"Now That I Can Surf, How Did I Find Myself Up the (Video) Stream Without A Paddle?"

Scott Sexsmith, Merced County Office of Education

This article is the first of several that we'll be sharing with readers in regard to video applications running over TCP/IP networks. At Merced County Office of Education, we're involved with three basic video applications. They are video streaming, videoconferencing, and video "store and forward." Before I go any further, let me clarify that I am not, by any means of the imagination, an expert in this field. Rather, my experience has come about much like yours, through trial and error and listening to our peers. I've also been very fortunate to work with a great network team here that's making all of this really happen. The team currently consists of Dwayne Stafford, Vern Alvarado, and Nanette Waggoner.

I'd like to share with you first a little bit about what we've been doing in the area of video streaming over the past year. Our efforts began about a year ago when we started exploring the possibility of running some videoconferencing over our existing LAN. With the purchase of two inexpensive Connectix cams, we quickly had a point-to-point conference running. Not great video quality, but reasonably good for the $200 investment. The audio quality was acceptable, and I became more interested in the whole process of implementing video/audio over the network.

Enthused by the relative simplicity and success of the test, we began looking into what would be needed to do simple video streaming over the LAN. Why video streaming? Streaming content can consist of live video, video

on demand (VOD), or scheduled video streams. Let's start with the idea of taking a speech from a superintendent being delivered to a large school district as an example. There is a very good chance that not all employees are going to be able to attend the live speech. It might be convenient to let those employees view a rebroadcast of the speech later on. After a week, the speech could remain available to employees and the public as a video on demand.

We started off on the project with the following premise: Build it cheap, learn as we go, and develop a "Proof of Concept System." We chose this aproach because none of us had any real experience with video via the LAN, and we didn't have an approved budget for the

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CEDPA Information

CEDPA is an association of K-12 Technologists. Founded in 1960, the major emphasis of the association's activities are directed towards improving K-12 Technology in public education within the State of California and to prepare its membership to better meet and support the technological needs of Administrative and Instructional Programs.

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 information systems and technologies via dissemination at an annual conference, through quarterly periodicals and special seminars.

(b) To foster the exchange of knowledge of educational information systems and technologies concepts, systems and experiences between local education agencies and other associations both at the state and national level.

(c) To inform the association membership of important information concerning educational information systems and technologies.

(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 information systems and technologies.

(e) To develop professional standards for the educational information systems and technologies 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.

President's Corner

Terrell Tucker
Panama Buena-Vista Union School District

Whether you're new to CEDPA or a long-time member, 1999 has already begun to show us the value of membership. Since the inception of E-rate, CEDPA has been involved with the visible participation of Greg Lindner and Skip Sharp in teleconferences and the CEDPA E-Rate listserv allowing each of us to gain new insights into the program. Members helping members has been critical in the realization of substantial funding for K-12 organizations.

State organizations such as ETAC and CCSESA have realized the value provided to the Educational community by CEDPA members by inviting us to participate in planning sessions.

Problems are on the horizon with the coming of the year 2000. However, help is at your fingertips with the Edtech and Y2K listservs and willing CEDPA participants.

Naturally, your Board of Directors is concentrating on "Switching Millenia". The theme for this year's Conference deals with the significance of the Y2K issues along with today's necessary switching technology. On a personal note, I am looking forward to Monterey in November, since it will mark the return to my very first CEDPA Conference ten years ago. CEDPA has changed quite a bit the last ten years, but its focus of serving the needs of California's K-12 community has never wavered. This year's Conference will be no exception to the long line of successful events we have witnessed over the years. The interest shown by our generous vendors is at an all-time high and an excellent speaker program is underway.

Your Board of Directors would like to ask the help of each CEDPA member. It is often difficult to reach the folks who not only need the benefits of an organization like CEDPA, but can also provide tremendous help to others involved in the Education business. Each of us needs to make phone calls or send e-mails to peers who are currently not involved in CEDPA. By personally passing along the benefits of our organization, we will be doing ourselves a great favor and helping others at the same time. Each of us has a lot to offer and can always use another peer to help solve our many problems.

