Why Robocall and Fraud Mitigation Needs to Be Webscale

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Agenda

- My Background
- Introduction
- Definitions
  - Robocall and Fraud Mitigation
  - Webscale
- Three-Pronged Solution: Robocall and Fraud Mitigation
  - Decouple: Separate capabilities out of the network into their own domain
  - Adapt: Make the system highly configurable
  - Automate: Fundamentally change how software is developed, tested, and deployed

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My Background

- Sonus / Ribbon 21 Years
- Director Verification Office Test Lab
  - Customer network reproduction and testing
  - Software deployment MOP development
- Professional Services Network Design
  - Designed networks worldwide; US, Europe, and Japan
- Systems Engineering Director / Tier 1 Accounts
- Chief Field Architect
  - Virtualization
  - Robocall Fraud and Nuisance Mitigation

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Introduction

- Answer This Question:

  “How can I keep up with the rapidly changing regulatory and competitive landscape for robocall and fraud mitigation?”

- Decouple The Problem Set Into Two Domains
  - Core Platforms + connecting calls – no margin for error; has immediate and direct impact on customers experience
  - Ancillary Services – enhance customers’ experience but will not severely impact experience if interrupted

- Employ Webscale Techniques to Ancillary Services
  - Proven strategy for reacting quickly within a highly reliable communications network
  - Adapt
  - Automate

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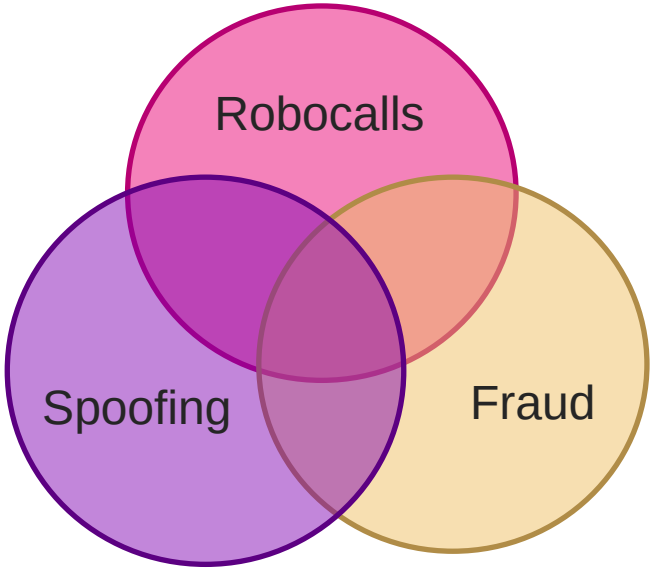
Fraud and Robocall Mitigation

- Robocall and Fraud
  - Closely related but not entirely the same
  - Some fraud is not through Robocalling
  - Some Robocalling is not fraud, but users still might consider it unwanted
- Not Simply STIR/SHAKEN
  - STI is an enabler but does not authenticate or determine intent
- Origination Robocall Mitigation
  - Prevention of clearly fraudulent ANI spoofing at origin
  - Behavioral analytics to detect *unexpected* robocalling customers
- Termination Robocall Mitigation
  - Blocks clearly fraudulent ANI spoofing
  - Provides called party notification and/or treatments



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What is Webscale?

- Apply Techniques of Web Monsters to Development, Testing, and Deployment
  - Facebook, Amazon, Netflix, etc.
  - Continuous development without user interruption
  - Minimize operational costs while meeting dynamic service demand
- Pace of Innovation
  - Respond to fierce competition with rapid introduction of capabilities
- Scale
  - High volume, auto-scaling services
- Service Assurance
- Automation
- A Mindset Not a Technology
  - Technologies are enablers and there are many that can be employed

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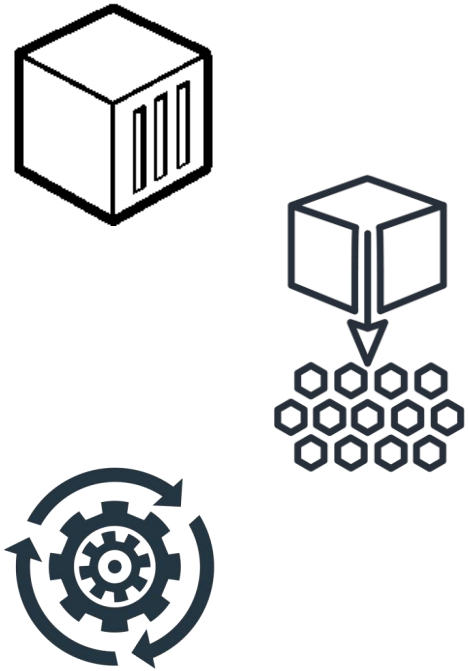
Webscale Enablers

