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TECH FORUM 23



Using Analytics to Solve Complex Issues

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Ribbon Network Engineering, Analytics

Agenda

- Market Dynamics and Challenges
- Operational Challenges
 - Understanding why calls are failing
 - Searching call detail records
 - Root cause analysis
 - Voice quality
 - MS Teams call insight
- Security Challenges
 - Telephony Denial of Service (High-Rate Call Attacks)
 - Robocalls (auto-dialers)
 - Fraudulent Calls
 - Mitigating Problems (blocking callers)

Evolving Changing Dynamics



Anywhere, Anytime
Communications



Hybrid Physical &
Virtual Networks



Insights, Assurance,
& Security



AI/ML-Based
Service Assurance

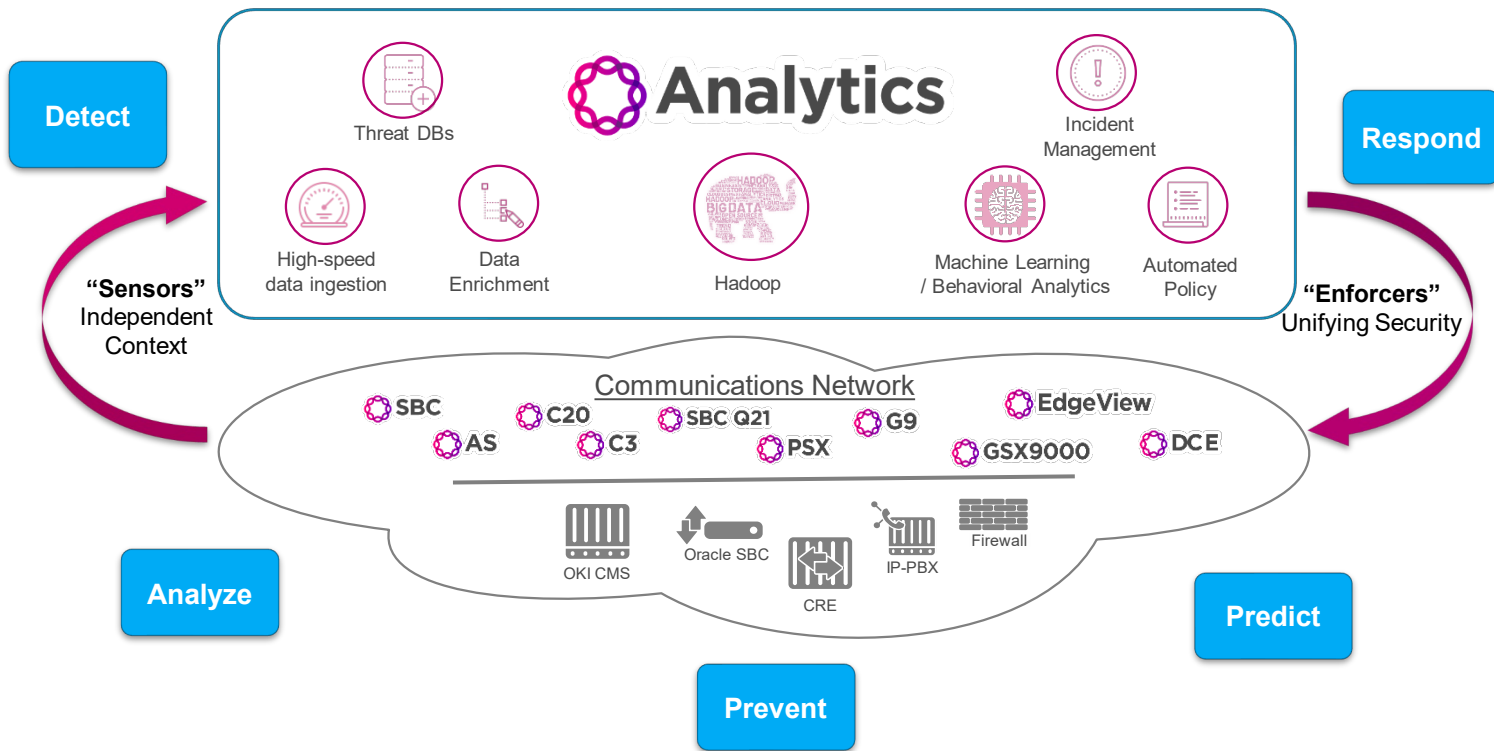


Regulatory
Requirements



Fast & Flexible
Service Innovation

Be ready for **Evolving** Networks & Services....



