

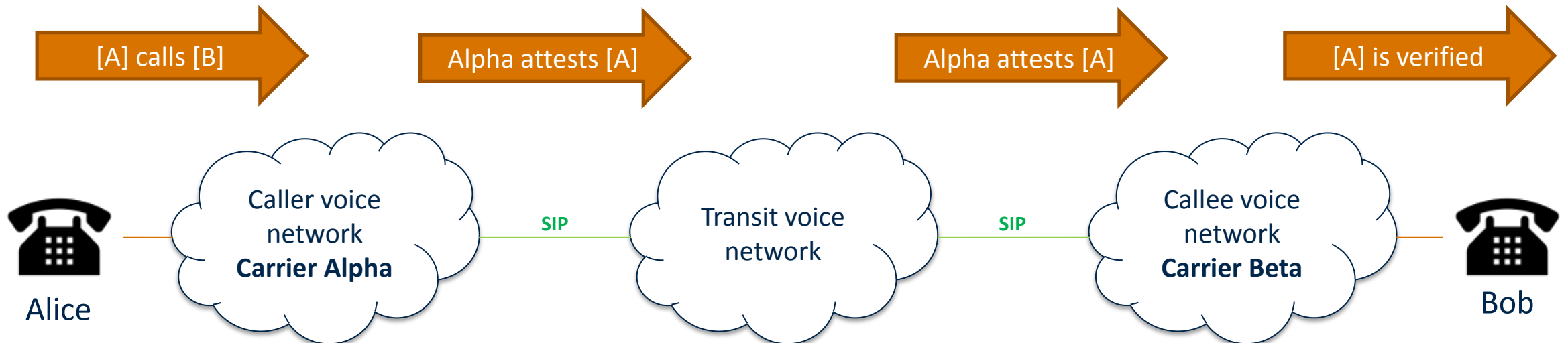
Voice Network Integration for SHAKEN

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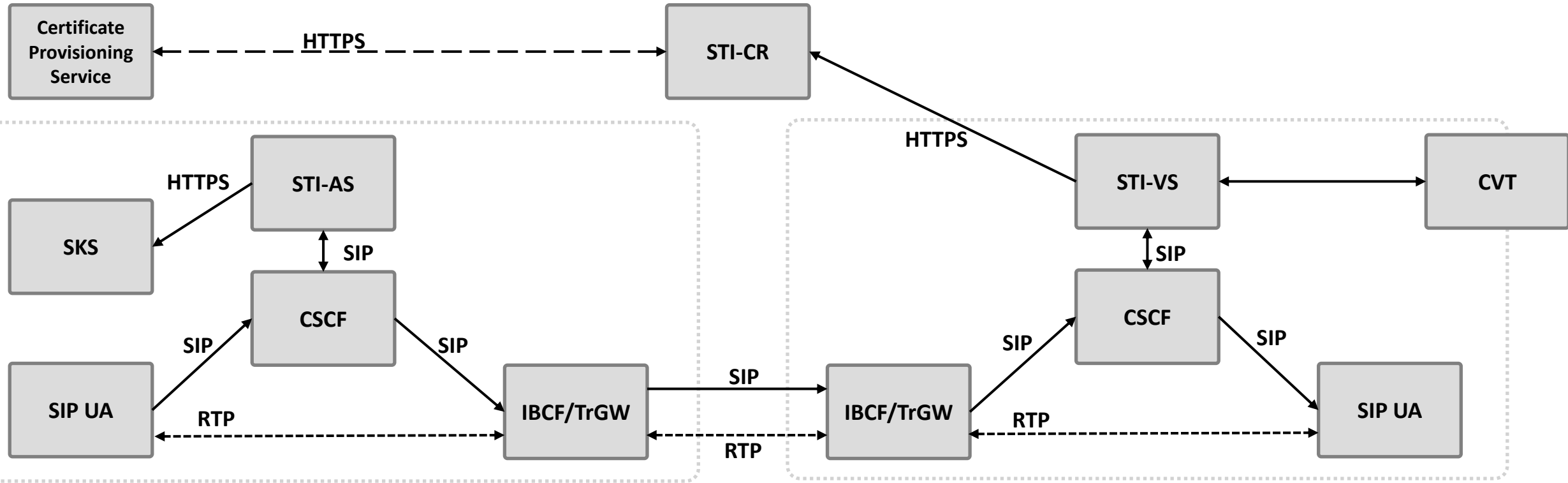
Voice design challenge

- Use the SHAKEN framework to
 - Attest to the trust in the caller identity
 - Provide an origination identifier
- Facilitated by the new SIP **Identity** header, carrying a cryptographically signed token called the **PASSport**



