



## An Introduction





The APNIC Foundation envisions a global, open, stable and secure Internet that is affordable and accessible to the entire Asia Pacific community.

Our mission is to increase investment in Internet development in the Asia Pacific region, through education and training, human capacity building, community development, research, and related projects and activities.

## The Internet in the Asia Pacific

For more than a billion people across the Asia Pacific, the Internet is an essential fact of life, providing employment, livelihood, health, education and much more. Many take the Internet for granted: it is always available, reliable, and affordable.

**But there are still millions of people who remain unconnected;** and millions more who have only limited, slow or unreliable access to the Internet. If these millions are to be better educated, healthier, and more productive members of society, it is essential they can access Internet services of a quality and standard that is taken for granted by so many others.

Across the Asia Pacific, the availability, stability, speed, cost and security of Internet services vary widely from place to place. Users in many developing economies tolerate conditions that are unacceptable in the developed world, and which seriously limit the benefits the Internet can deliver.

This “digital divide”, is not only between the “connected” and the “unconnected”, but between those who enjoy dependable, fast, secure services, and those who do not. **We must remove this digital divide if we are to achieve sustainable social and economic development in the region.**

“74.89 per cent of total fixed broadband subscriptions in Asia and the Pacific are concentrated in East and North-East Asia, followed by South and South-West Asia (9.77 per cent), North and Central Asia (7.68 per cent), South-East Asia (5.74 per cent) and the Pacific (1.93 per cent).”

*“State of ICT in Asia and the Pacific 2016: Uncovering the Widening Broadband Divide”*  
2016 report by ESCAP

ISIF Asia. Internet Niue free Wi-Fi access (Niue)



## The Challenges

With its growth and increasing importance around the world, the Internet faces a range of technical and regulatory challenges. Where these are not met, the Internet's benefits will be greatly limited.

**Security and stability:** From Denial of Service (DoS) attacks to hacking, malware and data breaches, security remains the top priority of network engineers and managers. Governments are also increasingly concerned with security issues, especially those that affect confidence in the Internet.

**Available address resources:** The Internet addressing capacity provided by what's known as Internet Protocol version 4 (IPv4) is almost exhausted globally. Internet Protocol version 6 (IPv6) is the only viable option for the Internet's future growth in the Asia Pacific but it is a significant operational challenge to effectively deploy.

**Efficiency and cost:** One way to ensure efficiency and low cost is to localize traffic and content wherever possible. Internet Exchange Points (IXPs) and data centres allow local traffic and content to stay local, lowering network costs, and increasing speed and efficiency.

**Regulation and governance:** The Internet faces new and unique regulatory challenges, often dominated by new and evolving technologies and services that operate across national borders. The resolution of these challenges depends on our ability to nurture the multistakeholder processes of global Internet governance.

**Research:** With the Internet's rapid growth and evolving technologies has come increased complexity and greater technical challenges. Practical, operational research is needed to help us understand where the problems are now, where they will be in the future, and what we need to do to fix them.

If these technical and regulatory challenges are to be overcome, the Internet community of the Asia Pacific must strengthen and develop new and specific skills and expertise. The success of the Internet will depend on our ability to do this.

**"The difference between a network which is stable, secure, reliable and efficient, and a network which is none of these things, can be solely a question of the expertise of those people who are building and operating those services".**

Paul Wilson  
Director General, APNIC

1 "Global Internet Report 2015: Mobile Evolution and Development of the Internet" ISOC July 2015.  
2 "Economic and Social Impact of ICT in the Pacific" Pacific Region Infrastructure Facility 2015.



AirJaldi, Ashapuri Network (India)



APNIC46 Fellows (New Caledonia)

## The Human Factor

Today, the Asia Pacific region - and especially its least developed economies - has a crucial shortage of the properly trained and experienced Internet engineers, technicians and managers needed to overcome these challenges. Just as we all need well-trained doctors to help keep us fit and healthy, the Internet needs well-trained professionals to keep it stable, reliable, efficient and most importantly, secure.

Despite these challenges, the Internet is booming in the Asia Pacific. Strong growth in traffic, devices and users is predicted to continue for many years to come. By 2019, the region was predicted to have the most Internet traffic from mobile devices in the world.<sup>1</sup> Another report<sup>2</sup> on Pacific Island economies shows how recent submarine cable installations have resulted in an explosion of capacity. Across the Pacific, international Internet bandwidth jumped more than 1,500% between 2007 and 2014.

