

# Addressing the Barriers to IPv6 Adoption – Agenda for Workshop

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# Study objectives

- IPv6 support, best practices and technology transfer:
  - To achieve cross-border interoperability of online services
  - To be consistent with ISA goals
  - Assessment of current state of IPv6 implementation in public administrations
- Based on that assessment:
  - Guidelines for IPv6 implementations in diverse public administration settings
  - Road maps for both technical and administrative aspects of IPv6 deployment are made available
  - Direct technology transfer through workshops

# Key issues

- Issue 1: Lack of a clear appreciation of the benefits of IPv6 adoption
- Issue 2: The problem of a legacy IPv4 mindset
- Issue 3: Setting the correct long-term goals
- Issue 4 Low adoption of IPv6 by governments
- Issue 5: Lack of recent IPv6 data regarding public administrations in Europe
- Issue 6: Various models used around IPv6 in public administrations
- Issue 7: Public administrations, security and IPv6

# Phase 2: Research

- Basic research on the current status and preparedness of the public administrations in each of the EU Member States
- Prior to launching into the full research we plan to
  - Review in detail the work of the GEN6 project
  - Test our draft research questionnaire via a pilot study on four or five MS
  - Actual number was determined during the pilot
- Full research will follow the evaluation of the pilot study

# Phase 2: Research

Step 0 : Pilot studies

Step 1 : Desk research

Step 2 : Interviews

Step 3 : Synthesis

Step 0 : Pilot studies

## 1. Review of GEN 6

1. Key MS : Germany, Czech Republic, Slovenia, Spain

2. MS with pilots : Greece, Luxembourg

## 2. Inclusion of most advanced MS outside of Gen6: Belgium, Portugal, Sweden

| Country        | Short description   | Reference Link   |
|----------------|---|--|
| France         | 2011 notice to public administration to take into account IPv6 in specification for public procurements   | <a href="https://ciscocollectivitesblog.files.wordpress.com/2012/05/ipv6-circulaire-8-dec2011-cir_34250.pdf">https://ciscocollectivitesblog.files.wordpress.com/2012/05/ipv6-circulaire-8-dec2011-cir_34250.pdf</a>  |
| Czech Republic | Government committed to the implementation of IPv6 in 2009 by adopting a government resolution ordering ministers and heads of central administration authorities to ensure access to publicly available websites and web services of their offices via the new protocol. | Initial resolution in 2009<br><br>2011 MPO State Policy in Electronic Communications - Digital Czech : <a href="https://www.mpo.cz/dokument149132.html">https://www.mpo.cz/dokument149132.html</a><br><br>2013 report: <a href="https://labs.nic.cz/en/n/2013-06-06-czech-republic-a-leader-in-the-introduction-of-ipv6-in-public-administration.html">https://labs.nic.cz/en/n/2013-06-06-czech-republic-a-leader-in-the-introduction-of-ipv6-in-public-administration.html</a>                       |
| Belgium        | 2012 Information letter requesting preparation for adoption of IPv6 in federal administrations  | 2012 directive: <a href="http://www.fedict.belgium.be/sites/default/files/downloads/IPv6News-fr-20121129.pdf">http://www.fedict.belgium.be/sites/default/files/downloads/IPv6News-fr-20121129.pdf</a><br><br>2014 report on deployment: <a href="http://economie.fgov.be/fr/binaries/Etude_sur_le_deploiement_de_L_IPv6_en_Belgique_tcm326-264455.pdf">http://economie.fgov.be/fr/binaries/Etude_sur_le_deploiement_de_L_IPv6_en_Belgique_tcm326-264455.pdf</a>  |
| Portugal       | Plans to migrate to IPv6 in 2016  | 2015 presentation: <a href="https://fr.slideshare.net/JorgeMatias5/ipv6-on-portuguese-public-administration-transition-of-services-to-ipv6">https://fr.slideshare.net/JorgeMatias5/ipv6-on-portuguese-public-administration-transition-of-services-to-ipv6</a><br><br>2016 news: <a href="https://www.telecompaper.com/news/portugal-public-administration-to-migrate-to-ipv6-in-2016-1076038">https://www.telecompaper.com/news/portugal-public-administration-to-migrate-to-ipv6-in-2016-1076038</a> |
| Sweden         | Post and Telecom Agency practical guidance for the deployment of IPv6 (2011)  | 2011 : <a href="https://www.pts.se/upload/Rapporter/Internet/2012/2012-02-21%20Deployment%20of%20IPv6%20-%20practical%20guidance.pdf">https://www.pts.se/upload/Rapporter/Internet/2012/2012-02-21%20Deployment%20of%20IPv6%20-%20practical%20guidance.pdf</a>   |
| Spain          | Transition to IPv6 strategy   | <a href="http://Administracionelectronica.gob.es">Administracionelectronica.gob.es</a>   |
| Slovenia       | Government of Slovenia, Ministry of Higher Education, Science and Technology  | <a href="http://go6.si">http://go6.si</a>  |
| Germany        | German local IPv6 research and development project  | <a href="http://www.bva.bund.de">www.bva.bund.de</a>   |

