

Enterprise IP-PBX & Amazon Chime Voice Connector using AudioCodes Mediant™ Virtual Edition (VE) SBC

Version 7.2



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Notice

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This document is subject to change without notice.

Date Published: May-27-2020

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Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Document Revision Record

LTRT	Description
10850	Initial document release.
10851	Date and time configuration added.
10853	Mediant VE SBC – PAYG product and Mediant VE SBC product; Configuring the SBC section split into two.

Documentation Feedback

AudioCodes continually strives to produce high quality documentation. If you have any comments (suggestions or errors) regarding this document, please fill out the Documentation Feedback form on our website at <https://online.audiocodes.com/documentation-feedback>.

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1 Introduction

This document describes how to set up connectivity between an Enterprise IP-PBX (e.g., Cisco Unified Communications / CUCM) and Amazon Chime Voice Connector, using the AudioCodes Mediant Virtual Edition (VE) Session Border Controller (hereafter, referred to as *SBC*).

1.1 Intended Audience

This document is intended for Engineers, or AudioCodes and Amazon partners, who are responsible for installing and configuring connectivity between an Enterprise IP-PBX and Amazon Chime Voice Connector, using AudioCodes SBC.

1.2 About AudioCodes SBC Product Series

AudioCodes' family of SBC devices enables reliable connectivity and security between the Enterprise's and the service provider's VoIP networks.

The SBC provides perimeter defense as a way of protecting Enterprises from malicious VoIP attacks; mediation for allowing the connection of any PBX and/or IP-PBX to any service provider; and Service Assurance for service quality and manageability.

Designed as a cost-effective appliance, the SBC is based on field-proven VoIP and network services with a native host processor, allowing the creation of purpose-built multiservice appliances, providing smooth connectivity to cloud services, with integrated quality of service, SLA monitoring, security and manageability. The native implementation of SBC provides a host of additional capabilities that are not possible with standalone SBC appliances such as VoIP mediation, PSTN access survivability, and third-party value-added services applications. This enables Enterprises to utilize the advantages of converged networks and eliminate the need for standalone appliances.

AudioCodes SBC is available as an integrated solution running on top of its field-proven Mediant Media Gateway and Multi-Service Business Router (MSBR) platforms, or as a software-only solution for deployment with third-party hardware or in a virtualized environment, supporting the following platforms: AWS, Azure, OpenStack, Google Cloud, VMware, Hyper-V and KVM.

1.3 About Amazon Chime Voice Connector

Amazon Chime Voice Connector provides SIP Trunking connectivity to over 100 countries for on-premises phone systems. Customers can purchase low-cost inbound calling, outbound calling, or both. With Voice Connector, customers can reduce voice calling costs by up to 50% by eliminating fixed telephone network costs, and simplifying voice network administration by transitioning it to Amazon Web Services (AWS).

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2 Component Information

2.1 AudioCodes SBC Version

Table 2-1: AudioCodes SBC Version

SBC Vendor	AudioCodes
Product	Mediant VE SBC
Software Version	7.20A.256.399 or later
Protocol	▪ SIP/TCP or SIP/TLS (to Amazon Chime Voice Connector) ▪ SIP/UDP, SIP/TCP or SIP/TLS (to Enterprise IP-PBX)
Additional Notes	None

2.2 Amazon Chime Voice Connector Version

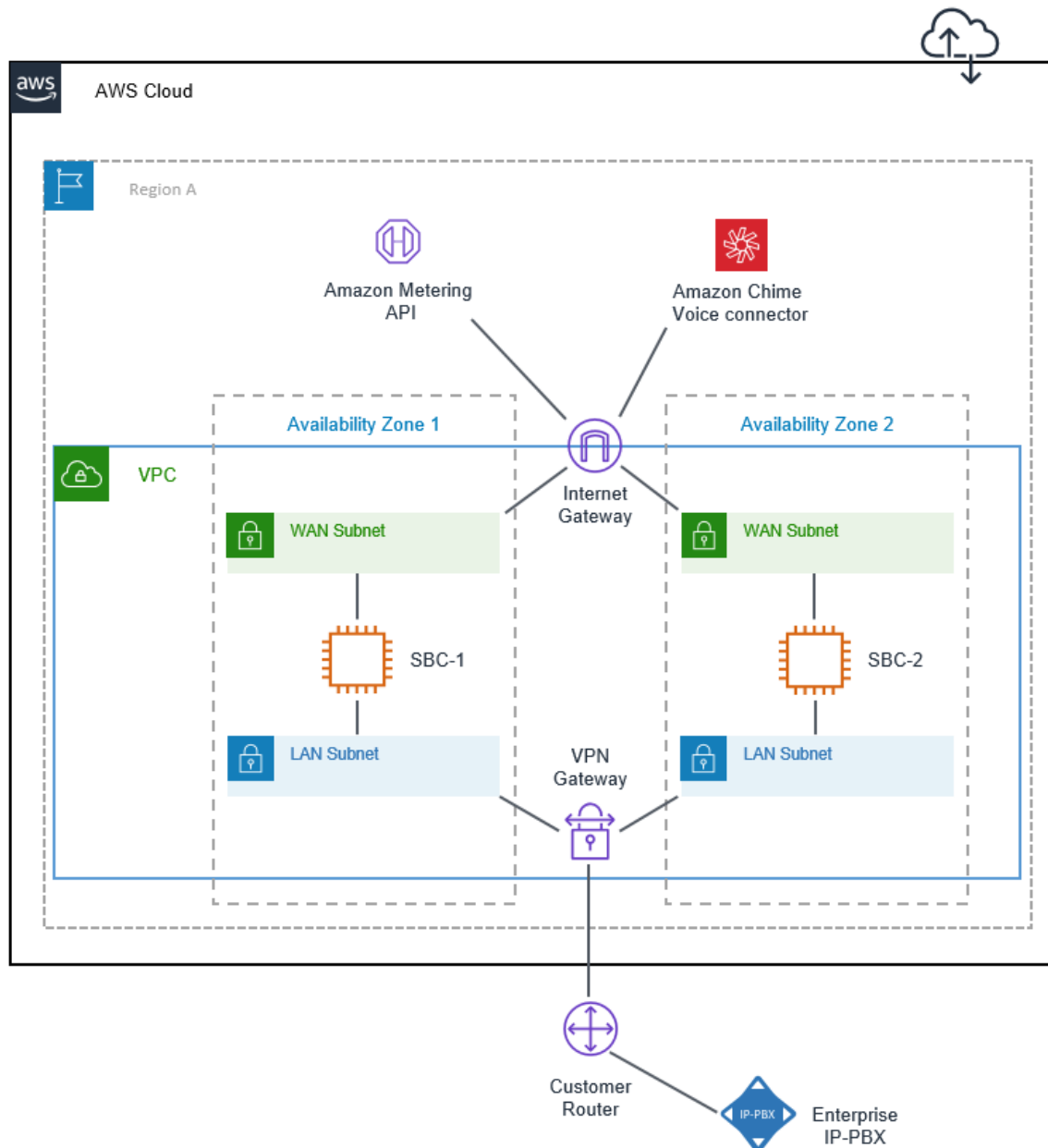
Table 2-2: Amazon Chime Voice Connector Version

Vendor/Service Provider	Amazon Chime
Protocol	SIP
Additional Notes	None

2.3 Deployment Topology

This document describes deployment using the following topology:

Figure 2-1: Deployment Topology



The SBC is deployed in AWS from the "Mediant VE Session Border Controller (SBC) – PAYG" Marketplace offer. This offer includes pay-as-you-go license that enables Customers to use SBC as much as needed and pay for actual service consumed via their AWS account billing.

Two separate subnets are used—WAN and LAN—to communicate with Amazon Chime Voice Connector and the Enterprise IP-PBX, respectively. Communication with the Enterprise IP-PBX may be performed using private IP addresses (over VPN or Direct Connect, as shown in the figure above) or public IP addresses. Communication with Amazon Chime Voice Connector is always performed using public IP addresses.

The LAN subnet is also used for accessing the management interface (Web or CLI) of the deployed SBC instance.

Two SBC instances may be deployed in different Availability Zones for improved solution reliability.

3 Prerequisites

Prior to deploying the SBC instance, make sure that you meet the following prerequisites:

- You have an AWS account. If you don't have an AWS account, you can sign up for one on Amazon's website at <http://aws.amazon.com/>.
- You have created LAN and WAN subnets needed for SBC deployment. Note that these subnets must reside in the same Availability Zone.

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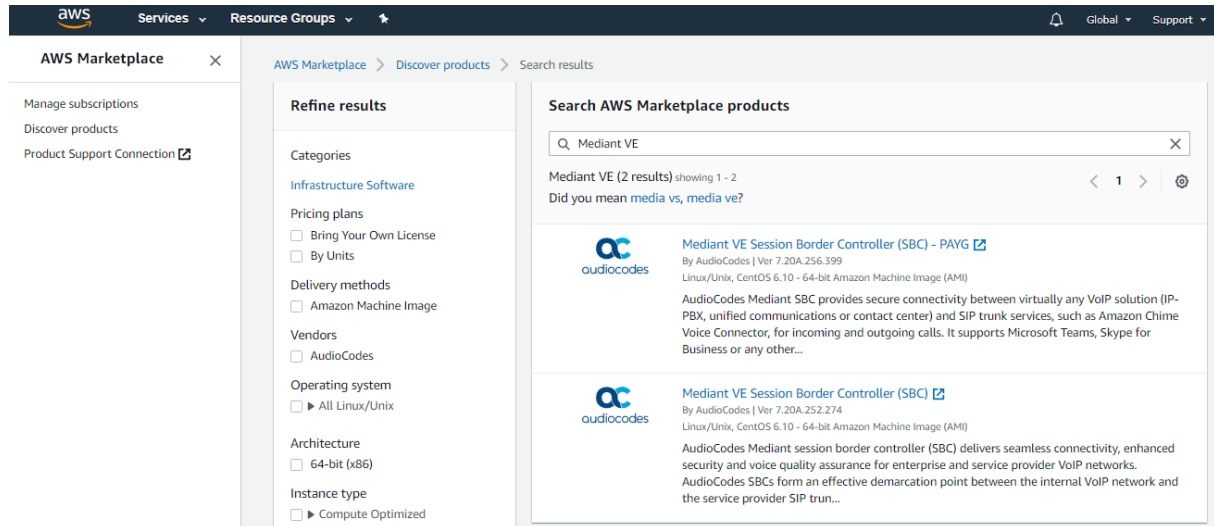
4 Deploying the SBC Instance

This section describes how to deploy the SBC instance.

