WHITE PAPER

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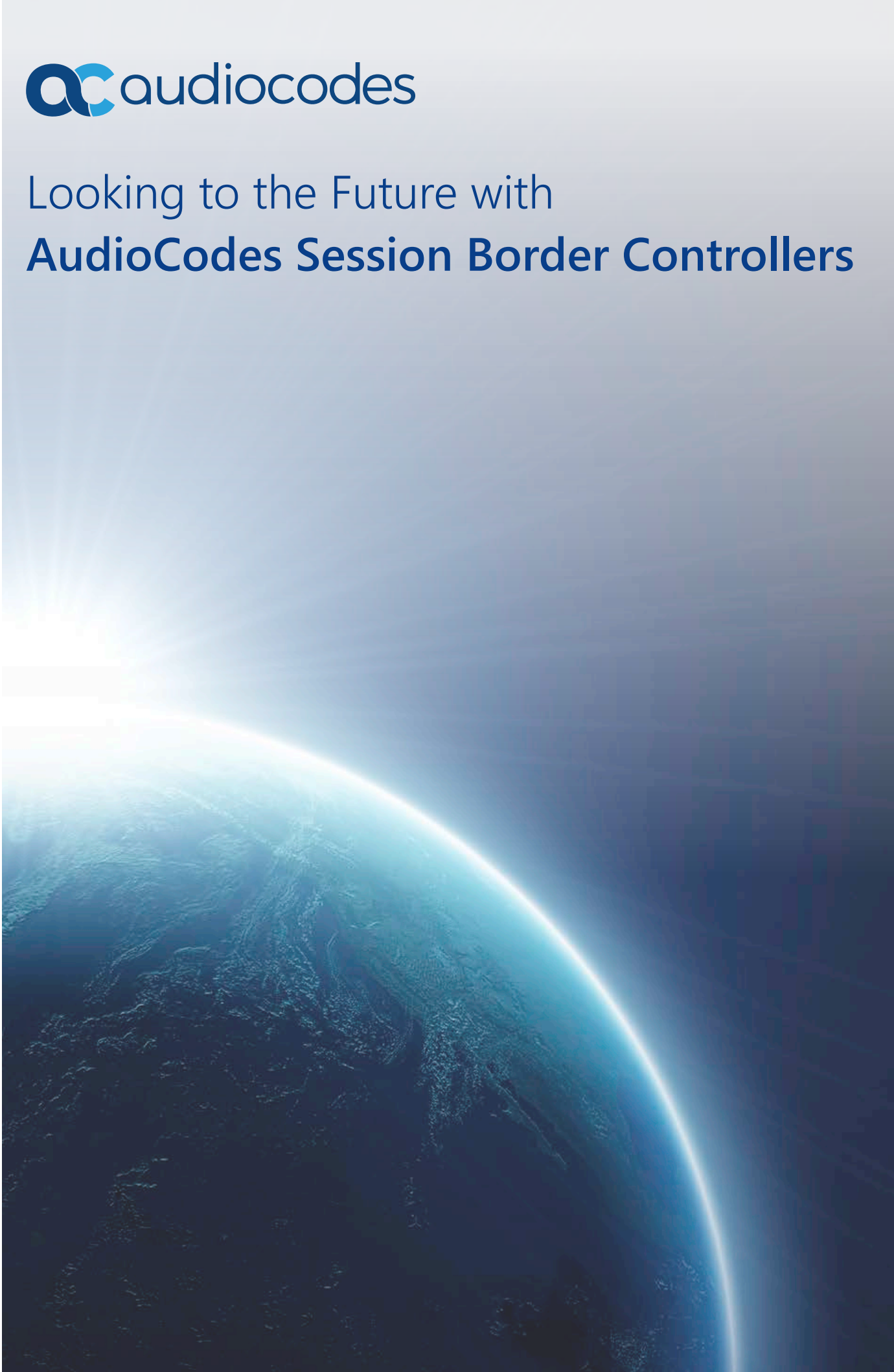
Looking to the Future with **AudioCodes Session Border Controllers**



Session Border Controllers (SBCs) are a key part of any VoIP network, deployed as they are at the border between the enterprise and the service provider. If you're already familiar with AudioCodes SBCs, you'll know that they provide seamless connectivity, enhanced security, quality assurance and regulatory compliance for your customers.

But is there more to the humble SBC than you might at first have thought? What else can they do? And how are SBCs likely to change in the future?

