

# Short-Duration Dialler Traffic: on Kamailio and the Postal Service



Evariste Systems LLC – based in Atlanta, Georgia, USA

→ <http://www.evaristesys.com/>

Vendor of Kamailio-based SIP trunking service delivery & LCR platform «CSRP»:

→ <http://www.csrpswitch.com/>

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Alex Balashov

✉ [abalashov@evaristesys.com](mailto:abalashov@evaristesys.com)

 <https://www.linkedin.com/in/alexbalashov>

 [@abalashov](https://twitter.com/abalashov)

# Short-duration (“dialler”) traffic: what is it?

- Three central characteristics:
  - **Fast setup pace:** high CPS (Calls Per Second), from  $\pm 50$  CPS to several thousand CPS.
  - **Low average call duration (ACD):** typically 6 sec – 30 sec
  - **Low answer-seizure ratio (ASR):** 0% - 60%

# Short-duration (“dialler”) traffic: what is it? – cont'd

- Typically (but not necessarily) generated by:
  - Predictive **diallers** (automated bulk-dialling software);
  - **Call centre** software;
  - Call **broadcast** platforms;
  - Business process / backoffice **outsourcing** companies.
- For range of purposes, varying in perceived social purpose and legitimacy, including:
  - Direct **telemarketing** and **lead generation**;
  - Appointment **reminders**;
  - Civil emergency **notifications**;
  - Marketing **surveys**;
  - **Political** campaigns and research.

# Regulatory aspects

- In USA, regulated by Federal Communications Commission and Federal Trade Commission:
  - Calls to fixed-line numbers limited by FTC Do Not Call List.
    - Lots of exceptions, e.g.:
      - Applies only to residential lines, not business;
      - Non-profit organisations;
      - Surveys;
      - Companies from which one has an “existing business relationship” – up to 18 months after last transaction;
      - Bill / debt collectors.
    - 3% maximum abandonment rate.
  - No telemarketing calls to mobiles.
  - These rules are followed... variously, especially by non-USA entities.

# What's this got to do with the post?

- Personal theory:

*As communication medium matures & advances through life cycle, it increasingly becomes a vehicle exclusively for the conveyance of bad news and junk.*

- Bulk mail (advertising / “junk mail”) accounts for **~50%** of US Postal Service revenue
  - Extrapolated from 2011 figure of 48%.
  - 99.9% of my household mail = junk, bills, letters from government agencies – in short, nothing pleasant.
- 95-98%+ of e-mail is spam.
  - Share of SMS that is spam is growing.
  - Other media (e.g. Skype IMs) = increasingly spammy.
- Same is likely to occur with consumer PSTN, outside of core business communication market.
- For better or worse, bulk/dialler/short duration traffic is probably here to stay.

# Carriers/PSTN terminators hate short-duration because...

- Resource utilisation (TDM trunks, network bandwidth, processing power, switch port licences) **disproportionate** to revenue realised:
  - Only answered calls billed – ASR is low.
  - Duration is low – minutes billed fractionally (in wholesale).
  - High CPS = high demands on computing power and bandwidth.
- Increased liability & service burden due to questionable traffic content.
  - End-subscriber complaints.
  - Impact on peering.
- Simultaneous call path/trunk usage is outsized.

# “Conversational” traffic is better because...

- Much more profitable...
  - Higher margins from retail customers, at least.
  - High ACD and high ASR.
  - Result: higher revenue and gross margins per message signalling unit (MSU), call, etc.
  - Uncontroversial.
  - Much higher revenue per port licence or trunk.

# Conversational vs. short-duration traffic economics:

	Daily calls	ACD	ASR	(Hyp.) Avg. per-minute rate	Total minutes billed	Billed minutes per call	(Hyp.) Revenue	(Hyp.) Revenue per call
<b>Conversational:</b>	200 000	210 sec	83%	\$0.0089	581 000	~ 2.9	\$5170.90	\$0.02585
<b>Short duration:</b>	1 200 000	24 sec	19%	\$0.0056	91 200	~ 0.76	\$510.72	\$0.0056

- Conversational:
  - 3.81x more revenue-minutes per call.
  - 10x more revenue total.
- But wait, there's more!
  - Conversational traffic, on average, brings higher per-minute billing (though not always, i.e. wholesale)
  - Large difference in peak simultaneous channel usage (e.g. ~300 concurrent call paths vs. 2000-3000) = 5-10x more switch licencing costs.



# Conventional carrier/PSTN terminator SDT strategies...

- Ban short-duration traffic;
- Punitive surcharge if % of short-duration calls (< 6 sec) exceeds  $x$ ;
- “Dialler” rate deck with higher pricing;
- Require customer to spread load across numerous gateways due to equipment CPS constraints;
- Restrict customer CPS;
- Restrict customer CPS selectively/adaptively;
- Offload SDT onto low-cost platform and direct to low-cost vendors (more on this later!).

# Who provides short-duration termination?

- Some “top-tier” feeders into VoIP termination supply chain have “dialler” offerings;
  - Usually via special “dialler” rate deck.
- Aggregators/reseller ITSPs:
  - Reputable aggregators;
  - Generic/unknown aggregators.

# Wholesale ITSPs/aggregators

- They do aggressive LCR;
- They expect customers also do aggressive LCR;
- They try to provide higher-quality product by summing together upstream providers of mediocre/average quality;
  - Business model depends on selective cherry-picking of **upsides** of mediocre upstream vendors and
  - ... aggressive workarounds for **downsides** of those vendors.
  - To some extent, this is possible.

