

# 4 Byte AS Number Update

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August 2008



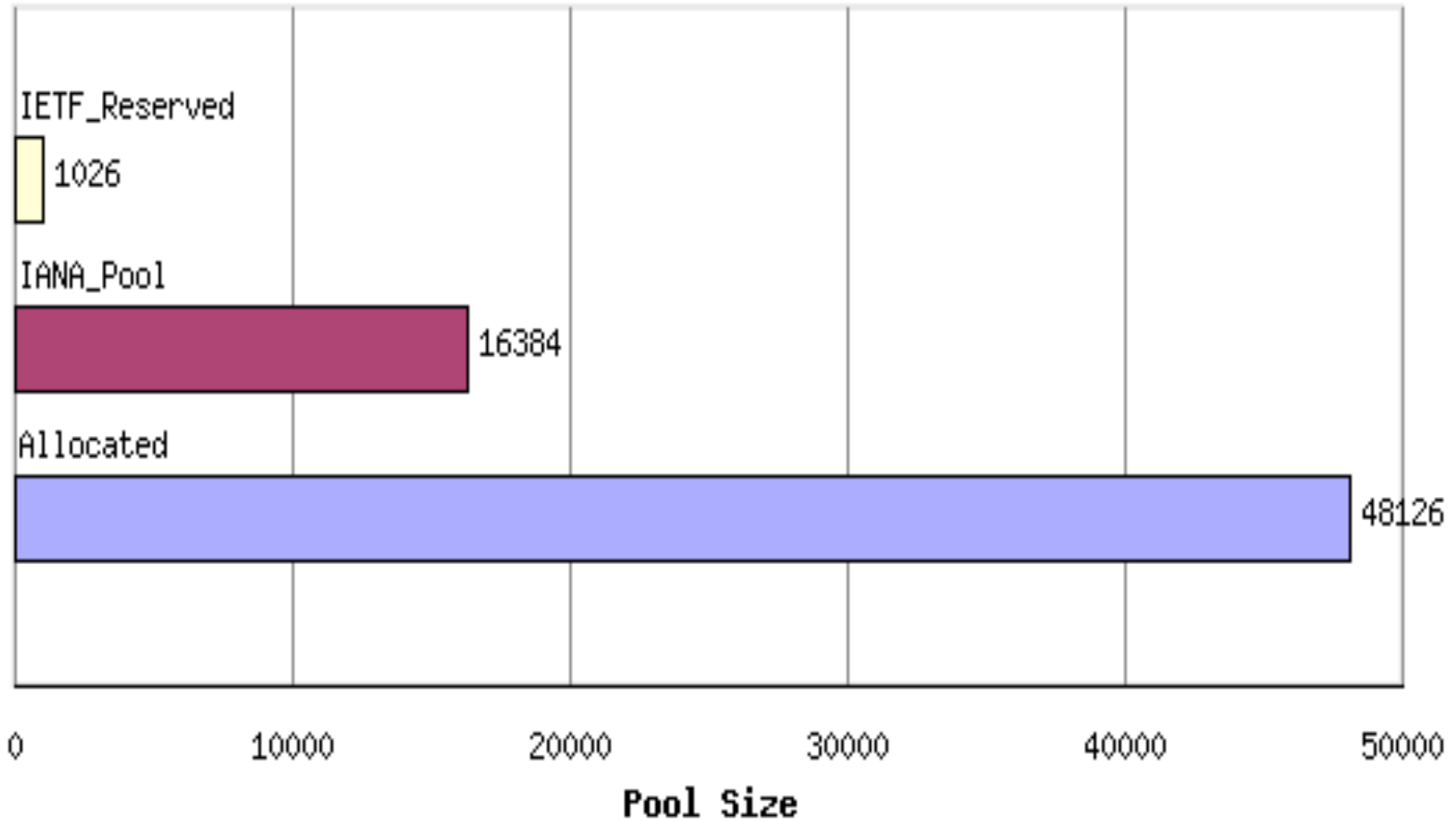
## The story so far ...

