



CEDPA K-12 TECHNOLOGISTS
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DataBus

“Supporting California's Educational Technology Community”

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Serving Digital Content on the Web

Mac OS X: Server software supports enhanced multimedia delivery.

Sandy Brenner, Apple Computer, Inc.

The importance of digital media has increasingly become one of the most discussed topics in education technology today. How can CEDPA members best support the goals of distance learning and the economical development of broadcast-quality digital content? How do we efficiently make such content easily available to educators and students in a cross-platform environment? Apple's *QuickTime Streaming Server* (QTSS) on Mac OS X Server leverages the flexibility and cross-platform capabilities of Apple's QuickTime 4 technology, helping educators to break down the walls of the school and deliver high-quality, sophisticated instructional programs to its constituents without regard to geographic boundaries.

QuickTime technology is used to produce over 80% of multimedia content on the Web, and the *QuickTime* file format has been chosen as a standard by the *International Organization for Standardization* in the organization's common digital media formats. Now, *QuickTime Streaming Server* has expanded the power of *QuickTime* into a whole new class of solutions.

What, exactly, is streaming? Streaming is the process that gets digital media onto your local computer so that a user can view it. HTTP streaming works by downloading an entire movie to your hard disk. HTTP streaming is great for short movies and anything else you intend to play over and over again. RTP (for real-time protocol) is a *just-in-time* streaming technology that keeps

your computer in constant touch with the server running the movie. Digital data is transferred and displayed—and discarded once you've seen it. Though a 3-10 second cache of data is stored to compensate for occasional network “burps” that might otherwise compromise quality, at no point is the entire movie stored on your computer. RTP streaming is ideal for full-length movies and live events.

QuickTime Streaming Server supports both HTTP streaming and RTP streaming, and both unicast (one person per stream) and multicast (multiple viewers per stream). With a combination of industry-standard streaming protocols and cutting-edge compression technologies, the QTSS solution delivers perfectly synchronized audio and video streams, regardless of the format, turning

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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.

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 K-12 education. Submissions, correspondence, and address changes should be sent to the editor at:

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Electronic editions of the *DataBus* and information about CEDPA are available from CEDPA's website at

<http://www.cedpa-k12.org>

Vendor Show – 1999

Mike Caskey
Stanislaus County Office of Education

Welcome to the 1999 CEDPA Vendor Exposition. This year, there are more than 60 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.

As we prepare for **Switching Millennia** in 1999, there will be three hospitality suites sponsored by the vendors on Thursday evening, including Spectrum Communications, National Computer Systems, and Quest Media & Supplies. Apple is co-sponsoring the President's reception Wednesday evening.

As in past years, the exposition doors will open at 10:00 a.m. The show will end at 4:00 p.m. 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!!!

Richard Seidner Announced as Friday Keynote Speaker

Richard Seidner, Director of Business Development, K-12 Education at Oracle Corporation, will be Friday's keynote speaker at CEDPA's 39th Annual Conference in Monterey. This last-minute change was necessitated due to unexpected changes at the California Department of Education. CEDPA thanks Jackie Lamb and the California Department of Education for their willingness to participate in our conference.

Rich was the Friday keynote speaker at last year's conference in Palm Springs. He has responsibility for Oracle's strategy, business partner relationships, and so-

President's Corner

Terrell Tucker
Panama Buena-Vista Union School District

It's hard to believe this year's Conference is only a short while away. Technology needs, as well as the funding for them, are at an all-time high. We will be able to enjoy a plethora of information suited to the needs of California's K-12 Technologists. A record number of vendors are set to provide all the answers, tools and goodies any self-respecting propeller-head could ever need.

Possibly the top motivating factor for attending this year's Conference is the second annual Network Operations Center. We will be able to personally experience some of the most up-to-date networking equipment on the market. Engineers will be readily available to answer questions and demonstrate a multitude of software and hardware solutions. This venue has become one of the highest attended functions at our annual Conference.

Remember that one of the finest ways to finish a fabulous conference is by participating in the fourth annual golf tournament on Friday. Contributions by vendors have allowed us to enjoy playing a round of golf on fine courses throughout the state, and at a very reasonable cost. This year, you will even have a chance to win a new car with a hole in one! Of course, Russ Brawn and myself plan to drive home in a new car, but there should be plenty for everyone.