Challenges

Operation



- How many tools do you use to detect & troubleshoot QoE issues
- Can I make use of the data to reduce cost & increase profitability

Planning



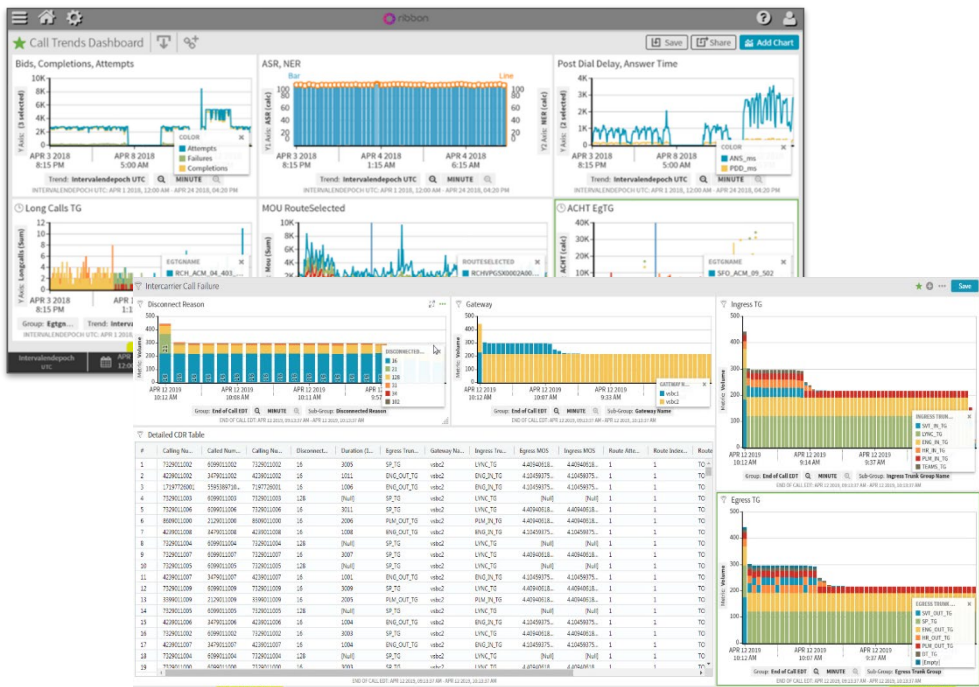
- Can I forecast network traffic congestion in advance
- How did you get alerted and how long to diagnose, if there is an

Security



- How do you secure your SIP Network today
- How do you protect your organization/customers against toll fraud or Telephony DoS attacks

Seeing into the Window with Analytics



Stay ahead of outages
Fix issues faster
Gain immediate ROI
Manage growing networks
Identify Security Threats

Visibility

Agility

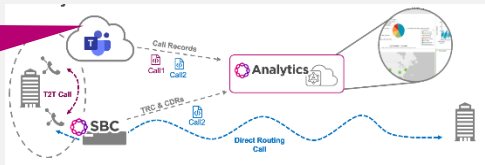
Action



Ribbon Analytics Advanced Analytics Use Cases

Teams Voice Visibility

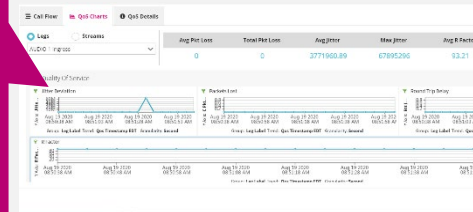
- Visibility & Insights into Teams to Teams calls and Teams to PSTN calls



Enables Service Assurance such as routing decisions, network failures and QoS across all calls

