Sri Lankan LEARN network connects to TEIN3

Announcement

On Friday 2nd April 2009 the following email was sent by Nimal Ratnayake announcing the connection of the Sri Lankan LEARN Network to the TEIN3 network.:

> *It is with great pleasure that I share with you the news of Lanka Education and Research Network(LEARN) getting connected to the TEIN3 network. The link was brought up on April 1, 2010.*
>
> *This is a major milestone for LEARN, as this is the first time we are getting connected to the Academic Internet. Although LEARN has been in operation for almost two decades now, we only had access to commodity Internet so far.*
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> *I would like to take this opportunity to thank David West, George McLaughlin, Li Zhonghui and the TEIN3 NOC and all the others who were involved in making this a reality.*
>
> *I would also like to mention the generous support given by Steve Huter of NSRC, and David Crowe of NERO, both from U of Oregon, who donated a router interface card for use with the link, and Michael Foley of the GDLN/World Bank who hand carried the card on his way to Sri Lanka.*
>
> *The financial support of the European Commission which covers the bulk of our subscription is greatly appreciated. Getting connected to the academic Internet would simply be unaffordable for us without their support.*
>
> *Nimal Ratnayake*
> *Lanka Education and Research Network (LEARN)*

Other S. Asian neighbors have also connected to TEIN3 including: Nepal (March 24, 2010), Pakistan (late 2008), India (March 8, 2010).

Impact on Routes to US

The commodity Internet path is longer in terms of no of hops than the TEIN3 path, but slightly shorter in terms of latency, mainly because they go through Mumbai.

Namal has seen similar differences in latency to Japan, Europe etc - no of hops is lower, but the latency is about 40ms higher through TEIN3.

Looking at the PingER data from SLAC to Sri Lanka (SLAC monitors www.ifs.ac.lk, www.ac.lk, www.pgia.ac.lk, www.pgis.lk, and www.ruh.ac.lk in Sri Lanka) the minimum Round Trip Time (RTT) from SLAC appears to have increased by about 10% in line with the above. The average RTT has gone up by 5%. It's too (April 3, 2010) early to tell much about the losses.

Given that the new route although longer has better performance I looked at the inter-packet delay variability (IPDV ~ jitter) which should be better if there is more capacity and less congestion. This is borne out, it looks like the IPDV from SLAC to namunu.learn.ac.lk has reduced from about 4-5ms to less than 0.6ms. This is also seen in the Smokeping plot below. In the plot the blue line is the RTT in ms., the grey smudge around the blue line is the jitter, the background colors indicate the losses and black means the host was unreachable at the time the measurement was made (every 30 minutes). !namanu. png!The improved jitter (lack of greay shading) is evident starting on April 1st 2009. The loss of ping connectivity starting on March 24th, 2009 is not understood. The most recent plot is also available.
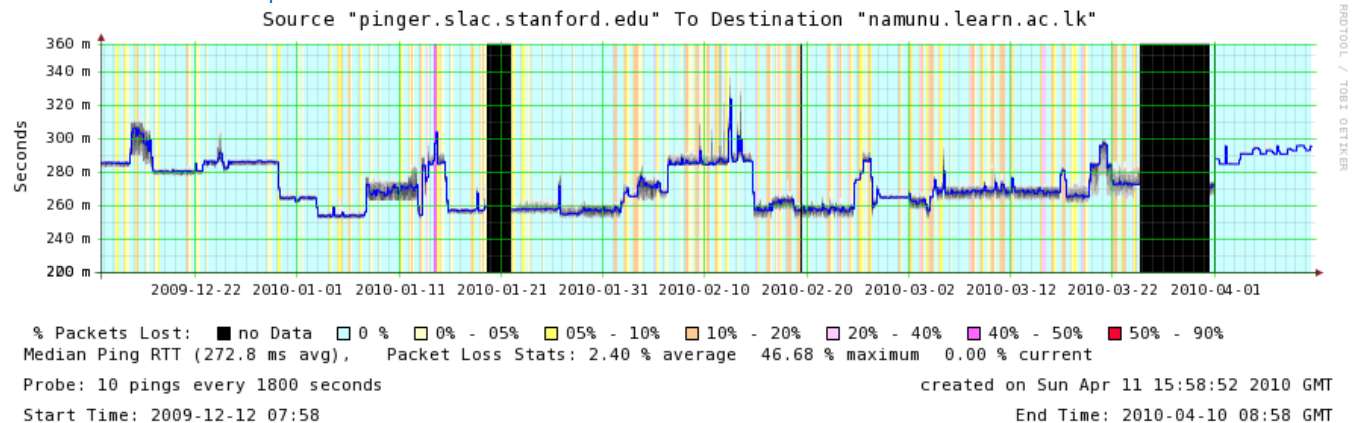
All LEARN hosts (IP range 192.248.0.0/17 and 2001:df0:17::/48) should be accessible through the TEIN3 link. If we find otherwise, we will let LEARN know and they will sort it out. Looking at a Smokeping graph for SLAC to www.ruh.ac.lk one can see a step change upward in the RTT and what looks to be lower jitter starting on April 1st. See below, the black line showing host unreachable from SLAC for a short time on April 1st 2010 may be caused by the cut-over. The most recent plot is also available.
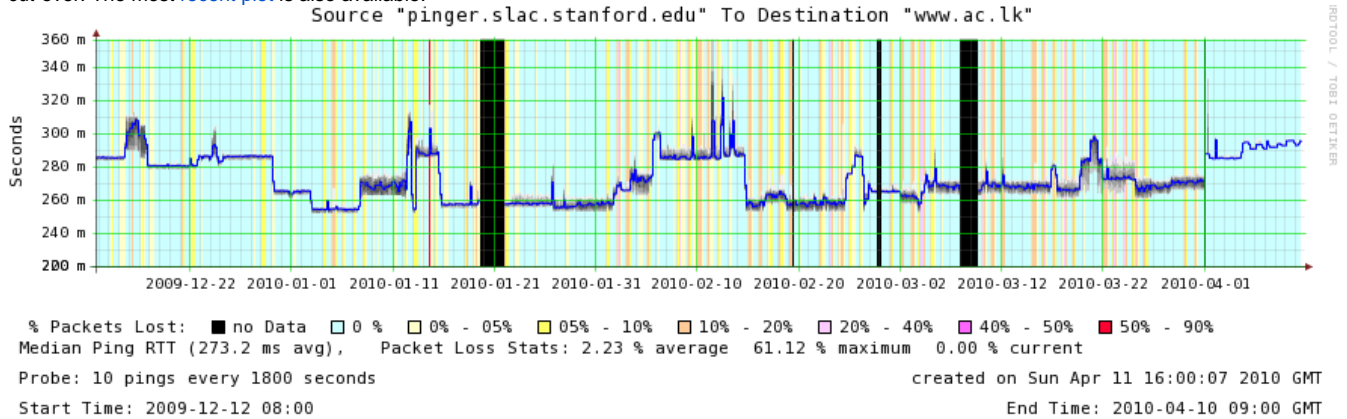
Impact on routes from LEARN

There is also PingER data measured from namunu.learn.ac.lk (see for example http://www-wanmon.slac.stanford.edu/cgi-wrap/pingtable.pl?file=average_rtt&by=by-node&size=100&tick=last60days&from=LK.LEARN.AC.N1&to=WORLD&ex=none&only=all&dataset=hep&percentage=any and choose your metric and time ticks). I have not looked at this yet in any details to see what it reveals. I do notice the minimum RTT from LEARN to Australia went up by ~ 100ms, while the IPDV dropped from about 0.8ms to about 0.3ms.