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Abstract:

The aim of this document is to inform about the 4rd results (for 1Q 2014) of the IPv6 Readiness Benchmarking results in public administrations across Europe.

Keywords:

IPv6, Governments, benchmarking, monitoring

Revision History

The following table describes the main changes done in this document since its creation.

Revision	Date	Description	Author (Organization)
V0.1.	29/05/2014	Document creation	Jiří Průša (CZ.NIC)
V1.0	29/10/2014	Dokument submitted	Jiří Průša (CZ.NIC)

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Executive Summary

Europe needs to be a competitive player in information technologies, and in IP networking this means introducing IPv6, in the private sector as well as in eGovernment services. Continuous monitoring of the level of IPv6 rollout progress of each state is therefore a must-have. That's why, in line with the **Digital Agenda for Europe** and its **Action Nr. 89,** we started to monitor and regularly record the IPv6 readiness of governmental institutions and their public appearances.

This way we can find out whether IPv6 was introduced or not, relating to web-services, DNS, and e-mail servers support. The problem lies in finding comparable metrics. Especially in the globalised world of internet we have to distinguish between national and international URLs. Even though some websites seem national since they are in national language and they are used by citizens of certain state we can't forget that they might be international e.g. Facebook, Google.

There is no other European-wide research that would compare just government websites although there is one research alike that is provided by the "IPv6 Observatory"[1]. The difference from the following one is in comparing international URL with national. The other difference between IPv6 Observatory and our research is that GEN6 focuses on government websites and services instead of on the most visited web-pages from each country.

The reason why this monitoring is unique is that it is the only one that is based on collecting comparable URLs of EU member states and some non-EU countries e.g. Turkey. Designated catalogue of governmental institutions of public appearance was prepared based on the common methodology (Deliverable D5.41 - IPv6 Readiness Monitoring Methodology) in order to monitor the progress of transition to IPv6. Based on this selection of addresses, IPv6 readiness will be measured and published every 3 months, starting in April 2013 until the end of the GEN6 (Government enabled with IPv6) project as supported by the European Commission. This benchmark will compare different areas of public administration starting with heads of state and ending with municipalities.

Technical checks in benchmarking will focus on the availability of web services, DNS and mail servers with respect to their availability via IPv6.

[1] *http://www.ipv6observatory.eu*

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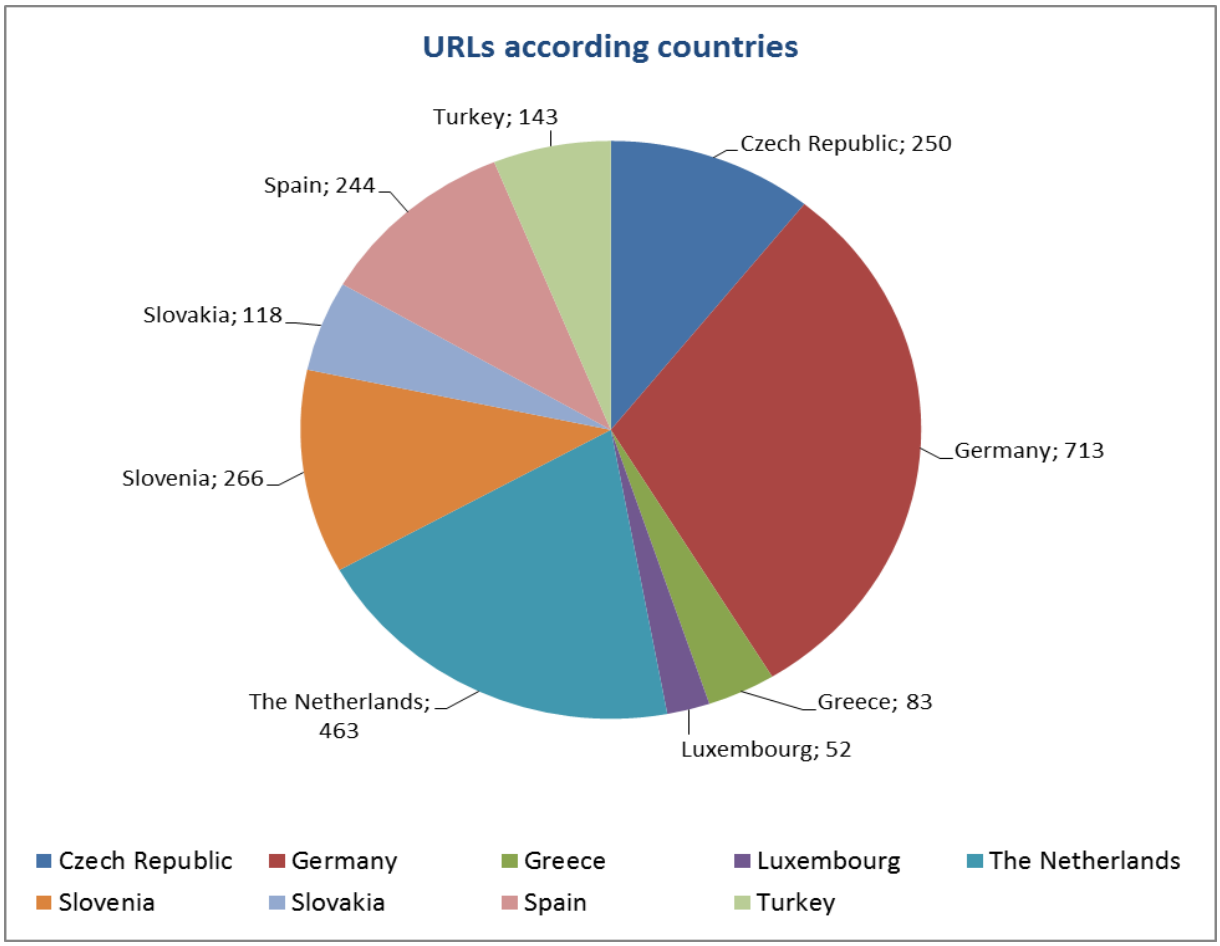
1. THE SCOPE