- 16 bit AS number field defined by BGP
- Used in BGP for
  - peer identification
  - path metric calculation
  - loop detection

# 16-bit AS Number Pool Status



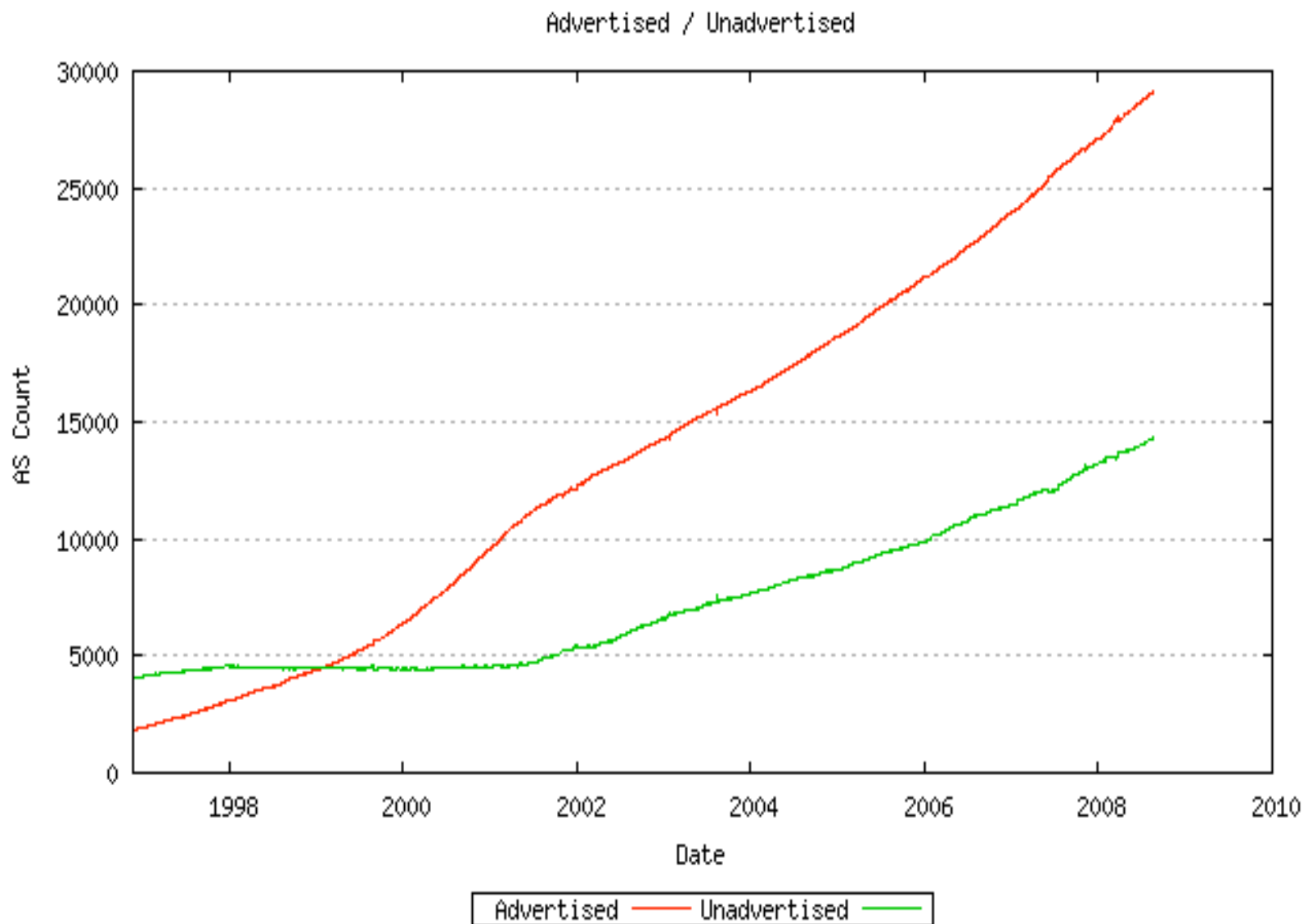