# Phase 2: Research

## Step 1 : Desk research

1. Analysis of transversal sources (OECD, RIPE NCC, ITU, Internet Society)
2. Collection of quantitative data
  1. Google, Cisco, Eric Vyncke
3. Country-level research (IPv6 councils/task forces, government)

| Source   | Link and contents   |
|--|---|
| Google   | <a href="https://www.google.fr/ipv6/statistics.html#tab=per-country-ipv6-adoption&amp;tab=per-country-ipv6-adoption">https://www.google.fr/ipv6/statistics.html#tab=per-country-ipv6-adoption&amp;tab=per-country-ipv6-adoption</a><br>Stats per country (not specific to public administrations)   |
| Akamai   | <a href="https://www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/state-of-the-internet-ipv6-adoption-visualization.jsp">https://www.akamai.com/us/en/about/our-thinking/state-of-the-internet-report/state-of-the-internet-ipv6-adoption-visualization.jsp</a><br>Stats per country (not specific to public administrations)   |
| Cisco  | <a href="http://6lab.cisco.com/stats/">http://6lab.cisco.com/stats/</a><br>Stats per country (not specific to public administrations)   |
| APNIC  | <a href="https://stats.labs.apnic.net/ipv6">https://stats.labs.apnic.net/ipv6</a><br>APNIC stats are generally detailed by AS number, giving potential insights on public administrations if they operate with their own AS   |
| Blog of Eric Vyncke (last update in late 2016) | <a href="https://www.vyncke.org/ipv6status/">https://www.vyncke.org/ipv6status/</a><br>Provide status regarding IPv6 for top 1 million websites from Alexa and then from Umbrella OpenDNS, with a capacity to filter per type of service (including government, see picture below)<br>Tests are done for IPv6 implementation for Web, email and DNS |

# Phase 2: Research

## Step 2 : interviews

1. National Digital Agency
2. Other stakeholders when relevant (NRA, Ministry of Industry, IPv6 Council, Ministry of R&D, cc TLD managers as back-up)

## Step 3 : Synthesis - Clusters of MS based on

1. adoption of IPv6 in the country (not specific to public administrations),
2. adoption of IPv6 by public administration, mixing semi-quantitative data from Vyncke and qualitative (quantitative if possible) from interviews.
3. ambitions in terms of IPv6 deployments in administrations, qualitative (quantitative if possible) from interviews.