➤ **To deploy SBC instance:**

1. Open the AWS Marketplace console at <https://console.aws.amazon.com/marketplace>.
2. In the **Discover Products** tab, search for the "Mediant VE" product.

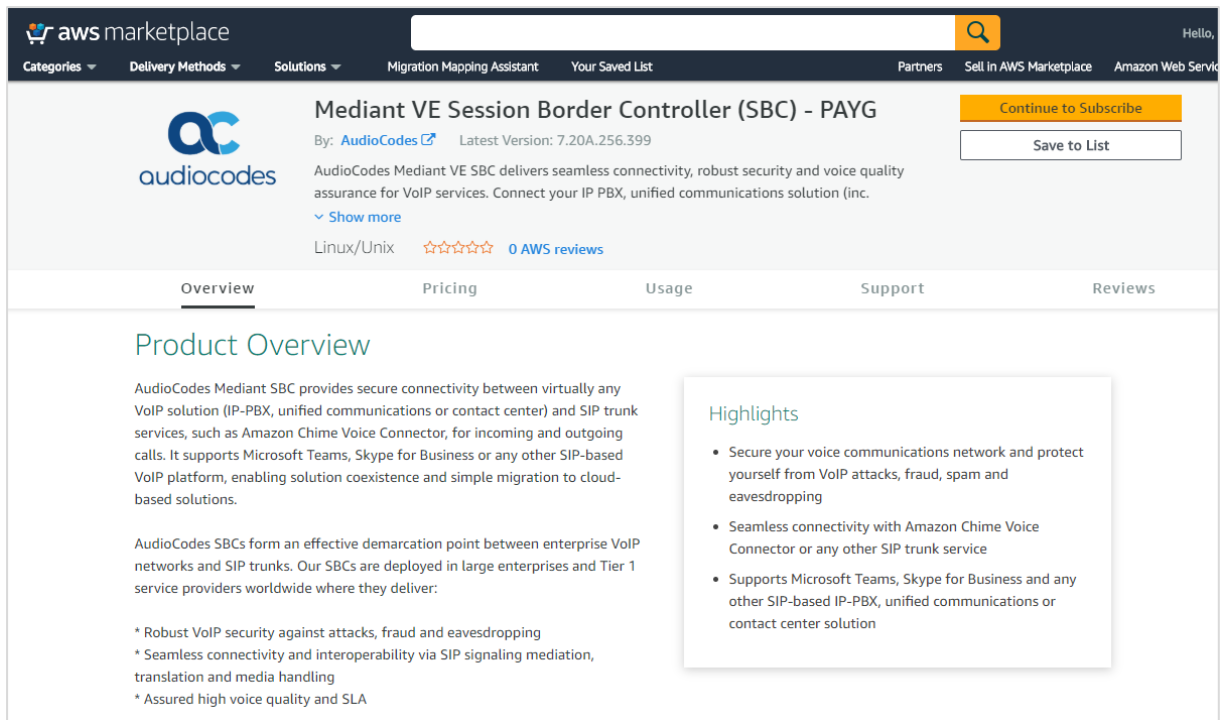
Figure 4-1: Searching for Mediant VE Product in AWS Marketplace



3. Two products are displayed:
 - "Mediant VE Session Border Controller (SBC)": This product includes a trial license (limited by 3 sessions) and requires purchase of production license from AudioCodes.
 - "Mediant VE Session Border Controller (SBC) – PAYG": This product includes a pay-as-you-go license that enables Customers to use the SBC as much as needed and pay for the actual service consumed via their AWS account billing.

4. Choose the Mediant VE product that matches your licensing needs. For example, choose **Mediant VE Session Border Controller (SBC) – PAYG** product.

Figure 4-2: Mediant VE Product Page in AWS Marketplace



Mediant VE Session Border Controller (SBC) - PAYG

By: [AudioCodes](#) Latest Version: 7.20A.256.399

AudioCodes Mediant VE SBC delivers seamless connectivity, robust security and voice quality assurance for VoIP services. Connect your IP PBX, unified communications solution (inc).

Linux/Unix ☆☆☆☆ 0 AWS reviews

Product Overview

AudioCodes Mediant SBC provides secure connectivity between virtually any VoIP solution (IP-PBX, unified communications or contact center) and SIP trunk services, such as Amazon Chime Voice Connector, for incoming and outgoing calls. It supports Microsoft Teams, Skype for Business or any other SIP-based VoIP platform, enabling solution coexistence and simple migration to cloud-based solutions.

AudioCodes SBCs form an effective demarcation point between enterprise VoIP networks and SIP trunks. Our SBCs are deployed in large enterprises and Tier 1 service providers worldwide where they deliver:

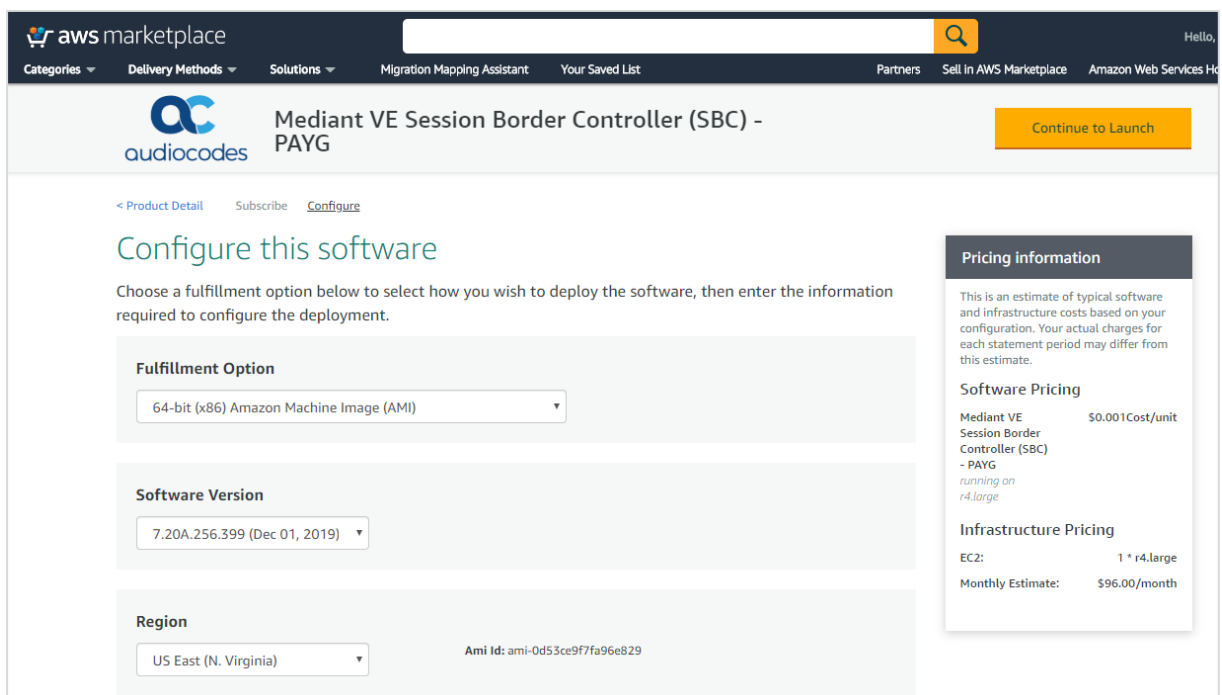
- * Robust VoIP security against attacks, fraud and eavesdropping
- * Seamless connectivity and interoperability via SIP signaling mediation, translation and media handling
- * Assured high voice quality and SLA

Highlights

- Secure your voice communications network and protect yourself from VoIP attacks, fraud, spam and eavesdropping
- Seamless connectivity with Amazon Chime Voice Connector or any other SIP trunk service
- Supports Microsoft Teams, Skype for Business and any other SIP-based IP-PBX, unified communications or contact center solution

5. Click **Continue to Subscribe** to subscribe to the Mediant VE SBC – PAYG product.
6. Click **Continue to Configuration** to proceed with SBC deployment.

Figure 4-3: Mediant VE Configuration Page in AWS Marketplace



Mediant VE Session Border Controller (SBC) - PAYG

[Product Detail](#) [Subscribe](#) [Configure](#)

Configure this software

Choose a fulfillment option below to select how you wish to deploy the software, then enter the information required to configure the deployment.

Fulfillment Option

64-bit (x86) Amazon Machine Image (AMI)

Software Version

7.20A.256.399 (Dec 01, 2019)

Region

US East (N. Virginia) Ami Id: ami-0d53ce9f7fa96e829

Pricing Information

This is an estimate of typical software and infrastructure costs based on your configuration. Your actual charges for each statement period may differ from this estimate.

