, Inc.
475 Holger Way • San Jose, CA 95134
408-715-9100
www.yeu.com

AMC Connector CN074

CN074 supports data transfer between AdvancedMC and AdvancedMC Carrier Board (blade) at 12.5 Gbps and beyond, optimizing the performance of the AdvancedTCA system. The high-speed connectivity is achieved by combining our unique connector-mounting technology, Compression Mount Technology (CMT), and our patented flexible circuit board, YFLEX. The combination of CMT and YFLEX reduces insertion loss and cross talk to the absolute minimum, ensuring data transfer rates of 12.5 Gbps and beyond with minimal signal loss. It withstands shock and vibration testing.

FEATURES

- Compression to carrier board and backplane connection
- Differential impedance of 100 (±) 10Ω
- Low cross talk
- GR-1217-CORE compliant
- RoHS compliant

For more information, contact: info@yeu.com

RSC# 32193 @ www.compactpci-systems.com/rsc

Interphase Corporation
2901 North Dallas Parkway, Suite 200 • Plano, TX 75093
214-654-5000
www.iphase.com

iSPAN® 3632

The iSPAN® 3632 Channelized I/O Processor brings a new level of integration to next-generation TDM-based systems. With up to four optical interfaces, the 3632 supports up to 622 Mbps aggregate transmission rates – a full 8064 DS0 time slots on a single-width AdvancedMC. In this compact package, the 3632 packs I-TDM/SFP.0 processing for all time slots, as well as up 2048 channels of HDLC encapsulation for embedded DS0 or subrate data links.

An emerging industry standard, I-TDM offers a flexible, efficient means of transporting TDM traffic through Ethernet backplanes – ideal for cost-effective systems based on AdvancedTCA 3.1.

Designed To Perform. Designed To Last.™

FEATURES

- Four OC-3/ TM-1 interfaces channelized to DS0 and subrate DS0
- I-TDM processing for up to 8064 DS0 channels with Integrated HDLC Controllers
- Carrier Grade Availability with APS support terminated on physically separate 3632 cards
- Channel setup/teardown rate in excess of 1000 transactions per second
- Up to five Gigabit Ethernet links to carrier for Control, encapsulated HDLC, and I-TDM/SFP traffic
- Provides an ideal building block for next generation high capacity TDM processing applications

For more information, contact: fastnet@iphase.com

RSC# 30105 @ www.compactpci-systems.com/rsc

Southco

P.O. Box 0116, 210 N. Brinton Lake Road • Concordville, PA 19331
610-459-4000
www.southco.com/ATCAresource

AMC Handles

Southco AMC Module Handles satisfy all types of standard module faceplates – compact, mid-size, and full-size. And our AMC Carrier Handles stow neatly to avoid interfering with module insertion. Both provide microswitch actuation for safe hot-swapping, and maximum flexibility for configuring AdvancedMC modules and carrier boards.

The ergonomic design and performance of both enhance the user experience. Intuitive operation makes it easy to remove and secure modules quickly and easily. And robust die-cast construction delivers long-lasting reliable performance.

All Southco AdvancedMC components feature RoHS-compliant finishes, and are available with optional custom-color powder-coated handles to enhance aesthetics or to color-code components.

FEATURES

- Robust module handles resist torque, provide a positive detent feel at each of three distinct detent points
- Snap-in module handles offer upgrade options for more ergonomic performance with existing boards
- Carrier handles provide intuitive operation – extend and rotate to de-activate microswitch, pull to release
- Carrier handles also provide ample clearance for all size configurations of AdvancedMC modules
- Snap-in light pipe brackets include light pipe housing and light pipes
- Light pipe brackets, available for AMC.0 R1.0 and AMC.0 R2.0 standards, include standard and custom designs

For more information, contact: info@southco.com

RSC# 32886 @ www.compactpci-systems.com/rsc

SANBlaze Technology, Inc.

2 Clock Tower Place, Suite 550 • Maynard, MA 01754
978-897-1888
www.sanblaze.com

PMC Fibre Channel HBA

The SANBlaze SB PMC-FC Dual Channel, 2 Gb Fibre Channel PMC adapter provides maximum performance in addition to low latency Fibre Channel device connectivity to embedded systems based on VME or CompactPCI. The SB PMC-FC has two independent 2 Gb Fibre Channel ports.

The SB-PMC-FC family consists of front I/O capability with copper and optical Fibre Channel options and rear I/O capability. Dual and single port configurations are available.

The SB PMC-FC can auto-negotiate down to 1 Gb operation to assure backward compatibility with existing 1 Gb SAN infrastructures and meets the requirements of today's 2 Gb SANs.

Support is available for all major operating systems.

FEATURES

- Two independent, 2 Gb Fibre Channel ports
- SFP based, supports multimode optics and copper options
- Auto-negotiation for legacy connect (1 or 2 Gb)
- Front and rear panel I/O options; PIM module available
- Software supports switch and loop (private and public) topologies
- 64-bit, 33/66 MHz PMC

For more information, contact: info@sanblaze.com

RSC# 20549 @ www.compactpci-systems.com/rsc

SANBlaze Technology, Inc.
2 Clock Tower Place, Suite 550 • Maynard, MA 01754
978-897-1888
www.sanblaze.com

PMC320 SCSI Adapter

The SANBlaze SB-PMC320 Ultra320 SCSI PMC adapter provides industry-leading SCSI device connectivity for embedded systems designs. The SB-PMC320 has two independent Ultra320 SCSI channels, each allowing up to 320 MBps transfer rates. Each channel supports up to 15 SCSI devices.

The SB-PMC320 also provides Raid 0 (striping) and Raid 1 (mirroring) functionality on either channel.

The SB-PMC320 SCSI PMC adapters are available in three configurations: A dual channel version with either two front panel ports via 68-pin VHDCI connectors or one front panel and one rear I/O port via J/P 4, and a single channel version with one front port via VHDCI connector.

All major operating systems are supported.

FEATURES

- Single or dual Ultra320 SCSI channels with front and rear panel I/O options
- Provides Raid 0 (striping) and Raid 1 (mirroring) functionality on either channel
- 133 MHz, 64-bit PCI-X interface
- Support for 32/64-bit and 33/66 MHz PCI bus
- Connects up to 30 devices
- PMC Ultra 160 SCSI adapter also available for slower and non-Raid applications

For more information, contact: info@sanblaze.com

RSC# 20534 @ www.compactpci-systems.com/rsc

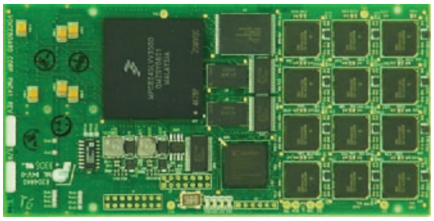
Voiceboard Corporation
473 Post Street • Camarillo, CA 93010
805-389-3100
www.Voiceboard.com

PTMC41

MediaPro PTMC41, a PICMG 2.15 PTMC standard DSP resource board, supports VoIP Media Gateway, wireless, and military communications applications. It is equipped with 2,048 channelized or unchannelized TDM inputs, local PCI bus, and embedded PowerPC controller.

Voiceboard offers carrier class implementations of VoIP, SIP, MEGACO, H.323, V.90 modem, FAX, conferencing, and a variety of VoIP, wireless, and military vocoders. An embedded TCP-UDP/IP stack supports dual GbE ports, IPv4/6, encryption options, RTP/RTCP, web server, and more.

Customer proprietary solutions may be developed for the PTMC41 via Voiceboard's Software Development Kit (SDK). SDK with telephony functions include echo canceller, tone generation/detection, AGC, VAD, vocoders and more.



FEATURES

- Offers TEMs the benefit of reducing design risk, development cost, manpower resources, and time-to-market
- PowerPC Executive controller implements a full Media Gateway (SIP, H.323, MEGACO) in a single PTMC module
- PowerPC software controls DSP resources, flash files, TDM switching, IP stack, Web Server and more
- Software libraries available include VoIP, SIP, MEGACO, H.323, modems, G3 FAX, conferencing, vocoders, and more
- SDK customer software development kit includes board drivers and optional VoIP, telecom, and vocoder library
- Customized hardware and software configurations available under special arrangement

For more information, contact: Ltomon@voiceboard.com

RSC# 32204 @ www.compactpci-systems.com/rsc

Red Rock Technologies
14429 N 73rd Street • Scottsdale, AZ 85260-3131
480-483-3777
www.redrocktech.com

RRTP-FAxxG-CF

Model RRTP-FAxxG-CF CompactFlash Drive Module is designed for embedded applications requiring the reliability and durability of solid state storage.

CompactFlash drives are held in position with aircraft strength aluminum retaining brackets for operation in harsh environments. Capacities of up to 32 GB total Flash are available now.

FEATURES

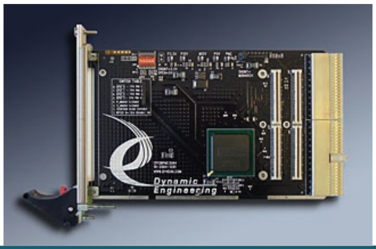
- High density solid state mass storage within the PMC slot with up to 32 GB of Flash storage capacity
- Ideal for higher shock and vibration environments
- 3.3 V and 5.0 V PCI interface compliant
- VxWorks®, Linux, and Windows® drivers available
- Front panel activity LEDs
- CompactFlash form factor hard drives can be specified

For more information, contact: info@redrocktech.com

RSC# 32830 @ www.compactpci-systems.com/rsc

Dynamic Engineering
435 Park Drive • Ben Lomond, CA 95005
831-336-8891
www.dyneng.com

cPCIBPMC



This 3U cPCIBPMC (CompactPCI to PMC) adapter/carrier converter card provides the ability to install a PMC card into a standard CompactPCI slot. The cPCIBPMC has a PMC card slot mounted to a universal 3U 4HP CompactPCI card. Suitable for 32/64 with 33/66 MHz bus operation. The card is wired for 64 bit PCI operation with pull-ups on the control lines to allow use in a 32 bit system.

The PMC bezel connector is mounted through the CompactPCI mounting bracket.

The cPCIBPMC follows the PMC specs for maximum power consumption and heat dissipation (7.5 watts). The power is routed from the CompactPCI to PMC connectors with mini-planes, each of which is rated for more than the maximum PMC draw. 3.3, 5, VIO, +12, -12

FEATURES

- Size – 3U 4HP CompactPCI
- PMC compatible slot – 1 PMC slot provided
- Interrupts – INTA, B, C, D routed to CompactPCI connector from PMC
- Signal conditioning – Secondary side PCI signals are routed and terminated IAW the PCI specification
- Power – +5 V, +3.3 V, +12 V, -12 V VIO supplied to PMC
- JTAG header connected to PMC supplied – JTAG pin definitions are in the silkscreen

For more information, contact: sales@dyneng.com

RSC# 30088 @ www.compactpci-systems.com/rsc

Technobox, Inc.
140 Mount Holly Bypass - Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

4972 Dual-channel SCSI Ultra 320

The Dual-channel SCSI Ultra 320 Controller (P/N 4972) supports two channels – one directed to the 68-pin SCSI front panel connector, the other to the rear I/O PN4 connector. Termination is provided for each SCSI bus, and the termination will automatically configure to support either Single Ended or LVD devices. As delivered, the board termination is programmed as active. However, termination state may be changed by reprogramming the module. Built around the LSI 53C1030, the 4972 features a 16 Kb serial EEPROM, which is used to store user configurable parameters by the LSI BIOS. A 512Kx8b Flash memory holds the BIOS for Intel platforms. A 32Kx8b NVRAM holds mirroring data. LEDs indicate channel activity, ARM heartbeat, and termination voltage.

FEATURES

- Provides two Ultra 320 interfaces (front and rear)
- Supports SE and LVD Parallel SCSI
- LSI 53C1030
- LEDs show SCSI activity and termination voltages
- Compatible with PCI-X
- RoHS compliant

For more information, contact: info@technobox.com

RSC# 30696 @ www.compactpci-systems.com/rsc

Technobox, Inc.
140 Mount Holly Bypass - Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

4821 x8 XMC-to-PCI Express Adapter

The Technobox 4821 is a passive x8 XMC-to-PCI Express Adapter (P/N 4821), which permits the use of an XMC card in a PCIe slot. The 8 PCI Express lanes on the P15 XMC connector are routed to the male PCI Express edge finger connector.

The 4821 also provides user access to all the signals on the XMC P16 connectors via two 64 pin headers. All the lanes are fixed at 2.5 Gbps per lane in each direction. This adapter provides +12V on VPWR to the XMC card. Several activity LEDs located at the edge of the board give an indication of key XMC and PCIe signals and voltages. The JTAG and I2C signals from the XMC bus and the PCIe bus are brought out to headers to permit test access. An optional fan assembly (P/N 4936) is available to augment cooling.

FEATURES

- Adapts an XMC card to PCIe slot
- Supports up to 8 PCI Express lanes
- 2.5 Gbps per lane in each direction
- XMC signals from P16 are accessible via two 64-pin headers
- Headers provide access to JTAG and I2C signals
- Status LEDs show XMC and PCIe status and activity
- RoHS compliant

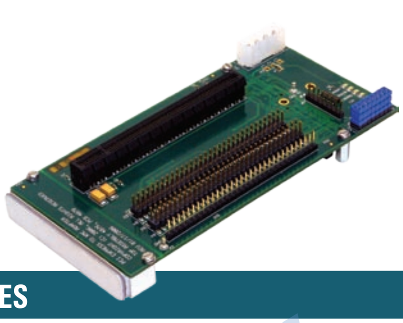
For more information, contact: info@technobox.com

RSC# 32865 @ www.compactpci-systems.com/rsc

Technobox, Inc.

140 Mount Holly Bypass - Unit 1 • Lumberton, NJ 08048-1114
609-267-8988
www.technobox.com

4876 PCIe-to-XMC Adapter



The Technobox PCIe-to-XMC Adapter (P/N 4876) permits an engineer to adapt an existing PCIe solution to an XMC site on a carrier or single board computer. This is an especially useful tool for software development where an existing PCIe solution is to be ported to an XMC equivalent. Side One of the 4876 has a pair of XMC connectors for the P15 and P16 interfaces that mate with the host XMC site. A single 8x PCIe connector is located on the opposite side of the adapter, along with some headers and jumpers. Two 64-pin headers are provided to permit probing of various XMC signals from the P15 and P16 connectors. Pin assignments conform to VITA 42.0-2005 and VITA 42.10-200x. Headers allow access to I2C, JTAG, plus several XMC signals that do not pass over the PCIe bus.

FEATURES

- Adapts a PCIe card to an XMC site
- Supports up to 8 PCIe lanes
- 2.5 Gbps per lane (each direction)
- Permits access to P16 Signals, I2C, and JTAG
- LEDs show key XMC signals and voltages
- Accommodates external power
- RoHS compliant

For more information, contact: info@technobox.com

RSC# 32863 @ www.compactpci-systems.com/rsc

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Xalyo Systems
Riant-Coteau 7 • CH-Gland, 1196 Switzerland
41-22-995-00-01
www.xalyo.com

XS-2000

XS-2000 is a PCI Telecom Mezzanine Card (PTMC) that offers high-end ATM and IP services at an attractive price. XS-2000 provides termination, switching, and interworking capabilities from any port to any port.

XS-2000 performance and features are ideally suited for applications such as wireless networking, Voice over Packet, DSLAM, and media gateways.

Using the state of the art Wintegra™'s WinPath2™ network processor, XS-2000 is the perfect interface to handle both ATM and IP simultaneously.

XS-2000 on-board MIPS processor can run advanced protocols (e.g. 3GPP, SS7, ATM, VoIP) while the network processor handles all the data path.

The highly configurable XS-2000 I/O ports support a mix that includes OC-3/STM-1, OC-12/STM-4, 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, and 1000BASE-X.

Compliant with IEEE 1386.1 PCI Mezzanine Card (PMC) and PICMG 2.15 PTMC, XS-2000 can be used in CompactPCI, cPSB, AdvancedTCA™, VME, and proprietary applications.

XS-2000 can also be used in PCI and PCI Express slots of any PC when assembled on XS-PCI PMC to PCI adapters or XS-PCIE PCI to PCI Express adapters

FEATURES

- WinPath2™ network processor
- 4x OC-3/STM-1
- 2x OC-12/STM-4
- 3x Gigabit Ethernet
- ATM AAL0, AAL1, AAL2 and AAL5, and POS
- Automatic Protection Switching
- PICMG® PT5MC
- Onboard MIPS 24K™
- 384 MB SDRAM
- 16 MB flash EPROM
- SFP optical transceivers
- Linux, Solaris™, Windows® and VxWorks®

For more information, contact: info@xalyo.com

RSC# 32714 @ www.compactpci-systems.com/rsc

Zephyr Engineering
1620 West Fountainhead Parkway, Suite 303 • Tempe, AZ 85282
480-736-8714 • 480-736-8322
www.zpci.com

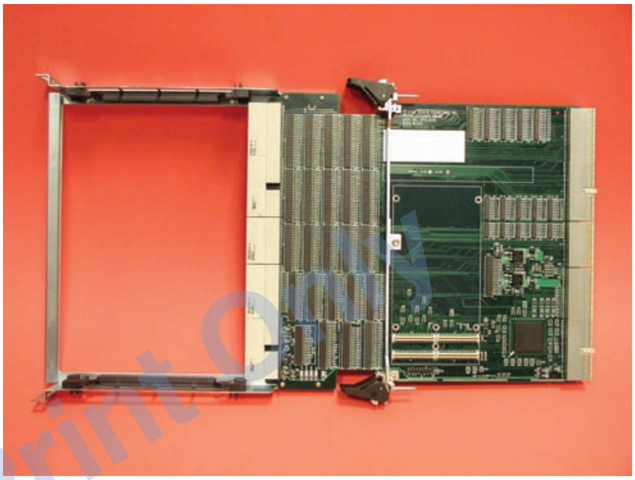
Zephyr Engineering Inc.

