Over-The-Top Bypass: Study of a Recent Telephony Fraud

http://s3.eurecom.fr/docs/ccs16_sahin.pdf

In this paper, we study the Over-The-Top (OTT) bypass fraud, a recent form of interconnect telecom fraud. In OTT bypass, a normal phone call is diverted over IP to a voice chat application on a smartphone, instead of being terminated over the normal telecom infrastructure. This rerouting (or hijack) is performed by an international transit operator in coordination with the OTT service provider, but without explicit authorization from the caller, callee and their operators. By doing so, they collect a large share of the call charge and induce a significant loss of revenue to the bypassed operators. Moreover, this practice degrades the quality of service without providing any benefits for the users.

In this paper, we study the possible techniques to detect and measure this fraud and evaluate the real impact of OTT bypass on a small European country. For this, we performed more than 15,000 test calls during 8 months and conducted a user study with more than 8,000 users.

In our measurements, we observed up to 83% of calls being subject to OTT bypass. Additionally, we show that OTT bypass degrades the quality of service, and sometimes collide with other fraud schemes, exacerbating the quality issues. Our user study shows that OTT bypass and its effects are poorly understood by users.