Reference Architecture

ATIS-1000074

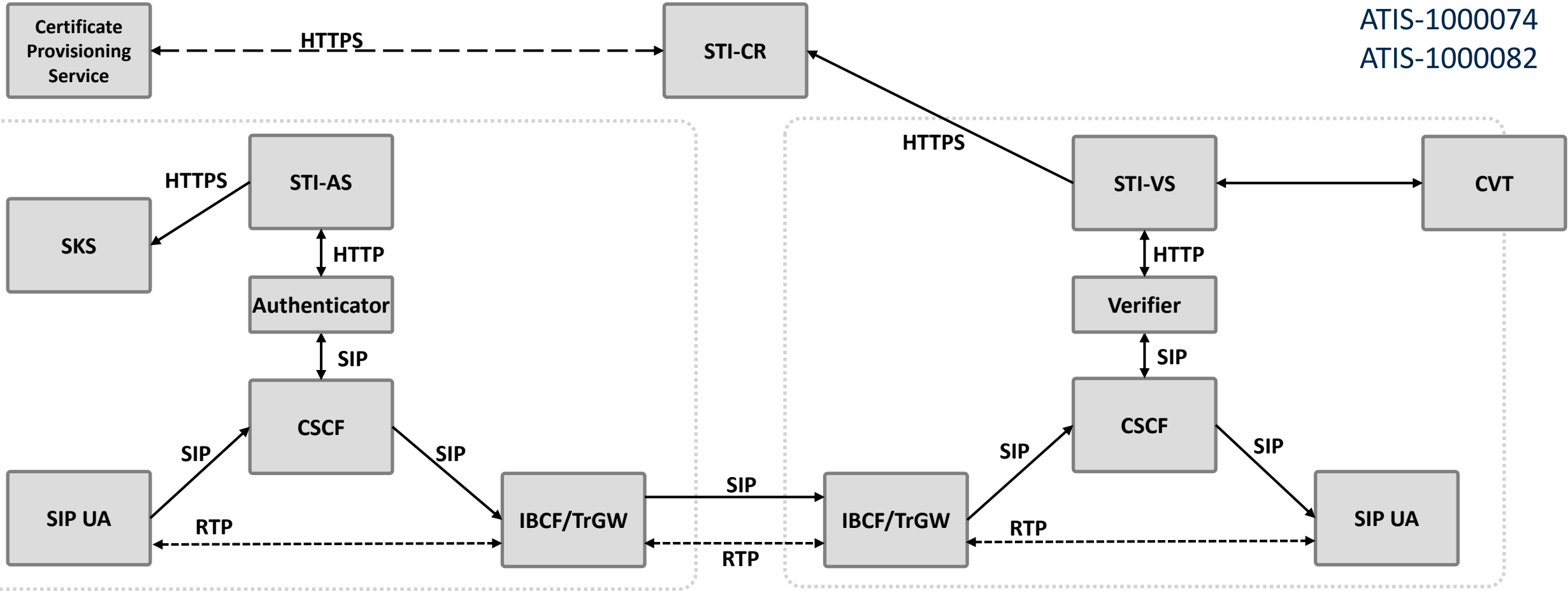


Service Provider A
Originating/Authorization

Service Provider B
Terminating/Verification

Reference Architecture + API split

ATIS-1000074
ATIS-1000082

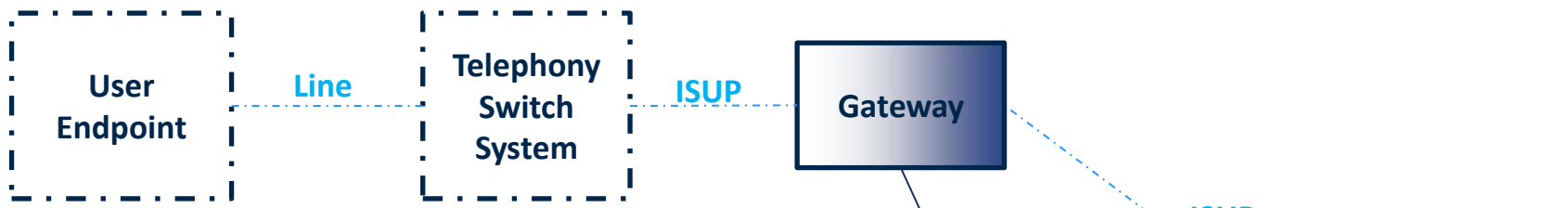


Service Provider A
Originating/Authorization

Service Provider B
Terminating/Verification

The reach of SIP

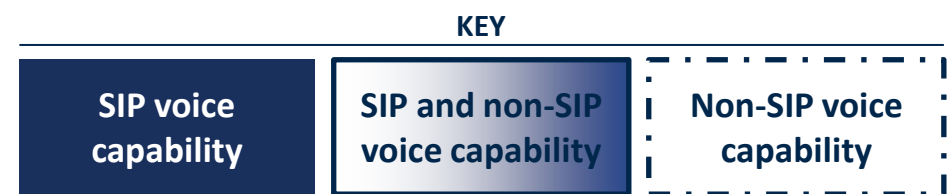
Legacy switching
Digital switches and pre-VoLTE wireless