AS Number Pool Status



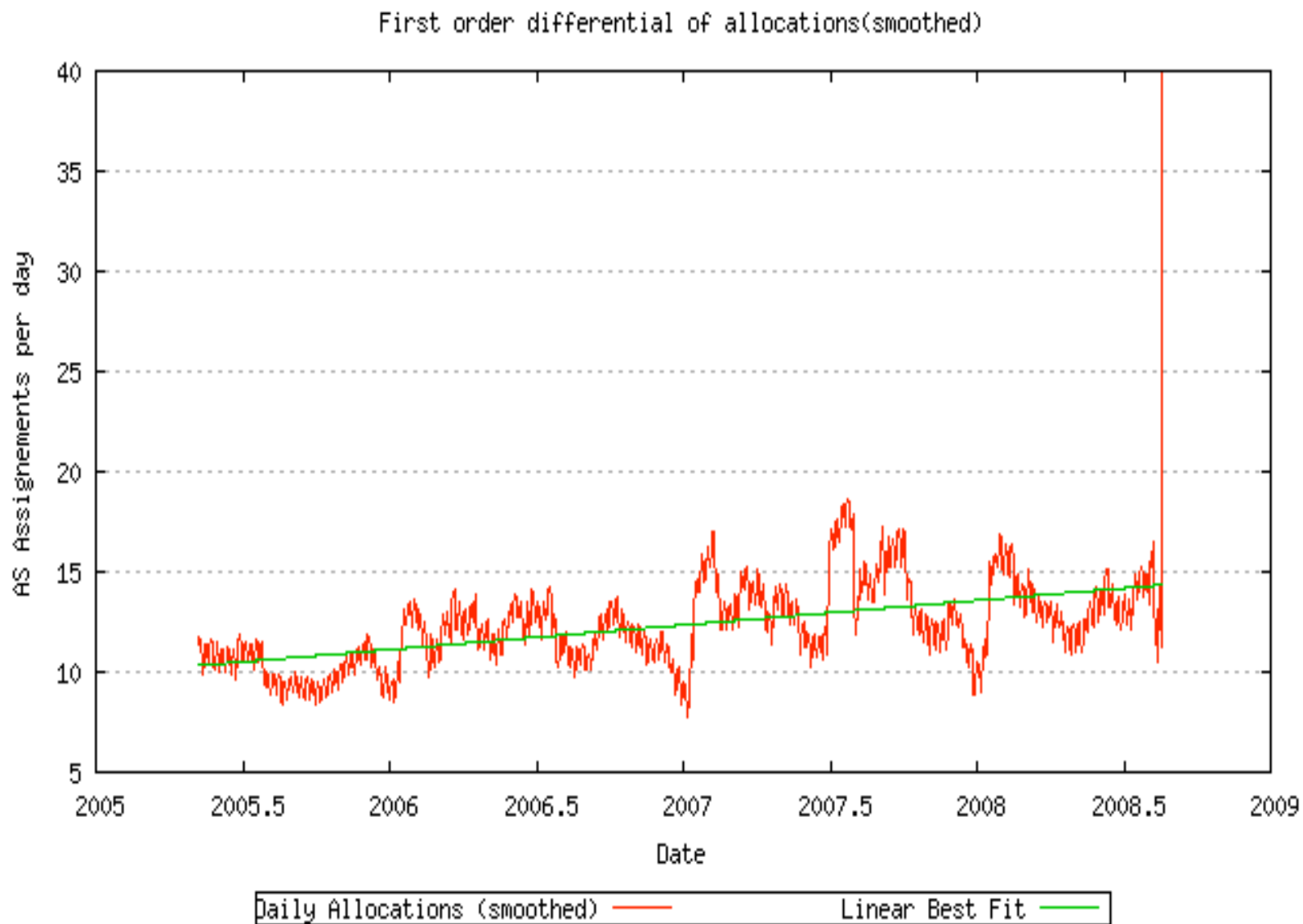
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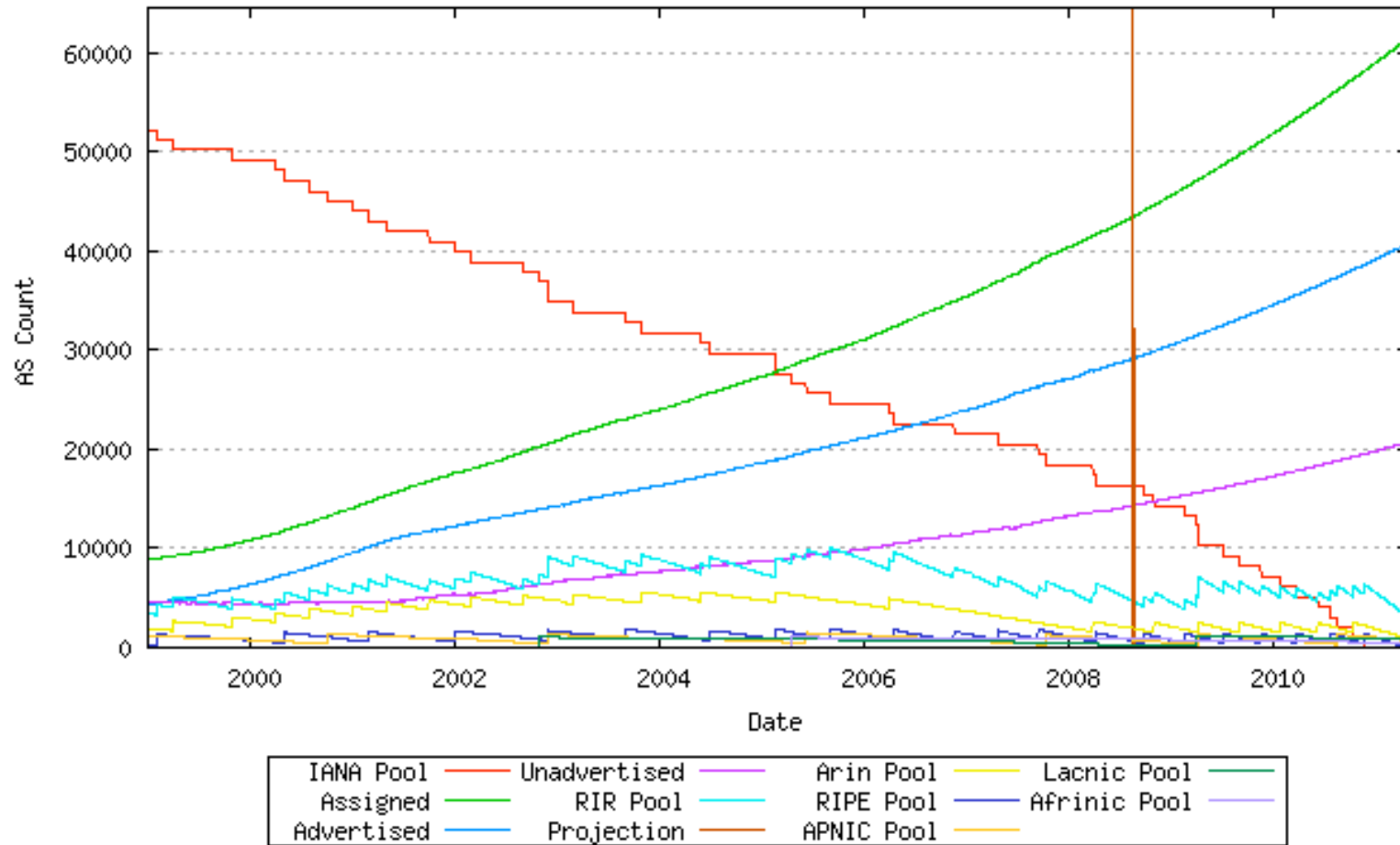
# 16-bit AS Number Consumption



