



Preparing for SHAKEN in Canada

9 June 2021

Presenters





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The SIP School – Promo Code TN10





The Problem!
 Caller ID Spoofing
 STIR/SHAKEN and what it promises
 PASSporTs and the Identity Header
 the STIR/SHAKEN Architecture
 Certificate Management
 Attestation levels
 Verstat or Verification Status
 Authentication and
 Enterprises and getting an 'A'

Delegate Certificates and other solutions
 Rich Call Data
 International STIR/SHAKEN
 Out of Band STIR/SHAKEN
 Call Diversion

Scams and illegal Robocalls	STIR/SHAKEN
It will reach you at some point!	Standards Standards Standards

Call Analytics
 The June 30th deadline!
 The Law
 Robocall Mitigation plans
 Traceback and the Industry Traceback Group

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Poll Question

What stage of progress are you at in deploying SHAKEN?

- Haven't started
- Selecting vendors
- In trial and testing
- Live in production
- We cannot implement SHAKEN because we do not have access to telephone numbers
- Not a telephone service provider

About TransNexus

- Serving Voice Providers since 1997
- Least Cost Routing, Toll Fraud Control, TDoS and Robocall Prevention
- SHAKEN and Robocall Mitigation
 - 2017 Aug Second company to pass the ATIS SHAKEN test bed
 - 2019 May Implemented SHAKEN in Production
 - 2019 Dec First certified SHAKEN Certificate Authority
 - 2020 Jan Authorized SHAKEN vendor by Policy Administrator
- Active Contributor to ATIS SHAKEN Standards

Agenda

1. CRTC 2021-123
2. US Robocall Mitigation Requirements
3. New Robocall threat and new solutions
 - Cross Border SHAKEN
 - SHAKEN for TDM
4. Questions and Answers

CRTC 2021 - 123 Decision

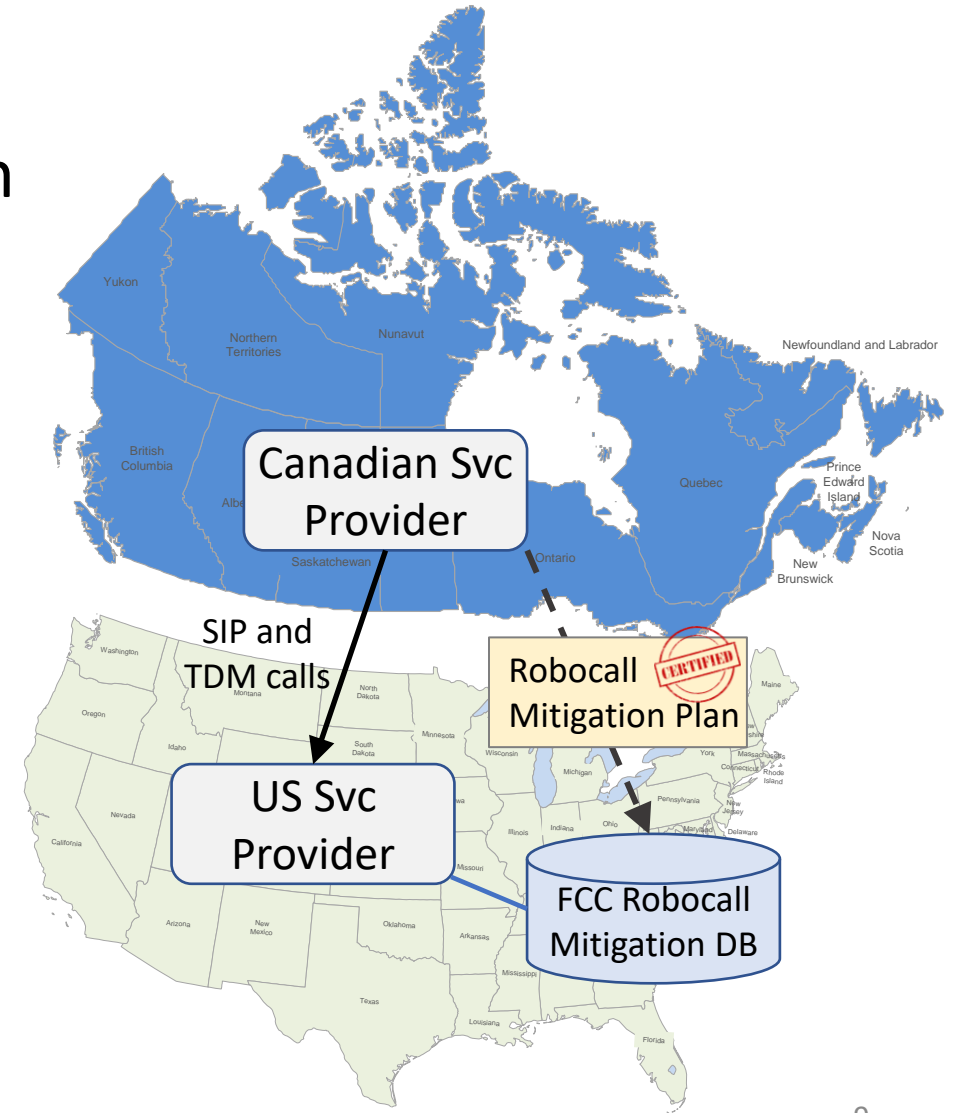
- Only applies to service providers with access to telephone numbers
 - Pending Part 1 application (21 Dec 2020) may expand SHAKEN to all service providers
- 30 Nov 2021 - SHAKEN required for all IP voice calls
- 31 Aug 2021 – Readiness Assessment Report (Appendix 1)
 - Statistics
 - % of all voice trunks SHAKEN enabled
 - Monthly % of all calls with SHAKEN Authentication
 - Attestation of calls delivered to customers: A, B, C or no attestation
 - Status and Description
 - Intra and inter-network calls
 - Call analytics and verstat delivery to end users
 - Diverted calls, toll-free calls, emergency calls, legitimate spoofed calls

