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APPLICATION BRIEF

Aethra Telecommunications® Session Border Controller

All-in-One Device

Session Border Controller is a software feature included in the Aethra Telecommunications Routers / Integrated Access Devices and Universal CPEs.

A fully integrated device reduces space and power consumption; multiple network functions residing in the same hardware optimize service deployment and management procedures.

VoIP Security

SBC allows secure Real Time Communications; Service Providers can offer VoIP features to their customers without fear of service theft, toll fraud or DoS attacks.

Sip Interoperability

Guaranteeing SIP interoperability between the network and the ever growing number of available solutions on the market (IP PBX, IP Phones...) can be easily managed using by SBC.

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Why a Session Border Controller

Voice over Internet Protocol (VoIP) is fast replacing the Public Switched Telephone Network (PSTN) and is the standard of Real-Time Communications (RTC) and Unified Communications (UC).

By its very nature, VoIP is an application that connects devices and networks that aren't fully under control of the Service Provider network itself, exposing it to new risks.

Even last generation firewalls cannot properly secure a Unified Communications environment residing on both sides of the network. Flexibility is indeed needed for a successful deployment of a distributed network which includes devices owned by the customer.

SBC is a software option available on the Aethra Telecommunications IADs and Universal CPEs. It is designed for Service Providers who offer either SIP Trunking or IP Centrex services to their customers.
Both scenarios need to secure RTC sessions in order to be able to guarantee flexibility to enterprises adopting new technologies in their transition to voice cloud services.

Network Separation and Security

In order to grant VoIP security in case a device in the customer network needs to connect to the Service Provider environment, the two networks need to be separated.

The SBC hides the core network topology by acting as a back-to-back user agent (B2BUA), where every SIP session is divided in two distinct segments: one between the endpoint and the SBC and the other between the SBC and the Service Provider server.

Moreover, the Aethra telecommunications SBCs can use transport layer security (TLS) and SRTP to encrypt signaling traffic and media packets.

In particular when the customer endpoints do not support TLS or SRTP, SBC can manage and add security so that every

communication in the Service Provider Network is encrypted.

SIP Interoperability and Transcoding

Interoperability bewtween the customer's IP PBX / IP Phones and the Service Provider SIP infrastructure is always key in the deployment of Enterprise Voice Services.

SBC allows to modify and adapt SIP headers in order to ensure compatibility between different devices, different software version and different vendors.

The transcoding capablity gives to the Service Provider the possibility to fully control which codecs are used in each side of the network and if required, to decode and then re-encode the voice signal as it crosses the SBC.

System can be configured to either drop un-wanted codecs in the network or re-encode voice flows while maintaining audio quality.

Application Scenarios

The SBC software is designed to support different scenarios according to the Service Providers VoIP infrastructure.

LOCAL IP-PBX SCENARIO

In the IP-PBX trunking scenario the Service Provider Network is kept fully separated from the customer network.

This is needed for example to avoid the necessity to share the VoIP credentials with the customer: SIP authentication towards the network is fully managed by the access device and not the IP PBX.

IP CENTREX SCENARIO

In the IP Centrex Scenario the IP PBX is hosted in the cloud by the Service Provider and customers only own SIP phones and endpoints which are connected to the network.

SBC supports different IP Centrex topologies, including direct and two-steps registrations to the hosted IP PBX platform, and works like a back-to-back user agent (B2BUA) to maintain full session state with endpoints and service platforms.

In a direct registration scenario
IP phones are registered directly on the hosted PBX, and the SBC is used to provide a local survivability.
When network connectivity fails, endpoints fallback their registrations to the SBC platform which guarantees local calling capabilities to them.

In a two-steps registration the customer SIP phones are registered in the local interface; the SBC originates then new registrations to the hosted IP PBX and can operate full voice network separation, media transcoding and signaling adaptation.

BG and SV Series Business Routers and XV8800 Series Universal CPEs

SBC is available on BG and SV Series Routers / Integrated Access Device and on the XV8800 Series Universal CPE platform, see Table 1 for licensing options and capabilites.

On the Universal CPE platforms, the SBC Application is designed to run alongside other VNFs (like vFirewalls, vPBX and SD-WAN clients).

Cores and resources can be dedicated and reserved to each application, with linear performances results with cores availability (i.e. number of trascoded calls).