Software Pricing

Mediant VE Session Border Controller (SBC) - PAYG running on r4.large \$0.001Cost/unit

Infrastructure Pricing

EC2: 1 * r4.large

Monthly Estimate: \$96.00/month

7. Choose the Region where you want to launch the SBC.



Note: For the **Mediant VE SBC – PAYG** product support is currently provided for installations in US regions only. For support in other regions, please contact us at <https://online.audiocodes.com/aws-support-cloud>.

8. Click **Continue to Launch**.

Figure 4-4: Mediant VE Launch Page in AWS Marketplace

The screenshot displays the AWS Marketplace interface for the Mediant VE Session Border Controller (SBC). The top navigation bar includes the AWS Marketplace logo, a search bar, and links for Categories, Delivery Methods, Solutions, Migration Mapping Assistant, Your Saved List, Partners, and Sell in AWS Marketplace. The main header features the Audiocodes logo and the product name 'Mediant VE Session Border Controller (SBC)'. Below the header, there are navigation links: '< Product Detail', 'Subscribe', 'Configure', and 'Launch' (which is highlighted). The main content area is titled 'Launch this software' and includes the instruction 'Review your configuration and choose how you wish to launch the software.' Under the 'Configuration Details' section, the following information is displayed:

Fulfillment Option	64-bit (x86) Amazon Machine Image (AMI) Mediant VE Session Border Controller (SBC) <i>running on r4.large</i>
Software Version	7.20A.252.274
Region	US East (N. Virginia)

Below the configuration details is a 'Usage Instructions' button. The 'Choose Action' section features a dropdown menu currently set to 'Launch through EC2'. To the right of the dropdown, a note states: 'Choose this action to launch your configuration through the Amazon EC2 console.' At the bottom right of the page is a prominent orange 'Launch' button.

9. From the 'Choose Action' drop-down list, select **Launch through EC2**, and then click **Launch**; the Choose Instance Type page appears:

Figure 4-5: Choose Instance Type Page

Step 2: Choose an Instance Type

	Memory optimized							
☐	Memory optimized	r5.metal	96	768	EBS only	Yes	25 Gigabit	Yes
☒	Memory optimized	r4.large	2	15.25	EBS only	Yes	Up to 10 Gigabit	Yes
☐	Memory optimized	r4.xlarge	4	30.5	EBS only	Yes	Up to 10 Gigabit	Yes
☐	Memory optimized	r4.2xlarge	8	61	EBS only	Yes	Up to 10 Gigabit	Yes
☐	Memory optimized	r4.4xlarge	16	122	EBS only	Yes	Up to 10 Gigabit	Yes
☐	Memory optimized	r4.8xlarge	32	244	EBS only	Yes	10 Gigabit	Yes

[Cancel](#)
[Previous](#)
[Review and Launch](#)
[Next: Configure Instance Details](#)

10. Choose the instance type as follows:

- If the Enterprise IP-PBX supports the G.711 U-law coder, choose the **r4.large** instance type. This instance type is recommended for deployments that do not require transcoding and/or other DSP capabilities.
- Otherwise, choose the **c4.2xlarge** instance type. This instance type is recommended for deployments that require transcoding and/or other DSP capabilities.

Refer to the *SBC Series Release Notes* for a complete list of instance types supported by Mediant VE SBC, their capacities and capabilities.

11. Click **Next**; the Configure Instance page appears:

Figure 4-6: Configure Instance Page

Step 3: Configure Instance Details
Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances ⓘ 1 [Launch into Auto Scaling Group](#) ⓘ

Purchasing option ⓘ ☐ Request Spot instances

Network ⓘ vpc-f8b7159d | default (default) [Create new VPC](#)

Subnet ⓘ subnet-cc8e83e4 | Default in us-east-1a [Create new subnet](#)
4091 IP Addresses available

Auto-assign Public IP ⓘ Disable

Placement group ⓘ ☐ Add instance to placement group

Capacity Reservation ⓘ Open [Create new Capacity Reservation](#)

IAM role ⓘ The AMI you have selected (ami-07ffbb3d7c12ff01) supports metered pricing and requires an IAM role with the aws-marketplace:MeterUsage permission to record software usage. [Learn more.](#)
☒ Automatically create an IAM role with the required permission and the name below
☐ Choose an existing IAM role from your account
 metering-role [Create new IAM role manually](#)

Shutdown behavior ⓘ Stop

Enable termination protection ⓘ ☐ Protect against accidental termination

Monitoring ⓘ ☐ Enable CloudWatch detailed monitoring
[Additional charges apply.](#)

Tenancy ⓘ Shared - Run a shared hardware instance
Additional charges will apply for dedicated tenancy.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

12. Configure network devices and IP addresses:

- For **Network**, select the VPC where SBC should be deployed.
- For **Subnet**, select the LAN Subnet. This subnet is used to communicate with the Enterprise IP-PBX and for accessing the SBC management interface (Web or CLI).
- For **IAM role**:
 - ◆ If you are deploying the **Mediant VE SBC – PAYG** product, select 'Automatically create an IAM role with the required permission and the name below', and then enter the IAM role name (e.g., "metering-role").
 - ◆ If you are deploying the **Mediant VE SBC** product, leave the IAM role empty.



Note: The **Mediant VE SBC – PAYG** product requires an IAM role with the following policy:

