KHNOG
Cambodia Network Operators Group

Public IP and BGP Routing Protocol

KHNOG 5 CONFERENCE

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Agenda

- Current Internet IPv4 route Report
- Benefit of have our own Public IP subnet
- What is BGP?
- Why do we need BGP?
- What is the requirement for BGP?
- Peering and Transit?

Benefit of have our own public IP subnet

- **Greater flexibility and reliability:** have greater control over your network and can exercise more flexibility in how you use your resources.
- **Portability:** Your IP addresses are portable, which means that you can choose your peering and upstream providers.
- **Reduced overhead:** can reduce the overhead of renumbering your network.
- **Secure routing**: You can manage your Internet number resources and secure routing through the Member-only portal.
- **Reverse DNS services**: You can get reverse DNS services for your Internet addresses.
- **Resource certification**: You can acquire Resource Certification using RPKI for secure routing.

To get IP: Get IP – APNIC (https://www.apnic.net/get-ip/)

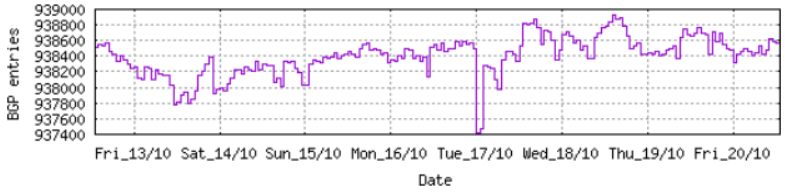
Current Internet IPv4 route report

Status Summary

Table History

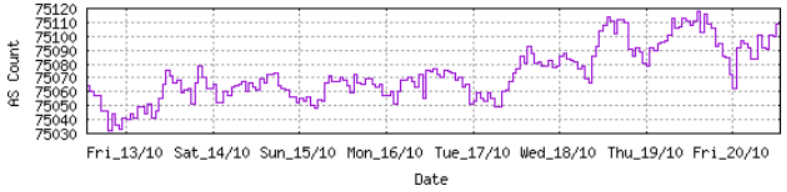
Date	Prefixes	CIDR Aggregated
13-10-23	938242	518280
14-10-23	937967	517665
15-10-23	938026	518213
16-10-23	938312	518203
17-10-23	938495	518052
18-10-23	938484	519271
19-10-23	938433	519030
20-10-23	938480	519031

Plot: BGP Table Size



AS Summary

75106	Number of ASes in routing system
26716	Number of ASes announcing only one prefix
11888	Largest number of prefixes announced by an AS AS8151: UNINET, MX
228674304	Largest address span announced by an AS (/32s) AS749: DNIC-AS-00749, US



