

Windo Watch



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Talk About Having It All...

If ever ordinary computer users have a shot at having it all, that time is now. Hardware is cheap and readily available. The software competitions on and off the Internet have provided an almost free supply of state-of-the-art applications.

Those of us who have been around the block a few times with *state of the art* operating systems, remember the bad old days of meager memory and tape or dual floppy drive systems with masochistic pleasure. You just don't know what you missed!

I used to rant about the glories of mainframe computing, completely ignoring the problems and frustrations packaged with it. The more onerous burdens were the ugly language of UNIX and meager time sharing allotments. As an aside, Hewlett-Packard has retired its last main frame at this writing.

I confess to puffing up with satisfaction when I look at my homebrew Pentium with its 32 MEG of RAM and 133mhz CPU. From early Z80 beginnings to where we've come, is a very good place to start talking about having it all.

Last week I thought I owned the world with WindowsNT 3.51 and what do you know, they've gone and done it again. Let me explain. Once you've used Windows95 and have fallen in love with the '95 interface even a powerful system like NT falls a teeny bit short. In the next month, or two or three, Microsoft will marry the best of this pair of 32bit Windows operating systems with its newest release - Windows NT v. 4 In the World of Windows that is more than mere talk about having it all..

Computer users never seem satisfied, at least those of us suffering from operating system fever. I don't think it took me a week after NT was running, to search out everything I ever thought I'd be interested in - about Merlin, OpenDocs, JavaScript and Xcontrols. And, who can ignore the announcements, promises, and virtual carrots offered by the major browser developers looking to create or consolidate still another operating system. Do you have a friend who will let you look at Apple's CyberDog? It's not smoke but rather an honest to goodness browser which utilizes OpenDocs. Perhaps I'd better shush-up and not tell a single Windows soul about having it all.

Has anyone else followed the Inferno story? Inferno is the new Lucent (formerly Bell Labs) operating system. Lucent Technologies, was formed by the recent split-up of AT&T.(continued)

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WebFeats Webserver Setup Diary
Copyright 1995,1996 Hank Mishkoff

This document is a *diary* of my attempt, successful, I hope, to set up a Webserver, from scratch. You're welcome to follow along, to offer suggestions, to share in my triumphs, to laugh derisively at my mistakes.

I figure that this document may be of interest to you if you're thinking of setting up your own Webserver, if you're curious about what's involved in becoming a Web service provider, or if you're having a slow day with nothing better to do.

To put this venture in context, I've created an overview of my plans for setting up the WebFeats server. And if you're dying to learn more about me, I've thrown together a brief bio for your reading pleasure.

Overview

Just so you know where all this is going, here's a quick overview of my plans for setting up the WebFeats Webserver.

SYSTEM HARDWARE 100-MHz Pentium, at least 1GB disk space, at least 16 MB RAM (probably 32 MB), DAT backup.

SYSTEM SOFTWARE Windows NT Server.

WEBSERVER SOFTWARE I'd like to use NetSite; but although Netscape has announced plans to port it to NT, they won't commit to a date. I plan to install O'Reilly's WebSite until NetSite becomes available to look at. Of course, if WebSite does a good job for me and does every-thing I need it to do, I may not switch to NetSite after all.

INTERNET CONNECTION A dedicated ISDN connection to UniComp Technologies in Dallas. I plan to start with one B channel, and upgrade to two B channels when and if it proves to be necessary.

ROUTER: Ascend Pipeline 50.

Update: 04/26/95 12:40 PM

Status Report

To begin this diary, here is the current status of the WebFeats Web-server project.

System Hardware My Zeos Pantera, a 100 MHz Pentium PC, arrived yesterday; I haven't even unpacked it yet. I bought a Zeos largely because I've already had two of their PC's, and they've performed quite nicely for me. I wanted something right away, and they were able to ship within hours after I placed my order.

It came with 16 MB RAM, which I'm told is not enough to make NT really happy; but changing the configuration would have slowed the

order, and it's easy enough to add more RAM later. It also came with a quad speed CD-ROM drive, which is faster than I need. I expect to use the CD-ROM only to load software and intend to swap it with the double-speed drive on my home PC making my home PC much happier when The Eleventh Hour is finally released.

System Software Getting a copy of Windows NT Server turned out to be more of a problem than I had expected, but everything turned out okay. I spotted a copy at CompUSA two days ago for \$679 (it lists for \$699 -- great discount from The Computer SuperStore, huh?), but didn't buy it because I didn't yet have a machine to load it on. And by yesterday, wouldn't you know it, none of the CompUSA stores in the Dallas area had it in stock; they told me it would take 7-10 days to get more.

This morning, my local computer store told me that they would match CompUSA's price, and they could get me a copy by tomorrow. (So why does it take CompUSA so long? Go figure.) And then another local store told me they had it in stock! They sold it to me for \$650. Maybe I should stop assuming that CompUSA's prices are always going to be the best.

Anyway, sometime this afternoon or tomorrow I plan to actually unpack the computer and install NT. I've never even used NT, so this should be an interesting experience. I've also picked up the Windows NT Resource Kit that Microsoft is pushing so heavily; I was happy to see that it got a very good review in the new PC Magazine. I'll let you know what I think of it.

WEBSERVER SOFTWARE I picked up a beta copy of WebSite at

Internet World a couple of weeks ago. And at Web World last week, I had a chance to spend a few minutes with Robert Denny, WebSite's creator. Although he's, of course, hardly impartial, he feels that WebSite is robust enough to hold its own against the NT version of Netscape's Netsite, which is supposedly due out soon. I hope he's right; I had planned to use Netsite, but if WebSite is as good as what Denny claims, perhaps I won't have to switch.

Internet Connection My ISDN line was installed yesterday! Unfortunately, I can't do a thing with it, because I don't have a router yet. I'm buying an Ascend Pipeline 50 from UniComp, my Internet service provider; I ordered it yesterday, and they tell me that it should be available in about a week. That will give me the needed time to begin to get familiar with both NT and WebSite.

Domain Name My domain name registration for webfeats.com came through late last week. UniComp tells me that all mail addressed to <anyone>@webfeats.com will be delivered to me. And by next week, my Webserver should answer to the name <http://www.webfeats.com>

Miscellaneous: I converted one of the plethora of phone lines that I've accumulated over the years to a business line for WebFeats today; I added Call Notes (SWB's voice mail) to it instead of an answering machine so people won't get a busy signal when they call WebFeats, even if I'm on the phone. And I already have a mailbox and a fax machine; all I need is some stationery and business cards and I'll be ready to roll. It might be a good idea to get the Webserver up and running, too, don't you think? Details, details...

More news as it happens.

Update: 04/27/95 09:50 PM

Server Hardware Setup Complete

Well, I finally got my Zeos Pantera unpacked and running.

I had hoped to install Windows NT today, but that's going to have to wait until tomorrow. I thought I'd have plenty of time to get it done today, but I decided to swap the 4X CD-ROM drive that came with the new PC with a 2X CD-ROM drive in my PC at home. I took both computers apart very carefully; hardware and I co-exist, but not happily, and swapped and connected the CD-ROM drives.

When I tried to connect them up, and the power and data cables worked like a charm, but the little *dine-out* or sound plugs were not compatible! You'd think these things would be standardized by now, wouldn't you? <grumble, grumble>

Tomorrow's project will be to install Windows NT. Not only have I never installed NT, I've never even used it. I'm looking forward to the challenge. I'll let you know how it works out.

By the way, I just found out that my router should be delivered on Monday, so if I can get NT and WebSite running by then, I'll be all set to start testing the whole setup early next week. And if it does work, you'll be the first to know about it. Maybe if I have the windows open, the neighbors might hear me celebrating...

Update: 04/28/95 11:10 PM

Windows NT Server Installation (1st Pass)

I installed Windows NT Server!

Well, sort of.

The installation procedure itself was ridiculously simple; it really wasn't any more complicated than your average point-and-click installation of your average Windows application program. But there were a few places in the procedure that asked me questions that I didn't quite understand making it difficult to feel confident that I was giving sensible answers.

In one place, as I recall all too well, I was told that if I made the wrong choice, I would have to repeat the entire installation procedure. (Editorial Note: Hank refers to the option of making the computer the Domain Controller) Luckily, this was the only instance that was quite that dramatic; everywhere else, the procedure indicated that I could change the setup at a later time if I decided that I was unhappy with my choice.

If you're interested in learning about setting up NT, you probably wish I would provide more detail about the experience -- and I will, but not tonight, because it's past my bedtime, and I'm getting punchy. Tomorrow, I'll review what I've done so far and figure out what I need to do next. And then I'll let you know what I've learned.

Update: 04/29/95 08:45 PM

NT Re-install

Having decided that I had not been careful enough in tracking the problems I encountered when I installed Windows NT Server, I decided to do it again, and take better notes this time. So here they are.

Domain Controller or Server: I can't decide whether I'm supposed to set up as a Domain Controller or a Server. And if I make the wrong choice, the installation program tells me that I'll have to completely re-install NT to correct my error.

The default is Server, and I believe that's the right choice. I'm not really clear about what a Domain Controller is (even after having read descriptions in various parts of the documentation), but it seems to involve networks with multiple servers, whereas I'm setting up a webserver on what is basically a stand-alone PC. However I may want to link up one or two other PC's at some point.

The main reason I'm uneasy about not choosing to set up as a Domain Controller is that there seems to be security considerations involved in the choice. At first, I thought that if I didn't set up as a Domain Controller, I wouldn't be able to implement password security on the system, which would obviously be unacceptable. After reading further I now lean toward the view that I can implement security even if I set up as a Server. If I'm wrong, I get to do this all over again, one more time.

Network Card Problem The installation program tells me that "The current netcard parameters are not verifiably correct and may result in usage problems or system failure." I'm using a Linksys Ether16 LAN Card that doesn't have any DIP switches; instead, you configure it by using a utility program that comes with the card. I configured the card before I installed NT, but I wonder if the fact that the card is configured via software rather than hardware is confusing NT.

I'm hoping that the card will work anyway. Maybe I'm being optimistic, but the message says that the card may not work, which is not the same as saying that it will not work.

Network Protocol The installation program wants me to select one or more network protocols from among NWLink IPX/SPX, TCP/IP, and NetBEUI. I don't think I need NWLink IPX/SPX because I'm not running NetWare. I think I do need TCP/IP because that's an Internet protocol and I am, after all, connecting to the Internet. I'm not sure about NetBEUI; will I need it if I decide to link another PC to the server? Beats me. I think I'll go with just TCP/IP for now (the exact opposite of the default setting, BTW), and hope that I can change my mind later if I need to.

TCP/IP Configuration The installation program wants me to configure TCP/IP, but it's asking me to supply values that I don't have (IP Address, Subnet Mask, etc.). I'm assuming that I can get this info from my Internet service provider next week.

When I continue the installation without supplying the TCP/IP information, I'm told that "The dependency service or group failed to start. This error prevented the network from starting." I'm hoping

that this problem will disappear when I get the necessary info from my Internet service provider. Hope springs eternal!

When I complete the installation and start the system, it tells me that "At least one service or driver failed during system startup. Use Event Viewer to examine the event log for details." And tomorrow, after I figure out what Event Viewer and the event log are, that's exactly what I'll do.

Netscape Server Beta

Netscape has announced that they're distributing beta versions of the next level (1.1, I think) of Communication Server their low end webserver. Level 1, the current product, runs only under UNIX; 1.1 and is supposed to run on other platforms, including NT. From the announcement, I couldn't tell whether the beta will be available in NT format.

I signed up for the beta, but I'm not holding my breath, because Netscape indicated that not everyone who wants to get in on the beta program will be accepted. Unlike O'Reilly, who gives away a WebSite beta to anyone who has a pulse, I guess that Netscape figures that they're in a position to be choosy. And once I install WebSite (in a day or two, I hope), I'll switch webserver only if it looks like Netscape's product offers something important that WebSite lacks. I'll keep you apprised of further developments.

UPS

A quick and relatively minor note: I went to Computer City this morning and bought an Uninterruptible Power Source. I always thought that UPS stood for Uninterruptible Power Supply. Shows

what I know. It's an APC 600; I paid a little extra for the ability to hook up a serial cable so that it can tell NT when it's running out of juice so NT can take appropriate action and shut itself down properly. According to the documentation, I'll need to get some additional hardware and/or software to actually implement that feature. But I'd have to experience at least a thirty minute blackout before that even becomes an issue.

The main reason I bought the UPS today is that we're supposed to have electrical storms here in Dallas tomorrow, and I want to be able to work straight through them. I usually shut down my computers as soon as I hear thunder; now I won't have any excuse not to keep working.

Update: 05/01/95 10:20 PM

NTFS Conversion

Security seems to be tighter under NTFS, the NT native file system, than it is under FAT, the file system used by MS-DOS. I've also been told that performance is better with NTFS than it is with FAT. And since the WebSite README file says that it requires NTFS -- I converted my file system from FAT to NTFS this morning.

I was a little uneasy about doing it. For one thing, I wasn't entirely sure of all of the implications. I understood that I'd no longer be able to boot DOS, but that didn't strike me as a major problem. But would I still be able to access DOS files? Get to a DOS prompt? Run DOS

commands and programs? I wasn't really sure, but I decided to go ahead anyway.

Another thing that I wasn't sure about was how to actually perform the conversion to NTFS. I couldn't find it in the help files, and NT comes with no documentation! You have to order it separately for something like \$70 [!] which I've done. I finally found the CONVERT command in the NT Resource Kit that I bought separately for \$150 [!] So I tried it, and, as far as I can tell, it worked.

I assumed that, once I did the conversion to NTFS, I would no longer see the option to boot DOS, but it still appears when I turn on the PC. I selected it just to see what would happen; the disk cranked and cranked, but nothing happened at all. Finally. I hit the reset button. Isn't the CONVERT command smart enough to know to remove the DOS boot option from the menu when you convert to NTFS? I guess not.

Anyway, my worries seem to have been for naught. The old DOS files are still there; I can still open a DOS box and enter DOS commands. If there is a downside to converting to NTFS, I haven't found it yet.

The Router Arrives

Today I picked up my Ascend Pipeline 50 router. My Internet service provider programmed it for me. What with errands to run and cables to buy, still another trip to CompUSA to get the right cables, I didn't hook everything up until pretty late – and, of course, it didn't work! But I didn't really expect it too, not the first time (hoped, but not

expected). I'll try to get an early start tomorrow, and tell you all about it.

Update: 05/02/95 03:30 PM

Router Installation: First Pass

In last night's episode of *As The Web Turns* ("ISDN: The Hidden Shame"), I mentioned that I had made one unsuccessful attempt to get my router up and running before I gave up and went to bed. Since I keep getting Email asking for more details (Is the OJ trial slow this week?), here is a step-by-step account of my first-ever-attempt to hook up a computer to an ISDN line.

I purchased the Ascend Pipeline 50 router from my ISP, and he programmed it for me and gave me a list of various items (IP address, subnet mask, etc.) that I would need to configure TCP/IP on my PC. He also gave me a few cables; but after scanning the *Getting Started* book, I realized that I didn't have the ones I needed, so I picked up the cables I needed at CompUSA.

At least I hope I picked up the ones I needed. As best as I can tell, I need:

A serial cable I think this is so I can program the router from the PC, or verify that the existing programming is OK if I have any problems. Will this cable still need to be in place, hogging a serial port, even after I've completed the programming? Beats me!

A cable with two RJ-45plugs to run between the router and the network card.

Another cable with two RJ-45plugs to run between the router and the ISDN jack on the wall. The ISDN jack keeps falling off the wall, by the way. The installer stuck it on with some kind of temporary adhesive, like sticky-notes. This sticky-note installation, by the way, cost me over \$600.

Okay, so I get everything plugged in, and the WAN light on the router won't stop blinking. The Getting Started guide says this is a bad sign; it means that "there is an error with the BRI interface (such as no physical or logical link)." This can, the book says, be caused by a number of different things, some of which have to do with the router's configuration. So I decide that, even though UniComp says that they programmed the correct configuration into the router and I shouldn't worry about it, I'm going to check the configuration anyway. Hey, I'm a curious guy, what can I say?

In order to program the router, the book says I need a communication program, hence, the serial cable, with VT100 emulation. So I decide to load CommWorks, a set of communication utilities that I've used with Windows 3.1. When I try to run the CommWorks setup program, NT crashes! I don't just mean the program crashes, I mean the whole operating system goes south. I thought that it wasn't supposed to do that -- isn't the whole idea behind NT that each program is protected from every other program, so that if a program crashes you can kill it and all of the other programs are still okay? Well, maybe that's the theory...

TCP/IP Installation (and NT Re-Installation)

I've managed to create another problem for myself.

I kept getting this error message when I'd boot the machine: At least one service or driver failed during system startup. Use Event Viewer to examine the event log for details. I didn't exactly know what this meant, but I thought it might have something to do with the fact that I had not installed TCP/IP, because I did not yet have the necessary info from my ISP.

So, I decided to install TCP/IP. And rather than figure out how to do that, I decided just to reinstall Windows NT, and let the NT installation program step me through the TCP/IP installation procedure. Pretty smart, huh?

Well, maybe not. It did solve the problem and got rid of the error message even though the WAN light on the router still blinks. But that's another story! Now, when I start the system, the startup menu offers me two complete installations of NT to choose from! If I select the old installation, I get the old error message; if I select the new installation, I don't.

Does this mean that I have two complete copies of NT hogging up space on my disk? Or do I just have two configuration records of some kind? Beats me.

This is getting to be fun. Stay tuned.

Update: 05/04/95 06:10 PM

ISDN Progress Report

Here's a status report on where I stand on my efforts to get my ISDN hookup to work. By the way, I don't want to discourage anyone by making this sound more difficult or time-consuming than it really is. True, I've been working on it for two days; but that really represents just a few hours of work spread out over two days.

In our last episode, our hero, -hey, that's me!, was trying to figure out why the WAN light on the router was flashing. The installation manual said that one possible cause might be that "there is an error with the BRI interface (such as no physical or logical link)." So I'm wondering: Did SW Bell mess me up and give me a bad phone line? Is the router programmed incorrectly? Did my ISP do something wrong on his end and not do whatever was necessary to make this a dedicated line?

Or, could it just be a bad cable?

Since bad cabling was the easiest thing to check out, I swapped the cable that connected the router to the ISDN jack with the cable the connected the router to the network card in the PC.

Voila! The WAN light went out. According to the book, that means that "there is an active BRI line and no connection." I take that to mean that the router recognizes the ISDN line, but that I don't have a valid connection. A small step in the right direction and progress is measured in small steps.

So, I bought a new cable to replace the bad one, which now connected the router to the PC. It still didn't work. I looked over my TCP/IP configuration, and decided that I needed to tell it that I was using DNS (Domain Name Service) and to enter the IP address of my ISP's domain name server. No luck.

Next, I tried to ping my ISP. Nada. Then, just for the hell of it, I tried to ping myself. Sounds kinda masochistic, doesn't it? Success! So that tells me, I think, that my TCP/IP is configured correctly. So, why isn't the PC talking to the router?

Just as I'm starting to check out the network card to see if its configured correctly, I get a visit from Dan York, who called me after reading some of these notes. While we're talking, Dan suggests that I might have an interrupt conflict. I haven't had time to check that out yet, but that's where I'll start when I resume my investigation.

I'd like to figure this out by myself (well, sort of by myself!) I've already been offered, and gratefully accepted, promising suggestions from several helpful people. I guess I'll break down and call my ISP tomorrow and ask for help. And if that doesn't work, I'll enlist the aid of a friend this weekend; he's a network consultant with no specific NT or TCP/IP experience, but he volunteered to help, and two heads are better than one. Wish me luck!

Costs

I've been asked to review the costs involved in doing what I'm doing. I'll confine myself to the financial, rather than psychological or

emotional costs. I'm going to do this from memory, because I'm much too lazy to dig up the actual receipts. Here are the damages, in no apparent order:

- * Zeos pentium-100, 16MB RAM, 1GB disk: \$3150**
- * UPS: \$290**
- * ISDN installation: \$570**
- * Domain name registration: \$50**
- * Assumed name (DBA) registration: \$9**
- * Windows NT Server: \$650**
- * Windows NT Server documentation: \$70**
- * Windows NT Resource Kit: \$150**
- * Ascend Pipeline 50 router: \$1100**
- * ISP ISDN setup fee: \$150**
- * Linksys Ether16 LAN Card: \$50**

I think that's everything. And I'm not going to total it up for you, because that would be too depressing. Ignorance's bliss.

Major expenses that I expect to incur within the next month or two include:

- * Additional 16MB RAM: \$???**
- * DAT backup: \$1000**
- * Webserver software: \$275-\$2500**
- * Network hub: \$100**
- * Additional 1GB disk drive: \$450**

And then all I'll need to do is get some customers to actually pay for all this stuff, and I'll be in business! Piece of cake.

Update: 05/06/95 10:55 AM

ISDN: The Saga Continues

So far in this diary, I haven't posted two updates in one day. I hope to change that today. Because in this installment, I'm going to have to report that I still haven't been able to get my ISDN hookup working. But today, I'm planning a full frontal assault on the problem, and I'll definitely report back if that happens, - just before I go out and get drunk!

Here's the way I spent my day yesterday:

I had accepted the default of IRQ 3 for my network card -- which, I have come to realize, was a mistake, because that's the interrupt generally used by COM2. So I had to set the card to a different interrupt.

Easy enough, you say.

Wrong! The Linksys Ether 16 LAN Card doesn't have hardware switches; instead you set the IRQ through a utility program that they provide.

Well, that's even better, you say.