Media Voice Quality

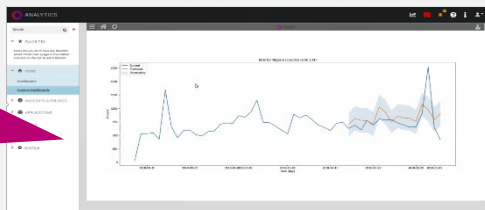
- Collect QoS data for calls throughout the call
- Allows review of call quality at a per second time slice
- Pinpoint leg and direction of quality issues
- Actual audio not recorded



High granularity of call quality issues

Planner

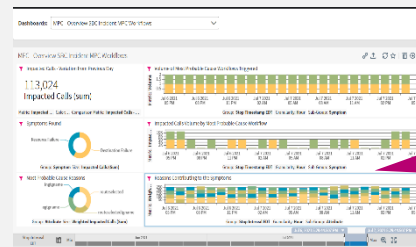
- Forecast and compare data trends
- Analyze device resources or traffic variables



Project future trends of resource needs and traffic values based upon historic data

Most Probable Cause

- Categorize and identify parameters with high impact to network issues



Run ML-based MPC algorithms to diagnose and continuously learn about problems in the network

Fraud Use Cases

Robocall & Nuisance Calls

Top Area Codes Targeted by Spammers

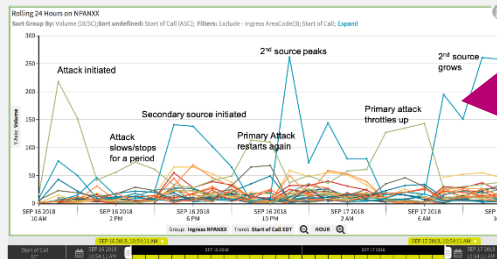


Complimentary analytics for STIR-SHAKEN

- Capture and score potential spoofed calls

Multi-tiered approach to stop excessive Robo or nuisance calls affecting your customers

Telephony Denial of Service

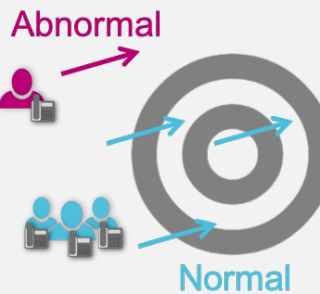


- Detect calling anomaly metrics such as Call Rate Exceeded, Long/short durations, geo, etc.
- Automatically alert and block rogue calling patterns

