Compact PCI Roundup

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ACULAB

The Aculab (Panama City, FL -- 850-763-9281, www.aculab.com) product line covers digital T1/E1/SS7 network access cPCI boards as well as Prosody DSP platforms for high-density speech processing. A single Aculab Prosody card, occupying a single slot, can deliver 256 channels of DSP voice processing and supports up to 120 E1/T1 links (such as to an Aculab E1/T1 board), in a "hot-swap" environment.

A single Aculab T1/E1 card can handle up to 247 speech channels (about eight E1 trunks). It combines both E1 and T1 interfaces and any mix of ISDN or CAS protocols. This is because the card, based on Aculab's "one processor per interface" architecture, allows any protocol to be used independently on each network interface. Onboard DSPs are used to handle signaling in tone-based networks, while in non-tone-based signaling applications, these DSPs can perform some functions appropriate to a line card. Each function is written in a free downloadable algorithm that runs on a per-DSP basis.

Aculab's offers a generic, cross-platform API that allows developers to quickly integrate Prosody cPCI technology into their applications involving fax, connected word speech recognition, text-t-speech, record and playback with a range of compressions, matrix conferencing, echo cancellation, DTMF tone detection, and data transmission protocols.

A mix of E1/T1 and Prosody cPCI cards can be combined for applications demanding DSP resources (such as record, playback, and echo cancellation) to deliver sophisticated convergence solutions.

ADVANTECH

The CT and Network Computing Division of Advantech Technologies Inc. (Carlsbad, CA -- 760-91-9288, www.advantech.com) recently brought forth the CompactPCI single board computer, the MIC-3377/M. It's a 6U-high, one-slot-wide package that accepts an 850 MHz Pentium III (256 KB L2 cache) or 733 MHz Celeron (128 KB L2 cache). The MIC-3377/M uses an Intel 440BX chipset that delivers a Front Side Bus (FSB) bandwidth of 100 MHz.

Two 144-pin SO-DIMM sockets support up to 512 MB SDRAM with Error Correction (ECC). Also, dual Intel 82559 Fast Ethernet controllers provide redundant Ethernet ports and team functions.
such as Adapter Fault Tolerance, Adaptive Load Balancing, and Fast EtherChannel.

All of the MIC-3377/M's I/O connectors are on the front panel, including two serial ports, one USB ports, and one PS/2 keyboard/mouse connector. The built-in high-speed PCI IDE controller provides two separate IDE channels with Ultra DMA/33 mode. The user-defined J3 connector supports up to four IDE devices and two floppy disk drives devices. Interestingly, a fan-less heat sink cools the board, so adequate ventilation is attained with external cooling air from the chassis fans, making the board quite slim.

Two versions of this CPU board are available: MIC-3377/M and MIC-3377D/M. The MIC-3377/M has a single PCI-to-PCI bridge that can handle up to eight-slot enclosures (MIC-3032/MIC-3021/M-C-3033) and drives up to seven cPCI slots, while the MIC-3377D/M with optional dual PCI-to-PCI bridges is applicable up to a 14-slot enclosure (MIC-3031) and drives up to 14 CompactPCI slots. Optional rear transitionboards (the MIC-3301 and MIC-3302) can connect all the inputs and outputs on the rear panel. It is recommended to select the MIC-3302 or MIC-3302F for the MIC-3377/M's rear connection, and the MIC-3301 for the MIC-3377D/M's.

Pricing starts at $1,800. OEM and volume discounts are available.

One of Advantech's most powerful new CPU boards is the PCA-6277. It can house dual 1GHz Pentium IIIs (based on the VIA Technologies Pro 133A chipset) along with up to up to 2 GB of high-speed PC-100/PC-133 SDRAM. Video is supplied by the ATI Rage 128 Pro 4XL VGA controller. An onboard IDE interface can connect to the new generation of ATA-66/100 hard disk drives, though most high-end applications will probably use the board's Adaptec's AIC-7892 Ultra 160 controller (and SCSI daughterboard) which supports Ultra 160 (160 MBps data transfer), Ultra 2 (80 MBps), and Ultra Wide (40 MBps) SCSI devices. There are also two Ethernet controllers/RJ-45 ports, as well as four USB ports, two PS/2 ports, hardware monitoring.

Because of the dual LAN connections, if one LAN unexpectedly fails, the PCA-6277 can still use the other one without interruption.

The PCA-6277 is priced as low as $615 with OEM volume discounts.

GERE SYSTEMS

With so much attention on large-scale hardware, it's easy to forget that special chips are a key component of much of CompactPCI signaling. For example, the Ambassador series of devices from Agere Systems (Allentown, PA -- 800-372-2447, www.agere.com) are time slot interchangers (TSIs) and backplane interconnect devices designed into many cPCI-based systems. These chips are used for transporting data and clocking information over the 32-data line ECTF H.100 (PCI) and H.110 (cPCI) telephony backplanes to resource boards on the bus.

Agere's T8110 device is the first in the T8000 series to have a PCI interface for programming the device registers and memories. When in PCI-mode, the optional microprocessor interface can be used as a PCI minibridge to program non-PCI devices. Designers can program the Ambassador
T8110 from a host processor through the PCI interface and also send control information to other devices such as DSPs or Framer ICs on the resource board. The T8110 can also partition its internal data memory to create up to 512 queues, called virtual channels, which can send data onto the local PCI bus. The T8110 masters the bus during these data transfers.

Perhaps the most interesting new Agere chip is the T8150, which serves as a bridge device into the new StarFabric switching protocol. It also can be designed into cPCI systems where it will work under the proposed PICMG 2.17 specification to incorporate the StarFabric protocol into these cPCI chassis via the J3 connector.

ALLIANCE SYSTEMS

After carefully evaluating the market, Alliance Systems (Plano, TX -- 800-977-1010, www.alliancesystems.com) now offers a CompactPCI solution for mission-critical telco applications called the C-Series.

Conceived as a compliment to Alliance's workhorse I-Series communication platforms, the NEBS-compliant C-Series is for customers who want a space-saving, high-density system with the highest availability.

The three C-Series models are the C-4000, C-10000 and C-15000, all with built-in redundancy. The C-4000 and C-10000 are designed to meet four nines (99.995%) of high availability (HA) while the C-10000 achieves five-nines (99.999%) of HA.

The seven slots of the C-4000 are mounted horizontally, which is why the unit is only 4U (7 inches) high. Standard fixtures include a 6U 800MHz Pentium III CPU board loaded with up to 1GB of ECC SDRAM, dual onboard 10/100BASE-T Ethernet controllers, and embedded video. Three front-accessible 200W hot-swappable power supplies provide N+1 redundancy.

Storage normally consists of an integrated EIDE hard drive, CDROM (on media blade), a 1.44 MB floppy drive and optional CompactFlash type II support.

The C-4000's interfaces include two 16C550 PC-compatible serial ports, two USB ports and a single PS/2 port with mouse and keyboard support via a y-cable.

The C-10000 has built-in redundancy for active system components including system slot CPU boards, power supplies, cooling, and system alarms. Alliance has also reduced MTTR (Mean Time To Replace) for system components by optimizing the cPCI front-loading, hot-swap standard to simplify replacement and minimize service time.

Built to meet NEBS Level 3 requirements, the C-15000 is ideal for applications requiring high system availability including service nodes, intelligent peripherals, central office server platforms, data acquisition, computer-based instrumentation, industrial automation/process control, automated test, imaging/machine vision, medical systems, networking or any critical computing server platform.
designed for the central office.

The 10U-high C-10000 has an eight-slot cPCI backplane. One slot (slot 8) is dedicated to the system CPU, while slots 1 through 7 are available for 32- or 64-bit CompactPCI peripheral cards and allow for rear-panel I/O. Or, you could have up to eight processor cards running at once.

The system supports 850MHz Pentium III CPU boards (Intel GX chipset with 100MHz Front Side Bus) with up to 1GB of ECC SDRAM (2 GB is possible). Dual onboard 10/100 BASE-T Ethernet controllers, and a PCI video controller are also onboard.

There are two 5.25-inch and two 3.5-inch front-accessible drive bays and the drive controllers can be EIDE or for optional CompactFlash type II. You can order the unit with either a 425W AC switchable 110V/220V or two 150W auto-switching, 110V/220V AC hot-swappable power supplies (DC is optional).

Both the C-4000 and the C-10000 have SMBus support on the backplane for system monitoring, control, and alarming functions. LEDs are provided on the front panel to indicate three alarming levels (Critical, Major, Minor), power-on and IDE activity. Also, two user-programmable LEDs are provided. Onboard temperature and power supply voltage monitoring is also included.

Key features of the 10U-high C-15000 include dual redundant, hot-swappable 500 MHz (850 MHz optional) Pentium III processor CPU boards that house 256 MB of ECC SDRAM.

Integrated into the Alliance CPU subsystems is a Redundant Alarm Subsystem that monitors the power supplies' Degrade (DEG) and Fail (FAL) signals, processor temperature, and onboard operating voltages. Critical, Major, and Minor LED indicators and an Alarm Cut Off (ACO) switch are provided on the front panel of each CPU. The alarms can verify proper system operation from the application layer and below and can generate an automated fault simulation mode, useful in testing hardware and software operation apart from application software. The development utility can display all management data in a graphical format.

The C-15000 has 14 cPCI slots: Four slots (physical slots 7 through 10) are dedicated to CPU subsystems. Twelve slots (1 through 6 and 11 through 16) can support 32- or 64-bit CompactPCI peripheral cards (rear panel I/O is supported). Additional I/O expansion can be done using up to two Peripheral Mezzanine Card (PMC) sites.

Four AC or DC input 150W hot-swappable power supplies provide N+1 redundancy.