Wrong again! The Linksys setup program, it seems, will run only under DOS. It will not run from a DOS box under Windows. I've confirmed this with Linksys technical support, as well as by much

trial and error. Now that I've configured my PC for Windows NT, I can't boot DOS at all. Linksys suggested that I boot it from a DOS diskette (why didn't I think of that?), and that seemed as though it was going to work. However, when the program reached the point where it was actually going to update the configuration on the card, it crashed. I just got off the phone with a friend who tells me that I need to add HIMEM.SYS to the CONFIG.SYS file on my DOS diskette, to give the setup program access to the memory it needs to operate. I'll give that a try after I post this report.

So, if I can't configure the card on an NT machine, what should I do? Linksys suggested the obvious but dreaded solution: Take the card out of the NT machine, put it into a DOS machine, program it in the DOS machine, take it out of the DOS machine, and put it back in the NT machine. Fortunately, I have a DOS machine sitting here in the same room. Unfortunately, I hate messing with hardware. Dammit, Jim, I'm a programmer, not a grease monkey!

So, I put the Linksys card in the DOS machine and tried to configure it for IRQ 5 or IRQ 9. It wouldn't use either of them. It seems that I have other devices set to those interrupts in the DOS machine. So even though I'm not planning to use the card in my DOS machine, the Linksys setup program detects the conflict and refuses to accept the setting.

Are you thoroughly confused by now? Me too!

I did try one more thing: I figured that if my router was programmed correctly, and if my ISDN line is properly functioning, I should be

able to ping the router through the Internet. But that didn't work either. - At least I'm consistent!

A friend of mine who's a network consultant has volunteered to come over and help me this afternoon. He says, with great confidence, that we will get it working. If he's wrong, my Internet service provider says that, if I can't figure it out by Monday, I can bring the PC and router down to his office and he'll set it up for me for a small fee. I would consider that admitting defeat *-but* if I haven't been able to get it running by Monday, I'll probably take him up on his offer anyway.

Stay tuned. The best is yet to come.

Update: 05/06/95 10:15 PM

ISDN: The Final Chapter (?)

SUCCESS!!!

At long last, my dedicated ISDN linkup to my Internet service provider is up and running. There were only a few dumb things preventing it from working. Here's what went wrong:

First of all, I did have the IRQ on the network card set incorrectly. I probably would have changed it sooner, but it was such a hassle taking it out of my NT machine and putting into my DOS machine every time I wanted to change the IRQ that I put it off as long as I could. However, it turns out that I didn't have to go through any of that; I could have changed the IRQ setting directly on my NT machine if I had known that I needed to boot the PC from a DOS

diskette that had HIMEM.SYS in the CONFIG.SYS file! When I finally changed the card to IRQ 10, it worked just fine.

Well, it almost worked just fine. Did you know that the RJ-45 cable that connects the network card to the router is wired differently from the RJ-45 cable that connects the router to the ISDN jack? You probably did, but I didn't. I was using *straight-through* cables for both. When I replaced the cable that connected the network card to the router with the correct cable, the PC was able to successfully ping the router for the first time.

I still was unable to communicate with my Internet service provider, but it turned out that their router was not set up properly. It wasn't easy tracking them down on a Saturday, but I'm pretty persistent, and I finally got them to fix it early in the evening.

And it worked! I'm on the Net!!

Now, all I have to do is get my webserver software running and load up an FTP server and do about a zillion other things... but I think I'll take a day off tomorrow. More next week.

Update: 05/08/95 09:55 PM

I've Been Pinged!

Didn't get much done today, but I did ask my service provider to set me up in his domain name table as both webfeats.com and

www.webfeats.com He'd already registered **webfeats.com** with InterNIC for me. It didn't take him long to get that done, and now I can be pinged! Don't worry; it doesn't hurt!

The server isn't powered up all the time, so you can't ping it very often (try to control your disappointment); but it was quite a thrill to ping my new company name and actually get a response. It made me feel like I'm really in business. For the first time, I feel like I fully understand what Descartes meant when he uttered the famous words: "I ping, therefore I am!"

NT Resource Kit Installation

In the README file that accompanies the WebSite beta, Bob Denny recommends that you install the Windows NT Resource Kit before you install WebSite. So, because I'm good at taking advice, and because I paid \$150 for the damn thing, I may as well do something with it. I installed it.

It was a typical, straightforward, point-and-click Windows install. It went so smoothly that it was almost a letdown. Almost! Of course, I haven't actually used it yet, so there's still lots of time for something to go wrong. I think I may be suffering from ISDN-induced paranoia.

FTP Installation

Since my subscribers will be using FTP to transfer their HTML to the WebFeats server, I decided to go ahead and install FTP. Like the Resource Kit, installing FTP was just as easy as it's supposed to be.

(Maybe I'm on a roll.) Tomorrow morning, first thing, I'll attempt to set myself up as an FTP user so I can learn how to configure FTP security. Then <drum roll>, it's time to install WebSite!

Update: 05/09/95 08:35 PM

IT WORKS!

After all the frustrating problems I've had, the final steps were ridiculously simple. No, I'm not complaining.

First, I had to introduce myself to NT security so I could configure user accounts for FTP. It took a while, and it's not set up exactly the way I want it, but I think (hope?) that I've set up a system that will allow me to set up user directories and allow users to FTP to their own directories and only to their own directories. At least, that's the plan. Reality, on the other hand, suggests that three hours experience with NT security is not going to be enough to defeat a determined hacker (or even, for that matter, a casual hacker). It will be interesting to see what happens.

By the way, I believe that I may have tracked down a package that will allow me to restrict users to the disk space that they've purchased from me. The program, Disk Quota Manager, is from NTP (New Technology Partners) of Bedford, NH. I'm not entirely sure that it has all the features that I need; they say they'll fax me some info. I am sure that it costs entirely too much money: They want \$500 for it. But if I can't find a less-expensive alternative, I'll just have to spring for it.

Finally, I loaded WebSite. I guess I was expecting some last minute problem, but it didn't happen. WebSite was running maybe five minutes after I first put the CD-ROM in the drive. It's almost anti-climactic, after all I've been through; and I'm sorry I don't have any hair-raising stories to tell, but it really was a piece of cake. All that was left for me to do, was to test it.

I FTP'd a few web pages over to a user directory I had created. No sweat!

I tried to access the pages through the web. No dice!

I changed a parameter in WebSite to tell it that my HTML documents were in \users, not in \website\httpd (the default).

I tried again to access the pages through the web.

IT WORKED!

I'm going to get some sleep. And I may take tomorrow off. If I can stand it.

Update: 05/12/95 07:20 AM

Still Here

Just a quick note to let you know that I'm still here!

WW

I hadn't really planned to take any time off, but it was an incredible relief when I finally got everything to work, and I guess I've been celebrating. But even though I don't expect to encounter anything quite as dramatic as what I went through setting up my ISDN line, I do plan to continue to document my experiences until the webserver is fully functional. BTW, I'm maintaining these same pages on my new webserver; you can see them at <http://www.webfeats.com/> Note that the server is not running all the time, and won't be until next week.

First Subscriber

I got my first subscriber yesterday!

Well, sort of. I've offered free test accounts to several people, and the first one took me up on it yesterday. She hasn't actually set anything up on the webserver yet, but it's still nice to actually have a subscriber, free or otherwise. And it's just as well that it's a free account; I'm having some trouble finding a bank that will process credit card transactions for me <grumble, grumble>.

Netscape Beta

I've confirmed that Netscape is beta-testing the NT version of Netsite, their webserver software. I've just installed the beta of WebSite, O'Reilly's webserver, and I don't really know enough about it yet to tell you what I think of it; but at a glance, it seems quite powerful and pretty friendly at the same time. But still, I'd love to get my hands on Netsite. Unfortunately, so would everybody else, and Netscape is

limiting the distribution of beta copies. I've sent in several requests, and haven't received a response. I'll let you know how it works out.

And, for the record, I do have at least one other option that I know of: Purveyor, an NT-based webserver from Process Software, has been on the market for a couple of months. I know this because someone from Process noticed these web pages and turned my name over to their sales department; a Process salesperson called me to try to get me to try Purveyor. It's a \$2000 product, as opposed to \$500 for WebSite, and I don't see any real reason to switch right now. So, why can't people call me and offer to give me something to try out and test, instead of trying to sell me something <g>? Just a suggestion...

Update: 05/15/95 08:45 PM

Odds and Ends

Even though I have WebSite up and running, I haven't done much of anything with it, mainly because I don't know anything about it! It doesn't have any help files or printed manuals as it's only a beta. I assume that the final release will have both. The documentation on the CD-ROM is in postscript format. I've spent hours trying to figure out how to use Ghostscript, a Postscript viewer found on a utilities CD-ROM, but I'm beginning to think that it's all a waste of time -- because O'Reilly says that WebSite 1.0 will ship this week. It was last week they said it would ship today; now they're saying it'll ship this week. I think I'll just go ahead and mail them the \$275 and hope that the documentation that comes with the released version will be in a format that I can actually read.

I added some RAM and installed a backup tape drive today. In fact, I only successfully installed the RAM and added an additional 16MB, which brings me up to 32MB. I've been told, quaintly, that NT needs that much RAM to be able to breathe. The 2GB (4GB, compressed) tape drive installation didn't go quite as well; physically it went fine, but I couldn't get the software to work. I'll call Conner (the manufacturer) in the morning, but I've got a sinking feeling that -- despite what the salespeople in the store told me -- the drive is simply incompatible with NT. I hate messing with hardware, but it looks like I'd better get used to it.

On another front, I'm discovering that it's impossible to find a bank that will process credit card charges for me. I plan to accept personal accounts only if they're charged to a credit card. The banks don't seem to want to process charges for any business that doesn't have an actual, physical store-front. Even the bank that's handled my personal account for ten years and where I now have my business account, won't do it. I have, however, located a couple of companies that specialize in setting up credit card processing for companies like mine. They charge much higher rates than a bank would charge; but since I can't get a bank to process charges for me, I guess I don't have much choice. I'll think I'll get myself set up with one of the processing companies later this week.

All for now. More to come!

Update: 05/17/95 10:35 PM

Tape Drive

I was right about why the Conner tape drive I bought wouldn't work: Despite what the salesperson in the store assured me, the drive is not NT compatible. Conner makes a SCSI version of the same drive, and they do have an NT driver for that unit. Unfortunately, I bought the IDE version, for which an NT driver is not available. <sigh>

So I returned the drive to the store. And rather than spend another day trying to find a DAT drive locally and, not incidentally, to save some money on sales tax, I ordered one from CDW, a mail-order house I've used before. This one is a Colorado drive; I called the nice folks at Colorado before I placed the order, and they confirmed that it would work with NT.

Unfortunately, the drive will work only in uncompressed (2GB) mode under NT; I won't be able to get compression (4GB), not with the controller they ship with the product. But if I ever need compression (it'll be a long time before that happens), it may be possible to achieve it with a different controller. That would be a lot cheaper than buying a new drive. The DAT drive, for those of you who are keeping score, set me back about \$1000.

Credit Card Processing

I've spoken with about half a dozen companies that provide credit

card processing services *merchant services*, they call it, to businesses like mine. Some of them even specialize in Net-related businesses. They all offer pretty much the same deal:

- * \$100-\$150 application fee (non-refundable!)
- * \$30-\$45/month validation software lease
- * 2.5% "discount" (minimum: \$25/month)
- * 30 cent fee per transaction
- * \$10/month statement fee

I believe I'm going to go with an outfit called Commercial Bankcard, in Atlanta. They're actually the most expensive place I spoke with, although they were all pretty close, but I got a better feeling talking to them than I did from talking to most of the others. I'll let you know how it works out.

Quota Manager

Since I'm having so much fun spending money I don't have, I bit the bullet and ordered Quota Manager from NTP today. That's the program that will let me limit the amount of disk space each of my subscribers can use. At least, I think I ordered it; they were supposed to fax me a confirmation, which never arrived. I'll call them tomorrow to see what's going on.

By the way, it's costing me \$500 to get this critical capability. If I were using UNIX, from what I understand, this function would be built in. Of course, if I were using UNIX, I would know even less about what I'm doing than I do now, if you know what I mean.

PolyForm

Finally (for tonight), I've been exchanging Email with the creator of a package called PolyForm, which, he says will allow me to make forms capabilities available to my subscribers without giving them access to CGI scripts. It's important for me to be able to provide forms capabilities; but, for security reasons, I don't want to allow general access to CGI on my server. I think that PolyForm may do the trick for me.

I have no idea of how much PolyForm costs. But if it's like everything else I've had to buy to get this venture off the ground, it'll be more than I could possibly imagine. Am I becoming cynical, or what? Well, maybe this time I'll be pleasantly surprised.

Update: 05/18/95 09:50 PM

Blackout

Although I bought an APC 600 UPS a few weeks ago, I didn't bother to get the interface kit that would allow it to communicate with NT. That feature allows NT to shut itself down "gracefully" if, during a prolonged power failure, the UPS sent a signal notifying NT that it was running out of juice. Then, when power was restored, the computer could reboot itself and NT would pick up where it was when it shut itself down.

I didn't think this feature would be very important to me. In the

nearly ten years I've been in this neighborhood, the power has never gone off for more than a few minutes, well within the capacity of the UPS to handle the load without needing to shut the server down.

So last night, of course, a car plowed into a utility pole down the street from me, knocking out all electric power to my neighborhood for an hour and a half. I was awakened at 1AM by the charming sound of my UPS beeping insistently. I should point out that I do not sleep at my office. In fact, I don't even have an office. WebFeats International is headquartered right here in my home. When power wasn't restored right away, I shut off the server and went back to sleep, and didn't power it back up until I woke up much later in the morning. So the server was down most of the night which would not be an acceptable situation if I were really in business and operational.

So, I ordered the UPS interface kit from APC today. There goes another 45 bucks. Hey, it's only money, right?

Speaking of money, I also bought an inexpensive (\$200) window air conditioner today. I now have two Pentium PC's in an upstairs bedroom that serves as WebFeats International Headquarters. That room has always been fairly warm, and the two PC's heat it up even more. I'm not sure my central A/C unit could keep that room comfortable when the temperature hits 100 degrees (note to my European readers: don't worry, that's Fahrenheit), as it often does throughout the Dallas summer. If I were to crank up the house A/C high enough to keep my office cool, the rest of the house would be sub-Arctic. Ergo the window A/C. Besides, I'm quickly running out of ways to spend money.

Which is probably just as well, as I'm quickly running out of money to spend.

DAT Drive

My DAT drive arrived today, as expected. It took me a little while to make NT realize that it was there. I finally figured out that I had to tell NT that, not only did I have a new tape drive, I also had a new SCSI controller board. Once I explained that patiently to NT, NT agreed to let me back up my hard disk. And it actually worked the first time I tried it. Now all I have to do is figure out how to automate the backup so that it kicks off at 1 AM every night (If people will stop driving into local utility poles, that is), and I'll be all set.

Credit Card Processing Revisited

Yesterday, I had pretty well decided to process credit cards through Commercial Bankcard in Atlanta. Today, I got a call from FirstNet, a Dallas-based company that also arranges credit card processing for Net-related businesses. I have no earthly idea why they called me. I sent Email to a slew of companies whose web pages I stumbled across and FirstNet must have been one of them.

Their rates are actually a little better than most of the other places I've spoken with, and I like the fact that they're local. They faxed me some info, and I'll talk to them again tomorrow. I suspect I'll file an application with them (\$75 fee), and we'll see what happens from

there. If it works out, I'll be ready to process credit cards in about two weeks, which is just about when I hope to be ready to launch WebFeats. Pretty good timing!

Update: 05/23/95 09:15 PM

These are just a few quick notes, just so you won't think I've been sitting around twiddling my thumbs.

Credit Card Processing

I filed an application yesterday with FirstNet, a local company that arranges merchant services (credit card processing) for companies like mine, that would otherwise have difficulty finding an agent. They already provide merchant services for PICnet, one of the ISP's here in Dallas, so they think they can get mine approved. We'll see. I gave them the non-refundable \$75 application fee, and they said they'd get back to me in about two weeks. Since I can't hope to sign up consumer accounts without being able to process credit cards (I am not going to send out a bunch of \$5 invoices), this is really important to me, and I'm keeping my fingers crossed.

Disk Quota

My NTP Disk Quota software arrived yesterday. I made a quick pass at installing it, hoping that the installation process would be so intuitive that I wouldn't have to read the instructions. Wrong! I got it sort

of half installed, only to realize that I was going to have to pay some attention to the documentation if I was going to have any chance of making it work. So I uninstalled it, and will try again later when I have more time.

WebSite

WebSite is shipping! In fact, they tell me that my copy shipped today! I'm really looking forward to the released version, not because I want to make use of whatever new features they've added (I don't even know how to use any of the old ones!), but because I'm looking forward to seeing some hard-copy documentation. The only documentation with the beta software I've been using is in PostScript files. After several hours of experimentation, I managed to download and successfully install a PostScript reader called GhostScript, but the quality of the text on the screen is really poor. I wasn't looking forward to getting eyestrain while I learned how to use WebSite. I can't help but think that it'll be helpful to actually know how to use the software on which I'm basing my entire business.

WebFeats Website

Now, this is confusing. In this section, I'm not talking about WebSite, the webserver software. In this section, I'm talking about my website, meaning my set of web pages. What I want to tell you is that I'm meeting with some artists tomorrow to help me design and layout a website for WebFeats. I don't necessarily want anything flashy, and it doesn't even have to be cool; I just want something that looks pro-

professional and friendly, something that would help a prospect believe that I will be a reliable vendor of services. If I don't have a decent-looking website for my own company, why would anyone pay me to create a website for their company?

Newspaper Ad

Finally, I just wanted to let you know that I've decided to place an ad in a local newspaper. Although I hope to do most of my advertising on the Net, there's a local weekly called The Met that's running a special Internet section on June 15, the exact day I hope *officially* unveil WebFeats. I'm writing a couple of articles that will appear in that section; they're not paying me much for the articles, but I'm mostly doing it for PR, anyway. And since they realize that they're seriously underpaying me, they offered me a good deal on ad rates, so I decided to give it a shot. I don't know if I'm more worried that I'll get no response at all, or that I'll get such a heavy response that I won't be able to handle it.

On second thought, I'd definitely rather have the latter problem.

Update: 05/30/95 08:25 PM

In the Home Stretch

At least, that's what it feels like: After a long race, I've just rounded the clubhouse turn, and I'm in the home stretch. I've committed myself to having my *grand opening* on June 15, a little over two weeks

from now. To ensure that I don't let that slip, I've been telling everyone who asks that I'll be ready on June 15; if nothing else, I'll be too embarrassed to let that slip. (Of course, if that tactic worked, Windows 95 would have been out long ago.) I'm also running an ad in a local paper on that same day.

As you can tell, I'm trying to box myself in so I won't be able to find excuses to delay the big day. I tend to be too much of a perfectionist for my own good; and if I wait until everything's perfect -- well, I might never be ready.

Here's what I figure I have to do between now and June 15:

LITERATURE: I don't plan to develop much in the way of printed sales literature but I have to have something. so I started working today on laying out a few print pieces. This is not the most important thing I have to do, but it is the one with the longest lead time; to be safe, I'd like to have something to take to my printer by June 5. I plan to have a flyer to advertise my development services, an application for commercial Web space, and an application for individual Web space. That doesn't seem like much; I have this uneasy feeling that I'll send the whole literature packet to a prospect, and they'll write back saying: That sounds great; send us some more information!

WEB SITE: Obviously, I need to develop a professional-looking Web presence of my own; I can hardly expect businesses to let me develop Web sites for them if my own site looks amateurish. I've got my artist working on a logo, a banner, and a few buttons; I think I can make it look competent without making it too flashy. I can always add some

glitz later on, if I feel the need. That's one of the nice things about Web pages: They're never finished. Of course, that's also one of the terrible things about Web pages.

WEB SERVER: At some point, it would probably be a good idea to learn something about using my Web server software, don't you think? WebSite release 1.0 just arrived today; it looks pretty much the same as the beta version, but I never really learned a whole lot about the beta version. It may seem strange that I'm ranking this as the least important of the three things I have left to do; but the other two must be ready by June 15, while I can learn how to use WebSite as I go

along. I'm hoping that I do have time to learn it pretty soon; but if my years as a consultant have taught me nothing else, they've taught me that all I really need to do is to stay one step ahead of my clients. And have lots of Maalox handy.

Update: 06/06/95 11:30 AM

Since I plan to officially launch WebFeats on June 15, this Setup Diary will soon come to a close <sniff!>. But don't panic! For archival purposes, I'll continue to maintain a link to this historic (?) document from the WebFeats home page.

Credit Card Update

I was hoping to hear from FirstNet yesterday; what I was hoping to hear was that my merchant account for credit card processing, had been approved. Well, I did hear from FirstNet yesterday. But what

they told me was that they were unable to contact anyone from my bank to confirm the existence and extent of my account. (Thanks, Bank of America! Not only would you not give me a merchant account because I don't have a storefront, your lack of cooperation has delayed my setting up a merchant account somewhere else!) So I drove down to my bank and made them call FirstNet and give them the information. What a pain. FirstNet says that I should now hear from them in a day or two. I'm keeping my fingers crossed.

Literature

I went to the printer yesterday to get some sales literature made up. I gave them the text that I wanted and a rough layout; I hope they can work some magic and make it look good. One problem is that my Application for Personal Web Space says that personal accounts must be charged to a credit card -- and, as you know, I haven't actually been approved to process credit cards yet. If that approval doesn't come through, I'll have to do some quick rethinking, - and, possibly, reprinting.

Graphics

Some graphic artists I know have designed a logo and some buttons for my website. Unfortunately, they have no Web experience, and that may turn out to be more of a problem than I thought. They have no idea, for example, how to do transparent or interlaced GIF's; since they've created only print graphics, that hasn't been an issue for them. And I don't have the time or the inclination to figure out how to take a Corel graphic and make it look good on the Web. I've contacted a couple of artists with some Web experience (there aren't many of

them around, believe me) to see if they can take these graphics and Webify them by next week. If you see some decent looking graphics in this space on June 15, you'll know that it worked.

