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## David stallard

(Stallards Camera House)

Will discuss

Digital Photography  
Wednesday 5th May 2004  
Studio Works  
Committee Meeting 6 PM  
Beginners 7.30 PM

### Newstream Articles

Deadline : 10 Days before Meeting

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### Membership

Single \$10, Family \$15 (Includes Email edition Newstream)

Printed & Posted Newsletter \$20 extra

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# General Information

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## Ron's Ramblings

I have really and truly arranged a speaker for our meeting on Wednesday 5th May.

David Stallard will talk to us about Digital Photography. Those of us who have been privileged enough to have heard David speak to meetings at our other venues know just how knowledgeable he is on this subject.

### ERRATA:

**In the last edition I gave the proposed date of the Computer Show as Saturday 21st August. The correct date I have been informed by Judy is Saturday the 7th August. Mea Culpa, Mea Culpa, Mea Maxima Culpa.**

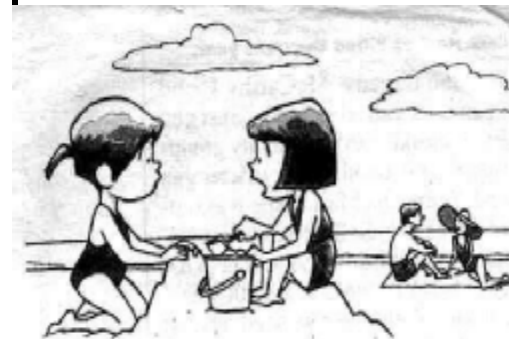
(I put the last bit of Latin in to prove I used to go to Mass)

See if you can find the other Latin Word in this edition.

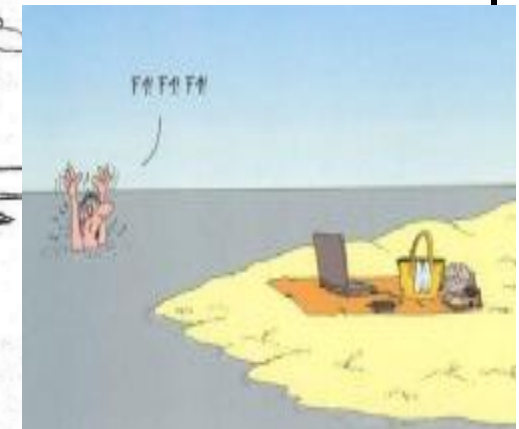
I was not able to be present at the last meeting due to circumstances beyond my control. Also the speaker I hoped to line up was unable to appear that night.

Look forward to the September Meeting (Our AGM) when Paul French from Tasmanian Printer Cartridge Company, Fresh from a Trade Fair and a Refillers Seminar will bring us the latest in Cartridge Technology

Ron Baker



"I'm never having kids. I hear they take nine months to download."



#### DISK 1000 - Your Library on Disk

Have you received your copy of Disk 1000? The disk holds a complete listing of programs available in our PC shareware library. This disk is free of charge to all new members.

**DISK COPY PRICES - CLUB MEMBERS \$1.00 per disk**

**Disk Prices - Box of 25 = \$12.00** Members Only

**CD Prices - Box of 10 = \$10.00** Members Only

Judy Hall, Shareware Librarian

### AVAILABILITY OF LIBRARY

The Shareware Library is available in-between meetings from the following people. Please telephone first to arrange a suitable time.

The library is also available at the venue - Studioworks

most Wednesdays 9am to 3pm. Email:

opencomputingtas@hotmail.com

LAUNCESTON

Julie Hjort Phone 6344 5686

Flat 2, 115 Penquite Road, Newstead Email: [ihjort@intas.net](mailto:ihjort@intas.net).

[au](#)

### Monthly Workshops

#### **Graphics - 19<sup>th</sup> May**

Next class

#### **PSP7 - Editing Photographs**

**Wednesday 19<sup>th</sup> May**

**1pm - 3.30pm**

**\$6.50 fee** - Numbers limited to 8 please register on noticeboard or call **Judy** 63947358 or 0428 947358.

### Family History Online

Next Classes

**Wednesday 12<sup>th</sup> May 1pm-3.30pm &**

**Tuesday 26<sup>th</sup> May 9pm - 12pm**

**\$4.00 fee** Numbers limited to 8 people

Please register on noticeboard

### Microsoft Publisher

Next Class

**Thursday 5<sup>th</sup> May - 3pm to 5pm**

Please register on noticeboard - Fee \$4.00

Class sizes limited.

### Windows & MS Word

#### **Keyboard Shortcuts**

Speeding up your work with keyboard shortcuts

**Wednesday 26<sup>th</sup> May - 1pm to 3pm**

Please register on noticeboard

Fee \$5.00 Includes printed handout.

### **OPEN & Tutors Meeting**

**Wednesday 5<sup>th</sup> May.**

After lunch at the venue for our OPEN meeting and a special meeting of all tutors at OPEN to discuss classes and answer any questions our new tutors may have.

**Please Note: Visual Labels & SuperMail Session moved to 23<sup>rd</sup> June**

### **VENUE TELEPHONE NUMBER**

A Mobile Phone Number is now available to all those wishing to contact OPEN during working hours. The number is

**0413 698 610**

### **OPEN Session Times**

All sessions are held at the venue at Studioworks, 1 Pipeworks Rd, L'ton

**Standard Sessions** (All sessions \$4.00)

Monday	9am - 12	Beginners
Monday	1pm - 3pm	2 <sup>nd</sup> Step
Tuesday	9am - 12	PC & Mac
Tuesday	1pm - 3pm	Beginners
Wednesday	9am - 12	Beginners
Wednesday	2pm - 4pm	2 <sup>nd</sup> Step
Thursday	1pm - 3pm	PC & Mac

### **TAFE eLearn Sessions**

(All sessions \$4.00) Started 15 March 2004 - All classes now full

Monday	9am - 12	eLearn
Thursday	9am - 12	eLearn
Thursday	1pm - 3pm	eLearn
Friday	9am - 12	eLearn

### **Special May Sessions**

Wednesday 5 <sup>th</sup> May	1pm on	<b>OPEN Meeting &amp; Tutor Tutorial</b>
Wednesday 5 <sup>th</sup> May	7pm on	<b>LCG Monthly Meeting</b>
Thursday 6 <sup>th</sup> May	3 - 5	<b>MS Publisher</b>
Wednesday 12 <sup>th</sup> May	1 - 3	<b>Family History</b>
Wednesday 19 <sup>th</sup> May	1 - 3	<b>Graphics</b>
Tuesday 25 <sup>th</sup> May	9-12	<b>Family History</b>
Wednesday 26 <sup>th</sup> May	1 - 3	<b>Win &amp; MS Word Keyboard Shortcuts</b>

*What's Happening at OPEN*

**OPEN Monthly Meetings**

**SPECIAL LUNCHEON for TUTORS**

**Open Meeting 5<sup>th</sup> May 2004 at 12.30**

This month we have a special luncheon booked at the All Year Round Hotel to start at 12.30 for the presentation of volunteer certificates and afterwards back at the venue for our regular meeting and a tutors meeting.

**Bulk Buy Booklets**

The books have now been ordered.

**Printing Costs**

With the purchase of the new printer we now have photographic quality printing available to all students. At this time the cost of printing will remain the same but may be reviewed in the future.

**Current costs are:**

Photocopying	20c per page
Printing to Kyocera Printer	20c per page
Printing black & white text to Canon	20c per page
Printing text and graphics to Canon	40c per page
Printing cards or full page graphics	\$1.00 per page

**Fee Alteration - \$2 sessions**

Anyone attending a second class within the same week can now pay \$4.00 for the first session and \$2 for each subsequent session.

**Please Note:** Special fee excludes sessions where special fees apply ie Graphics.

**Huge welcome back to Fran Cox** Great to have you back Fran, you were missed.

**Free Copy of Newsletter**

Don't forget to submit your email address if you wish to receive the LCG/OPEN newsletter via email. If you have not yet received the newsletter via email tell your tutor.

**Cleaning of the Venue**

We have finally secured a cleaner who will tackle the job of cleaning the rest room and the main computer room twice a month. Hooray.

**eLearn Students**

eLearn has now started. All those who are registered are asked to attend classes regularly and only attend on the day you are registered. If you need to attend a different class please speak to your tutor who can arrange this for you.

**Welcome our new Tutors**

We are very pleased to report that we now have three new tutors helping with the eLearn classes. They are Letty Rugari, Robert Tierney and Warren Ramsay. Welcome all and know that your help will be greatly appreciated.

**Northern Tas. Camera Club**

Will now be meeting at the OPEN Rooms once a month with the first meeting set for Saturday April 24<sup>th</sup>. If you are interested in Photoshop this may be of interest to you.

**MS Publisher Class**

This class has been moved to Thursday after the eLearn class, from 3pm to 5pm.

*Special Monthly Meetings*

**Launceston Computer Group Inc.**

1<sup>st</sup> Wednesday of the month

**Wednesday 5<sup>th</sup> May 2004**

**Evening 7.30pm – 10pm**

**Shareware**

**Supermail**

Supermail is a handy little program, which is a companion to Visual Labels. It allows you to create a database of names, addresses and phone numbers and easily print them to envelopes or labels. The information can be filtered easily to print only the desired records and setting up the labels uses the same interface as Visual Labels. This program is shareware.