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Action": [
        aws-marketplace:MeterUsage
      ],
      "Effect": "Allow",
      "Resource": "*"
    }
  ]
}
```

This role allows the Mediant VE SBC PAYG instance to communicate with the AWS Metering API and must be assigned to the launched instance – either automatically (as described above) or manually.

- In the **Network Interfaces** section located at the bottom of the page, click **Add Device**, and then select the WAN Subnet for the **eth1** device. This subnet is used to communicate with Amazon Chime Voice Connector.



Note: Because you are creating multiple network devices, AWS EC2 console doesn't automatically allocate public IP addresses for the instance. These should be assigned manually as described below.

13. Click **Next**; the Add Storage page appears:

Figure 4-7: Add Storage Page

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-072cd55a8a4c3c0a2	10	General Purpose SSD (gp2)	100 / 3000	N/A	☒	Not Encrypt

[Add New Volume](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

14. From the 'Volume Type' drop-down list, select the required volume of the instance. This setting does not affect SBC performance and may be set to any value.

15. Click **Next**; the Tag Instance page appears:

Figure 4-8: Tag Instance Page

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum) **Value** (256 characters maximum)

Name sbc-1

Add another tag (Up to 50 tags maximum)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Security Group](#)

16. In the 'Value' field, enter a name for your instance, and then click **Next**; the Configure Security Group page appears:

Figure 4-9: Configure Security Group Page

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a **new** security group ☐ Select an **existing** security group

Security group name: Mediant VE Session Border Controller -SBC- - Metered-7-20A-252-274-Autogen

Description: This security group was generated by AWS Marketplace and is based on recomm

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTP	TCP	80	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTPS	TCP	443	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom UDP	UDP	5060 - 5080	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom TCP	TCP	5060 - 5080	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom UDP	UDP	6000 - 65535	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

[Add Rule](#)

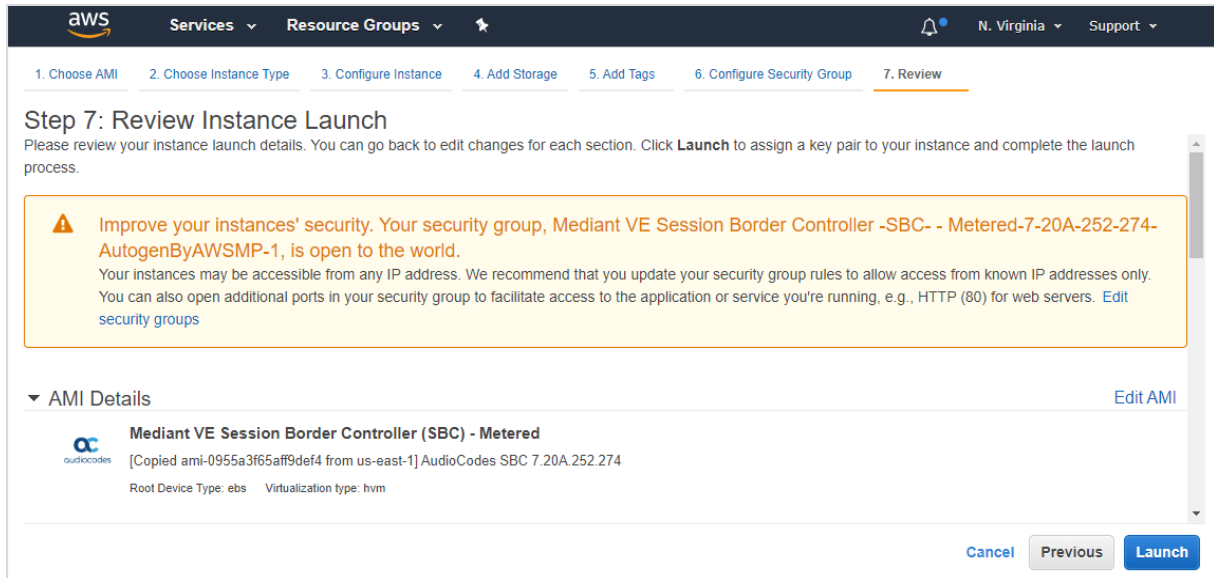
Warning
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Cancel](#) [Previous](#) [Review and Launch](#)

17. Configure firewall rules to allow management (SSH, HTTP, and HTTPS), signaling (SIP) and media (RTP/RTCP) traffic with your instance. Use default rules as a starting point and modify them to match your actual deployment needs.

18. Click **Review and Launch**; the Review page appears displaying a summary of your instance configuration:

Figure 4-10: Review Page



19. Click **Launch**; the Select an existing key pair window appears.
20. Select a key pair to authenticate SSH connection with the SBC instance, click the **I acknowledge** check box, and then click **Launch Instances**.
21. Proceed to the next step to assign Elastic IPs to the launched SBC instance

4.1 Assigning Elastic IP Addresses to SBC Instance

The AWS EC2 environment assigns "private" IP addresses to the instances running in it. These addresses may be used for communication between the instances running inside the same network (VPC); however, they may not be used to connect to the instance over the Internet.

If the instance has only one network device, AWS EC2 may automatically assign a public IP address to it. The exact behavior depends on the VPC and/or Subnet configuration. This address however is taken from a "shared pool" and changes if you stop/start the instance. Therefore, it is not very useful for production environment.

To make SBC properly reachable over the Internet, you must allocate Elastic IP addresses and assign them to your instance. Multiple Elastic IP addresses may be assigned to the same AWS EC2 instance, depending on the number of configured private IP addresses.

When an Elastic IP address is associated with the specific instance's private IP address, AWS EC2 environment performs NAT translation by converting the Elastic IP address to the private IP address, while preserving the port range. If the SBC needs to communicate with a SIP entity using the Elastic IP address, the latter must be configured in the NAT Translation table to ensure proper modification of SIP / SDP messages for NAT traversal.

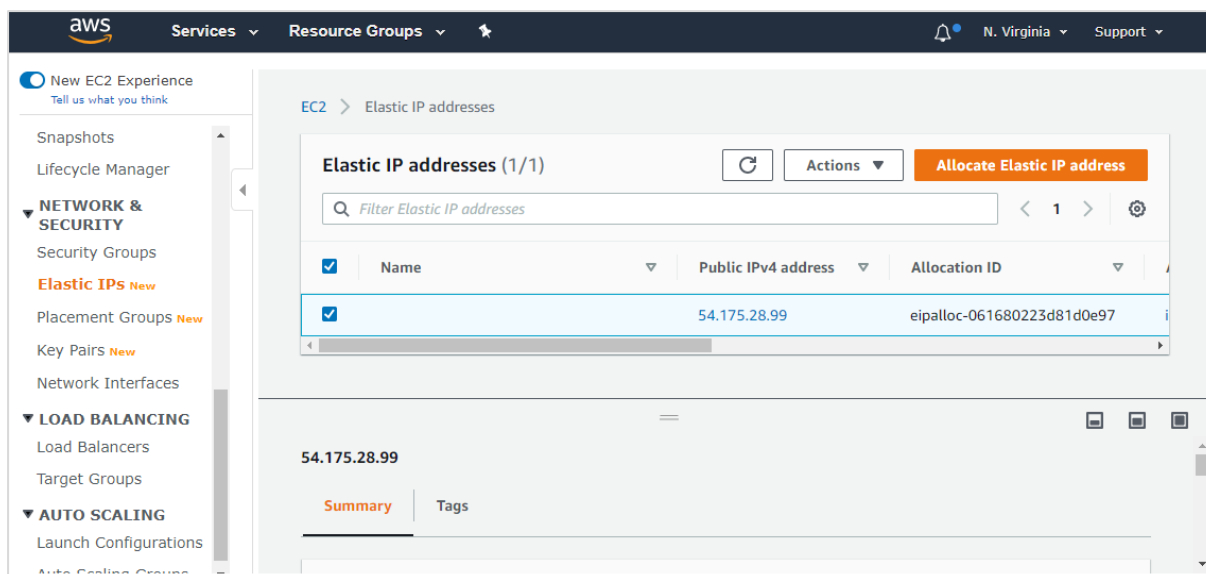
In the deployment topology shown in Figure 2-1, you need to assign Elastic IPs to the following SBC network interfaces:

- **eth1** – connected to the WAN Subnet
- (Optional) **eth0** – connected to the LAN Subnet. This is needed only if communication with the Enterprise IP-PBX is performed over the open Internet using public IP addresses or if you want to access the SBC management interface over the open Internet.

➤ To allocate an Elastic IP address to SBC instance:

1. Open the EC2 console at <https://console.aws.amazon.com/ec2>.
2. Navigate to **Elastic IPs** page under NETWORK & SECURITY.

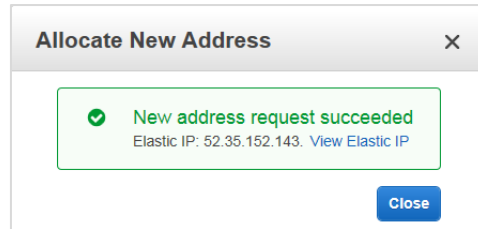
Figure 4-11: Elastic IPs Page



3. Click **Allocate Elastic IP address**; a message box appears requesting you to confirm.

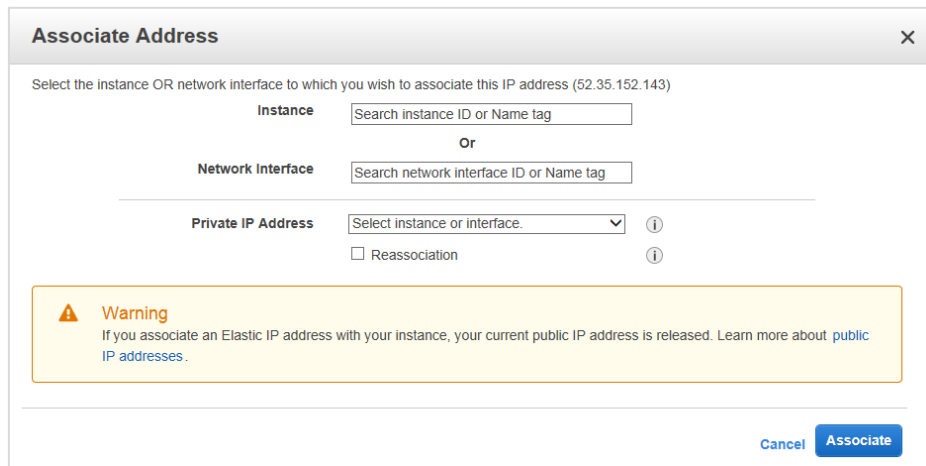
4. Click **Yes, Allocate** to confirm; a message box appears displaying the allocated IP address:

Figure 4-12: Allocated IP Address



5. Click **Close** to close the message box.
6. From the 'Actions' drop-down list, select **Associate Address**.

Figure 4-13: Associate Address Window



7. Select the instance or network interface and private IP address to which you want to associate the Elastic IP address, and then click **Associate**.
8. If you have configured multiple IP addresses and want to make them reachable over the Internet as well, repeat the procedure for additional IP addresses.

5 Configuring Amazon Chime Voice Connector

This section describes how to configure Amazon Chime Voice Connector.

➤ **To configure Amazon Chime Voice Connector:**

1. Open the Amazon Chime console at <https://console.chime.aws.amazon.com/>.
2. Navigate to **Calling > Phone number management** screen.
3. Under the **Orders** tab, click **Provision phone numbers**.
4. Select **Voice Connector** product type.
5. Search phone numbers by location or area code. Once found, select the phone number, and then click **Provision**.

Figure 5-1: Searching Phone Numbers

Provision phone numbers

