**Takeaway: AuthentiCall provides end-to-end authentication of identity and call content for modern phone calls**

**Possible Attacks**

Sophisticated and unsophisticated adversaries can spoof Caller ID and even intercept and modify call audio.

**Why Phone Networks Have Poor Authentication**

The inability to know the true source of calls facilitates prank calls, robocalls, scams, “swatting” attacks, and other problems in the phone network.

**Frame 1 of Diagram**

In the modern phone network, calls are routed through gateways at network boundaries that remove authentication information and modify call audio.

**Frame 2 of Diagram**

AuthentiCall can detect 99% of tampered audio frames with a false positive roughly once every 6 years.

**Frame 3 of Diagram**

Call content naturally changes as it is transcoded in the network, and cryptographic hashes over call audio cannot distinguish legitimate changes from attacks. Instead, we use the RSH algorithm* to digest call content at a low bitrate to distinguish legitimate changes from attacks. Changes can be measured with bit error between digests.

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