Standard for Billing Verification of Electronic Communications

Sophia Antipolis - 22 September 2010

STF 375
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Agenda

- Introduction:
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  - Who will benefit?

- Works performed as part of Specialist Task Force 375

- Standard Highlights
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  - Billing Integrity Principles
  - Process Approach to Billing Verification
  - Verification Process
  - Certification Chain

- Trial Results
  - Billing Error Rates
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- Next Steps
Why a Standard in Billing Verification?

There is a long and successful story of standards setting in defining and metering technical quality in the communications industry…

… but up to now, nothing existed to define what is meant by an accurate bill of a service provider of electronic communications…

… however on average, in the European Union, the telecom invoice accounts for between 1% and 5% of European citizen monthly spending…

… and this is a significantly growing item …

…and the latest trends shows a growing “disconnect” between customers understanding and invoices meaning (“data service, “roaming “, “unlimited”).
Who will benefit from a Standard in Billing Verification?

Service Providers
- Detect over-billing before customers complain
- Reduce under-billing
- Demonstrate commitment to accurate invoices

Consumers
- Received more accurate invoices
- Get confidence in invoices through verification

Regulatory Bodies
- Promote “transparency” through standards in single European electronic communications market
- Develop “usage” & “trust” in information society

Standards in Billing Verification
World Class Standards

Works performed as part of Specialist Task Force 375

- Funding by EU as part of 2009 ICT standardization work programme

- Staffing by ETSI of a cross functional team of representatives from service providers, users associations, certification companies and billing verification companies

- Review the content of the current practices for metering and billing system approval in countries where such regulations exist (TS 102 847)

- Document the requirements for check up of metering and billing processes (TS 102 845)

- Carry out a validation test in real size with three service providers in three countries.

- Document the requirements for a trusted party to provide approval of the metering and billing systems (TS 102 846)

- Validate technical specifications in ETSI/User Group workstream.
Prerequisites

Before implementing the checking-up on metering and billing process described in the standard, the two following prerequisites shall be fulfilled by the Service Provider:

- Prerequisite 1: Metering Rules Definition
- Prerequisite 2: Tariff Information Documentation
Billing Integrity Principles

By definition, the metering and billing of a service provider is correct if it complies with the following five billing integrity principles:

- Principle 1: Electronic Communications metering (success status, time, duration, volume, throughput) is accurate.
- Principle 2: Unsuccessful Electronic Communications are not billed or are billed at null price.
- Principle 3: Each successful Electronic Communication is billed.
- Principle 4: Billed Electronic Communications are metered and priced in accordance with documented metering rules and tariff information.
- Principle 5: Electronic Communication billing information details provided to customers are complete, sufficient, unambiguous and correct whatever the publishing mode.
Process Approach to Billing Verification

The present standard adopts a process approach for providing evidence measured by an Independent Observer according to a standardized process that a Service Provider complies with the billing integrity principles.

According to the standard, evidence of compliance of billing integrity principles is based on the actual generation and verification of the billing of a Stratified Sample of Electronic Communications (SSEC), designed according to a predefined statistical method and performed on a continuous basis by Automated Robots.

As a result of the billing and metering checking continuous process, billing and metering checking reports are produced on a predefined frequency and archived according to predefined storage policy.
Verification Process

- Metering & Billing Check-up Process
- Test Campaign Design
- Test Resource Procurement
- Electronic Communications Technical Configuration
- Case Management & Corrective Actions Enforcement
- Electronic Communications Generation
- Automated Robots Logs Collection
- Billing Error Rate Computation
- Reporting
- Balance and Invoice Checking
- Electronic Communications Rating and Matching
- Billing Details Collection
Two types of certification are defined:

- **Type A**  External Billing Verification Body
- **Type B**  Internal Billing Verification Body

The certification chain is made of the following entities:

- **Accreditation Body**
  - Accredits ISO 17065
- **Conformity Assessment Body**
  - Assesses Conformity TS 102 846
- **Billing Verification Body**
  - Checks Metering & Billing TS 102 845
- **Service Provider**
- **Meters & Bills**
- **Customer**

**NB** : Conformity assessment takes place in the wider environment of accreditation principles as defined in European Community regulation No 765/2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products.
**Billing Error Rate**: for a set of Electronic Communications, the ratio of the total number of Electronic Communications having breached at least one of the billing integrity principles divided by the total number of Electronic Communications in the set.
## Trial Results: Identified Errors

<table>
<thead>
<tr>
<th>Case ID</th>
<th>Discrepancies identified</th>
<th># transactions in local</th>
<th># transactions in roaming</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>voix</td>
<td>sms</td>
</tr>
<tr>
<td>POST-A-B1</td>
<td>local: transactions not billed from 11/01/2010 19h25 until 12/01/2010 03:45</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>POST-A-B2</td>
<td>roaming: incoming voice transactions missing on a specific roaming network (nearly 60% of transactions with a random distribution)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-A-B3</td>
<td>roaming: MMS and Data transactions missing on a specific roaming network (random distribution)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-A-R1</td>
<td>local: zoning discrepancies for 6 destinations outside of EU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-A-R5</td>
<td>roaming: pricing discrepancies for incoming and outgoing voice calls towards UE on a specific network from 02/01/2010 15h04 until 03/01/2010 18h21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-B-R2</td>
<td>local: wrong impact for sms towards international destinations (sms package towards local operators only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-B-R7</td>
<td>roaming: wrong rating step used for outgoing voice calls towards &quot;rest of the world&quot; zone (first minute not rated as a whole)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-C-B1</td>
<td>roaming: some SMS are not billed on a specific roaming network (random distribution)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-C-B2</td>
<td>local: 5 sms billed twice on 18/12/2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>POST-C-R5</td>
<td>roaming: generated voice calls not connected but calls are billed on a specific network with duration &lt; 5s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-A-R2</td>
<td>local: data transactions performed between 12PM and 2AM are rated with a null price but consumed and billed volume are not null</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-C-R2</td>
<td>roaming: wrong rating step for incoming voice calls on 2 visited networks of the same roaming country</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Next Steps

- Disseminate standards TS 102 845 and TS 102 846 across European Union.

- Develop industry adoption of standard TS 102 845 by
  - Service Providers
  - National Regulatory Authorities
  - Body of European Telecoms Regulators

- Promote the use of certification scheme TS 102 846 by issuing first certification of a Billing Verification Body