# Joint Project meeting between UM, UNIMAS, NUST-SEECS, SLAC

## Attendees (Skype IDs in parentheses)

Anjum Naveed* (Anjum Naveed) - PingER project Pakistan lead NUST/SEECS Islamabad
Arshad Ali* (Dr Arshad Ali) - Director general NUST/SEECS Islamabad
Nara* (Narayanan Kulathuramaiyer, will use fcsit ID) - Dean, FCSIT, PingER Project adviser UNIMAS Sarawak
Johari Abdullah* (fcsit) - Lecturer PingER technical point of contact UNIMAS Sarawak
Siti Salwah Salim ❓ - UM (Faculty of Computer Science and Information technology) Kuala Lumpur Mainland Malaysia
Abdullah Bin Gani* (abdullahanakgani) - Deputy Dean Research UM (Faculty of Computer Science and Information technology) Kuala Lumpur Mainland Malaysia.
Les Cottrell* (rlacottrell) - Manager Networking and Telecommunications, PI for PingER, SLAC Stanford California

* Have confirmed they will attend. Abdullah does not believe Siti will attend.

For more information see

> *Anjum Naveed see http://anaveed.seecs.nust.edu.pk/*
> *Arshad Ali see http://drarshad.seecs.nust.edu.pk/*
> *Narayan Kulathuramaiyer see http://www.jucs.org/jucs_articles_by_author/Kulathuramaiyer_Narayanan/BusinessCard*
> *Johari Abdullah see http://unimas.academia.edu/JohariAbdullah or https://www.mohe.gov.my/malimsarjana/cvpreview.cfm?id=1727*
> *Siti Salwah Salim see http://umexpert.um.edu.my/papar_cv.php?id=AAAJxnAAQAAAGGmAAc*
> *Abdullah Bin Gani see http://umexpert.um.edu.my/papar_cv.php?id=AAAJxnAAQAAAF9xAAG*
> *Les Cottrell see http://www.slac.stanford.edu/~cottrell/*

## General

The meeting will be by Skype Friday the 16th of November, 8:30am (Pakistan time). That will be 11:30am in Malaysia the same day while 7:30pm on Thursday the 15th of November for Les Pacific Standard time

## Purpose

This meeting is to gauge interest, potential avenues to explore and whether to put together a proposal and apply for funding.

- We need to decide what is the scope of the project/proposal. For example:
  - Set up an active end-to-end monitoring infrastructure for Malaysia educational sites, similar to that set up in Pakistan.
  - Set up low cost, low power monitorable sites (e.g. similar to the ePingER project) in remote regions such as Bario, Long Lamai, and Ba Kalalan.
  - Other suggestions.
- If go for funding need to identify potential funding sources.
- Need to identify a lead to put together a joint proposal from (UNIMAS, NUST/SEECS, SLAC, and UM)to a funding source for a joint project to set up.

## Proposed Agenda

- Introductions
- Proposed Joint Research Partnership between UM, UNIMAS, NUST and SLAC. - Arshad Ali
  - Dr. Arshad will lead this part of discussion. He will share the benefits of having Pinger deployment in Pakistan and how it is helping us identify issues and enable HEC in providing better services on PERN network. Other potential collaboration directions can include projects on the lines of Openflow research in NUST, utilization of GSM testbed and IPv6 testbed facilities at NUST. We are also looking for other projects in the domain of networks that can be of mutual benefit for everyone involved.
- Roles and who has the role:
  - Deploy and manage monitoring hosts at major sites in Malaysia
    - Provide guidance, experience - maybe a Pakistani person visit Malaysia
  - Mine the data, analyze and prepare reports
    - Keep data gathering and analysis working as web SaaS
- Potential sources of funding. Anjum points out that there are constraints that funding agencies put on Malaysian institutions. Keeping those in view, Anjum recommends we should think on the lines of submitting joint proposals in Malaysia as well as in Pakistan (ICT RnD and HEC). We may also consider submitting and NSF proposal. An important aspect of those proposals shall be exchange of researchers and this direction shall be considered and discussed in meeting.
  - Malaysia - Abdullah Bin Gani or Nara or both
  - Pakistan - Arshad
- What to do until funding or if no funding?
- Action items.

Obviously some preparation may be needed before the meeting to ID potential funding sources

## Notes from meeting

## Background information

Proposal

- The NUST Rector sent a memo to the VC of University of Malaysia in Kuala Lumpur suggesting a collaboration with UNIMAS, NUST & SLAC. This was favorably received. Les followed up with an email to the UM folks. UM also seem very receptive.