From beginning to finish, the CEDPA Conference is one of the top shows in the country. Whether this will be your first conference or your 39th, you will find it to be time well spent. See you in Monterey in November!

lutions for K-12 Education. Previously, Rich held a similar position for Digital Equipment Corporation, prior to its acquisition by Compaq Computer Corporation. He is a nationally recognized speaker on issues related to technology in K-12 schools and has been associated with the schools market for over 10 years. Rich is a graduate of Shippensburg University (PA), and the Executive Development Program of the Wharton Schools, University of Pennsylvania.

Speaker's Chair News

Oswaldo Galarza, ABC Unified School District

I am very pleased to inform you The 39th Annual CEDPA Conference will have two great speakers. On Wednesday, November 19, 1999, our main speaker will be **Carlene Ellis, Executive Vice President of Education for Intel** and on Friday, November 19, 1999, our main speaker will be **Richard M. Seidner, Director of Business Development, K-12 Education for the Oracle Corporation**.

Carlene has been a part of Intel since 1980 and has enjoyed a remarkable career path which has led to her current position as Executive Vice President of Education for Intel.

As the former CIO of Intel and in her current position, Carlene has a particularly relevant technology vision for education and CEDPA in particular. In her keynote, Carlene will review technology trends, technology support, remote management, etc. Carlene will share with CEDPA members what Intel foresees regarding educational technology and how schools, districts, and counties can develop successful IT strategies. She will also share how Intel is using its resources to help provide advanced technology to schools, school districts, teachers, and students. Carlene will share with us some of the best educational applications that CEDPA members will install, support, and manage in the new millennium.

Rich has responsibility for Oracle's strategy, business partner relationships, and solutions for K-12 Education. He is a nationally recognized speaker on issues related to technology in K-12 schools and has been associated with the schools market for over 10 years. Rich is a graduate of Shippensburg University (PA), and the Executive Development Program of the Wharton Schools, University of Pennsylvania. Rich will be speaking on key trends, the need for technology based solutions in schools, education portals, decision support systems, digital content, administrative solutions... what are schools focusing on now, and why? Rich would like to provide our members with a national frame of reference from his work with school districts across the country.

Breakout Sessions: The CEDPA membership's response to the breakout sessions has been excellent. Your CEDPA board has selected a number of great sessions for the November conference. Thank you for your interest and participation.

Managing Macintoshes with *NetBoot*

Sandy Brenner, Apple Computer, Inc.

Mac OS X Server is a powerful Internet and workgroup server solution, combining the latest Macintosh Server G3 hardware with Apple's new Mac OS X Server software to provide high performance and greater reliability. It includes a suite of solutions providing Internet, media, and network capabilities, to meet the needs of Internet, publishing, and education customers.

While Mac OS X Server provides the scalability, reliability, and security of a UNIX based system, its users interact with a friendly Macintosh environment. Apple has added the trademark simplicity and friendliness of a Macintosh, allowing easy installation, setup, and administration using familiar tools. The Mac-style Setup Assistant allows single-button connection to a wide range of services. Most customers can go from taking the CD out of the box to serving files in less than 30 minutes. With Mac OS Server preinstalled on a new Macintosh Server G3, you can be up and serving in 5 minutes!

Wouldn't it be ideal to be able to administer a lab of Macintosh computers from one hard drive image? Well, a new innovative service in Mac OS X Server provides a revolutionary way to simplify management of Macintosh networks. *NetBoot* brings a complete and consistent Macintosh desktop environment to Macintosh clients, while reducing administrative issues involved with maintaining large numbers of computers.

NetBoot makes managing a network of Macintosh computers simple. *NetBoot* and associated tools give administrators total control of *NetBoot* workstations on the network, yet they allows users a highly customized environment that can automatically follow them to any Mac on the network. *NetBoot* starts with a single powerful Mac OS X Server computer, whose hard drive contains all the information needed by the network. *NetBoot*-ready Macs start up from a system folder located on the *NetBoot* server. This eliminates the need to configure individual systems, making it as easy to manage a network of Macintosh systems as it is to manage a single one. Special *NetBoot* technology protects the system folder and applications from corruption, so mischievous users or viruses can't take down the network.

(See "NetBoot" on Page 7)

Mac OS X

(Continued from Page 1)

QuickTime into a cross-platform audio and video authoring and playback system. *QuickTime* media can be streamed into any application that supports playing local *QuickTime* movies (such as browsers, word processors, *QuickTime* Player, HyperCard 2.4.1, and Macromedia Director projects).

