

20120912 SLAC UNIMAS meeting

Attendees

Nara, Johari at Unimas and Les & Bebo in the Bay Area.

Mohamad Imran, Tan and Adam presented apologies that they could not attend.

General

The meeting was by Skype at 11am in Sarawak as usual.

Follow up on Discussions with VC

Unimas will send a formal invite to Les to visit Unimas for the order of a week or more to coincide with the Unimas 20 year anniversary celebrations on December 12th, 2012.

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.

In the meantime Les has put together more detail on what the Unimas student or staff would be engaged in at SLAC etc. We went through this at the meeting and agree it is a useful start.

Share an office with Les. This will provide quick response to questions and suggestions. Les will provide supervision and mentorship. there should also be a supervisor in UNIMAS. Have access to SLAC facilities (computing account, office space, facilities etc.)

The exact tasks to be performed will depend to some extent on the students interests. The following are potential areas for tasks.

Work on PingER Wide Area Network monitoring.

- Using and extending the PingER project tools. This would include the measurement agents, the gathering and archiving, the analysis, the graphical presentation tools, the documentation etc.*
- Provide improved PingER management tools to automatically discover problems, reporting relevant detailed information.*
- Mining the data for research; analyzing to provide case studies of Internet events (such as cable cuts, new installations, political turmoil, earthquakes, tsunamis, trends, correlations with other non Internet indices etc.); providing status reports; devising new ways to analyze the data; identify, filter and report on anomalies in near real time; correlate the anomalies across multiple links and multiple metrics.*

Work on graphical front ends for the perfSONAR network monitoring. This will be mainly with Dr Yee Ting Li.

Work on geo locating target hosts by means of ping Round Trip Times from known landmarks to provide information for trilateration.

Coordinate fortnightly phone meetings with UNIMAS.

Coordinate weekly phone meetings with NUST Pakistan.

Les will send a typical SLAC invitation letter to Nara. Done.

Nara raised the question as to whether the invitations could be for 2 years. Les checked with the US immigration folks. Unfortunately for IT specialists the limitation is 1 year.

Nara also asked as whether there was a way to get a certificate issued on their work at SLAC to assist with a future career. Les is happy to provide a letter of recommendation on SLAC letter head concerning their work at SLAC.

Typically visits are expected to be for about a year. UNIMAS are on a 2 semester system. There is a break of 3 weeks. the semesters start September and February.

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 availability etc. They could also be turned into PingER monitoring hosts and a web site.

There is an Internet2 / ESnet Joint Techs meeting from the 13th-17th January 2013 in Hawaii, I will attend. The focal areas are: Network Research and Emerging Technologies; Network Architecture and Operations; R&E Network Applications. there are also usually sessions on non US networks, for example at the last meeting at Stanford there was a talk on Challenges of Building an Affordable and Scalable Wireless Network at Universities in West Africa & KENET: Where we are, see <http://www.internet2.edu/presentations/jt2012summer/20120718-Wanja-Njue.pdf> and <http://www.internet2.edu/presentations/jt2012summer/20120718-Togo-challenges%20building%20wifi%20networks.pdf>. Nara will follow up and look at this meeting.

Les has also sent information on a workshop in Salt Lake City in November. Les does not currently know of a particular relevant other conference/meeting especially one on the West Coast of the US or even better in the Bay Area.

The VC also expressed interest in setting up a meeting with the SLAC Director [Persis Drell](#) to share ideas. Les has been working with SLAC's layers of management to set up a phone call between Vice Chancellor of UNIMAS and SLAC Director. SLAC director requested more information on the reasons for the meeting, and if we look forward, if this collaboration is going to continue, to ensure there is an Associate Director at SLAC sponsoring this collaboration. I was away for a couple of weeks. I met after my return with the CIO and he is in favor of pushing forward. He requested I work directly with the COO to set up the meeting. **The meeting will be early next week. If the VC has particular agenda for the phone meeting that would be useful to prepare for. If it is just a meet and greet it would be good to know that too.**

Future meetings

Nara mentioned that there is a council meeting at the end of the month which will be attended by many Malay Universities. he requested Les to put together a letter of Invitation for sites to join the PingER project. Les has sent a draft to Nara

UNIMAS PingER host name

Imran has successfully assigned the DNS name `pinger.unimas.my` to the UNIMAS PingER monitor (49.50.236.98). Les has tested the ping and traceroute servers and the `ping_data` server and all work correctly. *Les sent email to Mohamad 8/22/2012 with a reminder 9/5/2012 to coordinate the changes to the PingER meta data base (NODEDETAILS) and the `pinger.xml` file at UNIMAS.

Can we "cut over" the monitoring to use the DNS name of the UNIMAS host. This means you (Mohammed) will need to change `pinger.xml` From `<SrcName>49.50.236.98</SrcName>` To `<SrcName>pinger.unimas.my</SrcName>`

And I will need to modify the PingER meta database (NODEDETAILS) at SLAC.

Once you have made your change, please let me (Les) know and I will change my end.

