

Protecting your customers from spam calls.

Technology-Provider Roundtable
September 2, 2021



ECG: Your Voice Matters

**Develop, POC,
Prototype, RFI**
Recommend & Select

**Configure &
Deploy**
*Integrate, Remediate,
Custom Software Dev*

**Acceptance &
Productization**
*Product, Compliance,
Cybersecurity*

**Training &
Operations**
Voice & Data Networks



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**Alec
Fenichel**

TransNexus



**Greg
Blumstein**

TrueCNAM



**Gerry
Christensen**

YouMail

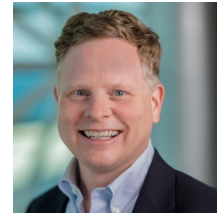


Mark Lindsey

ECG

Senior Member of Technical
Staff

VP Engineering





Spam Calling

VS

Robocall Mitigation & SHAKEN/STIR



FCC: Focused on
eliminating
originating
illegal robocalls.



*Voice Service
Provider Network*



Customers:
Focused on not
getting annoying
calls.



*Voice Service
Provider Network*




Inbound Wireline Robocall Mitigation An Enduring Problem

- In 2019-2021, many US *mobile* operators begun blocking spam calls
- Wireline is worse! For 2020:
 - 37% of calls to **wireline** unwanted,
 - 17% of calls to wireless unwanted (TNS for 2020)

Wireline carriers have an opportunity to excel.





Analytics and Policing

When a terminating Service Provider / PBX receives a call...

1. **Analytics.** "Scoring" the call. *How likely is this unwanted?*
 - a. Use Real-time databases of ongoing calling campaigns
 - b. Use SHAKEN/STIR Data
 - c. Voice captcha or other innovations

2. **Policing.** *What do we do with unwanted calls?*
 - a. Block the call
 - b. Reroute the call -- e.g., to voicemail, or a Voice Captcha
 - c. Label the call -- e.g., "SPAM LIKELY" Caller Name

Generating Revenue from Spam Call Management

Verizon - Mobile, Consumer-Focused

*Call Filter Plus: \$2.99/month per line
Consumer Mobile Offering*

2. What does Call Filter cost?

Call Filter is free* for Verizon customers with a compatible device. You can also get:

- Call Filter Plus for \$2.99/month. Call Filter Plus includes these additional features: Caller ID, Spam lookup, Personal block list, Spam risk meter
- Call Filter Plus (multi-line) for \$7.99/mo and is for 3 or more lines.

Note: Devices not compatible with the Call Filter app may not be able to upgrade to Call Filter Plus.

*Data usage applies.

Vonage - Enterprise PBX

*Spam Shield: \$2.99/month per line
Enterprise Offering*

VONAGE

Products Solutions Resources Developers About Us

Buy now Schedule a conversation

OVERVIEW PLATFORM FEATURES CALL CENTER USE CASES INTEGRATIONS INTERNATIONAL PRICING

UNIFIED COMMUNICATIONS / FEATURES / SPAM SHIELD

Spam Shield

Get all incoming calls checked for phone spam, and see instant warnings on your caller ID.¹

Talk to expert See plans and pricing

Spam Shield
\$2.99/month*
Per line

Overview
Spam Shield is a cloud-based service that checks all incoming calls for phone spam. It provides instant warnings on your caller ID, so you can avoid unwanted calls. Spam Shield is available for all Vonage Business Edition accounts.

Included Features
• Avoid unwanted spam calls that enter into the phone system.
• Check for spam on all incoming calls.
• Get instant warnings on your caller ID.
• All spam calls are blocked and you can see a list of blocked numbers.

*Vonage's services, or specific features or functionality of the services, may not be available in all locations. Please contact your sales representative for current availability. Spam Shield is currently available in the US only.

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What do customers want? It's not clear...

Two informal surveys with different questions get different results.



Mark Lindsey

Engineer and Educator in Networking & Voice Telecom

6d · 🌐

Knowing that robocalls can't be marked with 100% accuracy, what should happen to a call to your number?

For a call that is probably a spam robocall to you, would you rather your telephone provider...

You can see how people vote. [Learn more](#)

Block the call	23%
Reroute the call to voicemail	12%
Label it, e.g. "Spam Likely"	65%

26 votes · 4h left · [Hide results](#)

1 comment

👍 Like 💬 Comment ➦ Share ✉ Send

📊 831 views of your post in the feed



Mark Lindsey

Engineer and Educator in Networking & Voice Telecom

2mo · 🌐

Some robocall mitigation is focused on labeling calls, so the calls aren't blocked but they're labeled. Other vendors just block the suspected robocalls entirely. [...see more](#)

To handle robocalls going to you: Would you rather have them blocked (so your phone doesn't even ring), or get a Caller ID warning?

You can see how people vote. [Learn more](#)

Block all potential robocalls	57%
Label them on Caller ID	43%

35 votes · Poll closed

🗨 11 · 4 comments

👍 Like 💬 Comment ➦ Share ✉ Send

📊 2,428 views of your post in the feed





New Considerations

- **Spam Mailbox**

- If your *email* is blocked by a spam filter, it goes to a *spam mailbox*
- If a call is blocked, would-be recipients may need to be able to see those calls that were blocked.

- **Emergency 911 Callback**

- Operators can never block a call to emergency providers...
- But Operators *should* not block a callback call from the PSAP

- **Rural Call Completion (RCC)**

- US regulations govern blocking calls to rural destinations
- ...Operators must be careful to enforce RCC rules while implementing any blocking

- **FCC's "Reasonable Analytics"**

- For outbound robocall blocking, the FCC has an imprecise explanation. Operators should be aware of the landscape and discuss with a telecom attorney.



Technology Options



WEBINAR

Stop Robocalls, Voice Spam &
Vishing at the Network Edge

Unwanted Voice Traffic is impacting your business.

rq@mutre.com

September 2021



Reimagining how people connect.

Mutare

[mu·tà·re]

By definition...

(transitive)

To change (something, voice, etc.).

(reflexive)

To change oneself (into something).

30

Years

of empowering organizations
to re-imagine business
communications

Go To Market

Resellers, VARs, OEM, and
Carriers. 90% is through our
partners and 10% is direct
with revenue sharing.

World-Class Support

driven by personal attention
and a culture desirous of
maintaining customers and
relationships for life.

TRUST

Our daily commitment and
empathy for our Partners and
Customers has earned us a
reputation of integrity.

THE PROBLEM

**Unwanted
Voice Traffic
is a growing
business issue.**




Voice Network
Performance



Cybersecurity
Risk



Team Member
Productivity

 mutare



THE SOLUTION

Mutare Voice Spam Filter

Enterprise Protection

Remove, delete, vaporize unwanted calls **at the network edge**...that's right, bad traffic does not come into your voice network.

We Eliminate...

- Spoof Calls
- Robocalls
- Vishing
- Spam Calls

We Play Nice

Our solutions work seamlessly with your enterprise infrastructure. We work with all SBCs. Deployment can be in any cloud or on premise.



Solution Highlights

Voice Spam Filter

[The industry leading solution.]

VOICE SPAM FILTER Executive Summary

SOLUTION TYPE

Enterprise Software

IMPLEMENTATION

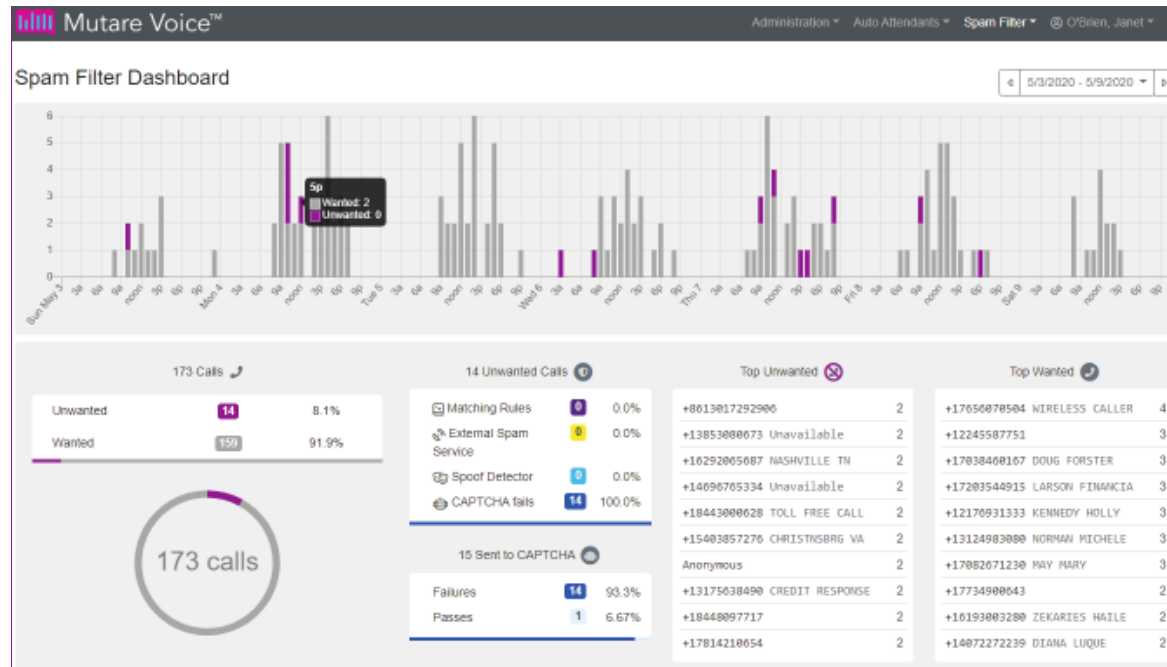
14 – 45 Days

INTEGRATION

Any SBC including Avaya, Cisco, Audio Codes, Oracle, etc.

