Welcome to Kamailio (OpenSER) – the Open Source SIP Server

Kamailio (former OpenSER) is an Open Source SIP Server released under GPL, able to handle thousands of call setups per second. Among features: asynchronous TCP, UDP and SCTP; secure communication via TLS for VoIP (voice, video); IPv4 and IPv6; SIMPLE instant messaging and presence with embedded XCAP server and MSRP relay; ENUM; DID and least cost routing; load balancing; routing fail-over; accounting, authentication and authorization; support for many backend systems such as MySQL, Postgres, Oracle, Radius, LDAP, Redis, Cassandra; XMLRPC control interface, SNMP monitoring. It can be used to build large VoIP servicing platforms or to scale up SIP-to-PSTN gateways, PBX systems or media servers like Asterisk™, FreeSWITCH™ or SEMS.

- Kamailio and SIP Express Router (SER) teamed up for integration of the two applications and new development. As result, starting with version 3.0.0 there is one application and a single source tree that incorporates all the features of the two projects plus new additions.

Recent News
2012-02-08: Kamailio at VoIPUsersConference, Fri, Feb 17, 2012
2012-01-31: Kamailio v3.2.2 Released
2012-01-29: Presentations at Fosdem 2012
2012-01-27: Kamailio & friends dinner at Fosdem 2012
2012-01-17: New Module – Cassandra DB Connector

Download Latest Stable v3.2.2
Pages
- Documentation
  - Main Index
  - New Wiki Site (3.2.x+)
  - Old Wiki Site (3.1.x-)
  - Modules
  - SIP Router Wiki

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10 years SER Conference
SIP Express Router & Kamailio

click for more details

event sponsored by
First Line Of Code

Open Source

GPL

FhG Fokus Institute

Berlin


SIP Express Router (SER)

OpenSER

Kamailio

rename

Integration Completed

v1.5.0

v3.0.0 v3.1.0 v3.2.0

Same application: Kamailio - SER

Awarded Best Open Source Networking Software 2009 By InfoWorld

Other Forks...

FhG Fokus Institute

Berlin

10 Years
Project Management

- Community oriented
  - open source project
  - over 50 registered developers
  - large community
  - many companies involved
    - service providers
    - integrators
    - vendors

- Management team
  - conflict resolution
  - volunteering individuals
  - different companies and countries
Management Team

- **Individuals**
  - 11 people as of January 25, 2010
    - Daniel-Constantin Mierla, Elena-Ramona Modoiu, Henning Westerholt, Juha Heinanen, Klaus Darilion
    - Alex Balashov, Andreas Granig, Carsten Bock, Inaki Baz Castillo, Jesus Rodriguez, Marcus Hunger

- **Companies**
  - Asipto, 1&1, TutPro, Enum.at, Evaristesys, Sipwise, Ngn-ims.com, Sipdoc.net, Voztelecom and Sipgate

- **Countries**
  - Austria, Germany, Finland, Spain, Romania and USA
Project resources

- **Servers**
  - main project’s web server
    - Spain
  - development and backup server
    - Germany
  - source code repository
    - SVN: Sourceforge.net
    - GIT: sip-router.org

- **Developers**
  - sponsored by companies
  - academic projects
  - over 50 registered from all over the world
Sample Usage

- **One of biggest VoIP deployments world wide**
  - **1&1 Germany**
    - Over 3 millions subscribers
    - Over 1.5 billion minutes per month
    - Second biggest telco in Germany
  - members of management board
  - several active contributors
Having requirements such as ...?

... you are on the right track!!!
Functionality

- **SIP Server**
  - SIP registrar
    - record registry for users
  - SIP location server
    - counterpart for registrar
  - SIP proxy server (router)
    - best at this job
    - initial target for the project
      - achieved long time ago
  - **SIP application server**
    - rich telephony services
    - instant messaging and presence
    - integration with third party applications
    - integration with web 2.0 and social networking
Functionality

- It is not
  - SIP phone
  - SIP media server
  - SIP back-to-back user agent

- It handles only signaling
State of the union

- Internal architecture refactored for v3.0.0
  - support asynchronous processing
    - TCP and TLS
    - SIP request handling
  - transaction management
  - internal libraries

Right now
- very stable core and main components
  ➞ topped with our well known scalability and flexibility
- safe framework for future development
  ➞ your work (extensions and deployments) is safe from now on for many years - there is no need to change the architecture again
- focus is on new features
  ➞ 3.x.x (and the next slides) show that

Scalability (info from public domain)
- services with millions of active subscribers
  ➞ 1&1 Germany (> 3M)
- services routing billions of call minutes per month
  ➞ might be the guy next to you (or pay attention tomorrow)
Stats

Kamailio and SIP Express Router
Main Language: C
Total Lines of Code: 489,210
Active Contributors: 39
Commit Activity Timeline:
5 year commit count

Kamailio and SIP Express Router - Project Cost

<table>
<thead>
<tr>
<th>Include</th>
<th>Avg. Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Markup And Code</td>
<td>$55000/year</td>
</tr>
</tbody>
</table>