- Enablers of rapid innovation and scale
- Containers
  - Docker, Portainer, OpenShift, each public cloud container service, etc.
  - Allows developers to develop and test with an exact production configuration
- Microservices
  - Loosely coupled, *reusable* components
  - Independent scaling vectors
- Automation
  - Kubernetes, Docker Swarm, Cloudify, Rancher, Amazon EKS, Google GKE, etc.
  - Lowers cost and increases velocity
  - DevOps
  - Continuous Integration
  - Continuous Deployment



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Poll Question #1

How are you deploying a robocall & fraud mitigation solution?

- Tightly integrated to existing call processing
- Separate from existing call processing, but in my network
- Separate and hosted by 3rd party

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Decouple

Core Call Processing System Challenges

- Core Call Processing Systems
  - Critical call path elements that directly define network quality
  - Changes are deliberately slow because of risk
  - Balance risk vs. delay in mitigation
  - Software upgrades must be carefully planned and executed

Tight Integration

- Challenges With Fraud and Robocall Mitigation In Core Call Processing Systems
  - Requires significant time and effort to roll out new routing designs for each robocalling threat
  - Customer routing database design complexities introduce delay to threat response
  - Every network design and blocking technique can require a custom data ingestion and routing design

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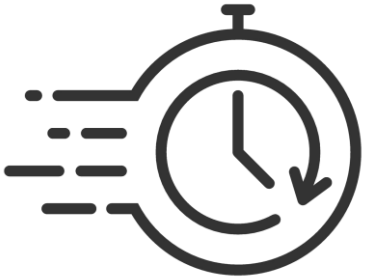
Deployment Challenges in Fraud and Robocall Mitigation

- Pace of Development
  - Even for just STI, we didn't know what we didn't know
  - Signing as a service, non-IMS networks, etc.
- Drivers of Rapid Change
  - Regulatory
  - Competitive: Users are starting to publicly comment on competitive differences
  - Reduce fraud costs
- Pace Not Slowing Down
  - STI alone: DIV, RPH, 607/608, Out of Band
  - Verified Caller and RCD
  - Honeypots, fraud campaign fingerprinting, ML based scoring algorithms, threat federation, and new database sources



Go Fast To Keep Up With the Bad Guys

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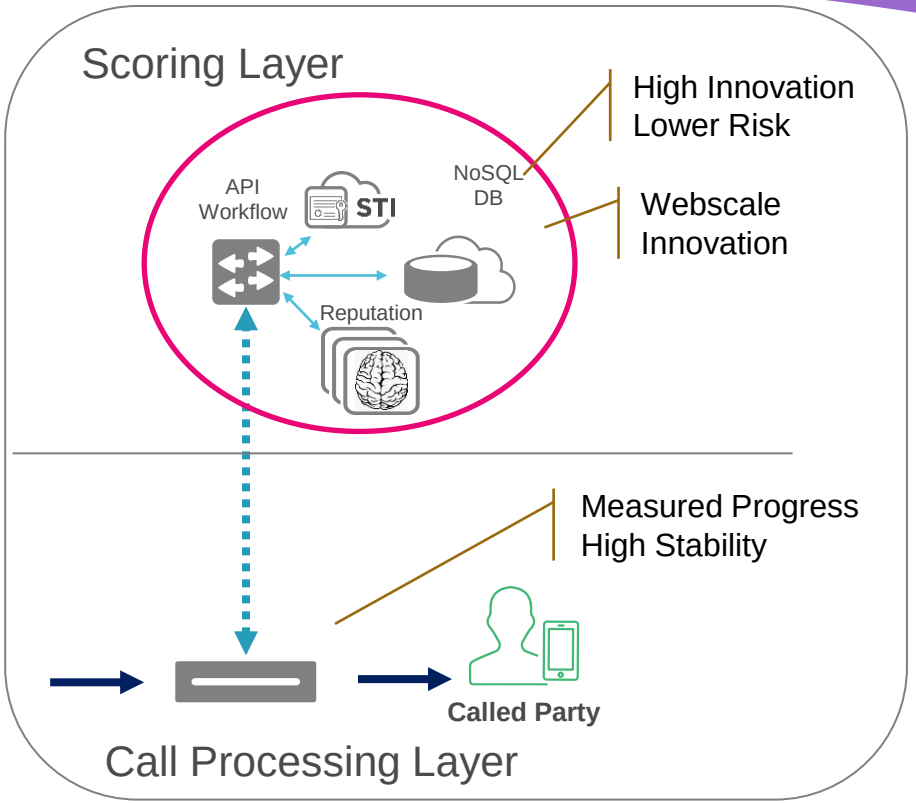
Decouple

