Agenda

• Branded Calling Experience
• Origination Policy and Vetting
• Review Challenges and Concerns
• Three Most Desired Methods Branding Methods
• Enterprise Process Summary
• Current Industry Direction
• Key Take Aways
Branded Calling Experience

• Increase call answer rates
• Increase call trust factor
• Protect and increase brand equity

• Delivering rich content to called party
• Calling Name, Logo, and Call Reason
• Securely send call information with STIR/SHAKEN

✓ Authenticated
✓ Branded
✓ Contextual
Branded Calling Display Options

• Enhanced Device
  – Mobile device, enterprise desk phone, and UC/Collaboration platforms
  – Name, logo, and call reason

• Traditional Caller ID Device
  – Enterprise desk phones, PSTN phones, and CID devices
  – Limited by Calling Name display
  – Name / Number Only
Origination Policy for Branding

• Vetting enterprise use of name and logo
  – Credit check, etc.
  – When
    • Service provisioning
    • TN allocation

• Storing logo for retrieval at called endpoint

• Policy based lookup during call origination
  – Apply name, logo URL, and call reason
  – Set attestation level for SHAKEN PASSporTs

• Policy Inputs
  – Ingress call association (e.g. trunk group)
  – Per organization identifiers (e.g. Enterprise ID)
  – Per-call signaled data
Enterprise Authentication Challenges

• OSP = TNSP and calls from trusted trunk
  – Enterprise brand easily verified
  – OSP has commercial relationship with enterprise
  – Option: OSP managed branding database

• OSP ≠ TNSP
  – Multiple outbound carriers / Separate TNSP
  – Toll-Free / Large enterprise
  – OSP did not issue the number

• Delegate to outbound call center
  – Many outbound carriers / Separate TNSP
  – Call center does not own brand or number

OSP – Originating Service Provider
TSP – Terminating Service Provider
TNSP – Telephone Number SP
VoIP Entity - Enterprise
Implementation Concerns

• Fraud
  – 7000+ carriers registered in US Robocalling Mitigation Database
  – Originating carriers implicated in some telecom fraud
  – There will be abuses; need to predict, means to detect, and means to react
  – FCC enforcement actions to mitigate

• Terminating Service Provider Trust of Call Branding Source
  – Terminating service providers will be reluctant to display signaled data
    • Protect their customers
    • May encourage more over the top fragmentation
  – Push to national database (e.g. CTIA)
  – How can TSP be certain of policies used to vet call branding at OSP?
  – Delegate certificates require multi-level trust hierarchy
Poll Question #1

Enterprises: Who have you engaged for instruction or guidance on Branded Calling capabilities?

- Telephone Number Service Provider
- Originating Service Provider
- Over-the-Top Provider
- Other
- Not yet engaged
Challenges With Existing CNAM

- **CNAM easily spoofed**
  - Not all calls are signed
  - TDM switches trigger CNAM irrespective of STIR/SHAKEN authentication

- **Data quality issues**
  - Terminating provider determines quality of data
  - Originating service provider has no control over called party experience
  - Enterprise only has relationship with originating service provider
  - Called party experience varies based on called party service provider

- *Need* to trust name on *all* devices and terminating networks

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*CNAM - circa 1993*

- OSP collection and vetting name during service ordering
- OSP stores name in own LIDB or CNAM database
- TSP uses SS7 and calling number Global Title routing to query OSP database
Challenges With Over-the-Top Branding

• Private companies with phone apps
  – Enterprise registers with app provider
  – Enterprise may need to notify every intent to call (eg. Google Verified Calls)
  – Called party must install OTT provider specific application

• Enterprise concerns
  – Must register with many OTT vendors
    • Can’t know which OTT app is on the called party device
    • Consumer experience will vary; some users will not have any OTT application
    • Must sign up with multiple OTTs to increase odds
  – Vendor lock-in
  – Potential for conflicting information presented on called party device
    • Carrier supplied RCD or CNAM from native dialer
    • OTT application popup
  – Crowdsourcing can be punitive
    • Consumers make knee jerk reactions to calls

• No mechanism available deliver name on wireline PSTN devices
Three Most Desired Branding Methods

• Originating Service Provider (OSP) Managed Database
• CTIA Registered Caller National Database
• Enterprise Delegate Certificates

• Most desired because in all three:
  – Originator controls brand content displayed to all called parties
Branded Calling Value: OSP Managed Database

- OSP maintains commercial relationship with enterprise
  - Vets enterprise for commercial service
  - Vets enterprise name and logo

- Great option for OSP originated calls
  - OSP Customer Care
  - OSP hosted call centers

- Great option for mid-sized enterprises
  - Especially for enterprises where OSP = TNSP
  - No complexity for enterprise
  - Letter Of Authorization process when OSP and TNSP are different

Provisioning Process

- Extension of STIR/SHAKEN authentication database
Branded Calling Implementation: OSP Managed Database

- **Originating Service Provider (OSP): Vets Enterprise**
  - Manages commercial relationship with enterprise
  - Stores enterprise brand data in OSP managed content delivery network (CDN)
  - Applies enterprise’s brand for enterprise originated calls

