Mediant<sup>™</sup> VE SBC

# Session Border Controller

# Virtual Edition

# Installation Manual







# Version 6.8

June 2015

Document #: LTRT-10352



# **Table of Contents**

1	Intro	oduction	7
	1.1 1.2	Product Package Installation Prerequisites	7
		1.2.1 VMware vSphere ESXi Hypervisor / Microsoft Hyper-V Server	7
		1.2.2 Mediant VE SBC Virtual Machine 1.2.3 Virtual Networking Configuration	8
2	Inst	alling the Mediant VE SBC	
_	21	Installing Mediant VE SBC on VMware vSphere ESXi	q
	2.1	2.1.1 Deploying the OVE Template File	9
		2.1.2 Adjusting the Virtual Machine for the Low Capacity SBC	.12
		2.1.3 Adjusting the Virtual Machine for the High Capacity SBC	.12
	2.2	2.1.4 Starting the Mediant VE SBC	.14
	2.2	2.2.1 Installing the Virtual Machine	15
		2.2.2 Adjusting the Virtual Machine for the Low Capacity SBC	.19
		2.2.3 Adjusting the Virtual Machine for the High Capacity SBC	.20
		2.2.4 Starting the Mediant VE SBC	.20
	2.3	Reconfiguring Default IP Address to Match Network Settings	21
	2.4	Identifying Incompatible Hardware Components	23
	2.5	Changing MAC Addresses from 'Dynamic' to 'Static'	23
	26	2.5.1 Changing MAC Addresses to Static in Microsoft Hyper-V	.24
2	2.0	instanting an TA System	23
3	LICE		21
	3.1	Entering the Product Key	27
	3.2	Obtaining the Software License Key	27
	3.3	Installing the Software License Key	28
Α	Con	figuring the Network	29
	A.1	Virtual NIC Types	.29
	A.2	Changing the Number of Virtual NIC Adapters	29
	A.3	Virtual Network Configuration	.30
В	Res	cue Options	31
	B.1	Taking a Snapshot	.31
	<b>B.2</b>	Viewing Available Snapshots	32
	<b>B.3</b>	Changing the Default Snapshot	.32
	<b>B.4</b>	Deleting a Snapshot	.32
	B.5	Manual Recovery	.32
		B.5.1 Returning to the Default Snapshot	.33
		B.5.2 Fixing the Current Installation B.5.3 Returning to an Arbitrary Snapshot	.34 34
		B.5.4 Returning to a Factory Snapshot	.34
	<b>B.6</b>	Automatic Recovery	.35

# List of Tables

Table 1-1: VMware vSphere ESXi / Microsoft Hyper-V Server Specifications	7
Table 1-2: Mediant VE SBC Virtual Machine Specifications	8
Table 2-1: Default IP Address	21

# List of Figures

Figure 1-1: Virtual Networking Configuration	8
Figure 2-1: Deploying the OVF Template – Selecting the OVF Template File	9
Figure 2-2: Deploying the OVF Template – Selecting VM Name	10
Figure 2-3: Deploying the OVF Template - Selecting Disk Format	10
Figure 2-4: Deploying the OVF Template - Selecting the VM Network	11
Figure 2-5: Adjusting VM for the Low Capacity SBC - Reserve CPU Frequency	12
Figure 2-6: Adjusting VM for High Capacity SBC - Increase 'Number of cores' to 4	13
Figure 2-7: Adjusting VM for High Capacity SBC - Increase 'Number of cores' to 4 x Core CPU Spec	ed13
Figure 2-8: Installing the Mediant VE SBC on Hyper-V – Hyper-V Manager	15
Figure 2-9: Installing Mediant VE SBC on Hyper-V – Import Virtual Machine Wizard	16
Figure 2-10: Installing Mediant VE SBC on Hyper-V – Enter Location of VM Installation	16
Figure 2-11: Installing Mediant VE SBC on Hyper-V – Select Virtual Machine	17
Figure 2-12: Installing Mediant VE SBC on Hyper-V – Choose Import Type	17
Figure 2-13: Installing Mediant VE SBC on Hyper-V – Choose Destination	18
Figure 2-14: Installing Mediant VE SBC on Hyper-V – Choose Storage Folders	18
Figure 2-15: Adjusting VM for the Low Capacity SBC – Settings	19
Figure 2-16: Adjusting VM for High Capacity SBC – Set 'Number of virtual processors' to 4	20
Figure 2-17: CLI Management Interface	21
Figure 2-18: Web Interface	23
Figure 2-19: Advanced Features - Network Adapter – Static MAC Address	24
Figure 2-20: Virtual Networking Configuration for HA System	25
Figure 3-1: Product Key on Software Upgrade Key Status Page	27
Figure 3-2: Software Upgrade Key Status Page	28
Figure A-1: Network Configuration Example	30
Figure B-1: CLI Management Interface	31
Figure B-2: Main GRUB Menu	33
Figure B-3: Rescue Options Menu	33
Figure B-4: System Returning to Snapshot State	33
Figure B-5: Selecting a Snapshot	34

### Notice

This document describes installation of AudioCodes' Mediant Virtual Edition (VE) SBC (Session Border Controller).

Information contained in this document is believed to be accurate and reliable at the time of printing. However, due to ongoing product improvements and revisions, AudioCodes cannot guarantee accuracy of printed material after the Date Published nor can it accept responsibility for errors or omissions. Before consulting this document, check the corresponding Release Notes regarding feature preconditions and/or specific support in this release. In cases where there are discrepancies between this document and the Release Notes, the information in the Release Notes supersedes that in this document. Updates to this document and other documents as well as software files can be downloaded by registered customers at <a href="http://www.audiocodes.com/downloads">http://www.audiocodes.com/downloads</a>.

#### © Copyright 2015 AudioCodes Ltd. All rights reserved.

This document is subject to change without notice.

Date Published: June-02-2015

### Trademarks

AudioCodes, AC, HD VoIP, HD VoIP Sounds Better, IPmedia, Mediant, MediaPack, What's Inside Matters, OSN, SmartTAP, VMAS, VoIPerfect, VoIPerfectHD, Your Gateway To VoIP, 3GX, VocaNOM and One Box 365 are trademarks or registered trademarks of AudioCodes Limited All other products or trademarks are property of their respective owners. Product specifications are subject to change without notice.