All C-Series models have two 16C550 PC-compatible serial ports, two USB ports and a single PS/2 port with mouse and keyboard support via a y-cable. All models support Windows NT Server, Windows 2000, and Linux.

APW ELECTRONIC SOLUTIONS
APW Electronic Solutions (Waukesha, WI -- 262-523-7600, www.apw.com) is known for their extremely rugged and vibration-resistant Dot-Ten CompactPCI card cages, designed to the IEEE 1101.10 industry standard. They come in sizes ranging from four, six, or eight slots, and are 6U high (other sizes available on request). The backplanes for 3U- or 6U-high cards are available. There is a Transition Cage (IEEE 1101.11) option for rear-mounted boards.

APW generated a lot of buzz this year with their StealthBridge, a bus bridging method of cPCI that allows backplanes to be populated with many cPCI plug-in board and I/O expansion cards. It's called StealthBridge because of its electronically “invisible” design. With a StealthBridge backplane, a single 19-inch subrack can contain a system with 21 cPCI cards and a full complement of rear-mounted I/O transition cards -- a gain of two or more slots per system. Two extra slots translates into eight more T1 lines or 256 full duplex phone lines.

When using a 66 MHz cPCI bus (instead of a typical 33 MHz bus), StealthBridge's gain in slots becomes even more appealing because of the current five-slot limit to the 66 MHz bus, severely restricting the advantages of this faster bus speed. On a StealthBridge backplane, however, a full 21 slots can be achieved using multiple bridges.

ARIEL

The RS4100C from Ariel Corporation (Cranbury, NJ -- 609-860-2900, www.ariel.com) is a 6U-high Octal T1/E1/PRI CompactPCI Network Interface Card. It can switch up to 240 PSTN calls (analog, digital or voice) and terminate up to 120 digital calls. It's also hot swappable, features standard cPCI and H.110 interfaces, and provides four programmable Texas Instruments DSPs. Ariel's plans include providing documentation that shows OEMs how to work with these DSP resources so they can download proprietary or commercial-off-the-shelf software for functions such as vocoders, echo cancellers, speech analysis, data and fax modems, encryption, etc.

An OEM Development Kit is available that includes a Red Hat Linux reference driver, utilities, and all the documentation needed to write drivers for other operating systems. A Windows NT driver is also available to OEMs.

The RS4100C costs $10,500.

Next up, the RS4200C is the industry's highest density 56K/ISDN network access solution for CompactPCI systems. Dubbed the RS4200C, the card set combines eight T1/PRI or E1/PRI interfaces with up to 168 ports of modem, ISDN, GSM, and PHS access. The RS4200C solution is made up of two parts, the 6U RS4100C network interface card and the 6U MP5000 168-port DSP/modem card. The MP5000 is a high-density DSP/modem pool baseboard that provides 96 ports. The MP5000 also provides three mezzanine sites, which accommodate 24-port modules and enable the MP5000 to be equipped with up to 168 ports to handle access sessions involving any combination of modem (V.90, V.34bis, and fallbacks), ISDN, GSM, or PHS (Personal Handy System) wireless customer premises equipment.

The RS4200C list price starts at $20,484.
Artesyn Communication Products LLC, a subsidiary of Artesyn Technologies (Madison, WI -- 608-831-5500, www.artesyncp.com) offers a whole spectrum of CompactPCI cards used in convergence applications.

For example, their new Artesyn CC1000 series of cPCI carrier cards is designed to quicken product evaluation and software development for the PM/PPC ProcessorPMC card (the PM/PPC product family is a line of PowerPC-based processor PCI Mezzanine Cards, or PMCs) as well as Artesyn's PM/3G-E1/T1 WAN I/O card.

By moving the processing component to the PMC, users have a complete processor/memory subsystem that's flexible and easy to upgrade. End users won't even notice an interruption in service when a new add-on module is plugged in, since the carrier cards have a non-transparent PCI-to-PCI Bridge enabling a separate processor domain from the cPCI host domain and supporting full Hot-Swap.

Next, Artesyn has introduced the MediaBlade, a modular, scalable, cPCI media subsystem for high-density, voice-over-Packet (VoP) media processing applications. MediaBlade is designed for OEMs or ISPs developing VoP conferencing systems, media servers, VoP voicemail servers and VoP announcement servers.

To shorten your time to market, MediaBlade's media subsystem is bundled with Artesyn's VoPware software solution, which gives you two APIs to choose from: A native API gives low-level access to media services and Real Time Transport Protocol (RTP) libraries, while a high-level CORBA API is available which abstracts the details of the lower-level libraries to enable even faster application development.

Systems can be scaled from a couple of hundred ports (one MediaBlade) to several thousand ports in a single cPCI backplane. Moreover, the MediaBlade’s CORBA interface allows for even larger-scale applications, since it can be used to distribute media processing functions across several backplanes.

The media processor's architecture supports non-blocking and independent mixing of all media ports, which allows for CALEA (Communications Assistance for Law Enforcement Act) -- AKA wiretapping -- requirements and other features such as voice-enabled chat rooms, customer support monitoring, media stream mixing and sidebar conferencing.

Artesyn's third new product introduction is the PM/VoP 240 a voice over packet media processing solution that supports up to 240 simultaneous VoP on a single PMC module. More than just an add-on module, the PM/VoP 240 is an integrated hardware/software solution specifically optimized for media server and gateway applications demanding high port density. The PM/VoP 240 list price is $3,500. OEM discounts are available.
Audiocodes Ltd. (San Jose, CA -- 408-577-0488, www.audiocodes.com) makes some of the industry's most impressive packetization boards in the CompactPCI form factor. Their 6U-high TrunkPack TP-610-192 cPCI VoIP Communication board, for example, can handle 192 voice or fax ports, and supports G.168 echo cancellation, G.723.1 and G.729A compression, and T.38 fax relay over IP. Call processing and voice traffic can enter and exit the board via either the H.110 interface or the board's optional six E1 or eight T1 interface module. A packet processor handles packet-streaming functions through the onboard 100Base-T interface, which can also be used to control the board using the MGCP protocol.

Both AudioCodes and Octave Communications (Nashua, NH -- 603-459-5200, www.octavecomm.com), experts in next-generation, reservation-less audio conferencing, recently announced a joint development project on a next generation IP conferencing product. AudioCodes' TrunkPack TP-610 will be integrated with the Octave OCI 1000 conferencing platform that supports various telephony applications and international networking protocols, including E1, T1, and ISDN PRI. The OCI 1000 platform enables customers to combine PSTN and VoIP functionality in the same footprint. The OCI 1000 allows an impressive 1344 ports in one chassis.

AudioCodes is also working with Advanced Fibre Communications Inc. (Petaluma, CA -- 707-79-7700, www.fibre.com) a developer and manufacturer of multi-service broadband solutions and outside plant for the telecom industry, on a Voice over Packet (VoP) product that will allow VoATM telephone access to the PSTN. It combines AudioCodes' TrunkPack TP-610ATM circuit pack that provides VoIP- and VoATM-to-TDM circuit conversion for AFC's VoATM/DSL applications running on AFC's AccessMAX family of Integrated Multiservice Access Platforms (IMAPs).

OEMs will now be able to offer an alternative to large and expensive gateway systems. The new device accepts various TDM circuit interfaces, including TR-08, ISDN User Part (ISUP) and Primary Rate Interface (PRI), and converts the voice streams to either VoIP or VoATM packet data under the control of MGCP or AudioCodes' TPNCP protocols. The target market includes full-scale system OEMs, Digital Loop Carrier vendors and softswitch vendors.

**BLUE WAVE SYSTEMS**

Blue Wave recently became part of the Motorola Computer Group (see MCG entry). Their engineers were responsible for the ComStruct CPCI/5421 and the CPCI/C6402 convergence boards.

The hot-swappable, 6U-high CPCI/5421 can handle 120 channels of voice-, fax- or data-over-IP when used with Texas Instruments’ Telogy embedded VoIP software. The board can connect directly with the PSTN via an optional daughtercard quad T1 or quad E1 PMC module, and can connect to packet networks via the onboard 10/100 Base-TX Ethernet connection. Alternatively, the board can communicate with the outside world using I/O boards in other slots by connecting to them through the H.110 J4 connector interface and across the cPCI backplane.

The board is divided up into four independent Packet Processing Units (PPUs) each containing five Texas Instruments TMS320C5421 dual-core DSPs and a Motorola MPC860P PowerQUICC processor that runs VxWorks and controls data movement and network interfacing.
If you’ve got an application that demands even more processing power -- larger multichannel applications such as fixed access wireless, 3G wireless baseband processing, voice transcoding and recorders/archivers, then take a look at the more powerful, hot-swappable CPCI/C6402 DSP resource board.

The CPCI/6402 has eight fixed-point, 250 MHz TMS320C6202 or 300 MHz TMS320C6203 DSPs (each with 16 MB of SDRAM) and two 80 MHz Motorola MPC860T control processors (an architecture equivalent to two C6400 boards), an Agere Ambassador T8105 TDM switch providing a full H.110 bus interface, a single PMC site and a dual 10/100 Base-T Ethernet connection.

When using G.723.1 or G.729 compression, the CPCI/6402 can handle 160 channels per board (TMS320C6202 DSPs installed) or at least 192 channels per board (when TMS320C6203 DSPs are installed). With a GSM-AMR vocoder, the board supports 120 channels (using the TMS320C6202 devices).

The board supports Windows NT/2000, Solaris, Linux and VxWorks.

