

PrimeGrid's Generalized Fermat Prime Search

On 20 Jun 2012, 4:26:47 UTC, PrimeGrid's Generalized Fermat Prime Search found the largest known Generalized Fermat mega prime:

$$356926^{524288}+1$$

The prime is 2,911,151 digits long and enters Chris Caldwell's "The Largest Known Primes Database" (<http://primes.utm.edu/primes>) ranked 1st for Generalized Fermat primes and 11th overall.

The discovery was made by (bherbihyewrbg) of Japan using an NVIDIA GeForce GT 640M in an Intel Core i7-3610QM CPU @ 2.30GHz with 8GB RAM, running 64 bit Windows 7 Professional. This GPU took 17 hours 49 minutes to probable prime (PRP) test with GeneferCUDA. (bherbihyewrbg) is a member of the Team 2ch team.

The prime was verified by Tim McArdle of the United States using an Intel Core i7-2600 CPU @ 3.40GHz with 8GB RAM, running 64 bit Windows Server 2008 . This computer took 43 hours 46 minutes to probable prime (PRP) test with GenefX64. Tim is a member of the Don't Panic Labs team.

The PRP was confirmed prime by an Intel Core i7 2600k @ 3.4Ghz with 8 GB RAM, running Windows 7 x64. This computer took 88 hours 19 minutes to complete the primality test using LLRx64. Prior to LLR's completion, an additional PRP test was conducted using GenefX64. This test took 25 hours 34 minutes to complete.

Because the primary finder failed to claim the prime, credit at the Prime Pages has been given to the double checker. Therefore, credits for the discovery are as follows:

1. (bherbihyewrbg) (Japan), discoverer
2. Tim McArdle (United States), double checker
3. PrimeGrid, et al.
4. AthGFNSieve, sieve program developed by David Underbakke
5. GenefX64, probable prime program developed by David Underbakke
6. GeneferCUDA, probable prime program developed by Shoichiro Yamada
7. LLR, primality program developed by Jean Penné

Entry in "The Largest Know Primes Database" can be found here:

<http://primes.utm.edu/~caldwell/primes/page.php?id=108492>

This is the 3rd known GFN prime at N=524288. 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.

This is PrimeGrid's 27th 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, 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>