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# Crunch Time

24 April 2011

<http://www.potaroo.net/tools/asn16/>



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- IANA to open up a 32-bit AS number registry
- **Published as a Proposed Internet Standard:  
RFC 4893**

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- **Drop the distinction on 1 January 2010**
  - They are all just one big pool of AS numbers once more

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- Set forth clear dates in terms of milestones in the transition to 32-bit AS numbers
- **Encourage advance planning and avoid disruptive exhaustion of the 16-bit AS number pool prior to general availability of 32-bit AS support in BGP and related systems**

# How are we doing?

## August 2008 AS statistics

- **88** Allocated 32-bit only AS numbers  
(Total of 43,670 allocated AS numbers)
- **12** Advertised 32-bit only AS numbers  
(Total of 28,909 advertised AS numbers)

131072	2.0
131074	2.2
131075	2.3
131076	2.4
131078	2.6
131079	2.7
131081	2.9
196611	3.3
196621	3.13
196624	3.16
327681	5.1
393219	6.3

## No general 32-bit BGP adoption yet

- Vendor situation is still lagging for 32 bit AS number support in BGP
  - My current understanding of vendor support:
    - Cisco: IOS-XR 3.4
    - Juniper: JUNOSe 4-1-0
    - Redback
    - others: ?
  - Open Source BGP:
    - Quagga 0.99.10
    - OpenBGPD

## Some Timely Questions

- Are your operational support systems capable of supporting 32-bit AS numbers?
  - Can you support customers / peers / upstreams peering with you when they use 32-bit AS numbers?
  - Can you cope with multiple AS 23456 BGP peers?

# Some Timely Questions

- Are your operational support systems capable of supporting 32-bit AS numbers?
  - Can you support customers / peers / upstreams peering with you when they use 32-bit AS numbers?
  - Can you cope with multiple AS23456 BGP peers?
- If you intend to use BGP for a new domain does your router vendor support 32-bit AS number support in BGP?

# For more information ...

<http://www.apnic.net/community/research/as-numbers/>

The screenshot shows a web browser window displaying the APNIC website. The browser's address bar shows the URL <http://www.apnic.net/community/research/as-numbers/>. The page features the APNIC logo and navigation menu on the left, and the main content area on the right. The main content area is titled "Autonomous System numbers" and contains text explaining the global pool of unallocated two-byte AS numbers and the development of a new four-byte version. It also includes a table with two reports: "32-bit AS number Report" and "16-bit AS number Report". Below the table, there is a section for "Experimental/test services" and a "See also" section with three links.

