Kamailio SIP Server

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Co-Founder

www.kamailio.org

www.asipto.com

www.kamailio.org

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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.

BERLIN, GERMANY
SEP 2, 2011
10 years SER Conference
SIP Express Router & Kamailio

click for more details

event sponsored by

Rock Solid SIP Server

Open Source
GPLv2

Excellence in SIP since 2001

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
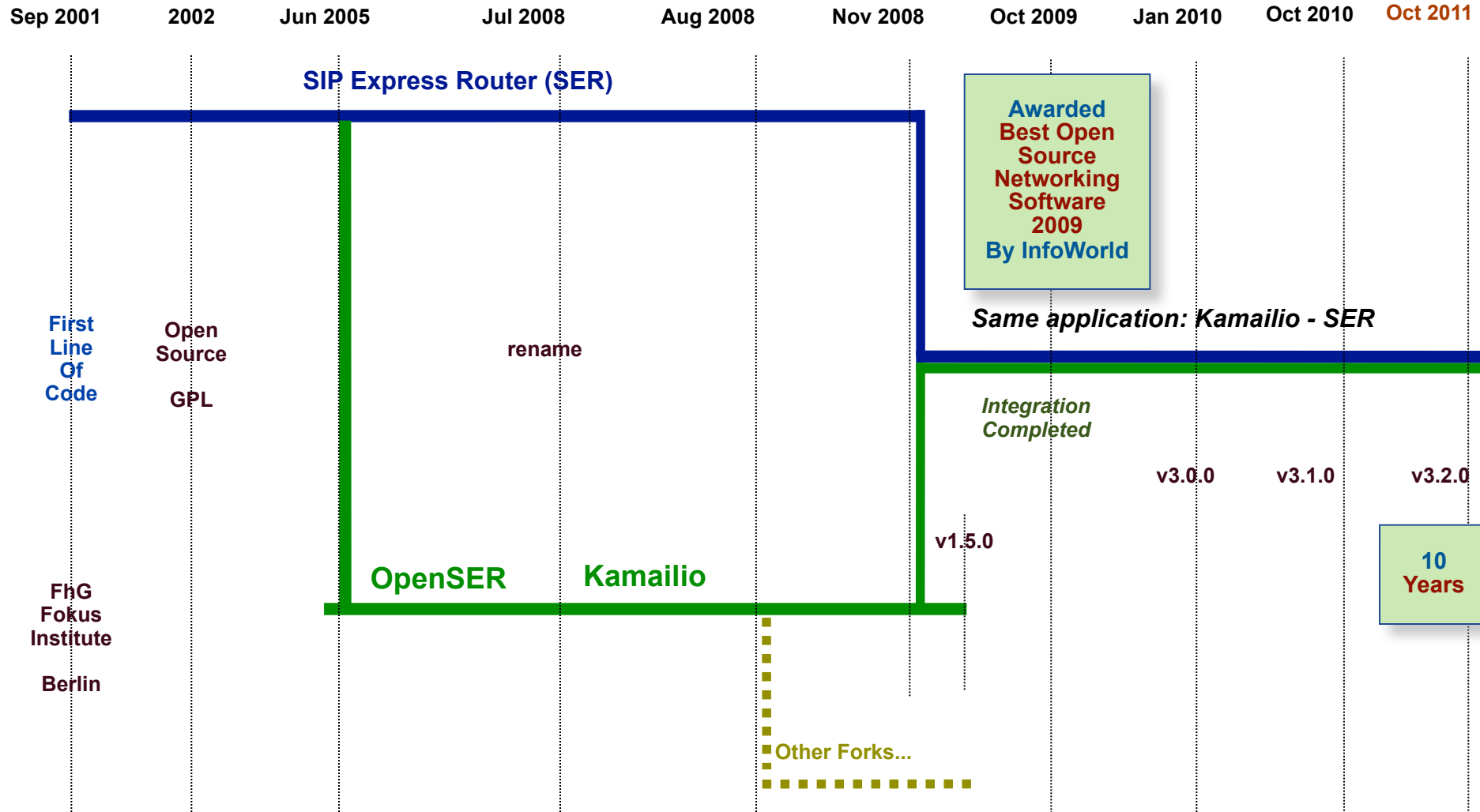2012-01-17: New Module – Cassandra DB Connector

