TNS - Call Guardian

SIPNOC 2018 Robocall & Caller ID Spoofing Data Analytics Solutions Showcase

December 5th, 2018

Paul Florack, VP Product Development

Transaction Network Services, Inc.

Founded in 1990
HQ – Reston, VA
30 Offices in 15 Countries

Payment Services

- Leading global provider of payment services
- **Powers millions of ATM's and POS devices**
- Level 1 PCI DSS certified backbone network
- **Transports more than 22 billion payment transactions annually**

Financial Services

- Low latency secure trading network services
- **Connects over 700 financial institutions worldwide**
- **Powering more than 2,000 end points** in the financial community
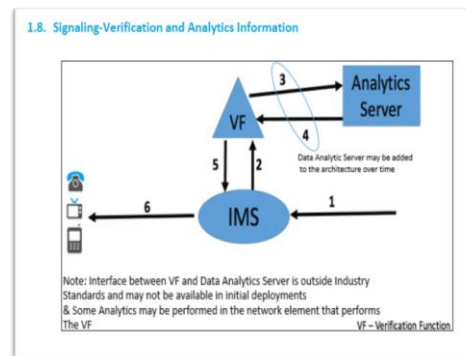
Telecom Services

- Largest independent SS7 network **delivering 100 billion messages monthly**
- Network Routing Directory for call routing - **delivering over 1.4 billion messages daily**
- Operates CCA's LTE hub
- Enhanced Mobile Call Identity
- **500 Carrier Partners**

Transaction Network Services enables businesses, people, and markets to connect, transact, and trade with each other securely and reliably

Roles of Reputation DB & Analytics Engines

- Key aspect of layered approach to restoring trust in communications providing the following capabilities:

  - Call Validation Treatment (CVT), Verification Function (VF) and/or Analytics Server function defined in various industry documents related to STIR/SHAKEN and robocall mitigation

  - Ingests **large amounts of cross carrier data** including Do Not Originate lists, STIR/SHAKEN parameters, real-time call signaling events, crowd sourced feedback, and other industry and carrier data inputs

  - Identifies **reputation and intent** of calling parties
    - For call treatment (block or divert) and call display

  - Provides legitimate call originators a mechanism to enhance the call experience by

  - Complies with carrier and consumer **privacy policies**

1.8. Signaling-Verification and Analytics Information

Note: Interface between VF and Data Analytics Server is outside Industry Standards and may not be available in initial deployments
& Some Analytics may be performed in the network element that performs The VF

VF – Verification Function

TNS Call Guardian

Transaction Network Services

TNS Call Guardian uses real-time call events combined with crowd-sourced data to create accurate and comprehensive reputation profiles differentiating legitimate users of telecommunications services from abusive, fraudulent, and unlawful users

