SBC: Do I really need it?

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Challenge in Telecom industry?

Bangladesh Safe home for foreign VOIP frauds
RAB arrested 37 Chinese and Taiwnese nationals and seize (Dhaka tribune 2014)

BTRC asks telcos to check call spoofing (prothomalo 2016)

BTRC alerts mobile users to frauds
(https://www.thedailystar.net 2016)

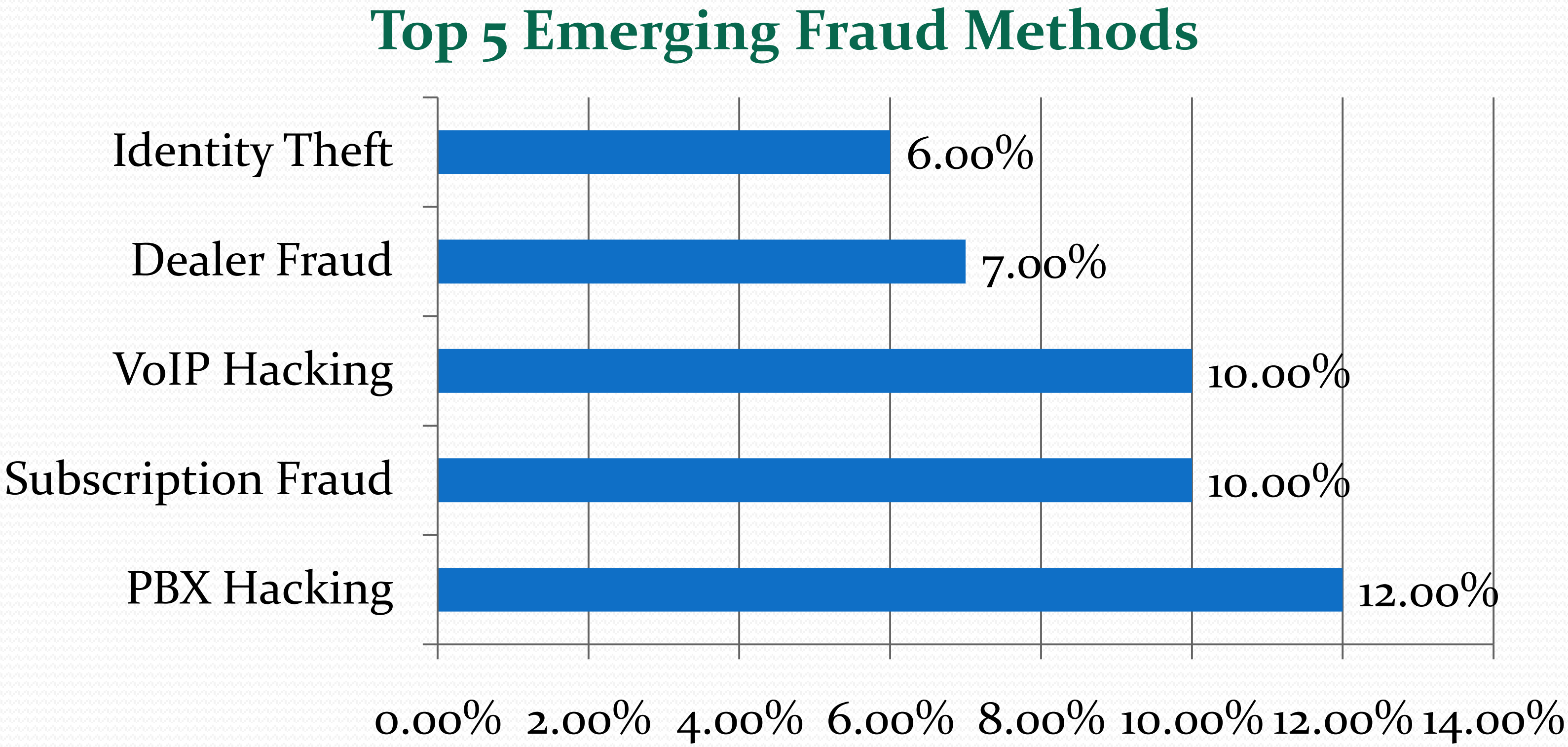
The global telecom industry annual losses of $46.3 Billion due to toll fraud

According to the Global Loss Survey 2013 of the communications Fraud Control Association (CFCA)

FBI finds Philippine hackers Compromised AT&T network and used their phone systems to call others long distance phone number. AT&T losses of up to $2.0 million (November 2011)

Massive DDoS attacks a growing threat to a VoIP service.
It crashes TelePacific VoIP system. Average 34 million SIP traffic VoIP connections requests in 1 day and flooding their systems
(March 2011)

