Advancing IP Interconnection NPRM

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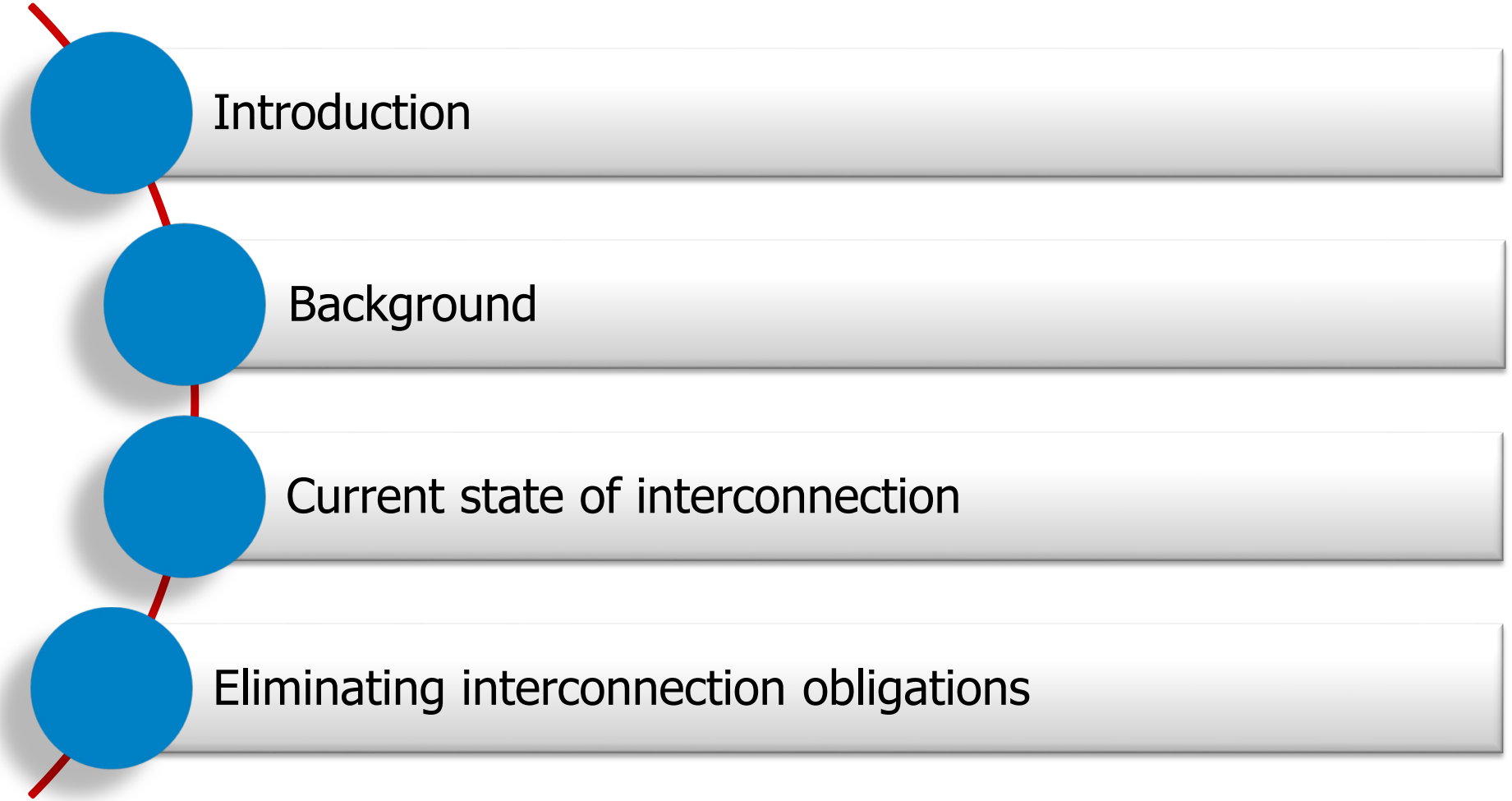
Agenda



Agenda

- Regulatory framework for interconnection of IP voice
- FCC authority over VoIP interconnection
- Cost benefit analysis
- Conclusion

Introduction

- Notice of proposed rulemaking FCC 25-73
  - WC Docket No. 25-304, Advancing IP Interconnection
  - WC Docket No. 25-208, Accelerating Network Modernization
  - WC Docket No. 17-97, Call Authentication Trust Anchor
- Adopted Oct. 28, 2025, and released Oct. 29, 2025
  - Has not yet been published in Federal Register
- Comments cycle is 30 days after published in Federal Register
- Reply comments cycle is 30 days after comments cycle

Introduction

- NPRM is designed with the following goals:
  - Seeks comment on the current state of time division multiplexing and Internet Protocol interconnection for voice services
  - Proposes forbearance from interconnection and related ILEC obligations
  - Seeks comment on impact of eliminating interconnection regulatory framework and what, if any, IP interconnection regulatory framework should replace it
  - Seeks comment on transition to all-IP interconnection while maintaining public safety and consumer protection
  - Hints at future proceedings impacting tariffing and access charge requirements

Introduction
What is driving this?