- Layered Approached to Identifying Bad Actors
  - Highly accurate big data algorithm drawing on billions of real-time call events
  - Registration of Enterprise TNs through Reputation Insights
  - Blacklists of Do Not Originate, invalid, unallocated and unassigned TNs
  - Crowd-Sourcing to supplement analytics
  - STIR/SHAKEN inputs
  - Options for call blocking, call diversion, call display
- Reputation Data Base of over 1.4B TNs in the US
- Supports Multiple Protocols (ENUM, SIP, AIN, REST, Wireless)
- Network Savings
  - Leverage signaling protocols for more scalable approach
  - Helps to reduce network costs rather than adding components
- Carrier deployed service model (no OTT)
- Data encryption, consumer & carrier privacy policies maintained
- Deployed at 3 of top 5 Wireless service providers
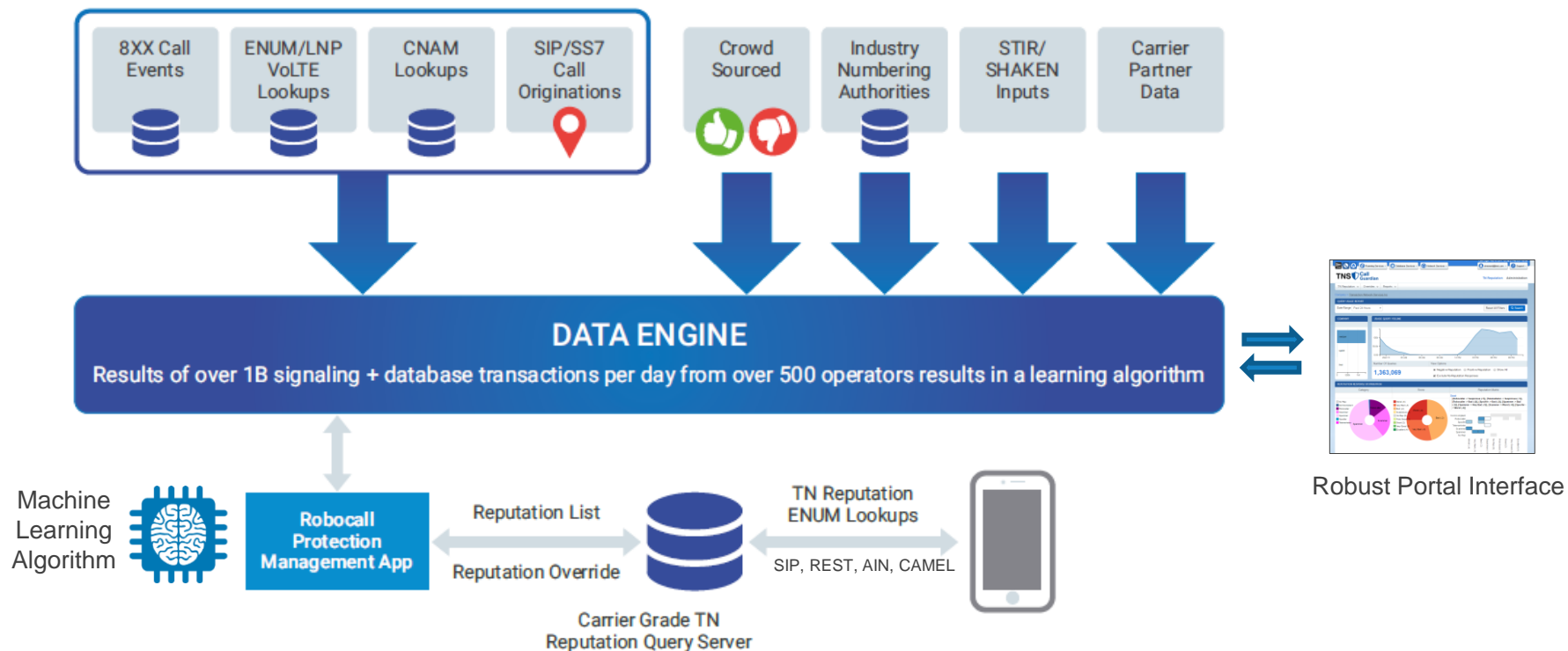 - Active trials at cable MSOs and landline networks
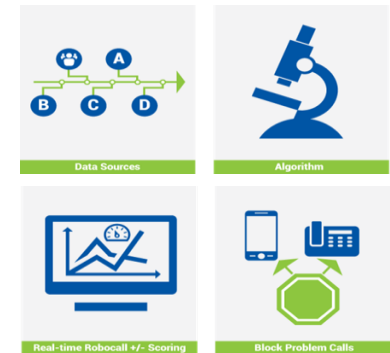
Industry recognition in 2018:

MindCommerce Study: Top solution for accuracy and identification of problematic telephone numbers

**FierceWireless Innovation Awards**: TNS won in the Customer Engagement category

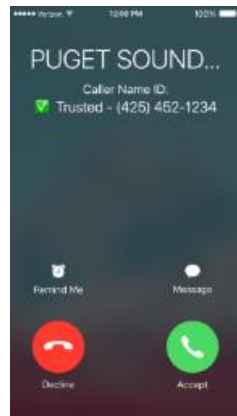**Northern Virginia Tech Council** - one of region's top companies driving tech innovation

Call Guardian :: Methodology

8XX Call Events

ENUM/LNP VoLTE Lookups

CNAM Lookups

SIP/SS7 Call Originations

Crowd Sourced

Industry Numbering Authorities

STIR/ SHAKEN Inputs

Carrier Partner Data

DATA ENGINE

Results of over 1B signaling + database transactions per day from over 500 operators results in a learning algorithm

Robust Portal Interface

Machine Learning Algorithm

Robocall Protection Management App

Reputation List

Reputation Override

TN Reputation ENUM Lookups

SIP, REST, AIN, CAMEL

Carrier Grade TN Reputation Query Server

Call Guardian :: Improving the Call Experience

Enhanced Call Experience

Network Integration

- **Signaling Events**
- **Network Interoperability**
- **Treatment & Routing**
- **Spoof Detection**

TNS Signaling & Routing Hub
- 500 Operators
- 1B Call Events
- SIP/SS7/ENUM
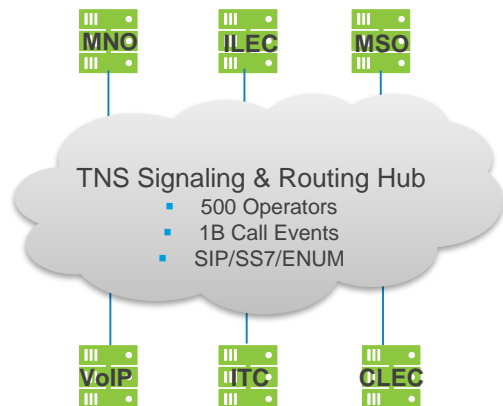
Federated Data Sources

