FreeSWITCH
Open Source Soft-Switch and Media Engine
What is FreeSWITCH?

• A core communications software daemon written mostly in C.
• A collection of modules written in C/C++ to extend functionality.
• A large collection of dependencies leveraging existing tech.
What does FreeSWITCH do?

• Interconnects communications protocols.
• Serves as a media engine and back-end for applications.
• Routes calls and optionally transcodes media formats.
• Provides conferencing and MCU functionality.
• Whatever you can make it do.
FreeSWITCH Core

- XML registry
- Event System
- Event hooks
- Language Modules
- Phrase macros
- C Utils
- Multi-dimensional CDRs (XML and JSON)
- Logging Engine
- Modules
FreeSWITCH Module Interfaces

• Designed to be used outside the core to extend functionality from a safe distance.

• Provide access to functionality that fit an abstract concept in FreeSWITCH.

• Meant to be extensions of the environment they run on like UNIX.
FreeSWITCH Interfaces (Endpoint)

- Implements a communication protocol that fits the paradigm of communication commonly known as “a call” such as SIP or TDM
- Allows calls to either be placed incoming or outgoing or both.
- Supplies access to other ancillary functions such as registration.
- eg: mod_sofia (SIP) mod_verto (WebRTC)
FreeSWITCH Interfaces (Dialplan)

• Allows a module to decide what applications to execute and in what order when a new session is created.

• eg: mod_dialplan_xml (XML)  ⤐ Popular but not the only choice.
FreeSWITCH Interfaces (File)

- Ability to read and/or record media to files.
- Also capable of reading and/or writing to streams.
- Setting/Getting of meta data in files when supported.
- eg: mod_sndfile (wav, etc) mod_av (mp4, mov etc)
FreeSWITCH Interfaces (ASR/TTS)

- Speech recognition and context-based switching.
- Text-to-speech generation.
- eg: mod_flite (festival light) mod_pocketsphinx (embedded sphinx)
FreeSWITCH Interfaces (Say)

- Language specific implementation of common generated prompts.
- eg: mod_say_en (english) mod_say_es(Spanish)
FreeSWITCH Interfaces (Chat)

• Protocol specific chat and chat-like interfaces.

• eg: mod_sms_flowroute (Flowroute SMS) mod_smpp (SMPP)
FreeSWITCH Interfaces (Limit)

- Abstraction of resource management concepts.
- Allowing a limitation to be tracked on arbitrary concepts.
- eg: mod_redis (Redis) mod_mongo (Mongodb)
FreeSWITCH Interfaces (Codec)

• Implementations of media COders DECoders.

• Provides the means to translate raw media to various streaming formats.

• eg: mod_opus (OPUS) mod_av (H264, H263)
FreeSWITCH Interfaces
(Application)

• Interacts directly with an inbound channel.

• Allows direct I/O to read and write media.

• Provides access to the channel to change variables or attach background processes, launch threads etc.

• Can be used to trigger other interfaces.

• eg: mod_dptools (set, bridge, record_session) mod_conference (conference)
FreeSWITCH Interfaces (FSAPI)

• Interacts with FreeSWITCH using text-in/text-out.

• Can be used to do anything. (cli commands, Find sessions by uuid etc)

• Can be run from the dial plan via variable expansion (similar to Asterisk function variables)

• eg: mod_commands (show, uuid_record) mod_conference (conference)
Books
packtpub.com
WebRTC in FreeSWITCH

• Started in 2013

• Primary goal to transplant the SDP / media engine into the core and support WebRTC components.

• Added SIP over WS support to unite with existing efforts.

• Developed Verto as FreeSWITCH native WebRTC interface.
WebRTC in FreeSWITCH
Verto (mod_verto)

- Endpoint (channels in FS)
- FSAPI (lookup registration / generate dialstring / status command)
- Chat (text-based-chat from html client)
- JSAPI (json store)
WebRTC in FreeSWITCH
Verto (verto.js)

• JavaScript library implements client side in browser.
• Event and callback driven.
• Extensible to existing and future applications.
• Elastic Cloud-Hosted Infrastructure, APIs and Services
• Home of the core engineering effort behind our STACK
• Sponsor of the FreeSWITCH Open Source
• Started in late 2017
• Entering into public BETA
• Sign up today! signalwire.com
Stop Paying For Phone Calls!

FreeSWITCH