- FCC's desire to accelerate transition from TDM to IP-based voice networks for ILECs
  - 74.5% of residential service and 80.2% of business wireline voice service is IP-based as of June 2024 (May 2025 Voice Telephone Services Report)
  - With widespread adoption of IP-based technology, the FCC asserts current TDM interconnection framework for voice is delaying next-generation network growth
- Build on FCC efforts to transition to next-generation communications networks
  - Accelerating network modernization (40 FCC Rcd 4382)
  - Proposing several actions to reduce regulatory barriers that hinder the transition to all-IP networks by preventing investment and deployment of next-generation networks (FCC 25-37)

Background

- Interconnection rules
- Incongruencies in the interconnection environment
- Need for IP network technology

https://complainthub.org

Background
Interconnection rules

- Section 201(a) requires every common carrier to provide the service upon reasonable request and to establish physical connections with other carriers
- Section 251 of the 1996 Act set up interconnection requirements to foster competition
- Section 251(c) sets the obligations for ILECs that, prior to the 1996 Act, had little to no competition, such as negotiating in good faith and providing quality interconnection at just and equitable rates

https://www.graduateprogram.org

Background
Incongruencies in the interconnection environment

- Telecommunications Act of 1996 was designed to convey duty for all carriers to interconnect, but Section 251(c) only applied to ILECs
  - When passed by Congress, 99.7% of local telephone service was controlled by ILECs, so the assumption was that all carriers would be under Section 251(c)
  - Today, ILEC switched access lines represent only 3.1% of voice telephone services
- The act also conveys interconnected VoIP can be a service that begins and ends in the public switched telephone network. Therefore, VoIP can be used in both TDM and IP networks, which means networks are often hybrid, converting between two types of technology

Background
Need for IP network technology

- Voice networks have changed considerably since 1996 with migration from TDM to VoIP
- FCC has pushed for an all-IP network that supports voice, video and data
- An all-IP network has advantages over legacy TDM networks
- Migration has created more competition in services provided
- IP networks promote public safety

https://webtrendz.nz

Background
Need for IP network technology

- Because Section 251(c)(2) still focuses on statutory obligations to interconnect with a legacy, circuit-switched infrastructure
  - Consumers have been unable to get the full benefit of IP network technologies
  - Many ILECs have been maintaining parallel TDM and IP networks to meet rules while meeting customers' needs, which creates inefficiencies and additional costs
  - TDM maintenance has become more difficult with obsolete services, minimal parts and fewer technicians available to do the work
- TDM networks make the public more susceptible to illegal robocalls, unlike the STIR/SHAKEN framework based on an IP network

Current state of interconnection
TDM interconnection for voice

- FCC seeks comment on current arrangements for TDM interconnection for voice services
  - What TDM-based arrangements remain by all types of providers?
  - What carriers are still employing TDM-based interconnection, for what services, and are IP-based providers still required to interconnect with ILECs in TDM even when traffic originates or terminates in IP?
  - Where does TDM interconnection actually occur? Where are these TDM point of interfaces located within the network, how are they geographically distributed?

Current state of interconnection
TDM interconnection for voice

- FCC seeks comment on current arrangements for TDM interconnection for voice services (cont.)
  - What are the operational or financial impacts of TDM interconnection arrangements on competitive carriers, particularly rural and small LECs, and those that have already transitioned to all-IP networks?
  - What is the volume of voice traffic still transiting legacy TDM networks?
  - Describe the technical, financial and regulatory factors that account for the persistence of TDM architectures in the nation's networks

Current state of interconnection
IP interconnection for voice

- FCC seeks comment on current arrangements for IP interconnection for voice services
  - Current carrier practices and arrangements for IP-to-IP interconnection for voice
  - The current network architecture underlying IP interconnection for interconnected VoIP services and how it has evolved
  - The costs associated with interconnecting directly over IP compared to exchanging voice traffic over existing internet connections and what protocols and quality-of-service mechanisms ensure voice quality
  - How do interconnection practices vary by size, type of provider and network technology and do small or rural ILECs offer direct IP interconnection at the same frequency as larger ILECs?