Vendor Show–1999

Mike Caskey
Stanislaus County Office of Education

Preparations for the 1999 CEDPA Vendor Exposition are well under way. We have sold one-third of the available booths as of 3/17/98, and have commitments for several more. The exposition will be held in the Monterey Convention Center, which is next to the DoubleTree Hotel at the Wharf.

Monterey is the site of one or our most successful conferences. It is also a site with a limited capacity for booths and we now have commitments for about 40% of the total space available for vendor spots.

If there is a vendor that you would like for me to contact, please let me know. Last year, I received many suggestions and recommendations and was able to recruit some new vendors to the venue. Since I have learned how to use the exciting and new technology that was made available to me last year, you can reach me at mcaskey@stan-co.k12.ca.us or at (209) 525-5095. Again, your tips and suggestions are always welcome.

Another reason you should let me know of any vendors you would like for me to contact now, is that exposition show rates are going up May 1,1999, from $750 to $1000. CEDPA strives to provide the best conference at the lowest possible price, but as with any non-profit organization, we must adjust rates as the hotels and conference centers adjust their rates.

The **CEDPA** vendor show puts you in contact with the companies that are familiar with, and work well in the education environment. These companies support **CEDPA** and, in turn, deserve our support as we provide technology to our districts and county offices, and go about the serious business of "Switching Millennia".

Clarification of February-March *DataBus* Article Source

The WebConvert article in the February-March *DataBus* issue (p.3) incorrectly states the article's source as being an employee of Lightspeed Net. Jack Johnson is WebConvert Head Developer at Lightspeed Software. Lightspeed Software and Lightspeed Net are not affiliated. CEDPA regrets the error.

The Schools Interoperability Framework:
A Blueprint for School Efficiency and Better Decision Making

Tuan Nguyen, Microsoft Corporation

As an IT manager, you know that no single vendor can meet all the needs for the K12 marketplace. From financials to food services, library systems to instruction, you need the freedom to select the solutions that are right for the job. But choice shouldn't mean chaos-and that too often describes the situation in many school districts. Student data is isolated in one database; enrollment records formatted for the state are in another. And both databases overlap. Simply keeping pace with fast-changing local, state and federal requirements can drain an IT department of badly needed human resources. And because today more students move from one district to another, it's more important than ever to develop a standard data format.

The Schools Interoperability Framework (SIF) aims to achieve just that. It's not a product-it's an initiative that draws upon the strengths of the leading vendors in the K12 market to enable schools IT professionals to build, manage and upgrade their systems. It's been endorsed by close to 20 leading K12 vendors of student information, library, transportation, food service applications and more. Deployment of the first pilot sites will begin by the summer of 1999, and the first SIF-based products likely will be available by the spring of 2000. This means IT managers can choose interoperable solutions from these vendors in the near term while laying the foundation for smooth upgrades and complementary solutions tomorrow.

SIF builds on the resources you already have, enabling you to take advantage of products from a wide range of vendors that all conform to industry standards. The key elements of SIF include:

• XML to define the common data formats, high-level rules, and mechanisms that enable applications to interact independently of the underlying software platform.
• Implementation guide to explain how to deploy SIF using software architecture based on Windows NT® and related technologies. Because SIF is an open process, implementation guides based on multiple platforms are possible.
• HTTP and TCP/IP to enable communications between software platforms.
• Compliance criteria and tests to ensure full applications interoperability.

SIF wasn't developed in isolation in a laboratory. It's the outcome of a series of intensive and ongoing efforts by school IT professionals and leading vendors. "The vendors who have embraced the Schools Interoperability Framework concept have set aside competitive issues to focus on the needs of the educational marketplace," explained Allison Turner, Vice President, Application Software at the NCS Education Software and Services Division.