ISDN Problem

I've had my ISDN line -- the one that cost more than \$600 to install -- for about six weeks. Yesterday, it went south. I assumed that my ISP had messed up. Wrong. It was the phone company -- they actually admitted to finding that they had some bad equipment at the central office. It took maybe 4-5 hours for them to fix it. I try to imagine what it would have been like if I had hundreds of clients depending on that ISDN line to keep their Web pages in front of their prospects -- no, I'll think about that tomorrow. Tomorrow is another day.

UPS

The Interface Kit to make my UPS talk to NT arrived today. It consisted of an RS-232 cable. For \$45. I'm in the wrong business! I hooked it up and unplugged the UPS, simulating a power outage, to see what it would do. It really was kinda' cool. The UPS, which is rated for 17 minutes, lasted for more than half an hour, powering my server, monitor, router, and hub. Pretty impressive. Then, it signaled NT that it was running out of juice, and NT shut itself down, no questions asked. I plugged the UPS back in; everything came to life, just like it was supposed to. I like it!

Good Book

I finally found a good book about how to do what I'm doing. It's called Running a Perfect Web Site, it was written by David M. Chandler. Very thorough; very easy to read. As Joe Bob says: Check it out.

Update: 06/14/95 09:40 AM

The Final Chapter

WebFeats officially opens for business tomorrow (June 15, 1995), so the URL I've been using for this diary (<http://www.webfeats.com/>) is about to become the WebFeats Home Page. For historical purposes (no, the Smithsonian hasn't called yet, but I'm sure that it's just a matter of time), I'll maintain a link from that page to the diary, which will move to a subdirectory (<http://www.webfeats.com/diary/>) tonight.

A quick final update

- * I've been approved for credit card processing. First Net will send someone to my place day after tomorrow to install the verification software and to train me on its use.
- * My ISDN line is working (today). The phone company has discovered two different problems in the last week, but there hasn't been a problem since they fixed the last one yesterday afternoon. That's over 12 straight hours of uninterrupted ISDN service! Not bad for only a \$600 installation charge...
- * I plan to complete work on the new WebFeats Web site this

afternoon and put it online tonight in preparation for the *grand opening* tomorrow.

* Today's project is to install Quota Manager, the software that allows me to limit users to the diskspace for which they've actually paid me. I had a minor problem when I first tried to install it a few weeks ago, so I put off figuring it out until the last possible minute, -of course!

Update: 04/10/96 08:21 AM

Epilogue - One Year Later

Nearly a full year has passed since I embarked on this incredible journey, and the folks at WebSmith have asked me to look back on the past year and draw some conclusions. What have I learned? Am I still having a good time? Am I making any money? If I had it to do all over again -- would I?

The short answers are: I've learned a lot, I'm having a wonderful time, I'm not making much money (yet!). And I absolutely, positively would do it all over again. In a heartbeat.

One pleasant surprise is that maintaining the webserver has been less of a chore than I feared it might be. I'm a programmer and a writer by trade; my hardware background, especially in regard to networks, is very weak, and my knowledge of the Internet was, when I started this project, a little on the sparse side. Sure, things have gone wrong:

The phone company has had serious problems with my ISDN line on at least four separate occasions; my ISP's name service acts up at the worst possible times; I've had to disable my SSI access counters because they kept crashing my webserver. But the good news is that the problems have all been solved, none of them have been very serious, and I've learned valuable lessons from each and every one of them.

One unpleasant surprise is that finding business has been tougher than I expected. For one thing, competition has increased dramatically since I started doing this a year ago; it seems that everybody who has ever looked at a computer is now in the web service business. Marketing and sales are not my strengths; I suppose that I was foolish enough to believe that customers would beat a path to my door, but it hasn't happened. I also came down with a bad case of *big-sale-itis*, which means that I made the mistake of concentrating on selling my services to large companies, hoping to find that one huge customer that would give me so much work that I could develop their site and then retire.

Since I'm still here, it's safe to say that that hasn't happened. Instead, I discovered that selling to big companies involves a long sales cycle, with lots of memos, demos, meetings, presentations, and frustrations. I should, however, point out that I did get some choice work from one of the major clients I pursued, the Cellular One Group.

But the best part of this journey, hands down, has been the people I've met along the way. According to my access log, about fifty people a week continue to read this diary, cover-to-cover, week in and week out, as they have been doing ever since I began writing it nearly a

year ago. Many of them write to me; some ask questions, some offer to help, some thank me for showing them that it can be done, some thank me for warning them that it can't. Some have become my customers, some have become my friends, some both. I never know what to expect when I open my Emailbox, but I know that's it going to be a surprise, and I know there's a good chance that it's going to be exciting.

At some point, if my income doesn't improve, I suppose I'll actually have to go out and look for a <gasp> job -- but even if that dreaded day comes, I'm sure I'd still do web service on the side. I'm having much too good a time to stop now!

Hank Mishkoff, in his official biography says "I've heard it said that the Web is the ultimate Vanity Press; and if that's so, far be it from me to pass up an opportunity like this. When asked about his work experience he responds thusly. "My first computer-related work experience was as a programmer on an IBM 1401 for Aetna Life and Casualty in Hartford in 1970. My main claim to fame since then, dubious as it may be, is that I was one of the original programmers for Texas Instruments when they developed their ill-fated 99/4(A) Home Computer in 1978. I've largely survived as a consultant and contract programmer since early 1983; much of my work has been in designing, developing, implementing, and maintaining reporting and commission systems for cellular phone companies.

Since 1980, I've supplemented my earnings by writing about various computer-related subjects. I've had two books published (one about the IBM PCjr, the other about Artificial Intelligence), and I've written perhaps a dozen magazine articles about subjects as diverse as computer conferencing, EDI, and cellular billing systems. I also create fiction (no cracks about the PCjr book, please); my first short story was awarded the Grand Prize in a contest sponsored by the Fort Worth Star Telegram. I haven't won an award since. Maybe I should have quit while I was ahead."

Hank's page can be visited at <http://www.webfeats.com>) and he can be emailed at hank@webfeats.com

Windows NT 101

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Introduction

Windows NT Workstation 3.51 is the subject of this article, a general overview. Windows NT is the descendant of the Microsoft/IBM marriage that originally was a joint effort at OS/2 but ended in a nasty divorce with MS going after New Technology, hence the NT. Going by their previous efforts at Windows (see versions 1 2 or 3), I don't think many people expected much from NT, at least in the beginning.

About a year or two ago I began to hear some murmurs about the stability of NT. I figured that was great but there probably wasn't too much I could use it for. It seemed to be marketed toward high-end developers and such. My environment is a 24x6 (24 hours a day, six days a week) environment. I need industrial strength PCs and OSs. I've been through the jumps with Windows 3.1 and 3.11. I learned how to tweak them to fit out needs. Then onto Win 95 and things seemed to get somewhat better, but I couldn't load it with consistent stability on my 486 machines. We got some Pentiums and Win95 seemed to run pretty well, as long as the video and network drivers worked right. Still, not quite there. We'd been talking, on and off, about NT for a few months, but decided to hold off for Win95. We finally took the plunge and opted to get an NT box to see what it could do. If it didn't work out, we could always regress and go back to '95.

I received two P133 machines, both with 32 megs of RAM and 2 gig drives. One was IDE-based and the other SCSI-based, with a Buslogic Flashpoint adapter. Another thing I thought to try was 4 megs on our video card since we work with 21" monitors at 1278x1024 for electronic publishing. Both were preloaded with NT 3.51. Microsoft recommends a minimum of 12 megs for an Intel-based system (386/25 and higher) but as you know from the past, Microsoft's minimum and your minimum are two different things. 32 MEG work great. Besides Intel, NT runs on the DEC Alpha (a screamer I'm told) Power PC.

I didn't know what to expect with NT but I definitely didn't expect to be asked to press Ctrl-Alt-Delete to log in! It's the opposite of what you'd expect. Security is the mantra of NT but more on this later. I noticed, as I was logging in, that when I moved the Login Dialog box around, somehow something seemed different, even though I couldn't put my finger on it at first. It just seemed so responsive. I went over to a windows machine and moved a window. On all the other windows versions, when you move a window or box, you move an *outline* of it. When you stop, the outline fills in with the box or window. In NT the window or box moves when you move it, in real time. It's something to get used to. I knew that the NT interface looked much the same as the Win 3.1 interface and that a Windows 95 interface was on the way. Granted, the Win95 shell adds a number of improvements, but I was willing to forgo this for some stability. A friend of mine said that he'd had his NT system up for three months and never had a crash. Seemed utopian, but I knew in the real world that would never hap-pen. If I hadn't tried a certain experiment on my system, I probably would have gone three months too! Details to come.

Windows NT is billed as a true multitasking 32-bit system. What that means technically, I'm not sure, but as a long-time Unix user *do* know what multitasking is. Multitasking means just that: multiple tasks operating independently, each one on its own virtual computer. NT uses services to handle all of its various background processes: networking protocols, server daemons like an FTP server, etc. It does this very unobtrusively.

The following are some of the highlights of Windows NT Workstation 3.51.

Boot Manager

NT 3.51 uses a boot manager which lets you boot into other OSs loaded on your system. You could have DOS 6.22 with Windows for Workgroups or have Windows 95 and the Boot Manager will give you a choice at bootup for an alternate OS. This is handy for developers or tech support people.

Setting up a dual-boot system does require some planning. - Just ask me! The way I did it wiped out my boot sector and left me with an unrecoverable NT installation. Ideally you would install your alternate boot OSs first and load NT last. There are a couple of Web sites giving pretty thorough instructions on how it is done. One is <http://www.bcpl.lib.md.us/~dbryan/directboot.html>

Security

Security is the theme of NT and is similar to a UNIX setup. You can't get in without a login and there are graduated layers of privileges assignable to users and groups. You *can* set up the system to get

around this, if for example, you were the only user. However, in any kind of office setting using networks, security is a necessity.

The root user here is the *administrator*, but you can clone this user and some or all of the administrator's privileges to another if you so choose.

User ids and privileges are the half of it. The other half is the OS itself and its relationship to the software you run. NT is the general, and will only let you run if you play by its rules. Rule 1: Thou shall not manipulate any of the hardware directly.

There are device drivers for everything. I had software which required a dongle (security button) attached to the parallel port. The software couldn't see the dongle. I had to get a special device driver before the software could see the dongle.

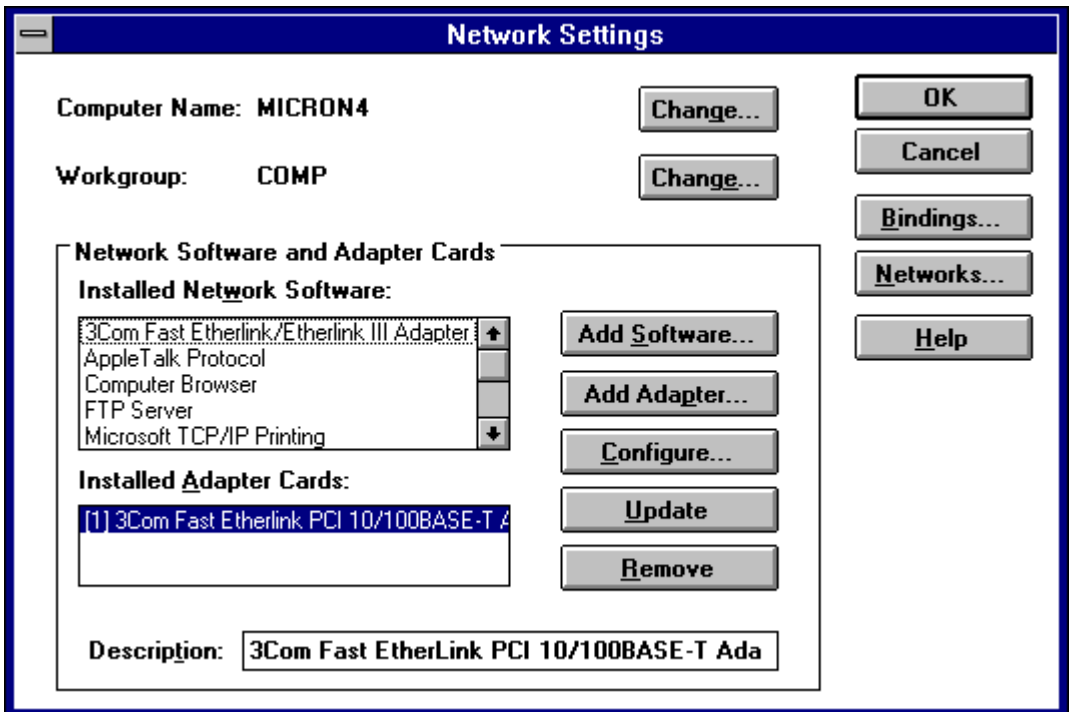
The Desktop

Just as I've said, it's Win 3 but on steroids. Here's a nice twist though. Since each user has a login, each user, has their own desktop to con-figure (how far depending on individual rights) as they may wish. Program groups come in two flavors: Common and personal.

Network Support

Very strong network capabilities. Built-in support for Appletalk, Netware, TCP/IP, and Microsoft networking of course. My network servers are Sun Sparcs running Solaris 2.x. The usual method of connecting to these machines, and I mean on a permanent basis, like mounting drives, is to buy a PC-NFS client (NFS being Network File System), and connect that way. I am evaluating a couple of packages

right now, a good one being Intergraph's implementation of Sun's PC-NFS. However, after hearing much talk of the Samba system I thought I'd give it a try. Samba runs on the UNIX end and emulates a PC running a Netbios protocol. In other words it looks on the net to be another PC running on a Microsoft Network. It is also free and it works without too much setup time: two big plusses in my book. Unfortunately, we deal with some very large text files and it seems that the NFS method works faster than the Samba method during access and print-ing, but not by much.



Remote Access

One of the nice touches of NT. Some of you may be familiar with RAS from Win 3.11. Basically the same, but with TCP/IP (plus others) support for easy Internet dialup access. You will need NT's TCP/IP protocol loaded also. NT workstation can act as a Remote Access server for up to ten clients. This allows dial-up access to the NT machine and your network.

File Manager

This file manager allows for long file names, mixed case file names, you name it. In fact, it seems as though NT doesn't particularly care what you call a file, except, if you want to be able to execute your files from file manager you will still need to have 3-letter extensions to differentiate file types. You can have extensions with up to four letters in them. Why couldn't they have put this file manager in Windows 95?

Server

You can set up your NT machine to be a file and print server. Share directories through file manager and printers through print manager.

Screen Savers

There are some pretty cool 3D screen savers included with NT. Beer lovers should type *beer* into the 3D Text screen saver for some interesting results.

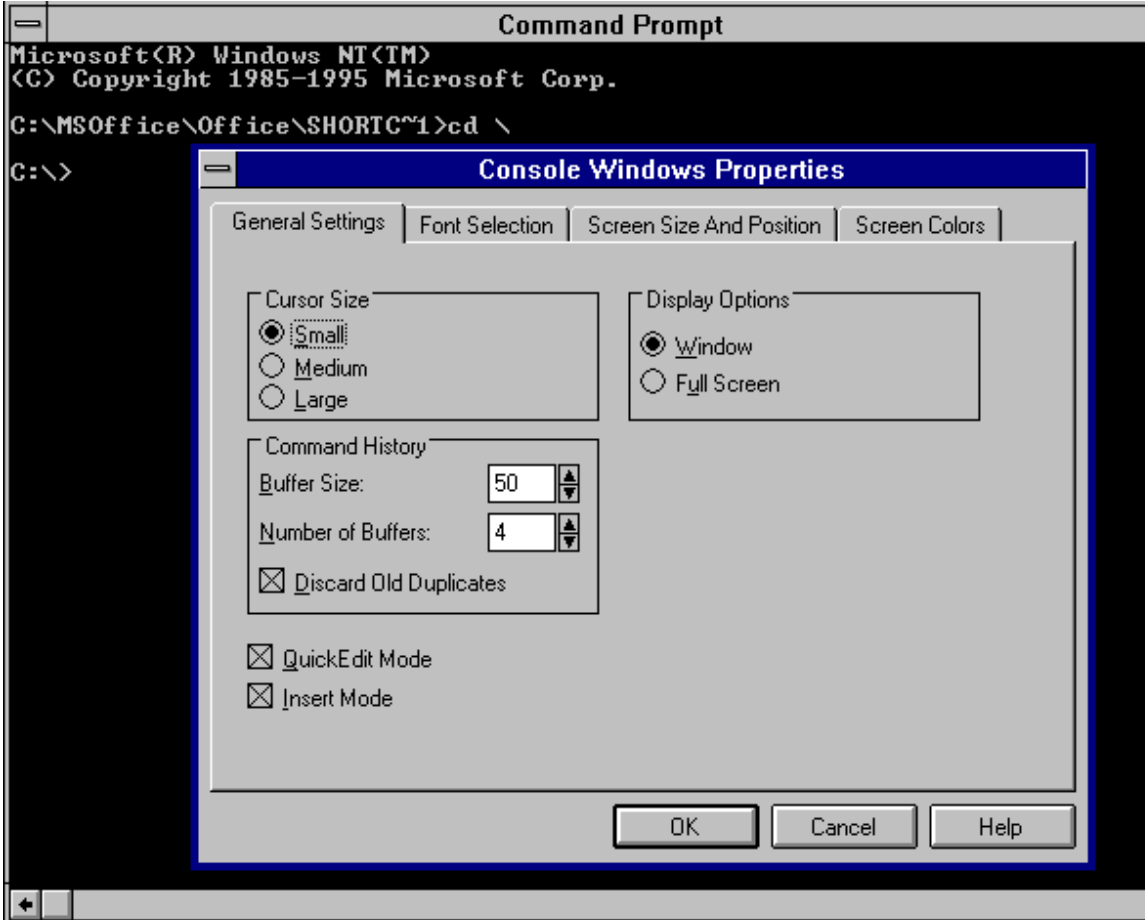
Fonts

I usually have quite a few fonts on my system and have Adobe Type Manager (ATM) installed for use with desktop publishing and illustration packages. I knew that ATM was not allowed on NT, so I wasn't sure how non-True Type fonts would be handled. I used the

Fonts control panel to see if I could load some Adobe Type 1 Postscript fonts. What it does is convert the Type 1 fonts to True Type and gives you the option of copying the Adobe fonts onto the system as well. The converted fonts work okay so far, but I as yet have had to try them out in high-resolution (1200-2400 dpi) situations.

Printing

Print support is robust: designed to work in a mixed-network environment. I can print locally, to a print server or shared network printer, directly to a TCP/IP-enabled printer, and directly to an Appletalk printer. It bugs me, though, that Microsoft won't give these printers the intelligence to let me drop a Postscript file onto a Postscript printer. Printers are setup through the Printer Control Panel or the Print Manager. Each printer can be also be controlled with security options.



DOS

Who? Now called the Command Prompt, DOS can be run as a window or full screen for all your DOS pleasures. I haven't had any problems with DOS programs except one which uses a com port. A

big plus is command history, previously available from such addons as 4DOS.

Software Compatibility

NT does a remarkable job of handling your DOS and Windows 16-bit applications. I had to try our hefty armada of applications on NT before I gave it the seal of approval. Word Perfect 6.1 didn't run after it installed. I found that WP put its *.DLLs into the winnt/system directory instead of the winnt/system32 directory. After I copied them over by hand and WP ran fine. There were a couple of networking applications from Hummingbird, designed for Windows 95, which would not install at all. I think that's very low and mean and hope the company changes this. Adobe Acrobat 2.0 will not run on NT 3.51 because it depends on ATM. Acrobat Exchange 2.1 has a built-in ATM and thus runs excellently on NT.

All the Win95 shareware I've tried seems to work fine on NT, my favorite being WinZip. Some DOS games will not run correctly on NT because they control the hardware directly. I couldn't tell you all of them, but one of my favorites, Links386 will not run from NT. Doom runs, but only with the Soundblaster disabled. The solution is a dual-boot system.

System Administration

Last but not least is the fun stuff. NT comes equipped with a set of system administration tools. The administrator, or others assigned with the administrator's privileges, have access to the User Manager to set up user ids, user and group permissions, password properties and security event logging; the Disk Administrator for various disk management functions including disk array setup; a graphical

Performance Monitor; a Backup scheduler; an Event Viewer for noting logged events; and a Windows NT Diagnostics tool to get in-depth reporting of installed devices, drivers, IRQs and such. It also includes a Registry Editor.



Summary

I have yet to delve into all the nooks and crannies NT has to offer, but I hope I've given the reader a look at what it has to offer, and I believe has a great deal to offer.

Next time I hope to report on Windows NT Server v4.0. It will be the Beta 2 release. I will attempt the death-defying feat of using it as a Mac file and print server. Stay tuned.

Jim Plumb is a Systems Administrator for a printing company and manages many computers and a variety of Operating Systems. Just about a year ago Jim took this editor by the hand and began the arduous process of educating a newbie to the new world of the Internet, HTML and homepages. Jim was our original WebMaster and put [WindoWatch](#) on the Internet! He has contributed many articles to [WindoWatch](#) including a series on Adobe's Acrobat.

A WINDOWS95 LOOK-A-LIKE BUT STILL VERY MUCH NT

Copyright 1996 By Linda L. Rosenbaum

Although we have two systems in our network of four that use Windows 95 exclusively, both of our NT based systems also have Windows 95 installed on them. Like many, I have been very lukewarm about the Windows 95 interface as well as its many other changes. I have been using NT 3.51 since it was released in June 1995, while my husband started with NT 3.5 on a new system in April, 1995. I got a lot of comfort from continuing to use the old style Windows 3.1 interface, as supplemented by RipBar Pro for NT. Having now used NT 4.0 beta 1 (build 1234) for over two months almost exclusively, I find it harder and harder to go back to NT 3.51. I find this to be the best of both worlds - the benefits of the improved interface that Windows 95 has, combined with all the features of NT that make it an excellent operating system.

