Internet Connection Quality Evaluation Tool

The NetTest platform

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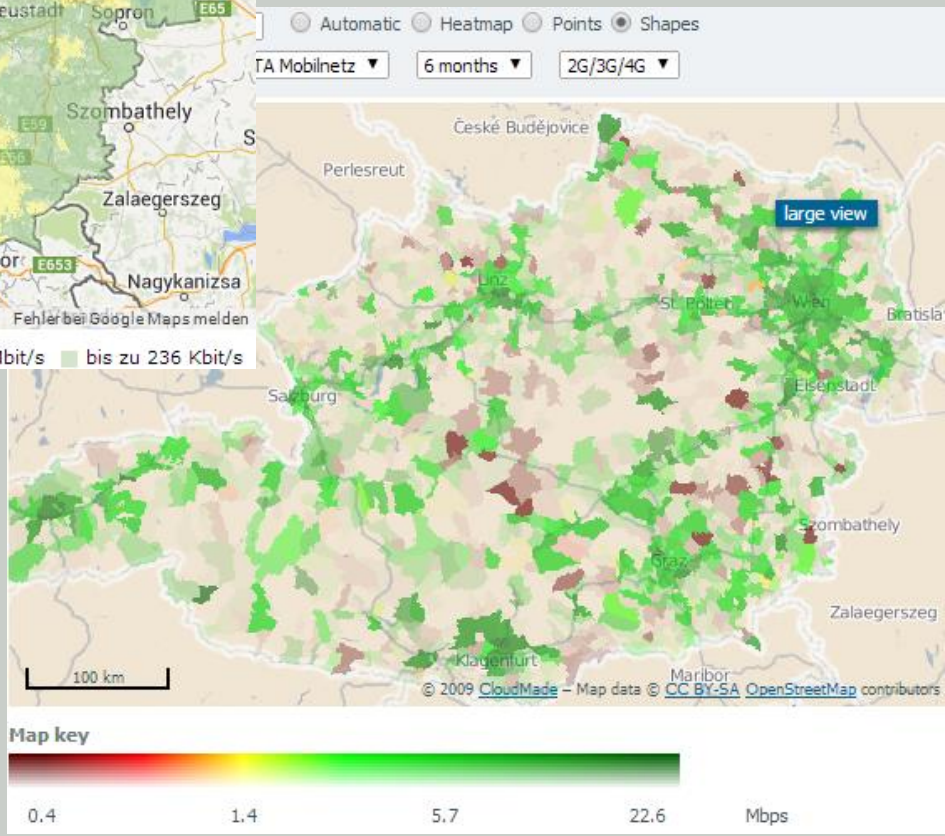
SPECURE
by alladin-IT

Key Issues Of Internet Connection Quality Evaluation

- Main indicator of internet connection quality = bandwidth available to the user
- For the user, it is very important to be able to measure and compare the key aspects of their internet connection with other users.
- **Key aspects of internet connection:**
  - **Download Speed**
  - **Upload Speed**
  - **Ping**
  - **Signal Strength**
  - **Network Neutrality**
- Representative test results
- Comparable test results between users
- Statistical analysis and visual illustration via heatmap
- Full compliance with BEREC report