STIR/SHAKEN Guidelines Version 1.0

- Guidelines will be published by CRTC Industry Steering Committee (CISC) – [Network Services Working Group](#)
- Key points
 - Attestation use cases
 - A = Full Trust (calling number assigned in the switch)
 - B = Partial Trust (calls from a SIP trunk to an enterprise)
 - C = No Trust
 - Intra-network calls can use Attestation tagging instead of SHAKEN
 - Inter-network calls require the originating service provider to authenticate each call with a SHAKEN PASSporT
 - Call Forwarding use cases

US Robocall Mitigation Requirements

- All service providers, originating calls with US calling numbers, must certify their robocall mitigation plan with the FCC by 30 June 2021. Includes foreign providers.
- US providers must block calls from any provider not certified in the [FCC Robocall Mitigation database](#)
- Blocking starts on 28 September 2021
- Only applies to calls with US Calling Numbers



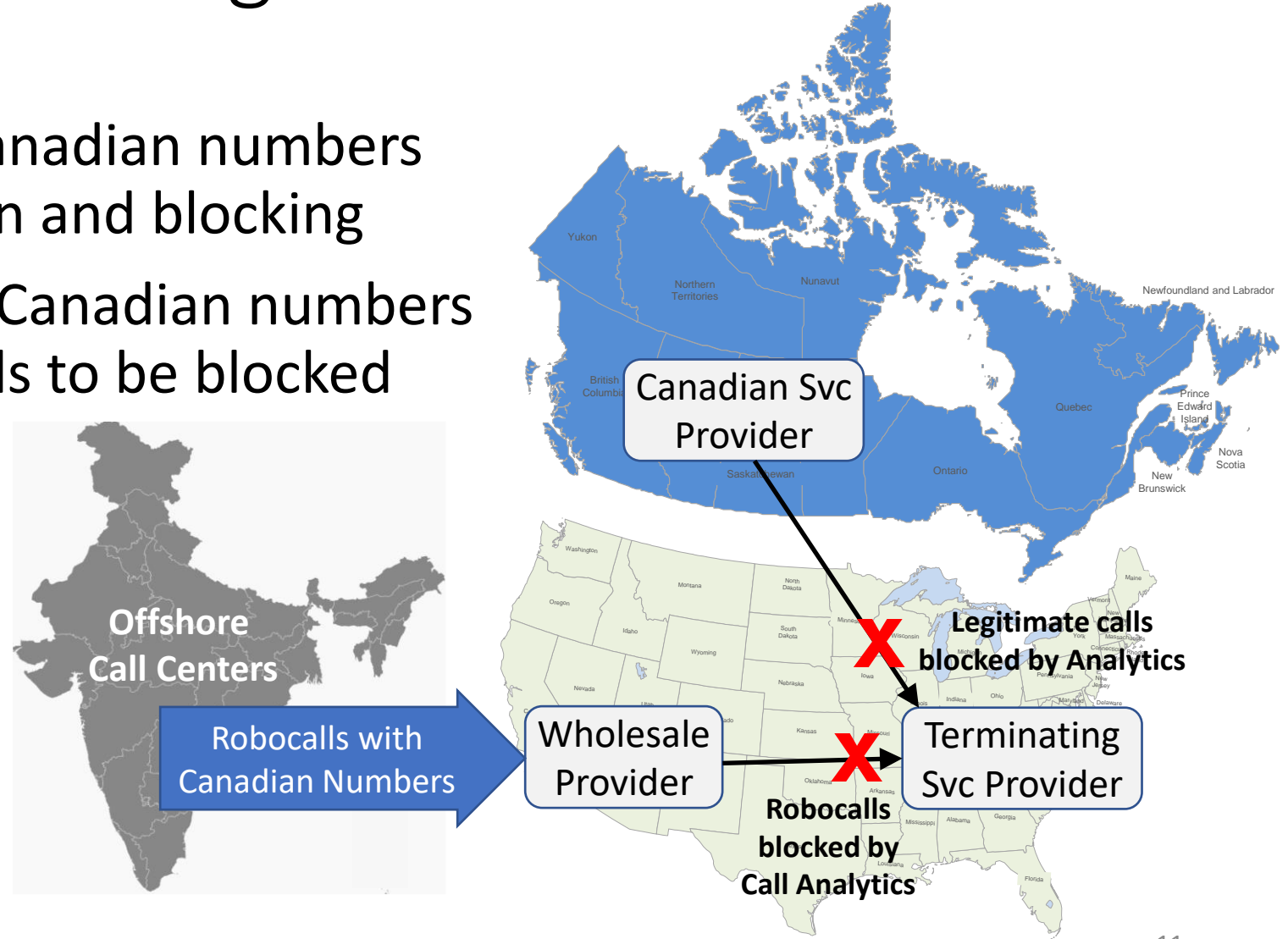
Foreign Companies certified with the FCC

- On 6 June 2021, 15 foreign service providers had certified their robocall mitigation plans with the FCC in the US.
- Five are Canadian service providers

Company	Location	Website
VOIP.ms	Terrebonne, QC	www.voip.ms
Compass Inc.	Toronto, ON	compass-inc.net
Teleglobe Canada	Montreal, QC	www.tatacommunications.com
Mash Telecom Inc.	Montreal, QC	mashtelecom.com
ProComm365 Technologies Inc.	Richmond, BC	procomm365.com

Robocallers are shifting to Canadian Numbers

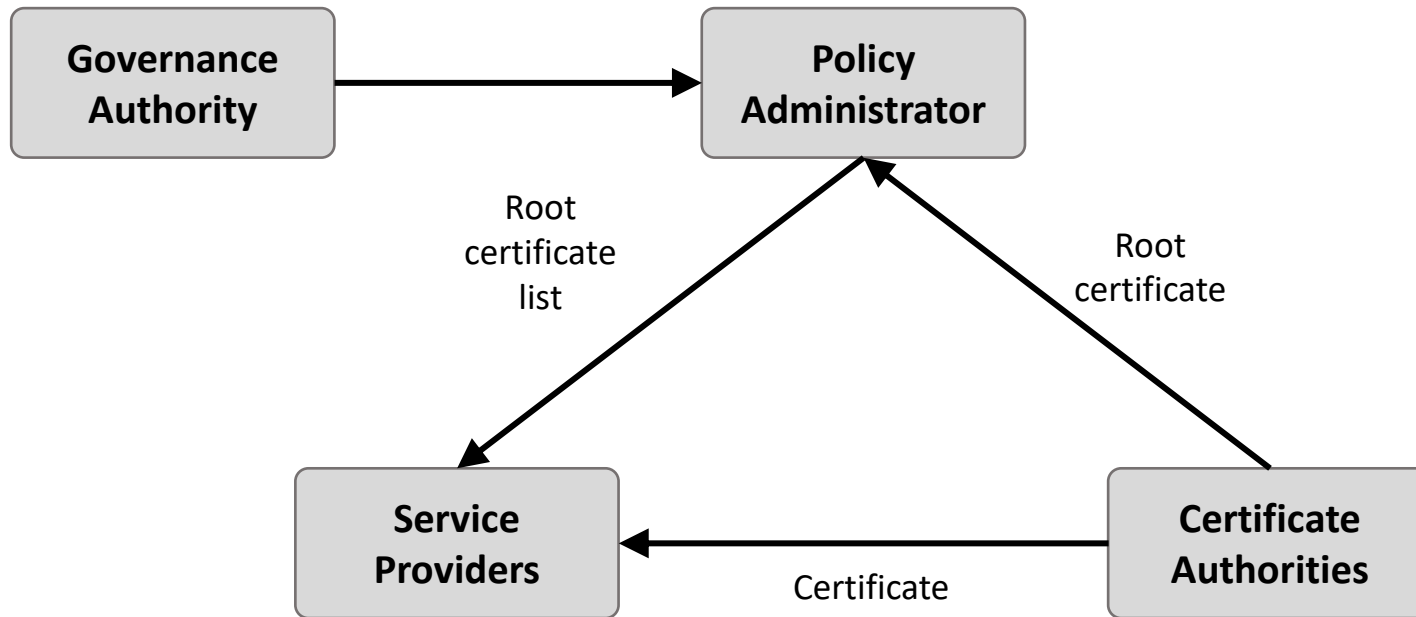
- Robocallers are using Canadian numbers to avoid FCC certification and blocking
- Robocalls with spoofed Canadian numbers will cause legitimate calls to be blocked
- Situation will get worse as SHAKEN adoption increases in the US
- Extensions to SHAKEN standard will fix this problem