**Disk# >>> 3575 <<<Category>>>UT for WIN/W98<<<**

**Supermail v2.2h 32bit**

SuperMail for Windows, v2.2h - 32-bit version for Windows 95/98. This mailing list program allows you to maintain an unlimited number of records. It prints labels, envelopes, letters, and reports. Complete set of mailing list management tools, including duplicate checker. Maintain an unlimited number of name/address records. ·Maintain an unlimited number of separate mailing lists. ·Print on all standard Avery mailing labels. ·Print on any size envelope, including return address. ·Create form letters & merge your names/addresses into letters ·Print hard copy reports.

## HUMOUR

### 13 thoughts for today

13. Never take life too seriously. Nobody gets out alive anyway.
  12. Life is sexually transmitted.
  11. Health is merely the slowest possible rate at which one can die.
  10. Men have two emotions: hungry and horny. If you see him without an erection, make him a sandwich.
  9. Give a person a fish and you feed them for a day; teach a person to use the Internet and they won't bother you for weeks.
  8. Some people are like Slinkies... not really good for anything, but you still can't help but smile when you see one tumble down the stairs.
  7. Health nuts are going to feel stupid someday, lying in hospitals dying of nothing.
  6. Whenever I feel blue, I start breathing again.
  5. All of us could take a lesson from the weather. It pays no attention to criticism.
  4. Why does a slight tax increase cost you two hundred dollars and a substantial tax cut saves you thirty cents?
  3. In the 60's people took acid to make the world weird. Now the world is weird and people take Prozac to make it normal.
  2. Politics is supposed to be the second oldest profession. I have come to realise that it bears a very close resemblance to the first.
- And the number one thought for the day:
1. You read about terrorists; most of them came here legally, but they hung around on these expired visas, some as long as 10-15 years. Now, compare that to Blockbuster; you are two days late with a video and those people are all over you. I think we should put Blockbuster in charge of immigration.

## Bypassing XP's Logon Screen

Hi Fred: I am running Windows XP Professional and when I restart my windows instead of going into windows so you can start working you have to hit your user name to continue loading. As I am the only person who uses my computer I would like that option back again and also every so often when I don't move the mouse it goes back to that screen like a screensaver I cant find anywhere to disarm this at all either. do you have a solution to mostly the start problem when you have to click that user name please when all said and done it is my computer i want it to do what i want ! Thank you very much, Tony from Toodyay West Australia

XP is a multiuser system, even when only one person is using the machine. Ideally, you're supposed to create an "everyday" account with limited permissions, and use an Admin-level account only for system maintenance. That way, viruses, worms, and whatnot that may foul up the limited, everyday user account will be less likely to cause system-wide damage. So, even with just one person using the system, you get better safety and security by having two accounts.

But a lot of people go in and stay in as Admin (or as themselves, with full admin rights). That's OK, as long as you realize that it's riskier, because trouble in an Admin-level account can spread system-wide in a flash.

In any case, if you want to auto-login, bypassing the "click on your name" and going straight to your account:  
<http://www.support.microsoft.com/default.aspx?scid=kb;en-us;315231>  
<http://www.google.com/search?q=automatic+login+xp>

The screen saver logon is different, but easily turned off: Right click anywhere on the desktop, select Properties, then Screen Saver, and uncheck the "On resume, password protect" box.

*From LangaList 12/4/2004*

## NEWBIE CLUB TUTORIALS

### **Tutorial... "Can You Remove A Shared File?"**

When you remove programs from your computer, using the Add/Remove Programs system, should you answer "Yes" or "No" to the question, "Do you want to remove a shared file?"

Hmmmm.

Shared files have the file extension ".DLL" on them. That means they're a Dynamic Linked Library file. All this means is the file in question can be used by different programs. A word processor and another program may share a DLL file. So removing that file may cause another program to malfunction.

You may have seen a message stating that a certain file cannot be found. That file is needed in order to open the program you're trying to use. Why is it missing? Could be that you removed it when you uninstalled another program.

The bottom line: If you aren't familiar with a filename, and you're asked if you want to delete it, don't. Just answer "NO" to the question. It won't do any harm if it's not actually needed. But watch out if it *\*is\** needed - and you've removed it! More on .dll's later ....

### **Tutorial ... "A .dll File Was Not Found - Excuse Me?"**

Here's two examples of emails that hit the Newbie Club email box in recent weeks.

"Error starting program, a required .dll file was not found." I don't know how to get rid of it. Could you please help?

"When starting windows, a screen comes up stating a required DLL file MSVBVM60.DLL was not found. When I click ok it goes away but I would like to fix whatever the problem is. I've tried several things with no success. Any help would be greatly appreciated. Thanks in advance."

If you haven't seen that happen yet on *\*your\** PC, you can bet your bottom dollar it's only a matter of time.

A .dll file is explained in Tutorial above.

Sometimes a .dll file disappears or is damaged, or is removed accidentally. And suddenly you find that one of your programs no longer works. The answer?

Download another one from the Internet and install it.

Go to <http://google.com> and type in dll in the search box. You'll be presented with a bundle of links to sites that let you download the .dll file you need from their .dll library.

If you don't find the one you want first time, try other sites until you do.

There are some sites that charge you, but you don't need to pay, because there are many more who offer free downloads.

You will need to write down the number of the .dll file you need, then type it into the search box of the download site. Also look for a site that explains how to install it. Print out and follow the instructions and everything should then return to normal.

DLL files are only tiny, but it's like a having a tiny fuse blowing in your auto engine compartment. When that tiny bit of wire blows, all that sophisticated technology grinds to a stop.

That's techies for you:-)

### **Tutorial ... "Storing Hardware"**

Adding new hardware to your computer isn't as easy as adding a new software program, but here's some tips to consider.

First of all, know what's in your computer. That means, find out exactly what's hiding in there by opening the case, and checking it all out. Not very practical advice? OK, then dig around inside using software. The next bunch of tips tell you how.

To see what processor is installed and how much Random Access Memory (RAM) you've got, right click My Computer (on your Desktop) and select Properties (or use the Windows Logo key+Pause, or hold down the Alt key while double clicking).

To see what size your hard drive is, go for My Computer once again. Double click the My Computer icon to open, then right click the drive letter you're interested in (usually 'C') and click Properties.

To see what type of video card (also called a video display adapter, or graphics card) you have installed, right click the Desktop, and choose Properties from the context menu. When you see the Display Properties dialog box, choose the Settings tab. You'll see the brand and model of the monitor installed (or it may just list "Plug and Play Monitor") along with the video card that makes it work.

To see what kind of hardware is installed in your computer (that wasn't already covered above), open the Control Panel ( Start. Settings. Control Panel) and double click the System icon. Click the Device Manager tab for a complete list. Click down the list of installed hardware. You can click the Properties button after highlighting a particular item, and you'll see more details on drivers, settings, and other info that may just bore you to tears.

Interesting stuff this. Just don't go messing around, ticking and unticking, unless

*(Continued from page 6)*

you know exactly what you're doing:-)

## **Tutorial: "How To Clean Up Your Clutter"**

What can you do with the various icons spread out like dew drops across your computer screen? Do you really need all 67 of them? Probably not. So let's clean up a bit, shall we?

Icons are of course representations of the actual program. Not all icons however represent the actual physical location of the program they refer to. This particular breed is known as the shortcut icon.

You can safely DELETE shortcut icons. You know it's a shortcut when you see a small arrow in the lower left corner of the icon. Also, you can double check yourself by RIGHT clicking any icon, looking at its PROPERTIES and you'll see if it's a shortcut or not.

Every item that makes up the stuff you see on your computer screen (called "objects" in techie-speak) has associated properties. Just as there are properties of a pencil (it's cylindrical in shape, made of wood, has an eraser, etc.) there are properties of computer files. (Their size, the date they were created, where they live on your hard drive - called the "path" - etc.)

So which icons can you safely remove?

Well, here's a list of what you CAN'T remove.

1. My Computer
2. Network Neighborhood
3. My Documents 4. Recycle Bin

(Actually, you can even remove the above, but that's even more advanced, and you have to use a special program to do it.)

Now, if you delete an icon, you'll receive a warning message if you're about to delete a program. So if you know nothing more than "I want to save anything Windows tells me is a program" and you just started highlighting icons and pressing the Delete key, you could safely remove anything that WASN'T a program. (You "highlight" an icon by clicking on it.)

You can really clean up your desktop this way, and if you have stuff you REALLY want on the desktop, you can always create a shortcut - a NEW shortcut, fresh and useable - at any time. This is explained in Windows for Newbies, along with 50 other basic tutorials, along with dozens of tips and tricks.

More on that here: <http://newbieclub.com/wfncopy>

So clean up your desktop without fear of loss. Then redecorate by changing the

wallpaper to something that goes with the new Spartan look.

## **Tutorial ... "Did I Copy It - or Move It?"**

Here's a tip which solved a long term irritation for me until I learned about it.

Like many things to do with computers, it's easy once you know how.

I move files and folders about by dragging them across in 'Explorer' (right click 'Start', click 'Explorer')

But Windows treats your dragged files differently if you're moving them around the same disk, or if you're moving them between disks.

Drag a file from one folder to another, and the file is moved. But drag the same file to another disk that's separate from your hard disk, like a floppy or a Zip disk, and it's copied.

NOT moved.

Dumbness prevails - hey wake up at the back!

