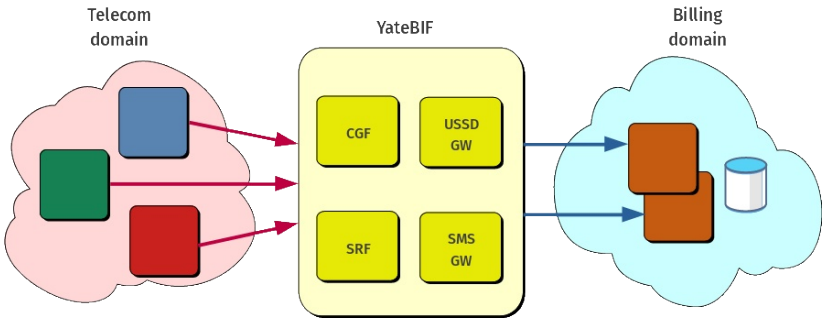
YateBIF™

Billing Integration Function

Yate Billing Integration Function is a bridge between Telecom protocols and Billing applications. Any charging and related protocol is converted to HTTP requests so the billing can be implemented as Web services.

The YateBIF product integrates Telecom charging protocols into Billing products. Any charging functions and related interactions are delivered to the billing application as structured HTTP requests so the billing platform does not need to support each and every frontend protocol.

The billing service can be implemented using widely available Web frameworks without having to know the details of the protocols. This leads to a quick return of investment without sacrificing the flexibility or reliability of the service.



Configuration is provided via a Web interface that can be replaced if desired. YateBIF uses a fully documented JSON API for configuration and management so it can be easily integrated with other O&M systems.

Features

- ✔ YateBIF runs on commodity hardware, reducing deployment costs and management requirements
- ✔ The operating system is Linux, well known in the servers world
- ✔ Can be deployed on various types of Virtual Machines or in Cloud environments
- ✔ Allows for scaling as you grow - you can add more servers as the subscriber base increases
- ✔ Handles all mobile services - calls, messages and data
- ✔ Simultaneous online and offline charging
- ✔ Allows the end user to interact with the billing system via voice prompts, USSD and SMS
- ✔ Integration of configuration, management and monitoring via similar JSON API
- ✔ Active/Active or K out of N redundancy by simply load balancing between multiple instances

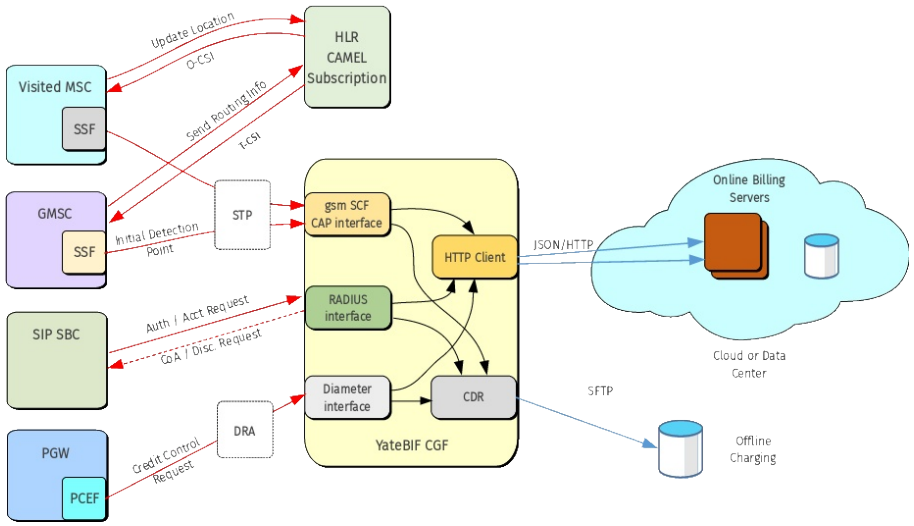
Main components

- ✔ **CGF** - Charging Gateway Function, receives charging information on various protocols
- ✔ **SRF** - Specialized Resources Function, plays prompts for voice calls
- ✔ **USSD GW** - Allows user interaction via USSD menus and notifications
- ✔ **SMS GW** - Allows user interaction via SMS

Charging Gateway Function

This is the major component of YateBIF, it interconnects to Telecom components that produce charging data or require online (prepaid) charging.

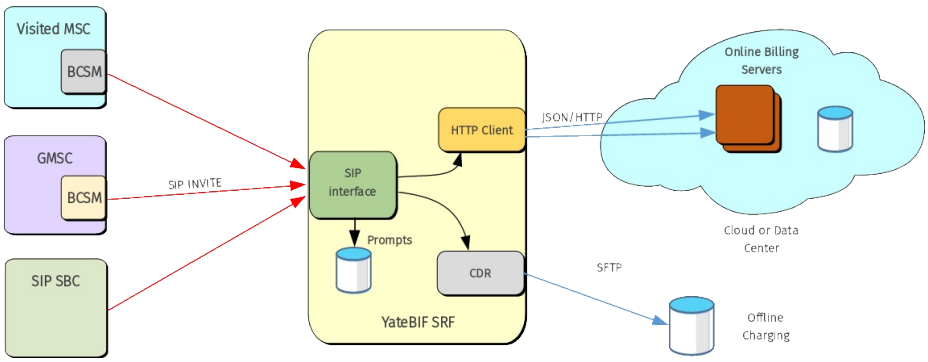
- ✔ CAMEL (CAP) for voice charging, prompting and duration enforcement
- ✔ Diameter for data, voice and SMS, multiple interfaces: Ro, Gx, Gy
- ✔ RADIUS for voice and data, standard and vendor dictionaries



Specialized Resource Function

This component is used to play the prompts when voice calls are controlled by CAMEL to gsmSSF or by RADIUS to a SBC or other type of voice switch.