> *...*
> *3. NUST has also been collaborating with Stanford University (SLAC) since 2004 under the PINGER project* http://www-iepm.slac.stanford.edu/pinger/*aimed at Internet measurements in particular focused on developing countries. This has involved students and faculty from NUST Pakistan, plus one year visits by about 17 graduate students so far from NUST to SLAC. As a result they have developed state of the art analysis and presentation tools, and received valuable exposure to Stanford and Silicon Valley.  This in turn has led in many cases to fully funded admission to world top ranking universities, and in others to start-up companies. There have also been several 1 to 2 week visits by faculty and staff in both directions. During my recent visit to Stanford University (SLAC), I came to know that UNIMAS is initiating a similar partnership with SLAC.Based on our discussions held at NUST, I proposed to Prof Dr Les Cottrell, a joint research partnership among Stanford (SLAC), NUST, both UNIMAS and UM from Malaysia.*
>
> *4. If you agree to the proposal, then I will ask NUST lead researcher (Dr Arshad Ali) on this project to coordinate with your designated computer science faculty. Please feel free to share your thoughts on the proposed idea. Under this project joint research funding opportunities can be explored via both Pakistani and Malaysian research funding agencies.*
>
> *Looking forward for mutually rewarding partnership.*
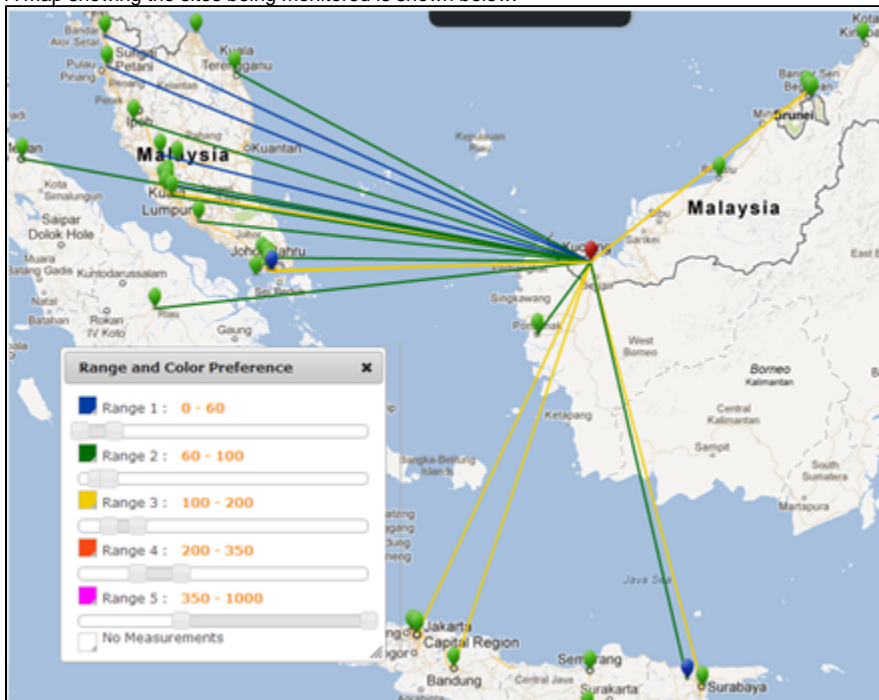
- Response from UM

Workshop

- Unimas plan to have a workshop on Pinger when Les comes in December. Unimas will invite participants from universities in West Malaysia, Sabah and Sarawak, (Brunei and Kalimantan could be added). The idea is to establish regional agreement for types of studies that can be undertaken, the sharing of data and exploration of future projects.
- Unimas have sent an itinerary. It is at https://confluence.slac.stanford.edu/download/attachments/128455354/Tentative+Itinerary+for+Les+Cotrell+Visit+in+Dec+2012.docx?version=1&modificationDate=1352078021290.
  Possible ways to advance would include:
  - NUST/SEECS have nominated Kashif Satar who is the technical PingER lead at NUST/SEECS to represent Pakistam
    - He will make valuable presentations on hands-on experiences (both technical, political and social) with building the archive site, managing multiple monitoring sites, mining the data, engaging customers (monitor sites contacts and decision makers, the network providers PERN (Pakistan Educational and Research Network), the funding agency (Higher Education Commission), preparing reports for the customers, and the benefits ensuing etc.

Project

- Duties of UNIMAS student at SLAC

Current state of active end-to-end monitoring for education in Malaysia.

The UNIMAS PingER monitor is now working see http://www-wanmon.slac.stanford.edu/cgi-wrap/pingtable.pl?file=average_rtt&by=by-node&size=100&tick=monthly&from=MY.UNIMAS.N4&to=SE.ASIA&ex=none&only=all&dataset=hep&percentage=any and in S.E. Asia 2 sites in Brunei, 7 sites in Indonesia, 1 in Cambodia, 11 in Malaysia, 1 in the Philippines, 2 in Singapore and 3 in Thailand. These sites are also being monitored from SLAC. A map showing the sites being monitored is shown below:



The monitoring will provide an historical record of performance (round trip times, jitter, loss), reachability etc. Based on this a case study should be put together to identify problems in particular the reliability (e.g. MTBF, uptime, MTTF), how congested the connections are, identify problems and possibly identify the causes.

When a reasonable amount of data has been gathered then a case study could be be made of the connections to the remote sites, to identify and compare the performance. Les has made a quick look at the data and the UNIMAS connections looks rather congested. **Can anything be done?**

ePingER

See https://confluence.slac.stanford.edu/display/IEPM/ePingER+Project

Unimas are going to propose a project to install ePingER hosts in remote Sarawak communities such as Bario in  the Kelabit highlands. Initially these would simply be PingER targets responding to pings. Later depending on bandwidth availabilty etc. They could also be turned into PingER monitoring hosts and a web site.

They have remote sites in Kelabit Highlands in Barrio. There is a wireless network. the hosts are solar powered. They could install an ePinger host and ping from Unimas via the VSAT connection. Could be a month or two to set the host at Bario up. There are other telecenter sites that are similar. They could also put up hosts in these places. These telecenters include: Long Lamai, and Ba Kalalan.

There is also interest in ePingER, e.g. for other major sites in Malaysia and even the Kelabit highlands where its low power requirements and low cost together with the ability to host applications such as a web accessible PingER monitoring station, could be very advantageous to quantitatively study the network performance, and provide reports for decisions makers and funding agencies on how to improve the network.

An ePingER App for an Android or iOS might also be an interesting project.

UNIMAS want to purchase 2-3 ePingER machines. However they have not found a distributor in Asia yet.