BROOKTROUT

Brooktrout Technology’s (Needham, MA -- 781-449-4100, www.brooktrout.com) TR2020 is an open systems board for Voice Over Packet (VOP) development, available in both PCI and CompactPCI form factors. The TR2020 can do voice compression and interactive voice response (IVR), as well as fax and data relay.

The TR2020 includes onboard packetization, onboard telephony (ISDN, T1 robbed bit signaling and MFC-R2), and hot swap support. The cPCI version can provide up to 120 channels per board and a system can support up to 1,440 channels, which is more bandwidth than two 45 Mbps T-3 spans. Besides gateways, the TR2020 can also be an “IP Trunk Card” to IP-enable existing telephony applications such as audio conferencing and messaging.

One of Brooktrout’s newest cPCI boards in their Netaccess Series is the NS300. It has eight software-selectable T1/E1 interfaces that can carry up to 240 TDM voice channels. The NS300 Series is aimed at the wireless/GPRS market. The new Base Station Systems (BSS), Serving GPRS Support Nodes (SGSN) and Gateway GPRS Support Nodes (GGSN) use various combinations of Frame Relay, X.25, SS7 Message Transfer Part 2 (MTP2) and UDP/IP protocols. The NS300 also has a packet relay module that can process packets at the board level, which reduces system cost, latency, scale and complexity.

Brooktrout also offers the NS700 SS7 Series board that houses four or eight T1/E1 interfaces and up to 32 SS7 links, as well as onboard MTP1, MTP2 and MTP3, plus a full SS7 software stack. Each board has a fast onboard processor to off-load the host’s lower layer processing tasks.

Finally, the TR1000 Series is a board for carrier-based enhanced services. It provides voice and fax DSP resources, with optional onboard interfaces to either ISDN circuit or IP packet networks. The TR1000 comes in various cPCI and PCI configurations ranging up to 192 channels per board.
Onboard ISDN signaling and IP packetization allow the TR1000 to support enhanced services on either circuit or packet networks under a common API.

**BUSTRONIC**

Bustronic (Fremont, CA -- 510-490-7388, www.bustronic.com), an Elma Company, has many CompactPCI products. Perhaps their most advanced product is their 16-slot Compact Packet Switched Backplane (cPSB) based on the PICMG 2.16 draft specification that is fully backwards-compatible to present CompactPCI technology.

Bustronic has also demonstrated a 21-slot StarFabric hybrid backplane that comes in a 7U form factor, and accepts standard cPCI 6U cards. Systems with this backplane will be able to achieve trunk speeds ranging up to OC12, OC48 and beyond, allowing 10,000 to 100,000 ports per single chassis.

Also this time around, Bustronic has introduced an amazingly compact two-slot H.110 Computer Telephony backplane for 1U-high "pizza box" enclosures. At the bottom of the backplane are the fan tray headers and the power "bugs" (power connector terminals onboard; in the cPCI industry vendors design power to enter the enter the backplane via power bugs, studs, or bus bars if the chassis telecom power supply bus is used), allowing easy hookup for the horizontal chassis. A thin-profile design near the power bugs allow cable access from the rear.

The Bustronic line includes four-, five-, six-, eight-, and 16-slot backplanes.

Developers know Bustronic for their 6U CompactPCI Test Extender. Extender boards are used to bring a circuit card entirely out of a card cage or enclosure so that it can be tested or debugged. Bustronic's 6U cPCI extender allows access to both sides of the test board, thus easing the attachment of test probes. The 6U cPCI Test Extender has ejector/injector latches that locks it into the chassis. The Extender also features a logic analyzer connection to troubleshoot signaling faults.

**CARLO GAVAZZI**

Carlo Gavazzi Mupac Inc. (Brockton, MA -- 508-588-6110, www.gavazzi-mupac.com) designs and manufactures standard and custom SBCs, chassis, and integrated system products.

Their new petite 545 Series CompactPCI enclosure offers from five to eight usable 6U x 160mm deep front-accessible slots and 6U x 80mm rear-accessible transition slots, all in a package only 7 inches to 10.5 inches (4U to 6U) high, 17 inches wide, and 12 inches deep. Constructed of .09-inch lightweight 5052-H32 aluminum, this is one of the lightest enclosures of its type in the industry, weighing about 13 lbs. without cards. It supports a variety of peripheral drives, allowing a combination of front-accessible and embedded devices. The subrack is compliant with IEEE 1101.10 and 1101.11.

The chassis supports hot swap and N+1 redundancy for fault tolerance and is provided with a 175-
watt, front-pluggable power supply with either AC (90 to 264 volts) or DC (40 to 72 volts) input. Supply output current is 175 watts and selectable for +5 volts with 25 amps, +3.3 volts with 25 amps, +12 volts with 5 amps, or -12 volts with 1.5 amps.

Designed with telecom and NEBS compliance in mind, the rear panel includes an ESD jack and a ground stud in addition to fuses and an on/off switch. The front panels are shielded and include a second ESD jack.

Carlo Gavazzi has taken the CompactPCI quite seriously, and now offers a new line of cPCI backplanes that come in 3U-, 4U-, 6U-, or 7U-high formats and ranges 5.25 inches to 12.25 inches high. These backplanes can be configured with from two to 16 slots. Backplanes with fewer than five slots operate at 33 MHz, while those containing five or more slots have a backplane speed selectable to either 33 or 66MHz.

**COMPAQ**

The Compaq CI-1600 Server for Telecommunications from Compaq (Houston, TX -- 281-370-0670, [www.compaq.com](http://www.compaq.com)) is a rack-mounted, open-architecture, high-availability, CompactPCI system that runs Windows NT 4.0.

The system has dual eight-slot backplanes (H.110 compliant) with dual sets of modules (cards) including CPU modules, Hot Swap Controller (HSC) modules, and ServerNet system area network (SAN) modules (ServerNet SAN is a high-bandwidth, low-latency interconnect system optimized for efficient message and data passing).

Each one of the dual backplane domains includes one 333 MHz Pentium-II CPU board with 256 MB of memory, one ServerNet I SAN module, a Hot Swap Controller (HSC) module, up to five optional CompactPCI I/O modules, and two transition card cages that hold transition modules which provide I/O connectors at the back of the computer.

The CI-1600 supports hot swappable I/O boards as well as hot swap power supplies, and cooling modules. There's also a dual set of 6 GB hard drives and dual set of (not hot-swappable) CD-ROM drives.

Thanks to the system's redundancy, it can continue functioning even with the loss of a CPU board, I/O module, hard disk, CD-ROM, diskette drive, or power supply/cooling module. All of the cPCI modules, drives, fans and power supplies are front accessible, and rear-connection I/O allows for CPU module removal without disconnecting field wiring

The unit supports detection and remote reporting of power, temperature, and fan fail conditions. An extensive alarm system with a NEBS-compliant alarm status display panel is capable of interfacing with the central office maintenance facility.

BAT and Ring voltage connectors are located on the Power Distribution Panel.
CONTINUOUS COMPUTING

The Continuous Computing Corporation (San Diego, CA - 858-882-8800, www.ccpu.com), also known as CCPU, recently launched its CompactPCI-based High-Availability Hi-5 Voice-over-Packet family of products including media gateways, media gateway controllers, signaling gateways, OAM&P (Operation, Administration, Maintenance and Provisioning), billing platforms and enhanced IP media servers.

Hi-5 products are complete platform solutions that come with all hardware, software and protocols you need to quickly develop and deploy fault-resilient, telco-grade VOP applications for the next generation public telephone network. With Hi-5 a developer can write applications and deploy them in the central office within weeks. Applications such as call agents or announcement servers can be deployed on a complete platform almost instantly, giving application developers "five nines" of reliability.

CCPU’s Hi-5 architecture is a NEBS-compliant CompactPCI system that has a packet backplane, replacing the conventional cPCI bus signaling with LAN-like links. The Hi-5 concept also includes CCPU’s well-known high availability modular middleware, upSuite, which supports functions such as IP file system replication at wire-line speeds and sub-second failover at the card level with no dropped calls or data.

A CCPU Hi-5 system can incorporate up to 32 CPUs in a box having a 12U form factor. Multiprocessor prices start at $25,000, depending on the configuration.

DAWN PRODUCTS

Dawn Products (Fremont, CA - 510-657-4444, www.dawnvme.com) originally made their reputation as a VMEbus vendor, but has added such CompactPCI items to their offerings as backplanes, universal extender boards and prototype development chassis.

Take, for example, their 6U cPCI Computer Telephony Backplane. Compliant with all the usual hot-swap PICMG specifications, it has a right justified controller slot. Six +12V/GND MTA100 connector positions are onboard for fans or other accessories. An ATX power connector is optional. The backplane is available in two to eight slot configurations. The backplane has high-current power bugs, studs, or Bus Bars for +5V, +3.3V, VIO, GND, and FGND.

DIVERSIFIED TECHNOLOGY

Diversified Technology (Ridgeland, MS -- 601-856-4121, www.dtims.com) offers an impressive portfolio of CompactPCI computer chassis, single board computers and complete computer systems used in convergence applications.

First, the CPC8629 Pentium III single board computer (SBC) is a dual 933MHz Pentium III FC-PGA SBC (840 chipset) that comes in a 6U-high CompactPCI card form factor. The CPC8629 is based on
Intel's 100MHz/133MHz front side bus (FSB). The CPU board can drive up to seven cPCI expansion slots.

The CPC8629 holds up to 4 GB of Rambus memory. Only 300 MHz and 400 MHz Direct Rambus devices are supported. There's also an Ultra-Wide LVD SCSI interface and an enhanced IDE Ultra ATA interface.

The CPC8629 can boot to OS without any floppy or hard drive connected to the system, since it has an onboard Compact Flash memory card that acts as a hard drive and uses standard OS partitioning, formatting and copying utilities, without cables and external devices.