- Download Latest Stable v3.2.2 -

Pages	Documentation
Home	Main Index
Features	New Wiki Site (3.2.x+)
Download	Old Wiki Site (3.1.x-)
About	Modules
Old Site	SIP Router Wiki

Kamailio & SER

MODULES_K

acc
auth
auth_db
dispatcher
dialog
Kex
msilo
presence
pua
registrar
rr
sl
usrloc
xlog
...
(over 80 modules)

MODULES

TM
app_lua
auth_identity
avpops
db_mysql
db_postgres
debugger
dialplan
enum
geoip
lcr
sanity
tls
topoh
...
(over 25 modules)

MODULES_S

acc_db
auth
auth_db
avp
dispatcher
dialog
exec
msilo
pdt
registrar
rr
sl
usrloc
xlog
...
(over 50 modules)

SIP Express Router (SER)

Kamailio (OpenSER)

CORE

SIP Parser – Memory Manager – Locking
Cfg Parser & Interpreter
Timer API – Module Interface

LIBS

DB1 – DB2 – KCore
MI – CDS
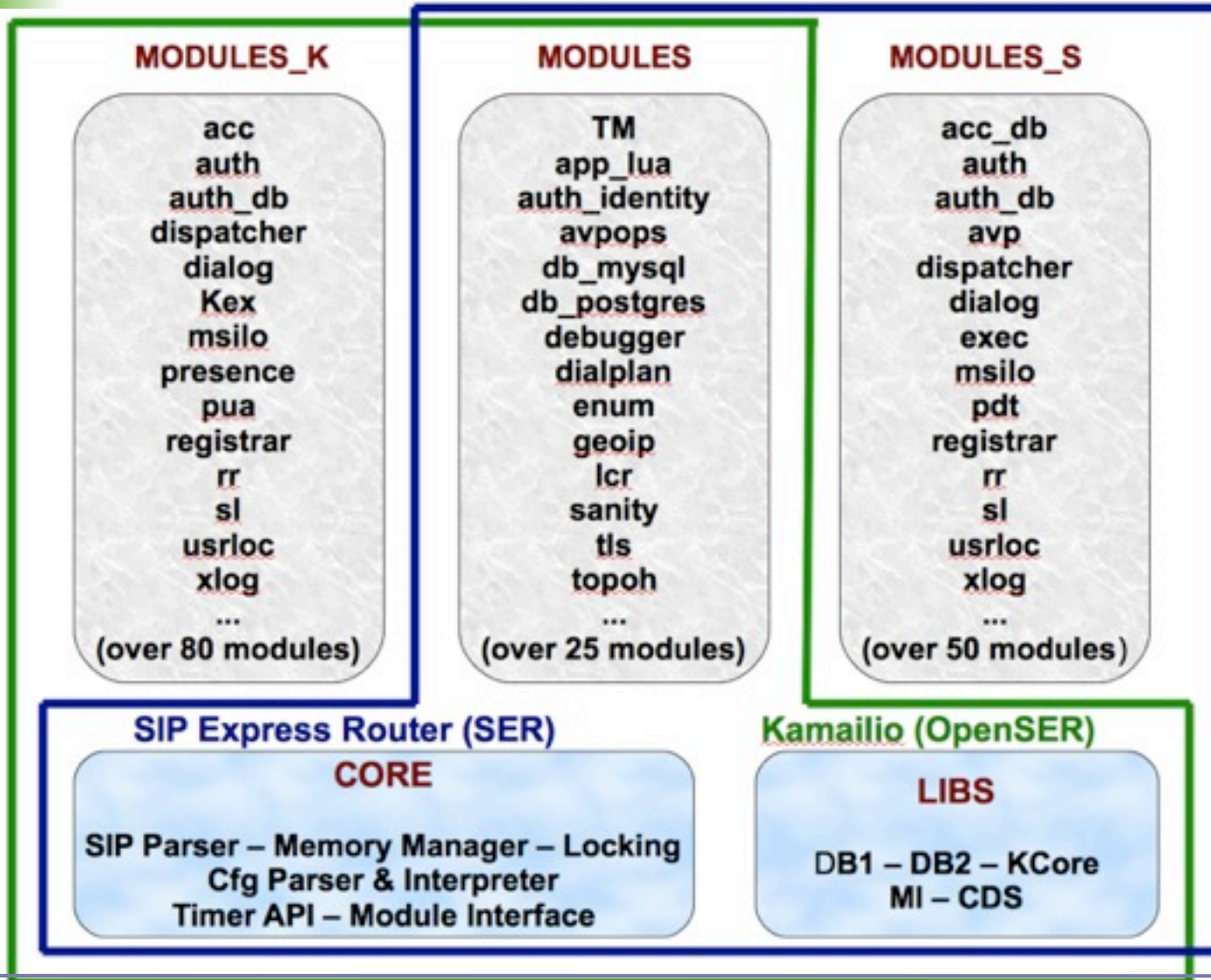
- Community oriented
  - open source project
  - over 50 registered developers
  - large community
  - many companies involved
    - service providers
    - integrators
    - vendors
- Management team
  - conflict resolution
  - volunteering individuals
  - different companies and countries

