Robocall signaling

draft-sipcore-callinfo-spam

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IETF 98
Background (for the un-STIRed and un-SHAKEN)

• Unwanted calls are typically
  • some are illegal, some are just unwanted (by many)
  • example: “this is the Internal Revenue Service; pay $2,000 or you will be arrested”; followed by “this is your local police department; did you pay?”
  • typical scams and illegal telemarketing: tech support, ”you won a trip” (for a small fee), competitive utility sign-up,
  • annoying to many, but possibly legal: charity, political, survey

• Some robocalls are actually wanted (and helpful)
  • “your prescription is ready”; “doctor’s visit tomorrow”, “snow day”, “boil your water”
  • but may be confused with unwanted calls

• Enabled by
  • cheap VoIP – particularly international calls
  • hard-to-track
  • programmable SIP end systems
    • including calling party (caller ID) spoofing
  • anonymous money transfer
Architecture

- check 4474bis signature
- look up category based on number (optional)
- indicate probability(spam)

"signature valid" (→ verstat)

"survey"

SIP proxy

4474bis

666 Unwanted

external service

“analytics”
“big data”

carrier
Motivation & assumptions

• Some carriers will do their own filtering, but ...
• Some carriers may need/want to leave that to third-party tools
  • avoid risk of rejecting wanted calls
  • particularly “grey” calls that some may want to receive or are not outright illegal
    • surveys, political calls, charities
• May also want on-device handling:
  • forward classes of calls to voice mail
  • display information and leave decision to human
  • change ringing behavior (e.g., with “Do not disturb” feature)
  • consult local app for decision
  • consult address book
  • make time-of-day dependent: no surveys or charity while I’m sleeping (in Korea)
Potential objections

• Categories are arbitrary!
  • commonly used in law & regulation (there are carve-outs for surveys, charities, political calls in the TCPA [US robocall law])
  • commonly used by current third-party robocall apps (Hiya, etc.)
  • reflects earlier calling party category

• Categories are guesses!
  • likely based on user feedback (and presumably some threshold: “90% of reports label this as a scam call, so we’ll slap on that label”)
  • in the future, may also be asserted based on direct carrier knowledge (“I know that my customer, the FCC, is a government agency”)
Conveys information from carrier (SBC, CSCF) to UA

Parameters:

- **spam**: estimated likelihood of spam (0-100%), i.e., measure of uncertainty
  - could be related to what fraction of called parties label this number as spam
- **type**: type of caller
  - for VoIP home gateways, could be displayed via caller ID (CNAM)
- **reason**: source of data
  - mostly, for debugging; similar to some email headers
- **source**: domain of entity inserting data

Example:

```
Call-Info: <http://www.example.com/5974c8d942f120351143> ;source=carrier.example.com ;purpose=info ;spam=85 ;type=fraud ;reason="FTC list"
```
## Call categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>business</td>
<td>placed by businesses, i.e., an entity or enterprise entered into for profit. This type is used if no other, more precise, category fits.</td>
</tr>
<tr>
<td>debt-collection</td>
<td>collecting of debt owed or alleged to be owed by the called party</td>
</tr>
<tr>
<td>emergency-alert</td>
<td>provide the recipient warnings and alerts regarding a pending or on-going emergency. (unrelated to emergency calls to 9-1-1 or 1-1-2. Includes alerts related to weather-related school closings.)</td>
</tr>
<tr>
<td>fraud</td>
<td>considered to be fraudulent.</td>
</tr>
<tr>
<td>government</td>
<td>government entity, if no more specific label such as &quot;health&quot; or &quot;debt-collection&quot; is known or applies.</td>
</tr>
<tr>
<td>health</td>
<td>informational calls by health plans, ... health care provider, ...</td>
</tr>
<tr>
<td>informational</td>
<td>information about a transaction: package delivery, appointment reminder, order confirmation</td>
</tr>
<tr>
<td>not-for-profit</td>
<td>not-for-profit organization, including for soliciting donations or providing information</td>
</tr>
</tbody>
</table>
## Call categories

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<tbody>
<tr>
<td>personal</td>
<td>A non-business, person-to-person, call, e.g., from a residential line or personal mobile number</td>
</tr>
<tr>
<td>political</td>
<td>elections or other political purposes</td>
</tr>
<tr>
<td>prison</td>
<td>Calls from jails, prisons and other correctional facilities</td>
</tr>
<tr>
<td>public-service</td>
<td>Calls that provide the recipient information regarding public services, e.g., school closings</td>
</tr>
<tr>
<td>spam</td>
<td>likely unwanted, if not otherwise classified</td>
</tr>
<tr>
<td>spoofed</td>
<td>calling number for this call has been spoofed</td>
</tr>
<tr>
<td>survey</td>
<td>solicits the opinions or data of the called party</td>
</tr>
<tr>
<td>telemarketing</td>
<td>placed in order to induce the purchase of a product or service to the called party</td>
</tr>
<tr>
<td>trusted</td>
<td>The call is being placed by a trusted entity and falls outside the other categories listed. This may include call backs, e.g., from a conferencing service, or messages from telecommunication carriers and utilities.</td>
</tr>
</tbody>
</table>
SIP Global Feature-Capability Indicator

• Must avoid insertion by malicious entities
• Thus, UA ignores unless “sip.call-info.spam” is a feature tag in REGISTER response
• If supported, proxy must strip
• Could be part of PASSPorT claim in the future
  • if end systems validate RFC4474bis
• Q: Right label & registry?