In fact, SIF complements, reinforces and extends other standardization efforts in the K12 arena. For example, SIF incorporates many of the SPEED/ExPRESS specifications. So there's no need to come up with new definitions of common attributes like codes for gender, ethnicity and grades. And SIF will be closely coordinated with EDUCOM's IMS project.

The proof is in the SIF specs themselves. Because they're clearly and consistently defined, they provide common data access to a wide range of software packages. There's no need to waste time entering and re-entering data from one system to another: SIF allows common data access to different software packages, providing considerable savings in the person-hours needed for simple data entry. This feature will make it easy to automate and customize the increasingly demanding government reporting requirements.

In the past, it was often necessary for a district to lock itself into one or two vendors in order to achieve interoperability. SIF changes all that. School districts will be able to mix and match solutions from different vendors.

For example, a school district will be able to use one SIF-compliant application for curriculum, another for transportation, and still others for student administration and financials. Adding new functionality won't require scrapping existing software-rather, IT managers can simply plug in new modules. And thanks to Internet and LAN connectivity, SIF streamlines the sending of data between districts and from districts to the state and federal governments.

Greater interoperability reduces the time needed for

A Networking Paradigm for the Next Millennium

Planning Ahead: Scalable Solutions for Evolving Networks.

Martin Lesley & Craig Rodgers
 Intel Corporation

The ever-changing computing industry is going through another cycle in its evolution. The networking paradigm that originated with centralized mainframes and later shifted to isolated LANs has transformed again in response to the globalization of information and communication.

Unlike the network view of old — which focused on the single dimension of shared infrastructure devices, such as hubs, adapters and switches — today's network paradigm is a multi-dimensional, dynamic model that encompasses three interrelated elements: network devices, client/server systems on the network, and the management aspect. This new model has been driven by sweeping changes in communication methods and business practices — evident most visibly in the vast and rapid growth of email and the Internet, as well as LAN-specific applications such as Notes,* SAP* and Oracle.*

Intel Corporation's commitment to "faster, simpler networks" is designed to accommodate this paradigm shift. Intel's overall objective is to design solutions that address the needs of Education and businesses in computing environments as small as the home and as large as the enterprise.

This paper provides an overview of Intel's vision for the future of networking solutions. Intel's networking strategy is to deliver a full set of best-in-class, scalable solutions for evolving networks. These solutions complement Intel's efforts to "deploy, manage and protect" desktop PCs and servers, a comprehensive strategy for increasing network reliability and lowering the total cost of ownership (TCO) of PC computing.

The computing industry never has been characterized by equilibrium. Constantly in flux, it has reshaped in response to rapidly emerging technologies, and in reaction to dynamically changing user needs and business practices.

Today, from the home to the multinational corporation, evolving networks are changing the face of computing. Several interrelated industry trends are driving this evolution:

- Communications methods, protocols, business practices and business models are changing

- Processors are becoming increasingly powerful, spawning richer applications
- New networking environments are emerging, particularly in small businesses and homes, and networks as a whole are growing more complex and sophisticated
- The view of the network is shifting from an infrastructure focus to a multi-dimensional models

The evolution toward a multi-dimensional model is key to Intel's networking strategy. In the past, the "network" was viewed as essentially a collection of infrastructure devices. This notion is becoming an artifact due to the rapid and dramatic ways in which business is changing.

Only a decade ago, for example, paper memos and an "In" basket were accepted and common methods of communication. Today, the immediacy of email is nearly ubiquitous. In the past, news typically traveled by newspaper; today, the Internet offers instantaneous news updates. Even enterprise organizations large enough to justify the cost of a private WAN for communication have embraced change. Today, many businesses large and small reduce their costs by taking advantage of the Internet as a public WAN.

The shifting landscape is manifest in other areas as well. For example, whereas in the past virtually all employees tended to occupy desks at an employer's site, today's business model is characterized by escalating entrepreneurship, telecommuting and worker mobility. Technology advances have also played an important part in the evolution; most notably, the ever-increasing processing power and mobility of the PC.