Abuse Methods in telecom industry



Communications Fraud Control Association survey report

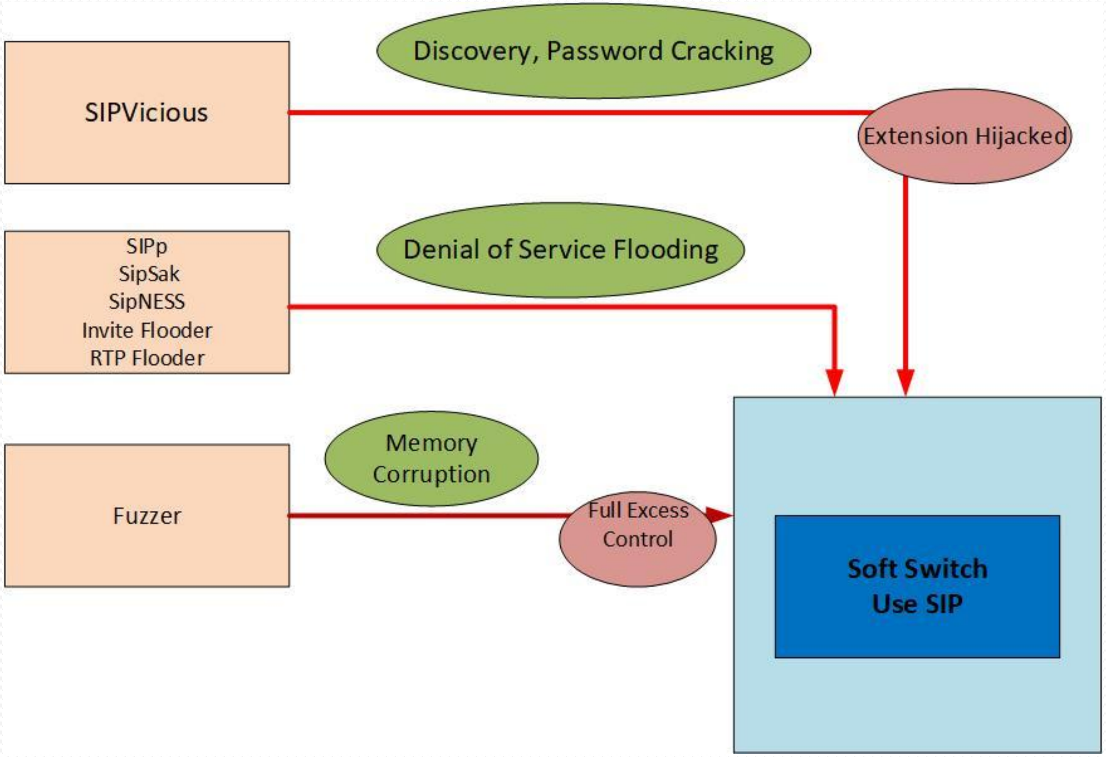
What is sip?

- Session Initiation Protocol (SIP)
  - SIP (Session Initiation Protocol) is a protocol used in VoIP communications allowing users to make voice and video calls over the internet.
  - Types of devices use - computers, phone set, IP-PABX, video equipment, media gateway, soft switch etc. - can exchange data over SIP

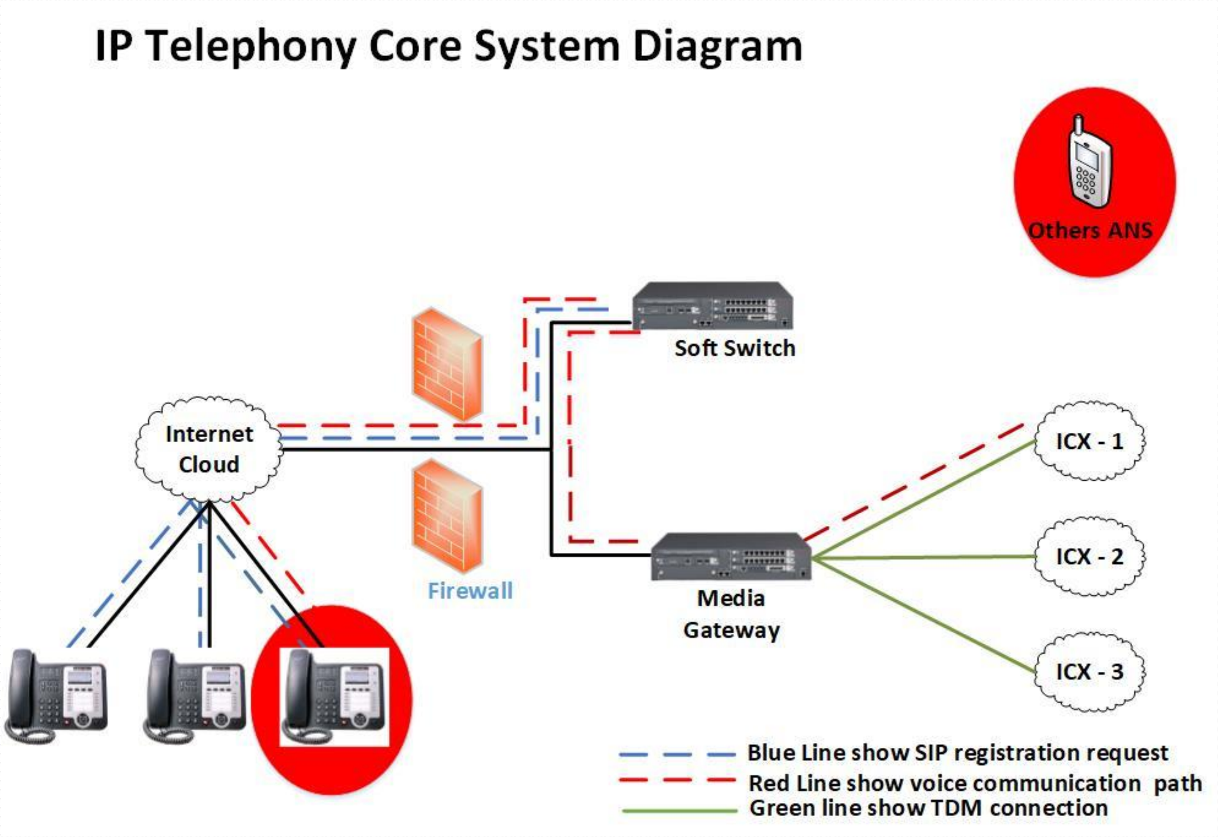
SIP Threat Categories of IP-Telephony service provider Networks