ZPCI.2466 6U Active Extender

The ZPCI.2466 Active Extender board from Zephyr Engineering, Inc., is the last word in CompactPCI extender design. It not only gets your board out in the clear for easy access, it also provides an on-board PMC slot for a PCI bus analyzer or PMC board debug.

The ZPCI.2466 is a 66 MHz version of the versatile ZPCI.2400, with all of the same valuable features you have come to rely on. The ZPCI.2466 uses a transparent PCI-to-PCI Bridge to extend CompactPCI bus signals without violating stub length restrictions, providing easy access to bus signal test points, user I/O test points, and both sides of your board under test. Plug in a PMC bus analyzer card and you have full access to your test board's CompactPCI bus. If you are developing a PMC card, you can use the slot for it instead and have access to all of your PMC card's signals. Clearly marked test points show all CompactPCI bus signal names. User I/O test points are marked with connector and pin numbers. Every CompactPCI and user I/O pin can be opened by removal of a 0-ohm resistor. Restoring the connection is easy; just plug on a 2 mm shunt! Each header has an adjacent pin for logic analyzer ground.

The ZPCI.2466's mechanical bracketry provides your test board with a one-slot virtual card cage; use your injectors just like normal. The ZPCI.2466 locks into the card cage with its own injectors. Foldback current limiting on the test board's +3.3 V, +5 V, +12 V, and –12 V supply rails prevents damage in case of short circuits.



FEATURES

- On-board bridge maintains CompactPCI signal integrity
- On-board PMC slot for PCI logic analyzer/exerciser
- All CompactPCI and user I/O signals are individually isolatable
- Supports PMC user I/O on J3-J5
- Ideal for both CompactPCI and PMC board testing
- Test points for all CompactPCI signals
- Test points for all user I/O pins
- Power test points simplify current measurements
- Individual indicator LEDs show board power status at a glance
- Rigid frame mates and locks with injectors on test board
- 32-bit and 64-bit configurations available at 66 MHz
- Short circuit protection for +3.3 V, +5 V, +12 V, and –12 V supplies

For more information, contact: info@zpci.com.

RSC# 20545 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

PrPMC6001

The Motorola PrPMC6001 PCI Mezzanine Card (PMC) is a perfect fit for embedded applications requiring low power and high performance with PowerPC® architecture. Featuring a Freescale MPC7448 PowerPC G4 architecture processor running at speeds of up to 1.4 GHz, the PrPMC6001 uses an integrated system controller to give the processor high-speed access to up to 1.0 GB of external memory with Motorola support. The PrPMC6001 features dual independent Gigabit Ethernet interfaces, one of which has optional SerDes support, routed to the PMC connector. It supports both real-time and Linux operating systems for enhanced customer flexibility.

The power and versatility of Motorola's PrPMC6001 may enable engineers that are designing leading-edge pervasive computing and embedded network control and signal processing applications, such as flight computers, software defined radio, and command, control and communications systems, to quickly and easily add processing power.

This latest module extends Motorola's embedded communications computing product portfolio, which ranges from individual blade and module building blocks through fully integrated and validated communications servers. Motorola gives customers the flexibility to integrate its products at the appropriate level for their solution.

About the Processor PMC Family
Motorola's family of Processor PMC modules features a complete host microprocessor and memory subsystem on an ANSI VITA 32 standard compact form factor. A PrPMC design approach allows customers to design simpler and smaller baseboards and focus their resources on adding value to their products through innovation such as software or custom interfaces. Motorola's PrPMC products can help shorten the design cycle, speed time-to-market, and reduce the time and complexity of upgrading, which lowers the total cost of ownership and provides excellent scalability.

FEATURES

- Freescale MPC7448 PowerPC G4 architecture processor operating at up to 1.4 GHz
- Marvel Discovery III system controller
- 1 MB L2 cache
- Up to 1 GB ECC DDR SDRAM
- Up to 133 MHz PCI-X interface
- Supports VxWorks 5.5 and 5.5.1, certain Carrier Grade Linux distributions and kernel.org 2.6.10

For more information, contact: inquiry@mcg.mot.com

RSC# 32594 @ www.compactpci-systems.com/rsc

KineticSystems
900 North State Street • Lockport, IL 60441
815-838-0005
www.kscorp.com

cPCI ADC-CP266

The CP266 is a single-width, 6U, CompactPCI module with 32 or 64 16-bit analog output channels. These independent analog channels provide ±10 V full-scale outputs. The channel update rate is 2 ms, and each output is accurate to ±1 mV. The power-up state of the analog outputs can be set to independent user-defined values. Paired output signals are provided to eliminate ground offset effects. The analog outputs are available at a single 68-pin SCSI II shielded connector (32-channel option) or a pair of 68-pin SCSI II shielded connectors (64-channel option).

The CP266 comes with a Plug and Play driver for configuring and using the device and application examples to illustrate its basic functionality.

FEATURES

- 32 or 64 independent analog output channels with 16-bit resolution
- ±10 V full-scale output
- Low drift
- Single gain and offset adjustments
- 2-pole, Bessel output filter on each channel
- Power-on reset to zero volts

For more information, contact: mkt-info@kscorp.com

RSC# 21632 @ www.compactpci-systems.com/rsc

KineticSystems
900 North State Street • Lockport, IL 60441
815-838-0005
www.kscorp.com

cPCI/PXI ADC-CP213

The CP213 6U CompactPCI/PXI 16-bit ADC provides up to 128 analog input channels and on-board signal conditioning with programmable gain. The core of a measurement system is its ADC, and selecting the right one is essential. While other vendor solutions require external signal conditioning modules, ours is built-in to provide higher performance at a better price – starting at $20/channel!

The CP213 has 2 channels that are configurable as isothermal reference channels for temperature measurements and 16 digital I/O channels that may be configured as digital I/O or attached to a frequency in, counter in, or timer out channel.

Typical applications of CP213 include temperature measurements, general-purpose data acquisition, and Automatic Test Equipment (ATE).

FEATURES

- 32, 64, or 128 channels of analog input with programmable gain per channel
- 16 multifunction digital I/O channels; can be attached to 2 frequency, 2 counter, and 2 timer channels
- 16-bit resolution
- Programmable scan rates of <1 S/s through 100 kS/s
- Optional 10 Hz to 1 kHz low pass filters
- Precision on-board reference for end-to-end calibration

For more information, contact: mkt-info@kscorp.com

RSC# 30671 @ www.compactpci-systems.com/rsc

Meritec
1359 W. Jackson Street • Painesville, OH 44077
800-860-9014
www.meritec.com

MERITEC® Four Decades of Connectivity Problem Solving
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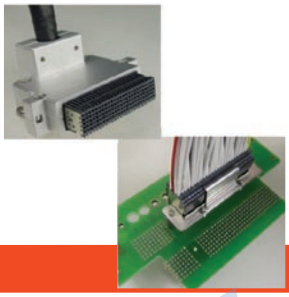
2mm HM Assemblies

Meritec is a leading manufacturer of high-performance 2mm CompactPCI Cable Assemblies designed for use in harsh environmental applications. Meritec designed a 2mm cable assembly product line that offers complete flexibility based on application requirements. Our high-performance 2mm cable assemblies offer customizable features including metal latching mechanisms facilitating rugged board connections and backshells to prevent EMI emissions and offer additional durability.

Along with 2mm cable assemblies Meritec also offers keying plugs, wafer blanks, and locking rails that can be purchased immediately from stock. This stock program helps make prototype designing assemblies quick and easy. Online ordering is available for stocked items including 2mm cables, 4X cables, angled PCI/PCIe connectors, and more.



FEATURES

- Welded contact terminations provide superior reliability and electrical properties
- Unique construction allows for flexible pin-out configurations and programable ground positions
- Provides the best combination of low loss, cross-talk, skew, capacitance and controlled impedance
- Customizable features include space saving right angle 2 mm, metal latching mechanisms and backshells
- The 2mm stocking program alleviates long lead-times for engineers developing prototype 2mm cable assemblies
- Online ordering is available for our stocked 2mm products along with a variety of other Meritec products

For more information, contact: info@meritec.com

RSC# 32160 @ www.compactpci-systems.com/rsc

KineticSystems
900 North State Street • Lockport, IL 60441
815-838-0005
www.kscorp.com

KineticSystems

cPCI Product-CP387

The CP387 is a single-width, 6U, CompactPCI module with up to 256 digital input/output channels. The CP387 base board supports 128 channels of TTL I/O. Four mezzanine card sites, which can be populated with an assortment of I/O options such as isolated input, isolated output, relay output, AC switch output, and differential I/O, to extend the capability of the CP387. The mezzanine card concept allows multiple digital I/O types to be configured within a single module to match the application requirements.

The module includes Pattern Recognition and Change Of State detection. Both operations can be used on the base card as well as span to the mezzanine channels. Input and output strobes are provided for connection to external sources.

FEATURES

- 256 digital Input/Output channels
- 128 base card channels
- 4 mezzanine card sites for added I/O capability such as TTL and Differential I/O, Isolated Input and Output, etc.
- Change Of State and Pattern Recognition
- Programmable contact-bounce suppression on inputs
- Input and Output strobes

For more information, contact: mkt-info@kscorp.com

RSC# 21633 @ www.compactpci-systems.com/rsc

Active Silicon Ltd.
17 Wilson Street, Suite 13 • Chelmsford, MA 01824
978-244-0490
www.activesilicon.com

Phoenix-D48CL-CPCI

Active Silicon designs and manufactures frame grabbers and customized vision systems. The technology has been used and proven in applications that range from scientific research, medical imaging and security to avionics and space robotics.

The Phoenix range of high performance digital frame grabbers includes 3U and 6U CompactPCI boards supporting image acquisition from Camera Link sources. They are designed to interface to today's demanding cameras with support for multitap, high-bit depth, and high-speed pixel clock settings.

The Phoenix Software Developers Kit has been specifically designed for OEM integration with a common API across all supported operating systems, which include Windows, Linux, Mac OS X, QNX, DOS, and VxWorks.

FEATURES

- Optional conduction cooled assembly
- Dual Base/single Medium Camera Link acquisition
- Wide range of Linescan and Areascan cameras supported
- Extended temperature range
- Extensive Opto-isolated, TTL and LVDS triggering, and I/O lines
- Data formatting for real-time processing and/or display

For more information, contact: info@activesilicon.com

RSC# 32055 @ www.compactpci-systems.com/rsc

Kontron
14118 Stowe Drive • Poway, CA 92064-7147
888-294-4558
www.kontron.com

Kontron CP306-V

The Kontron CP306-V CompactPCI system controller board combines the performance of the Intel® Celeron® M processor with the dense feature sets of the 855GME chipset and the ICH4 I/O Controller Hub all in a single 3U slot (8HP optional).

Designed for long-term availability, high integration and low-power, the Kontron CP306-V is the perfect building block for a wide range of embedded applications including industrial and medical applications. And the CP-Pocket chassis provides a very cost-effective solution for customers who require hot swappability, small 3U form factor, and an industrial computer standard.

FEATURES

- Celeron 600 MHz/Celeron M 1.3 GHz (320) with passive cooling
- Industry tailored with DVI, PS/2, and CompactFlash access on front panel
- Up to 1 GB PC333 DDR SDRAM w/ or w/o ECC via SODIMM-socket
- Mezzanine with onboard 2.5" HDD, CompactFlash – usable at the same time
- Flexibility with various 4HP/8HP options available and optional rear I/O support
- Combine with Kontron CP-Pocket chassis

For more information, contact: info@us.kontron.com

RSC# 30188 @ www.compactpci-systems.com/rsc

Advantech Corporation
2717 Loker Avenue West, Suite A • Carlsbad, CA 92010
760-918-9288
www.advantech.com

Trusted ePlatform Services

ADVANTECH

MIC-3390 - 6U cPCI

Onboard-based single board computer is designed to offer embedded system builders the best available value in high-performance Intel Pentium M computing at low power. Using the latest Intel Pentium M processors combined with the Mobile Intel 915GM Express chipset and Intel I/O Controller Hub ICH6M, the MIC-3390 supplies unprecedented performance, connectivity, and throughput without compromising system thermal design. MIC-3390 Graphic Memory Controller Hub, along with the ICH6M, gives an optimized integrated memory, graphics, and I/O solution. The chipset features a low-power design, validated on the MIC-3390 with all Intel Pentium M processors, and supports up to 2 GB of DDR2 system memory at 400/533 MHz on dual-channel SODIMM banks.

MIC-3390 maximizes on I/O throughput by taking full advantage of the ICH6-M's PCI Express (PCIe) root ports. Two single-lane PCIe links connect the Intel 82573E controllers directly to the root ports, providing bi-directional 2 Gbps peak bandwidth for Gigabit Ethernet support at wire speed. An additional PCIe lane connects to a PCIe-to-PCI-X Bridge to provide a 64-bit/100 MHz data path to the onboard PMC site and a 64-bit/66 MHz data path to the CompactPCI Bridge. The flexibility of the bridge allows the MIC-3390 to be used in a system slot or a peripheral slot as an intelligent I/O processor or as an application blade in a multiprocessor or clustered architecture.

In addition to a full array of industry standard I/O features, the Serial ATA Host Controller in the ICH6-M provides two ports for high speed data transfers up to 150 MB/s. One port is routed to rear I/O, and the other port is routed to both the onboard 2.5" SATA drive and rear I/O for a greater choice of connectivity. With an optional mezzanine card, the MIC-3390 provides a fully compatible IPMI 2.0 interface with LAN and serial port support for out-of-band management. MIC-3390 offers a solid and cost-effective foundation for cross-platform management.

The MIC-3390 delivers the performance and high scalability required for today's cutting-edge embedded computing applications.

FEATURES

- Low-power Intel® Pentium® M processor with speeds of up to 2.0 GHz and above, u-FCPGA package Socket 479 with u-FCPGA package design
- PCI Express dual Gigabit Ethernet on board
- Dual channel DDR2 400/533 MHz SDRAM up to 2 GB
- PICMG 2.16 R1.0 CompactPCI® Packet Switching Backplane Specification compliant
- PICMG 2.9 R1.0 CompactPCI System Management Specification compliant
- PICMG 2.1 R2.0 CompactPCI Hot Swap Specification compliant
- Onboard SATA 2.5" HDD bay, PMC connector, and CompactFlash socket

For more information, contact: CTInfo@advantech.com

RSC# 30060 @ www.compactpci-systems.com/rsc

Advantech Corporation
2717 Loker Avenue West, Suite A • Carlsbad, CA 92010
760-918-9288
www.advantech.com

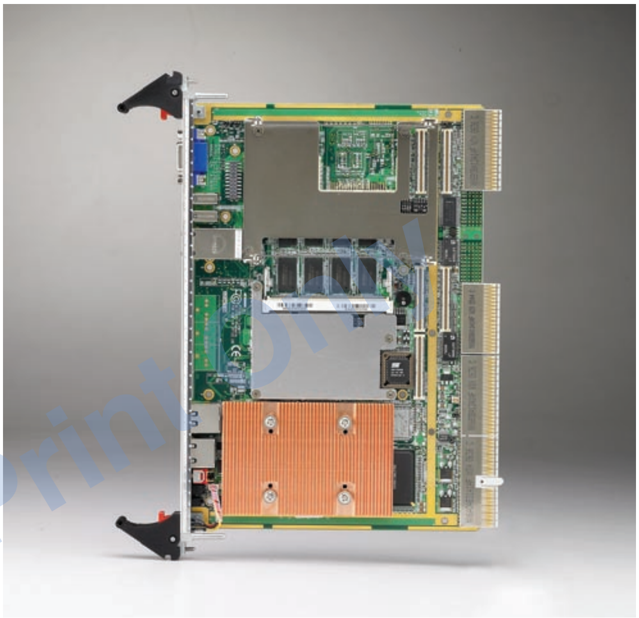
Trusted ePlatform Services

ADVANTECH

MIC-3392 - 6U cPCI

The MIC-3392 is a high-performance, power-efficient CompactPCI single board computer based on the Intel Core 2 Duo processor. It combines the benefits of two execution cores with intelligent power management features to deliver significantly greater performance per watt over previous Intel processors. The two execution cores share a power-optimized 667 MHz front side bus to access the same system memory. To save power, address and data buffers are turned off when there is no activity.

The MIC-3392 uses PCI Express (PCIe) technology to maximize I/O throughput. This SBC supports up to 4 GB of 667 MHz DDR2 RAM (6.4 GBps throughput), an onboard 2.5" Serial ATA HDD, and a CompactFlash slot. Two front-accessible PCIe Gigabit Ethernet (GbE) ports provide a bidirectional bandwidth of 2 Gbps. In addition, the MIC-3392 supports Rear Transition Boards and PCI Mezzanine Cards for further expansion options.