If you want to get control of the situation, and always be presented with a verification of your intent, use the RIGHT drag method. Really. Just right click instead of left clicking when you drag an icon. When you release the right button, you'll see a context menu appear with these options:

Move Here, Copy Here, Create Shortcut(s) Here, and Cancel.

It sure beats not knowing what Windows will do next.

If you don't like pressing the right mouse button for some reason, hold down the Ctrl and Shift keys at the same time while dragging with the left mouse button.

You can press them before or after you click the mouse--it doesn't care. The end result is the same. You be presented with a context menu seeking your intent.

Windows does try and aid you to some degree, changing the mouse cursor depending on the action taken. For example, a small plus sign (+) appears when you copy, and a small curved arrow appears when you're creating a shortcut.

## **Tutorial: "File Maintenance Using Dialog Boxes"**

Note: A dialogue Box is another name the techies have dreamed up. It's just another 'window'.

This is well kept secret, so tell everyone about it. You can do file maintenance using the OPEN and SAVE AS dialog boxes.

When you see the OPEN dialog box (seen when you are about to open a file) or the SAVE AS dialog box (seen when you are about to save a file) you can leave those boxes on the screen and perform the following:

> To do maintenance on a file or folder, right-click the object to display a

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*(Continued from page 7)*

shortcut menu...

> To create a new object, right-click an empty section of the file list, and then click New to get the New menu.

> To create a new folder within the current folder, click the Create New Folder button.

Here's an example of how to use this. Let's say you've begun downloading a file... and you're at the SAVE AS dialog box. While there, you think, "I need to create a new folder for this file so I keep my computer's hard drive organized."

Click the Create New Folder button, and a new folder appears with blue covering the file name. Type the name for the folder, press Enter, and the new folder is created. Then select that new folder for the download location. Tutorial: "Adding

### **Shortcuts to Your Start Menu"**

If you use your computer at all, you'll have some open windows on screen.

Without closing them, the Start Menu provides access to lots of programs. But let's say you're lazy, and want a quick click solution... create a shortcut that appears on the Start Menu... so you don't have to chase down the program on the Programs Menu!

Windows 98 and higher makes this real easy for you.

Using the left mouse button, click on an icon and drag it from the Desktop (your main screen) and hold it over the Start button for a couple of seconds. You'll see the Start Menu open up.

Keep holding the left mouse button down, and move the icon up to the area above the "Programs" time. You'll see a dark "bar" appear. Slide the icon up and down, and the bar moves up and down. Release the mouse button, and the icon that was on the Desktop is now on the Start Menu.

If you want the icon to be in both places, Desktop \*and\* Start Menu, use the RIGHT mouse button when dragging the icon. When you release the button, you'll have options... choose the option to "copy here".

If your computer is like mine, something will freeze up. My Start Menu got stuck and wouldn't close. What a drag. I had to reboot the computer to fix it.

Why these things happen is unknown to human beings, but they happen. If cars were built the same way, we'd have stop and go traffic all the time. Tutorial:

### **"Bouncing Email: Help Reduce The Rubber"**

Aye, it happens every day. "I sends out me email, and it bounces right back." I don't need another rubber ball! What's happening here? I know the address is

good, so that's not the reason for the returned email.

Turns out the email message you received AFTER sending your email explains it. "The recipient's mailbox is over quota." That means the silly thing is plumb full of mail! This happens to web-based email, like accounts at Yahoo!, Hotmail, and the like. And maybe AOL, and Juno, and others.

Any ISP who monitors the total number of bytes of mail stored in your inbox will 'bounce' messages if the mailbox exceeds the ISP's mail quota.

Every mailbox has a limit. If the next incoming piece puts you over the top, then the mail is "returned to sender. No such number. No such zone."

Hmm, has your mailbox been cleaned out recently?

If you go on a trip, and don't check your mail... well, you know what happens.

Things fill up, and you're soon 'over the limit' if you get a LOT of email.

So clean out those messages. Archive them. Transfer them to a special folder. Do whatever it takes.

Tutorial: "How to Remove Programs Safely" How to properly remove programs from your computer: Windows 98 has added a little program that helps you delete applications safely and CORRECTLY. Why correctly? Because a lot of new software leaves entries in the Registry, and unless you uninstall your programs, the excess code gets left behind. Not so tidy. So when you want to uninstall an application, follow these steps: 1. Click Start. 2. Choose Settings then Control Panel. 3. In the Control Panel window, double-click the Add/Remove Programs icon. 4. Under "The following software can be automatically removed by Windows..." select the application you want to remove. 5. Click Add/Remove and follow the instructions to remove the application. It will show you dialog boxes to assist you in the process. When you remove programs, you may be asked if you want to remove files called "DLLs". That's an acronym for Dynamic Linked Library file. These are shared by other programs. If you want to be real safe, just answer "No" to the question. Everything but the files in question will be removed. (Everything related to the program you're uninstalling, of course.) This is all very geeky, really. But the time may come when you need to uninstall something. So use this. Don't just randomly delete the files that make up programs, or you'll be in REAL trouble.

## A brief history of computing

Peter Carter

There was a time when I earned my living teaching some history and theory of computing, some programming, and the application of computing to life in general and education in particular. I therefore noted the suggestion written at the AGM with some interest. Now, I'm not sure exactly what the writer meant, but it looks like an excuse for a series of articles looking at machines and ideas of the past and how they have led to present day Macintoshen, together with a little programming. If we were still using the Apple II I could offer quite a bit of programming because the machine had a language built in, but programming the Mac is a very different proposition. I'll keep thinking about that aspect. In the meantime, let's start at the beginning...

### In the beginning

Humans are calculating creatures. Recent research shows that animals and birds have some number sense, but humans have always wanted to keep track of numbers of things, whether it be sheep in the flock or the number of days to the next festival. Before there were mechanisms there were counters, often small stones. Our word 'calculate' comes from the Latin word for a small stone. calculus *n.* a stone

**Algorithms** An algorithm is the set of rules and operations used to solve a problem or calculate a result. The term comes from the name of a ninth century mathematician working in Baghdad: Mohammed ibn Mūsū al-Khowārizmī (Mohammed, son of Moses, the Khowarezmite).

When you learned to add, subtract, etc. you learned the algorithms for those processes. Any machine, such as those I describe below, must incorporate those algorithms in its mechanism. For our machines, the algorithms are in the software, expressed in a programming language. I'll return to that notion in later articles.

**Analogue devices** In an analogue device, one quantity is

represented by another. In an analogue clock for example, the rotation of the hands is an analogue, a representation, of the rotation of the earth. Perhaps the most common analogue computing device was the slide rule, in which numbers, as logarithms, were represented as distances along the scales of the rule. In the late 19th century Lord Kelvin designed an analogue computer to calculate tides. The different components were represented by the positions of a set of pulleys, and the final result appeared as a graph. The most complex analogue computer was the Differential Analyzer, built by Vannevar Bush at MIT in 1930. It worked to within 2% accuracy. Navigators have used analogue devices for centuries. The astrolabe was an analogue computer, as is the device used by fliers to solve the vector triangle problems of aerial navigation.

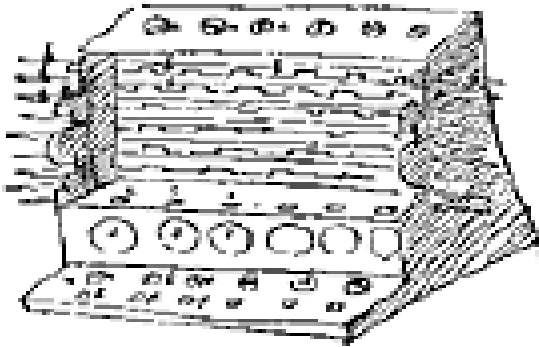
**Early days Arabic numerals and zero** Numerals as we know them entered Europe in the eighth and ninth centuries, but the transition from the cumbersome Roman system took a long time, until the 17th century in places. Key to the new system was the idea of place value: units, tens, hundreds, etc. which made calculation much easier. **John Napier (1550–1617)** Napier was a Scottish mathematician whose major invention was logarithms.

Multiplication could be performed as addition, and Henry Biggs published the first tables in 1617. Napier later invented a multiplication aid, Napier's rods (or bones). They were widely used across Europe. Another of Napier's inventions was the decimal point. **William Gunter (1581–1626)** and **William Oughtred (1574–1660)** Gunter devised a scale, based on logarithms, for multiplication. Oughtred rearranged the scales into two circles, making a circular slide rule, and later the linear version. Slide rules were in use until the late 20th century, and are still used for some specialised purposes.

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**Wilhelm Schickard (1592–1635)** Schickard was a polymath, and an associate of Kepler, the astronomer. Some time in 1623 Schickard built what he called a Calculating Clock, presumerably to help with astronomical calculations. It used a set of Napier's rods for multiplication, and a set of gears for addition. It was the first such machine, but it was lost during the Thirty Years' War. It was not until the 1960s that Schickard's work was rediscovered and a working replica built.

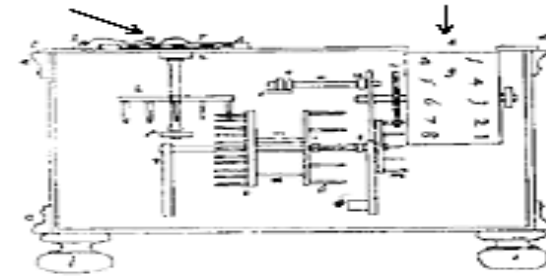


*Schickard's own drawing of his machine*

**Blaise Pascal (1623–1662)** Pascal's father was a tax official, and therefore needed to keep track of sums of money. The younger Pascal began work on a calculating machine in 1642. The first was a five digit machine, but later examples could work to eight digits. Numbers were set into dials in the top of the machine, and the result read in a series of windows. The machine could add only, and subtraction was by a method known as nines complements. The Pascaline was not particularly reliable, was expensive, and Pascal found that he was being undercut by cheap copies.