TECHNICAL REQUIREMENTS

Session Initiation Protocol (SIP)



HOW DOES IT WORK?

1. We examine the signaling information transmitted with each call to identify the caller ID
2. We compare each call to our proprietary database (UVT Engine)
3. We remove unwanted calls

CAN WE CUSTOMIZE THE FILTER?

Yes, with a simple UI

HOW DO I MAINTAIN & MONITOR

- Most admins prefer the Interactive Dashboard
- The UI allows you to quickly update enterprise-specific blocklists and allowlists

Filtering Tools and Actions Put the Enterprise in Complete Control

- Rules Manager Allow and Block Lists
 - Personal Block Lists
 - Dynamic List Filtering (Nomorobo and others)
 - Spam Storm Protection
 - STIR/SHAKEN
 - Voice CAPTCHA
- Allow
 - Drop
 - Route

Enterprise Deployment Options

1

On Premise Behind Firewall



2

Private or Public Cloud



3

Hybrid Managed Service



The Voice Traffic Analysis (VTA), a comprehensive assessment.

The Report Includes:

ESSENTIALS -

- Executive Summary
- Network Performance
- Cybersecurity Risk
- Team Member Productivity
- Voice Traffic Analytics
- Industry Comparison

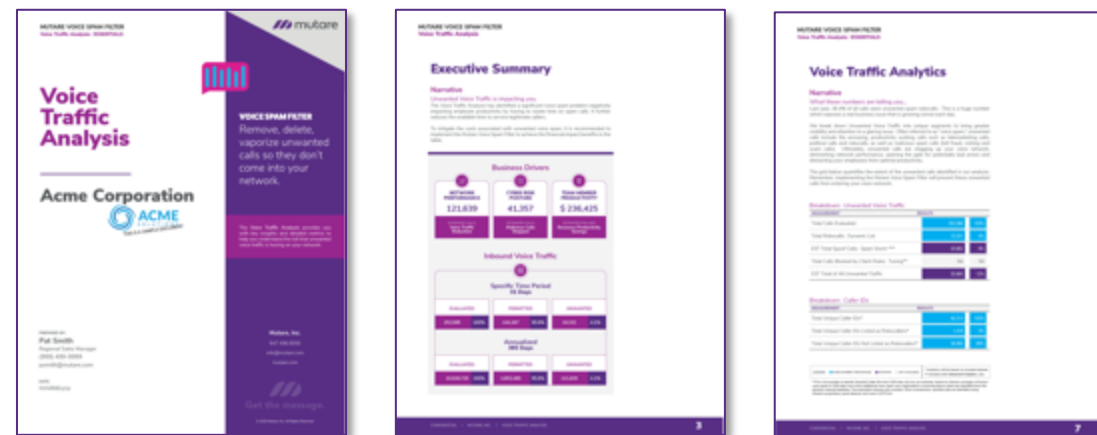
REFERENCE -

- Terms & Definitions
- Related eBook Summaries

MUTARE -

- About Voice Spam Filter
- About Mutare

This shows a few pages from the customized report.



<https://www.mutare.com/voice-spam-assessment/>

Mutare, Inc.

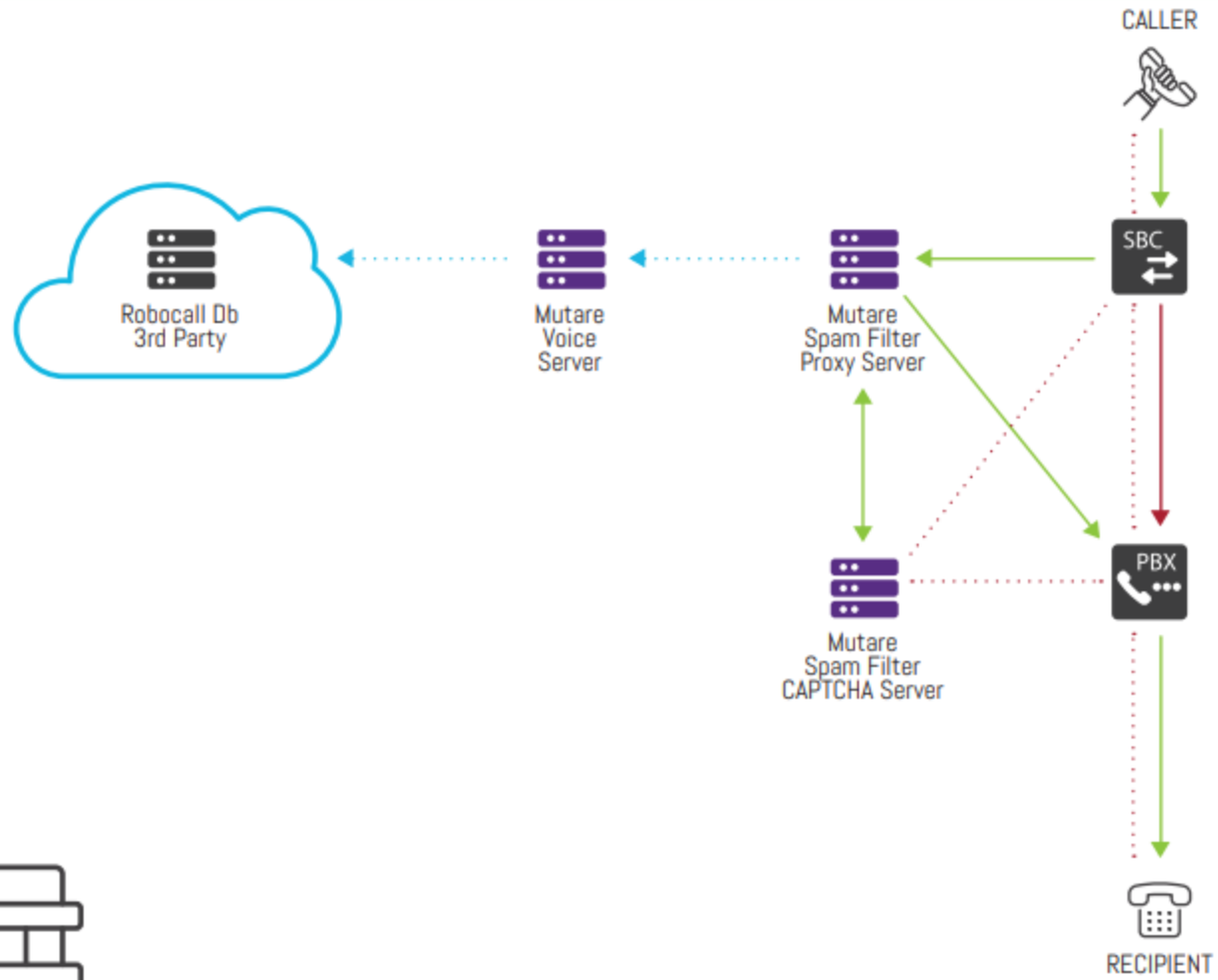
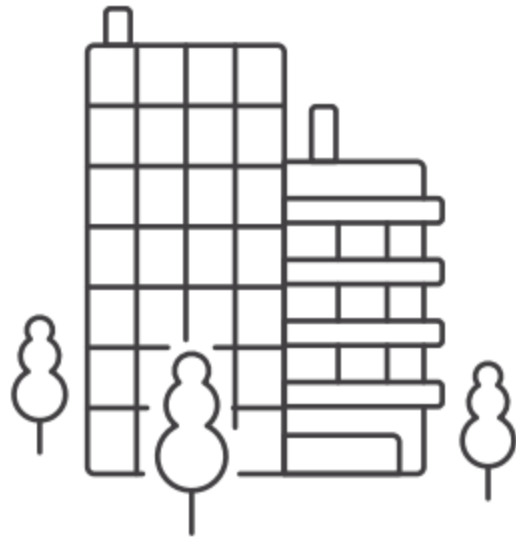
Thank you!