FEATURES

- Supports Intel Core 2 Duo processor
- Intel 945GM chipset supports 533/667 MHz FSB
- Up to 4 GB (DDR2 533/667) memory with SODIMM expansion
- Comprehensive I/O capability, dual Gigabit Ethernet, SATA, CompactFlash
- One 64-bit/66 MHz PMC expansion slot, and optional second 64-bit/66 MHz PMC expansion slot
- PICMG 2.16, R1.0 Packet Switching Backplane Specification compliant
- PICMG 2.9, R1.0 IPMI Specification compliant
- PICMG 2.1, R2.0 Hot-Swap Specification compliant
- Selectable System/Peripheral mode

For more information, contact: CTInfo@advantech.com

RSC# 32852 @ www.compactpci-systems.com/rsc

Kontron
14118 Stowe Drive • Poway, CA 92064-7147
888-294-4558
www.kontron.com

Kontron CP6012

The Kontron CP6012, a 6U CompactPCI CPU board with Intel® Core Duo processor T2500 (2 GHz), meets the highest performance demands. With its E7520 and 6300ESB chipset, it handles data throughput like a server. Compared to Intel® Pentium® M, dual-core technology allows approximately twice the performance at similar power consumption. The PICMG 2.16-compliant Kontron CP6012 is designed for bandwidth-intensive applications and, thanks to hot-swap support and PICMG 2.9-compliant Intelligent Platform Management Interface (IPMI), meets the highest demands for the management of high-availability applications. The Kontron CP6012 offers a high degree of integration and the latest interface technologies.

kontron
powered by Embedded
Dual Core Processor

FEATURES

- 4HP, single slot CPU with passive cooling
- Scalable processor speed, Intel Core Duo up to 2.0 GHz
- Support of latest PSB performance with 667 MHz
- Up to 4 GB DDR2 400 MHz SDRAM via two SODIMM sockets and 4x Gigabit Ethernet Interfaces via PCI Express
- Latest I/O technology with USB 2.0 channels and SATA and rear I/O supporting PICMG 2.16
- XMC/PMC + onboard HDD + CompactFlash configuration possible

For more information, contact: info@us.kontron.com

RSC# 30032 @ www.compactpci-systems.com/rsc

Kontron
14118 Stowe Drive • Poway, CA 92064-7147
888-294-4558
www.kontron.com

Kontron CP307

The Kontron CP307, a 3U CompactPCI CPU board, incorporates Intel's latest processor chip based on a new 65 nm technology – the Intel Core™ Duo processor – delivering optimized power efficient computing and breakthrough dual-core performance with amazingly low power consumption. With its two execution cores, the Intel Core Duo processor is optimized for multi-threaded applications and multitasking. Multiple demanding applications can run simultaneously. For example, a graphics-intensive program can be run at the same time as serious number-crunching programs. Furthermore, the two cores make it possible to execute two operating systems independently – one core dedicated to one OS – starting a new era of software implementations.

kontron
powered by Embedded
Dual Core Processor

FEATURES

- Versatile 4HP or 8HP CPU with passive cooling
- Scalable processor speed, Intel Core Duo up to 2.0 GHz
- Support of latest PSB performance with 667 MHz
- Up to 4 GB DDR2 667 MHz SDRAM dual channel memory
- 2x Gigabit Ethernet Interfaces via PCI Express, dual screen graphics, and onboard CompactFlash socket
- Latest I/O technology with up to 6x USB 2.0 channels, 4x SATA, and comprehensive rear I/O support

For more information, contact: info@us.kontron.com

RSC# 30027 @ www.compactpci-systems.com/rsc

MEN Micro
24 North Main Street • Ambler, PA 19002
215-542-9575
www.menmicro.com

F17 Core 2 Duo SBC

The F17 is a versatile 3U single board computer based on the latest Intel® 64-bit multicore high-performance Core 2 Duo processor running at 2.16 GHz. The SBC is designed especially for embedded systems that require high computing and graphics performance and low power consumption, including computer monitoring, visualization and control, test and measurement, traffic and transportation as well as medical engineering and shipbuilding.

The single-slot F17 can function as a 32-bit, 33 MHz system board for CompactPCI and CompactPCI Express systems or as a standalone board. The SBC is equipped with Intel's Mobile 945GM Express chipset that offers six PCI Express lines as well as two SATA lines, making the F17 ideal for applications with high communication requirements.

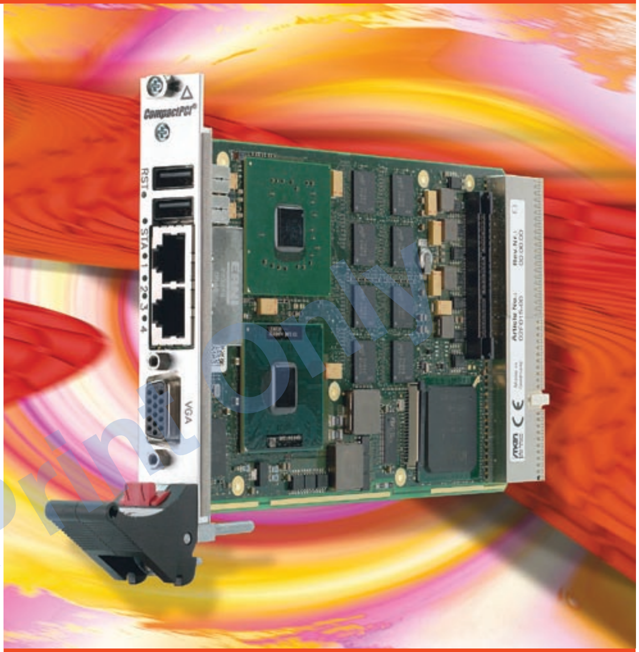
Standard I/O on the front panel includes a VGA connector, two Gigabit Ethernet interfaces connected via PCI Express as well as two USB 2.0 ports. Additional I/O functions, which include two DVI connections, a variety of UARTs and other USB 2.0 ports, can be added via side cards.

The F17 features 4 MB of L2 cache integrated into the Core 2 Duo and up to 4 GB of fast DDR2 DRAM. In addition, a CompactFlash slot can be equipped with a 1.8" hard disk offering unlimited memory space.

The board comes with various monitors for processor operation, board temperature, and rear I/O as well as with board support packages for Windows, Linux, VxWorks, and QNX.

The F17 is equipped with a tailored passive heat sink and its components have been soldered against shock and vibration according to applicable DIN, EN, and IEC industry standards. In addition, the F17 can be conformally coated to protect the board from humid or dusty environments. Because it employs components from the Intel Embedded line, the F17 has a guaranteed minimum standard availability of five years.

The F17 is the newest expansion to MEN Micro's high-performance Intel-based low power family of interchangeable 3U CompactPCI SBCs and makes the new Core 2 Duo processor technology available for use in a wider range of harsh industrial applications.



FEATURES

- Versatile 3U SBC based on the latest Intel® 64-bit multicore high-performance Core 2 Duo processor running at 2.16 GHz
- 32-bit, 33 MHz single-slot system board for CompactPCI and CompactPCI Express systems or standalone board
- Ideal for harsh environments – computer monitoring, visualization/control, test and measurement, transportation, medical, and shipbuilding
- Features six PCI Express lines and two SATA lines to satisfy applications with high communication requirements
- Front panel standard I/O include a VGA connector, two Gigabit Ethernet interfaces connected via PCI Express, and two USB 2 ports
- Side cards provide additional I/O functions such as two DVI connections, a variety of UARTs, and other USB 2.0 ports
- 4 MB of L2 cache integrated into the Core 2 Duo and up to 4 GB of fast DDR2 DRAM
- CompactFlash slot can be equipped with a 1.8" hard disk offering unlimited memory space
- Board support packages for Windows, Linux, VxWorks, and QNX
- Employing Intel Embedded components guarantees minimum standard availability of five years
- Meets DIN, EN, and IEC shock and vibration standards
- Can be conformally coated to protect the board from humid or dusty environments

For more information, contact: sales@menmicro.com

RSC# 31923 @ www.compactpci-systems.com/rsc

Trenton Technology
2350 Centennial Drive • Gainesville, GA 30504
770-287-3100
www.TrentonTechnology.com

CP16

Trenton's CP16 uses the Intel® Pentium® M processor to provide maximum processing capability and thermal performance. Key features designed into the CP16 include a front access PMC slot, local storage options, dual Gigabit Ethernet ports, and support for up to 2 GB of DDR220/266 memory. A rear transition module, RTM25, is available with or without dual Ultra320 SCSI interfaces and provides rear access to the SBC's I/O ports and status LEDs. PICMG® 2.16 (Packet Switching Backplane), 2.1/2.12 (Hot Swap), 2.9 (IPMI) compliance, and features like a local storage option and the ability to turn off the CompactPCI® bus enable the CP16 to excel in a wide variety of either CompactPCI system board or server blade computing applications.

FEATURES

- PICMG® 2.16 Packet Switching Backplane and PICMG® 2.1 (Hot Swap) support
- Intel® Pentium® M processor with the Intel® E7501 chipset
- Supports up to 2 GB of DDR200/266 plug-in memory modules
- Dual Gigabit Ethernet and Enhanced ATI® video
- Ability to turn off the CompactPCI® bus for server blade applications
- Optional Rear Transition Module available with or without dual Ultra320 SCSI

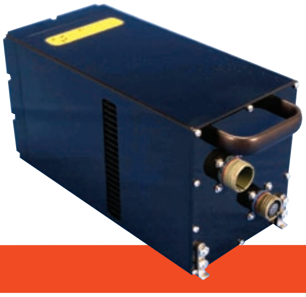
For more information, contact: jrenehan@TrentonTechnology.com

RSC# 16537 @ www.compactpci-systems.com/rsc

AP Labs
10864 Thornmint Road • San Diego, CA 92127
858-674-2850
www.aplabs.com

FS 5973

The FS-5973 is a forced-air, conduction-cooled chassis designed for use in avionics and other environments. Specifically, the FS-5973 chassis meets the environmental requirements of MIL-E-5400 for Class 1 equipment and will withstand extremes of temperature, vibration, shock, salt spray, sand, and chemical exposure while maintaining a sealed environment. The FS-5973 chassis is designed to adapt to existing ARINC style equipment mounting trays or it can be configured with a number of application driven mounting options, including hard and shock mounted.



FEATURES

- ARINC 404A, 1/2 ATR CompactPCI rugged chassis 4.88" (W) x 5.59" (H) x 11.46" (D); weight 9 lbs (4.09 kg)
- Five conduction-cooled 3U slots to IEEE 1101.2, .8" pitch: System slot, four spare slots for I/O and peripherals
- Meets MIL-STD-5400 Class 1, Watertight MIL-STD-108E, Storage temp: –62 °C to +95 °C, Operating temp: –55 °C to +55 °C at SL
- Vibration: MIL-STD-810E, 0.1 *g* 2/Hz, 15-2 kHz, Shock: MIL-STD-810E 20 *g*, 6-9 ms, half sine wave
- EMC: Per MIL-STD-461C; CE01, CE03, CS02, CS06, RE02, RS01, RS02, RS03
- Input: 18 to 48 Vdc, Output: +5 V 9 A, 3.3 V 5 A, +12 V 0.5 A, –12 V 0.5 A, input protection to MIL-STD-704A, MIL-STD1275A

For more information, contact: Sales@aplabs.com.

RSC# 21761 @ www.compactpci-systems.com/rsc

Chassis and enclosures

CompactPCI and AdvancedTCA Systems | Resource Guide 2007

Kaparel

97 Randall Drive, Unit B • Waterloo, ON N2V 1C5 Canada
519-725-0101 ext 208
www.kaparel.com

Kaparel
A RITTAL Company

AdvancedTCA Enclosure Family

Rittal Electronic Systems – the complete know-how. What really counts is reliability. Rittal Shelf Management Concepts incorporates innovative components to produce reliable systems available up to Level 5 for AdvancedTCA and MicroTCA. Everything is fully assembled, ready to run, and individually configured. The same naturally applies equally for CompactPCI, VME, and VME64x. One supplier, one manufacturer, one quality standard. As the leading system supplier, Rittal is your one-stop partner for electronic know-how and a reliable promise of all-inclusive competence – worldwide.

Case solutions in 5U, 12U, 13U, or cube design. Climate control concepts up to 200 W/board and more. High speed backplanes up to 10 Gbps.

FEATURES

- Rittal Electronic Systems – the complete know-how. What really counts is reliability
- Case solutions in 5U, 12U, 13U, or cube design; climate control concepts up to 200 W/board and more
- High speed backplanes up to 10 Gbps – Variable Shelf Management Concepts – Rittal incorporates innovative components to produce reliable systems available up to Level 5 for AdvancedTCA and MicroTCA
- Fully assembled, ready to run, and individually configured for CompactPCI, VME, and VME64x
- One supplier, one manufacturer, one quality standard: Rittal, your one-stop partner for electronic know-how

For more information contact: pkuepfer@kaparel.com

RSC #30136 @ www.compactpci-systems.com/rsc

Chassis and enclosures

CompactPCI and AdvancedTCA Systems | Resource Guide 2007

Elma Electronic

44350 S. Grimmer Blvd. • Fremont, CA 94538
510-656-3400
www.elma.com

ELMA
Your Solution Partner

CompactPCI Chassis

Elma has a wide range of system platform options for 3U CompactPCI backplanes. This includes standard IEEE 1101.10/.11 and IEEE1101.2 (conduction-cooled) implementations. The chassis feature design options geared for your telecom, medical, industrial, or rugged COTS application. Based on a modular packaging approach, Elma has the largest selection of CompactPCI enclosures in the industry. PICMG 2.16 compliant, 6U CompactPCI, and CompactPCI Express versions are also available.

Elma offers customization, signal integrity, thermal simulation, and validation/test services. Come to Elma for the service, quality, and selection you are looking for.

Elma Electronic
510-656-3400
www.elma.com

FEATURES

- Simulation & Validation/Test services available
- Versions in forced air and conduction cooling
- 3-, 4-, 6-, or 8-slot backplanes
- Rack-mount, desktop, ATR, or COTS configurations
- Advanced EMC shielding
- Customized versions available

For more information, contact: sales@elma.com

RSC# 32839 @ www.compactpci-systems.com/rsc

Advantech Corporation
2717 Loker Avenue West, Suite A • Carlsbad, CA 92010
760-918-9288
www.advantech.com

Trusted ePlatform Services

ADVANTECH

MIC-3042

The MIC-3042 is a 4U-high enclosure designed for standard CompactPCI power supplies. It equipped with 500 W 2+1 redundant CompactPCI power supply with hot swappable support. The system has eight slots for CompactPCI boards and IEEE 1101.11 rear I/O transition boards. The MIC-3042 comes with a built-in high quality backplane as standard that provides 64-bit/66 MHz PCI bus speed. The MIC-3042 standard configuration includes H.110 Bus, which complies with PICMG 2.5, the open architecture to build telecom solutions.

FEATURES

- 8-slot 6U CompactPCI® backplane
- AC or DC CompactPCI 500 W + 250 W redundant (2+1) power supplies
- PICMG 2.16 (CompactPCI Packet Switching Backplane) compliance
- PICMG 2.5 (CompactPCI Computer Telephony) compliance
- Built-in alarm module (MIC-3924L-AE)

For more information, contact: CTInfo@advantech.com

RSC# 32851 @ www.compactpci-systems.com/rsc

Advantech Corporation
2717 Loker Avenue West, Suite A • Carlsbad, CA 92010
760-918-9288
www.advantech.com

Trusted ePlatform Services

ADVANTECH

MIC-3043

Advantech's MIC-3043 is a 4U enclosure designed for mission-critical and high-reliability applications such as Networking, Telecommunication, Computer Telephony Integration, and Image Processing. The MIC-3043 is equipped with a hot-swappable CompactPCI redundant power supply and a hot-swappable fan module to minimize Mean-Time-to-Repair (MTTR). The MIC-3043 supports IEEE 1101.11 rear I/O transition boards. Users can route I/O signals to the rear transition boards for simplified cabling. Front boards pop in and out without any hardwiring. Built-in hot-swappable SCSI/removable IDE HDD bay is standard. One slim-type CD-ROM provides users more flexibility for storage media demands.

The MIC-3043 has a built-in high-quality backplane that supports 64-bit/66 MHz bus speed with impedance control and full-range compatibility. The H.110 Bus complies with PICMG 2.5, which is an open architecture ideal for telecom solutions or development platforms. With the enclosure's optional Chassis Management Module (MIC-3924A-B), the chassis temperature and fan speed can be monitored. The built-in Web-based administration interface allows users to monitor the system's operation from any place with Internet connectivity, making it easy to take any action necessary to avert system failure. Notification is delivered by a warning LED and beep tones.

FEATURES

- 6-slot 6U CompactPCI® backplane
- Supports two hot-swappable SCSI/SATA or removable IDE HDD bays
- Built-in IDE slim-type DVD-ROM
- AC or DC CompactPCI 250 W + 250 W redundant (1+1) power supplies
- Supports hot-swappable fan modules
- PICMG 2.5 (CompactPCI Computer Telephony) compliance
- Built-in alarm module (MIC-3924L-AE)

For more information, contact: CTInfo@advantech.com

RSC# 32850 @ www.compactpci-systems.com/rsc

Carlo Gavazzi Computing Solutions
10 Mupac Drive • Brockton, MA 02301
508-588-6110
www.gavazzi-computing.com

5359 FabricPac SM

The FabricPac SM is a CompactPCI 2.16 compliant Switch Fabric Platform that contains redundant IPMI System Management Cards, along with dual AC or DC input 600 W or 400 W PICMG 2.11 power supplies. This platform provides the system integrator with flexibility of designing a system, using both legacy bus based and next generation fabric base boards.

At the heart of the system are two PICMG 2.9 IPMI compliant System Managers in an over/under slot configuration. The IPMI System Managers are integrated into the chassis' electronics, providing an environment that is fully system managed and includes the cooling unit, system temperature, power supplies, fabric switches, and boards.

FabricPac SM contains a PICMG 2.16 Switch Fabric Backplane that delivers a maximum data throughput of over 40 Gbits/second. To ensure forward and backward compatibility the backplane contains 10 2.16 fabric node slots (eight slots contain the 64-bit /33 MHz PCI bus) and two switch slots.

