

Open Source VoIP

OpenSER – Asterisk – Yate – more ...
Building an Open Source Telecom



Daniel-Constantin Mierla

Elena-Ramona Modroiu

<http://www.openser.org>

- graduated Computer Science at University Politechnica Bucharest
- researcher at FhG Fokus, Berlin Germany
 - *developer of SIP Express Router*
 - *IP communications – VoIP and SIP*
 - *focus on convergence and security*
 - *EU projects: Evolute, King, Magnet*
- co-founder OpenSER project
- core developer OpenSER project
- member of OpenSER management board
- member of ROSDEV

- project founded by:
 - Bogdan-Andrei Iancu
 - Daniel-Constantin Mierla
 - Elena-Ramona Modroiu
- core developers and main contributor to **SER**
- open source **SIP (RFC3261)** server under **GPL**
- focus on stability, scalability and features
- **softswitch** – not a **PBX**
- high performances – thousands of call setups per second
- written in **C** for **Linux/Unix**-like platforms
- project hosted on sourceforge.net
- web forum hosted by voipuser.org

- website: <http://www.openser.org>
- mailing lists
 - users: users@openser.org
 - developers: devel@openser.org
 - business: business@openser.org
 - team: team@openser.org
 - management board: board@openser.org
- web forum
 - <http://www.voipuser.org>
- wiki pages
 - <http://www.openser.org/dokuwiki/>
 - <http://www.voip-info.org>

- spread:
 - **Europe** – Germany, UK, Spain, France, Switzerland, Austria, Netherlands
 - **North America** – Canada, USA, Mexico
 - **Central and South America** – Brazil, Chile, Columbia, Argentina
 - **Asia** – India, Malaysia, Indonesia, Philippines
 - **Africa** – South Africa
 - **Australia** – New Zealand
- over **1500** users on mailing lists
 - quick and clear answers
- very active web forum discussions
- **21** registered developers
- over **150** contributing with code and documentation

- core developers
 - Bogdan-Andrei Iancu
 - Daniel-Constantin Mierla
 - Elena-Ramona Modroiu
- main developers
 - Germany – 2
 - Austria - 2
 - Spain - 3
 - USA – 6
 - Romania – 6
 - Finland – 1
 - France - 1

- board of 7 members
 - **Romania** – 3
 - Bogdan-Andrei Iancu
 - Daniel-Constantin Mierla
 - Elena-Ramona Modroiu
 - **Finland**
 - Juha Heinanen
 - **Spain**
 - Cesc Santasusana
 - **Netherlands**
 - Adrian Georgescu
 - **Austria**
 - Klaus Darilion

- fast development
 - new features added by third party
 - large development team
- comprehensive testing
 - great help from community
 - quick response and fixes
- documentation improvements
 - contributions from users
- good advertising
 - each company using it is making publicity
- quality design and coding
 - thousands of eyes watching what you are doing
 - open discussions bring brilliant ideas

- have an impartial attitude
 - don't fall to one company interests and pressures
- preserve code coherence
 - clear integration of new contributions
 - avoid code duplicity
- maintain compatibility and additional tools
 - new releases cannot be radical changes
- sustain a clear roadmap and project development
- moderate disputes
 - because they happen ...
- manage community communication and networkings
 - events: conferences, summits
 - online meeting: irc

- Berlin, Germany, November 2006
- over 110 registered participants
- two days with presentations and discussions
- hosted by Voice on the Net conference
- about 20 special guests
- 17 presentations
 - distributed solutions
 - VoIP hosting and white label platforms
 - service providers
 - academic environments
 - applications development
 - security and peering