- Fuzzing Attacks
- VOIP Network Eavesdropping
- VOIP network Interception and Modification
- Device Configuration Weakness
- Voice & Telephony Denial of Service (TDOS) Attacks
- Device and OS Vulnerabilities
- IP/TCP Network Infrastructure Weakness
- VOIP & UC Protocols Implementation Vulnerabilities
- RoboCalls
- SIP BotNet attacks
- Signaling Manipulation Attacks
- Fraud Attacks – Wangiri, IRSF and many others
- Media Manipulation Attacks
- SPAM over Internet Telephony (SPIT)
- UC Infrastructure Threats (Voice, Media, IM, Web, UC & Collaboration)
- UC Application Layer Threats
- Data and Voice Threats
- Voice Phishing

Phase of a VOIP/SIP Attack



IP-Telephony core system security hole


IP Telephony Core System Diagram
Others ANS
Soft Switch
Internet Cloud
Firewall
Media Gateway
ICX - 1
ICX - 2
ICX - 3
Blue Line show SIP registration request
Red Line show voice communication path
Green line show TDM connection

What is SBC?

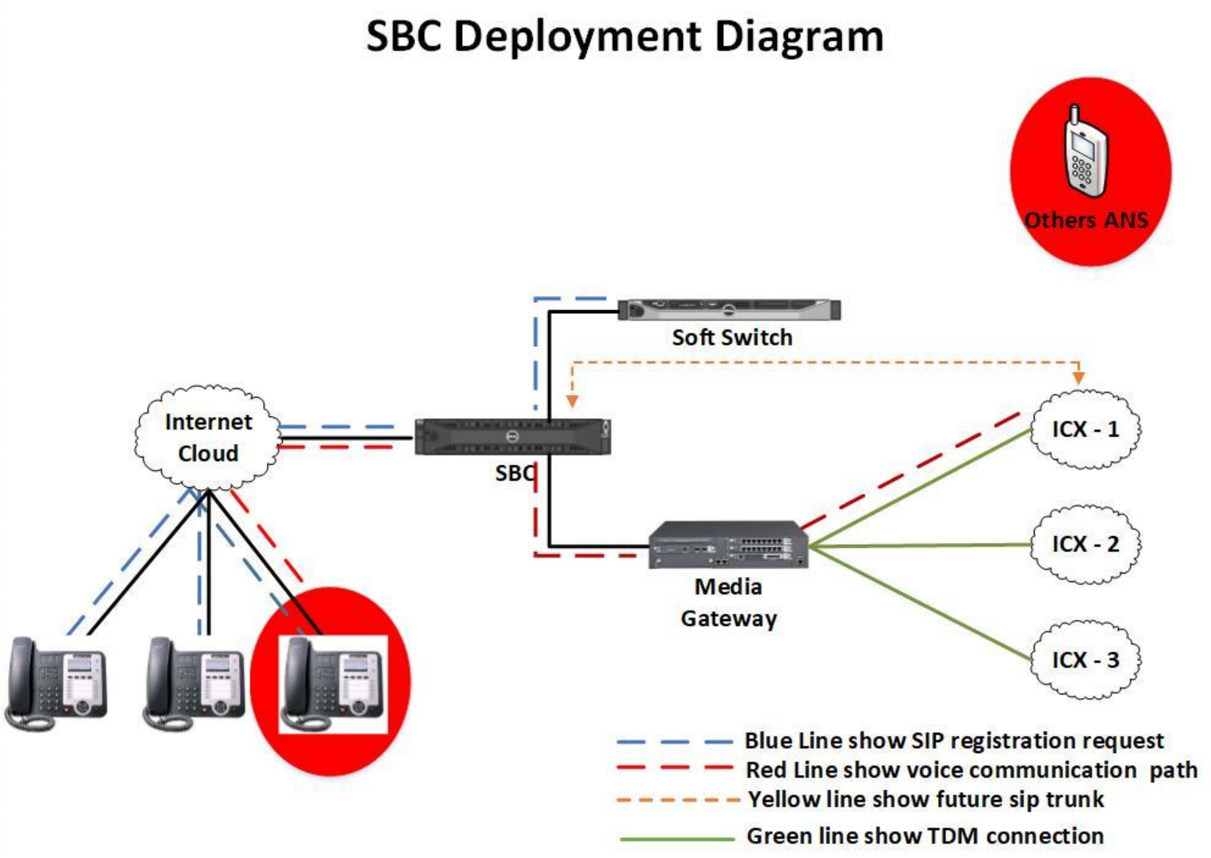
Session

Border

Controller

A Session Border Controller (SBC) is a dedicated hardware device or application that governing calls on a VOIP network. It’s allowing only authorized session pass through the connecting point.

How to Deploy SBC?



SBC Deployment Diagram

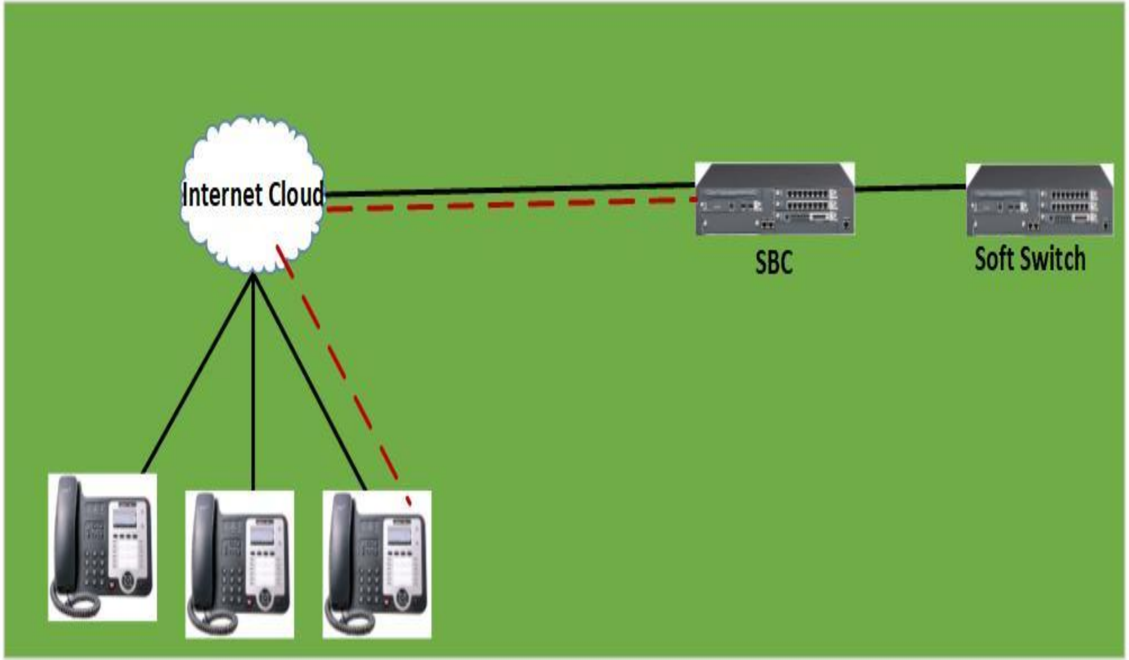
- Blue Line show SIP registration request
- Red Line show voice communication path
- Yellow line show future sip trunk
- Green line show TDM connection

Which Reasons you need to SBC?

Quality of Service	Call admission control, routing, Billing, NAT
Security	Encryption, Authentication, Policy, Firewall , VoIP Fraud
Interoperability	SIP -SIP-1 H323-sip, DTMF relay and interworking, Voice Transcoding
Demarcation	Fault Isolation, Topology Hiding, Session Border

Call Admission Control

- Check available Bandwidth
- Congestion Control
- CAC rejects calls when either there is insufficient CPU processing power