### WEEE EU Directive

Pursuant to the WEEE EU Directive, electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

### **Customer Support**

Customer technical support and services are provided by AudioCodes or by an authorized AudioCodes Service Partner. For more information on how to buy technical support for AudioCodes products and for contact information, please visit our Web site at www.audiocodes.com/support.

### Abbreviations and Terminology

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

### **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 Web site at <a href="http://www.audiocodes.com/downloads">http://www.audiocodes.com/downloads</a>.



## **Related Documentation**

#### Manual Name

Mediant Server & Virtual Editions SBC User's Manual

SIP Release Notes



**Note:** The scope of this document does not fully cover security aspects for deploying the product in your environment. Security measures should be done in accordance with your organization's security policies. For basic security guidelines, see *AudioCodes Recommended Security Guidelines*.

# **1** Introduction

AudioCodes' Mediant Virtual Edition (VE) Session Border Controller (SBC) is a software product installed and hosted in a virtual machine environment, enabling connectivity and security between enterprises' and Service Providers' VoIP networks.

The Mediant VE SBC provides perimeter defense as a way of protecting companies from malicious VoIP attacks; voice and signaling mediation and normalization for allowing the connection of any PBX and/or IP-PBX to any Service Provider; and service assurance for service quality and manageability.

The product also offers call "survivability", ensuring service continuity to enterprises served by a centralized SIP-based IP-Centrex server or branch offices of distributed enterprises. Survivability functionality enables internal office communication between SIP clients in the case of disconnection from the centralized SIP IP-Centrex server or IP-PBX.

The product features full management through its HTTP/S-based Web server. This userfriendly Web interface allows remote configuration using any standard Web browser (such as Microsoft<sup>™</sup> Internet Explorer<sup>™</sup>).

The product enables customers to significantly cut costs due to reduced hardware, power and cooling requirements.

## **1.1 Product Package**

The Mediant VE SBC is delivered as a virtual appliance that can be deployed on VMware® vSphere ESXi<sup>™</sup> 5 Hypervisor or Microsoft Hyper-V Server. Customers can choose how to obtain the product package according to preference. Two supply options are available:

- The product is supplied as a link, provided by AudioCodes, to a downloadable ZIP file containing the compressed virtual appliance image file.
- The product is also supplied as a DVD disk, containing the compressed virtual appliance image file.

## **1.2** Installation Prerequisites

The Mediant VE SBC software can be installed in two configurations:

- Low capacity SBC using a single vCPU and 2GB RAM
- High capacity SBC using 4 vCPUs and 4GB RAM

### 1.2.1 VMware vSphere ESXi Hypervisor / Microsoft Hyper-V Server

The physical server, on which Mediant VE SBC is installed, should have either VMware vSphere ESXi or Microsoft Hyper-V Server hypervisor preinstalled. Its hardware should be certified for the hypervisor being used and should meet these specifications:

Resource	Specifications	
Hypervisor	VMware ESXi version 5.1 or later Microsoft Hyper-V Server 2012 R2 or later	
Processor type	64-bit Intel® CPU with support for hardware virtualization (Intel VT-x) enabled and AES-NI support	
Number of CPU cores	Low capacity SBC: 4 cores or more High capacity SBC: 6 cores or more	
Memory	8 GB or more	
Disk space	60 GB or more	
Network interfaces	2 or more	

#### Table 1-1: VMware vSphere ESXi / Microsoft Hyper-V Server Specifications

**Note:** The VMware vSphere ESXi / Microsoft Hyper-V are 'bare-metal' hypervisors installed directly on top of the physical server.

For instructions on installing VMware vSphere ESXi, see <u>www.vmware.com</u>. For instructions on installing Microsoft Hyper-V, see the *Hyper-V Getting Started Guide* at <u>http://technet.microsoft.com</u>

### 1.2.2 Mediant VE SBC Virtual Machine

Mediant VE SBC runs in a virtual machine that must meet these minimum specifications:

Resource	Specifications	
Virtual CPU	Low capacity SBC: 1 vCPU High capacity SBC: 4 vCPUs Each vCPU must correspond to a physical CPU core fully reserved for the SBC VM.	
Memory	Low Capacity SBC: 2 GB High Capacity SBC: 4 GB	
Disk space	10 GB	
Virtual Network Interfaces	2 vNICs are recommended (for trusted / untrusted traffic), an additional vNIC is recommended for HA configurations	

The VM is automatically created when Mediant VE SBC virtual appliance is deployed.

### **1.2.3 Virtual Networking Configuration**

The virtual machine hypervisor should be pre-configured with two virtual networks designated for trusted and untrusted network traffic correspondingly.

Figure 1-1: Virtual Networking Configuration



# 2 Installing the Mediant VE SBC

## 2.1 Installing Mediant VE SBC on VMware vSphere ESXi

This section shows the installation process of Mediant VE SBC on VMware vSphere ESXi 5.1 or later using the VMware vSphere client.

The installation process might differ for other hypervisor versions and installation methods (e.g. vCenter).

#### **To install:**

- 1. Deploy the OVF Template (see Section 2.1.1).
- 2. Adjust the deployed VM (see Sections 2.1.2 and 2.1.3)
- 3. Start the Mediant VE SBC (see Section 2.1.4)
- 4. Reconfigure the default IP address to match your network settings (see Section 2.3).

### 2.1.1 Deploying the OVF Template File

The Mediant VE SBC is distributed in the form of an Open Virtualization Format (OVF) file.

- **To deploy the file:**
- 1. Log into vSphere client.
- Select File > Deploy OVF Template and locate the host server on which to install the OVF Template file.
- **3.** Browse to and select the SBC.ovf file supplied by AudioCodes.