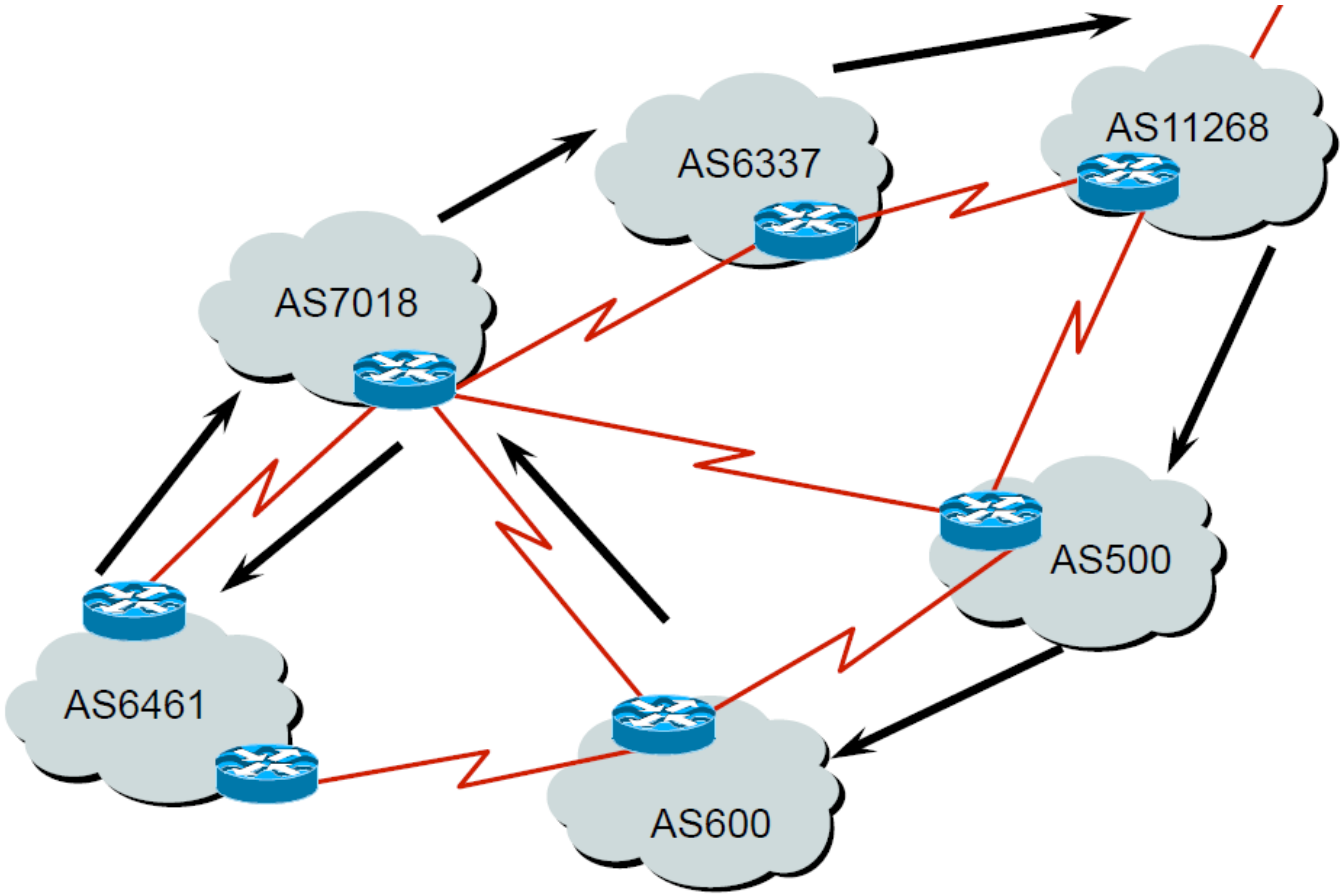
Plot: AS count
Plot: Average announcements per origin AS
Report: ASes ordered by originating address span
Report: ASes ordered by transit address span
Report: Autonomous System number-to-name mapping (from Registry WHOIS data)

Source from: https://www.cidr-report.org/as2.0/

What is BGP?

- Border Gateway Protocol is a routing protocol used to exchanging routing information between different networks on the Internet.
- Described in RFC4271
  - RFC4276 gives an implementation report on BGP
  - RFC4277 describes operational experiences using BGP
- The Autonomous System is the cornerstone of BGP
  - It is used to uniquely identify networks with a common routing policy

What is BGP?



Why do we need BGP?

- **Scalability:** Only BGP can handle current 1m of internet routes.
- **Flexible routing policies:** allows network administrators to implement complex routing policies based on a variety of factors, such as path length, bandwidth, and AS path.
- **Path selection:** is designed to select the best path for data to travel between different networks.
- **Load balancing and redundancy:** used to balance traffic across multiple links and provide redundancy in case of link failures or other network outages.
- **Interoperability:** BGP is a widely used protocol that is supported by many different vendors and platforms.

