

*Whitepaper*

# Are Firewalls Enough for End-to-End VoIP Security



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# I. Introduction

Telecommunications has always had a direct connection to business revenue. Sales teams need to call potential new clients, marketing teams need to promote the company's offerings and support staff need to interact with customers to resolve problems and deliver top-notch service. And to optimize performance, employees throughout the company need to have the ability to collaborate with one another easily, quickly and at any time.

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Considering the importance of communication, infrastructure security is naturally a key priority for most firms.

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Traditionally, the firewall has served as the primary, or even sole, network security solution for countless enterprises. However, the rise of Voice over IP applications is changing this status quo. Firewalls are not designed to operate within VoIP frameworks. Companies that leverage VoIP but rely entirely on firewalls for protection may therefore discover that their network infrastructure is vulnerable to external and internal threats.

This is why so many enterprises are turning to Session Border Controllers. SBCs are specifically built to deliver security and reliability for VoIP-based networks. A firewall can still play a role in these deployments, but it is the SBC that truly protects the company's telecommunications infrastructure once VoIP is in play.

To understand the significance of SBCs and the advantages they offer, it is first necessary to understand what a SBC is and how it functions.

# II. Definitions

In the simplest terms, a SBC is a device dedicated to governing phone calls on a VoIP network – each phone call is a “session.” The SBC will determine how the phone calls are started, conducted and concluded.

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Essentially, the SBC acts like a router between the carrier service and the organization. Only authorized calls are allowed through the company's “border,” between trusted and untrusted (foreign) networks.

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In this sense, then, the SBC's basic deployment concept is much like that of a firewall, but with a more specific focus and function. The SBC is designed for VoIP security, routing and integrations. The SBC can accept VoIP traffic while applying real-time security and policies, whereas firewalls are limited to offering general data exchange oversight and protection.

The significance of all of this is that the SBC is an invaluable tool for just about any business that is considering or has already embraced VoIP solutions, especially SIP

Trunking.

### III. Security

Arguably the single most significant reason why a SBC is so important for VoIP-enabled organizations is its security advantages. Obviously, security is a major consideration for any business. That is why firewalls have become virtually ubiquitous. A typical enterprise will put a firewall on both its internal and external cloud environments and beyond, using these tools to gain a greater degree of control over the traffic going in and out of its networks. Whenever an untrusted source is in play, the firewall serves as a safeguard, preventing potential intrusions and data loss.

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However, firewalls have a number of shortcomings that can compromise a firm's security when combined with VoIP telecommunications.

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Most notably, firewalls are designed to allow traffic to flow when it is initiated from the trusted side of the network. While this works for most data communications, it becomes a problem when VoIP is in play. On a VoIP-based network, the firewall will treat any unsolicited incoming phone calls as potential threats, and will therefore try to disrupt these exchanges. This means that any organization leveraging end-to-end VoIP will have to either disable its firewall or open up special IP addresses and ports, which can expose the network to serious security threats. And while some firewalls will claim to have some VoIP capabilities, but none are as purpose-built or feature-rich as a dedicated SBC.

SBC resolves this problem by complementing and building upon the security policies offered by firewall solutions. An SBC will allow calls to and from the corporate network without compromising the safety of the organization's data. Companies can also use the SBC to deny voice traffic as needed, thereby delivering a higher, more refined degree of control. Additionally, there is a general need to separate voice and data traffic flow within a network to ensure VoIP has either virtually or physically separate paths to ensure voice quality. SBCs deliver this level of functionality.

The value of robust, reliable network security is simple. Any attack will lead to significant costs in the form of lost revenue while voice and UC applications are experiencing downtime. Such attacks are an ever-present threat. Security breaches can originate from foreign networks, independent hackers and even company insiders. For most enterprises, it's only a matter of time until their network experiences an attack. As long as the cost of the SBC is less than the cost of the resulting loss of revenue due to the attack, the customer will come out ahead by embracing these solutions.

