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Cringely Wants A Supercomputer in Every Garage

Posted by timothy on Wednesday December 26, @11:05PM
from the i'd-call-mine-claire dept.

Nate LaCourse writes: *"Real good one from Cringely this month. It's on building his own supercomputer, but with some twists."* You'll probably also want to check out the KLAT2 homepage to learn more about their Flat Neighborhood Network. And since KLAT2 has been around for nearly a year (check out the poster on this page!), perhaps a 3rd generation is in the works?

< Commercialization Of The Internet | The Early Days of TV Science Fiction >

Related Links

- Nate LaCourse
- building his own supercomputer
- KLAT2 homepage
- Flat Neighborhood Network
- around for nearly a year
- More on Hardware
- Also by timothy

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Am I the only one? (Score:2, Insightful)
by Goldberg's Pants on Wednesday December 26, @11:09PM (#2753935)
(User #139800 Info)

Am I the only one to spot the "The Day The Earth Stood Still" reference here?

[Reply to This | Parent]

Jun 29

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Jan 3
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Re:Am I the only one? (Score:1)
by gkirkend (**gregory.kirkendall at openetools dot com**) on Wednesday December 26, @11:13PM (#2753947)
(User #111309 Info | http://www.openetools.com)

Yes

[Reply to This | Parent]

WELLL.... (Score:3, Funny)
by Midnight Ryder on Wednesday December 26, @11:37PM (#2753998)
(User #116189 Info | http://www.midnightryder.com)

Well, not to be one of those stick in the mud 'Read the %($#ING article' type people, KLAT2 is a reference to The Day The Earth Stood Still. Had you looked at the articles in question (particularly, the KLAT2 page) you would have discovered that indeed, they were intending the reference. Heck, go check it out - the poster they made up for it is worth the look! :-)

[Reply to This | Parent]

Re:Am I the only one? (Score:1)
by chronos2266 on Thursday December 27, @12:04AM (#2754047)
(User #514349 Info)

probably not....

Our poster is based on one of the posters for the classic 1951 science fiction movie The Day The Earth Stood Still. Yes, KLAT2 is an obscure reference to Klaatu, the fellow from outer space who came, with the robot Gort, to explain to all the people of the earth that if humans cannot work together in peace, the earth will be destroyed for the good of all planets. Of course, in the movie, Gort didn't have an AMD Athlon logo on his chest and Tux, the Linux penguin, wasn't the actor inside the suit... it's a very good movie anyway. ;-)

:)

[Reply to This | Parent]

Re:Am I the only one? (Score:2)
by coyote-san on Wednesday December 26, @11:45PM (#2754014)
(User #38515 Info)

Katu barrata nicko, or something very close to that.

[Reply to This | Parent]

Re:Am I the only one? (Score:3, Informative)
by dangermouse (**logan@slackware.com**) on Thursday December 27, @12:17AM (#2754079)
(User #2242 Info | http://slashdot.org/)

"Klaatu barata nikto."

I think it translates to "Klaatu says not", but I'm basing that off of a half-assed knowledge of German ("nikto" -> "nicht"), the similarity between "barata" and "berate", and context. Maybe there's some kinda Latin thing in there somewhere, idunno. It's the instruction Klaatu tells Love Interest to give to Gort the robot, so he won't destroy the entire planet.

And since someone asked, yeah, that's the same line whatsisface has to use in "Army of Darkness", and it was the only part of that lame movie I can remember laughing at.

Now, the question is: Will I get modded down because this is actually offtopic as hell, or because I insulted "Army of Darkness"? %-)

[Reply to This | Parent]

> **Re:Am I the only one?** (Score:2)
> by steveha on Thursday December 27, @04:00PM (#2755987)
> (User #103154 Info | http://www.blarg.net/~steveha)
>
> *I think it translates to "Klaatu says not"*
>
> It's been years since I saw *The Day the Earth Stood Still*, but if memory serves, this line meant "Klaatu commands obedience."
>
> *yeah, that's the same line whatsisface has to use in "Army of Darkness", and it was the only part of that lame movie I can remember laughing at.*
>
> Oh man, either you saw a different movie than I did or else your sense of humor is way different from mine. Oh well, to each his own, I guess.
>
> "Klaatu barada... necktie!"
>
> steveha
>
> [Reply to This | Parent]

- **3 replies beneath your current threshold.**

- **1 reply beneath your current threshold.**
- **4 replies beneath your current threshold.**

Great (Score:3, Funny)
by evacuate_the_bull on Wednesday December 26, @11:13PM (#2753948)
(User #517290 Info)

Make sure it has a red dot and says things like "Dave, what are you doing Dave?" Can't wait for mine!

[Reply to This | Parent]

genetic algorithms (Score:1)
by usernumber31337 on Wednesday December 26, @11:16PM (#2753954)
(User #512825 Info)

It seems in the article that an extensive amount of calculations was necessary to design the network. Ironically, they needed a supercomputer to design a supercomputer.

It is really cool considering that $6,000 is now enough to take on massive projects. How many months would this machine take to render Final Fantasy: The Spirits Within?

[Reply to This | Parent]

Re:genetic algorithms (Score:1)
by DAldredge (**DAldredge@Aldredge.Com**) on Wednesday December 26, @11:26PM (#2753977)
(User #2353 Info | http://aldredge.com/)

About 300,000 time longer then the time the average viewer of FF:TSW was able to stay awake during the movie.

[Reply to This | Parent]

ff:tsw (Score:1)
by kesuki on Friday December 28, @10:56PM (#2761426)
(User #321456 Info | http://www.nara.gov/...on/constitution.html)

I went to that movie on a date... and I liked it. A nice japanese cinema style movie.

FF:TSW and now that you can get a super computer for $6,000 is a little scary -- how long until companies buy the rights to peoples appearance. Then force them to get plastic surgery, and have computers make all the footage for the news anchors/commercials.

[Reply to This | Parent]

Re:genetic algorithms (Score:5, Funny)
by An Onerous Coward (**idafab@SPAMyahoo.com**) on Wednesday December 26, @11:29PM (#2753988)
(User #222037 Info | http://slashdot.org/)

> *"Ironically, they needed a supercomputer to design a supercomputer."*

And it shall be called. . . *Earth!*

[Reply to This | Parent]

Re:genetic algorithms (Score:1)
by BlueJay465 on Wednesday December 26, @11:49PM (#2754022)
(User #216717 Info)

[Insert references to the Schumann Resonance and Protocol 7 here]

[Reply to This | Parent]

Re:genetic algorithms (Score:1)
by TheConfusedOne (**(moc.motsla.rewop) (ta) (rekcorc.f.trebor)**) on Thursday December 27, @09:35AM (#2754685)
(User #442158 Info | http://www.runecon.com/)

The only thing I'm wondering about is how you can describe network topologies using Scrabble tiles...

[Reply to This | Parent]

Re:genetic algorithms (Score:1)
by mblumber (**blumberg@hotmail.com**) on Thursday December 27, @01:16PM (#2755335)
(User #267394 Info | http://slashdot.org/ | Last Journal: Thursday January 03, @09:44AM)

Watch out for the vogons and their poetry.

[Reply to This | Parent]

- **2 replies beneath your current threshold.**

Re:genetic algorithms (Score:1)
by wlp (**jpcowh01@slug.louisville.edu**) on Friday December 28, @02:18AM (#2757785)
(User #135753 Info | http://www.slug.louisville.edu/~jpcowh01)

The supercomputer calculations where just to validate their network design. Dr. Dietz had figured it out and designed a parallel simulation to test/show his design.

I'm not sure how well KLAT2 could render FF:TSW, but some of the fine/grain parallel processing work that Dr. Dietz had done could make real-time virtual caves possible. Check out his old work with the PAPERS/AFAPI project.

Jonathan

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

A damm good project (Score:1)
by baronben (**baron[ ]attbi.com ['ben@' in gap]**) on Wednesday December 26, @11:16PM (#2753956)
(User #322394 Info | http://www.liannesentar.com/)

I just love the idea of having a little super computer (and not just buying a Mac cube which claims to be a super computer, or a Dreamcast which can't be sold to Iraq because it qualifies as a supercomputer). Making a super computer must qualify as one of the ultimate hacks, a combination of technical skill, imagination, and pure unadulterated tech balls. This seems like one of those projects that I would do if I had the spare 6k needed. And oh yah, imagine a Beowulf cluster of these!

[Reply to This | Parent]

- **3 replies beneath your current threshold.**

Am i the onlyone who see's the posibilites of this (Score:1)
by jedi98629 on Wednesday December 26, @11:16PM (#2753957)
(User #544161 Info)

Haveing a super computer would be great, imagine have the possibility of being able to do your own DNA Research at home. Or you could just get like a 1 gig Vid card and play an awsome game of UT!

[Reply to This | Parent]

Re:Am i the onlyone who see's the posibilites of (Score:1)
by GigsVT on Wednesday December 26, @11:20PM (#2753968)
(User #208848 Info | http://www.poetrycontestonline.com/)

Well, yeah if UT is threaded.

I realize you were joking, but seriously, do any current games use SMP to their advantage? What about running games on a MOSIX cluster? Has anyone tried it?

[Reply to This | Parent]

Re:Am i the onlyone who see's the posibilites of(Score:1)
by swright on Wednesday December 26, @11:44PM (#2754012)
(User #202401 Info)

Quake 3 Arena can use multiple processors (set r_smp to 1). However I havent found it to be too stable....

Other Q3A based games may also use this (RtcW does, but on the demo at least, its _Very_ crashy).

[Reply to This | Parent]

SMP & gaming.(Score:1)
by s0l0m0n on Thursday December 27, @01:04AM (#2754157)
(User #224000 Info | http://slashdot.org/)

Have you played q3 or UT on a sweet athalon?

Can you even tell the difference in game play between say a 900mhz and a 1.4?

mostly, it seems to be the the video card that makes the difference, and the ram, not the processor.

[Reply to This | Parent]

Re:SMP & gaming(Score:1)
by swright on Thursday December 27, @09:09AM (#2754621)
(User #202401 Info)

agreed - but that wasnt the question :) Q3A is way fast enough for me with 1 processor (my box is a dual 1Ghz PIII, if only AhtlonMP was out when I bought it....).

[Reply to This | Parent]

Re:SMP & gaming(Score:1)
by ergo98 on Thursday December 27, @11:06AM (#2754925)
(User #9391 Info | http://www.yafla.com/ | Last Journal: Monday December 10, @12:01PM)

Have you played q3 or UT on a sweet athalon?

For both of them the balance of computations is very heavily weighted towards the video end of things, and as such at realistic resolutions the video card (with GPU) is a limiting factor before the CPU is. If, on the other hand, they had much more advanced AI or actually modelled the physics of the buildings (i.e. collapsing walls, etc.) then it might make more sense.

[Reply to This | Parent]

Re:SMP & gaming(Score:1)
by s0l0m0n on Thursday December 27, @05:30PM (#2756441)
(User #224000 Info | http://slashdot.org/)

If, on the other hand, they had much more advanced AI or actually modelled the physics of the buildings (i.e. collapsing walls, etc.) then it might make more sense.

I'll drink to that!

Real Physics! Collapsing walls. Doors that I can(and must) blow the locks off of. Realisitic sturctures for buildings. Lights that go out and stay out. Gore that splatters correctly and stays there. Ricochets.

As long as they don't make the enemy AI too much smarter. UT already kills me dead on it's highest settings.

josh

[Reply to This | Parent]

Re:SMP & gaming(Score:1)
by ergo98 on Thursday December 27, @11:02PM (#2757324)
(User #9391 Info | http://www.yafla.com/ | Last Journal: Monday December 10, @12:01PM)

As long as they don't make the enemy AI too much smarter. UT already kills me dead on it's highest settings.

Yup, 100% agree with that. However there would be an improvement if they made the AI more realistic rather than smarter: i.e. you often hear about the computer "cheating" in games because instead of modelling vision (with all of the flaws of it) & perception the computer has XYZ coordinates and if they fall within a range boom you're dead.

[Reply to This | Parent]

Re:Am i the onlyone who see's the posibilites of(Score:1)
by maverick_and_goose on Friday December 28, @11:22PM (#2761459)
(User #526330 Info | http://slashdot.org/)

the new doom game is supposed to be and it will supposedly run uber great on a dual processor

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:Am i the onlyone who see's the posibilites of(Score:1)
by rhost89 (**'gro.tsohr' 'ta' 'tsohr'**) on Thursday December 27, @09:59AM (#2754740)
(User #522547 Info | http://www.rhost.org/)

Also think about the possible misuse of the abilities to perform this amount of calculations. Improving nucular warhead blast yields, geneticly engeneering a new super virus taht could wipe out the planet. To me this scares me more then anything else. I personally dont need a supercomputer to chat on IRC, post to /. and type up and compile my projects.