Step 2: Search by country and location to display available phone numbers. Learn more about [Learn more](#)

Country: United States +1 Area: Location California Search by city

Phone number
☒ +17602550513
☐ +17602550519
☐ +14157121851
☐ +18316094099
☐ +17073617993

1 phone number selected

Cancel Previous Provision

6. Navigate to **Calling > Voice connectors** screen.
7. Click **Create new voice connector**.
8. Enter a name for the voice connector, select a region, enable encryption, and then click **Create**.

Figure 5-2: Creating New Voice Connector

Create new voice connector

Create an Amazon Chime Voice Connector to make phone calls using your existing SIP infrastructure. .

Voice connector name
connector1

AWS region
US East (N. Virginia)

Encryption
☒ Enabled (Recommended)
☐ Disabled

Cancel Create

9. Click the created Voice Connector.
10. Navigate to the **Termination** tab.
11. Change 'Termination status' to **Enabled**, and then write down the hostname displayed in the **Outbound host name** group. You will need it in the next step.
12. Under **Allowed hosts list**, click **New**, and then enter the Elastic IP address assigned to the 1st interface (eth0) of the deployed SBC instance (connected to the WAN subnet), followed by the prefix "/32".

Figure 5-3: Configuring Termination Status and Allowed Hosts List

The screenshot shows the Amazon Chime console interface. On the left is a navigation menu with sections: Amazon Chime (Getting started, Accounts), Calling (Getting started, Phone number management, Voice connector groups, Voice connectors), and Global Settings (Call detail records). The main content area is for a specific voice connector named 'alex-test-1'. It has several tabs: General, Termination (which is active), Origination, Streaming, Phone numbers, and Logging. Under the 'Termination' tab, there's a section 'Enable Termination settings to control outbound calling from your SIP infrastructure. Learn more.' Below this, 'Termination status' is set to 'Enabled' (radio button selected). Then, there's a section 'Outbound host name' with the description 'The unique hostname your SIP infrastructure uses for outbound calls.' and the value 'c6lgkcb5zn7jyx6cpswb2.voiceconnector.chime.aws'. Below that is the 'Allowed hosts list*' section with the description 'IP addresses allowed to make calls using your Voice Connector. You can create up to 10 entries.' It features a 'New' button and an 'Actions' dropdown. A table below shows one entry with a checkbox, a column header 'IP or Network', and the value '54.175.28.99/32'.

13. Under **Calling plan**, select countries to which outbound calls will be allowed.

14. Under **Credentials**, click **New**, and then enter a username / password to authenticate SBC with Amazon Chime Voice Connector. Write down the credentials; you will need them in the next step.

Figure 5-4: Configuring Calling Plan and Credentials

The screenshot displays the configuration interface for an Amazon Chime Voice Connector. It is divided into several sections:

- Calling plan***: A section with the subtitle "Allow outbound calls to selected countries." It contains a "Countries" dropdown menu currently set to "United States of America" with a close button (X).
- Credentials (Recommended)**: A section with the subtitle "Create up to 10 SIP credentials to authenticate outbound calls. If no credentials are created, authentication will not be required." It features a "New" button (orange) and a "Delete" button (gray). Below is a table with two columns: a checkbox and "Username". One entry is visible with the username "audc".
- Caller ID override**: A section with the subtitle "The caller ID shown for calls from this Voice Connector without caller ID. Outbound calls without a valid E.164 phone number as caller ID are blocked." It shows "Phone number" as "Currently unselected" with "Edit" (orange) and "Delete" (gray) buttons.
- Last options ping**: A section with the subtitle "The last SIP OPTIONS message received from your SIP infrastructure, if any." It displays "Last OPTIONS ping" information: "54.175.28.99" and "Feb 10, 2020 at 10:00 PM".

At the bottom right, there are "Reset settings" and "Save" buttons. A footnote at the bottom left states "* Required".

15. Click **Save** to save your settings.
16. Navigate to the **Origination** tab.
17. Change 'Origination status' to **Enabled**.
18. Under **Inbound routes**, click **New**, and then configure the following:
- **Host**: Elastic IP address assigned to the 1st interface (eth0) of the deployed SBC instance (connected to WAN subnet)
 - **Port**: 5061
 - **Protocol**: TCP
 - **Priority**: 1
 - **Weight**: 5

Figure 5-5: Configuring Origination Status

AudioCodes > Calling > Voice connectors > alex-test-1

AudioCodes

Amazon Chime

- Getting started
- Accounts
- Calling
 - Getting started
 - Phone number management
 - Voice connector groups
 - Voice connectors
- Global Settings
 - Call detail records

alex-test-1

General | Termination | **Origination** | Streaming | Phone numbers | Logging

Enable origination settings to control inbound calling to your SIP infrastructure. [Learn more.](#)

Origination status

☒ Enabled
☐ Disabled

Inbound routes*
 Configure inbound routes for your SIP hosts to receive inbound calls. You can create up to 10 routes.

[New](#) [Actions](#)

	Host	Port	Protocol	Priority	Weight
☐	54.175.28.99	5061	TCP	1	5

* Required

[Reset settings](#) [Save](#)

19. Click **Save** to save your settings.
20. Navigate to the **Phone numbers** tab.
21. Click **Assign from inventory**.
22. Select the phone number that you provisioned in the previous steps, and then click **Assign**. Write down the assigned phone number; you will need it in the next step.

Figure 5-6: Configuring Phone Numbers

AudioCodes > Calling > Voice connectors > alex-test-1

AudioCodes

Amazon Chime

- Getting started
- Accounts
- Calling
 - Getting started
 - Phone number management
 - Voice connector groups
 - Voice connectors
- Global Settings
 - Call detail records

alex-test-1

General | Termination | Origination | Streaming | **Phone numbers** | Logging

[Unassign](#) [Assign from inventory](#) [?](#) [↺](#)

Search by full phone number

< Previous Next >

	Phone numbers	Last updated
☐	+18489001709	Feb 06, 2020 at 9:41 AM

6 Configuring the SBC

This section consists of two parts:

- Section 6.1 describes configuration of interoperability between the Enterprise IP-PBX and Amazon Chime Voice Connector.
- Section 6.2 describes configuration of the metering license for the **Mediant VE SBC – PAYG** product

6.1 Configuring Interop between Enterprise IP-PBX and Amazon Chime Voice Connector