 847.496.9000

 info@mutare.com

 2325 Hicks Road
Rolling Meadows, Illinois 60008





TRUSTED CALL SOLUTIONS



Bart Pesavento
Director of Product Marketing

neustar®



September 2021

MARKET DRIVERS



Regulatory Mandates

- Carriers must implement new technologies – Robocall Mitigation and STIR/SHAKEN



Poor Calling Experience

- 88% of enterprise calls go unanswered
- New technologies have had unintended consequence of unfavorable call treatment
- Ensure robocalls don't reach enterprise and consumer

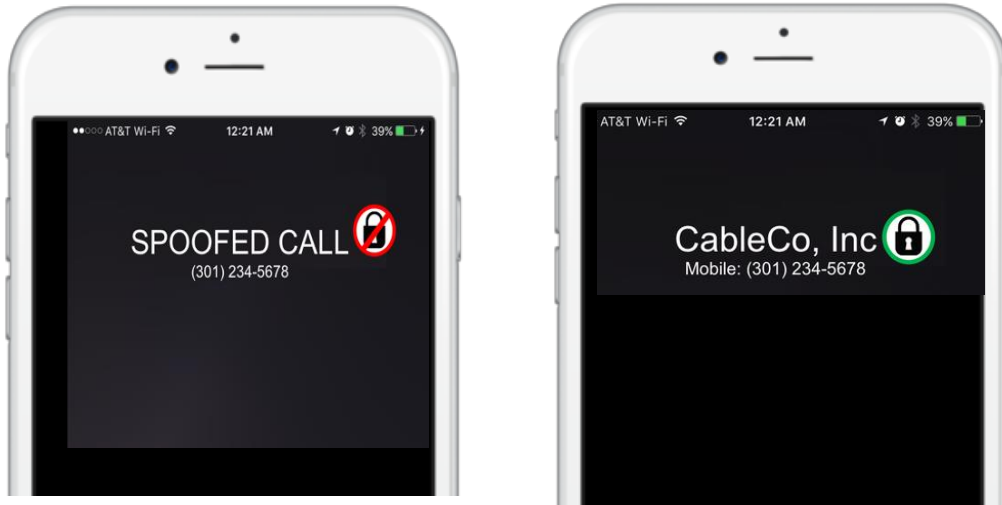


Monetization Opportunities

- CSPs are looking for ways to defray costs of STIR/SHAKEN and Robocall Mitigation implementations
- Improve the customer experience – Restore trust in phone channel

TRUSTED CALL SOLUTIONS - REGULATORY AND COMPLIANCE

CERTIFIED CALLER & CERTIFICATE MANAGER



**Unwanted
Call**

**Wanted
Call**



Features

Comply with FCC mandate

- All component to deploy STIR/SHAKEN including STI-CA

Support carrier and enterprise

- Subscriber's calls will receive highest level of attestation

Origination (Outbound)

- Signed calls are trusted by rest of ecosystem

Termination (Inbound)

- Signed calls are verified
- S/S Passport provides additional signal to analytics algorithm

20X increase in signed calls since May 2021

TRUSTED CALL SOLUTIONS - ROBOCALL SOLUTION

ROBOCALL MITIGATION ANALYTICS

NEUSTAR'S RM ANALYTICS PLATFORM

Termination (Inbound)



Robocall Protection –

Proprietary algorithm generates a fraud score for each telephone number enabling carriers to set alerts or block **terminating** calls.

Origination (Outbound)



Robocall Prevention –

Detection and alerting on robocalls **originating** from your telephone numbers.



Reporting - Data analytics dashboard that enables a carrier to examine call history by phone number and highlight trends and anomalies that identify bad actors



Features

Leverages existing Caller Name infrastructure to deliver warnings to customers

Easy implementation regardless of hardware

Flexible policy engine

- Allows operators to customize the display based on their business rules and preferences

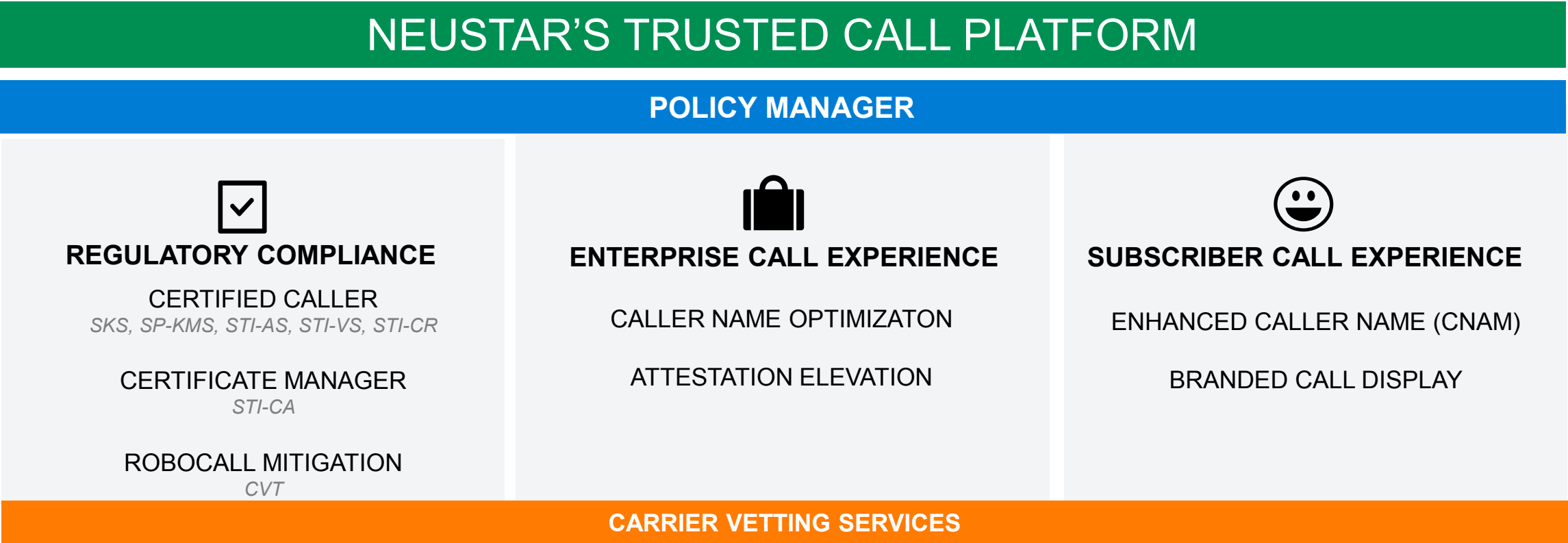
Data Analytics Dashboard

- Enable tracking of suspect and high-volume (high-runner) for both inbound and outbound calls.

NEUSTAR TRUSTED CALL SOLUTIONS FOR CARRIERS



POLICY MANAGER: Personalized policies and preferences at Network, Enterprise or Subscriber level.



NEUSTAR TRUSTED CALL SOLUTIONS



Full Portfolio of Trusted Call Solutions

Set of integrated, market-leading solutions for caller ID for mobile and landline, caller name optimization, branded call display and call authentication.



Identity Resolution Is In Our DNA

Expertise in advanced analytics and identity resolution & verification to enable trusted communications.



Leading Customer Network Of Carriers & Enterprises

Neustar provides Caller Identification services to over 800 carriers, and identity resolution solutions to over 7,000 leading brands and businesses.



Pioneer in Call Authentication

Co-author of STIR standards, and early contributor to SHAKEN framework. Ongoing leadership role in defining industry standards with ATIS, IETF and CRTC.



Industry's Reference Implementation of STIR/SHAKEN

As exclusive operator of the ATIS Robocalling Testbed, real-world STIR/SHAKEN implementations have and continue to be **tested for interoperability with Neustar's Testbed (and commercial) implementation.**



Future-Proof Call Authentication Solution

Fully-compliant to STIR/SHAKEN specifications, including all required and emerging components: SKS, SP-KMS, STI-AS, STI-VS, and STI-CR.



More Ways to Monetize

Flexible interfaces, STIR/SHAKEN software licensing and deployment support for both vendors and carriers to expand services and features, including enterprise-specific applications.





Thank You

CallerID@team.neustar

Give us a call **1-855-898-0036**

RedShift Networks

VoIP Cyber Security

Unified Communications Threat Management Software

- UCTM -

ATTACK ORIGINS

#	COUNTRY
39	UNITED STATES
22	NETHERLANDS
7	FRANCE
4	ESTONIA
3	GERMANY
2	ICELAND
1	CHINA
1	CZECH REPUBLIC
1	HONG KONG
1	ITALY

ATTACK TARGETS

#	COUNTRY
51	UNITED STATES
20	SINGAPORE
10	UNITED KINGDOM

ATTACK SUMMARY

#	ATTACK
18	REGISTER Violation
15	Detecting traffic from a malicious user
14	Malicious Endpoint detected
10	Robo Call Detected
6	Anonymous call from anonymous user
5	Session Duration Violation
4	Detecting fuzzing attack
3	Error rate Exceeds the limit

LIVE ATTACKS

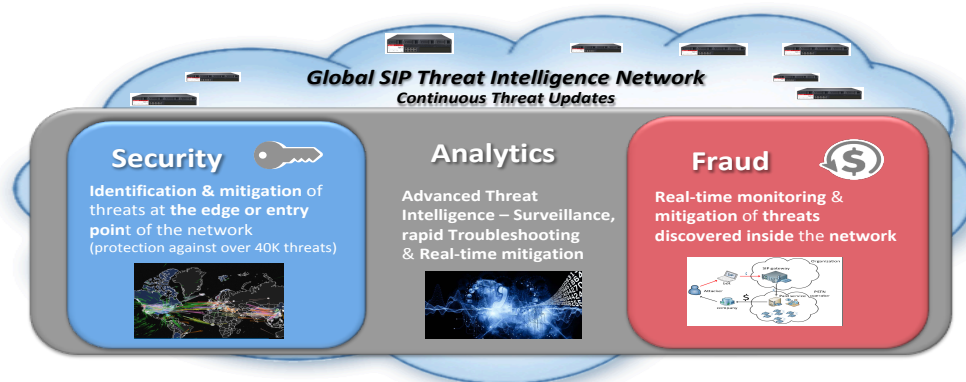
Attack Name	Origin	Origin IP	Target	Target IP	Attack time (GMT)
Robo Call Detected	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 08:39:33
Session Duration Violation	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 10:21:33
Robo Call Detected	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 04:48:01
Anonymous call from anonymous	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 10:13:15
Session Duration Violation	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 09:39:03
Anonymous call from anonymous	United States	216.221.154.227	UNITED STATES	216.221.154.227	2020-02-25 09:39:03

SPAM call identification & mitigation

REDSHIFT
NETWORKS
Secure Cloud Communication and Collaboration.