[Reply to This | Parent]

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Finally...(Score:2, Funny)
by Stone Rhino on Wednesday December 26, @11:25PM (#2753974)
(User #532581 Info | http://slashdot.org/ | Last Journal: Sunday December 16, @05:19PM)

A story that beowulf cluster posts will be relevant to!

[Reply to This | Parent]

Imagine...(Score:5, Funny)
by Tsar on Thursday December 27, @02:45AM (#2754263)
(User #536185 Info | http://tonyc.com/ | Last Journal: Tuesday January 01, @02:24PM)

...a **single-CPU** version of this!

[Reply to This | Parent]

Re:Imagine...(Score:5, Funny)
by nuintari (**rot13*ahvagnev@ahvagnev.arg*rot13**) on Thursday December 27, @05:05AM (#2754381)
(User #47926 Info | http://nuintari.net)

and a cluster of those!..... oh wait, nuts..... never mind.

[Reply to This | Parent]

Re:Imagine...(Score:2)
by nuintari (**rot13*ahvagnev@ahvagnev.arg*rot13**) on Friday December 28, @01:29AM (#2757710)
(User #47926 Info | http://nuintari.net)

jesus, this wasn't that funny..... not worth 5, christ.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**
  - **1 reply beneath your current threshold.**
- **1 reply beneath your current threshold.**

Now is the time for all good men...(Score:5, Interesting)
by BlueJay465 on Wednesday December 26, @11:25PM (#2753975)
(User #216717 Info)

This is a very interesting concept that he is putting forth, but at the same time, how many geeks out there are going to really make use of such a clustering farm? Not everyone I know does video compression projects, and it would seem kinda prohibitive for a black-hat to set one up to break encryption codes. Could someone please tell this naive soul what useful everyday application all these CPU cycles could be used for? (if you say SETI@Home, I am going to bitch-slap you)

Secondly, UWB seems to be the holy grail of wireless networking, yes, however is this something that the agencies of the world are going to let out of the bag so easily as he says, I can think of the CIA and the NSA having a few choice words about such "undetectable signals" being used by commonfolk after September 11th...

Just my two cents

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by alfredo (**deathspiral@nasalhair.com**) on Wednesday December 26, @11:37PM (#2753996)
(User #18243 Info)

Keep an eye out for Gigawire. It could be a inexpensive wireless broadband solution.

We won't know until Mr Jobs wants us to know.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:Now is the time for all good men..(Score:4, Interesting)
by An Onerous Coward (**idafab@SPAMyahoo.com**) on Thursday December 27, @12:10AM (#2754069)
(User #222037 Info | http://slashdot.org/)

I am now telling the computer *exactly* what it can do with a lifetime supply of chocolate.

Okay, we need to burn some spare cycles. Lots of them, in fact. I have some ideas. There may even be a couple in here that can be taken semi-seriously.

* SETI@H. . . Why are you looking at me like that? Admittedly, it's cliched, and I'm the impatient type who figured I'd find my first LGM within a week. Or by the end of the year at the very latest. But I still think that it's a pretty cool thing to be doing. Or load up one of the alternatives like Folding@Home.

* Find a buddy with a similar supercomputer, and have them play chess. Or tic-tac-toe billions of times every second (sorry, War Games flashback).

* There are lots of mathematical problems out there just begging to have a few supercomputers thrown at them. I'm not aware of what they are, so consult your local Mathematics department and offer your services.

* If you're not interested in doing video compression or complex scene rendering, you might be able to find someone who was. Some indie film maker who wants to play with the big kids is going to become your new best friend. Be sure to ask for a walk-on.

* Some sort of AI project could be interesting, providing you have some specialized training. Or you just give someone at MIT telnet access.

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:2, Interesting)
by TheClarkey on Thursday December 27, @12:34AM (#2754104)
(User #546286 Info)

This sort of thing would be an absolute god send for those involved in AI. But any comparison of techniques requiring runtime analysis would be an absolute god send.

That'd be much peferable to running some particular piece of code for a week or whatever on a workstation that some bunch of 1st year undergrads are using night and day. (All for one result - then realising you'd made a mistake in said code)

It would speed up research in so many diverse fields.

[Reply to This | Parent]

I've got one .....(Score:3, Interesting)
by taniwha on Thursday December 27, @01:41AM (#2754199)
(User #70410 Info | http://www.taniwha.com/nospam.jpg)

25 dual p650s in my home office ... when I crank it all the way up I come in at somewhere in the 50-100 range on the dnet rc64 dailies. Sadly the original reason I built it has evaporated and with the current cost of CA power I just have a fraction running

[Reply to This | Parent]

Re:I've got one .....(Score:1)
by iankerickson on Thursday December 27, @10:29PM (#2757234)
(User #116267 Info | http://slashdot.org/)

How much power did it use at full bore? (Curious)

Power cost and sheer draw are the big obstacles to putting beowulf-style clusters in your house. I know a guy who was given a surplussed IBM 704 Server (4xPII@200, 512 MB RAM, Mylex RAID SCSI-2 PCI card w/ 64 MB cache, 12 hot-swappable drive-bays, 45 GB of disk space, FT 2 port ethernet, and 3, count 'em, 3 400W power supplies) from work to take home and learn on. It never worked out for him. When he powered it up the lights in his house would dim... If his wife turned on something else, it would trip the circuit breaker. Now of course you have to use your brain and not put all your heavy draw equipment on the same circuit, like the TV, the Microwave, the vacuum cleaner, and the THREE FOUR-HUNDRED WATT POWER SUPPLIES of your "free" server oh so graciously gifted to you by your work. I

think he stuck it out, rearranged what appliances were plugged in where, and got the whole thing working OK...

...for one month. Then he got his power bill. It cost him his HMO co-pay to get his jaw off the floor so he could work his mouth well enough to cuss properly. That was the end of that. Last I heard, he pawned the beast off on someone else more willing to make the monthly sacrifices his silicon and metal "Seymour" required of its owner. He was just lucky it didn't need human blood to run properly (so long as the Mylex RAID is already configured).

I lucked out -- a Solaris system got taken out of service and I was given one of the SS20 workstations. It's a much less impressive machine than the 704, but it can do 4 CPUs and 512 MB of RAM on just one 50W power supply. I've had it running awhile and can't see a big difference in this month's bill from last years, as far as just total killowatt hours.

Moral of the story: whatever computers you're thinking about giving a good home (a worthy pasttime, I'd say), consider very carefully how much it's going to cost you to run. Unlike cars, computers don't cost a lot in terms of maintenance, fluids to change, or parts that wear out. But electricity is their fuel, and besides upgrades, software, and proprietary parts, electricity could easily be the #1 cost you incur for accepting a "free" computer, or building your own super-computer array in the garage.

There's a good chart that breaks it down by PS wattage vs. cents per killowatt/hour, the cost of running any device -- server, router, network appliance, etc. -- 24x7x365 for a year at:

http://www.samag.com/documents/s=1146/sam0109e/0109e.htm

or please use the google cached version:

http://www.google.com/search?q=cache:8pTuTII9CdY:www.samag.com/articles/2001/0109/documents/sam0109e/+cost+kilowatt+hour+router+year&hl=en&lr=lang_en

[Reply to This | Parent]

Re:I've got one .....(Score:1)

by taniwha on Friday December 28, @12:55AM (#2757636)
(User #70410 Info | http://www.taniwha.com/nospam.jpg)

How much power did it use at full bore?

well the first time I plugged it all in the extension cord got way too warm .... but didn't trip a breaker (I'd had my office rewired with heavy duty power when we had the house reshingled), after I split up the boxes 7-8/cord things were ok - before the CA power price increases it cost ~$100/month now it's too expensive to run (probably $300+/month).

My boxes were bought to maximise mips/$ (not top-of-the line cpus at the time, just enough ram/disk for the problem - chip simulations, cheap network card, no floppy/cd/kbd/graphics/etc)

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:2, Interesting)
by stephanruby (**'gro.kyzcnarb' 'ta' 'nahpets'**) on Thursday December 27, @02:51AM (#2754268)
(User #542433 Info | http://branczyk.org/)

"I can think of the CIA and the NSA having a few choice words about such "undetectable signals" being used by commonfolk after September 11th..."

On the contrary, UWB can not be used for **long range** communication, so it's not going to replace your cell phone anytime soon. However it's probably the best thing we've got to screen people at airports. This technology can literally see through walls and it can do it without hurting anyone.

Stephan

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:2, Interesting)
by Mawbid (**hawk/gagarin/is**) on Thursday December 27, @08:58AM (#2754602)
(User #3993 Info | http://gagarin.is)

I can’t think of any "useful everyday" uses, but surely a lot of different people have a lot of different ideas about what to do with a supercomputer.

When I was a kid I played with particle systems. I’d set up a cloud of particles with mass and/or electrical charge and see how their simple interactions created large-scale behaviour. It was a simple system that didn’t scale well (I made some attempt to break the space up into cubes and treat the contents of far away cubes as one particle, but it wasn’t a seamless transition). Even with the limited number of particles I could play with (a few hundred), I still saw a lot of interesting things happen, like the material breaking up into 2 or 3 separate clusters. If I had oodles of CPUs, I’d enjoy figuring out good ways to split the load between them.

In today’s society (those societies whose members waste time on Slashdot, anyway), life isn’t just about making a living. So in essence, these machines can be used for having fun, which is a good enough reason to make them.

P.S. It’s no reason to build a cluster, but if SETI@home doesn’t turn you on, perhaps Folding@home [stanford.edu] will.

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by jred (**jred@pobox.com)**on Thursday December 27, @11:37AM (#2755032)
(User #111898 Info | http://www.cautioninc.com/ | Last Journal: Tuesday December 04, @05:43PM)

Secondly, UWB seems to be the holy grail of wireless networking, yes, however is this something that the agencies of the world are going to let out of the bag so easily as he says, I can think of the CIA and the NSA having a few choice words about such "undetectable signals" being used by commonfolk after September 11th...

At least they *tell* you it’s undetectable... I’m sure the TLAs would be happy to let you know what’s "secure" from them. Now we can all feel safe & continue in complete privacy.

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by Doctor Memory (**tnelson@fast.net)**on Thursday December 27, @12:15PM (#2755167)
(User #6336 Info)

Could someone please tell this naive soul what useful everyday application all these CPU cycles could be used for?

Hey, if it's got too many cycles, you're too old!
[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by BlueJay465 on Wednesday December 26, @11:56PM (#2754033)
(User #216717 Info)

Even so, are you going to be starting your own 3D animation production company out of your garage? Lemme get more specific...

Are any AVERAGE geeks out there going to be able to make use of this processing power 0r is it ju5t f0r th3 1337 br4gg1n6 |216h+5?

IIRC, Babylon 5 was produced on an Amiga, however I don't know what software package they used.
[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by nurightshu on Thursday December 27, @12:05AM (#2754050)
(User #517038 Info)

I don't know what software package they used.

IIRC, it was Video Toaster. I seem to remember seeing that in the B5 credits one of the ~5 times I watched an episode.

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:2)
by IronChef on Thursday December 27, @03:04AM (#2754276)
(User #164482 Info | http://wrongcrowd.com/)

They started with Amigas but eventually moved on [cybersite.com.au].
[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:Now is the time for all good men..(Score:2, Insightful)
by ichimunki (**x@ichimunki.com**) on Thursday December 27, @08:39AM (#2754570)
(User #194887 Info | http://www.ichimunki.com/)

You are kidding right? When you say average geek, I think you should be emphasizing "geek" not "average". If you are so average that you wouldn't make use of a supercomputer, you are not a geek.

Ever wait all day to compile test versions of large software packages? No longer. Ever wish something would go just a little faster? No longer. Ever felt like encrypting all of Usenet history in order to do frequency analysis on the output? You might just finish your tests in this lifetime... the list goes on and on.

The main benefit that I see in looking at this sort of cheap components, high parallelism approach is that a failure in a unit is not fatal to the whole. But that's where I'm a little wary of the whole rigamarole of having to painstakingly compute the best way to connect all these redundant ethernet connections. That doesn't sound very fault tolerant to me. But then maybe it is, just that when a fault appears it slows down the system because it throws off the calculated topology.

[Reply to This | Parent]

Re:Now is the time for all good men..(Score:1)
by UberLame on Thursday December 27, @12:02PM (#2755115)
(User #249268 Info | http://slashdot.org/)

The Babylon5 animation was done w/ Lightwave, which at the begining of the show was tied to the VideoToaster hardware. However, Newtek did support numerous ways of making rendering faster. I believe that initially the Babylon5 people went with MIPS accelerator cards (a card with 1 or more MIPS r4k chips for rendering) that ran ScreamerNet, and later they moved to rendering over a network of workstations (NT on Intel and/or Alphas), and later still moved to using Lightwave on workstations (and of course still rendering on them as well).