Next up is the CPC8640, an SBC that's built around a 700MHz Celeron CPU (440BX chipset) in a CompactPCI form factor. Two standard 168-pin DIMM sockets hold up to 512MB of system memory. SDRAM memory is supported. Single-bit error correction (ECC) is available using standard parity DIMMs. The CPC8640 has both an Ultra-Wide SCSI controller (that can do 40 MBps data transfers) and a PCI EIDE controller that also supports 32-bit access, LBA mode, and bootable CD-ROM's.

Next, DTI's CPC8610 CPU board fits into a single cPCI system slot. It's driven by a 500 MHz Intel Embedded Pentium III (BGA2) CPU in a CompactPCI form factor (440BX chipset). One standard Small Outline Dual In-line Memory Module (SO-DIMM) socket is provided to hold up to 128 MB of system memory, such as SDRAM. Single-bit error correction (ECC) is available using standard parity SO-DIMMs.

The CPC8610 also features a National Semiconductor LM87 Serial Interface System Hardware Monitor for monitoring system critical variables like voltage, temperature, and CPU fan operation. There's also a PCI EIDE controller that supports ATA drives, 32-bit access, LBA mode, and bootable CD-ROMs. A single PMC site is also onboard.

Next, Diversified's SPC1000 is a Pentium III cPCI slave board computer, holding a 500 MHz processor based on the 440BX chipset. One standard 168-pin DIMM socket supports up to 256MB of system memory.

The SPC1000 communicates to the Host processor using Intel's 21554 PCI Non-transparent bridge. During the boot process, the Host processor allocates a memory and I/O window for communication to the SPC1000. The Host processor then uses this window to pass application specific data to and from the SPC1000. Hard Hat Linux supports the Non-transparent PCI Bridge through the Hard Net package. Installing this package allows the Host CPU to communicate to the SPC1000 using standard network protocols.

The SPC1000 also features an IPMI (Intelligent Platform Management Interface) Microcontroller for monitoring of system critical variables like voltage, temperature, and fan operation.

In terms of 19-inch rackmount systems, Diversified's 8U (14-inch) high FTC610 provides fault tolerant support for a complete system comprising power, drives, cooling, and a card cage. Aside from a standard 1.44MB floppy drive and an IDE CD-ROM, the FTC610 supports four SCA SCSI
devices for hot-plug devices in the front of the unit. Two internal drives are also available with an optional kit.

The FTC610's CompactPCI card cage supports eight slots. The standard backplane provided with the FTC610 has slots for a processor module, seven CompactPCI expansion cards, three power supplies, and four SCA SCSI drives. The processor slot is 2.4 inches wide to allow for advanced CPUs with proper heat sinks. The expansion slots are all 6U in height. The backplane incorporates support for the CompactPCI Computer Telephony Specification (and therefore ECTF H.110) at all seven expansion slots.

Another even larger Diversified system is the FTC621. This hefty rackmount is 14U high (24.5 inches) x 19 inches wide and a 14.5-inch deep rackmount chassis, with a typical configured weight of 76 lbs.

Power input can be 110-220V A/C or -48V D/C. From three to five hot-swappable 150W 3U power supplies provide from 300 to 600W with N+1 redundancy. Using so many small power supplies allows for relatively low cost sparing and replacement as compared to systems using fewer, but larger, power supplies.

The FTC621 supports drive configurations ranging up to six front-mounted SCA SCSI drive modules and two internally mounted 3.5-inch IDE drives. Drive bays can be allocated for a micro CD-ROM and a micro 3.5-inch floppy drive if the configuration warrants it. The SCA SCSI drive modules plug directly into the 3U card cage. IDE drives and associated cables can be accessed through the rear access panel.

The standard H.110 backplane provided with the FTC621 has one slot for the processor module, two slots for PCI-to-PCI bridge modules, and 16 cPCI expansion slots. The processor slot is 2.4 inches wide to allow for advanced CPU's with proper heat sinks without interfering with any of the expansion slots.

Finally, the CPT605 Desktop Development Chassis has a CompactPCI backplane that allows for front and rear mounted 6U cards. The front accessible slots include one CPU (Pentium II), three expansion slots, and one power supply slot. Connectors are available for rear I/O cards as well.

**ELMA ELECTRONIC**

Elma Electronic Inc. (Fremont, CA -- 510-656-3400, [www.elma.com](http://www.elma.com)) recently introduced a new 9U Type 15C CompactPCI chassis with advanced cooling for packaging power dense circuit cards.

Elma has gave top-notch cooling as the top priority for this system, which incorporates radial blowers into its redundant cooling system, thus providing three times the performance in high static pressure environments as you’d get with traditional muffin fans.

The system's roomy interior allows developers to select 6U cPCI H.110 compliant backplanes.
ranging in sizes ranging from four to 21 slots. The 9U Type 15C has a flush mounted 6U x 160mm IEEE 1101.10 card cage, a rear 6U x 80mm IEEE 1101.11 compliant card cage and an interesting, advanced shielding concept that's carried throughout the enclosure with all front panels and modules (peripherals and PSU).

An optional monitoring system for DC voltages, fan fail and over temperature conditions is available. All units are "turnkey" systems coming fully assembled, wired and tested with a two-year warranty.

The 9U Type 15C system starts under $2,000 and ships in approximately six weeks.

**FLEXTEL**

As its name implies, Flextel (Ivrea, Italy -- +39-0125-235311, San Jose, CA -- 408-768-8673, www.flextel.it) offers amazingly flexible fault-tolerant computing platforms.

For example, take their netVision 5000 Multi-Service Platform series for advanced convergence solutions such as VoIP gateways, Internet call centers, unified messaging and voice portals. The netVision 5000 series allows CompactPCI, PCI and ISA boards to harmoniously work together within the same chassis! To be exact, it all depends on the configuration you order: the netVision 5012 allows for a 12-slot chassis (six cPCI slots) and the netVision 5006 has six slots, three of which can be cPCI slots.

On these systems, more independent processors can run concurrently, whereby one can drive the I/O segment, and other processors can run applications interfaced by the local I/O ports or an inter-processor communication bus. In case the processor driving the I/O cards fails, the manageability system running on an independent Motorola 860 is able to automatically restart it or disconnect it and link the I/O subsystem to another processor in the chassis as well.

Whereas the netVision 5006 has one I/O segment for its six slots and is able to host a processor module, 4 PCI and 3 CompactPCI cards, the netVision 5012 has two I/O segments (one for the first six slots and another for the second six slots). These can be configured dynamically to become a single twelve-slot I/O segment, hosting eight PCI and six CompactPCI cards with fault-tolerant processors (this feature enables configurations that can run two different subsystems concurrently).

If a processor fails on one segment, the system will be automatically reconfigured, instantly becoming a single twelve-slot configuration now relying upon the second processor.

The Flextel backplane also supports a number of buses simultaneously, including a 1 Gbps inter-processor communication bus (optionally two buses for a total of 4.2 Gbps), a PCI/ISA I/O bus and a H100/MVIP/SCSA TDM bus. There are also two management buses.

The system can support up to four Processor Modules, each having up to two Intel Pentium IIIs and up to 4 GB of SDRAM. A netVision chassis can be configured to achieve 99.9995% uptime. All system components (including PCI and ISA cards) can be made redundant for maximum reliability. All
modules are hot swappable for rapid, non-disruptive servicing and are accessible from the front.

FORCE COMPUTERS

Force Computers (San Jose, CA -- 408-369-6000, [www.forcecomputers.com](http://www.forcecomputers.com)) is perhaps the largest producer of CompactPCI equipment in the world. Their new Force Centellis CO 21000-12U is a carrier-grade Compact Packet-Switching Backplane (CPSB) platform in a NEBS Level 3-compliant CompactPCI chassis. Because of the "packet" backplane, the system is extremely flexible and can be configured in an incredible number of ways.

For example, with the UltraSPARC power and Solaris compatibility option, the Centellis CO 21542-12U is powered by an UltraSPARC-IIi processor and runs the Solaris 8 operating system (factory installed), so customers can extend their existing SPARC/Solaris investments and leverage many existing Solaris-compatible applications. Customers can also consolidate valuable rack space by embedding the SPARC/Solaris server that may already be in the rack into the CPSB platform.

The development system configuration is called CENT CO 21000-12U-DC-D and includes one ZNYX Networks ZX4500 Ethernet switch and two 500W power supplies. The standard redundant Ethernet switch fabric system configuration is CENT CO 21000-12U-T-DC and includes two ZNYX Networks ZX4500 Ethernet switches each with 64 MB DRAM, 24 10/100 Ethernet interfaces (14 PICMG 2.16 and eight external), one PMC interface, two Gigabit Ethernet interfaces and a 200 MHz MPC8240 PowerPC processor. A 6U Telecom Alarm Module is included that has an integrated twin alarm panel, power and temperature sensor cables.

The redundant Ethernet switch fabric system configuration with the SPARC/Solaris server option is called CENT CO 21542-12U/SOL8-256-1HS-T-DC and includes with the standard platform one UltraSPARC-IIi processor based SBC with 256MB RAM, seven 10/100 Ethernet interfaces, three Wide Ultra2 SCSI interfaces, four serial interfaces, Solaris 8 operating system and 18GB Wide Ultra2 SCSI hard disk drive. A Telecom Alarm Module included.

You can power your system with the 500 MHz CPCI-550/552 UltraSPARC-IIe-based "Universal Mode" CPU board. The CPCI-550/552 is a "universal mode" UltraSPARC-IIe processor-based cPCI SBC and is the second in Force's new CompactPCI server blade family for CompactPCI Packet-Switching Backplane (cPSB) systems.