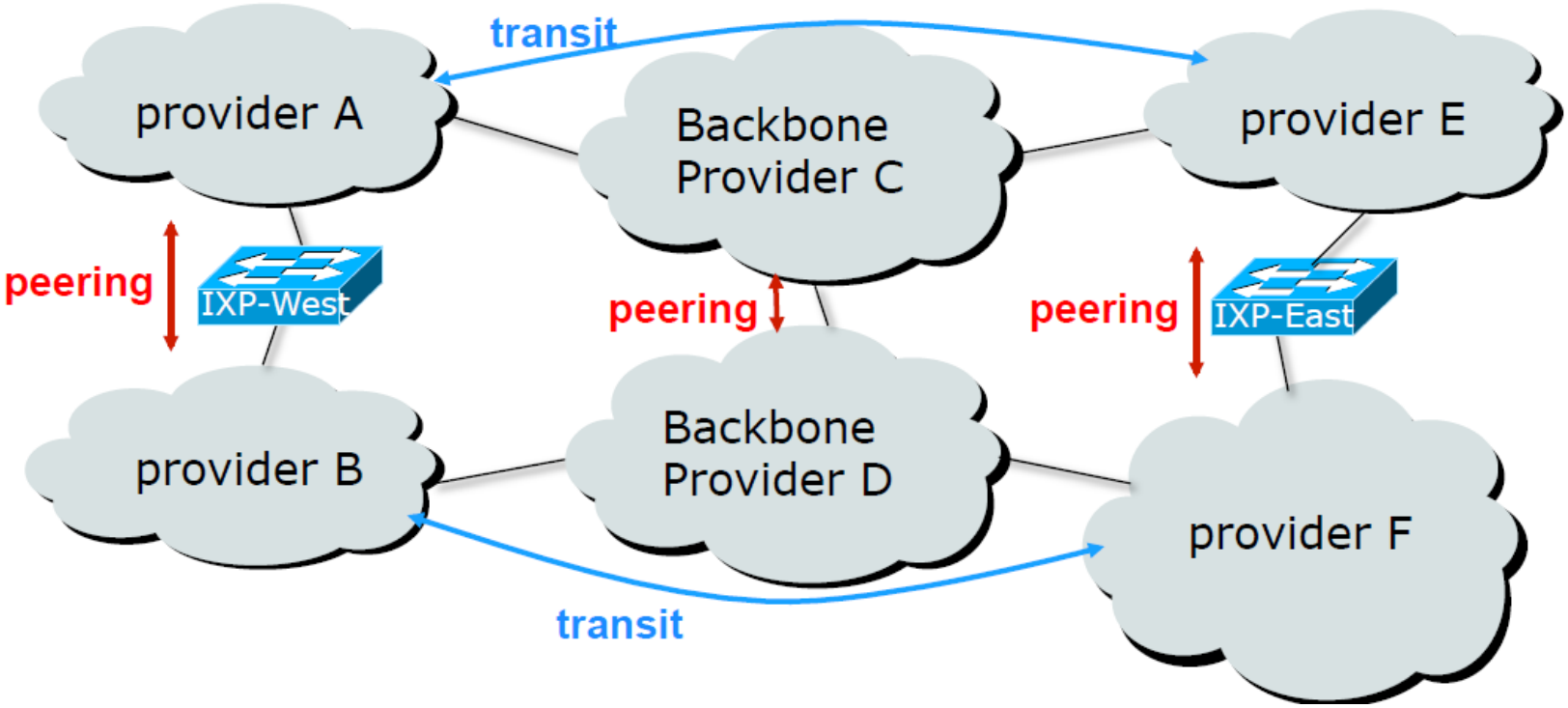
Why do we need BGP? Cont.

- **Interoperability:** BGP is a widely used protocol that is supported by many different vendors and platforms.
- **Security:** BGP includes several security features that help protect against attacks and unauthorized access.
- **Reliability:** BGP is designed to be highly reliable, with built-in mechanisms for detecting and recovering from network failures.

What is the requirement for BGP?

- Need ASN and Public IP
  - To get ASN and Public IP (https://www.apnic.net/get-ip/)
  - AS Two ranges:
    - 0-65535 (original 16-bit range)
    - 65536-4294967295 (32-bit range – RFC6793)
- Router
- IP Transit or Peering

Peering and Transit



A and B peer for free, but need transit arrangements with C and D to get packets to/from E and F

Thank You!

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