ANCOM

National Authority for Management and
Regulation in Communications of Romania

Broadband measuring and mapping tools in Romania

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Netograf – ANCOM application for measuring quality of internet access service by end-users

Legal basis

ANCOM decision 1201/2011 on establishing the quality indicators for the provision of the Internet access service and the publication of the due parameters

D1201/2011 establishes:

- a relevant set of quality indicators related to the provision of the Internet access service;
- the conditions and means of publication of the parameters of these indicators.

D1201/2011 specifies that:

- ANCOM shall create, manage and make available to the public an interactive application on its website to measure the technical quality indicators;
- The values of the measured quality parameters shall be calculated upon using a test server placed in an interexchange Internet connection node;
- The interactive application shall be developed in consultation with the providers of internet access services.

The aim *- to enable the end-users to benefit from relevant, comprehensive, comparable and user-friendly information.*

Developping and launching Netograf

- ANCOM, in consultation with providers, has conducted a public acquisition procedure for implementing a solution for internet access quality measuring;
- The winner of the tender has designed, developed, tested and implemented the application.
- **Netograf** was launched to the public by ANCOM in october 2014;
- The application is available for the users on **www.netograf.ro**.

Netograf – a measurement tool for end-users
General features

Transparent solution

- provides transparent information
- the same measurement conditions for all users
- test results and statistical results on the quality of services are offered to users in a uniform manner, on comparable bases

Easy to use, easy to understand

- web based application for testing and monitoring the quality of the internet access service available to the Romanian users
- the application is based on the principle of crowdsourcing

Robust solution

Short measurement time

Flexible solution

- can run on different devices – fixed and mobile terminals, OS, browser types
- can be used for mobile and fixed internet

## More awareness and knowledge on internet service quality

- users can assess the performance achieved by the providers and its evolution over time, i.e. improvement or degradation of service
- users can compare the results to those in the provider's commercial offer
- users can compare the results of one or more providers

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QoS parameters for measuring internet access performances

Quality parameters measured by Netograf are:

- **Download speed** (Mbps)
- **Upload speed** (Mbps)
- **Latency** (ms)
- **Jitter** (ms)
- **Packet loss ratio** (%)
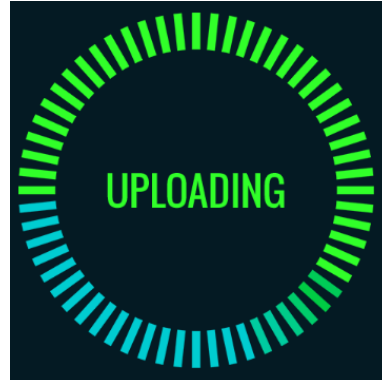
Performing a test

- In order to start a test, a user has to pick (by name) the internet offer he owns from the list provided by the Internet service provider (providers are required to add technical details of their commercial offers in the application); if the user doesn't know which offer he has in his internet contract, he can pick the option *Unknown*;

- When the test is launched, the user is asked how the internet is accessed; the question is based on the provider type: mobile service provider or fixed line service provider:

  - Fixed line service provider
    - Wireless
    - Wired
  - Mobile service provider
    - Indoor
    - Outdoor
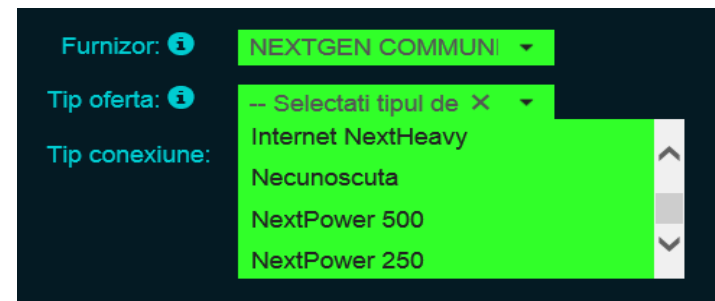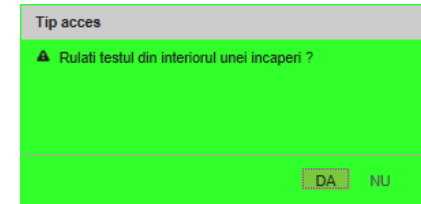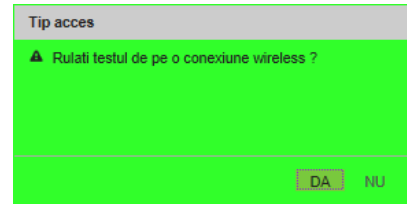
Within Netograf, users have access to technical details from commercial offers of providers and can compare the values of parameters from the offer (QoS offered by the provider) with the results of their measurements (QoS perceived by the user).