Siphon out unwanted, disruptive calls from your RTC network

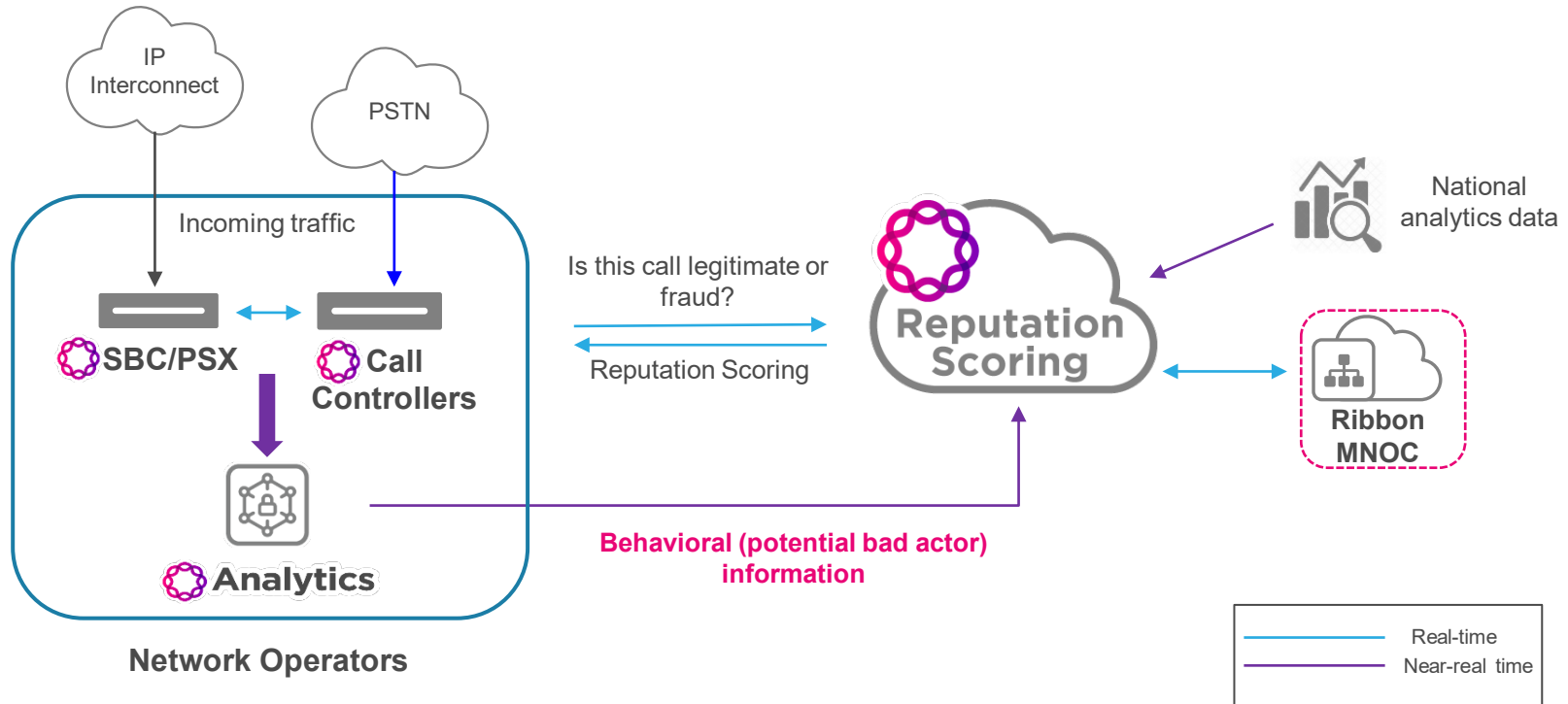
Fraud Management

- Track the behavior of individual subscribers and the activity of called numbers in the network
- Abnormal calls beyond a selected variance are alerted
- Customize incident identification and management

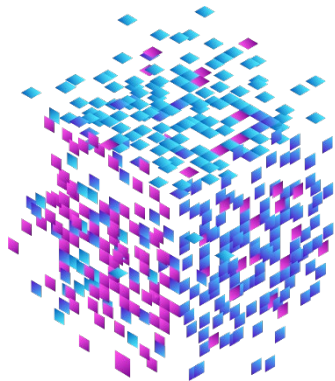


Identify repetitive calling patterns to anomalous places and flag or block them

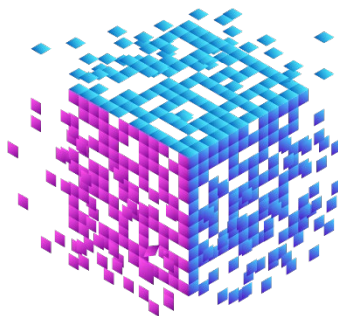
Robo/Fraud Call Mitigation With Analytics & Call Trust



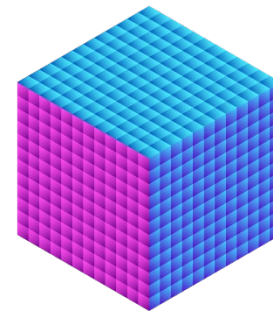
Improved data resolution drives results



Avoid lost productivity due to VoIP fraud, & nuisance calls



Save time, improve accuracy, and maximize efficiency for your workforce



Assure consistent communications quality for your customer

Increase visibility and actionable insights into your networks and services through analytics

