Linux, Toy or Real OS?

Calendar of Events:

1997 Silver Beavers
Congratulations

A. Victor Woods, Brian E. Stroup, Jack E. Linthwaite, John E. Foster, E. Francis Biggert, Marry E. Smith, Mark Strain, Robert H. Shaeffer, Donald F. Morrow, Helmer Orton Krehbiel, Kenneth. A. Hock, William B. Covington, & John R. Fenimore

Summer Camp at Chief Logan
micahw@princeton.edu

Preparations for the program at Chief Logan this summer are going very well. This month we did our junior staff hiring and I am very impressed with some of the Scouts that will be either returning on camp staff or who will be working for the first time. One of the special things about Chief Logan is that most of our staff has gone through our staff training program, and this year will be no exception. As was the case last year, over ninety percent of our staff will have been through at least one year of our two year training program and most will have done both years.

If any Scouts fourteen or older are interested in being Counselors-in-Training at Chief Logan with an eye to being on staff or just having a fun and educational week, please write to the Council Office and request a special program application.

Exp Summer Activity
The Scouter

The Exploring Division is once again gearing up for a summer event. The target date is Sat. July 12, & Sun 13, 1997. Details to be announced later.

Heavy Rains Hurt Chief Logan
The Scouter

There was a lot of rain and of lot of mud, but Chief Logan [where we are attending summer camp] survived the heavy rains of early March. It will take a bit of hard work to clean up the mess, but we were very lucky. Most of the damage is minor and affects roads, footbridges and trails. Our Rangers would appreciate any help that can be lent.

The Explorer Code
As an Explorer-

I believe that American's Strength lies in her trust in God and in the courage and strength of her people

I will, therefore, be faithful in my religious duties and will maintain a personal sense of honor in my own life.

I will treasure my American heritage and will do all I can to preserve and enrich it.

I will recognize the dignity and worth of my fellowmen and will use fair play and goodwill in dealing with them.

I will acquire the exploring attitude that seeks the truth in all things and adventure on the frontiers of our changing world.

Matty & Linux
James D. Corder

Most of this month's ExpNews is filled with a technical debate over the superiority of Linux and the x86 chip to commercial UNIX and RISC workstation, between Australian Scout Matt Wright and the members of Explorer Post 369. The language used is thus conversational, as it is simply extracted from our e-mail reflector. All italicized text is part of original letters and quoted in the responses by our members and advisors.

Linux & Intel vs. Alpha
Karl N. Matthias & Andy P. Drake

While Linux is certainly a solid OS, it presents serious challenges, with regards to both scalability and security. In terms of security, it is near the bottom of the list (moderately better than NT), even for the free OSes, and comes nowhere near commercial products. We recommend you check out OpenBSD, which has far superior security, supports IPv6, supports more hardware platforms than Linux, has a reputation for rock solid stability, has a lightning fast TCP/IP stack, is more industry standard, and relies on the long research of the BSD project (No porting required in most cases).

Your comparisons between the Intel Pentium OverDrive and the DECchip Alpha 21164/600 incited us to create some comparisons for you to peruse. Please note that we are granting that your Over-Drive is the speed of a Pentium 60, when it is in fact 8-10% slower because of the 486 subsystems on top of which it runs. However, we could not find performance marks for a processor slower than the P60, so that is what we have used. Please keep that in mind when looking at the following numbers.

All data is in SPEC92 quantities, based on manufacturer and independent SPEC performance benchmarks.

Chip	SPECint92	SPECfp92	Bus Spd(Mhz)	Bus Width
Pentium OD	70.4	55.1	33 Mhz	32bit
Alpha 500	620.0	786.0	125 Mhz	64bit
Alpha 600	775.0	982.5	150 Mhz	64bit

Please note that the SPEC ratings are based SOLELY on the processor speed, and do not indicate RAM access speed, peripheral performance, bus data width, or multiprocessing capabilities. So, on those statistics alone, it is clear that the 600 Mhz alpha is 10 times the speed of your Pentium in integer performance, and 20 times the speed in floating point. This is independent of the bus speed, which, as you can see, is nearly five times the speed of the Pentium. Aside from the bus being five times the clock speed, however, it is also twice as wide, being 64 bit rather than 32, which makes it overall 10 times the speed of the Pentium's bus.

64 bit RAM access also gives the Alpha an extreme advantage over the Intel chip. Also note that the Alpha has up to 4 megs of high speed secondary cache, while your Pentium maxes out at 512k. The Alpha has more than that as L1 cache built into the chip. Therefore a basic 21164/600 can have more cache than some older machines have RAM. It is clear, as you can see, that the Alpha is faster than the Pentium by more than "just a little."

Processor speed aside, any machine running on a DECchip 21164 will outperform a Pentium with even the same clock speed in overall performance because of the faster and wider bus. This means that ALL peripherals run faster, can pass more data at one time, and makes the machine vastly more capable than the Intel based design. You should be aware, too, that this discussion has not even approached a comparison with SPARC, PA-RISC, PowerPC, or MIPS architectures, which have similar performance curves.

And, if you are hell-bent on running Linux, you can run it on Alpha, too. We think it might be "a little" faster.

P.S. Forthcoming: our comparison between Linux and OpenStep, Open-BSD, Solaris, and Digital UNIX.

Unix the movie
Joe Harvey

Well, here at Virginia Tech they teach special UNIX based classes on usage and administration, however I already knew most of this thanks to Jim. They require us to get PC's. Sure I went beyond what they require because I just am like that. The point about UNIX here, they recommend we all run it. I use to run Linux for a few years. It was fine for a single user system, but now I use FreeBSD. FreeBSD has Linux emulation so some Linux stuff runs, and it is a True copy of BSD. It even comes with wonderful security holes.