Based on the common methodology defined in "D5.41 IPv6 Readiness Monitoring Methodology", all partners participating in GEN6 project were asked to collect URLs in their country. During 4Q/2012 – 1Q/2013, the following countries provided a set of URLs of the most important public organisations in their countries: the Czech Republic, Germany, Greece, Luxembourg, the Netherlands, Slovenia, Spain and Turkey. Due to close cooperation, CZ.NIC also provided data for Slovakia, which is not involved in the GEN6 project.

In total, 2 339 URLs[2] were collected for the purpose of an IPv6 readiness analysis. These URLs are sorted not only according to country, but also according to three levels of public administration: central government organisations, regional representatives and local self-government bodies.

The largest URLs sample (713) was provided by Germany, followed by the Netherlands (463), Slovenia (266) and the Czech Republic (250). Information about the structure of URLs according to country is presented in the chart.



[2] Including the R.O.C. (Taiwan) and TOP100 companies in the Czech Republic

From the public administration's point of view, the largest set of URLs is represented by the local level, that means cities and villages (1 863), followed by the national level (354) and the regional level (122). Due to the various constitutional environments in each country, no regional level is represented in case of Luxembourg and Slovenia (especially due to their country size). In case of Turkey, the regional level is formally established, but in fact, there are no regional offices and no websites at the regional level.

By analysing the provided URLs from each country, there is no significant difference in the amount of URLs at the national level (between 31 to 55), but they is a large difference in the amount of URLs at the local level – from 12 in Luxembourg to 666 in Germany. In this case, the difference can be easily explained if we look at the size of these countries and the number of cities/villages. At the national level, it's necessary to mention the case of the Netherlands, where several central-government institutions (ministries) share one URL. This should have a significant influence on the results on the national level.

2. IPv6 Benchmarking Results

All collected URLs were automatically analysed on 31 March 2014 by a script provided by ULAKBIM that was modified by CZ.NIC. The list of URLs according to countries and IPv6 readiness results is available at https://devpub.labs.nic.cz/ipv6-smt-new/country/.

To present benchmarking results in a more user-friendly way, the following overviews and charts have been created for all three levels of public administration as well as progress from the third measurement from December 2013 (D5.44: IPv6 Readiness Monitoring Results: 4Q 2013).