#### Figure 2-1: Deploying the OVF Template – Selecting the OVF Template File

🚱 Deploy OVF Template		_ 🗆 🗵
Source Select the source location.		
Source OVF Template Details Name and Location Disk Format Ready to Complete	Deploy from a file or URL          E:\ssbs_6.60A.205.006.ovf       Image: Comparison of the internet, or specify a location accessible from your computer, such as a local hard drive, a network share, or a CD/DVD drive.	
Help	≤Back Next ≥	Cancel

- 4. View the OVF details and click **Next**.
- 5. Select a name for the deployed template and click **Next**.



🛃 Deploy OVF Template		
Name and Location	- far the depleted terrelate	
speciry a name and locatio	n ror the deployed template	
Source OVE Template Details	Name:	
Name and Location	<b>558C Boston</b> The party cap contain up to 20 obsynctors and it must be uping within the inventory folder	
Disk Format Network Mapping	The name can concain up to ou characters and it must be unique within the inventory rolder.	
Ready to Complete		
Line Line Line Line Line Line Line Line		
	<u>≤Back</u> Next ≥	Cancel

#### Figure 2-2: Deploying the OVF Template – Selecting VM Name

#### 6. Select the Thick Provision Lazy Zeroed option and click Next.

#### Figure 2-3: Deploying the OVF Template - Selecting Disk Format

🛃 Deploy OVF Template					
<b>Disk Format</b> In which format do you wa	ant to store the virtual disks?				
Source OVF Template Details Name and Location Disk Format Network Mapping Ready to Complete	Datastore: Available space (GB):	datastore1			
	<ul> <li>Thick Provision Lazy Ze</li> <li>Thick Provision Eager Z</li> <li>Thin Provision</li> </ul>	roed eroed			
Help			<u>≤</u> Back	Next ≥	Cancel

7. Select the Destination Network(s) to which two of the SBC virtual Network Interface Cards will be connected. Note that Destination Network(s) name(s) depend on VMware host configuration. The OVF template provides the virtual machine with two NICs of type VMXNET3. After installation of the SBC virtual machine, you can change the number of network connections and/or their type (see Appendix A, Configuring the Network, on page 29). Click Next.

Eiguro 2-1. Doploving the	OVE Tomplato -	. Solocting the	VM Notwork
1 I u u c $2$ -4. Debiovinu u c		- 361661114 1116	

Deploy O¥F Template		<u></u>
Network Mapping What networks should th	he deployed template use?	
Source OVF Template Details Name and Location	Map the networks used in this OVF	template to networks in your inventory
Disk Format	Source Networks	Destination Networks
Network Mapping	VM Network	VM Network
	Description:	
	The VM Network network	1
Help		≤ Back Next ≥ Cance

- 8. Wait for the deployment process to complete.
- 9. Adjust the deployed VM as described in Sections 2.1.2 and 2.1.3.

### 2.1.2 Adjusting the Virtual Machine for the Low Capacity SBC

#### To adjust the deployed VM for the Low Capacity SBC:

- 1. Locate the new VM in the tree under your host, right-click it and select **Edit Settings**; the SBC Virtual Machine Properties screen opens.
- 2. Click the **Resources** tab, under Settings select **CPU**, configure 'Reservation' of the CPU frequency to the core CPU speed (maximum value). This will ensure that the full physical CPU core will be reserved for the Mediant VE SBC virtual machine. For example, for Intel<sup>®</sup> Xeon<sup>™</sup> E5-2640, with a core frequency of 2.5 GHz, reserve 2.5 GHz.

#### Figure 2-5: Adjusting VM for the Low Capacity SBC – Reserve CPU Frequency

💋 Mediant Software E-SBC - Virtual	Machine Properties	
Hardware Options Resources		Virtual Machine Version: 8
Settings	Summary	Resource Allocation
CPU	3392 MHz	Shares: Normal 1000
Disk Advanced CPU	u MB Normal HT Sharing: Any	Reservation:
		Limit: J 3392 🚔 MHz
		▲ Limit based on parent resource pool or current host
Help		OK Cancel

- 3. Select the 'Unlimited' option if it isn't already selected.
- 4. Click OK.

### 2.1.3 Adjusting the Virtual Machine for the High Capacity SBC

#### To adjust the deployed VM for the High Capacity SBC:

- 1. Locate the new VM in the tree under your host, right-click it and select **Edit Settings**; the SBC Virtual Machine Properties screen opens.
- 2. Click the **Hardware** tab, click **CPUs**, and then increase 'Number of cores per socket' to **4**.

Mediant Software E-SBC - \ indware Options Resources	irtual Machine Properties	Virtual Mach	hine Version: (
Show All Devices	Add Remo	Number of virtual sockets:	-
ardware	Summary	Number of cores per socket: 4	•
Memory	3820 MB		
CPUs (edited)	4	Total number of cores: 4	
<ul> <li>VMCI device</li> <li>SCSI controller 0</li> <li>Hard disk 1</li> <li>CD/DVD drive 1</li> <li>Network adapter 1</li> <li>Network adapter 2</li> <li>Floppy drive 1</li> </ul>	Restricted LSI Logic Parallel Virtual Disk CD-ROM 1 VM Network VM Network Floppy 1	Changing the number of virtual CPUs after the OS is installed might make your virtual machine unstable. The virtual CPU configuration specified on the might violate the license of the guest OS.	ne guest ne is page
Help		ОК	Cancel

Figure 2-6: Adjusting VM for High Capacity SBC - Increase 'Number of cores' to 4

3. Click the **Resources** tab; the screen shown in Figure 2-7 is displayed.

Figure 2-7: Adjusting VM for High Capacity SBC - Increase 'Number of cores' to 4 x Core CPU Speed

Mediant Software E-SBC - V	irtual Machine Properties		
Hardware Options Resources Settings CPU Memory Disk Advanced CPU	Summary 11600 MHz 0 MB Normal HT Sharing: Any	Resource Allocation Shares: Normal Reservation: Limit: Unit: Limit based on parent resource p	Virtual Machine Version: 8
Help			OK Cancel

- 4. Under Settings, select CPUs, configure 'Reservation' of CPU frequency to 4 times the core CPU speed. This will ensure that four full physical CPU cores will be reserved for the Mediant VE SBC virtual machine. For example, for Intel<sup>®</sup> Xeon<sup>™</sup> E5-2640 with a core frequency of 2.5 GHz, reserve 10 GHz. Select the 'Unlimited' option if it isn't already selected.
- 5. Click Finish.

