



CEDPA K-12 TECHNOLOGISTS
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DataBus

“Supporting California's Educational Technology Community”

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Smooth Scaling to Gigabit Ethernet

Technology: New standard offers higher bandwidth at reduced costs.

Sue Mangiapane, Cisco Systems, Inc.

The increasing deployment of switched Ethernet to the desktop can be attributed to the proliferation of bandwidth hungry intranet applications that drive demand for more and more bandwidth. Web browsing, and any-to-any communications of new intranet applications such as video to the desktop and collaborative whiteboarding are increasing the need for scalable bandwidth within the core of campus networks, while mission-critical applications call for resilient network designs. With the wide deployment of switched Fast Ethernet in the campus, users are awaiting delivery of standards-based Gigabit Ethernet products to scale performance across their backbones.

An example of Gigabit Ethernet implementation is Fast EtherChannel™ by Cisco Systems, Inc. Cisco's Fast EtherChannel technology builds upon standards-based 802.3 full-duplex Fast Ethernet to provide network managers a reliable high-speed solution for the campus network backbone. Fast EtherChannel provides bandwidth scalability within the campus by providing increments of 200 Mbps to 800 Mbps with multigigabit capacity in the future. Fast EtherChannel technology not only solves the immediate problem of scaling bandwidth within the network backbone today, but also paves the path for an evolution to standards-based Gigabit Ethernet and beyond, because Fast EtherChannel technology can be applied to support Gigabit EtherChannel.

Fast EtherChannel Benefits

Fast EtherChannel provides a solution for network

managers who require higher bandwidth between servers, routers, and switches than Fast Ethernet technology can currently provide. Cisco is committed to providing its customers with smooth evolution to Gigabit Ethernet bandwidth and beyond, and, with Gigabit Ethernet technology, Cisco will extend Fast EtherChannel to scale to provide multigigabit backbones in the future.

Fast EtherChannel provides scalable bandwidth in increments without having to deploy pre-standard Gigabit Ethernet approaches today and replace them tomorrow. Fast EtherChannel provides the following benefits:

- Standards based—Fast EtherChannel builds upon IEEE 802.3-compliant Fast Ethernet by grouping multiple full duplex point-to-point links together. Fast EtherChannel uses the industry standard 802.3

(See "Gigabit Ethernet" on Page 4)

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CEDPA Information

CEDPA is an association of Educational Data Processing Professionals (technologists) within the State of California. Founded in 1960, the major emphasis of the association's activities are directed towards improving Administrative Information Processing in public education within the State of California and to prepare its membership to better meet and support the technological needs of the Instructional Program.

CEDPA is a California non-profit corporation, as recognized by the Internal Revenue Service.

As cited in CEDPA's bylaws, the purpose of this organization shall be:

(a) To provide information to the California public educational community concerning educational data processing via dissemination at an annual conference and through periodicals and special interest seminars.

(b) To foster the exchange of knowledge of educational data processing concepts, systems and experiences between educational data processing installations and other associations both at the state and national level.

(c) To inform the association membership of important information concerning educational data processing.

(d) To provide recommendations to the State Department of Education, State Legislature, school districts, County Offices of Education and other public educational organizations concerning educational data processing.

(e) To develop professional standards for the Educational Information Systems Community within the State of California.

Yearly membership in CEDPA is granted to attendees of the Association's annual conference. Individuals interested in the Association's mailings may request to be added to CEDPA's mailing list by writing to the address below or filling out the interest form at CEDPA's website.

The *DataBus* is published bimonthly by the California Educational Data Processing Association and is distributed without charge to all members of the association and other selected technologists within the State of California who are interested in information systems processing and technology in education. Submissions, correspondence, and address changes should be sent to the editor at:

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President's Corner

Russ Brawn, WestEd

We are “**CEDPA K-12 Technologists.**” Starting with this year's conference, that's how you'll most often see our name in print. We've gotten feedback for some time that “data processing” (as in California Educational Data Processing Association) doesn't do our membership justice. It is not that data processing isn't germane to our jobs, but it is only a part of what we do.

Taking into account the design, implementation and management of data centers, local and wide area networks, and mission critical information systems begins to give one a sense of the complexities of our missions. However, we are called upon to meet increasing challenges that are only in part technical. We may hear words such as “communication,” “leadership,” and “accountability” at least as often as words such as “access,” “interconnection” and “bandwidth.” To best serve our constituencies we need growth both more broadly and in more depth than ever before. Business acumen, domain and technical expertise are all called for.