The FabricPac SM chassis has been designed to meet the requirements of NEBs Level 3, FCC-B, CE and UL, as well as being completely RoHS compliant. The chassis comes standard with front and rear panel mounted ESD jacks along with a pair of recessed rack adaptors that set the entire rack back 2 inches to create a cable management area for the cables that are connected to the front of the CompactPCI cards.

FabricPac SM cooling system features an evacuation cooling design that is supported by a front removable fan tray, which contains three high-powered fans that are speed-controlled and monitored by the IPMI System Manager. Airflow is front intake with rear exhaust with an average of 400 LFM per slot to all node, switch, and power supply slots.

Versatile. Reliable. Carlo Gavazzi's 5359 FabricPac SM Series CompactPCI enclosures are designed to meet the needs of embedded, telecommunications, development, testing, military, and measurement.

FEATURES

- Redundant IPMI System Manager
- CompactPCI 2.16 fabric backplane with two fabric switch slots and legacy 64-bit/33 MHz Bus
- RoHS and NEBS Level 3 compliant
- Hot Swap 400 or 600 watt power supply
- Front replaceable speed-controlled and monitored fan tray
- 19-inch or 23-inch rack mountable
- 15.75" (9U) high x 12" deep enclosure

For more information, contact: pr@cg-cs.com

RSC# 32718 @ www.compactpci-systems.com/rsc

Vector Electronics & Technology, Inc.
11115 Vanowen Street • North Hollywood, CA 91605
800-423-5659
www.vectorelect.com

Vector Series 2370

Vector Series 2370 offers the lowest profile per slot of the Vector enclosure group. The series accepts 6U x 160 mm front loading cards as well as optional 6U x 80 mm slots in chassis heights from 1U to 5U. Economical embedded ATX or dual-redundant, hot-swappable power supplies are also available. Vector Series 2370 is fully 1101.10 and 1101.11 compliant and designed for compliance with UL and FCC requirements. Vector Series 2370 can accommodate any 6U CompactPCI, VME, or VME64x backplane

Model	No. Slots	Height
2371	2	1.72" 1U
2372	4	3.44" 2U
2375	6	5.22" 3U
2376	8	6.97" 4U
2377	10	8.72" 5U

2375 3U

2372 2U

2377 5U

FEATURES

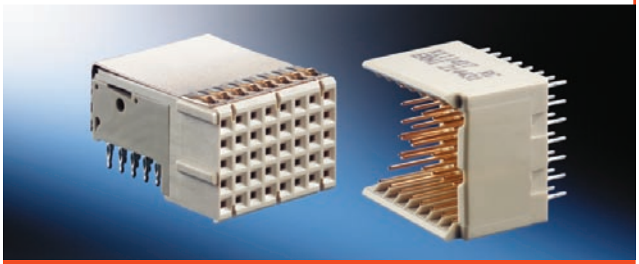
- 19" rack-mount, rack brackets removable
- 6U form factor, up to 2-10 slots
- Side air intake/exhaust
- 1101.10 and 1101.11 compliant
- Plug-in fan trays
- Rear mounted fused RFI AC input filter
- Rear power switch

For more information, contact: inquire@vectorelect.com

RSC# 13981 @ www.compactpci-systems.com/rsc

ERNI Electronics
3005 East Boundary Terrace • Midlothian, VA 23112
804-228-4100
www.erni.com

ERmet 2mm HM EXP.0/eHM



The PICMG EXP.0 specification was developed to incorporate the PCI Express technology into the popular PICMG 2.0 CompactPCI form factor. This specification was intended for 3U CompactPCI, military, PXI, and aerospace markets. The specification makes use of legacy CompactPCI connectors (ERmet 2mm HM), high speed differential connectors (ERmet ZD), and a new “mini” Hard Metric connector. This “mini” HM connector is defined as a 5 row by 8 column connector. ERNI offers a 3-pair/10-wafer ERmet ZD as well as the ERmet 2mm HM connector type B8 with integrated coding elements for preventing incompatible board/slot configurations (for example, an RIO card in a PXI slot).

FEATURES

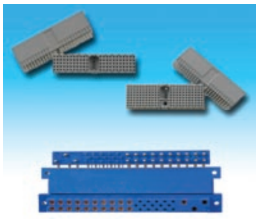
- Designed around the popular CompactPCI form factor
- Integrated coding elements for preventing incompatible board/slot configurations
- 40 signal pins in a 5 row by 8 column configuration

For more information, contact: info.usa@erni.com.

RSC# 30185 @ www.compactpci-systems.com/rsc

Yamaichi Electronics USA, Inc.
475 Holger Way • San Jose, CA 95134
408-715-9100
www.yeu.com

CompactPCI Power & 2mm Hard Metric Connectors



Yamaichi offers a variety of 2 mm hard metric connectors of “HMSU series” (Receptacle) and “HMPU series” (Plug) that comply with the CompactPCI backplane I/O interconnect. The connector has 5 signal rows and 8 signal rows with optional 2 shielding rows. It also provides values option of sequential pin length with the proven press-fit technology.

CNU003 Series – The CNU003 Series is a power connector for the CompactPCI backplane interface, available for 34-pin, 38-pin, and 47-pin configurations.

FEATURES

- 2 mm connector
  - Power connector available 34, 38, and 47 pins with both press-fit and solder dip termination
  - RoHS compliant
- CNU003 Series
  - IEC 61076-4-101 compliant
  - Available 5 row and 8 row pins with optional shield rows
  - Available sequencing valuations
  - Available values: Coding keys for Type A connector

For more information, contact: info@yeu.com

RSC# 32870 @ www.compactpci-systems.com/rsc

Hypertronics Corporation
16 Brent Drive • Hudson, MA 01749
800-225-9228
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HYPERTAC HYPERTRONICS

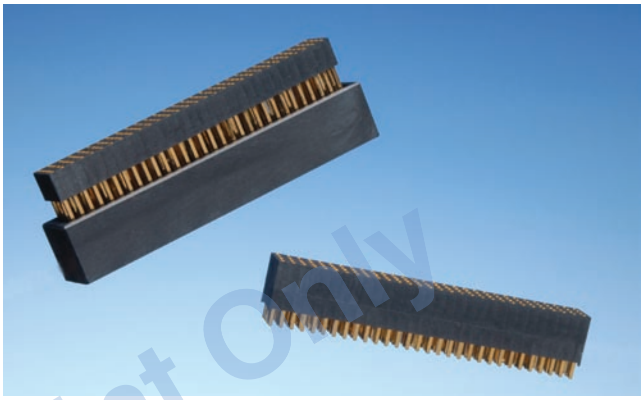
PC/104+

Hypertronics Corporation is a world leading provider of high-performance interconnect solutions for the most demanding applications, and Hypertronics' PC/104+ connectors overcome the challenges of harsh environments. The PC/104+ board stacking connectors utilize the unique Hypertac® contact system. The Hypertac contacts improve the performance of the PC/104 platform by providing immunity to shock and vibration fretting, therefore allowing for matched impedance and better signal integrity. The capabilities of the Hypertronics' ruggedized PC/104+ exceed all prior requirements for the form factor and will increase the range of industries and applications that the product can be used for.

PC/104+'s traditional stackable design eliminates the need for backplanes or metal card cages which are found throughout the range of embedded computing devices used in military systems, in all services and service branches. Hypertronics' PC/104+ is interchangeable with other PC/104+ COTS products and provides engineers with a shock and vibration resistant interconnect solution for their applications. Hypertronics' PC/104+ will improve the performance and reliability of all current PC/104 bus architectures in existing applications while establishing a higher standard for the industry.

Hypertronics' PC/104+ crosses the market boundary into space flight applications as well. The call from the space flight community requests a higher level of shock and vibration performance for the PC/104 platform. Hypertronics' PC/104+, containing the legendary Hypertac contact, meets this market need and enables engineers to achieve this goal. In addition, Hypertronics' PC/104+ contacts are housed in an LCP plastic insulator which exceeds the NASA space requirement for outgassing.

Hypertronics' PC/104+ is a highly engineered product designed specifically to allow for top signal integrity under all dynamic environmental conditions, which makes this product a perfect fit for those applications where failure is not an option.



FEATURES

- Design criteria: PC/104-*Plus* Specification Version 2.0, November 2003
- Compliant with all current PCI-104 standards
- Hypertac contacts provide high reliability
- Immune to shock and vibration fretting
- Matched impedance
- Standard footprint
- High-temp LCP insulator meets NASA outgassing requirements
- Contact tails incorporate a unique cross-section, which allows for both press-fit and solder termination
- Available in both stackthrough and nonstackthrough versions
- 2 mm centerline, 4 x 30 contact grid (120 total positions)
- Low power requirements with easy maintenance

For more information, contact: info@hypertronics.com

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power connectors and
signal connectors for

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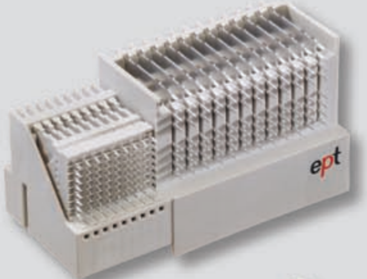
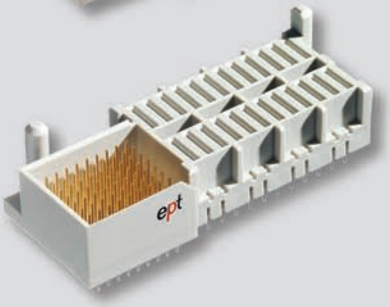
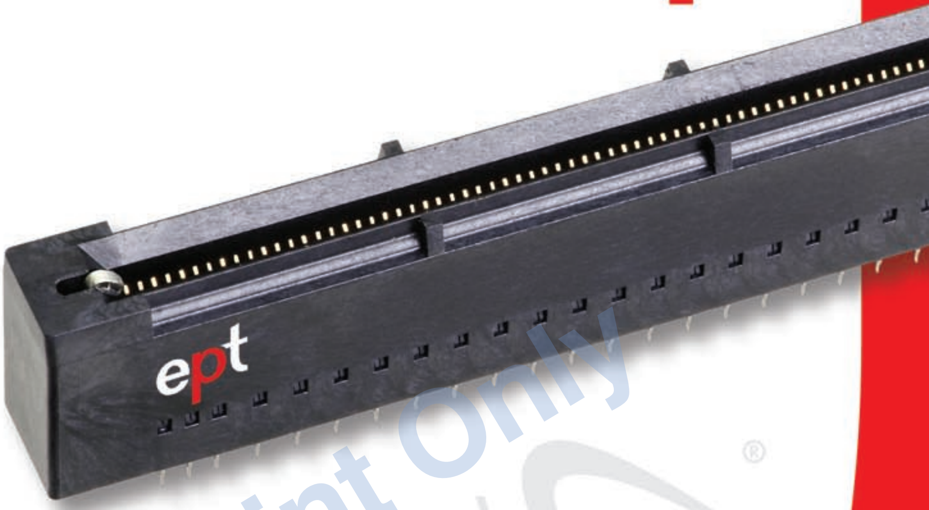
ept







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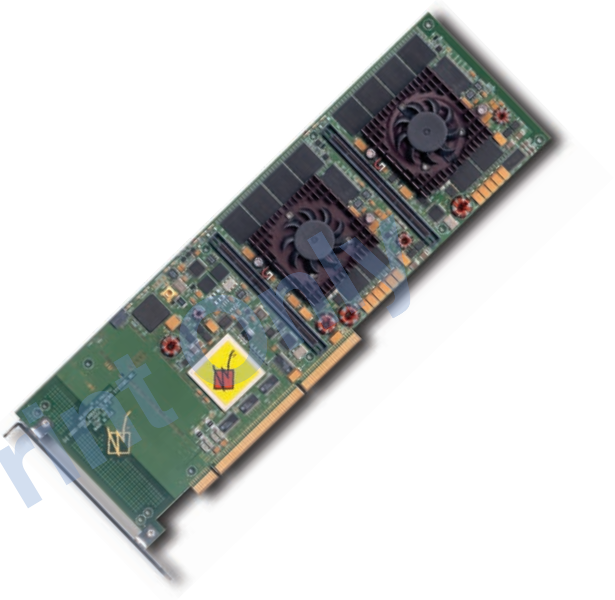
WILDSTAR II Pro PCI

Annapolis Micro Systems is a world leader in high-performance, COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. Our ninth-generation WILDSTAR II Pro for PCI uses Xilinx's newest Virtex-II Pro FPGAs for state-of-the-art performance. It accepts one I/O card in one, or up to two I/O cards in two, PCI or PCI-X slots, including Dual 1.5 GHz A/D, Dual 1.5 GSps D/A, Quad 105 MHz, Universal 3 Gb (Rocket I/O, 10 GbE, InfiniBand), Quad FC2, Quad GbE, and LVDS. Our boards work on a number of operating systems, including Win NT, 2000, XT, Linux, Solaris, IRIX, ALTIX, and VxWorks. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models.

Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on dataflow, automatically generates distributed control fabric between cores.

Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. CoreFire uses a graphical user interface for design entry, supports hardware-in-the-loop debugging, and provides proven, reusable, high-performance IP modules. WILDSTAR II Pro for PCI, with its associated I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that the customers' applications succeed. We offer training and exceptional special application development support, as well as more conventional support.



FEATURES

- One or two Virtex-II Pro Xilinx FPGA processing elements – XC2VP70 or XC2VP100
- Up to 96 MB DDRII or QDRII SRAM
- Up to 512 MB DDR DRAM
- Programmable flash for each processing element to share FPGA images
- Works with PCI or PCI-X backplane
- High-speed DMA multichannel PCI controller
- Host software: Win NT, 2000, XP, Linux, Solaris, DECAlpha, IRIX, and ALTIX
- Full CoreFire board support package for fast, easy application development
- VHDL model, including source code for hardware interface and ChipScope access
- Save time and effort and reduce risk with COTS boards and software
- Achieve world-class performance – WILD solutions outperform the competition
- Includes one-year hardware warranty, software updates, and customer support; training available

For more information, contact: jdonald@annapmicro.com

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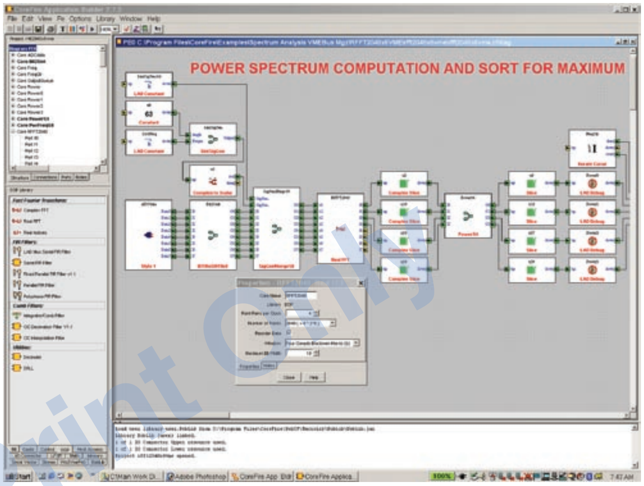
CoreFire FPGA Tool



Develop your application very quickly and easily with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily and quickly build and test their algorithms on the real hardware that will be used in the field.

Use CoreFire's graphical interface to drag and drop library elements onto the design window. Modify your input and output types, numbers of bits, and other core variables by changing module parameters with pull-down menus. The modules automatically provide correct timing and clock control. Insert debug modules to report actual hardware values for hardware-in-the-loop debugging. Hit the Build button to check for errors and as-built core sizes and to build an encrypted EDIF file. Use the Xilinx ISE tool to place and route each FPGA design. Modify and use the jar file or the C program created by the CoreFire Build to load your new file into your WILDSTAR II and I/O card hardware. Use the CoreFire Debugger to view and modify register and memory contents in the FPGA and to step through the dataflow of your design running in the real physical hardware.

Our extensive IP and board support libraries contain more than 1,000 proven, reusable high-performance cores, including FIR and CIC filters, a channelizer, and the world's fastest FFT. We support conversion between data types: bit, signed and unsigned integers, single precision floating point, integer and floating point complex, and arrays. A few of the newly added array cores include array composition and decomposition; slice, parallelize, serialize, repack, split, merge, reorder, rotate, and concatenate transformations; matrix math, sliding windows, and convolutions.

The combination of our COTS hardware and CoreFire enables our customers to make massive improvements in processing speed while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

FEATURES

- Dataflow-based – automatically generates intermodule control fabric
- Drag-and-drop graphical interface
- Work at high conceptual level – concentrate on solving algorithmic problems
- Hardware-in-the-loop debugging
- More than 1,000 modules incorporate years of application experience
- Reduce risk with COTS boards and software
- Save time to market
- Save development dollars
- Easily port completed applications to new technology chips and boards
- Training and custom application development available
- Achieve world-class performance – WILD solutions outperform the competition
- Annual node locked or networked license; includes customer support and updates

For more information, contact: jdonald@annapmicro.com

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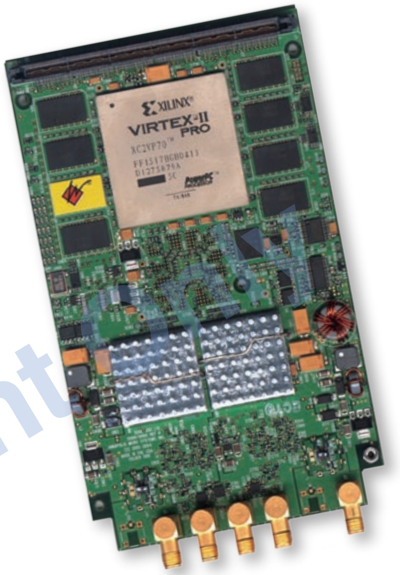
Dual 1.5 GHz A/D

Annapolis Micro Systems is a world leader in high-performance, COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. The Annapolis Dual 1.5 GHz A/D I/O card provides two channels of 1.5 GSps input (with 8-bit resolution) or one channel of 3.0 GSps input (with 8-bit resolution). The board has two Max108 8-bit ADCs, each one fed by its own pair of differential signals. The differential clock signals coming into the board can provide identical clocks to both A/Ds for dual 1.5 GSps channels or an inverted clock to one of the A/Ds to interleave the data for a single 3.0 GSps channel. Multiple I/O cards can be synched together via the Annapolis Clock Sync Distribution Board, as in the 24 GSps A/D Collection, Processing, and Distribution (CPD) systems.