- ❑ 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

- □ 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

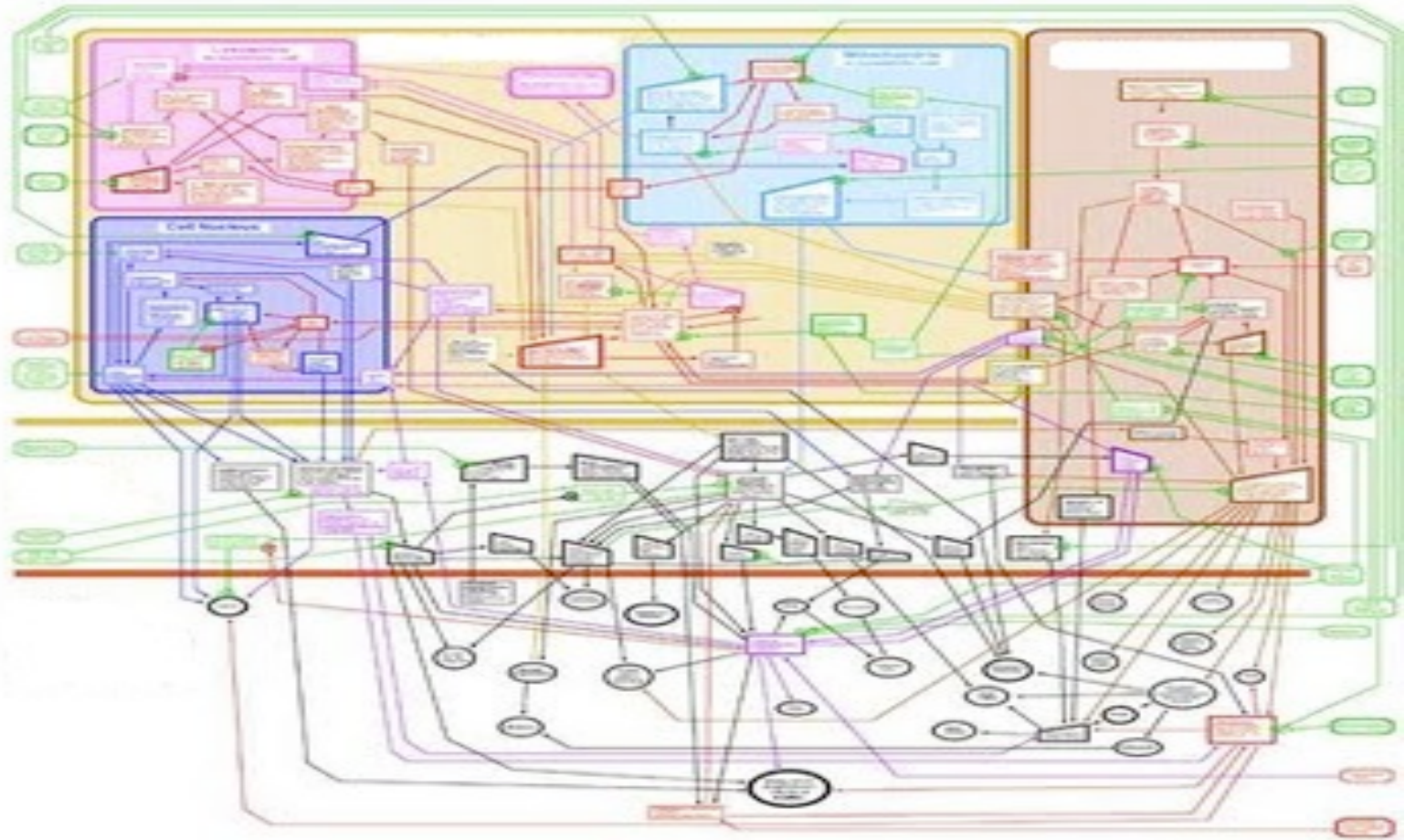- One of biggest VoIP deployments world wide
  - 1&1 Germany
    - Over 3 millions subscribers
    - Over 1.5 billion minutes per month
    - Second biggest telco in Germany
  - members of management board
  - several active contributors