Driven by these influences, today's networking paradigm is based on the notion of the "connected PC" — desktop PCs and servers vitally linked to the universal global network. Intel understands that this new paradigm requires striking a balance between the network devices, the client and server systems connected to the network, and the management solutions needed to control network and PC hardware.

The old network model focused only on the infra-

Networks

structure. The new networking paradigm encompasses all aspects of the network: infrastructure devices, client/ server hardware and applications, and management applications.

In the multi-dimensional networking paradigm — which encompasses network devices, clients and servers and management — the connected PC is the mechanism that enables global communication and information exchange.

The following standards, tools and technologies are evolving in support of this paradigm:

- Ethernet as the accepted communications method (10Mbps, 100Mbps and now including Gigabit Ethernet)
- TCP/IP as the standard networking protocol
- Shift toward a "client-to-any-server" model
- Increasing server performance
- Shift from shared segments (hubs) to switched segments (switches)
- Routers installed at the periphery of the network, with virtual private networking (VPN) technology used to reduce the cost of remote communications
- LAN-on-motherboard technology as an alternative to the NIC
- Networking products and PCs fully instrumented for manageability (Wired for Management)

Intel believes that the new networking paradigm dictates the need for powerful, flexible solutions that deliver the following:

- Adaptability and flexibility, including the ability to scale bandwidth, optimize hardware and balance the performance of the network with the performance of client and server PCs
- Products built to be effectively and intuitively manageable and managed
- Performance, including the ability to allocate bandwidth and maintain security

A design appropriate to the application; for example, small-campus solutions tailored to small-campus practices, and district office solutions tuned to the needs of users in the district.

An effective balance between performance and control is required in today's fast paced environment.

Intel is proactively responding to industry demand for faster, simpler networks by mapping its strategy to the changing landscape of PC networking. This initiative addresses the key challenges that confront consumers and businesses today as the industry evolves toward a "connected PC" paradigm in which users are vitally linked to a universal global network.

Effective solutions for this new multi-dimensional model must balance performance, control and cost across the network to maximize the benefits of computing for specific customer applications. Today's networking solutions must also maintain an effective balance between the three aspects of the new network, including the infrastructure, client/server systems and management applications. By applying its engineering, silicon and business expertise to leading-edge products, technologies and standards efforts, Intel is delivering scalable, powerful and manageable solutions for evolving networks that span from the smallest school to the largest.

Martin Lesley is a Technical Marketing Manager for Intel Corporation. Craig Rodgers is a Corporate Account Manager for Intel Corporation. Craig may be reached by telephone at (909) 597-2216 or by e-mail at craig.rodgers@intel.com.

Gates Addresses 4,500 Public School Superintendents at AASA Annual Conference

Sunmitted by Darryl La Gace, LemonGrove School District

Editor's note: Lemon Grove School District (Lemon Grove, California) was one of three hallmark school districts referenced by Bill Gates at the recent American Association of School Administrators' (AASA) annual conference as examples of how technology can be used to create better schools. This article appears by permission.

New Orleans, February 22, 1999 — Microsoft Chairman and CEO Bill Gates today shared the company's vision for how school districts can use technology to create more effective and efficient schools, and announced a new industry-wide initiative to improve the performance of school software. Speaking to more than 4,500 U.S. public school superintendents at the American Association of School Administrators' 131st Annual Conference, Gates envisioned a future where school districts will develop digital nervous systems - powerful information and collaboration tools to meet their instructional and administrative challenges.

By combining PCs and Internet access with powerful email, productivity and collaboration software, Gates said that schools can empower students, teachers and administrators to help districts become more efficient, improve decision-making and set the stage for improved student learning. "The PC and Internet are catalysts for reaching the educational goals that parents, educators and government have set for K-12 schools," said Gates. "School leaders who embrace technology as a new teaching and learning tool will shape education in the 21st century."