As a result of my higher end hardware, I had the pleasure of being able to beta test the Server version of NT 4.0 beta 1. I have a P133 with 64MB of RAM as well as a full SCSI-II setup with a fast hard drive, 4 meg video card and PCI peripherals (video card, network card and SCSI HA). We have a four system network at home that is set up as a peer-to-peer network with two systems using NT Workstation almost exclusively and two systems using only Windows 95. I concluded that it made more sense to install the NT 4.0 Server beta as a server in a workgroup instead of as a domain controller. Hence, my testing of NT 4.0 Server was much akin to using it as I use NT 3.51 Workstation.

My installation of NT 4.0 beta 1 went, in relative terms, quite smoothly. The setup dialogue was quite similar to what I found when I first installed the NT 3.51 Workstation. Since this is a beta product and I very much wanted to preserve my working installation of NT 3.51, I installed NT 4.0 beta 1 in a new directory. As a result, I cannot comment on the ability of NT 4.0 to successfully install an upgrade on NT 3.51. This type of installation also means that all of my programs had to be reinstalled since there is no migration path if the new version is not installed over the prior version. It's my expectation that once NT 4.0 is released, most would want to upgrade over their existing version of NT 3.51 in order to take advantage of a normal migration path.

The installation of NT is not quite in the same league as Windows 95 as far as its ability to detect hardware and install all necessary components. At least through NT 4.0 beta 1, this situation has not been noticeably improved upon. During my installation, NT did not automatically detect the specific network card on my system. I use a 3COM 3C590, which is the Etherlink III PCI network card. In fact, neither NT 3.51 nor Windows 95 were able to automatically detect this network card. However, I was able to specifically select it and the installation of the network drivers then proceeded smoothly.

As I found with NT 3.51, the drivers for my sound card, tape drive (DAT) and printer were not installed during the initial installation/setup. I had to do them all separately. Given the new set up of certain components, it took a bit of looking around to figure out how to install the sound card drivers. It is done using Control Panel | Multimedia | Devices | Add. The DAT tape driver is installed via the Tape Devices icon in Control Panel. And the printer drivers are installed via the Printer icon in Control Panel. Although each of these drivers had to be installed in separate steps, all installed normally.

My first thought when NT 4.0 beta 1 booted up was that it looks just like Windows 95! I personally don't think one can tell the difference.



As I started to take a look around, I was quite relieved to see aspects that relate to NT alone. One such example is the Administrative Tools, which contains Event Viewer, Performance Monitor, Windows NT Diagnostics, User Manager, and Disk Administrator. These tools are the heart of NT and where most of the specific NT stuff is accomplished from or monitored from. Another welcome site was finding that one can get to the Task Manager via clicking with the right mouse button on the taskbar.

As I dug deeper, I did discover other things that were different from Windows 95. For example, there is no Device Manager in the NT Control Panel within the System icon. Some of the same data contained here in Windows 95 is contained in NT within Windows NT Diagnostics. The NT 4.0 version of Windows NT Diagnostics provides a lot more detail on the hardware such as IRQ, DMA, and I/O usage than does NT 3.51. Another minor example is the extra tab called Plus! in Display Properties (right click on desktop). This tab allowed me to enhance selected items as well as choose alternative icons for My Computer, the Network Neighborhood and/or the Recycle Bin.

As I continued to explore, I did learn that there is quite a bit of Windows 95 that did make its way to NT 4.0. The overall interface and way operations are accomplished are virtually identical, including extensive use of the right mouse button. NT 4.0 has auto notification of CD's. It will automatically start up the CD player when an audio CD is inserted. All of my CD's that are automatically detected in Windows 95 are now also automatically detected in NT 4.0. NT 4.0 has a Windows NT Explorer which is the same as the one in Windows 95. The mechanisms used to share a drive, network a drive, or share and network a printer are quite similar between the two operating systems. NT also has the Recycle Bin which gives NT users for the first time the ability to undelete files. In testing, I have discovered that files deleted via the desktop or any program that uses the NT 4.0 desktop can be undeleted. Files that I delete via 16bit Windows programs do not go to the Recycle Bin and hence cannot be undeleted. Nor do files deleted on a remote system. NT 4.0 has sound schemes although the additional sounds that ship with Windows 95 are not contained in NT 4.0. Even so, I was able to create my own sound scheme easily.

The performance of NT 4.0 beta 1 feels quite similar, on my setup, to NT 3.51. I ran some benchmark tests in Windows 95, NT 3.51 (with SP2) and NT 4.0 beta 1. The results from WinBench 96 are as follows:

	<u>NT 3.51</u>	<u>NT 4.0</u>	<u>Windows 95</u>
Disk WinMark 96	1320	1320	1100
Graphics WinMark 96	16.4	14.1	19.8
CPUMark16	253	291	273
CPUMark32	286	291	273

The results from Wintune 95 are as follows:

	<u>NT 3.51</u>	<u>NT 4.0</u>	<u>Windows 95</u>
Dhrystone	245 MIPS	239 MIPS	244 MIPS
Whetstone	77 MFLOPS	75 MFLOPS	74 MFLOPS
Video speed	23 MP/s	18 MP/s	13 MP/s
C:\ Cached speed	27 MB/s	30 MB/s	23 MB/s
C:\ Uncached speed	.68 MB/s	.7 MB/s	.79 MB/s
RAM Read avg	226 MB/s	226 MB/s	250 MB/s
RAM Write avg	82 MB/s	81 MB/s	83 MB/s
RAM Copy avg	56 MB/s	55 MB/s	60 MB/s

The above tests were run on a Pentium P133 (Super Micro P55CMS motherboard with 512k pipeline cache) with an Adaptec 2940, Conner CFP 4207S, Hercules Terminator Professional, and 64MB of RAM (fast page mode DRAM). The video mode was 1024x768x16bit with a 90 Hz refresh rate on all three tests. In Windows 95 I was using release 4.51 of the Hercules drivers for Windows 95. In NT 3.51 I was using the Hercules video drivers for NT released in March 1996. In

NT 4.0 I was using the S3 compatible video drivers that come in NT 4.0 beta 1. The decrease in the graphics test from NT 3.51 to NT 4.0 did surprise me because there are changes in the video area in NT 4.0 that are supposed to enhance video speed/performance. In day to day usage, however, the video performance seems quite similar between NT 3.51 and NT 4.0.

Overall the vast majority of my programs that worked in NT 3.51 still work in NT 4.0. I have run into a few problems and am hopeful they will be “cured” with later betas of NT 4.0 or by the software company after the release of NT 4.0. I have a fair collection of 32bit Windows programs, both retail and shareware. These programs, with only a few exceptions, are running just fine in NT 4.0. One of my 16bit programs actually runs better in NT 4.0 primarily because a feature that would not work in NT 3.51 works just fine in NT 4.0. Procomm Plus for Windows 3.11 can play wave files. This has never worked in NT 3.51 even though it worked fine in Windows for Workgroups 3.11 and works fine in Windows 95. I was quite pleased to discover that the wave files now play in Procomm Plus 2.11 running under NT 4.0!

Unfortunately, at least under beta 1 of NT 4.0, the hardware supported by NT has not been noticeably expanded. It is still absolutely imperative that one have hardware either on the HCL (Hardware Compatibility List) or have NT drivers supplied from the manufacturer. The video subsystem has been changed and, as a result, all video cards that work in NT 3.51 will need new drivers for NT 4.0. The number of sound cards supported is still quite minimal as is hardware such as scanners. The drivers such as HP printer drivers that come in NT 4.0 are still not up to the abilities of their Windows 95 counterparts. It is hoped that when NT 4.0 is released and in more widespread use, that manufacturers will provide more NT support. But until that happens, one needs to be cautious when contemplating changing to NT 4.0.

It is a bit difficult to comment on the stability of NT 4.0 given that I'm using a beta version. Taking into account that it is a beta, I consider it quite stable and useable. On the other hand, it is not as stable as NT 3.51 and I have had several instances of problems I don't see in NT 3.51. These range from my sound scheme not being properly loaded, losing sound mysteriously, color scheme not being properly loaded, inability to properly shut down, and the BSOD's (blue screen of death). All of these have been corrected upon a reboot. I also seem to get more problems with individual programs, both 16bit and 32bit. But the vast majority of the time, NT itself is unaffected and I can restart the problematic program and get right back to business.

Despite this being a beta, I find it increasingly difficult to go back to using NT 3.51. I was quite indifferent to the Windows 95 interface and now find myself missing it when it is not available. I love the combination of the Windows 95 interface with the stability and other features found only in NT 4.0. I still find being able to run 16bit Windows programs, for example, in their own memory space, to be invaluable. I like the fact that when individual programs have problems in NT 4.0, the vast majority of the time I can just restart the offending program and get back to work. I don't believe Windows 95 is as good in this area. I am having some problems with individual programs that do work fine in NT 3.51. I expect that most of these will be fixed once NT 4.0 is released, if not sooner with a later beta of NT 4.0. With my hardware I don't notice much in the way of speed differences between using NT 3.51, NT 4.0 or Windows 95. There are some but are far outweighed, in my opinion, by what NT can give me above and above what Windows 95 can do.

I believe that anyone currently using NT 3.51 will want to upgrade to NT 4.0 once it is released. I also believe that someone using Windows 95 currently with appropriate hardware resources and supported peripherals should give serious consideration to switching to NT 4.0. To me it truly is the best of both worlds - looks like Windows 95 but is NT underneath.

Linda Rosenbaum lives and works in a suburb of New York City. She is an assistant controller at the World Headquarters for a large global manufacturing company. She has two young children and a husband whose full time job is to take care of the kids. When not working, Linda can be found on a variety of online services and the Internet reading and writing about her experiences with NT, networking, and multimedia. She maintains a home network of four systems using a combination of NT and Windows95.

Continued from Editorial:

The new operating system was developed for use on interactive networks. “It is intended to operate either on a stand-alone basis in new computing and comm devices, or as an adjunct to existing operating systems like Microsoft Windows 95 and Windows NT or Unix”, says the New York Times!

The expectation is that phone companies, cable television companies and businesses like hotels could use Inferno to provide a menu of services to their customers. Have we just scratched the surface when we talk about having it all?

Free programs - no time to test - no time to learn - less time to evaluate and no disk space left for even more software treasures. You talk about having it all with bleeding edge toys! My NT v4 beta arrived yesterday. Know what? I think I'm getting close to having it all! lbl

NT 4.0 - A Novice's View
Copyright 1996 by Paul Kinnaly

I was one of many people who, in late 1994, were looking for a better operating system. I had just installed a tiny Ethernet LAN for one desktop computer plus an occasional laptop, when I switched to Windows for Workgroups. In spite of this upgrade, I was still searching for a 32bit OS that would offer speed and stability. Running a 16meg 486-66, IBM's OS/2 WARP was certainly feasible. But an earlier unsatisfactory experience with it had left me jaded. NT 3.1, then, didn't seem feasible. Quite aside from the cost, my system was just not up to the demands that even Microsoft said NT imposed. So when Microsoft invited me to participate in the Windows95 beta test cycle, I jumped in with both feet. I fell in love with the many improvements '95 offered over earlier Windows versions and in the process thoughts of NT drifted from my mind. The fact is, I really didn't want to have to return to the clunky Win 3.1 style interface.

But now it's 1996. Windows95, although much improved over its predecessors, still has numerous shortcomings. And Microsoft is testing NT 4.0 - a major update that includes the Windows95 style interface. Although my CPU is now a 5x86-100, I still have only 16 megs of RAM. Microsoft is claiming that NT Workstation 4.0 will run in just 12 megs. It sounds too good to be true, but does seem worth trying, particularly when rumors started flying that it is NT, not '95, that Microsoft will be pushing as the desktop OS of the future.

Three floppy disks, a CD, and a 95 page Release Notes arrived. Quickly thumbing through the pages, I breathed a sigh of relief; the beta will install in a dual-boot manner ('95 or NT). I won't have to lose '95 to try NT. Inserting the CD, I started the install...

Immediate familiarity! The entire NT setup strongly resembles that of '95! While this beta does not have Plug-and-Play support, neither does my motherboard. I noticed few differences in how NT goes about installing. The options presented are reasonably self-evident, even to me, unfamiliar as I am with NT. About an hour after I've begun and with 128mb used on the NT drive, I booted the computer for the first time into NT and see the first big difference. While many complain that '95 is slow to boot, it's a speed demon next to NT! But, boot it does and I am off to begin my explorations.

One has to look very closely at the NT 4.0 desktop to discern any difference from that of '95. Explorer, the auto-hide taskbar, My Computer, and Network Neighborhood are all there. The interface is so true to its '95 cousin, that a user would be hard pressed to tell the difference.

Among the first pieces of software I installed were two benchmarking packages: WinBench 96 and Wintune 95. I wanted to see just how well my low-end, by NT standards, system compared. The results were generally encouraging. In each line, the green colored result is the better of the two.

First, WinBench 96:

	<u>NT 4.0</u>	<u>Windows 95</u>
Disk WinMark 96	493	499
Graphics WinMark 96	5.65	8.44
CPUmark16	101	100
CPUmark32	113	99.8

The results from Wintune 95 are as follows:

	<u>NT 4.0</u>	<u>Windows 95</u>
Dhrystone	72 MIPS	72 MIPS
Whetstone	33 MFLOPS	30 MFLOPS
Video speed	2.9 MP/s	3.9 MP/s
C:\ Cached speed	7.8 MB/s	7 MB/s
C:\ Uncached speed	0.7 MB/s	0.6 MB/s
RAM Read avg	79 MB/s	76 MB/s
RAM Write avg	61 MB/s	60 MB/s
RAM Copy avg	32 MB/s	31 MB/s

The above tests were run on a Cyrix 5x86-100 (Micronics 486VLB motherboard with 256k L2 cache) with a Western Digital WD31000, ATI Graphics Ultra Pro VLB (2mb VRAM), and 16MB of RAM. The video mode was 800x600x16bit with a 72 Hz refresh rate on both tests. The (different) versions of video drivers supplied with the two operating systems were used during the tests.

One of the reported features of the final release of NT 4.0 is a significant change in how graphics are handled. Reportedly, the need to re-write graphics drivers will be offset by a significant increase in graphics speed. I can only assume that this feature was not present in the build I was using (#1234) as the poor graphics performance was quite noticeable. With that exception, even this early beta build of NT 4.0 performed quite well, beating '95 in most other tests.

So much for benchmarks; how about real world results, using applications? Office 95 Professional, a 32bit package with large, memory hungry applications, seemed to be a good test medium. Manually timed loads of the various applications and their files showed that NT averaged about 10-15% slower in loading any given application. My presumption is -since disk speeds tested similarly- the greater amount of swapping to disk needed by NT slowed the process. While a PC with 16 mb of RAM is nicely above Windows95's *sweet-spot*, it is at least 8 mb below the generally accepted amount for NT. Seeking to verify this as the cause, I timed loading multiple applications simultaneously in NT, figuring that if swapping was to blame, sticking several large applications in memory at once would exacerbate it. The results were, suprisingly, inconclusive. Only a slight additional slow-down in load times was noted. A later test provided some explanation.

Having loaded the software, I sat down to actually use it. With only one major application loaded, the system's response was very similar to what I had come to expect under '95. A bit more sluggish, but not to a bothersome extent. But, when I loaded the entire Office 95 Pro package at once and began using any given application, the system slowed significantly and the disk light was on more than it was off.

Apparently, my earlier loading tests hadn't shown much difference because the applications, cleverly, loaded only a few modules at a time initially, minimizing swapping. But once I began to work in an application, it was called upon to load in more modules and swapping began in earnest. My conclusion is that, at least in its early beta form, NT 4.0 with but 16 mb of RAM acts somewhat like '95 using 8 mb - not too bad if you are single-tasking, but distractingly slow if multi-tasking is required. For a power-user or a small office environment, I would say 24 mb of RAM would be the bare minimum, while 32 mb would take you comfortably above that ole' sweet-spot.

Another complaint about NT has been compatibility. Microsoft made it clear from the start that Windows 95 was optimized for compatibility while NT was optimized for security and stability. On the hardware side, every piece of my system's hardware ran under NT's provided 32bit drivers but one: my Ensoniq SoundScape Elite. It turns out, however, that Ensoniq's 32bit NT 3.51 drivers worked perfectly. While my software is not wide-ranging, most of my 32 bit software installed and ran under NT as comfortably as it had using '95. One exception was QmodemPro 95; it refused to install at all, apparently not recognizing 4.0 as a valid OS. This was somewhat disappointing as I was looking forward to testing NT 4.0's newly included TAPI. I was pleasantly surprised, however, to find that when I clicked on the executable file -from my Win95 installation of it- it ran perfectly. **Note: While I tested several other pieces of software this way, I do not recommend this approach. Only installation under NT will allow the Registry to be updated properly. Running the software without registering it could lead to significant problems!]**

Every DOS application and 16bit Windows application I tried worked well under NT 4.0 with only one exception: one of my few games, Links386 Pro, would not run. A VESA TSR was needed to use this game on my system and I never found a way to get it loaded properly in NT. But, in general, I was pleasantly surprised to find NT 4.0 quite compatible with both my hardware and software.

One area I did run into problems was trying to set up RAS, NT's equivalent of 95's Dial-Up Networking. With the assistance of Bill Blomgren of Microsoft and fellow beta-tester Linda Rosenbaum, I eventually got it working properly and used the included MS Internet Explorer to browse the Web. The newest beta build, being released as this issue is released, reportedly eliminates RAS and substitutes a version of 95's DUN. Hopefully this will make setup of internet connectivity somewhat easier for most users.

As I was testing the Workstation version of NT 4.0, I was running a peer-to-peer or workgroup environment rather than a client-server, domain-based setup. Nonetheless, I was pleasantly surprised to find that my laptop, running '95, had no trouble accessing the shared resources I had created on the NT machine. I did, however, run afoul of one of NT's security features. Being a single user, I had not paid much attention to Win95's Profiles which allow different settings for different users on a single system. NT, as users of it well know, carries that concept much further. When I eventually created my first user on the NT system -other than the default Administrator- I was shocked to discover that when I logged on as that user, not only had all my desktop settings returned to their defaults, but the software that I, as Administrator, had installed was not accessible to me, the user! Time constraints didn't permit me the luxury of figuring out how to

overcome this setback - I'll have to explore Rights at some later time; I worked around the situation, as a single user can, by performing the rest of my tests as Administrator .

Along with security, stability is built into NT. Despite my amateurish attempts to overload my own applications and to string out thin NT's own tools, I had real trouble crashing the system. Even prowling in the Registry -which is even more complex than 95's- I didn't manage to do it. My one "success" at bringing the system to its knees -and beyond- came from impatience. Having loaded a 212 page Word 7 document, a 1.2mb Excel 7 spreadsheet, and a 1.5mb Access 7 database, I forced a repagination of the document by attempting to insert an OLE 2 link from the spreadsheet. 8 or 10 minutes of staring at the hourglass caused me to ask Task Manager to kill the application. It refused!

Finally, I demanded the system shutdown - a process that took many minutes itself. Only in the process of shutting down did I clearly discover that my system was still working, slogging away with its 5x86 and paltry RAM, trying to insert that spreadsheet. Left undisturbed, I don't want to contemplate how long it might have taken! But, perhaps most importantly, the fact that I even tried to do something so ridiculously big is testament to how little the lack of RAM had bothered me up until then. While my previous testing had revealed slowdowns, it had not deterred me from trying ever tougher tasks. Still, I cannot recommend general usage of NT on a system such as mine.

In summary, I was quite impressed with the first beta build of NT Workstation 4.0. On the surface its resemblance to Windows 95 will

mean minimal user adaptation from one OS to the other, yet under the surface it is the same secure, stable NT that its users know and love. Microsoft has made it clear in recent weeks that it will position NT Workstation as the principal desktop OS for business/power users, relegating '95 to the home market. With the price of RAM at its lowest point in some years and Pentium systems the current standard, NT 4.0 will *have* to be a serious consideration for many current Windows 95 folks.

Having seen what my system could do with it, I could not recommend it as the only OS on a 16mb 486 system, but would not rule it out even at that level in a dual boot capacity (disk-space permitting). If, however, you are running a P120 or better system, with 16 or (preferably) more megs of RAM, I would read all I could about NT 4.0. It would have to be a serious consideration. At current prices, about \$500 would buy NT plus an additional 8 mb of RAM. The price of RAM is still dropping, however, and who knows what trade-up incentives Microsoft may come up with for current '95 users. With its security and stability intact, the added familiarity of the '95 interface and features like TAPI, PC Card support, and so on, NT 4.0 might well be your OS of the future.

Paul Kinnaly's native curiosity takes him down many varying paths! Those of us at WindoWatch grudgingly share him with the Veterans Administration where he works as a Management Analyst. He is the WindoWatch WebMaster, Beta Tester extraordinaire, and all round editorial right hand.

Inside the World Wide Web Toolbox

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In last month's article, I introduced you to what is involved in designing and maintaining your own Webspace. In spite of the explosion of new Web pages, few people really know how to effectively reach their audience. I have received many encouraging responses to that first article. This tells me that Web management is the right topic to discuss at this time. When we ended last month, I had just begun to talk about Web Browsers, and the many plug-ins that have been made available to extend their capabilities. This month, I will begin by continuing with that discussion of Web Browsers.

If you will recall, I mentioned that presently there are twenty-eight separate commercially available browsers. The decision of which one to use is greatly narrowed by the fact that nearly all of these are direct descendants of the original NSCA Mosaic browser, which was developed with a government grant. Currently, of these twenty-eight browsers, 91% of all Web surfers use either Netscape Navigator (85%), or Microsoft Internet Explorer (6%), while the remaining 9% of the browser market is split between the manufacturers of the other twenty-six browsers. In this group, you will find browsers from Quarterdeck, Spyglass, America Online, CompuServe, to name just a few.