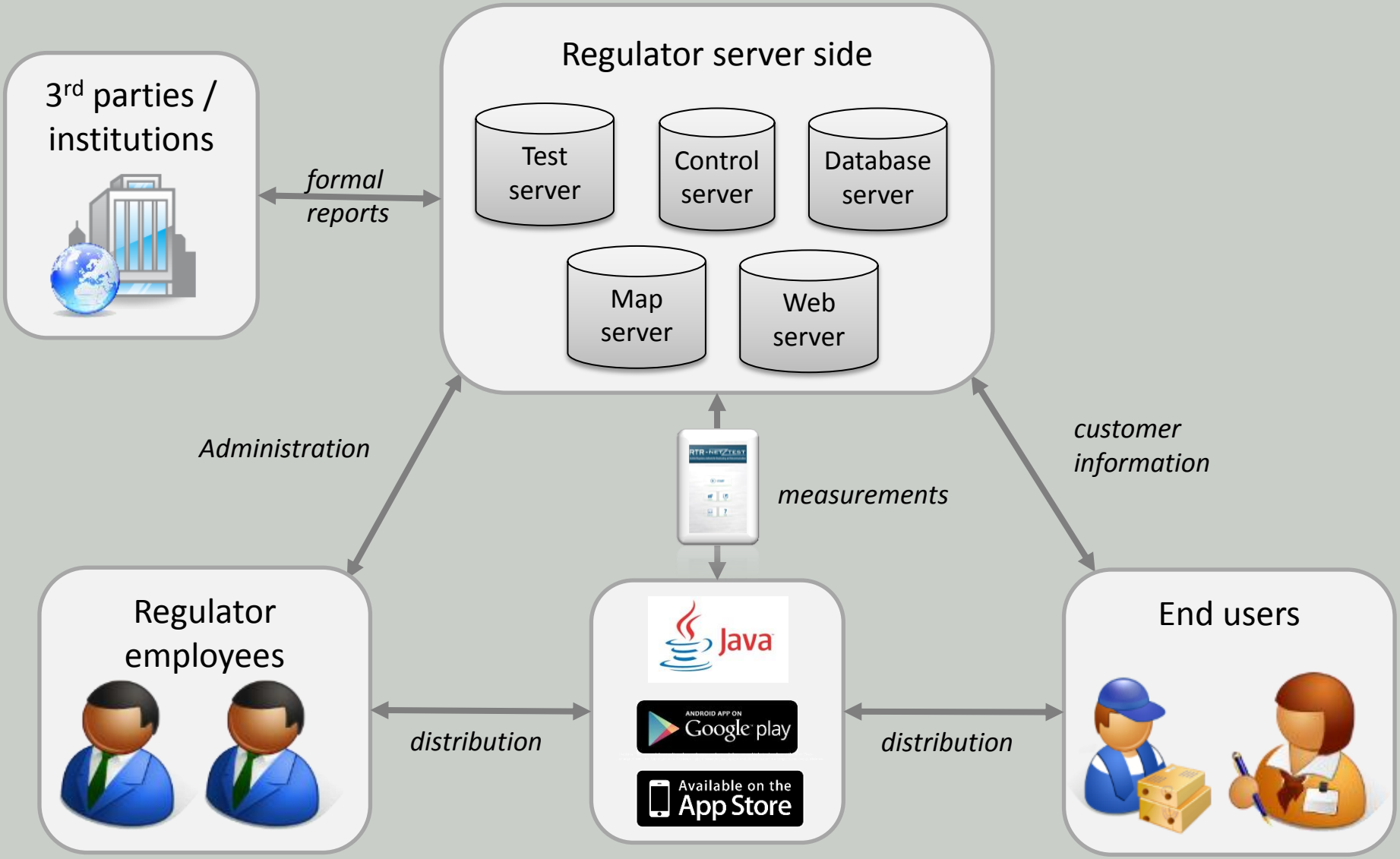
Comparing declared and actually measured coverage map of a provider

