KAREN Capability Fund - Project Milestone Reporting Template

Report Date: [*1 January 2010 – 30 June 2010*]

Project Name	PlanetLab NZ+	
Project Leader	Prof. K. Pawlikowski	
Co-funding Contribution	Yes	
Budget Spend	Planned to date 100%	Actual about 100%
Milestone Achieved	The final milestone (2 of 2)	
Project On Track?	Yes	
Project schedule	Planned 100%	Actual 100%

Health Check – *is the project achieving its objectives so far? If not, indicate the type of risk it is e.g. time, budget, resources etc?*

GREEN	YELLOW	RED
✓		

Milestones Check –*List the project milestones, (as per the contract), and indicate how successful you have been in meeting them (i.e. status). Include the dates that they were met.*

Milestones	Contract Milestone Date	Actual Date Met	Status ☺ 😐 ☹ ✓
Installation of new PlanetLab node (two PlanetLab servers) at Victoria University of Wellington	14/12/2009	14/12/2009[1]	✓ done
The 2nd PlanetLab NZ Workshop on "Next Generation Networks and Future Internet: Research and Experimentation"	14/12/2008	06/11/2009	✓ done
Installation of new PlanetLab node (two PlanetLab servers) at University of Waikato	14/06/2010	18/03/2010	✓ done
Installation of new PlanetLab node (two PlanetLab servers) at Auckland University of Technology	14/06/2010	15/05/2010[2]	✓ done
Presentation to KAREN Community	01/06/2010	19/03/2010	✓ done

[1] The formal registration of these two machines by the central Planetlab's administration at Princeton University in the USA was done on 22 January 2010.
[2] The formal registration of these two machines by the central Planetlab's administration at Princeton University in the USA is expected to be done with next couple weeks.

The goals of the Capability Build Fund are to raise awareness and enable effective use of KAREN. REANNZ wants to promote the enabling potential of KAREN and its use through creating a community ethos of sharing knowledge.

Current Status

The second and final milestone of PlanetLab NZ+ project was reached in mid May 2009, when we installed the node of PlanetLab NZ at Auckland University of Technology (two PlanetLab servers)[3]. Thus, at the conclusion of our two years of activities within PlanetLab NZ and PlanetLab+ (July 2008 - June 2010) we have six sites of Planetlab NZ, operating at University of Canterbury, University of Otago, Victoria University of Wellington, University of Waikato, University of Auckland and Auckland University of Technology. They are connected to the global PlanetLab network via KAREN; see www.planet-lab.org/db/pub/sites.php. Each of these sites has been equipped with two servers, which satisfy the latest operational requirements, as specified by the central PlanetLab administration at Princeton University.

As earlier reported, the 2nd PlanetLab NZ Workshop on "Next Generation Networks and Future Internet: Research and Experimentation" was held in Christchurch, on the 6th of November 2009. The workshop's presentations are available on ww.planetlabnz.canterbury.ac.nz/workshop2009. Information about PlanetLab project was shared with wider KAREN community during a tele-symposium on "KAREN and its role in facilitating research cooperation within NZ", organized on the 19th of March 2010, by the Department of Social Sciences at the University of Canterbury, with participants in Dunedin, Wellington, Palmerston North, Hamilton and Auckland. During the symposium, Prof. K. Pawlikowski gave a talk on PlanetLab NZ project and its dependence on KAREN. Additionally, we have been ready to talk with Chris Litten, Member Engagement Manager of REANNZ about our project when he visits the University of Canterbury on 1 June 2010.

Thus, **the final milestone of our project on PlanetLab NZ has been reached**; cf. Point 7, Schedule 1, of the CBF Agreement with the REANNZ regarding PlanetLab NZ, of the 25th of September 2009.