Next Gen switching
Some pre-SIP access
(e.g. MGCP, GR303, line frames)



End-to-end SIP
IMS and pre-IMS, including VoLTE



Functional break down



Origination Functions

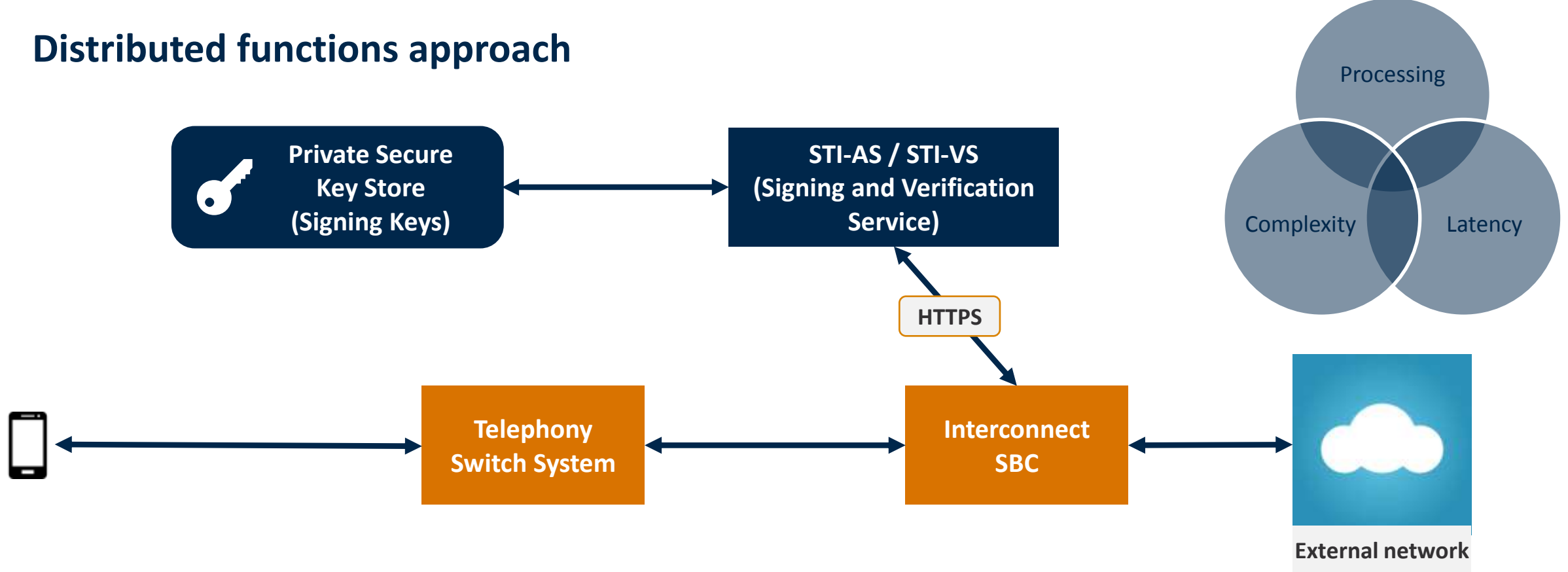
- Caller number policing
 - Is the entity generating the calling number inside the trust domain?
- Caller number signing
 - The request to the STI-AS
- SIP Identity header
 - Sending the STIR defined header for conveying the signed PASSporT to the recipient



Termination Functions

- SIP Identity header
 - Receiving the STIR defined header with a PASSporT signed by the originator.
- Caller number verification
 - The request to the STI-VS
- Verification consumption
 - Call Validation Treatment
 - User display? Block? Heuristics/Analytics?