Enter digit here

Answer digit appears in window



*Cross section of Pascal's machine*

**Gottfried Wilhelm von Leibniz (1646–1716)** Leibniz saw one of Pascal's machines while on a visit to Paris in 1672, and decided to do better by producing a machine that would multiply, as well as add. The key invention was a stepped gear, a cylinder with nine teeth of different lengths. As far as is known, only one was built, and it proved not to be very reliable. However the principles within it were to lead to later, successful, machines. Another of Leibniz's interests was binary notation, as now used in computers. He apparently thought of building a binary calculator, but nothing came of the idea.

**More mechanisms** Leibniz's stepped gear was the foundation for a succession of devices over the next 150 years: Hahn (Germany), Stanhope (Britain), Thomas de Colmar (France) being the first. In 1872 in the US Frank Baldwin devised a new mechanism, the pinwheel. In Sweden in 1878 Odhner came up with a similar machine, but real success came only when Felt, in the US, designed a key-driven calculator, the Comptometer. Burroughs developed a similar machine, and calculators like them were in use until well into the 20th century. But they were then soon to be outmoded, by ideas from two seminal 19th century thinkers, Babbage and Boole...

## Microsoft Office Assistance:

Crabby's top 5 Word 2002 tips and tricks

By The Crabby Office Lady

Here are five of my best Word tips in all their glory.

Today we'll talk about altering the Normal template once and for all, how to create a zero with a slash, reduce the glut of white space in print view, orient your text, and turn off the much-maligned drawing canvas.

Applies to Microsoft Word 2002

Microsoft Word is one of the most widely used Office programs. Some of you may think that to use Word, all you need to know is how to type, create and open documents, save, and enlist the aid of the spelling checker. That's basically true. But for Crabby's sake, expand your horizons a little, will you? Think of me as your tips and tricks diving instructor: Put on your wet suit, stick that snorkel in your mouth, and let's plumb the depths of Word.

**The Word template: Why be Normal?** Sometimes the Normal template (the one that opens each time you create a new document in Microsoft Word) isn't exactly laid out as you'd like. Okay, so you tweak it each time, but what a time-waster that is! Why don't you just set up the Normal template to look exactly as you want it to?

Good question. To change the Normal template Click Start > Run > and then type (or copy): C:\Documents and Settings\your user name\Application Data\Microsoft\Templates. Select the file Normal.dot. On the Edit menu, click Copy. Click anywhere in the folder, and on the Edit menu, click Paste.

Right-click that original Normall file, click Rename, and rename it Default (or whatever you want).

Right-click the copy you made, rename it Normal. Right-click the new Normal, and click Open. (Don't just double-click it as that would open a new document, and we want to open the template itself). Make any kind of changes you want-(change toolbars, views, default fonts-) anything at all. Then, on the File menu, click Save. By naming the new file Normal, you've created the new template that Word opens automatically. It's a beautiful thing.

**It's a zero, it's an O, it's Super Symbol!** Yes, like you, I once naively believed that a zero with a slash through it - would appear in the Symbol dialog box that you get to from the Insert menu.

But alas, it doesn't, so when I wanted to use this symbol, I had to take matters into my own hands.

The procedure below applies to Word 2002, One more thing: Thanks to Woody's Office Watch for noticing a missing step in an earlier version of this column, as well as for providing the inspiration to update the information from the above-referenced Knowledge Base articles.

To create a zero with a slash through it

On the Insert menu, click Field. In the Field Names box, click Eq.

Click Field codes (toward the bottom of that dialog screen). Note Do not click Equation Editor or you will be lost forever.

In the Field Codes box type EQ \o(0,/). You can copy and paste that from here. Click OK.

Now, select the slashed zero, right-click, and then click Toggle Field Codes. Remove the extra space after the right parenthesis.

Right-click again and click Toggle Field Codes . (Yes again.) The result should be a beautiful zero with a slash through it. Good for you!

Now, let's all create an AutoCorrect entry that will let you type in something that stands for the slashed zero and have the actual, slashed zero appear (without having to go through all that you did above).

To create an AutoCorrect entry for a slashed zero Select the slashed zero in your document. On the Tools menu, click AutoCorrect Options. In the Replace box type whatever combination you want Word to turn into a slashed zero.

An example is \*0. Click OK. Get on with your life.

**White space: Show it, hide it, make up your mind** This next tip comes from my next-door neighbour here at work. Can you even imagine how fantastic it is to have a Word expert right next door? Of course you can't; that's why you're reading this. Some of you like to work in Print view and some of you like to work in Normal view. I personally like Print view but all that white space gives me a headache. Here's a neat little trick that will give you the best of both worlds: Hide all that white space on the top and bottom of each page and still remain in Print view.

To show or hide white space in Print view Move the insertion point to the top or bottom of the page and click when you see Show White Space or Hide White Space

**Orientation: Turn this way and that way and away we go** I get these whiny e-mails all the time about how WordPerfect can rotate text, and so why can't Word? Slander, I say!

Libel, I shout! Word can rotate text (and I don't mean just WordArt either). The only thing is, to change the orientation of text, the text must be in a text box or a table cell.

How difficult is that? To rotate text in Word Click the drawing object or table cell that contains the text you want to change. On the Format menu, click Text Direction. Click the orientation you want.

**Drawing canvas: Turn it off and stop your crying** And speaking of whining, users of Word 2002 have clogged servers worldwide with their nasty e-mails about (and I quote) "That jail that appears when I try to insert a piece of art" "That imaginary boundary that I'm always fighting" What these creative (not to mention crazed) people are talking about is this:

When you insert a drawing object (a graphic you draw or insert and that can be changed)

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into Word, the drawing canvas is placed around it.

The drawing canvas is supposed to help you arrange your drawing in a document, and it works great if your drawing consists of several shapes. Many of you also wrote to me about how hard it is to position drawing objects in Word; that's what the drawing canvas is for.

(No, it wasn't created just to torture you and give me something to do.) That being said, if you're so torn up about it, turn it off so that we can give my e-mail server a break!

To turn off the drawing canvas On the Tools menu, click Options. Click the General tab. Under General options, deselect the last option, Automatically create drawing canvas when inserting AutoShapes.

About the author The Crabby Office Lady gets her column ideas from your far-out suggestions and demands. If you're feeling far-out or just have something to say, send her some Feedback. While she can't answer your mail, you may see a solution to your problem in a future column. Office Worldwide Â© 2004 Microsoft Corporation. All rights reserved.



## Lolo's Corner

**A2A Update, January/February 2004** The January A2A database update has taken place at <<http://www.a2a.org.uk>>.

The database now contains more than 6 million catalogue entries describing archives held in 340 record offices, libraries and other repositories throughout England. Among the 1411 new catalogues are finding aids describing the following:

- oral history recordings, photographs and other unofficial archives relating to the miners' strike in the 1980s, held at Sheffield Archives and submitted by the Shafts of Light project;
- catalogues of archives held at 5 museums - whose holdings are thus described on A2A for the first time - namely: the Watts Gallery in Surrey (catalogues contributed through the South East regional project Private Faces in Public Places), the Manchester Museum of Science and Industry and the Maritime Archive of National Museums Liverpool (through the Mills, Mansions and Corner Shops project in the North West), and Brixham Heritage Museum and Cookworthy Museum (through South West Family Fortunes); \*
- estate archives of the Chichester-Constable family dating back to the 12th century, held at East Riding of Yorkshire Archives and Records Service and submitted by the regional project Broad Acres, Big Houses, Yorkshire People; \*
- a wide variety of archives, including personal papers, deeds, manorial archives and records of local organisations, held by the archives services of Berkshire, Buckinghamshire, East Sussex, West Sussex and the Isle of Wight, contributed through the Aladdin's Cave project in South East England; \*
- and various public records held locally, including coroner's records held at Berkshire Record Office and Lincolnshire Archives, and records of local pre-1974 urban and rural district councils held by Wigan Archives Service. Following user evaluation held in 2003, a number of enhancements have also been made to the A2A site in conjunction with the database update. These enhancements include:
- redesigning and renaming the Special Interest (index) search as People, Places and Subjects;
- simplifying the operation of the People, Places and Subjects search, including clearer online help and removing the necessity to use an \*
- in the search; \*
- adding to the Standard Search and Extended Search the ability to search by the date that catalogues were actually uploaded to the database; \*
- and adding to the Extended Search the ability to search for creator(s) of archives by keyword.

Technical enhancements have also been made, comprising a new server, a new operating system and upgraded database management software. The new content and enhancements are only available at the new A2A URL <<http://www.a2a.org.uk>>. The site at the old url at .pro.gov.uk is no longer being updated, so please change your bookmarks/favourites to the new URL, and amend any web links you may have. Lastly, A2A usage since launch has now reached 2.85 million database searches, with 5.95 million catalogue downloads as a result. A2A is the English strand in the UK archives network: its database at <<http://www.a2a.org.uk>> already contains the electronic equivalent of over 400,000 catalogue pages describing archives held across England in national, local and specialist repositories and dating from the 700s to the present day. The A2A programme will make a further 300,000 catalogue pages available on the web by March 2004.