2.1. General overview (all levels)

Country	Web servers		DNS servers		E-mail servers	
	Fully supported	Partially supported*	Fully supported	Partially supported	Fully supported	Partially supported
The Czech Republic	33% (+ 4 pp)	1% (- 3 pp)	29% (+ 10 pp)	33% (+ 1 pp)	3% (- 2 pp)	9% (+ 3 pp)
Germany	6%	0%	14%	27%	2%	4%
Greece	0%	1%	5% (+ 1 pp)	1%	5%	0%
Luxembourg	0%	0%	19%	4%	2% (+ 2 pp)	0% (- 2 pp)
The Netherlands	5%	1% (+ 1 pp)	25% (- 2 pp)	13% (+ 5 pp)	5%	5% (+ 1 pp)
Slovenia	3%	0%	8% (- 1 pp)	17% (+ 4 pp)	4% (- 1 pp)	0%
Slovakia	18%	1%	4% (- 1 pp)	5% (- 2 pp)	0%	1%
Spain	2% (+ 1 pp)	1% (+ 1 pp)	3%	10% (- 3 pp)	2% (+ 1 pp)	2%
Turkey	2% (+ 1 pp)	1%	1%	1% (- 1 pp)	0%	1%

2.2. National level

Country	Web servers		DNS servers		E-mail servers	
	Fully supported	Partially supported*	Fully supported	Partially supported	Fully supported	Partially supported
The Czech Republic	55% (+ 3 pp)	6% (+ 4 pp)	42% (+ 10 pp)	29% (+ 10 pp)	16% (+ 7 pp)	23%
Germany	0%	0%	16%	23%	0%	0%
Greece	0%	3%	0%	3%	3%	0%
Luxembourg	0%	0%	8%	5%	3% (+ 3 pp)	0% (- 3 pp)
The Netherlands	45% (+ 3 pp)	3%	39 (- 3 pp)%	21% (+ 6 pp)	3%	0%
Slovenia	5%	2%	4% (- 5 pp)	16% (- 5 pp)	0%	0%
Slovakia	0%	0%	3% (- 2 pp)	5% (+ 2 pp)	0%	0%
Spain	9% (+ 4 pp)	2% (+ 2 pp)	4% (+ 1 pp)	28% (- 8 pp)	0%	4% (+ 1 pp)
Turkey	4%	2%	2%	6%	0%	2%

** has IPv6 address, but request is not successful*

2.3. Local level

Country	Web servers		DNS servers		E-mail servers	
	Fully supported	Partially supported*	Fully supported	Partially supported	Fully supported	Partially supported
The Czech Republic	31% (+ 5 pp)	0% (- 2 pp)	28% (+ 10 pp)	33% (+ 3 pp)	1% (+ 1 pp)	7% (- 4 pp)
Germany	6%	0%	14%	27% (+ 1 pp)	2%	4%
Greece	0%	0%	11% (+ 3 pp)	0%	8%	0%
Luxembourg	0%	0%	58%	0%	0%	0%
The Netherlands	2% (+ 1 pp)	0%	23% (+ 3 pp)	12% (+ 6 pp)	6% (+ 1 pp)	5%
Slovenia	3%	0%	9% (+ 1 pp)	17% (+ 4 pp)	5% (+ 1 pp)	0%
Slovakia	28%	1%	6%	4% (- 4 pp)	0%	1%
Spain	0%	0%	3%	3% (- 1 pp)	2% (- 1 pp)	1%
Turkey	1% (- 1 pp)	0%	1%	0% (- 1 pp)	0%	0%