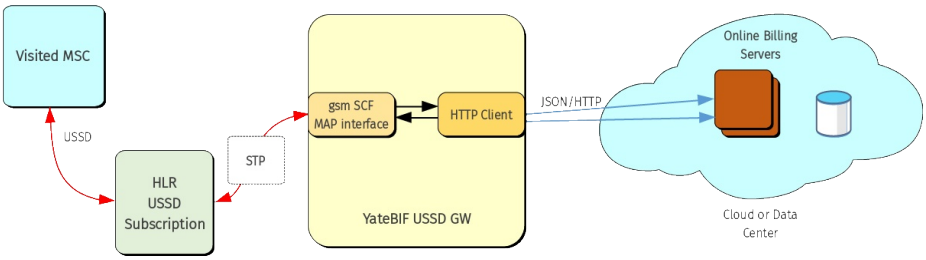
- ✔ SIP and SIP-T signaling
- ✔ TLS transport (optional)
- ✔ RTP for voice transport
- ✔ SRTP (optional)
- ✔ Narrowband, wideband, ultra-wideband supported
- ✔ G.711, G.722, GSM, AMR codecs
- ✔ Prompts provisioning by API



USSD Gateway

The USSD Gateway component allows the billing platform to offer a menu based end user interface.
It also supports network initiated notifications and menus.
USSD is an interactive session service and requires that the subscriber has coverage.

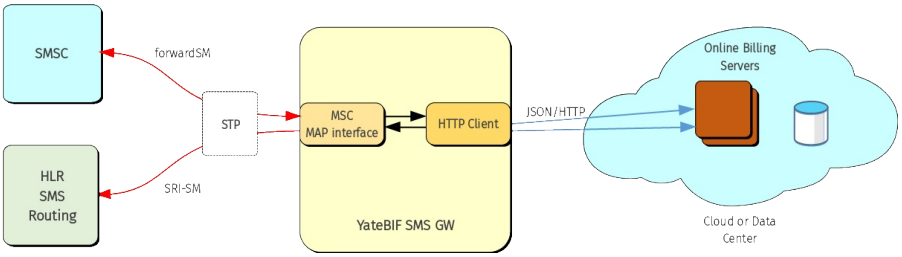
- ✔ User initiated USSD (via code)
- ✔ Network initiated USSD
- ✔ Supports USSD v1 and v2
- ✔ Automatic character set conversion to UTF-8
- ✔ Supports UTF-16 encoding (emoji, CJK)



SMS Gateway

For persistent interaction with the subscriber YateBIP includes a SMS Gateway function.
SMS is a store-and-forward service, messages are delivered when the subscriber is online.

- ✔ Subscriber to application (P2A)
- ✔ Application to subscriber (A2P)
- ✔ Supports MAP v1, v2, v3
- ✔ Alphanumeric originator
- ✔ Automatic character set conversion to UTF-8
- ✔ Supports UTF-16 encoding (emoji, CJK)
- ✔ Registration to HLR (optional)
- ✔ Direct delivery (requires configuration in HLR)



Software specifications

SS7 connectivity	- SIGTRAN, SCTP/IP, Multipath - M2UA, M2PA, M3UA - ITU MTP, SCCP, TCAP - ANSI MTP, SCCP - ETSI MAP v3
SCCP GTT	- E.212 or Translation Type (ANSI) - E.214 (ITU) - E.164
gsmSCF/MSC	- ETSI MAP v3 - Supported operations: • HLR <-> gsmSCF messages (USSD) • MSC <-> HLR messages (SMS Routing) • MSC <-> SMSC messages (SMS Forwarding) • VLR <-> HLR messages (Registration for SMS, optional)
SIP	- RFC 3261 standard - SIP-T support (RFC 3372) - RTP (RFC3550) with sideband DTMF (RFC2833)
Codecs	- G.711a, G.711u - GSM-FR 06.10, GSM-EFR, AMR-NB - G.722, AMR-WB (wideband) - iLBC - iSAC (wideband) - speex (narrowband, wideband, ultrawideband)
USSD	- Supports both USSD v1 and v2 - Sessions can be user or network initiated - One-shot notifications (USSN) - Automatic conversion to UTF-8 on the application side - Templated Web service URL per USSD code

Software specifications (continued)

SMS	- Format: Text or T-PDU (MO and MT) - MAP/SS7 transport (T-PDU format) - Registration to HLR (optional)
HTTP interface	- Templated URLs for each request type - HTTPS support for client and server
Configuration and management	- Web interface - JSON/HTTP API - YAML/HTTP API (optional) - Authentication (optional)
Monitoring	- Active agent for Zabbix server - Alarms via SNMP v2 or v3 traps - Status and stats via JSON/HTTP API
Operating system	Linux based

Virtual Machine specifications

CPU	- 24 vCores (12C/24T)
RAM	- 16GB
Storage	- 500 GB

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