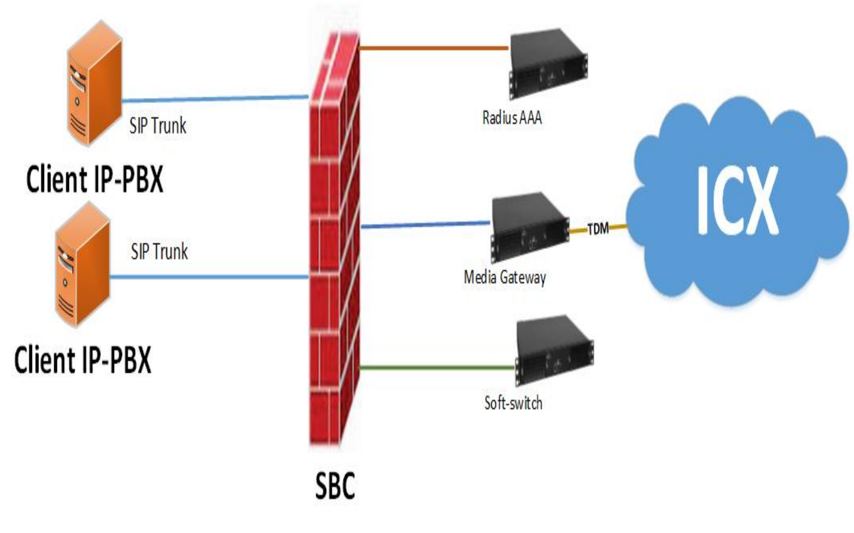


Routing Control

- Class 4 rouging:
- Internal Routed database
- Load share Database
- Priority routing
- Lest cost routing
- Or custom routing

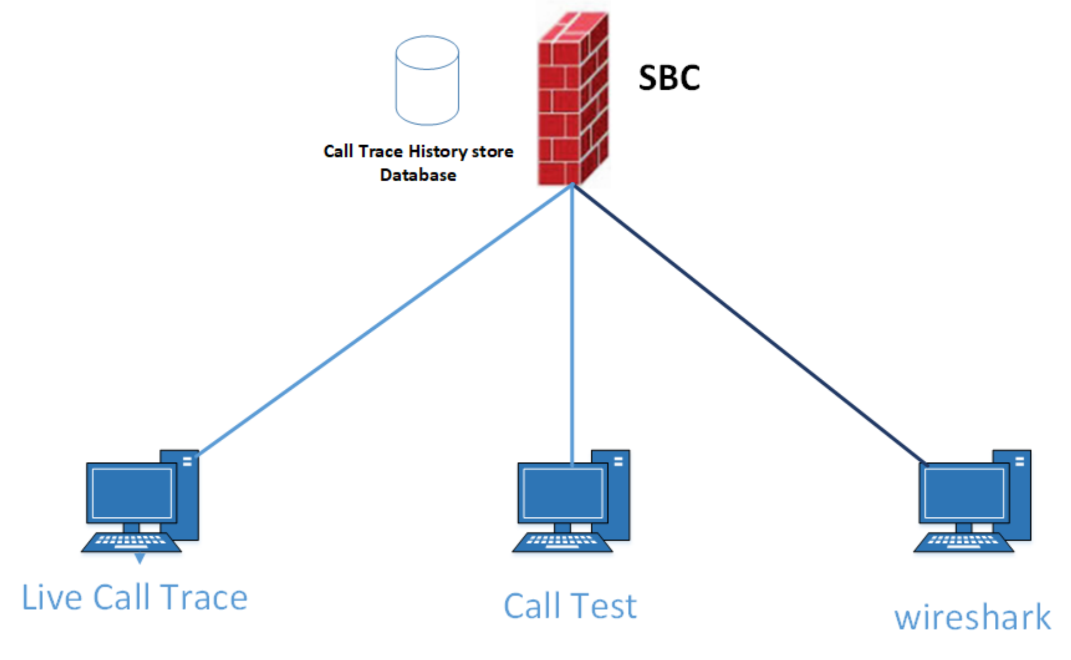
- Radius AAA
- Authentication, Authorization,
- Accounting