Obviously it is entirely up to you to select the browser to use! How-

ever, the fact is, that Netscape is the de facto standard of the Web with Microsoft's Internet Explorer its only realistic contender for eventual control of that standard! This is why I listed only the two in last month's toolbox example. To compete with Netscape's runaway market share of 85%, Microsoft decided to give their browser away as a free download. Another striking example of Microsoft's marketing savvy, is that they distributed a complimentary CD-ROM containing their Internet Explorer 2.0 software to every single one of the 80,000 people who attended the Super Bowl held in January 1996.

Notwithstanding the Netscape charge of fifty dollars and more for their Navigator software, only about a million people have taken Microsoft up on their offer. The Microsoft strategy, to date, has done little to erode Netscape's capture of the browser market. Perhaps, the inevitable battle royal will occur when Microsoft finally realizes their goal of fully integrating their Internet Explorer software directly into the Windows operating system. This transformation is expected to take place with the next major upgrade of the Windows operating system, expected with the retail shipment of Windows 97.

But, the real reason why Netscape has such a love affair with Web surfers the world over, is a direct by-product of their implementation of superior technology. That, coupled with their rapid-fire development schedule, has even won me over, and I received my free copy of Internet Explorer with the Microsoft PLUS! add-on for Windows 95. While Microsoft continues with development of the 3.0 version of the Internet Explorer, Netscape already has their 3.0 version available for download on their Webpage. And, if that wasn't enough, an article in the current InfoWorld announces the intended release of Navigator 4.0 by the end of this summer!

For the moment, at least, we have finished our discussion of Web Browsers, so it is back into the toolbox we go . . .

The World Wide Web Toolbox

I. Word Processor or Office suite?

The first item on the Web designer's list has to be a professional-level word processor. The leaders, for good reason, include Word for Windows, WordPerfect, and WordPro. In fact, if you are among the 55% of all personal computer users who have wisely invested in an Office Suite, you have already dealt with this requirement. A statistical aside - Microsoft dominates with 89% of the suite market with their Office! If you are planning on attempting to get by using WordPad, you will find the professional features required just too limited. In fact, if you are planning on anything more than a text-only site, you are going to need the advanced features of a 32bit program like Word7.

Even though there are literally hundreds of word processors on the entire market, there are but three major word processors to realistically choose from. Leading the pack is Microsoft Word, which is available in all three flavors of Windows (3.11, 95, and NT). It can be purchased either as a stand-alone product or as part of the Microsoft Office suite. Street prices may range from \$89.95 to \$129.95 for the stand-alone version. The cost of Word as a part of the Office suite can

dip as low as half of the above quoted price, since Office costs around \$249.95 depending on where you purchase the product.

Corel offers WordPerfect which, during the days of DOS, set the standard for all word processors. However, as a Windows offering, it trails far behind Word. After recently acquiring WordPerfect, Corel is serious about gaining market share. They are offering a copy of the current *beta* of the entire PerfectOffice suite for only \$19.95. If you are undecided about what to buy, and don't already own a competing product, this is definitely the way to go. Look for more information on this special offer on their Web Site at <http://www.corel.com>

To round out this trio, IBM offers WordPRO, which was previously available as AmiPro, before Lotus Development Corp. was purchased by Big Blue. Sold as part of SmartSuite or as a stand-alone product, WordPRO contains some advanced features that set it apart from its' ancestor AmiPro. Check out their Web Site at <http://www.ibm.com> for more information on WordPRO and SmartSuite.

Before I finish with the topic of word processors, let me quickly address a few of the many issues surrounding office suites. In my opinion, if you are going to spend \$150 dollars on a word processor alone, it makes strong financial sense to go the extra distance and purchase the suite that the word processor is a part of.

Let me run a couple of numbers by you . . . I own Microsoft Office 95 Professional on CD-ROM, a two CD set. Because I was an upgrade customer, I was entitled to a \$40.00 rebate. The software store (MEDIA PLAY), offered this title at \$249.95. That, coupled with the rebate, means that I was able to purchase a TWO CD SET of

Microsoft Office 95 Professional for \$209.95. Of the two CDs in the set, disc one was the OFFICE 95 PRO software. This included the full 32-bit, long filename versions of Access, Excel, PowerPoint, Schedule +, and Word.

Because it was the CD-ROM edition, the second disc contained BOOKSHELF 95. This was a great incentive, because even as an upgrade, Microsoft was, at that time, marketing Bookshelf 95 separately for as much as \$59.95. So, Office 95 Pro was a true bargain. Essentially, I paid \$75.00 for fully registered editions of Access, Excel, PowerPoint, and new to Office 95, Schedule +.

Microsoft has also come to realize the true Internet potential of their software, as in the case of the above. There are now separate plug-ins for all of the main components of Office95 Professional, except for the Bookshelf 95 CD-ROM only bonus. They are all called the Internet Assistant for Word, etc. They're all available on the Microsoft Internet Tools web page, located at the following address on the World Wide Web: <http://www.microsoft.com/msoffice/internet>.

II. Internet Assistants for Office 95

The Internet Assistants for each of the following components of Office 95 are all worth downloading, especially as they are all available as free downloads. They will be automatically built into OFFICE 97, which is expected to be the next version. For instance, the PowerPoint Internet Assistant allows the user to convert their slide presentations for display on the Web. And with the Word IA, the user can convert

their word processing documents into the HTML files that are utilized by the World Wide Web.

- **Access - Allows for database input from Web Site.**
File to Download - IA95.EXE (1 MB File size approx.)
<http://www.microsoft.com/msaccess/Internet/ia/default.html>
- **Excel - Allows spreadsheet formatting in HTML format.**
File to Download - HTML.XLA
<http://www.microsoft.com/msexcel/Internet/ia/default.html>
- **PowerPoint - Allows for file output to Web Page**
File to D/L - AXPUB.EXE (850 K File size approx.)
<http://www.microsoft.com/mspowerpoint/Internet/player/default.html>
- **Schedule + - Publish a schedule on the Web.**
File to Download - SCHIA.EXE
<http://www.microsoft.com/msscheduleplus/Internet/ia/default.html>
- **Word - The Word IA allows the user to output the usual .DOC files to the .HTML format used by the World Wide Web.**
File to Download - WORDIA2b.EXE version 2.0z
<http://www.microsoft.com/msword/Internet/ia/ia95/default.html>

Given all the software available to owners of Microsoft Office 95 Pro, why would anyone want to purchase a lonely-stand-by-itself Word Processor? Clearly, it makes sense to purchase an Office Suite. The Internet can utilize all of the Suite programs, not merely its word processor.

There have even been rumors and whisperings of Microsoft's plan to include FrontPage 2.0 in the Professional Edition of OFFICE 97. With the raging importance of the Internet, I'll bet that this will come to pass. Again, just to mention that FrontPage 1.1 (BETA 2) is available at the Microsoft Office website at <http://www.microsoft.com>

Be warned, however, that this beta is time bombed to expire after June 30, 1996. Even so, this should be plenty of time for everyone to put it through its' paces, and decide if this is the HTML editor for their own publishing system.

III. I need a HTML Editor, but which one?

Microsoft has a free plug-in for Word called an Internet Assistant that morphs its usual word processing abilities with those of a low-end HTML editor. The Internet Assistant for Word 95 converts your .DOC files to .HTM file format, but it contains none of the advanced features that will appeal to someone who wants to get serious about all this "HTML stuff". The download information for the Microsoft Word 95 Internet Assistant is as follows:

File - wrdia20z.exe (1,182,720 bytes)

Registration Fee - Free Download (you must own Word 95)

Publisher - Microsoft Corporation

<http://www.microsoft.com>

Notwithstanding the aforementioned time bomb, FrontPage 1.1, re-worked for Windows 95 is giving me the chance to put the software through its paces while designing the Web Site for my own upgrade to the * Windows 95 Registry FAQ. That time frame should give anyone ample time to preview the program in their own real-world mode. I, for one, have already decided to buy it.

When FrontPage 1.0 was sold originally, it was sold for \$695, as a product of Vermeer Technologies. The 1.1 Windows 95 version of FrontPage will sell for \$149.95. A special to current registered users of OFFICE 95 will offer the upgrade for \$109.95 until March 1997. The *beta* has been winning critical acclaim in the industry press having been featured in INFO WORLD, PC WEEK, C/Net Online, among others.

Just as with the Web Browser software, there are quite a few different HTML editors on the market, besides the Microsoft offerings. So, if you are looking for a non-Microsoft solution, there are plenty to choose from. I have provided the preceding information on FrontPage and the Internet Assistant for Word 95 because I have used them with stunning results.

Of the many HTML editors out there, the GOLD versions of the Netscape Navigator 2.0 and 3.0 browsers have built-in HTML editing capabilities.

There is, in my opinion, one major oversight with the Netscape GOLD editor. The user cannot edit HTML code on the fly, your favorite

word processor needs to step in for that task. This sadly defeats the concept of the all-in-one editing solution.

Conclusion

I strongly recommend the items that I am suggesting for your Web toolbox. Do your research, and choose your products wisely. Look around, and ask people you know and respect about the software that they have on their systems. If it is something that you are considering for yourself, then you just might save yourself the hassle of purchasing something that fails to meet your needs.

I would like to leave you with one final thought, as I conclude the second column in my Secrets of a WebMaster series. This is just the beginning. After we finish discussing the software needed for your toolbox, we will proceed step by step and create a sample site. I believe this method by example, helps me the most to learn and retain knowledge. I hope that it will help you as well

See you next month . . . where we will be discussing more of the latest and greatest WebMasters tips!!

*Kent D. Bentkowski is a seasoned computer professional with a wide range of experience. In this HTML series he is taking what he has already learned in the printing industry and will apply that knowledge for site development. *The author of the Windows95 Registry FAQ, released the day Windows 95 hit the shelves, Kent will deliver a series of HTML goodies for [WindoWatch](#) readers.*

Window Aspect: A Scripting Language
A Tutorial: Part Twelve Ghost BBS v3.20
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This column will be a bit of a departure from what is normally here, due mostly, to the release of Procomm Plus for Windows 3.0. I am not going to review the product now, but there are a few things that we, as both scripters and non-scripters, should take into account when upgrading.

However, before we begin, I want to make one point. Procomm Plus for Windows 3.0 is a Windows 3.1 application that is compatible with Windows95. It is a 16 bit application, not a Win95, 32 bit one. Those of you waiting for the Win95 specific version be advised that this is not it. There's no long filename support, no TAPI compliance, nothing having to do with Win95, other than it will operate happily under that OS.

There is supposed to be a 32 bit version of Procomm Plus, but not until later this year. So, if you insist on nothing but 32 bit upgrades for your system, and some of you do, then don't upgrade to PCP/Win 3.0 but wait for PCP/Win95 later this year.

For those of you who are going to upgrade, we continue. The first thing to remember is that, like Procomm Plus for Windows 2.0 when

it was released, Procomm Plus for Windows 3.0 contains a new version of the Windows Aspect Script Language, Wasp 3.0. And like PCP/Win 2.0, this means that any scripts written and compiled under previous versions of Procomm Plus for Windows, will not run under Procomm Plus for Windows 3.0. This means that, just like installing PCP/Win 2.0 on a system already running PCP/Win 1.0, special considerations must be made when installing PCP/Win 3.0 on a system running a previous version of PCP/Win.

Take a look at your current scripts. Do you have the source code for *all* of them that are necessary for your normal operations, or do you have scripts, like PCB Freedom and GHOST BBS, which are only in compiled form (i.e. a WAX extension), without the matching source code (WAS extension) files? If the latter, then those scripts will no longer function under PCP/Win 3.0, nor will they be converted to a Wasp 3.0 format file. Therefore, you have to be careful when installing PCP/Win 3.0, that you maintain your PCP/Win 2.xx installation until such time as you can obtain updated versions of those indispensable scripts.

Luckily, PCP/Win 3.0 makes this easy. When you install it, one of the first things it does is to check for a previous version, and offer you three alternatives for the upgrade. Two of those alternatives will work for you, while the third will leave you without your important scripts. My suggestion is to select the first option listed, which installs PCP/Win 3.0 in a new directory and converts your PCP/win 2.xx and earlier files to the new format, without touching your previous installation. This will setup PCP/Win 3.0 with as much of your previous PCP/Win configuration as possible, but still leave PCP/Win 2.xx (or earlier) on the drive so that you can use those scripts which don't get converted for you.

One thing to consider, however, if doing this type of install. A full installation of PCP/Win 3.0, with all options installed, will use up at least 35 megabytes of hard drive space above and beyond your earlier, PCP/Win installation. Before installing using this method, please make sure that you have enough hard drive space for this THIRTY-FIVE MEGABYTES installation. Again, -make sure you have the room for this!

Of course, as in previous versions of PCP/Win, you can pare this down somewhat by not installing all features of the new version. You may, therefore, want to look at the Custom Install option which PCP/Win 3.0 will offer, if you are short on disk space, or do not need or want some of the functions of PCP/Win 3.0

However you install PCP/Win 3.0, when done, it, like previous versions of Procomm Plus for Windows, will continue on to assist you in setting up the new version. This is one of the nice features of Procomm Plus for Windows. The install runs until you are completely set up and ready to go. If you choose the option mentioned above, the install program will even convert your older Procomm Plus for Windows dialing directories, meta key files, keyboard definition files, and even scripts, into the proper format for the new version to use.

But that isn't to say that there aren't a few things to watch out for.

Gotcha #1 - PCP/Win 3.0 knows about previous versions of itself, but PCP/Win 2.xx does not know anything about later versions. What does this mean?

If you install PCP/Win 3.0, without overwriting your PCP/Win 2.xx installation, as recommended above, and then later, decide to uninstall PCP/Win 2.xx when you are finished with it, you may find that PCP/Win 3.0 no longer functions without being re-installed. The reason is that, if you uninstall PCP/Win 3.0, while PCP/Win 2.xx is still installed, it knows about PCP/Win 2.xx, and leaves certain commonly used files behind, so that PCP/Win 2.xx will continue to run.

However, if you uninstall PCP/Win 2.xx, it knows nothing at all about PCP/Win 3.0, and doesn't even know to look for it. It thus removes all of the files PCP/Win 2.xx would normally use, even though PCP/Win 3.0 is still in need of certain common files.

Fortunately, all of those common files are installed in the \WINDOWS \SYSTEM directory. This makes the solution easier than it might be otherwise. When you want to uninstall PCP/Win 2.xx, don't, at least, with the PCP/Win 2.xx uninstall utility. Instead, simply delete the \PROWIN2 directories, and all of the sub-directories under it. Then use File Manager or Explorer to go to the \WINDOWS directory, locate the file PW2.INI, and delete it. This will uninstall PCP/Win2.xx without removing those files which both versions use in common.

Gotcha #2 - Should you do a complete install of all portions of PCP/Win 3.0, and then, later decide that you want to uninstall them, you can't, at least, not on a selective basis. The only way to do this in PCP/Win is to completely uninstall the program, and then reinstall it, using the custom option, and installing only the parts you now want.

Remember this when you install PCP/Win 3.0. there is nothing wrong with installing the whole thing to try out the various components to see if you like them/want to keep them. However if you do decide to

remove some of them later, be prepared for a re-install. And in the process, watch out for....

Gotcha #3 -*IF* you have need to uninstall PCP/Win 3.0, as mentioned above, do some advance planning. The uninstall included with PCP/Win 3.0, and for that matter, 2.xx, is not very smart. As a matter of fact, it is rather dumb. In a nutshell, the uninstall deletes the PCP/Win 3.0 home directory, wherever you installed it, and all files in that directory, and all files and/or sub-directories under that home directory!

Why the emphasis? Let's look at what might be stored under the PCP/Win 3.0 home directory...

- 1) Your dialing directories (DIR files) with any entries you have made for BBS, Internet, or fax connections.**
- 2) Your customized (if you have done so) tool bars (PWB files).**
- 3) Any meta key or keyboard translation files you might have created (KEY and KBD files)**
- 4) Any script files you may have written, in both source (WAS) and compiled (WAX) versions**
- 5) Any faxes sent or received, along with any custom cover pages you may have created.**
- 6) Your Compuserve mail files and settings, if you are using the PCP/Win 3.0 CISMgr script.**
- 7) Your MCI mail and settings if you are using that part of PCP/Win.**
- 8) Your email and newsgroup database of messages, if you are using the PCP/Win reader.**
- 9) Any stored QWK packets you may have on file, and/or any REP packets, if you are using the QWK reader.**
- 10) Your user dictionary for the QWK reader**

11) Any files you may have downloaded from a BBS, or the Internet.

You see, by default, and without asking you if this is where you want them stored, PCP/Win 3.0 will create sub-directories under the home directory for each of these items or alternatively, store them in one of it's own directories (like \PROWIN3\PROGRAMS, or \PROWIN3 itself). Further, if you decide to uninstall PCP/Win 3.0 in order to re-install with fewer features, and haven't told PCP/Win to use directories outside of the PCP/Win 3.0 home directory, the uninstall will wipe out completely, each and every one of them, leaving you back at scratch to start all over again.

Not fun! *IF* you are going to uninstall PCP/Win 3.0 at any time, for whatever reason, before you do, make sure that you carefully search each and every sub-directory under \PROWIN3, and the \PROWIN3 directory, for any files that you may have modified, or which contain information that you don't want to lose. Back them up, or copy them to a safe directory, or to another drive, or whatever, but make sure that you have stored copies, or you will lose it all! As I've said, the PCP/Win 3.0 uninstall utility is dumb, and will take everything with it, so be careful!

Gotcha #4 - For some people, a nice feature of PCP/Win 3.0 is the inclusion of a good, reliable TCP/IP Winsock for Internet connectivity. And the one in PCP/Win 3.0, for a 16 bit Winsock, is good. It is SuperTCP, which is a well-known, and solid winsock.

But for others, that is just the problem... you may already be using

SuperTCP for your Internet connections, or for your networking. And if you are, then you will have an INI file for SuperTCP in your \WINDOWS directory, with all of your settings and controls for it.

When PCP/Win 3.0 installs, it often times fails to see that INI file. But it does install it's own version of it in \WINDOWS. If it fails to see your version already there, then yours will be lost. There is no confirmation of the overwrite, - nothing!

If you are currently using SuperTCP for whatever reason, before installing PCP/Win 3.0, locate the INI file for it in \WINDOWS, and make a backup copy that you can use to restore your settings later, after the install of PCP/Win 3.0, if necessary.

That should about do it for this month. If I run into any more gotcha's, I'll let you know. Next month we'll look at what a conversion of your PCP/Win 2.xx scripts does to put them into PCP/Win3.0 format, and why this is not necessarily the best way to leave your files....

Gregg Hommel is a much respected Aspect script writer and programmer. He is well known on the various nets hosting any number of conferences. He is applying his considerable programming talents to the construct of his own homepage and ours. Gregg sits on our Editorial Board and is a regular [WindoWatch](#) contributor. Gregg can be reached at gregghom@ionline.net

OpenDoc: Component and Distributed Active Documents

Copyright 1996 by Herb Chong

Only a few months ago, OpenDoc was a hot topic among programmers and the PC trade press. It promised whole new ways of interacting with applications and extending application capabilities across a network. The furor has now died down, and the overwhelming presence of the Internet has relegated OpenDoc and its competing technology, OLE, to the back pages of trade journals and programming magazines.

What is OpenDoc and why should you care about it? To answer this question, we have to look back a few years in the history of PCs. Way back when Windows 3.0 was just getting popular, Microsoft announced that in Windows 3.1, there would be new technology to help make life easier for ordinary users of computers. People wouldn't have to buy huge monolithic applications that did everything anymore. They would start buying building blocks from other people and enhance their main applications. To help things out a little, Microsoft also announced that available immediately was a new version of PowerPoint that supported these components. Additionally, an upgrade for Word for Windows would shortly be available that supported these components too. What was this newfangled technology that required Windows 3.1 and upgrades to all your software to support? It was Microsoft's Object Linking and Embedding, otherwise known as OLE (o-lay for those of you who went to all those Microsoft talks).

OLE incorporated several things for Microsoft. Back then, object-oriented programming was the next great thing in the world of computer programming. It surely didn't hurt to have a technology that sounded like what some computer scientists were proclaiming was the greatest thing since sliced bread. It also didn't hurt that people were beginning to complain that their applications were growing so quickly and sprouting so many features that they were paying for things they couldn't use. Remember, in those days, a huge application was anything occupying over 10MB on disk. Borland's C++ 3.1 was a monster at more than 50 MB if you installed the whole thing. (By comparison, Borland C++ 5.0, recently released, requires just about 200MB for a full install. Times have changed.) You didn't have to buy a huge blockbuster from someone anymore. You just had to get the basic application and then buy the extra parts you needed when you needed them. If you didn't need them, you didn't pay as much and you didn't need as much disk space.