RedShift Networks

Headquarters:	San Ramon CA
Product offering:	VoIP Security, Threat Intelligence Analytics & Fraud Detection - Global SIP Threat Intelligence Network
Market Focus:	Service Providers and Large Enterprise
Product Status:	Deployed in carrier networks since 2012
Customers:	Service and Voice Application Providers
Proposition:	Patented Proactive Synchronous Flow Security Technology



- 45 International and Domestic Deployments
- Protecting over 255M users across our installed base
- 2020 – processed 27.6M Active sessions
- Processed 51M VoIP Security threat “alerts”
- Identify over 28K major Fraud “incidents”

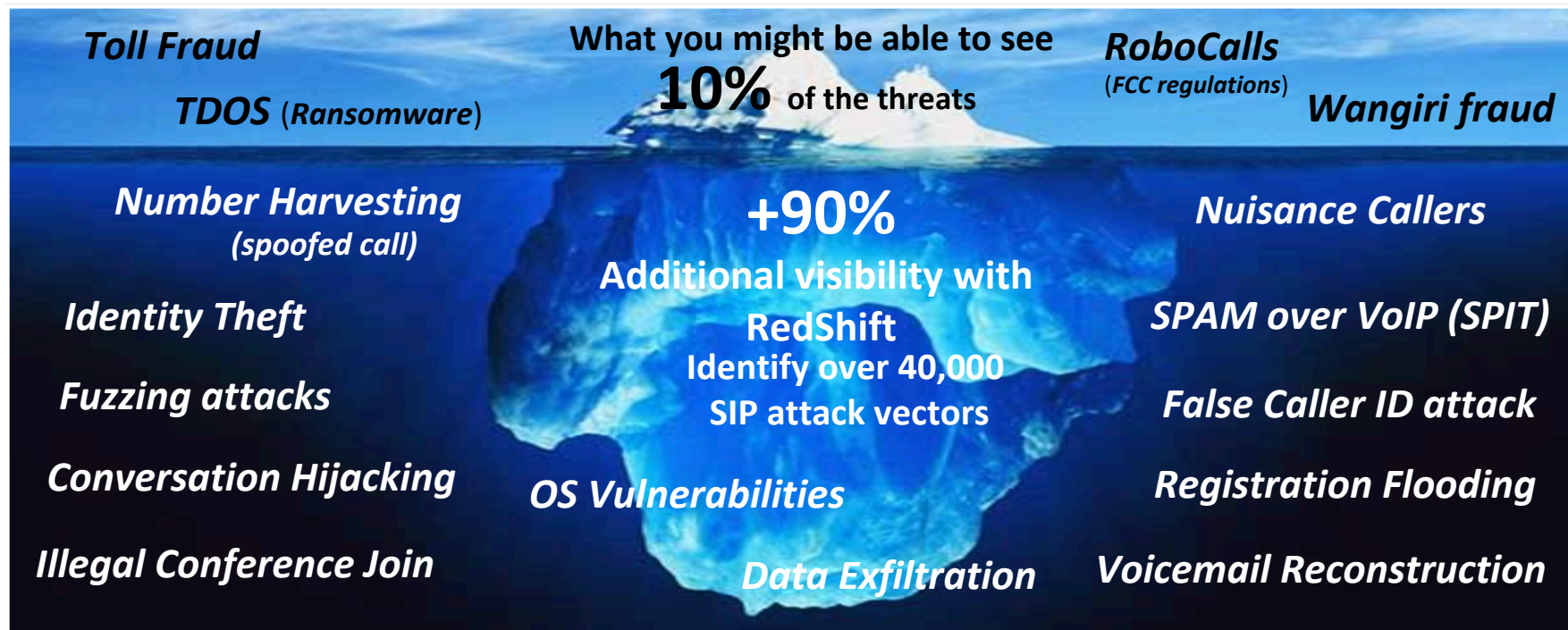
Unified Communications Threat Management (UCTM) Software

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REDSHIFT
NETWORKS
Secure Cloud Communication and Collaboration.

The problem RedShift addresses?

Operators require new tools to understand what is happening in their VoIP/SIP network
Maintain continuous security in real time to meet new threats & compliance requirements

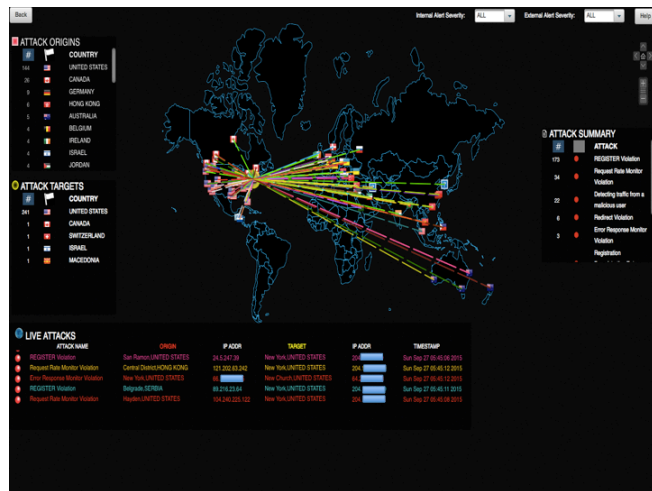


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RED SHIFT
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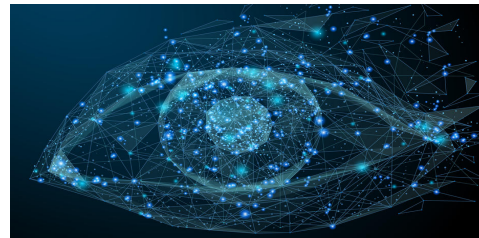
RedShift VoIP Security Software features

Network Security & Fraud Detection



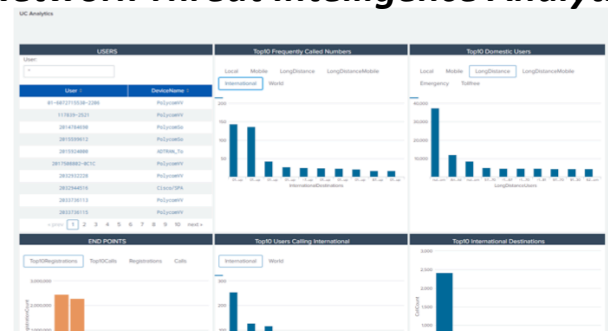
ID over 40,000 Cyber Threat Vectors
Real-time blocking & auto mitigation
Threshold controlled alerting
Near zero false negative/positive

Network Insight & Visibility



Who, What, When, Where How!

Network Threat Intelligence Analytics



Deep packet analysis, Performance monitoring,
Troubleshooting, Reporting, Statistics, Call Recording
Fraud & Financial Dashboards

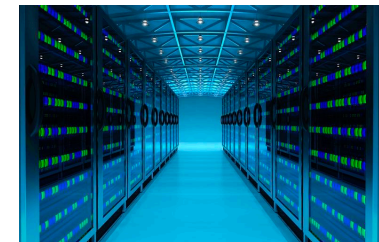
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Spoofed call Detection



ID Spoofed calls & Robocalls
Auto mitigation & call blocking
Support STIR/SHAKEN initiative

Robocall Database



3M+ Robocall numbers
Adding ~30,000 per day

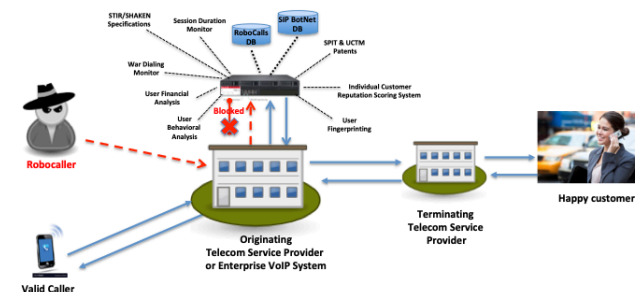
REDSHIFT
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UCTM Use Cases

