

IPv6 Deployment Status

draft-v6ops-ipv6-deployment-05

Nalini Elkins (Inside Products)

Giuseppe Fioccola (Huawei)

Sebastien Lourdez (POST Luxembourg)

Jordi Palet Martinez (The IPv6 Company)

Gyan Mishra (Verizon)

Paolo Volpato (Huawei)

Chongfeng Xie (China Telecom)

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Draft History

- Submitted as an individual draft -00 in October 2020
 - Version -01 presented at IETF 109
- In early April 2021 adopted as WG document
 - WG version -00 submitted in April 2021
- Version -02 presented and discussed at IETF 111
- Since then, 3 revisions:
 - Version -03 submitted after IETF 111 to address the comments received
 - Version -04 updated the analytics and did an editorial review after IETF 112
 - Version -05 fixed some remaining comments. Submitted beginning of March
- Thanks to the people who shared comments on the list (Bob Harold, Gabor Lencse, Cong Li, Gyan Mishra, Jordi Palet) and those who discussed offline.

Updates on the Draft

- The draft structure is stable since version -02
 - No new topics added since then
- The edits / changes in versions -04 and -05 were made:
 - To update the IPv6 analytics
 - To avoid the ambiguity of certain terms (i.e. “transition to IPv6” instead of “migration to IPv6”)
 - To expand the base text (e.g. “better describe the behavior of HE” or “add a reference to software”).
- The sections touched by the changes introduced in versions -04 and -05 are highlighted in the next slide.

Draft outline and relevant changes

1. Introduction
2. IPv4 vs IPv6: The Global Picture
 - 2.1. IPv4 Address Exhaustion
 - 2.2. IPv6 Users
 - 2.3. IPv6 Web Content
 - 2.4. IPv4 addresses per capita and IPv6 status
3. A Survey on IPv6 Deployments
 - 3.1. IPv6 Allocations and Networks
 - 3.2. IPv6 among Network Operators
 - 3.3. IPv6 among Enterprises
 - 3.3.1. Government and Universities
 - 3.4. Observations on Industrial Internet
 - 3.5. Observations on Content and Cloud Service Providers
 - 3.6. Application Transition
4. Towards an IPv6 Overlay Service Design
 - 4.1. IPv6 introduction
 - 4.2. IPv6-only Service Delivery
5. IPv6-only Underlay Network Deployment
6. IPv6 Benefits
7. Common IPv6 Challenges
 - 7.1. Transition Choices
 - 7.1.1. Service Providers
 - 7.1.2. Enterprises and Industrial Internet
 - 7.1.3. Cloud and Data Centers
 - 7.1.4. CEs and user devices
 - 7.2. Government and Regulators
 - 7.3. Network Management and Operations
 - 7.4. Performance
 - 7.4.1. IPv6 packet loss and latency
 - 7.4.2. Customer Experience
 - 7.5. IPv6 security
 - 7.5.1. Protocols security issues
 - 7.5.2. IPv6 Extension Headers and Fragmentation
8. Security Considerations
9. Contributors
10. Acknowledgements
11. IANA Considerations
12. References
 - 12.1. Normative References
 - 12.2. Informative References
- Appendix A. Questionnaire and Replies for network operators
- Appendix B. Questionnaire and Replies for enterprises
- Authors' Addresses

Version -04

Version -05

More Specifically

Section	Vers.	Title	Changes
2.2	-04	IPv6 Users	Updated analytics
2.3	-04	IPv6 Web Content	Updated analytics
3.3	-04	IPv6 among Enterprises	Expanded with new analytics
3.3.1	-04	Government and Universities	Expanded with new analytics
3.6.	-05	Application Transition	Expanded text on HE behavior
4.	-05	Towards an IPv6 Overlay Service Design	Clarified that “IPv6 Introduction” and “IPv6-only Service Delivery” are not necessarily phases in time. An operator may choose to directly go to IPv6-only
4.1.	-05	IPv6 Introduction	Removed ambiguity on the “advantages” of Dual-Stack
4.2.	-05	IPv6-only Service Delivery	Corrected a sentence about usage of IPv4 addresses by transition mechanisms
5.	-04	IPv6-only Underlay Network Deployment	Added references on Software Mesh Framework [RFC5565] and draft-ietf-bess-ipv6-only-pe-design
7.3	-04	Network Management and Operations	Reviewed text
7.4.1.	-05	IPv6 Packet Loss and Latency	Removed imprecisions in the use of terms such as “failure rate”, “packet loss”

Next Steps

- The authors believe the draft can move to WG last call
- Comments and feedback welcome

Thank you!