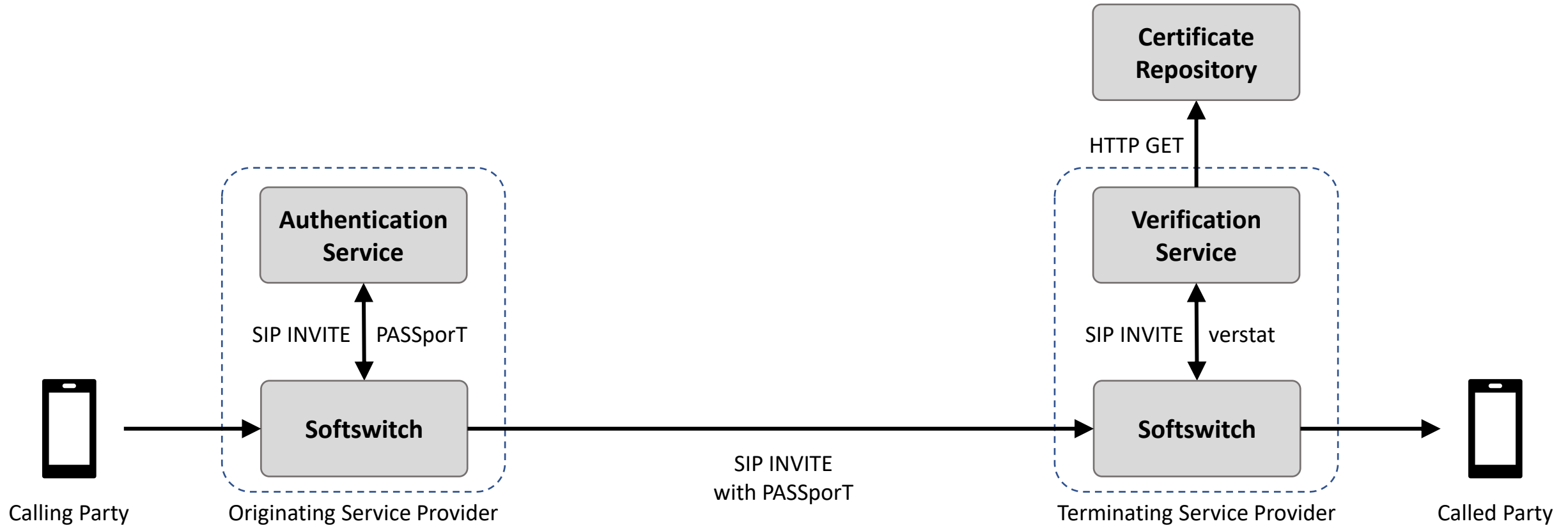
New SHAKEN Standards

- SHAKEN for TDM
 - In ISUP signaling (point to point)
 - Out-of-Band (end to end)
- Cross Border SHAKEN