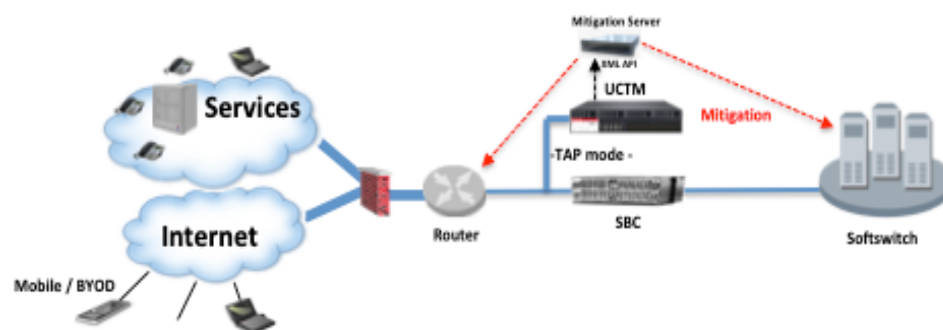
Fraud	Security	Analytics
<ul style="list-style-type: none"> • Real-time fraud detection • Risk / Cost control <ul style="list-style-type: none"> – Thresholds Cost, Volume, Duration • Fraud and Theft of Service <ul style="list-style-type: none"> – Number harvesting • Call spoofing <ul style="list-style-type: none"> – Malicious media / endpoint • Wangiri fraud <ul style="list-style-type: none"> – - One ring and cut • Illegal User Agents <ul style="list-style-type: none"> – EyeBeam / SIPCLI / VaxSoft • SIP Traffic By-Pass <ul style="list-style-type: none"> – Call origination outside native country • IRSF and DRSF <ul style="list-style-type: none"> – PBX Hacking – Traffic Pumping • Call Hijacking 	<ul style="list-style-type: none"> • SIP VoIP BotNets • Registration Storms on SBC <ul style="list-style-type: none"> – Loss of network resources • Stealth – low volume attacks <ul style="list-style-type: none"> – Undetected by SBC • Robocall attacks • Nuisance callers • Call Centers / 911 services • Error Code Alerts • DoS - Denial of Service attacks • TDoS – Telephony DoS <ul style="list-style-type: none"> – Ransomware attacks • DDoS - Distributed DoS • Attacks on Fax and Mail Servers • Fuzzing attacks • Number Harvesting, etc. 	<ul style="list-style-type: none"> • ID stress on VoIP elements • Rapid network troubleshooting <ul style="list-style-type: none"> – Causes / routing / endpoint / Etc. • Average call duration (ACD) • Answer-seizure ratio (ASR) (QoS) • Call & PCAP recording (QoS) • Message statistics (QoS) • Error rate tracking (QoS) • SIP / Q850 error code charts (QoS) • SIP call ladder diagrams (DPI) • Call history records (KPI) • Historical call charts (KPI) • Registration history (KPI) • Active calls / registrations (KPI)

How we stop SPAM & Robocalls

- Multi sourced **Global Database**
 - Over **3M** identified numbers – adding 25K-30K per day
- **Multiple Algorithms to detect illegal calls**
- **Identify where illegal calls** are coming from using **Geo location**
- Capture **rich data** about the illegal caller via **deep packet inspection (DPI)**
- **Instruct the SBC to block illegal call in real time** via normal SIP messaging
 - Implemented via **Advanced Fraud Interdiction (AFI)**
- **Support of STIR/SHAKEN** initiative with both **verification and attestation**



Mitigating VoIP Security threats & Fraud attacks



- **Auto mitigation** – Botnets, Registration Storms, Number Harvesting, etc.
 - **Security threats** via XML API
 - **ACL updates** in **Router or SBC**, depending on alert type
 - Publish alerts to **GigaVue fabric manager** for **blocking source IP Address**
 - Publish alerts to **pxGrid** for **quarantining IP Address** – Cisco ISE (Identity Services Engine)
- **Auto mitigation** – PBX Hacking, Traffic Pumping, Malicious media & endpoints
 - **Toll fraud** alerts via XML API (volume/duration based thresholds that have been exceeded)
 - **Update Dial Plan in Softswitch** to suspend traffic
- **Auto mitigation** – Spam, Robocalls, TDoS, banned numbers & countries
 - **Advanced Fraud Interdiction (AFI)**, communicates with SBC to identify attackers & respond to block or allow a call to be processed

RED SHIFT
NETWORKS

Thank
You



With its' patented advanced correlation engine technology, RedShift Networks is able to holistically combine **SIP Security, Fraud Detection and Network, Application and User layer Analytics** for visibility into anomalous activities, enabling real-time threat mitigation and troubleshooting!

Ray Muscatell
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RED SHIFT
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Secure Cloud Communication and Collaboration.

Robocall Prevention

TransNexus

Alec Fenichel
Senior Software Architect

About TransNexus

- Software for the telecommunications industry since 1997
- Solutions for
 - Jurisdictional least cost routing
 - CDR mediation and rating
 - Robocall mitigation
 - Toll fraud prevention
 - Robocall prevention
 - TDoS protection
 - STIR/SHAKEN
 - Analytics and reporting

Policy and Reporting Engine

- Granular policy engine
 - Block
 - Modify CNAM
 - Overwrite CNAM
 - Route to voicemail
 - Route to CAPTCHA gateway
- Real time reporting engine
 - Custom reports
 - Scheduled emails

Robocall Detection

- SHAKEN verification
- Invalid number detection
- Unallocated number detection
- Do Not Originate number database integration
- Calling number reputation database integration

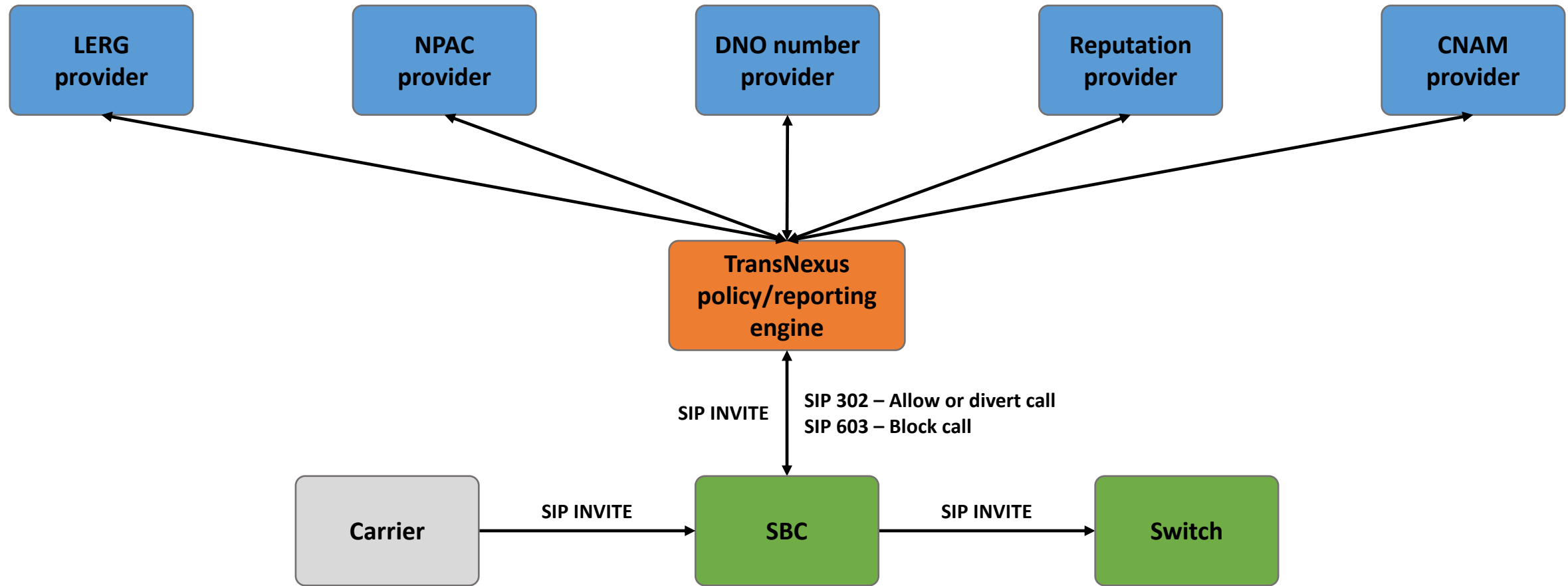
Data Providers

- LERG providers
 - TransNexus
- NPAC providers
 - 10x People
 - iconectiv
 - Neustar
 - TransNexus
- Do Not Originate number providers
 - Somos
 - TransNexus
- Calling number reputation providers
 - BulkVS
 - EveryoneAPI
 - TrueCNAM
 - YouMail
- CNAM providers
 - BulkVS
 - Neustar
 - PacificEast
 - Somos

Integration

- Cloud or on-premises
- SIP interface compatible with any switch/SBC
- Switch/SBC vendor partners
 - Oracle
 - Cisco
 - AudioCodes
 - NetSapiens
 - TelcoBridges
 - PortaOne
 - Telinta