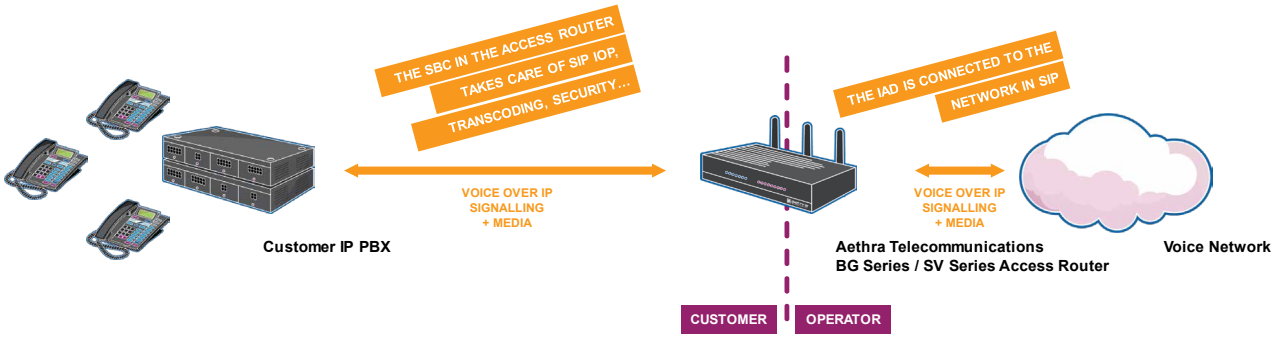

Fig. 1: Aethra Telecommunications SBC on BG Series in IP-PBX trunking service.

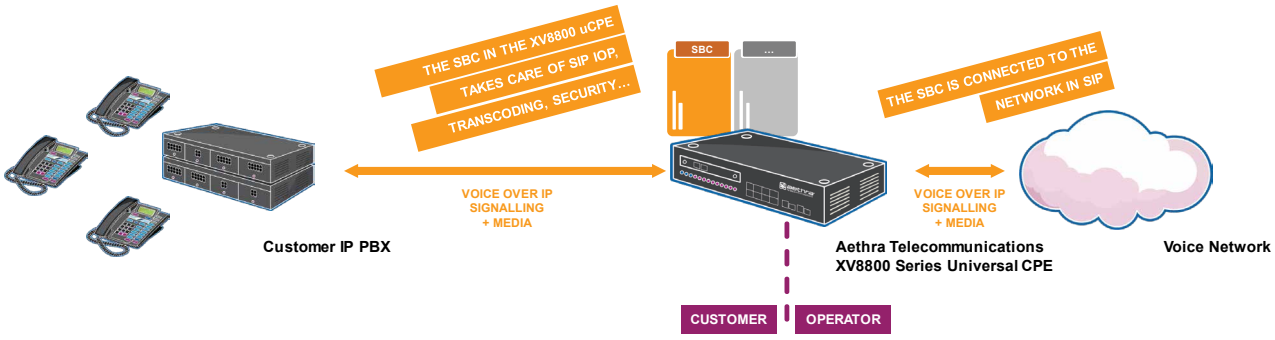

Fig. 2: Aethra Telecommunications SBC on XV Series in IP-PBX trunking service.

Resource allocation can be dynamically assigned to each application and VNF to permit service upselling to the end-user, like for example adding the capability to transcode a larger number of voice channel upon request.

Embedded ATA and PSTN Fallback

Aethra Telecommunications Routers and Integrated Access Devices include embedded analog FXS / FXO and ISDN voice interfaces to connect any legacy device that still exist in the customer network and garantee the automatic falling back to the PSTN service in case the main SIP trunks become unavailable.

Multi WAN Resiliency and Multi Trunk Sip

Aethra Telecommunications offers a wide range of fixed and mobile broadband access options.

Integrated Access Devices and Routers can be equipped with all flavours of DSL (from ADSL to SHDSL to VDSL2 - including the new 35b profile), Fiber, Ethernet and mobile 3G/LTE.

The devices support multiple WAN connectivities and multi SIP Trunks that ensure access backup and load balance.

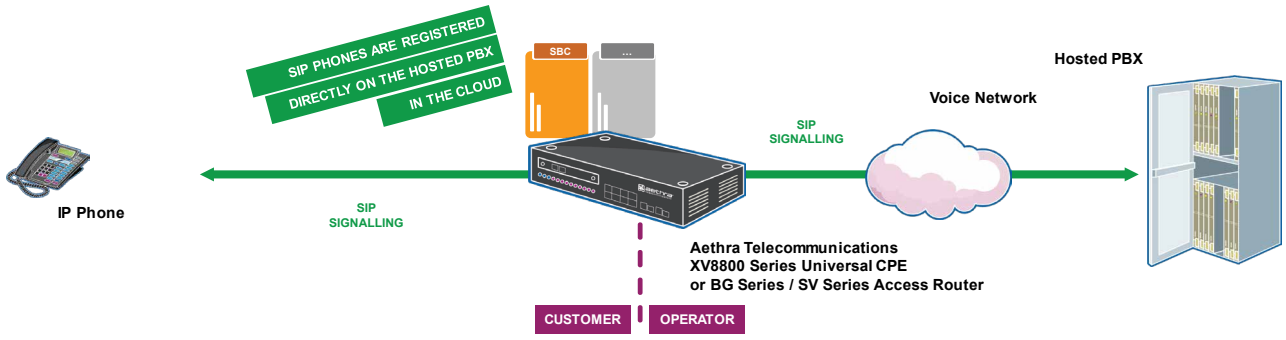

Fig. 3: IP Centrex scenario with XV8800 series and direct registration on Hosted PBX.