Strategic and tactical planning for support of our historically mostly administrative users is rapidly being augmented with like tasks for the educational side of the house. We've a number of opportunities to directly benefit students and parents as well as teachers. The breadth of this year's conference, “Reaching the Classroom,” is reflective of this.

So, starting here, starting now, you'll notice that CEDPA will not be spelled out habitually as it has been in the past. Rather, “CEDPA, Supporting California's Educational Technology Community” will be a phrase often seen in print. It is much more reflective of the jobs that you and your Board do. Our voice in statewide advocacy for K-12 technology issues continues to grow, let's not confuse anyone by an over emphasis on DP.

Just as most elements of our jobs still remain (with a lot of new responsibility thrown in for good measure) so it is with our identity.

- We are still CEDPA, we're not letting go of the name recognition built over the last 38 years.
- The *DataBus* will remain a core means of communication among us. You'll still have it available in print and via our web-site.
- Our basic logo is still our name within an outline of California. We will not let go of our emphasis on uniquely

California issues, nor on ignoring the diversity of our member needs.

As part of conference business, we will ask you to approve some revised wording in the CEDPA By-Laws. What hasn't changed? Our focus on service. Our need to work deliberately, creatively and collectively for the betterment of California's K-12 public school system. Proudly wear your new lapel pins – we are **CEDPA K-12 Technologists.**

Intel to Discuss “Technology For the New Millennium”

Be sure to catch Intel's breakout session at CEDPA's conference. Their presentation, “Technology's For the New Millennium” describes Intel's Strategy for K-12 beyond the year 2000. In this session, you'll learn about the latest technology roadmap for processors and other related technologies and see examples of leading edge software applications for students and teachers. You'll also get an idea of the technologies involved in getting this PC connected to the world.

Also in this session you'll hear how Intel is advancing the networking, internet access, and management of the classroom activities through the use of simple, yet advanced technologies such as high performance PCs, Fast Ethernet, distance learning/video conferencing and shared access. School-level technologies, including servers (file, Internet, video), hubs, switches, routers and management software will also be reviewed. After attending this breakout, you'll know the key trends and products to embrace those trends in and around the school.

Intel's presentation will be held on Wednesday at 1:30 PM in the Club Marquis. Intel will also present sessions in the Network Operations Center—be sure to check the NOC schedule.

Gigabit Ethernet

(Continued from Page 1)

mechanisms for full duplex auto-negotiation and auto-sensing.

- **Multiple Platforms**—Fast EtherChannel is flexible and can be used anywhere in the network where bottlenecks are likely to occur. Fast EtherChannel can be leveraged in network designs to increase bandwidth between switches, between routers and switches, as well as providing scalable bandwidth for network servers, such as large UNIX servers or PC-based Web servers.
- **Flexible Incremental Bandwidth**—Fast EtherChannel provides bandwidth Aggregation in multiples of 200 Mbps, with multiples of Gigabit Ethernet in the future. For example, network managers can deploy Fast EtherChannel consisting of pairs of full-duplex Fast Ethernets to provide 400+ Mbps between the wiring closet and the data center, while in the data center bandwidths of up to 800 Mbps can be provided between servers and the network backbone to provide large amounts of scalable incremental bandwidth.
- **Load Balancing**—Fast EtherChannel is composed of multiple Fast Ethernet links and is capable of load balancing traffic across those links. Unicast, broadcast, and multicast traffic is evenly distributed across the links providing higher performance and redundant parallel paths. In the event of a link failure, traffic is redirected to remaining links within the channel without user intervention.
- **Resiliency and Fast Convergence**—Fast EtherChannel provides automatic recovery for loss of a link by redistributing loads across remaining links. If a link does fail, Fast EtherChannel will redirect traffic from the failed link to the remaining links in less than a second. This convergence is transparent to the end user—no host protocol timers expire, therefore no sessions are dropped.
- **Ease of Management**—Fast EtherChannel leverages the experience and know-how developed over the years in troubleshooting and maintaining Ethernet and Fast Ethernet networks. Existing network probes can be used for traffic management and troubleshooting, and existing management applications such as CiscoView and TrafficDirector will be leveraged to support Fast EtherChannel.
- **Transparent to Network Applications**—Fast EtherChannel does not require any changes to networked applications. When Fast EtherChannel is

used within the campus, switches and routers provide load balancing across multiple links transparently to network users. For support of Fast EtherChannel on enterprise-class servers and NIC cards, smart software drivers can coordinate distribution of loads across multiple network interfaces.