Example Deployment



Questions and Answers

- Contact TransNexus
 - <https://transnexus.com>
 - info@transnexus.com
 - + 1 (404) 526-6060



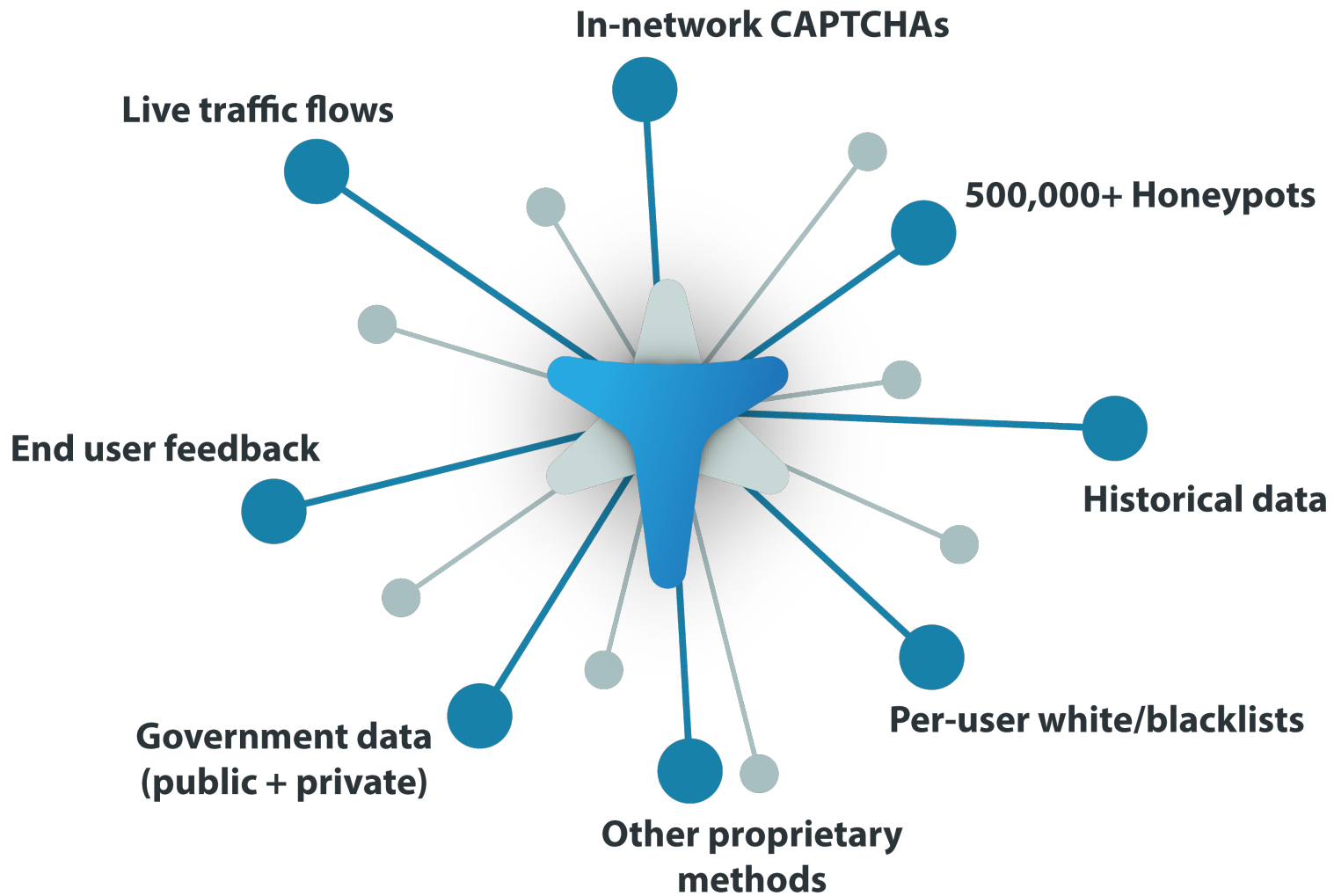
TrueCNAM Background

- Founded (2014) to address growing robocalling problem.
- TrueSpam scores - a real-time caller reputation analytics DB, soft-launched 2015.
- First carrier customers in January 2016.
- Used today by: ILEC's, CLEC's, VoIP providers & enterprise customers.
- Available via HTTPS REST API & other licensing terms.
- Contrary to name, focus has been TrueSpam scores since late 2015.
- First reputation DB integrated into a major SBC vendor (Metaswitch in 2016).
- Integrated into TransNexus ClearIP & NexOSS since 2018.

What is a TrueSpam score?

- Indicates likelihood that a call is un-wanted, including calls from:
 - Telemarketers, Robocallers, Fraud / Phishing calls.
- Scores range from 0 (low) to 100 (high), with defined low / medium / high ranges.
- Scores created by leveraging data from multiple sources:
 - We look at data like a FICO credit score. More data / sources, better it is.
 - Scores updated in real-time based on incoming data.
 - No-longer used TN's age-out of system based on TTL (Time To Live).
- Real-time. Detection of new robocalling campaigns, frequently within seconds to minutes of campaign beginning.

TrueSpam data sources



TrueSpam data sources - details

- Live traffic flows: Volume and velocity of calls, signaling, S/S, other data
- In-Network CAPTCHAs: “Press X to complete your call”. Real-time data from carrier partners.
- 500,000 Honeypots: TN’s not in service with a subscriber across carrier partners in US/CA. Real-time data. Some calls intercepted - media recored and analyzed.
- Historical Data: 10+ years of carrier partner CDR data used to create algorithms. Continued access to new CDR data.
- End user feedback & white/black lists: End user opinions of a TN.
- Government Data: Federal, State and Local agencies. Some public, some private.
- Other proprietary methods

Disclosable Customers



metaswitch



netTALK.))



Jolly Roger
TELEPHONE CO

Vodia



teleCalm[®]
protecting seniors, empowering caregivers



edge[®] communications

Customer Highlights

- Metaswitch - 500+ carrier customers in North America
 - TrueSpam provided via turn-key SaaS to existing ILEC/CLEC/VoIP customers.
 - Started discussions 4Q 2015, first deployments started 3Q 2016.
 - Customers: small to Fortune 100 ILEC's.
- Movius - Provides white-label “MultiLine” app on T-Mobile (former Sprint)
 - Replaces enterprise office desk phones with managed smartphone app.
 - TrueSpam scores used in-network on T-Mobile wireless network.
 - Customers and investors include large banks (e.g. JP Morgan Chase).
- Jolly Roger Telephone Company
 - Provides “bots” that waste the time of telemarketers.
 - Has received significant national press, including: NY Times, Shark Tank, Fortune, Business Insider, NPR, In Touch Weekly, Gizmodo, PC World, etc.

TrueCNAM - Data retention

- We throw away the vast majority of data we receive. Why?
 - Subscriber privacy - we store nothing resembling a CDR.
 - Avoid subpoenas / “No Such Letter”.
 - Carriers are comfortable with how we use / retain data.
 - See: T-Mobile, Yahoo, Equifax, Target, Facebook / Cambridge Analytica, etc.
- There’s a question of whether some of our competitors are in the robocall identification or the consumer data business.

Additional TrueSpam details

- Track >2,000,000 North American TN's presently.
 - Growing, even as old numbers are aged out (auto TTL'd).
 - False-positive rate < 0.01% over last 6 months.
- Technical:
 - Simple REST HTTPS API delivered via cloud. On-premise available.
 - Response latency average: 35ms (alternate low-latency API: ~5ms)
 - HA DB cluster in AWS: 2 geographic regions and 6 Availability Zones.
 - 100% uptime since December 2015.
- License data to >1/3 of STIR/SHAKEN Approved Certificate Authorities.
- License data to competitors, to augment gaps in their own caller reputation data.

Thank you!