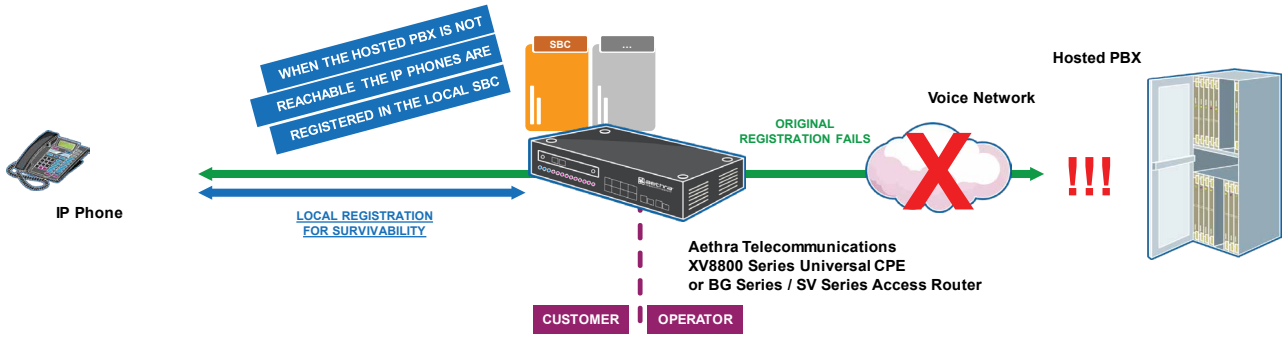

Fig. 4: IP Centrex scenario with XV8800 Series. Local survivability.

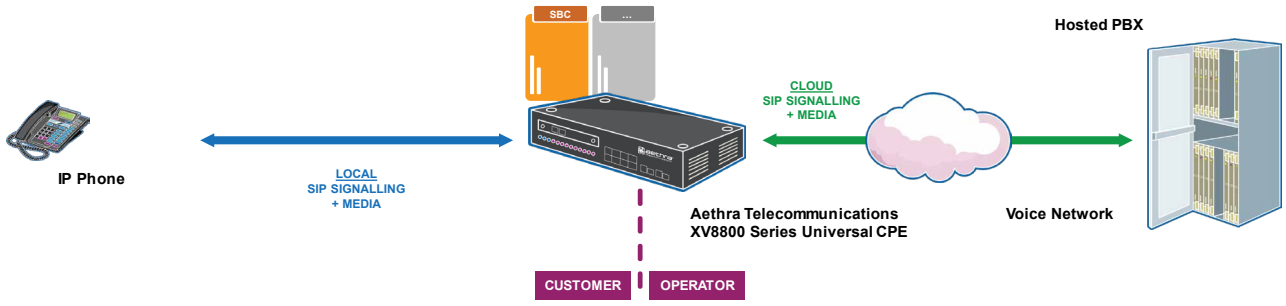

Fig. 5: IP Centrex scenario with XV8800 Series. Dual step registration.

aethra telecommunications®

TECHNICAL SPECIFICATIONS

VoIP Security

- Built–in VoIP Firewall
- Detection and Prevention of VoIP attacks
- Prevention of Denial–of–Service (DoS)
- DDoS attacks
- Source IP blocking
- TLS (Transport Layer Security)
- Access Control List (ACLs)
- Topology hiding: hiding internal SBC SIP entities details
- Contact hiding
- Trusted Hosts
- SRTP(Secure Real time Transport Protocol)
- Malformed Packet Protection

Signaling

- Back–to–Back User Agent (B2BUA)
- SIP authentication server for SBC users
- User peer registration Aliases
- SIP Registration based Method Filtering
- SMM (Sip Message Manipulation)

Media Services

- Supported Codecs
  - G711Alaw
  - G711Ulaw
  - G729
  - iLBC
  - Speex
  - GSM
  - Opus
- DMTF Relay and Conversion

Fax and Modem Support

- T.38 fax relay
- Automatic G.711 Fax and Modem Pass–Through

SIP Routing

- Embedded routing engine
- Inbound/outbound Sip routing Rule
- Calling/Called Number translation
- Trunk Peer ip–based/domain–name Routing Failover
- IPv4/IPv6 interworking

QoS

- Call Admission Control (CAC)
- Bandwith management
- DiffServ/DSCP marking

Management

- Local Management:
  - Console port
  - Extensive CLI
- Remote management:
  - CLI, WEB CLI
  - SNMP agent (v1,v2c ,v3)
  - TR–069* / CLI–over–TR–069*
- Firmware upgrades: Local and Remote (TFTP & FTP client embedded)

PRODUCT	LICENSE	MAX # OF CALLS	TRANSCODING MAX # OF CALLS
BG8544E	SBC Basic	60	8
BG8500P	SBC Basic	60	8
SV6044E	SBC Basic	60	8
SV6000M	SBC Basic	60	8
XV8800 / XV8800plus	SBC Basic	60	8
SV6044E	SBC Full	Unlimited Recommended up to 180	Unlimited Recommended up to 20
SV6000M	SBC Full	Unlimited Recommended up to 180	Unlimited Recommended up to 20
XV8800 / XV8800plus	SBC Full	Unlimited Recommended up to 180/core	Unlimited Recommended up to 20/core

Table 1: Session Border Controller Licenses and Features.

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Share Capital Fully Paid: € 725.000,00 / VAT IT10652521005

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