The difference between machines like Jim is saying is much like a movie. Sure most people go to a regular theater because of the price and movie availability. More movies are made for that type of theater. Sometimes people go to an IMax theater. They have superior quality and sound. The problem, movies are more expensive to make and most people don't know how to make movies for that medium. They still make great money, possibly even more, but are not used generally by most people.

I completely understand having a PC and using a free version of UNIX, after all, I am a college student trying to keep expenses low. It is a great thing to use and learn. You can even make money just using that, however before you can say it is better you must use the other stuff. A comparison of better OS's, cars, etc... must come from experience and a valuable one must come without bias.

Linux The community OS
Stephen Potter

Hi Matt,

Jim has asked me to talk with you also. It seems you two are in violent agreement about a few points, but can't see it.;-)

First of all, let me introduce myself. You may or may not have heard of me, depending on your involvement with the professional systems administration community and perl. I'm a twenty five year old, professional SA, and co-author of the book "Programming Perl, 2nd Edition" published by O'Reilly and Associates. I've been working on various versions of UNIX since 1985 or so, and have been a full-time SA since 1991.

I think we all agree that Linux fits the definition of a multi-user, multi-tasking.

 system (actually, if we want to be real sticklers, Linux is not a multi-tasking system, it is a time slice system, but that's just nitpicking; it fits the common association of a multi-tasking system).

I think we also agree that Linux is a much nicer system than the various Microsoft's Windows environments, for people who have some form of computer literacy. That is to say, it may not be the best environment for a secretary or a CEO, but for a programmer, developer, SA, or generally computer-clued user.

It is easy to understand your exuberance for Linux. When it first came out, I was much the same way. It was the only UNIX that the average person could use at home. I, personally, was ecstatic that I would no longer be stuck using Windows 3.11 (pre '95, NT days) all the time. Of course, I realized that, unfortunately, I still needed Windows

sometimes. I still use it occasionally, but mostly only for playing games.;-)

You have to realize though that there are times when Linux is not a feasible alternative. There are many tools for many jobs. A flathead screwdriver will not do a real good job at putting Phillips head screws into a piece of board, and vise versa. By the same token, Linux does not have the commercial support necessary to be a player in the business world.

Let me give you an example. I'm working in a production environment for Lucent Technologies (a spin off from AT&T/Bell Labs). We have 11 large servers (everything from SparcServer 1000 to Enterprise Sparc 4000s and a huge DEC Alpha system), about one Terabyte of space, 400 clients, 700 users, in three locations across two states). We recently had a problem with some of our SUNs not properly locking files. One day our systems were unusable for a couple of hours because of this problem. Imagine the salary of 700 people not being able to work, plus lost productivity, lost billing, etc. The department manager estimates that we lose approximately 50k/hr we're not productive here. We were able to call SUN and have an engineer out here, on site, with source code trying to solve our problems. You can't do this with Linux.

You also mention that everything has been ported to Linux. I challenge you to find me: SUNpro C/C++, Frame 5, Zmail, any of PureAtria's products (Purify, Clearcase, etc.). These are just a small sampling of the tools used on a day-to-day basis by my users, none of which are available for Linux.

Why would you say the 600MHz Alpha (150x4) is not much faster than your 83MHz Intel (33x2.5, if I remember correctly, or is it 66x1.25). Any way you look at it, the Alpha is between 2 and 7 times faster than the x86. Of course, that is assuming you can judge chips just by comparing clocks. If you consider the difference between a 120MHz 486 and a

COMMERCIAL LINUX PRODUCTS

120MHz Pentium, you realize that is a foolish comparison. You also need to consider that business think much differently than you or I. A 40k difference between two workstations may be a big deal to us, but if you're a financial trading floor, and you can make $100 million dollars by being able to process a single transaction 2 seconds faster than you competitor, do you really care about a $40000 price difference?

Taken directly from Intel's and Digital's websites, here are a few performance numbers for you:

Hardware	Dec Alpha 500	Intel P200 MMX
SpecInt95	14.8	6.41
SpecFP95	15.4	4.66

As you can see, the fastest Pentium processor is still less than half, to 1/3 the speed of the 500. And, the 500 is a desktop workstation (not a server), so the price is not that much different.

Jim and I have been friends for a long time. It takes a lot to impress him. You've obviously done something to impress him if he asked us to speak with you as well. I greatly respect your devotion to Linux. It is a wonderful tool, a great learning environment, and it may even be useful in non-mission critical situations (I worked for a CAD development company that was considering porting their product to linux so they could sell lower cost CADstations, they finally canned the idea because the PC-based hardware just isn't up to it), but it is not the end all and be all of UNIX.

Quote of the Month
Money is not the only ingredient to success, but neither is poverty. Money is part of success just as breathing is part of life, not the only part of it but a very vital part.

Up-an-Coming Post Expenses
12/01/97 Post Charter	$30.00
12/01/97 Post Insurance	$85.00
Monthly ExpNews	$75.00

Up-an-Coming Member Expenses
Registration 11/01/97	$15.00

Post Finances
Explorer Post 369 has	-$718.00
Floor Fund Need	$1,200.00
Floor Fund In Hand	$820.00
Pledges Outstanding FF,	$200.00
Room Fund Needed	$3,800.00
Room Fund	$0.00
Computer Fund Needed	$0.00
Computer Fund	$0.00

Our Principals:
1) Honor before all else.
2) The difference between a winner and a looser is that the winner tried one more time.
3) K.I.S.M.I.F.

Our Creed:
Exploring: Enthusiasm, Energy, & Excellence.

Explorer Post 369:

Explorer Post 369 was chartered on December 31, 1994 to the Reformation Luthern Church.

Explorer Post 369 specializes in UNIX for Programmers while emphasizing a deep theme of Engineering Computer Information & Science

Membership in Explorer Post 369 is open to young men and women between the ages of 14 [and in high school] and not yet 20. Annual Membership fees are $15.00.