## IV. Interoperability

Other than security, the next key reason why firms implement SBC tools is for purposes of interoperability. Every carrier and PBX vendor will deploy SIP Trunking, SIP Phones and other UC SIP applications, and these will feature a number of different variations in SIP Protocol. For a company to operate at maximum efficiency and effectiveness, it needs to unite all of its various SIP applications into a single, coherent system.

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This poses a major challenge. The wide range of settings and features makes it very difficult to bring the different resources together.

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However, SBC can deliver precisely this level of interoperability. A high-quality SBC provides functionality dedicated to the customization of the SIP Protocol that binds together two or more distinct versions of SIP on a given network. Tools that would otherwise clash can now function in unison.

## V. Availability

Users expect their phone systems to be available at all times, with no exception. The same holds true for VoIP systems. If these networks go down, the consequences will be dire. Beyond employee frustration, dropped calls can result in missed sales and lost service opportunities. Additionally, the company's image and reputation will be damaged in the eyes of partners, clients and customers.

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SBC tools can help to minimize the occurrence of dropped calls within a VoIP network.

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SBCs are effectively stationed on the edge of the corporate network, monitoring traffic as it comes from carriers and PBX vendors. If a carrier goes down or is otherwise unavailable, the SBC can reroute to another carrier option. This makes sure that, one way or another, the call will be handled and there will be an answerable location. No calls will be dropped. This guarantee easily justifies the cost of any SBC investment.

## VI. A single demarcation point

In a VoIP network, as with any other network, there will always be technical issues. Considering how high a priority communication is for every organization, these problems need to be addressed as quickly as possible. In a complex environment, though, this becomes a difficult challenge, especially for small to medium-sized businesses that do not have access to large, expansive IT resources.

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A SBC makes troubleshooting far simpler by creating a single demarcation point for a wide range of problem-solving processes throughout the network.

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If, for example, an employee reports one-way audio or distortion on his or her calls, the SBC will serve as the only necessary touchpoint in order to begin an analysis of the entire network for the potential root cause.

This is thanks to the fact that the SBC serves as a focus point for the entire VoIP network – every call, both incoming and outgoing, must pass through this resource. It is therefore ideal as a platform for examining voice quality and performance in a comprehensive manner.

This also makes the SBC invaluable for improving network efficiency. By serving as a focus point, the SBC can also act as a “traffic cop” for the network. If there is too much loading, then the SBC can throttle down. The SBC can also determine where to route calls so as to minimize costs without compromising quality.

## VII. Performance

Finally, SBCs deliver a level of performance for VoIP networks that firewalls simply cannot match. Notably, firewalls and other network devices provide only a limited degree of VoIP traffic analysis. As a result, customers are forced to rely on other parties, such as the carrier, to deliver the necessary analysis – analysis which is limited to the direct connection from the carrier. SBCs, on the other hand, do not face these limitations.

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SBCs enable companies to achieve comprehensive, detailed monitoring and reporting for a wide range of internal issues.

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By reporting on voice quality and other metrics, SBCs provide network administrators with the information they need to proactively address network performance issues, thereby promoting healthy communications.

On a related note, SBCs also improve performance by offering the best Quality of Service. SBCs prioritize voice data on VoIP networks, ensuring the clearest connection possible. Firewalls lack this capability, which can diminish a company’s QoS.

## VIII. Conclusion

Clearly, SBCs provide a large number of critical benefits for businesses using VoIP networks. Because they are designed specifically to work within VoIP environments, SBCs deliver better security, ensure interoperability and availability, create a single demarcation point for easier management and offer superior call quality and all-around performance. This makes SBCs invaluable for business of all sizes and industries. Today, firewalls are ubiquitous, present on virtually every corporate network. As VoIP solutions are deployed with growing frequency, SBCs will likely approach a similar level of popularity, and with good reason.

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### About Intervox

InterVox Communications Ltd is a provider of Information Communication Technology (ICT) solutions established on the rapidly growing Open Source Solution platforms including Linux, Asterisk, Openstack(...).

We are dedicated to integrating the next generation of Voice over IP(VoIP) communications solutions (on SIP or IAX2) that will enable our customers to have high quality voice calls and a negligible cost compared to traditional circuit switched call. We provide Voice over IP solutions to enterprises.