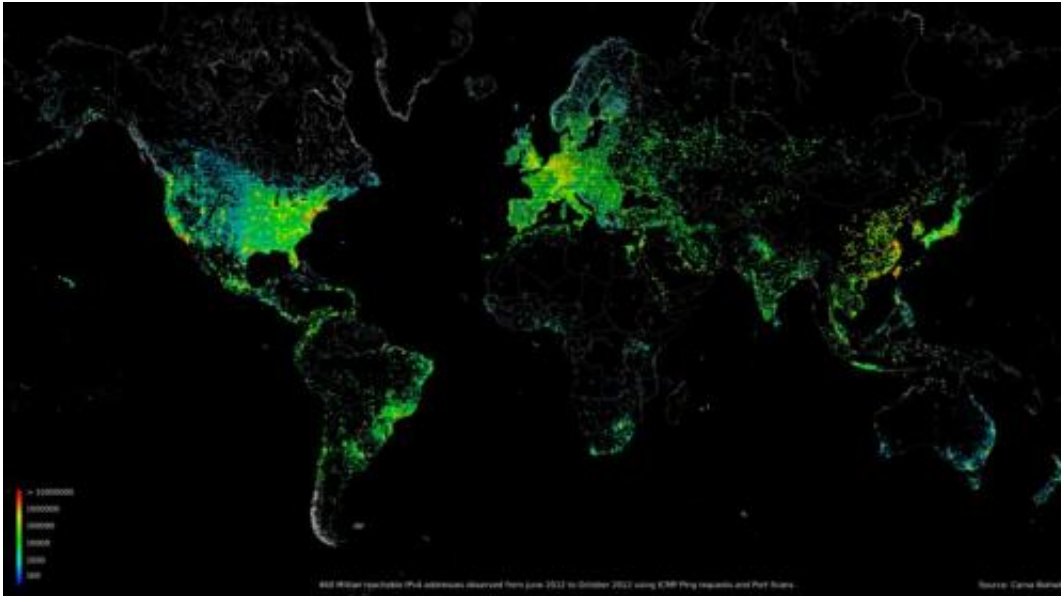


# USB sticks may beat Internet hurdles globally

December 6 2013, by Nancy Owano



World map of IPv4 addresses. Credit: arXiv:1311.6754 [cs.OH]

(Phys.org) —One may think that free software would be of enormous benefit to people in the towns and villages of the globe where the price of proprietary software is restrictively high. Such is not the case, as noted by Thierry Monteil of the University of Montpellier 2 in France. While the software is free to download, the cost of bandwidth is not. What is more, important but large software packages that enable technology students and workers to carry out their projects may take very long times to download, and may regularly be at the mercy of unreliable Internet connections. Monteil has authored a paper available on arXiv, which presents what may be a cheaper and easier way to

transmit large software packages. He has written the paper, "Spreading Huge Free Software without Internet Connection via Self-Replicating USB Keys." The paper describes his concept and how he tested it out. In short, one can use self-replicating USB keys without having to rely on a hard-to-afford and time-draining Internet connection.

Unfortunately, he wrote, the cost of bandwidth is expensive relative to the local income in countries and, even beyond cost, the available bandwidth does not allow huge downloads. "The network consideration "seems to be an important bottleneck in spreading free software where bandwidth is a rare commodity," he stated.

What the author has in mind instead is a self-replicating USB thumbdrive. The script will let a bootable USB stick replicate itself onto another stick, and at rates that can top the users' Internet connections.

*MIT Technology Review* [noted](#) how the concept involves a self-replicating bootable USB stick that holds an operating system and any software that needs to run on it. The stick can copy its contents to another USB stick. That way, users in underserved parts of the globe can get their hands on information they need more easily.

Monteil wrote a script that clones the contents of one USB stick to another. To test the idea, Monteil used the script to transfer Sage, with an installation of Debian. Sage (stands for Software for Algebra and Geometry Experimentation) is a free mathematics software system licensed under the GPL

The use of USB sticks for transferring information, nonetheless, carries a risk where someone could inject malware as part of the cloning events. "While being very efficient for our purpose of spreading huge [free software](#) inside a community, it is definitely not advisable for spreading sensitive software, or for large-scale distribution," he wrote. Monteil also

observed how "This communication-via-replication protocol currently relies on trust, and should be only used "for short distance communication...or among "a small structured community."

**More information:** Spreading huge free software without internet connection, via self-replicating USB keys, arXiv:1311.6754 [cs.OH] [arxiv.org/abs/1311.6754](http://arxiv.org/abs/1311.6754)

## Abstract

We describe and discuss an affordable way to spread huge software without relying on internet connection, via the use of self-replicating live USB keys.

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