

CIRPACK STIR/SHAKEN

Competitive advantages

- complete solution with STIR/SHAKEN enabled NGN, IMS, SBC and Secure Telephone Identity Application Server
- on premise solution as Virtual Network Functions
- scalable from 5 CAPS to 500 CAPS
- fully compliant with IETF, ATIS and French FFT MAN standards

Use cases

Authentication for service provider

With IMS core defining STIR/SHAKEN attestation of end users, the Cirpack SBC and Cirpack STI Application Server provides authentication of outgoing calls.

Signing operator

In case the origin operator is not equipped with a full STIR/SHAKEN solution, the call can be authenticated and signed by a transit operator equipped with Cirpack MGC, SBC and STI Application Server.

Verification of incoming calls at interconnection

At reception of incoming calls, a CIRPACK SBC coupled with the Cirpack STI Application server can verify caller identity and either refuse and/or log unapproved calls.

Deployment of Cirpack STI Application Server on any network

The Cirpack STI Application Server can be deployed on any SBC or core network equipment, provided the ATIS 1000082 REST interface or SIP redirection mechanism is available.

STIR/SHAKEN, the standard for authenticity of calling numbers

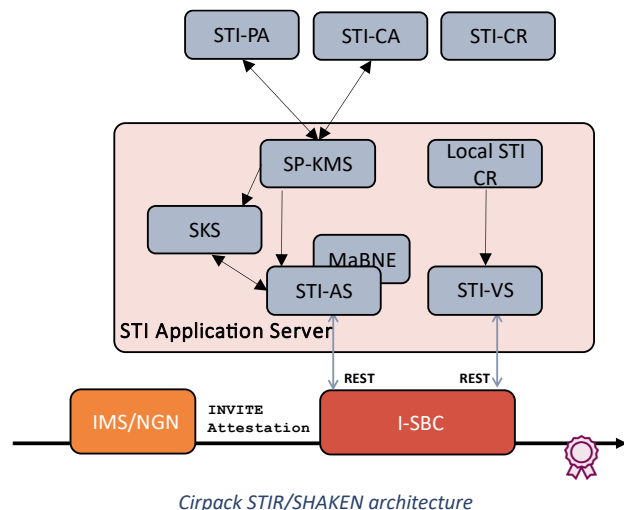
To control cold calling, robot calls, and to combat fraudulent calls, in particular call spoofing, telecoms standards bodies have defined the STIR/SHAKEN architecture.

The IETF has extended the SIP protocol, to carry caller identities with digital signatures, making it difficult for malicious parties to impersonate legitimate callers. In compliance with the IETF' Secure Telephony Identity Revisited (STIR), an interconnection SBC on an origination network attaches authentication information in the form of a "PASSport" to the SIP INVITE message, while the interconnect SBC on the receiving side verifies the digital signature on the "PASSporT" using the public key associated with the originating operator. After this verification, the called party's network can take action such as accepting the call, rejecting it or labelling it as suspicious.

In addition, ATIS has defined the SHAKEN (Signature-based Handling of Asserted Information Using toKENs) framework, which specifies how operator's certificates are issued and distributed, so that call receiving service providers retrieve origination network public keys to verify the digital signatures on PASSporT tokens. This framework is implemented in operator's networks by an application server comprising a Secure Key Store that generates and stores the operator private keys, a Service Provider Key Management System that manages public certificates, and an Authentication Server and a Verification Server that respectively generates or checks the PASSPorTs.

CIRPACK implementation of STIR/SHAKEN

As a reference provider of telephony infrastructure, Cirpack has enriched its portfolio with the Cirpack STI Application Server which implements the SHAKEN framework as a STI AS and VS, KMS and SKS, and has developed the STIR function in the Cirpack SBC, as pictured in the following figure:



STI Application Server features

- STI Authentication Service
 - ✓ Generation of Identity header according to STIR standard
 - ✓ PASSporT generation with SHAKEN extension
 - ✓ Extraction of Attestation and Origination ID from REST
 - ✓ Attestation decision based on checking of subscriber database
- STI Verification Service
 - ✓ signature verification with origin operator public key
 - ✓ local STI Certificate repository
 - ✓ Synchronization with national STI Certificate Repository (BPCO in France)
- Service Provider Key Management System
 - ✓ Key generation
 - ✓ Registration to the national STI Policy Administrator
 - ✓ Operator certificate retrieval from national Certificate Authority
 - ✓ Bypass token retrieval from Certificate Authority
- Secure Key Store
- Optional attestation/subscriber database for STI Application Server attestation decision
- Reporting
 - ✓ Daily breakable calls list by SFTP
 - ✓ Weekly accounting of outgoing calls classified as unidentified/unsigned/signed per attestation levels
 - ✓ Weekly accounting of received calls classified per attestation level
- Redondance and High Availability based on Corosync/Pacemaker framework
- Web GUI:

The screenshot shows a web browser window with the URL <https://tic-gui.local/logs>. The page title is "CIRPACK" and the main content is a table titled "Trace des transactions". The table has the following columns: Date début appel, Type, Numéro appelant, Type du numéro appelant, Numéro appelé, Type du numéro appelé, STI-AS débrayé, appel cassé, Code rejet SIP, and Attestation. The table contains 12 rows of transaction data.

Date début appel	Type	Numéro appelant	Type du numéro appelant	Numéro appelé	Type du numéro appelé	STI-AS débrayé	appel cassé	Code rejet SIP	Attestation
2019/01/12 12:50:00	signature	0601023394	mobile	0102030405	fixe	✓	✓		A
2019/01/12 12:50:00	signature	0102030405	fixe	0601023394	mobile	✓	✓		A
2019/01/12 12:50:00	signature	0203040506	fixe	0708091011	mobile	✓	✓		A
2019/01/12 12:50:00	verification	0304050607	mobile	0809101112	fixe	✓	✓		B
2019/01/12 12:50:00	verification	0405060708	fixe	0910111213	mobile	✓	✓		A
2019/01/12 12:50:00	verification	0506070809	mobile	1011121314	fixe	✓	✓		A
2019/01/12 12:50:00	verification	0607080910	fixe	1112131415	mobile	✓	✓		A
2019/01/12 12:50:00	verification	0708091011	mobile	1213141516	fixe	✓	✓		A
2019/01/12 12:50:00	signature	0809101112	fixe	1314151617	mobile	✓	✗	403	B
2019/01/12 12:50:00	verification	0910111213	mobile	1415161718	fixe	✓	✓		A
2019/01/12 12:50:00	verification	1011121314	fixe	1516171819	mobile	✓	✓		A

SBC features for STIR/SHAKEN

- Configurable behavior in case of failed verification
- Bypass procedures
- CDR enriched with STIR related headers

About Cirpack

Cirpack is a leading software company that provides scalable and multi-service IP Core Network solutions for the new generation of service providers.

The Cirpack product lines are based on highly innovative technological solutions:

- Softswitches and gateways for NGN deployments,
- SBC for network or service operators SIP security, and
- IMS for fixed and mobile networks.

Renowned for the robustness, scalability and reliability of its solutions, Cirpack is the ideal partner, offering agility and responsiveness to support its customers in their growth strategies.

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