declared coverage



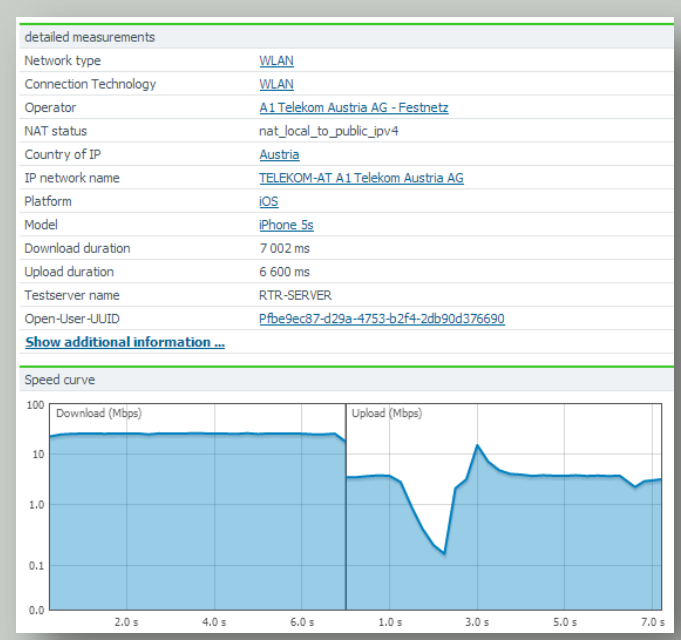
actually measured coverage via nettest

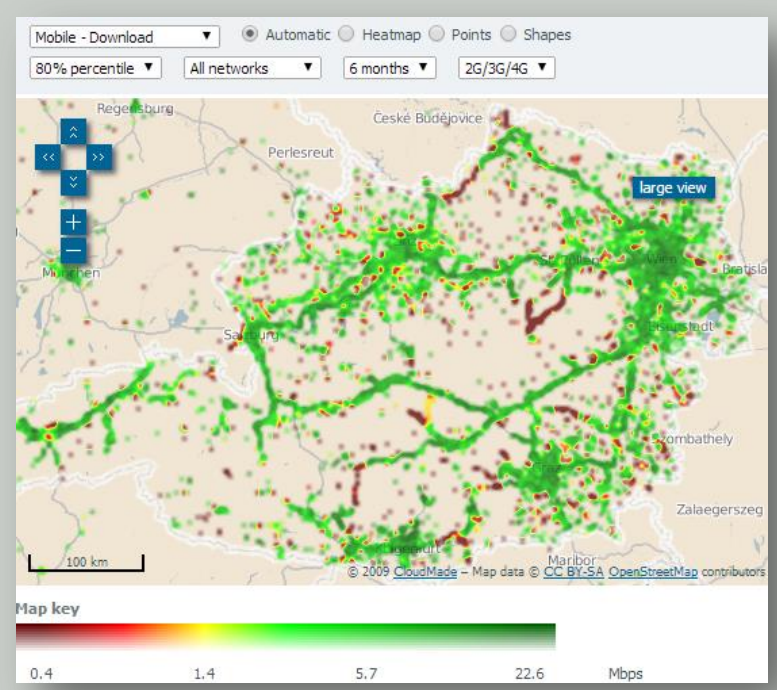
NetTest architecture



Key tools of the NetTest platform

- detailed test overview
- in-depth test statistics
- evaluation and comparison of tests of all users
- test synchronisation on multiple devices
- own test history for all users
- help and support (FAQ)





Features of the NetTest platform

- NetTest is fully in compliance with BEREC report from 8.3.2014 that recommends parameters of IAS quality monitoring system
- complex tool offering **reliable and credible testing** of internet connection
- offers complex information regarding **connection quality of all users** (comparing results between end users of all operators)
- offers possibility to determine the level of **user satisfaction** with their internet connection, as well as with their internet provider
- detailed comparison of real results with outputs of testing applications of mobile operators
- based on the principles of **crowd sourcing** – very effective data collection method using smartphones (Android, iOS)* and internet browsers
- well-organised, detailed **graphical and statistical depiction** of results, as well as mapping of testing processes for all users
- **fast deployment** / outsourcing-based implementation
- **open-source** developed solution based on open data principles

* http://en.wikipedia.org/wiki/Crowdsourcing

Benefits of the NetTest platform

- Reduction in regulator's operation costs:
  - less laborious internet connection quality measurements,
  - reliable litigation documentation.
- End user enablement:
  - availability of real internet quality data,
  - efficient complaints resolution,
  - informed purchasing decision when selecting ISP,
- Increased market competition:
  - increased level of performance experienced by the users.