### 2.1.4 Starting the Mediant VE SBC

- 1. In vSphere, right-click the name of the Virtual Machine, and then click **Power On**.
- **2.** Proceed to Section **2.3**.

## 2.2 Installing the Mediant VE SBC on Microsoft Hyper-V

This section shows the installation process of Mediant VE SBC on Microsoft Hyper-V Server 2012 R2.

#### **To install:**

- 1. Install the Virtual Machine (see Section 2.1.12.2.1).
- 2. Adjust the deployed VM (see Sections 2.2.3 and 2.1.3)
- 3. Start the Mediant VE SBC (see Section 2.1.4)
- **4.** Reconfigure the default IP address to match your network settings (see Section 2.3). This section shows how to install the Mediant VE SBC on Microsoft Hyper-V.

### 2.2.1 Installing the Virtual Machine

The Mediant VE SBC is distributed in the form of a VM image.

#### > To install the Mediant VE SBC on Microsoft Hyper-V:

- 1. Extract the zip file containing the SBC VM installation received from AudioCodes, to a local directory.
- 2. Open Hyper-V Manager by clicking Start > Administrative Tools > Hyper-V Manager.

#### Figure 2-8: Installing the Mediant VE SBC on Hyper-V – Hyper-V Manager

THE PARTY OF THE P			Нур	oer-V Manager				_ <b>_</b> ×
<u>File</u> <u>Action</u> <u>View</u> <u>H</u> elp								
← → 2 □ 2 □								
Hyper-V Manager	Virtual Machiner							Actions
	virtuar macrimes							WIN-VO01RE7B70M
	Name -	State	CPU Usage	Assigned Memory	Uptime 20.17-00	Status		New 🕨
		nuririiriy		4120 MD	20.17.00			强 Import Virtual Machine
								👔 Hyper-V Settings
								👯 Virtual Switch Manager
								🤬 Virtual SAN Manager
								💋 Edit Disk
	<			Ш			>	🖳 Inspect Disk
	Checkpoints						۲	Stop Service
								🗙 Remove Server
			No virtua	al machine selected.				🔉 Refresh
								View
								🕐 Help
	Details							
				Area and and a				
			NO	o item selected.				
							Activ	ate Windows
							Go to !	system in Control Panel to activa
	1							y

- 3. Start Import Virtual Machine wizard by clicking Action > Import Virtual Machine
- 4. At the "Before You Begin" screen click Next.



#### Figure 2-9: Installing Mediant VE SBC on Hyper-V – Import Virtual Machine Wizard

<b>7</b>	Import Virtual Machine	x
Before You B	Begin	
Before You Begin	This wizard helps you import a virtual machine from a set of configuration files. It guides you through	'n
Locate Folder	resolving configuration problems to prepare the virtual mathine for use of this computer.	
Select Virtual Machine		
Choose Import Type		
Summary	Do not show this page again	
	<pre></pre>	

5. Enter the location of the VM installation received from AudioCodes, and click **Next**.

Figure 2-10: Installing Mediant VE SBC on Hyper-V – Enter Location of VM Installation

	Import Virtual Machine	x
Locate Folder	r	
Before You Begin	Specify the folder containing the virtual machine to import.	
Locate Folder	Folder: C:\FromAudiocodes\SBC_VE\ Browse	»
Select with a machine Choose Import Type Summary		
	< <u>Previous</u> <u>Next</u> > Einish Canc	el

6. Select the Virtual Machine and click Next.

	Import Virtual Machine	X
Select Virtua	Machine	
Before You Begin	Select the virtual machine to import:	
Locate Folder	Name	Date Created
Select Virtual Machine	SBC_VE_NEW	1/30/2014 10:18:51 AM
Choose Import Type		
Summary		
	-	
	< <u>P</u> revious	Vext > Einish Cancel

Figure 2-11: Installing Mediant VE SBC on Hyper-V – Select Virtual Machine

7. Choose **Copy virtual machine** import type and click **Next**.

Figure 2-12: Installing Mediant VE SBC on Hyper-V – Choose Import Type

2	Import Virtual Machine	x
Choose Imp	ort Type	
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Choose Destination Choose Storage Folders Summary	Choose the type of import to perform: <ul> <li>Register the virtual machine in-place (use the existing unique ID)</li> <li>Restore the virtual machine (use the existing unique ID)</li> <li>Copy the virtual machine (create a new unique ID)</li> </ul>	
	< Previous Next > Einish Cance	!

8. Choose the folders in which to store the Virtual Machine on your storage..

Figure 2-13: Installing Mediant VE SBC on Hyper-V – Choose Destination

2	Import Virtual Machine	x
Choose Fold	lers for Virtual Machine Files	
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Choose Destination	You can specify new or existing folders to store the virtual machine files. Otherwise, the wizard imports the files to default Hyper-V folders on this computer, or to folders specified in the virtual machine configuration.	
Choose Storage Folders Summary	C:\ProgramData\Microsoft\Windows\Hyper-V\       Browse         C=heckpoint store:       C:\ProgramData\Microsoft\Windows\Hyper-V\         Smart Paging folder:       C:\ProgramData\Microsoft\Windows\Hyper-V\         C:\ProgramData\Microsoft\Windows\Hyper-V\       Browse	
	< Previous Next > Einish Cancel	

9. Select the location of the virtual hard disk and click **Next**.

Figure 2-14: Installing Mediant VE SBC on Hyper-V – Choose Storage Folders

	Import Virtual Machine	x
Choose Fold	ers to Store Virtual Hard Disks	
Before You Begin Locate Folder Select Virtual Machine Choose Import Type Choose Destination Choose Storage Folders Summary	Where do you want to store the imported virtual hard disks for this virtual machine?         Location:       C:\Users\Public\Documents\Hyper-V\Vrtual Hard Disks\         Browse.	
	< <u>P</u> revious <u>N</u> ext > Einish Cance	