# Phase 2: Results

- Extremely detailed report on the current state of IPv6 implementation in public administrations
- We will examine an overview of those results in a session after the break
- The deliverable includes:
  - An executive overview
  - A full, detailed report on the results of the study
  - Both can be found here: <http://ipv6gov.eu/documents/>



# Phase 3: Framework development

- Deliver detailed guidelines on network topologies and addressing types, addressing technologies, transition technologies and deployment strategies
- Also build on GEN6 by updating and expanding the information available on transition experience including network equipment, network provider access points, and middleware and server technologies
- This phase will also build on the progress made in interconnection of national networks for the purpose of European cross-border services
- Guidelines must account for diversity in both technical abilities of public administrations but also their organization
- Particular attention is to be paid to ensuring that groups of MS that have similar capacity and organizations are given consistent and unified guidelines

# Phase 3: Results

- **Guidelines Document**

- Aa resource for IPv6 address planning for public administrations.
- An introduction in three parts:
  - Preparation
  - Design
  - Maintenance
- Provides the tools needed for overall planning for the IPv6 deployment
- Provides a blueprint for IPv6 subnetting and address planning
- Also provides the tools for the development of a comprehensive IPv6 addressing plan appropriate to the public administration's requirements

# Phase 3: Results

- **Technical Profiles Document**
  - IPv6 Implementation Planning Documentation
    - With different approaches for different size of member state
  - IPv6 Address Planning
    - Including the relationship between Member States and RIPE
  - IPv6 Transition Approaches
    - This proved to be of interest during our Knowledge Transfer Workshop
  - Readiness Audit and Profile Development
    - Updated – built on the existing work of others

# Phase 3: Results

- The Deliverables for Phase 3 are on the project website
  - <http://ipv6gov.eu/documents/>
  - Not many comments on these deliverables during the project
- Also, the meeting report from the first workshop is available along with all the presentations are available in the workshop section of the project website

# Phase 4: Training

- Technology transfer for public administrations
- The workshops, and associated training, will be a comprehensive and accurate presentation of the deliverables from this study
- They will be presented in such a way as to enable public administrations to fully appreciate the benefits of deploying IPv6 and understand the crucial differences between IPv4 and IPv6 thinking
- Delegates will learn from these workshops the essentials that they need to know when deploying IPv6 in public administrations
- Materials for the workshops will be built from the materials gathered from Phases 2 and 3 along with supplementary materials, presentations and reports from people involved in deploying IPv6 in public administrations throughout Europe
- Particular attention will be paid to ensuring that the materials are appropriate to both the technical capacity of particular public administrations but their organization as well

# Phase 4: Results

- Technology Transfer Workshop in Lisbon in September 2018
- Workshop Purpose
  - As part of the project, it was our intent to organise and manage knowledge transfer workshops for those interested in and responsible for IPv6 implementation within public administration
  - This Lisbon workshop was a regional workshop focused on regional barriers to IPv6 success and strategies for overcoming those barriers.

# Phase 4: Results

- Technology Transfer Workshop in Lisbon in September 2018
- Agenda Included:
  - Lessons Learned from Workshop I on Addressing Barriers to IPv6 Deployment
  - Interactive session on regional challenges to IPv6 Deployment in Public Administrations
  - Addressing the Administrative Challenges of IPv6 Deployment
  - Meeting the Technical, Staffing and Training Challenges of IPv6 Deployment
  - Resources available to Member States
- Also, the meeting report from the Lisbon workshop is available along with all the presentations/training material are available in the workshop section of the project website

# A Note About the Workshops

- The workshops in Brussels and Lisbon had very active discussions with delegates
- MS participating are knowledgeable of the barriers and appreciative of potential solutions to those challenges
- However, attendance was not as good as was expected
  - Small MS simply did not attend (resources?)
  - Regional workshops attracted some local participation, but not regional participation
  - Could this be because of the wide diversity of MS IPv6 experience?
  - Reflective of a growing inertia in MS regarding IPv6?



# Phase 5: Final deliverables

- The IPv6 transition plan, initially drafted in the previous Phase of the project, will be finalized based on feedback from all the workshops and comments from key stakeholders
  - There were not a large number of comments
- This, the final workshop in Brussels
- The guidelines and transition plan is nearly complete at this point and subject to minimal changes
- This final workshop in Brussels is a prelude to two final deliverables:
  - A final meeting
  - The final study report

# Questions?