- **Compatible with Cisco IOS**—Fast EtherChannel connections are fully compatible with Cisco IOS virtual LAN and routing technologies. The Inter-Switch Link (ISL) VLAN trunking protocol can carry multiple VLANs across a Fast EtherChannel, and routers attached to Fast EtherChannel trunks can provide full multiprotocol routing with support for hot standby using HSRP.
- **Gigabit Ethernet Ready**—Fast EtherChannel technology is Gigabit Ethernet ready. Fast EtherChannel allows network managers to deploy networks today that scale smoothly with the availability of standards-based Gigabit Ethernet and beyond with future Gigabit EtherChannel.
- **Fast EtherChannel's trunking technology is based on grouping together multiple full-duplex 802.3 Fast Ethernets to provide fault-tolerant high-speed links between switches, routers, and servers. Fast EtherChannel is based on proven industry standard technology and provides load sharing across multiple Fast Ethernet links while providing redundancy and sub-second convergence times.**

Summary

Fast EtherChannel is a technology-leveraging, standards-based Fast Ethernet used in parallel to provide the additional bandwidth network backbones require today. It is an extension of EtherChannel applied to Fast Ethernet and is readily adaptable in the future to provide Gigabit EtherChannel as Gigabit Ethernet standardization is completed. In the interim, it provides flexible, scalable bandwidth with resiliency and load sharing across links for switches, router interfaces and servers. Fast EtherChannel provides the tools for network managers to build high-speed solutions today for their campus backbones, while leveraging their existing cabling and network device infrastructure. Cisco's strategy is to extend EtherChannel technology to Gigabit Ethernet upon its standardization.

Sue Mangiapane is Account Manager for Cisco Systems, Inc. She can be reached by telephone at (949) 789-5006, by FAX at (949) 789-5005, or by e-mail at smangiap@cisco.com. Be sure to drop by Cisco's Kiosk at the conference.

Microsoft Happenings

Tuan Nguyen, Microsoft Corporation

Why Use Microsoft Proxy Server in Your School?

Using Microsoft Proxy Server, your school can take advantage of the many ways the Internet can facilitate learning and enrich what is taught in the classroom, without leaving your network vulnerable to attacks from the outside or to inappropriate use from within your own network. Proxy Server will make Web use from within your school quicker and more easily managed, giving your users access to a rich diversity of Internet multimedia and interactive content, while saving you money by making efficient use of Internet dial-ups. Proxy Server is truly a powerful tool, integrated with the popular Windows NT Server, and included as part of the Microsoft BackOffice family of products.

High-Performance Access

Microsoft Proxy Server also delivers high-performance access to the Internet and your intranet. Proxy Server improves response times and minimizes network traffic by caching a local copy of frequently requested Internet or intranet data on a local computer. Proxy Server does this by dynamically analyzing Internet and intranet use and automatically identifying the most frequently used data. Proxy Server then caches this information, thus ensuring that users can access the most popular information quickly. Proxy Server also enables administrators to define a Time-to-Live for all objects in the cache, helping to keep the information fresh and ensure maximum efficiency. For example, with these tools you could provide a quick way to access an up-to-date MSNBC web page several times a day, without having to go out and retrieve this information over the Internet every time.

Microsoft Proxy Is a Secure, Easily Managed Internet Solution

Microsoft Proxy Server's single, secure gateway eliminates the need to share one dedicated machine for the Internet among multiple students. This eliminates the need to run multiple Internet lines into the school to provide different computers with separate connections, and delivers maximum accessibility, while helping to simplify administration.

Intuitive Interface

The Windows® interface is consistent throughout the current Microsoft operating systems: Windows 95,

(See "Microsoft" on Page 8)

InterGate to Provide Services for the NOC

Dan Shahbazi, Internet Products, Inc.

Internet Products, Inc. will be assisting with the Network Operations Center (NOC), giving two presentations and exhibiting at this year's CEDPA Conference. Two InterGates, the company's flagship turnkey Internet server will be on-hand at the conference. One will be located at Booth #25 and a second will be providing a realm of Internet services in the NOC.

Farley Stewart, Internet Products CEO will be on-hand at both locations to discuss the benefits the InterGate Solution can provide to the successful implementation of district wide Internet access and management. Currently, InterGate has been deployed in more COEs and districts in California than any other Internet solution.