- Scoring for Robocall and Fraud Mitigation
  - Rapid Innovation
  - Quickly adapt to robocalling changes
  - Low risk to network stability
  - Employ Webscale techniques
- Call Processing
  - Measured progress
  - High stability, slow to adapt
  - Implement rules-based call treatments once
    - Call Validation Treatment



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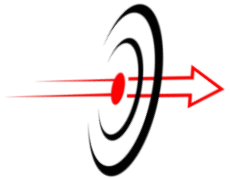
Adapt: Make the System Highly Configurable

Goals For Reacting to New Threats

- Goal: Robocalling and fraud threat response with zero design overhead
- Eliminate where possible:
  - Vendor or internal R&D lead time
  - Network and routing design time
  - Software testing and rollout
  - Production risk to core platforms
- Move to:
  - **Risk isolated service**
  - **Field adaptable** data lookups and decision criteria
  - Rapid CI/CD development and deployment
- Responsive
  - **Configurable in minutes for most evolving threats**
  - Scoring systems software rollout every 30 days for new advanced techniques

Risk Reduction



The Speed & Accuracy
to Be On-target

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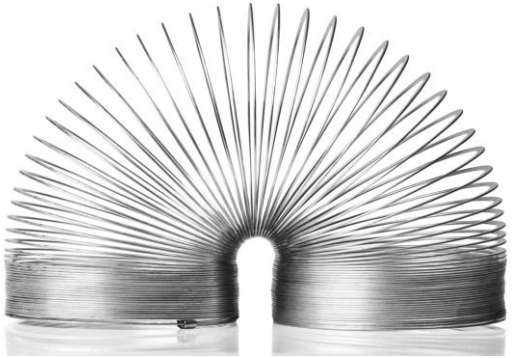
Core Platforms – Embedded Flexibility

- Minimize Upgrades
  - Support rapid response to changing threats
- Generic Call Treatment Rules and Actions
  - Support multiple scores mapped rules in a hierarchy
- Generic Signaling Mapping
  - Mapping of SIP content to scoring service request
  - Mapping of scoring response to SIP content



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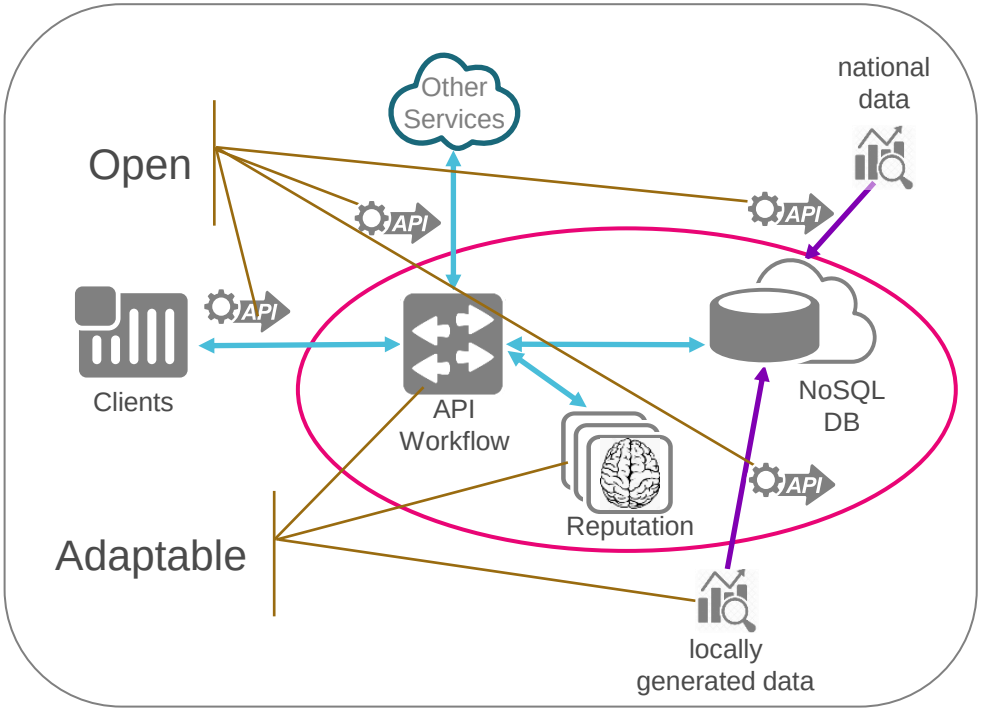
Actionable Analytics

