



M5T[®] SIP Client Engine

The **M5T SIP Client Engine** is a complete SIP client implementation based on RFC 3261 and other IETF RFCs. It offers a suite of high-level C++ APIs that developers can use to easily integrate SIP client functionality in any type of device.

The M5T SIP Client Engine takes care of all SIP signaling details and RTP media handling details; only the user/device interface and management functionality need to be added in order to have a fully functional and sellable SIP client. The M5T SIP Client Engine is also highly portable and already supports a large range of operating systems, allowing a single implementation to run across a complete product line, from cell phones and WiFi phones to IP phones and video soft phones.



Any phone type	Digital Gateways
Analog gateways/IADs	Set-top-boxes
Cable Modems	Home gateways

Key Product Characteristics

- C++ SDK for SIP client devices.
- Implements SIP for VoIP/MMoIP
- Implements SIP for IM and Presence
- Implements all standard call and media services.
- Standards based; implements a wide range of standards.
- Integrates with different multimedia engines / chipsets.
- Highly portable, supports a number of operating systems and platforms.
- Full C++ source code access.
- Supports multi-user / multi-line.
- IPv6 ready and dual IPv4 / IPv6 support.
- Multiple network interfaces support.
- Highly flexible, allows building new services over it.
- Highly customizable.



Reduces Time to Market

The M5T SIP Client Engine implements all standard client functionality, from signaling to media handling. Project Managers developing a SIP client application only have to plan the integration of the M5T SIP Client Engine along with the user and management interfaces. The net result is faster time to market with enhanced stability and interoperability gained from reusing the M5T SIP Client Engine.

Builds Secure SIP Devices

The M5T SIP Client Engine implements IETF standardized security mechanisms, enabling secured interoperability with a wide range of devices. The SIP signaling is encrypted using TLS with mutual or server authentication. The media flow is transported using Secured RTP (SRTP), which uses AES to encrypt the data. The SRTP keys can be exchanged through SDP using RFC 4568 (security description), using the Multimedia Internet Key Exchange protocol (MIKEY), which further encrypts the SRTP key, or even using ZRTP.

IPv4 and IPv6 Ready

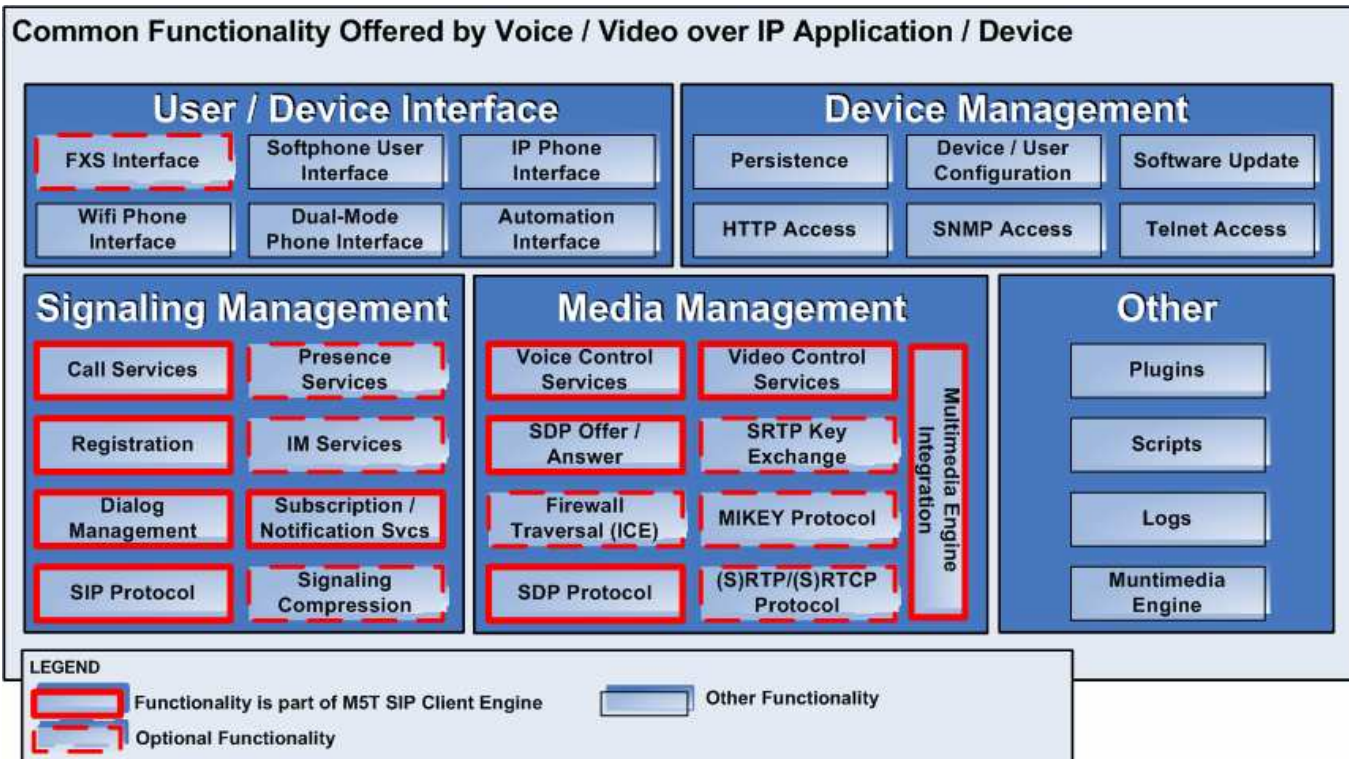
The M5T SIP Client Engine supports a wide range of transport protocols, allowing communications over UDP, TCP and TLS. Moreover, it can communicate over both IPv4 and IPv6 networks, and it can be configured to support multiple network interfaces, including dual stack devices. Overall, the M5T SIP Client Engine allows a smooth transition to the new IPv6 standard by supporting both Ipv4 and IPv6 at the same time.