Current state of interconnection
IP interconnection for voice

- FCC seeks comment on current arrangements for IP interconnection for voice services (cont.)
  - What are the types and number of IP interconnection agreements for interconnected VoIP service that exist today, and how do parties to those agreements treat technical and financial issues?
  - Where is interconnection for interconnected VoIP traffic happening today and between which types of carriers? It noted one industry report notes national carriers have negotiated traffic exchange at a small number of POIs, such as carrier hotels, rather than on a per-LATA basis. Is this the current trend?
  - What is the effect of its recent efforts to facilitate the NG911 transition on current IP interconnection arrangements and the role of TDM architecture during the NG911 transition?

Eliminating interconnection obligations
Effects on transitioning to an all-IP network

- FCC seeks comment on the financial impacts of abiding by the current interconnection obligations
  - What are the costs to ILECs of complying with sections 251(c)(2) and (c)(6) of the act and its rules implementing those provisions, sections 51.305 (rules for interconnection), 51.321 (UNE interconnection) and 51.323 (collocation standards), and their impact on the IP transition?
  - What kinds of expenses (capital, operating or otherwise) do the additional interconnection mandates found in Section 251(c) of the act impose, and what burdens do carriers, particularly small and rural carriers, face because of Section 251(c)'s requirements?

Eliminating interconnection obligations
Forbearance

- FCC proposes to forbear as of the adopted sunset date from the following:
  - Section 251(c)(2) and Section 251(c)(6) to the extent it requires ILECs to provide for physical collocation of interconnection equipment, and eliminate its rules implementing those statutory provisions
- Seeks comment to what extent it should forbear Section 251(c), how it should modify the rules and steps to mitigate potential harm to critical infrastructure services that may result from forbearance
- Seeks comment on whether ILECs continue to have the ability or incentive to engage in practices associated with monopoly power with respect to voice service and whether it is still necessary to differentiate ILECs from other carriers for interconnection

Eliminating interconnection obligations
Forbearance

- Seeks comment as to whether the forbearance ensures practices are just and reasonable, ensures protection of the consumers, is consistent with the public interest and if it would free up resources for development and deployment of next-generation networks. Also, does the act distort the market by unnecessarily shifting costs toward ILECs instead of allowing parties to negotiate interconnection agreements?
- Seeks comment on whether it should forbear from Section 251(c)(2) entirely or whether it should only partially forbear to the extent that Section 251(c)(2) imposes obligations on ILECs interconnecting in TDM, specifically
- Seeks comment on how it should address its implementing rules considering the proposed forbearance. It asked if it could delete sections 51.305, 51.321 and 51.323 outright

Eliminating interconnection obligations
Forbearance

- Seeks comment on whether forbearing from the interconnection and collocation requirements in sections 251(c)(2) and 251(c)(6) create any risk of interruptions to 911 service
- Seeks comment on how it can avoid any harm to critical infrastructure services in forbearing from interconnection and collocation obligations specific to ILECs
- Section 10(d) of the act requires the FCC to determine whether the requirements in Section 251(c) of the act have been fully implemented before forbearing from its provisions. The FCC said Section 251(c) of the act has been fully implemented and seeks comment on this view

Eliminating interconnection obligations
Establishing a date certain

- FCC proposes the forbearance of the aforementioned interconnection obligations to have a sunset date of the rules to be Dec. 31, 2028
- Seeks comment on the cost and benefits of establishing the sunset date as Dec. 31, 2028
- Seeks comment on what changes carriers will need to make to their networks prior to the proposed date of Dec. 31, 2028, for forbearance, including what steps small and rural carriers need to take and the associated costs
- Seeks comment on whether and how setting Dec. 31, 2028, as the sunset date would impact other timeframes of implementations, such as NG911, caller ID authentication and technology transitions

Eliminating interconnection obligations
Rules and frameworks affected by eliminations

- Seeks comment on whether forbearing from sections 251(c)(2) and 251(c)(6) and eliminating the rules would require updating other rules or statutory frameworks
- In the event that it grants relief from ILEC-specific interconnection obligations, are there any changes necessary to the definition of interconnected VoIP?
- Seeks comment on any other rules or sections of the act that might be rendered obsolete or redundant by the elimination of ILEC-specific interconnection obligations. It asked commenters to identify any provisions that should be updated or clarified, or from which it should forbear
- FCC intends to address issues related to tariffing and access charge requirements stemming from the TDM framework in separate future items

