



the open Net

s i n e q u a n o n

Basic quality parameters monitoring and gathering statistics in Internet

isavnin@theopennet.ru

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Quality monitoring

- What is quality?
- What we can measure?
- What we should measure?

Historical quality parameters

- Physical line parameters
- call setup times, answer ratios
- Mean Opinion Score

Internet

- delivery of packets
 - each packet can have independent way
- constantly changing topology
- best effort
- layered
- much more services build atop

Modern Obvious Quality

- “download speed”
- RTT times (ping)
- packet loss

Local to parties, simulating circuit

Internet

- Not just set of circuits
- Much more actors
- Developing and changing topology
- Much more services

Way to understand, before measurements

Statistics – old style

- subscriber lines
- professional participants

Statistics – for Internet

- resource holders
 - IP addresses
 - AS numbers
 - DOMAIN names
- routing protocol statistics
- DNS statistics

Resources

- Domains: ICANN and registries
- IP addresses/AS numbers: IANA & RIRS

whois protocol for obtaining this information

validity and completeness is an issue

Topology

“Ideal” topology

- Routing registry (RIPE NCC)
- PeeringDB

Validity?

Actual usage - DNS

- NAME/IP binding
- Additional protocols used
- Security additions – DNSSEC/DANE

Can depend on location of requester

Actual Usage - routing

Each participant have it's own view of the Internet

- AS number/IP address bindings
- AS to AS relations (and paths)

Actual usage - routing

- Route collectors
 - RIPE Stat
 - CAIDA, Routeviews
 - DYN, BGPmon, Isolario

Actual usage – data flow

traceroute/ping collectors

- availability
- RTT data

- RIPE Atlas
- CAIDA Ark

WEB usage

(not in the scope of this presentation)

- ALEXA
- Google Analytics
- Yandex Metric

Quality of Experience

- subjective measurement
 - MOS is prehistorical QoE
- not necessary relevant to technical parameters
- now – really complicated
 - much longer service delivery path
 - combination of different suppliers

QoE – measurement

- surveys
- by service provider based
- by regulator
- crowdsourcing

QoE - crowdsourcing

- by service supplier
 - mobile app of major Russian cell operators allows to report quality issues for immediate investigation
- with help of regulator
 - Moscow Department of IT helps to crowdsource quality of cell coverage
- libraries for developers

Collective efforts

- from “BGP looking glasses” to global measurements networks
- information sharing
- collaborative actions

the open Net

- engage technical Internet community
- provide technical expertise
- talk to other stakeholders

Feel free to ask questions and
communicate with us!