High-Level API Hides Protocol Details

The M5T SIP Client Engine provides high-level APIs that allow programmers to immediately get working on their applications without having to learn one or more protocols. Moreover, the provided abstraction level allows focusing on the application to add more value there than on a protocol that must always be implemented in the same way.

Extensible

Media5 built extensive mechanisms in the M5T SIP Client Engine to allow developers to modify incoming and outgoing SIP packets; headers can be added, removed or modified. Moreover, another extension mechanism allows programmers to send and receive SIP requests that are not directly handled by the SIP Client Engine, which permits the integration of value-added features at the signaling level.



Any Hardware, Any Platform, Any OS

The SIP Client Engine is built over the M5T Framework, which offers a layer of abstraction for a wide range of supported platforms and operating systems. The M5T SIP Client Engine thus works on all platforms and operating systems supported by the M5T Framework, including Linux, VxWorks, WindowCE, Symbian, Windows and eCos. Please contact Media5 for the latest list of supported Operating Systems or to know more about the support of your operating system.

Simplifies Product Line Development

The portable M5T SIP Client Engine can be reused across different projects, minimizing the learning curve and further decreasing time to market. Moreover, this reuse across project ensures cross-product interoperability and enhanced stability due to bug fixes transiting from one project to another.

Media5 Professional Services to Further Decrease Time to Market

Media5, with its M5T products, is a leading software provider delivering the latest software technology for developing secure and feature-rich IP communication systems. Over the past few years, Media5 has developed the know-how to address IP communication and security requirements in large and complex network architectures. This know-how allows Media5 to provide up-to-date, reliable and deployable solutions. Thus, as an important addition to any solution, Media5 offers professional services that are provided by experienced engineers. Media5's engineers offer years of hands-on R&D and field experience in Internet and Internet Telephony technologies. They possess extensive knowledge of IETF and ITU protocols related to real-time communication over IP, such as: SIP, MGCP/NCS, H.323, SDP, SigComp, MIKEY, RTP, RTCP, SRTP, TLS, Kerberos, STUN, etc. In addition, the engineers' expertise is present at all system levels: DSP, CPU, OS, BSP, compiler, embedded client applications, server applications, distributed management and security. This complete expertise combined together with an efficient management team allows Media5 to complete feature-rich projects on time and further allows faster time to market for our customers.