The single biggest factor limiting the positive impact of the Internet - despite this success - is the capacity of service providers to properly design, build and manage their networks. To achieve a secure, reliable and efficient Internet, the managers, engineers, and officers responsible, and their respective communities, must all have the technical skills - the capacity - to run and manage their networks to a recognized global standard of best practice.

The IDC report estimated that at the end of 2012 there was a shortage of over 250,000 professionals with networking skills in the region (excluding Greater China and Japan). It predicted this shortage would grow to more than 450,000 networking professionals by the end of 2016 and from there, continue to worsen.

**A report from technology analysts, IDC, warns of a shortage of such technical skills saying: "The Asia Pacific trends show an increasing need for people with network skills in emerging technologies and for well-trained teams that focus on higher value-added activities".**

*"The Evolution of the Networking Skills Gap in the Asia/Pacific" William Lee PhD. June, 2013.*

**The APNIC Foundation is committed to support the community to overcome this challenge, by increasing investment in education and training, to build the necessary technical capacity in the Asia Pacific region.**





## How the APNIC Foundation responds

In the Asia Pacific, Internet engineers are building and managing some of the world's largest and most challenging networks, working hard to ensure they are robust, efficient, and secure. To support this challenging work, professional networks and community organizations are increasingly important mechanisms used by engineers for training, knowledge sharing and professional development.

These organizations include Network Operator Groups (NOGs) for technical and operational development; Computer Security Incident Response Teams (CSIRTs or CERTs) for security issues; and associations of Internet Service Providers (ISPs) for industry coordination.

**"82% of respondents report a shortage of cybersecurity skills. 71% of respondents report the shortage in cybersecurity skills does direct and measurable damage."**

*"Hacking the Skills Shortage: A study of the international shortage in cybersecurity skills" Center for Strategic and International Studies 2016*

These organizations play a key role in helping to coordinate solutions to the technical and security challenges faced by the networks that make up the Internet in the Asia Pacific. They also make ideal partners for the delivery of training and capacity building for network engineers and others in the Internet community.

**The main focus of the APNIC Foundation is capacity building to support Internet development in the Asia Pacific.**



ISIF Asia 2018 Community Networks Award Winner and Gender Empowerment Award Winner at Seed Alliance Awards Ceremony held at the IGF 2018 (France)



Participants of the second regional workshop for the project "Raising cybersecurity capability and awareness: A secure and resilient Internet infrastructure for development in the Pacific" (New Caledonia)



Participants of the first regional workshop for the project "Raising cybersecurity capability and awareness: A secure and resilient Internet infrastructure for development in the Pacific" (Tonga)

## Project Profiles



### Seed Alliance: An Alliance to Scale Digital Innovation (2017-2019)

Donor: International Development Research Centre (IDRC)

The project seeks to scale-up digital innovation for initiatives that are focusing on gender equality and fostering women's leadership in the Internet for development sector. The project helps provide two grants, mentoring and networking opportunities to foster women's leadership and honours women's contributions to the Internet sector through one award.



### Seed Alliance: Connecting the last mile. Community Networks Grants and Awards (2017-2019)

Donor: Internet Society (ISOC)

The project seeks to contribute to community-led initiatives working to achieve affordable, locally owned and managed communication infrastructure, deploying creative low-cost solutions that use wireless technologies, GSM and/or fibre connections. The project helps provide of two grants and one award in the Asia Pacific region and acknowledges and honours Community Networks leaders' contributions to the Internet sector through one award.



### Raising cybersecurity capability and awareness: A secure and resilient Internet infrastructure for development in the Pacific (2016-2018)

Donor: Australia's Department of Foreign Affairs and Trade (DFAT)

The project seeks to strengthen Internet security in the Pacific by fostering and supporting the development of Computer Emergency Response Teams (CERTs) at the national level. This will be done through a bottom-up, research-led capacity-building program for selected security personnel, policymakers, relevant government departments, ISPs and telecom operators in the region.



### Developing the capability of the Papua New Guinea Computer Emergency Response Team (2018-2019)

Donor: Australia's Department of Foreign Affairs and Trade (DFAT)

The project seeks to strengthen Papua New Guinea's (PNG) and the Pacific's Internet security by supporting the development of a national PNG Computer Emergency Response Team (PNG CERT). This is being done through supporting the ICT hardware, software and other material needs of PNG CERT and by providing APNIC-led training and mentorship for the officers of PNG CERT and other key stakeholders.



