Network Operator Groups

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Network Startup Resource Center

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Who runs the internet?

A little history

- Late 1980s to early 1990s in the United States:
  - NSFNET "Regional-Techs" meetings, where technical staff from the regional networks forming the NSFNET met to discuss operational issues of common concern
  - And in February 1994, the group revised its charter and renamed itself to NANOG
    - The North American Network Operators Group
    - NANOG became an important forum for the exchange of technical information and discussion of implementation issues among network service providers.
  - https://archive.nanog.org/history

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A little history

- Late 1980s to early 1990s in Europe:
  - In 1989, Réseaux IP Européens (RIPE) began when a group of IP network operators based in Europe began a series of regular meetings to share experiences and carry out technical coordination work
    - They started to exchange information and established a database for storing operational data.
  - In 1990, the RIPE community, as they became known, decided to fund a 'coordination centre' that employed full-time staff to carry out the work for them.
    - RIPE NCC established in April 1992
  - https://www.ripe.net/participate/ripe/history

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Motivation

- Both in North America and in Europe, early network operators realised importance of coordination, collaboration, cooperation!
    - Discussion of operational issues of concern
    - Sharing experiences
    - Carry out technical coordination work
    - Discussion of implementation issues

- The first two network operator gatherings (groups) were born:
    - NANOG for North America
    - RIPE for Europe

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What happened next?

- More regional operator gatherings were established:
  - APRICOT (for Asia & Pacific Rim) in 1996
  - AfNOG (for Africa) in 2000
  - MENOG (for Middle East) in 2007
  - But LACNOG (Latin America & Caribbean) did not arrive until 2007 as a mailing list, and 2010 as a physical event

- As the Internet grew in each country in the early 2000s, we saw many country and sub-regional NOGs being formed
  - Not everyone could travel to NANOG or RIPE
  - In-person meeting was very important, more valuable than a mailing list!

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APRICOT

- The Internet Technology and Operations Summit for the Asia Pacific Region
  - https://apricot.net

- Held once a year, end of February
  - Training as well as Conference & Peering Forum
  - Venue for all Asia Pacific Internet organisations to meet

- Moves around the four sub-regions of the Asia Pacific region
  - South Asia, SE Asia, East Asia, Oceania
  - In coordination with APNIC, the Regional Internet Registry for Asia Pacific

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AfNOG

- The network operator group for Africa
  - Born out of the Internet Society Network Training Workshops which had run through the 1990s
  - Focus: training across the entire continent
  - First AfNOG was in Cape Town in 2000
  - https://afnog.org

- Held annually
  - Now part of the African Internet Summit
    - Venue for all Africa Internet related organisations to meet
    - Modelled on the APRICOT approach

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SANOG

- Established in 2003 as the Network Operator Group for South Asia
  - First meeting in Kathmandu
  - https://sanog.org
- Two meetings a year (January and July)
  - Rotating around the countries that form South Asia
  - Goals:
    - Training!
    - Fulfilling a need for the region
    - Opportunities for network operators across the region to interact and deal with common issues

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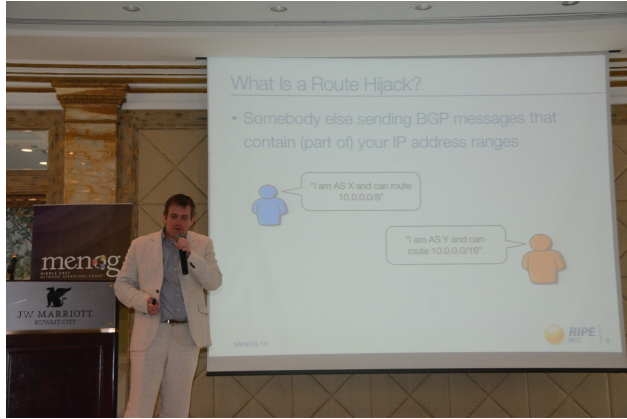
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PacNOG

- Established in September 2004 during training event prior to an APNIC conference in Fiji
  - First meeting in June 2005 in Fiji
- Two meetings per year in the Pacific Islands
  - Rotates around the region between Micronesia, Melanesia, and Polynesia
  - Goals:
    - Primarily for training!
    - Conference for network operators to hear updates, developments, and discuss technology best practices for the Pacific Islands
  - https://pacnog.org

Pacific Network Operators Group (PacNOG)
17th Meeting - Hosted and held in Samoa 13th - 17th July 2015

WELCOME TO PACNOG8
Pohnpei, Micronesia

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MENOG

- Network Operator Group for the Middle East
  - Established in 2007 with first meeting in Bahrain
  - Goals:
    - Meeting point for network operators in the Middle East
    - Training!
  - Meets once or twice per year, rotating around the region
  - https://menog.org

Country NOGs

- Many countries now have their own NOG
  - Almost every European country has a NOG
  - Most economies in South, South East & East Asia have a NOG
  - Many African countries have their own NOG
- Why?
  - Apart from all mentioned already…
  - International travel to attend a "big" NOG is not in everyone's reach
  - Country NOGs help develop a local operator community to help manage local operational issues, technical challenges, and create local interconnects

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Network Operator Groups

- Where network engineers and operators meet their colleagues
  - Peering & Business relationships
  - Industry relationship
  - Technology discussions
  - Operational best practices
  - Compare experiences (supplier, operational,…)
  - Purchasing decisions influenced
  - Networking software features worked out
  - Training & learning from colleagues
  - Employment opportunities
  - **Keeping the Internet Working**

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Who participates?

- Anyone running a TCP/IP based network that forms an integral part of the global Internet
    - Commercial Network Operators
    - Research & Education Networks
    - Content Providers & Content Distribution Network operators
    - "Over-the-top" providers
    - Datacentre operators
    - Internet Exchange Point operators
    - Enterprises
    - University & Research Establishment network operators

How are NOGs created?

- Informally!
  - Some grow out of the local Internet Exchange Point, when members want to meet each other separately from IXP member business
  - Some grow out of local netops social gatherings (beer & curry night, momo & whisky night, etc)
  - Some are formed by groups of industry friends trying to help the local operations community
  - Some grow out of regular organised training events (for example, by NSRC and supporters)
  - Some grow out of Regional Internet Registry regional meetings

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How are NOGs created?

- Some NOGs eventually establish a more formal structure
  - Legal entity
  - Bank account
  - Management Board & staff
  - Voting membership

- Vast majority have no legal entity, no bank account, no staff, no office
  - 100% voluntary!
  - Supported by legal entity (e.g. APIA in AsiaPac)
  - Supported by the RIR (e.g. RIPE/RIPE NCC and LACNOG/LACNIC)

- Legal entities are important for signing venue contracts, receiving sponsorship dues etc

Peering Forum

- Peering Forum is a development of the NOG concept
  - Regional Peering Fora mapping on to the Regional NOGs
  - There are many country Peering Fora now
  - Most NOGs have a Peering Forum component too!

- Purpose?
  - Interconnects!
    - Operator to operator, operators to content providers, etc
  - Giving operators opportunities to meet with others to improve Internet quality, reliability, latencies, etc

NOG event planning

- Meeting planning:
  - There are now so many events, it is essential to avoid conflicts and overlaps
    - Speakers can't be in 2-3 places at once
    - Regional NOGs try and avoid scheduling at the same time
    - NOGs in some countries plan their events back-to-back (e.g. SE Asia)

  - "Education Outreach and Training (EOT) Calendar for Internet Development" maintained by the NSRC
    - https://nsrc.org/calendar

Who runs the internet?