# PingER Status report, June 2012

PingER throughput measurements for 2011 indicate Africa was ~19 years behind Europe and its throughput was 14 times worse than Europe. Extrapolating the 2010 data indicated that Africa would be 30 times worse than Europe in 10 years. This significant improvement (from 30 times worse to 17 times worse) is believed to be due to the move from satellite to terrestrial links (initially driven by the soccer world cup), in particular for East Africa. Prior to the lighting of the first East African cable, in July of 2009, East African hosts were connected to other regions via GEOS links, with a minimum of 450ms RTTs to anywhere. Such long RTTs make interactivity dreadful, Voice over IP impractical, and badly impact throughput that is inversely proportional to RTT. As hosts had their connections moved to the fibre optic cable, RTTs improved by factors of 2 to 3 and with the extra capacity, losses and jitter were also reduced. Furthermore, these improvements were not just to coastal countries such as Kenya, but were quickly extended to landlocked countries such as Uganda and Rwanda. For the longer term, the provision of multiple cables from different companies is resulting in competition and price reductions.

Given the problems with throughput derivations for low loss regions, we have introduced the Mean Opinion Score (MOS)[[1]](#endnote-1). This gives the quality of a phone conversation and is a function of the RTT, loss and jitter, thus combining several measures. This year we have also introduced a new directness metric “alpha”[[2]](#endnote-2) which compares the great circle distance between the monitoring and remote site with the distance calculated using the minimum RTT a measure of the directness of paths between sites. We have also: added Maximum RTT which may be useful for identifying buffer bloat[[3]](#endnote-3); redid the PingER home page[[4]](#endnote-4) and the PingER Coverage map to add display of chosen metric for last year for chosen monitor/remote site pairs[[5]](#endnote-5); gathering, analyzing and displaying traceroutes on a daily basis for all hosts monitored from SLAC. This helps with understanding a major cause for changes in performance.[[6]](#endnote-6) In addition to these, a new application PingER Data Explorer[[7]](#endnote-7) was added based on Google Public Data.

PingER presentations in 2011:

* [Quantifying the worldwide Digital Divide: the emergence of Africa](http://www.slac.stanford.edu/grp/scs/net/talk11/africa-sep11.pptx), Les Cottrell, ISPA/iWeek, Pretoria, S. Africa, Sep 21, 2011
* [Quantifying the Worldwide Digital Divide: The Emergence of Africa](http://www.slac.stanford.edu/grp/scs/net/talk11/aps-apr11.pptx), Presented by Les Cottrell at the American Physical Society annual meeting, Anaheim, April 30-May 2nd 2011
* [PingER end to end Internet measurements: what we learn](http://www.slac.stanford.edu/grp/scs/net/talk11/icann-mar11.pptx), presented by Les Cottrell at the OARC/TechDay for the ICANN San Francisco March 7th, 2011
* [Table of Contents of Lectures](http://www.slac.stanford.edu/grp/scs/net/talk11/kinshasa-toc.docx) by Les Cottrell at [Ecole SIG on Nouvelles Technologies](https://confluence.slac.stanford.edu/download/attachments/17164/Rapport+Court4.pdf?version=1&modificationDate=1318438534000) en Democratic Republic Congo, 12-17 Septembre, Organisee par l’Universite de Kinshasa
  + The Internet: where did it come from, what are the challenges ([English](http://www.slac.stanford.edu/grp/scs/net/talk11/internet-history.pptx), [French](http://www.slac.stanford.edu/grp/scs/net/talk11/internet-history-fr.pptx))).
  + Internet, how is it performing ([English](http://www.slac.stanford.edu/grp/scs/net/talk11/perform.pptx), [French](http://www.slac.stanford.edu/grp/scs/net/talk11/perform-fr.pptx)).
  + Cell phones, how do they work ([English](http://www.slac.stanford.edu/grp/scs/net/talk11/cellphone-work.pptx), [French](http://www.slac.stanford.edu/grp/scs/net/talk11/cellphone-work-fr.pptx)).
  + Smartphones and other mobile computers ([English](http://www.slac.stanford.edu/grp/scs/net/talk11/smartphones.pptx), [French](http://www.slac.stanford.edu/grp/scs/net/talk11/smartphones-fr.pptx)).
  + [Network Problem Diagnosis for non-networkers](http://www.slac.stanford.edu/grp/scs/net/talk11/diagnosis.pptx).
  + [Pinger Case Studies](http://www.slac.stanford.edu/grp/scs/net/talk11/pinger-case-studies.pptx).

1. Mean Opinion Score see <http://en.wikipedia.org/wiki/Mean_opinion_score> [↑](#endnote-ref-1)
2. Directness of connection see <http://www.slac.stanford.edu/comp/net/wan-mon/tutorial.html#directness> [↑](#endnote-ref-2)
3. Buffer Bloat, see <http://en.wikipedia.org/wiki/Bufferbloat> [↑](#endnote-ref-3)
4. Pinger Home page, see <http://www-iepm.slac.stanford.edu/pinger/> [↑](#endnote-ref-4)
5. PingER deployment, see <http://www-wanmon.slac.stanford.edu/wan-mon/viper/pinger-coverage-gmap.html> [↑](#endnote-ref-5)
6. Traceroute archive, see <https://confluence.slac.stanford.edu/display/IEPM/Traceroute+Archive> [↑](#endnote-ref-6)
7. PingER Data Explorer, see <http://www-iepm.slac.stanford.edu/pinger/explorer.html> [↑](#endnote-ref-7)