Force's onboard SENTINEL chip can be used to combine several CPCI-550 SBCs into a single rack, thus enabling them to communicate with each other to make the CPCI-550 a building block for scalable, small-footprint systems that can handle third-generation (3G) wireless, VoIP and other telecom/datacom applications.

A more powerful SBC in this line is the CPCI-735/736 "Universal-Mode" Mobile Pentium III Processor-based SBC. It can house a Mobile Pentium III 700MHz processor and has a 64-bit local bus (via a PMC slot) for Gigabit Ethernet, Fibre Channel or other high-bandwidth, data-intensive I/O demands.
The board can hold 1GB of ECC-protected SDRAM (2GB optional) and 32 MB of onboard IDE FlashDisk memory (64MB optional).

High speed Ethernet connections to the network or between systems is done with Force's PMC/Gigabit Ethernet/82543 network interface card (NIC), which is a an autoconfiguring 10/100/1000 Ethernet NIC in a PMC form-factor. The card can do full-duplex operation -- which effectively doubles the available bandwidth -- when enabled by the host system driver. When connected to a standard local area network, the PMC/Gigabit Ethernet/82543 NIC also supports CAT 3 and CAT 4 UTP cable.

For embedded and networking applications, take a look at the Force PowerPMC-250, a 450 MHz G4 Power PC processor-based module in a PMC form factor. Aside from the 128 MB of ECC-protected SDRAM, there's also 32 MB of user Flash memory and 1 MB of Boot Flash memory.

GENERAL MICRO SYSTEMS

The Navigator from General Micro Systems (Rancho Cucamonga, CA -- 909-980-4863, www.general-micro-systems.com) is a hot-swappable CompactPCI CPU board for high-availability convergence applications such as web and Internet servers.

The Navigator is available with a choice of a field-upgradeable Pentium III 366-to-600 MHz Celeron or 500 MHz-to-1 GHz Coppermine-256 processor. The Celeron processor, designed for low-power applications, has 128 KB of on-die, no-wait-state cache. The Coppermine-256 is for high-performance applications and comes with 256 KB of on-die, no-wait-state cache. Both processors are equipped with up to 1 GB of main memory, which they access via a high-speed Front Side Bus (FSB) running at 66 MHz for the Celeron; 100 MHz for the Coppermine. This field-upgradeable memory is packaged as a pair of SO-DIMM modules.

The Navigator has two PCI Mezzanine Card (PMC) sites, one of which supports rear-panel I/O. The Navigator provides a PMC expansion module with three PMC sites. This module, when plugged into Navigator's PMC expansion connector, gives the board a total of five PMC slots, while occupying only one additional CompactPCI slot.

The Navigator's System Health Monitor reports processor temperature, onboard voltages, and fan speed to the OS. The Navigator also provides 100% Power-On-Self-Test (POST) diagnostics, which uses two binary LED displays on the front panel to indicate the status of over 50 tests that are applied each time power is applied to the board.

Software support for the Navigator C159 includes Windows NT/2000, VxWorks, Linux, Solaris and QNX.

The Navigator C159 starts at $2,794 in single-piece quantity, less memory and CPU. **Compact PCI Roundup**

GNP COMPUTERS
The new ComputeNode from GNP Computers (Monrovia, CA -- 626-305-8484, www.gnp.com) which can be deployed as a server or I/O processor for infrastructure services including DNS, firewall, log processing and authentication, and web hosting applications.

The ComputeNode is essentially a low-cost, entry-level, two-slot CompactPCI chassis measuring only 1U (1.75 inches) high and 11 inches deep, including the rear transition module. This enables the dense packing of COTS (Commercial-Off-The-Shelf) components and specialized cPCI boards. The small form factor provides the horizontal scalability while providing good front and rear I/O accessibility for service and maintenance.

GNP ComputeNodes normally function as standalone units that can be configured into powerful servers by plugging just about any cPCI processor board, such as those based on Sun Microsystems' SPARC, on Motorola/IBM's PowerPC or on the Intel architecture, in one cPCI slot. The second cPCI slot can be used to add capabilities such as storage (e.g., using GNP's single-slot Compact Media Carrier), I/O interface cards, Ethernet switches/expansion cards for network access, or a second processor for backup.

Prices for GNP ComputeNode chassis (without processor boards) begin at approximately $500 in production quantities.

I-BUS

I-Bus/Phoenix (San Diego, CA -- 858-503-3000, www.ibus.com) has always been enthusiastic over CompactPCI, and produced a range of products not long after the start of the cPCI era.

I-Bus/Phoenix has just launched the CO406, a 4U-high, six-slot horizontal CompactPCI enclosure. The CO406 supports full I/O card hot swap (PICMG 2.1 Rev. 2.0). For a relatively small machine it has a generous seven drive bays, including a front-accessible five SCA hot-swap SCSI disk array. The dual redundant blowers are hot swappable, as are the dual redundant 300W power supplies.

The H.110 backplane is made for single or dual slot system master CPU boards. There is full rear I/O module support, and front to back airflow.

The CO406 enclosure has a list price of $3,495 with the standard AC power supply option.

I-Bus/Phoenix has also launched their new IBC 2602, 6U Single Slot CompactPCI Peripheral Master CPU. The IBC 2602 supports Mobile Intel Pentium II processors running at up to 700 MHz (440BX chipset). An Intel 21554 non-transparent bridge allows the IBC 2602 to be used as a Peripheral Master, which means that up to seven IBC 2602’s can reside in a CompactPCI high performance system. Up to 512 MB of SDRAM and 128 MB of CompactFlash can be housed on each IBC 2602.

Additional goodies include dual 10/100 Base-TX Ethernet, a PMC expansion site that allows for additional I/O such as Ultra-SCSI or Fiber Channel support. A mezzanine IDE board is also available.
An IBC 2602 with a 500 MHz pentium III and 128 MB memory starts at $1,998.

INTEL


The DI series are key components used in the Intel Converged Communications Platform (ICCP), an open standards-based platform for consolidating many telephony and business communications applications from multiple vendors onto a single system. The DI series integrates telephone network interfaces and media processing resources on a single board, reducing the number of boards that in the past were needed in server-based business communications switching systems. Intel estimates that the DI series will reduce by 30% the telephony board cost of building switching systems.

The first offering, a trunk and stationboard (Model DI/0408-LS-A) is a single slot switching solution for building a complete server-based PBX or contact center starting at four trunks and eight stations on a single board. Aside from the voice, conference and fax resources, there's also Caller ID, message waiting indicator control, and a music on-hold audio port. Four fail-over circuits ensure basic telephone service in case of a power outage. The solution using these boards can be scaled to allow multiple boards in a single chassis.

The new station interface board (Model DI/SI32) offers 32 station interfaces with dedicated tone, call control, conference and voice resources. Optimized for smaller installations, additional DI/SI station interface boards with 16 and 24 ports will be available soon.

As new DI series boards are completed during 2002, their technology will deliver a range of analog, digital and VoIP switching solutions, complete with the resources and interfaces necessary to build enterprise-converged communications systems that scale from twelve to more than 300 ports in a single chassis.

The DI series is based on the Dialogic DM3 Mediastream CompactPCI architecture, and presently supported by Dialogic System Software and Software Development Kit Version 5.1 for Windows NT and Windows 2000. The DI series will also be supported by a future release of Dialogic CT Media server software for Windows 2000.

Additional product information on the DI series can be found at www.intel.com/network/csp/products/7511.htm.

IXTHOS

The CHAMP-AV Quad board from Ixthos' (Leesburg, VA -- 703-779-7800, www.ixthos.com) is a CompactPCI DSP board for 3G wireless, broadbandm and protocol transcoding, such as IP to ATM and back again. Four 500 MHz AltiVec PowerPC 7400/7410 DSPs provide over 16 GLOPS
performance, driving both Ixthos’ CHAMP (Common Heterogeneous Architecture for Multi-Processing) architecture and seven onboard intelligent DMA controllers which communicate using via Ixthos’ IXPacket technology.

The CHAMP architecture allow you to build systems based on two scalable, redundant signal processing elements where each "cluster" of signal processing elements contains two PowerPC processors, and has a dedicated 10/100BaseT Ethernet interface and all resources needed to send, receive and process voice/data channels with additional I/O data channeled through dedicated PMC sites.

JUNGO

Add-on software from Jungo (Netanya, Israel – +972-9-885-8611, www.jungo.com) infuses hot-swap CompactPCI card capability into such otherwise hot-swap ignorant operating systems as Windows NT / 2000, Linux, Solaris (both x86 and SPARC processors), and VxWorks 5.4.

To create hot swap boards you need to build them on the CompactPCI form factor. But board drivers must also be modified to be hot swap ""aware."" When you extract a cPCI board the driver must be notified so it can stop communicating with the board. Fortunately, Jungo also offers software development tools so you can either develop your own device drivers or you can buy driver development tools from Jungo that allow you to add hot swap capabilities to your existing drivers. Jungo’s driver development tools even support non-PCI buses such as USB and ISA.

KAPAREL

Kaparel Corporation (Waterloo, Ontario, Canada – 519-725-0101, www.kaparel.com) recently debuted their PS4900 Series of Compact Packet Switching Backplanes (cPSB). These cPCI backplanes support advanced Switched Ethernet, and are compliant with the PICMG 2.16 draft specification.

Kaparel also offers different lines of modular backplanes. The PS13xx Series, for example, are 3.5U-high, 64/32-bit CompactPCI backplanes that allow the construction of cPCI systems with any number of slots. Each modular backplane segment in the family contains between two and eight slots.

The PS14xx Series is a larger series of 6.5U 64/32-bit backplanes that also allow the construction of cPCI systems with any number of slots.