From ACT Apple March 2004

## Cleaning Keyboards

**Patricia Lane**

*This is March, and with the First of April not that far away, I thought I'd include something special to commemorate that date. If you are going to experiment with the processes described below, you are doing so entirely at your own risk. I'll take no responsibility for what might happen – Ed. ACT Apple*

Keyboards are abused peripherals. We spill sodas and coffee on them. Our food crumbs hide in them. Our cats lie on them. Smokers accidentally flip ashes on them. I've even heard of one person who "accidentally" blew out a large candle near hers and covered the keys in hot wax. To keep your keyboard clean, try to set ashtrays and drinks away from the keyboard. Sometimes this isn't possible. So you can also buy a keyboard cover for around \$US20 (which is about the cost of a new standard keyboard). Before you go out and buy a new keyboard, the "innards" of one can usually be cleaned. You'd be amazed at how much better the keys respond after a thorough cleaning. First, let's talk about the basics of what makes a keyboard work and what it contains. The visible part of a keyboard consists of 101, 104 or more keys or keypads. Some of these keys, such as the spacebar, have springs attached underneath them. When you press down on one of the keys, you are actually pressing down on small "rubber plunger domes" under the keypads. These rubberdomes are attached (glued) to a clear plastic circuit board. Some keyboards have what is called a membrane. A membrane is actually a one-piece rubber pad with extruding domes. When you read about "quiet" keyboards, they usually have membranes. The clear plastic circuit board, called the key matrix, lies on the bottom half of the keyboard case. The wire coming out of your keyboard attaches to the clear plastic circuit board and then to your CPU. This circuit board is called the key matrix because it is a grid of rows and columns of wires.

Each key acts like a switch. When you press a key, the dome, in turn, completes a circuit. The computer then identifies the correct keystroke.

Now that you know the basics of how your keyboard works, let's clean all of the gunk out of it! There are three ways to clean your keyboard.

The first is with a can of compressed air, the second is a very radical way that I haven't tried, and the third method is thorough (which is the method that I use). If you have a keyboard "cover" you can simply remove the cover and clean it. But this isn't nearly as much fun.

The standard cleaning method used on a keyboard is a can of compressed air. I find that this just redistributes a lot of the debris in the keyboard, makes a mess, and can actually make keys stick. If you'd like to try this method, turn your system totally off. Unplug the keyboard and take it outside. Using the can of compressed air, blow between the keys. A lot of dust and debris will be blown out this way.

One of my professors swore by the dishwasher method to clean keyboards. I haven't tried this, as I don't have a keyboard that I'm willing to experiment with. Three things bother me about this method. One, I don't want cat hair in my dishwasher. The second is that water gets awfully hot in a dishwasher. The third thing that bothers me is what happens if I forget to turn the "heat dry" off? I will have a melted keyboard in my dishwasher. For those of you who want to try to clean a keyboard in the dishwasher, make sure you put the keyboard on

the top rack with it upside down (keys facing down). Do not use heat to dry. Turn the "heat dry" feature off. It will take a few days for the keyboard to thoroughly dry out, so you will be without your computer until it is dry. Dry it by placing it upside down on a towel. Do not put a laptop in the dishwasher. People have actually done this! I have a friend who took his keyboard to the carwash. I really don't advise doing this. It took forever to dry out and it never was quite the same.

My method of cleaning a keyboard is thorough – it is not for the faint at heart. This isn't meant to stop you from using my cleaning method. It is meant as a caution – for you to take your time so you don't accidentally ruin your keyboard. Not all keyboards are exactly the same. I have cleaned several different brands/types of keyboards using this method. However, please don't blame me if it won't/doesn't work on your particular keyboard. This won't work on ancient keyboards or laptops. You need to turn your system totally off. Unplug the keyboard from the back of your CPU. Take the keyboard to the kitchen table.

Grab a Phillips screwdriver, a small bowl, a few Q-tips (cotton buds – Ed) soaked in water, a towel, and then sit down. Let everyone know you are busy concentrating on a complicated electronic device and can't be disturbed. :o)

Remove the wrist rest, if you have one. Turn the keyboard upside down on the towel. You will see 8-12 Phillips head screws on the back of your keyboard, although you may have more or less. Remove these screws and place them in the small bowl. Throw the cat in the spare bedroom when she tries to play with the small screws. When you have all of the screws removed, use both hands to place the keyboard right side up. Don't let it come apart yet. With the keyboard right side up, lift the top of the keyboard off. If it seems to "stick", use your fingernails or a small common screwdriver to carefully pry it apart. Set the top to the side for now. You are now looking at the plastic circuit board and rubber domes. If you don't have individual domes, you are looking at the membrane. Use the dampened Q-tips to remove any obvious dirt or grime from the domes or membrane. Be careful of the rubber domes! You can unintentionally knock these loose.

If this happens, you can usually tell where a dome went – a small circle of glue will be visible where the dome belongs. Do not glue them back. Now take the top half of the keyboard either to the kitchen sink or the bathtub, wherever you have a sprayer available.

Spray it down with a cleaner such as 409 or Lysol. Use a sponge and clean both sides of the keyboard top. Stand the keyboard up in the sink and spray it down with warm (not hot) water. You can clean your wrist rest also. If you have cats, dogs, or anyone with hair on their head in your household, you will notice hair coming out the edges of the keypads.

This is normal. Continue to rinse both sides until you think it is clean. Turn off the water. Peer in between the keys to make sure you have removed all the foreign objects lurking between the keys. Use a pair of tweezers if required. Rinse again if necessary. When you are satisfied that it is clean, gently shake the keyboard out (I do this in the tub) to remove as much water as possible. Then lay the keyboard on a clean towel and pat it dry. Make sure the keypads are totally dry on both sides before you put it back together.

I sometimes use a blow dryer (low heat!) to finish the drying process. When the keypad part of your keyboard is totally dry, take it back to the table. If you had any loose rubber domes, make sure they are in the correct spots. You can usually tell by comparing the backside of the keypads to the locations of the domes. The keypads will have a small recess that lines up with its dome. Gently lay the top of the keyboard on the top of the key-

board base. Line up the wire that goes to your CPU so that the whole unit fits together snugly. If you had a loose dome, test the key now. If it isn't working right, remove the keyboard top, re-align the dome, and replace the top. Patience is the key (pun intended) when trying to re-align a misbehaving dome. When you have the keyboard to your liking, hold it together using both hands and turn it upside down. Replace all the screws and tighten them snugly. For you guys out there – this doesn't mean using an impact wrench. Replace your wrist rest, if applicable. Take the keyboard back to your computer and plug it back into your CPU. Turn your computer on and your keyboard will be working like new.

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From ACT Apple March 2004



## The road to Longhorn

The next release of Windows is set to be as big a change from XP as Windows 95 was from Windows 3.1.

At the foot of the sleepy ski resort of Whistler Mountain in British Columbia, just off a small road called Blackcomb Way, lies the Longhorn Saloon and Grill – an enticing restaurant that serves up food and drink to provide, in their own words, “the perfect ending to a day on the mountain”. The Longhorn Saloon is where people go when they're through with Whistler, which is curiously similar to the situation Windows users are in. Whistler was the codename for Windows XP, and Longhorn is the codename for the next generation release of Windows, supposedly due in 2005.

Windows, codenamed Longhorn, isn't just a new GUI (Graphical User Interface), nor is it an evolutionary build of Windows XP. Instead, Longhorn is the culmination of several key Microsoft initiatives from the past few years, including .NET, DirectX, SQL Server, Trustworthy Computing, MSN Messenger, and Windows Installer.

Although Longhorn isn't due out in the shops till 2005, Microsoft has taken great pains to ensure that Longhorn is on everyone's lips. In order to keep people talking about it, Microsoft has put out a number of pre-alpha releases of Longhorn. These act as technology previews of what the final release might look like, and enable developers to work towards the new operating system. With over 18 months until release date, these releases have been more showcases than previews, and the majority of new features planned for Longhorn have yet to materialise.

### Three pillars

Longhorn brings with it many fundamental changes to the Windows platform. Microsoft has encapsulated the changes under the banner of WinFX. This can be broken down into four key technology ‘pillars’; Fundamentals, Avalon, WinFS, and Indigo.

**Fundamentals** is the operating system core we're used to from Windows XP, but is re-engineered to properly follow Microsoft's Trustworthy Computing mantra. It includes new ‘ClickOnce’ technology to make installation and maintenance of software much easier.

**Avalon** is a completely new graphics system that's intended for use on all future Longhorn-based applications, replacing older systems like GDI and GDI+. Avalon powers Aero, which is the new graphics engine, and does away with the old, component-based system of Windows development. In its place we get an all-new, vector-based system that keeps user interface information stored in a dialect of XML, known as the XML Application Markup Language (XAML). Much work is being done on the next release of DirectX (tentatively named DirectX Next) to offer better throughput of primitive shapes, and the Longhorn desktop will render all of its display through DirectX for maximum aesthetic effect. Demos have already been shown where windows have

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been transparent, rotated, scaled, and warped, while still retaining their functionality. This is made possible by the vector UI system and DirectX rendering. In order to keep the desktop clear of animated clutter and glitz for business users, the new Aero-style interface can be downgraded to a more traditional style by the administrator, although this will take place automatically if you don't have the required graphics hardware.