Billing and Routing

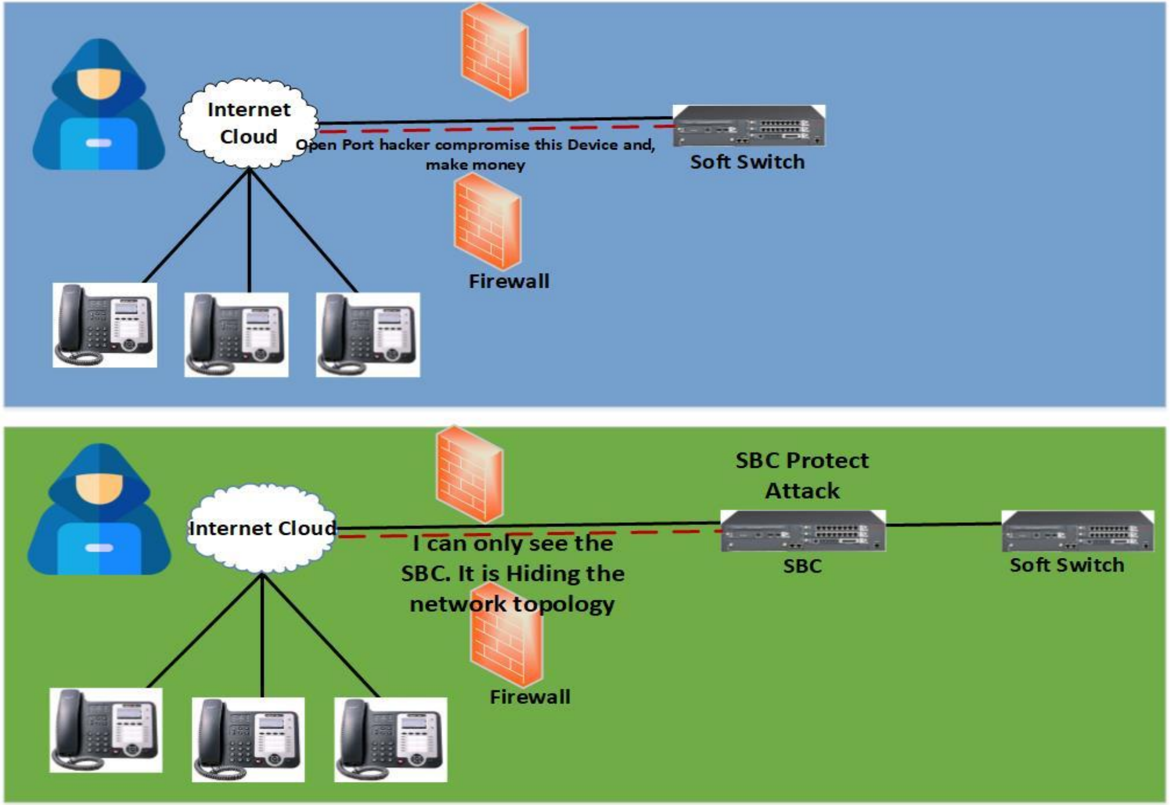


Session Troubleshooting

- Live call analysis
- Call test
- Call recording
- Live wireshark analysis



SBC Demarcation


Internet Cloud
Open Port hacker compromise this Device and, make money
Soft Switch
Firewall
SBC Protect Attack
Internet Cloud
I can only see the SBC. It is Hiding the network topology
SBC
Soft Switch
Firewall