Looking back at its brief history, we see that OLE was and still is an example of components. This is a relatively new term for the kinds of programming objects embodied in OLE objects and Visual Basic components. If you remember, I described in an article a while back what concepts made up an object-oriented programming language and how these concepts had to work together in a certain way to become an object-oriented application. There are four key identifying characteristics of object oriented design and programming:

- 1. abstraction or modeling of data and its behavior**
- 2. encapsulation or data hiding**
- 3. modularity**

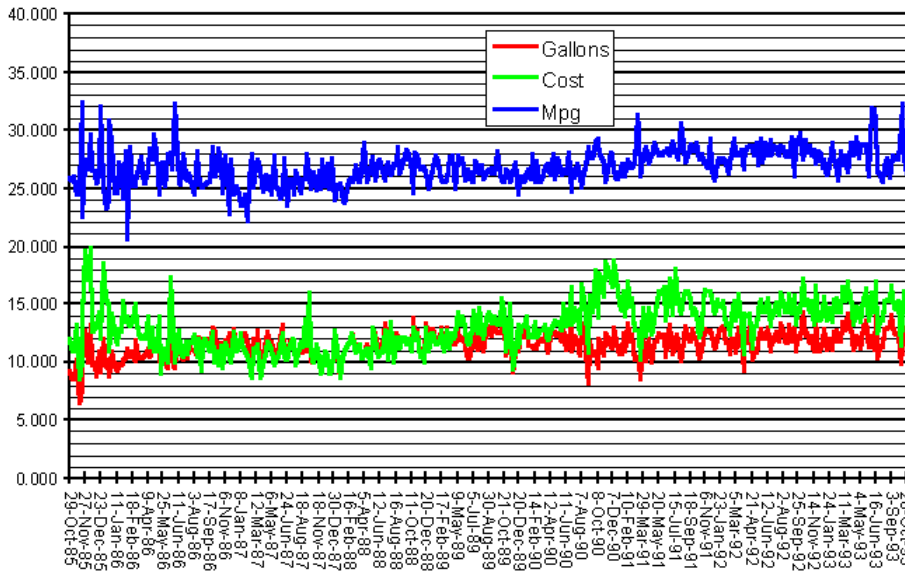
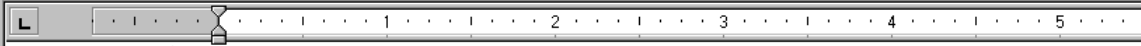
4. inheritance or derivation of objects from a hierarchy of objects from most abstract to down to most concrete

Of these four concepts fundamental to object-oriented programming and design, components like OLE and Visual Basic components leave out the last one. This has not to say that one can't build powerful applications with only components. Programmers have been doing it for years, and for millennia before that, engineers built their roads and bridges from components without being able to derive anything from something existing. They just designed differently.

So far, we have been vague about what is a component. In the world of OLE, a component is an application designed to enhance the function of other applications. This enhancement is usually by means of fitting itself into another application's data so that the two form a synergistic relationship. In Windows, before OLE, the only way you could have two applications interact was by means of something called Dynamic Data Exchange or DDE. It was a way for one application to get another application's data by giving a communications path between the two and specifying the rules for talking over this path. In simplistic terms, you can think of this as two applications, one calling the other by DDE and politely asking for some data, and the other listening and replying. OLE takes a different approach. It allows an application to actually embed the other application's data in itself.

What OLE did was establish rules for finding out which application the data came from and how to ask that application to show and manipulate the data if the user wants to do something to it.

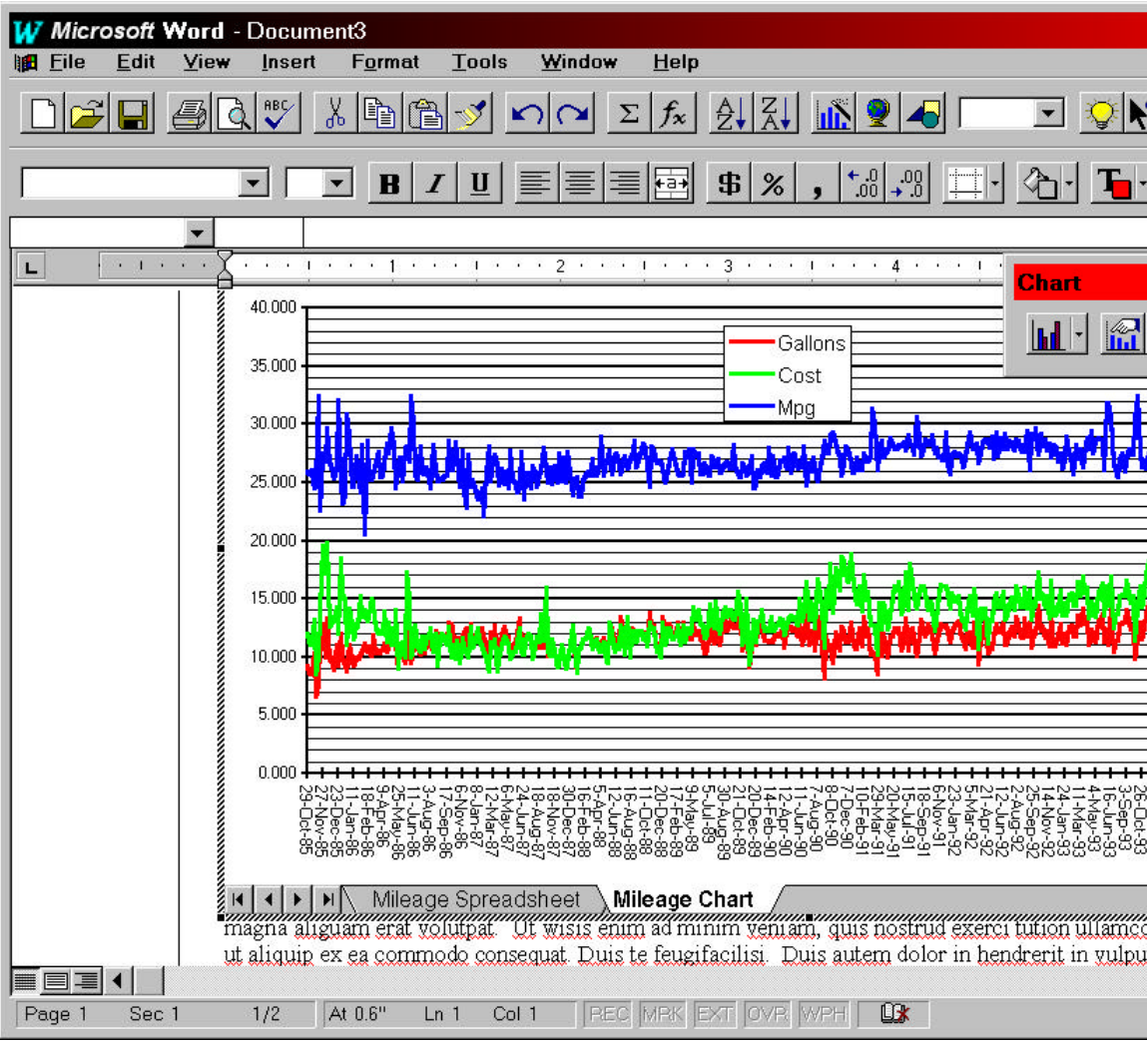
Normal Times New Roman 10 B I U



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Let's look at a concrete example to show what I mean. Here is an Excel chart embedded in a Word document. It doesn't look like much of anything special. Visually, it appears to be nothing more than a plain graphic inside a Word document. Appearances are deceiving though. There is an embedded object present, which visually represents the inactive OLE object. An inactive object has a visual representation of all the data needed to make up the document that the object is a part of, and an identifier that uniquely tells Windows which application to call when it is activated. The embedded object otherwise does nothing except take up more room in your Word document until you activate it. When you save the Word document, the entire embedded object is saved as part of the document. The Word document has become a compound document because it is now made up of more than one document. Each component has been put together with some OLE glue.

What happens when you double-click on the embedded object? In Windows 95, if you are using the Windows 95 versions of Word and Excel, this is what happens. You get Excel's menus and toolbars merged into or replacing the Word ones. Excel is now running in the background and handling all the mouse clicks and keystrokes within the object. The moment you click outside the object, Excel shuts down and you are back to Word again. This is an example of in-place activation of OLE objects. You can get this type of behavior only with OLE 2.0 objects. The original version of OLE launched the embedded object's application in a separate window.



At the time OLE was first introduced, it was a very new and expensive thing to do. Running two applications at a time, not to mention two full-featured applications like a word processor and a spreadsheet were usually not practical for most people. Only power users needed this kind of feature. However, many people could see the advantages of being able to build documents out of reusable components, or at least have the power of being able to extend the power of any OLE application with third party tools. An OLE container application can hold any type of OLE server application. The application programmers do not need to know what type of application is being the server and what is being the container. An end-user could easily build something from parts that the original programmers never imagined as being needed.

Something that is relatively new in the world of OLE is OLE Automation. It serves a similar purpose to DDE, but is more formal about what things a server application must do and how it does it. DDE is a classic client-server relationship where the client application asks a server application for data by sending messages back and forth. OLE Automation goes farther in that it allows a client to examine a server's capabilities and perhaps send data to be processed and returned. It is more like remote procedure calls in a programming language.

OLE, as it has evolved, has become more and more tightly integrated into the interface and structure of Windows. Microsoft has made a version of OLE for the Apple Macintosh computers that give the same capabilities to people who prefer using Macs over PCs. However, very little is documented for Mac programmers to use. Many companies saw the inherent power in designing and building applications in the way OLE allows Windows programmers to. However, there was little

likelihood of Microsoft porting their software and OLE to platforms other than Windows and the Macintosh. These companies formed a group and designed a software model and code to allow programmers the same capabilities of OLE and more, and also work across platforms and operating systems other than Windows and Macintosh. They called it OpenDoc.

To a first approximation, OpenDoc is a superset of OLE that is portable across many operating systems and hardware. It is also based on the notion of applications with embeddable components. An application may be a container app, a server app, or both at the same time. By design, OpenDoc applications written for Windows or Macintosh transparently accept OLE components as if they were OpenDoc components. The first public announcements of OpenDoc stressed portability and interoperability of components and applications. Provided the same applications were available on each platform, you could in theory move documents between platforms and manipulate them without losing information and retaining the embedded structure.

Lately, both OLE and OpenDoc groups have been announcing extensions to help their technologies with internetworking. Microsoft's version is called ActiveX and is essentially OLE objects across a network. OpenDoc hasn't given their Internet components a special name, but now it is possible to have the applications needed by a component to be on another system. The major difference between OpenDoc and OLE remains that OLE is primarily a Windows-based technology and OpenDoc isn't.

The ideas behind OLE and OpenDoc can be best summarized as the philosophy of component applications. Both technologies exist so that

major application developers can build streamlined basic applications and allow plugin components to enhance the function. These plugin components can be combined at will within the limits of hardware and operating system design. Third parties can develop components that the major developers don't have the time and resources to build. OLE and OpenDoc both allow partitioning of documents so that several applications can cooperatively manage and display data while preserving the appearance of a single homogenous document to the user.

At this time, it remains unclear which brand of technology will eventually dominate. It is clear, however, that applications and components will endure.

Herb Chong always provides light in over-heated technical discussions. Herb was the Guest Editor of the [WindoWatch](#) anniversary issue and has contributed many articles to the magazine. He serves as Contributing Editor.

Digital ID's

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A susidiary of RSA Data Security Corp.

July 15, 1995

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VeriSign, Inc. was formed by RSA Data Security, Inc. and several major industry leaders to focus on building a seamless, global Digital ID (digital certificate) infrastructure. The foundation of services and products that has become VeriSign originated as part of RSA Data Security, the industry leader in providing public-key cryptography solutions going back to 1989. An updated version of this document is being prepared as this one is published.

Digital IDs are currently being used in products like Netscape's Commerce Server, Terisa System's Secure HTTP tool kit, and Apple's Mac OS 7.5. Sun, Open Market, CyberCash, Premenos, National Semiconductor and Lotus are all planning on implementing VeriSign's Digital ID services. VeriSign products are being used internally in many institutions, including branches of the U.S. government, major corporations, national laboratories, and universities. Continue from Part One - WindoWatch Vol2 No.5 May 1996

DSS

What is DSS?

DSS is the US Government's Digital Signature Standard, which specifies a Digital Signature Algorithm (DSA), and is a part of the U.S.

government's Capstone project. It was selected by NIST, in cooperation with the NSA, to be the digital authentication standard of the U.S. government; whether the government should in fact adopt it as the official standard is still under debate.

DSS is based on the discrete log problem derived from cryptosystems proposed by Schnorr and ElGamal . It is for authentication only.

DSS has, for the most part, been looked upon unfavorably by the computer industry, much of which had hoped the government would choose the RSA algorithm as the official standard; RSA is the most widely used authentication algorithm. Several articles in the press, discuss the industry dissatisfaction with DSS. Criticism of DSS has focused on a few main issues: it lacks key exchange capability; the underlying cryptosystem is too recent and has been subject to too little scrutiny for users to be confident of its strength; verification of signatures with DSS is too slow; the existence of a second authentication standard will cause hardship to computer hardware and software vendors, who have already standardized on RSA; and that the process by which NIST chose DSS was too secretive and arbitrary, with too much influence wielded by NSA. Other criticisms were addressed by NIST by modifying the original proposal.

In the DSS system, signature generation is faster than signature verification, whereas in the RSA system, signature verification is faster than signature generation (if the public and private exponents are chosen for this property, which is the usual case). NIST claims that it is an advantage of DSS that signing is faster, but many people in cryptography think that it is better for verification to be the faster operation.

Is DSS secure?

The most serious criticisms of DSS involve its security. DSS was originally proposed with a fixed 512-bit key size. After much criticism that this is not secure enough, NIST revised DSS to allow key sizes up to 1024 bits. More critical, however, is the fact that DSS has not been around long enough to withstand repeated attempts to break it; although the discrete log problem is old, the particular form of the problem used in DSS was first proposed for cryptographic use in 1989 by Schnorr and has not received much public study. In general, any new cryptosystem could have serious flaws that are only discovered after years of scrutiny by cryptographers. Indeed this has happened many times in the past. RSA has withstood over 15 years of vigorous examination for weaknesses. In the absence of mathematical proofs of security, nothing builds confidence in a cryptosystem like sustained attempts to crack it. Although DSS may well turn out to be a strong cryptosystem, its relatively short history will leave doubts for years to come.

Some researchers warned about the existence of *trapdoor* primes in DSS, which could enable a key to be easily broken. These trapdoor primes are relatively rare however, and are easily avoided if proper key generation procedures are followed.

What is the current status of DSS?

After NIST issued the DSS proposal in August 1991, there was a period in which comments from the public were solicited; NIST then revised its proposal in light of the comments. DSS was issued as a FIPS and became an official U.S. government standard. DSS is currently in the process of becoming a standard, along with RSA, for the financial services industry; a recent draft standard contains the revised version of DSS.

PUBLIC-KEY CRYPTOGRAPHY

What is encryption?

Encryption is the transformation of data into a form unreadable by anyone without a secret decryption key. Its purpose is to ensure privacy by keeping the information hidden from anyone for whom it is not intended, even those who can see the encrypted data. For example, one may wish to encrypt files on a hard disk to prevent an intruder from reading them.

In a multi-user setting, encryption allows secure communication over an insecure channel. The general scenario is as follows: Alice wishes to send a message to Bob so that no one besides Bob can read it. Alice encrypts the message, which is called the plaintext, with an encryption key; the encrypted message, called the ciphertext, is sent to Bob. Bob decrypts the ciphertext with the decryption key and reads the message. An attacker, Charlie, may either try to obtain the secret key or to recover the plaintext without using the secret key. In a secure cryptosystem, the plaintext cannot be recovered from the ciphertext

except by using the decryption key. In a symmetric cryptosystem, a single key serves as both the encryption and decryption keys.

Cryptography has been around for millennia; see Kahn for a good history of cryptography; see Rivest and Brassard for an introduction to modern cryptography.

What is public-key cryptography?

Traditional cryptography is based on the sender and receiver of a message knowing and using the same secret key: the sender uses the secret key to encrypt the message, and the receiver uses the same secret key to decrypt the message. This method is known as secret-key cryptography. The main problem is getting the sender and receiver to agree on the secret key without anyone else finding out. If they are in separate physical locations, they must trust a courier, or a phone system, or some other transmission system to not disclose the secret key being communicated. Anyone who overhears or intercepts the key in transit can later read all messages encrypted using that key. The generation, transmission and storage of keys is called key management; all cryptosystems must deal with key management issues. Secret-key cryptography often has difficulty providing secure key management.

Public-key cryptography was invented in 1976 by Whitfield Diffie and Martin Hellman in order to solve the key management problem. In the new system, each person gets a pair of keys, called the public key and the private key. Each person's public key is published while the private key is kept secret. The need for sender and receiver to share

secret information is eliminated: all communications involve only public keys, and no private key is ever transmitted or shared. No longer is it necessary to trust some communications channel to be secure against eavesdropping or betrayal. Anyone can send a confidential message just using public information, but it can only be decrypted with a private key that is in the sole possession of the intended recipient. Furthermore, public-key cryptography can be used for authentication (digital signatures) as well as for privacy (encryption).

Here's how it works for encryption: when Alice wishes to send a message to Bob, she looks up Bob's public key in a directory, uses it to encrypt the message and sends it off. Bob then uses his private key to decrypt the message and read it. No one listening in can decrypt the message. Anyone can send an encrypted message to Bob but only Bob can read it. Clearly, one requirement is that no one can figure out the private key from the corresponding public key.

Here's how it works for authentication: Alice, to sign a message, does a computation involving both her private key and the message itself; the output is called the digital signature and is attached to the message, which is then sent. Bob, to verify the signature, does some computation involving the message, the purported signature, and Alice's public key. If the results properly hold in a simple mathematical relation, the signature is verified as genuine; otherwise, the signature may be fraudulent or the message altered, and they are discarded.

A good history of public-key cryptography, by one of its inventors, is given by Diffie .

What are the advantages and disadvantages of public-key cryptography over secret-key cryptography?

The primary advantage of public-key cryptography is increased security: the private keys do not ever need to be transmitted or revealed to anyone. In a secret-key system, by contrast, there is always a chance that an enemy could discover the secret key while it is being transmitted.

Another major advantage of public-key systems is that they can provide a method for digital signatures. Authentication via secret-key systems requires the sharing of some secret and sometimes requires trust of a third party as well. A sender can then repudiate a previously signed message by claiming that the shared secret was somehow compromised by one of the parties sharing the secret. For example, the Kerberos secret-key authentication system involves a central database that keeps copies of the secret keys of all users; a Kerberos-authenticated message would most likely not be held legally binding, since an attack on the database would allow widespread forgery. Public-key authentication, on the other hand, prevents this type of repudiation; each user has sole responsibility for protecting his or her private key. This property of public-key authentication is often called non-repudiation.

Furthermore, digitally signed messages can be proved authentic to a third party, such as a judge, thus allowing such messages to be legally binding. Secret-key authentication systems such as Kerberos were designed to authenticate access to network resources, rather than to authenticate documents, a task which is better achieved via digital signatures.

A disadvantage of using public-key cryptography for encryption is speed: there are popular secret-key encryption methods which are significantly faster than any currently available public-key encryption method. But public-key cryptography can share the burden with secret-key cryptography to get the best of both worlds.

For encryption, the best solution is to combine public- and secret-key systems in order to get both the security advantages of public-key systems and the speed advantages of secret-key systems. The public-key system can be used to encrypt a secret key which is then used to encrypt the bulk of a file or message. Public-key cryptography is not meant to replace secret-key cryptography, but rather to supplement it, to make it more secure. The first use of public-key techniques was for secure key exchange in an otherwise secret-key system ; this is still one of its primary functions.

What is RSA?

RSA is a public-key cryptosystem for both encryption and authentication; it was invented in 1977 by Ron Rivest, Adi Shamir, and Leonard Adleman. It works as follows: take two large primes, p and q , and find their product $n = pq$; n is called the modulus. Choose a number, e , less than n and relatively prime to $(p-1)(q-1)$, and find its inverse, d , mod $(p-1)(q-1)$, which means that $ed \equiv 1 \pmod{(p-1)(q-1)}$; e and d are called the public and private exponents, respectively. The public key is the pair (n,e) ; the private key is d . The factors p and q must be kept secret, or destroyed.

It is difficult (presumably) to obtain the private key d from the public key (n,e) . If one could factor n into p and q , however, then one could obtain the private key d . Thus the entire security of RSA is predicated on the assumption that factoring is difficult; an easy factoring method would "break" RSA.

Here is how RSA can be used for privacy and authentication (in practice, actual use is slightly different. RSA privacy (encryption): suppose Alice wants to send a private message, m , to Bob. Alice creates the ciphertext c by exponentiating: $c = m^e \bmod n$, where e and n are Bob's public key. To decrypt, Bob also exponentiates: $m = c^d \bmod n$, and recovers the original message m ; the relationship between e and d ensures that Bob correctly recovers m . Since only Bob knows d , only Bob can decrypt.

RSA authentication: suppose Alice wants to send a signed document m to Bob. Alice creates a digital signature s by exponentiating: $s = m^d \bmod n$, where d and n belong to Alice's key pair. She sends s and m to Bob. To verify the signature, Bob exponentiates and checks that the message m is recovered: $m = s^e \bmod n$, where e and n belong to Alice's public key.

Thus encryption and authentication take place without any sharing of private keys: each person uses only other people's public keys and his or her own private key. Anyone can send an encrypted message or verify a signed message, using only public keys, but only someone in possession of the correct private key can decrypt or sign a message.

MISCELLANEOUS

WW

What is a one-way function?

A one-way function is a mathematical function that is significantly easier to perform in one direction (the forward direction) than in the opposite direction (the inverse direction). One might, for example, compute the function in minutes but only be able to compute the inverse in months or years. A trap-door one-way function is a one-way function where the inverse direction is easy if you know a certain piece of information (the trap door), but difficult otherwise.

What is the significance of one-way functions for cryptography?

Public-key cryptosystems are based on (presumed) trap-door one-way functions. The public key gives information about the particular instance of the function; the private key gives information about the trap door. Whoever knows the trap door can perform the function easily in both directions, but anyone lacking the trap door can perform the function only in the forward direction. The forward direction is used for encryption and signature verification; the inverse direction is used for decryption and signature generation.

In almost all public-key systems, the size of the key corresponds to the size of the inputs to the one-way function; the larger the key, the greater the difference between the efforts necessary to compute the function in the forward and inverse directions (for someone lacking the trap door). For a digital signature to be secure for years, for example, it is necessary to use a trap-door one-way function with inputs large enough that someone without the trap door would need many years to compute the inverse function.

All practical public-key cryptosystems are based on functions that are believed to be one-way, but have not been proven to be so. This means that it is theoretically possible that an algorithm will be discovered that can compute the inverse function easily without a trap door; this development would render any cryptosystem based on that one-way function insecure and useless.