- Scoring System Must Be Able To:
  - Add new data sources at any time
  - Add and adjust scoring algorithms at any time
  - Create multiple scores for the same call
  - Support open APIs – compose new things on the fly
- Service Chaining
  - Easily chain in REST services as threats change
  - Designed around “zero development” integration model
- Reputation Data Sources
  - Big Data / NoSQL cloud-scale database
  - Designed for large data sets and frequent data updates
  - Should easily add new data sources from as threats emerge
  - “Zero development” integration model for new data sources



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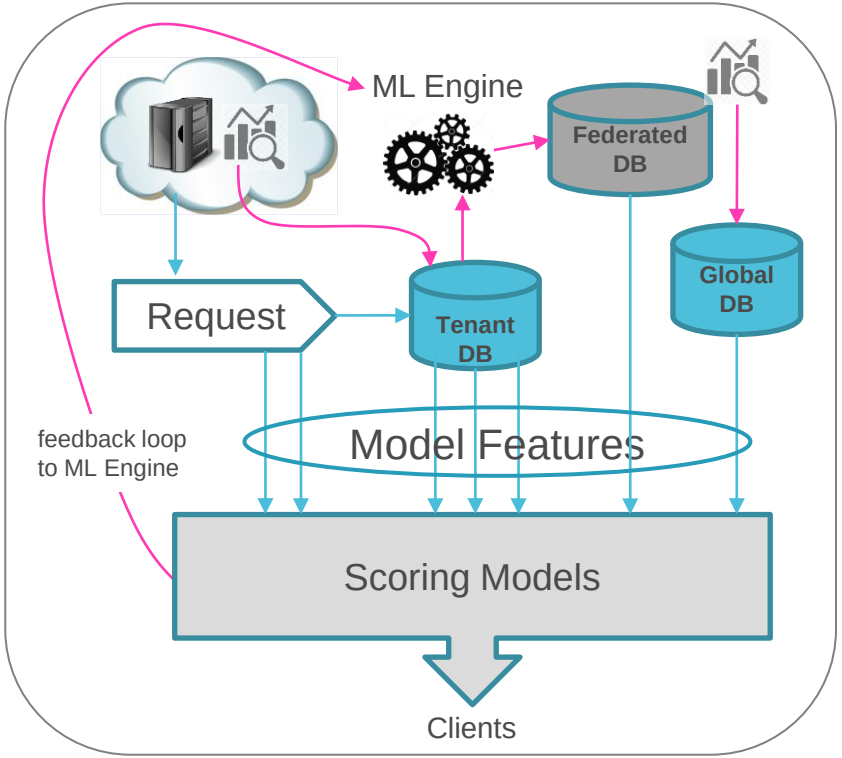
Adaptable Scoring Models

- Global Data Sources
- Custom Request Attributes
- Custom Data Sources
  - Private Tenant Data
  - Federated Data
- Custom Scoring Models
  - Data source weighting
  - ML model training and inference in Identity Hub
- Tenant Specific Exceptions



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Automate

Continuous Synthetic Testing

- Fundamental Enabler: Automated testing
- Testing should run 7 x 24 x 365
- Simulate actual service queries and responses
- Measure both service fidelity and response times
- Immediate call out for fidelity defects or SLA excursions
- Input to Blue / Green deployment fall back (next slide)

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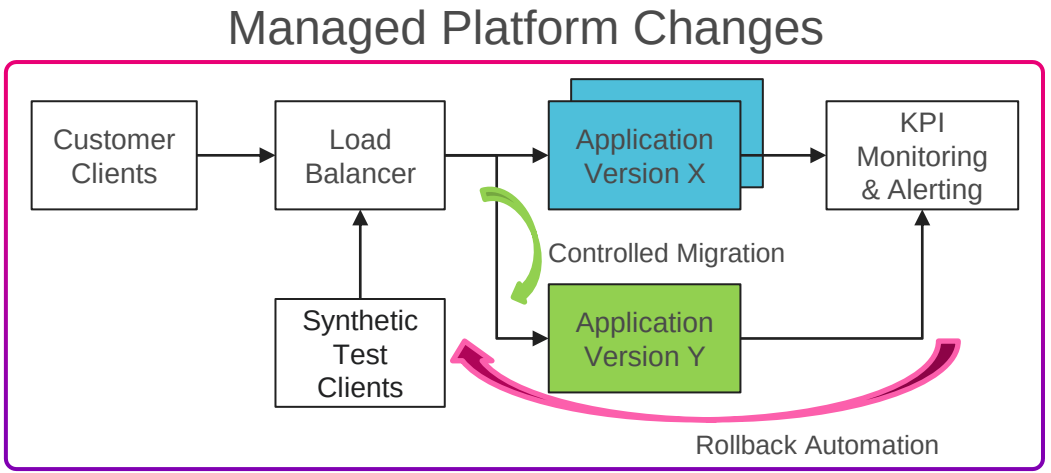
Blue / Green Deployment – Used for Software Development Changes