The Xilinx Virtex-II Pro 70 on the board provides user-configurable, real-time continuous sustained processing of the full data stream. Up to two of these I/O cards can reside on the Annapolis WILDSTAR II or WILDSTAR II Pro FPGA-based VME and PCI bus boards, which provide up to 30 million more user-reprogrammable FPGA gates for onboard processing.

Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. VHDL source is provided for interfaces to SRAM, LAD bus, I/O bus, and DACs. CoreFire users will have the usual CoreFire board support package. Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that the customers' applications succeed. We offer training and exceptional special application development support, as well as more conventional support.



FEATURES

- Two MAX 108 8-bit A/D converters – two 1.5 GSps channels or one 3 GSps channel
- Two sets of differential or single-ended input signals – one for each A/D
- Differential or single-ended clock input – synchronize or interleave the two data streams
- Up to 4 GBps I/O bandwidth to WILDSTAR II Pro motherboard I/O slot
- Xilinx Virtex-II Pro XC2V70 FPGA for user-reprogrammable processing
- Heat sink on A/Ds; heat sink/fan in PCI chassis
- Host software: Win NT, 2000, XP, Linux, VxWorks, Solaris, DECAlpha, and SGI
- Full Corefire board support package for fast, easy application development
- VHDL model, including source code for board level interfaces and ChipScope access
- Save time and effort and reduce risk with COTS boards and software
- Achieve world-class performance – WILD solutions outperform the competition
- Includes one-year hardware warranty, software updates, and customer support; training available

For more information, contact: jdonald@annapmicro.com

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Dual 2.3 GSps DAC

Annapolis Micro Systems, Inc. is a world leader in high-performance COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, digital signal processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

The Annapolis Dual 2.3 GSps DAC I/O card provides two 12-bit output streams at up to 2.3 GSps per stream.

The board has both a high-precision trigger for inner-board or board-to-board synchronization and a low-precision trigger. The card supports three modes: NRZ, RF, and RZ.

The Xilinx Virtex-II Pro 70 on the board provides user-configurable, real-time continuous sustained processing of the full data stream. Up to two of these I/O cards can reside on the Annapolis WILDSTAR II or WILDSTAR II Pro FPGA-based VME and PCI bus boards, which provide up to 30 million user-reprogrammable FPGA gates for onboard processing. Our boards run on many different operating systems. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. A VHDL source is provided for interfaces to SRAM, LAD bus, I/O bus, and DACs. CoreFire users will have the usual CoreFire board support package.

Develop applications with CoreFire (more than 1,000 cores), which transforms the FPGA development process, making it possible for theoreticians to easily and quickly build and test their algorithms on the real hardware that will be used in the field. The combination of our COTS hardware and CoreFire enables our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

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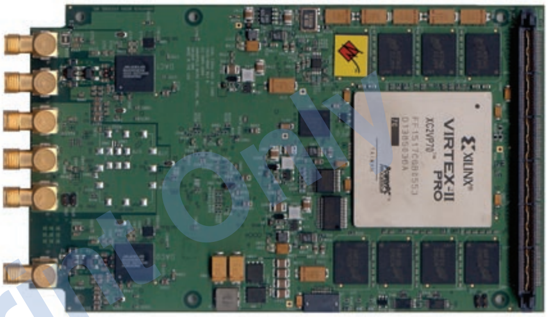

FEATURES

- Choice of up to 2.3 GSps or 1.5 GSps output per channel
- Two individually configurable output streams of 12-bit data
- High output power and exceptional gain
- Flatness in multiple Nyquist zones
- One Xilinx Virtex-II Pro 70-5, -6, or -7
- Up to 1 GB DDR SDRAM in four banks
- Supports three modes: NRZ, RF, and RZ
- Both high-precision and low-precision triggers
- JTAG and serial port access
- Proactive thermal management system
- Available in both commercial and industrial temperature grades
- Includes one-year hardware warranty, software updates, and customer support

For more information, contact: jdonald@annapmicro.com

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Tri XFP I/O Card

Annapolis Micro Systems, Inc. is a world leader in high-performance Commercial Off-the-Shelf FPGA-based processing for radar, sonar, SIGINT, ELINT, digital signal processing, FFTs, communications, software radio, encryption, image processing, prototyping, text processing, and other processing intensive applications.

The Annapolis Tri XFP I/O Card, which works with the WILDSTAR 4/5 Family Architecture, has three 10 Gb individually configured XFP connectors, each with its own XAUI to XFI converter. Industry-standard pluggable fiber optic transceivers can be purchased from Annapolis or from other vendors. The Tri XFP provides up to 30 Gb Full Duplex I/O directly between the outside world and the Rocket I/O pins on the Xilinx Virtex-II Pro or Virtex-4 I/O FPGA on the WILDSTAR 4 main board. No other vendor provides that volume of data straight into the heart of the processing elements and then back out again.

Two I/O cards can reside on each WILDSTAR 4 or WILDSTAR 5 VXS or PCI-X/E board, with up to 30 million user reprogrammable gates.

The Tri XFP card will support 10 Gb Ethernet, 10 Gb Fibre Channel, and OC 192. Although the protocols will be provided as black box solutions with few modifications by users allowed, more adventurous users who choose to develop their own communications protocols from the basics already have access to all the board resources through VHDL source for the interfaces to SRAM, signal conditioners, LAD bus, I/O bus, and PPC flash. CoreFire users will have the usual CoreFire board support package.

The Tri XFP is the first of many I/O cards Annapolis will be releasing for its new WILDSTAR 4/5 Architecture Family, which uses Xilinx Virtex-4 and Virtex-5 FPGAs for processing elements. WILDSTAR 4 is the 10th generation of Xilinx FPGA processing-based COTS boards from Annapolis.

Annapolis is famous for the high quality of our products and for our unparalleled dedication to ensuring that the customers' applications succeed. We offer training and exceptional special application development support, as well as more conventional customer support.

FEATURES

- Up to 10 Gb Full Duplex Ethernet per connector
- Up to 10 Gb Fibre Channel
- OC 192
- Three 10 Gb XFP connector
- Accepts industry-standard pluggable transceivers
- Available in both commercial and industrial temperature grades
- Includes one year hardware warranty, software updates, and customer support
- One or two I/O cards fit on a single WILDSTAR 4/5 processing board
- New I/O form factor for improved thermal performance
- First of many WILDSTAR 4/5 Family I/O cards, including superior performance A/D, D/A, and additional high-speed communication cards
- Save time and effort and reduce risk with COTS boards and software
- Achieve world-class performance; WILD solutions outperform the competition

For more information, contact: jdonald@annapmicro.com

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Universal 3Gbit IO

Annapolis Micro Systems, Inc. is a world leader in high-performance, COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. The Annapolis Universal 3 Gbit IO Card provides up to 36 Gb full-duplex I/O directly between the outside world and the Rocket I/O pins on the Xilinx Virtex-II Pro FPGA processors on the WILDSTAR II Pro main board. No other vendor provides that volume of data straight into the heart of the processing elements and then back out again. The card has three individually configurable, industry-standard 4x connectors, providing four lanes per connector, with dedicated signal conditioners to ensure clean communication. It supports a wide variety of readily available cables: copper for short haul (.3-5 m) or fiber for long haul (10-300 m). Two I/O cards can reside on each WILDSTAR II Pro or WILDSTAR II FPGA-based VME or PCI board with up to 30 million user reprogrammable gates.

Initial release of the Universal 3Gbit Card will come with an easy-to-use Rocket I/O protocol supporting up to 12 Gb full duplex per connector. The market will see releases of up to 10 G full-duplex InfiniBand per connector, up to 10 G full-duplex Ethernet per connector, and Serial FPDP. Although the InfiniBand, Ethernet, and Serial FPDP protocols will be provided as black-box solutions with few modifications by users allowed, more adventurous users who choose to develop their own communications protocols from the basics already have access to all the board resources through a VHDL source for the interfaces to SRAM, signal conditioners, LAD bus, I/O bus, and PPC flash. CoreFire users will have the usual CoreFire board support package.

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FEATURES

- Up to 12 Gb full-duplex Rocket I/O per connector
- Up to 10 Gb full-duplex InfiniBand per connector
- Up to 10 Gb full-duplex Ethernet per connector
- Three individually configurable 4x connectors – four lanes per connector
- Three fundamental oscillators – 100.00 MHz, 125.00 MHz, and 156.25 MHz
- One Xilinx Virtex-II Pro 70-5, -6 or -7, or Industrial 70-5I or 70-6I
- Up to 4 GB DDR2 SDRAM in four banks or up to 1 GB DDR SDRAM in four banks
- Two PowerPC 405s in FPGA with onboard flash for program storage
- JTAG, ChipScope, and serial port access
- Proactive thermal management system
- Available in both commercial and industrial temperature grades
- Includes one-year hardware warranty, software updates, and customer support

For more information, contact: jdonald@annapmicro.com

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WILDSTAR 4 for PCI

Annapolis Micro Systems is a world leader in high-performance, COTS FPGA-based processing for radar, sonar, SIGINT, ELINT, DSP, FFTs, communications, Software-Defined Radio, encryption, image processing, prototyping, text processing, and other processing intensive applications. Our 10th-generation WILDSTAR 4 for PCI-X uses Xilinx's newest Virtex-4 FPGAs for state-of-the-art performance. It accepts one I/O card in one, or up to two I/O cards in two, PCI-X slots, including single 1.5 GHz 8-bit ADC, quad 250 MHz 12-bit ADC, dual 2.3/1.5 GSps 12-bit DAC, Universal 3 Gbit Serial I/O (Rocket I/O, 10 GbE, InfiniBand), and Tri XFP (10 GbE, 10G FC). Our boards work on a number of operating systems, including Windows, Linux, ALTIX, and VxWorks. We support our board products with a standardized set of drivers, APIs, and VHDL simulation models.

Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on dataflow, automatically generates distributed control fabric between cores.

Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. CoreFire uses a graphical user interface for design entry, supports hardware-in-the-loop debugging, and provides proven, reusable, high-performance IP modules. WILDSTAR 4 for PCI-X, with its associated I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

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FEATURES

- Four Virtex-4 FPGA processing elements – One XC2VP70, XC2VP100, XC4VFX100, or XC4VFX140, and three XC4VSX55 or XC4VLX40 – 100
- Up to 3.5 GB DDR2 DRAM in 14 Banks or up to 96 MB DDRII or QDRII SRAM
- PCI or PCI-X bus – 133 MHz
- High-speed DMA multichannel PCI controller
- Programmable flash for each FPGA to store FPGA images and for PCI controller
- Auxiliary connector for additional power
- Full CoreFire board support package for fast, easy application development
- VHDL model, including source code for hardware interfaces and ChipScope access
- Available in both commercial and industrial temperature grades
- Proactive thermal management system – board-level current measurement and FPGA temperature monitor accessible through host API
- Save time, effort, reduce risk with COTS boards and software. Achieve world-class performance – WILD solutions outperform the competition
- Includes one-year hardware warranty, software updates, and customer support; training available

For more information, contact: jdonald@annapmicro.com **RSC# 31247 @ www.compactpci-systems.com/rsc**

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WILDSTAR II Pro VME

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We support our board products with a standardized set of drivers, APIs, and VHDL simulation models. Develop your application very quickly with our CoreFire™ FPGA Application Builder, which transforms the FPGA development process, making it possible for theoreticians to easily build and test their algorithms on the real hardware that will be used in the field. CoreFire, based on dataflow, automatically generates distributed control fabric between cores. Our extensive IP and board support libraries contain more than 1,000 cores, including floating point and the world's fastest FFT. CoreFire uses a graphical user interface for design entry, supports hardware-in-the-loop debugging, and provides proven reusable, high-performance IP modules.

WILDSTAR II Pro for VME, with its associated I/O cards, provides extremely high overall throughput and processing performance. The combination of our COTS hardware and CoreFire allows our customers to make massive improvements in processing speed, while achieving significant savings in size, weight, power, person-hours, dollars, and calendar time to deployment.

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FEATURES

- One to three Virtex-II Pro Xilinx FPGA processing elements – XC2VP70 or XC2VP100
- Up to 144 MB DDRII or QDRII SRAM
- Up to 768 MB DDR SDRAM
- Programmable flash for each processing element to store FPGA images
- Works with VME64x backplane
- High-speed multichannel DMA controller
- Host software: Win NT, 2000, XP, Linux, VxWorks
- Full CoreFire board support package for fast, easy application development
- VHDL model, including source code for hardware interfaces and ChipScope access
- Save time and effort and reduce risk with COTS boards and software
- Achieve world-class performance – WILD solutions outperform the competition
- Includes one-year hardware warranty, software updates, and customer support; training available

For more information, contact: jdonald@annapmicro.com

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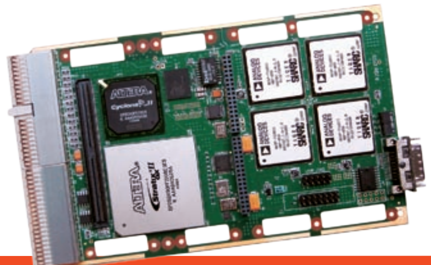
BittWare, Inc.
9 Hills Avenue • Concord, NH 03301
603-226-0404
www.bittware.com

GT-3U-cPCI

BittWare's GT-3U-cPCI is a ruggedized 3U CompactPCI board that has been designed for demanding multiprocessor based applications requiring complete flexibility and adaptability. The board features a large Altera® Stratix® II GX FPGA, one cluster of four ADSP-TS201S TigerSHARC® processors from Analog Devices, a front panel interface supplying four channels of high-speed SerDes tranceivers, and a back panel interface providing RS-232/RS422 and 10/100 Ethernet.

Simultaneous onboard and off-board data transfers can be achieved at a rate of 2 GBps via BittWare's ATLANTiS™ framework implemented in the Stratix II GX. The board also provides a large amount of onboard memory.



FEATURES

- One Altera Stratix II GX FPGA provides I/O routing and data processing via BittWare's ATLANTiS framework
- Four Analog Devices ADSP-TS201S TigerSHARC DSPs @ 600 MHz, 1.67 ns instruction rate DSP core
- One GB DDR2 SDRAM or 64 MB QDR SDRAM and 64 MB Flash memory for booting DSPs and configuring the I/O
- 16 link ports @ 1 GBps each; eight connect the DSPs to the FPGA, eight for inter-DSP connection
- Rear Panel I/O – FINe™ bridge providing 10/100 Ethernet and RS-232/RS422, 36 LVDS (16 inputs, 20 outputs)
- Front Panel I/O – four channels of high-speed SerDes transceivers

For more information, contact: info@bittware.com

RSC# 32632 @ www.compactpci-systems.com/rsc

Innovative Integration
2390 Ward Avenue • Simi Valley, CA 93065
805-578-4261
www.innovative-dsp.com

Quixote

Quixote is a 64-bit CompactPCI 6U board for advanced signal capture, generation, and co-processing. It combines one C6416 DSP with a two- or six- million-gate Virtex-II FPGA, utilizing the best of both worlds in signal processing technology to provide extreme processing flexibility and efficiency and deliver unmatched performance. Dual 105 MHz analog input/output integrate signal capture and waveform generation right on the FPGA external interface. One PMC site facilitates integration of off-the shelf or custom PMC mezzanine boards. Finally a PCI-to-StarFabric bridge offers two 2.5 Gbps ports to the new PICMG 2.17 switched interconnect backplane, for up to 625 MBps board-to-board or chassis-to-chassis communication.

FEATURES

- 1 GHz TMS320C6416 DSP and 2- to 6-MGATE Virtex-II FPGA
- 32 MB SDRAM, 8 MB ZBT SBSRAM, and AD6645 and AD9764 converters
- 64/32 bit CompactPCI, 66 MHz, 5 V/3.3 V and complex trigger modes with HW event logging
- PMC site with Jn4 to FPGA DIO and PICMG 2.17 StarFabric compliant
- Applications include: Software Defined Radio, wireless IP and RADAR, development and hardware testing
- Physical Layer Field Testing, ultra-fast flexible data acquisition, vector signal generation and electronic warfare

For more information, contact: sales@innovative-dsp.com

RSC# 32861 @ www.compactpci-systems.com/rsc

Innovative Integration

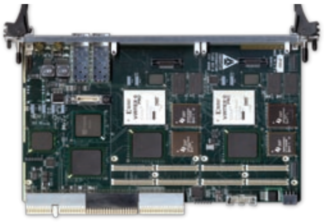
2390 Ward Avenue • Simi Valley, CA 93065
805-578-4261
www.innovative-dsp.com

Quadia

Quadia is a quad-DSP, dual FPGA, dual PMC sites, CompactPCI board with an advanced architecture that provides the best inter-processor connectivity and access to the finest external interfaces available today, to deliver blazing performance and extreme flexibility for advanced signal capture and real-time processing applications.

