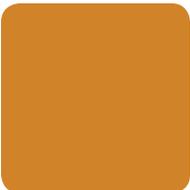
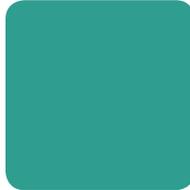
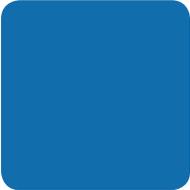


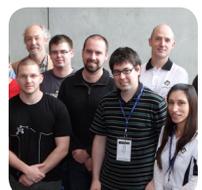
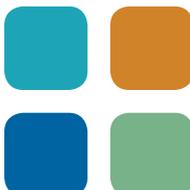


# APNIC IPv6 Program



## Expanding the Internet

*The IPv4 to IPv6 transition*



# IP addresses: critical Internet resources

Internet Protocol (IP) addresses are the means by which machines uniquely identify themselves on the Internet. Currently, almost all use the IP version 4 (IPv4) address system.

IPv4 has more than 4 billion ( $2^{32}$ ) possible address combinations, but even with so many these are quickly being used up. In fact, the available unallocated pool of addresses is predicted to be exhausted within the next few years.

Internet Protocol version 6 (IPv6) is a new protocol developed to ensure the continued growth of the Internet. IPv6 offers  $2^{128}$  addresses, an extremely large address space, allowing the Internet to expand and industry to innovate.

IPv6 deployment does pose some challenges. It is not directly compatible with IPv4, so a device connected via IPv4 cannot communicate

directly with a device connected via IPv6. For direct communication, both networks must deploy IPv6. Until all networks are IPv6 capable, we need to be able to use both the old and new protocols simultaneously.

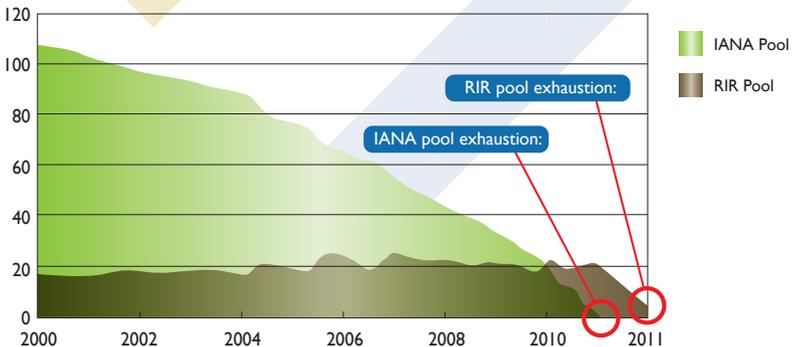


## Multi-stakeholder environment

Working cooperatively will enable the Internet community to successfully deploy IPv6. APNIC operates in a multi-stakeholder environment, facilitating communication and education on IPv6 deployment.

APNIC encourages multi-stakeholder communication and willingly provides customized information to stakeholders to assist with IPv6 adoption.

Projected timeline of free IPv4 address depletion



# APNIC and IPv6: How we support deployment

APNIC regards IPv6 deployment as the best solution for the future of the Internet. Without this deployment, the Internet will be unable to expand, innovation could be limited, and the underlying infrastructure will become increasingly complex to manage. The additional costs from delaying deployment will burden Internet operators, application developers, and end users. As the Asia Pacific's Regional Internet Registry (RIR), APNIC is helping the deployment of IPv6 through facilitation, information, and collaboration.

## Facilitation



APNIC assists multi-stakeholder discussion and information sharing with the entire Asia Pacific Internet community.

## Information



APNIC provides accurate and impartial research information and training on IPv6 including implementing a comprehensive IPv6 program to facilitate IPv6 deployment in the region.

## Collaboration



APNIC collaborates with national and regional organizations such as ISOC, ICANN, APEC, the OECD, and the ITU to build awareness about IPv6 issues.

# What can you do to prepare your network?

Find out more about IPv6 and how it affects your organization

[icons.apnic.net/ipv6](https://icons.apnic.net/ipv6)

## Internet Service Providers

Plan for the transition to IPv6 as soon as possible. Interim measures to conserve IPv4 such as Network Address Translation (NAT) have been implemented but require additional investment of human and technical resources. ISPs must weigh this against the opportunity for easier and more efficient network management that comes with the adoption of IPv6.