With these capabilities, *QuickTime Streaming Server* on Mac OS X Server lets you start up a streaming digital video channel on the Internet, programming your own news, entertainment and education content. The QTSS solution can serve hundreds of stored files to 1,000 concurrent users, and can reflect live broadcasts to more than 1,000 *QuickTime* 4 users. Setting a *QuickTime* movie to be streamed is as quick and easy as drag and drop from a Mac client, or FTP from a Windows or UNIX client. The Mac OS X Server can stream “hinted” *QuickTime* movies that contain any video, audio, text, MIDI, graphic, tween, or 3D media supported by *QuickTime*. Since QTSS supports IETF standard protocols (RTP, RTSP, SDP) and standard CODECs (H.261, H.263, DVI, GSM, JPEG, MPEG), it offers interoperability with other standards-based clients and servers (such as IPTV from CISCO). **Unlike other streaming solutions, QTSS has no per stream cost to service your client machines.**

Apple Computer has combined hardware and software to make a powerful solution for serving a school district’s intranet or internet needs. Along with *QuickTime Streaming Server*, Mac OS X Server includes Apache Web Server, the leading high-end enterprise-level web server for UNIX. WebObjects is also included, and is known as Apple’s enterprise technology for building Java-based network applications. It is the most flexible and scalable way to develop and deploy network applications which can be run from any standard web browser. *NetBoot* software enables multiple Macintosh computers to run from a single server that holds both system software and applications. Just update the *NetBoot* server, and all the *NetBoot* client computers have instant access to the new configuration.

Apple’s *QuickTime Streaming Server* is a powerful way to serve up the information resources your students need access to in the K-12 education environment. You can find out more information at <http://www.apple.com/quicktime>. More information on Apple Servers can be found at <http://www.apple.com/servers>.

Author’s Note:

On page 47 of the June 1999 issue of “NewMedia” magazine is an informative article of Mac OS X Server. In fact, it received an “Awesome” rating from the editors. This article shows Mac OS X Server out performing the Sun Solaris by three times, and NT by more than seven. The testing was done by Tom Baker, Web production coordinator at Intuit. This is what NewMedia had to say: “We dropped Mac OS X Server into a mix of production machines at Intuit, where it had to fight for its life against existing NT and UNIX servers. “We tried to compare Apple to apples, with a Pentium 11 400MHz running NT and IIS, a dual-200MHz Sparc machine running Solaris and Netscape Enterprise Server, and a 400MHz Power Macintosh G3 Server with Mac OS X Server and Apache. We tested them on the Intuit campus over a mixed 10/100BASE-T Ethernet LAN, so bandwidth was not a limiting factor. “Our sample Web site was a mix of simple and complex HTML (frames, nested tables, JavaScript). We used RadView Software’s WebLoad to monitor the number of attempted connections and transactions per second, starting with 20 users and growing to 100. “The performance results show how many pages the Web servers could crank out to browsers. The Mac combo out-performed both the Sun and the NT box at all tested load volumes, for 100 users, the Mac served over three times more pages than the Sun, and over seven times the NT.”

Sandy Brenner is an Advisory Systems Engineer for Apple Computer, Inc. She can be reached by email at sbrenner@apple.com.

CEDPA Conference Central

Be sure to visit the 1999 CEDPA Conference Central to get the latest information about CEDPA’s 39th Annual Conference, including session descriptions, exhibitors, travel directions, and registration forms.

<http://www.cedpa-k12.org/99conference/>

Nine Most Popular Pacific Bell Education First Workshops

Contributed by Jackie Siminitus, Pacific Bell

Staff technology development takes place in stages. Pacific Bell offers FREE, customized workshops at your school or library once your staff graduates from basic computer classes. Visit our Pacific Bell Knowledge Network Explorer website at <http://www.kn.pacbell.com>

1. Educational Resources on the World Wide Web

This hands-on workshop helps teachers and librarians use the Internet, providing tools and tips for finding resources for the classroom and library. Ideal for those new to the Internet or those who seek ideas on how to use the Internet more effectively. Search through Pacific Bell's Blue Web'n, our database of over 1500 lesson plans, online activities, and resources. See <http://www.kn.pacbell.com/wired/bluewebn>

2. Effective Search Strategies

Take advantage of the rich resources on the Internet without frustration! Learn effective search strategies to use search directories, keyword search and metasearch engines. Visit quality educational websites including the Pacific Bell Knowledge Network Explorer at <http://www.kn.pacbell.com>. Designed for Internet-savvy educators looking for basic to advanced searching tips.