The board features four C6416 DSPs, split in two independent clusters each hosting a PMC site and one large FPGA for end-user code, a central FPGA routing interprocessor communication, end-user FPGA communication, external port serial I/O for PCI Express or other private link, global memory, and PCI interface. Quadia is an ideal platform for integrating high performance DSP and I/O into advanced signal processing, data acquisition, and real-time applications such as telecom, RADAR, SONAR, and wireless communications.

Innovative Integration
... real time solutions!



FEATURES

- 1 GHz TMS320C6416 DSP (x4)
- 64 MB SDRAM per processor
- 64-bit/66 MHz CompactPCI
- Flexible internal/external communication mesh
- Two PMC sites with Jn4 to FPGA
- External data port, up to 12 Gbps

For more information, contact: sales@innovative-dsp.com

RSC# 21969 @ www.compactpci-systems.com/rsc

CompactPCI and AdvancedTCA Systems | Resource Guide 2007 | Enclosures

Twin Industries

455 Los Gatos Blvd., Suite 103 • Los Gatos, CA 95032
408-358-2505
www.twinind.com

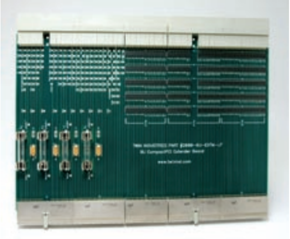
CPCI Extender Card

Twin Industries CompactPCI extender cards come in a wide variety of 3U and 6U form factors. Our extender cards serve as critical tools for engineering development and test applications. Several versions are available for applications that follow the CompactPCI mechanical specification, but have custom signaling environments.

Part# 2000-6U-EXTM-LF (lead free) follows the 64 bit CompactPCI specification for J/P 1-2. All data signals have clearly marked probing points. All voltages are protected by replaceable fuses. Multilayer PCB with power and ground planes. Probing points are provided for all J/P 3-5 signals. 2 mm headers allow for easy attachment of analyzer probes.

For more information contact our sales department at: 408-358-2505 or sales@twinind.com

TI



FEATURES

- Monitor CompactPCI boards in active systems
- Debug in space-restricted areas
- Probing points for all signals
- Power and ground planes
- Replaceable fuses for all voltages
- Quick-turn customization

For more information, contact: sales@twinind.com

RSC# 32873 @ www.compactpci-systems.com/rsc

Chomerics
77 Dragon Court • Woburn, MA 01801
781-935-4850
www.chomerics.com/premier

PREMIER™ FacePlate

ABOUT CHOMERICS, Division of Parker Hannifin Corporation:

Chomerics is a leading global manufacturer of electromagnetic interference (EMI) shielding materials. Our strengths are service, experience, technology, and unparalleled design capabilities.

Since 1961, Chomerics has been the primary force in the development and application of conductive elastomer technology in extruded, molded and RTV compound forms and with form-in-place gasketing technology. Our EMI shielding materials include conductive elastomers, metal EMI gasketing, spring finger gaskets, EMI cable shielding, conductive coatings and adhesives, shielding laminates and foil tapes, and shielded vents and windows.

We also manufacture an innovative line of thermal interface materials. Chomerics products have been designed into thousands of applications and help guarantee the performance, integrity, survivability, and maintainability of communications equipment, radars, aircraft, missiles, spacecraft, computers, fire control systems and industrial electronics.

Our comprehensive EMI testing facilities provide us constant exposure to real-world problems. We meet shielding challenges head on and respond with effective solutions.

The Chomerics world headquarters facilities in Woburn, Massachusetts is certified to ISO 9001 standards. The Chomerics facility in Marlow, England is ISO 9002 certified

CHOMERICS PREMIER™ FacePlates
Faceplates made with PREMIER™ conductive thermoplastic provide needed performance and save cost by eliminating machining and other secondary operation costs. The advantages of thermoplastic injection molding technology over metal fabrication technology can finally be enjoyed without the need for plating and delamination problems. PREMIER faceplates often have many secondary component features incorporated into the faceplate itself reducing or eliminating costs of assembly items such as latches and screws. PREMIER AdvancedTCA faceplates save up to 50% in cost over metal versions.

AdvancedTCA®

FEATURES

- Shielding effectiveness up to 85 dB for proven compliance with NEBS, FCC, and EU standards
- Low impedance for grounding needs
- High tensile and flexural, strength and modulus for proven compliance with insertion/extraction needs and long life durability
- Compliance with Telecom Flammability resistance needs: UL 94 V-0 @ 1.5 mm, 5 VA @ 2.0 mm, greater than 28% oxygen index rated
- Recyclable; conforms to WEEE and TCO, RoHS compliant
- Elimination of secondary processing steps for up to 50% lower Total Cost of Ownership

For more information, contact: chomailbox@parker.com

RSC# 30208 @ www.compactpci-systems.com/rsc

Schroff
170 Commerce Drive • Warwick, RI 02886
401-732-3770
www.schroff.us

Front Panel Express

Front Panel Express offers the benefit of "Quick Ship" on CompactPCI, PCI, VME, and VME64x panels customized to your exact specifications and delivered FAST – using high quality Schroff components. Shipped in 10 days or less, Front Panel Express can deliver 5 to 25 panels in 5 working days or up to 100 panels in 10 working days. Visit www.schroff.us/fpx for program details and to request a front panel quote today!

Front Panel
EXPRESS

FEATURES

- Prototypes in 5 days!
- 100 panels in 10 days!
- Flat and extruded front panels
- Customization services
- CompactPCI, VME, VME64x, and PMC
- Component kitting and full assembly

For more information, contact: info@pentair-ep.com

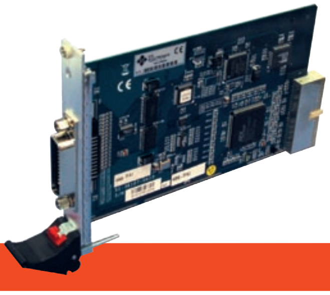
RSC# 19498 @ www.compactpci-systems.com/rsc

ICS Electronics
7034 Commerce Circle • Pleasanton, CA 94588
925-416-1000
www.icselect.com

488-PXI

ICS's 488-PXI is a PXI and CompactPCI card that adds a full-function IEEE 488.2 Bus Controller to any PXI or CompactPCI chassis. The 488-PXI card includes ICS's new 488.2V3 multicontroller Driver Library, which supports the NI style 488.1 'ib' and 488.2 command sets with its own GPIB-32.DLL and runs on Windows 2K/XP and Vista 32-bit operating systems. The 488.2V3 Driver supports C, Visual Basic 6, and Visual Basic.NET (2005) programs that make GPIB-32.DLL calls. It also supports VISA libraries from Agilent and National Instruments. This industry standard compatibility enables the 488-PXI card run LabVIEW and LabWindow/CVI, VEE, MATLAB, TestPoint, and other programs that make VISA calls.

ICS's 488-PXI card is the economical way to add GPIB control to a PXI chassis.



FEATURES

- Adds GPIB Controller capability to any PXI or CompactPCI chassis
- High 1 MHz data transfer rate reduces test time
- New WIN 2K/XP/Vista32 Driver Library runs LabVIEW, VEE, and all programs that use NI 488.2 and 'ib' commands
- New Driver Library supports multiple GPIB Controllers – PXI, USB, and PCI cards
- Includes ICS's new Explorer program that finds devices, configures the card, and controls instruments
- Includes GPIB AnyWhere, which lets you control your GPIB devices from a remote computer or over the Internet

For more information, contact: sales@icselect.com

RSC# 32854 @ www.compactpci-systems.com/rsc

AudioCodes
27 World's Fair Drive • Somerset, NJ 08873
732-469-0880
www.audiocodes.com

IPmedia™ (IPM) VoIP Media Processing

IPM-260 8 E1/T1 PCI VoIP Media Processing

IPM-1610 16 E1/T1 CompactPCI VoIP Media Processing

IPM-6310 3xT3 or OC-3 CompactPCI VoIP Media Processing

The IPmedia™ (IPM) blades are complete VoIP media processing solutions providing IP and PSTN interfaces to build next generation applications for both today's and tomorrow's networks. The blades feature a broad selection of firmware-based media processing capabilities including message record/playback, conferencing, voice coding, echo cancellation, and call progress tone detection.

Deliver Feature-Rich Solutions

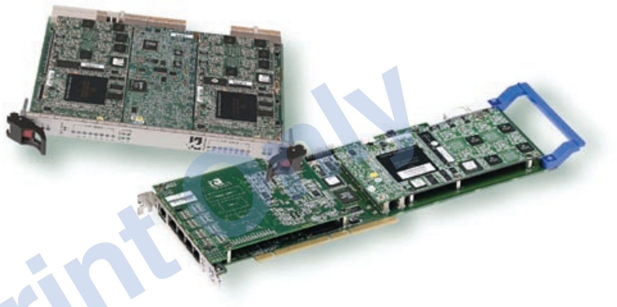
A wide selection of firmware-based media processing capabilities is available with the IPmedia blade series including: message record/playback, conferencing, onboard announcement storage, IVR streaming and control, voice coding and transcoding, echo cancellation, fax processing and call progress tone detection. Each channel resource is universal and can perform media processing functions independently and simultaneously while utilizing full flexibility of endpoints.

Comply with Industry Standards

The IPmedia blades complies with industry standard network control protocols including SIP, MSCML, MEGACO (H.248), MGCP, and AudioCodes' proprietary API – VoPLIB. This allows the implementation of a distributed media server architecture that separates call processing functions from media processing functions. The blades enable scalability, better redundancy, and higher system availability.

Applications:

- Contact Centers
- Conference Servers and IVR Servers
- Unified Communications/Messaging
- Voice Portals
- CTI Applications
- Voice Recording
- Transcoding
- Fixed-Mobile Convergence



FEATURES

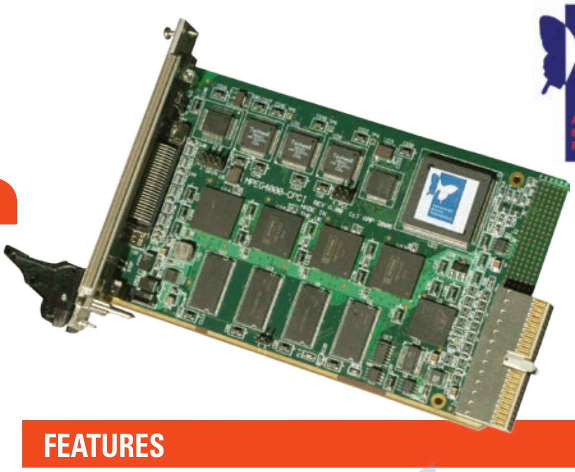
- Up to 248/480/2016 ports supporting voice, fax, and data
- SIP, MGCP, MEGACO (H.248) onboard protocols or AudioCodes VoPLIB API
- IVR voice playback and recording with advanced controls
- Real-time multiparty conferencing
- Transcoding
- T.38 real-time fax
- RTP/RTCP voice packet streaming (RFC 3550/3551)
- G.711, G.726, G.727, G.723.1, G.729 A/B/E, GSM FR/EFR, OKI ADPCM, NetCoder, G.728, EVRC, EVRC-B, AMR, AMR-WB (TP6310), QCELP, iLBC, G.722
- MVIP/SCBUS /H.100 TDM bus interfaces (IPM-260), H.110 TDM bus Interfaces(IPM-1610), H.110 bus interfaces (IPM-6310)

For more information, contact: bbl.info@audiocodes.com

RSC# 32858 @ www.compactpci-systems.com/rsc

Media processors

Advanced Micro Peripherals Ltd.
Unit 1, Harrier House, Sedgeway Business Park • Cambridge
CB6 2HY UK
+44 (0)1353 659500
www.ampltd.com



MPEG4000CPCI

MPEG4000CPCI is a 3U low power CompactPCI MPEG4 encoder board compressing up to four concurrent full-size real-time analog inputs from PAL/NTSC video and audio sources.

A Preview feature allows incoming video to be viewed on the host screen or on a separate PAL/NTSC monitor in parallel with the recording process.

The MPEG4000CPCI high-performance, low-power frame grabber and MPEG4 encoder is implemented on a 3U CompactPCI form factor. It can capture live video from cameras, DVDs, or other sources. Audio/video synchronization is provided on each channel. Text and graphics annotation can be superimposed on any channel using the high resolution text overlay function.

FEATURES

- Four concurrent full-size PAL/NTSC inputs at 25/30 fps each
- Live Video Preview to host screen and PAL/NTSC Output
- Resolution to 720 x 576 and frame rate to 120 fps
- Drivers for Windows XP/XPE/2000/NT/Linux/QNX plus sample C/C++ source code video recording apps provided
- Extended temperature -40 °C to +85 °C version available
- Remote surveillance, security, SS DVR, Internet video streaming, transport, video acquisition/analysis, etc.

For more information, contact: sales@ampltd.com

RSC# 32849 @ www.compactpci-systems.com/rsc

Military and aerospace

AMTELCO XDS
4800 Curtin Drive • McFarland, WI 53558
800-356-9224
www.xds.amtelco.com/h110.htm

XDS H.110 CompactPCI 512-Port Conference Board
XDS H.110 CompactPCI E&M Board
amtelco XDS Technology
xds.amtelco.com

AMTELCO XDS

To meet your specific application needs AMTELCO XDS offers a complete line of H.110 CompactPCI boards. The XDS H.110 CompactPCI boards utilize the proven XDS Infinity series processor and feature a H.110 compliant CT bus, a CompactPCI compliant host processor bus and an H.110 mechanical form factor.

AMTELCO XDS boards include a simple application interface to ensure you can get your applications to market even faster. AMTELCO software driver packages are distributed free of charge to XDS customers, with open source code for the driver and all supporting applications. For additional information, visit xds.amtelco.com today!

FEATURES

- AMTELCO XDS offers both 2-wire and 4-wire H.110 CompactPCI 16-port E&M boards
- The E&M board is ideal for interfacing to trunked radios, and specific E&M lines in a CO or PBX
- A NEW high performance DSP provides several other performance features, including voice processing
- AMTELCO XDS also offers high quality and high density 512-port H.110 CompactPCI Conference Boards
- For applications where identification is an issue, Voice Distortion is available on the Conference Boards
- Participants can be set up in conferences to “listen only” or “transmit only”

For more information, contact: xds@amtelco.com

RSC# 20478 @ www.compactpci-systems.com/rsc

General Dynamics Canada
3785 Richmond Road • Ottawa, ON K2H 5B7
613-596-7131
www.gdcanada.com/3UM

GENERAL DYNAMICS
Canada

PC3010 3U cPCI SBC

NEW PC3010 MIL-STD 3U Core 2 Duo CompactPCI SBC

General Dynamics Canada announces the PC3010. The first military 3U CompactPCI SBC based on Intel's Core 2 Duo architecture. It is a conduction cooled, MIL-STD-810F tested package supporting temperatures from -46 °C to +85 °C. The PC3010 is pin-compatible with our existing PC3000 Pentium M based single board computer to provide our existing customers an economical upgrade path.

General Dynamics Canada's products include 3U and 6U single board computers, computer chassis, displays, and displays with embedded computing, all designed and tested for extreme military conditions. These units are in service in Abrams Main Battle Tank, the USMC EFV, the Stryker MGS, What can we do for you? Call Robert at 613-596-7131 or Robert.Rohonczy@gdcanada.com

FEATURES

- Conduction Cooled, -46 °C to +85 °C operating; 3U CompactPCI single slot SBC Core 2 Duo 1.5 GHz+; up to 2 GB DDR2 ECC
- TPM, IPMI 2.0, onboard flashPorts: 2 SATA, 2 Gigabit Ethernet, 3 USB 2.0 ports, PMC, and VITA 42 (XMC) site
- Contact General Dynamics Canada for current specifications, feature availability, and pricing information
- Ask about our other products for military applications: 3U conduction-cooled single board power supplies
- Military computer units – Military displays with embedded computers – Military displays
- For product technical details on all of our 3U and 6U SBCs and Power Supplies, Navigate to: www.gdcanada.com/3UM

For more information, contact: robert.rohonczy@gdcanada.com

RSC# 32209 @ www.compactpci-systems.com/rsc

AMTELCO XDS
4800 Curtin Drive • McFarland, WI 53558
800-356-9224
www.xds.amtelco.com/h110.htm

amtelco
XDS Technology

AMTELCO XDS

To meet your specific application needs, AMTELCO XDS offers a complete line of H.110 CompactPCI boards. The XDS H.110 CompactPCI boards utilize the proven XDS Infinity series processor and feature a H.110 compliant CT bus, a CompactPCI compliant host processor bus, and an H.110 mechanical form factor. AMTELCO XDS boards include a simple application interface to ensure you bring your applications to market even faster.

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XDS H.110 CompactPCI 512-Port Conference Board
XDS H.110 CompactPCI E&M Board
amtelco XDS Technology
xds.amtelco.com

FEATURES

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- AMTELCO XDS also offers high quality and high density 512-port H.110 CompactPCI Conference Boards
- For applications where identification is an issue, Voice Distortion is available on the Conference Boards
- Conference participants can be set to "listen only" or to "transmit only"

For more information, contact: xds@amtelco.com

RSC# 20478 @ www.compactpci-systems.com/rsc

Tundra Semiconductor
603 March Road • Ottawa, ON K2K 2M5 Canada
613-592-0714
www.tundra.com

Tundra PCI Bridges

Tundra's PCI System Interconnect portfolio includes a wide range of high performance, industry standard, 32-bit PCI-to-PCI bridges. The product family includes:

The Tsi340™– A small form factor (17 mm x 23 mm) 128-pin PQFP package, synchronous, 66 MHz PCI bridge
The Tsi350™ – An asynchronous 66 MHz PCI bridge
The Tsi352™ – A synchronous 33 MHz PCI bridge

Backed by Tundra's world class service and support, these bridges provide a high-quality, competitively priced alternative to existing 32-bit PCI-to-PCI bridges. Designed as pin-for-pin and drop-in software compatible, the Tsi340/Tsi350/Tsi352 may be used on existing boards without software or hardware modification.