Successes

At the conclusion of this project, we have six universities in New Zealand fully connected to the PlanetLab, which offers the most advanced global experimental networking infrastructure for conducting research on new telecommunication technologies. This has allowed the networking research teams from Canterbury, Otago, Wellington, Hamilton and Auckland to join a league of the best research teams worldwide, to work on cutting-edge research initiatives on Future Internet, future peer-to-peer services, etc. Already in 2009, our research group at the University of Canterbury has succeeded in distributing our unique controller of distributed simulation, known Akaroa2, over arbitrary number of PlanetLab nodes; see www.akaroa.canterbury.ac.nz. This has allowed us to conduct simulation experiments on a global scale. We have also advanced our research projects on global experimental networking facilities, next generation networks and Future Internet. Our results were presented at (i) the 21st Int. Teletraffic Congress (ITC 21) on Traffic and Performance Issues in Networks of the Future, Paris, France, in September 2009, (ii) the 15th Asia-Pacific Conf. on Communications (APCC 2009), Shanghai, China, in October 2009, (iii) Int. Workshop on Reliable Networks Design and Modeling (RNDM2009), St. Petersburg, Russia,

[3] The formal registration of these two servers by the central Planetlab's administration at Princeton University in the USA is expected to be done with next couple weeks.

in October 2009, (iv) the 7th Int. Workshop on the Design of Reliable Communication Networks (DRCN 2009), Washington DC, in October 2009, and (v) the 7th Int. Conference on Information, Communications and Signal Processing (ICICS 2009), Macau, in December 2009. Additionally, we also attended (vi) the 2nd IEEE Workshop on the Network of the Future (FutureNet II) and Tutorial on "Architectures for the Future Networks and the NGI" during IEEE Global Communications Conference (IEEE GLOBECOM 2009) in Honolulu, USA, in December 2009, (vii) TRIDENTCOM 2010 (6th Int. Conference on Testbeds and Research Infrastructures for Development of Networks & Communities, Berlin, Germany, in May 2010), and will participate (viii) the Workshop on Stochastic Processes in Communication Networks for Young Researchers, organized by the Int. Centre for Mathematical Sciences & Cambridge University, in Edinburgh, UK, in June 2010. The last two events have been connected with visits of two research groups in Europe, which are actively involved in research on next generations networks and Future Internet: (a) the Telecommunication Networks Group at Department of Electrical Eng. & Computer Science, at the Technical University of Berlin, Germany, and (b) the AESOP (Analysis, Engineering, Simulation & Optimization of Performance) Research Group at Department of Computing at Imperial College London, UK.

Communications

Information about our project on PlanetLab NZ, its goals and our activities have been available on the Internet since in October 2008, see a website of our project at www.planetlabnz.canterbury.ac.nz. The archive is constantly updated. During this stage of our project, we have shared our research results, plans and experience, with our colleagues both in New Zealand and overseas.

In New Zealand, we organized the 2nd PlanetLab NZ Workshop on "Next Generation Networks and Future Internet: Research and Experimentation", held in Christchurch, on the 6th of November 2009. The workshop was attended by about 40 participants representing network research groups from the University of Canterbury, Auckland University of Technology, University of Auckland, University of Waikato, Massey University, Victoria University of Wellington and University of Otago, as well as local telecommunication industry represented by Allied Telesis Co. of Christchurch. The program begun with an invited lecture given by Prof. Kurt Tutschku from the University of Vienna, Austria. The workshop's presentations are available on ww.planetlabnz.canterbury.ac.nz/workshop2009 and an article appeared in the UC Chronicle, (vol. 44, no. 20, page 14, March 2009). Information about PlanetLab project was also shared with KAREN community during a tele-symposium on "KAREN and its role in facilitating research cooperation within NZ", organized on the 19th of March 2010, by the Department of Social Sciences at the University of Canterbury, with participants in Dunedin, Wellington, Palmerston North, Hamilton and Auckland. During the symposium, Prof. K. Pawlikowski gave a talk on the PlanetLab project and its dependence on KAREN.

