

IPv6 support required for all IP- capable nodes


draft-george-ipv6-required

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Problem statement

- ▶ IETF has remained IP version-agnostic, while other organizations have continued to recommend IPv6 adoption in stronger and stronger terms
 - Our standards *include* both IPv4 and IPv6, but the decision to actually **support** both was left to implementers
- ▶ IANA IPv4 exhaustion has occurred, but IETF has not updated its guidance to implementers
- ▶ Generic term “IP” is vague:
 - mostly means IPv4 only because in the beginning that’s all there was.
 - Sometimes means IPv4 (+ IPv6 eventually/maybe/sorta), usually not IPv4 + IPv6
- ▶ Vendors (especially in the consumer space) *still* view IPv6 as optional

Result

- ▶ New IP capable devices still may not support IPv6
 - Especially bad with long-lifespan/custom devices, mobile devices, Machine-to-Machine, consumer electronics
 - ▶ Existing IP Capable devices unlikely to get software updates to enable IPv6
 - ▶ Delays IPv6 enablement via hardware refresh
 - ▶ Continues adding to installed base of legacy IPv4-only devices that people expect to keep working
 - Drives more NAT44(4) to extend existing IPv4 address resources
 - Perpetuates the vicious cycle between lack of IPv6 users vs. lack of IPv6 content
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Recommendation

- ▶ New IP implementations **MUST** support IPv6.
- ▶ Current IP implementations **SHOULD** support IPv6.
- ▶ IPv6 support **MUST** be equivalent in quality and functionality to IPv4 support.
- ▶ IP Networking implementations **SHOULD** support IPv4 and IPv6 coexistence (dual-stack), but **MUST NOT** require IPv4 for proper and complete function.
- ▶ a best effort **SHOULD** be made to update existing hardware and software to enable IPv6 support.
- ▶ IETF WGs should stop work on IPv4-only protocols except for security updates and transition technologies

But, but, but...

- ▶ People should be replacing devices that don't support IPv6
 - Not all devices attached to a network are under the control/ownership of someone who even knows what IPv6 is (or why they should need it)
- ▶ Vote with your wallet!
 - Only works where vendors know that (lack of) IPv6 support influenced the purchasing decision
 - How would that work with Joe Consumer at \$bigbox_electronicsretailer?
- ▶ This draft won't actually fix anything
 - IETF makes implementation recommendations all of the time. IETF is overdue on formally requiring IPv6 support post-IANA IPv4 exhaust
 - Not moving this draft forward for the above reason would be saying that the IETF's recommendations are irrelevant to implementers
- ▶ Why aren't we just deprecating IPv4?
 - IETF doesn't have a formal "deprecated" status... yet - <http://tools.ietf.org/html/draft-yevstifev-genarea-historic-03#section-2.1>
 - "historical" status implies "no longer in use"
 - Open to a follow-on draft making IPv4 historical, but not yet...

Next Steps

- ▶ Adopt as Int-Area WG draft
 - ▶ Move to WGLC
 - ▶ Comments and suggestions are appreciated!
 - Additional informational references?
 - Additional RFCs that define “IP” that should be updated by this draft?
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