TUNDRA
Tsi350-66CQY
TUNDRA
Tsi340-66CQY

FEATURES

- Industry standard 32-bit PCI bridges
- Operate up to 66 MHz on primary and secondary buses (up to 33 MHz on the Tsi352)
- Asynchronous PCI operation on the Tsi350
- Support for up to nine bus masters on the Tsi350, up to four on the Tsi352 and Tsi340
- Compatibility with existing 32 bit PCI bridges to fit on existing board footprint using existing software
- RoHS compliant and standard package options available

For more information, contact: sales@tundra.com

RSC# 32831 @ www.compactpci-systems.com/rsc

Tundra Semiconductor
603 March Road • Ottawa, ON K2K 2M5 Canada
613-592-0714
www.tundra.com

Tundra Tsi109

The Tundra Tsi109™ is a high-performance host bridge for PowerPC® that offers DDR2 memory, integrated clock generation, and advanced I/O such as PCI-X and Gigabit Ethernet. With dual processor support and 200 MHz bus speeds, the Tsi109 is the ideal companion chip for both Freescale MPC74xx and IBM PPC750xx PowerPC processors. System performance is enhanced through the Tsi109's advanced switch fabric, and system cost is minimized via an array of integrated functionality.

The Tsi109 simplifies system design through flexible configuration options and provides effective power management through DDR2 memory support. Customers are offered the best system performance-per-watt as well as the best system performance-per-dollar by choosing the Tsi109.

TUNDRA
TMN668A.12
G64033.1.123
02NXG80506
Tsi109-200CLY

FEATURES

- 200 MHz 60x/MPX processor bus with dual CPU support and advanced pipeline architecture
- DDR2 Memory Controller: Up to 50 percent memory power savings compared to DDR
- Integrated Clock Generator with optional Spread Spectrum capability
- Designed for 200 MHz operation with only 8 PCB layers
- Low latency non-blocking internal switch fabric
- Pin compatible with Tsi108™

For more information, contact: sales@tundra.com

RSC# 31133 @ www.compactpci-systems.com/rsc

Voiceboard Corporation
473 Post Street • Camarillo, CA 93010
805-389-3100
www.Voiceboard.com

MAC1600

The Voiceboard MediaPro Access 2.16 CompactPCI card provides network access, call control signaling, and DSP processing over 16 T1/E1/J1 or dual T3/E3 network interfaces. MediaPro Access includes embedded software for implementing VoIP, wireless, and Trunking Media Gateway solutions, including SIGTRAN, SS7, or ISDN Signaling Gateways.

MediaPro Access supports dual 2.15 PTMC sites, dual GbE and H.110 interfaces. Carrier class implementations of VoIP, SIP, MEGACO, H.323, V.90 Modem, FAX, conferencing and a wide variety of VoIP, wireless, and military vocoders are available. Develop proprietary for MediaPro Access using the Voiceboard SDK.

MediaPro Access universally bridges between standard Class 5 switches, softswitches, 2/3G wireless infrastructure and IP networks.

FEATURES

- 480-2016 port channelized switched TDM or DS3 unchannelized data
- Turnkey VoIP Gateway, including MEGACO, SIP, or H.323 Media Controller function
- Turnkey Signaling Gateway supporting 64 links of ISUP/TUP/TCAP/MAP SS7, ISDN/Q.SIG and SIGTRAN
- PTMC DSP processor array with embedded VoIP, telecom, wireless, and military standard vocoders
- VoIP Gateway with echo canceller, lost packet recovery, RTP/RTCP, G.7xx vocoders, AGC, tone signaling, and more
- DSP Software libraries include VoIP, Modem, FAX, Conferencing, V.90, G.7xx vocoders, MELPe, DSP SDK

For more information, contact: Ltomon@voiceboard.com

RSC# 31955 @ www.compactpci-systems.com/rsc

Networking/Communication | CompactPCI and AdvancedTCA Systems | Resource Guide 2007

RapidIO® Trade Association
3925 Braker Lane, Suite 325 • Austin, TX 78759
512-305-0070 • 512-305-0009
www.RapidIO.org

www.rapidio.org

RapidIO® Standard

The RapidIO interconnect architecture is an ISO-certified open standard that seamlessly enables the chip-to-chip, board-to-board, control, backplane, and dataplane interconnections needed in high-performance systems. This established, scalable, packet-switched fabric addresses the needs of equipment designers in the wireless infrastructure, edge networking, storage, military, and industrial markets. Developers will find that the RapidIO ecosystem offers a critical mass of products on the market today – including a wide assortment of endpoints, which can minimize the amount of bridging required in a design. Detailed information about the RapidIO ecosystem products, design tools, and member companies is featured in the Company Showcase at www.RapidIO.org.

FEATURES

- The RapidIO standard is defined in three layers – Logical, Transport, and Physical:
  - Logical – Defines the protocol and packet formats necessary for endpoints to initiate/complete a transaction
  - Transport – Provides the necessary route information for a packet to move from endpoint to endpoint
  - Physical – Describes device level interface specifics: packet transport mechanisms, flow control, and so on
- RapidIO Trade Association Steering Committee members: AMCC, EMC2, Ericsson, Freescale Semiconductor, Lucent Technologies, Mercury Computer Systems, PMC-Sierra, Texas Instruments, Tundra, and Wind River

For more information, contact: Tom.Cox@RapidIO.org

RSC# 30779 @ www.compactpci-systems.com/rsc

Dynatem, Inc.
23263 Madero, Suite C • Mission Viejo, CA 92691
800-543-3830
www.dynatem.com

C3PM

The C3PM is a 3U CompactPCI compatible platform based on the Intel® low power Pentium® M processor. The Pentium M's low power consumption ideally equips the C3PM for rugged applications. The C3PM is built with no socketed components and an optional full-board heat sink and wedgelocks for operation in high shock/vibration conditions and extreme temperatures.

The 855GME and 6300ESB chipset supports PCI-X expansion to a dual-port 1000BASE-TX Ethernet controller, integrated VGA, two USB 2.0 ports, ATA/100, Serial ATA, and two configurable RS-232/422 COM ports. Onboard CompactFlash permits single-slot booting. Conventional PC I/O is accessible with industry standard connectors on an optional rear I/O module.

All I/O is routed through the J2 backplane connector.

FEATURES

- CompactPCI compatible 3U form factor
- Intel® Pentium® M Processor. Available with the Ultra Low Voltage 1.0 GHz @ 5.5 W , Low Voltage at 1.4 GHz @ 10 W or 1.8 GHz versions
- 512 MByte of DDR-266 DRAM with a memory bandwidth of 2.1 GBps
- Single-slot CompactPCI operation with an onboard CompactFlash disk for bootable mass storage
- CPM1 standard operating temperature range of -40 °C/+71 °C, -40 °C/+85 °C versions are also available
- PICMG 2.0 R3.0 compliant
- An Intel 82546 Ethernet controller supports two 10/100/1000BaseTX Ethernet ports routed to the J2 connector
- 855GME provides an integrated 32-bit 3D core at 133 MHz SVGA is routed to the J2 connector
- Primary IDE port is routed to a separate Type II compatible CompactFlash module that attaches to the cooling plate
- General Software's flash-based system BIOS with a variety of boot options including CD-ROM, USB, and PXE over Ethernet
- COM1/3, Serial ATA, two USB 2.0 ports, two 1000BASE-TX Ethernet ports, and VGA are routed through J2
- Also available in rugged, conduction-cooled versions

For more information, contact: sales@dynatem.com

RSC# 31941 @ www.compactpci-systems.com/rsc

Emerson Network Power
8310 Excelsior Drive • Madison, WI 53717
608-831-5500
www.artesyncp.com

PmPPC7448

Emerson's PmPPC7448 processor board is a complete processor subsystem in a very compact, industry standard form factor. It is designed to allow communication equipment manufacturers to add modular and upgradeable functionality to their I/O baseboards. It also provides the localized horsepower necessary for applications such as protocol processing, packet processing, data filtering, or I/O management.

Using an off-the-shelf processor subsystem saves you time-to-market by allowing you to focus your engineering efforts on the key value-add portions of the system without spending time and effort on the processor design and testing.

FEATURES

- Up to 1.4 GHz PowerPC® MPC7448 processor
- Up to 2 GB SDRAM in SODIMM packaging
- Marvell Discovery III system controller
- Dual 10/100/1000 Ethernet with P14 access
- 10/100 Ethernet on front bezel
- I2C and 4 GPIO ports with P14 access

For more information, contact: info@artesyncp.com

RSC# 22643 @ www.compactpci-systems.com/rsc

Innovative Integration
2390-A Ward Avenue • Simi Valley, CA 91362
805-578-4260
www.innovative-dsp.com

Duet 3U 64 bit

Duet is a dual-DSP coprocessor board that features a 4M or 5M Virtex-II Pro user reconfigurable FPGA, plus a PMC/XMC module site with JN4 and Rocket I/O connectivity to the baseboard Virtex FPGA. Unusually dense and small, Duet is packaged as a 3U CompactPCI board with an advanced architecture that provides superb inter-processor connectivity and direct hardware access to high-performance PMC-based external analog and communications modules, to deliver blazing performance and extreme flexibility for advanced signal capture and real-time processing applications.

Duet is an ideal platform for integrating high performance DSP and I/O into advanced signal processing, data acquisition, and real-time applications such as telecom, RADAR, SONAR, and wireless communications.

FEATURES

- 1 GHz TMS320C6416 DSP (x2), 64 MB SDRAM per processor
- Flexible internal/external communication mesh
  - 64-bit/66 MHz CompactPCI
- PMC/XMC site with Jn4 to FPGAand 4 Rocket I/O per VITA 42 external data port, up to 12 Gbps
- 4M or 5M Virtex-II Pro FPGA
  - Up to two 2 MB private DDR SBSRAM
- Up to two 128 MB private DDR SDRAM, dedicated 800 MBps links between DSPs, 3U CompactPCI with PXI support
- Applications: High-end co-processing, wireless, broadband communications, RADAR, video, biometrics, etc.

For more information, contact: 805-578-4225

RSC# 32856 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

CompactPCI Boards

Motorola offers an array of open standards-based, state-of-the-art CompactPCI® boards featuring Intel® and PowerPC® processors. Designed for telecommunications, data communications, real-time imaging, and industrial control, as well as other OEM applications, all Motorola single board computers are designed for maximum reliability, scalability, and serviceability. Motorola provides support for Linux, VxWorks, and other real-time operating systems to maximize productivity and reduce time to market for system architects and developers.

Intel Architecture Processor Boards

The Motorola CPCI-714x family of single board computers provides a range of performance and features for demanding control plane and packet switching applications. Breakthrough performance is delivered using the latest Intel® Pentium® M processors matched with significant memory and I/O capabilities. Standard board features include dual Gigabit Ethernet interfaces, 64-bit universal system- or peripheral-slot functionality, and a variety of rear transition modules for platforms based on CompactPCI and CompactPCI Packet Switching Backplane specifications.

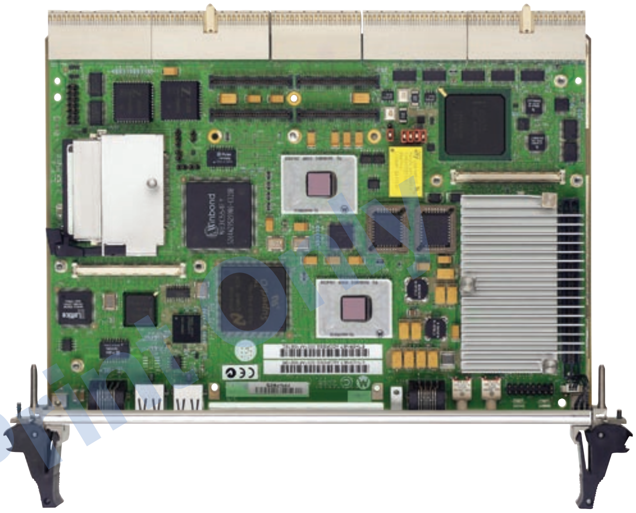
PowerPC Processor Boards

The Motorola PowerCore CPCI-6115 high-performance PowerPC processor board is designed for applications that require high bandwidth, fast memory access, and excellent networking capabilities. Board features include three Gigabit Ethernet (or Fast Ethernet) interfaces, dual high-performance PMC slots, watchdog timers, and universal system- or peripheral-slot functionality.

The CPCI-6190 universal-mode processor board helps to bring maximum real-time computing performance in a single slot to both system controller and intelligent peripheral modes.

The CPCI-6106 universal processor board provides developers with broad expansion capabilities and a wide range of interfaces.

The CPCI-6020 host processor board with Motorola's PowerPlus III Architecture helps push performance and functionality to unprecedented levels.



FEATURES

- Intel architecture and PowerPC processor blades optimized for performance, power, and features
- Universal mode system- or peripheral-slot functionality
- IPMI system management support (PICMG 2.9)
- CompactPCI Packet Switching Backplane compliant (PICMG 2.16) on CPCI-714x, CPCI-6115, CPCI-6106, and CPCI-6190 option
- Hot swap support (PICMG 2.1) on CPCI-714x, CPCI-6020, CPCI-6106, CPCI-6190
- Application flexibility with Linux, VxWorks, and other real-time operating systems
- Control plane and data plane solutions for next-generation platforms and network devices

For more information, contact: inquiry@mcg.mot.com

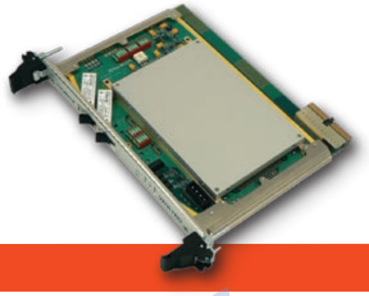
RSC# 20496 @ www.compactpci-systems.com/rsc

VMETRO, Inc.
1880 S. Dairy Ashford, Suite 400 • Houston, TX 77077
281-584-0728
www.vmetro.com

VMDRIVE 6U Storage

Designed to meet demanding military/aerospace and telecommunications applications, the VMDRIVE deploys 40 or 80 GB solid state storage in rugged conduction-cooled or commercial air-cooled environments.

The single slot 6U VME or CompactPCI VMDRIVE incorporates dual channel 2 Gbps Fibre Channel interfaces to store data up to 70 MB per second. The dual Fibre Channel ports allow the VMDRIVE to connect to Fibre Channel Storage Area Networks (FC SAN) for use in data recording applications.



FEATURES

- 40 or 80 GB 6U rugged storage for rugged environments
- Dual 2 Gbps Fibre Channel interfaces
- 70 MBps bandwidth or use Storage Area Networks for higher performance

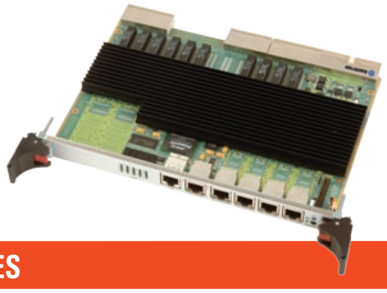
For more information, contact: info@vmetro.com

RSC# 32694 @ www.compactpci-systems.com/rsc

Kontron
14118 Stowe Drive • Poway, CA 92064-7147
888-294-4558
www.kontron.com

Kontron CP6923

The new Kontron CP6923 is a 6U hot-swappable CompactPCI switch with 24 ports and two high performance uplinks (10 GbE). The Kontron CP6923 provides built-in switching capacity for CompactPCI installations at an unsurpassed price/performance ratio by implementing the latest switching technology. It applies to VoIP installations such as Call Servers, Media Gateways, and Trunking Gateways in wireline and wireless networks, as well as VoIP systems in enterprise networks with high demands on performance.



FEATURES

- Leading-edge technology based on BCM5650X chip
- 24x Gigabit Ethernet ports
- Non-blocking Layer 2 and 3 switching and routing
- Copper, optical, rear I/O version
- Hot swap, IPMI
- Fully managed and comprehensive firmware package

For more information, contact: info@us.kontron.com

RSC# 32256 @ www.compactpci-systems.com/rsc

Motorola, Inc.
2900 S. Diablo Way • Tempe, AZ 85282
800-759-1107 or 602-438-5720
www.motorola.com/computing

Centellis CO 21KX

The Motorola Centellis™ CO 21KX is a carrier-grade PICMG® 2.16 CompactPCI® packet switching backplane platform in a CompactPCI chassis. Combining redundant hot-swappable Ethernet switches, hot-swappable system components, and a fault-resilient architecture, the Centellis CO 21KX delivers 5NINES availability for critical telecom and networking applications.

With an architecture designed for 5NINES availability, the Centellis CO 21KX embedded PICMG 2.16 platform minimizes both planned and unplanned downtime and provides continuous service during fault recovery. The Centellis CO 21KX provides this level of protection through a combination of redundancy at the component level to avoid single points of failure; repair and upgrade of the running system without impacting the system service; remote access for monitoring, control, and upgrade; and clear guidance throughout component replacement procedures.

The result is a high availability server ideally suited for data-intensive central office and networking applications, including media gateway controllers, VoIP concentrators, multimedia servers, signaling gateways, cable head-end, IP/DSLAM, IP PBX, and next-generation wireless Base Station Controller (BSC) systems. The Centellis CO 21KX chassis is ready for applications that must withstand earthquakes, office vibration, fire containment, electromagnetic interference, power faults, airborne contaminants, and other environmental extremes.