SHAKEN Trust Model



SHAKEN Call Flow



SHAKEN PASSporT

Header

```
"alg": "ES256"  
"typ": "passport"  
"ppt": "shaken"  
"x5u": "https://certificates.clearip.com/4a8eb5-461b.crt"
```

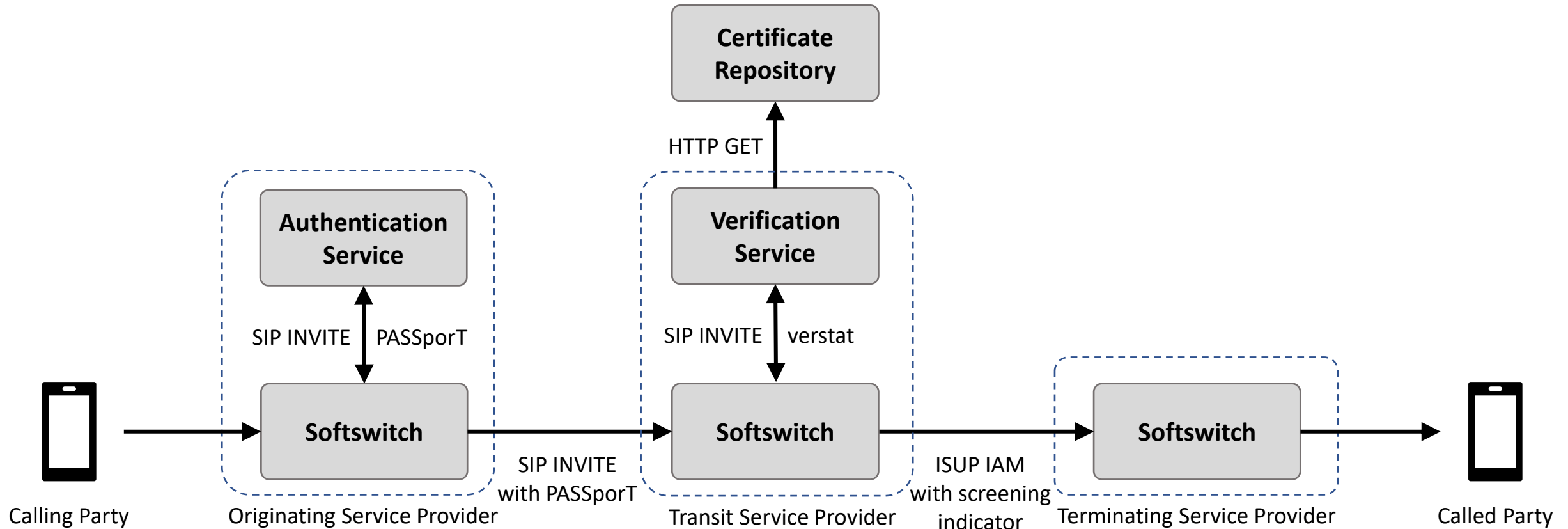
Payload

```
"iat": 1529071382  
"dest": { "tn": [ "14695858065" ] }  
"orig": { "tn": "12013776051" }  
"attest": "A"  
"origid": "4aec94e2-508c-4c1c-907b-3737bac0a80e"
```


Extending SHAKEN over TDM

- Extending SHAKEN over TDM enables the attestation level to be passed for calls that use TDM signaling or TDM switches
- The attestation level is transmitted in the ISUP screening indicator parameter
- Requires transitive trust
- Great for individual interconnects, difficult to scale globally