**10.** Click **Finish** to start the creation of the VM; the installation progress indicator is shown.



**11.** After the VM is created, adjust its properties as described in Sections 2.2.2 2.2.3and 2.1.3.

### 2.2.2 Adjusting the Virtual Machine for the Low Capacity SBC

- > To adjust the installed VM for the Low Capacity SBC:
- 1. Locate the new VM in the tree in the Hyper-V Manager, right-click it, and select **Settings**; the SBC Virtual Machine Properties screen opens.
  - Figure 2-15: Adjusting VM for the Low Capacity SBC Settings

2	ttings for SBC_VE_NEW on QAHYPERV2	<b>– – X</b>
SBC_VE_NEW	<b>●</b> ▶   <b>Q</b>	
SBC_VE_NEW         ▲ Hardware         ▲ Add Hardware         ▲ BIOS         Boot from CD         ■ Memory         2048 MB         ■ Processor         1 Virtual processor         ■ Hard Drive         SBC_VE.vhdx         ■ IDE Controller 0         ● DVD Drive         None         ● Network Adapter         Virtual Switch 1         ● None         ○ COM 1         None         ● Diskette Drive         None         ● Diskette Drive         None         ● Integration Services         Some services offered	Processor         You can modify the number of virtual processors based of the physical computer. You can also modify other resourd Number of virtual processors:         Number of virtual processors:         Image: Processor of the physical computer. You can also modify other resourd Number of virtual processors:         Resource control         You can use resource controls to balance resources an Virtual machine reserve (percentage):         Percent of total system resources:         O         Percent of total system resources:         Relative weight:	n the number of processors on ce control settings.
C:\Ronen\Virtual Machines\ Smart Paging File Location C:\Ronen\Virtual Machines\		
	<u>Q</u> K	Cancel Apply

- 2. Select Processor in the Hardware list.
- 3. Configure 'Virtual machine reserve (percentage)' to 100%, and then click OK.

### 2.2.3 Adjusting the Virtual Machine for the High Capacity SBC

This section shows how to adjust the Virtual Machine for the High Capacity SBC.

- > To adjust the installed VM for the High Capacity SBC:
- 1. Locate the new VM in the tree in the Hyper-V Manager, right-click it, and then select **Settings**; the SBC Virtual Machine Properties screen opens.

Figure 2-16: Adjusting VM for High Capacity SBC – Set 'Number of virtual processors' to 4

	Sett	ings for SBC_VE_NEW on QAHYPERV2
SBC_VE_NEW	¥	4 Þ   Q
★ Hardware         ▲ Add Hardware         ▲ BIOS         Boot from CD         ■ Memory         2048 MB         ■ Processor         ▲ Virtual processors         ■ Compatibility         ■ NUMA         ■ IDE Controller 0         ● Hard Drive         >SBC_VE.vhdx         ■ IDE Controller 1         ● DVD Drive         None         S SCI Controller         ● Network Adapter         Virtual Switch 1         ● Network Adapter         Virtual Switch 1         ● Network Adapter         Virtual Switch 2         ♥ COM 1         None         ● Diskette Drive         None         ● Name         SBC_VE_NEW         ▲ Management         ① Name         Som services offered         ◎ Checkpoint File Location         C:\Ronen\Virtual Machines\		Processor         You can modify the number of virtual processors based on the number of processors on the physical computer. You can also modify other resource control settings.         Number of virtual processors:         Image: Computer v
		OK Cancel Apply

- 2. Select Processor in the Hardware list.
- 3. Configure the 'Number of virtual processors' to be 4.
- 4. Configure 'Virtual machine reserve (percentage)' to 100%, and then click OK.

### 2.2.4 Starting the Mediant VE SBC

- 1. In Hyper-V Manager, right-click the name of the virtual machine, and then click **Connect**.
- 2. In the Virtual Machine Connection window, click **Start**.
- **3.** Proceed to Section 2.3.

# 2.3 Reconfiguring Default IP Address to Match Network Settings

After installation, the Mediant VE SBC is assigned a default IP address that will most likely be inaccessible from the customer's network. This address is assigned to the first virtual network interface card, connected to the 'trusted' virtual network switch during Mediant VE SBC installation.

Parameter	Value
IP Address	192.168.0.1
Subnet Mask	255.255.255.0

Reconfigure the IP address in order to connect to the Mediant VE SBC's Web-based Management Tool (hereafter referred to as 'Web interface'). The procedure below describes how to change the default IP address using the CLI. The procedure uses the regular CLI commands. Alternatively, you can use the CLI Wizard utility to set up your Mediant VE SBC with the initial OAMP settings. The utility provides a fast-and-easy method for initial configuration of the Mediant VE SBC through CLI. For more information, refer to the *CLI Wizard User's Guide*.

- > To reconfigure the IP address using CLI:
- 1. Connect to the VM's console (e.g., in vSphere, switch to **Console** tab); you will be presented with the CLI management interface.
- 2. At the prompt, type the username (default is **Admin** case sensitive), and then press ENTER:

Username: Admin

**3.** At the prompt, type the password (default is **Admin** - case sensitive), and then press ENTER:

Password: Admin

#### Figure 2-17: CLI Management Interface

🔂 10.3.95.3 - vSphere Client								<u> </u>
<u>File E</u> dit Vie <u>w</u> Inventory <u>A</u> dminis	stration <u>P</u> lug-ins <u>H</u> elp							
💽 💽 🏠 Home 🕨 🛃 🕽	Inventory 🕨 🎁 Inventory							
🔲 II 🕟 🧐 🔯	h 😰 🖻 🄛 🧇	2						
□ 10.3.95.3 E-SBC Boston E-SBC New York	E-SBC Boston Summary Resource All Welcome to Au	ocation Performar IdioCodes CL	ice Events	Console Permi	ssions			
	Username: Adm Password: _	nin						
	at and a set of the se							
	n an Ara Ar Ar							
Recent Tasks					Name, Target or Status cor	ntains: •	Cle	ar ×
Vame Power On virtual machine	Target	Status Completed	Details	Initiated by root	Requested Start Time 05-Nov-12 12:50:25		art Time 5-Nov-12 12:50:25	▲) ( ↓ ↓
🚰 Tasks							-	root

# 

- At the prompt, type enable and press ENTER: Mediant SW> enable
- 5. At the prompt, type the password again and press ENTER: Password: Admin
- 6. At the prompt, type the following commands to access the network interface configuration:

```
Mediant SW# configure voip
Mediant SW(config-voip)# interface network-if 0
Mediant SW(network-if-0)#
```



**Note:** Use the Tab key to auto-complete partially entered commands.

**7.** At the prompt, type the following commands to configure the IP address, prefix length and default gateway:

```
Mediant SW(network-if-0)# ip-address 10.4.212.155
Mediant SW(network-if-0)# prefix-length 16
Mediant SW(network-if-0)# gateway 10.4.0.1
```



**Note:** The IP and gateway addresses above are *by way of example* only. Use IP and gateway addresses appropriate to your network configuration.

