PrimeGrid's
Generalized Fermat Prime Search

On 29 Jun 2019, 00:54:18 UTC, PrimeGrid's Generalized Fermat Prime Search found the Generalized Fermat mega prime:

$$2877652^{524288}+1$$

The prime is 3,386,397 digits long and enters Chris Caldwell's "The Largest Known Primes Database" (http://primes.utm.edu/primes) ranked 3rd for Generalized Fermat primes and 26th overall.

The discovery was made by Roman Vogt of Germany using an NVIDIA GeForce GTX 1060 in an Intel(R) Core(TM) i7-2700K CPU @ 3.50GHz CPU with 16GB RAM, running Windows 10. This GPU took about 1 hour 42 minutes to probable prime (PRP) test with GeneferOCL5. Roman is a member of the Sicituradastra. team.

The PRP was verified on 29 Jun 2019, 08:52:47 UTC by Carlo Villa using an NVIDIA GeForce 830M in an Intel(R) Core(TM) i5-5200U CPU @ 2.20GHz with 8GB RAM, running Windows 10. This GPU took about 16 hours 55 minutes to probable prime (PRP) test with GeneferOCL5.

The PRP was confirmed prime by an Intel(R) Xeon(R) CPU E3-1240 v6 @ 3.70GHz with 4GB RAM, running Linux. This computer took about 25 hours 53 minutes to complete the primality test using multithreaded LLR.

The credits for the discovery are as follows:

1. Roman Vogt (Germany), discoverer
2. PrimeGrid, et al.
3. AthGFNSieve, sieve program developed by David Underbakke
4. GFNSvCUDA , sieve program developed by Anand Nair
5. GeneferOCL, probable prime program developed by Yves Gallot
6. LLR, primality program developed by Jean Penné

Entry in "The Largest Know Primes Database" can be found here: https://primes.utm.edu/primes/page.php?id=126598

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 Yves Gallot, Iain Bethune, David Underbakke, Anand Nair,Mark Rodenkirch and Geoff Reynolds who were major forces in moving the project forward. Also, thank you to all the sievers, especially Honza Cholt and Jim Breslin. A final thanks to Michael Goetz for porting to BOINC.

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 and currently managed by James Breslin, Scott Brown, Ulrich Fries, Michael Goetz, Roger Karpin, Rytis Slatkevičius, and Van Zimmerman.

PrimeGrid utilizes BOINC and PRPNet to search for primes with the primary goal of bringing 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

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