ENUM for carriers

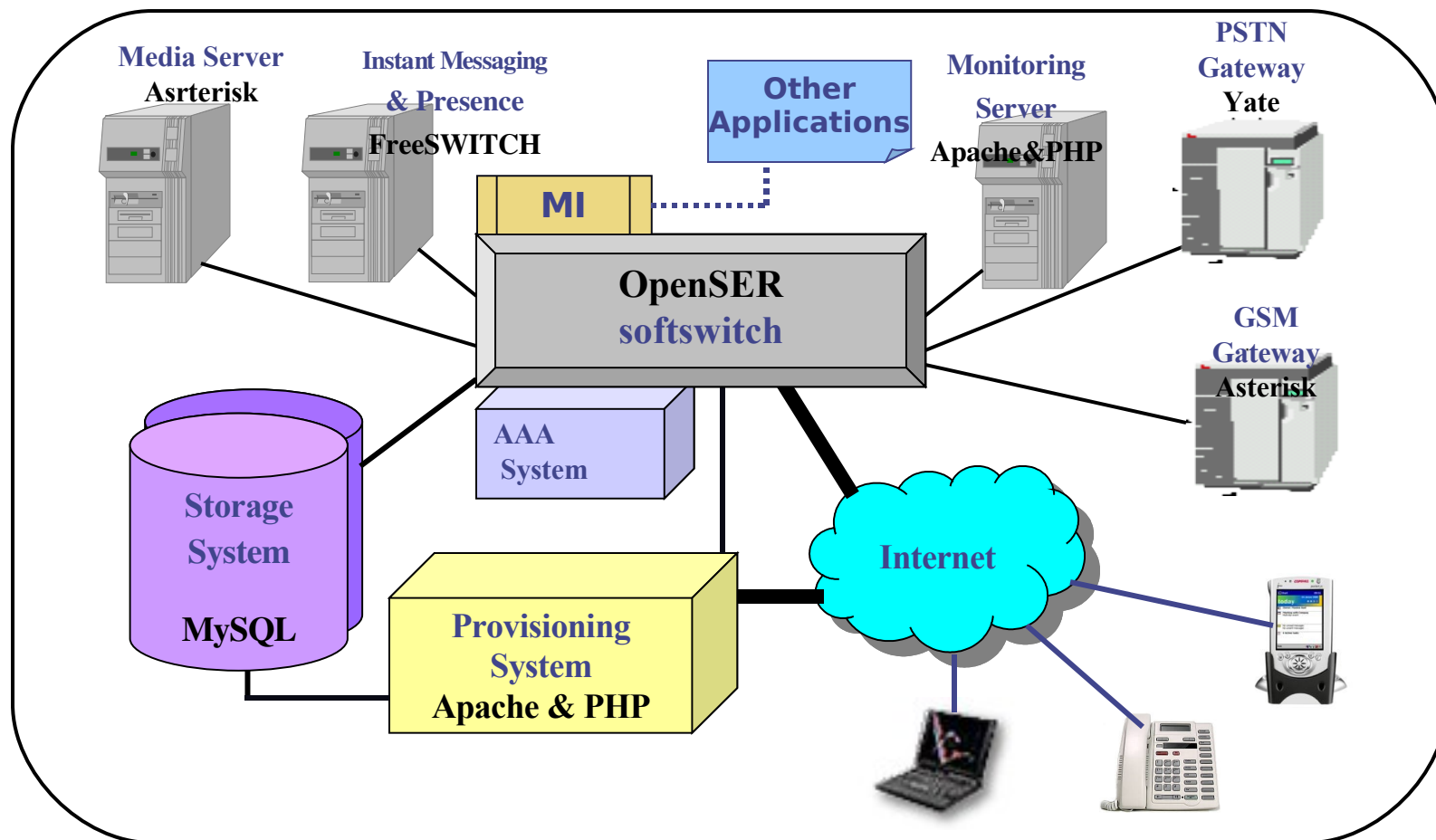
- Requirements from the Carriers view:
 - Under full control of the carrier
 - Carrier stays in the call flow
 - Number ranges possible
 - Number portability
 - Minimal provisional expense
 - For all E.164 numbers

- VoIP SIP Server (Router, Proxy, Registrar, ...)
- UNIX-like : IPv4/IPv6 : UDP/TCP/TLS
- NAT traversal
- Extended DB support (Mysql, Postgres, Oracle, etc)
- RADIUS & DIAMETER for AAA
- Security & DOS protection
- Advanced Routing: CPL, OSP, LCR, ENUM
- Gateways: SMS, XMPP-Jabber
- VoIP application extensions: Perl, Java SIP Servlets
- Management interface: fifo file and xmlrpc, snmp
- DNS Failover, white/black lists
- Support for clustering and HA

- OpenSER can be shaped to run on almost any kind of device:
 - embedded devices (routers, firewall, access points)
 - Soma Networks
 - medium-size devices
 - Collax
 - large architectures (servers, clusters)
 - Cisco - OpenSER is the SIP proxy of Cisco Service Node for Linksys One – platform running several OS applications: FreeBSD, Postgres, Bind...