Our Web Page
http://post369.columbus.oh.us

Our E-Mail Addresses

Committee Member
Herb Docken	Institutional Representative
Ralph Maurer(E)	Committee Chairman
Tom Niedzielski(E)	Committee Member
Steve Weller(E)	Committee Member

Adults Members:
James D. Corder(E)	www.corder .com
Andy Drake	drake.73@osu.edu
Steve Potter	spp@psisa.com

Consultants:
David J. Alden

Honorary Members:
Mark Bastian(Q)	mpb@icenet.com.au
Dan Jackson	
Lucas James(Q)	jj@ldjpc.apana.org.au
Alan Jones(Q)	alan@scoutnet.net.au
Sara Jones(Q)	sacubs@dove.net.au

Youth Members:
DJ Gregor(E)	dgregor@gregor.com
Joe Harvey(E)	joharve4@mail.vt.edu
John Klapp(E)	klapp.2@osu.edu
Karl N. Matthias(E)	matthias.3@osu.edu
Jim Smith	smith.2407@osu.edu
Mike Turner	turner.319@osu.edu

Post-Toadies:
Chris Gauger(1st)	Toady
Matt Groce(1st)	Toady
Allan Hamilton(S)	Page

(E)	Eagle Scout
(Q)	Queen Scout

BOY SCOUTS OF AMERICA

Explorer Post 369
P.O. Box 307218
Gahanna, Ohio 43230
United States of America
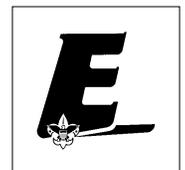
Linux Information

Linux The community OS

C Matthew Curtin
Chief Scientist Megasoft, Inc.
cmcurtin@research.megasoft.com

Linux is very standard.

It conforms to POSIX, but that's it. If you have code that isn't written to POSIX, it will certainly require a *port* rather than just a compile. If it was of BSD or System V origin, making the build would be a lot easier.

POSIX is, admittedly, a more important standard than either System V or BSD (specifically, it is one!:-) so this becomes much less of an issue with newer software (which tends to be written to POSIX anyway, since that means lots of systems -- BSD, System V, and other OSes like QNX, etc. -- will be able to compile without tweaks.)

Hang on i can get heaps of commercial stuff for linux and truck loads of FSF GNU stuff. now the kernel has got heaps in it. and yet the kernel is the system just cause SUN for instance hacks all their own stuff doesn't mean its way better than stuff from the FSF

Hmm, maybe I didn't articulate clearly...
❍ The kernel comes from Linus
❍ The shells, utilities, etc., primarily come from the GNU project

Aside from that, there's all kinds of stuff, i.e., commercial applications, but that which is part of the system as-is typically either Linus' kernel or GNU utility.

well 80c to the dollar its in AUD

And it's probably more expensive outside of the US. But here, we can get a reasonably configured system for under $10k. I actually have a price quote coming to me either today or tomorrow on a 500MHz Alpha system (running Linux, of course:-) so in a few days, I should be able to be a little more exact on their price.

Yep i agree its faster. but when i say 83mhz i mean bus speed so its actually quite quick. umm i thought their were two many registers that's what its well known for and hence everyone bagging it cause it doesn't adhere to various reduced instruction set principles.

Don't confuse the registers for the instructions. The Pentium processor only has like 4 (or 8? I forget.) general purpose registers. The instruction set is huge, though. And MMX makes it even worse: more instructions in the processor.

The theory behind RISC is "simple is better." I don't think that Intel really ever bought into this, although they have produced RISC processors (the i860 comes to mind). If you envision a huge board that has all of the instructions written on it, and to the right of it are the switches that need to be set and such within the processor in order to perform that operation, we can think of that as the processor's instruction lookup table.

When an instruction is handed the processor, the first thing that it needs to do is look up the instruction to see what to do with it. The larger the board, the longer it will take to find. Also, this will likely increase the complexity of the chip itself, since there are more components needed to support the "extra" instructions.

In a RISC processor, there are few instructions to worry about finding on a lookup table, and less zipping around the chip flipping switches and such. As a result, the processor runs faster.

Of course, a complex instruction that might be handled with one instruction on a CISC processor, whereas a RISC processor might need to break down the same operation into two (or even three) instructions. There's the trade-off: whether to make the system do more with each clock tick (and have fewer clock ticks) or whether to just make the clock ticks lightning speed (and require more of them).

hey their are usually 5 free interrupts after the bios has allocated them to system devices.

Yeah, but that's still broken.:-) Why don't Mac, Sun, or SGI users ever have to deal with device interrups? Because they have a more intelligent architecture that doesn't force the user to deal with stuff like that.

Look i agree. but the current builds of linux are fantastic. and the new security features being introduced on a daily basis. are impressive. and making these statements less relevant all the time

Agreed, but the fact of the matter is that Linux is not the end-all of operating systems. It's just one OS in a family of great OSes. (I suppose there are notable exceptions to the "greatness" of various Unices: SCO and HPUX come to mind.)

In any case, it's nice to be able to meet folks out there who have been able to see beyond the Micro$oft horizon into real OSes. Just remember that once you're there, you can look even further, as you no doubt know. Each OS has weaknesses and strengths that make it more or less appropriate for various jobs. In some cases, Linux just won't do the same job that Solaris or IRIX will (in very large multiprocessor systems, for example. I'm sure that Linux-MP won't be able to drive the same 266-processor graphics supercomputers that IRIX does. Yet, IRIX is impractical for the average home user. In some organizations, IRIX is impractical for the desktop). Each has a place, and each should be used for the job for which it is more appropriate than any of its siblings.