Gates showcased three school districts - in Costa Rica, Laurel County, Ky. and Lemon Grove, California - that are committed to building digital nervous systems that will provide broader access to technology and build strong computer skills for even their youngest students. He also affirmed the education software industry's commitment to software interoperability by announcing the Schools Interoperability Framework (SIF), an initiative by Microsoft and 17 other leaders in the education

Speaker's Chair News

Oswaldo Galarza, ABC Unified School District

Technology is afoot in public education! Come to the CEDPA Conference in Monterey to learn why technology is finally arriving in our public schools. There are various reasons why this is taking place. The long awaited E-rate funding is here; school modernization bonds are being approved; State or Federal technology grants are available. Communities are intent on ensuring that their kids have access to technology, and school officials are becoming more and more supportive of technology in the classroom.

Technology arrives in many forms: computers, software, video conferencing equipment, training, printers, scanners, cable TV access, televisions, wiring, network implementations, possibly even staff—and the list goes on. Infusing technology into the curriculum is a monumental task that will require the collaboration and support of all stakeholders.

The CEDPA membership response to this challenge is great. CEDPA technologists are ready to meet the new millennia with the following topics:

- **How to successfully implement a help desk**
- **Integrating online resources across the curriculum**
- **Building a network from nothing with nothing**
- **A technology coordinator's forum**
- **Internet staff development (trainer of trainers model)**

Continue to submit your forms and ideas. If there is a subject of particular interest to, let me know, and I will make every effort to see that it becomes part of the program. Thanks for your interest and participation. I can be reached by email at *galarza@abcusd.k12.ca.us*

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software industry to ensure that school software applications - such as library, cafeteria, transportation and student information management programs - will work together seamlessly and effectively.

Source: Microsoft PressPass

Video

project. Also, since we were busy assisting local districts with Internet connectivity, we only worked on the project as time permitted. Our first step was to look into software that we could use on a streaming server. After researching, we narrowed it down to RealVideo and NetShow from Microsoft. The cost for the RealVideo Server was several hundred dollars, and Microsoft's NetShow Server was available as a free download. Since budget was a major concern we downloaded the NetShow Server product. At this point, we were getting into a completely new area for us and the learning curve was quite steep. One of the most helpful documents I found was the white paper from Microsoft called "Installation and Deployment of NetShow Server." This paper was a great introduction into the world of video streaming, explaining system requirements, terms, acronyms, and codecs (video and audio compression software). It's available as a free download (along with the free server and encoding software) at http://www.microsoft.com/ntserver/mediaserv.

After reading through the paper, it was now time to look for hardware to make this project come to life. We would need at least one server, a PC to use as a digital encoding workstation, and an encoding card for the workstation. Also, we would need some software to aid us in the encoding process. Fortunately, we found that the encoding software (NetTools) was also available free from Microsoft.

The NetTools documentation listed several video-encoding cards that would be compatible with the software. Video cards can run the price range from $195 up into the thousands. Because price was an issue we ordered an Osprey 100 card at around $200. The encoding card was installed into an available Dell Optiplex GXA with a 266 PII, 64MB RAM, and running Win95. This particular encoding card relies on the computer's existing sound card to encode the audio. One downside to this situation is quite often the synchronization between the audio and video may not be quite in-synch as much as we would like. We then connected a VCR to use as an input source to the encoding workstation. Video out from the VCR is connected to the video input on the encoding card, and the audio out is connected to the audio in on the sound card. It wasn't long before we were encoding video and playing it back locally on the workstation.

This particular encoding card and workstation can encode a single video stream at a user configured data rate. If you wish to encode and stream at multiple data rates, it would require a separate workstation for each stream being encoded.

At this stage of implementation, this is where you need to do some planning regarding video encoding rates and the effect they will have on your network. In a perfect situation, all workstations and servers would be connected on giga-speed switches and high quality video could be pumped over the LAN without any regard to the amount of packets being sent. However, most of us don't live in Wonderland. Instead, we have a mixture of 10/100 connections on our LAN and are connected over the WAN at speeds ranging from 56KB to T1. If you're planning on streaming over a WAN, you'll want to make sure that your routers and video stream are Multicast enabled. Multicast streaming is similar to a television broadcast where users connect to a pre-established stream of data. Unicast gives each user their own unique stream of data. The bandwidth required (and the stress on the network) for 100 users viewing a 256KB Unicast stream is much greater than a single 256KB Multicast stream. One feature of the NetShow server package is that you can configure a stream to be primarily Multicast. If for some reason the route to the user is not Multicast enabled (i.e. a router does not support or is not configured for Multicast), then it will fall back to a Unicast stream.