In addition to failover and fault resilience, the Centellis CO 21KX series supports high availability through redundancy and hot swappability of key system components. Power supplies and cooling fan trays are all redundant and hot-swappable to minimize downtime and Mean Time To Repair (MTTR). CompactPCI boards are also hot-swappable, so they can be added, removed, or replaced without bringing down the system. And if heat is a concern for system reliability, the chassis provides 40 W per slot front cooling and 5 W per slot back cooling to support active components on rear transition modules.

FEATURES

- 12U/19" CompactPCI framework to deliver 5NINES availability
- Fault-resilient design minimizes hardware induced failures
- CompactPCI hot swap capability minimizes mean-time-to-repair
- PICMG 2.16-compliant packet switching backplane
- Ethernet switches and shelf controllers on same board, redundant and hot-swappable

For more information, contact: inquiry@mcg.mot.com

RSC# 21616 @ www.compactpci-systems.com/rsc

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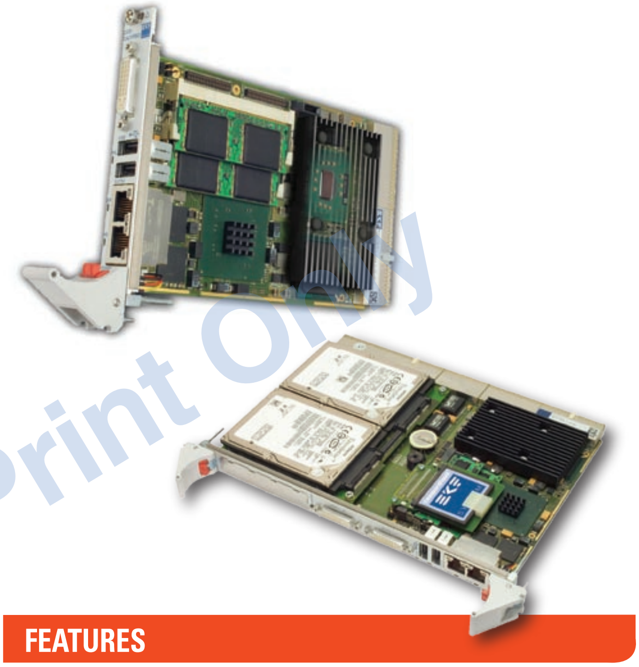
55 East Main Street • Johnstown, NY 12095
518-762-1288
www.vrosemicrosystems.com

EKF Elektronik GmbH
Philipp-Reis Str 4 • Hamm Germany 59065
(011) 49 23816890
www.ekf.de

VRM-CD3-X/ VRM-CCD-X

VRM-CD3-X is an Advanced 6U/4HP CompactPCI CPU with a Dual Screen scalable from 1 GHz ULV Celeron® M up to 2.0 GHz Pentium® M. The CPU is alternatively equipped with Intel LV Pentium® and Celeron® M processors up to 2 GB RAM. It's a versatile 4HP/6U CompactPCI CPU board, designed for systems that require high performance and low power consumption. Chipset is based on PCI Express technology and has a powerful integrated graphics accelerator, 2 independent DVI video connectors (for attachment of 1 or 2 displays), 3 independent Gigabit Ethernet controller (PICMG 2.16 support), and 8 USB 2.0 ports for high-speed communication. An onboard socket accommodates either a CompactFlash card or a 1.8" hard disk module. As an option, a 2.5" hard disk add on module can occupy the PMC slot. A proprietary local expansion interface connector may be used to directly attach a mezzanine companion I/O board incorporating audio and legacy support. A rear I/O transition module is also available. Four Serial ATA channels are routed across J3-J5 CompactPCI connectors, besides two Gigabit Ethernet ports, four USB channels, and a variety of other useful signals.

The **VRM-CCD-X 3U/4HP**, Advanced CompactPCI CPU board is scalable from the ULV Celeron® M processor up to the 2.0 GHz Pentium®M, and provided with 2 GB dual channel capable DDR2 RAM, the VRM-CCD-X is a versatile 4HP/3U CompactPCI® CPU board, designed especially for systems that require high performance at low power consumption. The chipset is based on PCI Express technology and has a powerful dual-screen integrated graphics accelerator. The VRM-CCD-X is equipped with two independent PCIe Gigabit Ethernet controllers for high speed communication. Seven USB 2.0 ports are provided for attachment of peripheral devices. In addition, an onboard CF socket accommodates either a CompactFlash memory card or Microdrive®. As an alternate, a 1.8" hard disk module is available as onboard mass-storage device (option). A local expansion interface connector may be used to directly attach a mezzanine companion board for audio and legacy support, which can carry in addition a 2.5" IDE hard disk drive. As an option, a rear I/O transition module is available to the VRM-CCD-X, which provides the Serial ATA connectors (2 x SATA, 2 x eSATA).



FEATURES

- VRM-CD3-X and VRM-CCD-X
- Chipset: Intel® i915 (Sonoma) chipset; Memory: Dual 200-pin SODIMM socket, DDR2 533 SDRAM, 2 x 1 GB max., symmetric dual channel capable
- Proprietary Expansion Interface: Onboard LPC/USB/AC97 Super I/O, USB, and audio interface connector, suitable mezzanine companion boards
- SATA: Quad channel Serial ATA interface
- CompactPCI: ICH6 integrated 32-bit PCI bridge, 133 MBps CompactPCI master
- Dual screen capable
- BIOS: Phoenix BIOS
- Drivers: Intel Graphics and networking
- Typical operating temperature: 0 °C to +60 °C; Storage temperature: -40 °C to +85 °C, max gradient 5 °C/min; Humidity: 5% to 95% noncondensing
- Altitude: -300 m to +3,000 M
- Shock: 15 g 0.33 ms, 6 g 6 ms; Vibration: 1 g 5-2000 Hz
- EC Regulations: EN55022, EN55024, EN60950-1 (UL60950-1/EC60950-1), 2002/95/EC (RoHS)

For more information, contact: sales@vrosemicrosystems.com or sales@ekf.de

RSC# 32719 @ www.compactpci-systems.com/rsc

KineticSystems

900 North State Street • Lockport, IL 60441
815-838-0005
www.kscorp.com

PXI Product-P635

KineticSystems' P635 is a single-width, 3U, PXI bus module with 8 frequency measurement channels. This counter module can be used to monitor a variety of pulse sources. Moreover, its unique circuitry allows the monitoring of a wide range of frequencies without changing any module settings.

TTL inputs are provided as well as differential input circuits, with a programmable high-frequency noise filter and hysteresis to provide high noise immunity. The analog path also includes programmable gain control. The gain control sets the input switching threshold, while the filter provides a 3 dB rolloff at 50 kHz. AC or DC coupling of the differential inputs is programmable on a per-channel basis.

FEATURES

- Eight frequency counter channels
- Frequency range from 0.06 Hz to 100 kHz
- Differential and TTL inputs provided
- Differential input range 20 mV to 20 V
- Programmable AC/DC differential inputs
- Programmable observation window: 1 ms to 1.025 sec

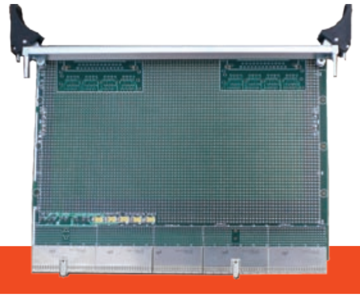
For more information, contact: mkt-info@kscorp.com

RSC# 24986 @ www.compactpci-systems.com/rsc

AZ-Com

3343 Vincent Road Suite D • Pleasant Hill, CA 94523
877-692-9266
www.az-com.com

Prototyping Boards



The CompactPCI prototyping boards are designed to aid development of CompactPCI bus products. They provide the ability to monitor and measure power consumption in each voltage line and to connect external power. All CompactPCI signals are available at the secondary connector pattern above the bottom connectors. This connector pattern can be populated with backplane connectors. In addition to 0.1" grid pattern boards have DB25 and multiple RJ-45 hole patterns as well as 2.0 mm holes patterns. Mounting holes for conduction cooled applications using card locks are present. For other related products or optional and custom configurations visit www.az-com.com

FEATURES

- PICMG 2.0. R3.0 compliant
- 3U and 6U versions available
- External power connection
- Secondary connector pattern
- 0.1" and 2 mm hole areas
- DB25 and RJ-45 hole patterns

For more information, contact: sales@az-com.com

RSC# 32889 @ www.compactpci-systems.com/rsc

Acqiris
P.O. Box 2203 • Monroe, NY 10950
845-782-6544
www.acqiris.com

10-bit Digitizers

The DC152 and DC122 10-bit Digitizers achieve an unequalled 4 GSps sampling rate. The DC122 offers a choice of front-end input mezzanines, providing 3 GHz input bandwidth or switchable high impedance input coupling with up 50 V full scale sensitivity.

The two models combine ultra fast sampling rates with standard acquisition memories of 256 kpoints (DC152) or 512 kpoints (DC122), and optional memories of 256 Mpoints and 512 Mpoints respectively.

These digitizers are fully compliant with both PXI and CompactPCI standards, and incorporate Acqiris' proprietary XLFidelity and JetSpeed II ADC chipsets, designed for optimizing high-speed ADC performance.

The XLFidelity ADC front-end chipset integrates the signal conditioning, amplification, and interleaving functions essential to high-speed data acquisition, allowing the accurate interleaving of two very high-speed ADCs.

JetSpeed II represents the next generation in Acqiris' dedicated ADC chipsets. It is designed to enhance high-speed ADC performance through the distribution of accurate synchronization and time base signals along with memory acquisition and control functions to increase the data throughput from the acquisition to internal memory.

The trigger mezzanine includes the XLFidelity FEA102 front-end amplifier chip. The trigger processing circuit embedded in the package includes dual comparators for window triggering mode, on chip DACs for threshold adjustment, additional filters for LF and HF reject trigger coupling, and a prescaler to allow a HF-divide-by-four mode.

The trigger mezzanine provides access to the circuit via a standard 50 ohm terminated BNC connector and to Acqiris' unique control I/O. These four front-panel MMCX connectors provide access for an external clock or 10 MHz reference signal, a trigger output, and two additional I/O digital control lines (I/O A and B) for monitoring or modifying the digitizer's status and configuration, or to extract a 10 MHz clock signal.

acqiris
DC122
DC152
D10
PXI

FEATURES

- Four times higher vertical resolution than oscilloscopes
- Single- or dual-channel 10-bit data acquisition with up to 4 GSps sampling rate
- Choice of single channel front-end mezzanines with up to 3 GHz bandwidth
- Dual-channel 2 GHz mezzanine for cross-channel timing measurements such as jitter, phase, and propagation delay
- 3U single-slot digitizers for use in any PXI or CompactPCI chassis
- Ideal for telecom, digital radio, ATE, lidar, radar, semiconductors, ultrasonic, and physics applications
- Long acquisition memory for maintaining fast sampling rates
- Multipurpose I/O connectors for trigger, clock, reference, and control signals
- Exceptionally low power consumption
- Flexible multi-mode trigger processor
- Optional frequency counter firmware for real-time frequency measurement
- Device drivers for Windows, VxWorks, and Linux
- Application software compatible with industry standard signal processing packages

For more information, contact: klaas.vogel@acqiris.com

RSC# 32881 @ www.compactpci-systems.com/rsc

AudioCodes
27 World's Fair Drive • Somerset, NJ 08873
732-469-0880
www.audiocodes.com

TrunkPack® (TP) VoIP Communication

TP-260 8 E1/T1 VoIP Communication Blade

TP-1610 16 E1/T1 CompactPCI VoIP Communication Blade

TP-6310 3xT3 or OC-3 CompactPCI VoIP Communication Blade

The TrunkPack (TP) VoIP Communication Blades are complete standalone Voice over IP Media gateways offered on a PCI or CompactPCI blade form-factor, enabling a range of application and packaging options. These blades enable development of scalable solutions ranging from 1 to 16 E1/T1, T3, up to OC-3 PSTN interfaces, supporting onboard industry standard network control protocols such as SIP, MGCP, and MEGACO as well as AudioCodes' VoPLIB API.

Deliver Feature-Rich Solutions

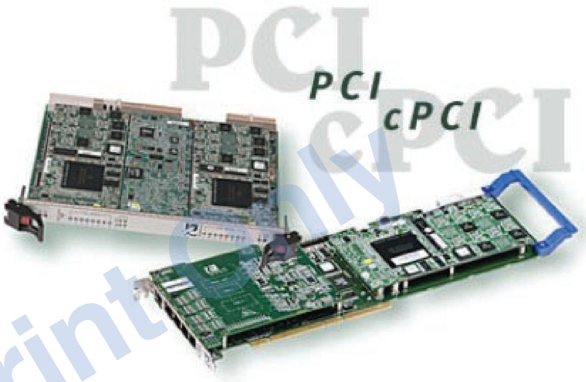
The TrunkPack series support a broad selection of voice processing related algorithms, including G.711, G.723.1, G.729AB, EVRC, AMR, QCELP and GSM Vocoders, G.168-compliant echo cancellation, and T.38 Real-time Fax over IP, as well as a suite of call progress and answering detection algorithms. Software programmable E1/T1/J1 PSTN interfaces and a wide range of supported telephony protocols including ISDN PRI, SIGTRAN (xUA), and CAS protocols enable interfaces to a wide variety of PBX and central office PSTN circuits.

Interoperability

TrunkPack communication blades offer precertification with a broad selection of IP-PBX, softswitch, contact center, messaging and other software applications, reducing the risk and complexity of integration into customer applications.

Applications

- IP-PBX and Hosted Softswitches
- IP Enabled Contact Centers
- IP Services Platforms
- VoIP Access Gateways
- Trunking Gateways
- Voice and Fax Messaging



FEATURES

- Up to 240/480/2016 ports
- SIP, MGCP, MEGACO (H.248) onboard protocols or AudioCodes VoPLIB API
- PSTN signaling: CAS, ISDN PRI, and SS7
- RTP/RTCP Voice Packet streaming (RFC 3550/3551)
- T.38 real-time fax
- Onboard announcements
- Embedded web and SNMP management
- G.711, G.726, G.727, G.723.1, G.729 A/B/E, GSM FR/EFR, OKI ADPCM, NetCoder, G.728, EVRC, EVRC-B, AMR, AMR-WB (TP6310), QCELP, iLBC, G.722
- MVIP/SCBUS /H.100 TDM Bus interfaces(TP-260), H.110 TDM bus interfaces (TP-1610), H.110 bus interfaces (TP-6310)

For more information, contact: bbl.info@audiocodes.com

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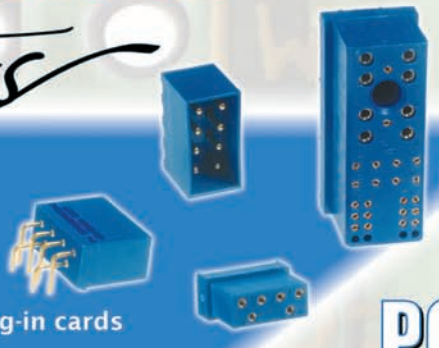
www.compactpci-systems.com/rsc

PICMG Power Connectors



Authentic Positronic
Zone 1 Power Connectors
AdvancedTCA®

VP Series

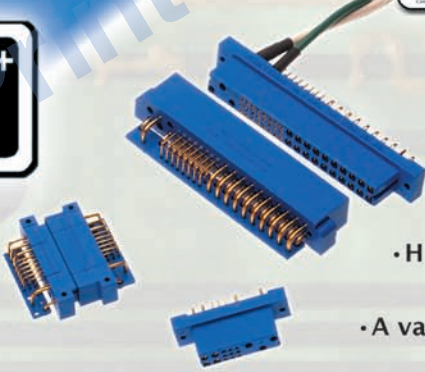
- Dedicated power inteface connectors for plug-in cards
- VPB is compliant to ATCA Zone 1 requirements, including "Sizzle Fault" testing
- Visit http://www.connectpositronic.com/Power/vp/vpb/ for Zone 1 compatibility information
- A variety of contact variants and package sizes

µTCA™ Redundant Input Power Connectors

- Compliant to MTCA.0 R1.0 for 48 volt and 24 volt systems
- PCB mount for use with power modules
- Crimp contacts and backshell options for power cables

PCI Series

Authentic Positronic
PICMG 2.11 Power Connectors
CompactPCI®



- P47 variant is compliant to CompactPCI® requirements
- Five package sizes available
- High current through a small package
- A variety of termination styles are available

Widest Variety of Power Distribution Interconnects

Power Connection Systems

Industry standard 3 to 30 contacts. Featuring: integral locking system, safety shrouded and screw termination options. Contact resistance as low as 0.0007 ohms.

Dragonfly High Density Power/Signal Connector

High density connectors for applications requiring power and/or signal contacts. Available with 4 through 16 contacts with crimp and PCB terminiations, integral locking system, and a variety of accessories.

Goldfish Power Connector

Miniature power interface connectors for applications which require excellent blind mating. AC/DC input, hardware management and DC output connections. Multiple package sizes and contact variants to choose from.

RSC# 147 @ www.compactpci-systems.com/rsc

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- Standard modules for extended environment and data critical applications:
  - Up to 2GByte SDRAM PC133 and PC100 modules
  - Up to 4GByte PC1600 and PC3200 DDR SDRAM modules
  - Up to 4GByte PC2-3200 and PC2-5300 DDR2 SDRAM modules
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  - High-density FLASH and SRAM modules
  - Industrial Grade CompactFlash® Cards from 128MByte to 8GByte
  - PCMCIA cards
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