PrimeGrid's
Generalized Fermat Prime Search

On 18 Jan 2012 21:13:24 UTC, PrimeGrid's Generalized Fermat Prime Search found the mega prime:

$$525094^{262144}+1$$

The prime is 1,499,526 digits long and enters Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 2nd for Generalized Fermat primes and 24th overall.

The discovery was made by David Tomecko of the United States using an NVIDIA GeForce GTX 570 in an Intel Core i7 980 @ 3.33GHz system with 24GB RAM, running Windows 7 Ultimate. This GPU took about 55 minutes 24 seconds to probable prime (PRP) test with GenefCUDA. David is a member of the The Knights Who Say Ni! team.

The PRP was verified on 19 Jan 2012 7:37:53 UTC, by Rick Reynolds of the United States using an NVIDIA GeForce GTX 570 in an Intel Pentium E2140 @ 1.60GHz with 2 GB RAM running Windows Vista Business x32. This GPU took about 48 minutes 30 seconds to probable prime (PRP) test with GenefCUDA. Rick is a member of the Aggie The Pew Team.

The PRP was confirmed prime by an Intel Core i5 @ 2.8 GHz with 4 GB RAM, running Mac OS X. This computer took 33 hours 55 minutes to complete the primality test using pfgw64. Prior to pfgw64's completion, an additional PRP test was conducted using GenefX64. This test took 8 hours 14 minutes to complete.

The credits for the discovery are as follows:

1. David Tomecko (United States), discoverer
2. PrimeGrid, et al.
3. AthGFNSieve, sieve program developed by David Underbakke
4. GeneferCUDA, probable prime program developed by Shoichiro Yamada
5. PFGW, primality program developed by Chris Nash & Jim Fougeron with maintenance and improvements by Mark Rodenkirch

Entry in "The Largest Know Primes Database" can be found here:
http://primes.utm.edu/primes/page.php?id=103976

This is only the 5th known GFN prime at N=262144. Using a single PC would have taken years to find this prime. So this timely discovery would not have been possible without the hundreds of volunteers who contributed their spare CPU cycles. A special thanks to everyone who offered their advice and/or computing power to the search - especially David Underbakke, Mark Rodenkirch and Geoff Reynolds who were major forces in moving the project forward. Also, thank you to all the sievers, especially Honza Cholt. A final thanks to Michael Goetz for porting GeneferCUDA to BOINC.

This is PrimeGrid's 20th mega prime. The Generalized Fermat Prime Search will continue to seek even larger primes. To join the search please visit PrimeGrid:
http://www.primegrid.com

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About PrimeGrid

PrimeGrid is a distributed computing project, developed by Rytis Slatkevičius, Lennart Vogel, and John Blazek, which utilizes BOINC and PRPNet to search for primes. PrimeGrid's primary goal is to bring the excitement of prime finding to the "everyday" computer user. Simply download the software and let your computer do the rest. Participants can choose from a variety of prime forms to search. With a little patience, you may find a large or even record breaking prime.

BOINC

The Berkeley Open Infrastructure for Network Computing (BOINC) is a software platform for distributed computing using volunteered computer resources. It allows users to participate in multiple distributed computing projects through a single program. Currently BOINC is being developed by a team based at the University of California, Berkeley led by David Anderson.

This platform currently supports projects from biology to math to astronomy. For more information, please visit BOINC: http://boinc.berkeley.edu

PRPNet

PRPNet is a client/server application written by Mark Rodenkirch that is specifically designed to help find prime numbers of various forms. It is easily ported between various OS/hardware combinations. PRPNet does not run each PRP test itself, but relies on helper programs, such as LLR, PFGW, phrot, wwww, and genefer to do the work.

For more information, please visit PrimeGrid's PRPNet forum thread: http://www.primegrid.com/forum_thread.php?id=1215

For more information about PrimeGrid and a complete list of available prime search projects, please visit: http://www.primegrid.com