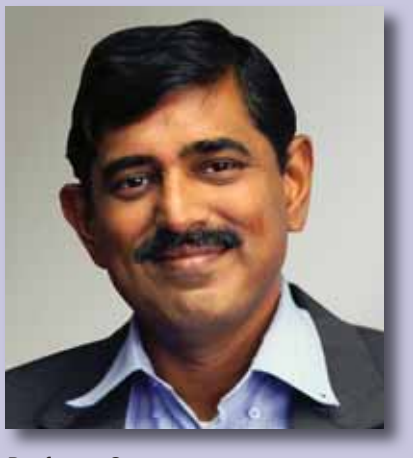
NAv6 Charts Malaysia's IPv6 Path

By Professor Sureswaran Ramadass,
Director of Malaysia's National Advanced IPv6 Centre (NAv6) Center of Excellence



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In recognizing the need for capacity building in IPv6, the National Advanced IPv6 Centre (NAv6), a world recognized academic and research institution within Universiti Sains Malaysia, is committed towards creating global expertise in IPv6 vigorously. NAv6 works in close cooperation with governments and organizations from around the world to promote, train, consult and deploy IPv6 technology. NAv6 also assists governments in formulating their national IPv6 Roadmaps and Framework, the initial step needed to ensure a well prepared and planned migration from an IPv4 only environment to an IPv4/IPv6 (dual stack) environment.

NAv6 is also a node under the International Telecommunication Union (ITU) academy to offer professional training programs on IPv6 to empower the human network by providing an interactive online course. The 'Migration to IPv6' 6 week course is one of the numerous courses conducted and successfully delivered remotely.

Q: You are part of the NAv6 Academic and Research institution within the Universiti Sains Malaysia. What Academic work do you undertake?

A: Lately our focus has been on training. We are an academic centre within the University of Science Malaysia and we focus on Masters and PhD students, working on next generation internet including IPv6. We have close to 60 student PG, about 45 PhD and 15 masters. Of the 45 PhDs we have 5 or 6 local, so about 37 to 38 are international.

We also conduct a training programme for the Certified Network Engineer in IPv6 (CNE6) certification programme for undergraduates who want to be certified as an IPv6 engineer with global recognition. CNE6 is endorsed by the Global IPv6 Forum and WIDE project (Japan). NAv6 offers three main IPv6 training courses, which are Certified Network Engineer in IPv6 (CNE6) Level 1, Certified Network Engineer in IPv6 (CNE6) Level 2, Certified Network Programmer in IPv6 (CNP6) and Certified Security Engineer in IPv6 (CSE6). These training programs are targeted at network engineers and developers that are involved in implementing and maintaining networking infrastructure and applications.

We have also successfully transferred our knowledge to the worldwide organizations by setting up authorised training centres. The objective in setting up Authorized Training Centres (ATC) is to nurture and develop local expertise in IPv6. NAv6 has set up a ATC's in Malaysia and various countries such as Sudan, Thailand, Singapore, Australia, Oman and India. Up to date we have trained over 4500 participants.

Q: What work do you do at a governmental level?

A: At the IPv6 level, we had our criteria drawn up in Malaysia's IPv6 Roadmap and we were in charge of research and development for Malaysia. We are in charge of the awareness campaign, training, monitoring and auditing. We have carried out the work and Malaysia is now on the way to becoming on IPv6 nation. All plans have been successfully implemented, we also have deadlines for organisations to migrate and a monthly or bi-monthly Council to ensure that progress was well underway.

Informational transaction is vital for all agencies to run its daily operations. The looming exhaustion of IPv4 network addresses requires the need for the current IPv4 networks to migrate to IPv6. The migration process from IPv4 to IPv6 capable networks would proceed in a gradual manner by adopting several well recognized techniques towards a fully IPv6 enabled network. The techniques mentioned require not only the latest model of equipment but it also involves a significant amount of man power to ensure a seamless migration process. Therefore to implement an IPv6 country-

wide project of such magnitude needs to be done step by step to ensure that the final migration would be free of any technical glitches or security issues.

The Country Roadmap sets out the transition timelines, recommendations and guidelines, as well as the roles and responsibilities of key stakeholders in the adoption of IPv6. The objective of the study is to develop a country Strategic IPv6 Roadmap. This document outlines strategic planning for the implementation of IPv6 and its associated programmes. The Roadmap is the basic plan to determine all activities and programs relating to IPv6 implementation. It is a very important source for all agencies and other major stakeholders in producing the migration plans.