3. Creating Web-based Activities – Just a Spin Away with Filamentality

Once educators find great websites, how do they integrate them into their curriculum? One way is to create a web activity using an on-line tool, Filamentality, without learning HTML. Pages are then housed on Pacific Bell's Knowledge Network Explorer website.

4. Keeping Students Safe in the World of Technology

Technology makes for excitement in education but what happens when the dark side of technology sneaks into the classroom? This workshop explores issues involving Internet safety, on-line ethics, website validity and webcam perils. Workshops also cover e-mail hoaxes, viruses, Internet legends and network security.

5. Hot Internet Sites, ¡En Español!

This popular workshop highlights Spanish language sites. Teachers explore bilingual websites appropriate for English-language learners and for students learning Spanish. This workshop focuses on classroom activities using the "hotlist" of Spanish links located at <http://www.kn.pacbell.com/wired/spanish>.

www.kn.pacbell.com/wired/spanish. In Los Angeles and San Diego, Education Advocate deliver this workshop in person; In other areas, Education Advocates use videoconferencing.

6. Videoconferencing Fundamentals

This session allows educators to experience videoconferencing! We answer your questions regarding use of this technology in a classroom or library also addressing the types of systems available. Learn how videoconferencing can be used to invite the "whole world" to your school or library! This workshop can be conducted on-site if videoconferencing equipment is available – or at one of Pacific Bell's Executive Briefing Centers.

7. Workshop for Librarians and School Library Media Teachers

Librarians fulfill a special role in the use of technology in library media centers and libraries. This workshop focuses on effective use of Internet and videoconference technologies in school library media centers or public libraries. A live videoconference or hands-on time on the Internet may be included if facilities allow.

8. What Does it Mean to be Digital?

California's Digital High School Initiative allows schools to implement technology that might otherwise be out of reach. This workshop examines what being digital can mean to a high school. Educators explore questions raised by bringing digital technologies onto a campus and how to find resources to address some of those questions.

9. Information Literacy and the Internet

What web-related literacy skills do today's students need? Find ways to teach information literacy skills to students of all ages. Learn tips for helping students search the web effectively and verify that the resources are reputable. Discover how to help students untangle massive amounts of information on the Internet and produce quality research. See <http://www.kn.pacbell.com/wired/big6/game>.

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NetBoot

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The included *Macintosh Manager* application lets administrators set system policies for controlling user access to network resources, like applications, AppleShare volumes, and printers. It also includes a robust, industry standard authentication mechanism for providing network security so the server and user's data are protected. *Macintosh Manager* allows users to access their applications, documents, and personal desktops securely from any Macintosh on the network.

Because *NetBoot*-ready Macs run from the network, adding one new computer, a lab, or a whole network of Macintosh systems is simple and fast. *NetBoot*-ready Macintosh systems start up from a single system folder located on the *NetBoot* server. The same goes for applications. *NetBoot*-ready Mac systems run applications stored on the *NetBoot* server, and each shares the same applications.

The *NetBoot* server automatically configures each machine for use on its network. Users just plug in the Ethernet cable, hold down the "N" key the first time the *NetBoot*-ready Macintosh starts up, and it boots from the server. *NetBoot*-ready computers include any Apple iMac, Power Macintosh G3 blue and white computers, and the June 1999 PowerBook G3 series computers. The Mac OS X Server can support up to 50 *NetBoot* clients, over a thousand AppleShare clients, and thousands of Macintosh Manager clients.

NetBoot provides added ease of use and control over your network, resulting in additional time and cost savings. Since everything is stored on the server and shared by each Macintosh, updating the server once updates the whole network. Now, instead of installing a new application or new OS update on every computer on the network, you only need to perform an installation once on the server, and every Macintosh has the new application. *NetBoot* doesn't require special applications, so the same Macintosh applications available today run without modification. This enables you to leverage your existing investment in applications.