What is a hash function? What is a message digest?

A hash function is a computation that takes a variable-size input and returns a fixed-size string, which is called the hash value. If the hash function is one-way, i.e., hard to invert, it is also called a message-digest function, and the result is called a message digest. The idea is that a digest represents concisely the longer message or document from which it was computed; one can think of a message digest as a *digital fingerprint* of the larger document. Examples of well-known hash functions are MD4, MD5, and SHS.

Although hash functions in general have many uses in computer programs, in cryptography they are used to generate a small string (the message digest) that can represent securely a much larger string, such as a file or message. Since the hash functions are faster than the signing functions, it is much more efficient to compute a digital signature using a document's message digest, which is small, than using the arbitrarily large document itself. Additionally, a digest can be made public without revealing the contents of the document from which it derives. This is important in digital time-stamping, where, using hash functions, one can get a document time-stamped without revealing its

contents to the time-stamping service.

A hash function used for digital authentication must have certain properties that make it secure enough for cryptographic use. Specifically,

it must be infeasible to find a message that hashes to a given value and it must be infeasible to find two distinct messages that hash to the same value. The ability to find a message hashing to a given value would enable an attacker to substitute a fake message for a real message that was signed. It would also enable someone to falsely disown a message by claiming that he or she actually signed a different message hashing to the same value, thus violating the non-repudiation property of digital signatures. The ability to find two distinct messages hashing to the same value could enable an attack whereby someone is tricked into signing a message which hashes to the same value as another message with a quite different meaning. The digest must therefore be long enough to prevent an attacker from doing an exhaustive search for a collision. For example, if a hash function produces 100-bit strings, exhaustive search would take 2^{100} attempts on average to match a given value, and approximately 2^{50} attempts on average to find two inputs producing the same digest.

A digital signature system can be broken by attacking either the difficult mathematical problem on which the signature method is based or the hash function used to create the message digests. When choosing an authentication system, it is generally a good idea to choose a signature method and a hash function that require comparable efforts to break; any extra security in one of the two components is wasted, since attacks will be directed at the weaker component. Actually, attacking the hash function is harder in practice, since it re-

quires a large amount of memory and the ability to trick the victim into signing a special message. With 2^{64} operations, an attacker can find two messages that hash to the same digest under any of the MD hash functions; this effort is comparable to that necessary to break 512-bit RSA; thus MD5 is a good choice when using RSA with a 512-bit modulus. However, those with greater security needs, such as Certifying Authorities, should use a longer modulus and a hash function that produces a longer message digest; either SHS (160-bit digest) or a modified version of MD4 that produces a 256-bit digest [71] would suffice.

What are MD2, MD4 and MD5?

MD2, MD4 and MD5 (MD stands for Message Digest) are widely used hash functions designed by Ron Rivest specifically for cryptographic use. They produce 128-bit digests and there is no known attack faster than exhaustive search.

MD2 is the slowest of the three; MD4 [71] is the fastest. MD5 [73] has been dubbed "MD4 with safety belts" by Rivest, since it has a more conservative design than MD4; the design gives it increased security against attack, but at a cost of being approximately 33% slower than MD4. MD5 is the most commonly used of the three algorithms. MD4 and MD5 are publicly available for unrestricted use; MD2 is available for use with PEM. Details of MD2, MD4, and MD5 with sample C code are available in Internet RFCs (Requests For Comments) 1319, 1320, and 1321, respectively. No feasible attacks on any of the MD algorithms have been discovered, although some recent theoretical work has found some interesting structural properties [24,25].

What is PEM?

PEM is the Internet Privacy-Enhanced Mail standard, designed, proposed, but not yet officially adopted, by the Internet Activities Board in order to provide secure electronic mail over the Internet. Designed to work with current Internet e-mail formats, PEM includes encryption, authentication, and key management, and allows use of both public-key and secret-key cryptosystems. Multiple cryptographic tools are supported: for each mail message, the specific encryption algorithm, digital signature algorithm, hash function, and so on are specified in the header. PEM explicitly supports only a few cryptographic algorithms; others may be added later. DES in CBC mode is currently the only message encryption algorithm supported, and both RSA and DES are supported for the key management. PEM also supports the use of Digital IDs, endorsing the CCITT X.509 standard for Digital ID structure.

The details of PEM can be found in Internet RFCs (Requests For Comments) 1421 through 1424. Trusted Information Systems has developed a free non-commercial implementation of PEM, and other implementations should soon be available as well.

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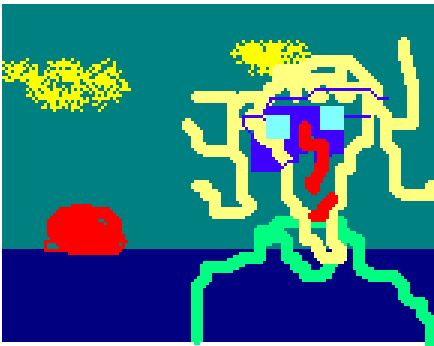
Behling, Jeff Fassett, Andrew Leventhal, Ram Moskovitz, George Parsons, Matt Robshaw and Kurt Stammberger.

Editorial Note: There is also a ten page bibliography available upon request. lbl

Another Alice Adventure!

An Interview With a Compuholic
Copyright 1996 by Peter Neuendorffer

Names have not been changed to protect the innocent.



Interview with Alice. Hawaii, 1996.
(don't I wish.)

Alice is the noted computer addict and my friend. We sat down over Cheeze Doodles and Diet Pepsi the other day and chatted, while she worked at her workstation. She was more than candid, and gave me an insight into the dark reaches of computer addiction.

PETER: You are a computer addict. What is it like for you?

ALICE: When I tell people I am addicted to computers - specifically programming - they take it as a joke. However, I find that there is little else I would rather do than sit and program. I often eat meals at the console. I have developed a large body of work, although paradoxically, I have sold very few copies of my programs. I cannot stop programming. I do not want to stop. I can never imagine having lived anywhere else [apologies to Shirley Jackson.]

PETER: Do you work with marketers who can guide you?

ALICE: Marketing does not interest me as much as programming, although I have had a couple disappointing business relationships with marketers. I hold one official copyright.

One of the problems is that I am in a weird market. I used to joke that publishing my programs is like dropping the work into a bottomless ocean. Work, work, work, and not a drop to drink. But I have managed to meet other programmers and system administrators. My imaginary friend Gertrude was picked up by an online magazine.

Much of my contact with other computer people is not face to face, but by telephone or email.

PETER: Do you think such contact is safer than face to face?

ALICE: No, oh, I don't know. They can make fun of you silently. It's less threatening to get a flame than meet a burning face to face tantrum. You get to see other people's inferiority masking as superiority. Email is the great leveler. You are up on a mountain or by the sea, all the same thing. One stretch of babble.

PETER: So what have you done lately?

ALICE: One of my programs *Time Travel* allows you to travel back to the past. Perhaps you can appreciate the enormity of the accomplishment. The Boston Bub did a review in the Business page that was complimentary, although -paradoxically again- they managed to get my home page address wrong. I used to joke that my aim in business was to be written up in the Bub business pages. When it was what next? A \$1000,000 offer evaporated when government funding was unavailable to the client. Another job, for \$2,000,000 from Norway

was never repeated. I spent the \$2,000,000 million very quickly at the local convenient store and lunch counter.

PETER: Are you in demand. Has it been successful, Are the long hours of torture at the terminal worth it? Are you happy?

ALICE: Although I am constantly on demand from Hollywood to write paranoia scripts, I have to tell them I'm too busy working. I do games, as you know, and it's a lot of work to visit all those Pizza parlors and check up on the scores.

PETER: So how do you work. What's it like for you?

ALICE: Marathon programming for me involves 24 hour sessions - without a break and design sessions over several gallons of coffee imagining the computer space floating in front of my eyes, although I am not at a terminal. The bucket of coffee in front of me gives me the license to daydream. I have always daydreamed in the classrooms of high school etc. Sometimes I see another person staring into space, and I know they are a fellow computer addict. The first rule of course is to never carry one of those fat text books to study on the bus. People resent it. And never ever approach strangers and ask "Are you a computer person?" All I do is the last.... all the time.

PETER: How did you get started?

ALICE: I was climbing around the inside of Univac when I decided there had to be a better way. I invented the Alice machine, a theoretical device that always got three when it added one to one to one. Then I went on to crocheting my own printed circuits with crochet needles. I invented the programming language *Heart*, but no one liked it because it gives different results depending who you are. I

had marketed it as *You Gotta Have Heart* but a legal battle ensued with the dog collar people.

PETER: But, I mean, what was the beginning for Alice?

ALICE: I was tired of being the butt of jokes, so I started computer work about seven years ago, immediately taking to it. I have trouble with delusions of grandeur, arising I think, over fears of not being recognized. I identify with Young Frankenstein where he screams "No one understands the importance of my work. I'll show them all." or words to that effect.

After I realized that you just couldn't go through life screaming these things in public, I took some courses and wangled a free review compiler from a friend. I was home.

PETER: What is the downside of all this? Surely there must be times when you say to yourself "Is it worth it? Can I go on? Are these people only out to get my free labor? Am I really as overweight as they say?"

ALICE: The only thing I don't like is the flicker. There is no question that the constant video flicker has hurt my eyesight, although the optometrist tells me that is not so. And I do get crabby and get mixed up as to whether breakfast comes before or after dinner. I have bumped into walls, occasionally, although this is alleviated if I stay sitting down in front of my computer. Someday I am going to outrun the blinking cursor, and I will wait for it for a change. I know the day will come when I find something interesting to do besides computers. Windows has been great for me because of what you see is what you get. Or almost.

PETER: So can you show us some of your work?

ALICE: Sure: here's an email. RE: recurring calendar notes.
Great minds run in the same channels! - cliché of the day. I am currently working on this problem. I have decided to physically push existing buttons (copy, paste, move ahead week/day) that are program options for moving and copying between days. Activate these from within my program to copy the data, or copy the button's code to the "recurring" module. If you save each record when you exit the memo, this keeps data up to date.

Don't forget you must have code to handle if the particular date box is too full to paste. For timing's sake the code to move ahead should be copied verbatim into the "recurring" code. In other words, physically pushing buttons from within the code may not work as the timing will be off. Your paste algorithm should paste to an invisible memo so you may determine validate it's size.

Moving across months involves (PSEUDOCODE):

Variable: monthdays is array of the number of days in month,
February value depending on if it
a leap year (function)

To Move to next day:

Write current day data to disk.

Add 1 to display day

if display_day is greater than
monthdays [display_month] then

Do this

[Add 1 to display_month;

Display_day is set to 1; {slightly different if
moving by week/month}

```
if display_month is greater than 12 then
  break out of this.
weekday:=weekday+1; index for Sunday, Monday,etc.
if weekday>7 then
  weekday:=weekday-7;]
Read new record and display it
```

All these variables are yours, not the language's. Delphi supplies a date function, and a decodedate procedure to determine the real-world date, month etc.

A few messages back I posted two crucial algorithms for calendar programs. Is_leap_year(year) and weekday_for_january_first(year)

Hope all this helps. You are best arming yourself with a paper almanac with a perpetual calendar page to test your calendars' correctness. Do not be surprised if your prototype is bug-filled with the "wrong" date etc.

More than his I cannot say.

PETER: Well, thank you very much "Alice."

ALICE: My pleasure.

Several days after this interview was given Alice had a huge system crash.

Peter Neuendorffer is the creator of Alice. They both regularly contribute to WindoWatch.

Exploring Excel 7

Copyright 1996 by Frank McGowan

Moving right along in our exploration of Office95, we come to Excel 7. Those of you still laboring under the delusion that numbers progress apace, one by one, from 5 to 6 are probably wondering what became of Excel 6. Put your mind at rest. In the wonderland that is Microsoft, such rules have been put aside, undoubtedly for excellent reasons (yes, that pun is intentional). One suspects that such Carrollian logic has more to do with marketing than with the Peano progression. We must note that other components of Office '95 have also magically become version 7.0 skipping blithely past 5 and 6 (PowerPoint) and 3 through 6 (Access). What next? Suspending the law of gravity?

Such speculation is probably best left to those who are qualified, such as metaphysicists. Meantime, at a more mundane level, we can take a look at the new-improved Excel. Like Word, the differences between the new version and its predecessor are subtle. Again, there is obvious emphasis on making Excel "Internet friendly." The File menu, besides the usual options, now includes "Send" and "Add Routing Slip." At this rate, the information highway is soon going to look like Boston's infamous and grossly misnamed Southeast Expressway.

While there seems to be no breakthrough differences between 5.0 and 7.0, at least at the visible level, some nice touches have been added. For one thing, the concept of Tool Tips has been extended to the Menu bar. When you point to a menu item, the options it contains are

dis-played without your having to open the menu. Not exactly earth-shaking, but useful.

Another, more significant feature of 7.0 is Autocorrect. Like its Word version, Autocorrect has built-in typo corrections to fix your key-boarding goofs as they occur. You can, just as in Word, add your own favorites, as well as specify abbreviations that you'd like expanded as you type. You can, for instance, type in your initials, and have Autocorrect put your full name in as you go along. My earlier nitpick still applies. There is no correction for "noone," which more and more of you insist on using in place of "no one." Sigh. It's tough being a language maven these days! (While I'm on my soapbox, I might as well lodge a complaint about the use of "everyday" in place of "every day." While sunrise may be an everyday event, the sun rises every day.)

OK, back to serious business. Are you as annoyed as I am when the cell pointer moves one cell down after you press Enter? Wouldn't you like to be able to move one cell to the right, left, or up instead? Or maybe stay in the current cell? Well, now you can. The ability to control where the cell pointer goes after Enter is a little-known, sparsely documented feature that I discovered almost by accident while browsing in the Tools menu. There, tucked away in the Edit tab is an option that lets you change the default direction from Down to whatever you want, including "stay where you are." Curious, I went to Excel 5 and discovered that a less elegant version of this option was also available there, but your only choice was to move down or stay put. You could also opt to press SHIFT-ENTER to move up a cell, but otherwise your options were limited.

Excel reveals its familial relationships to other members of Office 95 in other ways. For instance, like its cousin Access, Excel lets you copy a cell's contents to the cell immediately below it through the CTRL-apostrophe combination. Though this was also true of V5.0, it was not

documented, not even in Help. I found this one by testing to see if it worked. There may not be as many opportunities to use this as with Access but it's good to know about if your typing skills are as limited as mine!

You can also avoid typo opportunities by using the new AutoComplete feature, once you've created entries in a column. To repeat a preceding entry, double-click in the new cell, then either click the right mouse button and choose Pick from List, or click Alt-Down Arrow, and click the entry you want. It sounds a lot more complicated than it is, and will save you a good deal of aggravation. AutoFill is also still available for those occasions when you want to use the same entry in several contiguous cells in the same column.

The Spell program works much as Word 6's - you don't get a red wavy line under misspelled words as you type, so you don't get immediate feedback as in Word 7. You have to go to Tools, Spell or click the Spell tool button. And, remember, don't bet your career on Spell finding all your typo's. Those that result in real, though incorrect, words won't be flagged as errors. Where you meant to type *calm and collected*, you could get *clam and collected*. It's advisable to use Autocorrect to fix such obvious cases. You could also use Edit, Search to look for typical typo's. I'm especially prone to omitting the "r" in "your," which produces some really ugly results (like the one I see in the message from my Internet provider, prompting me to "Enter you login name").

All in all, I found Excel 7.0 to have nothing startlingly innovative in it, and to be reassuringly familiar, because of its close resemblance to 5.0. It's also comforting to find that files created in Excel 7.0 are backward compatible. An Excel 7.0 file is usable as-is in Excel 5.0. This is also the case with Word 7.0. Nothing's been done to render 7.0 files unrecognizable to the earlier version of the programs. By maintaining

the same look and feel, Excel's designers have made the transition relatively easy. Anyone who's learned Excel 5.0 will have no trouble adapting to 7.0. The learning curve is pretty much a flat line.

Frank McGowan is a teacher, science writer and computer consultant. He is a [WindoWatch](#) regular contributing many articles and reviews.

Keyboard Shortcuts: Word 7 for Windows 95

Copyright 1996 by Jack Passarella

Whether you have been using Microsoft Word for Windows a few weeks or a few years, you probably realize there are several ways to accomplish any given task. The most obvious methods are clicking on one of the ubiquitous toolbar buttons or hunting down a function through the cascading menu system. This column will focus on some useful but less obvious: keyboard shortcuts.

Keyboard shortcuts can be the quickest way to get from point A to point B or to accomplish any number of daily Word assignments. So, what differentiates a good keyboard shortcut from a bad one? When should you ignore your enticingly ergonomic mouse and keep your fingers on the home row? For me the answer lies in repetition and mnemonics... and in about that order.

Keep in mind that Word has numerous keyboard shortcuts in addition to allowing you, the user, to define or redefine a bunch of your own. In my opinion, you need to choose your shortcut arsenal carefully, based on the way you work. There are far too many shortcuts to torment yourself trying to remember them all. If you redefine existing shortcut keys, you run the risk of confusing yourself or others who might sit down at your computer now and then. Optionally, you could add completely new shortcuts without compromising the sanity of

your co-workers. We'll discuss that option towards the end of this article.

First lets talk about the existing shortcuts. Your first clue that these exist might have come from your knowledge of other Windows software. (Note: a lot of Windows programs share many shortcut keys and some of those I'll be discussing fit into this cross-application category.) You might also have seen the shortcut notation beside many commands listed on the menu system. For example, click on the *FILE* menu and you'll notice *CTRL+N* next to the *NEW* menu item. That means that pressing *CTRL+N* (i.e., hold down the *CTRL* key and press the letter *N*) will accomplish the same thing as clicking on *FILE*, then clicking on *NEW*. Since *NEW* begins with *N*, you have a mnemonic helper to remember that particular shortcut key. Also on the *FILE* menu, and also mnemonic are for *FILE-OPEN*, for *FILE-SAVE* and *CTRL+P* for . Check out the *EDIT* menu to find some other shortcuts that have a mnemonic edge.

I will focus on some less obvious keyboard shortcuts. Less obvious because they aren't emblazoned on the menu structure or equate to toolbar button functions so their usefulness isn't immediately apparent. The shortcut I've found most useful and arguably the least apparent is holding down the *SHIFT* key to select text.

Previously, whenever I wanted to select text, my first inclination was to reach for the mouse, regardless of whether I wanted to select a word, a sentence a paragraph or more. Now, I find it often quicker to hold down the *SHIFT* key and use the arrow keys to select text. *SHIFT* combined with the *LEFT* and *RIGHT* arrow keys will select a

letter at a time; **SHIFT** combined with the **UP** or **DOWN** arrow will select a line at a time. Add the **CTRL** key to the mix and things get interesting. Using **CTRL+SHIFT** plus a **LEFT** or **RIGHT** arrow will select an entire word; **CTRL+SHIFT** combined with an **UP** or **DOWN** arrow will select the rest of the paragraph in the direction of the arrow.

There are other variations on this selection process using the **HOME** and **END** keys, but I find that I reach a point of diminishing returns if I go beyond these basics. Notwithstanding, **CTRL+HOME** and **CTRL+END** are perfect keyboard shortcuts to jump to the top and bottom of a document respectively. Finally, in the selection shortcut arena, I often use **CTRL-A** to select my entire document. This usually follows a decision to change the font throughout.

The Cut-Copy-Paste gang are, arguable, equally as useful as employing the **SHIFT** key in the selection process. These keyboard shortcuts are **CTRL+X**, **CTRL+C** and in that order. Aside from **X**, **C** and **V** being side by side on the keyboard, the best mnemonic association I've heard from participants in the ILink MS-Word conference I co-host is that, visually, the **X** kinda looks like a pair of scissors -- squint and you'll see it - while the **V** looks sorta like a funnel or a wedge for inserting what you've previously cut or copied into the current cursor location. You should be able to remember for Copy without any visualization gymnastics.

On a par with the Cut, Copy and Paste shortcuts, are those for Bold, Italic and Underline. Purely mnemonic as **CTRL+B**, **CTRL+I** and **CTRL+U**. These are so easy to remember the letters are even used for the formatting toolbar buttons. You can either select text first to apply

these character formatting styles to after typing or use the key to switch on the formatting for whatever you intend to type next. (Note: you can use *CTRL+SHIFT+D* to double underline, which is remotely mnemonic, but I rarely feel the need to double-underlining anything and if I do, I have a tendency to want to use *CTRL+D* for this, which unfortunately brings up *FORMAT-FONT* which is definitely non-mnemonic, so just forget I ever said anything about it.) This next combination is completely non-mnemonic but so unusual I have no trouble remembering them *CTRL+[* to shrink the selected text one point size at a time, paired with *CTRL+]* to grow the selected text one point at a time. I imagine the selected text swelling or shrinking within this bracket container.

The above are shortcut keys I use on a regular basis. My big guns. What follows are those I bring out occasionally and are somewhat mnemonic, if you are willing to stretch a point.

CTRL-Z will UNDO your previous action. An ILink MS-Word participant who is also a trainer suggested I remember this one by thinking I want to 'zap' things back the way they were before I botched it up. That 'zap' mnemonic has stuck. Alignment options are, for the most part, easy to remember. To left align a paragraph, use *CTRL+L*; to right align try *CTRL+R*; *CTRL+J* will fully justify a paragraph; to center a paragraph use *CTRL+E*. Oops! Not quite mnemonic is it. Well, another tip I received explained that the letter C was already taken for COPY, so Microsoft used the next letter in CENTER. Guess, it's pseudo-mnemonic after all.