- 8. At the prompt, type exit to complete the network-if configuration: Mediant SW(network-if-0)# exit
- If Mediant SE SBC is connected to the IP network that uses VLAN ID, type the following commands to configure it (otherwise skip to step 10):

```
Mediant SW(config-voip)# interface network-dev 0
Mediant SW(network-dev-0)# vlan-id 10
```

```
Mediant SW(network-dev-0)# exit
```

**10.** At the prompt, type **exit** to complete the configuration:

Mediant SW(config-voip)# **exit** 

**11.** At the prompt, type **reload now** to reset the product and activate the new configuration:

Mediant SW# reload now

After the Mediant VE SBC restarts, connect to its Web interface to continue the provisioning (see the *Mediant Server & Virtual Editions SBC User's Manual* for details).

Mediant St Mediant St	E SBC 🖌 Submit	Burn     Device Acti	ons 🔹 💼 Home	😢 Help 🛛 🖢 Log	a off Admin
Configuration Maintenance Status & Diagnostics Search	Mediant SE SBC Home I	Page			
Basic O Advanced	Alarms	Vetwork	¢	]	
	General Information				
	IP Address	10.4.5.177			
	Subnet Mask	255.255.0.0			
	Default Gateway	10.4.0.1			
	Product Type	Mediant Software E-SBC			
	Firmware Version	6.80A.000.002			
	Protocol Type	SIP			
	Operational State	UNLOCKED			
	High Availability	Not Operational			

#### Figure 2-18: Web Interface

# 2.4 Identifying Incompatible Hardware Components

Each time Mediant VE SBC is started it validates its VM configuration and issues a warning if incompatible hardware and/or VM configuration is detected. The warning is displayed at the VM console for 10 seconds during the boot up sequence, after which normal start up sequence continues.

You can also view details of the VM configuration and/or hardware platform using the **show system** hardware CLI command. Incompatible components are indicated with an asterisk (\*).



**Note:** Incompatible components should be replaced or, alternatively, not be mapped to the SBC VM.

The example below shows an incompatible NIC:

```
# show system hardware
cpu: Intel<R> Xeon<R> CPU E31220 @ 3.10GHz, total 4 cores
memory: 4096 MB
chassis: Microsoft Hyper-V Server
network:
Intel Corporation 82574L Gigabit Network Connection
Intel Corporation 82574L Gigabit Network Connection
*Realtek Semiconductor Co., Ltd. RTL-8169 Gigabit Ethernet (rev 10)
*Realtek Semiconductor Co., Ltd. RTL-8169 Gigabit Ethernet (rev 10)
```

## 2.5 Changing MAC Addresses from 'Dynamic' to 'Static'

By default, the MAC addresses of the SBC Virtual Machine are set dynamically by the hypervisor. Consequently, they might be changed under certain circumstances – for example, after moving the VM between Hyper-V hosts.

To prevent this, it's advisable to change the MAC Addressees from Dynamic to Static.

### 2.5.1 Changing MAC Addresses to 'Static' in Microsoft Hyper-V

This section shows how to change the MAC address to Static in Microsoft Hyper-V.

- > To change the MAC address to 'Static' in Microsoft Hyper-V:
- **1.** *Turn-off* the SBC VM.
- 2. Enter the Settings of the selected SBC VM
- 3. For each Network Adapter, do the following:
  - a. Choose Advanced Features
  - **b.** Change the 'MAC address' option to **Static**.

#### Figure 2-19: Advanced Features - Network Adapter – Static MAC Address

12	ettings for SBC_VE_NEW on QAHYPERV2	_ 🗆 X
SBC_VE_NEW	4 • 0	
<ul> <li>★ Hardware</li> <li>☆ Add Hardware</li> <li>▲ BIOS Boot from CD</li> <li>➡ Memory 2048 MB</li> <li>➡ Processor 1 Virtual processor</li> <li>➡ IDE Controller 0</li> <li>➡ Hard Drive SEC VE. vbdy</li> </ul>	Advanced Features MAC address Dynamic Static 00 - 15 - 5D - 5E - 74 - 29 MAC address spoofing allows virtual machines to char address in outgoing packets to one that is not assign Enable MAC address spoofing	nge the source MAC ed to them.
DEC_CHINEX     DECONTROLOGY     DIDE Controller 1     DECONTROLLER     SCSI Controller     Virtual Switch 1     Hardware Acceleration     Advanced Features     Quite Adapter     Virtual Switch 2     Virtual Switch 2	DHCP guard DHCP guard drops DHCP server messages from unau pretending to be DHCP servers. Enable DHCP guard Router guard Router guard drops router advertisement and redirect unauthorized virtual machines pretending to be route Enable router advertisement guard	thorized virtual machines
None     COM 2     None     Diskette Drive     None     Management     Name	Protected network Move this virtual machine to another cluster node if a detected. Protected network	network disconnection is
SBC_VE_NEW Integration Services Some services offered Checkpoint File Location C:\Ronen\Virtual Machines\	Port mirroring Port mirroring allows the network traffic of a virtual m copying incoming and outgoing packets and forwardin virtual machine configured for monitoring. Mirroring mode: None	achine to be monitored by ng the copies to another
	Ōĸ	Cancel Apply

# 2.6 Installing an HA System

Users can configure two Virtual Machines, running on different servers to work in a High Availability (HA) configuration.