### Combating cybercrime 'safe havens': Building a well-informed and trained cyber law enforcement community in the Pacific (2018-2019)

Donor: Australia's Department of Foreign Affairs and Trade (DFAT)

The project seeks to complement and build on the efforts of the Council of Europe's GLACY program, Australia's efforts through Cyber Safety Pasifika and the PILON Cybercrime Working Group. Where these initiatives have a strong policy and cyber safety foundation, this program will focus on developing capacity through the provision of technical and governance training for Pacific law enforcement officers and judiciary.



### Enhancing National Cybersecurity and Network Quality of Service in Advance of Papua New Guinea's Hosting of APEC (2018-2019)

Donor: The New Zealand Ministry of Foreign Affairs and Trade (MFAT) and Australia's Department of Foreign Affairs and Trade (DFAT); in coordination with The Asia Foundation (United States)

The project seeks to reduce national-level network inefficiencies and enhance the cybersecurity capabilities of PNG, prior to the installation of the second submarine cable. It seeks to do this through technical training and assistance for the local professionals responsible for Internet infrastructure, such as PNG CERT and PNG IX as well as the wider technical community.





## Governance and Support

APNIC and the APNIC Foundation share a common vision of “a global, open, stable, and secure Internet that serves the entire Asia Pacific community”. Under its charter, the Foundation seeks to “advance education, on a non-profit making basis, in technical, operational and policy matters relating to Internet infrastructure, through undertaking or funding activities in Hong Kong and elsewhere in the Asia and the Pacific region”.

Incorporated in Hong Kong in September 2016, the Foundation was first discussed by the APNIC Executive Council (EC) in 2014, when it set out to explore a mechanism to support and expand the APNIC Development Program. The EC wanted to do this by raising funds, independent from APNIC membership contributions, to support regional Internet development efforts in the future.

Projects and activities funded by the Foundation are designed and managed by APNIC, in collaboration with funding partners interested in Internet development. These activities are implemented by APNIC and our partners, which include a growing group of

community trainers and technical advisors, and other like-minded organizations.

The Foundation is guided by an independent Board of Directors - selected by the APNIC EC - that includes recognized and respected experts from the Asia Pacific Internet community. The Foundation's staff are based in the APNIC office in Brisbane, Australia.

**The Foundation welcomes support from, and collaboration with other foundations, agencies and organizations working to develop the Internet in the Asia Pacific.**

## Board Members



**Ms Sylvia Sumarlin,**  
Board Chair  
(Indonesia)



**Mr Danish A. Lakhani**  
(Pakistan)



**Mr Michael Malone**  
(Australia)



**Mr Sharad Sanghi**  
(India)



**Mr Edward Tian, Ph.D.**  
(China)

## APNIC – A Respected and Recognized Partner

With more than 16,000 direct and indirect Members in almost every economy of the Asia Pacific, APNIC has spent over 20 years supporting the Internet to serve the region's 3 billion citizens. Many of its 80-plus staff travel regularly in the region to support Members, provide training and technical assistance, or share expertise and information. APNIC also partners with many organizations through MoUs, sponsorships and informally to support the continuing development of the Internet.

APNIC's success in partnering and seeking financial support for its activities is founded on five important assets:

**1) A strong technical focus and regional recognition as a source of best practice and expertise**

**2) Neutrality and independence from any particular vendors, services, or technologies**

**3) A non-profit organization with financial strength and transparency**

**4) Robust regional networks and relationships**

**5) Long track record of successful management and implementation**

The APNIC Foundation builds on and supports these strengths and APNIC's strong history of success in training and community development.

APNIC development partners have included DFAT; IDRC; the Swedish International Development Cooperation Agency (Sida); the Japan International Cooperation Agency; KDDI Foundation, the World Bank, the United Nation's International Telecommunications Union (ITU), ICANN, DotAsia and ISOC.



APNIC trainees, Port Vila (Vanuatu)



## Get in touch!

The APNIC Foundation welcomes your support, especially for its work in less developed economies. If you are interested in learning more about the Foundation's activities or would like to provide support, please contact:

[foundation@apnic.net](mailto:foundation@apnic.net)

<http://apnic.foundation>

<http://www.apnic.net>

*Front cover clockwise from top:*

**Mahabir Pun at Khopra relay station. Nepal Wireless (Nepal)**

**KhushiBaby, a necklace that stores electronic health data to track child immunization (India)**

**Participants of the second regional workshop for the project "Raising cybersecurity capability and awareness: A secure and resilient Internet infrastructure for development in the Pacific" (New Caledonia)**