The evolution of SBCs in unified communications architecture

With the rise of unified communications, SBCs are taking on more and more network roles, which in turn simplifies the network and brings costs down. AudioCodes SBCs are at the forefront of this shift. Consider the following examples:

- UCaaS providers usually prefer to segment their customers' networks and define their own voice network within the customer's LAN, which allows a more predictable and controllable environment. The traditional way to do this would be to use another router along with the existing main enterprise router. However, as a managed SBC is already deployed, why not complement its capabilities with routing functions? AudioCodes SBCs provide router functions such as DHCP servers, HTTP reverse proxies, and Network Address Translation. No additional router in the network is required.
- More and more voice related traffic is going over HTTP. For example, Skype for Business clients implement SIP over HTTP. Also, many VoIP endpoints are managed through HTTP. As a result, a reverse HTTP gateway is often installed next to an SBC. Instead of this, why not integrate a reverse HTTP proxy in the SBC itself? The latest AudioCodes SBCs do just that, containing as they do a full-blown reverse HTTP proxy.
- Unified communications require expanded bandwidth and high Quality of Service. However, enterprise MPLS can be expensive and is not available everywhere. SD-WAN is one way to overcome this challenge, but it is geared more towards data applications than voice. The SBC, with its DSP and deep packet inspection capabilities, is an excellent vehicle to enhance voice quality and reduce bandwidth. AudioCodes' VoIPerfect SBC technology can cut 60% of MPLS voice bandwidth without impacting voice quality. VoIPerfect allows the use of unmanaged broadband links by overcoming their inherent network impairments. One of the main advantages of VoIPerfect over SD-WAN is that it does not require multiple WAN links to enhance quality, sufficing instead with a single link.
- More and more enterprises are using WebRTC to embed click-to-call buttons on their websites. To connect these calls to a contact center, a WebRTC gateway is required. AudioCodes SBCs contain a WebRTC gateway that delivers all the security capabilities of an SBC as well as the interworking capabilities of a standalone WebRTC Gateway.
- Because unified communications traffic is usually encrypted, external Quality of Service probes and tapping devices cannot work. SBCs are B2BUA devices that encrypt and decrypt voice streams, and are perfect candidates for probing and tapping. AudioCodes SBCs are specifically designed to facilitate this.
- Unified communications and PBX solutions usually only handle their own internal routing and dial plan. However, when a large organization uses multiple PBX and unified communications solutions, routing and dial plan maintenance can become a real headache. SBCs address this by creating an overlay VoIP network with a unified dial plan and routing policy - exactly what the AudioCodes Universal Communications Architecture does.

The SBC heads to the cloud

As enterprises move more of their communications into the cloud, two trends are becoming clear.

The first trend is enterprises basically copying and pasting their entire IT infrastructure operation from on-premises to the cloud. Here, the SBC's responsibilities in the cloud remain more or less the same as they were on-premises.

The second trend is enterprises consuming telephony services from the cloud, such as UCaaS. In this case, the SBC plays a different role. Interoperability is no longer an issue, and the SBC primarily takes care of security, survivability and voice quality.

The challenges of the cloud

Running SBCs in the cloud poses several technical obstacles to overcome.

Firstly, a complete redesign of their architecture is required. In the past, if SBCs with more session capacity were needed, bigger and more powerful hardware SBCs were the only option. With the cloud, more capacity is created by adding small virtual machine instances. To do this, SBCs need to switch to a microservice architecture. Here, each of the major SBC functions (media, signaling and transcoding) are carried out by a separate node or microservice. Microservices provide the best way to deliver cost-effective scaling because each node type usually requires a different resource mix from the cloud.

Secondly, each public cloud has its own set of orchestration and automation tools and best practices. This means that SBCs need to support open RESTful APIs to work with different clouds.

Thirdly, SBC vendors must also build automation scripts and test them on each cloud environment.

The security challenges of the future

As security threats increase, SBCs will need new technologies to defeat them. SBCs will likely inherit some of the methods used by firewalls.

SBC vendors will keep databases of new attack signatures and attack mitigation processes encountered by their SBC installation base. This information will then be fed back to all SBCs to prevent attacks from spreading to other regions.

Also, the advent of virtualization changes the way SBCs provide security. In the past, SBCs relied on purpose-built hardware and network processors to fight off DDoS attacks. In the age of virtualization, different mechanisms are required. Techniques such as DPDK, GPUs for transcoding, and cryptology accelerators will be used instead.

The end of the SBC?

It was once thought that firewalls would eventually be assimilated into enterprise routers and that standalone firewall providers would disappear. Of course, as we know, this hasn't happened. In fact, the main reason that SBCs exist in the first place is because unified communications/PBX vendors are unable to agree on an open and common set of interfaces. This is unlikely to change soon. On the contrary, protocols are becoming more complex with the growth of unified communications, and the need for an intermediary – the SBC – seems to be on the rise.

About AudioCodes

AudioCodes Ltd. (NASDAQ, TASE: AUDC) designs, develops and sells advanced Voice-over-IP (VoIP) and converged VoIP and Data networking products and applications to Service Providers and Enterprises. AudioCodes is a VoIP technology market leader, focused on converged VoIP and data communications, and its products are deployed globally in Broadband, Mobile, Enterprise networks and Cable. The Company provides a range of innovative, cost-effective products including Media Gateways, Multi-Service Business Routers, Session Border Controllers (SBC), Residential Gateways, IP Phones, Media Servers, Value Added Applications and Professional Services. AudioCodes' underlying technology, VoIPerfectHD™, relies on AudioCodes' leadership in DSP, voice coding and voice processing technologies. AudioCodes' High Definition (HD) VoIP technologies and products provide enhanced intelligibility and a better end user communication experience in Voice communications.

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