**WinFS** is a new file system that's integrated with some of the technology Microsoft developed for use with SQL Server, codename Yukon. This is a product that will eventually be SQL Server 2004 or SQL Server.NET. The plan is to use the existing NTFS file system that we're used to from Windows 2000 and XP, and to add proper support for metadata. Metadata is "data about data", and will be used to describe the contents of the files on your hard drive. Much of this was already in Windows XP. If you convert a music CD to Windows Media Audio format when online, Media Player will auto-connect to an online CD music database to get the name of the artist, the name of the tracks, the year it was recorded, and the genre for the CD, storing that information inside each file. What's new in Longhorn is the ability to look at your hard drive through a metadata-filtered view. For example, you could sort your music folder by artist, even though the artist's information isn't stored in the filename itself but in the metadata. It's possible that this will only be available in the My Documents folder in the Longhorn release.

**The final component in the three pillars is Indigo.** This is the communications layer that's designed to both bring together all the advances Microsoft has made in its move to .NET, as well as bringing in a new set of technologies at the same time. Combining various disparate parts of .NET into one API means that developers will be able to access a selection of protocols and security measures all through one interface, which in turn should help to increase security, whilst adding a great deal of flexibility at the same time. End users can expect applications to work together much more smoothly if all of Microsoft's hopes for Indigo come true. It will finally bring the power of web services to the desktop in a way that everyone can use. Microsoft has committed to back-porting the Indigo subsystem to both Windows XP and Windows 2003, which should help its adoption.

New features and technologies are all well and good, but to really understand what Longhorn offers, you need to look at it from the viewpoint of the three types of user who will buy it; enterprise users looking to deploy to hundreds or thousands of desktops; small office and home users looking to work smarter with their existing resources, and developers looking to take advantage of the latest technologies.

**Big business** Despite Windows XP having been out for some time now, Windows 2000 continues to be the most popular enterprise desktop system in use. For the large part, this is because it's easy to manage and very stable. Responding to repeated requests from its customers to lengthen its Windows product cycle, Microsoft will make Windows XP last from late 2001, when it was released, to late 2005/2006 when Longhorn will finally

arrive. As a result, Microsoft will have had over four years to develop Longhorn into a product that will be as popular in big business as Windows 2000. There are three key technologies that will drive this. The first is Next Generation Secure Computing Base (NGSCB), an initiative most of us know by its original codename, Palladium. Many stories and rumours regarding Palladium have circled the web since it was first announced, with people saying it will remove all freedom from computing, that it will lock you into Microsoft and certain hardware manufacturers, and that it will stop you using unauthorised software (that is, software that 'they' don't want you to use). Some parts are true. Microsoft has said that "much of the NGSCB architecture design is covered by patents, and there will be intellectual property issues to be resolved. It's too early to speculate on how those issues might be addressed." If patents are involved, running NGSCB hardware almost certainly means lock-in, so be careful what you commit to. If this 1984-like event doesn't materialise, NGSCB has the potential to help companies form stronger and more secure networks. It has a finely grained trust system that's built from the hardware up, meaning that when someone sends you an email, you can verify that it came from that person and their system.

From a software management perspective, one of the new features being introduced in Longhorn is ClickOnce. This is anticipated to enable easy installation, maintenance, and uninstallation of software. This feature, which is being introduced in the next version of Microsoft's Visual Studio.NET development tools will also allow dynamic updating of applications in roughly the same manner as Windows Update currently works. The plan here is that by keeping applications patched, one set of security issues can be struck off the check list.

One area that's sure to please CTOs the world over is platform compatibility. Longhorn is available in three different flavours for three different architectures – one for x86 (Pentium-class hardware), one for AMD64 (Opteron and Athlon64), and one for ia64 (Itanium and Itanium 2). As a result you can standardise your OS irrespective of the hardware you choose. We believe that the ia64 build may not ever be released given the current success of the architecture, but it's possible that Intel may cut a deal with Microsoft to keep its ailing flagship alive.

**Home users** With increasing competition from Apple OS X, a lot of work is going into Longhorn to bring it up to speed. The most obvious change will be the new user interface, brought about through Aero. Right now the Longhorn releases all sport a dark grey interface, christened 'Slate', but this will definitely be changing before Longhorn is released. The new sidebar is designed to build on the usability enhancements brought about by the taskbar in Windows 95, and is currently a great way to keep your taskbar clear. Despite the best efforts of Windows XP to group programs together into one button, the system tray and the quick launch icons on the taskbar clutter it up. This is all being moved to the sidebar, along with new things such as the Slideshow, a much-

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improved clock, a PDA synchronisation tool, and potentially dozens of other third-party plug-ins. Much of 'Slalom' (the version of Windows Media Center that will follow on from 'Symphony', which itself is the version to follow on from Windows Media Center 2004) will be based on Longhorn, which means that we may be seeing some innovative uses for the sidebar by the time Longhorn finally launches – scrolling RSS news feeds, anyone? Of course, it's questionable how much differentiation will be kept between Longhorn and Windows Media Center. Microsoft is indeed likely to import features from Media Center into the main Windows branch in order to add more "Why upgrade to Longhorn?" bulletpoints.

The addition of WinFS means that you can treat data from various programs on your systems as files you can search through. When searching for files and folders, you can also search for contacts, music by certain artists, and so on. This was one feature that was missing from the metadata functionality found in Windows XP, and is now possible thanks to the Yukon code in Longhorn. If Microsoft does get this feature nailed down and in operation for more than just My Documents, it opens up numerous possibilities. These include the ability to search for documents with very specific information, such as "Written to NatWest Bank, from me, in October".

On the usability front, a new version of Internet Explorer (IE) is now bundled with Longhorn, and sports a newer, simplified interface. The key toolbar buttons are currently so large that some might even consider it 'dumbed-down'. This is of course the first release of IE since Microsoft announced they would stop shipping it as a standalone package, so it's no surprise to see that IE is wholly Longhorn-ified. There are some new features around, of which the most interesting are the new pop-up blocking tool and a download manager. In our opinion, these are changes that are long overdue. Whether or not we'll also see tabbed browsing in the finished release is yet to be seen, but given that all other major browsers now do it, there's little reason not to.

The chances of DirectX Next – the successor to DirectX 9 – introducing anything interesting from a gaming perspective are fairly low. None of the cards currently on the market are even near taking full advantage of DirectX 9, with games that take full advantage being even further away. With DirectX X – as it may end up being called – pushing the envelope further, don't expect to see many compliant games until 2007. For developers Longhorn heralds a new programming paradigm from Microsoft, codenamed WinFX, and encompasses a trio of core changes to the Windows programming model. Comprised primarily of Avalon; the display subsystem, Indigo; the communications layer, WinFS; and the Yukon/ SQL Server 200x-based database file system, Longhorn also incorporates a variety of other codenamed projects that are currently in production: these include 'Whidbey' (the .NET codename), which comes as part of the new Visual Studio .NET release, and XAML, the new declarative way to design your GUIs. While this is all great from an innovation point of view, it does mean

that developers can expect to have to rewrite their applications from the ground up. Currently we have .NET Framework 1.1. This is to be superseded next year by .NET Framework 2, currently codenamed Whidbey, which is a stepping stone to WinFX on Longhorn. Although it will be possible to run Windows Forms on Longhorn, Microsoft recommends Avalon for use on Longhorn. Mark Boulter, a Microsoft developer, said at a presentation at the Professional Developers Conference 2003 (PDC2003), "if you're targeting Longhorn, only use Avalon. If you're targeting multiple versions of Windows, use Windows Forms. Use adaptive techniques to get the best of both worlds". Mr Boulter says to build applications that detect and use Longhorn features when available, "replacing Windows Forms GridView with Avalon ListView control when running on Longhorn".

We have a feeling that this is easier said than done, and that Microsoft is playing down the changes required to migrate to Longhorn.

XAML will be especially difficult. The idea behind XAML is that it splits off GUI design from the code that drives it, which is all well and good – this technology has been around in GTK and Qt for some time, and has been proven to work. This certainly has its advantages, and the abstraction means that the UI can be ported easily to other environments such as mobile phones and PDAs. It also means that professional GUI designers can take care of the application layout using tools such as Visio while programmers plug in the actual business logic behind the scenes. On the downside, this is absolutely nothing like the way Windows currently works, and is likely to throw many developers off the track. We've been testing XAML for about a month now, and it's damn impressive. There's no doubt that it will catch on, but the question is, how many developers will need to be dragged along kicking and screaming by Microsoft?

To make this as easy as they can, Microsoft has at least made the Avalon APIs somewhat interoperable with Windows Forms. To help you preserve your existing .NET 1.1 investment as you migrate your apps to Longhorn, you'll be able to embed your existing dialogs directly inside Avalon applications. Furthermore, to help you learn how to take advantage of the new Longhorn APIs, you'll also be able to embed Avalon inside Windows Forms applications, although this isn't likely to be a route chosen by many developers.

It's all coming soon The official release date of Longhorn is 2005, but we wouldn't be surprised to see that slip to Q2 2006, if not later. This causes a problem for customers who have to live with the prospect of no operating system (OS) upgrades for about two years, despite having been on the same OS for two years already. On the upside, this does give the industry a long time to get up-to-date. Too many machines are still running Windows 98 and Me for Microsoft's liking, and a long break will help people at least get up to XP before Longhorn comes along.