Codebase
635,457 Lines
171 Person Years

Estimated Cost
$9,379,931

Updated Feb 04, 2012

Factoids

- Mostly written in C
- Mature, well-established codebase
- Very large, active development team

Kamailio and SIP Express Router, updated Feb 04, 2012
Features

- **SIP Application Server**
  - Proxy, redirect, registrar, location

- **Presence & IM Services**
  - End-to-End
  - SIMPLE Server
  - RCS - RCS-e
  - Presence User Agent
  - Resource Lists
  - XCAP Client & Server
  - MSRP Relay

- **Multi-domain support**
  - LDAP/H.350 support
  - Embedded HTTP Server

- **IPv4-IPv6**
  - Asynchronous
  - UDP/TCP/TLS/SCTP
  - DNS NAPTR & SRV
  - DNS Failover and Load Balancing
  - DNS Internal Cache

- **Plug in module interface**
  - (over 150 mods)
  - Small footprint
  - Customizable routing policy

- **Carrier Routing**
  - Dynamic Routing
  - ENUM lookup support
  - Advanced routing
    - (Load Balancing and LCR)
    - DID, Aliases & speeddial
Features

- Embedded Lua, Perl, Python, C#,
  Java SIP Servlet programming interface

- No-SQL
  Memcached
  Redis
  Cassandra

- NAT traversal
  Security permissions
  anti-DOS attacks
  User call preferences
  Call Processing Language

- Link any application to Kamailio using
  FIFO/UNIXSOCK/DATAGRAM/XMLRPC interfaces

- Database API
  MySQL
  PostgreSQL
  SQLite
  UNIXODBC
  BERKELEYDB
  ORACLE
  Text files
  RADIUS

- Gateway
  SMS
  XMPP

- Accounting through log file,
  database or Radius/DIAMETER servers
New in 3.1.0

Flexibility
- Embedded Lua
- Embedded Python
- Extended preprocessor directive
  - #!define
  - #!subst
- New variables

Interactive config debugger
- step-by-step execution
- execution trace
- xlog enhan’s
- print cfg line
- k&s modules integration

Performance
- Asynchronous TLS
- UDP raw sockets
- Multi-homed improvements
- Load balancing
  - weight
  - call load
- Traffic shaping

Features
- GeoIP API
- Registration to remote servers
- Reason header for Cancel
- Embedded HTTP & XCAP servers
- Cfg tree caching & message queue systems
New in 3.2.0 - Oct 2011

- **RLS**
  - OMA specs
  - split NOTIFY bodies
  - XPath support within doc

- **Reg-Info Implementation**
  - RFC3860 pub-sub service for location data

- **Presence Server**
  - data distribution across many instances through database

- **Presence User Agent**
  - updates for latest RL services

- **Embedded XCAP server**
  - OMA - specs If-Match cond

- **SQLite connector**
  - use file based database for embedded systems

- **Distributed Message Queue**
  - Using SIP and Peer-to-Peer

- **Many native extensions to Lua**
  - cfg routing logic all in Lua
New in 3.2.0

- **async module**
  - run asynchronously parts of config file (route blocks)

- **Redis No-SQL**
  - connector from config

- **Partitioned user location service**
  - many nodes sharing location data

- **ipops module**
  - a set of operations for handling IPv4/IPv6 addresses

- **New features in old parts**
  - **acc** - write full CDR at once
  - **dialog** - attach extra attributes
  - **core** - more pre-processor directives
  - **pv** - new variables and transformations
  - **tmx** - export of async TM functions
  - **sqlops** - support for xavps
  - **uac** - enhancements to remote registration
  - **siptrace** - traffic replication enhancements

- **sdrops module**
  - SDP body management

- **JSON**
  - **JSONRPC**

- **Redis No-SQL connector from config**

- **Partitioned user location service**
  - many nodes sharing location data

- **ims Extensions**
  - about 10 new modules (P-CSCF, I-CSCF, S-CSCF...)
SIP Beyond VoIP - Presence Services

**Kamailio modules**

- USRLOC
- MI MODS
- XMPP
- PUA_DLGI
- PUA_USRLOC
- PUA_MI
- PUA_XMPP
- PUA

**APPLICATIONS**

- External XCAP Server
- P...E_PROFILE
- P...E_CONFERANCE
- XCAP_SERVER
- XCAP_CLIENT
- P...E_DIALOGINFO
- RLS
- PRESENCE_MWI
- PRESENCE_XML
- PRESENCE

**KAMAILIO CORE**
New in 3.2.0

http://www.kamailio.org/w/kamailio-openser-v3-2-0-release-notes/

http://www.kamailio.org/wiki/features/new-in-3.2.x
Enhancements to existing modules
- auth, auth_db
- rr, app_lua, tls, textops
- dialog, dialplan

New in core - tls connections, fork delay, tcp buffer clone, socket workers, RPC commands

New modules
- xhttp_rpc - execute RPC commands via HTTP
- presence_profile - get phone configuration via SIP Presence mechanisms
- app_mono - embedded execution of managed code (C#)
- db_cassandra - DB connector for Cassandra
- msrp - embedded MSRP relay
- tmrec - time based recurrence matching (RFC2445)

http://www.kamailio.org/wiki/features/new-in-devel
Questions?

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