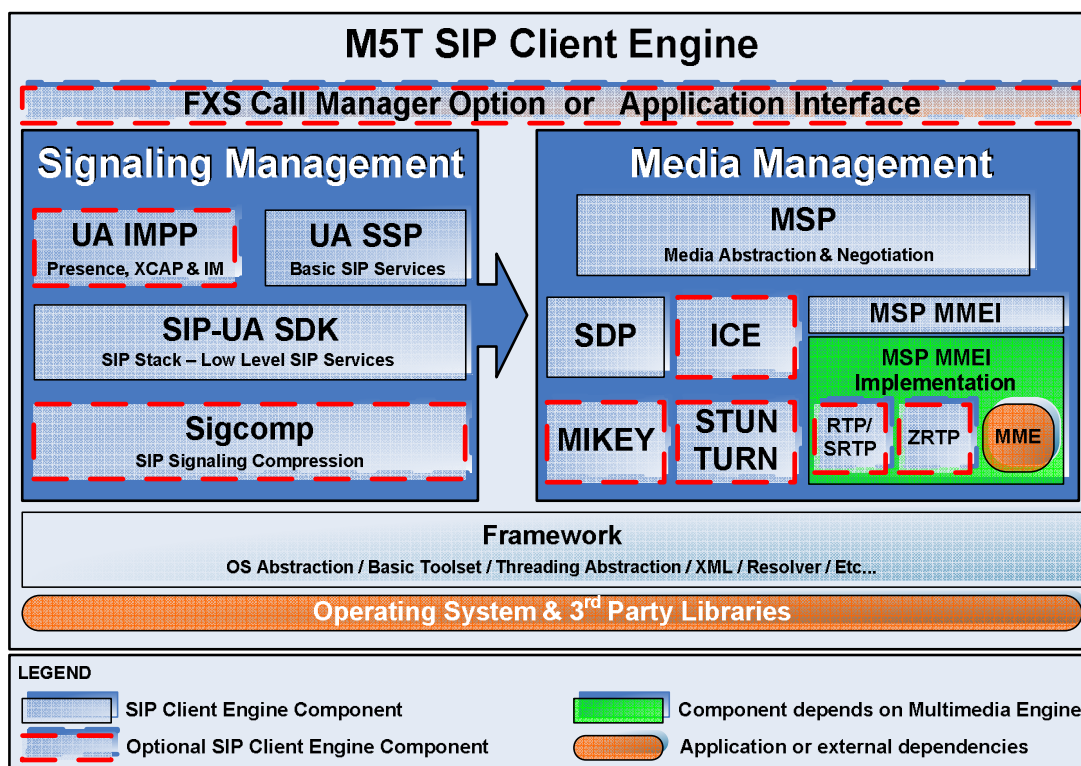
Feature Rich

To assist R&D Managers in minimizing development cycle, the M5T SIP Client Engine implements a wealth of features, including call establishment, call transfer, call forward, hold, resume, visual message waiting indication, registration management, etc. Moreover, optional components are available to provide advanced features such as NAT/firewall traversal, Presence and Instant Messaging.

Multimedia Engine / Chipset Integration

The M5T SIP Client Engine must interface with a Multimedia Engine in order to support audio and video. The M5T SIP Client Engine already supports a number of multimedia engines and chipsets. Contact Media5 to know if the multimedia engine you are using is currently supported. Media5 can easily add the support for your selected multimedia engine / chipset if the need arises.





Integrates Key M5T Components

The M5T SIP Client Engine is built over and integrates key M5T components, such as:

- **SIP-UA SDK** for SIP signaling management.
- **Framework**, for abstracting the operating system and platform.
- **SDP** for parsing and generating the SDP that is used for media negotiation.
- **UA-SSP** which is the User-Agent Signaling Service Provider that integrates M5T SIP-UA SDK and offers higher level user agent APIs.
- **UA-IMPP** which is the User-Agent Instant Messaging and Presence Provider that also integrates M5T SIP-UA to offer high-level presence and IM APIs.
- **Sigcomp** which is used for compressing the SIP signaling on low bandwidth links.
- **MSP** which is the Media Service Provider that offers high-level media APIs and integrates many media-related components.
- **ICE, STUN and TURN** that offer the functionality for sending media through NATs and Firewalls.
- **RTP SDK** which is used for encapsulating the media and sending it on the network.
- **SRTP SDK** which is used for encrypting the sent media and decrypting the received media.
- **ZRTP SDK** which is used for negotiating the keys to use with SRTP.
- **MIKEY SDK** which is also used for negotiating the keys to use with SRTP.



Partial Features Overview

GENERAL FEATURES

- Multi-user/profile support
- Multi-network interface
- IPv4, IPv6, dual host support
- SIP over UDP, TCP, TLS
- SIP Security
 - Server TLS Authentication
 - Mutual TLS Authentication
 - Digest Authentication
- Media Security*
 - AES Encryption*
- Media Security Key Negotiation*
 - MIKEY*
 - Security Descriptions*
- "sip", "sips", "tel", "pres" and "im" URI schemes
- ENUM resolution of "tel" URIs
- SIP extensions for:
 - Privacy
 - Asserted Identity
 - UA Capabilities
 - Caller Preference
 - GRUU

CALL FEATURES

- Make / Receive Call
- Forward Call
- Transfer Call
- Reliable 1xx (PRACK)
- UPDATE
- Forked call handling
- Caller Preferences
- Support for all Offer/Answer scenarios
- Early media

MEDIA SESSION FEATURES

- Offer/Answer Negotiation
- Support Audio, Video & Fax
- Hold Media Stream
- Resume Media Stream
- 3-way Conference
- Early media
- RTP/RTCP Control*
- SRTP/SRTCP Control*
- ICE Negotiation*
- MIKEY*
- Security Descriptions*

REGISTRATION FEATURES

- Automatic refresh
- Registrar list configuration
- Registration monitoring (reg-info)
- Obtaining a GRUU
- Persistent Connection Mgmt
- Service-Route discovery
- Publishing UA capabilities