Mohammed is still in KL arranging his visa application. **He'll complete the above once he is back in Kuching.**

Extending UNIMAS PingER hosts monitoring

Has there been any progress on extending `pinger.xml` at UNIMAS to add a dozen or more hosts in Malaysia. Les sent email to Johari 8/22/2012 and again 9/7/2012 requesting an update. Information on how to add hosts can be found at:

See the documentation on `pinger2.pl`. Basically you have to edit the `pinger.xml` file (normally to be found in `/usr/local/share/pinger/pinger.xml`) to add the extra hosts in the field:

`<HostList>` This field holds any number of `<Host>`-entries which will get called by PingER2. In contrast to `<BeaconList>` these entries are not overridden by the refresh as defined in `<BeaconListConfig>`. That means that all custom hosts that are to be monitored in addition to the `BeaconList` should go into this list.

Example:

`<HostList>`

`<Host>`

`<Name>www.cc.gatech.edu</Name>`

`</Host>`

`<Host>`

`<Name>www.foo.bar</Name>`

`<IP>192.168.1.1</IP>`

`</Host>`

`</HostList>`

These entries will be preserved in this file until you re-edit them

Looking at the `pinger.xml` there has been no progress on this.

It would also be interesting to extend the monitoring to other more centrally connected hosts in the cities of Malaysia. The following hosts were suggested: Mimos in West Malaysia, KL; Kota Kinabalu, the University Malaysia Sabah; Swinburne in Kuching, Miri, Manipal university in KL. Les tested pinging these universities: Swinburne (www.swinburne.edu.my) does not ping; www.curtin.edu.my in Miri does not ping; www.segi.edu.my in Kuching does not ping; University of Malaysia Sabah(www.ums.edu.my) does not respond to ping; Manipal International University pings and has been added to the hosts monitored by SLAC; Mimos has been added; Universiti Putra Malaysia Kampus Bintulu Sarawak (www.btu.upm.edu.my) has been added.

Johari will try, before the next meeting, to get the list of sites that are above mention into the `pinger.xml` file and identify at least a dozen or more potential sites in Malaysia.

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

When a reasonable amount of data has been gathered then a case study could be made of the connections to the remote sites, to identify and compare the performance.

ePingER

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

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.

The folks at the ICTP provided an upadte to the embedded system used for ePingER.

The ITCP folks responded concerning the ePingER embedded Linux board:

"Yes, we still work with the Alix boards. An alternative is the <http://www.raspberrypi.org/>. It is much cheaper but, from what I understand, does not run a standard Linux distribution. I have not tested it, so I am not sure about the low power features.

We just used <http://tyconpower.com/> for a project in Micronesia, and they worked well".

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

Next meeting

Thursday 27 8pm Pacific Daylight Time, Friday 28 11am Malay time.

Funding for visits and students

From previous notes:

Students have a local supervisor in Kuching. We start with a couple of graduate students interested in network monitoring.

- They learn about the PingER and other projects
- They work on assigned tasks working in Kuching
- We meet regularly (e.g. weekly) via phone (Skype) to review progress.
- Meeting includes Les at SLAC, any Kuching students at SLAC, students and supervisor in Kuching
- Daily emails, skype calls & instant messaging to keep in contact
- Tasks will involve programming (typically in perl) of network measurements, analysis and presentation (GUIs) of information

The best of the best graduate students are invited to SLAC for 1 year as an intern/visiting scientist

- Up to 2 students at a time
- They will work together with the SLAC team on projects such as PingEr, perfSONAR
- Depending on the student there may be opportunities for presentations, talks, and contributing to publications

They are funded by Kuching

If interested then fairly early on it would be good to have a face to face meeting in Kuching and/or SLAC to go over expectations, do some publicity, introductions etc.

- Les has sent some ideas for projects/tasks. A [first cut is available](#).

Future

Are there resources and what for:

- Funding for students as time goes goes on as becomes clearer, then seek student & grants
- Funding for face to face start up visits. Spoken to vice chancellor, Skype call between SLAC ann VC at a later time. Schedule a meeting to discuss resources. Visit to SLAC Internal discussions

Consult higher education for funding

- Funding for extended (1 year) internships at SLAC

What kind of students – graduate, BS, MS, PhD ...

What are student interests?

- Building network monitoring tools tools (measurement, analysis, GUIs)
- Analyzing data, producing case studies
- Research, writing papers

Identify students

Face to face visits and discussions

Selecting students as interns at SLAC for 1 year and funding

Communications:

- Computing requirements, accounts at SLAC
- Interim email lists and SMS txt messages
- Documentation repository (probably use the SLAC wiki)
- Follow on meetings would include identified students, progress reports etc.

Miscellaneous

The government of Sarawak is embarking on a huge project on renewable energy. This is a big issue in Sarawak partially due to the isolation of many places. They have lots of water so hydro-electric power is very interesting. They are interested what SLAC or Stanford are doing in this area. This is not an area Les is directly associated with, Being funded by the US Department of Energy (DoE) SLAC is interested in Energy. There is basic research focused on how catalysts work, how does sunlight work in plants to sequester carbon and produce energy, looking at the challenge to transform our future energy supplies from fossil fuels to renewable energy while still enabling economic growth see <http://www.slac.stanford.edu/pubs/slacreports/reports19/slac-r-993.pdf>. There is also work on the Stanford campus and DoE sites see for example <http://www-conf.slac.stanford.edu/energyss/2010//Speakers.asp>. Also we strive to expand the use of renewable energy within our facility and our activities by implementing renewable energy projects and by purchasing electricity from renewable energy sources.

Useful links

[PingER home page.](#)

[PingER site map](#)

[PingER Wiki](#)