Now it was time to tackle the server package. We installed the downloaded NetShow Server onto an old HP NetServer 5/133 LS that was not currently being used. The server had a Pentium 133 processor, 24GB of disk space, 128MB of RAM and running Windows NT Server 4.0. Configuration of the server software was the most difficult part of the process, and shortly into this task, Microsoft released NetShow Streaming Media Server 3.0. A download and installation of the upgrade went well. The newer version of the software was much more intuitive, and the team had the server working fairly quickly.

Our first attempt would be to encode a videotape, move the newly created file to the server and attempt to play it from another workstation located on the LAN. This would be an example of video on demand. After tweaking the server configuration and downloading the most current version of Microsoft Media Player we had it working. Success! We could now digitize any video we

California School Information Services (CSIS)

Russ Brawn
California School Information Services

CSIS Mission. The mission of the CSIS program is to design and implement a statewide system for the electronic transfer of student information for state reporting and student records transfer by county offices of education and school districts. The California Legislature has allocated approximately $14 million in state funding to begin development and implementation of the statewide system, of which $12.5 million will be allocated to build local student information system capacity among county offices of education and school districts. On February 9, 1999, the California State Board of Education approved the *CSIS Development Plan* and authorized CSIS to begin the competitive funding of local student information development activities by LEA's.

CSIS Funding Available to LEA's. CSIS is planning to release by March 26, 1999 the Phase I Request For Proposal (RFP) form and procedures by which consortia of LEA's may seek funding on a competitive basis to augment, modify or implement student information system capability that will meet local needs and enable LEA's to participate in CSIS activities. Eligible applicants will consist of consortia of LEA's that have either: a) already implemented a common student information system that they propose to augment or modify; or b) have not implemented a common student information system for all their sites and wish to utilize "seed funding" through CSIS to build this capability.

The CSIS RFP may be downloaded from www.csis.k12.ca.us as of March 29, 1999. A live statewide satellite teleconference will be broadcast to every county office of education on April 14, 1999 at 2:00 P.M. to brief interested LEA staff and software vendors on the RFP process. Details about the telecast will be distributed to county offices and made available through the CSIS web site in the near future.

Contacts. Questions about the CSIS program and the RFP process may be addressed to Bob Friedman, CSIS Administrator, by calling (916) 325-0887 or by email to bobf@csis.k12.ca.us.

Video

(Continued from Page 8)

wanted, transfer the file to our server, put a link on our Web page to the stored file, and play the video from any workstation. Optimism for the project grew.

We next attempted to do a live feed, again using the VCR as a "live" source of video. Adding configurations to the server to accommodate a station broadcast and linking it to the encoding station gave us the results we were looking for. Now we could stream live any video source we could encode. Possible sources for encoding could be cameras, VCRs, satellite feeds, etc. In the case of live feeds like these, the video is encoded and the created stream is passed along to the server. The server then "broadcasts" the stream to clients. One feature of the NetShow server allows us to simultaneously stream from the encoding workstation and save the stream to a file for later use.

Today we are streaming live our county school run ITFS television station, METV. This station provides educational television to students and staff in Merced, Mariposa, and Madera counties.

Now that the "proof-of-concept" system is working we are planning some changes in our implementation of this system. We have a new HP LH3r PII 450 server that we'll be using instead of the old HP NetServer 5/133 LS. This server should better handle multiple Unicast streams (video on demand) as well as simultaneously deliver the multicast streams. For encoding purposes we're building a new workstation. This will be a dual Pentium III 450 with 128MB of RAM and 3.2 GB of disk. This workstation will house four Winnov Videum AV encoding cards that will run under Windows NT and have built-in audio and video encoders. Having both audio and video on one card allows better synchronization and in this case allows multiple encoding cards in one system. Since the NetShow encoders are software encoders (as opposed to hardware based), we're planning on needing the dual-processors to handle the four encoding processes that we'll be doing. We'll be able to encode a single feed at multiple rates in one pass and this should result in saving money, labor, and workspace.

