



# Wireline: Incremental IPv6

**draft-kuarsingh-wireline-incremental-ipv6-00**

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# Introduction

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- ▶ Draft-kuarsingh-incremental-ipv6 lays out a phased approach to introducing IPv6 in a Wireline Network
  - ▶ Primary audience would be Cable and other Wireline environments
- ▶ Intended to help operators whom may be just starting out planning a strategy for IPv6 transition and implementation
- ▶ Link to framework document [draft-ietf-v6ops-v4v6tran-framework]
- ▶ Ver. -00 did not have link to RFC6264 but that was suggested
  - ▶ This draft is more specific and sets out a more definitive phase and objectives



# Version -00 and Future Version -01

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- ▶ Current draft -00 is intended to include more information including
  - ▶ Operational conditions which may precede, co-exist with and follow each identified phase
  - ▶ More information on operational considerations for each phase
  - ▶ More information on which technologies were not listed/used and reasoning
  - ▶ Overall link to operational environment progress with relation to which technologies are active at each phase.



# Topics Covered (and maturing)

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- ▶ Motivation
- ▶ Reasons for Phased approach
  - ▶ Relevance of IPv6 and IPv4 in transition
  - ▶ IPv4 Resource challenges
  - ▶ IPv6 Environment Maturity
  - ▶ Impacts to Operators
- ▶ Transition Technology Analysis (very basic for novice)
  - ▶ Auto Tunneling (background)
  - ▶ CGN (NAT44)
  - ▶ 6RD
  - ▶ Native Dual Stack
  - ▶ DS-Lite
  - ▶ Not mentioned (NAT64, dIVI, A+P etc) – reasoning in next rev



# Approach and Rationale

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- ▶ Introduce IPv6 as soon as possible
  - ▶ Use Tunneling if needed due to Customer Prem and/or Access network issues
  - ▶ Assist auto tunneling technologies as best as one can (promotes IPv6 use)
  - ▶ IPv4 still main service, and aligns with network conditions (tools/mgmt etc)
- ▶ Mature to Dual Stack as soon as possible
  - ▶ Use CGN if needed on IPv4 (it's deployable)
  - ▶ IPv4 path still independent so less impact to tools, procedures and troubleshooting (environment maturing)
- ▶ Optimize IPv4 environment
  - ▶ Move to tunneled IPv4
- ▶ Keep the most traffic off transition technologies!
- ▶ Transition techs are “auxiliary paths”, “assist paths”
- ▶ Relays, translators etc – are engineering and management challenges so use them as little as possible
- ▶ Use Dual stack phase to move the build of content and services to IPv6

# Transition Phases

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## ▶ Phase 0

- ▶ Foundational Items (routing, policy, security, transition architecture)
  - ▶ Will be expanded in rev -01 with far more detail and operational considerations and input

## ▶ Phase 1 (Tunneling)

- ▶ Managed/Assist Auto-Tunneling (6to4, Teredo)
- ▶ Introduce 6RD as early option
- ▶ Most tools on Ipv4, main capabilities (content to be added)

## ▶ Phase 2 (Native Dual Stack)

- ▶ Mature IPv6 environment, add in CGN if needed
- ▶ Mature IPv6 tools, capabilities, operational proceeds

## ▶ Phase 3 (Tunneled IPv4)

- ▶ IPv6 now mature, services on IPv6 now (for the part)
  - ▶ Optimize IPv4 (if resourced challenged or if desired)
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# Next Steps

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- ▶ Interest and/or value in such a document?
- ▶ WG Document?