DETALII OFERTA

Denumire: | **Valabil de la:** 2015-03-26 | **Valabil până la:** | **Tip Ofertă:**
Abonament | | | Mobil

Descriere - Viteză download (Mbps):
poate oferi viteze de download de până la 43,2 Mbps pentru 3G si de pana la 225 Mbps pentru 4G in funcție de abonamentul contractat și de tehnologia disponibila în zona de utilizare.Pentru mai multe informații privind viteza de download a abonamentului dvs. va rugăm sa consultați contractul încheiat cu

Descriere - Viteză upload (Mbps):
poate oferi viteze de upload de până la 5,7 Mbps pentru 3G si de pana la 50 Mbps pentru 4G in funcție de abonamentul contractat și de tehnologia disponibila în zona de utilizare.Pentru mai multe informații privind viteza de upload a abonamentului dvs. va rugăm sa consultați contractul încheiat cu

Descriere - Viteză download după depășire (Kbps):
Viteza download după depășirea traficului poate fi limitata la valori între 128 kbps si 256 kbps in funcție de abonamentul contractat. Pentru mai multe informații privind valoarea la care este limitată viteza download după depășirea traficului inclus in abonamentul dvs. va rugam sa consultați contractul încheiat cu

Descriere - Viteză upload după depășire (Kbps):
Viteza upload după depășirea traficului poate fi limitata la valori între 64 kbps si 128 kbps in funcție de abonamentul contractat. Pentru mai multe informații privind valoarea la care este limitată viteza upload după depășirea traficului inclus in abonamentul dvs. va rugam sa consultați contractul încheiat cu

Viteză download garantată (Mbps): | **Viteză upload garantată (Mbps):** | **Întârziere (ms):** | **Variație (ms):** | **Pierderi (%):**

Volum trafic lunar (GB):
In funcție de abonamentul contractat, acesta poate include o limită de trafic, după depășirea căreia parametrii de calitate sunt limitați sau pot fi percepute tarife suplimentare. Pentru mai multe informații privind volumul trafic lunar inclus in abonamentul dvs. vă rugăm să consultați contractul încheiat cu

Test results

- After completing the set of information, the test runs and the user can view the test results and can access some additional information on the average values of the parameters tested per provider, type of offer, location of the test.

Additional information after performing a test

The user can log to the portal and has the ability to manage saved accounts and create new ones; logged user can access the history of his results.

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Publication of comparative statistical values

- Based on the tests performed by the users, the application also calculates:
    - the number of tests performed
    - the average values of the technical quality parameters

    for a certain provider per access type (wired/wireless or indoor/outdoor)

- These statistical values are presented separately for fixed internet and mobile internet;

- A user can compare the results of one or more providers, being able to add maximum 4 selection panels for this purpose;

- Statistical values are available quarterly (results encompass a quarter) and yearly (results are updated almost in real time)

- The application calculates for each provider the average values registered by the provider in different scenarios:

    - irrespective of offer type or location;
    - per offer;
    - per location (county, town, locality);
    - per offer and location.

INTERNET FIX

Furnizor:* ℹ   -- Selectati furnizorul -- ▼
Perioada: |2015 - Trim. I   ✕   ▼
Tip Oferta: ℹ   2014 - Trim. IV
Judet: 2015
Oras/Comuna: 2015 - Trim. I
Localitate:
ADAUGA
Campurile marcate cu * sunt obligatorii !
▼ AFISARE   RESETARE FILTRE

- For the accuracy of the measurements included in these cumulative results, tests are subject to some exclusion rules.

⟹ *Having such additional information, the users are able to evaluate the network performance **as experienced by other users**.*

Other tools offered by ANCOM which can give a picture about QoS offered by provider - Data set 1

1. (Fixed) Service map

- According to general authorization regime for the provision of electronic communications networks and services, providers are required to report two times per year to ANCOM the localities where they provide fixed networks and services.