The PS44xx Series is an even larger series of 7U-high 64/32-bit CompactPCI backplanes allows the construction (up to 21 slots) of CompactPCI systems with H.110 compatible slots. Each backplane module in the family contains between 2 and 8 slots.

Kaparel also builds non-modular (monolithic) cPCI backplanes in 3U to 6U form factors.
KONTRON

Kontron Communications, formerly Teknor Applicom (Boisbriand, Quebec, Canada -- 450-437-5682, www.kontron.com) has been extremely active in the CompactPCI industry. They still use the Teknor brand name, similar to the way that Intel uses the Dialogic brand name.

In September, Kontron launched two new cPCI platforms in their ""Xtreamlink"" family. The ""first-born"" member of this family appeared last year: the CxP0816 (now renamed the Teknor XL-CXP), an 8U-high, 19-inch CompactPCI development platform with full rear I/O access.

First of the new platforms is the Teknor XL-PSB, based upon and conceived of as an upgrade to the XL-CXP. It's an 8U low- to medium-end 19-inch rackmount platform designed for IP networking and CT applications. It has a PICMG 2.16 compliant packet switched backplane that consists of two eight-slot 64-bit cPCI buses operating at 33 MHz PCI or 66 MHz PCI-X signaling speeds (there's support for rear transition modules in all card slots). Overlaid on this is a dual redundant switch fabric (two fabrics and 12 nodes) as outlined in PICMG 2.16. Interestingly, the system also has two PICMG 2.5 R1.0 compliant H.110 CT buses with six nodes to handle legacy boards.

The XL-PSB supports all Teknor 6U CompactPCI PICMG compliant single board computers including Kontron’s cPCI-DMXP64GX.

The second new offering is the 10U-high Teknor XL-VHDS, a high-end platform targeting such applications as gateways, media servers, softswitch and core Internet routers. It's based on a ""cableless"" configuration concept, and also has a backplane incorporating switch fabric technology. Kontron says that the XL-VHDS is ""a revolutionary concept that will remedy Time-t-deployment,"" thus relieving ""Time-to-headaches."

Each slot may have up to four 1 Gbps Ethernet ports connected to the redundant switch in a PICMG 2.16-like configuration. This means that up to 30 CPU engines can occupy a 10U enclosure. A 42U-high floor cabinet can now have the processing power of 90 700 MHz Pentium III's.

All signals involving high availability and system management are routed to each device and slot in the system via an Intelligent Platform Management Interface (IPMI). Even if you first installation doesn't need a full HA configuration, the basic XL-VHDS system can be upgraded later. Any passive or supportive device such as fans and power supplies are designed in a quick swappable format.

MAPLETREE

Mapletree Networks Inc. (Norwood, MA -- 781-751-2400, www.mapletree.com) designs and manufactures circuit- and packet-based voice, data and fax network access and core network infrastructure equipment for OEMs. Mapletree Networks' UniPorte Architecture allows boards to process any kind of network access connection type (data, voice, VoDSL, wireless data, ISDN or fax) on any port.
Mapletree's MTN5300, for example, is a CompactPCI board designed for carrier-class access and gateway systems. Its capacity can scale up with the help of Mapletree's MTN4096 PCI Mezzanine Card, allowing for a range of from 144 to an incredible 336 UniPortes, in 96 port increments. The "univeral port" aspect of the MTN5300 eliminates the need for different cards designated for different applications. VoIP, remote access, and wireless voice and data traffic processing can all be done with this single cPCI board.

To connect with the outside circuit switched world, MTN5300 supports the H.110 CT bus for carrying TDM data between a WAN card and the MTN5300. As for the packet network, the Ethernet interface is available through either the front plate via RJ-45 port, or through the backplane, with compliance to the Compact Packet Switching Backplane (cPSB) specification.

All MTN5000 Series boards are hot-swap compatible. The generic API allows integration with any operating system, allowing OEM customers to provide carrier-class management. The MTN5300 cPCI board's power requirements are low by industry standards, using only 16 watts total.

**MEN MICRO**

Of all the products introduced this past year by MEN Micro (Carrollton, TX -- 972-939-2675, [www.menmicro.com](http://www.menmicro.com)), there are two quite interesting CompactPCI items:

One is the MEN F6, a 3U CompactPCI single board computer based on the Motorola 8260 PowerPC from the Motorola PowerQUICC II family, capable of speed up to 200 MHz.

Distinguishing this SBC is a DIN connector on the "top" edge that enables an OEM to design an extension card that can plug into the sideboard interface connector and thus take advantage of the extensive communications abilities included in the 8260. This is aided by the fact that the MEN F6 gives system designers direct access to the extensive communications processing capability already integrated into the MPC8260 processor. The MPC8260's communications processor module (CPM) has three fast communication controllers (FCC), two multichannel communications controllers (MCC) for time division multiplexing, four serial communications controllers (SCC) for HDLC/SDLC or UARTs, and two serial management controllers (SMC).

Any OEM-designed extension card takes the form of a 3U card that mounts beside the F6 in a second slot 3U sideboard, making a two-slot wide 3U-high assembly. Or the companion card can be an extension card that "fills in" the rest of the 6U footprint by connecting to a vertical extension sideboard, making it into a single slot 6U assembly. Either way the OEM has the advantage of starting with a complete 8260 PowerPC SBC, thus enabling the OEM to concentrate on developing application specific communications interfaces for ATM, T1/E1, Fast Ethernet, HDLC/SDLC, or any other protocol supported by the CPM of the 8260.

The F6 can function as either a master or a slave on the cPCI bus. Hot swap is supported in either master or slave operations. And an onboard messaging unit makes the F6 suited for multiprocessor applications.
The F6 comes with 256 MB of RAM and a CompactFlash slot that can hold as much as 300 MB of flash memory. An IDE interface is included as well as several watchdog mechanisms. The F6 supports VxWorks and Linux.

MEN Micro's second cPCI product of interest is the MEN D3, a one-slot 6U CompactPCI SBC based on the Motorola 8245. The D3 is available in three different standard configurations to accommodate three different types of mezzanine card I/O: M-Module I/O, PC-MIP I/O, or PMC I/O. The board have three M-Module, three PC-MIP or two PMC mezzanine sites. All versions include a 300 MHz PowerPC XPC8245.

In CompactPCI systems the MEN D3 operates as a master system-slot board, but in embedded applications it can also operate as a standalone processing unit without a bus connection.

The most popular version of the MEN D3 among convergence developers has been the D3C, which is a version with two PMC sites onboard. There are a wide variety of add-on communications-oriented PMC modules, and the advantage here is that an integrator (or OEM) can now pick the best of breed for a specific project or product.

The MEN D3 comes with up to 256 MB of DRAM in a SO-DIMM slot, 2 MB of flash memory and an ATA-compatible CompactFlash site. Two 100 megabit-per-second (Mbps) Ethernet interfaces are also onboard.

A serial interface with an RJ45 connector is featured on the front panel of the D3 and can be configured as either RS232 or RS485. Another three universal asynchronous receivers/transmitters (UARTs) can be configured as RS232, RS422, RS485, or TTY with or without optical isolation. Rounding out the D3's complement of computer interfaces is a USB port, an IDE interface, mouse and keyboard ports and several TTL lines. The D3 also comes with a real-time clock, watchdog timer, onboard temperature monitor, hex switch and light emitting diodes (LEDs) on the front panel to provide user status information.

The D3 can run either the VxWorks or Linux operating systems.

MOTOROLA

The Motorola Computer Group (Tempe, AZ -- 602-438-3000, www.mcg.mot.com) is one of the major developers of CompactPCI technology.

MCG recently expanded its cPCI line by unveiling three advanced CompactPCI single board computers. The CPN5365, CPV5370 and CPV5375 are all Intel Pentium III-based boards that contain PMC sites so that OEMs can tailor their exact I/O configurations and onboard disk storage.

The CPN5365 is a single-slot cPCI SBC powered by a low power 700 MHz Pentium III processor. The CPN5365 functions as a peripheral slot CPU within the CompactPCI environment. In this way OEMs can develop distributed processing applications by applying processing power at the node level.
The board can be quickly customized by adding up to two PMC modules. The board can hold up to 1 GB SDRAM. It has an onboard EIDE disk option, USB ports, AGP graphics, a parallel port, dual Fast Ethernet controllers and standard PCI I/O. Also, I/O for PMC sites and onboard devices are accessible from either the front or rear of the unit. Suggested list price for the CPN5365 starts at $3,495.

Motorola's CPV5370 is also a 700 MHz Pentium III-based cPCI host-slot CPU card. Intended as an upgrade to Motorola's existing high availability platforms, it can also be used in embedded board-level applications such as telecom. The board can be booted from an onboard Flash memory device rather than a lower-reliability device such as a hard disk or floppy drive. The CPV5370 gains some additional flexibility thanks to its EIDE disk and a single PMC site. The board can run under popular operating systems such as Windows 2000 and Linux. Suggested list price for the CPV5370 starts at $4,395.

Finally, the new CPV5375 is also a high-performance, Pentium III-based 700 MHz Compact-PCI host-slot CPU, and it has two PMC sites with front and rear I/O access. The board can run Windows 2000, Linux and other operating systems. Suggested list price for the CPV5375 starts at $2,995.

**NMS COMMUNICATIONS**

Back in 1998, NMS Communications (Framingham MA -- 508-271-1000, [www.nmscommunications.com](http://www.nmscommunications.com)) had one of the first CompactPCI quadspan T1/E1 cards ready to be tested by our labs.