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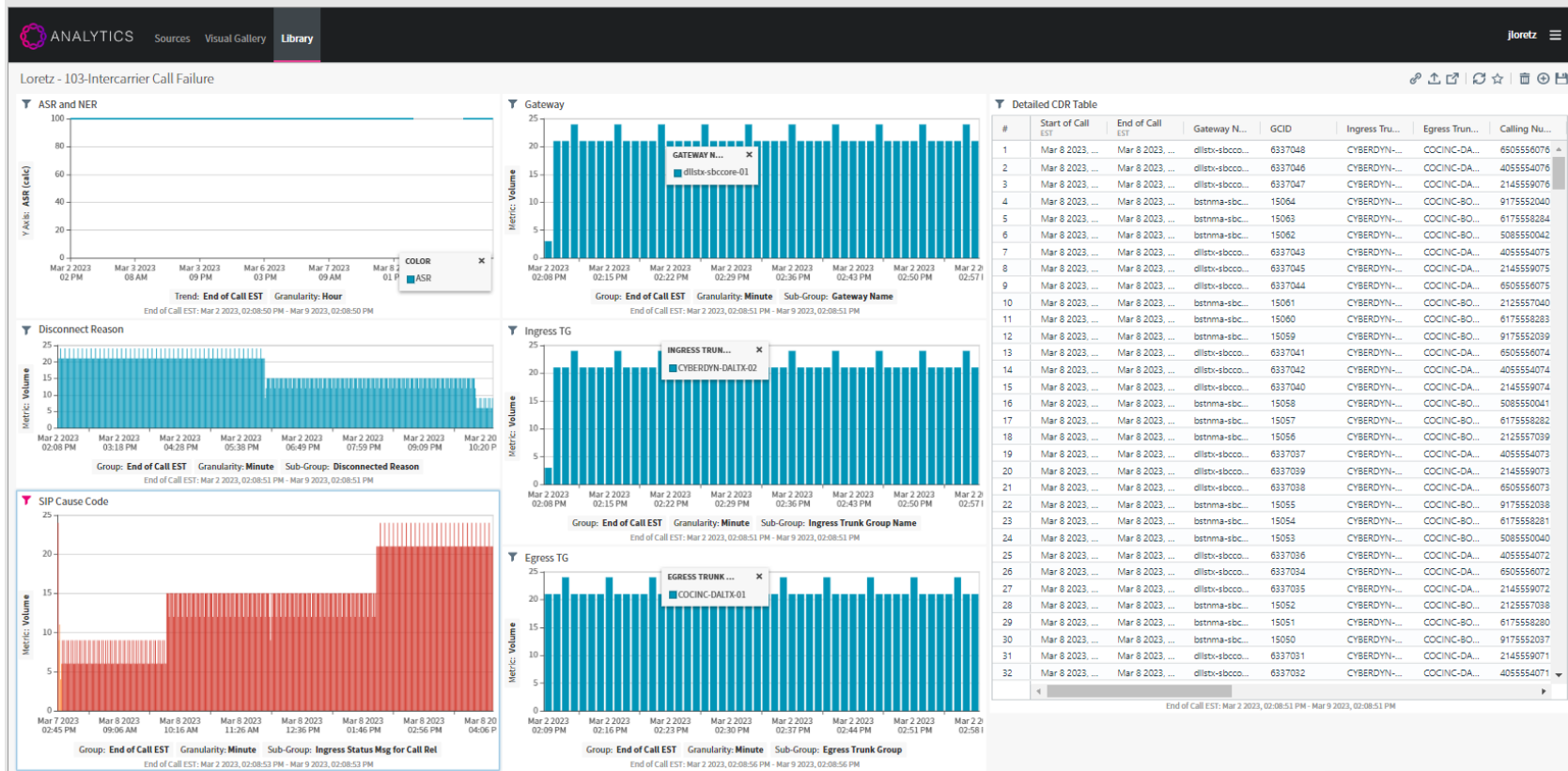
THE RIGHT WAY