But also note that the rendering for Babylon 5 is all space scenes, which are about the easiest things to do, and also that the rendering isn't very good by todays standard (although still good enough to get the idea accross).

[Reply to This | Parent]

- **3 replies beneath your current threshold.**

HP Did This Too (Score:5, Interesting)
by MathJMendl (**Yahoo [at] MathJMendl [dot] com**) on Wednesday December 26, @11:29PM (#2753985)
(User #144298 Info | http://www.mathjmendl.org/)

ZDNet has an article [zdnet.com] of HP building a supercomputer like this as well, called the "I-Cluster." It has 225 networked computers running Linux Mandrake (so changes could be easily made) on 733 MHZ out of the box PCs. The only catch is that is is slightly more expensive- $210,000 (minus network cabling). On the other hand, they plan to release the open source tools they made as well, so that people can repeat this.

[Reply to This | Parent]

Re:HP Did This Too (Score:1)
by robbyjo on Thursday December 27, @12:06AM (#2754055)
(User #315601 Info | http://slashdot.org/)

$210,000 is not slightly more expensive. KLAT2 costs $41,000 and Cringely used only $6,000. AND it only ranks 385th while KLAT2 ranks 200th.

[Reply to This | Parent]

Re:HP Did This Too (Score:1)
by ctdean on Thursday December 27, @02:37AM (#2754253)
(User #202870 Info)

And the bandwidth between each node was only a single fast ethernet. The cool point that Cringely is making is about both cost and bandwidth.

This zdnet article reads like a press release from HP on a standard beowulf setup.

[Reply to This | Parent]

Re:HP Did This Too (Score:1)
by tunah on Thursday December 27, @03:55AM (#2754318)
(User #530328 Info | http://tunah.net/)

$210,000 (minus network cabling)

If you didn't NEED the cables, why did you BUY them?

[Reply to This | Parent]

Re:HP Did This Too - 'I-Cluster' (Score:1)
by BradleyUffner (**bradley@@nbn.net**) on Thursday December 27, @07:36AM (#2754486)
(User #103496 Info | http://slashdot.org/)

"I-Cluster".... but how many colors does it come in?

[Reply to This | Parent]

Sure(Score:2, Offtopic)
by jsse on Wednesday December 26, @11:30PM (#2753989)
(User #254124 Info)

I always think that it isn't worth to waste the valuable garage space on my second-hand japanese car, which worth no more than $1,000.

Now it is used to place a $41,000 supercomputer! Ph43r m3!!

but then, I wouldn't allow anyone driving a car into my garage(WATCH THAT NETWORK CABLES ON THE GROUND!), so should I build another garage for my real cars?....

[Reply to This | Parent]

> **Re:Sure**(Score:1)
> by lazy_greenhouse_gas on Thursday December 27, @01:15AM (#2754173)
> (User #544084 Info)
>
> I just think of the crappy switching layout and think to myself: Think: set think! [I am glad I'm drunk because ordinarily a bunch of clustered dual processor equipped machines equivocating on the nearest VC makes me ill, But chemically now, I THINK IT IS PURE ZEN.]
>
> [Reply to This | Parent]

easy cowboy (Score:3, Funny)
by ProfKyne on Wednesday December 26, @11:37PM (#2753995)
(User #149971 Info | http://toolshed.down.net/)

Those are some interesting ideas.

Now how about organizing them before publishing them? Call me pre-postmodern (and I'm still in my twenties), but I tend to learn more from a coherently-organized message than from a random jumble of statistics and facts. Cringely jumps from a detailed description of the KLAT2 and its innovative networking technology to a brief description of UWB. And then it's over.

Maybe I'm missing something.

[Reply to This | Parent]

Re:easy cowboy(Score:1)
by Maditude on Thursday December 27, @12:00AM (#2754042)
(User #473526 Info)

Yep, it was still a fun article, though. Now, I'm off to read what I can about UWB, and why one would need a super-computer to use it...

[Reply to This | Parent]

> **Re:easy cowboy**(Score:2, Informative)
> by Maditude on Thursday December 27, @12:08AM (#2754063)
> (User #473526 Info)
>
> well, that was an easy search...
>
> If you wanna check out a sizable collection of .PDF's on the subject of Ultra Wide Band, uwb.org has some links here [aetherwire.com].
>
> [Reply to This | Parent]

Re:easy cowboy(Score:2)
by Squeeze Truck (**xmsho@!SHPAM!NEIN!yahoo.com**) on Thursday December 27, @01:44AM (#2754202)
(User #2971 Info)

If you followed Bob's 802.11b adventures (which ran off-and-on for about 2-3 months), you know that this is the beginning of what will be a whole series of articles about this supercomputer.

Yes, he is actually going to try to build this thing, and he is going to document and post his progress as well as every single technical snag and kludgey solution.

I can hardly wait!

[Reply to This | Parent]

Now what...(Score:1, Redundant)
by jsse on Wednesday December 26, @11:37PM (#2753997)
(User #254124 Info)

Now what am I going to do with the extra computational power that I created?

Running Super-SETI at home, claiming to be the greatest contributor when they really find ET?

Running Super-Quake with all the transparant cheat-code on without a slight jitter?

Rendering MSN frontpage in less than a second, with Mozilla?

Any better idea?

[Reply to This | Parent]

Re:Now what...(Score:2)
by jonbrewer on Thursday December 27, @12:11AM (#2754070)
(User #11894 Info | http://www.rock-chalk.com/)

I'd really like a cheap farm for video compression. I tied up a G4 433 for six hours last week compressing a 20 minute movie using Sorenson 3. Fortunately was using OSX and so the machine remained relatively responsive, but still, six hours pinned just for 20 minutes. (Of course it did take a 4GB movie down to 150 MB)

So now that we have a cheap supercomputer, all we need is cheap software. :-) I imagine Apple won't be porting iDVD to Linux anytime soon, and the stuff the studios use is either custom or very expensive.

[Reply to This | Parent]

Re:Now what...(Score:1)
by Graff on Thursday December 27, @12:37AM (#2754112)
(User #532189 Info | http://slashdot.org/)

If you upped the priority of the process you might have gotten it to work a bit faster. The renice command sets the priority of a process so that it will take more processor time. Try using a value of -16 (lower values are higher priorities, go figure), but be warned that your computer might now be quite so responsive. It's a small price to pay if it cuts the time from 6 hours to 3, however.

Just do the following:

1) start the program going
2) run terminal
3) type top and hit return
4) look for the pid number for your process
(this is the pidnumber in step 6)
5) hit control-c
6) type sudo renice -16 pidnumber
7) enter the administration password
8) watch the time needed drop

[Reply to This | Parent]

Re:Now what...(Score:1)
by mlk on Thursday December 27, @01:14AM (#2754172)
(User #18543 Info | http://www.gasmic.org.uk/)

Not knowing what commands are on MacOSX, but this should work too...

renice -16 ‘ps | grep <insert app name here> | grep -v grep | awk ’{ print $1 }’‘

if you have a few apps, stick it in a loop like:

for i in ‘ps | grep <app name> | grep -v grep | awk ’{ print $1 }’‘; do renice -16 $i; done

(change ’renice’ to ’kill’, and you have my fav alais)

[Reply to This | Parent]

Re:Now what...(Score:1)
by jrockway (**jrockway@@@imsa...edu**) on Thursday December 27, @04:47AM (#2754363)
(User #229604 Info | http://notes.sourceforge.net/ | Last Journal: Saturday December 08, @01:13PM)

instead of that ‘ps | grep...‘ stuff, you can use the pidof command to get the pid of any app.

i.e.

$ pidof bash
345 654 378
$

[Reply to This | Parent]

Re:Now what...(Score:1)
by mlk on Thursday December 27, @06:31AM (#2754451)
(User #18543 Info | http://www.gasmic.org.uk/)

cool... err but
$ pidof bash
bash: pidof: command not found

bah, and I can’t find it on google... where does this wonderful tool live?

[Reply to This | Parent]

Re:Now what...(Score:1)
by Sunda666 (**bofh.ig@com@br**)on Thursday December 27, @08:17AM (#2754529)
(User #146299 Info | http://slashdot.org/)

In my Mandrake 8.1 box it lives inside SysVinit-2.78-11mdk (rpm). It may be something similar for you, unless you don’t run linux, in that case, no luck, ’cuz pidof seems to be dependent on a /proc kernel interface. Anyway, you can buid yer own pidof with ps+grep+sed/awk/tr in a shellscript like I did on an old Solaris box. Btw, that package also brings the nice "killall" command ;-)

[Reply to This | Parent]

Re:Now what...(Score:1)
by mlk on Thursday December 27, @06:45PM (#2756722)
(User #18543 Info | http://www.gasmic.org.uk/)

ahh, not a linux system (Cgywin @ work, Cgywin/FreeBSD @ home).

Ta.

[Reply to This | Parent]

Re:Now what...(Score:2)
by jonbrewer on Thursday December 27, @02:49PM (#2755683)
(User #11894 Info | http://www.rock-chalk.com/)

Thanks! I'll try it out when I get back to work.

This movie project was my first experience with OSX, and the first real time I've spent with a Mac since I gave away my 7100 a few years ago... With so much control over the OS and a system that didn't crash on me once I think I'll be spending more time with it.

[Reply to This | Parent]

Re:Now what...(Score:1)
by Alan Partridge on Thursday December 27, @07:56AM (#2754500)
(User #516639 Info)

as there's no such (Apple) computer as a G4 433 then either a) you've OC'd it b) you're lying or c) you've an upgrade card in there. Either way, you could nearly double your performance just by buying the latest bottom-of -the -range Powermac.

[Reply to This | Parent]

Re:Now what...(Score:2)
by jonbrewer on Thursday December 27, @02:45PM (#2755663)
(User #11894 Info | http://www.rock-chalk.com/)

All I know is that it's a G4 at somewhere in that range. Maybe it's 466? It's gray and white, and I bought one of those nifty 17" flat panels for it.

It was idle and had been running OS 9. I swiped it and installed 10 on it because I needed to produce a video in short order and didn't want to fuck around with installing a firewire card and Adobe Premier in my NT workstation.

Really iMovie seems to be a cool program. It was no

problem to import the video, cut it up, resequence it, add transitions, sound, etc. The only problem I had was that the output for full-screen high quality was 4+ GB, and compressing it so that it would look good took me several tries of multiple-hour conversions.

[Reply to This | Parent]

Re:Now what...(Score:1)
by archen on Thursday December 27, @08:58AM (#2754598)
(User #447353 Info)

Okay, so this brings up the question, why set up a farm at all? It seems to me that you would be better off just getting another Mac, networking the machines, and just let the *other* machine do the rendering. Setting up any reasonable farm would probably take up way more room, electrisity, and would most likely run you about the same cost in the end.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Not Just A Supercomputer; Create A Super AI Mind.(Score:2, Insightful)
by Mentifex on Wednesday December 26, @11:42PM (#2754008)
(User #187202 Info | http://mind.sourceforge.net/rejuve.html)

What good is a supercomputer in your garage if you do not use it to maximize garage-holder value? If you provide supercomputer habitat for the progeny and supercomputer embodiment of the JavaScript AI Mind, [sourceforge.net] which has also been coded in Forth as Mind.Forth Robot AI, [scn.org] then your home-sweet-home garage will be a major waystation on the road to the Technological Singularity. [caltech.edu]

Just as the Shroedinger Equations for atomic bombs and such were developed seventy-five years ago when Erwin Schroedinger spent his 1926 Christmas vacation holed up in the Swiss Alps and working out a few mathematical formulas that shook the world, nowadays over the 2001 Yuletide there have been the first stirrings of True AI in the JavaScript AI Mind, [sourceforge.net] which any garage tinkerer may adapt for either 'pert near all-powerful supercomputer AI or a killer-app if not killer robot. [mit.edu]

Following in the footsteps of the giants who created Visual Basic Mind.VB [virtualentity.com] and Java-based Mind.JAVA, [angelfire.com] be the first on your block to create the ***supercomputer-based*Garage-Mind**

[Reply to This | Parent]

- **2 replies beneath your current threshold.**

What is 10base-100? (Score:1)
by zoid.com on Wednesday December 26, @11:46PM (#2754017)
(User #311775 Info | http://zoid.com)

I thought it was 100base-T? Am I missing something?

Here's the qoute *"And fast Ethernet (10base-100) costs about three percent of gigabit Ethernet on a per-card basis, so using four cards per PC still saves 88 percent."*

Google results for 10base-100
- Results 1 - 10 of about 81.