Contact Information:

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www.truecnam.com



Spam Call Blocking Webinar

YouMail Profile

Mission: Protecting everyone from illegal phone calls

Known for:

- Consumer robocall blocker app
- [YouMail Robocall Index](#)

HQ: Irvine, CA

Employees: 50

Founded: 2007

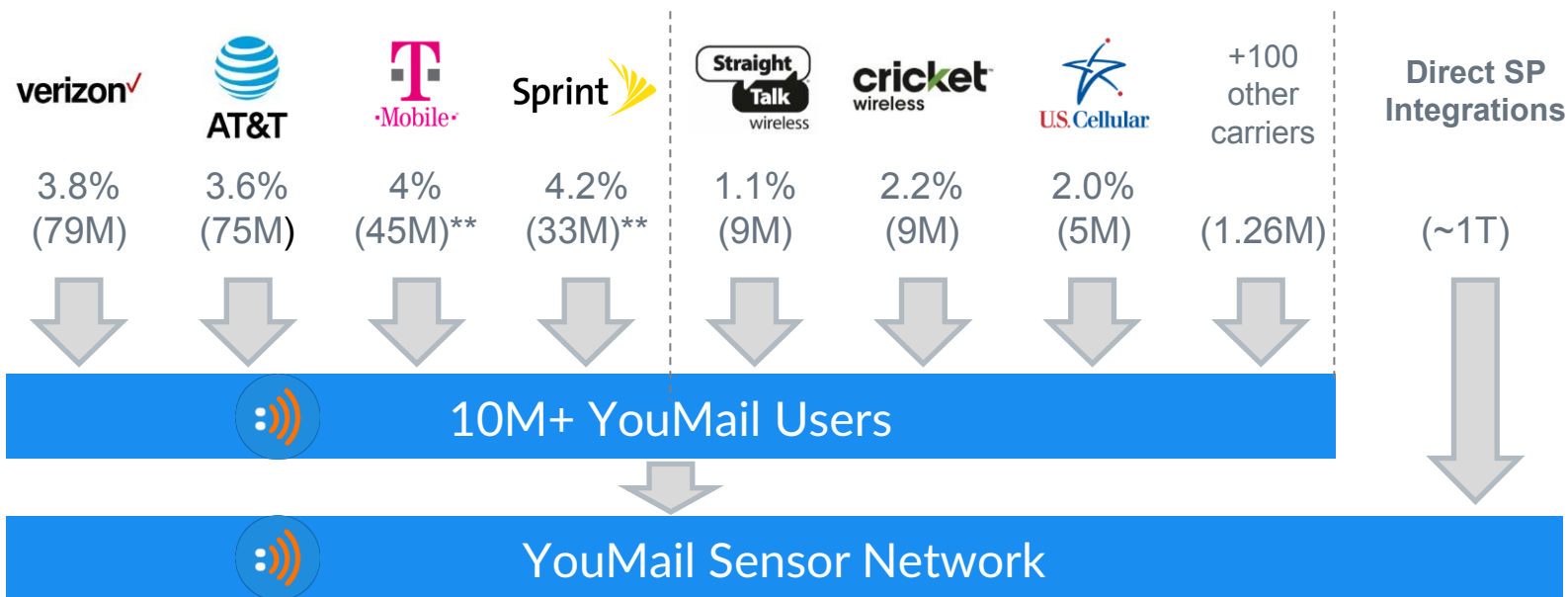
Enterprise
Customers:



- 10M consumer/professional users
- Primary data source for FCC robocall metrics, USTelecom mitigation investigations
- 2021: New enterprise and service provider solutions

Sensor Network Delivers Rapid Warning

Scale across carriers provides **zero-hour** robocall protection



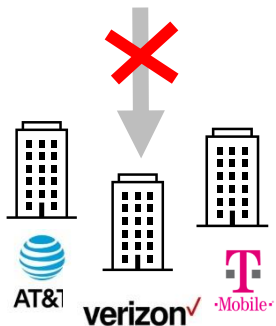
Call Content + AI = Zero-Hour protection

YouMail:

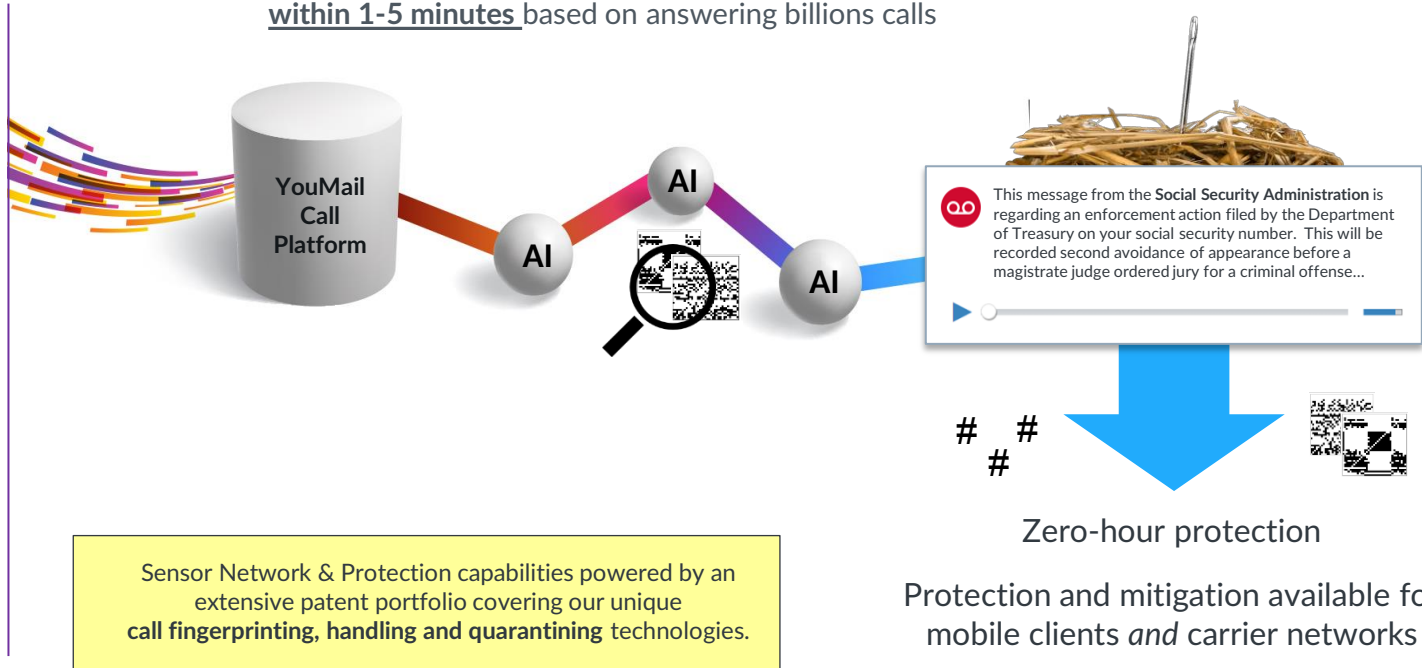


Sensor Network

Consumer mobile numbers
answered by YouMail
instead of carrier



YouMail Call Fingerprinting identifies bad calls typically
within 1-5 minutes based on answering billions calls




Analytics Engine Identifies Robocalls

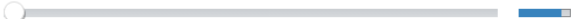

Patented algorithms **fingerprint calls in real time**

- Call audio and metadata is analyzed using highly accurate, trained models
- Campaigns identified and classified (e.g. identity theft, imposter scams, bank fraud, tax fraud)
- DID spoofing tactic detection
- **Faster and more accurate than call event-based analytics** that rely upon signals or metadata that do not have visibility into call content





This is an important message from the social security administration. This is to intended to contact you regarding an enforcement action filed by the U S Department of Treasury on your social security number are ignoring. This will be an intentional second attempts to avoid initial appearance before magistrate Judge ordered Grand jury for a federal criminal offense. This is the final attempt to reach you to resolve this issue immediately to speak to a federal agent to call back at number 240-587-5386, I repeat 240-587-5386. Thank you.

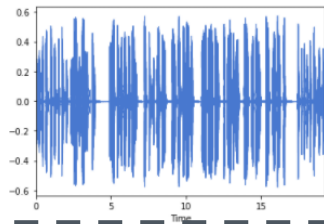


Campaign:	Federal Tax and Audit Division
Caller Phone Number:	240-587-5386
Caller ID:	IRS
Caller Carrier:	Bandwidth.com CLEC, LLC
Call Time:	10/13/2020 1:23:05 PM PDT
Call Time (UTC):	2020-10-13T20:23:05Z
Callee Phone Number:	210-884-xxxx
Callee Carrier:	T-Mobile

Audio Fingerprinting in Action

A

Known
Fraud
Call

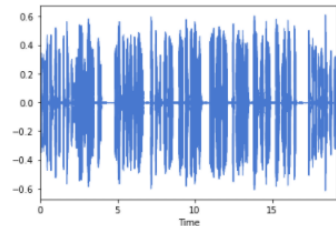


Fingerprinting
algorithms perform
private comparisons



B

Sample
Call
#1

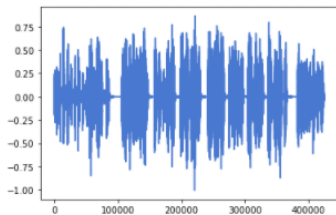


Cold : the calls match!

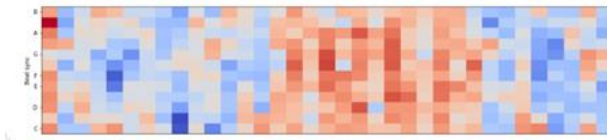


C

Sample
Call
#2



Heat : these are **NOT** the same call!