** has IPv6 address, but request is not successful*

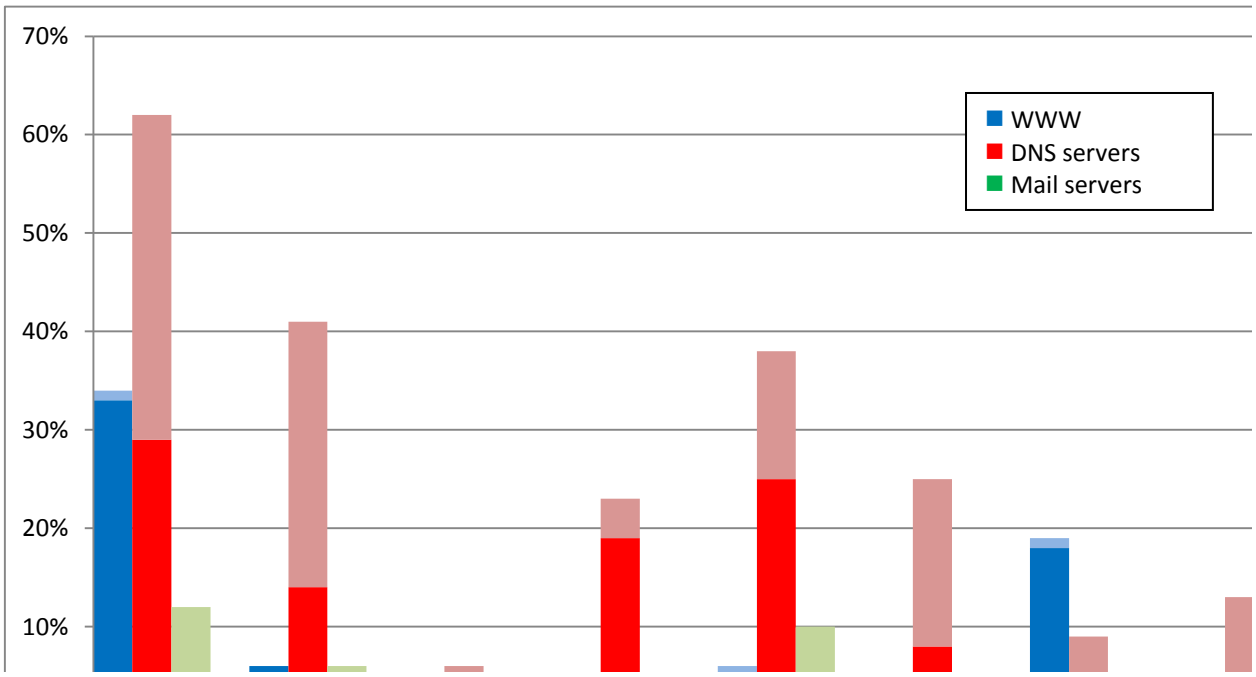
2.4. Regional level

Country	Web servers		DNS servers		E-mail servers	
	Fully supported	Partially supported*	Fully supported	Partially supported	Fully supported	Partially supported
The Czech Republic	15%	0%	8%	46% (- 8 pp)	8%	15%
Germany	13%	0%	6% (+ 6 pp)	31% (+ 7 pp)	6%	0%
Greece	0%	0%	0%	0%	0%	0%
The Netherlands	8%	8%	25%	25% (+ 17 pp)	8% (+ 8 pp)	0%
Slovakia	13%	0%	0%	13%	0%	0%
Spain	0%	2%	0%	15% (- 5 pp)	5%	0%

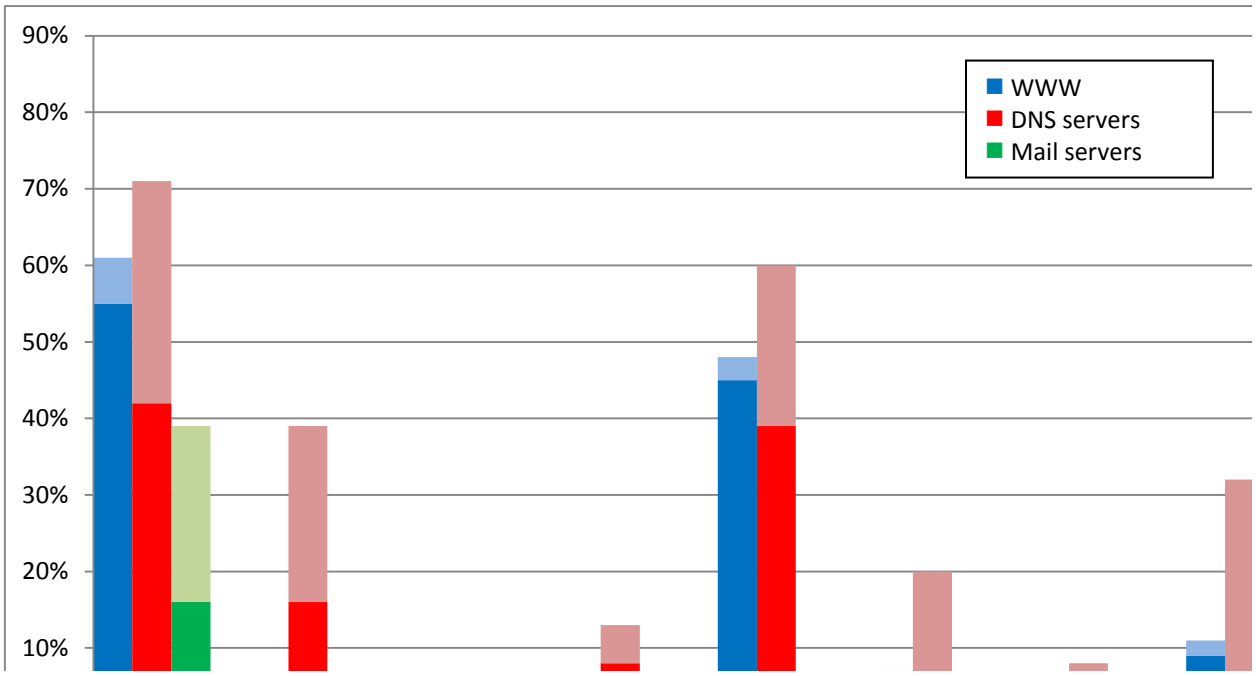
** has IPv6 address, but request is not successful*