Extending SHAKEN over TDM Call Flow



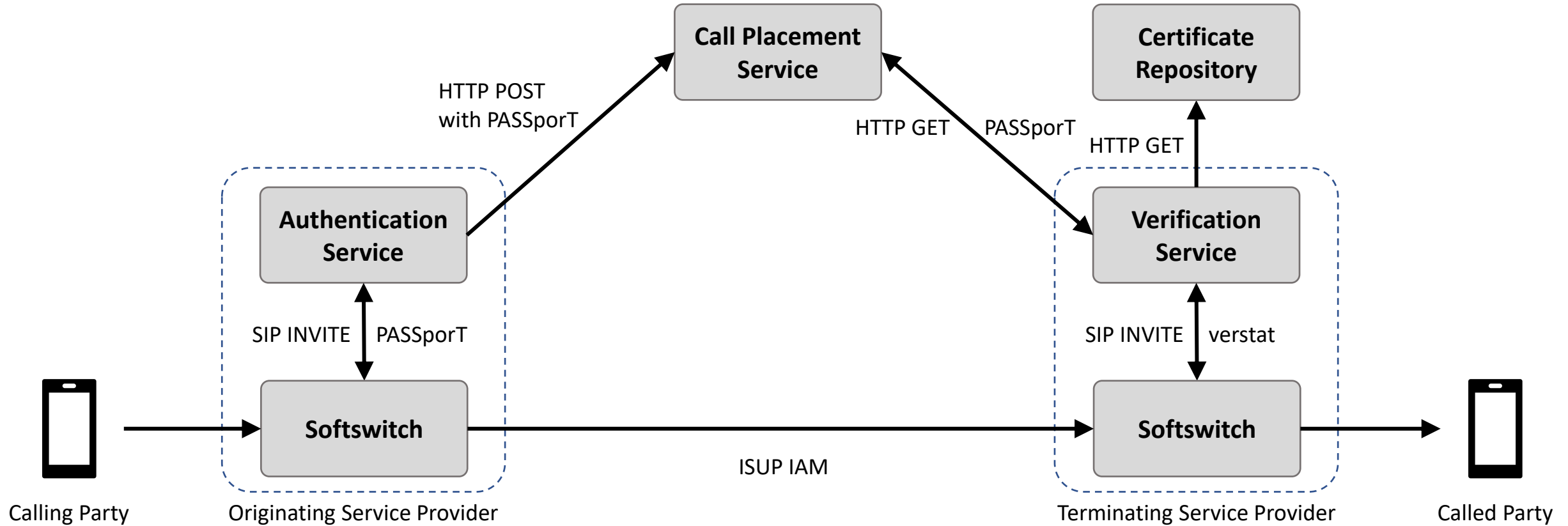
Out-of-Band SHAKEN

- Out-of-Band SHAKEN enables SHAKEN for calls that use TDM signaling or TDM switches
- The normal SHAKEN PASSporT is transported over the internet for the portions of the call flow that use TDM
- Small addition to the existing SHAKEN functions

Out-of-Band SHAKEN History

- July 2013: Secure Caller-ID Fallback Mode proposed in IETF
- July 2017: STIR Out of Band Architecture and Use Cases proposed in IETF
- May 2019: TransNexus customers using Out-of-Band STIR in production
- March 2020: Out-of-Band STIR for Service Providers proposed in IETF
- May 2020: SHAKEN: Out-of-Band PASSporT Transmission Involving TDM Networks proposed in PTSC Non-IP Call Authentication Task Force
- December 2020: TransNexus customers using Out-of-Band SHAKEN in production
- February 2021: STIR Out of Band Architecture and Use Cases became IETF RFC
- March 2021: SHAKEN: Out-of-Band PASSporT Transmission Involving TDM Networks completed
- June 2021: SHAKEN: Out-of-Band PASSporT Transmission Involving TDM Networks letter ballot period ends