This section describes how to configure the SBC to enable connectivity between the Enterprise IP-PBX and Amazon Chime Voice Connector. The SBC Wizard interface is used because it simplifies configuration and leverages the interoperability database, which supports a wide variety of IP-PBX flavors.

➤ **To configure SBC:**

1. Open the SBC Web interface.



Note:

- After deployment, the SBC Web interface is accessible via the 1st network interface (eth0) which is connected to the LAN subnet.
- If you assigned an Elastic IP address to the 1st network interface (eth0), you may use it to access the Web interface. Otherwise, you'll need to use the private IP address of the 1st network interface (eth0).

2. Log in using the following default credentials:
 - Username: **Admin**
 - Password: Instance ID of the launched instance (e.g. "i-0f526bc135adc65a8")
3. On the toolbar, click **Actions**, and then choose **Configuration Wizard**; the SBC Configuration Wizard welcome page appears.

Figure 6-1: Opening SBC Configuration Wizard

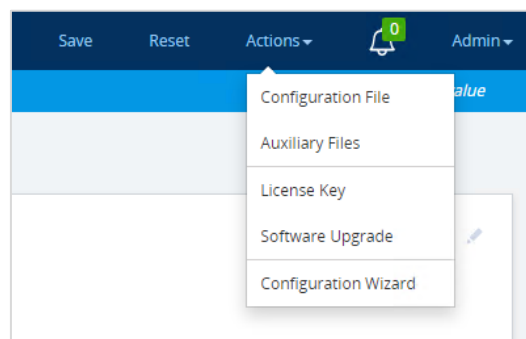


Figure 6-2: SBC Configuration Wizard Welcome Page

4. Fill in the information for usage statistics, and then click **Next**; the General Setup wizard page appears:

Figure 6-3: General Setup Wizard Page

5. Configure the general parameters as follows:
 - For 'Application', select **SIP Trunk (IP-PBX with ITSP)**.
 - For 'IP-PBX', select your Enterprise IP-PBX flavor. If not listed, select **Generic IP-PBX**.
 - For 'SIP Trunk', select **Amazon Chime Voice Connector**.
 - For 'Network Setup', select **Two ports: LAN & WAN**.

6. Click **Next**; the System Parameters wizard page appears:

Figure 6-4: System Parameters Wizard Page

7. Configure system parameters as follows:

- For 'Time Zone', enter the time zone where the SBC is deployed.
- For 'Primary NTP Server', enter **169.254.169.123**, which is the IP address of the Amazon Time Sync service.

8. Click **Next**; the Network Interfaces wizard page appears:

Figure 6-5: Network Interfaces Wizard Page

9. In the WAN INTERFACE > 'NAT Public IP' field, enter the Elastic IP address assigned to the 2nd SBC interface (eth1).



Note: If you want SBC to communicate with the Enterprise IP-PBX using public IP addresses (over the Internet), you need to manually configure NAT Translation on the 1st SBC interface (eth0) in the NAT Translation table (Setup > IP Network > Core Entities) after the SBC Configuration Wizard finishes.

10. Click **Next**; the IP-PBX Configuration wizard page appears:

Figure 6-6: IP-PBX Configuration Wizard Page

The screenshot shows the 'IP-PBX configuration' wizard page. The left sidebar contains a navigation menu with options: WELCOME, GENERAL SETUP, SYSTEM, INTERFACES, **IP-PBX** (highlighted), SIP TRUNK, NUMBER MANIPULATION, SUMMARY, and FINISH. The main content area is titled 'IP-PBX configuration' and contains several sections:

- NETWORK INTERFACE:** Network Type is set to 'LAN'.
- IP-PBX:**
 - Address: 10.15.28.101
 - Backup Address: 0.0.0.0 or domain.com
 - SIP Domain: 0.0.0.0 or domain.com
 - Keep Alive: ☒
- SIP INTERFACE:**
 - Transport Type: TCP
 - Destination Port: 5060
 - Listening Port: 5060
- MEDIA PORTS (REALM):**
 - Media Protocol: RTP
 - Base Port: 6000
 - Number Of Sessions: 100

At the bottom of the form are three buttons: '< Back', 'Next >', and 'Cancel'.

11. Configure the IP-PBX parameters as follows:
 - For 'Address', enter the IP address or hostname of the Enterprise IP-PBX.
 - Verify that the other parameters match your Enterprise IP-PBX configuration and adjust them as needed.
12. Click **Next**; the SIP Trunk Configuration wizard page appears:

Figure 6-7: SIP Trunk Configuration Wizard Page

The screenshot displays the 'SIP Trunk configuration' wizard page. On the left is a sidebar with navigation links: WELCOME, GENERAL SETUP, SYSTEM, INTERFACES, IP-PBX, **SIP TRUNK** (highlighted), NUMBER MANIPULATION, SUMMARY, and FINISH. The main area contains several configuration sections:

- NETWORK INTERFACE:** Network Type is set to 'WAN'.
- NAT:** NAT Public IP is an empty field.
- SIP TRUNK:**
 - Address: c6lgkcb5zn7yjk6cpswjb2.voiceconnector.cl
 - Backup Address: 0.0.0.0 or domain.com
 - SIP Domain: 0.0.0.0 or domain.com
 - Keep Alive: ☒
- SIP INTERFACE:**
 - Transport Type: TLS (dropdown)
 - Destination Port: 5061
 - Listening Port: 5061
- SIP ACCOUNT:**
 - Account Type: Authentication (dropdown)
 - Trunk Main Line: +18489001234
 - Username: audc
 - Password: *****
- MEDIA PORTS (REALM):**
 - Media Protocol: SRTP (dropdown)
 - Base Port: 7000
 - Number Of Sessions: 100

At the bottom are buttons for '< Back', 'Next >', and 'Cancel'.

13. Configure the SIP Trunk parameters as follows:

- For 'Address', enter the **Outbound host name** of your Amazon Chime Voice Connector.
- For 'Trunk Main Line', enter the phone number that is assigned to your Amazon Chime Voice Connector.
- The 'Transport Type' and 'Media Protocol' settings depend if encryption is enabled or disabled for Amazon Chime Voice Connector:
 - ◆ **Encryption enabled:**
 - 'Transport Type': **TLS**
 - 'Media Protocol': **SRTP**
 - ◆ **Encryption disabled:**
 - 'Transport Type': **TCP**
 - 'Media Protocol': **RTP**
- The 'Account Type', 'Username' and 'Password' settings depend if credentials are configured for Amazon Chime Voice Connector:
 - ◆ **Credentials configured:**
 - 'Account Type': **Authentication**
 - 'Username': enter configured username
 - 'Password': enter configured password
 - ◆ **Credentials not used:**
 - 'Account Type': **None**
 - 'Username' and 'Password': leave empty

14. Click **Next; the Number Manipulation wizard page appears:**

Figure 6-8: Number Manipulation Wizard Page

15. Configure number manipulation for inbound and outbound calls. The wizard allows you to configure basic number manipulation rules for source and destination numbers:
 - 'Prefix': Defines the number prefix for which manipulation is applied.
 - 'Remove': Defines the number of digits (or characters) to remove from the left of the number.
 - 'Add': Defines new digits to add to the left of the number.

Note that Amazon Chime Voice Connector uses the international number format, including the "+" sign and country code (e.g., +18489001709). If your IP-PBX uses a different number format, you must configure number manipulation for both inbound and outbound calls.

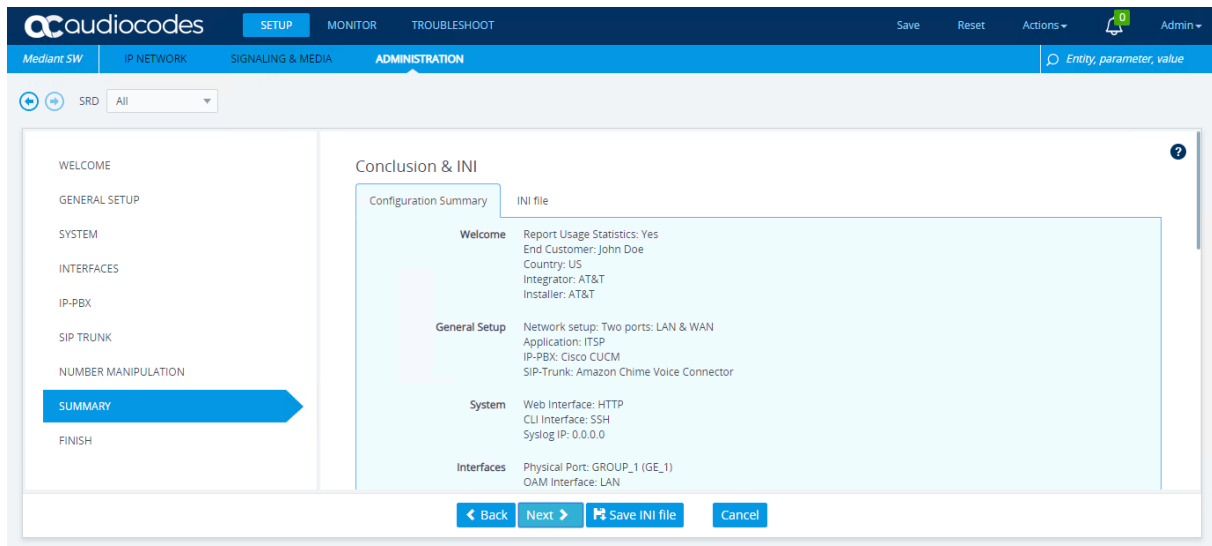
For example:

- The rule — 'Prefix': +1, 'Remove': 2, 'Add': <empty> — converts international US numbers into a national format. For example, it changes +18489001709 to 8489001709.
