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The perfCube: Experiences with perfSONAR on a cubox-i4Pro

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perfSONAR on cubox

- Several organizations have begun playing with these devices
- TCP maximum = 350Mbps
- owamp works well
- ntp clock sync works well



“perfSONAR Light”

- We assume only the most essential perfSONAR components run a on the perfCube
 - In particular, no web interface, no measurement archive
- These are the packages that make up “perfSONAR Light”:
 - bwctl network test tool, which calls iperf3, iperf, nuttcp, ping, traceroute, tracepath
 - owamp network test tool
 - perl-perfSONAR_PS-LSRegistrationDaemon
 - This registers your host in the lookup service
 - perl-perfSONAR_PS-RegularTesting
 - This manages regular testing
 - perl-perfSONAR_PS-MeshConfig-Agent
 - allow your host to be a client of a Mesh Config server.
 - perl-perfSONAR_PS-SimpleLS-BootStrap-client
 - lets your host find which LS to register with

Sample Deployment Model

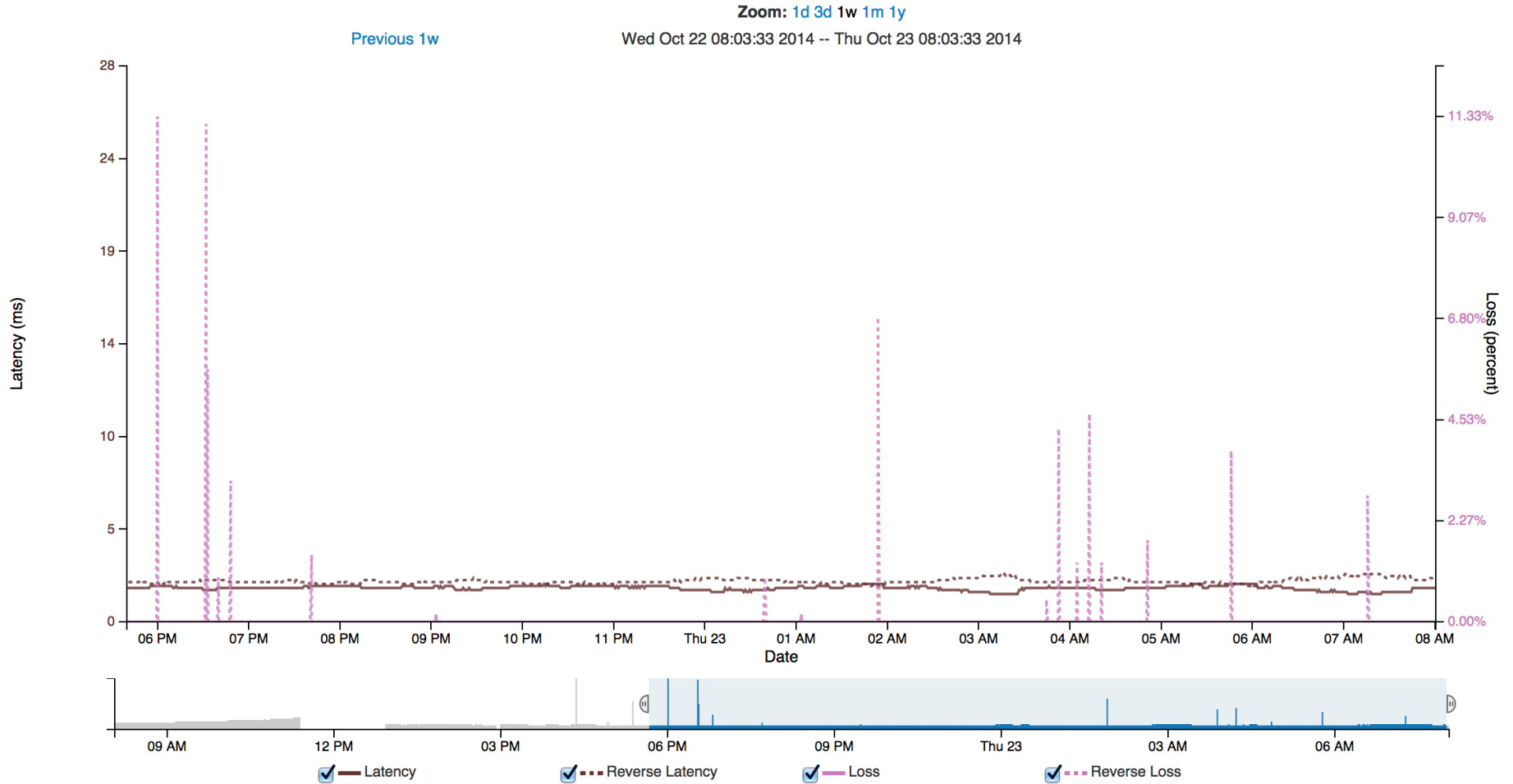
- Campus deploys a central “measurement archive”
- perfCube on all important subnets
 - Or all subnets?
- All perfCubes are configured to run owamp to a the campus border
 - This would be a faster host
- No regularly scheduled iperf tests
 - Throughput test only for troubleshooting network problems

