

ABC SBC: Charging and Accounting

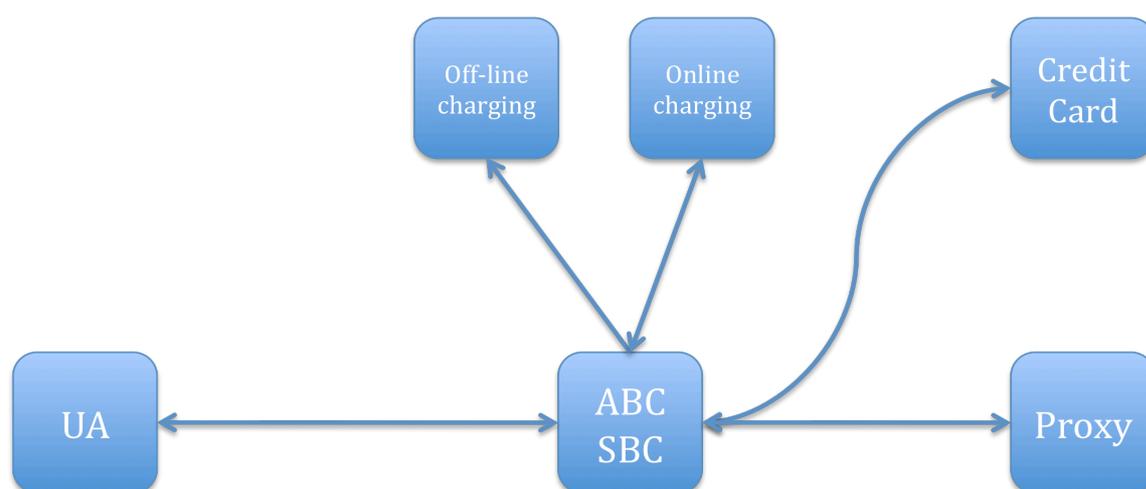
FRAFOS GmbH

Integrating Charging and Session Control

SBCs play a central role in deciding which users and which traffic get access to a provider's services. The decision on who and what is to be allowed in is taken based on financial and security aspects. Traffic that is violating certain security policies and users behaving maliciously are rejected at the network borders. Users who are not paying their bills or do not have sufficient funds to pay for the used services will also be denied access to the operator's services.

VoIP service providers deploy off-line charging systems for determining the overall customer usage and bills. On-line charging systems determine the current costs of the used services. In order to determine the costs incurred by a user both systems require call-data records (CDRs) that describe the length, type and participants of the calls initiated by the user.

The ABC SBC enables service providers to integrate their charging systems with the call processing infrastructure. The ABC SBC uses DIAMETER to inform the charging solutions whenever a call is to be started or terminated. The ABC SBC can also generate CDRs that describe the entire call. Such CDRs include the starting and end points of the call, the participating users and the used media. The exact content of the CDRs can be further customized to meet the exact requirements of the operator's charging systems.



To support pre-paid services, the ABC SBC acts as a policy enforcement point. When a pre-

paid subscriber wants to use a certain service, the ABC SBC generates a CDR indicating the subscriber identity, the callee identity as well the required service. Based on this information the on-line charging systems decide whether the subscriber has sufficient funds to pay for the service and for how long the subscriber should be allowed to use the service. In case the subscriber has sufficient funds then the ABC SBC will accept the call. Otherwise, the call will be rejected immediately. Once the subscriber's funds have been consumed, the on-line charging system instructs the ABC SBC to terminate the subscriber's active calls. As a B2BUA, the ABC SBC generates BYE messages to the callers and callee and terminates the call.

It is further possible to combine the charging and announcement capabilities of the ABC SBC. Instead of terminating the active calls of a subscriber, the ABC SBC generates an announcement to the subscriber indicating that the subscriber does not have sufficient funds and asks the subscriber whether he would like to upload new funds. Using DTMF tones, the subscriber can accept or reject. In case the subscriber decides to upload funds, the caller gets connected with an application server that provides credit card processing for example. This way, the operator offloads the announcement and preliminary communication with the subscriber to the ABC SBC. The application server is only contacted if needed.

This is an example of how the ABC SBC can be used as part of the charging and billing infrastructure of the operator. The ABC SBC is, however, developed as a flexible platform that allows easy customization to other interaction scenarios and charging model.

Technical Specifications

SUPPORTED PLATFORMS

Linux

SIGNALING FEATURES

SIP RFC compliant

B2BUA

SIP header manipulation

Multi-part body support

MEDIA SERVICES

Software based transcoding (G711u/a, G726, GSM, iLBC, L16, G722, Speex; on request: G729a, G729a/b, AMR)

Dynamic jitter control

NAT/NAPT on media

Audio codec relay

Video codec relay

RTP inactivity monitoring

Codec filtering

MEDIA APPLICATIONS

Call recording

Announcement services

Ring-tone and Ring-back tone services

Conference bridge and Voice mixing

MANAGEMENT CAPABILITIES

GUI based configuration and monitoring

Secure embedded web-based GUI

SSH access

SNMP V2 status and logs

Local logging of alarms, events and statistics

CALL ROUTING

Call blocking and filtering

Embedded routing engine

QOS CONTROL

Bandwidth limitation and management

Call admission control per peering partner/trunk

PROTOCOL SUPPORT

SIP

RTP

UDP, TCP, SCTP

Translation between transport protocols

SNMP, NTP, SSH, DNS

SECURITY

Signaling topology hiding

Media topology hiding

RTP DoS protection

Call rejection under DoS

Call rate limitation

HIGH AVAILABILITY

Active/Hot Standby redundancy model

REFERENCE HARDWARE

CPU: 2x HexaCore with HyperThreading

RAM: 48GB

HDD: RAID-10 with 4 disks, 15K RPM

Network interfaces:

- Management ports
 - Two (active/standby) 10/100/1000 Ethernet RJ-45 ports
- Media/signaling High availability Ports
 - Four 1 Gbps Ethernet RJ-45

About FRAFOS

FRAFOS GmbH is a manufacturer of VoIP solutions with offices in Berlin and Prague. FRAFOS was incorporated as privately held company in May 2010, in Berlin, Germany.

The history of FRAFOS team and technology goes back to the late nineties. As researchers at the prestigious German public R&D institute Fraunhofer FOKUS, the FRAFOS founders were the among the first to work the SIP and RTP standards and to develop open source solutions that paved the way for the VoIP revolution.

FRAFOS offers SIP session management and security solutions of the latest generation that come either as a standalone solution or as a cloud ready implementation. The flagship product of FRAFOS, the ABC SBC, offers open interfaces and built in multimedia applications such as recording and announcements. The ABC SBC enables the operators to simplify their service infrastructure and prepares them for future challenges.