

Network Operator Groups

Philip Smith

Network Startup Resource Center



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Who runs the internet?



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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>



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>



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

What happened next?

- More regional operator gatherings were established:
 - APRICOT (for Asia & Pacific Rim) in 1996
 - AfNOG (for Africa) in 2000
 - MENOOG (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!

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

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



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

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>

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

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**



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

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>

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