In the next article, I'll give you an update on how the new server worked out and whether or not our custom four-speed encoding system worked as planned. I'll also share with you our new pilot program using Cisco's IP/TV product to do "store and forward." Using this product,

Cisco Announces New Limited Lifetime Warranty for Series 1900/2900 Equipment

Sue Mangiapane, Cisco Systems, Inc.

Cisco Systems, Inc., recently announced new limited lifetime warranties for selected Catalyst Series 1900 and 2900 switches and switch modules. The warranty includes:

• Return for repair or replace with like product for as long as the original end user owns the product. If a hardware problem is identified, the repaired unit or a replacement unit will be sent within 10 days of Cisco receiving the unit.

• The power supply and fan are covered only for the first 5 years. If the product is returned in year 6 or later, and the defect is caused by the power supply or fan, Cisco is not obligated to replace or repair the unit at no charge.

• IOS Software Maintenance releases of "bug-fixes" for the first 90 days of ownership by the end user.

• Guest access to Cisco Connection On-Line (CCO).

If you are interested in exploring a lifetime warranty contract for your school or district's entire enterprise, please contact your local Cisco Account Manager and we will be happy to work with you.

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WS-C1912-A
WS-C1912C-A
WS-C1924-EN
WS-C1924F-EN

WS-C1924-EN-DC
WS-C1924C-EN
WS-C1912-EN
WS-C1912C-EN

Catalyst 2820 Series
WS-C2822-A
WS-C2828-A
WS-C2822-EN
WS-C2828-EN

Catalyst 2820 Series Modules
WS-X2811
WS-X2818
WS-X2821
WS-X2824
WS-X2831
WS-X2841
WS-X2842
WS-X2851
WS-X2861
WS-X2871
WS-X2872

Sue Mangiapane is Account Manager, Cisco Systems, Inc. Sue can be reached by phone at 949-789-5006, by Fax at 949-789-5005, or by e-mail at smangiap@cisco.com.

Video

we should be able to digitize instructional classroom videos and transfer them to an NT Server running Cisco's IP/TV product. When the classroom teacher requests one of these videos, it would be transferred from the host server to another server located at the school. This transfer would take place in the evening when the bandwidth demands are lower. The next day the teacher could play the video in their classroom via the network. This would reduce the delivery time of videos to the classroom from around one week to one day and save costs associated with manually delivering videos to the schools.

You can find Merced County Office of Education's video-streaming site on the web at http://www.merced.k12.ca.us/metv.html.

Cupertino Union School District

10301 Vista Drive   •   Cupertino, CA 95014-2091   •   (408) 252-3000   •   Fax (408) 255-4550

DIRECTOR II, INFORMATION SYSTEMS

BASIC FUNCTIONS

Directs and coordinates a wide variety of information systems, networking and telecommunications services and installations in support of the daily operations of the District. Reports to Superintendent.