Regulatory framework for interconnection of IP voice

- Seeks comment on whether and how it should modify its regulatory framework for interconnection to account for IP voice services. It seeks comment on whether there has been any demonstrated need for FCC intervention
- Asked whether the regulatory framework established for traffic exchange under Section 251(a) continues to make sense for IP-to-IP interconnection for voice services, or should it more closely resemble the light-touch regulatory approach taken in other areas, including internet traffic exchange

https://venturecafephoenix.org

Regulatory framework for interconnection of IP voice
Scope of traffic and services

- Seeks comment on scope of traffic and services a framework specific to IP-to-IP interconnection for voice traffic should encompass
- Seeks comment on whether any such regulatory framework should distinguish between different types of carriers (e.g., ILECs, rural LECs, CLECs)

https://networkip.net

Regulatory framework for interconnection of IP voice
Duties for interconnection

- Seeks comment on whether it should adopt rules to require carriers to interconnect in IP, specifically for voice traffic
  - Asked if it should mandate carriers provide direct IP-to-IP interconnection, or require IP-to-IP interconnection but permit carriers to do so indirectly
- Seeks comment on whether it should impose certain baseline requirements, such as particular terms and conditions, on IP-to-IP interconnection agreements
- Seeks comment on whether it should impose additional or specific requirements for IP-to-IP interconnection for voice service related to a carrier's duty to negotiate in good faith

Regulatory framework for interconnection of IP voice
Other considerations

- Seeks comment on whether it should determine POIs for VoIP in an all-IP world, and if so, how it would do so. Then, could or should the FCC require POIs in each state, region or tandem, or at certain technically feasible points
- Seeks comment on whether it can and should encourage the exchange of IP voice traffic over the public internet

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Regulatory framework for interconnection of IP voice
Other considerations

- Seeks comment on what role states should play, if any, in VoIP interconnection and on the landscape of state regulation of IP-to-IP interconnection today
  - Has any state role been necessary for the establishment of IP interconnection agreements for voice traffic to date?
  - What role should the FCC play in overseeing any state regulation of VoIP interconnection?
  - Have state actions with respect to VoIP interconnection been consistent with federal policy?

FCC authority over VoIP interconnection

- Seeks comment on the best authority under which it could or should adopt rules or requirements to govern IP interconnection for voice services, if necessary
- FCC has not determined yet the following under sections 201 and 251:
  - If VoIP providers are telecommunications carriers
  - VoIP services (including interconnected VoIP) are telecommunications services or information services
  - VoIP services constitute telephone exchange service or exchange access

FCC authority over VoIP interconnection

- FCC has not determined yet the following under sections 201 and 251 (cont.):
  - If it could require providers of voice service to interconnect in IP under Section 251(a) and could it rely on Section 251(a)(1) to require IP interconnection between facilities-based interconnected VoIP providers that have not been classified as either a telecommunications service or an information service under the act
  - Whether Section 251(a) provides the FCC authority to adopt rules, if necessary, requiring providers of voice service to make interconnection arrangements for the exchange of voice traffic in IP, and to negotiate good faith arrangements for the same
  - Whether providers of interconnected VoIP service are or could be telecommunications carriers (or common carriers)

FCC authority over VoIP interconnection

- While the FCC has not affirmatively classified all VoIP offerings as either a telecommunications service or information service, it has recognized providers may elect to offer interconnected VoIP as a telecommunications service. This affirms the current treatment of interconnected VoIP is appropriate
- Seeks comment on whether it must classify all interconnected VoIP as a telecommunications service to regulate interconnected VoIP providers as telecommunications carriers
- Seeks comments on whether sections 201, 251(c)(2), 256 and 227b on interconnection will still be sufficient to provide authority to address IP interconnection obligations and IP-to-IP interconnection

FCC authority over VoIP interconnection
Ancillary authority

- Seeks comment whether it can rely upon ancillary authority as a basis for an IP interconnection regulatory framework (e.g., Title II obligations)
  - Seeks comment whether any requirements it might adopt to regulate interconnected VoIP interconnection would be reasonably ancillary to the FCC's exercise of its authority under a statutory provision or other authority
  - Alternatively, it seeks comment on whether it should adopt regulations pertaining to interconnection for VoIP services by relying on ancillary authority in conjunction with its authority under Section 254 (universal service)

https://www.thebluediamondgallery.com/

FCC authority over VoIP interconnection
Other sources of authority

- Seeks comment on any other sources of FCC authority for adopting a policy framework for IP interconnection for interconnected voice services
  - What would be the scope and substance of the FCC's authority to address IP interconnection under that authority?

