History of xSER/Kamailio at 1&1

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About me

1&1

- IT in general
  - Linux user since 2001
  - Seriously in IT since 2003
- 1&1 Internet AG
  - Since beginning of 2007 with software development
  - Now with IT Operation
  - Located in Karlsruhe, Germany
- Kamailio Open Source project
  - Core Developer
  - Member of management board
- Part of the much bigger group that design, build and also operate the services I'll present in this talk
- Interested in Open Source and Open Systems

Customer & Carrier

Kamailio Softswitch

Asterisk PBX

MySQL
PDB
Mail, LI
MySQL
Mail, LI

Debian Linux
Debian Linux
Debian Linux

How its started

- December 2003 – 540.000 DSL customers
  - Resale
  - QSC first partner
- July 2004
  - First branded DSL resale offering with VoIP
  - SER 0.8.12 in production, later SER 0.8.14
- December 2004 – SER 0.9.0 in production
- July 2005
  - OpenSER 0.9.5.1 in production
  - Only a limited set of internal patches
- August 2005
  - 1.34 Million DSL customers
  - Backend something like 10-20 machines
- September 2005 – internal development starts seriously

Becoming more professional

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- December 2005 – 1.75 million DSL customers, still resale
- January 2006
  - OpenSER 0.9.5.2 with major extensions in production
  - Biggest change partitoned user location
  - Operation processes and Q/A improved a lot
- August 2006 – still OpenSER 0.9.5.2
- December 2006
  - 2.09 million DSL customers, 780.000 VoIP customer
  - 260 million minutes/month
- February 2007
  - OpenSER 0.9.5.3 in production
  - Includes sp_route2 module, which then later became carrierroute
  - Backend is something like 20-30 machines

Internal developments

- Bigger module extensions
  - Own PATH (RFC 3327) implementation "X-Incoming"
  - Rewrite branches
- Bugfixes
  - Core dumping, crashes, documentation
  - User agent things, logging and debugging
- modules
  - sp-mysql-mt (multithreaded DB connector with timeouts)
  - sp_p_usrloc and sp-ul_db (partioned user location)
  - sp-ntool (something like dialplan)
  - sp-route2 (carrieroute)
  - sp-usrloc and sp-registrar (smaller extensions)
  - small ones like sp-ring, sp-forward etc.. ended up in utils, siputils
  - sp-mid (message waiting indication)
  - sp-userblacklist (ported)

Lets go Open Source

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- February 2007 – decision to change development mode
- March 2007 – first internal tests of OpenSER 1.2.0
- April 2007 – first contribution to OpenSER project
- May 2007
    - Internal test of OpenSER 1.2.1
    - Internal patches gets ported or merged upstream
- July 2007 – first line VoIP products available
- September 2007 – internal tests of OpenSER 1.2.2
- December 2007
    - First line VoIP is preferred product
    - 2.54 million DSL customer, 1.6 million VoIP, 800 million minutes/month
- January 2008
    - Internal tests of OpenSER 1.3.0
    - Porting mostly finished, several major contributions now upstream

Move to production

- June 2008
  - OpenSER 1.3 in production on balancers
- October 2008
  - OpenSER 1.3 completely in production
  - 2.78 million DSL customer
- September 2009 – VDSL products available
- October 2009
  - Kamailio 1.5 in production on balancers
  - Two developers in the Open Source project
  - Internal development now happens first in upstream (e.g. carrierroute)
- December 2009
  - Kamailio 1.5 in production for precence application
  - Integration of about freenet DSL customers, 3.44 million DSL customers now
  - Backend something like 50 machines

What about geographical redundancy?

- June 2010
  - Kamailio 1.5 in production on proxies
  - Four developers in the project
- July 2010
  - Kamailio 1.5 completely in production
  - Further improvements in operation processes and Q/A
- September 2010 – internal tests of Kamailio 3.0
- October 2010
  - 3.38 million DSL customers, 2.21 million have first line VoIP
  - Building of a second backend in another data center
- November 2010 – setup with geographical redundancy finished
- February 2011
  - Setup with geographical redundancy full in production
  - Backend now more than 100 machines, not including support systems

Keeping up with the development

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- **April 2011**
  - Internal tests of Kamailio 3.1, contribution of partitioned user location
- **May 2011**
  - Kamailio 3.1 in production on balancers
  - Dialog support and CDR based accounting in production
- **August 2011**
  - Kamailio 3.1 for proxies in test
  - 3.31 million DSL customers, 2.41 have first line VoIP
  - Internal developments contributed, this time after production use
- **September 2011**
  - Five developers in the Open Source project
  - Further tests of Kamailio 3.1
- **Winter 2011 (estimated)**
  - Kamailio 3.1 completely in production, internal tests of Kamailio 3.2

Development and challenges

- NoSQL databases
  - redis already there, there seems to be interest in mongoDB
  - We're looking into hbase
- Testing and Q/A can be still improved
- Applications and APIs
- Many issues are caused from our partners, not from the own platform
- IPv6 is still not there
  - Main problem are the UAs
  - Another big problem is the media, obviously, don't let me start with LI..
  - Every player in the German market has (different) issues
- Lack of IPv4 IP addresses generally complicate things
  - Growth really difficult
  - New concepts like LTE are implemented with private IPv4..
  - LTE still has a way to go, marketing vs. reality

Contact

- Kamailio users and developers list
    - http://www.kamailio.org/
    - http://www.sip-router.org/
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