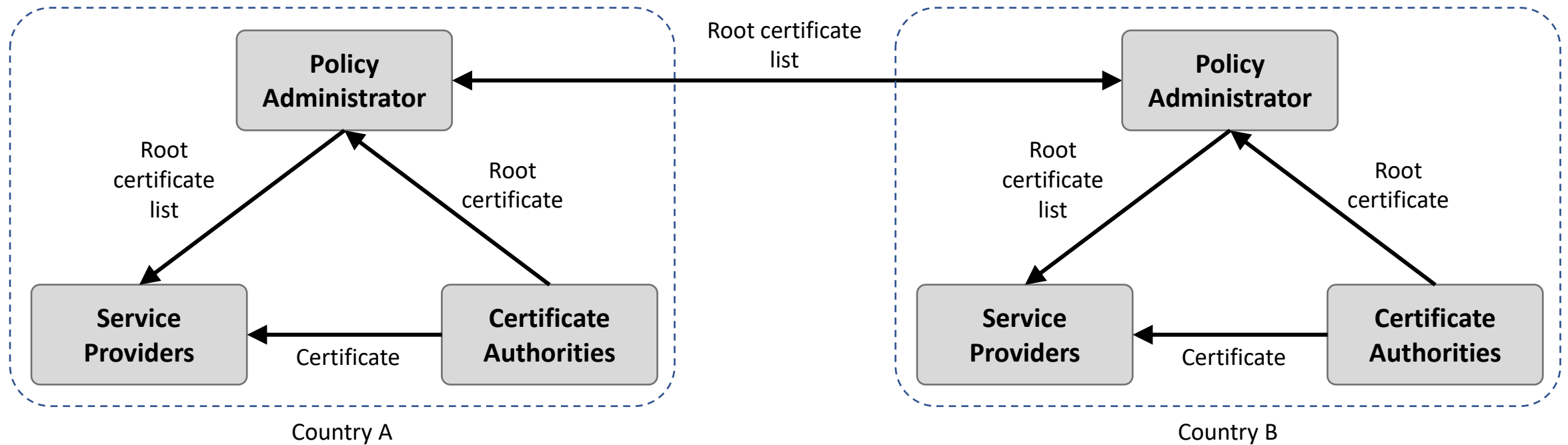
Out-of-Band SHAKEN Call Flow



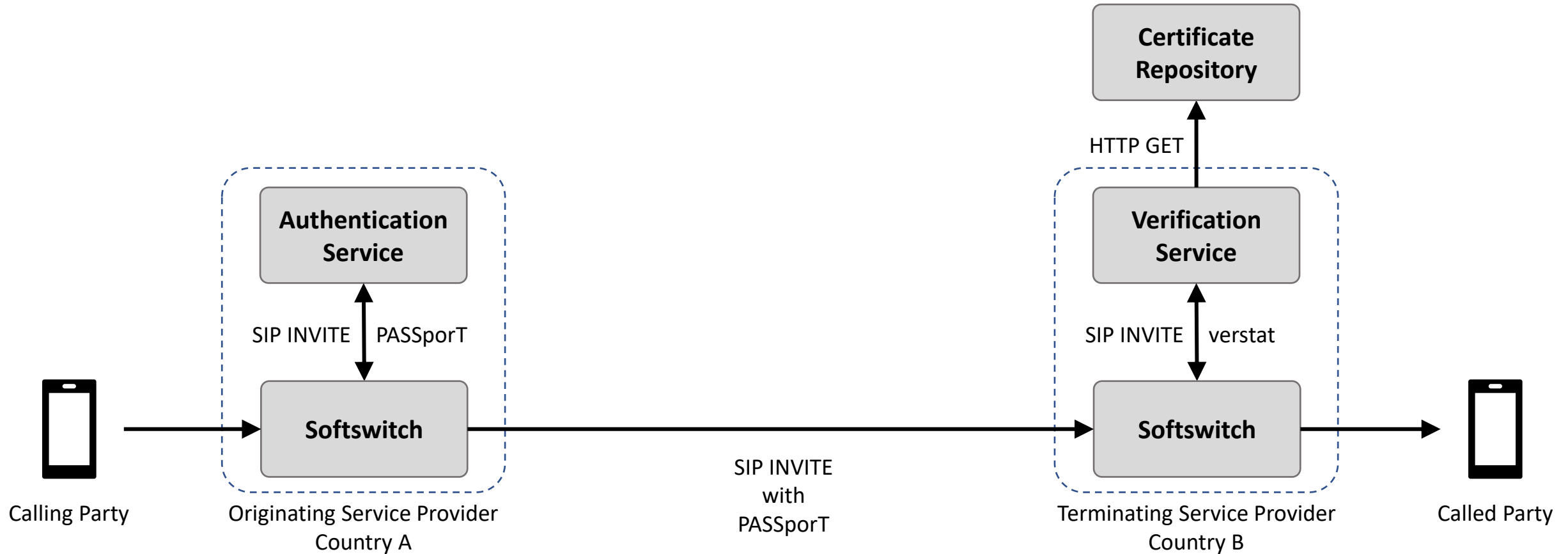
Cross Border SHAKEN

- Each country operates their own Governance Authority and Policy Administrator
- Each Certificate Authority operates in a single country
- The Policy Administrators of each country exchange root certificate lists

Cross Border SHAKEN Trust Model



Cross Border SHAKEN Call Flow



Poll Question

Have you filed a robocall mitigation certification with the FCC?

- Haven't started
- Working on it
- Yes, we have filed
- Didn't know about this requirement
- We do not originate calls with US calling numbers

Questions and Answers

- You will receive an e-mail with a link to the webinar slides.
- For more information contact:
 - info@transnexus.com
 - 1-404-526-6060