### **To configure an HA system:**

- 1. Reconfigure a temporary IP address for each device, according to the instructions under Section 2.3.
- 2. To support HA functionality, the devices must be installed with the an HA-enabled license. Follow the instructions described in Section 3 on page 27 for licensing each device in the HA system.
- **3.** Follow the instructions described in the section 'High Availability System' in the Mediant *Server & Virtual Editions SBC User's Manual*, and configure each device accordingly using the Web interface.



#### Figure 2-20: Virtual Networking Configuration for HA System



This page is intentionally left blank.

# 3 Licensing the Product

After you have successfully completed the software installation, you need to obtain and install the Software License Key file to enable the call capacity and features that you ordered with the product, as described in the following subsections.



**Note:** For HA systems, each unit has its own Serial Number, Product Key and Software License Key. Therefore, the instructions in this section must be done for each unit.

# 3.1 Entering the Product Key

The Product Key is used to identify a specific purchase of your device installation for the purpose of subsequent communication with AudioCodes, for example, for support and software upgrades. The Product Key is provided in the email confirmation at the time the product is purchased and must be entered on the product through the Web interface, as described below.

#### To enter the Product Key:

1. Open the Software Upgrade Key Status page (Maintenance tab > Software Update menu > Software Upgrade Key).

#### Figure 3-1: Product Key on Software Upgrade Key Status Page

**Product Key** 

Change Product Key

- 2. In the 'Product Key' field, enter the Product Key.
- 3. Click the Change Product Key button.

You can view the Product Key on the Device Information page (Status & Diagnostics tab > System Status menu > Device Information).

## 3.2 Obtaining the Software License Key

The procedure below describes how to obtain the Software License Key.

- To obtain the Software License Key:
- Make a note of the product Serial Number. The Serial Number is displayed in the 'Serial Number' field on the Device Information page (Status & Diagnostics tab > System Status menu > Device Information).
- 2. Activate your product through AudioCodes License Activation tool at <u>http://www.audiocodes.com/swactivation</u>. You will need your Product Key and Fingerprint (Serial Number) for this activation process. The Product Key was provided to you in the e-mail that was sent to confirm your purchase order from AudioCodes. Upon activation, an e-mail will be sent to you with a Software License Key file.
- 3. When you receive the new Software License Key file, open the file with any text-based program (e.g., Notepad), and then verify that the "S/N" value reflects the Serial Number of your product.



Warning: Do not modify the contents of the Software License Key file.

# 3.3 Installing the Software License Key

The procedure below describes how to install the received Software License Key.

- **To install the Software License Key:**
- Open the Software Upgrade Key Status page (Maintenance tab > Software Update menu > Software Upgrade Key):

Figure 3-2: Software Up	ograde Key Status Page
-------------------------	------------------------

Software Upgrade Key Status	
Product Key	
Change Product Key	
Serial Number 42626300208240	
Current Key jARTp0tJvD4TbxwCizgicBVU5ihz6zQkMI7L@8XAezvZV1sFgPR1ouv172hz6wkl3MMyckcFajcTbxwE	
Key features:	
Board Type: Mediant VE SBC	
ODE features: RICP-XR AMRFOILCYMAnagement ODE features: VoiceOualityMonitoring MediaEnhancement	
Security: IPSEC MediaEncryption StrongEncryption EncryptControlProtocol	
Coders: G723 G729 G728 NETCODER GSM-FR GSM-EFR AMR EVRC-QCELF G727 ILBC EVRC-B	
AMR-WB G722 EG/11 MS_RIA_NB MS_RIA WB SILK_NB SILK WB SPEEK NB SPEEK WB OPUS_NB	
DATA features:	
IP Media: Conf VXML VoicePromptAnnounc (H248.9) POC	
Channel Type: RTP DapCn=30 Control Protocols, MGCW SIP SISurvivebility SBC=1000 MSFT FFU=1000 WebBTC	
Defailt features:	
Coders: G711 G726	
Add a Software Upgrade Key	
Add Key	
Load "Upgrade Key" file from your computer to the device	
Browse_ No file selected. Load File	
Reset with flash burn is required after file is loaded.	

- 2. Back up the Software License Key currently installed on the product, as a precaution. You can reload this backup to restore the product's original capabilities if the key does not comply with your requirements.
  - **a.** In the 'Current Key' field, select the entire text string and copy it to any standard text file (e.g., Notepad).
  - **b.** Save the text file with any file name and file extension (e.g., key.txt) to a folder on your computer.
- 3. Open the Software License Key file using a text-based program such as Notepad.
- 4. Copy-and-paste the string from the file to the 'Add a Software Upgrade Key' field.
- 5. Click the **Add Key** button; the key is installed on the product and displayed in the 'Current Key' field.
- 6. Verify that the key was successfully installed. On the Software Upgrade Key Status page, check that the listed features and capabilities activated by the installed key match those that were ordered.
- 7. Reset the product; the new capabilities and resources enabled by the key are activated.

# **A Configuring the Network**

# A.1 Virtual NIC Types

The Mediant VE SBC virtual appliance provided by AudioCodes contains two virtual NICs. For VMware ESXi:

The OVF template contains two virtual NICs of type VMXNET3. This configuration provides optimal network and CPU performance. If you add additional virtual NICs, make sure that they are of the same VMXNET3 type.

For Hyper-V:

The Virtual Machine image contains two virtual NICs of type "network adapter". If you add additional virtual NICs, make sure that they are of the same type (and are not "legacy network adapters").

Mediant VE SBC also supports passthrough NICs. This option gives the best network and CPU performance but requires allocation of a NIC to a specific VM without the capability of sharing it with other VMs. For details, refer to the *hypervisor documentation*.



Warning: For VMware, the Mediant VE SBC supports only virtual NICs of type VMXNET3. Other vNIC types, e.g., E1000 or VMXNET2, are not supported.

# A.2 Changing the Number of Virtual NIC Adapters

You can add/remove virtual adapters to the Mediant VE SBC. When adding/removing a NIC, shutdown is required. For details, refer to the *hypervisor documentation*.