RESPONSIBILITIES

Supervises work, operation and scheduling of others in MIS department • Monitors system development to assure maximum compatibility, efficiency and effective use of equipment • Confers and communicates with management/staff to develop project/program specifications, operational procedures, schedules and software evaluation • Provides on-going communication with end users of system • Establishes priorities and sets project timelines to meet user needs related to automated data systems • Identifies and defines potential and/or existing technological problems; develops and recommends solutions • Acts as a resource person in providing information related to technology systems • Prescribes program documentation standards including operating instruction and flow charts • Confers with hardware manufacturers regarding equipment needs, maintenance, contractual requirements, etc. • Meets with software vendors to review project specifications and evaluate program capabilities, timelines, training, parallel processing, and contractural requirements • Prepares various departmental reports and makes presentations to administrative staff and board members regarding departmental activities and operations • Plans, orgranizes, and implements operations and procedures to support District's administrative and technological system • Schedules and controls data input functions, controls job stream and logging functions and provides for back up and system security • Organizes and implements training programs to meet the technological needs of the District • Trains and provides user support to District personnel in all areas of technology utilization • Assists in recommending, instituting and administering departmental procedures, controls and policies relative to technology • Co-chairs the District Technology Committee • Evaluates technology instructional programs • Represents the district at County, State, and Federal agency meetings pertaining to assigned duties • Develops, submits, and monitors budgets for the operations of assigned programs • Cultivates business partnerships to support technology implementation.

QUALIFICATIONS

BS/BA in MIS/Computer Science/Engineering or related field(s) • Demonstrated technical experience and training to ensure successful performance • Three (3) years of increasingly responsible experience in project management or system administration; Knowledge of LAN and WAN networks • Experience in making independent judgements, analyzing difficult situations, making decisions, supervision • Demonstrated expertise in technology and system design and analysis • Ability to prepare accurate reports and correspondence • Ability to establish and maintain effective working relationships with those contacted in the performance of required duties • Most pass district physical expamination and meet the physical requirements necessary to successfully perform required duties • Must possess and maintain a valid California driver license.

SALARY AND BENEFITS

Salary Range: $69,024 - $89,246 per year. **Effective date of Employment:** ASAP. **Work Year:** 12 months. **Vacation:** 12 days per year. **Sick Leave:** 12 working days of sick leave per year. **Insurance:** Employees are eligible for health and medical, dental, vision and life insurance. **Holidays:** 14 paid holidays per year. **Retirement:** Public Employees Retirement System coordinated with Social Security Benefits.

APPLICATION PROCEDURE

Completed application must be received by Thursday, April 15, 1999. Individuals interested in applying for the position of Director II, Information Systems, Posting Number 184 (98-99) may obtain an application from:

    Terry Nolan
    Human Resources Manager
    Cupertino Union School District
    10301 Vista Drive
    Cupertino, CA 95014
    (408) 252-3000, extension 433
    FAX (408) 255-4450.

We are an Affirmative Action/Equal Opportunity Employer.

SIF

data input and management as well. Data need be entered once, and only once, freeing personnel for other tasks. With SIF, school administrators can gather data from multiple sources and analyze that data against the overall performance indicators that schools increasingly are using to measure their effectiveness. Administrators can look at the overall attendance, grades, free and reduced lunches, discipline violations and more and make informed decisions about adjustments to their school program. Once this data has been gathered, administrators can use decision support tools to make correlations that may have otherwise gone unnoticed and data warehousing and analysis tools to drill down into the data or view data from different perspectives.

Closer collaboration between IT vendors and school districts can help K12 IT managers make the most of their limited resources by eliminating replicated data and minimizing maintenance. Increased efficiency frees them to concentrate on applications development-for example, using data analysis tools to better integrate student records with government reporting. SIF also provides the basis for predictive analysis-another cost-saving capability.

Implementing SIF is straightforward. Think of it as a deployment guide that embraces multiple vendors, pooling expert knowledge previously available only to elite- and expensive-IT consultants. Even financially strapped school districts will be able to take advantage of a full range of SIF-compliant tools. SIF, then, opens the way for greater schools IT productivity. According to Patrick Plant, Director of Technology at Anoka-Hennepin School District in Minnesota, "Intelligent interoperability of our instructional and administrative software systems is critical toward providing seamless informational services to our parents, students and staff in a cost-effective manner."

That's the essence of SIF: a method for IT managers to meet today's needs for interoperable systems and data reporting while opening a smooth path to tomorrow's technological innovations.

Tuan Nguyen is K-12 Education Marketing Manager for Microsoft Corporation's Southern California District. He may be reached by telephone at (949) 263-3081 or by e-mail at tuanng@microsoft.com

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