PRESENCE & IM FEATURES*

- Publishes rich PIDs*
- Subscribes to watchers (presence.winfo)*
- Subscribes to peer/list for presence state*
- Automatically refreshes subscriptions*
- Full XCAP Integration
- Presence Authorization
- Resource Lists
- Send / Receive IM

** denotes features available with the use of optional components*

IMPLEMENTED AND SUPPORTED STANDARDS

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|--|--|--|
| RFC 1950 - Deflate* | RFC 3761 - Enum | RFC 4567 - Key Mgmt ext for SDP* |
| RFC 2246 - TLS | RFC 3764 - Enum registration for SIP AOR | RFC 4568 - SDP security descriptions* |
| RFC 2429 - RTP Payload - H.263+* | RFC 3824 - Using E.164 numbers with SIP | RFC 4661 - XML Filters* |
| RFC 2617 - HTTP Digest Authentication | RFC 3830 - MIKEY* | RFC 4662 - Resource List Subscriptions |
| RFC 2976 - The SIP INFO Method | RFC 3840 - UA Capabilities | RFC 4733 - RTP Payload for DTMF/Tones* |
| RFC 3261 - SIP | RFC 3841 - Caller Preferences | RFC 4745 - Common Policy* |
| RFC 3262 - Reliable 1xx Responses | RFC 3842 - MWI Event Package for SIP | RFC 4825 - XCAP* |
| RFC 3263 - Locating SIP Servers | RFC 3856 - Presence Event Package* | RFC 4826 - Resource Lists* |
| RFC 3264 - SDP Offer-Answer Model | RFC 3857 - winfo Event Package* | RFC 4827 - XCAP Usage for Presence* |
| RFC 3265 - SIP Specific Event Notification | RFC 3858 - XML for Watcher Information* | RFC 5025 - Presence Authorization* |
| RFC 3267 - RTP Payload - AMR&AMR-WB | RFC 3861 - im and pres Resolution* | RFC 5049 - Sigcomp and SIP* |
| RFC 3311 - The SIP UPDATE Method | RFC 3862 - CPIM Message Format* | RFC 5196 - UA Caps ext. to PIDF* |
| RFC 3320 - Sigcomp* | RFC 3863 - PIDF* | RFC 5261 - XML Patch Ops.* |
| RFC 3321 - Sigcomp Extended Op* | RFC 3891 - The SIP Replaces Header | RFC 5262 - Partial PIDF* |
| RFC 3323 - A Privacy Mechanism for SIP | RFC 3903 - Publish* | RFC 5263 - Partial Notify* |
| RFC 3325 - Asserted Identity | RFC 3952 - RTP Payload - iLBC | RFC 5264 - Partial Publish* |
| RFC 3389 - RTP Payload - Comfort Noise | RFC 3959 - Early Session Disposition | RFC 5367 - Embedded RL Subscriptions* |
| RFC 3420 - message-sipfrag | RFC 3960 - Early Media and Ringing Tone | RFC 5389 - STUN* |
| RFC 3428 - SIP Extension for IM* | RFC 3966 - The TEL URI | draft-ietf-behave-turn* |
| RFC 3485 - Sigcomp Dictionary SIP/SDP* | RFC 3984 - RTP Payload - H.264* | draft-ietf-behave-turn-tcp* |
| RFC 3515 - The SIP REFER Method | RFC 4028 - SIP Session-Timers | draft-ietf-mmusic-ice* |
| RFC 3550 - RTP/RTCP | RFC 4091 - ANAT Semantics for SDP | draft-ietf-mmusic-ice-tcp* |
| RFC 3551 - RTP Audio/Video Profile | RFC 4092 - Use of ANAT in SIP | draft-ietf-simple-xcap-diff - XCAP Diff XML* |
| RFC 3581 - Symmetric Response Routing | RFC 4479 - A Data Model for Presence* | draft-ietf-sip-gruu |
| RFC 3605 - RTCP attribute in SDP | RFC 4480 - Rich PIDF* | draft-ietf-sip-outbound |
| RFC 3608 - Service Route | RFC 4481 - Timed Presence Ext. to PIDF* | draft-ietf-sipping-cc-transfer |
| RFC 3611 - RTCP XR* | RFC 4482 - Contact Info. for PIDF* | draft-ietf-sip-xcapevent - XCAP event* |
| RFC 3680 - Registration Event Package | RFC 4538 - Target Dialog | draft-zimmermann-avt-zrtp* |
| RFC 3711 - SRTP* | RFC 4566 - SDP | |

** denotes RFCs that are supported through optional components.*



For additional information, contact your Media5 Representative, or call:

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<http://www.media5corp.com/sip-client-engine>