- **Enterprise (VoIP Entity): Business as Usual**
  - Initiates calls using existing SIP methods
    - Could also be TDM initiated (PRI, etc.)
  - No addition software or 3rd party services

- **Multi-carrier Enterprises**
  - Require manual letter of authorization from TNSP
  - Slow, manual updates
Branded Calling Implementation: OSP Managed Database

1. Enterprise

2. Origination Policy Decision

3. STI-AS

4. INVITE with Identity (With SHAKEN Passport and RCD claim)

5. STI-VS

6. INVITE Verified Display Name w/ Call-Info

7. Trunk Group

- Carrier Personnel
- Ribbon One Portal
- Carrier Portal
Branded Calling Value: CTIA Registered Caller National Database

• Enterprise
  – Useful for larger enterprises who have multiple OSP relationships
  – Privacy concerns over visibility of data
  – Commercial relationship with CTIA

• CTIA National Database Owner
  – Database operator maintains commercial relationship
  – Vets enterprise name and logo

• Originating Service Provider
  – Must maintain replicated mirror of national database (like LNP or Toll-Free)
Branded Calling Implementation: CTIA Registered Caller

• CTIA Registered Caller: Vets Enterprise
  – Manages commercial relationship with Enterprise
  – Stores branding data in content delivery network (CDN)
  – Distributes TNs, names, and CDN URLs to all OSPs along with enterprise ID

• Enterprise (VoIP Entity)
  – Initiates calls using existing SIP methods. Could also be TDM initiated (PRI, etc.)

• Originating Service Provider (OSP)
  – Vets enterprise during service establishment and vets enterprise ID
  – Replicates national database for call-by-call lookup
  – Verify and attest ‘A’ with OSP SHAKEN Identity
  – Applies enterprise’s branding for calls enterprise originates
Branded Calling Implementation: CTIA Registered Caller

1. INVITE from Enterprise

2. STI-AS from Originating Carrier

3. INVITE w/ Identity (With SHAKEN Passport and RCD claim)

4. STI-AS from Terminating Carrier

5. INVITE Verified Display Name w/ Call-Info

6. Enterprise ID from CTIA Personnel

7. Content Delivery Network

CTIA Registered Caller

Off-Line Replication

Registered Caller DB

Origination Policy Decision

CTIA Personnel

Enterprise ID

A2

A4

A1

A3

37x10 17

Ribbon Communications Confidential and Proprietary
• Enterprise
  – Enterprise maintains control of branding experience
  – Perfect for larger enterprises who have multiple OSP relationships

• Telephone Number Service Provider
  – Telephone Number Service Provider (TNSP) maintains enterprise commercial relationship
  – Maintain subordinate CA infrastructure (or outsource to aaS provider)

• Originating Service Provider
  – Verify and attest ‘A’ with OSP SHAKEN Identity
Branded Calling Implementation: Enterprise Delegate Certificates

• Telephone Number Service Provider (TNSP): Vets Enterprise
  – Manages commercial relationship with enterprise
  – Stores branding data in content delivery network (CDN)
  – Issues delegate certificate to enterprise

• Enterprise (VoIP Entity)
  – Applies branding for calls that the enterprise originates
  – Signs originations using private key for delegated certificate

• Originating Service Provider (OSP)
  – Verifies delegate certificate
  – Uses delegation success to attest for SHAKEN identity
Branded Calling Implementation: Enterprise Delegate Certificates

Certificate Authority

STI Service Provider

VoIP Entity Reseller

VoIP Entity Enterprise

Authorization

STI-CA → STI-SCA → STI-SCA → VE-KMS → VE-AS → VE-CR

STI-CA → STI-SCA → STI-SCA → STI-KMS → STI-AS → STI-CR → STI-VS

Certificate Management and Call Processing are independently deployed except at the signing VoIP Entity.
Enterprise Process Summary

• OSP Database
  – Account creation with OSP and vetting
  – Register name and logo with OSP

• CTIA Solution
  – Account creation with CTIA and vetting
  – Register name and logo with CTIA
  – Account creation with each OSP and vetting

• Delegate Certs
  – Account creation with TNSP and vetting
  – Register name and logo with TNSP
  – Account creation with each OSP and vetting
  – Signing of calls using delegate certificate

• Common to All Three
  • Additional steps with multiple OSPs
Poll Question #2

Enterprises: Which branding method do you think best meets your needs?

• OSP Managed Database
• CTIA National Database
• Delegate Certificates
• Over-the-Top provider
• Undecided
Current Industry Direction

• Fragmented Databases
  – Multiple closed ecosystems evolving
  – No guarantee called party will see intended branding
  – Unlikely for terminating provider to check multiple databases
  – Same fate as CNAM

• Push Toward CTIA National Database
  – Driven by carriers in CTIA trade association

• Carriers Need Focus
  – Enterprises would do well to organize and influence carriers
Key Take Aways

- Enterprise discussions with OSPs are important
- Will be multiple means to vet data
  - Should not require an enterprise to engage multiple, many vetting entities
- OSP plays pivotal role as they own the originating enterprise relationship
- TSP will only pass on data they believe is legitimate
Thank You