When the announcements of Longhorn's release date were first aired, many thought it a

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foregone conclusion that there must be a Windows release between XP and Longhorn. This seems increasingly unlikely, as Microsoft has committed to so many changes and upgrades in Longhorn that any interim OS release would cause more problems than it would solve. Even a Windows XP Second Edition would add to the upgrade path chaos. Instead, Microsoft's plan seems to be to backport many Longhorn features to Windows XP in the form of service packs. XP SP2, for example, will be compiled using Visual Studio.NET Whidbey, and will incorporate new security restrictions along the same lines we'll see in Longhorn. This will help prepare end-users and developers for the switch in 2005. Back in British Columbia, Blackcomb Way leads people away from the Longhorn Saloon, so it's not surprising that Microsoft has codenamed the post-Longhorn release of Windows as Blackcomb. It's not known if there's anything planned for this release beyond its approximate 2007/2008 release date, but Microsoft rarely has less than a five-year strategy plan. Paul Hudson

**The highlights** If you decide to make the upgrade, these top eight features provide a wealth of possibilities.

**The sidebar** An extension of the task-based workflow first showcased in XP. Third-party developers will be able to write custom apps to give the sidebar helpful add-ins for you to choose from. You can also make the taskbar merge with the sidebar so that everything is together, but it's a little cluttered right now.

**WinFS** The new database extension to NTFS allows you to store custom information about each file on your hard drive. Explorer will be programmed to take full advantage of it. This will be particularly helpful in the Find dialog, where you can search for more specific information, such as Contacts.

**Avalon** The new .NET-based graphics API for Longhorn that will take advantage of features found in new graphics cards. Avalon also powers Aero, and will automatically downscale effects if the hardware isn't up to scratch.

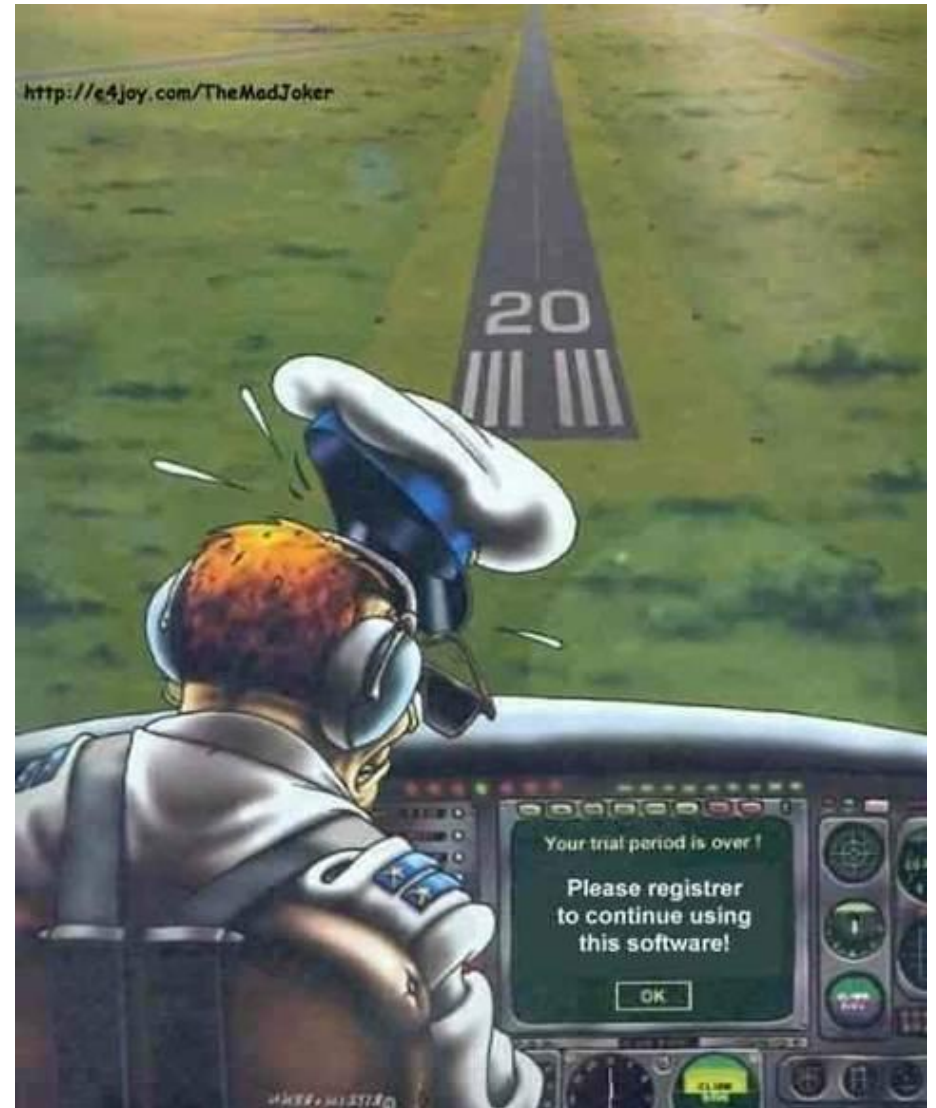
**ClickOnce** Install, update, fix, and remove software using this unique new technology available in .NET 2. It takes the best parts of web services (easy deployment, access over the web), and brings it to Windows development.

**DirectX Next** Games will be taking full advantage of DirectX 9 by about Q1 2005, so Microsoft are pushing the barriers even further with the next release of their popular games API. Look for v4 of pixel and vertex shaders.

**Visual Studio.NET Whidbey** Brings with it .NET v2, which takes the existing .NET system and adds to it many of Longhorn's new features. Great for developers, and should be on sale in Q4 2004. This is the easiest way to migrate your apps to Longhorn.

**NGSCB (Next Gen Secure Computing Base)** Previously known as Palladium, this Big Brother-esque technology could either be used to bring full Internet security to all users, or to take control away from the users. Only time will tell what Microsoft has planned here. However, it does require a lot of collaboration with other vendors, which may be its downfall.

**Aero** The new user interface system for Longhorn that uses vectors to allow smooth scaling and warping, then renders the entire system through DirectX for maximum performance. Mac OS X continues to move quickly in the "lickably good" user interface arena, and this is Microsoft's first salvo in return. *PC Plus Issue 214 - April 2004*



## Firewalls: your first line of defence

Dan DiNicolò analyses the features of hardware and software firewalls, to give you a better idea of what's best for you

When it comes to managing a home or small office network with a broadband Internet connection, the implementation of a firewall should never be overlooked. While nobody will dispute the importance of having a hardware or software firewall from a security perspective, many users aren't familiar with the many features that firewalls support. A firewall was once considered a device that would determine which TCP/IP traffic could exit or enter a network. But the firewall of today also includes a wide range of advanced features, enabling you to control everything from the email attachments that should be quarantined, through to privacy features like the ability to block cookies.

This feature takes a look at different firewall components, as well as the differences between soft and hardware-based firewall solutions. Once we're done, you should have a better idea of the firewall solution that will work best for you and your network setup.

### Why a firewall?

At the most basic level, the firewall's main purpose is to act as a secure intermediary between your private network and the Internet. For example, you might decide that all the systems on your internal network will have unrestricted access to any and all services on the Internet, such as web, FTP, ICQ, and so forth. Similarly, you might want to block internal users from accessing the Internet with certain programs, such as file-sharing services like Kazaa. Regardless of which camp you fall into, the configuration of almost any firewall will allow you to control the type of traffic permitted on your network.

For most users, the primary reason for implementing a firewall is to keep the bad guys (aka the Internet at large) out of your network. In the default configuration of most firewalls, all traffic originating on the Internet is blocked from entering your network, denying external users the ability to connect to your private network. Of course, there will be times when you want to be selective about the type of traffic that enters your network. If you host your own internal web server, for example, and want Internet users to be able to connect to it, you'll need to configure the firewall to both allow this traffic to enter, whilst also forwarding the request to the specific internal system on which your web server software is running.

The implementation of a firewall is all about configuring rules about which types of traffic can move in or out of the network. The default rule for internal systems making



outgoing connection attempts might be configured so that 'any internal system (the source) can connect to any Internet system (the destination) for all types of TCP/IP traffic'. Similarly, the default rule for external systems trying to make incoming connections is usually something along the lines of 'any Internet system (the source) can't connect to any internal system (the destination) for all types of TCP/IP traffic'. In other words, the first rule authorises all internal systems unrestricted access to the Internet, while the second blocks all Internet systems from accessing systems on your private network. The screenshot above illustrates the act of blocking a single PC on a private network to prevent the Internet from using MSN Messenger. If you keep in mind that the configuration of a firewall is mainly about configuring rules for the interactions between systems on your private network and the Internet, you're well on your way to understanding what a firewall is all about.

### Hardware versus software

Once you understand why you need a firewall and its primary purpose, it's time to go about determining whether a software or hardware solution will work best for you. As a general rule, users looking to protect a home or small office network will do best with a hardware solution. Those with a single PC are likely to find a software firewall more cost-effective. In the hardware arena, the most popular option for a home firewall is found in the form of an Internet router (such as those available from companies like Linksys or SMC). These relatively inexpensive devices usually include a range of features, such as the ability to share a broadband cable or DSL Internet connection, a firewall component, and an integrated DHCP server for allocating IP addresses to systems on your network. From a simplicity standpoint, the convenience of managing a single device for sharing Internet access and providing firewall functions is hard to beat.