Google results for 100base-T
- Results 1 - 10 of about 64,800

[Reply to This | Parent]

Re:What is 10base-100? (Score:3, Informative)
by SuzanneA on Thursday December 27, @12:16AM (#2754078)
(User #526699 Info)

As I understood it, 10base-100 was the original name for what most people call 100base-TX these days. Some people still seem to refer to it as 10base-100.

Btw, a little nitpick, the TX would refer to 4 pair (all 8 conductors), 10base-T uses 2 pair, 10base-TX and 100base-TX use all 4 pairs.

[Reply to This | Parent]

Re:What is 10base-100? (Score:2)
by s20451 on Thursday December 27, @01:19AM (#2754177)
(User #410424 Info | http://www.utoronto.ca/)

It used to be that saying "10 base X", where X was a number, implied that the medium was coax cable where the maximum length of the network was given by X. However, usually X was given in hundreds of feet, such as "10 base 2" or "10 base 5". This could yet be an error ... haven't seen coax used in a real network for years.

[Reply to This | Parent]

Re:What is 10base-100? (Score:1)
by SuzanneA on Thursday December 27, @01:50AM (#2754211)
(User #526699 Info)

Umm, I thought 10base-5 was AUI, ie 5 signals (CI, TX, RX,(in differential +/- pairs) Gnd and +12v). I always assumed that was where the '5' came from. And I seem to remember that AUI's maximum cable run is significantly more than 500 feet (more like a couple of miles if you plan your network properly, from what I remember).

It always made sense to me that way anyway, AUI is 5 signals, 10base2 (thin-net to the chronologically challenged among us) uses 2 signals.

[Reply to This | Parent]

Re:What is 10base-100? (Score:1)
by wierdo on Thursday December 27, @04:24AM (#2754347)
(User #201021 Info)

Umm, I thought 10base-5 was AUI, ie 5 signals (CI, TX, RX,(in differential +/- pairs) Gnd and +12v). I always assumed that was where the '5' came from. And I seem to remember that AUI's maximum cable run is significantly more than 500 feet (more like a couple of miles if you plan your network properly, from what I remember).

The number used to refer to the number of meters (approximately, in hundreds). Cheapernet could do about 200, and Thicknet could do about 500. Also, the AUI connector has nothing to do with the physical thicknet wire, it only has to do with the exchange between the card and transceiver (non AUI cards just have the transceiver built on). 10Base5 is just rather thick coax with a center conductor and a braided RF shield.

-Nathan

[Reply to This | Parent]

Re:What is 10base-100? (Score:2)
by bwalling (**wallinblatgtedotnet**) on Thursday December 27, @08:27AM (#2754553)
(User #195998 Info)

Yes, and the 'T' in 10BaseT stands for 'T'wisted Pair.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

case screws(Score:1)
by jedi98629 on Wednesday December 26, @11:47PM (#2754019)
(User #544161 Info)

where do we get um? where do they go, it seems u have enough then u run out! does ne1 know of a site that sells um?

[Reply to This | Parent]

You ediot!(Score:2, Troll)
by Robber Baron on Thursday December 27, @12:09AM (#2754067)
(User #112304 Info | http://slashdot.org/)

You haven't been doing this for long, have you? You scavenge 'em from other cases, that's where! Case has 4 screws, you put 2 back in the case and put 2 in your bag! That way you never run out of screws!

Sheesh...!

[Reply to This | Parent]

Re:You ediot!(Score:1)
by jedi98629 on Thursday December 27, @12:19AM (#2754081)
(User #544161 Info)

normaly like 10 for $5 at frys ne ways

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:case screws(Score:1)
by jayrtfm (**jslashdot@rtfm.nu**) on Thursday December 27, @03:11AM (#2754283)
(User #148260 Info | http://www.rtfm.nu)

www.directron.com
hardtofindparts.com

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Closing statement(Score:1)
by Proteus Child on Thursday December 27, @12:08AM (#2754064)
(User #535173 Info | http://www.virtadpt.net/core.html)

I've decided to call her Wendy.

I wonder if he's referring to Stahn Mooney's wife from Rudy Rucker's ***ware** novels...

[Reply to This | Parent]

Re:Closing statement (Score:1)
by mge (**mge@nospam.ozemail.com.au**) on Thursday December 27, @04:19AM (#2754340)
(User #120046 Info | http://www.ozemail.com.au/~mge)

I've decided to call her Wendy.
He's Bob the Builder [bobthebuilder.org] and the computer is Wendy (who does all the work). Where's Scoop Muck & Dizzy ?

[Reply to This | Parent]

/. needs a Cringley icon, any suggestions? (Score:4, Funny)
by John Harrison on Thursday December 27, @12:09AM (#2754066)
(User #223649 Info | http://www.angelfire.com/games4/anirak/)

I think a fake Stanford degree would do nicely.

Maybe they could set things up so that ALL his articles hit the main page as soon as he posts them.

If this were the case he could put a "discuss this article" link on his page and simply link to /.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Old news (Score:4, Offtopic)
by SumDeusExMachina on Thursday December 27, @12:28AM (#2754095)
(User #318037 Info | http://slashdot.org/)

Sorry to say it guys, but this is a repeat of an old Slashdot post that linked to an ArsTechnica article [arstechnica.com] more than a year old.

Still though, after having to wallow through Cringley's painful lack of comprehension of basic technical knowledge, reading the ArsTechnica piece again was quite refreshing.

[Reply to This | Parent]

Re:Old news (Score:2)
by Wavicle (**org.wavicle@joe**) on Thursday December 27, @02:41AM (#2754257)
(User #181176 Info)

Thanks for the link to the ArsTechnica article, you are right it is a much better read on KLAT2. I was particularly interested by the network design, I'd never thought about how to solve that problem and thought the KLAT2 solution was great.

[Reply to This | Parent]

Re:Old news(Score:2)
by Rocketboy on Thursday December 27, @06:41AM (#2754453)
(User #32971 Info)

I think you missed the point. Cringley isn't a gearhead and doesn't claim to be. If he can make this work then anyone with sufficient interest and a willingness to learn can build their own scaleable computer cluster, for whatever goofy project turns them on. Does this loss of technical priesthood priviledge bother you? :)

Look on the bright side: at some point in the future when your relatives bother you for help with computer problems, the problems might actually be interesting. Instead of wondering why Windows has eaten Uncle Bob's resume, they'll wonder why there's an anomalous 6ms latency on node 4 and want you to help them figure out whether the problem is related to cable shielding degradation or whether there's a subtle error in the routing algorithm...

[Reply to This | Parent]

Re:Old news(Score:1)
by Dun Malg on Thursday December 27, @10:52AM (#2754877)
(User #230075 Info)

Yeah, and we'll still roll our eyes and say to ourselves "when will they learn to run network cable somewhere other than through doors and windows?"

"Hey Uncle Bob! Here's your latency problem: the cable has been smashed by the door."

[Reply to This | Parent]

Re:Old news(Score:1)
by Pussy Is Money on Thursday December 27, @11:37AM (#2755031)
(User #527357 Info | http://slashdot.org/)

> *I think you missed the point. Cringley isn't a gearhead and doesn't claim to be.*

Eh? What's Cringely mean by this then: "Why worry when you can nerd out, instead?"

[Reply to This | Parent]

The Ultra Wide Band Working Group (UWBWG)(Score:2, Informative)
by Harumuka on Thursday December 27, @12:28AM (#2754097)
(User #219713 Info | http://duckbutter.i8.com/)

Through Google I found the UWBWG [uwb.org], and there's lots of detailed papers at Aetherwire [aetherwire.com]. Interesting reading.

[Reply to This | Parent]

the ignorant are easily amused (Score:5, Insightful)
by markj02 on Thursday December 27, @12:37AM (#2754114)
(User #544487 Info)

Cringely is completely missing the point. KLAT2 uses multiple routes and switches, not channel bonding. And what the project contributes is not the basic idea of using multiple network interfaces (which is decades old), but a specific approach: using genetic algorithms to optimize the network topology. More traditionally, such clusters have used manually designed topologies with known performance bounds.

[Reply to This | Parent]

Re:the ignorant are easily amused (Score:4, Insightful)
by funnyguy (**funnyguy@no_spam.digitalsmackdown.net**) on Thursday December 27, @02:32AM (#2754248)
(User #28876 Info)

the FNN which was created for KLAT2, is not a speed increase of ethernet by using multiple network cards. It basically allows full speed (100mb full-duplex) without a 64+ port, full wire speed switch. If such a thing even existed. Cringley's network is just 4 channel bonded network layers. Channel bonding actually has slightly more overhead than FNN. With KLAT2's FNN, each machine is on 4 seperate networks. No matter what other machine a single machine needs to communicate with, they each share one common network. Each network is held together with one switch, so there is always a full speed route to every other computer in the cluster. The OS handles this directly by using /etc/ethers to hard code the hardware addresses of every computer. different networks are different subnets, and the network routes are layed out accordingly.... blah blah... I could go on and on, but aggregate.org has more info.

As for the algorithm everyone is talking about. there are some versions which can return a pattern in a second or two on a slow celeron. then there are some version which are designed optimized for certain datasets which take time to run. but generally, you don't need a supercomputer to design a fnn. even with 64+ nodes.

[Reply to This | Parent]

Re:the ignorant are easily amused (Score:4, Insightful)
by Zeinfeld on Thursday December 27, @07:45AM (#2754491)
(User #263942 Info | http://slashdot.org/)

Quite, the problem with measuring super-computer performance is that every single machine in the class is highly optimised to a particular niche. That is the main rason they are so expensive compared to the components - large machines sell in the tens rather than the tens of thousands.

Anyone can build a machine with a really high processing performance. Just by a few thousand X boxes and plug them into the same ethernet cable. The real issue is how much communications bandwidth you have between the CPUs. Some problems require almost none - the 'trivial parallelism' problems like DEScrack and the mandelbrot set. In the 1980s we had a machine that had 1000 20MHz processors that could bang out mandelbrot sets like anything (using the goofy algorithm, not the modern optimizations). But is wasn't much use for anything else.

The problem with competitions for supercomputers is that they rarely measure the communication bandwidth because (a) its hard to do and (b) the effect on performance is highly algorithm dependent.

As for the KLAT's ingenious topology, I once did some research in the area myself when it was the fashion. I tried using minimum diameter graphs which should in theory have been better than a plain taurus. However as with Bill Dally at Cal Tech I concluded that the additional cost of exotic topology (more than double the price) was not really justified by the performance advantage (about 10-30% on a good day).

Certainly the many companies that set up to build transputer based processing clusters with high performance switches inside did not seem to go anywhere much.

Using a high performance router at the core of a processing cluster might be interesting. They are pretty cheap these days and are headed cheaper.

[Reply to This | Parent]

Supercomputing? Why bother? (Score:5, Insightful)
by Bowie J. Poag on Thursday December 27, @12:46AM (#2754126)
(User #16898 Info | http://system26.com/)

Speaking as someone who, yes, *has actually worked with the big iron...*

Why bother. Remember, Moore's Law is still in effect. Recently, we've hit the point in the curve where supercomputers are no longer needed, nor cost-effective. That is, the time it takes for the industry to deliver a far superior product has eclipsed the average lifespan of your typical supercomputer.

We're living in an age where a single graphing calculator you can buy at Walgreens has more horsepower under the hood than what got us to the moon 30 years ago. Your $2700 PC will be worth $150 within 3 years.

Having a supercomputer in every garage makes about as much sense as taking a rocket fuel-powered dragster to the supermarket for a gallon of milk.

Cheers,

[Reply to This | Parent]

Re:Supercomputing? Why bother (Score:1)
by linzeal (**koat@@@disinfo...net**) on Thursday December 27, @01:22AM (#2754180)
(User #197905 Info | http://www.anarchsforlife.org/)

"taking a rocket fuel-powered dragster to the supermarket for a gallon of milk"

sorry to be a pisser but wouldn't that analogy fall flat considering that advances in land speed vs computation speeds are highly different? the question I'm wandering is this, "What the fuck are we supposed to do with all this processing power" In other words what is the killer app that would use this? I can only come up with artificial intelligence used for slave like tasks around the home + generic latest whiz bang entertainment. Does anybody else know of anything?

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:Supercomputing? Why bother (Score:3, Interesting)
by ASCIIMan (**jsaboe@arti[ ]org ['fex.' in gap]**) on Thursday December 27, @01:36AM (#2754191)
(User #47627 Info)

Sadly, you are partially correct [arxiv.org].