Recently, they've debuted two new cPCI boards:

The CG 6000C is a resource board that offers 240 VoIP ports per cPCI slot and a full-blown software development environment. The CG 6000C hosts the NMS Fusion 4.0 software development platform for advanced real-time media streaming applications. The CG 6000C is also supported by the NMS Natural Access development and runtime environment, which provides a consistent set of OS-independent APIs to ensure application portability.

NMS has also released a new member of NMS Alliance Generation 4000 Series, the AG 4000C. This provides 120 ports of IVR/Fax and up to 60 ports of VoIP in a single cPCI slot. The base board supports two or four T1 or E1 interfaces and 16 digital signal processors (DSPs), and can be supported by a daughterboard with 16 or 32 additional DSPs. There's also H.323 version 2 support. Vocoding algorithms supported include G.723.1, G.711, G.729a, MS-GSM, ETSI GSM. IP fax capabilities include T.37. The AG 4000 Series also supports the NMS CT Access development and runtime environment, which provides a consistent set of APIs that are OS-independent to deliver true application portability.

**ONE STOP SYSTEMS**

One Stop Systems (Escondido, CA - 760-745-9883, [www.onestopsystems.com](http://www.onestopsystems.com)) has just introduced the ""Millennium Gold"" 8U CompactPCI carrier class enclosure for mission-critical wireless,
Internet, and telephony apps. It boasts a 14-slot backplane with the H.110 telephony bus, four 175W power supplies, and four individually removable drive canisters for high-speed SCSI drives. For optimal cooling, it provides three hot-swappable fans mounted below the card cage and three hot-swappable exhaust blowers mounted above the card cage. An optional 6U system monitor board provides monitoring of vital system functions through its Internet-based firmware.

The ""Millennium Gold"" with a 14-slot H.110 telephony bus backplane lists for $4,295 (OEM quantities).

And if you thought that CompactPCI was already compact, you may be surprised by the One Stop Systems' new 2U-high cPCI enclosure with rear I/O. This low profile, space efficient enclosure includes a 6U four-slot horizontally mounted backplane, 130W power supply and cooling fans. A typical configuration for datacom applications includes a single slot system CPU board and three peripheral CPU boards.

One Stop Systems has also introduced a line of 6U dual processor system and peripheral cPCI CPU boards. Powered by low power mobile Pentium III processors with clock speeds of 500 MHz or 700 Mhz, and up to 1.5 GB of SDRAM, it all fits into a single or dual slot footprint.

The dual 700Mhz, 8HP master CPU board lists for $5,598 (no DRAM), and the dual 700Mhz, 4HP slave CPU board with 256MB soldered DRAM lists for $6,100. Volume pricing is also available.

PENTAIR

Pentair Electronic Packaging (Warwick, RI -- 401-732-3770, www.pentair-ep.com) has released the Schroff Pro Series PEN-6073 is a 9U-high, 8-slot CompactPCI NEBS-ready 19-inch rackmount system. The backplane accepts eight 6U x 160mm cards, in addition to a double-slot (8HP) CPU from the front and eight 6U x 80mm rear transition cards. The card guides are color-coded molded plastic with metallic electrical discharge clips and include an integral keying block to accept optional keying pegs. There's even electromagnetic shielding and drive bays for one 5.25-inch and two 3.5-inch drives. Pricing starts at $2,950.

Pentair's new Shroff CompactPCI Injector/Extractor handle costs just $3.39. CompactPCI handles are critical components because they actuate the microswitch and also control the insertion/extraction process. Unlike many other handle designs, however, Pentair's live insertion microswitch is operated by a recessed push button in the Schroff handle and functions independently of the handle ejection process, thus preventing accidental triggering of the hot swap microswitch. The new Schroff handle has a depth of just .55 inches -- almost two-thirds less than the standard 1.5-inch deep IEEE 1101.10 handles. Designers of telecom equipment are typically restricted to an enclosure depth of 12 inches, so the low profile Schroff handle reduces the percentage of usable enclosure space taken up by handles from 12.5% to just 4.5%.

Pentair's new Schroff PEN-6071 Pro Series subrack for both CompactPCI and VME64x applications include heavy-duty rails to accommodate the new Injector/Ejector handles required for cPCI. Card guides are available to support the new keying specifications (keying reduces the chance of plugging
a card into the wrong slot). In addition the Schroff Pro Series subrack line provides accessories such as electrostatic discharge clips, rear I/O card guides, and shielded front and filler panels. Pricing for a 3U subrack kits starts at $88.

PEP MODULAR COMPUTERS

PEP Modular Computers Inc. (Pittsburgh, PA -- 412-921-3322, www.pepusa.com) recently extended its 6U CompactPCI Family with its CP604 CPU board for multiprocessing applications. The board holds a 700 MHz Mobile Pentium III CPU and up to 2 GB of DRAM. System management is done via the Intelligent Platform Management Interface (IPMI). The board's front panel VGA-CRT socket can be replaced as needed by a VGA-LVDS or COM2 port. There are also four serial ports (RS232/422/485).

You may want to plug that CPU board into PEP's new 3U CompactPCI backplane, the CP3-BP11-M. It has 11 slots which are subdivided into two separate bus segments -- one segment with four slots (clocked at 66 MHz) and the other with seven slots clocked at 33 MHz. The bridge module is located at the rear of the backplane so that no slot has to be sacrificed for this purpose.

PERFORMANCE TECHNOLOGIES

Two new cPCI products have emerged from Performance Technologies (Rochester, NY -- 716-25-0200, www.pt.com). The first is an addition to PTI's IPnexus product family: the carrier-grade CPC3400 switch. The CPC3400 has a PICMG 2.16 compliant packet switched backplane, just like PTI's existing CPC4400 series of "managed" embedded switches. But the "unmanaged" CPC4400 has a less expensive backplane directed at applications that don't need sophisticated monitoring and routing features, but it can still perform all basic IP switching tasks associated with wireless infrastructure, IP telephony or any next-generation network equipment that handles Ethernet traffic.

Volume price of the IPnexus CPC3400 is $995.

PTI has also announced the MicroLegend Signaling Blade, an embedded signaling gateway in a CompactPCI form factor. It's specifically designed for telecom equipment manufacturers seeking to integrate SS7/IP signaling capabilities into their current and next-generation designs. The PICMG 2.16 compliant Blade works as a signaling gateway when integrated into embedded telecom system environments, and can be configured as a signaling endpoint or a signal transfer point (STP) in the SS7 network. The Blade can also provide signaling networking capabilities between the circuit switched PSTN and IP telephony networks.

The Blade's distributed software architecture allows two or more Blades to be clustered together to provide fault resilience in case of a module or link failure.

PIKA

PIKA (Kanata, Ontario, Canada -- 613-591-1555, www.pikatech.com) offers the Pika PrimeNet MM
platform for media processing. Pika's AllOnBoard architecture allows the PrimeNet MM family to have high port densities along with a DSP subsystem that can be independently scaled and dynamically allocated to any line. This means that service providers not only lower their costs by running more lines from a single chassis, but also can mix and match applications to available processor resources on the fly.

The PrimeNet MM family includes two lines of T1/E1 cards: CompactPCI and PCI. The PrimeNet MM Compact PCI card provides voice over quad or octal span T1/E1/ISDN Primary Rate Interface (PRI) network connections for up to 240 digital telephony channels. They support up to eight digital network interfaces and 35 100 MIPS DSPs. Pika's cPCI card is H.110 complaint thanks to the Lucent/Agere Ambassador chipset, with a maximum port switching capacity of 512 CT connections, or 256 full duplex connections.

RADISYS

RadiSys Corp. (Hillsboro, OR -- 503-615-1100, www.radisys.com) is another leading CompactPCI vendor, having acquired Texas Microsystems a few years ago, one of the great names in fault-resilient computing.

RadiSys' latest cPCI-based building block for telecom applications is the EPC-3301, a 6U-high CPU board. It can hold a 400 MHz Intel Mobile Pentium III processor, featuring low-power operation and a passive heatsink. The board also includes ruggedized non-rotating mass storage (CompactFlash) and a SCSI interface for 24/7 operation of 3.5-inch hard disks. The EPC-3301 has two 144-pin SO-DIMM sockets that hold up to 512 MB of SDRAM. There's also support for 10Base2 (BNC connector) and 10/100BaseTX (RJ-45) Ethernet, SCSI II, dual serial, dual USB, parallel, keyboard, mouse, and PMC video connectors, all of which are accessible via the front panel. A watchdog timer, real-time clock with an onboard battery, dual EIDE interfaces, and a floppy interface are also onboard.

The EPC-3301 can run under VxWorks, Windows 98, NT and 2000.

RadiSys has also debuted the ENP-3510, a CompactPCI board that's said to be the first Intel IXP1200 Network Processor-based time division multiplexing (TDM) packet-processing solution on the market. The ENP-3510 enables high speed IP packet processing for any application that demands high density or high speed packet processing, and supports 256 full duplex channels per board (the rough equivalent of up to 10 T1s).

The ENP-3510 has four 10/100 BaseT Ethernet connections available either on the front panel or rear transition module. There's also a single PMC site that can be used as I/O for E1/T1; to provide OC-3 ATM or a DSP cluster; or for other special-purpose interfaces.

RITTAL

Late breaking news from Rittal (Springfield, OH -- 937-399-0500, www.rittal-corp.com) is the 1U RiBox that houses a complete one-slot cPCI system with rear I/O. It's designed as a gateway to a central telephone networking system. Forced air cooling is done with a 22 CFM blower, and
monitoring features include: a user configurable alarm channel, low speed fan detect, power supply over temperature detect, low input voltage detect, remote error monitoring and user configurable external access to select rear I/O connections.

Faced with integrating multiple complex elements into Rittal's RiBox, Rital's engineers managed to complete the project in just four weeks. Thermal dynamics were a major factor in the design solution, along with the alarm board that ties into the power supply.