Members of our research team have also attended a number of international research conferences on PlanetLab and other global experimental networking facilities, next generation networks and Future Internet, to present the results of our research activities enabled by PlanetLab NZ. The research papers were presented at:

- the 21st Int. Teletraffic Congress (ITC 21) on Traffic and Performance Issues in Networks of the Future, Paris, France, in September 2009 (a paper presented by Prof. H. Sirisena)
- the 15th Asia-Pacific Conf. on Communications (APCC 2009), Shanghai, China, in October 2009 (two papers presented by W. Liu, a PhD student from Canterbury) ,

- the Int. Workshop on Reliable Networks Design and Modeling (RNDM2009), St. Petersburg, Russia, in October 2009 (one paper; nobody from our group could present this paper because of a delayed Russian visa, the paper was presented by the conference's chairman)
- the 7th Int. Workshop on the Design of Reliable Communication Networks (DRCN 2009), Washington DC, October 2009 (a paper presented by Prof. H. Sirisena)
- the 7th Int. Conference on Information, Communications and Signal Processing (ICICS 2009), Macau, in December 2009 (a paper presented by Prof. K. Pawlikowski) .

In May 2010, our PhD student, Muhammad Asad Arfeen, shared information about PlanetLab NZ, and consulted his research plans in the area of on-line prediction of events in PlanetLab and Future Internet, at TRIDENTCOM 2010 (6th Int. Conference on Testbeds and Research Infrastructures for Development of Networks & Communities, in Berlin, Germany) and during meetings with two European research groups which are actively involved in research on global experimental networking facilities and Future Internet: (a) the Telecommunication Networks Group of Professor Adam Wolisz in Department of Electrical Eng. & Computer Science, at the Technical University of Berlin, Germany, and (b) the AESOP (Analysis, Engineering, Simulation & Optimization of Performance) Research Group of Prof. Peter Harrison at Department of Computing, the Imperial College London, UK.

Top Issues

List of any issues, difficulties or roadblocks:

In January 2010, to make possibly the best use of research facilities provided by PlanetLab NZ, network research groups from the University of Canterbury and University of Waikato had jointly applied for a Marsden Research grant, with Prof. K. Pawlikowski as the Principal Investigator. Unfortunately, the application was unsuccessful. However, we are determined to apply again next year, as well as to look for alternative sources of funding for our research activities.

The only network research group which has remained unconnected to PlanetLab NZ is the research group of Prof. Richard Harris at Massey University. It is hoped that a funding will become available for connecting this group to PlanetLab NZ as well.

Top Risks

List of any known or anticipated risks to project:

None

What's Coming Up

Next steps in project, please be as technical as possible:

We are grateful to REANNZ for this grant from KAREN Capability Fund, which has enabled us and five other network research groups accross New Zealand to access PlanetLab. Using this modern global experimental networking infrastructure, we are able to participate in cutting-edge research on Future Internet and other next generation networks. The results of our research projects have attracted a number of postgraduate students who want to be involved in our research projects. Two PhD students joined our research group at the University of Canterbury earlier this year, and applications of few other students are under consideration. One postdoc fellow from Germany, fully funded by the German Research Foundation, will join our research group for 1.5 year, since February 2011.

To remain up-to-date with new developments in the area of global experimental networking infrastructures, we have applied for an additional funding to REANNZ, which would be used for our participation in a GENI Engineering Conference in the USA, in July or November 2010. The GEC is a working meeting where researchers and developers discuss research results and plans for advancing infrastructure planning and prototyping within the GENI project (Global Environment for Network Innovations; the newest development in the area of global experimental networking facilities). The conference would be attended by one of our new PhD students, who intend to specialize in this area.

Currently we are actively searching for a fund which could allow us to continue our annual PlanetLab workshops, by organizing the 3rd PlanetLab NZ Workshop on Next Generation Networks and Future Internet later this year.

Another goal, if a suitable funding is found, is to connect the Network Research Group of Prof. Richard Harris at Massey University to PlanetLab NZ.