[Reply to This | Parent]

you forgot development cost (Score:1)
by guybarr on Thursday December 27, @03:06AM (#2754278)
(User #447727 Info | http://slashdot.org/)

the article forgets development costs; development of large parallel applications cannot be done on a MUCH smaller one.

my guess is the best strategy is something like:

1) devellop a prototype on a tiny cluster
2) buy (or rent) a medium-size, medium-speed cluster and iron out the network-related and paralelism-related problems.
3) then look at moore's law and the hardware roadmaps, and decide when it is best to buy the super-computer for actually solving your large-scale problem (which is what parent-comment discusses).

[Reply to This | Parent]

Plenty of reasons (Score:2)
by crisco on Thursday December 27, @01:45AM (#2754203)
(User #4669 Info | http://cothrun.com/)

<disclaimer>I know little about 'big iron'</disclaimer>

But isn't the point of these kind of projects to derive more computing power in a generic form, something useful to many situations?

Sure, my Athlon isn't too slow at the piddly little hobbyist 3d rendering stuff I play with, but what if I suddenly get grandiose dreams of 3D worlds, wouldn't it be nice if I could divert the down payment for a house and move myself a year or two farther along Moore's timeline?

I can think of some small business applications where a nice quick video compression would be nice, especially if the hardware and software were all generic enough to buy off the shelf without a serious outlay of cash. Granted, there are very nice and very fast hardware codecs but then what if that same small business wanted to render some 3D along with that video stream? Or I'm working for them and get permission to render my VR opus overnight?

What about applications that could be enabled by cheap and standardized GFLOPs? If you can't think of any you're not thinking hard enough.

[Reply to This | Parent]

Two Reasons(Score:3, Interesting)
by nuintari (**rot13*ahvagnev@ahvagnev.arg*rot13**) on Thursday December 27, @05:03AM (#2754376)
(User #47926 Info | http://nuintari.net)

One: Because we can.

Two: Ever seen the stuff they run on supercomputers today? Simulating a supernova for 1 nano second can take a month of CPU time on some of the world's fastest supercomputers. Oh, its still very nessesary. If the past is any indication of the future, we will always need blazing fast machines to push the limits in the scientific world.

I assume you mean big iron as in mainframe, which is NOT a supercomputer by any means. Mainframes do the work that runs this world, supercomputers help us discover what we'll do in tommorow's world. They are very different worlds.

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:4, Interesting)
by Rasta Prefect on Thursday December 27, @05:21AM (#2754398)
(User #250915 Info)

I don't know about every garage, but as someone who is currently working on a research project at a University, I can say we'd find something like this very interesting, as would a number of other departments on the campus. We've got a couple of Crays sitting around, but can't afford the cost of maintaining the things. Something like this would be way more affordable to buy and maintain for educational/research purposes where traditional supercomputers aren't even vaugely an option.

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:3, Insightful)
by Rocketboy on Thursday December 27, @06:53AM (#2754463)
(User #32971 Info)

Why bother. Remember, Moore's Law is still in effect

What's Moore's Law got to do with this? This is more the area of Murphy's Law, I think. As for *why bother*, heck, I don't know: because I can. When I had a 286 PC, it did everything I wanted it to do at the time, why did I need a 386? My 386 was dandy, what was the benefit of having a 486? My trusty 486 was quite fast at the time: was the premium price of a Pentium worth it?

Stuff happened! People thought up new applications for newer and faster machines, and then we couldn't do without them. Remember when your average machine could push out 5 frames per second of 160x120 video, tops? I remember when encrypting a 26k text file took almost a minute, each. Back in the day I didn't think I'd be watching DVD videos on my desktop or laptop PC: who'd want to, that's what TVs were for!

Years and years ago I had a program that simulated stellar interaction in small globular clusters. A few hundred stars pushed a 086 as far as it would go and it was still an overnight crunch to simulate much interaction. I kinda gave up on it after a while: other interests, etc. I think about it occasionally, wondering when that sort of stuff will get commoditized to the point where I can take a look at it again without having to pull away from current projects for six months. Not quite there yet, I think, but gettin' close, gettin' mighty close... :)

[Reply to This | Parent]

Re:Supercomputing? Why bother (Score:1)
by guygee on Thursday December 27, @08:26AM (#2754550)
(User #453727 Info)

Why bother. Remember, Moore's Law is still in effect. Recently, we've hit the point in the curve where supercomputers are no longer needed, nor cost-effective. That is, the time it takes for the industry to deliver a far superior product has eclipsed the average lifespan of your typical superco mputer.

True, Moore's Law needs to be factored in to the cost/benefit calculations, but are you claiming that, in the time it takes to build a cluster using CPUs with computational power P(OLD), the total computational power of the N node cluster PN=N*(Parallelization Efficiency)*P(OLD) will be approached by the computational power of a single processor P(NEW)? Granted, the previous discussion is simplified, as the efficiency is problem dependent and also dependent on N, but for many reasonable problems and

sufficiently large Ns the answer is 'Of Course Not!'.

And for what problems can we use the massive computational power afforded by clusters?

Video Compression, 3D feature extraction, temporal update of remote sensing imagery, ultra-wideband simulation in urban environments, dynamic forest growth simulations, computational fluid dynamics, N-body simulations of star clusters, weather and climate prediction, sea ice tracking and prediction, intelligent automated forces, disaster planning and simulation using autonomous entities...

on and on...Only limited by your imagination!

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:1)
by guygee on Thursday December 27, @10:18PM (#2757209)
(User #453727 Info)

Yeah, my wife can't stop playing pysol!

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:Supercomputing? Why bother? (Score:5, Interesting)
by Zeinfeld on Thursday December 27, @08:32AM (#2754558)
(User #263942 Info | http://slashdot.org/)

Speaking as someone who, yes, has actually worked with the big iron...

The machine I worked on in the early 90s is still in the top 100 of the supercomputer charts (or would be if the compilers knew about it).

While a desktop Cray-1 can now be had at commodity prices the machine is now two decades old. The obsolescence rate is nowhere near as giddy as some would claim.

The really big iron tends to have a lifespan of about five years and is typically retired because the power consumption and maintenance costs favor a move to newer hardware. True supercomputers rarely fall victim to Moore's law. Even the KLAC machine discussed only barely qualifies as a supercomputer, 64 processors is at the low end of the scale. People have Web servers with that number of CPUs. True big iron starts with a few hundred processors and goes up to the tens of thousand.

If by working on the big iron you merely mean you used to use IBM 3090 class machines, then the joke is on you, those machines were often obsolete before they were manufactured. When I worked at one lab I had a desktop machine (first production run Alpha) that was considerably more powerful than the CPUs of the just-installed campus mainframe.

Fact is that many of the people buying 'big iron' in the 1980s and 1990s were incompetent. They bought machines that ran the O/S they knew, which often meant they bought obsolete IBM mainframes for applications where a ntwork of IBM PCs would have served far better. I spent quite a bit of time in institutions where wrestling control of the computing budget from an incompetent IT dept was a major issue. In fact the World Wide Web began at CERN in part as a result of such a struggle. Tim, bless him wanted the physicists to switch from the IBM mainframe CERN VM to use NeXTStep machines. One of the schemes that the CERN CN division had cooked up to force people to use the mainframe was to only make information such as the address book available on the IBM mainframe. Attempts to make it more widely available were treated much the same way that Napster was treated by the RIAA. The Web took off at CERN initially because you could

access the address book from a workstation or from the VAX.

Very few mainframes were actually designed to provide fast processing. The IBM 3090 series was actually designed to perform transaction processing for banks. As a scientific CPU it offered tepid performance at a price arround 100 to 500 times the price of a high power workstation.

There are certain applications in which CPU cycles are still the limiting factor. Admittedly they are much smaller as a proportion of the whole than they were 10 years ago.

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:2)
by foobar104 on Thursday December 27, @12:43PM (#2755254)
(User #206452 Info)

Even the KLAC machine discussed only barely qualifies as a supercomputer, 64 processors is at the low end of the scale. People have Web servers with that number of CPUs.

I know this is completely off topic, but Travelocity (the travel web site, you know) has lots and lots and lots of SGI Origin systems for running their front-end app-- it does session management and HTML generation, and passes data back and forth from the user to the database, so it's basically just a web server.

I've lost count, but I know they've been buying at least one 32-processor system per quarter for several years now. And, if I remember right, they recently bought something like four 32-proc Origin 3000 systems, too.

So, yeah, they've got a hell of a big web server. ;-)

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:1)
by (outer-limits) on Friday December 28, @01:28AM (#2757707)
(User #309835 Info)

Not true! In pure processor speeds, you are correct, but an IBM big iron, had a lot more going for it.

1) Massive I/O capablities.
2) Excellent instrumentation that Unix hints at.
3) Software reliablitity that Unix wishes for. e.g. All system software had to have a capacity to restart itself if it failed. None of this 'kernel panic' I'm bailing out rubbish. Apparently half the code was just for recovery/reliability purposes.
4) Security. The number kiddies getting into IBM OS is miniscule compared to Unix.
5) Software base. Who can be bothered building the software for a bank or airline.
The cost is too much, (look at bank fees), but their is at least a partial reason for it all.

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:2)
by Zeinfeld on Sunday December 30, @06:34PM (#2766034)
(User #263942 Info | http://slashdot.org/)

Yes the large IBM mainframes do have impressive specs for use in banks. I have never criticized their use in that context. I have criticized their purchase by IT managers in major science labs where they are exceptionally unsuited to the work performed and the reasons for the purchase have more to do with ego than technology.

However I disagree on your assement of the reliability and security of the beasts. Used in a general computing environment the series is notable for its fragility. If on the other hand you only use the machine for one task, then the simpler the better and lacking almost every feature you would reasonably expect in an O/S MVS is a great choice, but by the same measure so is MSDOS.

Comparison to UNIX merely shows how far we have sunk. UNIX has never been a secure or a reliable O/S on the measures relevant to financial services. Even today if you want to run something like a chemical plant or a nuclear power station you use VMS.

[Reply to This | Parent]

Re:Supercomputing? Why bother? (Score:2)
by Multics on Thursday December 27, @09:14AM (#2754634)
(User #45254 Info)

I am reminded of the US Patent Office manager that reported that all that could be invented has been invented. **NOT**

As someone with their own supercomputer (ACME [purdue.edu] and /. of 6/6/2000 [slashdot.org]) I can say that you'll come up with a bunch of things you would like to do but haven't found the CPU time to do. This of course presumes that you have half a brain.

We run NP complete problems to completion. Our idle loop is a prime number factoring of one of the RSA challenge numbers. If we were to hit one of those numbers (even the $10k one) we'd more than pay for the machine (but not the A/C or power).

I do ponder what a typical PBS.org [pbs.org] reader would do with their own supercomputer. Most lack the sophistication to get a return on investment on even just the air conditioning and electricity better yet the cost of the hardware and the set up. But what do you expect from someone who practices identity theft [wired.com]?

All that said, it is having this class of power out in the hands of the masses that could well bring the next BIG NEW IDEA. It is neat that it can be done and I hope a bunch of /.ers write the code they want to run on such a thing *then* build one to run it.

-- Multics

[Reply to This | Parent]

Oh no! Someone stole Peter Pan's identity! (Score:2, Interesting)
by Esoteric Moniker (**dkoontz.REMOVE-TO-EMAIL@ordizmelby.com**) on Thursday December 27, @01:45PM (#2755416)
(User #515235 Info)

>But what do you expect from someone who practices identity theft [wired.com]?

How exactly do you steal the identity of someone who never existed? The man we know as Robert X. Cringly was the Infoworld Cringly for 8 years! I'd say he pretty much defined who that Cringly was (or is today, I don't read Infoworld.) Saying he practices identity theft would be a valid argument if the Infoworld Cringly was someone else and he had just appropriated the name for use on PBS, but he didn't. He built up the Infoworld Cringly and so I believe he has a right to go on with the persona he's used for all this time.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

nah... (Score:3, Offtopic)
by elmegil on Thursday December 27, @12:48AM (#2754131)
(User #12001 Info)

I'd rather have a superMODEL in every garage.

[Reply to This | Parent]

Re:nah... (Score:1, Offtopic)
by Squeeze Truck (**xmsho@!SHPAM!NEIN!yahoo.com**) on Thursday December 27, @01:51AM (#2754213)
(User #2971 Info)

I keep my supermodels in the broom closet.
I'm not parking my car on the street when it rains, yeesh!

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Imagining a cluster of TiBooks now. (Score:1, Troll)
by 2nd Post! (**louis_wang.hp@com**) on Thursday December 27, @01:04AM (#2754158)
(User #213333 Info | http://nekobox.org/~sillyoldbear)

Of course, heat *is* an issue... but imagine a half inch between each layer, you would rack mount them at a slight angle and use heat convection to pull up air, a chimney effect...