SBE

SBE (San Ramon, CA -- 925-355-2000, www.sbei.com) now offers the HighWire400c/M, a 6U Motorola MPC8245 PowerPC based core-processing board with two PTMC module sites, dual Ethernet ports and packet switched backplane support. It holds 64 MB of SDRAM and 1 MB of Flash memory.

A variety of both PTMC and PMC modules can be used with the board. SBE's wanPTMC products include multiport channelized T1/E1/J1 interfaces and fully channelized T3 PTMC H.110 CT Bus-enabled modules with onboard OSI Layer 1 packet processors supporting SS7 and HDLC modes. A wide range of HW400c/M compatible wanPMC standard PMC modules supporting T1/E1/J1, clear channel T3, HSSI and Synchronous Serial interface in single and multiport configurations are also available.

SBS TECHNOLOGIES

SBS Technologies (Carlsbad, CA -- 760-438-6900, www.sbs.com) recently debuted the Model CP61016 rackmount, a 10U CompactPCI systems enclosure for 6U CompactPCI cards. It fits into a 19- or 23-inch RETMA rack.

The enclosure comes fully wired and integrated with either a 16-slot standard or H.110 telephony CompactPCI backplane, N+1 350 watt hot-swap pluggable power supplies (AC or DC input), state-of-the-art reverse impeller blower cooling and a front-operator control panel display. Standard options include an integrated health monitoring system and an extra fan tray below the card cage to ensure airflow in development environments. The advanced cooling system provides continuous airflow throughout the system, allowing up to 1000 watts of heat dissipation. List price begins at $6,265.

SBS Technologies is also teaming with the Motorola Computer Group to provide a high-speed 6U WAN packet processor, the ARIES 2000IP, to be designed for Motorola's PXP2000 IP packet switched backplane telecom platform.

The ARIES 2000IP board's high performance 66 MHz local PCI bus, dedicated packet buffer and dual PMC sites make it capable of hosting many high-density interfaces ranging from T1/E1 to multiple OC-3. Coupling the ARIES 2000IP with Motorola's PXP product allows Motorola to offer OEM media servers, optical switches, signaling gateways and integrated access devices (IADs).
**TECHNOLAND**

Technoland's (Sunnyvale, CA -- 408-992-0888, [www.technoland.com](http://www.technoland.com)) latest 6U CompactPCI board is the TL-cPCI 7000LLV, a hot-swappable 6U CompactPCI CPU board built with the Intel 440BX AGP set. Mobile Pentium III or Celeron processors with up to 700 MHz clock speed can be the board, which supports up to 512MB of SDRAM. The board needs no CPU fan but only a passive heat sink.

For networking functionality and availability, TL-cPCI 7000LLV is also equipped with two Intel 82559 fast Ethernet controllers that can be configured to double the existing bandwidth. Other feature highlights include one built-in DiskOnChip socket with flash memory up to 144 MB, an SMI SM721 G4/G8 VGA Controller with 4MB/8MB embedded memory for CRT / LCD support, Award 2Mbit Flash BIOS, two serial ports, one parallel port and two USB ports.

**TRACEWELL**

Tracewell Systems (Westerville, OH -- 614-846-6175, [www.tracewellsystems.com](http://www.tracewellsystems.com)) has announced availability of its T-Frame for CompactPCI, a highly configurable eight-slot general-purpose system development platform for board-level, software and even production testing. It cuts engineering time for cPCI-based electronic products and allows engineers to fully concentrate on product development and system integration.

The T-Frame has an open-frame design that provides direct access to installed boards, without the use of performance-robbing extender cards. Built-in, detailed measurements of backplane voltages, current, and exhaust air temperature enable engineers to monitor vital parameters without the time and expense of external data acquisition equipment and programs.

The eight-slot, 64-bit backplane is hot-swap compatible (per PCMIG 2.1), and supports standard 3U or 6U boards. The system slot is left justified to provide full access to the component side of installed boards. The rear I/O card cage is adjustable for 60, 80, or 100mm boards. Power options include single or dual 350W plug-in power supplies, allowing hot-swap power simulation, N+1, or 700W operation. Power supplies can be installed in either the front or rear card cage, further improving accessibility.

The T-Frame for cPCI starts at $3,595 in single quantities.

**TRENTON TECHNOLOGY**

Trenton Technology Inc. (Gainesville, GA -- 770-287-3100, [www.trentonprocessors.com](http://www.trentonprocessors.com)) continues its growth in the CompactPCI area with its new CPLE CompactPCI SBC with Pentium III low-profile FC-PGA processors running at speeds up to 1 GHz (or Celeron processors up to 850 MHz). This makes the CPLE is Trenton's fastest cPCI CPU board. The CPLE has dual Ethernet, 4 MB of SVGA video, 4MB of Flash memory and up to 1 GB of standard SDRAM, all fitting in a single-slot form factor. The CPLE also uses the ServerWorks ServerSetIII LE chip set, which supports a high Front Side Bus bandwidth of 100/133MHz and a 32-bit/33MHz or 64-bit/66MHz PCI Local Bus, allowing you to take use this board with applications demanding high processing power and memory.
bandwidth.

The CPLE is fully compliant with the PCI Local Bus 2.1 and PICMG 2.0 Revision 3.0 CompactPCI Specifications. Runs under most popular OSes. List prices start at $2,169. Volume and OEM purchase programs are available.

VMIC

Just as we were going to press, VMIC (Huntsville, AL -- 256-880-0444, www.vmic.com) announced the VMICPCI-7753, an Intel socket 370 Celeron and Pentium III CompactPCI bus system controller. The VMICPCI-7753 offers processor speeds of 566 MHz to 866 MHz, but can be cooled with only a passive heat sink. There's also a 133 MHz front side bus, up to 512 MB SDRAM on a SO-DIMM module, and an Ultra DMA/100 IDE hard disk interface. Up to 192 MB of IDE CompactFlash is optional.

The board sports a PMC mezzanine expansion site and supports remote boots over Ethernet. A software-selectable watchdog timer with reset is also onboard. An onboard Fast Ethernet controller supports 10BaseT and 100BaseTX interfaces. Two USB ports (one front panel USB port, one USB port available via rear I/O) OS support includes Windows NT / 2000, VxWorks, Solaris, Linux, LynxOS, and QNX.

VOICEBOARD


The MediaPro SGW integrates up to 128 SS7 signaling links, T1/E1 network access and a full complement of embedded SS7 signaling gateway software on a single cPCI board. MediaPro PowerPro Signaling Gateway software includes all SS7 layers up through the ISDN User Port/Telephone Port (ISUP/TUP) interface as well as stacks for implementing 2.5/3G wireless solutions.

Voiceboard's PowerPro software can support 128 SS7 signaling links at their maximum capacity. MediaPro SS7 can achieve fault resilience by running its stack software on a networked configuration of redundant active/standby processors, so that high availability is attained even if the redundant stack processors are geographically distributed.

Voiceboard also offers the MediaPro MGW, an integrated Media Gateway solution for carrier class applications on a single cPCI board. The board has 256 T1/E1 network access ports, dual 100baseT Ethernet, DSPs, and embedded Media Gateway software on a single cPCI board.

MediaPro MGW protocol software runs on the embedded PowerPC 750 processor and RTOS, and can handle the board's full 256-port capacity. Downloadable MediaPro MGW protocol software
includes H.323, MGCP, MEGACO/H.248 and SIP. Downloadable MediaPro MGW DSP software for VoIP and VToA applications include G.7xx vocoders, G.168 echo canceller, T.38 FAX, conferencing and V.90 modem modules. CPCI host and Ethernet drivers are available for VxWorks, Solaris, Lynx OS, Linux and Windows NT.

The MediaPro IP network configuration eliminates single points of failure in the cPCI chassis and simplifies hot swap operation. The MediaPro MGW single board architecture allows port capacity to be scaled without limit and application servers to be located remotely.

ZIATECH

Ziatech (San Luis Obispo, CA -- 805-541-0488, www.ziatech.com) is now part of Intel. The company that got the CompactPCI ball rolling back in 1994 is still busy developing new cPCI products.

For example, the ZT 5084 10U High Availability Platform has five-nines (99.999%) availability with built-in redundancy for active system components including system-slot CPU boards, power supplies, and alarming. Its components are hot swappable.

The ZT 5084 is a 19-inch rackmount that has a 16-slot cPCI backplane driven by a low power Pentium III board. There are 12 64-bit peripheral slots compliant with the H.110 telephony bus and rear-panel I/O is supported (rear-panel transition cards can be 80mm-deep IEEE 1101.11-style.). Windows 2000, Linux and VxWorks are supported.

Ziatech has also released the ZT 5087 Telephony Platform, which has seven slots horizontally mounted in a 4U-high enclosure. The unit has an interesting fan-tray assembly uses efficient side-t-rear cooling. The CD-ROM and Slimline floppy disk drive, optional hard drive, and advanced alarming features reside on a single-slot media carrier alarm board (MCAB). Windows 2000, Linux and VxWorks are supported.

Finally, Ziatech's ZT 5503 System Master Processor Board is designed for telecom and Internet applications demanding multiprocessing solutions for increased performance and system reliability. Optionally, the 6U-high board can operate in a peripheral slot in drone mode, whereby it does not communicate on the cPCI bus. This option permits use of the ZT 5503 as a standalone computer in a peripheral slot.

The board accepts up to an 800 MHz Pentium III processor (Intel 440 GX chipset) and 512 MB to 1 GB of ECC SDRAM. The board supports Windows 2000 Professional, Linux, VxWorks and Windows 2000 Server