2.5. Charts

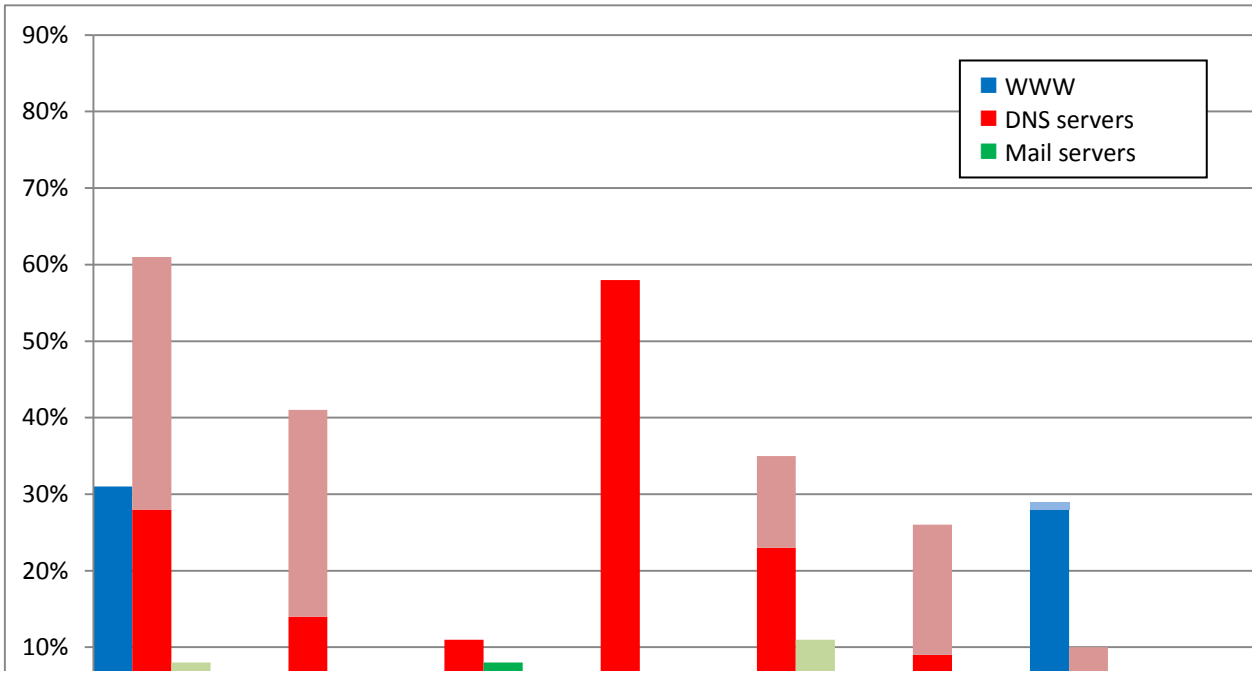
General overview (all levels)