CEDPA attendees can gain further insights at two breakout sessions Stewart will present. On Wednesday, October 14, from 1:30 - 2 p.m. Stewart will present "Simplify Districtwide Internet Management with InterGate." Attendees at this session will gain a clear understanding of how to effectively manage Internet access at their districts through a single, low cost of ownership device.

On Friday, October 16 from 9:15 to 9:45 a.m. Stewart will present "How To Quickly and Safely Implement Districtwide Web Filtering." This session will discuss the various Web filtering methods available and how to best accommodate differing acceptable use policies with an accurate, flexible and safe Web filtering solution.

Further information about Internet Products can be found on the Web at www.InternetProducts.com or via e-mail at info@InternetProducts.com.

Dan Shahbazi is Public Relations Manager for Internet Products, Inc., and may be reached by telephone at (619) 576-4100 x 109 or by FAX at (619) 576-4111. His e-mail address is dan@ipinc.com.

Vendor Show—1998

Mike Caskey
Stanislaus County Office of Education

Welcome to the 1998 CEDPA Vendor Exposition. This year, there are more than 50 vendors displaying their products for you. In this group, there are several vendors that have not previously been to a CEDPA Vendor Show. The vendor exposition features a wide variety of hardware and software products including network equipment and connectivity hardware and software, document imaging hardware and software, scanning hardware and software, administrative systems, Internet providers, Internet hardware and software, general computer hardware and software, printing systems, and database systems.

This year, we are introducing Kiosks into the vendor exposition. These large booths will be specially constructed for the 1998 CEDPA conference. The Kiosks are stand-alone units that have been referred to as "Islands". There is room for only 4 of these special booths and they will be situated in the Foyer area of the ballroom. Vendors with Kiosk booths are Intel, Microsoft, National Computer Systems (NCS), and Novell. Please let the board know what you think of this concept.

Please take time to visit each of the vendors. These vendors support education in general, K-12 education in the State of California, and these vendors support your organization. And, you just might run into a solution to a problem.

Enjoy the show!!!

CEDPA Listservs

Edtech - A discussion forum for educational technology issues.

Erate - A discussion forum for E-Rate, the FCC ruling on Universal Service that provides schools and libraries significant discounts on telecommunications services.

SIG - A discussion forum for K-12 information management issues; also used to assist with the planning and announcement of CEDPA SIG meetings.

To join a list, send an e-mail message to listserv@cedpa-k12.org. Leave the message subject blank. The message body should contain only two words: the word **subscribe** and the name of the discussion list you wish to join. The rest of the message should remain blank. Do not append your signature line to the message.

To leave a list, send a message as above, except use the words **unsubscribe** and the name of the list.

CSIS Report

Bob Friedman, CSIS

Legislation and funding have re-vitalized efforts to get The California School Information Services (CSIS) program moving once again. The CSIS mission is to enable LEA's to electronically transfer student records between districts and to postsecondary institutions and to submit state reports electronically to the California Department of Education (CDE). A CSIS Work Group has been formed which has met twice already. The task of the CSIS Work Group is to provide technical leadership in developing the information system requirements and procedures necessary to support the statewide implementation of a robust system that will meet LEA needs.

During September, the CSIS Work Group met on September 9th and 23rd to work on a common student identifier, a course cross-walk mapping procedure, and to begin the review of CDE state reporting data elements to be electronically transferred through CSIS.

The objectives of CSIS describe a process of electronic collection and transfer of common data elements between and among districts and the California Department of Education. Three major objectives to be accomplished by school agencies are:

- By June 30, XXXX every California public school district will have implemented a district student information system containing the common core functions and data element standards necessary to effectively manage and use school information locally and to perform electronic state reporting and student records transfer activities.

- By June 30, XXXX every California public school district will have implemented the electronic transfer of school information to the California Department of Education (CDE) which will be ready to receive and process the school information received through the CSIS system.

- By June 30, XXXX every California public school district will have implemented the electronic transfer of student records to other school districts and to postsecondary institutions.

Bob Friedman is Administrator for California School Information Services (CSIS). He may be contacted by e-mail at bobf@csis.k12.ca.us. Be sure to attend the CSIS breakout session on Thursday at 8:30 AM in the Oasis I room to learn of the latest developments with CSIS.

Novell News

Software: New products and licensing options provide attractive alternatives for education.

Joe Rodehaver, Novell, Inc.