$1,499 for a 600MHz iBook, 20 of these would cost ~$30k, but you couldn't use the channel bonding concept, unfortunately. You'd be stuck with 100bT, which would probably get swamped with any real work in a 4 iBook per switch, 6 switch topology... without even trying to minimize latency.

20 iBooks would also take up about
8x9.1x11.2 per stack, so all 5 stacks would take up about 40 inches in

space... You could stick these next to a desk or bed and use it as an end table! Okay, that'd be a tall end table...

$2,999 for a 667MHz ToBook, 20 of these would cost ~$60k, but these *are* Gigabit capable! In a similar topology, or perhaps because of prices for Gigabit switches, you might as well use one switch. Who knows?

Of course heat is even more of an issue, but give n the same space as the iBooks, there's a whole extra half inch of space available to the TiBook!

40x9.4x13.5 inches! It would even make a good space heater!

Okay, okay, I know, it's damn expensive. But... consider, how much is a 20 CPU machine from HP or IBM? I know, I know, they tackle different uses, like reliability, uptime, IO throughput, etc. A 4way 680 pServer from IBM is $220k, from their own website :)

Damn... I wonder when Apple is going to release a thin rackmount slab server?

[Reply to This | Parent]

Re:Imagining a cluster of TiBooks now. (Score:2)
by nuintari (**rot13*ahvagnev@ahvagnev.arg*rot13**) on Thursday December 27, @05:08AM (#2754385)
(User #47926 Info | http://nuintari.net)

> Damn... I wonder when Apple is going to release a thin rackmount slab server?

When they can figure out how to make it cute.

[Reply to This | Parent]

Even more interesting ideas (Score:3, Interesting)
by 2nd Post! (**louis_wang.hp@com**) on Thursday December 27, @02:03PM (#2755480)
(User #213333 Info | http://nekobox.org/~sillyoldbear)

I have a TiBook. Apple *could* do away with the screen, keyboard, and speakers, and replace the CD-ROM slot with a ram-bay.

Not only could you hook them together using gigabit ethernet, you could take advantage of the firewire port as well, perhaps chaining them together with some sort of SAN, though you are still limited by the ~50MBps, though perhaps that's not useless, I don't know.

Still, with the ram bay you could up the memory from 1GB to something crazy, like 16GB. The battery is useful as a backup-emergency device, allowing the slab to run for about 4

hours in case of emergency (woo!).

You could even concievably netboot the thing, since OS X allows for that, right? Minimize the hard drive or get rid of it altogether... you could seriously make a slab about the size of 1/2" by 8" by 8" I suspect :)

[Reply to This | Parent]

Talk about power! (Score:2, Informative)
by alouts (**alouts@hotmail**) on Thursday December 27, @01:04AM (#2754159)
(User #446764 Info)

Literally.

The costs of a clustering setup go well beyond the initial hardware. At the level that Cringely is building (with only 6 machines), it may not be a huge problem, but running KLAT2 will cost you some dough just for the power.

A couple years ago I made a dumb mistake and bought a saltwater reef tank without realizing that it would end up costing me $150/mo. in electricity bills (it ain't cheap running 4000+ watts in lights and pumps 18 hours a day). I'm sure running 66 machines 24 hours a day ain't cheap either.

[Reply to This | Parent]

Re:Talk about power! (Score:2, Informative)
by Newtonian_p on Thursday December 27, @11:03AM (#2754917)
(User #412461 Info | http://balder.prohosting.com/newtonip/)

Ok, let's see how much this would cost. Let us assume these computers are using 300W power suplies and as a worst case senario, let us assume that all 300W that the PS is capable of supplying is being used in each machine.

I live in Quebec where electricity is the cheapest in the world costing about 6 to 7 cents (CAN) per kWh. I don't know how much it is in the US.

so I have .300 kW/machines x 66 machines x 24 h/day x 0.06 dollars/kWh = 28.50 dollars/day.

28.50$ a day in the worst case might be a bit pricy for a household but it is cheap for a university. Of course, electricitry is much more expensive in the us, I have seen prices of 0.14$/kWh in New-York many years ago but the 300W power supply is probably not being

fully used making it cheaper.

[Reply to This | Parent]

Re:Talk about power! (Score:1)
by ErikZ (**eazolan@davesworld.net**) on Thursday December 27, @01:09PM (#2755311)
(User #55491 Info)

"Let us assume these computers are using 300W power suplies and as a worst case senario, let us assume that all 300W that the PS is capable of supplying is being used in each machine."

That's a pretty stupid assumption.

Considering a 300w PS usually means PEAK watts. (Which means if you run it at 300w for more than a minute, magic smoke appears!)

Lets be generous and say 75 watts operating average.

7$ to run your cluster for 24 hours. If you can afford the space and the 66 machines, you can afford this.

[Reply to This | Parent]

Re:Talk about power! (Score:1)
by alouts (**alouts@hotmail**) on Thursday December 27, @03:15PM (#2755791)
(User #446764 Info)

Fine, 75 watts per machine it is. But let's also assume that we're talking US, maybe California (where I happen to live). We're talking $0.13/kWhr on average [ca.gov]. Let's also assume we're dealing with a "cluster in the garage" type setup here.

So, for Cringely's setup, we're looking at 6 machines, plus a 24 port switch (they seem to run from about 30 - 70 watts, so let's split the diff at 50). That's 500 watts, 24 hours a day.

So sure, for him to run his 6 machine cluster will only cost him about $50/mo. It's not an insane amount, but my point was just that it adds up and tends to be one of those ongoing expenses that people don't consider right off the bat.

[Reply to This | Parent]

Re:Talk about power! (Score:2)
by 2nd Post! (**louis_wang.hp@com**) on Thursday December 27, @04:59PM (#2756269)
(User #213333 Info | http://nekobox.org/~sillyoldbear)

Well, a GHz AMD CPU takes, what, 45W? This supercomputer is only useful when it's working, so I'm going to pretend it's being useful.

Still, here [caltech.edu] someone has take the time to measure the power usage of a 500MHz G3 powerbook. 17.54W under full load! A G4 is a couple W more expensive than a G3, but that's probably offset by the fact that the LCDs won't be powering on at all.

So 66 PCs at 75W sucks up $7 a day.
66 PowerBooks at 15W sucks up $1.50 a day. A month means $210 vs $45, and a year means $2,555 vs $547.5

Of course, the notebooks do cost more than the $2k delta, but 66 iBooks is a lot cooler, niftier, and compact than 66 PCs :)

You could probably stick it in the corner and use it as a space heater.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

- **1 reply beneath your current threshold.**

This is silly (Score:3, Funny)
by Binary Tree (**root@localhost**) on Thursday December 27, @01:07AM (#2754165)
(User #73189 Info)

Technically we almost all have a "supercomputer", depending on what era's standards you're referring to.

Also, if everybody had a supercomputer in their garage, they would no longer be so "super."

[Reply to This | Parent]

If those fans fail... (Score:1, Offtopic)
by FrankDrebin on Thursday December 27, @01:25AM (#2754183)
(User #238464 Info | http://slashdot.org/)

...you'll be lookin' at a whole lotta Kentucky Fried Penguin!

[Reply to This | Parent]

Re:If those fans fail..(Score:1)
by analyst99 (**.Analyst99. .at. .HotMail.Com.**)on Thursday December 27, @12:09PM (#2755138)
(User #193974 Info | http://slashdot.org/)

YUMMY! KF Penguin, make mine extra crispy with coleslaw! ;0)

[Reply to This | Parent]

My Hank Dietz (creator of KLAT2) story (Score:4, Interesting)
by IvyMike on Thursday December 27, @01:33AM (#2754188)
(User #178408 Info)

Dr. Dietz used to teach at Purdue, and I had the good fortune to take a compiler course taught by him. On the first day, when introducing himself, he came to the part where he was describing how to get into contact with him. When giving out his phone number (at Purdue, on-campus numbers were 5 digits long) he mentioed that his phone number was "GEEKS". He added, "No, I didn't ask for GEEKS, but when I figured it out, I thought it was pretty cool."

Needless to say, it was a pretty cool course.

[Reply to This | Parent]

Wow! (Score:1, Flamebait)
by Squeeze Truck (**xmsho@!SHPAM!NEIN!yahoo.com**)on Thursday December 27, @01:38AM (#2754194)
(User #2971 Info)

Can you imagine a beowulf cluster of these supercomputers??!?!

...I'll get me hat...

[Reply to This | Parent]

strange...(Score:1)
by altan on Thursday December 27, @01:44AM (#2754201)
(User #519377 Info | http://slashdot.org/)

tis weird... just at 3:00 in the morning i was thinking of a 3-4 boxed p2/128mb ram beowulf cluster instead of a pentium4/640mbram...

[Reply to This | Parent]

A real supercomputer? Not exactly (Score:5, Insightful)
by fgodfrey (**fgodfrey@bigw.org**)on Thursday December 27, @01:49AM (#2754206)
(User #116175 Info | http://forest.bigw.org/)

The article would have people believe that all a supercomputer is is a collection of not-quite-modern processors, memory, and an interconnect of some sort. This is simply not the case. If it were, why do many (granted a smaller number than before) people still buy real big iron? The answer is that Cringely's (sp?) collection of processors is not a real supercomputer for the kinds of applications that are associated with traditional machines. Traditional vector supercomputers still have processors that are faster than Pentium 4 class systems. Traditional massively parallel supercomputers (which are the most similar to a cluster) have a number of features not found in your average garage built cluster like a truely low-latency interconnect, gang scheduling of entire jobs, single system image for users/administrators/processes.

Clusters are great for embarassingly parallel applications (ie ones that have threads which don't communicate with each other much. This includes things like SETI@home and batch rendering of images. What they don't compare on is applications that communicate a lot like nuclear physics simulations. This is not to say that that will never change in the future, but for the time being it's still true.

Last, and certainly not least, real supercomputers have memory bandwidth that can match the speed of the processor. A Cray or an SGI Origin has an absolutely massive amount of bandwith from the processor to local memory compared to a PC. That allwos a traditional supercomputer to actually *achieve* the fantastic peak performance numbers. On many applications, the working sets are huge and don't fit in cache so you end up relying on memory being fast. On a PC, it's not and I've heard from sources I consider reliable (though I have no actual numbers to back this up so it may be rumor only) that one large cluster site sees around 10% or less of peak on a cluster for a nuclear physics simulation, whereas, on a vector Cray, you can hit ~80% of peak. This means that the cluster has to be 8 times more powerful and when you start multiplying the costs by 8, they start looking like the same price as a real supercomputer.

So my point is that building a real supercomputer does not mean grabbing a bunch of off-the-shelf components, slapping them together with a decent network and running Beowulf (or a similar product).

[Reply to This | Parent]

A real supercomputer? Yes, exactly (Score:4, Interesting)
by Multics on Thursday December 27, @09:51AM (#2754722)
(User #45254 Info)

Your comments are true for a 486. They are not true for anything much newer. An IBM SP machine, which owns half of the top 10 on the top500 [top500.org] list, is basically a commodity parts built system.

Yes, these systems are not sometimes the best for handling vectorizable jobs, but they are so inexpensive compared to the old specialized hardware that it is easier to waste cycles than build special hardware.

As to memory bandwidth. Modern CPU caches make the question nearly moot.

If all of this were not true, then people wouldn't be building clusters and the majority of the top500 list wouldn't be dominated by clusters. Instead there are *3* traditional architecture machines in the top 20. This is the reason that Cray (etal) no longer dominates the marketplace... commodity systems have overtaken nearly all of the specialized hardware world.

-- Multics

[Reply to This | Parent]

> **Re:A real supercomputer? Yes, exactly** (Score:2)
> by foobar104 on Thursday December 27, @12:54PM (#2755279)
> (User #206452 Info)
>
> *As to memory bandwidth. Modern CPU caches make the question nearly moot.*
>
> This is simply not true. Your other points are pretty wacked, too, but I'll take this one because I have personal experience.
>
> I have some image processing code that runs on IRIX, and I recently did a shoot-out between an Origin 2000 and an Origin 3000. Both machines had eight 400 MHz R12000 processors with 8 MB of secondary cache and 4 GB of RAM, and both were equivalently equipped for disk.
>
> The Origin 3000 was almost *twice* as fast as the 2000 was, with identical CPUs, memory, and disk. (The actual numbers are on a spreadsheet at the office, unfortunately.) The

difference? Memory and interprocessor bandwidth. The Origin 3000 platform has a specified memory bandwidth of about 2.5 times the bandwidth of the Origin 2000.

The test involved taking a big multispectral image, splitting it up into tiles, handing each tile off to a thread, and doing some processing on the tiles. The data set was pretty huge, but not so big that it couldn't be cached entirely in RAM, so the first step was to load the whole thing into memory. But for the actual test run, there was a lot of fetch-operate-fetch, which really exercised the memory bandwidth of the system.