The objective of the IPv6 migration plan is to conduct a detailed study of network infrastructure and critical applications and prepare a report detailing of Roadmap, Migration Approach, Pilot project, test bed and timelines. In the migration plan, the implementation proposals will have minimal impact on day to day operations as well as additional costs. The work undertaken will involve study network which will involve gathering information on network infrastructure, key network equipment, servers, appliances and computers, gather information on critical applications, prepare plan to migrate to a dual stack IPv4/IPv6 network with minimal impact on existing critical applications, prepare a set of strategies covering IT equipment acquisition, new critical applications, manpower resource planning and network policies to prepare for IPv6 compliance audits based on Global Standards.

Q: And your work outside Malaysia?

A: NAv6 works in close cooperation with governments and organisations from around the world to promote, train, consult and deploy IPv6 technology. NAv6 also assists governments in formulating their national IPv6 Roadmaps and Framework, the initial step needed to ensure a well prepared and planned migration from an IPv4 only environment to an IPv4/IPv6 (dual stack) environment. We are still doing things nationally but we are now focusing internationally and mostly regionally within Asia. We sit on the Indian government expert panel for IPv6 and we advise them accordingly and we work together with them accordingly. We also work with companies in China on IPv6. and we work with universities in Indonesia. We work with the Internet Corporation for Assigned Names and Numbers in pushing and promoting IPv6 throughout the region, we work with other governments in other countries including Singapore Thailand, Philippines, Cambodia, Japan and Korea. All around the region we work with governments, organisations and universities.

In Africa we work with the Association of African Universities which has a membership of over 1000 universities. Some specific instances include Tanzania and now we are working with Sudan where we have already trained 200 engineers through our programme.

Q: What work have you done with the ITU?

A: In one recent project, NAv6 successfully completed a study on "IPv6 address allocation and distribution" for the International Telecommunication Union (ITU). NAv6 continues to support the ITU by expanding on that study. Leveraging on its expertise in IPv6, NAv6 is currently in discussion or already implementing projects with the ITU, regulatory authority of UAE, India, Sudan, Malaysia, Laos, corporations in the USA, Singapore, Indonesia, Australia, Iran, Thailand, Vietnam, Tanzania, Bangladesh, Philippines, Luxembourg, Iraq and many others to assist them in framework development and capacity building on IPv6. NAv6 is also a node under the International Telecommunication Union (ITU) academy to offer professional training programs on IPv6 to empower the human network by providing an interactive online course. The 'Migration to IPv6' 6 weeks course is one of the numerous courses conducted and successfully delivered remotely. The 'Migration to IPv6' course involved over 100 participants from 25 countries. During the duration of six weeks, the participants were exposed to IPv4 basics and limitations; the need for IPv6; international trends and standards of IPv6; policy and regulatory framework; technological framework; cost estimation methodology; and migration roadmap building.

Q: Now that IPv6 is becoming established how are your priorities changing?

A: In the previous ten years we were building awareness. Now it is at the stage of being implemented. However, IPv6 is not an easy thing to implement and is not something you do overnight. It is even more intensive than the Y2K issues and you have to have careful planning. It took 18 months to two years for the total migration package for our University for example. Nowadays when I look at migration, it may not be the most accurate word. I would rather use the world extending because you not really taking away the IPv4 part of your network, rather you are adding the IPv6 part. So, whenever we tell people we are migrating your network they seem to be worried and say "what are you migrating it to?" In reality when they ask that question you can't really answer because they are not migrating it to a different network really what you are doing is adding a new protocol. A better way would be to say that we are extending the network with IPv6 capabilities.

Q: Beyond IPv6, what else is the NAv6 doing?

A: We have certain areas of expertise in next generation Internet such as video high definition, video conferencing, telepresence. These are areas that we do extensive research in and we have actually created tools and software and hardware systems that industry is now using. We also do a lot of work in security Internet related security and botnets. We have 15-20 PhD students working in that area. We are also looking at energy efficiency, green technology, wireless and satellite communication again applying IPv6 to it.

Perhaps a better way to bring yesterday's ITRs into the 21st century is to frame them as national obligations that speak to the overall objectives and aspirations all nations share for these invaluable, unique communications resources.

For more information visit:
www.nav6.usm.my