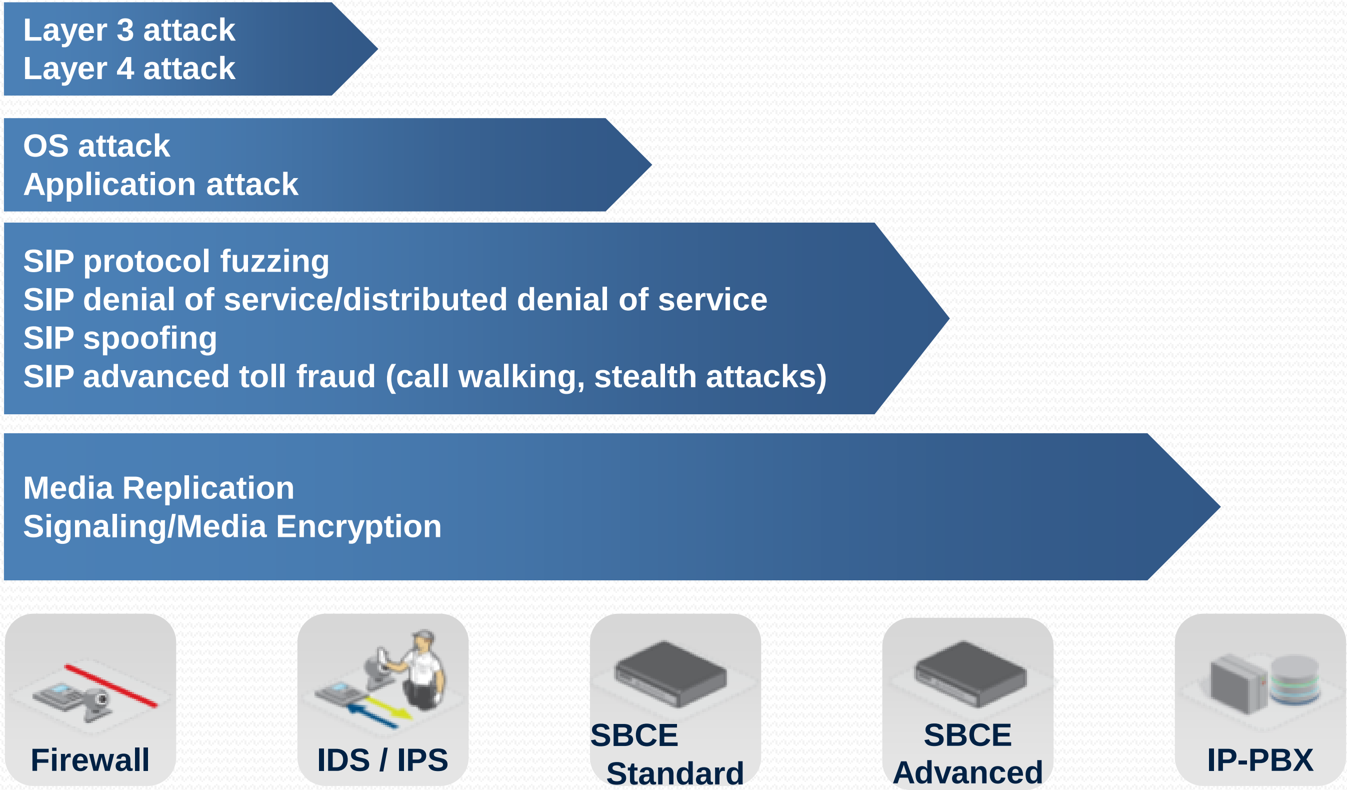
Demarcation

1. Fault Isolation and dynamic black list
2. Topology hiding

SBC Security

Threat Protection	Sip firewall	IP firewall	SBC Intrusion Detection	Sip rate limit
UDP Threats UDP Flood **RTP Threats** RTP spoofing **SIP Threats** SIP Invite spoof **IP Threat** IP Spoofing **ICMP Threat** ICMP flood **TCP Threat** Scan attack– TCP port	Log or block failed sip request	Block service Allow service	SBC has been pre-configured with a set of known attacks	Prevent DOS type attack If limit cross Dynamic block IP