So your comment about memory bandwidth being moot is completely off base.

[Reply to This | Parent]

Re:Use DDR RAM(Score:2)
by foobar104 on Thursday December 27, @04:13PM (#2756037)
(User #206452 Info)

I guess your ideas are kind of on the right track, but you should probably familiarize yourself with modern system architecture trends.

Crossbar-style system interconnects are not new ideas. I'm not an authority on the subject, but I know that the Cray Y-MP had a 32-port switch architecture that provided about 1.3 GB per second of memory bandwidth per processor (hope I'm remembering these numbers right!)

The DEC VAX 9000 series had a 1 GB/second CPU-to-memory pathway that utilized a crossbar switch, also.

Both of these systems were in wide use around 1990, give or take a few years. And, of course, the ideas go back much further than that. I used to have a copy of a paper by Wulf in *Communications of the ACM* dated 1974 that described a switch-based multiprocessor system. Can't find it right now, alas.

Things have come a long way. From 1 GB/sec aggregate in 1990 to 22 GB/sec aggregate in 1998 (the Cray SV1) to 40 GB/sec aggregate in 2001 (the

SV1ex). The SV1ex provides *each processor* with 6.4 GB/sec of bandwidth into and out of main memory.

Increasing the speed of the RAM isn't the issue-- the SV1ex uses commodity SDRAM. The issue is building sufficiently large parallel paths for the memory controllers to execute very large parallel fetches into a vector cache.

So I guess you could say that you're headed in the right direction, but you've got a long way to go. ;-)

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Re:A real supercomputer? Yes, exactly (Score:2)
by fgodfrey (**fgodfrey@bigw.org**) on Thursday December 27, @05:03PM (#2756288)
(User #116175 Info | http://forest.bigw.org/)

No longer dominates the Top 500 and no longer dominates the marketplace are two different things. The Top500 benchmark (LINPAC) doesn't do a lot of interprocessor communication and hence is the type of job well suited to a cluster.

As for cycles wasted/cost, that is going to depend on the applications involved. At some point, the sheer cost of the power wasted is going to be a factor. Obviously not on a garage built six node cluster, but if you start talking about 2048p the power *will* be an issue.

The IBM SP, while being *mostly* commodity uses some non-commodity parts and has a lot of proprietary software to make it work.

CPU caches, modern or otherwise, are not an issue with an application that has, say, a 1 gigabyte working set. It simply doesn't fit in the cache no matter what you do. You can restructure loops to make things better, but you're still going to be banging on memory.

You're right, commodity systems have overtaken a lot of areas that used to require traditional supercomputers, but

then, the market for traditional-architecture supercomputers has *never* been big.

[Reply to This | Parent]

Re:A real supercomputer? Not exactly (Score:1)
by The Fun Guy (**bniemira@arserrc.gov**) on Thursday December 27, @12:03PM (#2755118)
(User #21791 Info | http://members.tripod.com/bniemira)

You said: "The answer is that Cringely's (sp?) collection of processors is not a real supercomputer for the kinds of applications that are associated with traditional machines. ... Clusters are great for embarassingly parallel applications (ie ones that have threads which don't communicate with each other much. This includes things like SETI@home and batch rendering of images."

Cringley said: "Beyond using it to heat my office, I plan to keep the supercomputer busy with a video compression project I'm doing as well as further experiments in wireless communication."

Sounds like he's using the right tool for the job, then. I think he's using the term "supercomputer" to refer to a machine that is many, many times more powerful than the PC that a typical user would have sitting on his/her desk. By this definition, my PIII-600 is a supercomputer compared to the 486SX-25 I started with in 1992.

[Reply to This | Parent]

Re:A real supercomputer? - what about software? (Score:1)
by udittmer on Thursday December 27, @12:35PM (#2755228)
(User #89588 Info | http://slashdot.org/)

Lets also not forget the little matter of needing software that can take advantage of parallelism. Not being familiar with QNX I don't know if it can schedule threads or processes across networked computers (my guess would be no), but tools for parallel execution (especially compilers and efficient networking libraries) are still hard to write and generally expensive. Something like MPI can probably be gotten for free these days, but then you're back coding Fortran or C or something, always with a watchful eye on parallel performance. That takes experience and time, both of which aren't cheap. Also, if any communication needs to hapen between processors, network latency usually tends to be a bigger problem than network bandwidth, unless large amounts of data are transferred (in which case good performance may be impossible due to a low CPU/communication ratio).

[Reply to This | Parent]

Re:A real supercomputer? Well, depends (Score:1)
by Zilya on Thursday December 27, @03:08PM (#2755769)
(User #228271 Info)

Fast ethernet is good enough for pretty big range of well-written parallel applications. In general, the ratio of CPU power/communication has to be proportional to nonlinearity/nonlocality ratio of the problem the computer is designed for. Usually, for partial differential equations, explicit timestepping algorithms put little strain on communications. OTOH, once you go to implicit transport equations of any kind, you need all communications you can get.

And, memory bandwidth is a bitch, I agree. Those dual athlons really have memory bottleneck :(

[Reply to This | Parent]

I'll be going with MOSIX (Score:1)
by foqn1bo on Thursday December 27, @01:51AM (#2754212)
(User #519064 Info)

A housemate of mine and I decided that we wanted to build a pathetic little Supercomputer out of the various PCs laying around in our little Geek House. We've decided to give MOSIX [mosix.org] a run. It sounds like a fairy tale solution...especially when it comes to automatic process migration node to node. Anybody here have any positive experiences or harsh words regarding this?

[Reply to This | Parent]

:((Score:1)
by NiftyNews on Thursday December 27, @01:53AM (#2754215)
(User #537829 Info | http://www.niftyness.com/nndd/main.shtml)

While he's giving things away...

...can I have a pony?

[Reply to This | Parent]

D-Link sells Gigabit NICs for cheap (Score:1)
by spullara (**spullara@yahoo.com**) on Thursday December 27, @02:25AM (#2754238)
(User #119312 Info | http://www.sampullara.com/)

They should recalculate all this if they have Gigabit LAN cards. You can get them from buy.com for about $57. I have used them at home to make really fast point-to-point links. Also, even though the switches with all gigabit ports start at around $700 for $200 you can get a switch with 8 10/100 ports and 1 gigabit port. That should add some interestings properties to the network.

[Reply to This | Parent]

Re:D-Link sells Gigabit NICs for cheap (Score:2)
by biglig2 on Thursday December 27, @06:22AM (#2754447)
(User #89374 Info | http://www.bigwig.net/biglig/ | Last Journal: Tuesday December 18, @12:23PM)

Gb Uplink ports wouldn't really help - the traffic pattern inside KLAT2 is flat, where all nodes are equal. Not like a LAN where it helps to not have a bottleneck at the switch interconnects.

[Reply to This | Parent]

Wouldn't help? (Score:2)
by Svartalf (**fearl@!spammers!die!airmail.net**) on Thursday December 27, @11:13AM (#2754945)
(User #2997 Info | http://members.nbci.com/svartalf)

It wouldn't help so long as the CPUs couldn't utilize the gigabit bandwidth. Swap out the 100 megabit lan cards for the cheapo gigabit ones for slightly more money- I think you'll find that this cluster's still starved for bandwidth.

[Reply to This | Parent]

Re:D-Link sells Gigabit NICs for cheap (Score:2)
by hey! (**mattleo@treehouse.acrcorp.com**) on Thursday December 27, @09:03AM (#2754610)
(User #33014 Info | http://slashdot.org/)

How fast are those cards actually?

I know D-Link's PCMCIA 100BaseTX cards are 16-bit, so while they will signal at 100MB/sec, their throughput is not any more than (as far as I can see) than you would get from an old desktop NE2000 adapter. Low end network hardware frequently pulls this kind of stunt -- repackage old technology so that it will look like it should perform better than it actually can.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

- **1 reply beneath your current threshold.**

"Ultra Wide Band" - no! (Score:2)
by Animats (**slashdot-replies@downside.com**) on Thursday December 27, @02:29AM (#2754245)
(User #122034 Info | http://www.animats.com)

This is just spread spectrum, but with even more spread. See TimeDomain [timedomain.com] for the hype. Even they admit *"UWB's best applications are for indoor use in high-clutter environments.*We already have wireless LANs, and they work quite well. UWB may or may not play in that market, but it's not a big deal.

The FCC is being very cautious about mass-market UWB products. Since these things blither over a gigahertz or so of spectrum, they overlap with other services. At low power, a few of these things are probably OK, but in bulk, there could be trouble. The concern is that mass deployment could wipe out other services in congested areas.

[Reply to This | Parent]

Re:"Ultra Wide Band" - not (Score:1)
by Student_Tech on Thursday December 27, @03:11AM (#2754282)
(User #66719 Info)

From my understanding, and my dad's, they also raise the noise floor so if you are trying to talk to people over radio (such as amateur radio) it is that much more noise you must contend with. Yes, DSPs can help to some extent, but UWB still raises the amount of noise one must deal with.

[Reply to This | Parent]

Re:"Ultra Wide Band" - not (Score:1)
by markov_chain on Thursday December 27, @03:45PM (#2755926)
(User #202465 Info)

Right, that's essentially what the previous post said. The UWB transmissions occur in a very wide band of frequencies, thus overlapping with other services like amateur radio. To the other services any power not coming from the original transmitter is counted as noise; that's why UWB transmissions are said to raise the noise floor.

The argument for UWB is that a single UWB transmitter's power is spread so much that it adds only tiny amounts of noise to other services. However, the question is what happens when there are massive amounts of UWB transmitters contributing noise.

[Reply to This | Parent]

Sorry had to point this out (Score:1, Informative)
by Anonymous Coward on Thursday December 27, @02:49AM (#2754267)

From the PBS article:
"The solution was to put more cheap Ethernet cards in each PC, and then use "channel bonding" to make them all look like a single faster card"

From KLAT2 FAQ
"Every NIC in every PC has a unique MAC address (and potentially unique IP address) -- i.e., this is not channel bonding."

FNN is totally different and in many cases more suited for this app than simple channel bonding.

One thing I did wonder about was. Why the floppy drive? You can get netboot cards very cheap... And you'd only need one per system. Just one less mechanical thing to fail. Plus the node would come up much faster. PXE or even BOOTP/DHCP boot would be fine.

Also I kind of wonder about commodity Realtek cards. I'm sure Realtek makes a fine chipset, but most vendors who use Realtek chipsets really skimp on the rest of the card. You can get 3com or Intel Pro/100 multipacks almost for the same price as the realtek cards sell for off of the shelf.

Ok rant over... Flame away.

[Reply to This | Parent]

Not really here (Score:1)
by WyldOne (**{cwyles} {at} {nyx.net}**) on Thursday December 27, @02:26PM (#2755567)
(User #29955 Info | http://www.geocities.com/cwyles/)

I can get a clone Realtek card for $10 (or less sometimes) retail. Most other cards are at least $20. I can also pick up a floppy for $1 a piece used.

Not sure how much you could get the realteks w/rom for bulk but you would have to call around

[Reply to This | Parent]

Re:Not really here (Score:1)
by sh4na (**.shana. .at. .esoterica.pt.**) on Friday December 28, @05:45AM (#2758033)
(User #107124 Info | http://w3.to/shana)

Sure you can get any crappy card for 2 cents, but then you'll get the quality of a 2 cent card. I've tried Realteks and the likes, and in a 100Mbit network I'd get the performance of a 10, sometimes worse. It took ages to do anything! So no thank you, I'd rather stick with my $20 card.

Floppy drives used? Unless it's more than 5 years old (when they used to make them good), it'll last you through two or three bad diskettes, it'll read half of the good ones, and it'll smash the rest. Another good use for your money, I'd say...

By the way, I can sell you a really good used HD, cheap. If you don't mind a few bad blocks here and there, that is...

You know, sometimes you get what you pay for.

[Reply to This | Parent]

links to really homemade supercomputers (Score:1)
by DrD8m on Thursday December 27, @03:31AM (#2754299)
(User #307736 Info | http://www.sorgonet.com)

I like this kind of home supercomputers some examples here [sorgonet.com] of course, linux powered

[Reply to This | Parent]

Better throughput than Gigabit? (Score:1)
by NanoGator on Thursday December 27, @04:13AM (#2754335)
(User #522640 Info | http://www.nanogator.com/)

How can 4 bonded 10/100 cards provide better throughput than a gigabit card? I can understand them being cheaper, but the idea of them being faster is hard for me to grasp.

The way I see it, 4 100 megabit cards at MOST would create a 400 megabit pipe. Wouldn't bonding add overhead to it to make it even less than 400 megabits?

Would somebody mind explaining how this works?