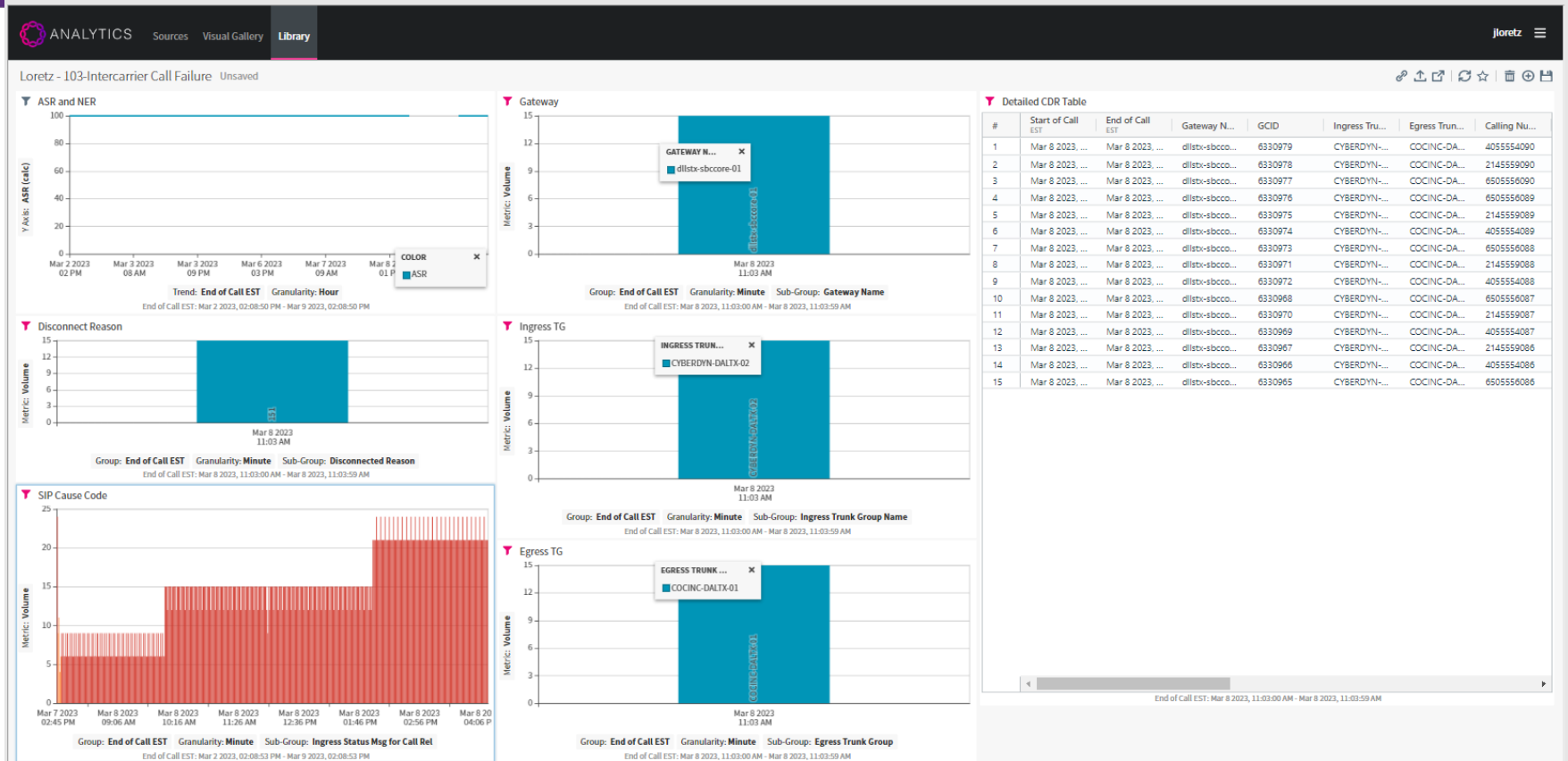
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Intercarrier Call Failure



Intercarrier Call Failure – Filter Visuals for specific SIP Cause



CDR Viewer

Search

Loaded Search: Find Global Call ID

Device Type *

Ribbon SBC Core

Data Source *

SBC Core GSX CDRs V2

System Interval (EST) *

2023-03-04 14:16:07 to 2023-03-09 14:16:07

Search Criteria:

Grid View | Command Line

Search Criteria Builder


- Record Type = Attempt
- And Global Call ID = 6330979

+ Add new criteria

Load Default Search | Manage Searches | Save Search | Search

Table Layout: Default SBC Core GSX CDRs Table ⓘ

Manage Layouts

Start of Call ↑↓	End of Call ↑↓	Record Type ↑↓	Calling Number ↑↓	Called Number ↑↓	Action
2023-03-08, 11:03:25.000 EST	2023-03-08, 11:03:57.000 EST	ATTEMPT	4055554090	9405552090	  