Novell Announces New School Licensing Program For K-12

Novell recently announced a new licensing program for K-12 schools that would allow schools to use a bundle of Novell products for as little as \$2.00 per student per year. Under this program, schools or districts can have unlimited and unrestricted use of NetWare, BorderManager and ZEN Works products for \$2.00 per student per year which includes all upgrades and update protection for these products. Should the school or district desire other products such as GroupWise, ManageWise or NDS for NT, they can add any of these for only \$.50 per student per year and get the same type of upgrade protection as for the bundled products. The student count is based upon ADA count and is paid for and reported only once a year. This new program offers a very inexpensive and easy to administer way to use Novell products. During the past two months since it's announcement, 286 school or districts throughout the nation have signed up for the SLA — School Licensing Agreement. All that is necessary is a four page agreement which includes a worksheet to report and figure annual license fees. The agreement is year to year with no long term commitment, rather. It is an "evergreen" contract that automatically renews unless the school or district tells Novell to cancel. Novell would be happy to send any interested school or district program information and a copy of the agreement by sending a request to Joe Rodehaver, Western Area Manager, Novell Academic Sales at jrodehav@novell.com or by phone at 714-474-2807. Also, come by the Novell Booth at CEDPA Conference in October.

Novell Begins Shipping of NetWare 5 and ZEN Works

Novell announced early shipping of NetWare 5, the next generation of network operating systems allowing native pure IP from the server and many new internet features. NetWare 5 is based upon open internet standards and has added virtual memory management as well as a multi-processing kernel allowing the running of true distributed applications. New added features include a Runtime Environment for Windows 95/98 and Windows for NT giving customers thousands of JAVA applications with 100% JAVA support. Shipping with NetWare 5 is Oracle 8, 5-user version and education users can receive a free download of Netscape Web Server and Netscape Messaging Server. NetWare 5 allows increased

security when accessing the internet and offers extended NDS and distributed printing benefits. Watch for the new Grant program which will offer NetWare 5 both in new licenses and upgrades at extremely deep discounts for K-12.

Also, Novell started shipping Z.E.N. Works (Zero Effort Networks for Users) which is the first directory-enabled desktop management tool that makes Windows-based PC's more reliable and easier to use. ZEN Works leverages Novell's industry-leading NDS, the most mature

(See "Novell" on Page 8)

Network Operations Center: Connectivity in Full Bloom

The Network Operations Center (NOC) is an exciting new addition to the conference this year. With **Systems Management** as the theme for the NOC, you will be able to attend a variety of tech-talks from leading manufacturers of software and hardware on products that can make managing your network easier. You'll see new technologies up and running, and have opportunity to watch and ask questions as systems engineers install and configure their latest wares.

The NOC will occupy two meeting rooms. Dozens of PCs running Windows98 and Windows NT will be supported by Windows NT and Novell Netware servers. Cisco's IP TV, HP's OpenView, CiscoWorks, and other technologies will be operational. Routing and switching equipment will be supplied by Cisco and Allied Telesyn. LAN environments will be supervised by InterGate and Microsoft's Proxy Server.

The tech-talks include topics such as "How To Deploy Microsoft's Systems Management Server," "CiscoWorks and How To Problem Solve With Netsys," and "A Look At Novell's NetWare Five," just to name a few. Each tech-talk will be presented by a systems engineer, who will also be available for one-on-one Q&A later in the day.

Be sure to stop by the NOC and see connectivity in full bloom!

Microsoft

(Continued from Page 5)

Windows NT Server 4.0, and Windows NT Workstation 4.0. The most widely used interface in the world gives schools the advantage of familiarizing their students to an operating system they are likely to be using in the business world. Additionally, the familiar and intuitive interface is consistent throughout Microsoft Proxy Server and other Microsoft products, making Proxy Server an easily managed and powerful tool for teachers and school administrators.

For more information please access our K-12 Education web site at <http://www.microsoft.com/education/k12>.

Be sure to see Microsoft in action at the Microsoft Kiosk and in the Network Operations Center at CEDPA's conference.

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Novell

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and multi-functional directory service available, to simplify network administration and lower the total cost of owning networked PC's. With ZEN Works, network users require less support and spend less time troubleshooting. ZEN Works offers the ability of users to roam from one PC to another while maintaining their familiar interface and having access to the network resources and applications they require with a single login. Also, ZEN allows an automated first step in the help desk process giving users quick resolution to problems without dispatching a technician. End users get automatic repair of "broken" applications as well as personalized software distribution, workstation hardware inventory, secure remote control and automatic printer configuration. These are all the things every school district has been asking for.

Stop by the Novell Booth at CEDPA Conference in October and see the above products working in the Network Operations Center at CEDPA.

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