

# STUN NAT Traversal Toolkit



Softil offers a complete NAT traversal solution for developers. The Softil NAT Traversal Toolkit is an IETF standards-based Session Traversal Utilities for NAT (STUN) solution that comprises the latest NAT-related solutions available today for SIP, RTSP, Megaco/H.248, Diameter and other protocols.

## New Opportunities for VoIP Everywhere

In today's market, there is a real need for a fully compliant, standards-based solution that enables traversal of network address translators, stemming from the rapid adoption of broadband connections and increasing demand for VoIP services.

With the growing awareness of the advantages of voice and video telephony over the Internet, the need for viable standard-based solutions for NAT traversal are felt by enterprise and home users alike. Since cross-enterprise VoIP connectivity doesn't yet exist, NAT traversal solutions are necessary to allow transparent communication with anyone, anywhere in the world, while maintaining security and privacy.

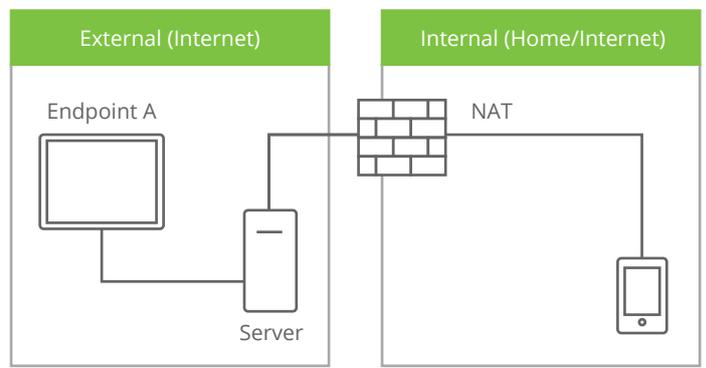
The STUN RFC 3489 standard represents a major step forward in VoIP standardization. The industry is committed to its implementation, ensuring interoperability and widespread support for its use.

## The NAT Traversal Challenges

### Internal network address exposure

A NAT replaces internal endpoint addresses with public endpoint addresses on the Internet, for security and to reduce the number of required public IPv4 addresses. In terms of security, the change of internal endpoint addresses prevents outside entities from acquiring addresses of the internal endpoint network, which would enable detection of the internal network structure.

### Signaling protocol complexity



Signaling protocols such as SIP send internal addresses inside messages. Therefore, either the endpoint in the internal network must know the public addresses for the internal addresses (which is not always possible), or the NAT must be able to replace the address inside the message payload. This poses two problems: the complexity of the signaling protocol, and the difficulty of a NAT to recognize the internal mechanisms of the protocol. A NAT that modifies signaling messages to route them properly also causes problems for authentication and security protocols.

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## Softil's Solution

Softil's NAT Traversal Toolkit is a STUN solution that complies with IETF Standard RFC 5389.



## Application

The user application itself is built on top of one or more Signaling Toolkits and should plug on top of the NAT Traversal Toolkit. The Toolkit comes with a step-by-step explanation of how to implement the solution, along with a sample test application implementation.

## NAT Traversal Toolkit

The Softil NAT Traversal Toolkit implements the STUN IETF RFC 5389. As a significant contributor in the IETF related working groups (BEHAVE, MMUSIC), Softil contributes and closely follows STUN standardization. This is imperative in ensuring interoperability with other STUN implementations and the ability to integrate NAT traversal solutions with different protocols, such as SIP, RTSP, Megaco and others, in different network topologies.

The STUN protocol was developed to solve certain NAT shortcomings. While providing numerous benefits, NATs can break many existing IP applications, making it difficult to deploy new ones. Guidelines were developed that define how to build NAT-friendly protocols, but many protocols simply cannot adhere to these guidelines. Examples include almost all peer-to-peer protocols, such as multimedia communications, file sharing, and gaming. The problem arises when the protocol requires one of the session peers to code its address-related data within the protocol payload, causing the other peer to try using a "behind-the-NAT" address, which in most cases is not accessible.

Proprietary protocols were developed as workarounds to operate through NATs. The STUN protocol embodies portions of this methodology, but codifies these workarounds into an interoperable protocol that meets the needs of many applications. STUN requires no changes to NATs, and works with an arbitrary number of NATs in tandem between the application entity and the public Internet.

The STUN standard is constantly being revised, and Softil's STUN implementation incorporates the most updated revisions. As the standard evolves, the Softil NAT Traversal Toolkit will always behave in full compliance with RFC 5389. This enables support for both existing STUN servers as well as those that are still being developed. It also serves as a foundation for Interactive Connectivity Establishment (ICE), a protocol based on the updated STUN standard.

The NAT Traversal Toolkit is part of Softil's SIP Developer Suite, which includes SIP-related Toolkits, Add-ons and products that provide all capabilities a SIP network-element developer needs. The Softil NAT Traversal Toolkit works both in conjunction with other Softil Toolkits and as a standalone implementation.

Softil's NAT Traversal Toolkit enables application developers to write terminals, proxies, registrars, border elements, MCUs, gateways and any other VoIP entities that are NAT-aware. The flexibility of this solution allows support of all standard solutions, with complete control over the protocols used and multiplexing features selected per call for improved resource allocation and increased security.

For more information, contact Softil at [info@softil.com](mailto:info@softil.com)

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