- SIP service providers
 - lund1 , voip-users , babble.com, Arcor
- hosting & white label solutions
 - Voztelecom
- routing & trunking providers
 - MCI
- termination & GW providers
 - Magrathea
- solution providers
 - Voice System
- integrators
 - Basis AudioNet
- academic institutions: MIT, UNC, INRIA, SWITCH

- no vendor trap
 - faster development cycle
 - split work between parties
 - easy synchronization with the main stream by
- contributions $\Rightarrow$ unified effort for development
 - Voice System (Presence, XMPP, IM Conference, DNS adds-on)
 - Collax (perl scripting support)
 - Voztelecom (Application Agent)
 - SomaNetworks (Session Timer)
 - Trans Nexus (OSP)
 - Enum.at (Infrastructure Enum, Domain policy)
- performance and flexibility
 - build on your imagination



- An Open Source Modular Multiprotocol PBXa
- Asterisk delivers services on the SIP network
 - Voicemail
 - PSTN gateway
 - Conference
 - Announcement services
- multiple protocols: IAX2, SIP, h323, Skinny, zap, jingle
- multiple codecs: gsm, g711, g729, ilbc, ...
- transcoding
- gateway to PSTN
- protocol translation
- back-to-back user agent

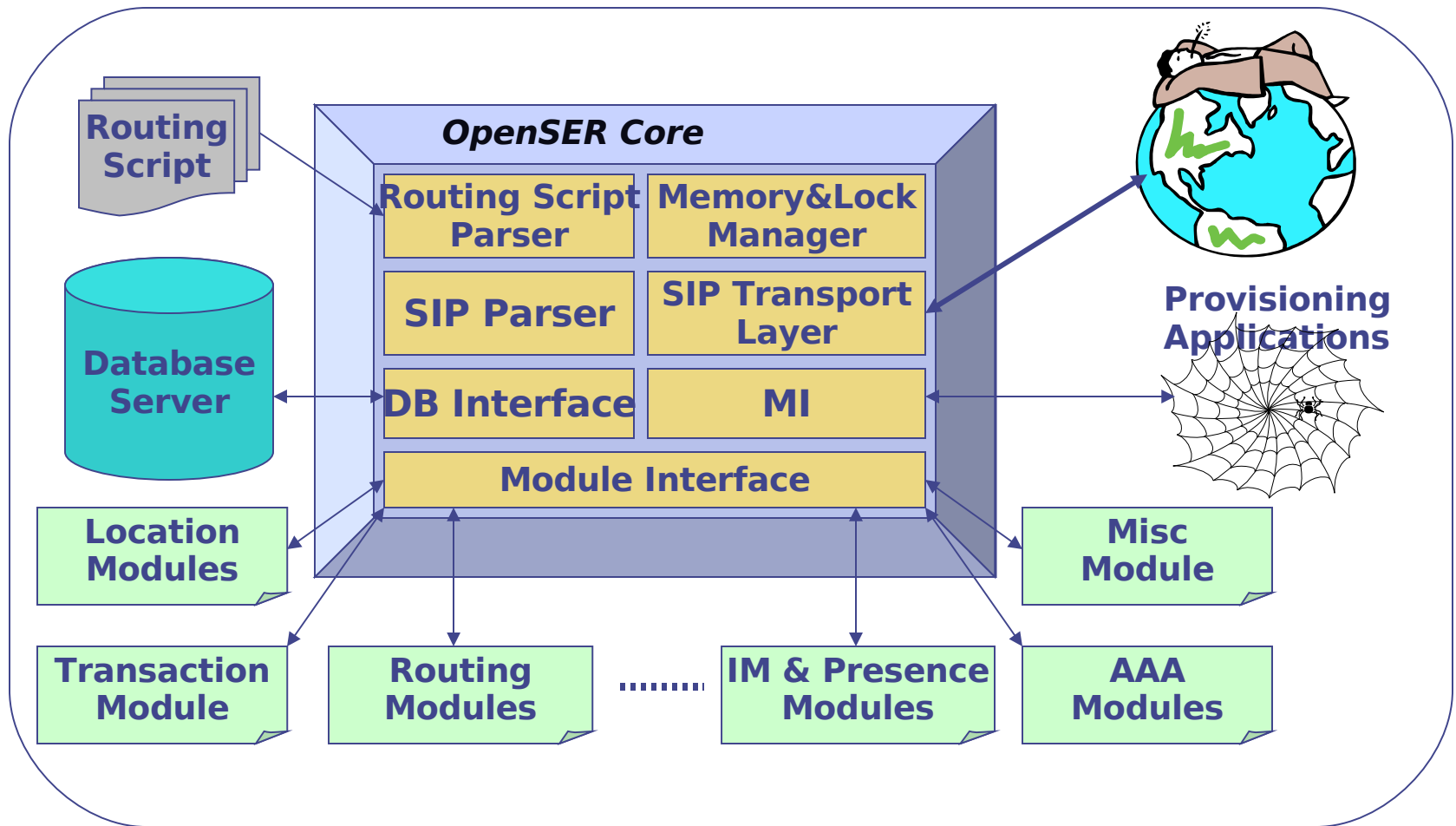
■ Yate

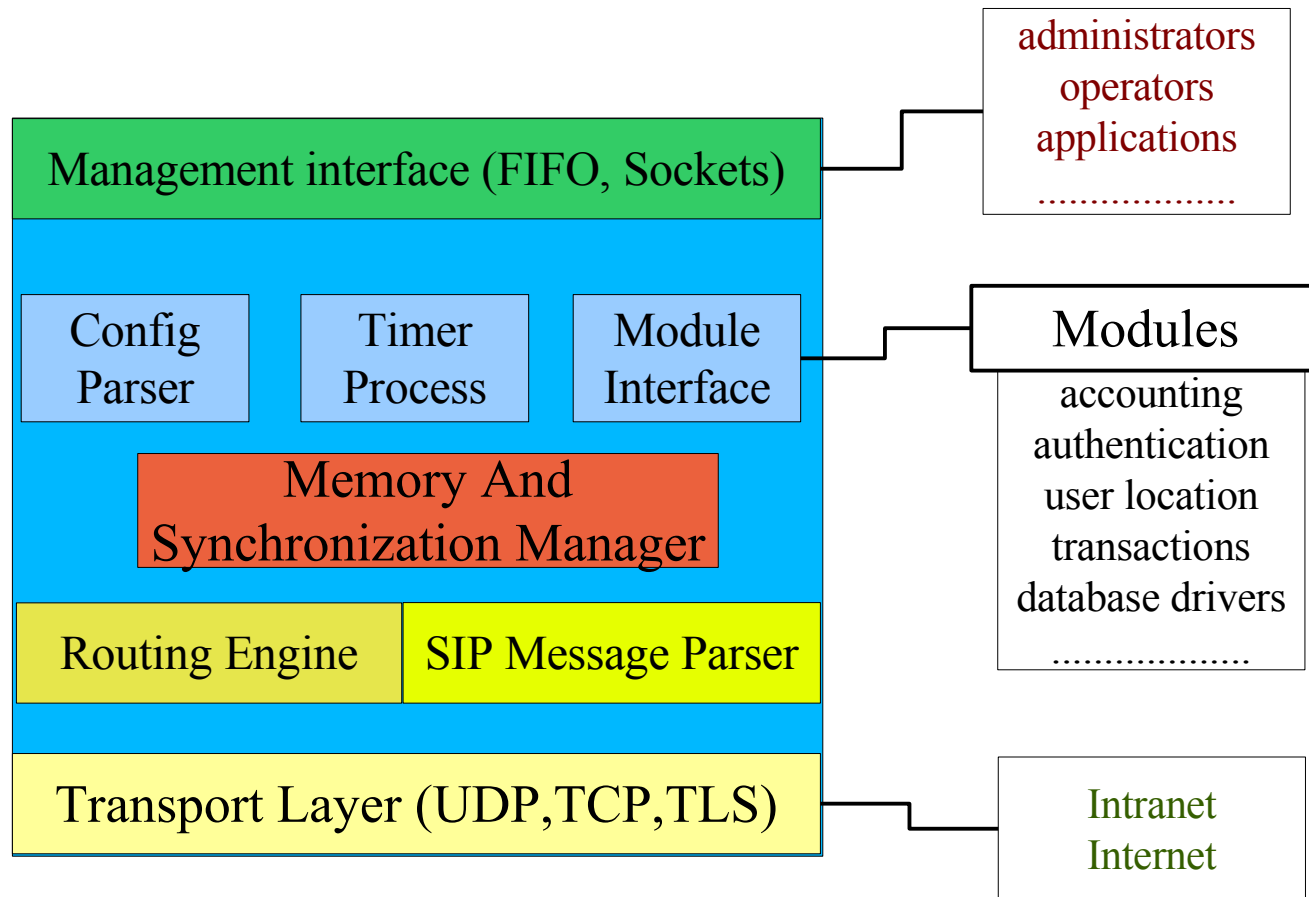
- Romanian project
- Diana Cionoiu (roaming around ...)
- SIP, H323, IAX2
- VoIP-PSTN gateway
- IVR engine