Segment of VoIP Security



Layer 3 attack
Layer 4 attack

OS attack
Application attack

SIP protocol fuzzing
SIP denial of service/distributed denial of service
SIP spoofing
SIP advanced toll fraud (call walking, stealth attacks)

Media Replication
Signaling/Media Encryption

Firewall

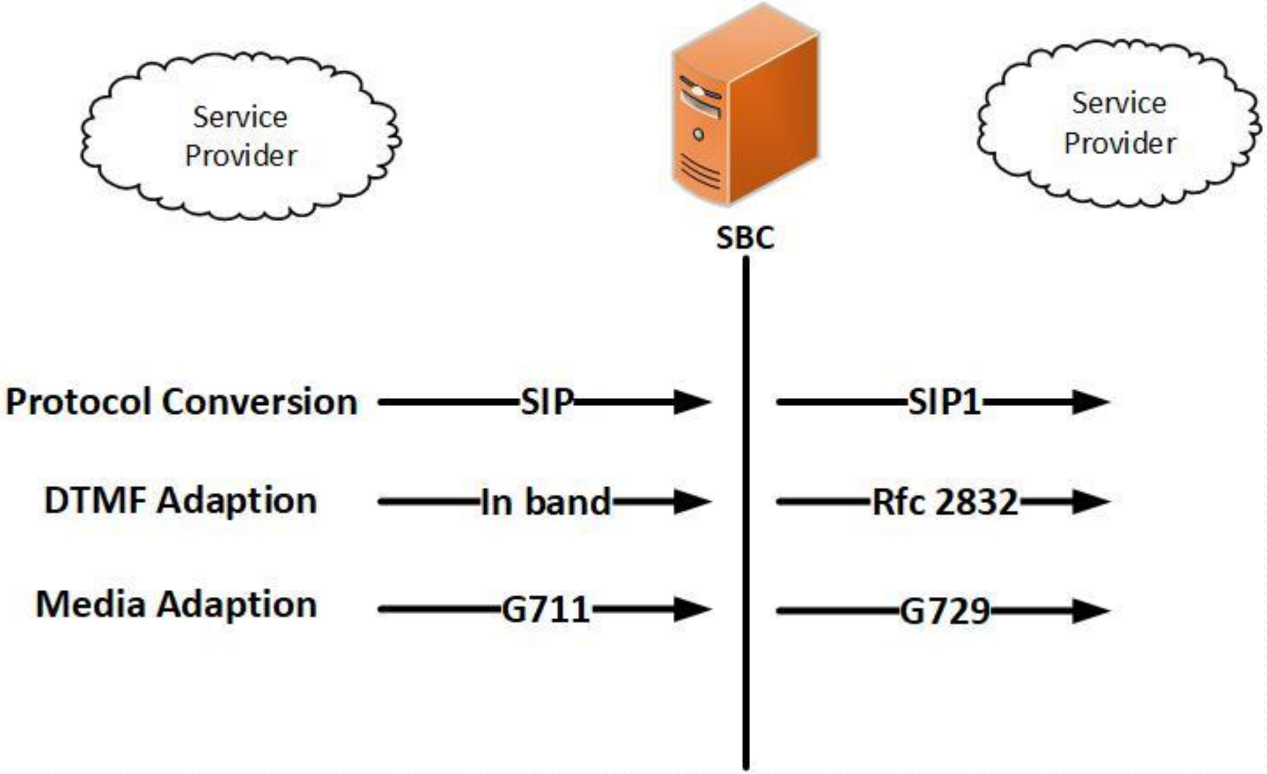
IDS / IPS

SBCE Standard

SBCE Advanced

IP-PBX

SBC interoperability



Connect every call

1. Connect sessions even with miasmas
2. Less route retries call ASR increase
3. Connect session even no common codec
4. Establish more calls to improve ASR