- The rule — 'Prefix': 00, 'Remove': 2, 'Add': + — replaces the prefix 00 with +. For example, it changes 008489001709 to +18489001709.
- The rule — 'Prefix': *, 'Remove': 0, 'Add': +1848900 — assumes that all IP-PBX numbers are 4 digits and converts them into an international US format. For example, it changes 1709 to +18489001709.

Additional manipulation rules may be defined through the regular SBC Web interface after you have completed initial SBC configuration.

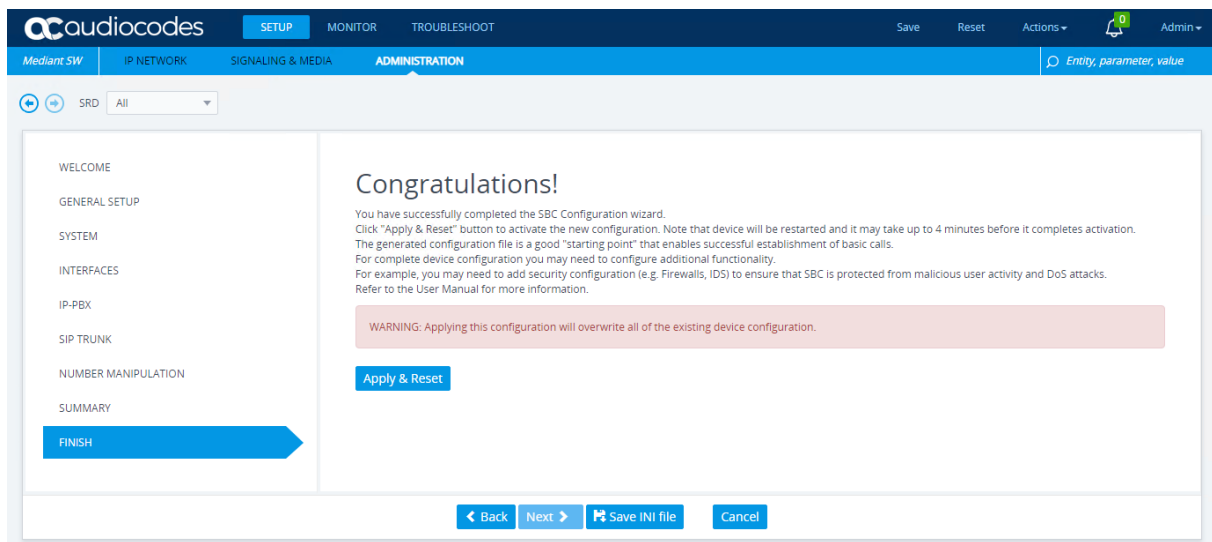
16. Click **Next**; the Summary wizard page appears:

Figure 6-9: Summary Wizard Page



17. Review the configuration summary, and then click **Next**; the Finish wizard page appears:

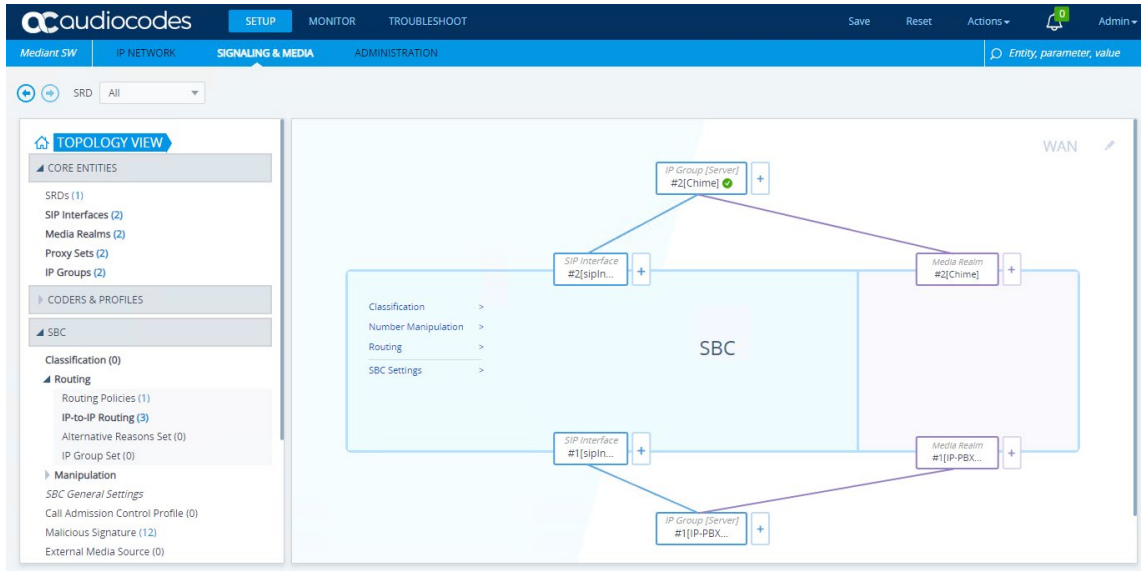
Figure 6-10: Finish Wizard Page



18. Click **Apply & Reset** to apply the configuration. This may take about four minutes to complete.

19. After the SBC completes its reset, you are redirected to the Web Login page. Log in using the default credentials.
20. Review the SBC configuration:
 - In the TOPOLOGY VIEW page, verify that two IP Groups, representing Amazon Chime Voice Connector and the Enterprise IP-PBX were created.
 - Verify that IP Group #2, which represents Amazon Chime Voice Connector, is displayed with a check mark indicating that the SBC has successfully connected to it.
 - Verify that CORE ENTITIES and SBC sections in the configuration menu have no red dots (indicating entities with invalid configuration).

Figure 6-11: Topology View Page



6.2 Configuring Metering License for Mediant VE SBC – PAYG Product

The "Mediant VE SBC – PAYG" product includes a pay-as-you-go (PAYG) license that requires a persistent connection between the SBC and the AWS Metering API. This connection is performed using public IP addresses via the network interface that is configured as described below.

This configuration is very important, as without it the SBC will be unable to communicate with the AWS Metering API and will seize its service. The PAYG license also requires that the correct system time is configured on the SBC. Therefore, it's important that you verify it as well, as described below.



Note: This section is applicable only to the "Mediant VE SBC – PAYG" product that uses pay-as-you-go (PAYG) license. If you deployed the "Mediant VE SBC" product that requires a production license purchased from AudioCodes, skip to the next section.

➤ To configure SBC:

1. Navigate to the Time & Date page (**ADMINISTRATION > TIME & DATE**).

Figure 6-12: Time & Date Page

The screenshot displays the 'Time & Date' configuration page in the AudioCodes Mediant VE SBC web interface. The page is divided into three main sections: LOCAL TIME, NTP SERVER, and TIME ZONE.

LOCAL TIME: This section contains a table for setting the local time. The table has columns for Year, Month, Day, Hours, Minutes, and Seconds. The current values are Year: 2020, Month: 2, Day: 19, Hours: 11, Minutes: 35, and Seconds: 43.

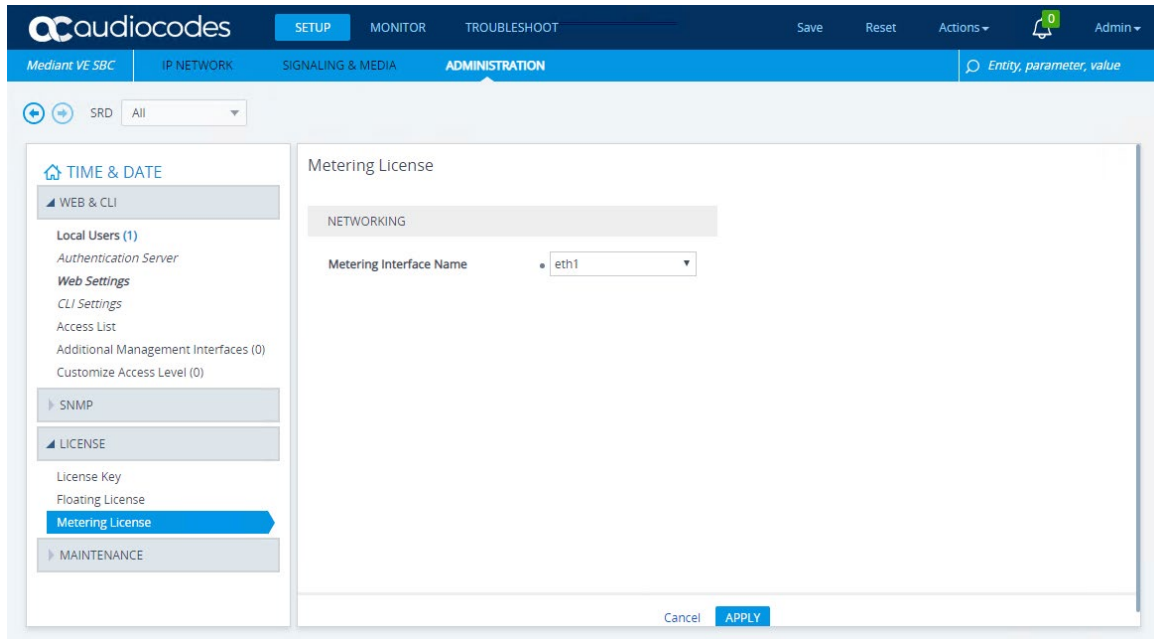
NTP SERVER: This section contains settings for the NTP server. The 'Enable NTP' checkbox is checked. The 'Primary NTP Server Address (IP or FQDN)' is set to 169.254.169.123. The 'Secondary NTP Server Address (IP or FQDN)' is empty. The 'NTP Update Interval' is set to 24 hours and 0 minutes. The 'NTP Authentication Key Identifier' is set to 0. The 'NTP Authentication Secret Key' is empty.

TIME ZONE: This section contains settings for the time zone. The 'UTC Time' is 19 Feb, 2020 09:35:43. The 'UTC Offset' is set to 2 hours and 0 minutes. The 'Daylight Saving Time' is set to 'Disable'. The 'DST Mode' is set to 'Day of year'. The 'Start Time' is set to Jan 01 00:00. The 'End Time' is set to Jan 01 00:00. The 'Offset (min)' is set to 60. The 'Day of Month Start' is set to Jan Sunday First 00:00. The 'Day of Month End' is set to Jan Sunday First 00:00.

At the bottom of the page, there are 'Cancel' and 'APPLY' buttons.

2. Verify that the 'Local Time' field displays the correct value that matches the configured time zone. If not, modify the parameters under the NTP SERVER and TIME ZONE groups.
3. Navigate to the Metering License page (**ADMINISTRATION > LICENSE > Metering License**).

Figure 6-13: Metering License Page



4. From the 'Metering Interface Name' drop-down list, select the network interface that is associated with the Elastic IP address. In the deployment topology described in Figure 2-1: Deployment Topology, this is **eth1**.
5. Click **Apply** to apply your settings.
6. On the toolbar, click **Save** to save your settings.

7 Configuring the Enterprise IP-PBX

Refer to the configuration manual of your Enterprise IP-PBX for detailed instructions on how to connect it to the SBC. Configuration on the Enterprise IP-PBX depends on the IP-PBX flavor, but typically it includes the following steps:

1. Create a **SIP Trunk** that represents the SBC.
 - Configure the **destination address** as the IP address of the 1st SBC network interface (eth0).
 - ♦ If you want the Enterprise IP-PBX to communicate with the SBC using private IP addresses (over VPN or Direct Connect), use the private IP address of the 1st SBC network interface (eth0).
 - ♦ If you want the Enterprise IP-PBX to communicate with the SBC using public IP addresses (over the Internet), use the Elastic IP address assigned to the 1st SBC network interface (eth0).
 - Configure the **destination port** to match the SBC listening port (configured on the IP-PBX Configuration wizard page of the SBC Configuration Wizard).
 - Configure the **protocol** to match the SBC transport type (configured on the IP-PBX Configuration wizard page of the SBC Configuration Wizard).
2. Create a **route** to the SBC:
 - Configure the **route pattern** (e.g., "+1XXXXXXXXXX").
 - Configure the **route destination** as the **SIP Trunk** that represents the SBC.

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8 Deploying a Second SBC Instance for Improved Reliability

After successfully completing deployment and configuration of the first SBC instance, you can improve your solution reliability by deploying a second SBC instance in a different Availability Zone, as show in Figure 2-1: Deployment Topology.

➤ **To deploy a second SBC instance:**

1. Deploy the second SBC instance, as described in Deploying the SBC Instance on page 13. Use different LAN and WAN subnets that reside in a different Availability Zone of the same VPC.
2. Configure the second SBC instance, as described in Configuring the SBC on page 27.
3. In the Amazon Chime Voice Connector settings:
 - Add the second SBC instance to the list of allowed hosts in **Termination** tab > **Allowed hosts list** (see Step 12 in Section Configuring Amazon Chime Voice Connector).