Throughput limitation?

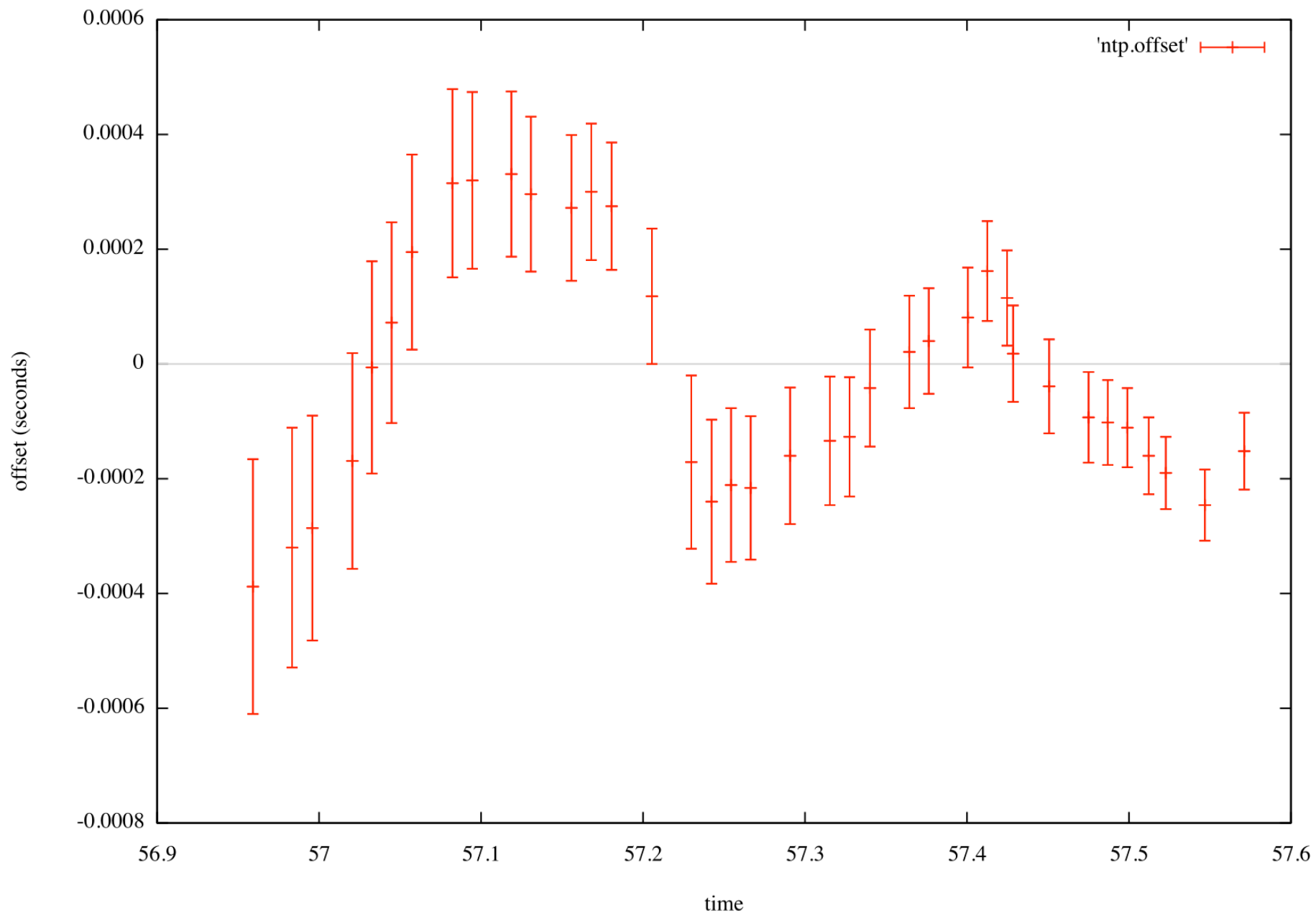
- Iperf3 on a perfCube only gets 350Mbps, is this a problem?
 - Not really, as iperf3 retransmit profile is still very useful for finding problems:
- For example, sample iperf3 output:

[ID]	Interval		Transfer	Bandwidth	Retr	Cwnd
[15]	0.00-1.00	sec	139 MBytes	1.16 Gbits/sec	257	33.9 KBytes
[15]	1.00-2.00	sec	106 MBytes	891 Mbits/sec	138	26.9 KBytes
[15]	2.00-3.00	sec	105 MBytes	881 Mbits/sec	132	26.9 KBytes
[15]	3.00-4.00	sec	71.2 MBytes	598 Mbits/sec	161	15.6 KBytes
[15]	4.00-5.00	sec	110 MBytes	923 Mbits/sec	123	43.8 KBytes
[15]	5.00-6.00	sec	136 MBytes	1.14 Gbits/sec	122	58.0 KBytes
[15]	6.00-7.00	sec	88.8 MBytes	744 Mbits/sec	140	31.1 KBytes
[15]	7.00-8.00	sec	112 MBytes	944 Mbits/sec	143	45.2 KBytes
[15]	8.00-9.00	sec	119 MBytes	996 Mbits/sec	131	32.5 KBytes
[15]	9.00-10.00	sec	110 MBytes	923 Mbits/sec	182	46.7 KBytes

Clock stability? Seems pretty good....



NTP sync: +- .2ms



perfCube Image available to play with

- Disk image available at:
 - <http://downloads.es.net/public/perfsonar/cubox/images/>
- RPM repo of perfSONAR Light components available at:
 - <http://downloads.es.net/public/perfsonar/repo/Fedora/20/armhfp/>
- Note: This is UNSUPPORTED by the perfSONAR team!

Future Ideas

- Auto-configuration / Auto-discover Support
 - perfCube would query the perfSONAR lookup service to find its local measurement archive
 - perfCube would query the perfSONAR lookup service to find which mesh config to join
- Open question: security model for all this

Debian vs Fedora?

- ARM-based device support is much better on Debian
- perfSONAR currently only supports RHEL-based Oses
 - Easy to build ARM rpms using ‘rpmbuild –rebuild’ command
- Fedora on a cubox support is mostly 1 person at the moment:
 - https://github.com/jmontleon/fedora-20-cubox-i_hb
- Getting everything working on Fedora was (for us) easier than Debian
 - Long term, perfSONAR might add Debian support

More Information



perfCube Install Guide: <http://goo.gl/eNsDQA>

<https://code.google.com/p/perfsonar-ps/wiki/lowCostPerfSONAR>

<http://www.solid-run.com/products/cubox-i-mini-computer/cubox-i-specifications/>

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