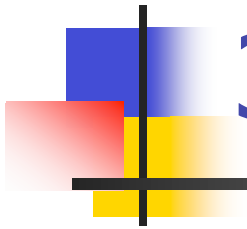
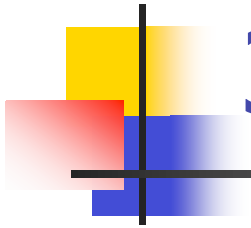


32-bit ASNs

Philip Smith

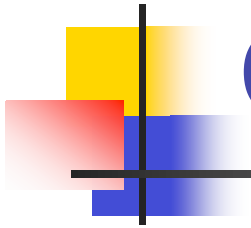
SANOG 14
15 - 23 July 2009
Chennai



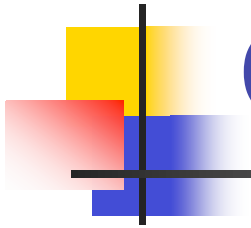
32-bit ASNs

- Standards documents
  - Description of 32-bit ASNs
    - www.rfc-editor.org/rfc/rfc4893.txt
  - Textual representation
    - www.rfc-editor.org/rfc/rfc5396.txt
  - New extended community
    - www.ietf.org/internet-drafts/draft-ietf-idr-as4octet-extcomm-generic-subtype-00.txt
- AS 23456 is reserved as interface between 16-bit and 32-bit ASN world

Getting a 32-bit ASN

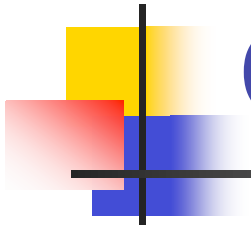


- Sample RIR policy
  - www.apnic.net/docs/policy/asn-policy.html
- From 1st January 2009
  - 32-bit ASNs assigned by default
  - 16-bit ASNs only available on request
- From 1st January 2010
  - No distinction – ASNs assigned from 32-bit pool



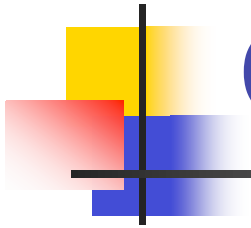
Changes (1)

- 32-bit ASNs are backwardly compatible with 16-bit ASNs
- There is no flag day
- You do NOT need to:
  - Throw out your old routers
  - Replace your 16-bit ASN with a 32-bit ASN



Changes (2)

- You do need to be aware that:
  - Your customers will come with 32-bit ASNs
  - ASN 23456 is not a bogon!
  - You will need a router supporting 32-bit ASNs to use a 32-bit ASN
- If you have a proper BGP implementation, 32-bit ASNs will be transported silently across your network

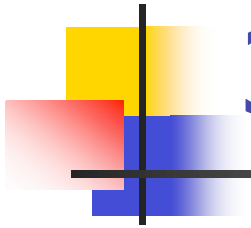


Community Assistance

- Several 4-byte ASN presentations
  - At RIR meetings
  - At NANOG, RIPE and APRICOT
- Community wiki:
  - http://as4.cluepon.net
  - Has implementations, configurations examples, configuration advice,…

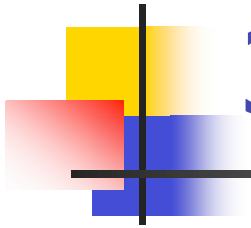
Implementations (July 09)

Name	Version
Alcatel-Lucent SR OS	7.0
Arbor Peakflow SP	5.5
BIRD	1.0.12
Brocade (Foundry) IronWare	4.0.00 for the NetIron MLX and XMR, 2.8.00 for the BigIron RX
Cisco IOS	12.0(32)S12, 12.0(32)SY8, 12.2(33)SXI1, 12.4(24)T
Cisco IOS XE	2.3
Cisco IOS XR	3.4(1)
Cisco NX-OS	4.0(1)
ExtremeXOS	Need Information
Juniper JUNOS	9.1R1
Juniper JUNOSe	4.1.0
Force10 FTOS	7.7.1.0
OpenBGPD	4.2, patches for 3.9 and 4.0
Quagga	0.99.10, patches for 0.99.6 and other versions
Redback SEOS	2.0



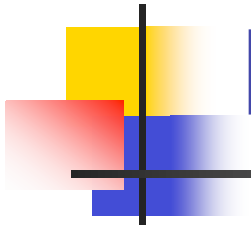
32-bit ASN not supported:

- Inability to distinguish between peer ASes using 32-bit ASNs
  - They will all be represented by AS23456
  - Could be problematic for transit provider's policy
- Inability to distinguish prefix's origin AS
  - How to tell whether origin is real or fake?
  - The real and fake both represented by AS23456
  - (There should be a better solution here!)



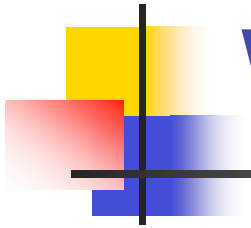
32-bit ASN not supported:

- Incorrect NetFlow summaries:
  - Prefixes from 32-bit ASNs will all be summarised under AS23456
  - Traffic statistics need to be measured per prefix and aggregated
  - Makes it hard to determine peerability of a neighbouring network



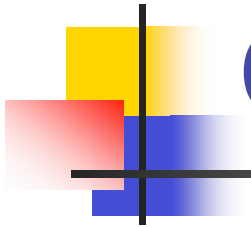
Problems so far?

- AfNOG
  - Broke quagga (had fixed max size for 4-byte ASN AS_PATH (AS4_PATH))
- Confederations
  - If not all confederation members support 4-byte ASNs, can end up with AS23456 in AS4-PATH
  - Caused BGP session reset
- Case of AS_PATH shorter than AS4_PATH not caught as error
- Fixes in:
  - www.ietf.org/internet-drafts/draft-ietf-idr-rfc4893bis-00.txt



What next?

- Pester your router vendors for 32-bit ASN support
  - Do you really want to run beta software in your core network?
  - Depletion of the 16-bit pool is not far away
    - Stable software, deployment cycles &c
  - Insist your vendors support “asplain”
    - Otherwise prepare to rewrite all your regular expressions!!



Conclusion

- The Internet will not break
- Your network will not break

- If you have an ASN today:
  - You don’t need to change anything
  - 32-bit ASNs appear as AS 23456
- If you have no ASN today:
  - Your routers will need 32-bit ASN support
  - (Or you will need to ask RIRs for a 16-bit ASN)