Having requirements such as ...?

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

- **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**

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

- ☐ **It handles only signaling**

- 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
➡ toped 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)

Cocomo

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

Updated Feb 04, 2012

Kamailio and SIP Express Router - Project Cost

Include	Avg. Salary
Markup And Code ⬍	$ 55000 /year

Codebase	Effort (est.)
635,457 Lines	171 Person Years

Estimated Cost — **$9,379,931**

Updated Feb 04, 2012   more at ◯

Factoids

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

Kamailio and SIP Express Router, updated Feb 04, 2012   more at ◯

SIP Application Server proxy, redirect, registrar, location

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

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

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

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

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

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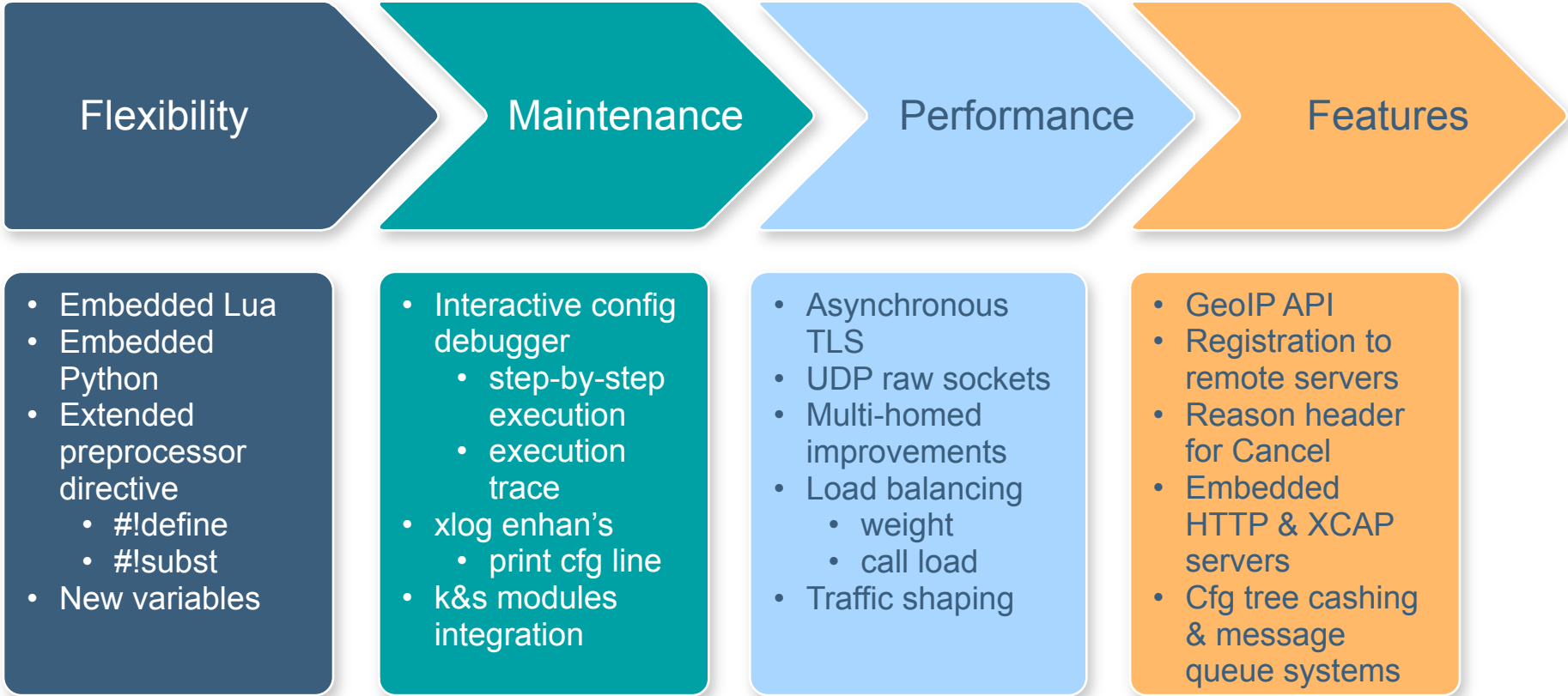
Link any application to Kamailio using FIFO/UNIXSOCK/DATAGRAM/XMLRPC interfaces

Database API MySQL PostgreSQL SQLite UNIXODBC BERKELEYDB ORACLE Text files RADIUS

Gateway

SMS XMPP

Accounting through log file, database or Radius/DIAMETER servers

Flexibility

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

Maintenance

- 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 cashing & message queue systems