- The map is performed for information purpose on services actually provided at fixed locations in a certain location, by processing data that providers report to ANCOM.

- The map can be accessed at

https://statistica.ancom.org.ro:8000/sscpds/public/serviceCoverage#gmap

Fixed services coverage

Localitatea: **FĂGĂRAŞ - M. FĂGĂRAŞ (M. FĂGĂRAŞ - J. BRAŞOV)**

J. BRAŞOV

Pentru lista completă a furnizorilor ce oferă serviciile selectate, apăsaţi aici

Lista furnizorilor de servicii

Judeţ	J. BRAŞOV
Localitate	
Tip servicii	☑ Telefonie fixă
	☑ Internet fix
	☐ TV prin cablu sau IPTV

tel: 0800 855 855 e-mail: relatii_cu_publicul@ancom

Lista furnizorilor de servicii din localitatea FĂGĂRAŞ - M. FĂGĂRAŞ,J. BRAŞOV, judeţul undefined

Pentru vizualizarea ofertelor furnizorilor de servicii, accesaţi aplicaţia Veritel

Denumire	Telefonie fixă	Internet fix	TV prin cablu sau IPTV
Operator 1	DA	DA	NU
Operator 2	DA	DA	NU
Operator 3	DA	DA	NU
Operator 4	DA	DA	DA
Operator 5	DA	DA	DA
Operator 6	DA	DA	NU
Operator 7	DA	DA	NU

Pagina 1 din 1   Afişare 1 - 7 din 7

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2. Online application for comparing the communications offers intended for the end-users

- For viewing the offers of service providers, users can access **Veritel** http://www.veritel.ro/

- Veritel is ANCOM's interactive application that performs comparative analysis of tariff plans on the market, providing a ranking of the most advantageous offers in terms of price, based on user input options.

- Veritel allows comparing offers of fixed and mobile telephony and internet.

- The legal base is ANCOM's decision on the obligations of the providers of publicly available electronic communications services to inform the end-users.

For internet service, offers from Veritel give some information related to QoS offered by provider (Theoretical value).

Based on the options related to location and download speed Veritel shows the available offers.

Localitate aleasă: BUCURESTI SECTORUL 4 (MUNICIPIUL BUCURESTI)

Viteza de download aleasă (best effort) ⦿ 1 Mbit/s

Calculeaza doar pentru anumiti furnizori ⮟

Costuri oferte internet la punct fix conform estimării de consum

Compară oferte **Schimbă în lei**

#	Furnizor	Denumire	Cost total lunar estimat (cu TVA) 🛈	Tip contract	Download	Upload	Limitare viteza dupa depasirea traficului inclus	Durata minima contract	Penalităţi în de reziliere înainte de termen	Promotie	Tarif lunar (cu TVA)
#: 1											
1				Abonament	100 Mbit/s	100 Mbit/s		12 luni	Da	Nu	
#: 2											
2				Abonament	50 Mbit/s	50 Mbit/s		12 luni	Da	Da	
#: 3											
3				Abonament	50 Mbit/s	25 Mbit/s		24 luni	Da	Da	
#: 4											
4				Abonament	100 Mbit/s	100 Mbit/s		12 luni	Da	Da	
#: 5											
5				Abonament	300 Mbit/s	100 Mbit/s		12 luni	Da	Nu	
#: 6											
6				Abonament	500 Mbit/s	200 Mbit/s		12 luni	Da	Nu	
#: 7											

Users can see additional information about an offer by accessing the link of the respective offer.

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Future work & conclusions

<u>In the future</u>

- continue optimization of the tools;

- extend with new capabilities (in terms of hardware and software);

- link Service map and Veritel;

- infrastructure inventory/maping;

- consider data set 2 implementation.

<u>Conclusions</u>

- data set 3 implementations are complex, sensitive and require significant efforts to accommodate views of all parties; legal basis is important;

- clarity on what and how is measured and what the results mean is paramount;

- mixing various data set information should be carefully done;

- coordinate with national initiatives to avoid conflicts and duplication.

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Thank you!

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