Compliance with BEREC report 1/4

According to report published on 8.3.2014, Body of European Regulators recommends following parameters of IAS quality monitoring system:

Parameter	**Recommendation** *(as stated in BEREC report)*	**NetTest compliance**
IP layer measurements	*"Measuring at least following IP layer parameters: upload and download speed, delay, jitter, and packet loss ratio."*	
Including all types of IAS	*"The recommended IP layer metrics are applicable for fixed as well as wireless/mobile Internet access services."*	
Monitoring degradation of service	*"When evaluating potential degradation of IAS as a whole, BEREC recommends that such measurements are conducted over time to allow trend analysis."*	
Crowd-sourcing	*"Regarding aggregated results, BEREC recommends - for reasons of cost-effectiveness and user-friendliness - that averaging (based on data gathered from all participating users) should be done based on crowd-sourcing."*	
Software-based agent	*"Implement end user transparency measurements in a user-friendly manner (a software-based measurement agent downloaded to end user equipment)."*	

Compliance with BEREC report 2/4

According to report published on 8.3.2014, Body of European Regulators recommends following parameters of IAS quality monitoring system:

Parameter	**Recommendation** *(as stated in BEREC report)*	**NetTest compliance**
Accuracy	*"Accuracy requires that results are obtained from a clearly defined population and their statistical treatment is well documented, so that results can be interpreted without bias."*	
Comparability	*"This includes "plain" comparability of individual sample measurements, but also comparability at higher levels, such as comparability between IASes, and between countries when possible, so that degradation … can be identified with a sufficient level of confidence."*	
Security	*"The system components must be robust and protected against security attacks, and availability, integrity and confidentiality of the measurement data must be secured during storage and transmission."*	

Compliance with BEREC report 3/4

According to report published on 8.3.2014, Body of European Regulators recommends following parameters of IAS quality monitoring system:

Parameter	**Recommendation** *(as stated in BEREC report)*	**NetTest compliance**
Privacy	*"This implies that the user must be informed which data are collected, for what purpose and what information shall be included, how data will be used, and specifically that some information may be made available to the public."*	
Legal value	*"The system governance must be designed in a way which mitigates conflicts of interest and ensures credible results. The provider of a quality measurement system should keep in mind that measurements undertaken with their system may imply legal usage of these measurement results (e.g. before a court)."*	
End user enablement	*"For regulators to set up a measurement system with the overall aim of being objective and provider-independent and enabling users to undertake measurements implies and maybe even intends that an end user will rely on and make further use of the measurement results."*	

Compliance with BEREC report 4/4

According to report published on 8.3.2014, Body of European Regulators recommends following parameters of IAS quality monitoring system:

Parameter	**Recommendation** *(as stated in BEREC report)*	**NetTest compliance**
Future-proof	*"The system design should ensure flexibility, extensibility, scalability and adaptability."*	
Open source code	*"Details about the measurement methodology should be made available, and open source code should be considered as an option to achieve this requirement. Knowledge of source code is therefore the ultimate tool to make the measurement methodology transparent."*	
Open data principle	*"Furthermore, transparency of collected data ("open data") should also be sought, with due respect for the limitations of national legislation."*	
Cost-effectivness	*"This implies that cost-effectiveness should also be applied as a general rule-of-thumb to all phases of the measurement system lifecycle, like development, deployment and operation."*	

WWW.SPECURE.COM

Specure
Andreas Gaber, alladin-IT GmbH
Kaiserstraße 8/11, 1070 Wien, Austria
+43 1 890 08 47
info@specure.com

Specure
Jozef Svrček, Martes s.r.o.
Dlhá ulica 88, 010 09 Žilina, Slovakia
SK: +421 41 56289 33, AT +43 1 2646932
info@specure.com