[Reply to This | Parent]

Re:Better throughput than Gigabit? (Score:1)
by Defiler on Thursday December 27, @10:01AM (#2754746)
(User #1693 Info)

Simple. No one actually gets 1000mbit from a GigE card. You're lucky to get 50MB/sec with a crossover cable. You can match that with four 100Base-TX cards. Actually, GigE cards are extremely cheap. Only about double the price of cheap 100mbit cards. It's the switches that are expensive. Still at least $100 per port.

[Reply to This | Parent]

Re:Better throughput than Gigabit? (Score:1)
by Extreme Unguent on Thursday December 27, @12:41PM (#2755250)
(User #546398 Info)

Well, KLAT2 isn't using channel-bonding and they are talking about bisectional b/w not local... so it's not a very adaptable comparison. He also has custom (Realtek) drivers for his NICs.

[Reply to This | Parent]

Re:Better throughput than Gigabit? (Score:1)
by Defiler on Thursday December 27, @10:49PM (#2757288)
(User #1693 Info)

Sure. I didn't say that was what KLAT2 was using, just making the point that you don't actually see a full gigabit with GigE equipment.

[Reply to This | Parent]

Re:Better throughput than Gigabit? (Score:1)
by WyldOne **({cwyles} {at} {nyx.net})** on Thursday December 27, @02:10PM (#2755504)
(User #29955 Info | http://www.geocities.com/cwyles/)

Ethernet works by the dump the data on the wire and hope for no collisions.

Every time you get a collision 2 pcs have to resend their data. so you redue the bandwidth by 66%.

So by adding more channels to send on you decrease collisions and increase throughput.

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

Disapointing(Score:1)
by MattGWU (**MattSlash at bogonflux dot net**) on Thursday December 27, @05:01AM (#2754373)
(User #86623 Info)

When I read the title, I had visions of actual homebrew *supercomputers*...something along the lines of Euclid from Pi. Break out the soldering irons and damn the torpedoes! Yes, Beowulf technology is great. Genetic algorithms and channel bonding and QNX are nice touches, but Beowulf clusters are fairly common, even for ordinary people...an article about NEW uses for the things would have been nice, other than that, just shut up and build one! Soon to be taking my own advice...even have an app in the works for it. Still a nice project with a half-decent writeup, but it's been done.

How about it, folks? Homebrew big iron? Where would one even begin? Food for thought, at least.

[Reply to This | Parent]

Supercomputer in every neighborhood(Score:1)
by tempmpi on Thursday December 27, @06:08AM (#2754437)
(User #233132 Info)

A supercomputer in every garage is something that is too expensive and useless most of the time, but a supercomputer in the neighborhood could be a relalistic and usefull idea. We have seen on slashdot that is it possible and not too expensive to make a neighborhood fiber lan. Most people do not need much processing power all the time they need a high peek processing power for short moments.
Most user application software will not be able to use divided the load over the cluster but there would be many applications running at a time, so the load would be spread over the cluster without special application software.
People could keep there old PCs and turn them into X terminals or use vnc to connect to the cluster.
$41,000 is only $205 for everyone if 200 people use the cluster.

[Reply to This | Parent]

QNX? Hey Cringely..(Score:3, Funny)
by Chazmati on Thursday December 27, @07:25AM (#2754479)
(User #214538 Info)

"(the operating system) will be QNX, a real time OS that supports massive parallelism and has very low overhead. QNX is fast! QNX is also Posix compliant, so there is lots of software that almost works under it."

If you're looking for software that **almost** works, I know of an OS that might fit your needs. You're not going to hook this thing up to the Internet, though, are you?

[Reply to This | Parent]

Re:QNX? Hey Cringely.. (Score:1)
by Unknown Bovine Group on Thursday December 27, @09:47AM (#2754713)
(User #462144 Info | http://slashdot.org/)

Even more interesting... *And even though QNX is a commercial operating system, it is free for noncommercial purposes like mine.*

Uh, Cringely, wouldn't creating the thing and then using it as the subject of an article for the company that employs you count as a commercial purpose?

[Reply to This | Parent]

Re:QNX? Hey Cringely.. (Score:2)
by Knobby on Thursday December 27, @04:13PM (#2756040)
(User #71829 Info)

Uh, Cringely, wouldn't creating the thing and then using it as the subject of an article for the company that employs you count as a commercial purpose?

You don't really expect QNX to bitch about a little free advertising do you?..

[Reply to This | Parent]

only fastest one percent is supercomputers (Score:3, Informative)
by peter303 on Thursday December 27, @09:43AM (#2754698)
(User #12292 Info)

By definition only the fastest devices are supercomputers. These days that is about a teraflop. Thta includes the US DOE ASCI series and the announced installation of the Blue Storm and Blue Gene IBM computers. Ten gigaflop computers a dime a dozen and a hundred gigaflops not so rare.

[Reply to This | Parent]

Cringely Wants A Supercomputer in Every Garage (Score:1)
by ZaneMcAuley on Thursday December 27, @11:36AM (#2755029)
(User #266747 Info | http://www.ineedanewgirlfriend.com/ | Last Journal: Thursday October 25, @04:32PM)

Well, don't we all :)

[Reply to This | Parent]

This is all OBE (Overcome by events) (Score:1)
by Extreme Unguent on Thursday December 27, @11:51AM (#2755077)
(User #546398 Info)

Most of what Cringely said may have been true a year or so ago but it isn't now. For instance, if he is using Athlon XPs, why would he move FP code to 3DNow! instead of SSE? And there are a host of competing cheap interconnects now, especially if you can avoid TCP/IP. But if you can't, there's always IP-over-FireWire... M$ has had that running at 400Mbps for years. I don't think you can get into UWB for $6000. See the Linux Clustering Info Center [lcic.org]and Extreme-Linux.com [opnsrc.com].

[Reply to This | Parent]

Why spend $40,000 when you only need $13,000? (Score:1, Informative) by Anonymous Coward on Thursday December 27, @01:30PM (#2755375)

I don't understand why this guy's so excited about 64 gigaflops for $40,000. Consider the following

6 Dual 800Mhz G4 PowerMacs (running your choice of Darwin or Linux)
Processing Power: 70.8 gigaflops (11.8 each machine)
RAM included: 1.5 GB (heck, I already have 1GB in my PowerBook G4)
Hard Disk Space: 480 GB
Extras: Each machine has one 4x AGP slot, four 64-bit PCI slots, an NVIDIA GeForce 2 MX card (64MB), Gigabit Ethernet and a 56K modem you can just take out and hang on your Christmas Tree or something

Cost: $21,000 ($3,500 from store.apple.com)
Ebay off the CD-R/DVD-R Drivers for $350 each to save $2,100
Total cost: $18,900

Tip: If you wait until after MacWorld in January (where Apple will most likely introduce a line of faster PowerMacs) you can either get more gigaflops for the same price or lower the price of 64 gigaflops to around $13,000.

What kind of an idiot goes out and spends over $40,000 on something less powerful than he could get for $13,000? And people complain that Apple hardware is expensive... morons...

[Reply to This | Parent]

Re:Why spend $40,000 when you only need $13,000? (Score:1)
by Hankd on Saturday December 29, @09:30AM (#2762106)
(User #166718 Info)

KLAT2 is nearly 2 years old and it gets 65GFLOPS on a real application... peak speed is 180GFLOPS. The G4 doesn't do badly speed-wise, but is not price/performance competitive with Athlons... in fact, right no general-purpose processor is. ;-)

[Reply to This | Parent]

- **1 reply beneath your current threshold.**

I want a supercomputer (Score:1)
by RMBWebmaster on Thursday December 27, @02:36PM (#2755612)
(User #542302 Info | http://www.ratemybuds.com/)

Can this be done with sparc's?

[Reply to This | Parent]

Uses for mini-cluster (Score:2, Funny)
by WyldOne **({cwyles} {at} {nyx.net})** on Thursday December 27, @02:41PM (#2755642)
(User #29955 Info | http://www.geocities.com/cwyles/)

1) heat in garage in winter
2) Top 10 in Seti@home
3) Porno-ize you favorite anime (Final Fantasy anyone?)
4) Why are you reading this? I thought you were doing #3

[Reply to This | Parent]

Thanks for reading the articles before posting (Score:1)
by VonSnaggle on Thursday December 27, @03:59PM (#2755978)
(User #64586 Info)

Not to sound like an ass, but this is the best article I've read on Slashdot for quite some time. So when I want more information on the subject I was hoping to find some intelligent or at least funny conversation and most of the posts are crap, just when my 3 day moderating period has ended. I wish some people would just read the linked articles before posting!

[Reply to This | Parent]

Essential Costs (Score:1)
by Tekgno on Friday December 28, @12:43AM (#2757614)
(User #321071 Info)

When you are comparing costs [aggregate.org] for construction, don't forget the essentials.

16 Pizzas for student helpers @ $10
4 Cases of soda student helpers @ $7

Total: $188

[Reply to This | Parent]

Supercomputers and Bisection Bandwidth (Score:1)
by Hankd on Friday December 28, @09:56AM (#2758475)
(User #166718 Info)

Two useful definitions that explain why KLAT2 was built as it was:

- A *supercomputer* is a computer that is not only very fast, but whose design allows it to be scaled-up to be faster as more money is spent.
- *Bisection Bandwidth*, the worst-case total bandwidth between halves of a parallel machine when all processors are communicating, is the primary measure of supercomputer network bandwidth, **NOT** NIC speed. Further, NIC performance is often limited by the OS interface and/or PCI bus. This is why a network made of multiple 100Mb/s NICs per PC and cheap wire-speed switches easily can equal or exceed the performance of using Gb/s NICs and the narrower, often less than wire speed, Gb/s switches.
  The same argument applies for latency: single switch for 100Mb/s FNN versus multiple switch hops for Gb/s.

[Reply to This | Parent]

There is no one formula to build a cluster (Score:1)
by mikefoley (**mike.foley@te[ ]logist.com ['chno' in gap]**) on Friday December 28, @10:25PM (#2761386)
(User #51521 Info | http://www.yelof.com/)

It's interesting reading the replies here. It's as if all clusters are only defined by CPU and speed of the NIC. Sorry, it's not that way at all.

A cluster should be designed to solve a specific problem. You have to do some math up front before making your choices on things like NIC's and CPU's. You can't apply a blanket solution. Some of the things to consider are:

. The size of the data being exchange
. Does the matrix you are computing fit into cache?
. Is the problem dependant on memory bandwidth?
. etc....

For example, for some problems, the amount of data exchanged fits well within a Jumbo Packet of a Gb Ethernet AND is not affected by latency.

Other problems are very dependant on latency and require things like a Dolphin or Myrinet card. These are not inexpensive items.

Still other problems require memory bandwidth and work well with systems like Alpha's.

So, if you are building a small cluster to run POVray at home, go with cheap. If you are trying to crack the human genome, you need racks upon racks of things like high-end Alpha's with Quadrics interconnects. It's all dependant on the problem you are trying to solve.

FWIW, I used to work at API and DEC/Compaq.

[Reply to This | Parent]

There are design rules and cluster design tools (Score:1)
by Hankd on Saturday December 29, @09:24AM (#2762102)
(User #166718 Info)

There is no formula, but there are lots of design rules... check out:

http://aggregate.org/CDR/ the Cluster Design Rules tool [aggregate.org]

You specify some characteristics of your application, your site (power and space), and budget; it presents the best designs taken from a design space of millions.

[Reply to This | Parent]

a few thoughts (Score:1)
by spiffy_guy (**jhs97j@timon.acuFORTRAN.edu minus language**) on Saturday December 29, @12:33AM (#2761544)
(User #30225 Info | http://slashdot.org/)

I think one of the neatest ideas about having a supercomputer in your house is that there is nothing to do with it. Most people think this is a negative, having no problems to solve. I think it's fantabulous. Think of all the new problems to discover so you can have something to solve. Sure the lazy among us will go for Optimial Golum Rulers, digits of Pi, Chess, SETI, RC5-xxx, video rendering/compression/effects, or whatever.

IBM was going to/is build a monster of a machine Blue Gene. Biggest machine ever built. However they wanted a problem to show off their beast, they decided to look at protien folding. NOBODY was looking at protien folding using supercomputers to actually analyze them. It was a computer waiting for a problem big enough, and it fit.

I'd also like to note that though these computers being built have HUGE processing power they don't have the latency and bandwidth a lot of problems like Weather prediction. Unless you get a Cray, Superdome, or Regatta it's like towing a trailer with a piece of yarn. For certain problems the processing power is less important than the memory bandwidth.

[Reply to This | Parent]

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A man of genius makes no mistakes. His errors are volitional and are the portals of discovery. -- James Joyce, "Ulysses"