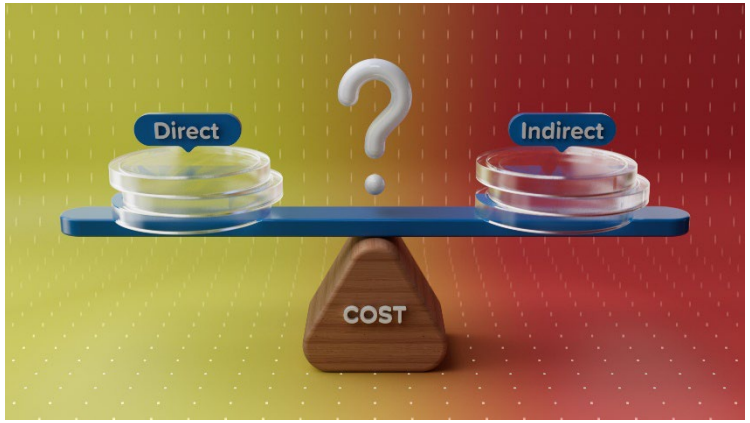
https://foto.wuestenigel.com

Cost benefit analysis
Benefits

- Seeks comment on the benefits of forbearing from its specific interconnection obligations for ILECs and on any potential regulatory framework for IP interconnection
  - What regulatory costs will ILECs avoid because of such deregulation?
  - What effect would the absence of FCC intervention have on market competition?
  - What impact could the other proposals have on competition?
  - Does the FCC's current interconnection regime promote anticompetitive conduct, and would its elimination promote affordability of voice services or improved service offerings?
  - How might small and rural carriers and their customers benefit?

Cost benefit analysis
Costs

- Seeks comment on the extent of any costs that may result from the elimination of its additional interconnection rules for ILECs, including for competitive and rural providers and their customers
- Seeks comment on whether there are any technical or policy issues the FCC should be aware of that could arise as carriers transition from TDM to IP because of the proposals



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Conclusion

- There are a lot of moving parts related to interconnection, collectively seen through the NPRM
- Key takeaways – the FCC is seeking the following:
  - Comments on the current status of TDM interconnection for voice services
  - Comments on the current status of IP interconnection for voice services
  - Comments on elimination of interconnection obligations, known as forbearance, under Section 251(c)(2) to transition to an all-IP network
  - Comments on establishing a sunset date for the rules as Dec. 31, 2028
  - Comments on what the regulatory framework could be for IP voice services

Conclusion

- Key takeaways – the FCC is seeking the following (cont.):
  - Comments on the FCC's authority to govern IP interconnection for voice services
    - Including how it should define VoIP providers
  - Comments on a cost benefit analysis of moving from a TDM-based network to an IP-based network for voice services
  - Comments cycle is 30 days after published in Federal Register
  - Reply comments cycle is 30 days after comments cycle

thank you!

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Acronyms

- A-CAM — Alternative Connect America Cost Model
- BDS — Business Data Services
- CAF BLS — Connect America Fund Broadband Loop Support
- CAF ICC — Connect America Fund Intercarrier Compensation
- DS3 — Digital Signal Level 3
- DS1 — Digital Signal Level 1
- EA-CAM — Enhanced Alternative Connect America Cost Model
- FCC — Federal Communications Commission
- FNPRM — Further Notice of Proposed Rulemaking
- ILEC — Incumbent Local Exchange Carrier
- IP — Internet Protocol
- LEC — Local Exchange Carrier
- NECA — National Exchange Carrier Association
- NG911 — Next-Generation 911

Acronyms

NPRM	Notice of Proposed Rulemaking
OC3	Optical Carrier 3
POI	Point of Interface/Interconnection
Rcd	Record
RoR	Rate of Return
RRQ	Revenue Requirement
SPA	Special Access
STIR/SHAKEN	Secure Telephone Identity Revisited/Signature-based Handling of Asserted Information Using Tokens
SWA	Switched Access
TDM	Time Division Multiplexing
TS	Traffic Sensitive
UNE	Unbundled Network Elements
VoIP	Voice over Internet Protocol
WCB	Wireline Competition Bureau