From Linux to Solaris
Karl N. Matthias

I just wanted to interject some things here. First, although most of us would love to have the fast DEC machines we were talking about, few of us can afford them in America, either. I currently have two NeXT machines, a 166 mhz Alpha, and a PC. The PC was by far the most expensive. So, what I am saying to you is that a workstation is not out of the question simply by virtue of being a workstation. I had a SPARC-2, which when I bought it 1.5 years ago, cost only US$1400. That was with a 17" monitor (now on my PC), 2 Gigs, and 16 MB RAM. You can get one for far less than that now. Of course, in raw CPU, your Pentium blows the thing out of the water, but if you want to talk about reliability and integration, there is no comparison. The SPARC worked all the time, whenever I needed it. I never had one hardware problem. The biggest drawback to that setup was that I needed more RAM. But, what I am saying is that you can get a nice workstation, albeit not the fastest on the planet, for not a lot of money. If you want a SPARC 5, then you will be talking more cash, but for learning Solaris, a 2 is great.

Now I sold the SPARC-2 to buy my PC. I thought, well I can get a PC for the same money that will run Solaris x86, and it should be a lot faster, so I think I'll do that. I have had it since August. Guess what? Solaris still doesn't run correctly, because of my video card and monitor. Get the picture? Since you have a PC already, though, why not try to get ahold of Solaris x86. It's not hard to install

once you actually buy it, and there is an academic price (at least in the US) on Solaris 2.5.1 for US$200. You may be able to get it used on the net soon for less than that, though, because 2.6 is coming out very soon. It is essentially the same OS as for SPARC, except that you can keep your current hardware investment.

I don't think anyone was trying to tell you that it was a mistake to buy a PC, just that you should be aware that there is a lot more to UNIX, and indeed the computer world in general, than just a PC and Linux. I was in your shoes only five years ago, so I know how cool Linux when you first break out of DOS/Win. I had Linux running on my 386sx16, and I thought it was the coolest thing ever. Two years later I bought a NeXTstation, and my outlook changed drastically. Then, when I met Jim Corder, through the Post, I got to see Nationwide's Data Center. Let me tell you that it was awesome to see those machines. I knew about Suns and SGIs, and all, but it's just not the same to actually see it all together. Now, I have been fortunate enough to have an internship at Nationwide, and I have learned more in the last year than in the previous four combined. I am telling you this so that you don't think everyone is jumping on you without understanding your perspective.

DJ also started on Linux, and until early 1996 he did not own a real workstation. He now is a consultant with Great Northern here in Columbus, and is doing quite well because of ability to other UNIXes. I can't speak for him, but I think a lot of that growth was due to his ability to actually sit at a Solaris machine. It is hard to imagine how much more mature the operating system is until you actually move to it completely. The gulf between the two is huge.

Andy started with NetBSD on his Amiga, then moved to Amiga UNIX, which is real SVR4. Having access to a real implementation of UNIX is so important. You might not believe me, but it is. If you can, get ahold of Solaris x86, or at least UnixWare, or something SVR4-based. If you can't then don't for now, and do everything you can with

what you have, but if you can, it will change everything. I promise.

Matt & Jim
James D. Corder

contacting Sun in Melbourne to ask about the price of their low end workstation.

Ask about the Java Station and the Java Card... They are not lumped with workstations.

Moreover, remember that Sun Work-Stations are not home computers. They will quote you full list price. You should be able to get between 30% & 40% off of that price from your local university... The Ohio State University receives a 40% discount. They pass 35% to their students. They keep 6% for paperwork...

A Sun Sparc4 with 1GB disk 32MB Ram 17" monitor runs about $3500.00US after Discount. Used is about half of that...

I have enclosed several copies of for sale postings for you to look at. Used UNIX boxes are out there cheep... Ok, the ones I chose where slow and old but cheep... Most of my youth started out on such equipment... Sometimes a slow freight train can haul more stuff than a fast motor cycle:-)

But i must add that the judgements of your various guru's on linux seem to be had from past experience. i.e. on a 386sx16. now my computer is around 9600% faster than that machine. and linux has since been officially released.

Most of the youth are top wage earners. Therefore, I think most of their equipment is the latest and greatest. Most also dual boot their systems. Therefore, I bet a few of them have the latest and greatest Linux on one or two of their systems. I think DJ stated that he has over 30 systems on his local area network in his home. Andy has

about 20 computers in his home. Ok, I am one of the smaller networks with only 10... The big bucks are in networking many different vendors onto the same network:-)

I would like to add that my high end computer purchased as the following costs me under 2000 and runs faster than an alpha 166 which i cannot purchase here for that much...

I will agree that costs of computers down under are about twice to there times that in America. But I still think the difference between RISC and non-RISC chip plus 32Bit vs. 64Bit plays a great deal into the equation. With the same disk and ram let us put 100 users doing simultaneous SQL calls to an Oracle database and see who wins:-)

I would also like to mention that Debian has been taken aboard a space shuttle around a week or two ago. as it was deemed the choice OS to support the software for various experiments... Infoworld magazine. one with a huge subscriber base voted Linux no1 OS for 96

NASA Cleveland, Ohio has contacted me on many occasions for Solaris System Administrators. Never have they contacted me for Linux ones...

I may add that i have had a little experience with SG's and Alphas on 3 occasions. one was at mega10. the other was with my alpha at home a real clunker which my computer runs 10x faster than... and with some alphas at my friends work at melbourne University... so i'm not ignorant to these machines.and i'd like a high end one. now as for putting a proprietary unix on my x86 box. i am doing so... but i have found out they have little or no support for hardware whereas linux supports as much hardware as WindowsNT does... and the x86 box is open standards and not proprietary...

Mattwy, the SGI that we had at Meag10 was a dog. The O2 is great. Now can your box do one second of video into one second of mpeg in one second? the O2 can. As for Universities, I have found that they have second rate equipment. Ok, they get the hand-me-downs from large companies. Only research equipment that is fully funded is any good at major universities...

People do develop fantastic software for free. they often develop it for free and sell it to large businesses so as a home user i can use it and the company can have the best of both worlds while migrating me and influencing me in what i use when i am in business...

