Ofcom Consultation on CLI Authentication

Comments of Bandwidth, Google, Microsoft, and RingCentral

Bandwidth Inc. and affiliates ("Bandwidth"), Google LLC ("Google"), Microsoft Corporation ("Microsoft"), and RingCentral, Inc. and affiliates ("RingCentral") are jointly providing these comments to Ofcom's CLI authentication consultation as the founding members of a new Cross-Border Call Authentication framework. We appreciate Ofcom's continuing leadership in developing practical approaches to telephone number spoofing by fostering measures that are targeted at curtailing fraudulent activities while avoiding the unintentional blocking of legitimate calls.

We support the use of CLI authentication in the UK, including the eventual introduction of a national framework for CLI authentication based on STIR/SHAKEN call attestation. In developing rules for such a framework, Ofcom should allow a future UK governance authority to make its authentication system interoperable with other trusted governance authorities so that attestations originating from qualified service providers outside the UK are recognized in the UK and vice versa. In the meantime, Ofcom should ensure that UK service providers are free to participate in CLI authentication programs that are being developed for service providers in countries that have not yet implemented STIR/SHAKEN.

To accelerate the availability of STIR/SHAKEN in the absence of national deployments, we have joined together to create a new STIR/SHAKEN governance authority with the Alliance for Telecommunications Industry Solutions (ATIS), a technology and solutions development organization.[1] This new governance authority has developed a CLI authentication framework designed to operate across international borders. As it is not tied to a particular country, this new framework will allow STIR/SHAKEN to be available to voice service providers in countries where token-based CLI authentication has not been implemented on a national basis. It will also allow voice service providers that have IP networks to exchange authenticated traffic with other voice service providers that have implemented STIR/SHAKEN in their networks.

In these comments, we describe how CLI authentication based on a non-jurisdictional[2] implementation of SHAKEN would work in practice and the benefits it can provide as a supplement to the UK's introduction of a national STIR/SHAKEN framework.

Need for cross-border attestation

Countries that have implemented STIR/SHAKEN continue to struggle with the lack of meaningful attestation information regarding calls terminating in their country that originate abroad.

As the consultation document notes,[3] there are several scenarios in which legitimate calls originating abroad may carry a UK telephone number as either a network or presentation number. In addition to mobile users roaming internationally, business users often generate such calls, such as from call centers or cloud-based conference bridges hosted abroad. In today's world of remote access and cloud-enabled services, these use cases have become common and therefore increasingly important to enterprises and end-users alike. Simply blocking as potentially fraudulent all calls from foreign networks with a domestic number as CLI is not a good solution. Ofcom rightly recognizes the ability of STIR/SHAKEN to address these legitimate use cases in a more targeted way.

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[1] ATIS, in conjunction with the SIP Forum, has developed the SHAKEN series of standards. These standards are available at no cost from https://www.atis.org/whitepapers/.

[2] A "non-jurisdictional" implementation is one that is not tied to a single national network but is instead intended to allow service providers to deploy STIR/SHAKEN before it is available in a given country.

[3] Consultation document, paragraph 5.40.

However, relying on national gateway providers for attestation information has its limits as these intermediaries cannot provide the meaningful authentication that an originating provider can provide. As Ofcom notes, gateway providers are unable to fully attest the number as they do not have a relationship with the end-customer that originates a call.[4]

The originating service provider is in the best position to validate a customer's right to use a number given its direct knowledge of the caller. However, the vast majority of countries do not have national STIR/SHAKEN frameworks in place, and even where STIR/SHAKEN has been deployed, national STIR/SHAKEN deployments tend to focus on authenticating calls originating from that country's numbering plan.

While mutual recognition of SHAKEN certificates within a trusted community of national frameworks may eventually be possible, an interim solution for internationally originated calls is necessary in order to provide more meaningful authentication than sole reliance on gateway attestations.

Expanding geographic access to CLI authentication

Accelerating the availability of CLI authentication can limit the spread of fraudulent spoofing. Although more countries are likely to introduce CLI authentication, it will take some time for them to complete their STIR/SHAKEN deployments. In addition, many jurisdictions are unlikely to create a comprehensive national CLI authentication framework in the foreseeable future due to local technical constraints and resource limitations.

Nevertheless, voice service providers with IP networks may be ready now to implement STIR/SHAKEN on a voluntary basis. Terminating providers who are completing their transition to IP are ready to use call attestation information to help shield their subscribers from illegally spoofed calls. Similarly, originating providers recognize that the use of STIR/SHAKEN can mitigate the increasing risk that calls their customers make will be blocked by terminating providers.

Even if a solution is only temporary until a national framework is developed, these providers can leverage the use of CLI authentication among a selected group of domestic and foreign carriers to ensure the delivery of legitimate calls to both national and international destinations.

Role for non-jurisdictional STIR/SHAKEN

We are creating a non-jurisdictional STIR/SHAKEN framework to fill the gaps we see in the emerging CLI authentication ecosystem. We expect voice service providers to use the framework for bilateral exchange of attestation information for calls from countries without STIR/SHAKEN unless or until a national STIR/SHAKEN deployment system is in place. Most importantly, the new framework allows legitimate originating service providers to provide attestations for calls originating outside one of the countries that has implemented STIR/SHAKEN and to increase the authentication information they can receive for calls terminating to their networks. This addresses the urgent need for full attestations for inbound international calls.

A Cross-Border Call Authentication Governance Authority (GA) has been created by ATIS and an initial group of international voice service providers to develop the policies and architecture for STIR/SHAKEN deployment not tied to any national implementation. National governing authorities will be able to evaluate the Cross-Border Call Authentication GA's policies, and it is our hope that they will be able to treat it as a trusted partner and make national systems interoperable to facilitate information sharing for cross-border CLI authentication in the future.

[4] Consultation document, paragraph 5.44.

The Cross-Border Call Authentication GA has put in place processes to ensure that voice service providers meet strict requirements for participation. The GA has selected iconectiv as its policy administrator, which will be responsible for approving service providers and certification authorities (based on criteria specified by the GA), issuing tokens, verifying originating providers for terminating and gateway providers, and enforcing GA policies.

Each service provider must provide the policy administrator with information necessary to authenticate the provider and determine they are legitimate and trustworthy. This includes evidence of the provider's legal status, contact details, authorization to provide communications services, and other information concerning their compliance and service history. Service providers are required to have processes in place to identify problem users and support traceback requests. The policy administrator will also make an evaluation of whether the service provider is technically capable of deploying SHAKEN. Once accepted, registered as a member and issued a token, an originating service provider can obtain a certificate for signing calls from a certification authority approved by the policy administrator. Originating service providers will be suspended or removed from membership if they provide attestations for customers that do not have the right to use a particular telephone number or engage in other activities inconsistent with the GA's policies.

In the future, we hope that there will be interoperability between national SHAKEN frameworks, such as the STI-GA in the U.S. and the CST-GA in Canada, and the Cross-Border Call Authentication GA so that attestations from the Cross-Border Call Authentication framework will be recognized by the governance authority in the terminating country, and vice versa. This would require interconnection between the two policy administrators in order to share read-only access to their lists of registered service providers and approved certification authorities. Such exchange of information will be based on ATIS' standard for cross-border use of SHAKEN (ATIS-1000087).

Plans for implementation

Non-jurisdictional STIR/SHAKEN is expected to launch on a limited basis in August of this year. A small number of voice service providers, including Microsoft and Bandwidth, will provide attestations when sending traffic to each other that originates in countries without a SHAKEN framework already established.

Initial interest in the project has been positive and additional voice service providers are expected to become members in the coming months.