It's recommended to take a System Snapshot before you add/remove a NIC (see Section B.1 on page 31).

# A.3 Virtual Network Configuration

The virtual network can be configured in various configurations depending on your implementation, number of virtual machines, physical adapters, network security requirements, VLANs topology, etc.

Use the following guidelines when implementing virtual network configuration:

- Create separate networks for trusted and untrusted traffic.
- Connect two physical network ports to each virtual network to enable Ethernet port redundancy.



**Note:** Mediant VE SBC supports Ethernet port redundancy on its own (via Ethernet Groups that may be connected to two vNICs). In most deployments, however, this functionality is not needed – instead, only one vNIC is used and Ethernet port redundancy is implemented by virtual switch.

- Use trusted network for management traffic (Web, CLI, SNMP).
- For HA configurations, create a separate network for HA traffic.



# **B** Rescue Options

The Mediant VE SBC features a System Snapshots mechanism that provides the capability of returning the system to a previous state. The mechanism may be used as a rescue option if a system malfunction occurs.



**Note:** In addition to the functionality described below, you can use the snapshots functionality provided by the virtual machine hypervisor.

# **B.1** Taking a Snapshot

Taking a System Snapshot captures a complete state of the Mediant VE SBC, including:

- installed Mediant VE SBC software
- the current configuration
- auxiliary files
- the Software License Key

The first 'factory' snapshot is automatically taken when initial installation is performed. Additional snapshots (up to 10) may be taken. The Mediant VE SBC can be returned to a snapshot, as described below.

#### > To take a snapshot using the CLI:

1. Connect to the CLI interface as described under Section 2.3.

Figure B-1: CLI Management Interface

Welcome to AndioCodes CLI
Username: Admin Password:
Mediant SW>

- At the prompt, type enable and press ENTER: Mediant SW> enable
- 3. At the prompt, type the password and press ENTER: Password: Admin
- At the prompt, save the current configuration (burn) before creating a snapshot: Mediant SW# write
- **5.** Type the following commands to take a snapshot:

```
Mediant SW# configure system
Mediant SW# startup-n-recovery
Mediant SW (startup-n-recovery)# create-system-snapshot <name>
```

# **B.2** Viewing Available Snapshots

Currently available system snapshots can be viewed by using the **show-system**-**snapshots** command. The 'default' snapshot is indicated by asterisk.

```
Mediant SW(startup-n-recovery)# show-system-snapshots
first-install-2010-01-01_03-18-29
pre-production-6.70.037.010-2010-01-08_00-39-58
*production-6.70.037.010-2010-01-08_00-41-30
```

# **B.3** Changing the Default Snapshot

The 'default' snapshot indicates a restore point that is used by Automatic Recovery in the case of software malfunction (see Section B.6) and/or Manual Recovery (see Section B.5). The last user-created snapshot is automatically set as 'default' though it can be changed using the set-default-snapshot command.

```
Mediant SW(startup-n-recovery)# set-default-snapshot pre-
production-6.70.037.010-2010-01-08_00-40-27
```

# **B.4 Deleting a Snapshot**

To delete a snapshot, use the **delete-system-snapshot** command:

Mediant SW(startup-n-recovery)# delete-system-snapshot preproduction-6.70.037.010-2010-01-08\_00-39-58

## B.5 Manual Recovery

Manual recovery is performed on user request. When the Mediant VE SBC reboots, a GRUB menu is displayed that allows users to select one of the following rescue options:

- Return to default snapshot
- Fix current installation
- Browse available system snapshots
- Return to factory snapshot (after install from CD)

### **B.5.1** Returning to the Default Snapshot

#### To return to the default snapshot:

- 1. Reboot the server.
- 2. In the GRUB menu that's displayed for 5 seconds during the server start-up, press the Down ↓ key, select **Rescue option**, and press **Enter**.



	GNU	GRUB version	1.99
Software E-SBC Software E-SBC	F6.70ra.037.010 F6.70ra.037.010	(VGA) (RS232)	
Rescue Uptions Safe Mode			
Use the ↑ ( Press enter before boot	and ↓ keys to se r to boot the se ting or 'c' for a	lect which ent lected OS, 'e' a command-line	ry is highlighted. to edit the commands

3. In the Rescue Options menu, select **Return to default snapshot** and press **Enter**.

#### Figure B-3: Rescue Options Menu



The system returns to the default snapshot, restoring the software version and the full configuration (see Section B.3). The process can take up to 10 minutes to complete.





### **B.5.2 Fixing the Current Installation**

- To fix the current installation:
- In the GRUB menu, select Fix current installation and press Enter; the system is repaired while the currently installed software version and its configuration are preserved. The process can take up to 10 minutes to complete.

### **B.5.3** Returning to an Arbitrary Snapshot

#### To return to an arbitrary (non-default) system snapshot:

1. In the GRUB menu, select **Browse available system snapshots** and press **Enter**; you're prompted to select a snapshot.

	GNU GRUB version 1.99	
System	1 Snapshot - first-install-2010-01-01_08-15-09	
System	Snapshot - test-6.6-2010-01-01_08-13-00	
System	Snapshot - first-install-2010-01-01_08-15-09	
System	Snapshot - 6.6-2010-01-01_10-05-50	
System	1 Snapshot - test-2010-01-02_09-34-51	

#### Figure B-5: Selecting a Snapshot

2. Select a snapshot and press **Enter**; the system returns to the selected snapshot, restores the software version and the full configuration. The process may take up to 10 minutes to complete.

### **B.5.4 Returning to a Factory Snapshot**

- To return to a factory snapshot (after install from CD):
- In the GRUB menu, select Return to factory snapshot (after install from CD) and press Enter; the system returns to the first snapshot automatically taken when initial installation from CD was performed. The process can take up to 10 minutes to complete.

# **B.6** Automatic Recovery

The Mediant VE SBC activates Automatic Recovery when it encounters a severe software malfunction that prevents it from successfully booting for three subsequent attempts. Automatic Recovery returns the system to the 'default' snapshot and may take up to 10 minutes to complete.



# Installation Manual



www.audiocodes.com