I have found that most salesmen will give me their software for free. They hope that I will support it and recommend it for purchase for the companies that I Contract for. Many of the companies that I support will give me their hardware and software for free so that I can help them from home. CompanyX found that I could answer their UNIX needs over the phone but FrameMaker took me at least an hour before I could even return their call. I had to drive into CompanyX to start up a session. They thought it was cheaper to give me a free copy than pay for the hour drive and hour home every time they had a question.

Now as for professional System Administrators. I made sure that every one of my 18 SAs had a Sun Station and a dedicated PPP line in their house. Moreover, that they could get to the system prompt "ok" from home.

Matt, what we are all trying to do for you is to get you to see the entire picture. You are where you should be at your age. But if you go through life with blinders on you will be no better than the horse pulling the wagon. You will be going where your master wants you to go. Now on the other hand, if you become a SR. UNIX System Administrator you will have Companies in other countries ask you to come work for them. Hay, when I was in Australia I got a call from a couple of companies down under... I don't know how they found me but they did.

I just got offered a gig in both London and Tokyo... Ok, it is summer and I want to stay home:-) I most likely would have taken the gig in Australia if they would have done the Visa paperwork...

Ok... Linux is now used very widely.

This is like the people that think PCs are 99% of the InterNet. They don't see the other side at all. Sun is over 80% of the InterNet!!!

written in a hurry over recess its now the end of recess i'm off to chemistry bye:)

Subject: FS: Sparc IPC Bare

10 Apr 1997 06:12:31 GMT

SparcStation IPC: case/motherboard/ cpu/Powersupply 8 MB ram floppy $100.00

Subject: FS: Next

10 Apr 1997 08:12:31 GMT

32MB RAM, 2GB HD, Keyboard, Mouse. NO MONITOR. OPENSTEP 4.0 Mach loaded OPENSTEP 4.0 Developer loaded $500

Subject: FS: Sun Sparc 1+ $900

10 Apr 1997 09:20:17 GMT

❍ base w/ethernet, 2 serial, SCSI
❍ 19" Sun Color Monitor
❍ GX Color Frame Buffer (CG6)
❍ 424 MB Hard Drive (Solaris 2.5)
❍ 24 MB Memory
❍ Floppy Drive
❍ 10baseT Transceiver
❍ Keyboard, Mouse & Pad
❍ SunMicrophone & Audio cable

6-month warranty included. COD, or Visa/Mastercard. Add for shipping.

x86 vs. RiSC
Karl N. Matthias

Okies well i've been doing some more research... And i've come up with the following... This x86 motherboard does 75, 83 & 100mhz bus speed http://sys-doc.pair.com/asust2p4.html. I have a HOT 558 which just does 75 & 83 x86 architecture is 32 bit so here is a slight failing...

Also x86 supports a pathetic number of registers, and other brain-dead features which make it far less flexible than most RISC platforms. Not to mention that unless you are using SCSI drives on your Pentium, your hard drive and CD-ROM are eating CPU cycles. Big time. IDE has no processor of its own and relies on the CPU to take care of processing. Why do you think it is so slow when you try to do something while another program is launching? This is not cleared up by adding another CPU for multiprocessing, either, it's just less noticeable. This is just an example of what is "WRONG" with x86.

As for linux, The kernel that linus distributes now supports multiprocessors Therefore making Linux a true multiprocessing OS. Most of you have boxes from Sun and Digital with just one processor. Is this multi-tasking or time slicing? Hmm

This is multitasking. Time-slicing and time-sharing are how you multitasking, whether you have twenty CPUs, or just one. There are two different (mainstream) kinds of multitasking, though, cooperative and preemptive. UNIX supports both, while some "multitasking OSes" support only cooperative, which is pathetic (i.e. MacOS 7).

Multiprocessor boards are quite cheap now. 300AU for a quad one that supports 75 and 83mhz bus speeds

Yes, but you are forgetting a very important fact in this whole discussion. Pentiums do NOT work together very well. The architecture was never designed to support multiprocessing, and they are essentially brain-dead. What you end up with is really pathetic. When you should get at least a 75% performance increase by adding a second processor, on a Pentium you get only 25-30%. It decreases for each processor above two, to a maximum of four. By the time you have added the fourth processor you get less than 25% performance increase over the first processor. This is really terrible. By contrast, with a chip like the PowerPC which has been designed for multiprocessor use, you get greater than 75% performance increase above the first processor for each additional processor to a maximum of eight (on 603 and 601) and a theoretically limitless number for the 604e or 620. SPARC, MIPS, and Alpha all perform like this, too.

Another thing you have to take into account is the way in which the OS handle the multiprocessing. Just because it supports it does not mean it supports it well. MacOS, for example, supports multiprocessing, and you can buy a Mac from DayStar with up to 4 processors, but the multiprocessing is really poor, even worse than NT, if that's possible. You get only 50% performance increase over the first processor for each additional processor. Now I don't know what the stats are for Linux, but I have not heard good things. Solaris, on the other hand, supports (I think) up to 64 processors in full parallel with 90% or greater performance increase over the first processor for each additional processor, on SPARC. Yeah, that's bad-ass. DEC UNIX, HP-UX, and IRIX all have similar statistics.

Linux — The Choice of a GNU Generation

Now the price of the individual chips is negligible. purchase Pentium 150's and reclock them from 2.5x60 to 83x2.5 (using the 3x setting seems to course instabilities) the cost for each of these chips is a mere 160bux. NOw intel die i'm currently worshiping Advanced Micro Devices' K6 which is supposed to be supporting 266 and 300mhz total clock speeds by the start of June...

Yes, you are right, the K6 is a nice chip, and I would like to have one, as well, but it is not on par with a RISC chip because it is supporting the x86 architecture which needs to just drop compatibility with anything below the 386 and move on with life.

Ok so here we have a really fast computer and its cheap... And its running an OS that FREE. That has everything a kernel could want included in the kernel. And with Redhat 4.1 distribution and Applixware office suite includes everything else that a user would want in their box...