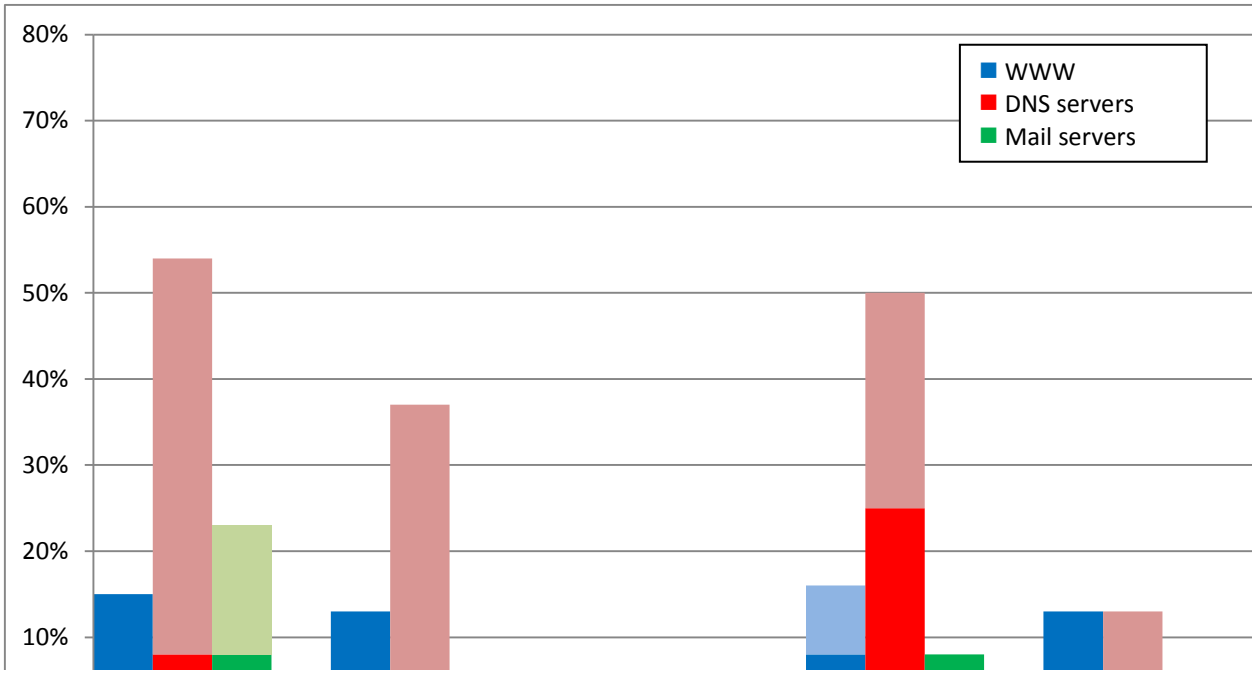
National level



Local level



Regional level



3. CONCLUSIONS

Based on the objectives of the **Digital Agenda for Europe** and especially its **Action Nr. 89**, the GEN6 project made an analysis aimed at IPv6 support at individual public administration bodies at all levels – national, regional and municipal. The data came from eight EU member countries (the Czech Republic, Germany, Greece, Luxembourg, the Netherlands, Slovakia, Slovenia, and Spain) and from Turkey.

Comparing the situation in 1Q 2014 with the measurement made in December 2013, there is no eminent progress. In the Czech Republic, there is a steady (and in this quarter very significant) growth especially at the national and local level. The growth at the national level can be explained mainly by enforcement of the legislative obligations associated with the Ministry of Industry and Trade (MoIT, a project partner in the observer role at the moment) making services available also via IPv6. At the local level, there is the effect of the Golden Crest Competition, which included IPv6 support as one of the evaluating criteria for a second time.

Looking at services, it is pleasant to see a **steadily growing IPv6 support on mail servers**, which represent one of the weak points of IPv6 deployment in public administration. As for the name servers in the participating countries (with the exception of Slovakia), there can be seen a significantly higher IPv6 implementation level than at other services, which is mainly the result of support by national registries and registrars, who often act also as web hosting companies. The only country with higher support of web servers than mail servers is Slovakia, whose national domain name register is not as active in promoting IPv6 as other registers, e.g. CZ.NIC in the Czech Republic.

The above mentioned figures clearly demonstrate the **positive impact of dissemination measures in the GEN6 project** and the need to involve policies aspects in the project activities. Compared to pilot projects – dissemination and policies represent cost-effective measures with big impact.

4. REFERENCES

[1] IPv6 Readiness Monitoring Methodology; Deliverable D5.41
http://www.gen6.eu/docs/deliverables/GEN6_PU_D5_41.zip

[2] IPv6 Observatory
http://www.ipv6observatory.eu/

[3] A Digital agenda for Europe; COM(2010)245
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF

[4] The European eGovernment Action Plan 2011-2015; COM(2010)743
http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0743:FIN:EN:PDF