New in 3.2.0 - *Oct 2011*

Reg-Info Implementation

RFC3860
pub-sub service for
location data

**Embedded
XCAP
server**

OMA - specs
If-Match cond

RLS
OMA specs
split NOTIFY bodies
XPath support within doc

Presence Server

data distribution across
many instances through
database

**SQLite
connector**

use file based
database for
embedded
systems

Presence User Agent

updates for latest
RL services

**Many native extensions
to Lua**

cfg routing logic all in Lua

**Distributed Message
Queue**

Using SIP and Peer-to-Peer

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
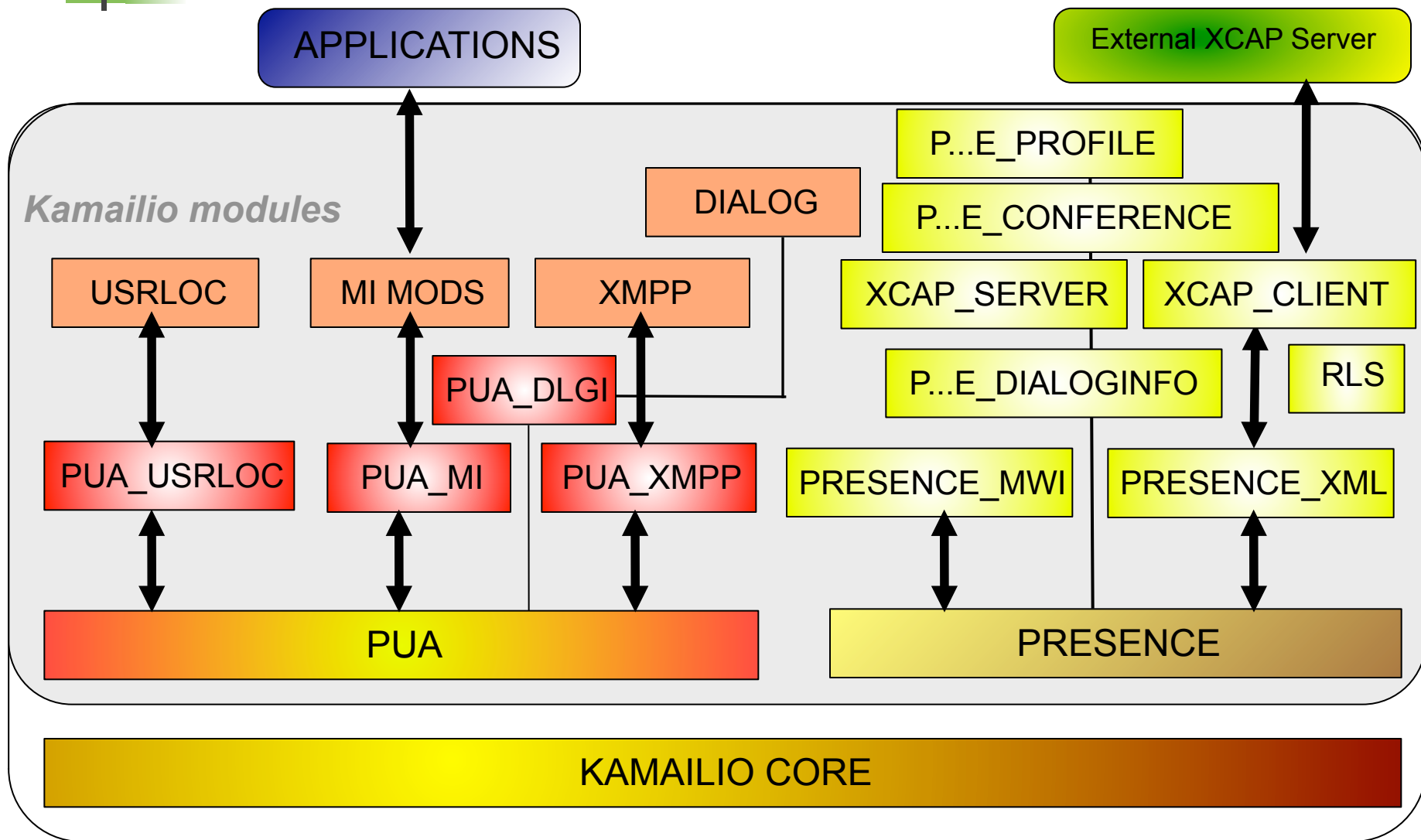**siptrace - traffic replication enhancements**
.....

sdpops module

SDP body management

JSON JSONRPC

IMS Extensions
about 10 new modules
(P-CSCF, I-CSCF, S-CSCF...)

SIP Beyond VoIP - Presence Services

APPLICATIONS

External XCAP Server

Kamailio modules

USRLOC

MI MODS

XMPP

DIALOG

P...E_PROFILE

P...E_CONFERENCE

XCAP_SERVER

XCAP_CLIENT

PUA_DLGI

P...E_DIALOGINFO

RLS

PUA_USRLOC

PUA_MI

PUA_XMPP

PRESENCE_MWI

PRESENCE_XML

PUA

PRESENCE

KAMAILIO CORE

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

http://www.kamailio.org/wiki/features/new-in-3.2.x

New in devel (3.3.0) - *2012 before the summer*

- ❑ 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?

Contact

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