# Generic “dialler” ITSPs/resellers

- They seem uniquely attracted to dialler traffic.
- Let's call them “generic dialler ITSPs”.
- Generally operate at exceptionally low margins, even against background of wholesale PSTN termination.
- Some of them are “one-man shows”.
  - They like “hosted softswitch” products.
  - Attracted to perceived easy money.



# Generic “dialler” ITSPs/resellers

- Example of product aimed at these:
  - <http://speedflow.com/en/mediacore/overview>
  - [quote from PDF “Guide to Starting Your Own VoIP Wholesale Business” [http://speedflow.com/download/wholesale\\_business\\_2.pdf](http://speedflow.com/download/wholesale_business_2.pdf)]

*“VoIP wholesale is becoming an increasingly popular business model nowadays. It supposes traffic aggregation and exchange between VoIP operators. In other words, wholesale VoIP providers receive traffic from one carrier and transmit it to another one acting as a ‘man in the middle’ between them.*

*VoIP wholesale usually doesn’t require huge initial costs and might be highly lucrative if done right.”*

# Generic “dialler” ITSPs/resellers: what do they want?

- Technical features conducive to low-margin arbitrage plays:
  - Aggressive failover and route advancing;
  - Awareness of route quality (to them, it means bad ASRs, FAS, etc.);
  - Highly niche workarounds, e.g. around bad media gateways when dialling particular areas;
  - Mechanisms to enforce route profitability, limit losses, eliminate fraud, predict the unpredictable.

# “Serious” termination suppliers: what do they want?

- Dialler traffic is very low margin;
- But there is some revenue in it for them.
- They want to grow their termination and infrastructure costs behind these low gross margins.
  - Reduce licencing costs and resource consumption;
  - Reduce support/troubleshooting/customer service burden;
- Increasingly, they want to separate this “garbage traffic” from their “high-quality” conversational infrastructure altogether.
- Cheap technical solutions for low-margin, low-quality product.

# Why Kamailio is particularly attractive to this segment...

- Best at handling high CPS.
  - Commercial softswitches are worst at handling high CPS; many can be knocked over with as little as 40-50 CPS.
  - In “conversational” business, this is not a problem (40-50 CPS of high-ASR high-ACD traffic supports horizontal scaling).
- Low overhead for high concurrent call paths.
  - Not economically limited like commercial softswitches & SBCs;
  - Not [as] technically limited like Asterisk & FreeSWITCH.
  - Generically supports tens of thousands of concurrent call paths at negligible cost.

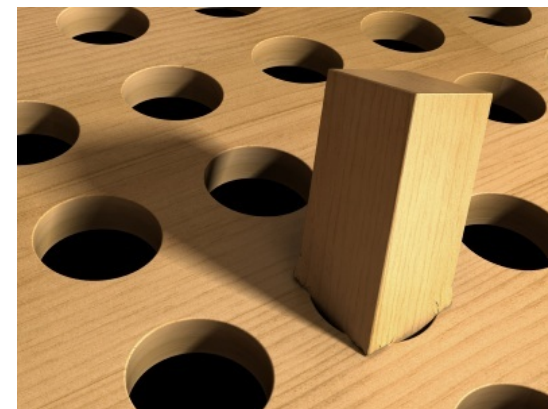


# Why Kamailio is particularly attractive to this segment...

- High performance generally, e.g. low-overhead failover across branches, no RTP relay by default.
- Easy to integrate (e.g. RADIUS accounting).
- Free/open-source licence.
- Access to low-level SIP attributes permits nuanced technical features to support arbitrage and race-to-bottom plays consisting of aggregation of predominantly low-quality vendors.

# Challenges

- Often looking for turn-key VoIP business package including switch + backoffice.
- User is often not especially technical, especially more “generic” termination resellers.
- Looking for odd mixture of high-level “user-friendly” features and deeply nuanced technical features to support arbitrage across low-quality vendors.
- Their customers use aggressive LCR and are very sensitive to quality and ASR – race to bottom, commoditisation.



## Bottom line:

- For better or worse:
  - A lot of serious operators are looking for parallel platform to get “garbage traffic” off their “high-quality” conversational voice infrastructure.
  - Business models of serious suppliers and fly-by-night resellers alike require **large amounts of concurrent channels** at negligible marginal cost.
- Market opportunity for cheap box to route high-volume garbage to vendors of dubious quality.
- Love it, hate it, market for this is growing.
- Kamailio is especially good as a switching platform for this.

## Bottom line – cont'd:

- Kamailio can also accessorise existing platform, e.g.
  - by providing high-performance routing intelligence or database interface (e.g. redirect server).
  - Cheap load balancer across horizontally scalable network elements (e.g. FreeSWITCH – Kamailio LB + FreeSWITCH call processor is common design pattern for high CPS-oriented ITSPs).
- It caters well to obsession with high performance and throughput.

## Bottom line – cont'd:

- **In the end**, there is market need for cheap box that can process a lot of calls very fast.
- Kamailio is an exceptionally cheap box that can process an especially large amount of calls with a notable quickness.
- Recent developments in Kamailio ecosystem & feature set further enhance its appeal to this market:
  - i.e. Asynchronous processing features.
  - *Rtpengine* by Sipwise

# The End

*If you have any questions or would like to discuss this topic further, please find me at Kmailio World 2015!*