Monitoring Telephone Number Behavior

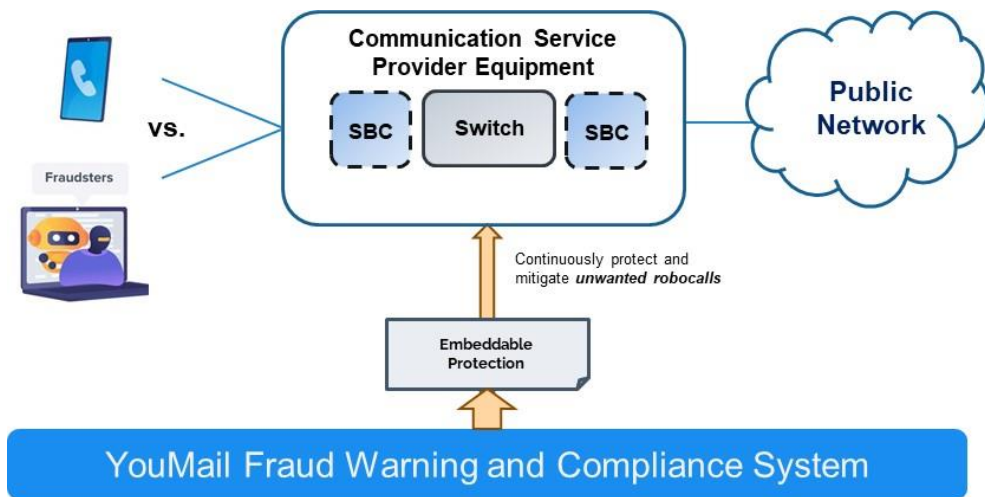
► Important to monitor more than call events...

- Identifying specific unwanted behaviors
- Capturing actual unethical an/or illegal activities

Campaign ID	Type	Campaign	Last 7 D	Est. Calls last 7 D	avg. Daily Calls Log	Est. Calls Yesterr	day vs. Avg. Las	Est. Calls Last 30 D
189	Vehicle Warranty	Possibly Extending or Reinstating	1.16%	21,809,160	3,115,594	3,884,550	24.68%	64,709,730
507	Vehicle Warranty	Driving Without a Warranty	12.36%	9,552,600	1,364,657	1,893,555	38.76%	22,003,170
1665	Disability Benefits	National Disability Regarding Insurance	1.06%	8,039,235	1,148,462	431,085	-62.46%	14,348,475
1457	Vehicle Insurance	Senior Executive / Automotive Department	3.49%	7,080,060	1,011,437	1,327,620	31.26%	26,368,395
1663	Disability Benefits	Disability Advisor Regarding Your Wellness	1.26%	4,380,015	625,716	588,990	-5.87%	13,002,585
1658	Medicare	Medicare Discount Card Regarding Insurance	1.38%	4,022,010	574,573	772,995	34.53%	19,306,170
76	Google Listing	Verified by Google	6.91%	3,866,280	552,326	776,040	40.50%	11,393,520
275	Employment	EduMatcher / Employment	2.08%	3,825,825	546,546	762,990	39.60%	14,213,625
75	Google Listing	Business Listing at Risk	9.35%	3,824,955	546,422	642,930	17.66%	10,922,850
469	Employment	Career Coach / Employment	0.65%	3,463,035	494,719	663,810	34.18%	12,765,510
439	Disability Benefits	Disability Advisor on a Recorded Line	0.36%	3,274,680	467,811	620,745	32.69%	11,871,150
1480	Vehicle Warranty	Susie / Vehicle Service Department	68.40%	3,052,830	436,119	665,550	52.61%	10,703,610
1474	Vehicle Warranty	Urgent Message	37.00%	2,713,095	387,585	413,250	6.62%	7,324,965
1454	Automatic Charge	Computer Services / Registered Customer	0.00%	2,123,235	303,319	337,560	11.29%	7,255,365
1673	Student Loan	Agent / Forgiveness and Relief Program	3.72%	2,033,190	290,456	642,060	121.05%	6,884,310
1507	Health Insurance	Kristen / Health Care Associates	0.39%	1,900,515	271,502	377,580	39.07%	12,103,875
46	Health Insurance	Pre-Approvals Ready	0.00%	1,870,065	267,152	375,405	40.52%	5,903,385
1459	Health Insurance	Interstate Brokers	0.00%	1,833,525	261,932	358,005	36.68%	5,123,430
1506	Process Server	Process Servicing	0.00%	1,744,350	249,193	354,090	42.09%	5,382,255
1672	Student Loan	Agent / Forgiveness and Relief Legislation	2.23%	1,732,605	247,515	522,000	110.90%	6,790,350
15	Interest Rate	Visa Alert System	4.77%	1,688,670	241,239	381,495	58.14%	5,758,965
45	Interest Rate	Qualified to Drop Down	9.67%	1,680,005	240,928	337,560	40.11%	5,696,760
1681	Debt Reduction	Simple Life Debt Solutions	3.07%	1,602,105	226,672	224,895	-1.74%	6,183,525
190	Vehicle Warranty	Alison from the Warranty Department	6.50%	1,586,880	226,697	282,750	24.73%	4,948,995
1463	Vehicle Warranty	Set To Lapse	4.53%	1,488,135	212,701	251,430	18.27%	6,178,305
531	Disability Benefits	Monthly Disability Money	5.62%	1,431,585	204,512	356,210	62.93%	5,403,570
22	Interest Rate	Preapproved as a Valued Customer	0.03%	1,418,100	202,586	210,975	4.14%	6,711,615
1543	Google Listing	Suspended Or Not Verified	4.70%	1,415,925	202,275	261,435	30.25%	6,486,285
1664	Disability Benefits	Benefit Advisors Regarding Insurance	0.38%	1,387,215	198,174	277,865	39.82%	4,977,705
1125	Health Insurance	2020 Health Care Advisors	0.00%	1,313,700	187,671	241,425	28.64%	4,366,095
792	Amazon Alexa	Amazon / Register Business	19.75%	1,308,480	186,926	172,695	-6.61%	3,642,730
744	Interest Rate	Legal Financial Advisers	33.48%	1,295,430	185,061	354,525	91.3%	3,654,870
1670	Disability Benefits	Medicare Advisor / Disability Advisor Regarding Insurance	0.21%	1,267,155	181,022	244,035	34.81%	4,634,925
1461	Vehicle Warranty	Lisa Warranty Department	59.90%	1,261,500	180,214	229,245	27.21%	3,774,060
412	Travel	Awards Department	0.00%	1,223,655	174,808	226,200	29.40%	2,756,470
1662	Vehicle Insurance	About New Low Rates	0.04%	1,201,035	171,576	219,675	28.03%	12,924,725
672	Health Insurance	Very Affordable Options	2.40%	1,194,945	170,706	283,185	65.89%	3,805,815
1656	Solar	The-Solar-Project.com	1.27%	1,161,015	165,859	256,215	54.48%	4,005,045
1130	Debt Reduction	Preapproved Hardship Program	3.68%	1,100,115	157,159	252,300	60.54%	3,026,730
1639	Vehicle Insurance	Career Coach / Produce Quick Auto	2.88%	1,088,370	155,481	212,715	36.81%	4,023,750
1629	Bill Reduction	AT&T / Avail Up To 50%	68.38%	1,084,020	154,860	288,840	86.52%	11,108,160
1508	Debt Reduction	Account Holder Services	0.00%	1,078,365	154,052	160,950	4.48%	2,994,105
1678	Medicare	Discount Card Membership / Regarding Insurance	5.28%	999,165	134,166	165,735	23.53%	3,043,260
274	Employment	Employment Department	0.00%	927,420	132,489	176,175	32.97%	3,319,920
67	Health Insurance	Sam with Insurance	0.95%	913,935	130,562	180,525	38.27%	4,313,025
1531	Loan Approved	Our Company For Up To \$10,000	50.88%	913,935	130,562	150,075	14.95%	1,887,030
1266	Robot Financial Help	Coronavirus Robot	0.00%	903,495	129,071	133,545	3.47%	1,172,325
1676	Health Insurance	866-200-3714 / Discount Insurance Quotes	0.39%	900,885	128,698	179,655	39.59%	3,309,915
684	Medical	Precautionary Genetic Cancer Screening	37.52%	878,700	125,529	177,915	41.73%	3,230,745
70	Easy Money	Absolutely Change Your Life	0.00%	877,830	125,404	200,970	60.26%	2,830,980
231	Home Security	Home Security Promotions	0.10%	862,605	123,229	115,275	-6.45%	2,715,270

1480	Vehicle Warranty	Susie / Vehicle Service Department
1474	Vehicle Warranty	Urgent Message
1454	Automatic Charge	Computer Services / Registered Customer
1673	Student Loan	Agent / Forgiveness and Relief Program

YouMail Powers Compliance Solutions



- Threat Database enables rapid, accurate robocall blocking
 - Identifies source telephone numbers and assigns risk score
- Real time API enables integration with service provider network call path
- Robocall audio recordings support service provider account management

More Information

More Information...



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Ground-Truth Identification → Zero-Hour Detection + Action

<https://www.linkedin.com/in/gerrychristensen/>



Enterprise and Service Provider Robocall Mitigation

About YouMail



YouMail directly answers **billions of real live** calls to its users across **all carriers** – more calls and more **voicemail audio content** than anyone else.



Robust **patented technology** and **zero hour detection** powers our solutions for consumers, enterprises and carriers/service providers.



YouMail is the **primary authority** and **data provider** powering investigations & measurement (traceback, FCC, enforcement), and provider of the **Robocall Index**.



YouMail solutions are directly deployed at US service providers & financial institutions that work **together** to **catch & stop** attackers.



Every call should be
safe & productive.