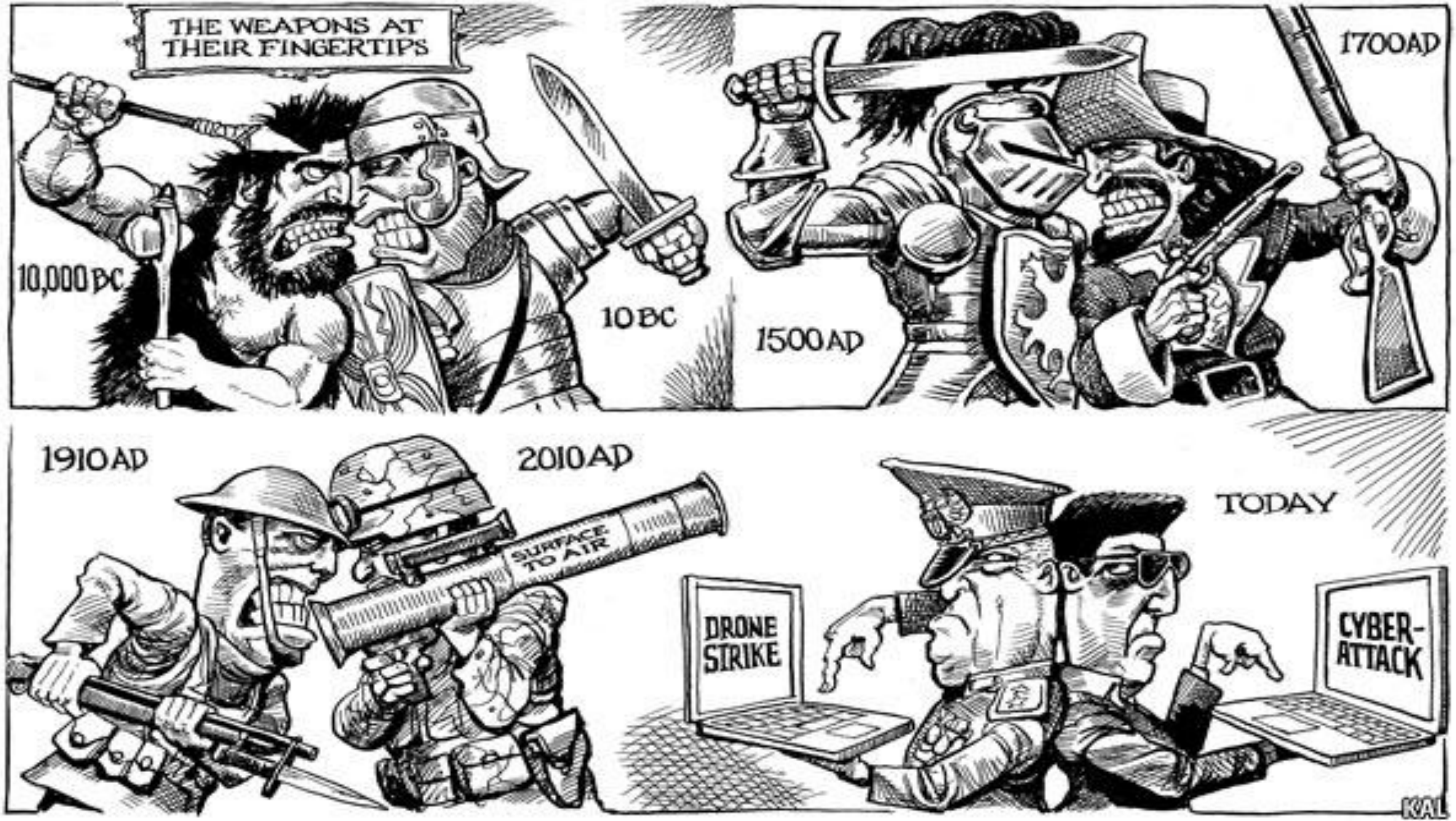
SBC Cover your business size ?

High capacity up to 60000 current session handle with media RTP

Swift handle inbound and out bound call

Minimize delay on call setup

Reduce call drop


THE WEAPONS AT THEIR FINGERTIPS
10,000 BC
10 BC
1500 AD
1700 AD
1910 AD
2010 AD
SURFACE TO AIR
DRONE STRIKE
TODAY
CYBER-ATTACK
KAL

Thank You