■ FreeSWITCH

- transcoding
- SIP-XMPP gateway
- audio conferencing

- ekiga
- gaim
- kphone
- minisip
- linphone
- twinkle
- openwengo
- yate client
- Xten X-Lite
- Windows Messenger





Click a statistic to see its chart

 **shmem:real_used_size** - monitored from 7 May 2007, 00:00:01 every 5 minute(s)

 **tm:inuse_transactions** - monitored from 7 May 2007, 00:00:01 every 5 minute(s)

 **usrloc:location-users** - monitored from 7 May 2007, 00:00:01 every 5 minute(s)

 **usrloc:registered_users** - monitored from 7 May 2007, 00:00:01 every 5 minute(s)



- Authentication & authorization
 - DIGEST authentication
 - IP authentication (not really secure for UDP)
 - ACL support
 - DOS detection
 - dynamic monitoring of SIP traffic to detect DOS attacks (mainly based on flood)
 - self protection mechanism
 - IP blacklists
 - static or dynamic lists containing forbidden destinations
 - lists can be activated based on the type of destination (Gws, subscribers, Media servers, etc)
- secure peering
 - TLS, OSP, domain policy



- FOSDEM 07
 - biggest Open Source development event in Europe
 - Bruxelles, Belgium
- ROSDEV 07
 - first edition of this event
 - Romanian developers of Open Source projects
- eLiberatica
 - we are here
- LinuxTag
 - the well know international event of Linux and Open Source users in Germany, Berlin
- Voice on the Net
 - one of the biggest VoIP shows, Stockholm, Sweeden



Benefits of Open Source developer

- money
 - ?!?
- celebrity
 - ?!?
- power
 - ?!?
- fun
 - ?!?
- monotony and spare time
 - ?!?

- programming
 - start new projects
 - school and university projects
 - homeworks
 - contribute to existing projects
 - if you need a new feature, develop it and make it public
- documentation
 - translations
 - improvements
- community
 - answer mailing lists
 - participate in web forums and blogs
 - convince people around you that Open Source is a viable alternative

- Daniel-Constantin Mierla
 - daniel@voice-system.ro
- Elena-Ramona Modroiu
 - ramona@openser.org
- OpenSER SIP Server
 - <http://www.openser.org>
- IETF Standardization Group
 - <http://www.ietf.org>
- VoIP Resource Site
 - <http://www.voip-info.org>
- Asterisk Media Server
 - <http://www.asterisk.org>
- Web Forum
 - <http://www.voipuser.org>

THANK YOU!

Questions?