Applix sucks Matt. We have it at work, and it REALLY sucks. Just ask Andy Drake, he is the administrator for it at Nationwide.

Finally. It is a multitasking and multiuser beast... Do you terminals not have processors when they're displaying X?

We run workstations, not X terminals, so of course they have a processor.

okies well I'll see what your replies are to that. I have 700bux to spends and i still can't get myself a unix box for this much that is half the speed of my linux box.

You are right. I neve disagreed--I don't think anyone did. What we did say was that if you wanted to learn marketable UNIX skills (i.e. commercial UNIX--Linux will only take you so far), you needed to run some-

thing other than Linux. Currently Solaris x86 is your only other option on x86. SCO does not count, it's SVR3.2 with extensions. Ick!

If you wanted to learn something else, you would have to get a used workstation. Now the CPU and graphics may not meet your pentium in performance, the workstation is not a slow beast, by any means. I have a SPARCstation-LX at work which is roughly on par with a 486DX-80 in horsepower, yet multitasks and networks in ways my PC would dream of. This is what you get with the tight integration of peripherals in a workstation vs. a PC. Aside from a commercial OS. Oh yeah, and BIG monitors are cheap for workstations, since they are fixed frequency. US$150 for a used Trinitron 17".

I want to make two suggestions to you if you want to stick with Linux. First, consider getting a PowerMac (clone) instead. You can run MkLinux, and compile all your favorite Linux applications and utilities, as well as use a real RISC architecture. PowerPC chips outperform a Pentium massively at the same clock speed (PPC 603, 603e, 604, 604e). PowerMac hardware is really nice, has a SCSI bus built in, supports PCI peripherals, fixed-frequency monitors (cheap!), and everything else you could want. A DayStar, UMAX, or PowerComputing multiprocessor box is not THAT expensive, either. Just something to think about.

Also, while you are praising processors, consider this RISC chip. Have you heard of the StrongARM? It is a joint project of Advanced RISC Machines (part of the Acorn Group, UK) and Digital Equipment Corporation. Essentially it is a 166Mhz - 233 Mhz processor (for now) that outperforms and Pentium 100 at its lowest clock speed (166Mhz), supports multiprocessing (for real), runs on 1.5 volts, dissipates .17 Watts, and costs US$38. Do you think that's a bargain? Oh yeah, it's in the Apple Newton, as well as the Acorn RiscPC.

Also check out the Exponential X704, a PowerPC chip that runs at 533 Mhz and

which will be shipping in a Mac by this fall.

There is more to the world than x86
C Matthew Curtin

There are far more multiprocessor Suns, DECs and SGIs than x86 machines, especially if you look at that on a percentage of all the ones out there. www.infoseek.com, etc., all run on multiprocessor Sun machines. Ditto for all of the Disney web sites. (I know; I did the security architecture on 'em:-) Anyway, those x86 boxes can get pretty big, when they're in huge parallel processing supercomputers. (I think the Intel Paragon is a massively parallel system based on Pentiums.)

BUT, I'd still rather have a 288-processor SGI Onyx:-)

And, for the record, multitasking is time slicing. Multiprocessing is where several processors are cooperating to run things.

As a matter of fact, now that I think about it, my old group at Bell Labs used a dual-processor Sun SPARCserver 20 for its general purpose machine, serving NFS, NIS+, etc., to the rest of our workstations.

X terminals do have processors (and small OSes, even). However, the processor, memory, OS, etc., are all just enough to support the display; no applications run "locally".

Multi-Tasking
Joe Harvey

As for linux, The kernel that linus distributes now supports multiprocessors Therefore making Linux a true multiprocessing OS. Most of you have boxes from Sun and Digital with just one processor. Is this multitasking or time slicing?

It is Multi-Tasking. Multi-Processors doesn't mean that it is a multitasking OS. It just means that you have a multi-processor OS. It is the same deal, just because you can run stuff in the background (i.e. Win 95) that doesn't mean that it i a multi-user OS. Time-slicing and Time-sharing are the ways that we allow ourselves to maximize CPU usage more efficiently and give ourselves multi-tasking abilities. The reason you can multitask is due to time-slicing. With multiprocessors you still have time-slicing, you just have a distributed load on more than one processor. Then the OS selects which order to run the processes. I/O bound processes take a lot of time. Therefore it you run one of them and then run compute bound tasks while waiting for the I/O data and return to the I/O task when it comes you get more efficiency for time. The other factor is of course priority that they have to take into account. I am not going to go into algorithms and OS details now, but you can have multi-tasking and multi-users on a single processor.

A responce to new statements on power & performance   I
Karl N. Matthias

Okies mate umm I have always known that i must use an independent disk array to get half decent performance out of an x86 machine. although I have one that uses ide and relies on the processor. ITs quite quick anyhow... Now as for those Motorola chips. We have heaps of them in the Graphics/Art Department at our school and when handling system

This is the MacOS, a really BAD operating system, not the hardware. Also be careful that you are talking about Power-Macs, and not Motorola 68k based macs.

devices they almost die... The chips aren't that fast and are clocked 2x 2.5x 3x 3.5x 4x 4.5x and 5x which is ridiculous and so are the bus speeds.

Nope, they ARE fast. You may be looking at OLD powermacs. The 6100, 7100, and 8100 are SLOW, just like the 486-66

---

which was the PC that came out at the same time. This is not a fair comparison. Aside from that, you are wrong about the clock speeds of the chips. The standard PowerPC bus runs at 66 Mhz, the speed of the fastest standard Pentium Bus. I will have to check on bus speeds, but all you need to do if you doubt the performance of the PowerPC over the x86 is just go read any literature about benchmark comparisons. The PowerPC 604e, for example, outclasses a Pentium of the same clockspeed by almost half again the integer performance, and almost twice the floating point, and it costs about the same.