Autonomous System numbers

Asia Pacific Network Information Centre

You are here: [Home](#) » [Research](#) Quick Links

### Autonomous System numbers

The global pool of unallocated two-byte AS numbers is [predicted](#) to run out in April 2011. To address the shortage of two-byte AS numbers, the IETF (Internet Engineering Task Force) developed a new four-byte version and ensured full backwards compatibility. The Regional Internet Registries (RIRs) began assigning these four-byte AS numbers on 1 January 2007 to networks that specifically requested the new four-byte AS numbers. However, from 1 January 2009, the RIRs will assign four-byte AS numbers by default to networks requesting AS numbers. It is inevitable that, sooner rather than later, two-byte AS numbers will be unavailable.

To track the consumption of two-byte AS numbers and monitor the deployment of the newer four-byte AS numbers, APNIC's Chief Scientist, Geoff Huston, has been analysing global AS number statistics.

<a href="#">32-bit AS number Report</a>	Global trends in two-byte and four-byte AS number allocation rates and use on the Internet.
<a href="#">16-bit AS number Report</a>	Analysis of AS number consumption and the predicted date for the consumption of the IANA pool of 16-bit AS numbers.

### Experimental/test services

APNIC has facilities in Brisbane and Tokyo where four-byte ASN software developers may be able to interoperate and deploy for test purposes. If they are physically present at the exchanges, then directly; otherwise, they can do so by means of e-BPG multihop.

APNIC has also facilitated the development of patches for the freely available BGP code base and promoted the text interchange formats now used in RPSL and the IANA registry, among others.

### See also

- [Policies for Autonomous System number management in the Asia Pacific region](#)
- RFC 1930, [Guidelines for creation, selection, and registration of an Autonomous System \(AS\)](#)
- [Old Routing Worlds, New Routing Worlds and 4-Byte AS Numbers](#)

Done 2001-10-02 20:10:20 +1 AS4608

# For more information ...

<http://wiki.icons.apnic.net/display/ASN/Home>

The screenshot shows a web browser window with the address bar displaying <http://wiki.icons.apnic.net/display/ASN/Home>. The browser's address bar also shows a search engine (Google) and various toolbars. The page content includes a navigation menu with links like Home, ICONS blog, How-to guides, Network tools, News feeds, Community, Photo gallery, and Glossary. The main content area features the title "Introduction to Four-byte AS Numbers" and several paragraphs of text discussing the transition from 2-byte to 4-byte AS numbers. A sidebar on the right contains a dashboard with a tree view of site navigation options. The footer of the browser window shows the text "Done" and "202.12.29.5 AS4608".

Home - ASNumbers - ICONS Wiki

http://wiki.icons.apnic.net/display/ASN/Home

Home | ICONS blog | How-to guides | Network tools | News feeds | Community | Photo gallery | Glossary

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Notation Help

## Introduction to Four-byte AS Numbers

In a situation similar to the exhaustion of IPv4 address space, the current pool of unassigned 2-byte Autonomous System (AS) numbers is predicted to run out in April 2011.

While IPv6 is the industry's preferred solution to the IPv4 shortage, a new expanded system, which extends AS numbers to four bytes in length, is designed to address the AS number shortage.

Working cooperatively through the NRO (the Number Resource Organization) and in conjunction with ICANN (Internet Corporation for Assigned Names and Numbers) the world's five Regional Internet Registries (RIRs) are taking a coordinated approach to the transition from 2-byte to 4-byte AS numbers.

A major change in allocation policy is on the horizon with RIRs preparing to issue 4-byte numbers by default starting in early 2009.

Network builders may experience connectivity issues if their own equipment or the routing policies and hardware of their upstream providers is not compliant with this emerging standard.

To assist the Internet community to address these issues, share information about solutions and on-going issues, and to provide a forum for general discussion about the introduction of 4-byte Autonomous System numbers, ICONS is providing this information in the hope that other community members, including ISPs, users, and vendors can contribute up-to-date information for the benefit of all community members.

Dashboard  
ASNumbers  
Home  
.bookmarks  
About 4-byte AS Numbers?  
AS number change could affect Internet routing from 1 January 2009  
Four-byte Resources  
Operational Implications  
What Are AS Numbers?  
News  
ICONS Wiki  
IPv6 Deployment  
Photo Gallery  
Security

APNIC

Done 202.12.29.5 AS4608



Thank You

Questions?