- **Identification**
  Person, Business & Category

- **Reputation**
  Risk Level & Category

Enriched Interaction

- **Android & iPhone**
- **Pre-Loaded, Downloaded & SDKs**
- **Enriched identification**
- **Post Call Actions**
- **Marketing Engagement**

Call Guardian :: Tools for the Public & Legitimate Call Originators
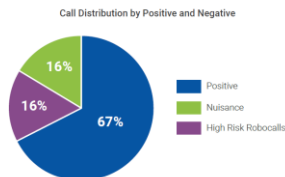
Reportarobocall.com

Improved Tools for Legitimate Call Originators

- Gives Call Originators Ability to Understand Reputation Score
- Helps to Conform to Behavior Less Likely to Trigger Negative Reputational Scoring
- Provides Enterprises a View Into Crowd-sourced Feedback
- Provides Alerts When the Telephone Number Turns to Negative Reputation
- Helps Drive Revenue and Increased Contact Rate when Positive Calling Practices are Used

Call Guardian :: Data Insights
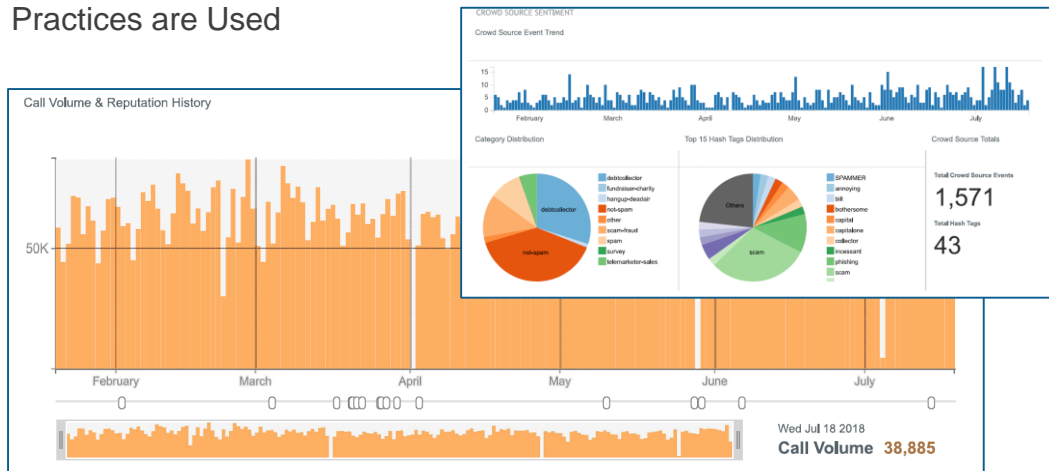
Industry Trends

- One-Third of inter-Carrier Calls are High-Risk or Nuisance

Call Distribution by Positive and Negative

- Positive — 67%
- Nuisance — 16%
- High Risk Robocalls — 16%

- 34% of Inter-carrier Call Traffic Originates from a Tier 1 Carrier

- VoIP TNs Generated 50% of Negatively Scored Calls by Total Volume

Negatively Scored Calls

- Wireline — 18%
- Wireless — 7%
- VoIP — 50%
- Other — 25%
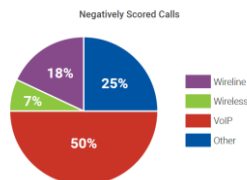
- 7% of the Negative Calls Originate from Numbers Owned by the Top 5 US Operators

Customer Impact

Real Telephone Number being spoofed:

Subscriber (205) xxx-yyyy was spoofed and the number was used to place over 37,000 calls in a single day

Customer received 5,870 calls back

Customer terminated service 11 days later

Trend:

- 1 in 5 People whose telephone number has been hijacked disconnects their number

- 1 in 2,000 MDNs allocated to a cell phone is hijacked by a spoofer

- 275 people are being hijacked every day

STIR/SHAKEN Integration

- **Available now**
  - Ingestion of Verstat Parameter Working In lab with Tier 1 Carrier. Production Ready Today.
  - Carrier deployed STIR/SHAKEN Solution – on-premise

- **Additional Capabilities in 2019**
  - TNS Call Authentication Hub
    - Full STIR/SHAKEN Solution in Hosted Environment
    - Pre-SHAKEN/STIR Solution that Authenticates Calls Originating from Networks that use TNS Signaling Hub

- **Display Options**
  - Conducting User Studies to better understand UX implications for various identification scenarios with Call Authentication (attestation)
    - No Attestation → Reputation dictates call treatment (block, divert, display)
    - Full Attestation → Good Reputation - Normal Call treatment, Eligible for trusted call enrichment
      Bad Reputation - Process Call, adjust display

Transaction Network Services

Thank You!

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