And the built in scsi interface is not up to the standard of an Adaptec 2940UW

Hmm. You are again comparing apples to oranges. The 2940UW is Fast-and-Wide SCSI, which is a totally different breed of SCSI than ships in MOST workstations, and in the PowerMacs. Of course it is faster, it has almost twice the datapath. But don't go thinking you will use your standard SCSI drives on that card, because you won't.

for instance... Now as for those Trinitron. I couldn't get a 2nd hand 72hz 1024x768 14" PC monitor for under 200 bucks in au second hand... so a second hand 17" Sony trinitron would be in the order of 500-600bux

That's why I said fixed-frequency monitors were a good deal. They are one quarter to one fifth of the cost of a multisync.

As for the 386 stuff. Its dropped. what is left to give compatibility?

No it isn't. You can still run 8086 apps on your Pentium Pro. That's asinine. The reason I said they should drop support for everything below 386 is because 386 was the first 32bit Intel Chip. The Pen-

tium Pro, is, in a sense, and overblown 386.

The only compatibility is with the last generation... And as for a 486dx80 that is as slow as a wet weak. Anyhow i'm seeing your point on the Sun, Dec

As I said, and you can verify if you choose, because it is the truth, compatibility runs all the way back to the 8086 and 8088. If you call that the last generation... What you fail to see about the comparison to a 486dx80 is that I agreed that the processor was not a speed demon on the workstation, and I was giving you something to compare it to. A 486dx80, however, is not "as slow as a wet weak" (whatever a wet weak is), you can still run all new applications on it. My point, though, was that the tight integration of the workstation makes its comparatively slower CPU seem faster because everything else performs so well, and the pieces are so well tied-together.

but No way would i get Apple trash. (this isn't a blind sort of prejudice either) i spent half of last week getting some stupid mac things in order and they're [expletive delated]

No, you miss my point. You have had trouble with the OS, which I, too, agree is crap. My point to you was simply that the PowerMac HARDWARE is far superior to your x86 HARDWARE, and that, given the same OS (here Linux), the PowerMac will outperform the PC hands down.

Secondly. If you don't like Applixware... StarOffice is Free and better. I just thought i'd simplify things and list things from the same vendor... but that is resolved http://www.staroffice.com/ I believe they have versions available for all major posix os's

Okay, I will go look at that. But don't tout ApplixWare unless you know something about it. It really is god-awful. I would prefer to run Bank-Street Writer on my Apple II.

A responce to new statements on power & performance II

Andrew Drake

I think it would behove you to investigate the ENTIRE PowerPC architecture before making statements like that - it is just plain wrong. You must take into account that not everyone in the industry utilizes Intel's ludicrous practice of clocking chips. One feature inherent to the PowerPC architecture is that the chips are already "clocked", much as the older Motorola 680X0 series and the 88X00 are. For example, under your model (and as Apple marketing actually did), the Motorola 68040 could be labeled as a 50mhz device, simply because it runs at 50mhz on the inside, but actually has a 25mhz clock. Is it 50 or 25? Motorola always labels them the true clock rate, but in reality, a 25mhz 68040 easily outruns a 486DX2/50, even on quantifiable benchmarks.

Taking this one step further, a Motorola 68060 runs at 50mhz or 60mhz, handily outclasses a Pentium 90 (this is without cache, my friends) AND it runs all legacy code. Why? Because of pipelining and super scalar technology, as well as a completely superior instruction set. Amazing that is only labeled "50" megahertz, eh? Might as well be 100 or 120 as it does run internally at those speeds, but alas, Motorola is honest. Shame on them, right?

Similarly, IBM/Motorola PowerPC chips are correctly labeled, and the 533mhz X704 PowerPC chip debuting in systems later this year (4th Quarter) will actually run at 533 mhz, thus requiring a 1Ghz Pentium just to keep up. What is the fastest proposed Pentium II? 233, and maybe a 300 if you count only Mhz and allow AMD's chips in the game. Try, try again.

TABLE 1.

Pages	Users	Button
121	23	exploring
1680	217	ExpNews
141	32	links
3993	197	post
17	5	1997.calendar
1706	88	members
510	42	Adults
167	23	Toadies
455	52	Youth
505	54	program
3993	197	post
16	13	project
77	15	scouting

Assuming that your school even has moderately new Power Macs (which can be pretty decent hardware), an IBM RS6000 is NOT the same thing as a Power Mac, even though both run PowerPC 60X series CPU's. Much is to be said, as Karl pointed out, for system integration, and IBM (as well as to a limited extent Apple) has done this very well, much better than comparable Intel boxes, simply because they are true "workstations" and are thus subject to more rigorous uses. Why is it that a crummy old SPARC 1+ (maybe US$300) multitasks better that any Intel box? It's better integrated, and the OS knows how to use its available hardware contexts VASTLY better than even Linux on Intel. Yes, it will be slower, but at least it won't crash and will provide smoother operation under heavy load.

POINTLESS COMPARISONS TO WIDE SCSI DELETED

No way would i get Apple trash.

First, I hate to tell you, but UNIX is coming to the Mac desktop in the form of OpenStep, and it's arriving SOON. Second, quality control issues with Apple aren't just that - issues. They are quite well constructed (as are most non-Intel boxes, Amiga and Atari included). Comparatively speaking, they are easier to use and much more productive than comparable Windoze boxes (".DLL NOT FOUND" comes to mind...), but

http://post369.columbus.oh.us
James D. Corder

On April 9th we added a counter to our web-page. We are currently experiencing 6.5 hits a day. The chart on the left shows the usage totals for our page since the beginning of the year. I am extremely pleased with the growth of our page...

suffer from a lack of a shell OS interface. This, and a whole host of other limitations to the MacOS should be nicely cured with a little NeXTSTEP technology.