## Content providers

Ensure your content remains available via IPv6 by implementing dual-stack networks. Dual-stacking your network requires both an IPv4 and IPv6 address, allowing simultaneous communication with IPv4 and IPv6 devices.

## Application developers

Develop your applications so they are IPv6-enabled. Ensure that with servers and clients running both IPv4 and IPv6 addresses, software can function with either protocol. Do you have the knowledge you need to code dual-stack programs?

## Equipment vendors

Enable your IPv6 networks by ensuring your routers, switches, home gateways, servers, firewalls, and network monitoring tools are IPv6 ready. There are significant technical differences between the two protocols that you need to know of; therefore, you must introduce IPv6 support into your product cycles as soon as possible.

## Government organizations

Be proactive and learn about IPv6 transition issues to successfully deploy IPv6 in your economy. The Internet is an important piece of social and economic infrastructure, and government organizations need to prepare for IPv6 transition. Governments can lead by example by implementing IPv6 into their procurement policies and their network infrastructure.

## Businesses

Ensure your business can maintain scalability and growth by enabling your networks with IPv6. If your business relies on hosting or data-centre services, you must plan to deploy IPv6. An IPv6-based Internet offers organizations a more efficient, secure, manageable, and cost-effective network architecture.

# Your IPv6 planning checklist

## Learn

- Plan to train and up-skill your staff
- Attend an APNIC training session
- Access useful APNIC publications about IPv6; for example, ICONS

## Plan

- Assess the impact of IPv6 adoption
- Develop a timetable for deployment
- Integrate IPv6 spending into your 2010 budgets

## Prepare

- Apply for IPv6 address space from APNIC
- Build test beds for applications and services
- Enable and test IPv6 accessibility on customer-facing networks

# APNIC Services for IPv6

APNIC has a number of services that will help your organization to develop IPv6 capabilities and acquire IPv6 resources.

## Training



Attend an APNIC training session either online or in person. APNIC's Training Program and other educational initiatives respond to the needs of members and other stakeholders. You can learn about the structure, operational, and technical features of IPv6, including planning, building, and configuring an IPv6 network.

## Information services



Learn more about the current state of IPv6 deployment in the region by accessing up-to-date data regarding IP address trends in the Asia Pacific. You can view various APNIC publications on the latest developments in IPv6, view user friendly graphs, or download detailed raw data sets for your own analysis.

## Liaison



Meet APNIC IPv6 Program and Liaison representatives to discuss the issues you face. APNIC staff regularly conduct IPv6 and other presentations at events throughout the region and at global events outside the Asia Pacific. APNIC also participates in meetings held by network operator groups, government forums, and trade shows.

## IPv6 policy development



APNIC policies determine how numeric Internet resources such as IP addresses and AS numbers are distributed in the Asia Pacific. APNIC's goal is to ensure that those with a demonstrated need for resources are able to access these shared resources and that they are distributed fairly and consistently across the region.

## Key APNIC services via IPv6



APNIC makes its key resources and services available via IPv6. You can conduct whois queries, access the MyAPNIC services portal, and join the ICONS community wiki, which contains useful information to assist you with your IPv6 transition issues and a forum to exchange ideas and advice on deployment scenarios.

## IPv6 addresses



Apply for resources by following an easy step-by-step process. APNIC's IPv6 resource management policy allows it to make IPv6 multihoming address assignments to end-site networks. The APNIC Helpdesk ([helpdesk@apnic.net](mailto:helpdesk@apnic.net)) is available to assist you. See below for an explanation on the advantages of multihoming.

[www.apnic.net/IPv6](http://www.apnic.net/IPv6)

Multihoming is when a network has more than one link to the Internet (either via connectivity to two or more ISPs and/or Internet exchange or peering points). Your multihoming arrangement should also include dual-stack connectivity that allows for both IPv4 and IPv6 connectivity as part of your network planning.

To do this, your organization can request an IPv6 multihoming address assignment directly from your ISP or from APNIC when you become a member.



+61 7 3858 3188

helpdesk@apnic.net

### Helpdesk languages:

Bahasa Indonesia, Bengali, Cantonese,  
English, Filipino (Tagalog), Hindi, Mandarin, Thai

## Asia Pacific Network Information Centre



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