CHALLENGES & OPPORTUNITIES WITH IMPLEMENTING ENTERPRISE SHAKEN/STIR

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NETNUMBER: All-G Signaling Control Platform

About Us
Founded 1999
Employees in 22+ countries, offices in Boston, Frankfurt, Prague and Utrecht

Globally Deployed
NetNumber products are deployed by 9 out of 10 largest global telcos and by 16 IPX carriers processing hundreds of billions transactions every months on over 550+ TITAN Edge nodes

Multi-Protocol Multi-Service TITAN
NetNumber TITAN Edge compute platform with 6+ industry protocol stacks available for numerous customer-defined and 15+ different off-the-shelf network and data services

SW-based and Cloud-ready
NetNumber products can be deployed as a VM on KVM/Openstack and ESXi/VMware based VIs, or on COTS HW, or as a VNF managed by a VNF Manager (VNFM)

Signaling – Routing – Security – Global Data – Private Networks
HOW IS ENTERPRISE SHAKEN/STIR DIFFERENT?

First let’s look at SHAKEN/STIR for directly connected mobile subscribers

Baseline SHAKEN/STIR Framework

Works perfectly for directed connected devices/subscribers

MNO knows exactly which device originated the call
Enterprises are often more complex than directly connected subscribers

Enterprise “Knowledge Gap”

Who is responsible for originating the call?
COMPLEX CALL ORIGINATION USE CASE

• **Enterprise**: Gotham City
  o Uses phone network to alert residents of fire and safety risks
  o Expects calls to be presented to residents in a way that will be trusted
  o Believes it is very important that citizens answer their calls
  o Expects to define the calling name display (e.g. “Gotham City”)
  o Needs flexibility to pick one or more vendors to handle their outbound calls

• **Trusted Vendor**: Everbridge
  o Manages outbound calling programs for thousands of enterprise customers
  o Customer option to use their own TNs (BYON) or use Everbridge supplied TNs
  o Needs flexibility to distributes calls to the network via multiple CPaaS providers

• **CPaaS Infrastructure**: Everbridge, Fonative, Twilio, etc.
  o Distribute outbound calls across multiple networks for capacity, resilience and price
HOW TO FILL THE ENTERPRISE “KNOWLEDGE GAP”

• **Option-1:** Central Database of Vetted Enterprises  
  o OSP checks database using calling TN before signing the call  
  o *Key issue:* How does OSP know who actually originated the call?

• **Option-2:** Vetted Enterprise Signature  
  o OSP verifies enterprise signature before signing the call  
  o *Key issue:* How will enterprises get certificates and learn to sign calls?

• **Option-3:** Combination Of Both Models  
  o OSP verifies enterprise signature and checks database.  
  o *Key issue:* Is combination better or just more complicated?
**CENTRAL DATABASE**

**Key Questions:**

How does OSP know which enterprise originated the call?
How do we avoid bad-guys using the database of trusted TNs?

Complex Enterprise Call Origination

Enterprise → Vendor → CPaaS → Originating SP → Central Database → Terminating SP → Verify OSP Signature

How can OSP know the calling-party?
Key Questions:

- How does the enterprise get a certificate?
- How does the enterprise sign its outbound calls?
HOW WILL ENTERPRISE SIGNATURES WORK?

• **Enterprise Vetting**
  - Multiple vetting agencies are already developing solutions (iconectiv, Numeracle...)
  - Competition will define pricing for vetting services
  - Vetting to include Enterprise, Trusted Vendors and TN resources

• **Issuing Enterprise Certificates**
  - Multiple entities engaged with STI-PA and STI-CAs to define how to issue certificates to Enterprise customers. (NetNumber, Neustar, Comcast...)
  - Competition will define pricing. **No need for Enterprises to learn how to do this.**
  - Enterprise Signature only needs to “inform” the SHAKEN STI-AS function performed by the OSP. **No change in SHAKEN framework required.**

• **Signing Enterprise Calls**
  - Multiple entities already building cloud-based enterprise call signing solutions
  - Competition will define pricing. **No need for Enterprises to learn how to do this.**
  - Enterprise call-server makes API call (HTTPS or SIPS) to get outbound calls signed.
WHAT DO ALL SOLUTIONS SHARE IN COMMON?

• **OSP Role**
  o Broad agreement OSP is responsible for setting “attestation” and signing every call.

• **Enterprise Vetting**
  o Broad agreement that enterprise identity and TN allocations must be vetted for participation in SHAKEN/STIR.

• **Cost Allocation**
  o Broad agreement that enterprise complex call use-cases can be supported but the cost of support should be borne by participating enterprises who use the system.

• **Next Step**
  o Broad agreement that real-world implementations are required to validate use-cases.
LIKELY NEXT STEPS

• Central Database
  o Advocates will move forward with an implementation if they find demand from enterprise customers.
  o Pricing and other business terms will play an important role in adoption.

• Enterprise Signatures
  o Multiple implementations are already being developed
  o Competitive market will define pricing
  o Most likely outcome is “fully outsourced service” used by enterprise customers
  o Enterprises aren’t expected to become SHAKEN/STIR experts

• Enterprise Vetting Already Starting
  o All solutions require participating enterprise customers and their trusted vendors to be vetted before joining the SHAKEN/STIR community.
  o Multiple vetting agencies are already beginning work.
HOW SHOULD WE PICK AN ENTERPRISE SOLUTION?

• Agree on the common principles through ATIS working group
• Enable multiple implementation models to co-exist
• Let the market participants gain experience
• End-state may be mixture of multiple implementation models
THANK YOU