Second, you're correct, a NeXTstation with an equally fast processor as your 486dx80 is slow, but it is VASTLY more productive given the hardware than the Intel box ever was (any OS included), again due to integration and OS tuning for the hardware. Even 4 years later, my NeXTstation Turbo Color is a damn fine machine, with great hardware and a great OS that coexists well with just about everything from mainframes to PC's, and anything from VMS, MacOS, NT or the Unixen. Somehow, Intel is slightly lacking in this department - sure they are cheap, but where else could I plug in a laser printer with ONE cable, the system instantly recognizes it, and the printer is automatically network ready. Linux? Uh, no - do you enjoy configuring LP or LPR in your spare time? I don't, and NeXT does it for you, EVEN using the standard Berkeley LPR subsystem which is what Linux uses.

Yeah, Intel boxes, even running Linux, are a little sad in the hardware department. You must concede this point as well, if you've already given into us on the integration issue. Congratulations, the only positive thing is that Intel boxes are cheap - and they run like it (poorly). Again, try adding any level of RAID to your Linux box, have fun. Trust me, we'll get "somewhat" (VASTLY) better performance out of my fibre-channel linked Sun SBUS

card, than your IDE cable...And yes, the cost is about the same because the Sun uses standard drives inside.

But then, we haven't talked about mass storage software either. Where is the equivalent of Sun's On-line Disk Suite or the HP/DEC Logical Volume Manager? Uh, gee whiz, it's not here! Oh, and both of those are FREE with the operating system. With it, you can do all the mirroring, volume management, and disk integration you need. Need I say more? Let me put it to you this way, your Linux system is NOT going to be able to handle my database needs (370GB of data on ONE machine) like my HP 9000 T500, and yet that HP/SUN/IBM machine can use THE SAME drives that you do. Uh, there is difference, even if you are still using Linux as your Unix.

Fine, even if you don't use 370GB of data at once, the ability to easily add as much or as little storage space as you need using regular hardware and standard OS tools is an important feature. All of these products are here and now, not vapor, and are FREE. In the end, Solaris, HP-UX, AIX, DEC Ultrix and IRIX are simply more flexible. Period.

Oh, and if by some chance I do want to run say, Photoshop (Illustrator, Frame, WordPerfect, etc.) native, I can with any of these operating systems, and not on Linux. Somehow, XV just doesn't approach the quality of Photoshop....

Secondly. If you don't like Applixware... StarOffice is Free and better. I just thought i'd simplify things and list things from the same vendor... but that is resolved http://www.staroffice.com/ I believe they have versions available for all major posix os's

As the Applixware administrator for my employer, it fulfills our needs for a multifunction office suite until Corel Office for Java arrives. That is about all I can say - it isn't particularly nice to use, and has some serious idiosyncracies which are holdovers from an obvious PC port. Further, StarOffice is a little pointless unless your enjoy reading menus in German, as the product is clearly targeted at

Europeans (of which, I assume most of us on this list are, but I must admit I left my phrasebook back in the old country). Yes, there is an English version available, but support for the product as a whole is rather iffy at best. Sorry, I don't really want to call Berlin when StarOffice won't coexist with my other applications.

Corel Office for Java promises to be the solution - a "real" office package that is platform and data independent AND runs on client - server technology. Plus, since it's from an established firm with great products already in use, it is a much easier sell than a product from Herr Schmidt and Company of Hannover, who might just make a great product (and Germans typical do), but is a relative no-name. Yes, I have evaluated StarOffice, but with our current investment in systems and other software (not counting technical support issues), Applixware is a better choice.

As for MultiUser. u still haven't told me what is not multiuser about it i can connect multiple terminals to the one box and timeslice that box's processor with my x86.

Sure, Linux is *MULTIUSER*, hay even Xenix and Minix are multiuser, no-one is debating that. ANY UNIX is multiuser, but the way in which the kernal supports threading (BSD or SVR4 model are both decent, but SVR4 is probably the winner), and multiprocessing (SMP, ASMP, etc.) makes all the difference. Tell you what, I'll pit your two processor Linux P150 machine against a two processor Solaris based SPARC20 with 125mhz Ross Hyper SPARC chips and we'll see who stays up longer doing either a database build (Is ORACLE, SYBASE, or INFORMIX even available on Linux? No.), high usage web server - any high load situation. Will it be Linux? Nope, 'cause the multiprocessing code is a hack at best, and Solaris has been tuned to support high load distribution across multiple processors.

Oh wait - did anyone say "hot swappable"? I sure did - Ultra 2 boxes from Sun support HOT SWAPPING of CPU mod-

ules (among other parts), WITHOUT taking down the rest of the box. SGI, HP, and IBM all have similar features. What happens if I pull a processor out of an Intel based box while it is doing a heavy load intensive operation - think it will survive? Think Linux would still stay up? Uh, no. Solaris can adapt to the uniprocessor model on the fly, without crashing the rest of the machine. When will you admit to the superiority of commercial OSes?

Linux is written and supported by hobbyists, not a programming staff. As such, it incorporates good and bad code, the TCP/IP stack for a long time was atrocious, as was the NFS code. Certainly usable, but not particularly quick.

Let me put it to you this way. For the sake of argument, I will concede that firms like Red Hat do clean up some of the worst atrocities in Linux. However, the entire staff at Red Hat is smaller than Sun's On-line Disk Suite group which makes just ONE segment of the Solaris operating system. Plus, if I have a problem at 2:30 in the morning with On-line Disk Suite, I can have Sun escalate the call all the way up to the programmer who designed the product. Think Caldera or Red Hat will answer the phone at 2 AM? Uh, no. Think they'll get back to within a week? Maybe.

*Get Your *Web-Based* Free Email at http://www.hotmail.com*

Matty, as a Sun stockholder, I would like to personally thank you for using another Sun product running Solaris. HotMail is made available for free to the public by a division of Sun called JavaSoft, utilizing Solaris based Ultra Enterprise servers. Please invite your friends to take advantage of this opportunity for email!

Hey, "In a world where the network is the computer, the computer has to be Sun."