IPv6 Deployment Status

draft-v6ops-ipv6-deployment-02

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Draft History

- Submitted as an individual draft -00 in October 2020
  - Version -01 presented at IETF 109
  - Version -02 presented at IETF 110
- After IETF 110, during revision week requested by the v6ops chairs a lot of comments received and discussed in the mailing list
- In early April 2021 adopted as WG document
  - Version -00 submitted in April 2021 (no major modifications)
  - Version -01 submitted on June 1st to address most of the comments received
- In early June, question by the chairs on WG adoption and new round of comments in the mailing list
  - Version -02 submitted on July 12th

Draft Status

- 7 co-authors (+3 since version 01)
- Thoroughly reviewed to cope with comments suggesting to:
  - Avoid "marketing/sales" language
  - Better specify the scope
  - Remove the unreferenced/unproven advantages of IPv6
  - Introduce the missing references

- Thanks everyone for spending time to read and comment!

- In addition, analysis presented at RIPE 82

Diffs

- The overall structure has been mostly maintained

- Modified specific sub-sections and the relevant text

- The introduction has been entirely rewritten

- The previous "Call for Action" paragraph renamed as "Common IPv6 Challenges" and reviewed accordingly.

- Main changes highlighted in light blue

More on the Main Changes

- Survey on IPv6 Deployment:
    - Widened the section on the survey among Network Operators
    - Reviewed the survey among Enterprises

- Clear distinction between IPv6-only Service Delivery and IPv6-only underlay network deployment

- Improved section on IPv6 underlay network deployment

- Clarification of the Common IPv6 Challenges and identification of the key categories

The Survey on ISPs and Enterprises

- It is quite exhaustive!
- Considering the total number of customers served by these operators, it is a high number (billions!)

- If not exhaustive, why not to propose a wider poll through the v6ops WG?

Common IPv6 Challenges

- **Transition Choices**
  - **Service Providers**: For both fixed and mobile operators the approach is not unique!
  - **Enterprises**: quite late to adopt IPv6
  - **Industrial Internet**: IoT and Industry 4.0 are often mentioned as key driver but adoption is slow.
  - **Cloud and Data Centers**: most CSPs have adopted IPv6 in their internal infrastructure but not yet for external
  - **CPEs and user devices**: most of them are IPv6-enabled but there are exceptions
- **Government and Regulators**: mixed situation. There are countries well ahead and others which are not
- **Network Operations**: how to handle training to staff and network management change
- **Performance**: In some cases IPv6 behaving "worse" than IPv4 in terms of packet loss, delay and customer experience
- **IPv6 security**: to reach the same level of security as it exists nowadays, some aspects need to be taken into account. Issue to be considered are related to the IPv6 associated protocols (e.g. NDP, MLD,…), IPv6 EHs, transition technologies.

Next Steps

- The incentives to IPv6 may still need further thoughts
- Comments and criticism are always welcome

- How to collect further operational input?
- Does it make sense to share this analysis externally?

Thank you!