Distributed functions approach



Originations

Caller number
policing

Attestation Label

Caller ID Signing

STIR
SIP Identity

Consumption /
Action/ Display

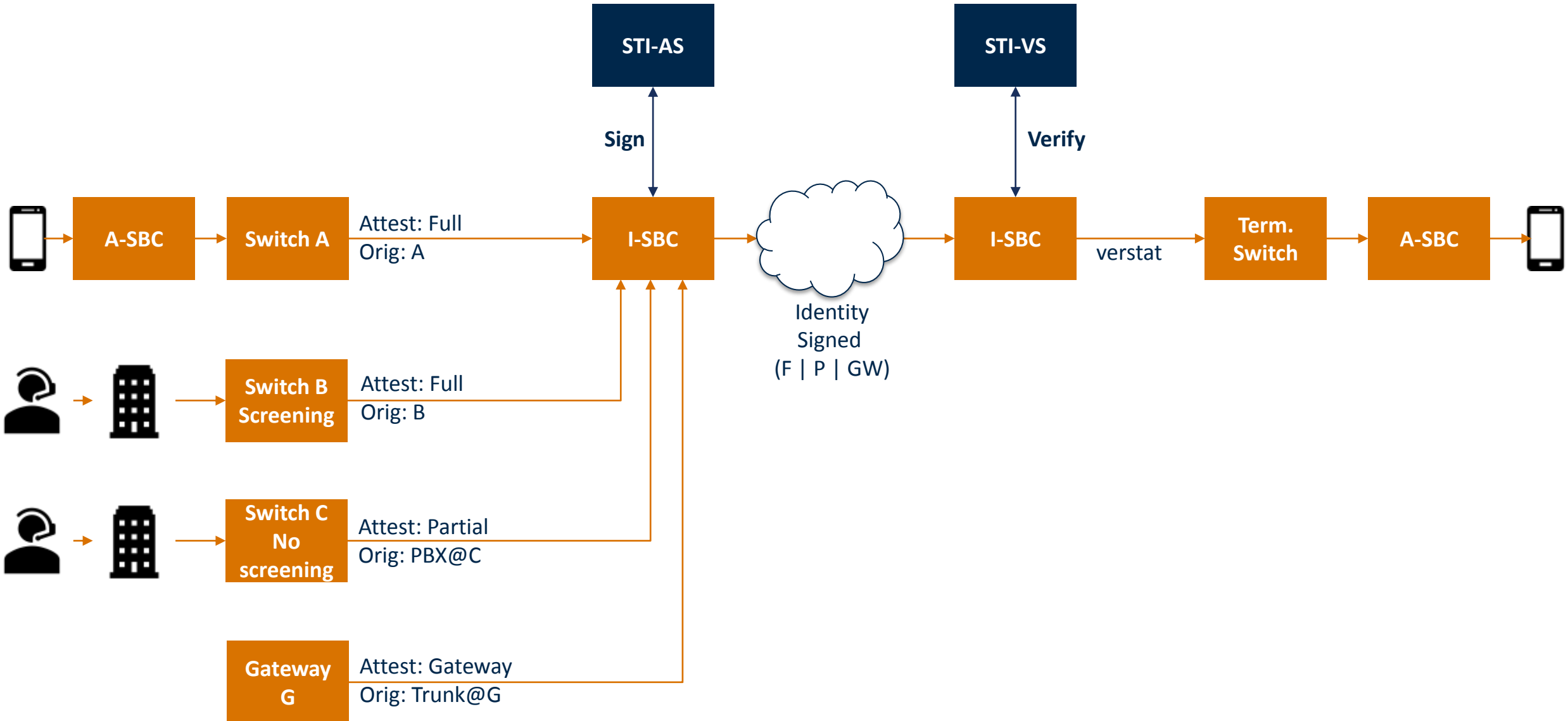
Verification Label

Caller ID
Verification

STIR
SIP Identity

Terminations

Setting Attestation and Origination



Recap

- SHAKEN currently provides a framework for attesting the caller number and identifying the origination point into the SIP network. SHAKEN brings design challenges:
 - New SIP flows with new SIP headers
 - Deals with a problem space that is not 100% SIP
 - Requires a widespread level of adoption to become useful
 - Cost and adoption barriers: compute resource, new systems to deploy and operate, existing systems to modify
 - User impact of post-dial delay on both originating and terminating networks
- Interconnect SBC
 - Demarc for trust domain, avoid unnecessary post-dial delay and crypto
 - Point of SIP interworking function, already in call flow
 - Usually next-gen network elements, often single or dual sourced
 - Single integration point
 - Compatible with in-network IMS AS approach
 - Address common telco design goals – cost/processing/latency

Complications

- Drive towards Full Attestation
- Telephone Number Proof-of-Possession
 - Extend a SHAKEN like trust mechanism to the SIP PBX access?
- Call Diversion
 - Embed SHAKEN PASSporT for each call forwarding hop?

Thank you

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<https://www.metaswitch.com/products/applications/metaspHERE-qcall>