- Deploy *Software* – Test – Migrate
- Continuous Synthetic Testing
- Pre-testing with synthetic clients
- Controlled Migration
- Automated, unconditional rollback
- Human gates
  - Initial deployment testing
  - At x% of production



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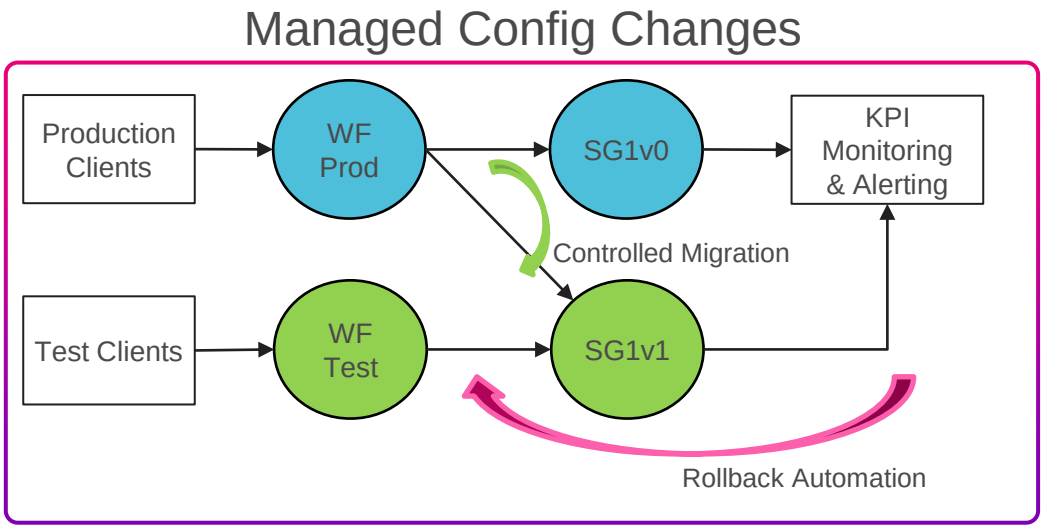
Blue / Green Deployment – Used for Configuration Changes

- Deploy *Configuration* – Test – Migrate
- Continuous Synthetic Testing
- Pre-testing with synthetic clients
- Controlled Migration
- Automated, unconditional rollback
- Human gates
  - Initial deployment testing
  - At x% of production



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Poll Question #2

Of externally hosted services you've deployed, what is your primary motivation?

- Reduced operational expense
- Better able to manage scale
- Speed of new feature deployment
- All the above

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How To Get To The New Paradigm?

Deploying Webscale

- Build Out Private Webscale Infrastructure
  - Some Tier 1s are doing this for their 5G infrastructure, inclusive of operations
  - Highly focused on 5G and not ready to apply to existing voice network needs
  - Voice network operations infrastructure and process need to be adapted to Webscale infrastructure

- Outsource to hosted services provider, leveraging Webscale on public cloud

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An Example of A Real Deployment

- Session Border Controller + Policy and Routing Server + Hosted Identity Assurance Services

- Upgraded call processing core up to minimum release to leverage:
  - Advanced API capabilities for Reputation Scoring and Secure Telephone Identity (STI)
  - Advanced call validation treatments and flexible signaling mapping

- Subscribed to Ribbon Identity Assurance services
  - Ribbon Identity Hub is cloud-hosted SaaS platform for STIR/SHAKEN and Reputation Scoring services
  - Dynamically reconfigure service as needed to adjust scoring and add new data sources
  - Leverage Ribbon CI/CD process
  - Adopt monthly deployment cadence to capture new rapidly changing scoring challenges

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Robocall and Fraud Mitigation Summary

- Embrace a Webscale mentality to keep up and win
- De-risk by decoupling robocall & fraud mitigation from call processing infrastructure
- The bad guys innovate fast; ensure your solution is adaptable by design
- Increase scale, operational efficiency and resiliency by leveraging automation and blue/green deployment
- Yes, you can do this using a hosted services provider

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Thank You