As you might expect, a hardware firewall isn't the best solution for everyone. While generally associated with broadband Internet connections, having a firewall in place is just as important for the networks of PCs that use dial-up. Dial-up connections to the Internet may be slower, but systems using them still face the same security threats as systems connected via broadband. In cases where you've got a single PC dialling into the Internet, or even multiple systems sharing a dial-up or broadband Internet connection via a Windows method like Internet Connection Sharing, (ICS) then a software solution is usually your best option. A wide variety of software-based firewall solutions exist, but some are more popular than others. Windows XP includes a native firewall in the form of the Internet Connection Firewall (ICF). While not nearly as fully-featured as some of the third-party programs available, ICF handles the job of blocking requests originating from the Internet, allows you to selectively sanction different types of TCP/IP requests into your network, and gives you control over how the system will respond to common requests such as a ping. On the downside, ICF is fairly limited in that it doesn't allow you to control which resources internal systems can access on the Internet. In cases where your needs are basic or cost is an issue, a solution like ICF will get the job done, and do it

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well. ICF is configured via the Advanced tab of the properties of a connection . If you're looking for more out of your software firewall than just the ability to block Internet users from accessing your PC or network, then you'll need to take a closer look at third-party software. Two of the most popular solutions for home and small office users include ZoneAlarm and Norton Personal Firewall. Both programs are relatively inexpensive and offer you a much more granular level of control over system and network security.

### **Firewall features**

When selecting a firewall solution, it's well worth taking the time to examine the features that different hardware and software platforms support prior to making a decision. This is a simple affair when evaluating software, since both ZoneAlarm and Norton Personal Firewall allow you to download time-limited trial versions prior to purchase. Things aren't as simple on the hardware solution side, since vendors will include different capabilities with their project and you really don't have the option of trying before you buy. Rather than going through the pain of learning that a feature you want isn't included in the model you've purchased, this is where it pays to do your homework in advance. Some of the features to consider when looking for a firewall solution include support for controlling access for internal systems, intrusion detection, MAC address filtering, URL blocking, custom rule creation, various content blocking features, and more. Each of these capabilities will be looked at in more detail in the following sections.

### **Outside in**

The most important feature of any firewall is its ability to control access from the Internet to your PC or network. You'll find that by default, most firewall software will be configured to block all requests for resources on your PC or network that originates from the Internet. This is good news, since hackers, crackers, and script kiddies (non-hackers using pre-built tools to try and hack into your system) are constantly trying to connect to Internet systems looking for easy targets. Their reasons for wanting to access your system range from curiosity (what can I find?) to malicious behaviour (let's install a Trojan horse and try to take complete control of this system!), so keep your guard up. However, while blocking all connection attempts from outside users is a good default, there will be times when you want Internet-based users to be able to connect. This may be the case if you have an FTP server installed where you share files with work colleagues. In this instance, the firewall needs to be configured with a rule to allow Internet-based FTP traffic to gain access to your system or network. In the case of a hardware router with a built-in firewall, this would involve configuring a rule that permits all traffic from the Internet destined to TCP port 21 (the default FTP port) to be forwarded to your internal FTP server. For a higher degree of control, access to your FTP server could be made more limited by configuring your firewall to only allow external users from certain IP addresses to

connect. When selecting a firewall, try to choose one that gives you the option to create more granular rules for incoming traffic. This provides a much higher degree of control than a firewall that doesn't allow you to limit connections to specific hosts, and by extension makes your PC or network more secure.

### **Inside out**

Along with the ability to keep the bad guys out of your network, you may also be looking for a method of controlling the traffic that leaves your network destined for the Internet. You may want to limit the types of services that your internal users have access to, such as bandwidth-consuming services like Kazaa. In many companies, firewalls are used to limit users to basic and common services like web (HTTP), email (SMTP and POP3), and so forth. Not only does this give the company greater control over the way the Internet connection is used, but it also ensures that users are denied access to services that might otherwise have an impact on their productivity.

In the same way, perhaps you only want certain users to have Internet access. Most hardware and software firewall solutions will allow you to control exactly which users are allowed to access the Internet according to their IP address. This is a great way to stop certain users, while permitting others access. Regardless of your exact goals, this level of control is useful for everyone from parents to the administrator of even a very large network.

One additional but related feature found in many software firewall packages is the ability to restrict access to the Internet by certain programs. For example, you can configure a list of exactly which programs are authorised to access an Internet connection, such as Internet Explorer or Outlook Express. This feature is especially useful since it can help to ensure that any malicious applications installed on your system (such as a Trojan horse program) can't access the Internet, thus rendering them useless. This is an extremely useful and important feature of programs like ZoneAlarm and Norton Personal Firewall. If you're evaluating either, their relative merits will be commented upon a little later in this feature.

### **Intrusion detection**

Most home and small office firewall solutions have traditionally only provided what's known as 'stateless' service. At the most basic level, a stateless firewall will inspect each packet that attempts to pass through the firewall, and then accept or reject the packet after considering the rules that have been defined by the firewall administrator. While this basic function is critical, a stateless firewall does nothing to determine whether a packet is valid, beyond looking at the IP address and the port numbers of the source and destination hosts.

Most of the newer firewalls on the market today provide an option to enable 'stateful' service, or only use this option by default. A stateful firewall not only checks that packets

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match the IP address and that the port rules have been defined, but it also checks to ensure that the contents of the packets are valid and not some attempt to maliciously use the connection by a hacker. A stateful firewall does this by tracking each connection, and then looking for abnormal or suspicious behaviour. In cases where the behaviour of the connection is suspicious, events can be logged or the connection itself can be terminated by the firewall. The methods available vary from firewall to firewall. As a general rule, the more complex and expensive the firewall, the more advanced the intrusion detection capabilities it provides. If you're going to implement your own firewall for a home or small office, then a stateful model should be a key pre-requisite and is well worth implementing, even if it costs a tiny bit more up front.

#### **MAC filters**

Although IP addresses are important, every client on an Ethernet or Wi-Fi network ultimately identifies and communicates with other systems on the network using MAC addresses. Any system with a wired or wireless network card installed has a MAC address that's globally unique, providing you with another method to control Internet access. For example, consider a situation where a user knows their IP address is blocked from access. If that user is running an operating system like Windows 98 or Me, they could easily change their IP address to another value, and perhaps one that's allowed to access the Internet. If a MAC address filter were configured for this system, it wouldn't be allowed to access the Internet under any circumstance, regardless of the IP address in use. Again, this feature gives you a more granular level of control over who should or shouldn't have access, so is well worth looking for in a firewall solution.

#### **Virtual DMZ hosts**

Most home firewall solutions, such as hardware routers, use a technique called Network Address Translation (NAT) to enable multiple PCs on the private network to connect to the Internet using a single public address provided by an ISP. This technique is useful due to the scarcity of public IP addresses, and the fact that most providers won't provide more than one public address without additional charges. Internal clients simultaneously 'share' the single public address, with the NAT device (in this case the hardware router) keeping track of the various connections. On a Windows system, Internet Connection Sharing (ICS) provides a basic NAT function when it's enabled.

Unfortunately, not all applications work well in NAT environments as they require direct end-to-end connectivity without an intermediary (the NAT server) translating packets. For this reason, one of the features that you might want to look for in a firewall solution is the ability to define virtual DMZ hosts. DMZ is short for demilitarised zone, a term traditionally used to describe a portion of a network that's accessible to Internet systems, but distinct and separate from the private network. When virtual DMZ hosts are supported and designated, a client system can be granted unrestricted two-way access to the Internet via the router by bypassing the NAT function. This capability is rarely

required by applications, but if you're having issues getting a certain program to function, then it's definitely worth having at your disposal. URL blocking

Although support for URL blocking varies between different firewalls, it's another feature that you might find useful. When URL blocking is enabled, you can configure lists of web sites or keywords that a user on your network won't be able to access. As an example, a company might want to ensure that users don't use a service like Hotmail as a method of circumventing the company mail server. In this case they would block the www.hotmail.com site, or any related site for that matter. Unfortunately, the configuration of URL blocking can be fairly time-consuming, especially in cases where you have sites and many keywords that you wish to block. In situations where you want to be able to selectively permit or block access to sites in a granular fashion (such as by category, topic, or keyword), a better solution is to implement content-control software such as NetNanny. This will offer you the option to selectively enable or disable broad types of content in a single mouse click.

#### **Cool add-ons**

As a consumer, the time couldn't be more right to be in the market for a firewall solution for two reasons. Firstly, prices for both hardware and software versions have dropped dramatically due to heavy competition. Secondly, the fierce competition in the industry has forced manufacturers and developers to provide more bang for your buck in terms of additional features and capabilities as a way of differentiating their products. Software like ZoneAlarm not only provides basic firewall functions but also allows you to block cookies and banner ads. On the hardware front, vendors like SMC include features like Dynamic DNS client components to automatically update Internet DNS servers when your DHCP-allocated IP address changes, thus avoiding manual reconfiguration. You won't need all of the cool add-ons that manufacturers and developers are providing, but the choice and flexibility is an added bonus when you need it. Final thoughts

If you're currently in the process of evaluating a firewall solution for your home or office, take the time to determine your needs before you buy. It may involve a little more time and effort on your part, but ultimately a firewall solution that meets all of your needs is money well spent.

Dan DiNicolo

This article first appeared in PC Plus Issue 213 - March 2004

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