The *NetBoot* server is designed for educators to bring technology to the classroom with low-cost, easy-to-manage computers like the iMac. *NetBoot* helps school districts to:

- Improve the student to computer ratio
- Achieve technology goals under tight fiscal

constraints

- Reduce the cost of managing their computing infrastructure
- Use existing technology resources

Mac OS X Server combines the friendliness of the Macintosh with UNIX-style power that results in an ideal server for K-12 education. To find out more information on Mac OS X Server technologies, be sure to visit Apple Computer, Inc., at <http://www.apple.com/servers>.

Sandy Brenner is an Advisory Systems Engineer for Apple Computer, Inc. She can be reached by email at sbrenner@apple.com.

CEDPA Listservs

As a service to K-12 Technologists, CEDPA hosts several e-mail discussion distribution forums (listservs) on current topics of interest. These lists are open to anyone with an interest in the topic area.

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.

Y2K - A discussion forum for Y2K-specific issues, problems, and solutions.

To join a distribution 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 or any other text to the message.

To leave a list, send a message to listserv@cedpa-k12.org as above, except use the words **unsubscribe** and the name of the list you wish to leave.

How to Make “One Click” Installers for your Macintosh Labs

Reed Jackson, Apple Computer, Inc.

Would you like to...

*Save hours in configuring systems during semester breaks?

*Support hundreds of computers with a “rescue-disk” waiting to return the computer to full operation?

*Simplify hundreds of Application Software installations into one-click installation?

*Set up hundreds of computers at a time?

*Manage multiple schools by saving a “custom image” for each school on your district servers?

*Create Bootable Custom Configuration One Click installers, unique to each campus, or baseline configurations combined with custom bundled application suites?

...if so, read on!!!

This article describes how to make a CD that will boot your Macintosh and in one click will configure your Macintoshes to a standardized configuration. If you do not have a CD Burner, or if your Macintoshes do not have CD drives, you can also perform this process via a network and a server.

Let’s see how this is done...

Contents

1)Assumption

2)The Concept

3)What you will need

4)Critical Steps

Step 1 Configure the Ideal Macintosh

Step 2 Create an image of the Ideal configuration

Step 3 Make a bootable CD

Step 4 Boot, Launch and Restore

5)Using Apple Software Restore over the Network

Assumption

You have a lab of Macs or a campus of Macs where many of your computers have a similar baseline software and hardware configuration. You want each machine to resemble the next with system settings and applications installed. You need to do this with the least amount of work and time. With this document and the tools listed below, You can create a bootable CD, or a network accessible installer which will simply and easily restore all computers to a standard configuration, in “ONE-CLICK”.

The Concept

a)Using a standard Macintosh from your class or lab, create an “ideal” hard drive configuration with System Software, Applications and any system settings preferences you desire.

b)Make an image of the “ideal” drive using Disk Copy.

c)Make a bootable CD that includes the “one-click” installer.

d)Boot your target machines from this CD and restore the “ideal” configuration on the target Macintoshes.

What you will need

1-External hard drive partitioned with a 700 MB volume with system software to boot your target machines.

2-Network Startup Floppy or Network Startup CD

3-ASR SDK 1.3.2 or later. Note: This resource is available online at: <http://developer.apple.com/sdk>. Download the Installer SDK (12MB) which contains ASR SDK 1.3.2

4-CD-ROM Burner (if you want to make bootable CD9s with the restoration)

5-CD-ROM Burner Software Installed on the 700 MB Volume(I recommend Adaptec Toast 3.5.5)

6-Apple Disk Copy 6.1.3 or later (currently 6.3)

7-MacOS software

8-The software programs that you run on your labs and classroom Macintoshes

Here’s How

Step 1 - Configure the Ideal Macintosh

Identify the Macintoshes for which you will create the installer.

Depending on the vintage of Macintosh that you are working with and the System Software licenses you own, identify the “ideal” system software version for your lab. See the Apple Technical Information Library Article #15582 for a guide to system software versions. Note: This resource is available online at <http://til.info.apple.com/techinfo.nsf/artnum/n15582>. You may also contact your local Apple System Engineer for assistance.

If you are working with Macintosh models without CD, you can create a 3One-Click2 installer that will run over a network. See below for using Apple Software Restore via a Network.

(See “Installers” on Page 9)

Installers

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Now, choose a common denominator Macintosh computer. A common denominator Macintosh computer is a Macintosh that will serve as the “ideal” machine.

This is the machine on to which you will install system software and adjust system settings in a way that you would like all “LIKE” machines to be configured.