To indent a paragraph, use *CTRL+M*; to remove indenting, simply

SHIFT+CTRL+M. I remember this one by a bit of sub-vocal chicanery: I tell myself 'm'-dent. Somehow, some way I managed to make that one stick in the gray matter as well. In this instance, the

SHIFT combination can be thought of as shifting things back the way they were before you m-dented them. Also, of note: to create a hanging-indent paragraph, press ***CTRL+T***. Mnemonic? Kind of, if you squint again and imagine the shape of the letter T resembling the left side of the hanging-indent paragraph. You can use ***SHIFT+CTRL+T*** to unhang it.

If you change document views frequently, you might want to make use of the ***ALT+CTRL+N***, ***ALT+CTRL+P***, ***ALT+CTRL+O*** trio to switch between Normal, Page Layout and Outline views. To insert date or time fields, you might remember ***ALT+SHIFT+D*** and ***ALT+SHIFT+T***.

So far, I've talked about using the shortcut hand that Microsoft has dealt you. I gave you a minor caution early on about modifying built-in shortcuts, which you can feel free to ignore. Finally, you can add a shortcuts for a function currently lacking one, or create additional keystroke shortcuts for functions that already have one or more. That's the shotgun shortcut approach.

Select **TOOLS**, **CUSTOMIZE**, then the **KEYBOARD** tab. In the categories list box, you'll see that you can assign shortcuts to menu items, macros, fonts, styles, common symbols and auto text. Select a category, then choose an item from the list box to the right. If a shortcut is already assigned, it will appear in the Current Keys area.

One neat trick is to click inside the Press New Shortcut Key text box, then enter a keyboard shortcut. If it's already assigned to a function, you will see that listed in the space below. If it's not currently in use,

feel free to use it for your own devices. If you enter in invalid key combination as a shortcut, Word will simply beep at you. (Note: it's possible to get around Word's shortcut restrictions using macros. E.g., in my shareware screenplay template, I use the TAB key to switch between certain styles. Word does not allow you to assign any function to the TAB key, so I used a macro.)

If your key combination is acceptable, the Assign button will become available. You can assign the shortcut, keeping in mind that shortcuts you assign override existing shortcuts. If you don't like an existing shortcut, you can re-move it and replace it with one you find more logical, even reassigning the illogical shortcut to a more appropriate function. Simply click on the Current Keys item you want to remove. The Remove button be-comes available. Click to remove that shortcut from the currently selected function. If you find that you've made a complete mess of things, click on the Reset All button to restore everything to out of the box condition. Yes, Word does provide a safety net for the adventurous.

In the bottom right of the dialog box you'll see a text box titled Save Changes In with a template name listed. This is where your shortcuts will be stored. Normally this will be your normal.dot (i.e., global) template -- meaning, the shortcuts will be available whenever you're in Word. If you want your shortcuts restricted to a certain template, make sure you change normal.dot to that other template before you assign them. Now the shortcuts are only 'live' when that template is

attached. Usually you'll want them in normal.dot.

If your powers of recall have not been strained to their limits by now, you may want to investigate the ListCommands macro, new to Microsoft Word 7 for Windows 95. This macro will create a table in a new document with a list of Word command names along with a list of shortcut keys and menus that the commands appear on. To create the macro, just use TOOLS, MACRO, type in a name like 'test' or -- if you want to save the macro, something more meaningful, like ListShortcuts -- then click on the create button. Word inserts the Sub MAIN and End Sub commands. All you need to do is type ListCommands on a line between them. That's it. Then just click on the RUN button (i.e., right-facing VCR-control-like wedge) to create the table document. Save the macro when prompted if you want to keep it around. Otherwise, you can save the table document that the macro creates.

Now, in a purely non-mnemonic gesture, I will **ALT+F4** out of here.

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Spring Cleaning

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In the Spring we often tackle the awful tasks of organizing the attic or applying water sealer to the cellar floor. Then there is searching the closets for spring clothing followed by the inevitable trip to the Laundromat. Not too much different from programming! Here are some thoughts about software writing which I want to share - - especially to those new enthusiasts to programming.

In Windows programming, as in DOS, there are a series of house-keeping routines that carry across from one application to another. These are like sourdough. Here are some indispensable routines.

In DOS, text mode, unfortunately the monochrome and color screens are at different addresses, pointing to a portion of the temporary memory RAM. Although one wonders who out there still has a monochrome system, it still is a possibility. Writing to the wrong address can freeze the system. In Windows, addressing the screen directly is difficult.

Proportional spacing of text in Windows means that text will wrap automatically in the container - such as a text box. Word wrapping in DOS must be coded.

In DOS, turning the cursor off and on is obligatory. The cursor is always there, whether visible or not. In Windows, the cursor is owned

by the active control. Clicking on an edit box produces a cursor in that box. The DOS program is screen specific, stopped in it's flow by impending data input ("Your name?:")

The Windows program is control specific, with all controls sitting on the screen waiting like actors for the director to say "Rollem". It is event driven. The user clicks on button1 and code is executed. A DOS program requires a modicum of code to be set up. The Windows program could literally be entirely written by the graphics-interface compiler without a single line of code.

In DOS, you have to have a string input routine, so that you may test for hotkeys at the level of each keystroke. Cntrl-cursor right, left must be coded. Niceties like changing from insert to non-insert mode must also be coded. In Windows, the standard is to stay in insert mode. Switching to overstrike causes the screen to flicker.

One of the central points of Windows is the standardization of features. Main menus are expected to loosely conform to File, View, Edit, Options, Help. To get a handle on these, the programmer is best off paying attention to how the screen layout appears in established Windows programs. As in DOS, the user gets nervous when menus are changed around suddenly, and the you are best off disabling controls where they are not active, rather than changing the menus around.

For any environment, a lowercase() or uppercase() routine for returning all lowercase or uppercase is a must. Especially if you are searching for a string. For some ungodly reason, *Peter* and *peter* are treated as two different strings. This costs you a couple instructions for every search test. The speed of a module is dependent upon the number of

iterations and the amount of code per iteration. The holy grail of searching is to keep out of the loop any code that does not need to be inside it.

A routine to remove leading and trailing blanks on a string is useful as well. If you user enters data as" *this*" the computer should be presented with the string" *this*" in most cases. But a routine must be invoked first.

One very important aspect of coding is the need for comments. These phrases appear in the source, originator code, for the benefit of the programmer or programmers that will modify the code later. It is all very well to churn out code, but if there are no comments, it becomes too dense to understand at a later date. A simple comment like {this is for the date validation} can mean the world.

When programming in DOS, it was important to squeeze the most bang for the buck by conserving memory and optimizing for speed of execution. Wherever possible, routines would be pushed to the stack and then upon exit, the memory was retrieved. This was also true with data.

With Windows, there are some attractive features, such as seeing if a given string (words) are in a listbox, are costly in time. But by and large, the Windows programmer is free to add forms -Windows- and controls - such as buttons- without worry about memory. Old style allocation of memory, although not recommended, can still be done in Windows Delphi.

Armed with a rudimentary bubble sort and a binary search, the programmer is all set in Windows. However in DOS, more sophisticated

recipes were necessary to obtain speed. A bubble sort floats an item to its proper place in the sorted list. A binary search cuts the list (has to be sorted) in half repeatedly until it zeros down on the sought-for item.

Because controls in Windows are encapsulated with properties and methods, they may be used for data manipulation by setting them to invisible. In DOS programming, one painstakingly coded as a control and due to the demands of the project, the code was not very portable to other applications. Non-screen code written in Turbo Pascal is 100% portable to the Windows Delphi environment. QBasic is supposed to be equally portable to Visual Basic.

One of the pitfalls of the new Rapid Application Development compilers such as Visual Basic or Delphi is that you can quickly populate your programs with Windows without writing a single line of code. There is a tendency to skimp on details in the code. You have a big fat monster that is not dependable, although the plethora of controls says to the user "I am important."

Both languages have inspection capabilities where you can run the program to a given line of code. At that *breakpoint* you can examine the values of variables to see if they are what you expect for that point of the program. If you tell the compiler to stop on a certain line, and you check for the value of user_name, and it says *wizp2* you know that user_name is garbage at that point.

So you work your way back until you jump over the error. Narrowing down the search to the offending line(s) of code that caused the garbage to occur. Garbage is usually caused when the value that just

happened to be in memory has not been set to a meaningful value by your program.

Sloppy coding can be catastrophic to a program. I recently had a "Print" feature to my program. It checked to see if there was a least one line to print. Once it found a line I wrote "exit" (exit the print module.) So it did, and exited without printing anything. I should have said "break" meaning to only skip out of the single loop, not head for the hills. Now this may not sound like thrilling happy-hour talk, but such simple stupid mistakes can be costly.

This particular bug was easy to spot, as when I set the break point to where it was supposed to print the heading, it sailed on by. The line of code did not execute at all. Often when testing, what is not done is more important than what is.

There are other housekeeping routines, such as in Windows, repositioning the Windows according the screen resolution. Such routines are runtime specific. They must be ready to roll even if I the programmer drop dead or quit the business to become a cook. Initializing of data at startup is also important. Never assume that a variable is Zero just because it has not been used yet.

When writing complex if conditions "If it's before lunch than if it's 8:00 then do that else do the other things" must be examined carefully.

Never assume the computer knows what you mean. "You mean what you say and say what you mean. It is a question of who is master, you or the word." -Lewis Carrol Alice's Adventures in Wonderland.

Perhaps the single most important thing in programming, as in Spring cleaning is to know when to take a break. Spending the entire Spring in front of a computer is not the way to recover from this horrible Winter. In fact, I think I'll take a break right now! Maybe do that laundry.

Peter Neuendorffer is a Windows programmer who has written many shareware programs. He is the creator of Alice and is a regular [WindoWatch](#) contributor. He can be reached at petern@user1.channell.com

THE HUNTING OF ELEPHANTS

Author Unknown

- **MATHEMATICIANS** hunt elephants by going to Africa, throwing out everything that is not an elephant, and catching one of whatever is left.
- **EXPERIENCED MATHEMATICIANS** will attempt to prove the existence of at least one unique elephant before proceeding to step one as a subordinate exercise.
- **PROFESSORS OF MATHEMATICS** will prove the existence of at least one unique elephant and then leave the detection and capture of an actual elephant as an exercise for their graduate students.
- **COMPUTER SCIENTISTS** hunt elephants by exercising this Algorithm:
 1. Go to Africa.
 2. Start at the Cape of Good Hope.
 3. Work northward in an orderly manner, traversing the continent alternately east and west.
 4. During each traverse pass,
 - a) Catch each animal seen.
 - b) Compare each animal caught to a known elephant.
 - c) Stop when a match is detected.
- **EXPERIENCED COMPUTER PROGRAMMERS** modify this Algorithm by placing a known elephant in Cairo to ensure that the algorithm will terminate.

- **ASSEMBLY LANGUAGE PROGRAMMERS** prefer to execute Algorithm A on their hands and knees.
- **HARDWARE ENGINEERS** hunt elephants by going to Africa, catching gray animals at random, and stopping when any one of them weighs within plus or minus 15 percent of any previously observed elephant.
- **ECONOMISTS** don't hunt elephants, but they believe that if elephants are paid enough, they will hunt themselves.
- **STATISTICIANS** hunt the first animal they see N times and call it an elephant.
- **CONSULTANTS** don't hunt elephants, and many have never hunted anything at all, but they can be hired by the hour to advise those people who do.
- **OPERATIONS RESEARCH CONSULTANTS** can also measure the correlation of hat size and bullet color to the efficiency of elephant-hunting strategies, if someone else will only identify the elephants.
- **POLITICIANS** don't hunt elephants, but they will share the elephants you catch with the people who voted for them.
- **LAWYERS** don't hunt elephants, but they do follow the herds around arguing about who owns the droppings.
- **SOFTWARE LAWYERS** will claim that they own an entire herd based on the look and feel of one dropping.
- **VICE PRESIDENTS OF ENGINEERING, RESEARCH, AND DEVELOPMENT** try hard to hunt elephants, but their staffs are designed to prevent it. When the vice-president does get to hunt elephants, the staff will try to ensure that all possible elephants are completely pre-hunted before the vice president sees them. If the vice-president does happen to see a elephant, the staff will:
 1. compliment the vice president's keen eyesight and

2. enlarge itself to prevent any recurrence.
- **SENIOR MANAGERS** set broad elephant-hunting policy based on the assumption that elephants are just like field mice, but with deeper voices.
 - **QUALITY ASSURANCE INSPECTORS** ignore the elephants and look for mistakes the other hunters made when they were packing the jeep.
 - **SALES PEOPLE** don't hunt elephants but spend their time selling elephants they haven't caught, for delivery two days before the season opens.
 - **SOFTWARE SALES PEOPLE** ship the first thing they catch and write up an invoice for an elephant.
 - **HARDWARE SALES PEOPLE** catch rabbits, paint them gray, and sell them as desktop elephants.

C|NET SHOWS YOU WON'T SEE

I pulled this from C|NET's digital dispatch. Enjoy!

Yes, it's true, c|net is planning to create new shows about computing and digital technology. Of course, everybody wants to give their two cents' worth about what these future TV programs should be like. Here are some suggestions that we pulled off the Internet that we definitely *willnot* use:

This Old Mainframe - Host Bob Vila revamps a Univac and shows you how you can turn an old PC into a functional doorstop or othe decorative object.

My Three Suns - Neighbors wonder why Steve Douglas keeps three Unix based workstations in a suburban neighborhood.

Wang Can Cook - Chef Charles Wang blends together software in an incomprehensible manner from companies he's purchased. Studio guests grudgingly pay ever higher prices for his creations.

Leave it to Spindler - The Spindler tries to earn money by selling apples, but finds he can't sell them for as much as he paid for them; tries to make it up in volume. Ward, June, and the Board of Directors sigh.

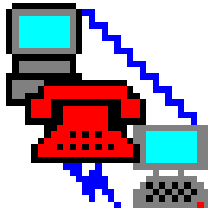
***Mayberry CPU*--Andy discovers that his digital clock has more intelligence than Goober. Aunt Bea debugs Floyd's electronic cash register.**

***Mr. Rom's Neighborhood*--Mr. Rom puts young ones to sleep by reading selections from various IBM documentation.**

***Says Me Street* - Muppet-like forms of Bill Gates, Larry Ellison, and Scott McNealy show children how to work and play together on the information superhighway. Large character known as Big BlueBird is a favorite of the kids, although no one really knows why.**

Derek Buchler continues to provide his friends with bits of humor he finds in the course of his Internet travels.

An Ordinary Day....



Reflections of a ModemJunkie

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My day began as usual this morning. Before I went down to the shower, I ran a script that logged on to a local bbs and downloaded the waiting messages from the RIME conferences to which I subscribe. When I returned, the messages were waiting. I scanned them for anything of particular interest. I then logged onto Chicago Syslink, read my mail, checked for anything new as I do every other day. While I pulled on my socks, I played a trivia game or two.

Then, like every other day, I logged onto the Internet, as my family was getting ready to leave the house, I checked my mail, read a few newsgroups and looked at my home page just to see that it hadn't changed, a strange habit that I will have to talk about another day.

As I was logging off the phone rang. It was shocking news. As I listened in stunned silence, I closed Windows and watched my screen return to black. The c: prompt sat alone in the top left corner.

I listened in near silence as tears worked their way down my cheeks. My wife came in the room, impatient to begin our day. I waved her away with one hand and stared at the screen as I listened to more details. She stood there stunned and looked at me as I typed these words: "Arthur is virtually dead."

This is not the place to talk in detail about Arthur or the difficult life he had. Nor the place to talk about his moments of brilliance, his huge heart or so many other things. Or the things we shared in the forty years since both our fathers died. Nor is this the place to talk about the details of his death. A proper memorial will have to wait-- wait until I can think more clearly and remember the emotion with greater tranquility. Arthur is virtually dead.

What is appropriate to say here is to think of all the time spent at this screen and to vow to dedicate just some small portion of that time to the living-- to conversation with flesh and blood.

It is easy to become convinced of the importance of everything in the virtual world that appears before me on the screen. I religiously answer the e-mail of total strangers. I seek help in creating better web pages. I tout the wonders of the Web to total strangers and friends of lesser acquaintance. But when was the last time I called Art? When was the last time I tried to break into his strange isolation..or out of mine. Arthur is virtually dead.

Those words haunt me...This morning Arthur's body clung to life. But, Arthur was virtually dead. The irony of those words struck deep as they stared out at me in the phosphorescence of the screen.

It is too late to call him up again, to take another walk along the lake or to fly another kite with him.

Under ordinary circumstances, I would spend a little while longer here before the screen writing my column, but I need to be with people tonight. I need to celebrate life. I have asked the editor to leave a little blank space at the end of this column. A little space reflecting the time I will spend tonight with the living. If it isn't there imagine it. It bears this dedication in my heart:

**In Dedication
to the Memory of
Arthur Sandler
1943-1996**

*Leonard Grossman is an attorney who works for the government. He is a **Windo-Watch** regular and has been contributing "Reflections" for some time. Leonard's homepage was chosen as a "Best o' comp.infosystems.www.announce" site during April 1996. Comments can be sent to grossman@mcs.com or leonard.grossman@syslink.mcs.com*

Don't Send Flowers Just Yet.
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For at least the last year, many of my fellow columnists have been solemnly predicting the death of the Internet!"**The Net's Going to Collapse! Type for your lives!!**" Well, let me be bold enough to go on record and say that I don't think it's going to happen. I, too, have been frustrated! There are problems of bandwidth and content; sites disappearing as quickly as you decode their URLs; censorship and bugs; weekly upgrades of browsers to install and configure; morons, newbies, freebies, heebies and jeebies; to mention but a few. BUT, through all of it, the Internet provides important and unique services with the potential to ultimately accomplish a lot.

Even so, I think we need to revise our opinion of how it's going to thrive. One of the most used and useful parts of the Internet is E-Mail. Five years ago people used to ask "Do you have a fax machine?" Now they ask "What's your fax number?" It's a rare business card that doesn't have a fax number printed on it.

E-Mail addresses are moving in the same direction. Right now we ask "Do you have an E-Mail address?" Within five years, or less, I think that it will be assumed that if you're in business you'll have an E-Mail address, - and most home Internet users will too! AOL sends out all of those freebie diskettes for a reason. And, it's not just so we can reformat them and recycle them to store old TurboTax data. They do

it because like a sperm, one out of every big batch finds its way to a willing computer and BAMMO...an on-line user embryo!

And those embryos are growing fast, sometimes too fast! The stereotyped *AOL Newbie* getting himself into trouble on USENET isn't completely fictional. Newbies often say pretty dumb things, just like the rest of us when we were inexperienced raw recruits. They, too, will also gain experience and learn. The bigger problem is not the people who don't know any better but rather people who don't or won't *become* any better. I recently witnessed an exchange on a technical USENET group among supposedly intelligent people who came to the group to discuss computer technology. It went something like this:

1>> "The [Bleeping] Mac, [Bleeping] [Inhales]!!!!"

2>> "Oh, yeah [Bleep]head?? Well, all you PC [not very bright people] [inhale] too! Eat [unpleasant substances] and die you [Bleep] [Bleep] [Bleep] [Bleep], and your dog too!!!!"

1>> "My [bleeping] dog [bleeping] knows more about computers than you do, you [bleeping] [bleeping] [bleep]!!!"

.. And so forth. The signal to noise ratio can get pretty low sometimes, and if you aren't willing to wade through all of the muck it's pretty easy to pack it in, unplug the modem, and go back to a friendly game of Freecell. If you can find the internal strength to press on and get past the people who want to relive the glory days in the sandboxes of second grade there is great information to be found. The motto *pearls among swine* applies. There really are people in the newsgroups who are genuinely interested and knowledgeable who are willing to share and help if you have a question.

It's within that core of good people where I think the real strength of USENET can be found.

The Web is a more complicated issue. For a long time it's been predicted that we'd all do our shopping at Virtual Malls, wandering the corridors of cyberspace, trying on sweaters and disagreeing with our spouses about wallpaper patterns, probably using E-Mail.

Unfortunately, questions of credit card security seem to have dampened the enthusiasm of the home shoppers. Shopping via the Web can be slow, frustrating and face it...those jeans that*looked* like they fit on the screen...maybe didn't fit quite so well when they arrived home. No matter how big your monitor is, you just can't seem to find an open dressing room in cyberspace.

However...the Web does have some worthwhile uses. Computer geeks ...er, consultants like myself, use it on an almost daily basis to find and get information. The search engines provide leads to hard drive specifications, software questions, and technical solutions, to mention just a tiny number of categories. This represents a wide variety of information needed on a daily basis with the most current information being best. It's easier to navigate than a fax-back system and doesn't require four days for a tech to call you back.

Here's another example of a strength of the Web. Right now, in the background, I have PointCast automatically updating my news information. I don't even take a newspaper anymore because between the radio in my car and PointCast I get all the news I want! PointCast (www.pointcast.com) is an excellent example of what I believe the future of the Web is. It's an on-line news service that lets you decide what you want to read about and then sends it to you whenever you

want it to. No more digging through the *food* and *real estate* sections trying to find sports!

Better yet, it configures itself as a screen saver, so while you're waist-deep in your busy day, taking a phone call from a client who needs to explain the world in triplicate, you can just glance up at your screen to see how your stocks are doing, find out what the ball scores are, even get National, International and Entertainment News flashing across your screen automatically.

Did you know that there's a web site called TheRef (look for it with YAHOO) that can give you all of the technical specs for hundreds, maybe thousands, of different hard drives? Or that Kiwanis International (www.kiwanis.com) has a web site under construction that can link you down through their districts, divisions, right to the Kiwanis Club in your neighborhood? Did you know that the U.S. Postal Service has a web site that will tell you what the Zip+4 code is for any mailing address that you give it?

As some have reluctantly learned, the name of the Internet game is information. That's really what the Internet is all about. All of the grand schemes for the Web becoming a huge commercial marketplace are going to fall short, in my opinion, until we have some substantial technological advancements. But as it stands now, the Internet is a mushrooming colossus of information resources. And information properly applied is power.

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