 - Add the second SBC instance to the inbound routes in **Origination** tab > **Inbound routes** (see Section Configuring Amazon Chime Voice Connector). Use priority and weight to create active/active or active/standby SBC deployment.
 - Amazon Chime Voice Connector routes calls first according to priority, where 1 is the highest priority. If hosts are equal in priority, calls are distributed among them based on their relative weight.
4. In the Enterprise IP-PBX settings, add the second SBC to the outbound rules list. Refer to your specific IP-PBX configuration manual for detailed instructions.

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9 Troubleshooting SBC Deployment

This section describes typical problems with SBC deployment described in this document and corresponding solutions.

Table 9-1: Troubleshooting SBC Deployment

Problem	Solution
Connection cannot be established with the SBC's Web interface	The SBC's Web interface is accessible via the 1st network interface (eth0) only. In typical deployment topology (described previously), the 1st SBC network interface (eth0) is not assigned with a public (Elastic) IP address. Therefore, you should use one of the following means to access the SBC Web interface: - Establish a VPN / Direct Connect connection between your datacenter and the LAN subnet to which the 1st SBC network interface (eth0) is connected. Access the SBC's Web interface from a PC in your datacenter over this VPN / Direct Connect connection. - Launch another AWS instance with Windows OS. Connect it to the LAN subnet and assign it with the public (Elastic) IP address. Use this instance as a "jump server". In other words, log in to it first (via the public IP address) and then access the SBC's Web interface from it (via the private IP address). - Assign the Elastic IP address to the 1st SBC network interface (eth0) and use it to access the SBC's Web interface.
SBC refuses to accept calls and displays the "No connection to Metering API" alarm	The "Mediant VE SBC – PAYG" Marketplace offer includes a pay-as-you-go license that enables Customers to use SBC as much as needed and pay for the actual service consumed via their AWS account billing. This licensing model requires a persistent connection between the SBC and AWS Metering API. The "Metering" IAM role that grants permission to use this API must be assigned to the SBC instance (see Section 4 for details). If connection with the AWS Metering API is unavailable, SBC seizes its operation until connection is available. The "No connection to Metering API" alarm is raised to indicate this problem. In the deployment topology described in Figure 2-1: Deployment Topology, the SBC should use the 2nd network interface (eth1) to connect to the AWS Metering API. This is because this connection is performed via public IP addresses and eth1 is assigned with an Elastic IP address. The network interface used for accessing the AWS Metering API can be changed on the Metering License page (ADMINISTRATION > LICENSE). Typical reasons that may cause lack of connectivity between SBC and the AWS Metering API include: - No "metering" IAM role assigned to the SBC instance. - No Public IP address on the network interface used for communication with the AWS Metering. - Incorrect time configured on the SBC (ADMINISTRATION > TIME & DATE). - A Network Security Group or some other firewall device is blocking communication between SBC and the AWS Metering API endpoint (<a href="https://metering.marketplace.<region>.amazonaws.com">https://metering.marketplace.<region>.amazonaws.com). Use the above checklist to identify the reason why your SBC instance can't access the AWS Metering API and resolve it.

Problem	Solution
SBC doesn't forward calls to/from Amazon Chime Voice Connector	Initial configuration created by the SBC Configuration Wizard may need minor adjustments to suit your specific setup. For example, you may need to adjust number manipulation rules (SETUP > SBC > Manipulation > Outbound Manipulations) to match the number format used by your IP-PBX. To troubleshoot such problems, collect logs from the SBC as described in Section Collecting and Analyzing Logs from SBC, analyze them using the Syslog Viewer utility, identify the root cause of the problem, and then solve it by adjusting the corresponding SBC configuration. Refer to the AudioCodes Mediant VE SBC User Manual for detailed description of SBC capabilities and configuration.

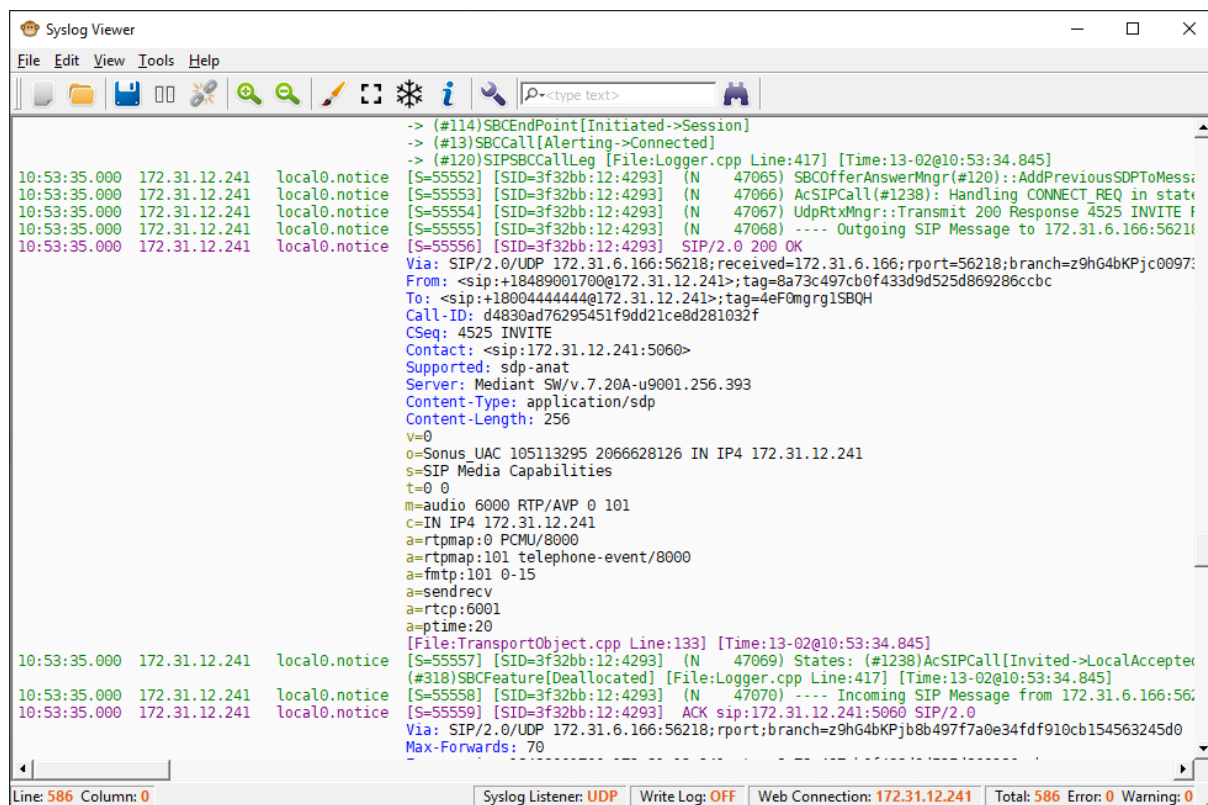
10 Collecting and Analyzing Logs from SBC

This section describes how to collect logs from the SBC and analyze them to perform advanced troubleshooting.

➤ **To collect logs from SBC:**

1. Download AudioCodes Syslog Viewer from <https://www.audiocodes.com/library/firmware>.
2. Install it on the PC that has access to the SBC management interface, through the LAN network connected to the 1st SBC network interface (eth0).
3. Run the Syslog Viewer tool.

Figure 10-1: AudioCodes Syslog Viewer Tool



4. Connect to the SBC Web interface, and then log in using the default credentials.
5. Open the Logging Settings page (**TROUBLESHOOT > Logging > Logging Settings**).
6. Configure the following parameters:
 - From the 'Enable Syslog' drop-down list, select **Enable**.
 - In the 'Syslog Server IP' field, enter the IP address of the PC where Syslog Viewer is running.
 - From the 'VoIP Debug Level' drop-down list, select **Basic**.

7. Click **Apply** to apply your settings.
8. Make a few calls; detailed logs, including all the send and received SIP messages are displayed in the Syslog Viewer.

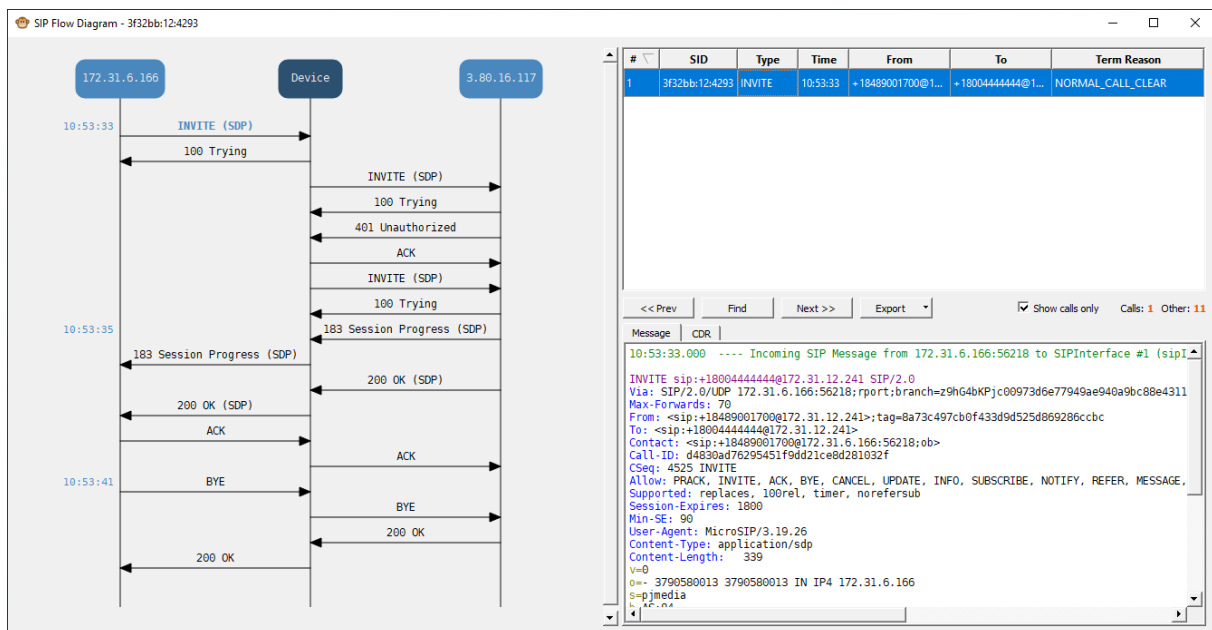


Note: The above procedure configures the SBC to send syslog messages to the PC where Syslog Viewer is installed. If such communication is not possible (e.g., due to a firewall or NAT devices in the middle), you may use the *Web Connect* feature in the Syslog Viewer to establish an HTTP connection with the SBC and pull logs from it. Refer to the Syslog Viewer's Help > Overview for configuration details.

➤ **To analyze the collected logs:**

1. After collecting the call logs, use the *SIP Flow Diagram* feature in the Syslog Viewer ( button) to display a ladder diagram of the SIP call.

Figure 10-2: SIP Flow Diagram



2. Click the call to display its SIP ladder diagram. Click the message in the SIP ladder diagram to display its content.
3. Use the main Syslog Viewer screen to view additional logs sent by the SBC; these may help you to identify the root cause of the problem.

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