Before you install and setup your ideal machine I recommend the following.

1) Low Level Format the “ideal” Macintosh’s hard drive with the latest version of “Hard Drive Setup”. In “Drive Setup” under the “Functions” menu, choose “Initialization Options”, and select “Low Level”. This insures the boot tracks and drive sectors are unique and original.

2) Some system settings are stored in PARAMETER RAM and will not be preserved on the “restored” systems. Do not be alarmed. You can make these settings manually after restoration is complete.

3) Consider your target Macintoshes RAM and Hard Drive size when creating your “ideal” configuration. You may need to make several configurations for use on different generation Macintoshes. This is easy. Multiple configurations can be stored on your custom configuration CD.

4) When you configure the “ideal” machine, name the hard drive “Macintosh HD”. This will keep things simple and manageable later.

5) Treat the installation and configuration of this system as you would if you were setting this machine up for the first time and create the settings and installations that you would like to have on each of the systems in this group. These preferences and installations will be on each machine that you run this Restore.

Now that you know what system software you are going to use, and you have picked the ideal Macintosh, Install System Software, and Applications, and Customize any settings on the Macintosh. When you are finished you will be ready to create an image of this ideal configuration. When you are through, go on to step#2 (below).

**** A special note about configuring system settings****

You will want to set some system wide settings as default at this point, others you will NOT want to set.

Set These:

Mouse Speed and Click Speed

Key Repeat Rate

Date and Time Time-Zone Election

View options

TCP/IP Control Panel : DNS Configuration, DHCP (if used)

Appearance

Don’t set these:

TCP/IP IP Address (if your using static addressing DO NOT SET THIS)

Macintosh Name

Macintosh Owner’s Name

Step 2 - Create an image of the Ideal configuration

Now that you have created an ideal configuration, we need to capture it in a convenient format for restoring it to target Macintoshes. To do this, we will use Disk Copy.

Follow the instructions in Apple Software Restore for making an Image of your ideal Macintoshes hard drive. Once you have created the image, you must prepare it for use with Apple Software Restore. Follow the instructions for Apple Software Restore for preparing an image for restoration. Repeat this step for each configuration that you desire.

Tips for making your image:

Start the Macintosh from an external volume so that Disk Copy can make an image from the disk. Do this because, if the internal drive is the startup volume, Disk Copy will not be able to make an image of it.

Disk Copy cannot be run from the disk that is being imaged, so run Disk Copy from the external disk.

According to the ASR SDK, you can save the image as Read-Only, or Read-Only Compressed. I recommend saving as Read-Only. After it is created, I use the 3Convert...2 command to change it in to a Read-Only Compressed. It seems much faster than creating it directly in to a Read-Only Compressed.

Put all the images you create in the Configurations folder of the ASR Folder. This is where restoration configurations are stored for use with ASR. (See Instructions for ASR)

Step 3 - Create bootable CD

Now create a bootable CD that contains system software that will run Apple Software Restore (ASR requires 7.5 or later) and boot the target machines.(I recommend 8.1,

(See “Installers” on Page 10)

Installers

(Continued from Page 9)

but this won't be possible in situations where the target computers do not have enough RAM to run 8.1) Following the instructions for Adaptec's Toast, create a CD that will boot your target machines. On this CD you will need to have a System Folder, the Apple Software Restore application, and the Configurations Folder containing the HD images that you created in Step 2.

Step 4 - Boot, Launch and Restore

Boot from the Bootable CD you created, launch Apple Software Restore, and restore your target machines. See ASR Quick Reference Guide for complete instructions. Note: The ASR Documentation is included with the ASR SDK which you downloaded earlier from <http://developer.apple.com/sdk>.

Using Apple Software Restore over the Network

If you do not have a CD Rom Burner, you can use Apple Software Restore over your network. Follow the instruc-

tions above to create the Restoration Configurations. On your AppleShare file server, create a Shared Folder for Apple Software Restore. Put Apple Software Restore and your configurations folder in to the Shared Folder. Share this folder. You are now ready to mount the share from your target computer and perform a restore over the network.

To access Apple Software Restore, and be able to restore on to the internal Hard Drive of the target Macintosh, the Macintosh must be started from a Network Ready startup disk, floppy or CD Rom. Boot your Macintosh, log on to the AppleShare server. Launch Apple Software Restore, and use the configuration you created to restore the Macintosh.

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