Page navigation: 1 of 10

CDR Viewer – CDR Data Viewer / Decoder

CDR Data Record ✕

Saved Layouts ▼

Show Empty Fields

Fields ↑↓	Values ↑↓
<input type="text"/>	<input type="text"/>
Record Type	ATTEMPT
Tenant Id	1
Gateway Name	dllstx-sbccore-01
Accounting Id	499770984618588
Start Time (System Ticks)	189551029

Ladder Diagrams

Network Diagram 1: [22] INVITE ✕

Sending To 10.10.70.85:5075 From 10.10.70.86:5060

DATE: 03/04/2023 14:23:35.073
CALL-ID: 33561953_100576212@10.10.70.86

PAYLOAD:
INVITE sip:9725872505@10.10.70.85:5075 SIP/2.0
Via: SIP/2.0/UDP 10.10.70.86:5060;branch=z9hG4bK00B9f461e5313dd8537
From: <sjp:9727281382@10.10.70.86>;tag=gK001aecbb
To: <sjp:9725872505@10.10.70.85>
Call-ID: 33561953_100576212@10.10.70.86
CSeq: 200496 INVITE
Max-Forwards: 70
Allow:
INVITE,ACK,CANCEL,BYE,REGISTER,REFER,INFO,SUBSCRIBE,NOTIFY,PRACK,UPDATE,OPTIONAL
Accept: application/sdp, application/isup, application/dtmf, application/dtmf-relay, multipart/mixed
Contact: <sjp:9727281382@10.10.70.86:5060>
P-Preferred-Identity: <sjp:9727281382@10.10.70.86:5060>
Supported: timer,100rel,precondition,replaces
Session-Expires: 1800
Min-SE: 90
Content-Length: 177
Content-Disposition: session; handling=required
Content-Type: application/sdp

v=0
o=Sonus_UAC 728962 636921 IN IP4 10.10.70.86
s=SIP Media Capabilities
c=IN IP4 10.10.70.86
t=0 0
m=audio 17468 RTP/AVP 0
a=rtpmap:0 PCMU/8000
a=sendrecv
a=ptime:10

Cancel PDU

Network Diagram 1 🔍 ✕

	IP:Port	10.10.70.85:6255	10.10.70.110:5070	10.10.70.86:5060	10.10.70.85:5076	10.10.70.85:5077	10.10.70.85:5075
2023-03-04, 14:23:03.570 EST				[16] INVITE			
2023-03-04, 14:23:04.072 EST				[17] INVITE			
2023-03-04, 14:23:05.077 EST				[18] INVITE			
2023-03-04, 14:23:07.079 EST				[19] INVITE			
2023-03-04, 14:23:11.073 EST				[20] INVITE			
2023-03-04, 14:23:19.078 EST				[21] INVITE			
2023-03-04, 14:23:35.073 EST				[22] INVITE			
2023-03-04, 14:23:35.577 EST				[23] 504			
2023-03-04, 14:23:35.578 EST				[24] ACK			

View By: IP: Port ✕

Close 🔍

2023-03-04, 14:23:35.000 EST ATTEMPT 9727280482

Network Diagram 1: [23] 504 ✕

Sending To 10.10.70.85:6255 From 10.10.70.110:5070

DATE: 03/04/2023 14:23:35.577
CALL-ID: 10784-48538@10.10.70.85

PAYLOAD:
SIP/2.0 504 Server Time-out
Via: SIP/2.0/UDP 10.10.70.85:6255;branch=z9hG4bK-48538-10784-010784
From: <sjp:+19725872505@10.10.70.85:6255>;tag=10784
To: <sjp:+19725872505@10.10.70.110:5070>;tag=gK0091f20a
Call-ID: 10784-48538@10.10.70.85
CSeq: 1 INVITE
Reason: Q.850;cause=102
Content-Length: 0

Cancel PDU